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Getting Started with Mission Control

Welcome to Delphix Mission Control

Mission Control is a centralized reporting and auditing tool for overseeing multiple Delphix Engine deployments. Mission Control allows administrators to combine, sort, and audit data from multiple Delphix Engines. A centralized view of data from many Delphix Engines allows administrators to identify promptly any issues with the deployment, determine where resources are allocated, quickly locate deployed databases, and properly size future additions.

User Roles and Permissions

Mission Control has two types of users:

Admin User

Admin users have full access to all report data and can configure the Mission Control appliance. For example, they can add/delete Delphix Engines, add/delete reports, add/delete users, change tunable settings, and add/delete tags.

Auditor User

Auditor users can only view report data. Admin users can also assign auditor users a set of tags (arbitrary text strings) to restrict which report data they can view. There is no default auditor account. The first Delphix Administrator will need to create the auditor users and will be responsible for creating their User IDs and Passwords.

System Requirements

The VM guest where you install Mission Control has the following requirements:

- VMware ESX: 4.x or greater
- Two Virtual CPUs
- 4 GB of Memory
- 50 GB of Storage

Mission Control supports Delphix Engine 4.0 or later.

Supported Browsers

The following are the minimum supported browser versions for accessing the Mission Control console:

- Chrome 37
- Safari 7
- Firefox 32
- Internet Explorer 11
Delphix Engine Configuration

Activity One: Import the OVA file for Mission Control into a VM guest

1. Using the vSphere client, login to the vSphere server where you want to install Mission Control.
2. Select File > Deploy OVA Template.

Add Mission Control to the Network

By default, Mission Control is configured to use DHCP to acquire an IP address. If this is acceptable within your organization, then Mission Control should be immediately accessible at the IP hostname assigned to the VM guest within vSphere.

However, many organizations do not support the use of DHCP by servers on their network. In that case, it will become necessary to log in as "root" into Mission Control via the console provide by vSphere, and work with your network administrator to perform the following actions to set up a static IP address on the VM guest.

1. Connect to the VM guest (running a stripped-down version of Linux) as "root", initial default password is "delphix."
   a. Change this password as soon as possible.
2. Run the Linux command ifconfig -a | grep -i hwaddr.
   a. Record the "HwAddr" output for later use. This should be six hexadecimal numbers delimited by colons, such as 0A:1B:2C:4D:5E:6F.
3. Change to the directory /etc/sysconfig/network-scripts
4. Edit the ifcfg-eth0 file to make the following changes:
   a. Copy the existing ifcfg-eth0 file to another name like ifcfg-eth0.save.
   b. Change bootproto=dhcp to bootproto=static.
   c. Using the "HwAddr" value saved from step #2 above, add a line reading HWADDR=<hwaddr-value-captured-above>.
   d. Using an available IP address value obtained from your network administrator, add a line reading IPADDR=<available-IP-address>.
   e. Using an IP netmask value obtained from your network administrator, add a line reading NETMASK=<netmask-spec>.
   f. Save the changes.
5. Make sure that output from the hostname command matches the value set within vSphere.
   a. If the output does not match, use the Linux command hostname <short-IP-hostname-value> to set it.
6. Create a default gateway route for the static IP address assigned above.
   a. Typically, the default gateway address has the fourth digit of ".1" for the IP address of the server
      i. The server at IP address 192.168.7.10 might have a gateway of 192.168.7.1.
   ii. Obtain the gateway IP address from your network administrator.
   b. Use the Linux command route add default gw <gateway-IP-address>.
7. Make sure that the contents of the /etc/resolv.conf file is set appropriately to permit DNS name resolution.
   a. Ensure the line that specifies the IP domain name is correct for your network.
      i. For example, the line reads domain delphix.com for servers within Delphix.
   b. Ensure that at least one (and preferably two or more) DNS nameserver IP addresses are specified and that they are reachable via "ping."
      i. For example, each line should read nameserver <DNS-nameserver-IP-address>. Running the Linux command "ping <DNS-nameserver-IP-address>" should complete successfully.
8. Once all of these changes have been made, restart network services on the Linux OS.
   a. Run the Linux command service network restart and ensure that it completes successfully.

Logging In

1. Access Mission Control by opening a web browser using the IP address or DNS qualified host name. Mission Control does not currently support SSL connections, so you should use http, not https.
2. Mission Control ships with one generic Delphix Admin User. The User ID is “delphix_admin” and the password is “delphix.”

Once logged in as the Delphix Admin User, change your password. You can find instructions to do this in the Change a User Password section found below.

Navigating the Mission Control Toolbar and User Interface

The Mission Control Toolbar appears after logging into Mission Control. The navigation bar enables you to analyze, manage, and configure data reporting for a Delphix deployment. The View Report functionality appears on the left-hand side of the toolbar. The configuration, help, and login buttons appear on the right-hand side of the toolbar. Below is a screenshot of the toolbar key functionality as well as a brief summary of the functionality available.

Viewing Reports

The View Report tab provides aggregated data across all connected Delphix Engines and presents it as a set of different reports. You can select these reports from the drop-down menu. Mission Control has automated features that check for updates across all Delphix Engines and sync these updates into reports every 10 minutes. To refresh the currently displayed report manually, click Refresh.

Interactive reports such as Storage Breakdown and History display interactive graphical representations of historical and current storage usage across all Delphix Engines you are monitoring. These visualizations of storage and disk capacity enable you to analyze and mediate storage across Delphix Engines from multiple perspectives.
Configure Mission Control

Clicking on the configuration icon in the upper right-hand corner of the screen navigates you to four configuration tabs: Reports, Engines, Users, and System. Read below for more details.

Configure Reports

The Reports tab is the central place to configure settings, create scripts, and email reports in Mission Control. There are three sections that include Report scripts, Script configuration (tunables), and Email reports. To learn more about how to navigate and work in each of these sections, please continue reading.

To navigate to the Report configuration tab:

1. Click the configuration icon on the right-hand side of the toolbar.

2. Click Reports.
Mission Control Email Reports Configuration - Version 1.4

Report Scripts

- Enable/disable individual reports to determine which ones are available in the reports drop-down menu
- Delete reports
  - Deleted reports are no longer generated in Mission Control
- Upload new reports
  - This is an experimental feature. Please contact Delphix if you are interested in customizing existing reports or creating new ones.
Script Configuration

- Configure tunable parameters for specific reports
  - Click the field in the value column to make it editable

Email Reports

- Configure email reports which automatically send tabular data to any number of email addresses
- Send emails on daily, weekly, or monthly schedules
- Customize the way the data is presented in emails by choosing the sort column and limiting the number of rows.

To access the Email Reports section, follow the instructions below:

1. Click the configuration icon on the right-hand side of the toolbar.
2. Click Reports.
3. Scroll down to Email Reports.
Activity Two: Configure, Automate, and Email Mission Control Reports

This activity will walk you through the system and report configuration and automation features that facilitate emailing Mission Control reports in the Email Reports configuration section. To begin, you will need to navigate the the configuration icon and select system configurations first in order to enable system connections such as the SMTP server.

1. Click the configuration icon on the right-hand side of the toolbar.

2. Click System.

3. Scroll down to Email and click Edit Settings.
4. Populate all the fields in the **Edit Email Settings** as seen below and click **Save changes** :
5. Now that SMTP has been configured, navigate to the Reports Configuration page and scroll down to Email reports. Follow and complete the three-step process as illustrated below to begin automating and emailing Mission Control reports.

**Required:** Click Add Email Report. A series of fields will appear to help guide the configuration and automation of emailing selected Mission Control reports. The following is a description of each of these fields.

a. The Report field provides a selection of the specific Mission Control report you would like to use for the Email Report function. Note: Only tabular reports are available for email.

b. Sort by Selection provides a drop down of the column you wish to sort by, which varies based on the report you have selected above, and whether the results should be ascending or descending.

c. In the Limit the Report To fields, a selection choice appears allowing you to run and email a report with all data rows or to enter the number of data rows you would like included in the report.

d. In the Schedule field, fields are provided to select the scheduled day and time that you want the report to be sent.
In the **Send to** field, enter the **email addresses** to which you want to send the report. **Note:** Use a comma to separate email addresses.

Once you have configured all of the fields above, save the information by clicking **Add Email Report**. The newly added report will appear. You will then have access to additional features to edit, send a report now, or click the X button to delete the report.

### Optional:
Click the **Edit** button when you need to change or enter new information into any of the configuration fields found in the **Add Email Report** functionality.

### Optional:
Click the **Send Now** button to either:

a. Send a test email report during the process of configuring an email report in order to verify the report settings, or design.
   Or
b. Send a one-off email outside of an automated and scheduled email report.

### Configure Engines

To navigate to the **Engines** screen, as seen below:

1. Click the configuration icon on the right-hand side of the toolbar.

2. Click **Engines**.

![Configuration - Engines](image)

**Configure Engines Tab - Version 1.4**

The **Engines** tab lists all Delphix Engines that you have added to Mission Control. The **Status** column shows whether Mission Control is connected to each Engine; it will prompt a specific error message if it is unable to connect. To remove an engine from Mission Control:

1. Click the X icon next to the engine you wish to delete.
2. In the confirmation dialog, click **OK**.

### Configure Users

To navigate to the **Users** screen, as seen below:
1. Click the configuration icon on the right-hand side of the toolbar.

2. Click Users.

Click Users.

Users Tab - Version 1.4

The Users tab displays the set of user accounts that have permission to access Mission Control. You can assign tags to auditor users to restrict which Delphix Engines and containers they can see. For more information, refer to the “How to Assign Tags” activity in a later section.

Activity Three: Add Delphix Engines to Mission Control

1. Access Mission Control with a supported web browser using its IP address or DNS qualified host name. Supported web browsers include Chrome 37, IE 11, Safari 7, and Firefox 32.
2. Click the Engines tab in the Mission Control Toolbar.
3. Click Add Engine.
4. In the Hostname field, enter the Delphix Engine’s IP address or hostname.
5. Enter a username and password. The user must have at least an auditor role on the target Delphix Engine.
Activity Four: Adding Users

1. Click the configuration icon on the right-hand side of the toolbar.
2. Click Users.
3. Click Add user.
4. Enter a username and password.
5. Select auditor or admin.
6. Inform the newly-created user of their user ID and password login credentials.

Activity Five: Change a User Password

1. Click the configuration icon on the right-hand side of the toolbar.
2. Click Users.
3. Click the name in the upper right-hand corner.
4. Click change password.
Search and Run Reports

Reports are the heart of Mission Control. Reports gather data that spans all connected Delphix Engines and presents the data in a single location.

Activity Six: Search and View a Report

1. Click View Report.
2. Click the report drop-down menu to reveal a selection of report options, as seen below.

Running a Report - Version 1.4.

Five new category sections appear to help you quickly locate the report of your choice. These include Engine Activity, Health, Source, Storage, and VDB.

Reports of interest may include the Storage Summary report found under Storage, allowing you to view, compare, and analyze storage usage across Delphix Engines. Other useful reports include Active Faults, SnapSync, and Replication Summary. Below is a summary list of all reporting categories found under View Reports and a description of the reports found under each category.

Engine Activity Reports

Audit Log: Provides a view of all actions that have been performed on all Delphix Engines. This includes both user- and system-executed actions.
Jet Stream Bookmarks: Tracks Jet Stream bookmark usage across a jet stream deployment, particularly in relation to storage/capacity, as bookmarks pin storage on the delphix engine.

Recent Jobs: Covers all jobs across all engines, such as provisioning or refreshing a VDB.

Replication Status: Allows you to validate that replication is running successfully across all Delphix Engines where it has been configured. If replication is not running successfully, it allows you to determine the cause.

Health Reports

Active Faults: Presents a consolidated view of faults across all Delphix Engines, along with suggested actions (in the “Action” column) to resolve the fault. When you have identified and fixed a fault, an administrator can go to the affected engine and mark the fault as resolved through the GUI or CLI.
Active Faults Report – Version 1.4

**Engine Summary**: A high-level overview report of all Delphix Engines. It contains version and platform information, the number of faults and recent jobs, and critical alerts for each engine.

**Recent Alerts**: Alerts are events that have occurred, their severity, and the point in time at which they occurred. The **Recent Alerts** report combines the alerts and their associated information across engines.

**Replication Status**: If you work with multiple Delphix Engines, it can be difficult to keep track of the various replication jobs. This report helps you determine quickly whether everything is running smoothly or whether a certain replication job is failing.

**Source Reports**

**dSource Usage** : Shows a list of dSources with the following information for each:

- Actual disk capacity the dSource uses
- Unvirtualized capacity – that is, the disk space that would be required if not using Delphix Engines
- Percentage storage saved
- Number of VDBs that are currently provisioned from the dSource

**SnapSync Summary**: Allows you to validate that SnapSync is occurring as expected and to compare the current and average duration of SnapSync operations. The duration of SnapSync operations may vary based on the size of the database, available network bandwidth, and database configuration – for example, whether change block tracking (CBT) is enabled. You can use this report to easily find the dSources for which SnapSyncs take the longest.


**Storage Reports**

**Storage Breakdown**

Using the information displayed with the **Total** button, you can:

- Determine which engines have the most free space and identify good candidates for new dSources/VDBs
- Determine which engines have the least free space, identify which engines need additional storage or require storage to be freed, and identify which engines may require different retention policies
- Determine which engines have the most space used by VDBs and take actions such as refreshing VDBs or removing unneeded VDBs and/or VDB snapshots
- Determine which engines have the most space used by dSources and identify source breakdown to see how capacity is used for dSource data. If needed, you can make appropriate changes to free up space.

Using the information displayed with the **Source** button, you can determine which engines have the most space used for logs and snapshots and modify retention policies or refresh VDBs to release old snapshots.

Storage History: Clicking the Historical tab summarizes total storage usage of all monitored engines for the past 30 days.

Storage Summary: Shows the total, used, and available storage for each engine, which allows you to identify when you are approaching a low-storage availability state.

VDB Reports

VDB Inventory: Shows a consolidated list of all virtual datasets (VDBs and vFiles) that have been provisioned from a data source using the Delphix Engine. This report contains the same data as the top-level Containers tab. You can use this report to easily identify where each virtual database is located.
**VDB Inventory Report – Version 1.4.**

**VDB Refresh Summary**: Allows you to verify that refreshes are happening as expected and to compare the current and average duration of refresh operations.

**VDB Usage**: Shows a list of VDBs with the following information for each:

- Actual disk capacity the VDB uses
- Unvirtualized capacity
- Percentage of storage saved

<table>
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<tr>
<th>DELPHIX ENGINE</th>
<th>TAG</th>
<th>NAME</th>
<th>TYPE</th>
<th>PARENT CONTAINER</th>
<th>CREATION DATE</th>
<th>PARENT TIMEFLOW POINT</th>
<th>ENABLED</th>
<th>STATUS</th>
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<tr>
<td>d2.dccenter.delphix.com</td>
<td>Vappdata-unix_F95</td>
<td>AppData</td>
<td>appdata-unix</td>
<td>Tue Mar 03 2015 09:43:34 GMT-0800 (PST)</td>
<td>Tue Mar 10 2015 13:00:04 GMT-0700 (PDT)</td>
<td>ENABLED</td>
<td>RUNNING</td>
<td></td>
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<tr>
<td>gp2.dccenter.delphix.com</td>
<td>db11107vdb</td>
<td>Oracle 11.1.0.7.0</td>
<td>db11107</td>
<td>Tue Feb 03 2015 15:19:36 GMT-0800 (PST)</td>
<td>271451083</td>
<td>ENABLED</td>
<td>FAILED</td>
<td></td>
</tr>
<tr>
<td>gp2.dccenter.delphix.com</td>
<td>db11202vdb22</td>
<td>Oracle 11.2.0.2.0</td>
<td>db11202</td>
<td>Tue Feb 03 2015 15:20:56 GMT-0800 (PST)</td>
<td>25822181</td>
<td>ENABLED</td>
<td>RUNNING</td>
<td></td>
</tr>
</tbody>
</table>
Date of most recent refresh operation or, if never refreshed, date when VDB was provisioned
Filter, Organize, and Extract Reports

Tagging

You can tag Delphix Engines in Mission Control with a set of arbitrary text strings. You can then filter reports to show only data from Delphix Engines with a certain tag. You can also use tags to restrict auditor users so that they can only view data from Delphix Engines with that tag.

Activity Seven: Apply Tags

1. Click the configuration icon [configuration icon] on the right-hand side of the toolbar.

2. Click Users.

3. Click in the space under the Tag headline.

4. Enter any text string.

5. Click OK.

Applying Tags – Version 1.4.

The screenshot below illustrates how to use a tag to filter the kinds of data and reports an Auditor User can access.

1. Click the configuration icon [configuration icon] on the right-hand side of the toolbar.

2. Click Users.

3. Click in space under the Tag headline.

4. Enter the tag category configured for the Auditor User.

5. Click OK.
Once you apply the tag filter, the Auditor User will only have access to reports and data associated with that tag.

**Filtering**

Each report contains a free text filter field. Using this filter allows you to search all displayed columns and returns all rows that have at least one match. Examples of report filtering include:

- Identifying certain types of faults
- Identifying all assets related to an engine
- Locating a virtual database by name

**Activity Eight: Extracting Data from Reports**

Once you have selected the report you are interested in viewing, you will be able to extract the report data with a variety of options. Extract and save the report data by clicking Copy, CSV, PDF, or Print on the right-hand side. Click the option of your choice to extract and save the report. The screenshot below highlights the sequence of steps to extract reports.
Understanding the Graphs Interface

The View Report drop-down menu on the Mission Control Toolbar includes interactive graphical representations of historical and current storage usage across all Delphix Engines you are monitoring.

These include visualizations of Storage Breakdown and Storage History. Storage Breakdown provides different ways of viewing data, including Total to interact with graphs containing the current total storage on all engines and Source to view the breakdown of disk capacity currently used for dSource data. Storage History provides a graphical interface to analyze all historical storage data collected by monitored engines in the past 30 days.

Activity Nine: Viewing Storage Breakdown Reports

Selecting Storage Breakdown allows you to analyze current storage usage by Total and Source.

Working with Total Storage Graphs

Clicking the Total button presents an interactive data visualization of total storage on each Delphix Engine. The bar graphs show the breakdown of all disk capacity between:

- **Source** – The capacity used for dSource data
- **Virtual** – The capacity used for VDBs
- **Free space** – The amount of available free space on the engine

The Category Legend Key on the right-hand side, shown in the screenshot below, helps you see how your current storage is distributed.
1. Click a category in the **Category Legend Key**.

The engines will appear in order according to the category you chose to prioritize. In the screenshot above, **Total** has been prioritized.

Using the information displayed with the **Total** button, you can:

- Determine which engines have the most free space and identify good candidates for new dSources/VDBs
- Determine which engines have the least free space, identify which engines need additional storage or require storage to be freed, and identify which engines may require different retention policies
- Determine which engines have the most space used by VDBs and take actions such as refreshing VDBs or removing unneeded VDBs and/or VDB snapshots
- Determine which engines have the most space used by dSources and identify source breakdown to see how capacity is used for dSource data. If needed, you can make appropriate changes to free up space.

**Working with Source Usage Graphs**

Selecting the **Source** button presents an interactive data visualization from a source perspective. The bar graphs show how much of each engine’s storage space is used by:

- **Active Source Data** – The capacity used for current active copy of dSources
- **Manually Retained Snapshots** – The capacity held exclusively due to manually retained snapshots
- **Snapshot Retention** – The capacity held due to snapshot retention policy, either exclusively or in combination with manual settings
- **Snapshots for Dependent VDBs** – The capacity of snapshots held due to VDBs that have been provisioned from them, either exclusively or in combination with policy or manual settings
- **Log Retention** – The capacity held due to LogSync retention policy.

The **Category Legend Key** on the right-hand side helps you see how your current storage is distributed.

Graphical Visualization of Storage Capacity Breakdown for All Engines by Source, Mission Control Version 1.4.

To display engines according to a particular category:

1. Click a category in the **Category Legend Key**.

The engines will appear in order according to the category you chose to prioritize. In the screenshot above, **Active Source Data** has been prioritized.

Using the information displayed with the **Source** button, you can determine which engines have the most space used for logs and snapshots and modify retention policies or refresh VDBs to release old snapshots.

**Activity Ten: Viewing Storage History Reports**

Clicking the **Storage History Report** visually summarizes total storage usage of all monitored engines for the past 30 days. In this tab, a line graph appears with the historical storage data for the selected Delphix Engine(s) and a drop-down list of Delphix Engines from which to choose, as seen in the screenshot below.
Storage History for Top Five Engines, Mission Control Version 1.4.

By default, the above graph shows historical details of the top five engines, based on the most recent data point. However, you can choose which engines' details to display by selecting it from the drop-down menu.

The screenshot below illustrates using the scroll bar at the bottom to hone in on a particular time and date of capacity use. Use your mouse and hover over interesting points on the graph for specific storage information. A rollover box will appear with specific information.
Specific Historical Storage Capacity Details, Mission Control Version 1.4.
Mission Control Maintenance

Managing the Operating System

Mission Control runs as an open virtual appliance. The underlying operating system, CentOS, can be modified or patched as needed. For best practices, please refer to the official documentation: https://www.centos.org/docs/

**Note:** Any changes to files related to Delphix may result in an unusable system. These files are stored in the following locations:

- /opt/delphix
- /var/delphix
- /var/log/delphix

To manage the appliance or the Operation System or to upgrade, you must have root access. The default root password is “delphix.” You should change this as soon as possible.

To navigate to the System screen, as seen below:

1. Click the configuration icon on the right-hand side of the toolbar.
2. Click **System**.

Here you can view the current version of Mission Control.

System Tab - Version 1.4

**Activity Eleven: Self-Service Upgrade of Mission Control**
Upgrading Mission Control

When a new version of Mission Control is available, download the upgrade script from Delphix.

1. Click the configuration icon on the right-hand side of the toolbar.
2. Click System.
3. Scroll down to the Upgrade section.
4. Click Choose file.
5. Select the upgrade script.
6. Click Upload & Install.

Activity Twelve: Generate and Upload MC Support Bundles

You only need to do this when Delphix support requests that you send a Mission Control support bundle.

1. Click the configuration icon on the right-hand side of the toolbar.
2. Click System.
3. Scroll down to the Support section.
4. Enter the case number if provided by Delphix support.
5. Click Submit.
Support for Mission Control

To file support requests from the support portal please go to https://support.delphix.com.

Additional support is available with the Delphix community@ https://community.delphix.com/delphix under the “Mission Control” category.