MicroStrategy®

Analytics and Mobility

Enterprise Manager Guide

MicroStrategy ONE

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CONTENTS

Analyzing System Usage with Enterprise Manager

You can use the predefined reports and dashboards as they are, copy them and then modify the copies, or build your own custom reports and dashboards to suit your needs. The Enterprise Manager project includes many metrics and predefined reports and dashboards. You can create new metrics, prompts, filters, templates, reports, or dashboards to suit your preferences or to perform the type of analysis needed. All the predefined objects are in the Public Objects folder in the Enterprise Manager project.

For best practices and background information on Enterprise Manager, as well as steps to set up, maintain, and use it, see the following sections:

- *Best practices for using Enterprise Manager, page 4*
- *Understanding Enterprise Manager components and processes*
- *Installing and configuring Enterprise Manager, page 9*
- *Maintaining Enterprise Manager, page 38*
- *Reporting in Enterprise Manager, page 53*

Best practices for using Enterprise Manager

- Make all users who need access to the Enterprise Manager reports members of the MicroStrategy Web Viewer user group. Users in this group have all the necessary permissions and privileges to use the out-of-the-box Enterprise Manager reports, which show problem areas and help you tune the system.
- Assign users to groups with the appropriate Enterprise Manager-related privileges.
  - MicroStrategy Web Viewer group grants all the necessary privileges and permissions to view the out-of-the-box Enterprise Manager reports. Assign users to this group who need to view reports.
  - In order to configure a project source and list projects to be monitored by MicroStrategy Enterprise Manager, the user must satisfy one of the

following criteria:

- User can be an Administrator user
- User can be part of one of the following groups:
  - System Monitors
  - System Administrators (sub group of System Monitors)
  - Narrowcast System Administrators (sub group of System Monitors)
- User can be part of the Everyone group with the following privileges granted:
  - Architect - Use Architect editors
  - Administration - Bypass all object security access check

- Use Enterprise Manager to monitor itself. This feedback can help you fine-tune Enterprise Manager's monitoring ability.
- For additional information about every object in the Enterprise Manager project, see the object's Long Description property (right-click the object, select **Properties**, and select the **Long Description** category). The long description includes sample reporting requirements for the object.
- For best practices about installing, data loading, and reporting in Enterprise Manager, see the following:
  - *Best practices for installing and configuring Enterprise Manager, page 11*
  - *Best practices for Enterprise Manager data loading, page 42*
  - *Best practices for Enterprise Manager reporting, page 56*

Enterprise Manager system components

- **Intelligence Servers**

  The MicroStrategy projects on each Intelligence Server can be configured to log usage statistics to the staging tables.

- **Enterprise Manager**

  Enterprise Manager consists of a MicroStrategy project, the Enterprise Manager server (service), and an interface in MicroStrategy Command Manager where administrators can control how the server operates.

  - The Enterprise Manager project is the heart of Enterprise Manager. It runs against the Enterprise Manager data warehouse (as shown above). The project contains facts, attributes, hierarchies, metrics, filters, and prompts that are used in the reports and dashboards. These are designed to help users monitor and tune their entire MicroStrategy system. For detailed descriptions of each report and dashboard, see *Reporting in Enterprise Manager, page 53*.
  - The Enterprise Manager server directs Intelligence Servers to load statistics about the monitored projects into the statistics repository and runs the data load, which moves statistics data into the repository fact tables.
  - MicroStrategy Command Manager is used to schedule the Enterprise Manager data loads and maintain Enterprise Manager. You can also use it to monitor data load progress.

    - For steps on configuring Enterprise Manager via MicroStrategy Command Manager, see *Configuring Enterprise Manager, page 25*.

- **Statistics repository**

  The statistics repository contains data on the MicroStrategy system's usage and performance; the staging tables are populated by all projects that are configured to log statistics. For an explanation of the

collected statistics, see the System Administration Help. For details about the contents of the statistics tables, see the *Statistics Data Dictionary* in the System Administration Guide.

- **Enterprise Manager data warehouse**

  The Enterprise Manager data warehouse is in the same database as the statistics repository. The data warehouse contains the following:

  - **Lookup tables** contain descriptive information about each object in the monitored projects, such as name, owner, creation date, folder path, and so on. In the data load process, the lookup tables are loaded with data from the staging lookup tables.
  - **Statistics tables** contain raw statistics data that has been loaded from the staging statistics tables by the data load process.
  - **Fact tables** contain data that has been processed and loaded from the statistics tables by the data load process.

Enterprise Manager processes

Enterprise Manager has three major processes:

- **The statistics logging process**

  You choose which MicroStrategy projects log usage statistics into the staging statistics tables. For details about the statistics logging process, including steps to configure a project to log statistics, see the System Administration Help.

- **The data loading process**

  Before the raw information in the statistics staging tables can be analyzed with the Enterprise Manager project, it must be migrated into the Enterprise Manager repository and converted into a form that can be reported on. In addition, Enterprise Manager needs up-to-date information about the projects it monitors to report accurately on topics like per-user

resource usage. The data load process populates the lookup and fact tables in the Enterprise Manager data warehouse. For a detailed description of the data load process, see *Data loading, page 39*.

- **The Enterprise Manager reporting process**

  The Enterprise Manager users execute reports in the Enterprise Manager project to analyze the information in the repository. For detailed descriptions of each report, see *Reporting in Enterprise Manager, page 53*.

INSTALLING AND CONFIGURING ENTERPRISE MANAGER

Below is a high-level overview of the steps to install and configure Enterprise Manager for your MicroStrategy system.

1. Consider the best practices for installing and configuring Enterprise Manager and confirm that you have fulfilled the prerequisites for installing it.
    - Read the *Best practices for installing and configuring Enterprise Manager, page 11*.
    - For a list of the prerequisites, see *MicroStrategy Enterprise Manager prerequisites, page 12*.
2. Install Enterprise Manager. For steps to install Enterprise Manager, see the Installation and Configuration Help.
3. Step through items in the MicroStrategy Configuration Wizard that are relevant to Enterprise Manager:
    - Set up tables in the statistics and Enterprise Manager repository, which includes the statistics database and the Enterprise Manager data warehouse. For steps to create the tables, see *Creating the Enterprise Manager repository, page 15*.
    - Configure your projects to log statistics to the statistics database. Each project for which you want to log statistics, you specify the information that you want to have logged. For steps on doing this, see the System Administration Help.
    - Create the Enterprise Manager project: Unpack objects to create the project and the metadata database for use with the project. For steps to create the project, see *Creating the Enterprise Manager project, page 17*.
4. Use MicroStrategy Command Manager to define the following:
    - The projects for which Enterprise Manager will perform data loads. These should be the same projects in which you turned on statistics in the previous step. For steps to configure the projects, see *Creating*

a data load, page 25.

- Data loading schedules for when your projects are loaded into the Enterprise Manager repository. For steps to define the schedules, see *Creating a data load, page 25*.
- Maintenance tasks that are done in the data load process. For steps on defining these, see *Selecting Enterprise Manager maintenance tasks to perform in the data load, page 46*.
- What is logged when a data load occurs and how large the log files and table can get. For steps to define these, see *Configuring what Enterprise Manager data load information is logged, page 47*.

Best practices for installing and configuring Enterprise Manager

- Install Enterprise Manager on a machine that is separate from Intelligence Server.
- Enterprise Manager must be installed on the same machine as MicroStrategy Command Manager.
- The Enterprise Manager project can be in the same metadata as your other projects.
- Create the statistics and Enterprise Manager repository in a database that is separate from a production data warehouse and MicroStrategy metadata. Intelligence Server can operate more efficiently if they are not in the same data warehouse.
- Assign users to groups with the appropriate Enterprise Manager-related privileges.
  - MicroStrategy Web Viewer group grants all the necessary privileges and permissions to view the out-of-the-box Enterprise Manager reports.

Assign users to this group who need to view reports.

- In order to configure a project source and list projects to be monitored by MicroStrategy Enterprise Manager, the user must satisfy one of the following criteria:
  - User can be an Administrator user
  - User can be part of one of the following groups:
    - System Monitors
    - System Administrators (sub group of System Monitors)
    - Narrowcast System Administrators (sub group of System Monitors)
  - User can be part of the Everyone group with the following privileges granted:
    - Architect - Use Architect editors
    - Administration - Bypass all object security access checks
- To ensure that you can successfully upgrade the Enterprise Manager project in the future, do not modify schema objects. Rather, make copies of the objects you want to modify and then modify the copies.
- Upgrade to Enterprise Manager service packs when they become available. MicroStrategy includes your feedback in the service packs, including fixes to issues and additional enhancements.
- After upgrading Enterprise Manager, delete any tables with the `DELETE_` prefix that remain in the Enterprise Manager repository to maximize available space in the database.

MicroStrategy Enterprise Manager prerequisites

Before you install Enterprise Manager, make sure the following are true:

- You have write access to two databases: one for the Statistics and Enterprise Manager Repository, and one for the Enterprise Manager project metadata. The Statistics and Enterprise Manager Repository should be in a database that is separate from your production data warehouse. The project metadata can be placed in the same database as other MicroStrategy project metadatas. Note the Data Source Name (DSN) for each.

  The Statistics and Enterprise Manager repository may be in any of these databases:

  - IBM DB2 UDB
  - MySQL
  - Oracle
  - SQL Server
  - Teradata

  If you are using DB2 or Sybase for these, you must change the minimum page file size for the database to at least 16K. DB2 uses the page file size to determine the maximum size of a single row in the database. Some Enterprise Manager tables contain rows that require more than the default 4K.

  Before creating the DSN for a MySQL database using the Connectivity Wizard, you must obtain and install the ODBC driver for it.

  For a complete list of the versions of each database that are certified for use with Enterprise Manager, see the *MicroStrategy Readme*.

- You have administrator privileges for the MicroStrategy projects that you want to monitor in Enterprise Manager. You must also have the Create Configuration Objects privilege for the project source in which you are creating the Enterprise Manager project.

The Enterprise Manager metadata contains a user group called EMAdmin. Users in this group have all the privileges necessary to use all features of Enterprise Manager. It is recommended that any users who are to administer Enterprise Manager be added to this group.

- To use the dashboards that come with Enterprise Manager, you need MicroStrategy Report Services. For information about the dashboards in Enterprise Manager, see *Dashboard-style Documents, page 59*.

These dashboards are designed for use with MicroStrategy Web. If you are using MicroStrategy Web Universal, edit the dashboards and change all occurrences of `Main.aspx` in the links to `mstrWeb`.

Installation Considerations

Enterprise Manager involves one or more MicroStrategy Intelligence Server environments, a Statistics and Enterprise Manager warehouse database, and an Enterprise Manager Data Loader service. It is critical that only a single Data Loader service is configured for any given Enterprise Manager warehouse. Configuring multiple Data Loader services to the same Enterprise Manager warehouse will result in unexpected behavior and potential data loss.

It is possible to store statistical data from multiple MicroStrategy Intelligence Server environments in the same Statistics and Enterprise Manager warehouse. Some issues can arise with the Enterprise Manager reporting if statistics are being logged into a single warehouse from more than one environment that contains a project with the same GUID (this situation can occur if the project has been duplicated from one metadata to another). In this case, it is strongly recommended to use a separate Enterprise Manager warehouse for each environment that contains the same project GUID in order to avoid these issues.

MicroStrategy strongly recommends that customers not try to upgrade Enterprise Manager 9.x warehouses to version 10.x. Instead, it is

recommended to retain the existing Enterprise Manager 9.x warehouses and projects for historical reporting, and create a new Enterprise Manager 10.x warehouse and project for reporting on current and future data.

Creating the Enterprise Manager repository

The Statistics and Enterprise Manager Repository should reside in a database that is separate from your production databases. You can use an existing statistics database in your system or create a new database:

- To use an existing database, note the Data Source Name (DSN) for it. This DSN is used later in the setup process, when you are prompted for the Enterprise Manager repository.
- To create a new repository, follow the procedure below.

To create a new Enterprise Manager statistics repository

1. Create a database to store your Enterprise Manager statistics repository. This is generally performed by your database administrator. This database must be one of those certified for use as a MicroStrategy statistics repository. For a list of certified databases, see the *MicroStrategy Readme*.
2. Use the MicroStrategy Connectivity Wizard to create a DSN for the statistics repository. Note this DSN for later. You need it when creating the statistics tables and when you specify the DSN for the Statistics and Enterprise Manager repository.

If you are upgrading from an earlier version of Enterprise Manager, performing the steps below drops the existing tables. To avoid losing this data, see the *MicroStrategy Upgrade Guide* for instructions on upgrading.

Set up the tables in the Enterprise Manager statistics repository

1. From the Windows **Start** menu, point to **All Programs**, then **MicroStrategy Tools**, and then select **Configuration Wizard**.

   The Configuration Wizard must be run with administrator privileges. If you are not an administrator on the local machine, from the **Start** menu, instead of selecting **Configuration Wizard**, right-click **Configuration Wizard** and select **Run As Administrator**.

2. On the Welcome page, select **Create Metadata, History List and Enterprise Manager Repositories** and click **Next**. The Repository Configuration: Repository Types page opens.
3. Select the **Statistics & Enterprise Manager** option and clear the other options. Click **Next**. The Repository Configuration: Statistics and Enterprise Manager Repository page opens.
4. From the **DSN** drop-down list, select the Data Source Name for the database that will contain your Enterprise Manager repository (the same database that you will use to log Intelligence Server statistics). This is the database and DSN you created in the first two steps of this procedure.
5. Type a valid **User Name** and **Password** for this database. The login that you specify must have permission to create and drop tables in the database, and permission to create views.
6. Click **Next**. The Configuration Wizard connects to the database.

   If Enterprise Manager tables already exist in this database, it prompts you for whether to re-create the tables.

   Clicking **Yes** deletes the existing tables and all information in them.

   To leave the existing tables in place, click **No**. To re-create the tables, click **Yes**.

7. The Summary page lists the tasks that will be performed. To create the tables, click **Finish**. The process can take several minutes.

   Now that the statistics repository tables exist, you can configure projects to log statistics there. See *Setting up projects to log statistics to the statistics database, page 21*.

Creating the Enterprise Manager project

The Enterprise Manager metadata contains all the facts, attributes, hierarchies, metrics, filters, and reports that are predefined as part of the Enterprise Manager project. The Enterprise Manager project can be created on a machine with your production metadata. It is installed in the form of a MicroStrategy Object Manager Package. You can create a new metadata database or use an existing metadata database.

You can automate the creation of the Enterprise Manager project by using a Configuration Wizard response file. For instructions on creating the response file, details about the settings in the response file, and steps on running the response file, see *Using a response file to create an Enterprise Manager project, page 32*.

To create a new metadata database

1. Create a database to store your Enterprise Manager metadata. This is generally performed by your database administrator. This database must be one of the databases certified for use with MicroStrategy metadata. For a list of certified databases, see the *MicroStrategy Readme*.
2. Use the MicroStrategy Connectivity Wizard to create a Data Source Name (DSN) for the metadata. Note this DSN for later. It is needed when creating the statistics tables and when you specify the DSN for the Metadata Location.

To access the Connectivity Wizard, from the Windows **Start** menu, point to **All Programs**, then **MicroStrategy Tools**, and then select **Connectivity Wizard**. For detailed instructions on using the Connectivity Wizard, see the Installation and Configuration Help.

To create the Enterprise Manager project

1. From the Windows **Start** menu, point to **All Programs**, then **MicroStrategy Tools**, and then select **Configuration Wizard**.
2. Select **Create Enterprise Manager project** and click **Next**. The Enterprise Manager Project Creation page opens.
3. Type in a valid **User Name** and **Password** to connect to Intelligence Server metadata.
4. Click **Next**. The Enterprise Manager Repository page opens.
5. From the **DSN** drop-down list, select the data source name of the Enterprise Manager repository.
6. Type in a valid **User Name** and **Password** to connect to the database.
7. Click **Next**. The Summary page displays the tasks that will be performed.
8. Review the information and when you are ready, click **Finish**. The process can take several minutes.

   Enterprise Manager is now initialized in your system; you can connect to it using MicroStrategy Command Manager, select which projects to monitor, and schedule the data loads. For steps on these, see *Configuring Enterprise Manager, page 25*.

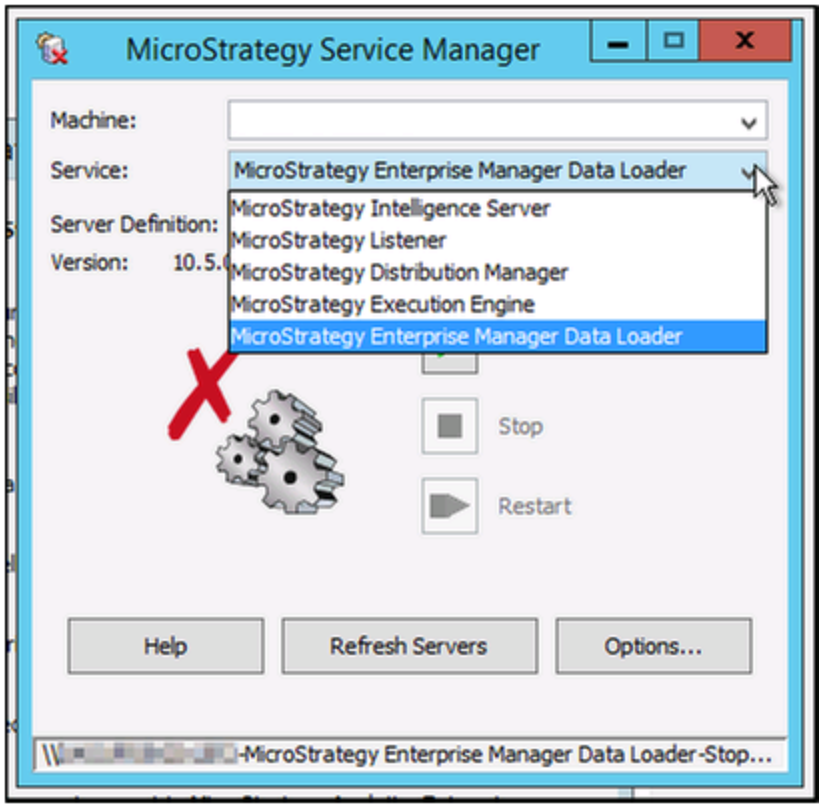
Configuring Enterprise Manager Data Loader Service

After the warehouse creation is completed, the Data Loader service will need to be configured to point to the warehouse. If the warehouse creation

was performed on the same machine as where the Data Loader service was installed, this step will be performed automatically by Configuration Wizard at the end of the warehouse creation process. Otherwise it will need to be performed manually via Service Manager on the machine where the Data Loader service is installed.

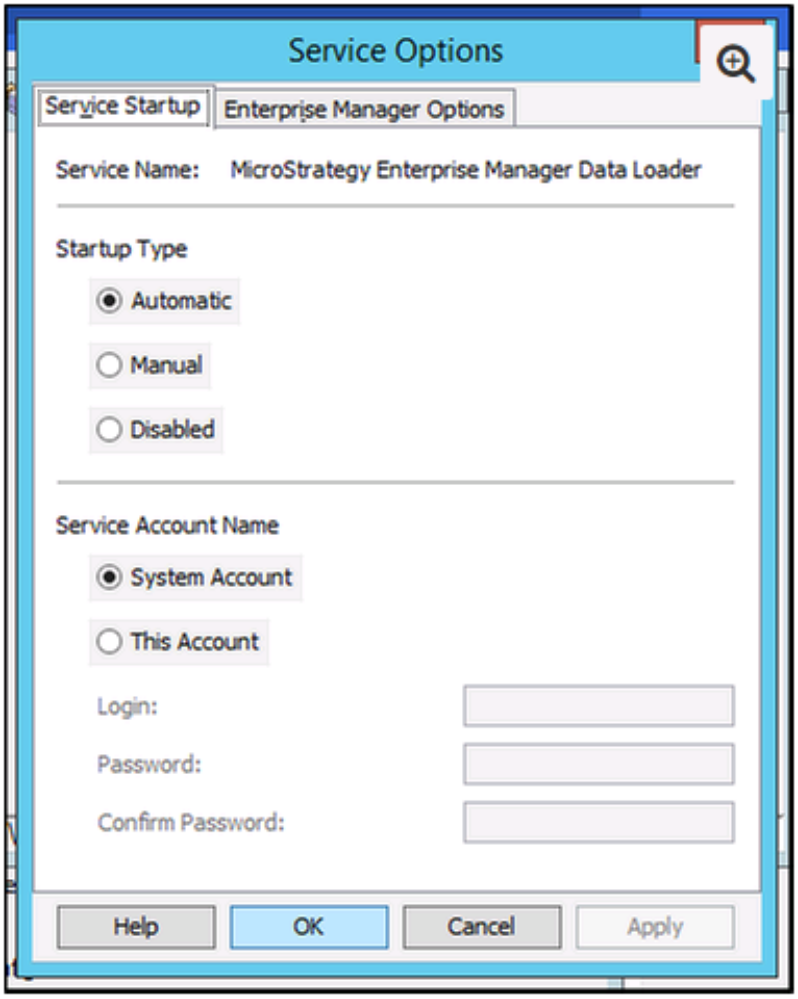
Steps to configure Data Loader Service

1. Open **Service Manager** and select **MicroStrategy Enterprise manager Data Loader** from the drop-down menu.



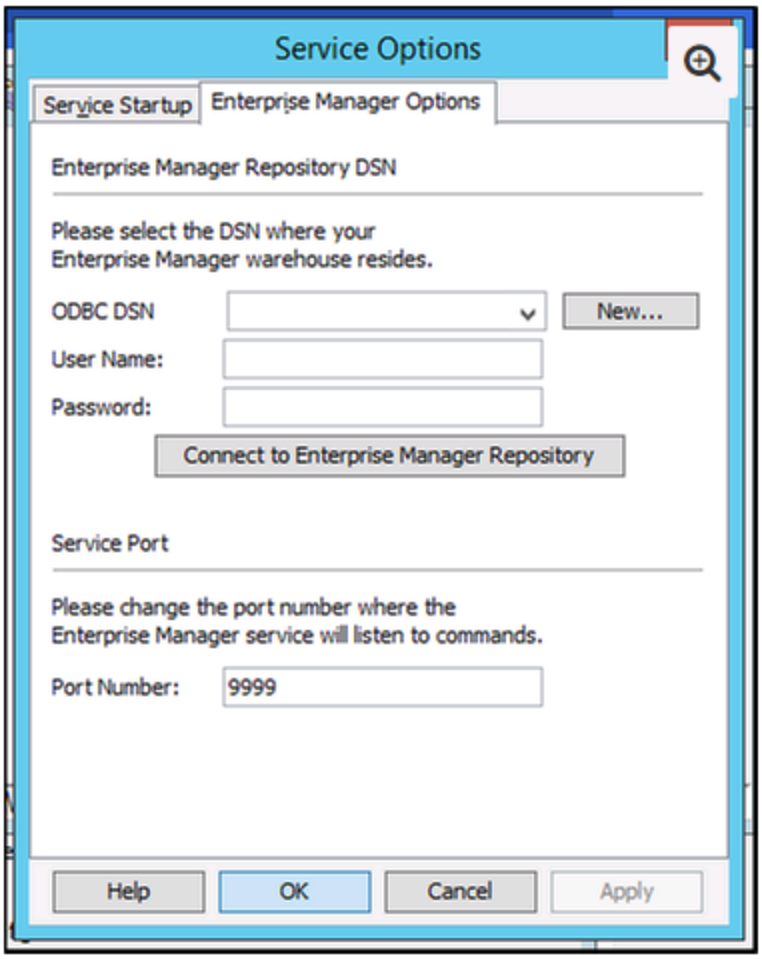
2. Click **Options** to open the Service Options dialog box.
3. Apply any changes needed to the **Service Account Name**. Click **Apply**,

then **OK**.



4. Select the **Enterprise Manager Options tab** and enter the DSN information for your Statistics and Enterprise Manager warehouse. If the DSN has not been created, click **New** and create the connection now.
5. Enter the log in credentials for the warehouse and click **Connect to Enterprise Manager Repository** to test your connection to the warehouse.
6. If you need to change the port that the Data Loader Service is listening

to, enter it in the **Port Number** field and click **Apply** then **OK**.



Setting up projects to log statistics to the statistics database

Projects can be configured to log statistics in two ways:

- From MicroStrategy Developer, used to set each project to log different levels of statistics (see the System Administration Help)
- From the Configuration Wizard, used to create the Statistics database instance and turn on basic statistics for all projects in the metadata (follow the procedure below)

To use the Configuration Wizard to configure projects to log basic statistics

1. From the Windows **Start** menu, point to **All Programs**, then **MicroStrategy Tools**, and then select **Configuration Wizard**.
2. Select **Configure Intelligence Server** and click **Next**. The Server Configuration: Metadata Connection page opens.

Enterprise Manager Metadata Repository

1. Select the **Data Source Name** for the Enterprise Manager metadata database from the drop-down list.
2. Type a valid **User Name** and **Password** for this database. Click **Next**.
3. If you have previously configured Intelligence Server, click **Next** until you reach the Statistics Configuration page. If this is the first time you are configuring Intelligence Server, click **Help** for instructions to configure Intelligence Server.

Default statistics database instance

1. On the Statistics Configuration page, select the **Make this my default Statistics Database Instance for the local Intelligence Server metadata** check box.
2. From the **DSN** drop-down list, select the data source name of the database to use for the default statistics repository.
3. Type a valid **User Name** and **Password** for this database.
4. Select the **Enable Basic Statistics (For newly created projects and existing projects not logging statistics)** check box.
5. Click **Next**. The Summary page opens.

6. Review the information on the page; when you are ready, click **Finish**. The process can take several minutes.
7. When finished, you see a confirmation that it completed. Click **Return**. The Welcome to MicroStrategy Configuration Wizard page opens. Click **Exit** to close it.

   After the projects are set up to log statistics, you must also check that the database connection feature for using parameterized queries is enabled. For steps on this, see *Configuring database connections to use parameterized queries, page 23*.

Configuring database connections to use parameterized queries

For each project source containing projects that log statistics in the statistics repository, you must ensure that the database connection used for the statistics repository has the feature enabled to use parameterized queries.

To enable parameterized queries in the database connection

1. In MicroStrategy Developer, log in to the server (three-tier) project source containing the projects that are logging statistics.
2. Right-click one of the projects that is logging statistics and select **Project Configuration**. The Project Configuration Editor opens.
3. Expand the **Database instances** category, and select the **SQL Data warehouses** subcategory.
4. In the Database instances list, select the database instance that is configured to log statistics, then click **Modify**. The Database Instances dialog box opens.

5. In the **Database connection (default)** list, select the connection used for the statistics repository database, and click **Modify**. The Database Connections dialog box opens.
6. Click the **Advanced** tab and select the **Use parameterized queries** check box.
7. Click **OK** three times to save the changes and return to the MicroStrategy Developer interface.
8. Repeat the above steps for other three-tier project sources containing projects that are logging statistics to the statistics repository.

Configure an additional database driver setting

If your statistics and Enterprise Manager repository is in an Oracle, Sybase, or Teradata database, you must configure an additional ODBC driver setting so the information is recorded properly in the statistics repository.

1. Open the ODBC Data Source Administrator tool in Windows.
2. Select the DSN for your statistics and Enterprise Manager repository and click **Modify**. The ODBC Driver Setup dialog box opens.
3. Perform the following according to your database:
   - Oracle: click the **Advanced** tab and select the **Enable SQLDescribeParam** check box.
   - Teradata: click **Options** and select the **Enable Extended Statement Information** check box.
4. Click **OK** twice to save the change and close the ODBC Data Source Administrator dialog box.

After the projects are properly logging statistics for the system usage, you must set up the Enterprise Manager project so that you can run reports

about that usage. For steps, see *Creating the Enterprise Manager project, page 17*.

Configuring Enterprise Manager

Once Enterprise Manager is installed, the data loader service is configured, and the projects are set up to log statistics, you can configure Enterprise Manager to process the statistics and load them into the Enterprise Manager repository. This involves connecting to Enterprise Manager using MicroStrategy Command Manager and creating one or more data loads.

Creating a data load

You can create a data load and specify which projects Enterprise Manager will monitor, select which maintenance tasks the data load performs, and set the schedule for when the data load runs.

Prerequisites

- You must have Enterprise Manager installed on the same machine as Command Manager.
- Before you can create a data load, you must be able to access Enterprise Manager using MicroStrategy Command Manager.
- The projects must already be configured to log statistics.

For a description of what happens in the data load process, best practices to consider when setting it up, and maintenance tasks that can be done as part of the process, see *Data loading, page 39*.

To create a data load in Enterprise Manager

1. Open Command Manger and create a connected or connection-less session. For configuration purposes either will work.

2. Run the following command to connect the Enterprise Manager Data Loader service to a MicroStrategy environment by choosing an Intelligence Server from that environment

   This command has to be called for every environment for which a data load needs to be created.

```
START MONITORING SERVER "<I-Server_machine_name>"
IN PORT <port_number> USING USERNAME "<username>"
PASSWORD "<password>" FOR ENTERPRISE MANAGER "<em_
machine>" IN PORT <em_port>;
```

Field	Description
<I-Server_machine_name>	Name of one of the Intelligence Servers from the environment you want to monitor/run a data load for. If you have a cluster of Intelligence Servers, choose anyone and Enterprise Manager will automatically pick up all the Intelligence Servers in the cluster and save them. When a data load is triggered, Enterprise Manager does a load analysis for each Intelligence Server and chooses the Intelligence Server with the least load to help with the data load. Do not enter "IP" or "Localhost" in this field.
<port_number>	First <port_number> field is related to the port number where Intelligence Server is running. (Default Intelligence Server port is 34952)
<username>	Metadata Username
<password>	Metadata Password for the Username above. Note: If password is empty (not recommended), simply enter this field as PASSWORD ""
<em_machine>	Name of the machine where Enterprise Manager is running. Do not enter "IP" or "Localhost" in this field.

Field	Description
<port_number>	Second <port_number> field is related to the port number where Enterprise Manager is running. (Default Enterprise Manager port is 9999) Note: If you would like to change the port number where Enterprise Manager is running, please use MicroStrategy Service Manager on the machine where Enterprise Manager is installed and select 'Enterprise Manager Data Loader' service, click Options > Enterprise Manager Options.

3. Select the projects you want to monitor with the following command:

```
CREATE DATA LOAD "<name>" FOR ENVIRONMENT "<server_
name>" AND PROJECT "<project_name>" [, ENVIRONMENT
"<server_name>" AND PROJECT "<project_name>" ...]
DO ACTION [UPDATEWAREHOUSE] [CLOSESESSIONS]
[REPOPULATETABLES] [UPDATESTATS]
[UPDATEOBJECTDELETIONS] BEGIN DATE <date> [TO
<date>] FREQUENCY (DAILY | WEEKLY ON [MONDAY]
[TUESDAY] [WEDNESDAY] [THURSDAY] [FRIDAY]
[SATURDAY] [SUNDAY] | MONTHLY ON DAY <number>) (AT
<time> | FROM <time> TO <time> EVERY <number>
(MINUTES | HOURS))(ENABLED | DISABLED) IN
ENTERPRISE MANAGER "<em_machine>" IN PORT <port>;
```

Field	Description
<name>	Name you would like to give to the data load
<server_name>	Name of the Intelligence Server used in the "START MONITORING SERVER" command above.
<project_name>	MicroStrategy Project you would like to monitor/run data

Field	Description
	loads for. Statistics needs to be enabled for the projects before you can include them in the CREATE DATA LOAD command. Parameterized inserts need to be enable in the DBInstance being used as the Statistics DBInstance for the project
DO ACTION [UPDATEWAREHOUSE] [CLOSESESSIONS] [REPOPULATETABLES] [UPDATESTATS] [UPDATEOBJECTDELETIONS]	These are the tasks the data load will carry out every time it is triggered. UPDATEWAREHOUSE is the task that populates the basic look up and fact tables in the Enterprise Manager warehouse and is **mandatory**. CLOSESESSIONS makes sure all incomplete sessions at the time when the data load is triggered are handled correctly. It is recommended to run [CLOSE SESSIONS] with every data load. REPOPULATETABLES populates all the Relationship tables in the Enterprise Manager Warehouse such as relationships between Users & User Groups, Reports and Attributes, Reports and Metrics etc. UPDATESTATS is a task that runs database specific commands to optimize the cost of each query that is run against the database. UPDATEOBJECTDELETIONS is a tasks that updates the current status of the objects by comparing with the metadata that is, whether they still exist or not. Specifically, it updates the EM_EXISTS_ID column in for each object look up table with a 0 if it is deleted from the metadata. REPOPULATETABLES, [UPDATESTATS] and UPDATEOBJECTDELETIONS are expensive tasks and can significantly increase the time of your data loads depending on the size of your metadata.
BEGIN DATE <date> [TO <date>]	Date at which the data load should begin executing and when it should end executing. The format required by the <date> field is "dd/mm/yy 00:00:00 +0000"

Field	Description
	where dd/mm/yy is the DATE, 00:00:00 is the time and +0000 is the offset. If you would like the data load to start executing from today till forever simply enter the first `<date>` as "`dd/mm/yy 00:00:00 +0000`" where dd/mm/yy is a date in the past and enter the second `<date>` as something many years in the future such as "12/31/2050 00:00:00 +0000". Note: Both <date> fields are mandatory. By default, all date times are saved in your machine's time zone. In most cases where a user wants data load to begin running from today and continue running till they delete it, this field should be set as "BEGIN DATE "01/01/1970 00:00:00 +0000" TO "12/31/2050 00:00:00 +0000"
`FREQUENCY (DAILY | WEEKLY ON [MONDAY] [TUESDAY] [WEDNESDAY] [THURSDAY] [FRIDAY] [SATURDAY] [SUNDAY] | MONTHLY ON DAY <number>)`	When the data loads should loads run that is, Daily, weekly, monthly. Note: This is a mandatory field. If you would like to run them Daily then please use "FREQUENCY DAILY ON MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY". If you would like them to run weekly on Saturday and Sunday only then please use "FREQUENCY WEEKLY ON SATURDAY SUNDAY"
`FROM <time> TO <time>`	This field tells Enterprise Manager what time the data load should run on a particular day. A user needs to account for the following two factors when filling in this field: Your machine's time zone where you are running Command Manager All times are saved in UTC time zone by the EM service.

Field	Description
	Note: This is a mandatory field. By default, all times are saved in UTC. Hence, (1) if the machine you are running Command Manager on in EST time zone and you want to run the data load at 23:00:00 EST, then please enter th field as 'FROM 04:00:00 TO 05:00:00'. This is because; 4 am UTC is 11 PM EST. (2) If the machine you are running Command Manager on is in PST time zone and you want to run the data load at 23:00:00 PST, then please enter this field as 'FROM 07:00:00 TO 08:00:00'. This is because; 7 am UTC is 11 PM PST. (3) If the machine you are running Command Manager on is in EST time zone and you want to run the data load at 23:00:00 PST, then please enter this field as 'FROM 07:00:00 TO 08:00:00'. This is because; 7 am UTC is 2 am EST which is is 11 PM PST.
`EVERY <number> (MINUTES | HOURS))`	Frequency at which the data load should run. If you would like to run it every 2 hours, please use "EVERY 2 HOURS". This is a mandatory field.
(ENABLED | DISABLED)	If this data load is enabled (will run) or disabled (will not run). This is useful in cases where you don't want the data load to run (as you may be troubleshooting an issue) but you do not want to delete it either.
<em_machine>	Name of the machine where the Enterprise Manager is running.
<port_number>	Second `<port_number>` field is related to the port number where Enterprise Manager is running. (Default Enterprise Manager port is 9999) If you would like to change the port number where

Field	Description
	Enterprise Manager is running, please use MicroStrategy Service Manager on the machine where Enterprise Manager is installed and select Enterprise Manager Data Loader service, click Options >Enterprise Manager Options tab.

4. Once a data load is created, you can verify when it will run next by running the following command:

   ```
   LIST DATA LOADS IN ENTERPRISE MANAGER "<em_machine_name>" IN PORT <port>;.
   ```

   The **Next Execution** field in the results will highlight when the next data load will be triggered.

Example

Below is a sample "CREATE DATA LOAD" scenario as entered into Command Manager

Time zone of Command Manager Machine: EST

Cadence: Daily

Time user would like to run a data load: 11 pm EST

Data Load Tasks: Only basic data load – sufficient for 80% of Enterprise Manager reporting.

```
CREATE DATA LOAD "Daily 11 pm" FOR ENVIRONMENT "<I-Server_machine_name>" AND PROJECT "<project_name>" DO ACTION UPDATEWAREHOUSE BEGIN DATE "01/01/1970 00:00:00 +0000" TO "12/31/2050 00:00:00 +0000" FREQUENCY DAILY ON MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY
```

```
FROM 04:00:00 TO 05:00:00 EVERY 2 HOURS ENABLED IN
ENTERPRISE MANAGER "<em_machine>"IN PORT <port>;
```

After you have configured Enterprise Manager and used it, you can maintain the data loads. For steps on how to disable and enable them, modify schedules, change what maintenance tasks are performed in the data load, and delete the data loads, see *Maintaining Enterprise Manager, page 38*.

Upgrading Enterprise Manager

You should consider several important issues as you upgrade your Statistics and Enterprise Manager Repository and the Enterprise Manager project. For complete details on upgrading your Enterprise Manager environment, see the Upgrade Help.

The best way to update the Enterprise Manager project is by using the MicroStrategy Configuration Wizard, as described in the Upgrade Help. Alternatively, you can use Object Manager to upgrade the Enterprise Manager project. For instructions on how to use Object Manager and Project Merge, see the System Administration Help.

Using a response file to create an Enterprise Manager project

As an alternative to stepping through each page of the Configuration Wizard during the project creation process, you can create a response file with the Enterprise Manager project information and use that response file with the Configuration Wizard to automatically create the Enterprise Manager project on this machine and configure the connection to the Statistics and Enterprise Manager repository.

Creating a response file

MicroStrategy recommends that you create a response file through the graphical interface of the Configuration Wizard. You step through the

Configuration Wizard and make your selections, as described in *Creating the Enterprise Manager project, page 17*. When you reach the Summary page of the Configuration Wizard, do not click **Finish**. Instead, click **Save**. You are prompted to save your selections in a response file.

You can also create or modify a response file with a text editor. For information on all the parameters in the response file, see *Enterprise Manager response file parameters, page 35*.

MicroStrategy supplies a blank response file template, `Response.ini`, in the Common Files folder of your MicroStrategy installation. By default, this folder is `C:\Program Files (x86)\Common Files\MicroStrategy`.

Executing a response file

You can execute a response file in any of the following ways:

- From within the Configuration Wizard. See *To use a response file with the Configuration Wizard, page 33*.
- From the Windows command line. See *To use a response file through the Windows command line, page 34*. This enables users to run the file without using any graphical user interfaces.
- In UNIX or Linux. See *To use a response file through the Configuration Wizard in UNIX or Linux, page 34* or *To use a response file through the UNIX/Linux command line, page 35*.

To use a response file with the Configuration Wizard

1. From the Windows **Start** menu, point to **All Programs**, then **MicroStrategy Tools**, and then select **Configuration Wizard**. The Configuration Wizard opens.
2. Click **Load**. The Open dialog box displays.
3. Browse to the path where the response file is saved and click **Open**. The Summary page opens.

4. An overview of all the configuration tasks performed by the response file is displayed. Review the tasks and when you are ready to perform the configuration, click **Finish**.

To use a response file through the Windows command line

Type the following command in the Windows command line:

`macfgwiz.exe -r "Path\response.ini"`

Where *Path* is the fully qualified path to the response file. For example, a common location of a response file is:

```
C:\Program Files (x86)\Common Files\
MicroStrategy\RESPONSE.INI
```

If an error message is displayed, check the path and name you supplied for the response file and make any required changes.

To use a response file through the Configuration Wizard in UNIX or Linux

1. From a UNIX or Linux console window, browse to *<HOME_PATH>* where *<HOME_PATH>* is the directory you specified as the Home Directory during installation.
2. Browse to the folder `bin`.
3. Type `mstrcfgwiz-editor` and press **ENTER**. The Configuration Wizard opens with the Welcome page displayed.
4. Press **ENTER**.
5. Type `1` to select to use a response file and press **ENTER**.
6. Type the fully qualified path to the `response.ini` file and press **ENTER**. For example:

   `/home/username/MicroStrategy/RESPONSE.INI`

If an error message is displayed, check the path and name you supplied for the response file and make any required changes.

To use a response file through the UNIX/Linux command line

1. From a UNIX or Linux console window, browse to *<HOME_PATH>* where *<HOME_PATH>* is the directory you specified as the Home Directory during installation.
2. Browse to the folder `bin`.
3. Type the following command in the command line and press **ENTER**.

   `mstrcfgwiz-editor -response /Path/response.ini`

   Where *Path* is the fully qualified path to the response file. For example, a common location of a response file is:

   `/home/username/MicroStrategy/RESPONSE.INI`

   If an error message is displayed, check the path and name you supplied for the response file and make any required changes.

Enterprise Manager response file parameters

Enterprise Manager configuration

The parameters in the `[EMProjectHeader]` portion of the response file create the Enterprise Manager project on this machine and configure the connection to the Statistics and Enterprise Manager repository. The table below lists the available parameters and the functionality of available options for each parameter. For detailed information about each parameter, see the Configuration Wizard Help.

Options	Description
`[EMProjectHeader]`	Options in this portion refer to creating the Enterprise

Options	Description
	Manager project on this machine.
`EMProject=`	Defines whether to create the Enterprise Manager project, as determined by the following values: `1`: Create Enterprise Manager project on this machine. `0`: Do not create the Enterprise Manager project.
`EMProjectEncryptPwd=`	Defines whether the passwords are encrypted in the response file, as determined by the following values: `0`: The passwords are not encrypted in the response file, which enables you to modify the passwords in the response file using a text editor. You can then distribute the response file to multiple users with various login and password credentials. However, be aware that this can compromise your database security if you do not remove the passwords from the response file before distributing it. `1`: Encrypts the passwords in the response file, which ensures that your passwords are secure. This is the default behavior.
`EMProjectDSSUser=`	The user name to log in to the Enterprise Manager project.
`EMProjectDSSPwd=`	The password for the user name above. This may be encrypted, depending on the `EMProjectEncryptPwd=` setting.
`EMProjectPkgFile=`	The full path and file name of the MicroStrategy Enterprise Manager project package file used to create the project. On Windows, by default this is `C:\Program Files (x86)\Common Files\MicroStrategy\OOTB-EM.mmp`.
`EMProjectDSNName=`	The Data Source Name for the database that contains your Statistics and Enterprise Manager repository.
`EMProjectDSNUserName=`	The user name to connect to the Statistics and Enterprise

Options	Description
	Manager repository database.
`EMProjectDSNUserPwd=`	The password for the user name above for the Statistics and Enterprise Manager repository database. This may be encrypted, depending on the `EMProjectEncryptPwd=` setting.

MAINTAINING ENTERPRISE MANAGER

To ensure that Enterprise Manager is operating properly and efficiently, you can adjust the data loading schedules, select maintenance tasks that are performed as part of the data load process, control what information is logged, and configure log file settings such as location and how large the log files can get. These are explained in the following sections:

- *Data loading, page 39*
- *Selecting Enterprise Manager maintenance tasks to perform in the data load, page 46*
- *Troubleshooting the data loading process, page 49*
- *Configuring what Enterprise Manager data load information is logged, page 47*

Data loading

The data loading process gathers and prepares data for analysis and reporting in the Enterprise Manager project. During the data load process, Enterprise Manager gathers metadata from projects, transfers metadata and statistics information from staging tables into the Enterprise Manager repository, and converts raw data into a form that can be analyzed and used for reporting.

A data load occurs according to the schedule you define when you create the data load. For instructions on setting the schedule, see *Creating a data load, page 25*. You can also run a data load at any time if your repository is missing data. For steps on running a data load immediately, see *Running a data load now, page 45*.

You can turn on and off single data loads or all data loads at once. For steps, see *Data loading, page 39*.

The data load process has four steps.

1. Enterprise Manager gathers metadata from projects. Enterprise Manager provides Intelligence Server with a time window for the data load. Intelligence Server then transfers relevant information about the project sources specified in Enterprise Manager to lookup tables in the statistics staging tables. Relevant information includes such data as report names, user/group names, and object relationships. Examples include user/group relationships and which schedules are mapped to which reports.
2. While Intelligence Server is transferring lookup table information, Enterprise Manager moves statistics data from the statistics staging tables into the statistics tables in the Enterprise Manager repository.
3. After Enterprise Manager has finished transferring statistics data, it starts transferring the staging lookup tables that Intelligence Server has completed. Enterprise Manager moves the information in the staging lookup tables into lookup tables in the Enterprise Manager repository.

   Metadata information for all projects in a project source is transferred into the Enterprise Manager lookup tables, regardless of whether those projects are configured to log statistics.

4. The final step in the data load process involves processing the data in the Enterprise Manager repository tables. These statistics tables contain raw data logged by Intelligence Server. For performance reasons, most fields are fixed-length fields and contain data that cannot be directly interpreted by an administrator. An example of such a field is an object GUID. This raw data must be processed further to support administrative analysis and reporting requirements. SQL scripts transform the statistics data into a form that can be useful for administrative reporting. The transformation ensures that reporting on MicroStrategy metadata content is feasible. This transformed data is stored in fact tables in the Enterprise Manager repository.

Some of Enterprise Manager's fact tables are views of certain statistics tables. This substantially speeds up the data load process.

To ensure that the statistics data is complete, at the beginning of the data load process a timestamp is created in the EM_IS_LAST_UPDATE table, according to the current date and time in the Enterprise Manager repository. This timestamp indicates the end of the data migration window. The beginning of the data migration window is determined by the previous data load's timestamp entry in the EM_IS_LAST_UPDATE table. Therefore, the data load transfers any statistics logged between the start of the last data load and the start of the current one. When the data load process is complete, Enterprise Manager updates the EM_IS_LAST_UPDATE table to indicate that the process is finished.

If the data load process is successful, Enterprise Manager deletes all data from the staging lookup and staging statistics tables.

If the data load process is interrupted before it finishes, this last update is not time stamped. In this case, the next time a data load runs, it starts with data from the time the last successful data load was finished.

For log file information you can use to troubleshoot the Enterprise Manager data loading process, see *Troubleshooting the data loading process, page 49*.

Prerequisites

- Users must have the following privileges assigned to successfully run a data load:
  - Web Reporter
  - Web user
  - WEBUSER
  - Command Manager

    - Use Command Manager
    - USECOMMANDMANAGER
    - Administration
    - Monitor Cluster
    - USECLUSTERMONITOR
- Projects with Environments
- Schedule for recurring data loads.
- The `UPDATEWAREHOUSE` task is required for executing a data load.

Best practices for Enterprise Manager data loading

- Performing the `CLOSESESSIONS` action is not required, but MicroStrategy recommends that you run this task with every data load to ensure sessions are terminated for each project being loaded.
- Set up the scheduled data loads according to the answers to these questions:
    - How long does the data load take?
    - How current does the data need to be?

    If you need near-real-time data, and the data load does not take longer than a few minutes, you may want to run the data load as often as once per hour. However, if the data load process takes a long time, you should run it when Intelligence Server use is low, such as overnight.
- Some data load maintenance tasks can increase data load times. However, the following tasks should be run at least weekly.
    - `REPOPULATETABLES` - This task synchronizes the relationship (relate) tables in the Enterprise Manager repository with the metadata.

  - UPDATEOBJECTDELETIONS - This task ensures that objects that are deleted in the project metadata are marked as having been deleted in Enterprise Manager.

    For more information about data load maintenance options, see *Selecting Enterprise Manager maintenance tasks to perform in the data load, page 46*.

- When you change the name of a project in Developer, you should refresh the list of available projects in MicroStrategy Enterprise Manager before the next data load.
- Synchronize the time of the Intelligence Server machine with the Enterprise Manager repository if possible. When Intelligence Server writes statistics into the database, it uses the repository database management system's timestamp. This is written as `em_record_ts` (in the fact tables) and as `recordtime` (in the statistics tables). Enterprise Manager uses `recordtime` to determine which statistics to move over according to the time window for a data load process. The time window is determined according to the Enterprise Manager repository database management system's time.

  Also, if the repository database time is different from the Intelligence Server machine time, certain reports in Enterprise Manager may have missing data. For example, if statistics appear for "Deleted report" in Enterprise Manager reports, it may be because statistics are being logged for reports that, according to the repository's timestamp, should not exist.

Modifying a data load

You can change the schedule and tasks performed for an existing data load. For steps to create a data load, see *Creating a data load, page 25*.

Making changes with **ALTER DATA LOAD** commands

To make changes to an existing data load use the `ALTER DATA LOAD` command in Command Manager and make the necessary changes to your

data load parameters. You can use `ALTER DATA LOAD` to do any of the following:

- Change the name of a data load.
- Enable or disable a data load.
- Add/Remove projects and environments to monitor.
- Make changes to the data load schedule.
- Modify actions and tasks performed during the data load.

The following example shows the `ALTER DATA LOAD` command to change the name of a data load.

```
ALTER DATA LOAD "<name>" [NEW NAME "<new_name>"] [FOR
ENVIRONMENT "<server_name>" AND PROJECT "<project_name>"
IN ENTERPRISE MANAGER "<em_machine>" IN PORT <port>;
```

For more information on the commands available see the *Syntax Examples* section of the Command Manager Help documentation.

While making changes to a data load with `ALTER DATA LOAD` is supported, it is recommended that users make changes to the original `CREATE DATA LOAD` command. Once the changes are in place, execute the `DELETE DATA LOAD`statement followed by the `CREATE DATA LOAD` command containing the desired changes.

To disable or enable all data loads

You can disable and enable all Enterprise Manager data loads by stopping and starting the Enterprise Manager data loading service.

1. On the machine that hosts Enterprise Manager, open the MicroStrategy Service Manager.

- In Windows: Double-click the Service Manager icon in the system tray. If the Service Manager icon is not present, from the Windows **Start** menu, point to **All Programs**, then **MicroStrategy Tools**, and then select **Service Manager**.
- In UNIX: You must be in an XWindows environment to run Service Manager in UNIX. From the `/bin` directory in the MicroStrategy directory, type `./mstrsvcmgr` and press **ENTER**.

2. From the **Service** drop-down list, select **MicroStrategy Enterprise Manager Data Loader**.
3. Choose from these options:
   - To stop the data loader, slick **Stop**. All data loads are disabled. This is available if the service is running.
   - To start the data loader service, click, **Start**. This is available if the service is stopped.
   - To stop and immediately start the data loader service, click **Restart**. This is available if the service is running.

Running a data load now

You can run a data load immediately rather than waiting for its next scheduled time by running the following in Command Manager:

```
EXECUTE DATA LOAD "<data_load_name>" IN ENTERPRISE
MANAGER "<em_machine>" IN PORT <port>;
```

Deleting a data load

You can delete a data load and all its settings by running the following in Command Manager:

```
DELETE DATA LOAD "<data_load_name>" FROM ENTERPRISE
MANAGER "<em_machine>" IN PORT <port>;
```

Selecting Enterprise Manager maintenance tasks to perform in the data load

In addition to loading data from the statistics tables and project metadata, the data load process can perform certain system maintenance tasks. These tasks keep your Enterprise Manager project and data loads performing efficiently. To run

The maintenance tasks that can be performed are listed here by category:

- **Basic actions**
  - **Fact & lookup migration**: This task populates data in the Enterprise Manager repository by migrating it from the statistics tables into the fact and lookup tables. Specifically, this moves any data that is new since the last data load occurred.
- **Advanced metadata actions**
  - **Update folder paths/object deletions**: This task updates the location property of attributes such as Report, User, and so on. It synchronizes the Enterprise Manager repository lookup tables with the actual folder paths in the metadata. This task also ensures that objects that are deleted in the project metadata are marked as having been deleted in Enterprise Manager. Information about deleted objects is retained in the Enterprise Manager lookup tables for historical analysis. A deleted object is marked with a Deleted flag in the corresponding lookup table.
  - **Repopulate relate tables**: This task synchronizes the relationship (relate) tables in the Enterprise Manager repository with the metadata.
- **Advanced database cleanup actions**
  - **Close orphan sessions**: This task closes all sessions that have been open for longer than 24 hours. These are called orphan sessions, which

are entries in the statistics staging tables that indicate that a session was initiated in Intelligence Server, but no information was recorded when the session ended. Orphan sessions occur rarely, but they can affect the accuracy of Enterprise Manager reports that use Session Duration. For example, one long-running orphan session can skew the average time a session lasts by several days.

The SQL script run for this option is `em_close_orphan_sessions_DBname.sql`, where *DBname* is an abbreviation of the type of database storing your Enterprise Manager repository.

- **Update database statistics**: This task executes SQL scripts that cause the Statistics and Enterprise Manager repository to collect statistics on the repository tables. The database uses these statistics to improve response times for Enterprise Manager reports.

For complete guide to the commands needed to run these and other maintenance tasks, see the Command Manager syntax section of the Command Manager Help Guide.

Configuring what Enterprise Manager data load information is logged

You can configure Enterprise Manager to collect information about the data load operation. Over time the information in the log files and table can become outdated and no longer relevant to your analysis. You can keep them to a manageable size, making them easier to maintain and faster to query. You can also configure Intelligence Server to log information.

For the names of the files and table, where they are, the types of information they store, what to check in them when troubleshooting a data load, see *Checking Enterprise Manager log files, page 51*.

To configure Enterprise Manager data loading logs

Open MicroStrategy Command Manager and execute the following command:

```
SET [LOGGING LOCATION "<logging_location>"] ERROR
ACTION (CONTINUE | STOP | SKIP) OVERLAP ACTION (START |
WAIT) DB LOG (ENABLED | DISABLED) PURGE DB LOG AFTER
<num_lines> LINES PURGE XML LOG AFTER <size> BYTES IN
ENTERPRISE MANAGER "<em_server>" IN PORT <em_port>;
```

Configure the following parameters to configure the Enterprise Manager logs:

- **LOGGING LOCATION**. Specifies where the `MAEntMgr.xml` log file is stored. You may find the information in this file helpful for troubleshooting errors that occur in the data load.
- **ERROR ACTION**: Set to `(CONTINUE)`, `(STOP)`, or `(SKIP)` to set the action a data load will take when an error occurs.
- **OVERLAP ACTION**: Set to `(START)` or `(WAIT)` to set the action a data load will take if there is another loading process currently running.
- **DB LOG**: Set to `(ENABLE)` or `(DISABLE)` to allow or disallow logging of Enterprise Manager log info to the `EM_LOG` table in the Enterprise Manager Warehouse.
- **PURGE DB LOG AFTER <> LINES**: Sets the number of lines saved in the `EM_LOG` table. The minimum is value is 0, and the maximum is 999999.
- **PURGE XML LOG AFTER <> BYTES**: To allow Enterprise Manager to control the `MAEntMgr.xml` log file's size. Specify the size bytes that triggers the backup. When the file gets to the specified size, Enterprise Manager renames the log file by appending a sequential number to the name, creates a new `MAEntMgr.xml` file, and continues to log information in it. The minimum is 0 and the maximum is 50000.

To configure Intelligence Server to log data load information about Enterprise Manager

1. Open the Diagnostics and Performance Logging Tool.
   - In Windows: From the Windows **Start** menu, point to **All Programs**, then **MicroStrategy Tools**, and then select **Diagnostics Configuration**.
   - In UNIX/Linux: Navigate to the directory `~/MicroStrategy/bin` and enter `mstrdiag`.
2. In the Kernel component list, in the row of the **EM Migration Trace**, open the File Log drop-down list, and select the name of the file to log information to.
3. Click **Save**.

You can use the Health Center Console to read the log file. For steps, see the System Administration Help.

Troubleshooting the data loading process

If a data load does not complete or is not moving statistics for a project as you expected, you can check items that prevent the data load from working properly. You can also turn on logging features and then search those log files and table for causes of the problem. These are explained below.

- *What can prevent a data load from working properly?, page 49*
- *Checking Enterprise Manager log files, page 51*

What can prevent a data load from working properly?

Below are some of the reasons why a data load might not work for a project:

- Data cannot be loaded from a project that is not already loaded on Intelligence Server. Data also cannot be loaded from a project that is set to Request Idle, Execution Idle, or Full Idle mode.

  Before loading data from a project, make sure the project is not in any of these idle modes and is set to Loaded status. For an explanation of the different project modes, including instructions on how to set a project's mode, see the *System Administration Guide*.

- If you have changed the password for the user that configured a project for Enterprise Manager, data cannot be loaded from that project until you reconfigure it. For steps, see *Modifying a data load, page 43*.

- If you have deleted a project in Developer that is being monitored by Enterprise Manager, the data load process fails until you remove that project from the list of projects being monitored.

- If Intelligence Server and Enterprise Manager cannot get to the statistics and Enterprise Manager repository, data cannot be recorded in the statistics database, and the data load process cannot run. Make sure the DSN for the repository is correct and that the database user has the permissions needed connect to and write data in the database. For steps, see *Creating the Enterprise Manager repository, page 15*.

- If the database connection for the statistics repository is not configured for parameterized queries the data load will fail. See *Configuring database connections to use parameterized queries, page 23* for more information.

- Data can be recorded only if statistics logging is enabled for a project. Make sure you configured your projects to log statistics to the statistics database. For steps on doing this, see the *Monitoring the System* chapter in the System Administration Help.

- If the project is not selected as part of a data load schedule, information for that project is not loaded into the Enterprise Manager repository. To ensure that it is enabled, see *Modifying a data load, page 43*.

- Check that the data load schedule is turned on. Also, if the MicroStrategy Enterprise Manager Data Loader service has stopped, no scheduled data loads occur. For steps on enabling a data load and on starting the data loader service, see *Data loading, page 39*.

Checking Enterprise Manager log files

Enterprise Manager can log information about the data load process, including all errors, into a table and several files. If a data load does not finish or has errors, you can search the table and files to find the cause of the problem. You can configure the following logging options:

- Information is recorded in the `MAEntMgr.xml` log file about the steps in the data load process, including any errors. This information includes the timestamp of steps such as the data load start, the project or object being processed, fact migration, any errors, and so on. This log is populated for every data load and cannot be turned off. You can, however, control how large the file gets before it is backed up. To do this, configure the **Backup log every _ MB** option. By default this file is stored in these locations, but you can change it for your system (see *Configuring what Enterprise Manager data load information is logged, page 47*):
  - In Windows: `C:\Program Files (x86)\MicroStrategy\Enterprise Manager\`
  - In UNIX/Linux: `/<MSTR Home Path>/install/EnterpriseManager/`
- If an error occurs when a SQL query executes as part of a data load, the `MAEntMgr.xml` file records that the error occurred, but does not store the SQL query that caused the error. To obtain the SQL query that caused the error open the `MigrationSQL.log` file, which is found in the following default locations:
  - In Windows: `C:\Program Files (x86)\Common`

`Files\MicroStrategy\Log\MigrationSQL.txt`

- In UNIX/Linux: `/<MSTR Home Path>/log/MigrationSQL.log`

- You can configure Enterprise Manager to record information into the `EM_LOG` table about the data load process. The information includes when data load started, the steps performed, and so on, which is similar to what is in the `MAEntMgr.xml` file. The `EM_LOG` table is in the Enterprise Manager repository. To view its contents, use a tool to query the database, such as the MicroStrategy DB Query Tool. You can also control how much history to keep in the table by configuring the **Populate EM_LOG table and purge every _ rows** option. For steps to enable this logging and control the table size, see *Configuring what Enterprise Manager data load information is logged, page 47*.
- You can configure Intelligence Server to record information in a diagnostics file that you specify, such as the `DSSErrors.log` file, about the data load process. This records detailed information for steps that Intelligence Server performed in the process. To turn on this logging, from the MicroStrategy Diagnostics and Performance Logging Tool, select the **EM Migration Trace** check box, from the **File Log** drop-down list, select the name of the log file to record the information in, and click **Save**. For steps to enable this logging and control the table size, see *Configuring what Enterprise Manager data load information is logged, page 47*. To view the log file, you can use the MicroStrategy Health Center Console.

REPORTING IN ENTERPRISE MANAGER

Enterprise Manager contains many reports designed to provide useful information about your MicroStrategy objects, report processing data, and user and session data. For example, is the length of time jobs wait in queue causing significant delays in report processing? If so, increasing the number of available database connection threads could help decrease the queue time. This is one example of how Enterprise Manager reports can help you.

Enterprise Manager also contains several dashboards, a type of interactive document that uses one or more reports to explore related areas of data. For an intuitive introduction to how which Enterprise Manager can help you analyze report information, use the dashboards before you begin executing any reports. For more details on the contents of the dashboards included with Enterprise Manager, see *Dashboard-style Documents, page 59*.

To run a report in the Enterprise Manager project, you connect to the project as you would any of your other projects. You must have been assigned the appropriate privileges in the Enterprise Manager project by a system administrator.

You can use the Enterprise Manager reports out of the box, or you can modify the reports to return exactly the data you want to analyze for your MicroStrategy environment. For information about customizing the Enterprise Manager reports, see *Customizing Enterprise Manager reports to suit your needs, page 57*.

Enterprise Manager report names are preceded by a number. The integer-numbered reports (such as 81. Activity by User) indicate that the report returns data on a high-level analysis area. The decimal-numbered reports (such as 81.1 Ad-hoc Job Activity by User or 81.2 DB Result Rows by User) indicate that these reports provide more detail within the higher-level analysis area.

Indexes are included for out-of-the-box reports on the Enterprise Manager fact tables. Check the indexes for the Enterprise Manager reports that you run most frequently or that take the longest to complete. If necessary, you

should build additional indexes if you find some reports using tables that do not have an index.

The analysis areas of the Enterprise Manager project are described below. Several of the analysis area descriptions include details on one or two representative reports from that area, and suggest report customization ideas that can be used with many of the reports within that analysis area.

- **Dashboards-style Documents** are an excellent source of summarized data and provide interactive analysis at deeper levels of detail. For descriptions of each Enterprise Manager dashboard, see *Dashboard-style Documents, page 59*.
- **Operations analysis** reports provide information on system resource usage, concurrency, and report and subscription processing time. For descriptions of these reports, see *Operations analysis, page 79*.
- **Performance analysis** reports support analysis related to usage patterns, Intelligence Server governing settings, and Intelligent Cube Analysis. For descriptions of these reports, see *Performance analysis, page 90*.
- **Project analysis** reports provide information about MicroStrategy project growth and the uses of configuration and project objects. For descriptions of these reports, see *Project analysis, page 96*.
- **Real-time analysis** reports provide information related to response times and schedule results. This information can be useful for troubleshooting and for optimizing your database configuration. For descriptions of these reports, see *Real-time analysis, page 106*.
- **User analysis** reports analyze user activity and preferences. For descriptions of these reports, see *User analysis, page 107*.

For a detailed list of all Enterprise Manager facts, attributes, and metrics, see the System Administration Guide.

Because Intelligence Server can be configured to log different types of statistics, some of the reports in the Enterprise Manager project are

affected if some logging options are not selected. For details about the statistics logging options, see the System Administration Guide.

Best practices for Enterprise Manager reporting

- A prior successful data load must have occurred in which the object names and descriptions were loaded before any data will be available in the Enterprise Manager reports. If this has not occurred, metrics are still reported and aggregated correctly, but certain object names appear as null fields.

  Once the statistics data are processed in a data load, the scope of analysis increases significantly, and reports in the different Enterprise Manager analysis areas reflect the data.

- The dashboard documents included with Enterprise Manager give an intuitive introduction to reporting and should be used before running any reports. For more information on the dashboards available in Enterprise Manager, see *Dashboard-style Documents, page 59*.

- Instead of directly modifying a report supplied with Enterprise Manager, MicroStrategy recommends that you make a copy of the report and modify that copy.

- By default, only the MicroStrategy system administrator and users in the EMAdmin group have the necessary permissions and privileges to run reports in Enterprise Manager. If other users need to view the Enterprise Manager reports, an administrator must assign the users the privileges to use all objects in the Public Objects and Schema Objects folders.

- Data that is displayed as "########" indicates that the data cannot be displayed. For example, if a metric for Average Report Execution Duration displays "########" for a report in a certain time frame, that report might have never executed to completion in that time frame and had all its

executions canceled. This could mean that you need to investigate your system for problems in that time frame.

Customizing Enterprise Manager reports to suit your needs

The reports in Enterprise Manager provide a wide variety of information for your analysis. However, you may find that the out-of-the-box reports do not fit your analytical needs. In this case, you can either edit an existing report or you can create your own report using the predefined metrics and attributes in the Enterprise Manager project.

Instead of directly modifying a report supplied with Enterprise Manager, MicroStrategy recommends that you make a copy of the report and modify that copy.

You can modify and create reports in Enterprise Manager through Developer or MicroStrategy Web, just as in any other MicroStrategy project. For an introduction to MicroStrategy reporting, covering the basics of analyzing and creating reports and report objects such as metrics and filters, see the Basic Reporting Help. For information about more complex reporting tasks, see the Advanced Reporting Help. You can also click **Help** for detailed information about any interface.

Some Enterprise Manager reports make use of MicroStrategy's Freeform SQL feature to allow you to use custom SQL statements to access alternative data sources. For complete details about Freeform SQL, see the Advanced Reporting Help.

Viewing information about Enterprise Manager objects: Project documentation

The Project Documentation Wizard provides detailed information about any objects in the Enterprise Manager project. For example, to find which metric

to use for a specific purpose, you can generate and view the project documentation for the Enterprise Manager metrics.

When you step through the Project Documentation Wizard, you specify the objects that you want information about. The wizard records information about these objects as an HTML file. You can view and search this HTML file or print it for quick reference.

The Enterprise Manager project documentation is initially available on the machine that has the Enterprise Manager project installed. To enable other users to view the project documentation, share the HTML files over your network.

To create project documentation for Enterprise Manager

1. In MicroStrategy Developer, log in to the Enterprise Manager project. You must log in with an account that has administrative privileges in this project.
2. From the **Tools** menu, select **Project Documentation**. The Project Documentation Wizard opens.
3. Step through the wizard. Select the **Enterprise Manager** project and the objects and information that you want to include in the project documentation. For instructions on how to use the wizard, click **Help**.

   To include information about metrics or reports, select **Application objects**. To include information about attributes, select **Schema objects**.

4. On the last page of the wizard, click **Finish**. The project documentation HTML files are generated in the location you specify in the wizard.

Dashboard-style Documents

Enterprise Manager comes with several Report Services documents that show one or more related reports in a dashboard-type display. Report Services documents are an excellent source of summarized data from related areas of analysis. Dashboards, which are a type of document, provide a lot of interactive graphical features to enable exploration of the data at several levels of detail.

The Enterprise Manager Overview dashboard provides an intuitive and interactive overview of collected document, report, and user activity data. It also serves as a quick guide to the other dashboards you can run in Enterprise Manager. Before executing any Enterprise Manager reports, use this dashboard to get an introduction to the capabilities of Enterprise Manager.

You must have MicroStrategy Report Services to view or work with a Report Services document. Dashboards must be viewed in MicroStrategy Web to take full advantage of their interactivity.

The other dashboards in Enterprise Manager are:

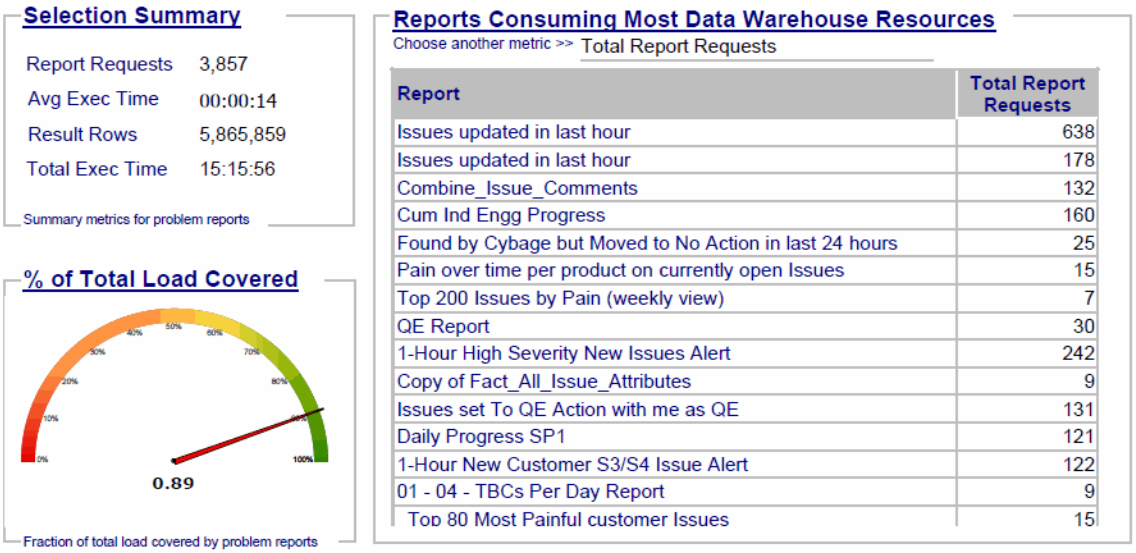
- *Data Warehouse Optimization Advisor Dashboard, page 60*
- *Dashboard and Document Processing Analysis Dashboard, page 61*
- *Mobile Usage and Adoption Dashboard, page 62*
- *Project Analysis Dashboard, page 63*
- *Project Analysis (Interactive) Dashboard, page 64*
- *Real-Time Server Usage Dashboard, page 66*
- *Report Usage Analysis Dashboard, page 67*
- *Server Caching Optimization Advisor, page 68*
- *User Activity Dashboard, page 70*

- *Enterprise Manager Overview (For Phones) Dashboard, page 71*
- *System Administration Overview Dashboard*

Except for the iPhone Analysis Dashboard, these dashboards are designed for use with MicroStrategy Web. If you are using MicroStrategy Web Universal, the links to other reports in the dashboards do not function. To correct the links, edit the dashboards and change all occurrences of `Main.aspx` in the links to `mstrWeb`.

Data Warehouse Optimization Advisor Dashboard

This dashboard provides information that can guide you when optimizing your data warehouse performance. The user specifies the time frame for analysis, the number of database tables to consider for optimization, and the percentage of jobs to consider in the optimization calculations.



The top half of the dashboard summarizes the current database usage. This summary includes the following:

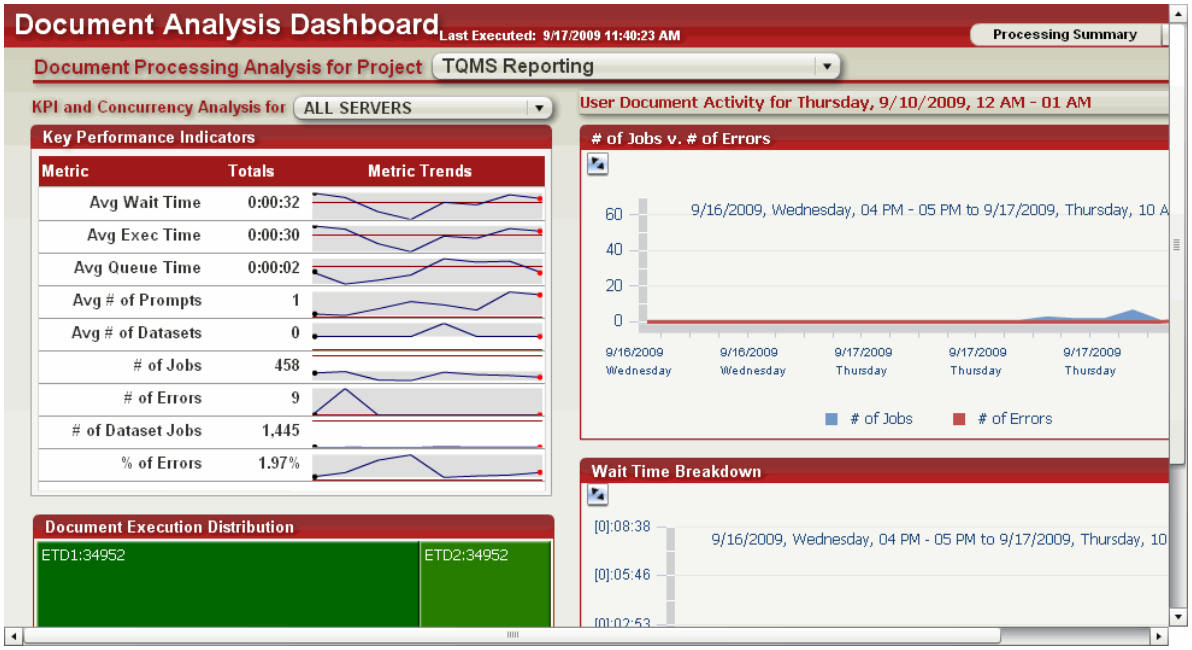
- An executive summary of the database usage over the specified period, including the number of report requests and report result rows, the average execution time for each request, and the total execution time.

- A gauge graph showing the percent of total database load that the specified percentage of jobs consume.
- A grid showing which reports consume the most database resources. This grid can be sorted by number of report requests, number of result rows, or execution time.

The bottom half of the dashboard lists the database tables being considered for optimization. Clicking on a table brings up a list of optimizations and their potential effectiveness. These optimizations include aggregate table grouping and different types of secondary indexes.

Dashboard and Document Processing Analysis Dashboard

This dashboard provides an overview of document usage and performance in your projects, including average wait times and number of execution errors encountered. The user specifies the period for analysis.



The Processing Summary area provides a general picture of document activity for a project and Intelligence Server. It includes the following:

- Line graphs showing key performance indicators for document execution, including average wait times, execution times, and number of errors encountered
- An area graph showing the number of jobs and execution errors over time
- An area graph showing average wait, execution, and queue times for executed documents

The Document Details area provides in-depth information on documents in a project. Select a document from the drop-down list to view the following:

- A bubble graph of popular documents, with the number of users and job requests for each document
- General information about the selected document, including the owner, description, and date the document was last modified
- An area graph showing the average wait time, execution time, and queue time encountered when executing the document

Mobile Usage and Adoption Dashboard

This interactive dashboard measures your MicroStrategy business intelligence system's use by mobile device users, and the overall contribution that Mobile usage contributes to the total business intelligence system use. This dashboard gives insight into details such as number of mobile interactive jobs, number of mobile subscriptions, and the most popular mobile reports and documents.

For an Enterprise Manager dashboard that is designed to be viewed on mobile devices, see *Enterprise Manager Overview (For Phones) Dashboard, page 71*.

You can specify the time frame for the reported data using the dashboard's prompt, and you can easily re-prompt the dashboard to change the time frame.

The left pane includes the following:

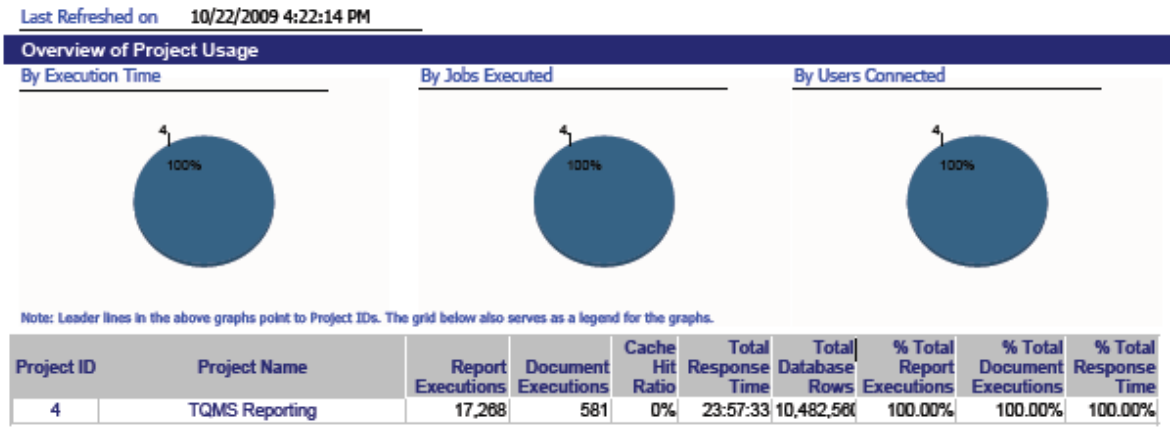
- **Intelligence Server Cluster**: You can specify the cluster for which you want to report data.
- **Intelligence Server Machine**: You can specify an Intelligence Server machine for which to report data.
- **Project**: This pie chart shows which projects are most popular among mobile users. The grid report shows metrics for users, errors, and jobs.

The right pane includes the following tabs:

- **Mobile Contribution to Enterprise BI**: Click this tab to view contribution of mobile usage to your overall system. You can see weekly subscription reports and weekly interactive reports. You can view total jobs, document jobs, and report jobs within the context of the respective weekly subscription or interactive reports.
- **Popular Reports and Documents**: Click this tab to view a heat map showing the most popular reports and documents for your mobile users. Details are shown in a graph below the data.

Project Analysis Dashboard

This dashboard provides a comprehensive overview of usage and activity on your projects, over the time frame that you specify.



The top portion of the dashboard contains a general analysis of the system. It includes the following:

- Pie charts showing the project usage by total time spent executing jobs, total number of jobs executed, and number of users connected
- An overview of system usage for each project, including cache hits, number of jobs, and other metrics

On the dashboard, below the general analysis area is a separate portion for each project. These portions contain a detailed analysis of the project:

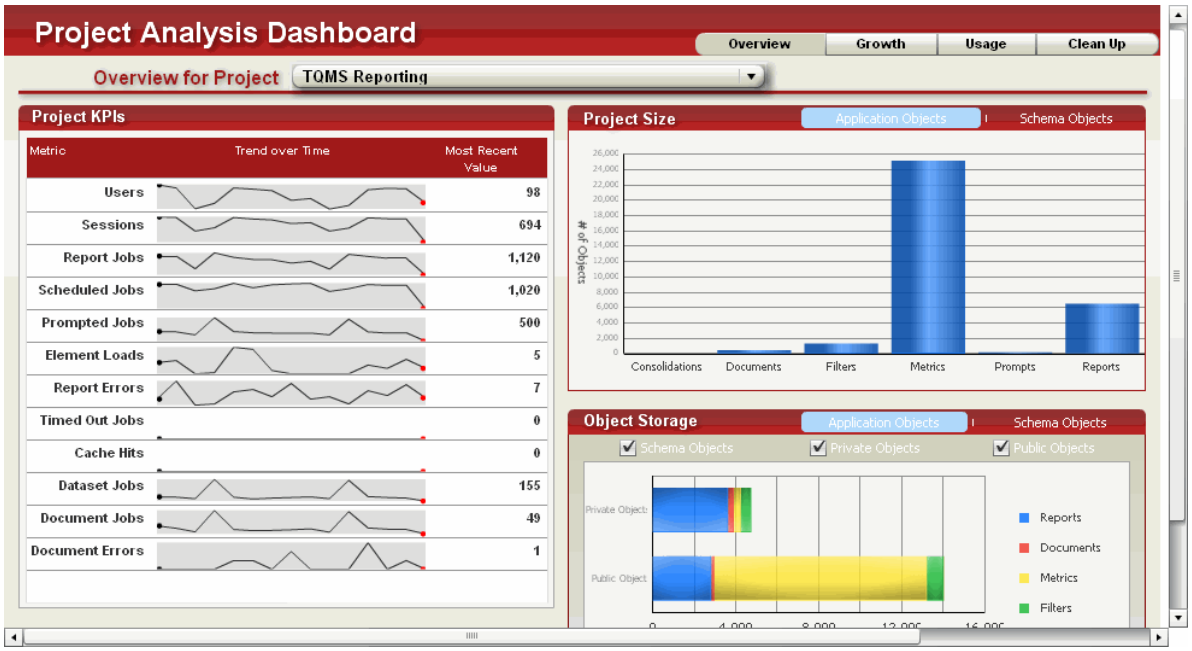
- A line graph showing the weekly growth trend for the numbers of reports and other objects in the project
- A line graph showing the weekly usage trend, in terms of number of users and number of user requests
- A line graph showing the weekly project performance trend, in terms of job execution time and number of jobs
- A graph showing the load distribution (ad hoc versus scheduled jobs)

This dashboard also contains links to other Enterprise Manager reports.

For customization purposes, the document links work over the ASP.NET version of MicroStrategy Web. For MicroStrategy Web Universal, the links must be modified appropriately. The MicroStrategy Developer Library (MSDL) provides information to customize Report Services documents.

Project Analysis (Interactive) Dashboard

This dashboard provides usage information for a project, including object storage, patterns in project growth, and a list of unused application objects for cleanup.



The Overview portion provides a general view of project performance and project size:

- Line graphs of key performance indicators for the project over time, including the number of users, sessions, and document jobs
- Bar graphs of the number of application and schema objects in the project, broken down by object type—reports, documents, attributes, and hierarchies

The Growth portion provides details about new application objects added to the project:

- A graph of the number of application objects that have been added to the project by week, broken down by object type
- A funnel graph of new application objects added to the project, organized by the owner of the object

The Usage portion provides a picture of the most frequently used objects in the project:

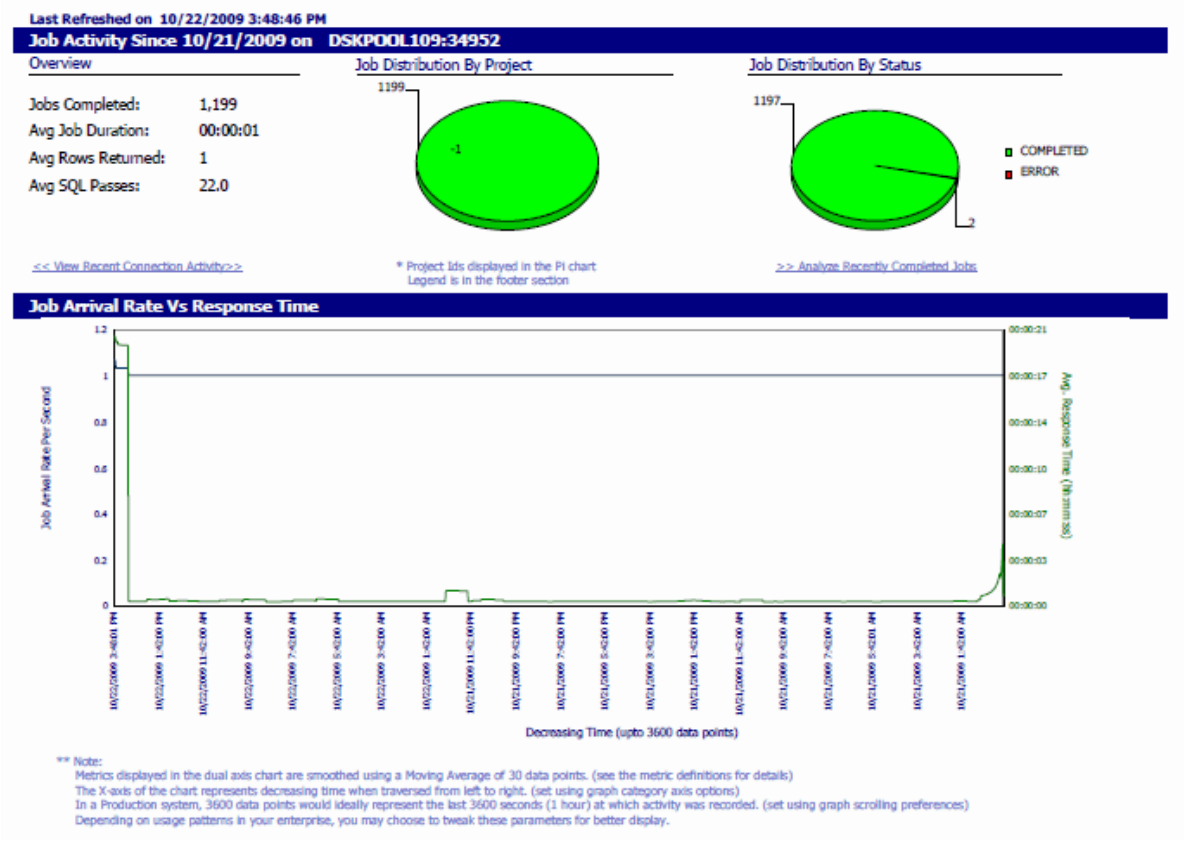
- Heat maps of the top 10 frequently used reports and documents in the project
- Lists of the top 10 attributes, metrics, and filters in the project

The Clean Up portion provides a view of unused objects in the project:

- A list of unused reports, documents, attributes, and other application objects for the project
- Links to generate scripts for deleting unused application objects from the metadata

Real-Time Server Usage Dashboard

This dashboard provides an overview of recent system activity. The user specifies the earliest date for which data is reported.



The dashboard includes the following:

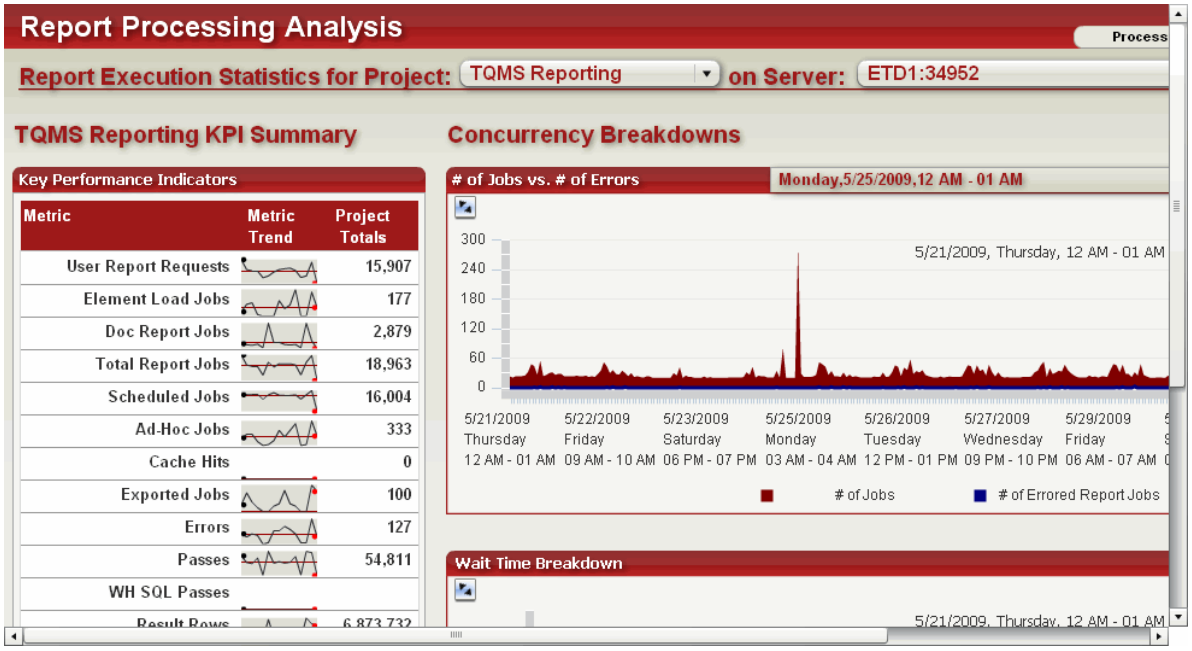
- Critical system metrics such as average job duration and total jobs processed for a given server machine
- Pie charts indicating the recent job distribution by project, and execution status such as Completed, Error, and so on
- A line graph showing system throughput and response time for a server machine
- A grid indicating the status of scheduled jobs on the server machine, per project

The dashboard also includes links to more detailed reports.

For customization purposes, the document links work over the ASP.NET version of MicroStrategy Web. For MicroStrategy Web Universal, the links must be modified appropriately. The MicroStrategy Developer Library (MSDL) provides information to customize Report Services documents.

Report Usage Analysis Dashboard

This dashboard provides an overview of report usage and performance in your projects, including average wait times and number of execution errors encountered. The user specifies the period for analysis.



The Processing Summary portion provides a general picture of report activity for a given project and Intelligence Server:

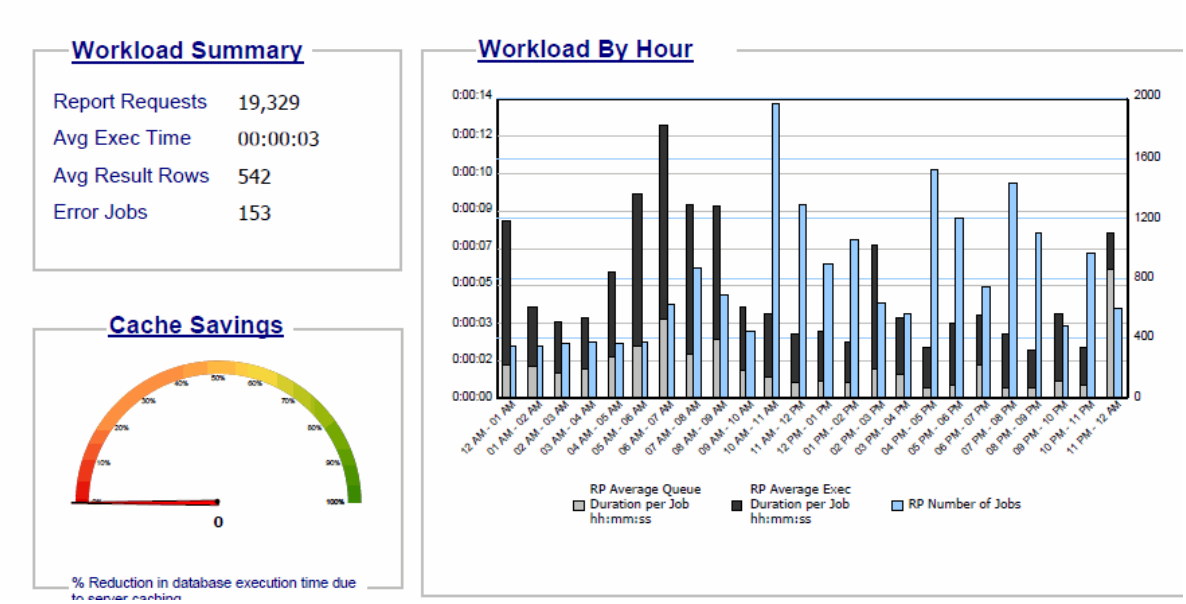
- Line graphs of various key performance indicators, including the number of user report requests, exported jobs, and execution times
- An area graph showing the number of jobs and report execution errors encountered over time
- A graph showing average wait times, execution times, and queue times for reports over time

The Reporting Details portion provides in-depth information on individual reports within a given project. Select a report from the drop-down list:

- A bubble graph of popular reports, with the number of user and job requests for each report
- Detailed information about the specified report, including the owner, description, and date the report was last modified
- A heat map showing the users that have requested the report, along with the number of report execution errors encountered

Server Caching Optimization Advisor

This dashboard provides information that can guide you toward optimal caching strategies, according to historical usage data. The user specifies the percentage of jobs to be optimized (the default is 20%) and a period for the analysis.



The dashboard has two panels. The first panel provides an overview of the effectiveness of server caching over the specified period:

- A summary of the server workload, including the number of report requests, the average amount of time required to execute a request, the average number of result rows, and the number of jobs that resulted in an error
- A gauge showing the percentage that database execution time has been reduced by jobs that hit the cache instead of the database
- A bar graph analyzing the hourly server workload by average time each job spends in queue, average execution time per job, and number of jobs per hour

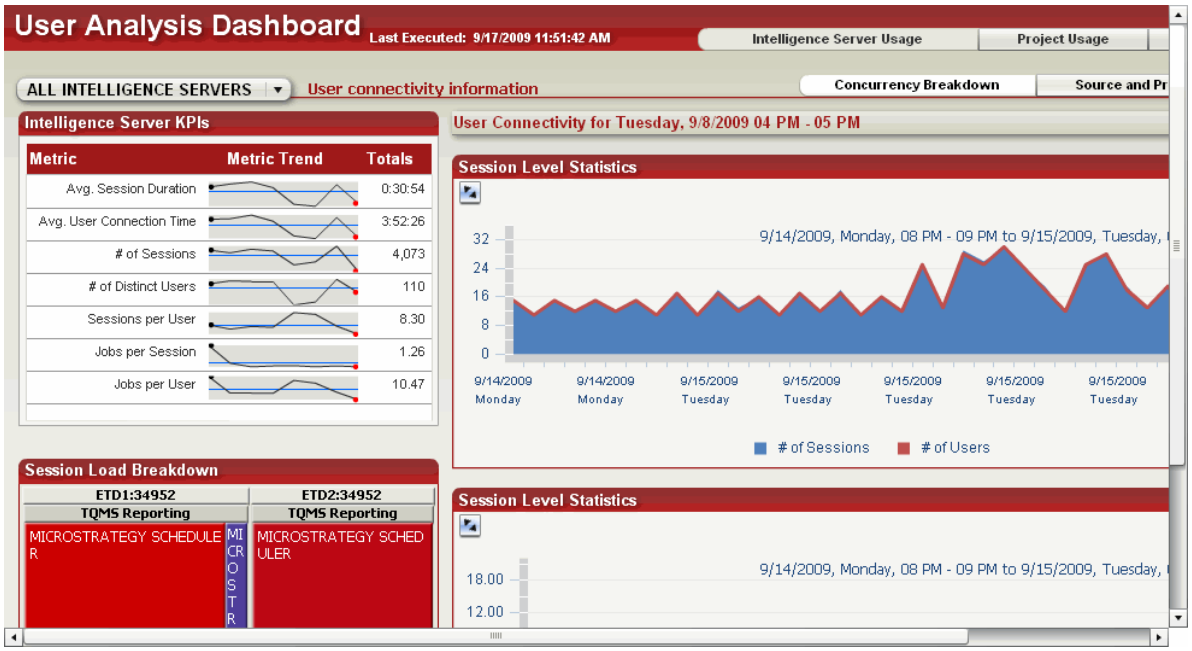
The second panel provides the optimization potential for three optimization strategies, presented in three grids:

- Enabling caching for the worst-performing reports, according to projected database savings
- Disabling caching for reports with low hit ratios

- Increasing caching efficiency by building OLAP cubes augmented with frequently drilled-to objects

User Activity Dashboard

This dashboard provides an overview of user activity on an Intelligence Server or project, including statistics for report and document execution and user session information. You can also examine inactive users to determine how long they have been inactive or determine whether they should be removed.



The Intelligence Server Usage portion shows user and session activity for an Intelligence Server:

- Line graphs of key performance metrics for an Intelligence Server—average session duration, average connection time, and number of distinct users
- A heat map showing the number of users connecting to Intelligence Server via applications such as MicroStrategy Web or MicroStrategy Scheduler

- Area graphs with breakdowns of the number of sessions, number of users, and average session durations per application or project

The Project Usage portion contains user-specific activity information for a project. Select a project name from the drop-down list to view the following:

- A heat map of connection activity by user with number of jobs and sessions per user and connection times
- A breakdown of each user's individual activity, including the names of executed reports and documents, errors encountered, and wait times

The User Inactivity portion allows you to view information on inactive users by project or Intelligence Server:

- An area map of inactivity trends showing the number of users that have been inactive for a given period
- A list of inactive users, with a listing of account creation dates and date of last connection
- A bar graph showing the distribution of inactive users by length of inactivity

Enterprise Manager Overview (For Phones) Dashboard

This dashboard provides MicroStrategy Mobile users with quick access to a high-level overview of activity in the MicroStrategy system in the past week. It is designed to be viewed in MicroStrategy Mobile. For an Enterprise Manager dashboard that provides information about mobile device usage in your MicroStrategy system, see *Mobile Usage and Adoption Dashboard, page 62*.

The main Enterprise Manager Mobile dashboard consists of links to four detailed dashboards:

- The **User Analysis** dashboard provides information about user activity in the past week, such as the number of users who have connected to the

MicroStrategy system, or the number of job requests logged. You can view user activity by interface, such as Developer, MicroStrategy Mobile, or MicroStrategy Web, by user group, or by feature, such as Report Services or OLAP Services.

- The **Project Analysis** dashboard provides information about the reports and documents in each project that were used in the past week, and the load distribution across clustered Intelligence Servers for each project.
- The **Operations Analysis** dashboard provides information about the number of report and document jobs that have returned an error in the past week. You can drill down to see which reports and documents returned an error, and what the error codes were for each report or document.
- The **Performance Analysis** dashboard provides information about the past week of report and document requests from various sources, such as Developer, MicroStrategy Web, or Distribution Services. For each source, you can see how many reports/documents used a cache, how many used an Intelligent Cube, and how many used an external data source.

System Administration Overview Dashboard

The System Administration Overview dashboard provides system adoption and performance analysis of the MicroStrategy environment. The goal of this particular dashboard is to provide administrators with a quick look into the following aspects of their environment over the previous 2 months:

- *Key Adoption and Performance Trends*
- *Peak Usage and Performance Analysis*
- *Report Usage and Performance Details*

Below is a summary of each sheet of the dashboard, including the design workflow and intended goal.

Key Adoption and Performance Trends

The Key Adoption and Performance Trends sheet is titled "1. Trends"' and provides a high level snapshot of Key Performance Indicators (KPIs) in the MicroStrategy environment over the last two months. The purpose of this sheet is to provide a quick usage-based health check showing weekly KPI trends supported by a 2-month detail.

KPIs

Select a week from the top left selector. The top row of grids display KPI trends for the selected week compared to the week prior as indicated by an arrow (up/down/no change). The KPIs are:

- Adoption
  - Distinct Users
  - Total Sessions
- User Experience: Reports
  - Report Jobs
  - Report Elapsed Time
- User Experience: Documents
  - Document Jobs
  - Document Elapsed Time
- User Experience: Errors
  - Report Errors
  - Document Errors

Each of these trend indicator grids correspond to a more detailed view of each KPI over time in the four combination charts directly below.

KPI Charts Over Time

This set of combination charts highlight the trends over the last two months of all KPIs utilized in the weekly trend comparison. The graphs are categorized as:

- Adoption Trends
- Document Usage Trends
- Report Usage Trends
- Error Trends

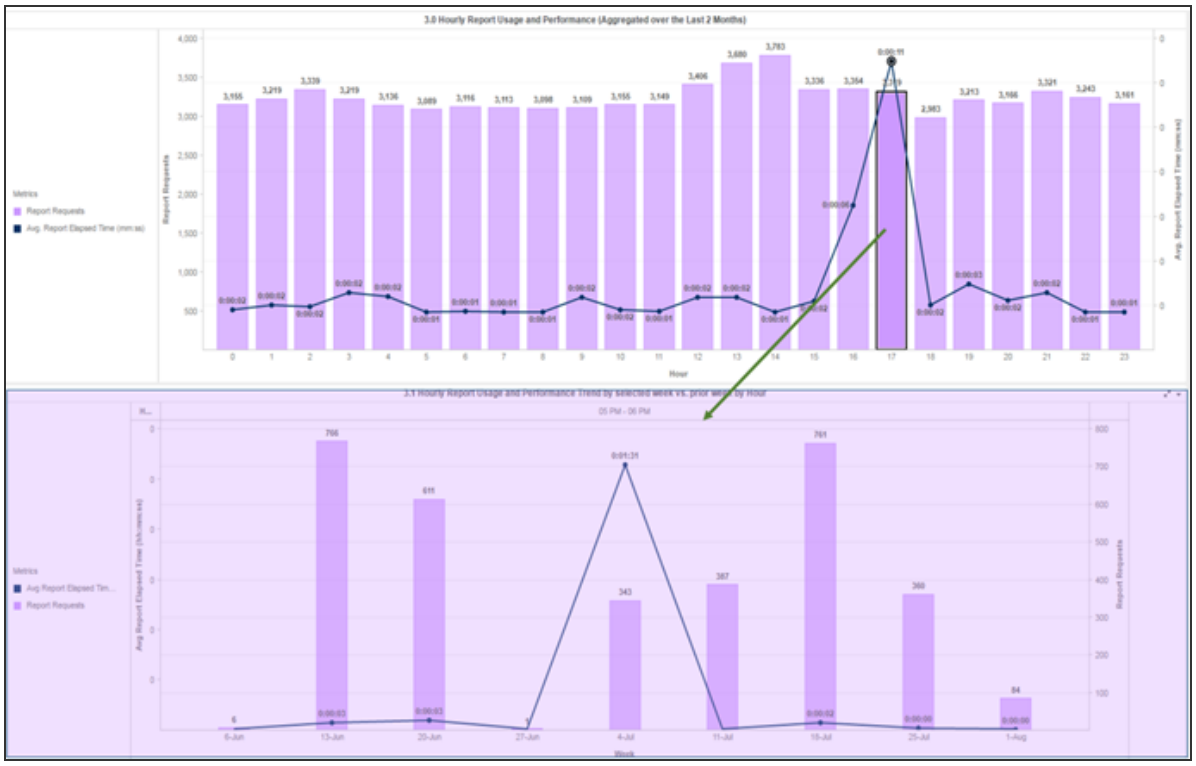
These charts are intended to provide a historical perspective to the KPI trend grids at the top, to understand if the trend you are seeing is indicative of a consistent trend in your environment or is the result of a system anomaly.

Peak Usage and Performance Analysis

The Peak Usage Analysis Sheet provides a high level view of hourly report usage metrics over the last two months.

Last Two Months Usage and Performance by Hour

Use this combination chart in the top of the dashboard to analyze the aggregate number of report jobs and the average report job elapsed time by hour of the day over the last two months. Interact with the elements within the graph to target the combination chart on the bottom, which provides details of report usage and performance by week during your selected time window over the last 2 months.

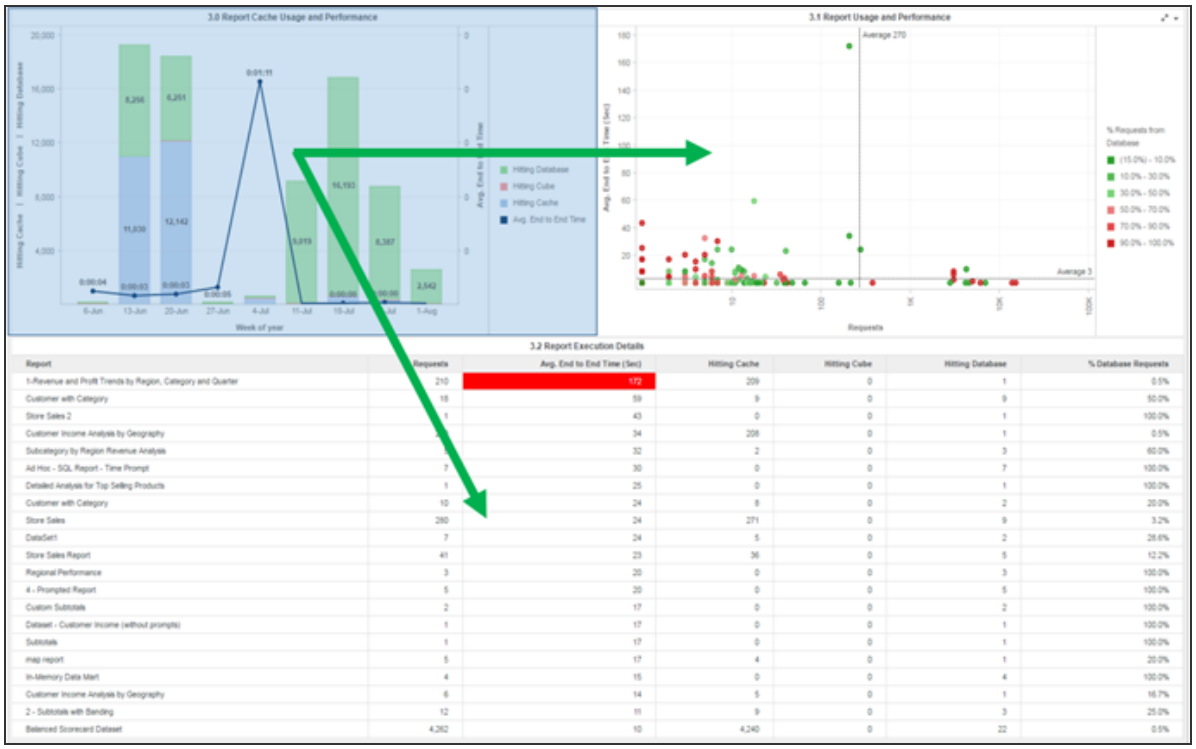


This ability to drill into a specific hourly time period is intended to provide administrators with the ability to determine whether high/low usage and performance metrics aggregated over the last two months are from consistent high/low usage over time or are skewed by usage and performance of specific weeks.

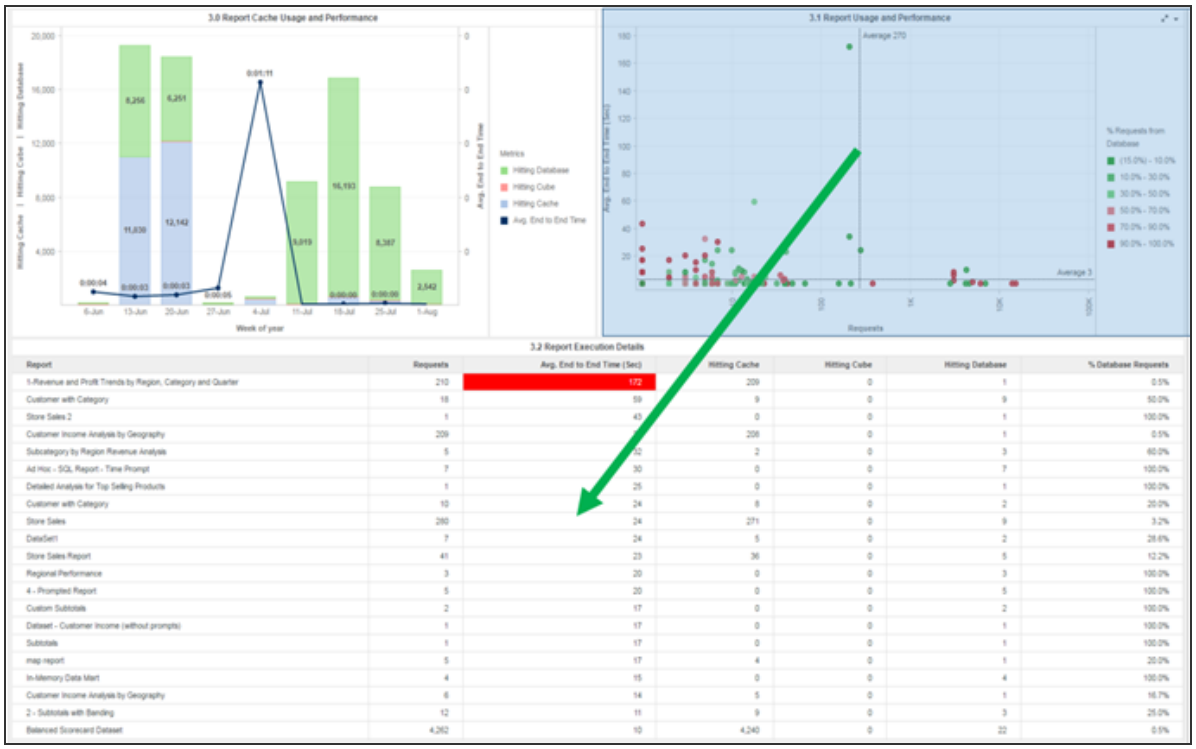
Report Usage and Performance Details

The Report Usage and Performance Details sheet is intended to provide administrators with the ability to dive into the individual report usage and performance details by a particular week. This empowers administrators to identify which reports in their environment pose a risk to both user adoption and system reliability due to poor performance.

The combination chart in the top left is similar in design to the Report Usage and Performance chart provided within the *Key Adoption and Performance Trends* sheet of this dashboard. However, this chart provides the additional detail of breaking down the weekly report requests into whether each job was against a Cube, Cache, or Database. Administrators may interact with the elements of this chart to target the other two visualizations in the sheet.



The top right visualization provides a scatter plot, with each point corresponding to a particular Report within your MicroStrategy environment. The x-axis is a logarithmic scale based on the total number of report requests during the selected time period, with the y-axis indicating the average end to end execution time of that report in seconds. Two reference lines are displayed, indicating the average number of report requests by report (vertical line) and average execution time (horizontal). As a result, the two quadrants of reports that should be analyzed are those that plot above the average execution time, especially those that have more than the average number of requests. Administrators can additionally select individual points on the graph or select points that fall within an area of the chart. This selection will target the grid at the bottom, which provides details such as the name of the report, the number of requests, and the breakdown of requests hitting cache/database/cubes.



Operations analysis

The Operations Analysis folder in Enterprise Manager contains the following analysis areas, each with its own reports:

- *Concurrency analysis (including user/session analysis), page 79*
- *Data load, page 81*
- *Delivery processing analysis, page 82*
- *Inbox Message Analysis, page 83*
- *Report processing analysis, page 84*
- *Resource utilization analysis (including top consumers), page 87*

Concurrency analysis (including user/session analysis)

This analysis area provides reports to analyze session and user concurrency on the system at different times. Administrators can measure the following:

- The total number of users in the metadata
- The total number of users who are logged in
- The total number of user sessions that are open
- The total number of user sessions that have active jobs

Reports in this analysis area use an attribute from the Time hierarchy as the primary attribute for analysis, and various metrics representing answers to administrator questions.

Report name	Function
10. Concurrency by Hour of Day	Provides the number of concurrent active users and the number of concurrent sessions by hour of day. This report is prompted on time.
11. Daily Session Concurrency Analysis	Uses various metrics to analyze the concurrent active sessions over time. This report is prompted on time and on session duration.
12. Session Duration Analysis	Uses various metrics to analyze the duration of user sessions, over time. This report is prompted on time and on session duration.
13. Daily User Connection Concurrency Analysis	Uses various metrics to analyze the concurrency of user sessions, over time. This report is prompted on time and on session duration.
14. Minute Level User Concurrency During Peak Hours	Provides a minute-level graph for the active users and sessions during the peak hours of the day. This report is prompted on time.
14.1 Top n Maximum User Concurrency Hours - report as filter	Provides a list of the top N hours in terms of maximum user concurrency. This report is prompted on time, session duration, and number of hours to be returned.

Sample report: Daily Session Concurrency Analysis

This report uses various metrics to analyze the concurrent active sessions over time. The results summarize the load on and use of Intelligence Server. This report contains prompts on time and on the minimum and maximum duration of the sessions to be analyzed.

Usage scenario

Administrators can use this report to analyze the total number of sessions on the MicroStrategy system in any day. They can also see the average, minimum, and maximum number of sessions open at any minute in a day.

Report details

- Drill path: The recommended drill path is along the Time hierarchy.
- Other options: To restrict the scope of analysis to a specific MicroStrategy client such as Developer, you can add an additional filter or page-by on the Connection Source attribute using the appropriate client. Alternatively, you can add a filter or page-by on any attribute from the Session hierarchy (except the Session attribute itself).

Data load

This analysis area covers the historical data loads and how long they take. .

Report name	Function
Data Load Durations - Complete (Last Week)	Lists all Enterprise Manager data loads that occurred in the past week and how long each took.
Data Load Durations - Project Wise (Last Week)	Lists all Enterprise Manager data loads that occurred in the past week and how long each took. The project name is included.

Sample report: Data Load Durations - Project Wise

This report provides a historical view of the data load process for each project being monitored. For each project, the start and end time of each data load is listed.

Usage scenario

Administrators can use this report to confirm that the statistics data is being loaded at the proper time and that the data load does not put an undue load on the server.

Report details

- The projects are listed by project name.
- The project with GUID 00000000000000000 represents fact migration from the statistics tables of the listed project.

Delivery processing analysis

This analysis area provides reports that analyze the Distribution Services subscription activity in your system.

Report name	Function
111. Weekly Subscription Activity	Provides a comprehensive weekly summary of subscription activity.
112. Subscription Statistics	Provides subscription activity over a given time interval. This report is prompted on time.
113. User Subscription Statistics	Provides information for users on subscription execution over a given time interval. This report is prompted on time.
114. Top 10 Subscribed Documents	Provides insight into the documents that contribute to the top 10 percent of recipients; execution time; or number of subscriptions over a time interval. This report is prompted on time and on which subscription analysis metric to use.
115. Top 10 Subscribed	Provides insight into the reports that contribute to the top 10

Report name	Function
Reports	percent of recipients, execution time, or number of subscriptions over a time interval. This report is prompted on time and on which subscription analysis metric to use.
116. Top 10 Subscribed Contacts	Provides insight into the users that contribute to the top 10 percent of recipients, execution time, or number of subscriptions over a period. This report is prompted on time and on which subscription analysis metric to use.
117. Top 10 Longest Executing Subscriptions	Lists the top 10 percent of subscriptions that contribute to the execution times over a period. This report is prompted on time.

Inbox Message Analysis

This analysis area provides reports that analyze Inbox Message activity, including errors encountered while performing actions on Inbox Messages and the contribution of Inbox Message Jobs to the total number of jobs on Intelligence Server.

Report name	Function
118. Inbox Message Action over Time	Provides information on the number of inbox messages, the number of actions performed on these messages, and how many of those actions resulted in errors. This report is prompted on time.
119. Number of Messages by User over Time	Provides insight into the users of inbox messages. This report looks at the number of messages for each user and the number of actions taken on these messages. This report is prompted on time.
120. Inbox Contributions to Job Counts	Analyzes the contribution of inbox message jobs to the total job count on Intelligence Server. This report is prompted on time.
121. Top 10 Users of Inbox Messages by	Provides the top 10 users of inbox messages by project. This report is prompted on time.

Report name	Function
Project	
122. Top 10 Reports in Inbox Messages by Project	Lists the top reports by number of inbox messages. This report is prompted on time.
123. Top 10 Documents in Inbox Messages by Project	Lists the top documents by number of inbox messages. This report is prompted on time.
124. Unread Inbox Messages	Provides information on the activity of inbox messages that have not been read. This report is prompted on time.
125. Inactive Inbox Messages	This report looks at the inbox messages that have not had any actions performed in a set number of days. This report is prompted on a measuring metric and a number of days of inactivity.

Report processing analysis

A significant area of system analysis and monitoring involves tuning the server's governing and project configuration settings. Administrators can use the reports in this analysis area to determine the following:

- Whether the time out setting for user sessions is appropriate. Analysis can help you configure the User Session Idle Time setting. (From Developer, right-click a project source and select **Configure MicroStrategy Intelligence Server**, expand **Governing Rules**, and select **General**.)
- Whether caching should be enabled for prompted reports. Analysis can help you configure the Enable caching for prompted reports and documents setting. (In Developer, right-click the project name, select **Project Configuration**, expand **Caching**, expand **Result Caches**, and select **Creation**).

While insights into such questions usually involve gathering data from multiple reports spanning multiple analysis areas, the Enterprise Manager

reports in the Report Processing Analysis area provide a targeted examination to assess server and project governing.

Report name	Function
1. Weekly Summary - Activity Analysis	Provides a comprehensive weekly summary of project activity. This report is prompted on the projects to be summarized.
2. Report Execution Analysis Working Set	Analyzes report execution by time each job takes to execute. This report is prompted on time and on the projects to be analyzed.
3. Document Execution Analysis Working Set	Provides a comprehensive analysis of document execution by time the jobs take to execute. This report is prompted on time.
4. Report Error Analysis	Provides a comprehensive analysis of jobs that do not run to completion. This report is prompted on time.
4.1 Report Job Time Out Analysis	Provides information about which and how many report executions have exceeded the execution time out limit. This report is prompted on time.
4.2 Job Cancellation Trend	Provides the number of canceled and non-canceled jobs, over time. This report is prompted on time.
5. DB Result Rows by Report	Provides the number of jobs, the number of database result rows, and the average elapsed report execution duration, per report and project. This report is prompted on time.
5.1 Report Executions with no data returned	Lists the report jobs that return no data. This report is prompted on time and on type of report job.
5.2 Post-Report Execution Activity	Analyzes user activity after executing each report. This report is prompted on time and on type of report job.
6. Top 10 Longest Executing Reports	Provides the number of jobs and the average elapsed report execution duration for the 10 longest executing reports. This report is prompted on time.
7. Top 10 Longest Executing Documents	Provides the number of jobs and the average elapsed document execution duration for the 10 longest executing documents. This report is prompted on time.

Report name	Function
10. Document Analysis based on Wait Time (End-to-End)	Provides average wait times for documents by project executed via MicroStrategy Mobile. This includes Intelligence Server time, device rendering time, network time and end-to-end wait time. This report is prompted on time.
11. Document Analysis based on Request Type (End-to-End)	Provides the number of times documents are executed via MicroStrategy Mobile by type of request, such as user request, report queue request, application recovery request, Back button request, and so on. This report is prompted on time.

Sample report: DB Result Rows by Report

This Enterprise Manager report can help you understand the effect on load and performance of those user reports that did not result in cache hits. This report prompts on time.

Usage scenarios

- You can use this report to identify user reports that have high Average Elapsed Time (Average Elapsed Duration per Job) and are requested frequently (Total Report Requests). You can then consider a strategy to ensure that these user reports have a high cache hit ratio in the future.
- Total Database Result Rows provides a good approximate measure of the size of report caches. This can give you insight into tuning report-related project settings. To make changes to the project settings, in Developer, right-click the project name, select **Project Configuration**, expand **Caching**, expand **Result Caches**, and select **Creation** (to specify whether and how caches are created), **Storage** (to specify cache memory usage), or **Maintenance** (to specify cache expiration, or to purge caches). For detailed information about these settings, click **Help**.
- Total Database Result Rows also provides a measure of the data returned by the database to Intelligence Server for post-processing.

- Average Execution Time provides a measure of time taken to execute a report on the warehouse data source.

Report details

Additional options: To restrict your analysis to a given computer, a connection source, a user session, and so on, add any attribute from the Session folder to this Enterprise Manager report. For example, to restrict analysis to Web reports, add the Connection Source attribute to the page-by axis. For detailed information about page-by, see the Basic Reporting Help.

Resource utilization analysis (including top consumers)

This analysis area provides reports to help you analyze how available resources are being used so you can determine optimization strategies. Available system hardware resources include various Intelligence Server machines, database servers, Web servers, and client machines. Enterprise Manager provides insight into Intelligence Server machine use and the nature of client-side activity.

Administrators can use the reports in this analysis area to measure the following:

- How much time users spend in report execution queues
- Load times to determine at what times peak loads occur
- Which interfaces (Developer, Web, Mobile, and so on) users prefer
- Web usage statistics

Reports in this analysis area prompt you to select a period to analyze and use various metrics representing answers to administrator requirements.

The Top Consumers folder contains shortcuts to reports elsewhere in Enterprise Manager. Together, these reports indicate what users and reports are top consumers of system resources.

Report name	Function
30. Execution cycle breakdown	Provides a daily breakdown of the time taken by each of the four steps in the report execution cycle: queue, SQL generation, SQL execution, and Analytical Engine. This report is prompted on time.
30.2 Queue to Execution time ratios by Server Processing Unit	Breaks down queue time and execution time for each report job step. This report is prompted on time.
30.3 Effect of job prioritization on queue time	Lists information on the effects of job prioritization on the queue time, execution time, and elapsed duration of reports. You can use this to see if adjusting database threads—by changing their priority to high, medium, or low—would improve performance. This report is prompted on time.
31. Activity Analysis by Weekday/Hour Working Set	Lists the Intelligence Server number of report jobs by hour. This report is prompted on time.
32. Peak Time Periods	Lists the number of jobs and the average queue and execution durations per job by hour. This report is prompted on time.
33. Server Activity Analysis Summary	Lists the number of jobs and daily use of each Intelligence Server by connection source. This report is prompted on time.
33.1 Scheduled Report Load on Intelligence Server	Analyzes the duration and CPU usage of all scheduled jobs. This report is prompted on time.
33.2 Subscribed Report Load on Intelligence Server	Analyzes the duration and CPU usage of all Narrowcast Server subscription jobs. This report is prompted on time.
33.3.1 Web Access Trends	Analyzes the number of jobs run from MicroStrategy Web. This report is prompted on time.
33.3.2 Web and Non-Web Usage	Compares the server usage of Web and non-Web users. This report is prompted on time.
33.3.3 Web Usage	Provides the number of Web users, the average number of jobs

Report name	Function
Statistics	per Web user, and the average report execution time per job for Web users. This report is prompted on time.
34. Intelligent Cube Usage Statistics	Provides comprehensive information about an Intelligent Cube's use. This report is prompted on time.
Top Consumers	
43. Top 10 Database Tables	Lists the top 10 most accessed database tables per project, and how many jobs access those tables. This report is prompted on time.
6. Top 10 Longest Executing Reports	Provides the number of jobs and the average elapsed report execution duration for the 10 longest executing reports. This report is prompted on time.
62. Top 10 Reports	Analyzes the server load for the 10 most-executed reports. This report is prompted on time.
80. Top (n) users	Determines the top (n) users, using a metric you choose from a list. This report is prompted on time, a list of metrics, and the number of users.
91. Popular reports in a User's User Group	Lists the top (n) most-executed reports in a user's user group. This report is prompted on project list, user list, and the number of reports.

Sample report: Scheduled Report Load on Intelligence Server

This report provides a comprehensive analysis of the effect scheduled jobs have on the Intelligence Server machines in your system. This report contains a prompt on time.

Usage scenario

You can use this report to understand the daily effect of scheduled reports on each Intelligence Server machine. Effects can be measured with metrics such as the total server report jobs and the total time spent in Intelligence Server.

You can also use this report to study which user reports are executed as part of a schedule. By viewing which scheduled jobs have errors, you can quickly take appropriate action.

Report details

- This report lists several attributes in the Report Objects window that are not in the report grid. With MicroStrategy OLAP Services, you can move these attributes from the Report Objects window to the report grid without re-executing the report. For detailed information about OLAP Services, see the Basic Reporting Help.
  - To know which users in your system have scheduled the most jobs, include the User attribute in this report.
  - To understand which schedules have been mapped to a report in a project, include the Report attribute in this report.
  - To find out which of your scheduled reports had errors, include the Error Indicator attribute in this report.

Performance analysis

Administrators can use this analysis area to understand what effect the server and project governing settings and usage patterns have on the system.

The Performance Analysis folder has several reports and two folders, each with its own related area of analysis:

- *Cube advisor, page 94*
- *Performance monitoring analysis, page 95*

The Performance Analysis folder in Enterprise Manager has reports that measure such metrics as average job execution time and other job performance trends, cache analysis, longest executing reports, and so on.

Report name	Function
40. System Performance Trends	Analyzes system performance over time using your choice of metrics. This report is prompted on time and on methods of analysis.
41. Cache Analysis	Analyzes the effectiveness of caching on the system. This report is prompted on time, indicator, and the top number of report processing metrics. The project is in the report's page by area.
42. Job Performance Trend	Analyzes daily and weekly trends in report requests and job performance. This report is prompted on time.
43. Top 10 Database Tables	Lists the top 10 most accessed database tables per project and how many jobs access those tables. This report is prompted on time.
44. Warehouse Tables Accessed	Provides a count of the warehouse tables and columns accessed, by type of SQL clause. This report is prompted on time.
45. User Data Request Performance Breakdown	Provides insight into how users are using the monitored projects and Intelligence Server and looks at the user experience for the monitored systems regarding the data requested. This report is prompted on time.
46. Cache Analysis (End-to-End)	Provides average wait times and number of user requests via MicroStrategy Mobile that hit the application cache—which are usually from using the Back button—device cache, server cache, or no cache. This report is prompted on time.
47. Network Type Analysis (End-to-End)	Provides average wait times and number of user requests, categorized by the type of network from which the requests originated. This report is prompted on time.
48. For Capacity Planning Team (Number of Jobs)	Provides information about how many jobs were executed, with numbers of hits for caches and Intelligent Cubes. This report is prompted on time.
49. For Capacity Planning Team (User/Session Concurrency)	Provides information by day, hour, and connection source of numbers of users and sessions. This report is prompted on time.

Report name	Function
50. For Capacity Planning Team (Document Executions)	Provides information by day and hour of how many documents were executed and the average number of reports per document. This report is prompted on time.
51.1 For EA Team (Report Processing Analysis - Job Based)	Provides information about how long report job steps took for a report you select. This report is filtered by day, hour, and minute.
51.2 For EA Team (Document Processing Analysis - Job Based)	Provides information about how long document job steps took for a document you select. This report is filtered by day, hour, minute, and document.
52.1 For EA Team (Report Processing Analysis - Time Based)	Provides information about how long report job steps took for reports that were running at a selected time. This report is filtered by day, hour, and minute.
52.2 For EA Team (Document Processing Analysis - Time Based)	Provides information about how long job steps took for documents that were running at a selected time. This report is filtered by day, hour, and minute.
53. For EA Team (Performance Monitor)	Dashboard with performance monitor trends and execution times for jobs executed at a selected time.
53. For EA Team (Performance Monitor) (HTML 5)	Dashboard with performance monitor trends and execution times for jobs executed at a selected time.
53.1 For EA Team (Dataset: Document Report Execution Analysis)	A dataset report for the above performance monitor dashboards showing document and report execution times for jobs running at the selected time.
53.2. For EA Team (Dataset: Performance Counter Trend)	A dataset graph report for the above performance monitor dashboards showing trends in the selected performance counter such as percent of CPU time, total in-use memory, and so on.

Two reports from this analysis area are presented in detail below. These sample reports have been selected as representative reports of the analysis area; the details and options suggested for the sample reports can often be used on other reports in the same or related analysis areas.

Sample report: Cache Analysis

This report provides a comprehensive analysis of report caching in the system. A good caching strategy can significantly improve system performance. This report is prompted on time and on the job type you want to analyze, and you can select the number of top report jobs you want to see data for.

Usage scenario

You can use this report to analyze the cache hit ratios for certain reports; typically, these are the most frequently requested or most resource-intensive reports. You can also determine whether prompted reports should be set up to create a cache by analyzing whether prompted reports are hitting the cache regularly.

Report details

- To analyze the cache hit ratios for element load jobs, select **Element Browsing Job** at the prompt for the indicator filter. Be sure to remove the Report attribute from the report because Element browsing jobs are ad hoc and do not map to any existing report in the metadata. This can give you insight into tuning element-related project settings. To make changes to the project settings, in Developer, right-click the project name, select **Project Configuration**, expand **Caching**, expand **Auxiliary Caches**, and select **Elements**. For detailed information about these settings, click **Help**.
- To analyze the cache hit ratios for prompted jobs, select **Prompted jobs** at the prompt. This can give you insight into tuning advanced report-related project settings. To make changes to the project settings, in Developer, right-click the project name, select **Project Configuration**,

expand **Caching**, expand **Result Caches**, and select **Creation** (to specify whether and how caches are created), **Storage** (to specify cache memory usage), or **Maintenance** (to specify cache expiration, or to purge caches). For detailed information about these settings, click **Help**.

Sample report: Warehouse Tables Accessed

This report provides a count of the number of warehouse tables and columns accessed in various SQL clauses. This report is prompted on time.

Usage scenario

You can use this report to gain insights into database tuning by determining which warehouse tables and columns are accessed in the various SQL clauses, such as SELECT, WHERE, and so on. This information can help you determine where database tuning can be adjusted to improve overall query and reporting performance of your MicroStrategy project.

For example, columns that are frequently accessed in the WHERE clause are good candidates for indexing.

Cube advisor

The reports in this analysis area give an overview of database execution statistics for report requests. They provide a picture of how measures such as report execution times are affected if reports are run against Intelligent Cubes rather than the data warehouse.

You can use the Database Execution Time of Reports report with Cube Advisor to provide data on the performance benefits of potential Intelligent Cubes, such as any decrease in the time required to execute SQL statements and the number of users that would be affected by the recommended Intelligent Cubes. For information on this report's contents and steps for exporting it and importing into Cube Advisor, see the *Dynamic Sourcing* chapter in the In-memory Analytics Help.

Report name	Function
46. Report Object Listing	Provides analysis of the attributes and metrics in a report. This report is prompted on report.
47. Projected Cube Execution Time of Reports	Projects the execution times of report jobs if they were to hit an Intelligent Cube. This report is prompted on time and on report.
48. Database Execution Time of Reports	Provides database execution statistics for report requests. This report is prompted on time and on project. You can export this report as an Excel file and then import it to the Cube Advisor.

Performance monitoring analysis

The reports in this analysis area measure Intelligence Server performance, as recorded by the Diagnostics and Performance Logging Tool's Performance Monitors. For information about enabling these counters, or other uses of the Diagnostics and Performance Logging Tool, see the System Administration Help.

Report name	Function
92. Performance Monitor Report	Lists the Performance Monitor Counters recorded in project statistics, and their values, over a selected time. This report is prompted on time and on what counters are recorded in the Enterprise Manager warehouse.
93. Performance vs. Governing Settings	Provides general performance analysis against Intelligence Server governing settings over a selected time. To achieve maximum flexibility in this report, make sure that the following performance counters are logged in the Diagnostics and Performance Logging Tool: • Executing Reports • Memory Used by Report Caches • Number of Report Caches

Report name	Function
	• Open Project Sessions • Open Sessions
94. Report Performance against Governing	Provides an analysis of report performance against Intelligence Server governing settings over a selected time. To achieve maximum flexibility in this report, make sure that the following Performance Counters are logged in the Diagnostics and Performance Logging Tool: • Executing Reports • Memory Used by Report Caches • Number of Report Caches
95. User Performance against Governing	Provides an analysis of performance per user against Intelligence Server governing settings over a selected time. To achieve maximum flexibility in this report, make sure that the following performance counters are logged in the Diagnostics and Performance Logging Tool: • Open Project Sessions • Open Sessions
96. Delivery Performance against Governing	Provides an analysis of performance per subscription delivery against Intelligence Server governing settings over a selected time.

Project analysis

Enterprise Manager reports in this analysis area use the Project attribute to analyze various metrics related to project use and Intelligence Server use. Administrators can use these reports to analyze project usage trends and understand how a project grows over time. The reports can help you determine which metadata objects are used and how often, so you can take appropriate actions.

The Project Analysis folder in Enterprise Manager contains the following analysis areas, each with its own reports:

- *Object properties analysis, page 97*
- *Object usage analysis, page 99*
- *Project development trends, page 104*
- *Prompt usage analysis, page 105*

These areas are described below, and one report is presented in detail. This sample report has been selected as a representative report of the analysis area; the details and options suggested for the sample report can often be used on other reports in the same or related analysis areas.

Object properties analysis

These reports list the properties of all objects of a specific type in the projects or Intelligence Servers monitored by Enterprise Manager.

Report name	Function
50.1 Attribute Form Properties	Lists the properties of all attribute forms in all monitored projects. This report is paged by project.
50.2 Attribute Properties	Lists the properties of all attributes in all monitored projects. This report is paged by project.
50.3 Column Properties	Lists the properties of all columns in all monitored projects. This report is paged by project.
50.4 Fact Properties	Lists the properties of all facts in all monitored projects. This report is paged by project.
50.5 Hierarchy Properties	Lists the properties of all hierarchies in all monitored projects. This report is paged by project.
50.6 Logical Table Properties	Lists the properties of all tables in all monitored projects. This report is paged by project.
50.7 Transformation	Lists the properties of all transformations in all monitored

Report name	Function
Properties	projects. This report is paged by project.
51.1 Consolidation Properties	Lists the properties of all consolidations in all monitored projects. This report is paged by project.
51.2 Custom Group Properties	Lists the properties of all custom groups in all monitored projects. This report is paged by project.
51.3 Document Properties	Lists the properties of all documents in all monitored projects. This report is paged by project.
51.4 Filter Properties	Lists the properties of all filters in all monitored projects. This report is paged by project.
51.5 Metric Properties	Lists the properties of all metrics in all monitored projects. This report is paged by project.
51.6 Prompt Properties	Lists the properties of all prompts in all monitored projects. This report is paged by project.
51.7 Report Properties	Lists the properties of all reports in all monitored projects. This report is paged by project.
51.8 Template Properties	Lists the properties of all templates in all monitored projects. This report is paged by project.
51.9 Security Filter Properties	Lists the properties of all security filters in all monitored projects. This report is paged by project.
52.1 DB Connection Properties	Lists the properties of all database connections in all monitored Intelligence Servers.
52.2 Event Properties	Lists the properties of all events in all monitored Intelligence Servers.
52.3 Intelligence Server Definition Properties	Lists the properties of all monitored Intelligence Servers.
52.4 Project Properties	Lists the properties of all projects in all monitored Intelligence Servers.

Report name	Function
52.5 Schedule Properties	Lists the properties of all schedules in all monitored Intelligence Servers.
52.6 User Group Properties	Lists the properties of all user groups in all monitored Intelligence Servers.
52.7 User Properties	Lists the properties of all users in all monitored Intelligence Servers.
52.8 DB Instance Properties	Lists the properties of all database instances in all monitored Intelligence Servers.
52.9 Device Properties	Lists the properties of all Distribution Services devices in all monitored Intelligence Servers.
52.10 Transmitter Properties	Lists the properties of all Distribution Services transmitters in all monitored Intelligence Servers.
54. User Security Filter Relations	Lists all users and their associated security filters in all monitored Intelligence Servers. This report is paged by project.

Object usage analysis

This analysis area provides reports to analyze how objects are used in MicroStrategy.

The Object Usage Analysis folder has several reports and two folders, each with its own related area of analysis:

- *Command Manager Reporting, page 101*
- *Configuration Object Usage Analysis, page 102*
- *Static Report Content Analysis, page 103*

The reports in the top-level Object Usage Analysis folder can be useful to help you determine what application objects are not being used, and can be safely deleted.

Report name	Function
60.1 Report Statistics	Lists all reports that have not been executed since the specified date and provides the number of times they have been executed. This report is prompted on time.
60.2 Template Statistics	Lists all templates that have not been used since the specified date and provides the number of times they have been used. This report is prompted on time.
61.1 Schedule Statistics	Lists all schedules that have not been used in the specified time frame. This report is prompted on time.
61.2 Server Definition Statistics	Lists all server definitions that have not been used in the specified time frame. This report is prompted on time.
62. Top 10 Reports	Analyzes the server load for the 10 most-executed reports. This report is prompted on time.
63. Report Drilling Analysis	Provides information about how many times a report has been executed and how many times users have drilled from that report. This report is prompted on time.
64.1 Schedule-Report-User Relations	Lists the users, projects, and reports associated with each schedule.
64.2 Schedule-Document-User Relations	Lists the users, projects, and documents associated with each schedule.
65. Report Drilling Patterns	For any report, lists the objects that have been drilled from and drilled to from four-tier clients such as MicroStrategy Web. This report is prompted on time.
66. Find Patterns in Attribute-Metric Associations to Build Cubes	For all jobs that execute for longer than the specified time, lists attributes and metrics that are in the same job. You can include the attributes and metrics in an Intelligent Cube to reduce database use. This report is prompted on how many seconds.

Command Manager Reporting

The reports in this analysis area provide Command Manager syntax that you can use to delete unused objects in a project, including attributes, filters, metrics, and users.

Report name	Function
126.1 Delete Unused Attributes	Provides Command Manager syntax to delete attributes that have not been associated with reports in a project. This report is prompted on the attribute's creation date.
126.2 Delete Unused DB Instances	Provides Command Manager syntax to delete database instances that have no report executions associated. This report is prompted on the database instance's creation date.
126.3 Delete Unused Documents	Provides Command Manager syntax to delete documents that have never been executed. This report is prompted on the document's creation date.
126.4 Delete Unused Filters	Provides Command Manager syntax to delete filters that have not been associated with reports in a project. This report is prompted on the filter's creation date.
126.5 Delete Unused Metrics	Provides Command Manager syntax to delete metrics that have not been associated with reports in a project. This report is prompted on the metric's creation date.
126.6 Delete Unused Reports	Provides Command Manager syntax to delete reports that have never been executed. This report is prompted on the report's creation date.
126.7 Delete Unused Schedules	Provides Command Manager syntax to delete schedules that have never been associated with reports, documents, or users. This report is prompted on the schedule's creation date.
126.8 Delete Unused Security Filters	Provides Command Manager syntax to delete security filters that have no associations with users. This report is prompted on the security filter's creation date.
126.9 Delete Unused Templates	Provides Command Manager syntax to delete templates that are not associated with any reports. This report is prompted on the

Report name	Function
	template's creation date.
126.10 Delete Unused User Groups	Provides Command Manager syntax to delete user groups that do not contain any users. This report is prompted on the user group's creation date.
126.11 Delete Unused Users	Provides Command Manager syntax to delete users that have never connected to the system. This report is prompted on the user's creation date.
126.11.1 Disable Unused Users	Provides Command Manager syntax to disable but not delete users that have never connected to the system. These users can be re-enabled. This report is prompted on the user's creation date.

Configuration Object Usage Analysis

The reports in this analysis area can be useful to help you determine what configuration objects are not being used and can be safely deleted.

Report name	Function
67. Unused DB Instances	Lists all database instances that have not executed a job in a certain period. This report is prompted on time.
68. Unused Projects	Displays all projects that have not been accessed in a certain period, along with usage statistics for all other times. This report is prompted on time.
69. Unused Schedules	Displays all schedules that are not used in any reports or documents.
70. Unused Server Definitions	Displays all server definitions that are not loaded on Intelligence Servers, and those that are loaded but are idle, meaning users are not running jobs or connecting.
71. Unused User Groups	Lists all user groups that do not contain any users.

Static Report Content Analysis

The reports in this analysis area inform you about what report objects are rarely used.

Report name	Function
60.3 Attributes Least Used in Executed Reports	Lists the attributes that are used in the fewest jobs and the most recent time each attribute was used. This report is prompted on time, the number of attributes excluded, and a set of report processing metrics.
60.4 Metrics Least Used in Executed Reports	Lists the metrics that are used in the fewest jobs and the most recent time each metric was used. This report is prompted on time, the number of metrics excluded, and a set of report processing metrics.
60.5 Filters Least Used in Executed Reports	Lists the filters that are used in the fewest jobs and the most recent time each filter was used. This report is prompted on time, the number of filters excluded, and a set of report processing metrics.
62.1 Top n Attributes By Usage In Executed Reports	Lists the most-used attributes. This report is prompted on time, the number of attributes, and a set of report processing metrics.
62.2 Top n Metrics By Usage In Executed Reports	Lists the most-used metrics. This report is prompted on time, the number of metrics, and a set of report processing metrics.
62.3 Top n Filters By Usage In Executed Reports	Lists the most-used filters. This report is prompted on time, the number of filters, and a set of report processing metrics.

Sample report: Report Drilling Patterns

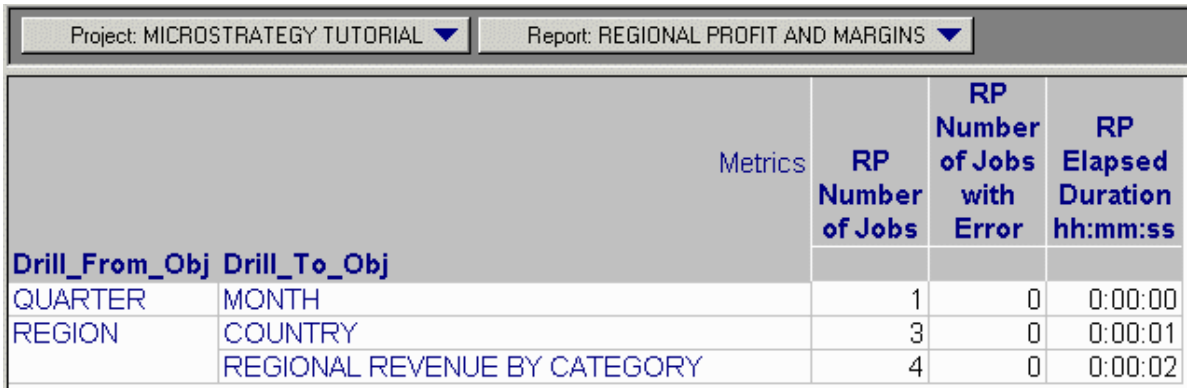
This report lists the objects in each report that have been drilled from and drilled to in four-tier clients such as MicroStrategy Web. The report is paged by project and by report. It prompts you for the dates to be analyzed.

Analysis of drilling and statistics is available only from a four-tier client such as MicroStrategy Web.

Usage scenario

The Report Drilling Patterns report shows you what users want to see, by displaying the most commonly drilled-to objects. This information allows you to determine which attributes to include in a report's list of report objects. Because SQL is not generated for OLAP Services drilling, you can use this report to optimize your OLAP Services implementation.

Sample report display



Drill_From_Obj	Drill_To_Obj	Metrics: RP Number of Jobs	RP Number of Jobs with Error	RP Elapsed Duration hh:mm:ss
QUARTER	MONTH	1	0	0:00:00
REGION	COUNTRY	3	0	0:00:01
	REGIONAL REVENUE BY CATEGORY	4	0	0:00:02

Report details

Additional options: Use this report in conjunction with other statistics-type reports that display similar usage information about individual objects such as templates, schedules, and so on.

Project development trends

The reports in this folder provide information about the objects and object usage trends in the project.

Report name	Function
70. Summary of Application Objects by Project	Provides a count of all types of application objects (reports, filters, metrics, and so on) in all monitored projects, by owner. This report is paged by project and other object information.
71. Summary of Configuration Objects	Provides a count of all types of configuration objects (schedules, database connections, and so on) in all monitored Intelligence Servers, by owner. This report is paged by object status.
72. Summary of Schema Objects by Project	Provides a count of all types of schema objects (facts, attributes, and so on) in all monitored projects, by owner. This report is paged by project. and other object information.
73. Weekly Project Usage Trend	A grid-graph view showing the weekly trends per project of users, sessions, and requests. This report is prompted on time.
74. Weekly New Application Objects Trend Over a Selected Period	A grid-graph of new application objects created over a specified period. This report is prompted on time.

Prompt usage analysis

The reports in this folder provide information about prompt use and prompt answer trends in a project.

Report name	Function
1. All Prompt Answers for a Given Time Period	Lists all answers to all prompts for a report over the specified period. This report is prompted on time and report. This report is also an as-is view of the IS_PR_ANS_FACT table for the specified period.
1.1 Most Frequently Selected Prompt Answers Per Report, Prompt Combination	Lists all prompt answers all prompts in a report, sorted by frequency. This information can help you choose default prompt answers for each report. This report is prompted on time and report, and paged by project, report, and prompt.

Report name	Function
1.2 Which Prompt Answer Values Are Used/Not Used For A Specific Prompt Title?	Lists the number and percentage of jobs that contain each prompt answer. This report is prompted on time, report, and prompt.
1.3 Which Prompts Remain Unanswered?	Lists all optional prompts that are not answered. These prompts might be able to be safely removed from the reports. This report is prompted on time and report.
1.4.1 Distribution of Prompts Within Executed Report Jobs by Prompt Type, Location Type	Provides information about the prompts and prompt locations in executed reports. This report is prompted on time and report.
1.5 Prompt Answers That Result in Reporting Errors	Provides a list of prompt answers that cause errors in report execution, and the corresponding errors. This report is prompted on time and report.

Real-time analysis

Several administrative questions require near real-time information about project and server activity. Following are examples:

- When a user contacts the administrator to troubleshoot an error received when executing a report, the administrator needs a list of recent errors and error messages to investigate the problem.
- Administrators often want to ensure that throughput and response times observed by users are meeting expectations.
- Schedules are typically used to update caches during a batch window. The administrator might want to monitor the system to ensure that scheduled jobs have finished successfully.

Such requirements as those listed above focus on a relatively small snapshot of recent activity on the system. Reports that provide answers to

such questions must be refreshed without requiring frequent updates using the Enterprise Manager data loader.

The Real-time Analysis reports provide details of Intelligence Server activity. The data used in these reports is no more than 24 hours old. If a successful data load has finished in the past 24 hours, data from that data load is used; otherwise, the reports work directly with data from the statistics tables.

The reports in this analysis area use Freeform SQL and provide targeted administrative reporting features that complement the historical reporting features in the Operations, Performance, Project, and User Analysis areas.

Report name	Function
101. Recently Completed Jobs	Provides details about all jobs that have completed since the specified date. This report is prompted on time.
102. Recent Sessions, Users	Provides details about recent user connection activity. This report is prompted on time.
103. Recently Completed Scheduled Jobs	Provides details about all recently completed scheduled jobs. This report is prompted on time.

User analysis

Reports in this analysis area contain the User attribute as their primary attribute for analysis, along with various metrics that answer an administrator's questions about user activity and preferences.

The User Analysis folder in Enterprise Manager contains the following analysis areas, each with its own reports:

- *User activity analysis, page 108*
- *User preference analysis , page 111*

These areas are described below, and two reports are presented in detail. These sample reports have been selected as representative reports of the analysis area; the details and options suggested for the sample reports can often be used on other reports within the same or related analysis areas.

User activity analysis

This analysis area provides reports to analyze the effects of user activity on the system. Administrators can measure the following:

- Who are the most prolific users in terms of number of jobs, connection duration, and so on?
- How are users using features such as ad hoc reporting, drilling, and so on?
- Which users are using the system correctly and which need more training, as identified by the number of canceled jobs and jobs with errors?

Report name	Function
80. Top (n) users	Determines the top (n) users, using a metric you choose from a list. This report is prompted on time, a list of metrics, and the number of users.
81. Activity by User	Provides summary information of user reporting activity by user and project. This report is prompted on time.
81.1 Ad-hoc activity by User	Provides information about how many ad hoc jobs are being run and the composition of ad hoc jobs. This report is prompted on time.
81.1.1 Drilling Activity by User	Provides information about how many jobs each user has run and how many of those jobs resulted from drilling. This report is prompted on time.
81.2 DB Result Rows by User	Provides the number of jobs, the number of database result rows, and the average elapsed report execution duration per user and project. This report is prompted on time.

Report name	Function
82. Unused/Inactive Users	Lists all users who have not logged in since the specified date and provides information about their connections. This report is prompted on time.
83. User Inactivity by Project	Provides a list of users who have not connected to a project over a certain time interval. It also provides the last connection and disconnection timestamp.
84. User Analysis based on Wait Time (End-to-End)	Lists users who requested content via MicroStrategy Mobile along with information such as their total wait time, Intelligence Server time, device rendering time, network time, and how many manipulations they made.

Sample report: Activity by User

This report provides data on total elapsed report duration. It also provides counts of canceled jobs, non-canceled jobs, jobs that end with an error, and timed-out jobs by user and by project. This report prompts for a time for the analysis.

Usage scenario

You can use this report to gain insight into how reports are used per project by all users. You can determine which users are wasting resources by repeatedly canceling jobs and determine who run the most reports in a project. You can also see where reporting errors originate.

Report details

- Drill paths:
  - To narrow the scope of your analysis to individual sessions, drill across from User to Session and keep the parent attribute.

    - To identify the reports and documents that were executed by a user during a session, drill across from Session to Report/Document.

- Other options:
    - To restrict your analysis to the most prolific users using your chosen criteria, add the report Top (n) Users as a filter to this Enterprise Manager report.
    - To determine which projects a user is using, add a filter on user.
    - To restrict your analysis to a machine or connection source, add any attribute from the Session folder to this Enterprise Manager report.

Sample report: Top (n) Users

This report displays the top N users according to the user activities you select. The report prompts you for user activities and the number of users you want returned.

Usage scenario

You can use this report to learn the top users in a number of analysis areas related to user activity:

- Which users log in to Intelligence Server most often (select the Number of Sessions metric)
- Which users are connected the longest (select the Connection Duration metric)
- Which users run the most report jobs (select the RP Number of Jobs metric)

Report details

- Add your own metrics to this report for user activity analysis that focuses on your environment's requirements.
- Use this report as a filter in custom reports that you create. For example, the Activity by User report returns the total elapsed time for report execution by user and project, and the number of canceled and non-canceled jobs. To narrow the results to the top 10 users responsible for the highest number of canceled jobs, you can add this Top (n) Users report as a filter to the Activity by User report. This allows you to analyze overall user activity and determine whether these users are canceling jobs legitimately.

User preference analysis

This analysis area provides reports to analyze the effects of user group activity on the system. Administrators can measure the following:

- What groups do specific users belong to?
- What reports are most commonly executed by members of a specific user group?

Report name	Function
90. List User Groups to which users belong	Lists all user groups to which the specified users belong. This report is prompted on user.
91. Popular reports in a user's User Group	Lists the top N most-executed reports in a user's user group. This report is prompted on user, time, and number of reports.