



DataFeed Loader User Guide V2.10.1.0

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Notice

Any SQL code provided in this document is intended for illustrative purposes only. The functions and queries herein are provided in SQL formatted for MSSQL. It may be necessary to adjust the query language to suit a different SQL DBMS. Sample queries should be viewed as possible examples of data calculations and are subject to change. The queries provided should be used as a guide to understand how the underlying data items can be used but are not guaranteed to represent the same methodology as the FactSet Workstation or other industry calculations. Queries cannot be guaranteed to be written for performance and/or efficiency.

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Updates

Effective Date	Version	Change Type	Description
30-AUG-2018	2.10.1.0	New Feature Documentation Update	<ul style="list-style-type: none"> Modified Loader behavior for Oracle databases when using AWS RDS Modified Loader behavior when using proxies Addition of Oracle Setup for AWS RDS instructions in Appendix R: Oracle Setup for AWS RDS
26-JUL-2018	2.10.0.0	New Feature	<ul style="list-style-type: none"> Addition of Oracle 12.2 (12c Release 2) as a supported database Addition of Oracle as an additional AWS RDS endpoint Preservation of Oracle format files Modified Loader behavior when utilizing Download Only functionality
28-JUN-2018	2.9.0.1	Documentation Update	<ul style="list-style-type: none"> Updated AWS EC2 and RDS instance recommendations for initial database loads Modified link to Visual Studio C++ 2013 Redistributable
7-JUN-2018	2.9.0.0	New Feature Documentation Update	<ul style="list-style-type: none"> Addition of Microsoft SQL Server 2017 as supported database Addition of Microsoft Azure as supported endpoint Addition of database compression for Microsoft SQL, MySQL, MariaDB, and Oracle databases Updated DSN Setup Guides for all supported Windows installations Updated AWS EC2 and RDS instance requirements for initial database loads
15-MAR-2018	2.8.1.0	New Feature	<ul style="list-style-type: none"> Improves Loader behavior when schema sequences increment
22-FEB-2018	2.8.0.0	New Feature Documentation Update	<ul style="list-style-type: none"> Preservation of SQL Server format files Addition of new purge command to remove unsubscribed bundles Modified required Oracle permissions Modified List of Command Operations descriptions Updated list of shortened Oracle table names in Appendix T: Oracle Field and Table Name Shortening Modified Share Network Directory requirements for Oracle installations Addition of Setup Option instructions Modified required packages in Appendix I: DSN Setup Guide for Oracle for Red Hat Modified download location of PostgreSQL binaries in Appendix P: PostgreSQL Setup Modified required Oracle permissions in Appendix Q: Oracle Setup

14-DEC-2017	2.7.1.0	New Feature Documentation Update	<ul style="list-style-type: none"> Improved Loader behavior to PostgreSQL databases to handle larger tables Improved Loader behavior to retry corrupted downloads Updated location of PostgreSQL DSN files
30-NOV-2017	2.7.0.0	New Feature Documentation Update	<ul style="list-style-type: none"> Addition of Amazon Web Services Relational Database Service as a supported endpoint Addition of Windows Server 2016, Windows 10, Red Hat 7, and Amazon Linux 2017.09 as supported Operating Systems Addition of Table Generation Statements within the Loader directory for Download Only users for all supported databases except Oracle Addition of database and database user creation scripts within the Loader installation directory for all supported databases except Oracle Modified Loader behavior when subscribed to Download Only content Updated Database Setup Guides for all databases except Oracle for AWS RDS endpoints Updated System Requirements for AWS environments Clarified System Requirements for Linux instances
14-SEP-2017	2.6.0.0	New Feature Documentation Update	<ul style="list-style-type: none"> Addition of Ubuntu 14.04 and 16.04 as supported Operating Systems Addition of MySQL version 5.5, 5.6, and 5.7 as supported databases Addition of MariaDB version 5.5, 10.0, 10.1, and 10.2 as supported databases Addition of PostgreSQL version 9.5 and 9.6 as supported databases Addition of lima-gateway.factset.com as additional site for data transfer Updated screenshots for Appendix B: DSN Set Up Guide for Microsoft SQL for Windows and Appendix E: DSN Set Up Guide for Oracle for Windows Appendix I: DSN Setup Guide for Oracle for Red Hat Updated requirements for Oracle permissions in Appendix Q: Oracle Setup for On-Premise

Overview

The FactSet DataFeed Loader (“Loader”) is a client program designed to expedite implementation and provide a reliable means of managing the FactSet Standard DataFeed products (“DataFeed”). The Loader handles all core requirements for proper DataFeed consumption, including initial database setup, schema administration, connectivity, data retrieval, update sequencing, and error recovery. The Loader can load to a Microsoft SQL, MySQL, PostgreSQL, MariaDB, or Oracle database or can store files locally for processing. The Loader is not intended for loading non-FactSet content although other data can co-exist within the same database or database server.

This documentation assumes knowledge of the contents of the “FactSet Standard DataFeed General V1 User Guide” and any pertinent User Guide for the DataFeeds being loaded.

Product Offering

The Loader handles many aspects of the implementation of loading a FactSet Standard DataFeed into your database. The following is a broad overview of those features which are described in more detail in the Product Components section of this User Guide.

- Data Modeling
 - Builds database tables and processes changes based on the latest schema.
- Data Processing
 - Updates your database, including file acquisition and processing of the data files.
- Data Integrity and Error Recovery
 - Creates both file based and in-database logging of updates for robust tracking
- Performance
 - Optimized update planning minimizes system resources.

Documentation

Updated documentation and other relevant information for content sets can be downloaded at FactSet’s Online Assistant (OA) at <https://oa.apps.factset.com/#!/pages/15222>

You can log in using your factset.net ID as your username. If you do not have a username, please contact the Global Client Support team.

To identify revision releases and documentation updates, version numbers will be applied to this User Guide. The update table will explain the nature of the change. The syntax used will be “[w].[x].[y].[z]”, where w is the version number, x is the revision number, y is for minor releases, and z indicates if there has been a documentation update.

Product Components

Data Modeling

In order to create or modify your database tables, the Loader will connect to FactSet’s server to download the schema files. These schema files, downloaded to the schemas folder of your Loader installation directory, describe the structure of each table (including fields, primary keys, and database schemas), as well as DataFeed locations. The Loader builds the tables needed to process the bundle specified. When there are changes to a schema, the Loader detects the updated schema file, and updates each table according to instructions in the schema update file.

Data Processing

In order to update your database, the Loader will connect to FactSet's server, download the bundles specified, extract, and load the text files needed to update the tables if required. The Loader constructs and executes load statements based on your subscription.

The Loader maintains detailed information on the sequence of data files applied to tables. This enables the construction of an efficient update plan, ensures all data is applied correctly, and facilitates recovery from failures.

Data Integrity and Error Recovery

Running the same command twice will not cause data corruption or other errors. Consequently, error recovery is usually possible by rerunning the same command after fixing the source of the problem (e.g. bad credentials). The Loader does not use transactions, since data integrity is guaranteed by the sequencing intelligence. The Loader keeps detailed and time-stamped logs which provide information for use by FactSet support should you encounter problems. The Loader returns an exit status indicating success or failure of the command. Some loads may have been successful even if the overall command failed, and a rerun will only attempt to correct the failures.

Performance

The Loader does not require significant resources beyond the inherent demands of downloading, extracting, moving, and loading data files. For on premise Microsoft SQL configurations, the Loader uses an efficient bulk merge process and when using Oracle, the Loader uses external tables. When using Microsoft SQL Server with Amazon Web Services' Relational Database Service and Microsoft Azure's SQL Database, the Loader uses the bulk copy process. For PostgreSQL, MySQL, and MariaDB, the Loader uses standard merge functionality. Detailed performance data, plus file history (size, number of lines, etc.) is maintained in several metadata tables. See Appendix U: MetaData tables for more information.

Disk Space

Depending on configuration settings, free disk space available, and subscriptions, disk space will be consumed at one or two locations.

If the Loader and database are installed on the same on premise server, the minimum amount of disk space required is 16GB. This will comprise of 12GB for working space, 4GB for log files, and a minimal amount for program, configuration, and schema files. By default, the Loader deletes log files older than 30 days. The Loader application is multi-threaded and may utilize up to 192GB of free disk space depending on your subscription for fastest performance. If the maximum amount of disk space is not available during setup, then the application will utilize less disk space and download threads.

If the Loader and database are on separate on premise servers and you are using Microsoft SQL Server or Oracle, then a share drive will be required. The minimum amount of disk space for a share location is 12GB and the Loader may utilize up to 192GB of free disk space depending on your subscription. If less than 192GB is available during setup, then the application will utilize less disk space and download threads.

If the Loader and database are on separate servers in an on premise configuration and you are using MySQL, MariaDB, or PostgreSQL, the minimum amount of free disk space required is 16GB. This will comprise of 12GB for working space, 4GB for log files, and a minimal amount for program configuration and schema files. The Loader may utilize up to 192GB of disk space depending on your subscription for fastest performance.

If the Loader is used with Amazon Web Services or Microsoft Azure, the minimum amount of disk space on the virtual machine is 16GB. This will comprise of 12GB for working space, 4GB for log files, and a minimal

amount for program, configuration, and schema files. By default, the Loader deletes log files older than 30 days. The Loader application is multi-threaded and may utilize up to 192GB of free disk space depending on your subscription for fastest performance. If the maximum amount of disk space is not available during setup, then the application will utilize less disk space and download threads.

If you will be utilizing the Download Only functionality of the Loader, you will need at least 30GB of free disk space at the location where the files will be downloaded depending on your subscription. We recommend that you delete the downloaded files once they have been applied to your database to reduce the amount of disk space consumed.

Change Management

Schema changes are automatically managed by the Loader. When changes are made that require an update to the table, the schema update file will indicate that a full refresh must be performed. The Loader will download a Full bundle produced in the new schema format and rebuild the tables.

New subscriptions will be downloaded automatically the next time the Loader is run after the subscription is added to your account. Existing subscriptions will be unaffected. Canceled subscriptions will result in a warning message that the content should be removed via the purge command at your convenience. Currently, cancellation of one region in a multi-region feed will result in a rebuild after running the purge command. Please see your FactSet Account Representative for more information should you encounter this scenario.

Version Types

All changes will be classified as a new version or revision release and will be announced via FactSet Notify.

New Versions

FactSet will release new versions of existing DataFeed packages periodically to provide clients when there are major structural or methodology changes. New versions will be released by pushing out a new zip bundle with a corresponding schema. The new version zip bundles will be delivered in parallel with the previous existing zip bundles for 6-12 months, allowing clients to move to the new version any time during this period.

Revision Release

Revision releases will be pushed out within an existing package to release incremental upgrades to clients. Revision changes will be used to implement changes that do not result in material methodology changes or if there is a critical need to address a bug. Revision releases can include adding new content, modifying data types, changing primary keys, adding new fields to existing files, adding new files, and retiring fields and/or files. If a download of a full file is required, the file will be processed as documented in the Change Management section.

DataFeed Loader

DataFeed Loader clients will automatically process all revision releases via normal processing of delta files.

Running the Loader

The Loader is a command line tool and can be run manually or scheduled with any scheduling tool capable of executing Windows or Linux Command line programs. Both Full and Delta files are loaded as necessary using a single command. More information can be found in the Loader Operation section in this document.

Download Only

The Download Only functionality allows the Loader to connect to FactSet's service to authenticate and download zipped data files and schemas. This functionality of the Loader allows users to create a custom

loading process. The downloaded files will be stored in either the Loader installation directory or the remote directory under the zips and schemas directories when specified during the setup.

When the Download Only functionality is enabled, the metadata tables will be stored in the data.db file in the Loader installation directory. This is a SQLite database and the contents of the file can be viewed by any SQLite viewer. More information about monitoring the metadata tables can be found in Appendix U: MetaData tables.

Table Generation Statements

When Download Only functionality is enabled, the Loader will create Table Generation Statements if requested for your RDMS in the \tgs directory of the Loader installation folder. These Table Generation Statements allow you to minimize your development time by creating data objects in your database. This task is simplified by copying the appropriate Table Generation Statements in your database client and executing the statements.

These particular Table Generation Statements allow you to create the tables and their corresponding fields. These fields are structured based on their data type and therefore the statements you execute will set the suitable schema details to make sure that when loading data, you can only load it based on the metadata of the particular field. The Table Generation Statements also specify the primary key(s) of the table so that you can properly query these tables once you have data available.

In addition, if Microsoft SQL Table Generation Statements is enabled, the corresponding Format Files will be downloaded in the \tgs\mssql\format_files folder.

Database and User Creation Scripts

Sample database and database user creation scripts for each supported database are located within the \scripts folder of the Loader installation directory. These scripts allow you to minimize your development time by creating the database and appropriate user and can be customized for your environment.

Database Compression

When database compression is enabled during setup, the Loader will compress newly created tables. If database compression is enabled after the initial database load, a force rebuild is necessary to compress tables. Database compression is only available for Microsoft SQL, Oracle, MySQL, and MariaDB databases.

Loader Installation File

The installation files for the Loader can be found on the FactSet website at <http://www.factset.com/download/datafeedloader/> under the 'Documentation and Downloads' header. Only the latest version of the Loader will be available for download. After downloading, unzip the file into the Loader installation directory.

Unauthorized modification of the config.xml file should be prevented; this includes reading of the information contained within, such as login credentials and passwords. Users should set specific permissions on the config.xml file: write access should only be granted to the administrator of the machine, and read access to only the admin and the service account that runs the loader.

MetaData Tables

The Loader maintains several metadata tables, providing information on operational history. These tables detail each action taken by the loader (the commands, zip files, and text files processed) as well as the current database state (the schema and data sequence numbers).

If you will be utilizing the Download Only capability of the Loader, the metadata tables will reside within the data.db file in the Loader installation directory. This file is a SQLite database and can be opened with any SQLite viewer.

FDS_Command_History

The FDS_Command_History table logs the commands issued by the user. This table allows the user to retrieve start/end times of each run and will show if the run was successful or not. The name of the log file is also stored in this table. A success value of 0 in this table indicates that the command has failed. A value of 1 indicates success which may include any non-error exit code such as 'EXIT_CODE_WAIT_FOR_FULLS' or 'EXIT_CODE_WARNING'. A value of 2 indicates the Loader is still running.

FDS_Data-Sequences

The FDS_Data-Sequences table stores the sequence numbers of the latest Full, Delta, and Fast files that were processed for a particular schema/table, broken into specific zip/text file combinations. This table allows for error recovery since the state of the table's data is always known.

FDS_File_History

The FDS_File_History table shows which files were loaded into a table and the associated execution statistics, so users can better understand update times and schedule their loads accordingly. This table can be joined to the FDS_Zip_History table to understand which zip file the text files were updated from.

FDS_Schema-Sequences

This table stores the current schema sequence of any given schema/table. This allows the user to verify if the latest schema changes were applied to their database.

FDS_Zip_History

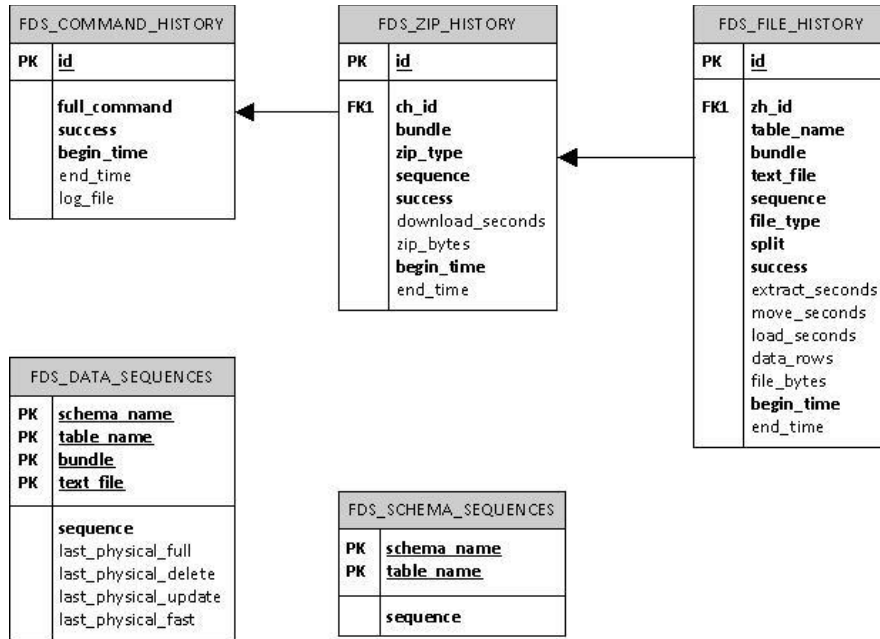
The FDS_Zip_History table shows which zip files were downloaded and processed by the Loader. The bundle contains the name of the zip file and the zip_type (Full, Delta or Fast). This table allows the user to obtain the execution statistics on each zip file. This table can be joined to the FDS_Command_History table in order to understand which zip files were processed during each run.

FDS_Table_Locks

The FDS_Table_Locks table is used by the Loader to show which tables are able to be rebuilt and should not be relied upon by end-users. This table contains three columns: schema name, table name, and ready. A ready value of 0 indicates a table is currently being rebuilt and is currently locked out by other processes. A ready value of 1 indicates the table has been rebuilt. This table will be cleared at the beginning and end of each Loader run.

Figure 1 below shows the structure of the metadata tables:

Figure 1: MetaData Table Structure



Log Files

A timestamped folder is generated for each distinct run of the Loader and contains timestamped text files for each distinct bundle. The log folders is stored under the logs directory and is named using the command's timestamp.

The format is as follows:

[YYYYMMDD]-[HHMMSS]

For example, within the timestamped log folder, a run of the Prices Basic Americas bundle log file would show up as:

20170228-171742-fp_v1.fp_basic_am.log

Table Properties

The Loader will preserve the following properties for Microsoft SQL and Oracle: table partitioning, table compression, and indexes. An exception is that if the type of a column used for partitioning changes, the table will be recreated without any partitioning and you will need to reapply it if still needed. Please note that the new table may not have the same columns as before, so any indexes on a column which has been removed will not be recreated. Additionally, it is recommended that you backup and preserve table properties outside of the database.

The Loader will preserve the row_format option if using MySQL. The Loader does preserve partitioning and indexes.

The Loader only preserves indexes for PostgreSQL.

Product Installation

The Loader is distributed as a self-sufficient 64-bit executable, requiring only a configuration, certificate, and key file to operate. As a stand-alone application, it can be integrated into an existing operating system or run autonomously depending upon the installation.

System Requirements

Target Software and Systems (on-premise)

- Operating Systems (64-bit only)
 - Windows 7, Windows 8.1, Windows 10, Windows Server 2008, Windows Server 2012 or Windows Server 2016
 - Red Hat 6 or 7
 - Ubuntu 14.04 or 16.04
- Databases
 - Microsoft SQL Server 2008, 2008 R2, 2012, 2014, 2016, or 2017
 - Oracle 11.2, 12.1, or 12.2
 - MySQL 5.5, 5.6, or 5.7
 - MariaDB 5.5, 10.0, 10.1, or 10.2
 - PostgreSQL 9.5 or 9.6

Target Software and Systems (Amazon Web Services)

- Operating Systems (64-bit only)
 - Windows Server 2012 or 2016
 - Red Hat 6 or 7
 - Ubuntu 14.04 or 16.04
 - Amazon Linux 2017.09 and newer
 - **Please note: Amazon Linux 2 has not been tested**
- Databases
 - Microsoft SQL Server 2008 R2, 2012, 2014, 2016, or 2017
 - MySQL 5.5, 5.6, or 5.7
 - MariaDB 10.0 or 10.1
 - PostgreSQL 9.5 or 9.6
 - Oracle 11.2 or 12.1

Target Software and Systems (Microsoft Azure)

- Operating Systems (64-bit only)
 - Windows Server 2008 R2, 2012, or 2016
 - Red Hat 6 or 7
 - Ubuntu 14.04 or 16.04
- Databases
 - SQL Database
 - Please note, default compatibility level for SQL Database is 140. Compatibility levels 100-130 are not supported.

Hardware Requirements (on-premise)

- Minimum of 16GB of disk space if the database and Loader resides on the same server. This comprises of 12GB working space for data files, 4GB for logs, and a minimal amount for program, configuration, and schema files. By default, the Loader deletes log files older than 30 days.
 - The Loader is a multi-threaded application and may consume up to 196GB of disk space during initial database loads and table rebuilds depending on your subscription. If you have less than 192GB of free disk space available during setup, the Loader will throttle the amount of download threads.
- Minimum of 12GB of disk space if the database and Loader are on separate machines using Microsoft SQL Server or Oracle.
 - The Loader may consume up to 192GB of disk space at the share location during initial database loads and table rebuilds depending on your subscription. If you have less than 192GB of free disk space available at both the Loader installation directory and share location during setup, the Loader will throttle the amount of download threads.
- Minimum of 16GB of disk space if the database and Loader are on separate machines using MySQL, MariaDB, or PostgreSQL.
 - The Loader may consume up to 192GB of disk space during initial database loads and table rebuilds.
- At least 30GB disk space if you will be utilizing the Download Only capability of the Loader
- Your database installation must have adequate space for your subscription. Required space varies significantly by product, and depends on your database vendor and configuration.
- 4GB RAM on the installation box, and 4GB RAM on the database box. 8GB RAM if the server is the same.

Hardware Recommendations (Amazon Web Services)

- For each EC2 instance type, we recommend allocating 192GB to a General Purpose SSD EBS volume. The Loader is a multi-threaded application and may consume that space during database loads and table rebuilds depending on your subscription.
- For each RDS supported, FactSet recommends utilizing General Purpose SSD. Additionally, best practices from Amazon Web Services recommends disabling Multi-AZ and Automated Backups during the initial database load. Required space varies significantly by product and depends on your database vendor.
- The below hardware recommendations have been based on testing performed by FactSet for initial database loads. After the initial database load is complete, you may choose to scale your AWS instances based on your requirements.

RDBMS	EC2 instance type	RDS instance type
Microsoft SQL Server	c5.large	m4.xlarge
PostgreSQL	m5.large	m4.2xlarge
MySQL	c5.large	m4.xlarge
MariaDB	m5.large	m4.4xlarge

Hardware Requirements (Microsoft Azure)

- DataFeed Loader has been tested with the following on Microsoft Azure:
 - Microsoft's D2S_V3 Standard virtual machine with SSD hard drives. A minimum of 16GB of additional disk space is required on this virtual machine, which comprises of 12GB working space, 4GB for logs, and a minimal amount for program, configuration, and schema files.
 - The Loader is a multi-threaded application and may consume up to 196GB of disk space during initial database loads and table rebuilds depending on your subscription. If you have less than 192GB of free disk space available during setup, the Loader will throttle the amount of download threads.
- Microsoft Azure's SQL Database has been tested with 400 DTU's. Your instance must have adequate space for your subscription.

Connectivity

- FactSet account with a subscription to one or more FactSet Standard DataFeeds.
- Broadband connection capable of reaching FactSet's servers via TLS v1.1 or higher.
- Your proxy must allow the Loader to connect to FactSet's HTTPS server via Port 443.
 - Connectivity to FactSet's HTTPS server can be tested via a web browser connecting to the following sites:
 - <https://datadirect.factset.com/testConnect>
 - <https://auth.factset.com/testConnect>
 - <https://lima-gateway.factset.com/testConnect>

If you are successful in connecting, you will see 'SUCCESS' in the upper left corner of the web browser. If you are unsuccessful in connecting, please contact your IT or Security team to whitelist the sites.

Database Administration

- Connectivity to database is done via ODBC so a Data Source Name (DSN) will need to be configured on the machine running the Loader. (This is required even if the Loader and database are on the same box.) Instructions for this are provided in the Appendices
- An operating system account with appropriate permissions. For security, you may want to create a separate user for the Loader, although that is not necessary.
- Access to Database
 - Access to the FactSet data through any connection mechanism supported by your SQL Server or Oracle installation.

User Implementation Requirements

- Scheduler
 - Schedules Loader commands (e.g. Windows Task Scheduler; AutoSys, cron etc).
- Paging/Notification System
 - Listens to exit status and notifies DBA of delays or job failures via email or pager.
 - Retries and/or escalates according to your recovery procedure.
- Administration
 - Database maintenance and backups.
 - Monitoring system issues (disk space, processing times, runaway threads, etc.).
 - Determining desired update schedule.

Operating System User and Home Directory

The Loader may be run under any Windows or Linux user. As a best practice, we recommend creating a non-administrative user specifically for running the Loader. When using Linux, this user must have access to a home directory.

The user must have read, write, list, and execute permissions to the Loader installation directory and if applicable, the shared directory and all files within those directories.

Database User and Permissions

As a best practice, when using Microsoft SQL or Oracle, it is highly recommended that a database account is created specifically for the Loader. This account should not be an administrator. A database user must be setup when using MySQL, MariaDB, or PostgreSQL. Additional information can be found in Appendix M: Microsoft SQL Setup for on premise environments, Appendix N: Microsoft SQL Server Setup for AWS RDS and Microsoft Azure, Appendix O: MySQL and MariaDB Setup, Appendix P: PostgreSQL Setup, and Appendix Q: Oracle Setup.

Tables and schemas created by the Loader should not be modified by processes other than the Loader (either their structure or data).

Shared Network Directory

The database server needs access to certain files provided by the Loader (for example, data files). When using Windows, if the database and Loader are not on the same server and you are using a Microsoft SQL or Oracle database, you must specify a remote directory to be used for sharing files between the two servers. The database must have Read access to this location and the Loader must have Read/Write access.

Additionally, if using an Oracle database with a single user, a subdirectory will be created within the share if one does not exist. The Loader application will copy files to this subdirectory and the Oracle database will read from this location via an Oracle directory object.

Upgrade Guide

Upgrading from v2.2

If you are upgrading in place from DataFeed Loader v2.2 to v2.9, please perform the following step first: Open the config.xml with a text editor and insert the following tag at the bottom of the file before the </data> tag:

```
<version>2.3</version>
```

This will ensure that your Loader is compatible with v2.3. Please continue with the steps 1-5 listed below to have the Loader upgrade you to v2.9

Upgrading from v2.2 or v2.3

If you are upgrading from v2.2 or v2.3 to v2.8, follow steps 1-5 below.

Upgrading from v2.4 or higher

If you are upgrading from v2.4 or higher, follow steps 3-5 below.

1. Generate a new key.txt file. The instructions to generate a new key.txt file can be found at Step 6 in the Setup Guide.
2. At command prompt run 'fdsloader64 --setup' to set the Loader parallelization level at Option 12. The default value provided in the square brackets is based on the amount of free disk space available at both your Loader installation directory and share drive if applicable.
3. If you are a database user and subscribed to Documents Distributor – Transcripts, please set the download location at Option 13. If you are a Download Only user, please skip this step.
4. Exit the setup command by typing 'quit'
5. Verify configuration by running 'fdsloader64 --test' at command prompt.

Getting Started

- Your FactSet curator login credentials which includes your FactSet.net username and password
- FactSet credentials used to access the DataFeeds: username and machine Serial Number provided to you by your FactSet Account Representative.
- DataFeed Loader zip file downloaded from the FactSet website.
- Loader machine where you will install and run the program, connecting to the database via ODBC. Please note, this can be the same as the Database Server but does not have to be. Please refer to Appendix S: Possible Installation Architectures for examples to help you decide based on your environment.

Setup Guide

1. Create the database that will be used to host the Standard DataFeed content. Sample database and user creation scripts for each supported RDMS is located within the /scripts folder of the Loader installation directory. It is highly recommended to create a database specifically for these operations. Please consult with your Database Administrator for database creation and configuration. For database specific instructions, please see the following Appendices:

	MSSQL	MySQL/MariaDB	PostgreSQL	Oracle
Appendix	N	O	P	Q

2. Extract the downloaded DataFeed Loader to a location where you wish to install the Loader. For example, you might create the folder "D:\fdsloader\" or "/home/user/fdsloader"
3. If you will be utilizing the Download Only functionality of the Loader, you will need to determine the download location for the zipped data and schema files. If a remote location is not specified during setup, the files will download to the Loader installation directory. If you will be utilizing the Download Only functionality, please skip to Step 6, otherwise, go to the next step.
4. Create or determine the Data Source Name (DSN) that will access and manage the target database. If you are creating a new DSN, use the ODBC Data Source Administrator to set this up. In this document, we will refer to the DSN as 'FDSLoader.' For further instructions on setting up a DSN, please see the following Appendices:

	MSSQL	MySQL/MariaDB	PostgreSQL	Oracle
Windows	B	C	D	E
Red Hat/Amazon Linux	F	G	H	I
Ubuntu	J	K	L	M

5. If the database is on Windows and you are installing the Loader on a machine that is not the database machine in an on-premise environment, then you will need to create a folder that will have shared access by both the Loader machine and the Database Server. Read/Write access is required by the Loader and Read access is required by the Database Server. The Loader places files in this directory for bulk loading by the database server.

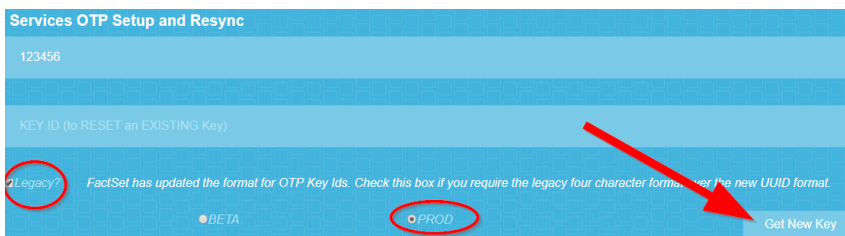
- Using your factset.net curator login, open a web browser and visit <https://auth-setup.factset.com>. Your login screen should look like Figure 2 below.

Figure 2: Factset.net login screen



- Once logging in, you will be brought to the Services OTP Setup and Resync page similar to Figure 3: Services OTP Setup and Resync below. Enter the machine Serial Number, click the 'PROD' radio button, ensure the 'Legacy' checkbox is selected and then select the 'Get New Key' button.

Figure 3: Services OTP Setup and Resync



- After clicking on the 'Get New Key' button, copy the resulting text box similar to Figure 4: KeyId, Key, and Counter below and create a new text file in the Loader installation directory titled 'key.txt'.

Figure 4: KeyId, Key, and Counter



- To configure the Loader, run 'fdsloader64 --setup' from Command Prompt. Default answers in the setup command are contained within the square brackets while running the command.
 - If you are using Windows 10 or Windows Server 2016, please uncheck the 'Quick Edit mode' box found in the 'Properties' section of 'Command Prompt'.
 - If you are using Linux, the unixODBC package must be installed prior to running setup.
- After setup is complete, run 'fdsloader64 --test' from Command Prompt to test connectivity to FactSet, database connectivity, credentials, and speed test.

During setup, the Loader determines the amount of free disk space available for downloading and unzipping of files at both the installation and share directory and determines the parallelization level. If the amount of disk space made available for the Loader changes after setup, please re-run the setup command and select option 14 (Loader Parallelization Level) and accept new displayed default which accounts for the available disk space.

The loader can be run on a separate server or on the same one as the database. In this document, the Loader process runs on the “local” system and the database is on the “remote” one.

Processing Instructions

Once the Loader has been set up and the variables set, use the following guidelines to run your Loader.

Loader Operation

File transfers occur through the FactSet HTTPS server via port 443. The FactSet HTTPS server is a service meant to facilitate file transfers between FactSet and the user and is used for delivering all data and schema files.

There are additional flags that can be used, allowing the user to customize the update to their needs. Other flags, including “help” and “version” flags, are used when you are not updating your database. All options are specified with two dashes.

Usage: `FDSLoader64 (--help | --test | --version | --support | --purge | (--bundle [schema name].[bundle prefix] (--ignore-fast-zips) (--force-rebuild)))`

For Linux installations, use `./FDSLoader64` (case sensitive) along with the options above.

By default, only FDSLoader64 with no additional flags should be run from the command prompt and the application will limit downloads to all subscribed products and only new sequences posted.

The available commands and a description are included in Table 1 below.

Table 1: List of Operation Commands

Command	Description
help	Displays the list of commands.
version	Displays the version number.
subscriptions	Displays the bundles that are available according to user’s subscription.
force-rebuild	Forces the Loader to rebuild all tables at the latest schema sequence
Setup	Configures settings in the Loader for database, system configuration, and connectivity to FactSet
Purge	Removes unsubscribed tables and associated metadata records according to user’s subscription
bundle	Specifies the bundles to update, qualified by their schema name.
<i>Optional flags:</i>	
<code>--force-rebuild</code>	Forces the Loader to try to rebuild all tables matching the bundles, at the latest schema sequence.
<code>--ignore-fast-zips</code>	Used to skip the latest “fast” file during the load process. This flag is only relevant for the Prices V1 feed and is ignored otherwise.
support	Generates support_[username].zip in the Loader installation directory, for use by FactSet Support.
<i>Optional flags:</i>	
<code>--support-logs-max</code>	Specifies the number of logs to include in the support file.
<code>--support-logs-begin</code>	Specifies the earliest date of logs to include in the support file.
<code>--support-logs-end</code>	Specifies the latest date of logs to include in the support file.
test	Conducts series of tests to ensure connectivity, database privileges, credentials, and speed test

<p><i>Optional flags:</i></p> <p><i>--test-connection</i></p> <p><i>--test-database</i></p> <p><i>--test-credentials</i></p> <p><i>--test-speed</i></p>	<p>Tests the ability of the Loader machine to connect to auth.factset.com, datadirect.factset.com, and lima-gateway.factset.com</p> <p>Tests the ability of the Loader to create schema, create table, insert into table, delete table, and delete schema on the database named in the configuration of the Loader</p> <p>Tests the ability of the Loader to connect to auth.factset.com with the username provided during the setup and credentials provided in the key.txt file</p> <p>Tests the connectivity speed of the Loader machine to FactSet’s HTTPS server</p>
---	---

We recommend scheduling the Loader to run between 15-30 minutes interval.

Setup Option

The setup option configures Loader settings between the application to the database and connectivity to FactSet. Successful setup of the Loader requires the following information:

- Type of Relational Database used (Microsoft SQL, Oracle, MySQL, MariaDB, or PostgreSQL)
- SQL Server Name, Port, and Database Name
- SQL Server User Name and Password
- Location of Loader installation directory
- Location of Shared Directory or Download Directory (if applicable)
- Operating System of Database Server (if applicable)
- FactSet User Name and Serial Number
- Proxy Information

Default answers are provided within the square brackets. The default answers can be accepted by pressing ‘Enter’ or can be changed by typing in a new response.

Bundle Option

The bundle option requires both the schema name and bundle prefix in order to run the load. The schema name is derived by the version number of the product being loaded. For example, the Sample DataFeeds are all run under the ‘spl’ product code and the latest release is on version two. Therefore, the schema name is specified as ‘spl_v2’. The bundle prefix is the name of the zip file without the designations specifying the update type and sequence number. This value can be found within the ‘Bundles’ section of any product User Guide.

In order to run the multiple bundles on one execution of the Loader, specify the bundles using a comma separated list. Do not include spaces between the commas. If a bundle is specified twice, the Loader will ignore duplicates and only update the database once.

We recommend scheduling the Loader to run between 15-30 minutes interval. Please see your FactSet Account Representative if you wish to use the bundle command.

--force-rebuild

Running the force-rebuild option will drop, create, and refresh the tables for the bundle(s) specified. If no bundles are specified, the entire database will be rebuilt. The Loader will refresh the table starting with the latest full file and any subsequent delta files. In cases where files from different bundles are being loaded into the same table (ex. regional feeds) the Loader will rebuild with all the bundles based on the user subscription.

Therefore, if the user subscription includes Prices AM and EU then running a --force-rebuild on the fp_basic_am bundle will cause the Loader to rebuild using both the fp_basic_am and fp_basic_eu bundles.

Figure 5: Running multiple bundles with --force-rebuild

```
d:\fdsloader>fdsloader64 --bundle spl_v2.ff_hub_v2_sample,spl_v2.ff_basic_v2_sample --force-rebuild
2017/04/11 01:38:38 INFO>: config.xml is at the latest version 2.5, continuing.
2017/04/11 01:38:38 INFO>: FDSLoader version 2.5.0.0
```

Support Option

The support option creates a zip file for analysis by FactSet for troubleshooting issues. The zip file name will be support_[username].zip and will be placed in Loader installation directory. Below is an example of the support command. By default, the support command will include the last 3 log folders created and the results of the --test-all command.

Figure 6: Running Support Command

```
d:\fdsloader>fdsloader64 --support
2017/04/11 01:43:30 INFO>: config.xml is at the latest version 2.5, continuing.
2017/04/11 01:43:30 INFO>: FDSLoader version 2.5.0.0
```

--support-logs-max

Adding this qualifier will indicate the number of log files to include in the support.zip file.

Figure 7: Running Support command with --support-logs-max

```
d:\fdsloader>fdsloader64 --support --support-logs-max 10
2017/04/11 01:46:38 INFO>: config.xml is at the latest version 2.5, continuing.
2017/04/11 01:46:38 INFO>: FDSLoader version 2.5.0.0
```

--support-logs-begin

Adding this qualifier will specify the earliest date to be included in the support.zip file. The date portion should be in the YYYYMMDD format.

Figure 8: Running Support command with --support-logs-begin

```
d:\fdsloader>fdsloader64 --support --support-logs-begin 20170411
2017/04/11 01:48:30 INFO>: config.xml is at the latest version 2.5, continuing.
2017/04/11 01:48:30 INFO>: FDSLoader version 2.5.0.0
```

--support-logs-end

Adding this qualifier will specify the latest date of log files to be included in the support.zip file. The date portion should be in the YYYYMMDD format.

Figure 9: Running Support command with --support-logs-end

```
d:\fdsloader>fdsloader64 --support --support-logs-end 20170412
2017/04/11 01:49:50 INFO>: config.xml is at the latest version 2.5, continuing.
2017/04/11 01:49:50 INFO>: FDSLoader version 2.5.0.0
```

Combining Optional Flags

The optional flags may also be combined. For example, combining the --support-begin-date with --support-end-date would result in including log files inclusive of the date range in the support.zip file.

Figure 10: Combining --support-logs-begin with --support-logs-end flags

```
d:\fdsloader>fdsloader64 --support --support-logs-begin 20170411 --support-logs-end 20170412
2017/04/11 01:52:39 INFO>: config.xml is at the latest version 2.5, continuing.
2017/04/11 01:52:39 INFO>: FDSLoader version 2.5.0.0
```

Test All

Running the --test option will conduct a series of tests to ensure connectivity, database privileges, credentials, and speed test. When running this flag, the results of each test will be printed on screen.

--test-connection

Adding this qualifier will test the ability of the Loader machine to connect to auth.factset.com, datadirect.factset.com, and lima-gateway.factset.com. When running this flag, the results of the test will be printed on screen. If connectivity to either site fails, please whitelist the failed site.

--test-database

Adding this qualifier will test the ability of the Loader to create schema, create table, insert into table, delete table, and delete schema on the database named in the configuration of the Loader. When running this flag, the results of the test will be printed on screen. If any of these tests fail, please see your database administrator to ensure the proper privileges have been granted on the user.

--test-credentials

Adding this qualifier will test the ability of the Loader to connect to auth.factset.com with the username provided during the configuration and key, keyID, and counter provided in the key.txt file. When running this flag, the results of this test will print on screen. If the key file is not present or is unable to authenticate to FactSet, a message will be displayed to indicate as such. Please see the Setup Guide to create your key.txt file.

If your username is incorrect, please rerun `fdsloader64 --setup` to enter your correct username.

--test-speed

Adding this qualifier will test the connectivity speed of the Loader machine to FactSet's HTTPS server. When running this flag, the results of this test will print on screen.

Program Exit Codes

The Loader returns an exit code depending on the result of the update. These may be used to control the load process, and can also be used to control a notification system.

Table 2: List of Exit Codes

Exit Code	Exit Message	Description
0	EXIT_CODE_SUCCESS	Update was run successfully. Next command can be run.
1	EXIT_CODE_ERROR	Loader encountered an error, so update was not applied or is incomplete. User should correct the error and attempt to rerun the Loader.
2	EXIT_CODE_WARNING	Update completed, but there were warnings. Additional details displayed on screen.
3	EXIT_CODE_WAIT_FOR_FULLS	Command option <code>--force-rebuild</code> was specified, but at least one table could not be rebuilt since Full files aren't yet available in the latest schema sequence. Try again.
255 or higher	N/A	Loader encountered an error, so update was not applied or is incomplete. User should correct the error and attempt to rerun the Loader.

Appendix A: Glossary

A small glossary of terms used in this document. Please refer to the “FactSet Standard DataFeed General V1 User Guide” for a longer list of definitions.

AWS	Amazon Web Services provides on-demand of IT resources via the Internet with a pay-as-you-go pricing model.
Database schema	The layout of the tables and fields of the database.
DBMS	Database Management System is a server application that provides data services to other applications through various interfaces (SQL, ODBC, etc.).
DSN	Data Service Name is the identifier given to an ODBC service that provides access to a database (SQL, Spreadsheet, text file, etc.). Use the Data Sources application in Windows to manage your DSN services.
EC2	Amazon Elastic Compute Cloud service which provides resizable compute capacity in the cloud.
Object Schema	A database object schema is a distinct namespace to facilitate the separation, management, and ownership of database objects such as table definitions.
ODBC	Open Database Connectivity is a heterogeneous interface to that applications can use ODBC functions through an ODBC driver manager and the driver passes the query to the DBMS.
Relational DBMS	Relational Database Management System is a database service in which data is arranged in tables of records and fields.
RDS	Amazon Relational Database Service is a web service that offers setup and operation of a relational database in the cloud.
SQL	Standard Query Language is a computer language designed for querying relational databases and joining data from various tables together. Many DBMS products use this language although there are variations in their implementations.

Appendix B: DSN Set Up Guide for Microsoft SQL for Windows

The Loader accesses the SQL Server database via the ODBC driver. This requires that a Data Source Name (DSN) be setup. Contact your Database Administrator to get the following information prior to starting:

- The SQL Server Host Name
- The name of the Database that was created for the FactSet DataFeed content
- The account information to be used for accessing the Database

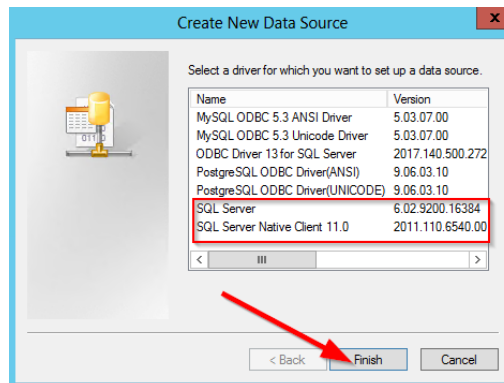
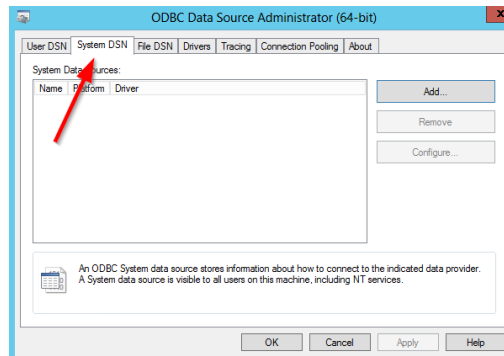
Please note: DataFeed Loader requires the installation of the Visual C++ Redistributable Package for Visual Studio 2013. This package can be downloaded from the Microsoft website at <https://www.microsoft.com/en-us/download/details.aspx?id=40784>

Use the ODBC Data Source Administrator to set up a DSN from Windows where the Loader is installed to the SQL Server database.

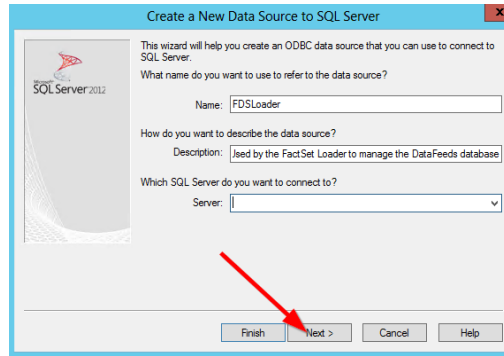
Navigate to Start → Control Panel → System and Security → Administrative Tools → Data Sources. Alternatively, you can go to Start → Run → %systemdrive%\windows\system32\odbcad32.exe. This will open the ODBC Administrator, allowing you to create a DSN, which is needed by the Loader.

Once you have launched the ODBC Administrator, follow the steps below:

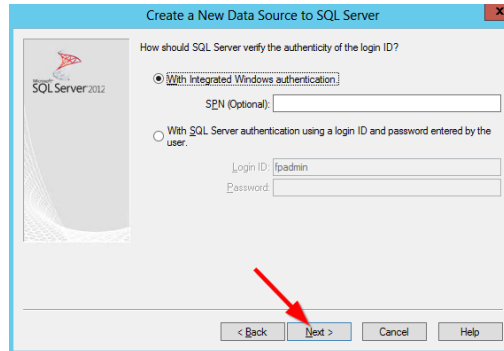
1. Select System DSN tab. Click the "Add..." button to add a new Data Source.
2. In the Create New Data Source panel, select latest version of the SQL Server Native Client driver which is compatible with your version of SQL Server. If this is not available, you may use a "SQL Server" driver if you have it.
3. Click "Finish".



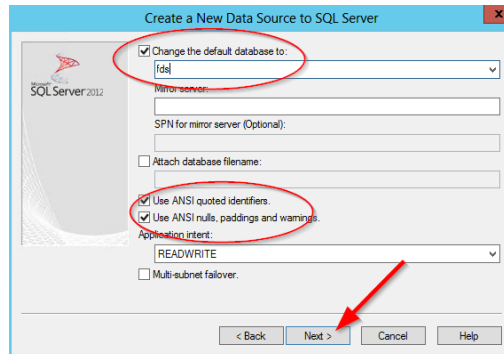
4. Enter the Data Source Name (“FDSLoader”) and a description (“Used by the FactSet Loader to manage the DataFeeds database”).
5. Type the server URL or AWS RDS endpoint directly in the Server box
6. Click “Next”.



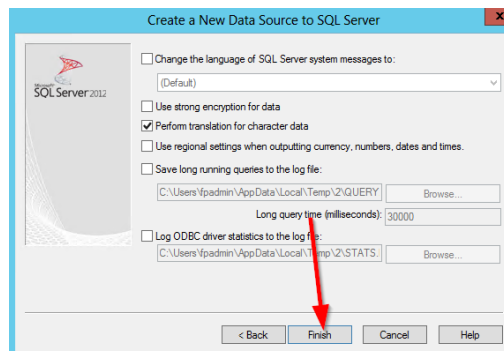
7. Enter the authentication details for the account that the Loader should use when connecting to your database.
8. Click “Next”.



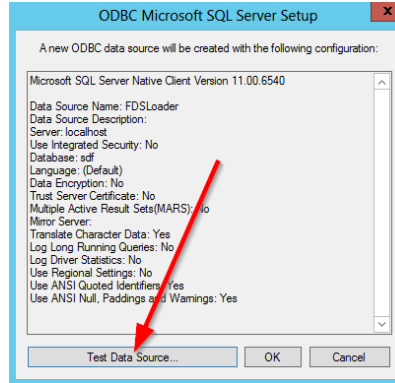
9. Change the default database to the database created. Note: The database should be created already. Ensure that “User ANSI quoted identifiers” and “Use ANSI nulls, paddings and warnings” are both checked.
10. Click “Next”



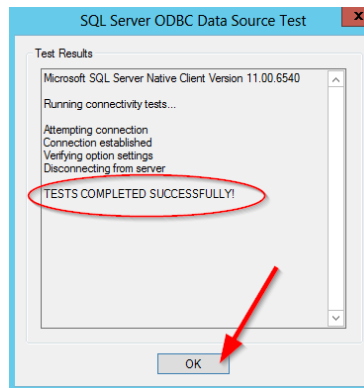
11. Click “Finish”



12. Use the "Test Data Source..." button to make sure your DSN can connect.



13. You should see the following screen if your connection is successful.



Appendix C: DSN Set Up Guide for MySQL and MariaDB for Windows

The Loader accesses the MySQL and MariaDB database via ODBC drivers. This requires a Data Source Name (DSN) to be setup. Contact your Database Administrator to get the following information prior to starting:

- The MySQL or MariaDB Server Host Name and database port number
- The name of the database that was created on the MySQL or MariaDB host that will be used for the FactSet DataFeed content
- The database username and password for accessing the database

Please note: Only MySQL Connector/ODBC 5.3 has been verified for compatibility with DataFeed Loader.

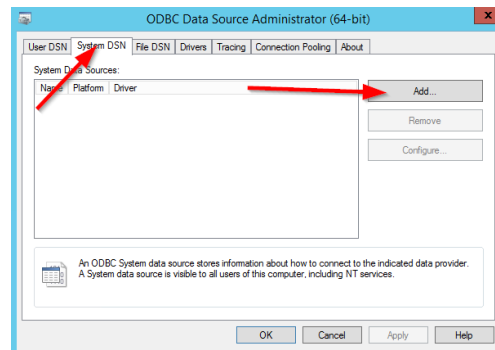
Additionally, DataFeed Loader requires the installation of the Visual C++ Redistributable Package for Visual Studio 2013. This package can be downloaded from the Microsoft website at <https://www.microsoft.com/en-us/download/details.aspx?id=40784>

Once you have obtained this information, follow the steps below:

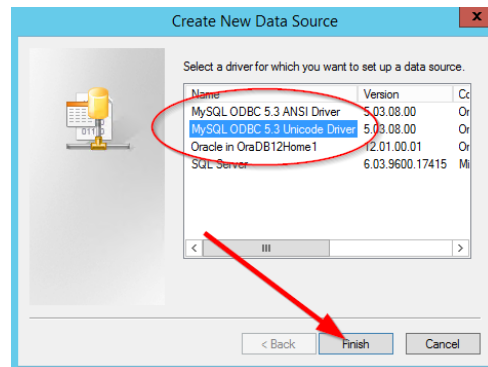
1. Download the 64-bit 5.3 MSI ODBC drivers from the MySQL website <https://dev.mysql.com/downloads/connector/odbc/>
2. Install the MySQL ODBC drivers and choose the default settings
3. Navigate to Start → Control Panel → Administrative Tools → ODBC Data Sources (64-bit).
 - Alternatively, you can go to Start → Run → %systemdrive%\windows\system32\odbcad32.exe.

This will open the ODBC Administrator, allowing you to create a DSN, which is needed by the Loader

4. Select System DSN tab. Click the “Add...” button to add a new Data Source

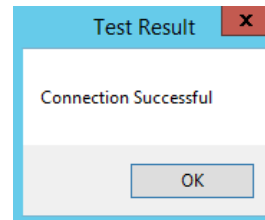
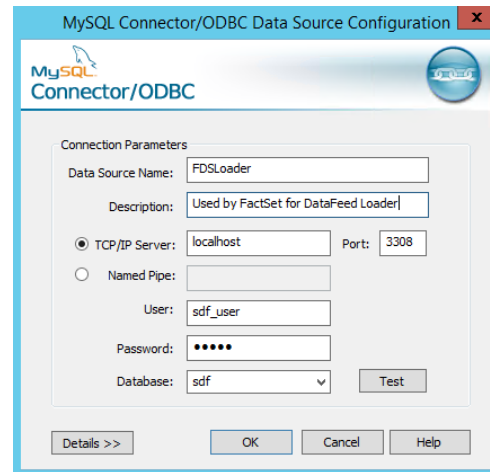


5. In the Create New Data Source panel, select 'MySQL ODBC 5.3 Unicode Driver' and click 'Finish'



6. Next screen will be the MySQL Connector/ODBC Data Source Configuration, you will need to input the following:
 - Data Source Name (“FDSLoader”)
 - Description (“Used by FactSet for DataFeed Loader”)
 - TCP/IP Server (server name, IP address, or AWS RDS endpoint)
 - User (database username)
 - Password (database password)
 - Database (database used by Loader)

7. Click ‘OK’. You should see the following screen if you connection is successful.



Appendix D: DSN Setup Guide for PostgreSQL for Windows

The Loader accesses the PostgreSQL database via ODBC drivers. This requires a Data Source Name (DSN) to be setup. Contact your Database Administrator to get the following information prior to starting:

- The PostgreSQL Server Host Name and port number
- The name of the database that was created on the PostgreSQL host that will be used for the FactSet DataFeed content
- The database username and password for accessing the database

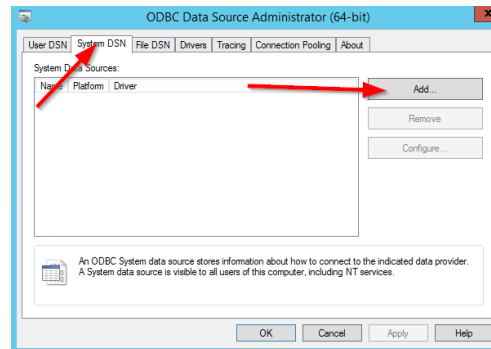
Please note: The psql load utility requires the installation of the Visual C++ Redistributable Package for Visual Studio 2013. This package can be downloaded from the Microsoft website at <https://www.microsoft.com/en-us/download/details.aspx?id=40784>

Once you have obtained this information, follow the steps below:

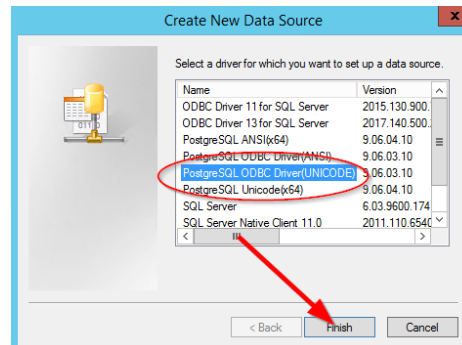
1. Download the 64-bit MSI ODBC drivers from the PostgreSQL website <https://www.postgresql.org/ftp/odbc/versions/msi/>
2. Install the PostgreSQL drivers and choose the default settings
3. Navigate to Start → Control Panel → Administrative Tools → ODBC Data Sources (64-bit).
 - Alternatively, you can go to Start → Run → %systemdrive%\windows\system32\odbcad32.exe.

This will open the ODBC Administrator, allowing you to create a DSN, which is needed by the Loader

4. Select System DSN tab. Click the "Add..." button to add a new Data Source



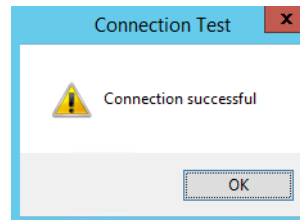
5. In the Create New Data Source panel, select 'PostgreSQL ODBC Driver (UNICODE)' and click 'Finish'



6. The next screen will be the PostgreSQL Unicode ODBC Driver (psqlODBC) Setup. You will need the following information:

- Data Source ("FDSLoader")
- Description ("Used by FactSet for DataFeed Loader")
- Database (database used by Loader)
- Server: (server name, IP address, or AWS RDS endpoint)
- User Name (database user name)
- Password (database password)

7. Click 'Test'. You should see the following screen if your connection is successful.



8. Click 'OK' and then 'Save' to Save your DSN Settings

Appendix E: DSN Set Up Guide for Oracle for Windows

The Loader accesses the Oracle database via ODBC drivers. This requires a Data Source Name (DSN) to be set up. Contact your Database Administrator to get the following information prior to starting:

- The Oracle Server Host Name
- The name of the database that was created and the database port on the Oracle Server that will be used for the FactSet DataFeed content
- The account information to be used for accessing the database

Please note: DataFeed Loader requires the installation of the Visual C++ Redistributable Package for Visual Studio 2013. This package can be downloaded from the Microsoft website at <https://www.microsoft.com/en-us/download/details.aspx?id=40784>

Once you have obtained this information, follow the steps below:

1. Download the following two 64-bit drivers from the Oracle website (<http://www.oracle.com/technetwork/topics/winx64soft-089540.html>)
 - Instant Client Package – Basic: All files required to run OCI, OCCI, and JDBC-OCI applications
 - Instant Client Package – ODBC: Additional libraries for enabling ODBC applications
 - **If utilizing Amazon RDS:** Tools Package - Includes Data Pump, SQL*Loader and Workload Replay Client
2. Unzip all files into the same directory
3. Open Command Prompt and go to directory where files were unzipped and type 'odbc_install'. Once drivers are installed successfully, you should see this:

```
C:\orcl\instantclient_12_1>odbc_install
Oracle ODBC Driver is installed successfully.
```

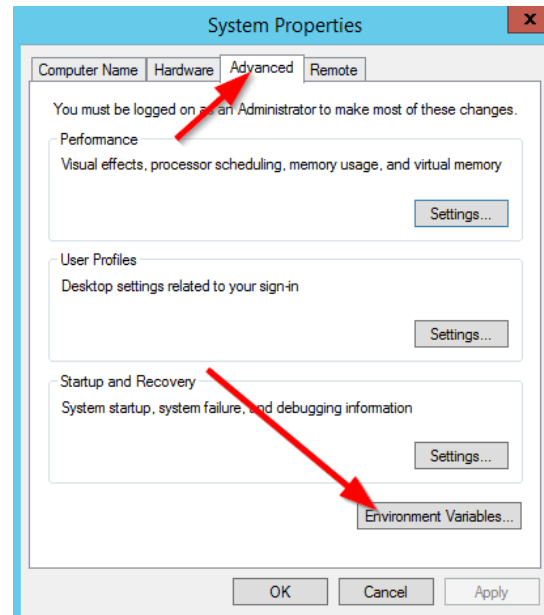
4. Create tnsnames.ora file using the following template:

Figure 11: Template for tnsnames.ora file

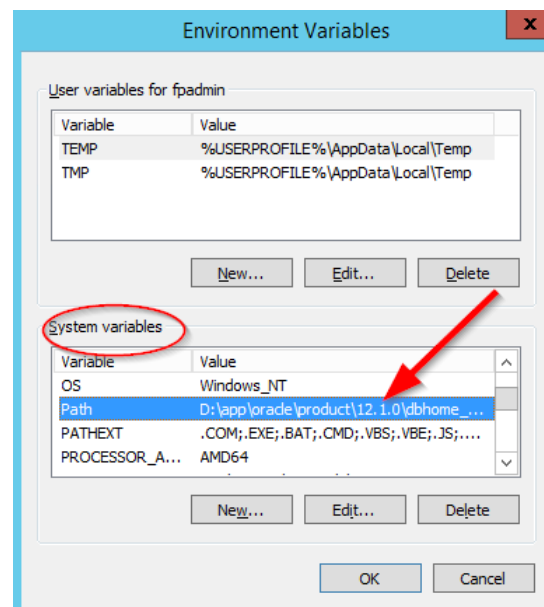
```
[description] =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = [servername])(PORT = [portnumber]))
    ) (CONNECT_DATA =
      (SID = [databasename]) (SERVER = DEDICATED)
    )
  )
```

- Replace the following information from the template with information provided by your database administrator:
 - [description] can be any short description such as FDS_SDF
 - [servername] name of database server
 - [databaseport] database port used for the FactSet DataFeeds
 - [databasename] name of Oracle database where FDS DataFeeds will be loaded
- Remove brackets before saving file
- Make note of location of file

5. Open System Properties and go to Advanced tab and click Environment Variables

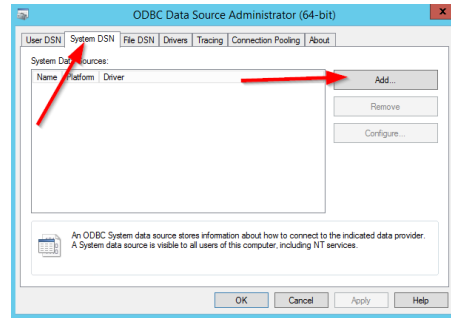


6. Under System Variables
 - a. Edit the Path variable and add the location of the Oracle ODBC drivers
 - b. Create new path for TNS_ADMIN with the location of the tnsadmin.ora file



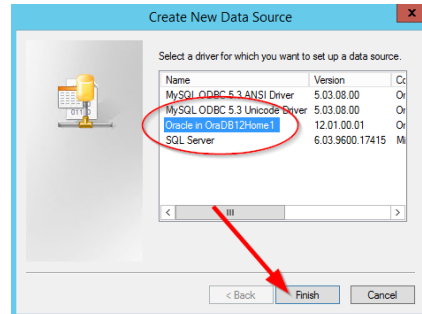
7. Open ODBC Data Source Administrator

- Start → Control Panel → System and Security → Administrative Tools → Data Sources.
Alternatively, you can go to Start → Run → %systemdrive%\windows\system32\odbcad32.exe



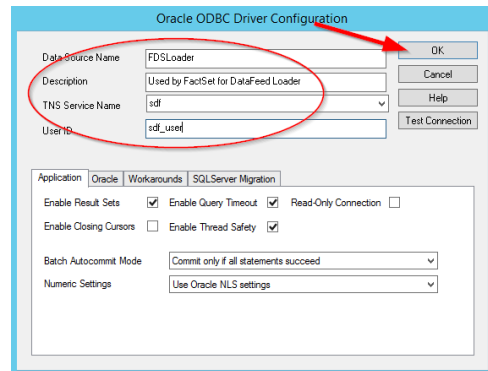
8. Go to System DSN tab

1. Click Add
2. Scroll to find Oracle Driver
3. Click Finish



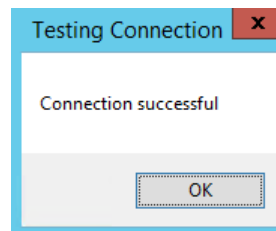
9. Next screen will be Oracle ODBC Driver Configuration, you will need to input the following:

- Data Source Name (“FDSLoader”)
- Description (“Used by FactSet for DataFeed Loader”)
- TNS Service Name – this is from the tnsnames.ora file
- User ID to connect to database



10. Click Test Connection

- Input User ID’s password



Appendix F: DSN Setup Guide for Microsoft SQL for Red Hat or Amazon Linux

The Loader accesses the SQL Server database via the ODBC driver. This requires that a Data Source Name (DSN) be setup. Contact your Database Administrator to get the following information prior to starting:

- The SQL Server Host Name
- The name of the Database that was created for the FactSet DataFeed content
- The account information to be used for accessing the Database
- Ensure the unixodbc package is installed via yum

Please note: If using Amazon Linux, the Loader requires package versions not provided directly by Amazon. In order to enable installing packages from non-Amazon repositories, please follow the steps below:

1. Open the `/etc/yum/pluginconf.d/priorities.conf` file
2. Change the `'enabled=1'` to `'enabled=0'`
3. Save and exit

Please revert this file back to read `'enabled=1'` after installing the SQL Server ODBC Driver.

Once you have obtained this information, follow the steps below:

1. Using superuser privileges, run the following commands appropriate for your Red Hat or Amazon Linux version:

Figure 12: DSN Setup for Microsoft SQL for Red Hat 6 and Amazon Linux

```
sudo su
curl https://packages.microsoft.com/config/rhel/6/prod.repo >
/etc/yum.repos.d/mssql-release.repo
exit
sudo yum -y remove unixODBC-utf16 unixODBC-utf16-devel
sudo ACCEPT_EULA=Y yum -y install msodbcsql17 --
nogpgcheck
```

Figure13: DSN Setup for Microsoft SQL for Red Hat 7

```
sudo su
curl https://packages.microsoft.com/config/rhel/7/prod.repo >
/etc/yum.repos.d/mssql-release.repo
exit
sudo yum -y remove unixODBC-utf16 unixODBC-utf16-devel
sudo ACCEPT_EULA=Y yum -y install msodbcsql17 --
nogpgcheck
```

- Using the template below, configure the DSN

Figure 14: template.ini for Microsoft SQL for Red Hat

```
[FDSLoader]
Driver = ODBC Driver 17 for SQL Server
Server = servername, IP address, or AWS RDS endpoint
UID = Database User Name
PWD = Database password
Database = Database Name
```

- Edit the `odbcinst.ini` file
 - Location of the `odbcinst.ini` file can be determined by running `'odbcinst -j'`
 - Open the file using `sudo`
 - In the `[ODBC Driver 17 for SQL Server]` section append at the bottom:
`Threading=0`
- Install the DSN by running the following command:
`odbcinst -i -s -f template.ini`
- Verify that the DSN has been properly installed by running the following command, which should return the DSN name.
`odbcinst -q -s`
- Ensure connectivity to database by issuing the following command: `isql -v FDSLoader <username> <password>`

Appendix G: DSN Setup for MySQL and MariaDB for Red Hat and Amazon Linux

The Loader accesses the MySQL and MariaDB databases via ODBC drivers. This requires a Data Source (DSN) to be setup. Contact your Database Administrator to get the following information prior to starting:

- The MySQL or MariaDB Server Host Name and port number
- The name of the database that was created on the MySQL or MariaDB host that will be used for the FactSet DataFeed content
- The database username and password for accessing the database
- Ensure the unixodbc package is installed via yum

Please note: Only MySQL Connector/ODBC 5.3 has been verified for compatibility with DataFeed Loader.

Once you have obtained this information, follow the steps below:

1. Download the Operating System appropriate 64-bit **5.3** ODBC drivers from the MySQL website <https://dev.mysql.com/downloads/connector/odbc/>
2. Run the following command based on your Operating System:

Figure 15: DSN Setup for MySQL and MariaDB for Red Hat 6 or Amazon Linux

```
yum -y install mysql-connector-odbc-5.3.9-1.el6.x86_64.rpm
```

Figure 16: DSN Setup for MySQL and MariaDB for Red Hat 7

```
yum -y install mysql-connector-odbc-5.3.9-1.el7.x86_64.rpm
```

3. Using the template below, configure the DSN:

Figure 17: template.ini for MySQL and MariaDB for Red Hat

```
[FDSLoader]
Driver = MySQL ODBC 5.3 Driver
Description = Used by FactSet for DataFeed Loader
SERVER = servername, IP address, or AWS RDS endpoint
PORT = 3306
USER = Database User Name
Password = Database Password
Database = Database Name
```

4. Edit the odbcinst.ini file
 - d. Location of the odbcinst.ini file can be determined by running 'odbcinst -j'
 - e. Open the file using sudo
 - f. In the [MySQL ODBC 5.3 Unicode Driver] section append at the bottom:


```
Threading=0
```
5. Install the DSN by running the following command:


```
odbcinst -i -s -f template.ini
```

6. Verify that the DSN has been properly installed by running the following command, which should return the DSN name.
`odbcinst -q -s`

7. Ensure connectivity to database by issuing the following command: `isql -v FDSLoader`

Appendix H: DSN Setup for PostgreSQL for Red Hat and Amazon Linux

The Loader accesses the PostgreSQL database via ODBC drivers. This requires a Data Source Name (DSN) to be setup. Contact your Database Administrator to get the following information prior to starting:

- The PostgreSQL Server Host Name and port number
- The name of the database that was created on the PostgreSQL host that will be used for the FactSet DataFeed content
- The database username and password for accessing the database
- Ensure the unixodbc package is installed via yum

Once you have obtained this information, follow the steps below:

1. Run the following command based on your Operating System:

Figure 18: DSN Setup for PostgreSQL for Red Hat 6 and Amazon Linux

```
yum -y install https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-6-x86_64/pgdg-redhat96-9.6-3.noarch.rpm
yum -y install postgresql96.x86_64
yum -y install postgresql96-odbc.x86_64
ln -s /usr/pgsql-9.6/lib/psqlodbc.so /usr/lib/psqlodbc.so
```

Figure 19: DSN Setup for PostgreSQL for Red Hat 7

```
yum -y install https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-7-x86_64/pgdg-redhat96-9.6-3.noarch.rpm
yum -y install postgresql96.x86_64
yum -y install postgresql96-odbc.x86_64
ln -s /usr/pgsql-9.6/lib/psqlodbc.so /usr/lib/psqlodbc.so
```

2. Add the following to your /etc/odbcinst.ini file using superuser privileges:

Figure 20: odbcinst.ini file for PostgreSQL for Red Hat

```
[PostgreSQL Unicode]
Description = ODBC for PostgreSQL
Driver = /usr/lib/psqlodbc.so
Threading=0
```

- Using the template below, configure the DSN:

Figure 21: template.ini for PostgreSQL for Red Hat

```
[FDSLoader]
Driver = PostgreSQL Unicode
Description = Used by FactSet for DataFeed Loader
SERVERNAME = servername, IP address, or AWS RDS endpoint
PORT = 5432
USERNAME = Database User Name
Password = Database Password
Database = Database Name
```

- Install the DSN by running the following command:
`odbcinst -i -s -f template.ini`
- Verify that the DSN has been properly installed by running the following command, which should return the DSN name.
`odbcinst -q -s`
- Ensure connectivity to database by issuing the following command:
`isql -v FDSLoader`

Appendix I: DSN Setup Guide for Oracle for Red Hat

The Loader accesses the Oracle database via ODBC drivers. This requires a Data Source Name (DSN) to be set up. Contact your Database Administrator to get the following information prior to starting:

- The Oracle Server Host Name
- The name of the database that was created and the database port on the Oracle Server that will be used for the FactSet DataFeed content
- The account information to be used for accessing the database
- Ensure the unixodbc package is installed via yum

Once you have obtained this information, follow the steps below:

1. Download following two 64-bit packages from the Oracle website
<http://www.oracle.com/technetwork/topics/linuxx86-64soft-092277.html>
 - Instant Client Package – Basic: All files required to run OCI, OCCI, and JDBC-OCI applications
 - Instant Client Package – ODBC: Additional libraries for enabling ODBC applications
 - Instant Client Package - Tools: Includes Data Pump, SQL*Loader and Workload Replay Client
2. Create an empty text file named 'odbc.ini' and place it in the \$ORACLE_HOME/etc directory as your odbcinst.ini file.
 - Location of the odbcinst.ini file can be determined by running 'odbcinst -j'
3. Run the following commands:

Figure 22: DSN Setup for Oracle for Red Hat

```
yum -y install oracle-instantclient12.2-basic-12.2.0.1.0-1.x86_64.rpm
yum -y install oracle-instantclient12.2-odbc-12.2.0.1.0-1.x86_64.rpm
yum -y install oracle-instantclient12.2-tools-12.2.0.1.0-1.x86_64.rpm (only if Amazon RDS is utilized)
sudo /usr/share/oracle/12.2/client64/odbc_update_ini.sh /usr/lib/oracle/12.2/client64/lib
echo 'export ORACLE_HOME=/usr/lib/oracle/12.2/client64' >> ~/.bashrc
echo 'export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$ORACLE_HOME/lib/' >> ~/.bashrc
source ~/.bashrc
```

4. Edit the odbcinst.ini file
 - a. Location of the odbcinst.ini file can be determined by running 'odbcinst -j'
 - b. Open the file using sudo
 - c. In the [Oracle 12c ODBC driver] section append at the bottom:
 Threading=0

5. Create tnsnames.ora file using the following template:

Figure 23: Template for tnsnames.ora file

```
[description] =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = [servername])(PORT = [portnumber]))
    ) (CONNECT_DATA =
      (SID = [databasename]) (SERVER = DEDICATED)
    )
  )
```

- Replace the following information from the template with information provided by your database administrator:
 - [description] can be any short description such as FDS_SDF
 - [servername] name of database server
 - [databaseport] database port used for the FactSet DataFeeds
 - [databasename] name of Oracle database where FDS DataFeeds will be loaded
 - Remove brackets before saving file
 - Make note of location of file
 - Run the following command:
 - echo 'export TNS_ADMIN=/path/to/tnsnames.ora' >> ~/.bashrc
6. Using the template below, configure the DSN

Figure 24:template.ini for Oracle for Red Hat

```
[FDSLoader]
Driver = Oracle 12c ODBC driver
ServerName = server name or IP address/database name
UserID = Database User Name
Password = Database Password
```

7. Install the DSN by running the following command:


```
odbcinst -i -s -f template.ini
```
8. Verify that the DSN has been properly installed by running the following command, which should return the DSN name.


```
odbcinst -q -s
```
9. Ensure connectivity to database by issuing the following command:


```
isql -v FDSLoader
```

Appendix J: DSN Setup Guide for Microsoft SQL for Ubuntu

The Loader accesses the Microsoft SQL database via ODBC drivers. This requires a Data Source (DSN) to be setup. Contact your Database Administrator to get the following information prior to starting:

- The Microsoft SQL Server Host Name
- The name of the database that was created on the MSSQL host that will be used for the FactSet DataFeed content
- The database username and password for accessing the database
- Ensure the unixodbc and libnss3 packages are installed via apt-get

Please note: Only connectivity via Ubuntu 16.04 to Microsoft SQL Server is supported.

7. Using superuser privileges, run the following commands:

Figure 25: DSN Setup for MSSQL for Ubuntu

```
sudo su
curl https://packages.microsoft.com/keys/microsoft.asc | apt-key add -
curl https://packages.microsoft.com/config/ubuntu/16.04/prod.list >
/etc/apt/sources.list.d/mssql-release.list
exit
sudo apt-get update
sudo ACCEPT_EULA=Y apt-get install msodbcsql17
```

8. Using the template below, configure the DSN

Figure 26: template.ini for Microsoft SQL for Ubuntu

```
[FDSLoader]
Driver = ODBC Driver 17 for SQL Server
Server = servername, IP address, or AWS RDS endpoint
UID = Database User Name
PWD = Database password
Database = Database Name
```

9. Edit the odbcinst.ini file
 - a. Location of the odbcinst.ini file can be determined by running 'odbcinst -j'
 - b. Open the file using sudo
 - c. In the [ODBC Driver 17 for SQL Server] section append at the bottom:

Threading=0

10. Install the DSN by running the following command:

odbcinst -i -s -f template.ini

11. Verify that the DSN has been properly installed by running the following command, which should return the DSN name.

odbcinst -q -s

12. Ensure connectivity to database by issuing the following command: `isql -v FDSLoader <username> <password>`

Appendix K: DSN Setup Guide for MySQL and MariaDB for Ubuntu

The Loader accesses the MySQL and MariaDB databases via ODBC drivers. This requires a Data Source (DSN) to be setup. Contact your Database Administrator to get the following information prior to starting:

- The MySQL or MariaDB Server Host Name and port number
- The name of the database that was created on the MySQL or MariaDB host that will be used for the FactSet DataFeed content
- The database username and password for accessing the database
- Ensure the unixodbc and libnss3 packages are installed via apt-get

Please note: Only MySQL Connector/ODBC 5.3 has been verified for compatibility with DataFeed Loader.

Once you have obtained this information, follow the steps below:

8. Download the Operating System appropriate 64-bit **5.3** ODBC drivers from the MySQL website <https://dev.mysql.com/downloads/connector/odbc/>
9. Unzip and install the downloaded drivers
10. Edit the odbcinst.ini file
 - a. Location of the odbcinst.ini file can be determined by running 'odbcinst -j'
 - b. Open the file using sudo
 - c. In the [MySQL ODBC 5.3 Unicode Driver] section append at the bottom:
Threading=0
11. Using the template below, configure the DSN

Figure 27: template.ini for MySQL and MariaDB for Ubuntu

```
[FDSLoader]
Driver = MySQL ODBC 5.3 Driver
Description = Used by FactSet for DataFeed Loader
SERVER = servername, IP address, or AWS RDS endpoint
PORT = 3306
USER = Database User Name
Password = Database Password
Database = Database Name
```

12. Install the DSN by running the following command:
odbcinst -i -s -f template.ini
13. Verify that the DSN has been properly installed by running the following command, which should return the DSN name.
odbcinst -q -s
14. Ensure connectivity to database by issuing the following command: isql -v FDSLoader

Appendix L: DSN Setup Guide for PostgreSQL for Ubuntu

The Loader accesses the PostgreSQL database via ODBC drivers. This requires a Data Source Name (DSN) to be setup. Contact your Database Administrator to get the following information prior to starting:

- The PostgreSQL Server Host Name and port number
- The name of the database that was created on the PostgreSQL host that will be used for the FactSet DataFeed content
- The database username and password for accessing the database
- Ensure the unixodbc and libnss3 packages are installed via apt-get

Once you have obtained this information, follow the steps below:

1. Ensure the following packages are installed:
 - a. `odbc-postgresql`
 - b. `postgresql-client`
2. Edit the `odbcinst.ini` file
 - a. Location of the `odbcinst.ini` file can be determined by running `'odbcinst -j'`
 - b. Open the file using `sudo`
 - c. In the `[PostgreSQL Unicode]` section append at the bottom:

`Threading=0`

3. Using the template below, configure the DSN:

Figure 28: template.ini for PostgreSQL for Ubuntu

```
[FDSLoader]
Driver = PostgreSQL Unicode
Description = Used by FactSet for DataFeed Loader
SERVERNAME = servername, IP address, or AWS RDS endpoint
PORT = 5432
USERNAME = Database User Name
Password = Database Password
Database = Database Name
```

4. Install the DSN by running the following command:


```
odbcinst -i -s -f template.ini
```
5. Verify that the DSN has been properly installed by running the following command, which should return the DSN name.


```
odbcinst -q -s
```
6. Update environment path to find driver file with the following commands:
 - a. `echo "export LD_LIBRARY_PATH=$(dpkg-query -L odbc-postgresql | grep psqlodbcw.so | xargs dirname):"$LD_LIBRARY_PATH" >> ~/.bash_profile`
 - b. `source ~/.bash_profile`
7. Ensure connectivity to database by issuing the following command: `isql -v FDSLoader`

Appendix M: Microsoft SQL Setup for on premise environments

The FactSet DataFeed Loader has been tested with on premise hardware to work with the following versions of Microsoft SQL Server:

- Microsoft SQL Server 2008, 2008 R2, 2012, 2014, 2016, 2017

The DataFeed Loader supports both Windows and SQL Server Authentication.

Database and user creation scripts are contained within the scripts folder of the Loader installation directory.

When creating the database, we recommend the following:

- **simple** database recovery model
- SQL Server account be created specifically for the Loader application with **bulkadmin**, GRANT CREATE SCHEMA, and GRANT CREATE TABLE server role
- Initial database size should be set to the size of your database subscription with autogrowth enabled to 10% and unlimited file size
- Initial log file size should be set to 5gb and autogrowth enabled to 10% and unlimited file size

Appendix N: Microsoft SQL Server Setup for AWS RDS and Microsoft Azure

The FactSet DataFeed Loader has been tested with AWS RDS to work with the following versions of Microsoft SQL Server:

- Microsoft SQL Server 2008 R2, 2012, 2014, 2016, 2017

Additionally, the FactSet DataFeed Loader has been tested with Microsoft Azure's SQL Database with compatibility level set to 140.

The DataFeed Loader supports both Windows and SQL Server Authentication.

Database and user creation scripts are contained within the scripts folder of the Loader installation directory.

The Loader requires the use of the bcp utility when loading to AWS RDS and Microsoft SQL database instances.

For Linux installations, please visit the following website for bcp installation instructions:

<https://docs.microsoft.com/en-us/sql/linux/sql-server-linux-setup-tools>

For Windows installations, please visit the following website for bcp installation instructions:

<https://www.microsoft.com/en-us/download/details.aspx?id=53591>

When creating the database, we recommend the following:

- SQL Server account be created specifically for the Loader application with GRANT CREATE SCHEMA, GRANT CREATE TABLE, and db_datawriter server roles.
- Initial database size should be set to the size of your database subscription with autogrowth enabled to 10% and unlimited file size
- Initial log file size should be set to 5gb and autogrowth enabled to 10% and unlimited file size
- Automated Backups and Backup Window set to 'Disabled' during full database load
 - This functionality may be enabled after full database load is completed

Appendix O: MySQL and MariaDB Setup

The FactSet DataFeed Loader has been tested to work with the following versions of MySQL and MariaDB using the InnoDB storage engine:

- MySQL 5.5, 5.6, 5.7
- MariaDB 5.5, 10.0, 10.1, 10.2

Please note: AWS RDS is only compatible with MariaDB versions 10.0 and 10.1

Database and user creation scripts are contained within the scripts folder of the Loader installation directory.

Database settings

- The following settings will require editing your options file. The location of this file will vary depending on your database version and operating system.
- **Please note:** Your database instance must be restarted after editing your options file.
 - MySQL: <https://dev.mysql.com/doc/refman/5.7/en/option-files.html>
 - MariaDB: <https://mariadb.com/kb/en/mariadb/configuring-mariadb-with-mycnf/>
 - innodb_buffer_pool_size
 - The innodb_buffer_pool_size should be set to 75% of available RAM for optimal Loader usage for on premise environments.
 - **Please note:** By default, AWS RDS sets this variable to the recommended value. No additional changes are required.
 - MySQL: https://dev.mysql.com/doc/refman/5.7/en/innodb-parameters.html#sysvar_innodb_buffer_pool_size
 - MariaDB: https://mariadb.com/kb/en/mariadb/xtradbinnodb-server-system-variables/#innodb_buffer_pool_size
 - The following settings **must** be verified and configured appropriately:
 - innodb_large_prefix must be set to ON.
 - MySQL: https://dev.mysql.com/doc/refman/5.7/en/innodb-parameters.html#sysvar_innodb_large_prefix
 - MariaDB: https://mariadb.com/kb/en/mariadb/xtradbinnodb-server-system-variables/#innodb_large_prefix
 - Innodb_file_format must be set to Barracuda
 - MySQL: https://dev.mysql.com/doc/refman/5.7/en/innodb-parameters.html#sysvar_innodb_file_format
 - MariaDB: https://mariadb.com/kb/en/mariadb/xtradbinnodb-server-system-variables/#innodb_file_format
 - Innodb_file_per_table must be set to ON.
 - MySQL: https://dev.mysql.com/doc/refman/5.7/en/innodb-parameters.html#sysvar_innodb_file_per_table
 - MariaDB: https://mariadb.com/kb/en/mariadb/xtradbinnodb-server-system-variables/#innodb_file_per_table

- Local_infile must be turned ON.
 - MySQL: https://dev.mysql.com/doc/refman/5.7/en/server-system-variables.html#sysvar_local_infile
 - MariaDB: https://mariadb.com/kb/en/mariadb/server-system-variables/#local_infile
- The configuration settings can be verified by the following query:

Figure 29: MySQL and MariaDB configuration settings query

```
select
@@innodb_large_prefix as innodb_large_prefix,
@@innodb_file_format as innodb_file_format,
@@innodb_file_per_table as innodb_file_per_table,
@@local_infile as local_infile
```

Appendix P: PostgreSQL Setup

The FactSet DataFeed Loader has been tested to work with the following versions of PostgreSQL:

- PostgreSQL 9.5, 9.6

Database and user creation scripts are contained within the scripts folder of the Loader installation directory.

The Loader requires the use of the psql Load Utility. If the Loader and database are on separate machines, you will be required to install the psql utility on the Loader machine.

For Ubuntu installations please run the following command:

Figure 30: Ubuntu psql Load Utility

```
sudo apt-get -y install postgresql-client
```

For Red Hat installations run the following commands:

Figure 31: Red Hat 6 and Amazon Linux psql Load Utility

```
yum -y install https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-6-  
x86_64/pgdg-redhat96-9.6-3.noarch.rpm  
yum -y install postgresql96.x86_64
```

Figure 32: Red Hat 7 psql Load Utility

```
yum -y install https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-7-  
x86_64/pgdg-redhat96-9.6-3.noarch.rpm  
yum -y install postgresql96.x86_64
```

For Windows installations, binaries can be downloaded at: <https://webcms.enterprisedb.com/download-postgresql-binaries>

Appendix Q: Oracle Setup for On-Premise

The FactSet DataFeed Loader has been certified to work with the following versions of Oracle:

- Oracle 11.2, 12.1

The DataFeed Loader will connect to the Oracle database as a single account, which it will use for all operations. The Loader database user will require the following privileges:

- CREATE SESSION
- CREATE TABLE

The Loader database user must be granted read/write permissions on the Oracle directory object created for use with the Loader.

The Loader database user must also be granted UNLIMITED TABLESPACE privilege or sufficient quota on its default tablespace to store the entirety of the user's subscription.

A sample script to create the database, a database user, the Oracle directory object, and grant necessary permissions can be found in the `/scripts/sql/oracle.sql` file contained within your Loader installation folder.

Appendix R: Oracle Setup for AWS RDS

The FactSet DataFeed Loader has been tested with AWS RDS to work with the following versions of Oracle:

- Oracle 11.2, 12.1

The DataFeed Loader supports both Windows and SQL Server Authentication.

A sample script to create the database, a database user, the Oracle directory object, and grant necessary permissions can be found in the /scripts/sql/oracle.sql file contained within your Loader installation folder.

The Loader requires the use of the SQL*Loader utility when loading to Oracle AWS RDS database instances.

For Linux installations, please visit the following website to download and install the Oracle Instant Client Basic, ODBC, and Tools packages for version 12.2: <http://www.oracle.com/technetwork/topics/linuxx86-64soft-092277.html>

For Windows installations, please visit the following website to download and install the Oracle Instant Client Basic, ODBC, and Tools packages for version 12.2: <http://www.oracle.com/technetwork/topics/winx64soft-089540.html>

The DataFeed Loader will connect to the Oracle database as a single account, which it will use for all operations. The Loader database user will require the following privileges:

- CREATE SESSION
- CREATE TABLE

The Loader database user must be granted read/write permissions on the Oracle directory object created for use with the Loader.

The Loader database user must also be granted UNLIMITED TABLESPACE privilege or sufficient quota on its default tablespace to store the entirety of the user's subscription.

Appendix S: Possible Installation Architectures

There are many possible configurations to how the Loader can be installed on premise depending upon your particular environment and needs. While each installation will be unique, five general options exist and are explained below. These options will help in the setup and configuration of your own installation.

Figure 33: Installation Architecture – Single Machine

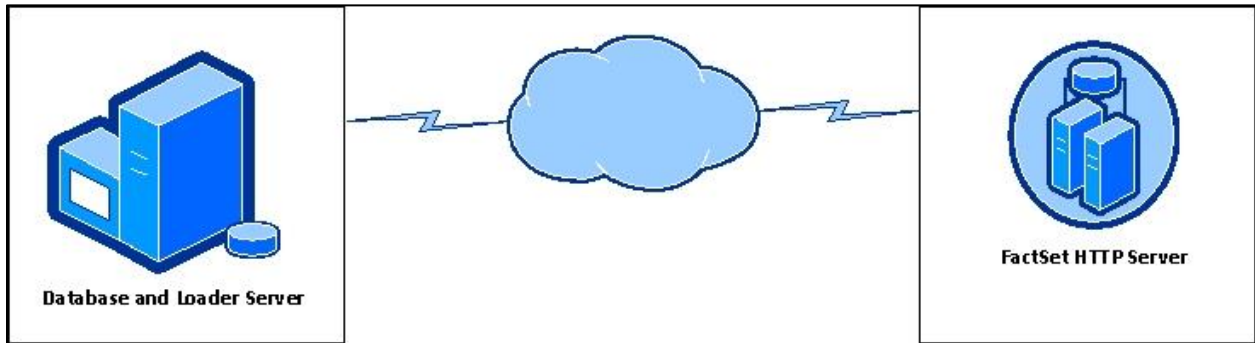


Figure 34: Installation Architecture - Two Machines with Windows Share folder on Loader Machine

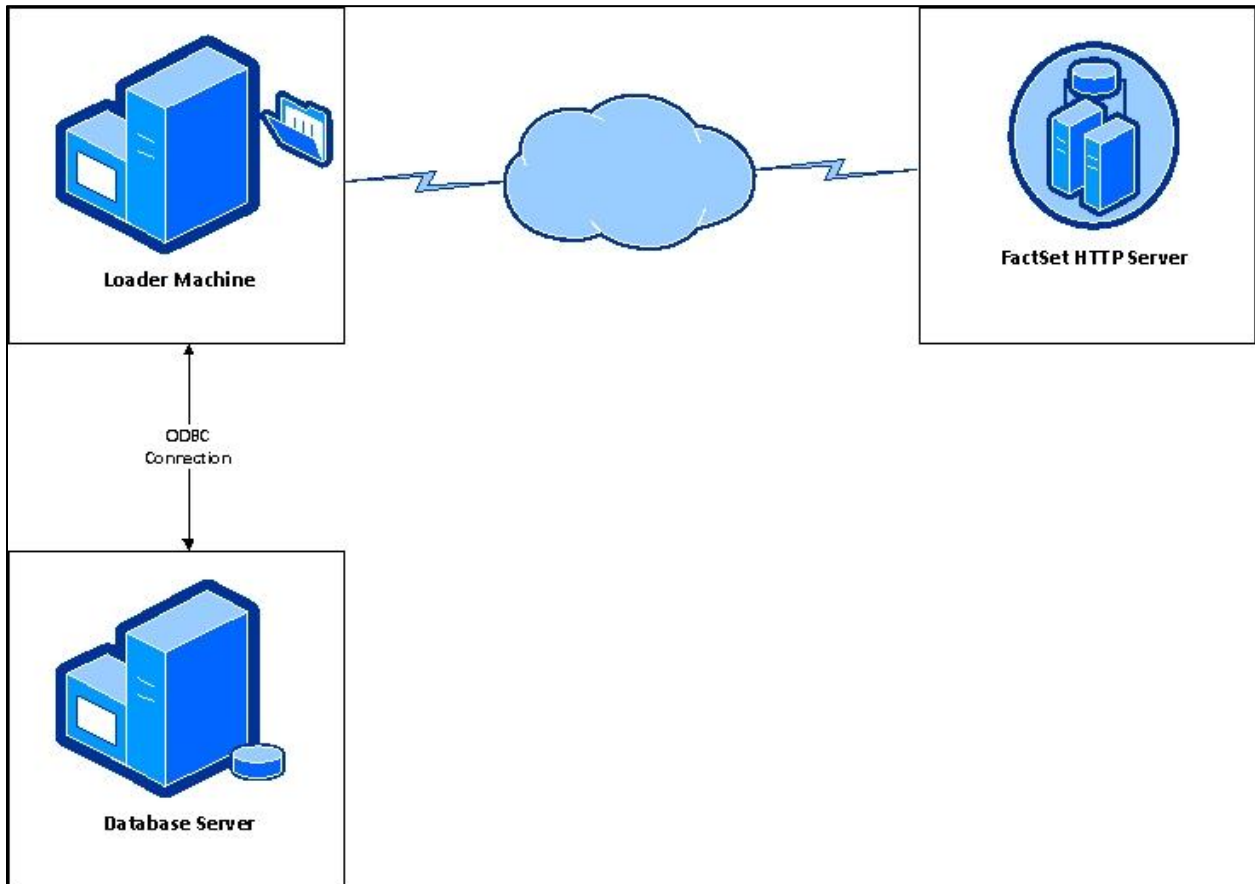


Figure 35: Installation Architecture - Two Machines with Windows shared folder on DB Server

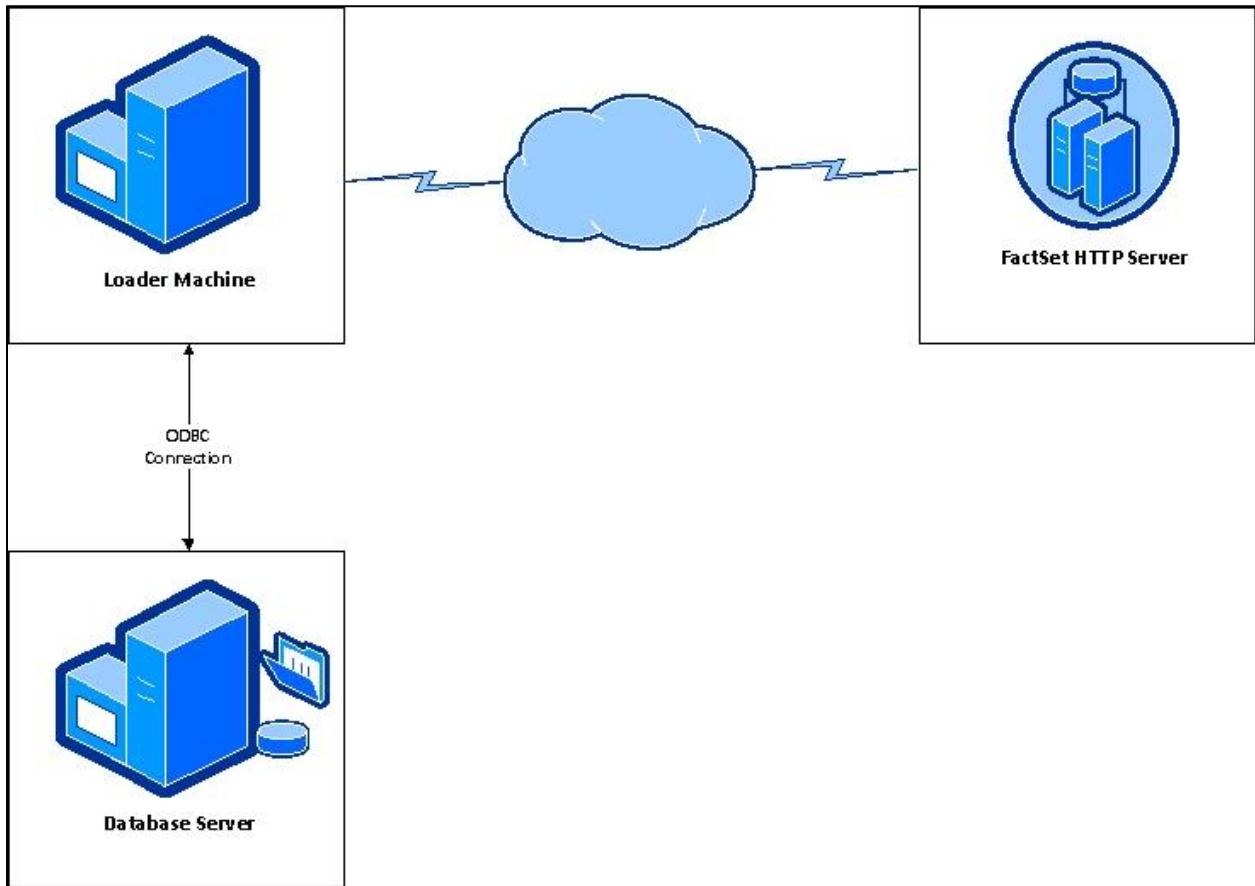


Figure 36: Installation Architecture - Multiple Machines

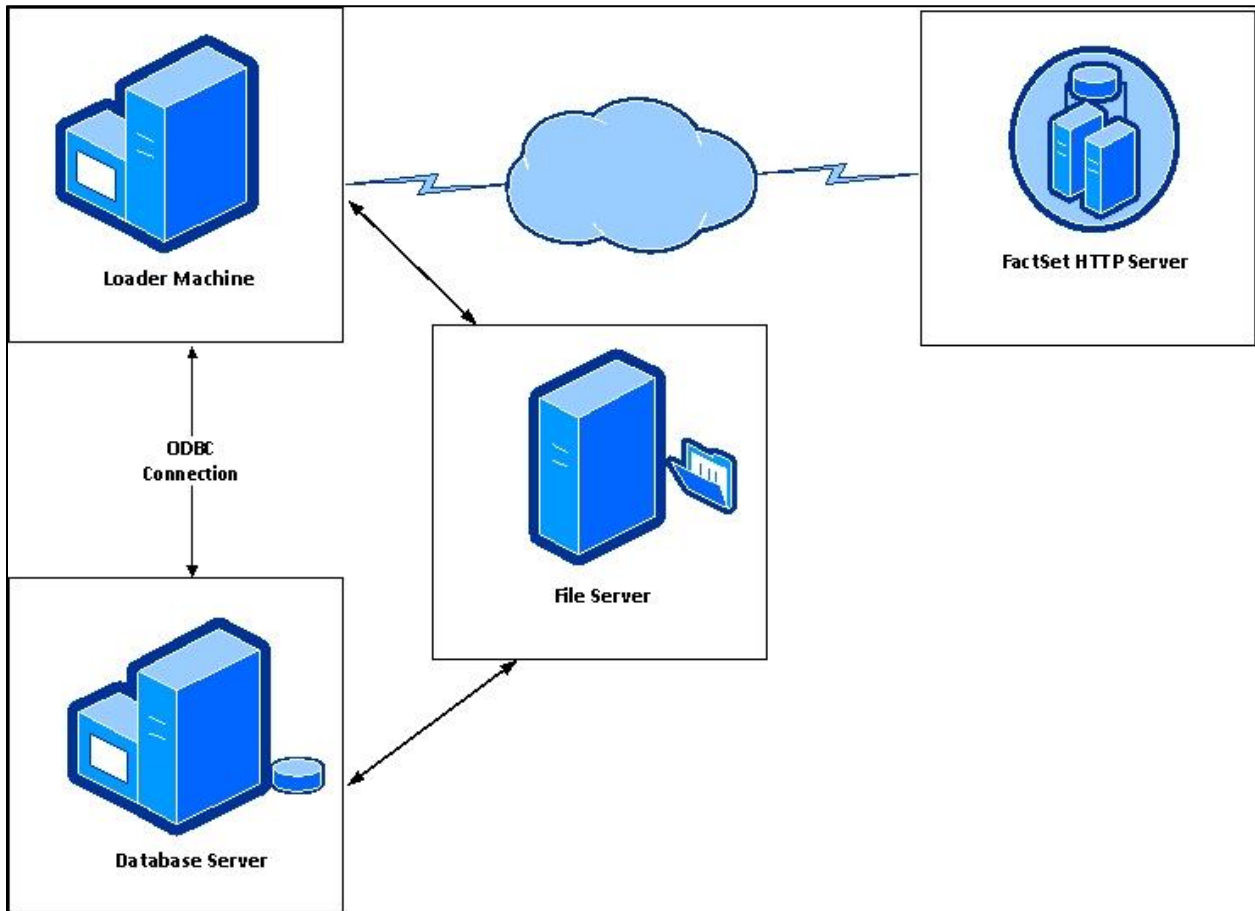
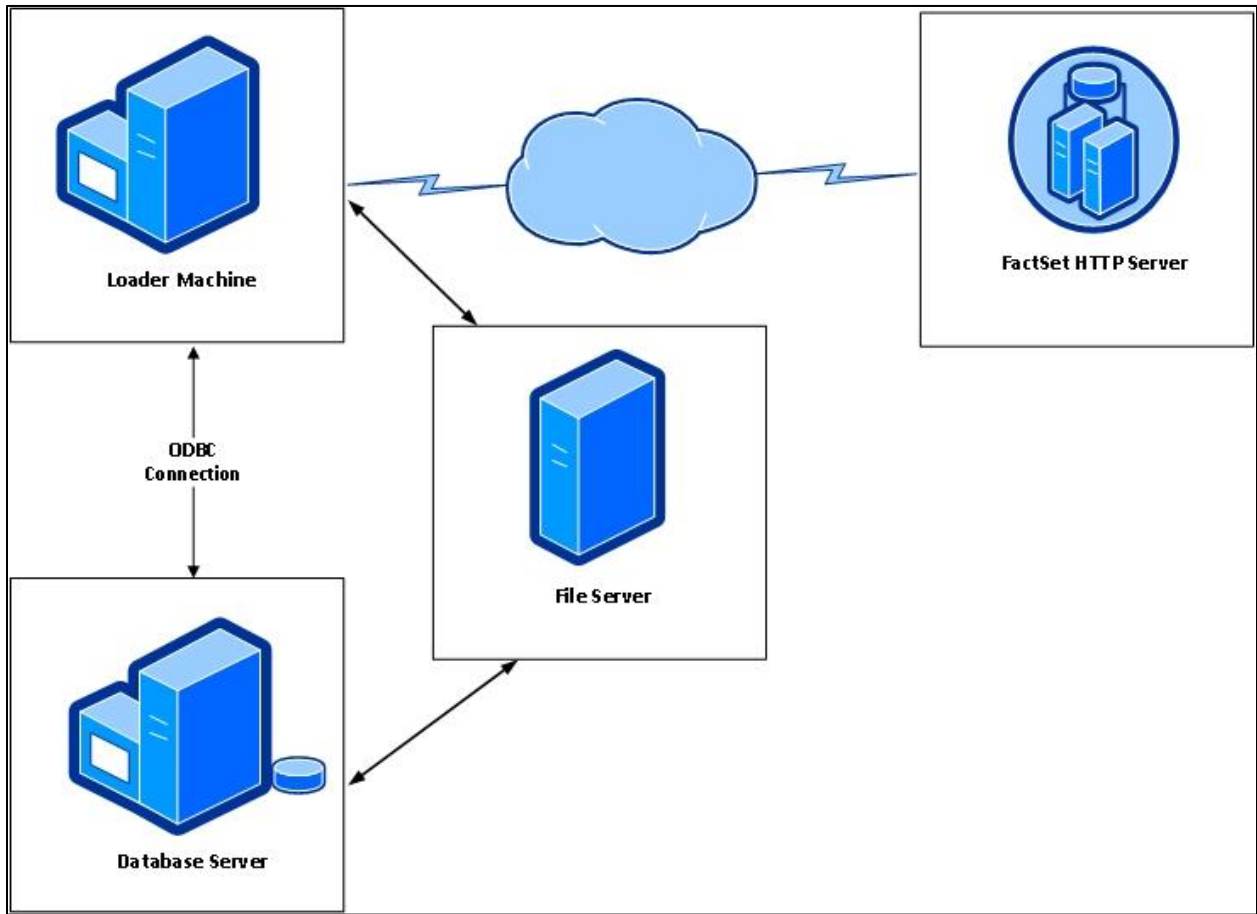


Figure 37: Installation Architecture – Multiple machines using Linux



Appendix T: Oracle Field and Table Name Shortening

When using the Oracle database, all content is loaded under a single user. As a result, the naming convention for Oracle is [schema_name]_[tablename]. Additionally, Oracle does not allow table or field lengths to exceed 30 characters. As a result, the following fields will be modified when using Oracle:

Table 3: Oracle Field Names

Schema	Bundle	Table	MS SQL Field Name	Oracle Field Name
dcs_v2	dcs_hub_v2	dcs_entity_structure_v2	factset_ultimate_parent_entity_id	factset_ult_parent_entity_id
edm_v1	edm_xc_premium edm_regulatory edm_standard edm_premium	edm_xc_entity_structure edm_reg_entity_structure edm_standard_entity_structure edm_entity_structure	factset_ultimate_parent_entity_id	factset_ult_parent_entity_id
ff_v2	ff_advanced_eu_v2 ff_advanced_ap_v2 ff_advanced_am_v2	ff_advanced_af_v2	ff_debt_unsecure_facil_swing_subord	ff_dbt_unsecd_facil_swing_subrd
ff_v2	ff_advanced_eu_v2 ff_advanced_ap_v2 ff_advanced_am_v2	ff_advanced_af_v2	ff_debt_lt_revolv_unsecure_facil_oth	ff_dbt_lt_rvlv_unsecd_facil_oth
ff_v2	ff_advanced_eu_v2 ff_advanced_ap_v2 ff_advanced_am_v2	ff_advanced_af_v2	ff_debt_loan_unsecure_place_priv	ff_dbt_loan_unsecd_place_priv
ff_v2	ff_advanced_eu_v2 ff_advanced_ap_v2 ff_advanced_am_v2	ff_advanced_af_v2	ff_debt_loan_unsecure_delay_draw	ff_dbt_loan_unsecd_delay_draw
ff_v2	ff_off_dir	od_people_entity	factset_ultimate_parent_entity_id	factset_ult_parent_entity_id
ff_v2	ff_advanced_eu_v2 ff_advanced_ap_v2 ff_advanced_am_v2	ff_advanced_af_v2	ff_debt_lt_revolv_secure_facil_oth	ff_dbt_lt_rvlv_sec_d_facil_oth
ff_v2	ff_advanced_eu_v2 ff_advanced_ap_v2 ff_advanced_am_v2	ff_advanced_af_v2	ff_debt_secure_facil_swing_subord	ff_dbt_sec_d_facil_swing_subrd
ff_v2	ff_advanced_eu_v2 ff_advanced_ap_v2 ff_advanced_am_v2	ff_advanced_af_v2	ff_debt_lt_revolv_unsecure_curr	ff_dbt_lt_rvlv_unsecd_curr

Also, the following table names will be modified:

Table 4: Oracle Table Names

Schema Name	MS SQL Table Name	Oracle Table Name
econ_evt_v1	econ_events_estimates	econ_evt_v1_econ_events_est
econ_v1	econ_standardized_attrib	econ_v1_econ_stand_attrib
edm_v1	edm_entity_relationships	edm_v1_edm_entity_relation
edm_v1	edm_reg_address_coordinates	edm_v1_edm_reg_address_coord
edm_v1	edm_reg_country_coordinates	edm_v1_edm_reg_country_coord
edm_v1	edm_reg_entity_affiliates	edm_v1_edm_reg_ent_affiliates
edm_v1	edm_reg_entity_identifiers	edm_v1_edm_reg_ent_ids
edm_v1	edm_reg_entity_metro_areas	edm_v1_edm_reg_ent_metro_areas
edm_v1	edm_reg_entity_naics_rank	edm_v1_edm_reg_ent_naics_rank
edm_v1	edm_reg_entity_structure	edm_v1_edm_reg_ent_structure
edm_v1	edm_reg_security_13f_list	edm_v1_edm_reg_sec_13f_list
edm_v1	edm_reg_security_entity_map	edm_v1_edm_reg_sec_entity_map
edm_v1	edm_reg_security_listing_map	edm_v1_edm_reg_sec_listing_map
edm_v1	edm_reg_state_coordinates	edm_v1_edm_reg_state_coord
edm_v1	edm_security_listing_map	edm_v1_edm_sec_listing_map
edm_v1	edm_standard_entity_identifiers	edm_v1_edm_standard_ids
edm_v1	edm_standard_entity_naics_rank	edm_v1_edm_standard_naics_rank
edm_v1	edm_standard_entity_structure	edm_v1_edm_standard_structure

edm_v1	edm_xc_address_coordinates	edm_v1_edm_xc_address_coord
edm_v1	edm_xc_country_coordinates	edm_v1_edm_xc_country_coord
edm_v1	edm_xc_entity_affiliates	edm_v1_edm_xc_ent_affiliates
edm_v1	edm_xc_entity_identifiers	edm_v1_edm_xc_ent_ids
edm_v1	edm_xc_entity_metro_areas	edm_v1_edm_xc_ent_metro_area
edm_v1	edm_xc_entity_naics_rank	edm_v1_edm_xc_ent_naics_rank
edm_v1	edm_xc_entity_relationships	edm_v1_edm_xc_ent_relation
edm_v1	edm_xc_security_13f_list	edm_v1_edm_xc_sec_13f_list
edm_v1	edm_xc_security_entity_map	edm_v1_edm_xc_sec_entity_map
edm_v1	edm_xc_security_listing_map	edm_v1_edm_xc_sec_listing_map
edm_v1	edm_xc_state_coordinates	edm_v1_edm_xc_state_coord
ent_v1	ent_entity_address_coord	ent_v1_ent_address_coord
ent_v1	ent_entity_country_coord	ent_v1_ent_country_coord
ent_v1	ent_entity_country_props	ent_v1_ent_country_props
ent_v1	ent_entity_descriptions	ent_v1_ent_entity_desc
ent_v1	ent_entity_identifiers	ent_v1_ent_entity_ids
ent_v1	ent_entity_metro_areas	ent_v1_ent_entity_metro_area
ent_v1	ent_entity_relationships	ent_v1_ent_entity_relation
ent_v1	ent_entity_state_coord	ent_v1_ent_state_coord
ent_v1	ent_scr_relationships_keyword	ent_v1_ent_scr_rel_keyword
ent_v1	ent_scr_relationships_summary	ent_v1_ent_scr_rel_summary
evt_v1	ce_conferences_coverage	evt_v1_ce_conf_cov
evt_v1	ce_conferences_coverage_future	evt_v1_ce_conf_cov_future
evt_v1	ce_events_coverage_future	evt_v1_ce_events_cov_future
ff_v2	ff_balance_model_rpt_map	ff_v2_ff_bal_model_rpt_map
ff_v3	ff_balance_model_rpt_map	ff_v3_ff_bal_model_rpt_map
fp_v2	fp_basic_shares_current	fp_v2_fp_basic_shs_current
hier_v1	hier_sector_entity_summary	hier_v1_hier_sect_ent_summ
hier_v1	hier_sector_participant	hier_v1_hier_sect_partic
hier_v1	hier_sector_structure	hier_v1_hier_sect_struct
ids_v1	h_security_ticker_exchange	ids_v1_h_security_ticker_exc
ids_v1	h_security_ticker_region	ids_v1_h_security_ticker_reg
own_v4	own_con_asset_type_coverage	own_v4_own_con_asset_type
own_v4	own_con_bus_region_coverage	own_v4_own_con_bus_region
own_v4	own_fi_fund_gen_hold_hist	own_v4_own_fi_fund_gen_hist
own_v4	own_fi_reg_fund_gen_hold_hist	own_v4_own_fi_reg_fnd_gen_hist
own_v4	own_fi_reg_fund_hold_hist	own_v4_own_fi_reg_fnd_det_hist
own_v4	own_fund_generic_holdings	own_v4_own_fund_gen_hold
own_v4	own_fund_generic_holdings_hist	own_v4_own_fund_gen_hold_hist
own_v4	own_insider_transactions	own_v4_own_insider_trans
own_v4	own_inst_stakes_holdings_hist	own_v4_own_inst_stakes_hist
own_v4	own_reg_fund_generic_holdings	own_v4_own_reg_fnd_gen_hold
own_v4	own_reg_fund_generic_holdings_hist	own_v4_own_reg_fnd_gen_hist
own_v4	own_reg_fund_holdings	own_v4_own_reg_fnd_holdings
own_v4	own_reg_fund_holdings_hist	own_v4_own_reg_fnd_det_hist
own_v4	own_stakes_holdings_hist	own_v4_own_stakes_hold_hist
own_v4	own_uksr_cust_holdings_hist	own_v4_own_uksr_cust_hold_hist
own_v4	own_unadj_13f_holdings_hist	own_v4_own_unadj_13f_hold_hist
own_v4	own_unadj_13f_reportable	own_v4_own_unadj_13f_rpt
own_v4	own_unadj_fund_generic_holdings_hist	own_v4_own_unadj_fnd_gen_hist
own_v4	own_unadj_fund_holdings_hist	own_v4_own_unadj_fnd_det_hist
own_v5	own_con_asset_type_coverage	own_v5_own_con_asset_type
own_v5	own_con_bus_region_coverage	own_v5_own_con_bus_region
own_v5	own_ent_13f_combined_inst	own_v5_own_13f_cmbnd_inst
own_v5	own_ent_13f_filing_hist	own_v5_own_13f_filing_hist
own_v5	own_ent_13f_subfiler_inst	own_v5_own_13f_subfiler_inst
own_v5	own_ent_fund_filing_hist	own_v5_own_fund_filing_hist
own_v5	own_ent_fund_identifiers	own_v5_own_ent_fund_ids
own_v5	own_ent_fund_objectives	own_v5_own_ent_fund_obj

own_v5	own_ent_funds_feeder_master	own_v5_own_fund_feeder_mast
own_v5	own_ent_inst_identifiers	own_v5_own_ent_inst_ids
own_v5	own_fund_generic_summary_fi	own_v5_own_fund_gen_summ_fi
own_v5	own_inst_schedule_d_combined	own_v5_own_sched_d_cmbnd
own_v5	own_inst_schedule_d_detail	own_v5_own_sched_d_det
own_v5	own_inst_schedule_d_generic	own_v5_own_inst_sched_d_gen
own_v5	own_inst_stakes_detail	own_v5_own_inst_stakes_det
own_v5	own_sec_13f_reportable	own_v5_own_sec_13f_rpt
pe_v1	pe_portco_pvt_invest_evts	pe_v1_pe_portco_invest_evts
pe_v1	pe_stakes_securities_pvt_invest	pe_v1_pe_stakes_invest
rbics_v1	rbics_bus_seg_report	rbics_v1_rbics_bus_seg_rpt
rbics_v1	rbics_entity_product	rbics_v1_rbics_ent_product
ref_v2	dcs_reporting_period_map	ref_v2_dcs_rpt_period_map
ref_v2	entity_relation_type_map	ref_v2_ent_relation_type_map
ref_v2	ff_accounting_standard_map	ref_v2_ff_acct_standard_map
ref_v2	invnt_obj_specialization_map	ref_v2_invnt_obj_spec_map
ref_v2	ma_term_change_types_map	ref_v2_ma_term_chg_type_map
ref_v2	pe_security_categories_map	ref_v2_pe_sec_cat_map
ref_v2	shrk_campaign_status_map	ref_v2_shrk_camp_status_map
ref_v2	shrk_cg_amendment_type_map	ref_v2_shrk_cg_amend_type_map
ref_v2	shrk_election_source_map	ref_v2_shrk_elect_source_map
ref_v2	shrk_pill_version_type_map	ref_v2_shrk_pill_ver_type_map
ref_v2	shrk_special_exhibit_map	ref_v2_shrk_spec_exhibit_map
s_econ_v1	econ_standardized_attrib	s_econ_v1_econ_stand_attrib
s_ent_v1	ent_entity_address_coord	s_ent_v1_ent_address_coord
s_ent_v1	ent_entity_country_coord	s_ent_v1_ent_country_coord
s_ent_v1	ent_entity_country_props	s_ent_v1_ent_country_props
s_ent_v1	ent_entity_descriptions	s_ent_v1_ent_entity_desc
s_ent_v1	ent_entity_identifiers	s_ent_v1_ent_entity_ids
s_ent_v1	ent_entity_metro_areas	s_ent_v1_ent_entity_metro_area
s_ent_v1	ent_entity_relationships	s_ent_v1_ent_entity_relation
s_ent_v1	ent_entity_state_coord	s_ent_v1_ent_state_coord
s_evt_v1	ce_conferences_coverage	s_evt_v1_ce_conf_cov
s_ff_v3	ff_balance_model_rpt_map	s_ff_v3_ff_bal_model_rpt_map
s_fp_v2	fp_basic_shares_current	s_fp_v2_fp_basic_shs_current
s_hier_v1	hier_sector_entity_summary	s_hier_v1_hier_sect_ent_summ
s_hier_v1	hier_sector_participant	s_hier_v1_hier_sect_partic
s_hier_v1	hier_sector_structure	s_hier_v1_hier_sect_struct
s_own_v5	own_con_asset_type_coverage	s_own_v5_own_con_asset_type
s_own_v5	own_con_bus_region_coverage	s_own_v5_own_con_bus_region
s_own_v5	own_ent_13f_combined_inst	s_own_v5_own_13f_cmbnd_inst
s_own_v5	own_ent_13f_filing_hist	s_own_v5_own_13f_filing_hist
s_own_v5	own_ent_13f_subfiler_inst	s_own_v5_own_13f_subfiler_inst
s_own_v5	own_ent_fund_filing_hist	s_own_v5_own_fund_filing_hist
s_own_v5	own_ent_fund_identifiers	s_own_v5_own_ent_fund_ids
s_own_v5	own_ent_fund_objectives	s_own_v5_own_ent_fund_obj
s_own_v5	own_ent_funds_feeder_master	s_own_v5_own_fund_feeder_mast
s_own_v5	own_ent_inst_identifiers	s_own_v5_own_ent_inst_ids
s_own_v5	own_fund_generic_summary_fi	s_own_v5_own_fund_gen_summ_fi
s_own_v5	own_inst_schedule_d_combined	s_own_v5_own_sched_d_cmbnd
s_own_v5	own_inst_schedule_d_detail	s_own_v5_own_sched_d_det
s_own_v5	own_inst_schedule_d_generic	s_own_v5_own_inst_sched_d_gen
s_own_v5	own_inst_stakes_detail	s_own_v5_own_inst_stakes_det
s_own_v5	own_sec_13f_reportable	s_own_v5_own_sec_13f_rpt
s_rbics_v1	rbics_bus_seg_report	s_rbics_v1_rbics_bus_seg_rpt
s_rbics_v1	rbics_entity_product	s_rbics_v1_rbics_ent_product
s_sanc_v1	sanc_us_relationships	s_sanc_v1_sanc_us_relations
s_shrk_v1	shrk_ca_activist_ent_structure	s_shrk_v1_shrk_ca_actv_struct
s_shrk_v1	shrk_ca_activist_summary	s_shrk_v1_shrk_ca_actv_summ

s_shrk_v1	shrk_ca_campaign_advisors	s_shrk_v1_shrk_ca_camp_adv
s_shrk_v1	shrk_ca_campaign_defense	s_shrk_v1_shrk_ca_camp_defense
s_shrk_v1	shrk_ca_campaign_details	s_shrk_v1_shrk_ca_camp_det
s_shrk_v1	shrk_ca_campaign_events	s_shrk_v1_shrk_ca_camp_events
s_shrk_v1	shrk_ca_campaign_gov_obj	s_shrk_v1_shrk_ca_camp_gov_obj
s_shrk_v1	shrk_ca_campaign_participants	s_shrk_v1_shrk_ca_camp_partic
s_shrk_v1	shrk_ca_campaign_value_obj	s_shrk_v1_shrk_ca_camp_val_obj
s_shrk_v1	shrk_ca_sharkwatch_hist	s_shrk_v1_shrk_ca_sharkwatch
s_shrk_v1	shrk_cg_charter_amendments	s_shrk_v1_shrk_cg_charter_amnd
s_shrk_v1	shrk_cg_charter_current	s_shrk_v1_shrk_cg_charter_curr
s_shrk_v1	shrk_pp_advanced_advisors	s_shrk_v1_shrk_pp_adv_adv
s_shrk_v1	shrk_pp_advanced_amendments	s_shrk_v1_shrk_pp_adv_amnd
s_shrk_v1	shrk_pp_advanced_current	s_shrk_v1_shrk_pp_adv_current
s_shrk_v1	shrk_pp_advanced_source	s_shrk_v1_shrk_pp_adv_source
s_shrk_v1	shrk_pp_basic_current	s_shrk_v1_shrk_pp_basic_curr
sanc_v1	sanc_us_relationships	sanc_v1_sanc_us_relations
shrk_v1	shrk_ca_activist_ent_structure	shrk_v1_shrk_ca_actv_struct
shrk_v1	shrk_ca_activist_summary	shrk_v1_shrk_ca_actv_summ
shrk_v1	shrk_ca_campaign_advisors	shrk_v1_shrk_ca_camp_adv
shrk_v1	shrk_ca_campaign_defense	shrk_v1_shrk_ca_camp_defense
shrk_v1	shrk_ca_campaign_details	shrk_v1_shrk_ca_camp_det
shrk_v1	shrk_ca_campaign_events	shrk_v1_shrk_ca_camp_events
shrk_v1	shrk_ca_campaign_gov_obj	shrk_v1_shrk_ca_camp_gov_obj
shrk_v1	shrk_ca_campaign_participants	shrk_v1_shrk_ca_camp_partic
shrk_v1	shrk_ca_campaign_value_obj	shrk_v1_shrk_ca_camp_val_obj
shrk_v1	shrk_ca_sharkwatch_hist	shrk_v1_shrk_ca_sharkwatch
shrk_v1	shrk_cg_charter_amendments	shrk_v1_shrk_cg_charter_amnd
shrk_v1	shrk_cg_charter_current	shrk_v1_shrk_cg_charter_curr
shrk_v1	shrk_pp_advanced_advisors	shrk_v1_shrk_pp_adv_adv
shrk_v1	shrk_pp_advanced_amendments	shrk_v1_shrk_pp_adv_amnd
shrk_v1	shrk_pp_advanced_current	shrk_v1_shrk_pp_adv_current
shrk_v1	shrk_pp_advanced_source	shrk_v1_shrk_pp_adv_source
shrk_v1	shrk_pp_basic_current	shrk_v1_shrk_pp_basic_curr
spl_v2	dcs_reporting_period_map	spl_v2_dcs_rpt_period_map
spl_v2	econ_events_estimates	spl_v2_econ_events_est
spl_v2	edm_entity_relationships	spl_v2_edm_entity_relation
spl_v2	edm_reg_address_coordinates	spl_v2_edm_reg_address_coord
spl_v2	edm_reg_country_coordinates	spl_v2_edm_reg_country_coord
spl_v2	edm_reg_entity_affiliates	spl_v2_edm_reg_ent_affiliates
spl_v2	edm_reg_entity_identifiers	spl_v2_edm_reg_ent_ids
spl_v2	edm_reg_entity_metro_areas	spl_v2_edm_reg_ent_metro_areas
spl_v2	edm_reg_entity_naics_rank	spl_v2_edm_reg_ent_naics_rank
spl_v2	edm_reg_entity_structure	spl_v2_edm_reg_ent_structure
spl_v2	edm_reg_security_13f_list	spl_v2_edm_reg_sec_13f_list
spl_v2	edm_reg_security_entity_map	spl_v2_edm_reg_sec_entity_map
spl_v2	edm_reg_security_listing_map	spl_v2_edm_reg_sec_listing_map
spl_v2	edm_reg_state_coordinates	spl_v2_edm_reg_state_coord
spl_v2	edm_security_listing_map	spl_v2_edm_sec_listing_map
spl_v2	edm_standard_entity_identifiers	spl_v2_edm_standard_ids
spl_v2	edm_standard_entity_naics_rank	spl_v2_edm_standard_naics_rank
spl_v2	edm_standard_entity_structure	spl_v2_edm_standard_structure
spl_v2	edm_xc_address_coordinates	spl_v2_edm_xc_address_coord
spl_v2	edm_xc_country_coordinates	spl_v2_edm_xc_country_coord
spl_v2	edm_xc_entity_affiliates	spl_v2_edm_xc_ent_affiliates
spl_v2	edm_xc_entity_identifiers	spl_v2_edm_xc_ent_ids
spl_v2	edm_xc_entity_metro_areas	spl_v2_edm_xc_ent_metro_area
spl_v2	edm_xc_entity_naics_rank	spl_v2_edm_xc_ent_naics_rank
spl_v2	edm_xc_entity_relationships	spl_v2_edm_xc_ent_relation
spl_v2	edm_xc_security_13f_list	spl_v2_edm_xc_sec_13f_list

spl_v2	edm_xc_security_entity_map	spl_v2_edm_xc_sec_entity_map
spl_v2	edm_xc_security_listing_map	spl_v2_edm_xc_sec_listing_map
spl_v2	edm_xc_state_coordinates	spl_v2_edm_xc_state_coord
spl_v2	ent_scr_relationships_keyword	spl_v2_ent_scr_rel_keyword
spl_v2	ent_scr_relationships_summary	spl_v2_ent_scr_rel_summary
spl_v2	entity_relation_type_map	spl_v2_entity_relation_type_map
spl_v2	ff_accounting_standard_map	spl_v2_ff_acct_standard_map
spl_v2	h_security_cusip_hist_v2	spl_v2_h_sec_cusip_hist_v2
spl_v2	h_security_sedol_hist_v2	spl_v2_h_sec_sedol_hist_v2
spl_v2	h_security_ticker_exchange	spl_v2_h_security_ticker_exc
spl_v2	h_security_ticker_region	spl_v2_h_security_ticker_reg
spl_v2	inv_obj_specialization_map	spl_v2_inv_obj_spec_map
spl_v2	ma_term_change_types_map	spl_v2_ma_term_chg_type_map
spl_v2	pe_portco_pvt_invest_evts	spl_v2_pe_portco_invest_evts
spl_v2	pe_security_categories_map	spl_v2_pe_sec_cat_map
spl_v2	pe_stakes_securities_pvt_invest	spl_v2_pe_stakes_invest
spl_v2	shrk_campaign_status_map	spl_v2_shrk_campaign_status_map
spl_v2	shrk_cg_amendment_type_map	spl_v2_shrk_cg_amend_type_map
spl_v2	shrk_election_source_map	spl_v2_shrk_elect_source_map
spl_v2	shrk_pill_version_type_map	spl_v2_shrk_pill_ver_type_map
spl_v2	shrk_special_exhibit_map	spl_v2_shrk_spec_exhibit_map
spl_v2	sym_ticker_exchange_hist	spl_v2_sym_ticker_exch_hist
sym_v1	sym_ticker_exchange_hist	sym_v1_sym_ticker_exch_hist

Appendix U: MetaData tables

Each time the Loader is invoked, an entry is made into the `fds.fds_command_history` ("Command History") table and a distinct log file is created and placed in the `\logs\` folder directory of the Loader installation. The name of the log file will be noted in the `log_file` column of the Command History table. No entries will be made in the `fds.fds_zip_history` ("Zip History") or `fds.fds_file_history` ("File History") table if there are no new files posted for download. If new files are posted the loader commences to download these files and an entry will be made into the Zip History table. Once the zip file downloads and uncompresses successfully, entries will begin to be made in the File History table.

Command History Table

In the following example, we will begin by joining the Command History, Zip History, and File History tables to dive deeper into file errors and successes. This query will be slightly modified as we work through an example.

Table 5: Combining Command History, Zip History, and File History Query

```
select ch.id as 'command id', ch.full_command, ch.success as 'command success',
ch.begin_time as 'command begin time', ch.end_time as 'command end time',
ch.log_file,
zh.id as 'zip id', zh.bundle, zh.zip_type, zh.sequence, zh.success as 'zip success',
zh.download_seconds as 'zip dl seconds', zh.zip_bytes,
zh.begin_time as 'zip begin time', zh.end_time as 'zip end time',
fh.id as 'file id', fh.file_type, fh.success as 'file success',
  fh.file_bytes, fh.begin_time as 'file begin time',
  fh.end_time as 'file end time'
from fds.fds_command_history ch
left join fds.fds_zip_history zh on zh.ch_id = ch.id
left join fds.fds_file_history fh on zh.id = fh.zh_id
where ch.begin_time >=getdate()-10
and ch.success = '0'
--and (zh.success is null or fh.success is null)
order by 4 desc
```

Figure 38: Combining Command History, Zip History, and File History Output

command id	full_command	command success	command begin time	command end time	log_file
7565	D:\sdfd\demo_loaders\sdf_dev_mssql_2008R2\FDSLod...	0	2015-06-10 21:00:02.900	NULL	20150610-210002-edm_v1-edm_premium-e.log

In the above query, the Loader was launched once in the last 10 days and failed without downloading any files. It would be recommended to investigate the log file for error messages that was generated which is noted in the 'log_file' column of the query output.

A command success value of 0 from the Command History table (`ch.success`) indicates a Loader failure. A value of 1 indicates a success or non-error exit code and a value of 2 indicates the Loader is currently running. A null value in the `zh.success` or `fh.success` columns indicates Loader was invoked, but no files were downloaded.

If we change the 'ch.success = '0' value to '1' and uncomment out the line that begins with --and (zh.success, we will see instances where the Loader was launched, but there were no new files posted, so no entries were made in the Zip History or File History tables. This is a normal operation of the Loader.

Figure 39: Combining Command History, Zip History, and File History Modified Output

command id	full_command	command success	command begin time	command end time	log_file
7602	D:\sdfdemo_loaders\sdf_dev_mssql_2008R2\FDSLod...	1	2015-06-12 14:00:03.250	2015-06-12 14:14:47.667	20150612-140002-edm_v1-edm_premium-e.log
7601	D:\sdfdemo_loaders\sdf_dev_mssql_2008R2\FDSLod...	1	2015-06-12 13:00:03.497	2015-06-12 13:16:14.293	20150612-130002-edm_v1-edm_premium-e.log

Zip History Table

The Zip History table will tell us the specific zip files that were downloaded during a specific command. Launching a single command may download multiple zip files. If we the modify the previous query to look at instances where not only did the command fail, but also the zip download failed as well:

Table 6: Command and Zip History Failure Query

```
select ch.id as 'command id', ch.full_command, ch.success as 'command success', ch.begin_time as 'command begin time',
ch.end_time as 'command end time', ch.log_file,
zh.id as 'zip id', zh.bundle, zh.zip_type, zh.sequence, zh.success as 'zip success', zh.download_seconds as 'zip dl
seconds', zh.zip_bytes, zh.begin_time as 'zip begin time', zh.end_time as 'zip end time',
fh.id as 'file id', fh.file_type, fh.success as 'file success', fh.file_bytes, fh.begin_time as 'file begin time',
fh.end_time as 'file end time'
from fds.fds_command_history ch
left join fds.fds_zip_history zh on zh.ch_id = ch.id
left join fds.fds_file_history fh on zh.id = fh.zh_id
where ch.begin_time >=getdate()-30
and ch.success = '0'
and zh.success = '0'
--and fh.success = '0'
order by 4 desc
```

Figure 40: Command and Zip History Failure Output

command id	full_command	command success	command begin time	command end time	log_file
7565	D:\sdfdemo_loaders\sdf_dev_mssql_2008R2\FDSLod...	0	2015-06-10 21:00:02.900	NULL	20150610-210002-edm_v1-edm_premium-e.log

In the above example we can see instances where there were issues with the download of the zip file or the unzipped file being applied to the database. When records show up with these modifications to the query, we would recommend investigating the issue a bit further with the zh.id (aliased as zip id) value copied into a new query with the Zip History table.

Table 7: Zip History Query

```
select *  
from fds.fds_zip_history  
where id = '65350'
```

Figure 41: Zip History Output

id	ch_id	bundle	zip_type	sequence	success	download_seconds	zip_bytes	begin_time	end_time
65350	7565	ent_geo_rev_v1	delta	269	0	0.688	27482216	2015-06-10 21:03:29.470	NULL

Since a value of 0 appears in the table above, we may want to see if a subsequent run was able to successfully process the same bundle with a minor modification to the previous query.

Table 8: Zip History Query Modified

```
select *  
from fds.fds_zip_history  
where id >= '65350'  
and bundle = 'ent_geo_rev_v1'  
order by 1 asc
```

Figure 42: Zip History Query Modified Output

id	ch_id	bundle	zip_type	sequence	success	download_seconds	zip_bytes	begin_time	end_time
65350	7565	ent_geo_rev_v1	delta	269	0	0.688	27482216	2015-06-10 21:03:29.470	NULL
65405	7566	ent_geo_rev_v1	delta	269	1	0.591	27482216	2015-06-10 22:36:29.213	2015-06-10 22:40:36.293

We can see that in a subsequent run; the bundle was successfully loaded, noted by the success value of 1.

File History Table

If additional information regarding the specific file or action that failed during the loading process, it is recommended the user look at the File History table. The file_type column will provide information on which action the Loader was performing when the Loader failed.

Investigating further into the File History table, we see that the Loader failed during the update process. In this situation, we would recommend the user examine the log file for any error messages and if necessary, it is recommend that the user re-run the Loader if subsequent loads had not picked up this file.

Table 9: File History Query

```
select *  
from fds.fds_file_history  
where zh_id = '65350'
```

Figure 43: File History Query Output

id	zh_id	table_name	bundle	text_file	sequence	file_type	split	success	extract_seconds	move_seconds	load_seconds
550965	65350	ent_gr_item	ent_geo_rev_v1	ent_gr_item_country	269	delete	1	0	0.377	NULL	NULL

Data Sequences table

The fds.fds_data_sequences (“Data Sequences”) table is used to display the last full and delta files applied to the database. This table is most useful when trying to ensure that two databases are in sync.

In the query below, we combine the Data Sequences and File History table to tell us the last time a table was updated via an update and full file.

Table 10: Data Sequences Query

```
select ds.schema_name, ds.table_name, ds.bundle, ds.text_file, ds.sequence, s2.end_time as 'last update applied', s.end_time
as 'last full applied'
from fds.fds_data_sequences ds
join (select table_name, bundle, text_file, max(end_time) as 'end_time' from fds.FDS_FILE_HISTORY where file_type = 'full'
group by table_name, bundle, text_file) as s on s.bundle = ds.bundle and s.table_name = ds.table_name and s.text_file =
ds.text_file
join (select table_name, bundle, text_file, max(end_time) as 'end_time' from fds.FDS_FILE_HISTORY where file_type = 'update'
group by table_name, bundle, text_file) as s2 on s2.bundle = ds.bundle and s2.table_name = ds.table_name and s2.text_file =
ds.text_file
order by s2.end_time desc
```

Figure 44: Data Sequences Query Output

schema_name	table_name	bundle	text_file	sequence	last update applied	last full applied
ref_v1	h_currency	hub_fx	h_currency	1288	2015-06-25 12:14:53.050	2015-04-26 16:57:52.647
econ_v1	econ_standardized_attrib	econ_standardized_v1	econ_standardized_attrib	1484	2015-06-25 12:14:24.623	2015-04-26 18:54:31.813
econ_v1	econ_standardized	econ_standardized_v1	econ_standardized_y	1484	2015-06-25 12:14:23.637	2015-04-26 18:54:31.077
econ_v1	econ_standardized	econ_standardized_v1	econ_standardized_q	1484	2015-06-25 12:14:22.653	2015-04-26 18:54:30.380

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