



# Enzo Unified

Installation and Configuration Guide

*Version 1.6 – RTM*

*Last Updated On August 15 2016*

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## Pre-Requisites

In order to successfully install Enzo Unified you will need to have the following configuration:

- Windows 2012 or higher, 64-bit Operating System
- A dedicated instance of SQL Server Express 2014 or higher
- .NET 4.5 must be installed; some adapters may require .NET 4.6

It is important to note that Enzo Unified uses SQL Server to store its configuration settings and other parameters. Four databases will be created on the SQL Server instance.

There are two executables for installing Enzo Unified: one for AMD processors, and another for Intel processors.

*For compatibility reasons, it is highly recommended to install a dedicated instance of SQL Server for Enzo Unified.*

*This release of Enzo Unified has certain limitations, documented at the end of this document.*

## Install Enzo Unified

Run the MSI provided by the Enzo Unified support team on the server; this can be a physical machine, or a virtual machine running locally or in the cloud. There are two setup files available: one for Intel processors and another for ADM processors.

*You must be an administrator on the machine.*

The installation will make the following significant changes to your machine:

- A new Windows Service will be created (the name will start with Enzo)
- A new SSL certificate will be created in the certificate store
- Firewall rules will be changed to allow the TCP protocol to communicate on the selected port during installation
- Four databases will be created on the database server
- A shortcut to Enzo Manager will be created on the desktop

## Key Enzo Unified Settings

The installer will prompt you for specific information, including:

- The Port on which Enzo Unified will listen for incoming SQL requests; by default this value is 9550, but you can change it if desired.
- The HTTP and HTTPS ports on which Enzo Unified will listen for incoming HTTP traffic; you can also change the default values.

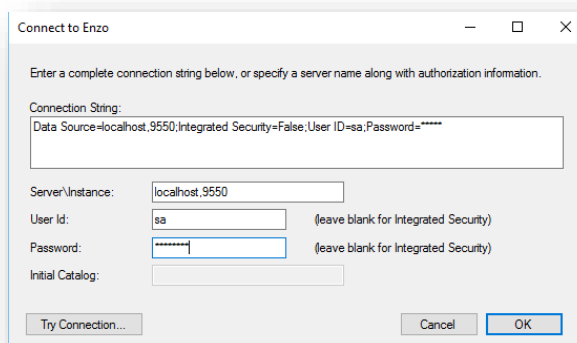
During the installation process, you will be asked to select the Adapters you want to install. Although you can select all available adapters, it is recommended to pick only the adapters you want to use on a production machine for performance and security reasons.

## Change sa Password

Enzo Unified emulates SQL Server, including the 'sa' administrative account. Upon installation, the 'sa' account has its password set to **password**. It is highly recommended to change this password as soon as the installation of Enzo Unified is completed.

Follow these steps to change the 'sa' password:

- Start Enzo Manager (the shortcut should be on your Desktop)
- Select File -> Connect... and provide the connection information to Enzo Unified and click OK
  - o The Server should be your machine name (or localhost), followed by a comma, and the port on which Enzo is listening for SQL connections (9550 by default), as such:
    - Localhost,9550
  - o UserId: sa
  - o Password: password



- Select Configuration -> Change 'sa' Password, enter the new password, and click OK

- Current password: password
- New Password: your new password
- Re-enter password: your new password

## Configure Adapters with Enzo Manager

Once Enzo Unified is installed, many of the adapters need to be configured before they can be used. The following section covers the adapters that come with the installer of Enzo Unified. To configure an adapter, simply click on it on the left. After installing Enzo Unified, only the 'sa' account will be available in the Login dropdown window; if you have created additional logins, they will also need to be configured separately (each login requires its own configuration settings per adapter).

When selecting a login, you can either create a new configuration, or update an existing one. To create a new configuration, choose New Config. To edit a configuration, select it from the list and click on Save after changing values.

### Refreshing Configuration Settings in SSMS

Although changes to security settings take effect almost immediately, changes to configuration settings requires users to either login, or to refresh manually using the `_configFlush` command.

For example, if you are currently logged in with SSMS as the 'sa' account, and you make a change to the configuration settings of the Couchbase adapter (such as the password of the bucket), use the following command to refresh all opened sessions with the new settings:

```
EXEC couchbase._configFlush
```

### Adapter-Specific Configurations

#### Amazon PA

This adapter provides access to Amazon's Product Advertising API.

Signup URL: <https://aws.amazon.com/api-gateway/>

Parameter Name	Type	Comment
<b>associateTag</b>	string	The associate tag provided by Amazon
<b>awsAccessKeyId</b>	string	The Access Key identifier
<b>awsSecretKey</b>	string	The secret key
<b>url</b>	string	The product URL as provided by Amazon

#### AmTote

This adapter is used to access the AmTote gateway services. Contact Enzo Unified for more information.

#### Azure Bus

Provides access to the Microsoft Azure Service Bus (Queues, Topics and Subscriptions).

Signup URL: <http://azure.microsoft.com>

Parameter Name	Type	Comment
<b>BusNamespace</b>	string	The Azure Bus namespace
<b>Name</b>	string	The name of the ACS account
<b>Key</b>	string	The access key for the bus
<b>Retries</b>	int	Number of automatic retries

### Azure IoT Hub

Provides access to the Microsoft Azure IoT Hub.

Signup URL: <http://azure.microsoft.com>

Parameter Name	Type	Comment
<b>Name</b>	string	The name of the IoT Hub
<b>ConnString</b>	string	The connection string to the Hub

### Azure Storage

This adapter provides access to Azure Storage information, including Azure Tables, Azure Blobs and Azure Queues.

Signup URL: <http://azure.microsoft.com>

Parameter Name	Type	Comment
<b>Account</b>	string	The Azure Storage Account name
<b>Key</b>	string	The Azure Storage Account key
<b>UseSSL</b>	bool	1 to use SSL
<b>Retries</b>	int	Number of automatic retries

### Bing

This adapter provides access to Bing Search and Bing Translation.

Signup URL: <http://datamarket.azure.com/dataset/bing/search>

Parameter Name	Type	Comment
<b>customerId</b>	String	The Bing API Customer Id
<b>apiKey</b>	string	The Bing API Key

### Couchbase

This adapter provides access to Couchbase buckets.

Parameter Name	Type	Comment
<b>userName</b>	string	The bucket user name
<b>password</b>	string	The bucket password
<b>nodes</b>	string	A comma separated list of couchbase nodes listening (ex: <a href="http://devlap03:8091/pools">http://devlap03:8091/pools</a> )

## CSV

This adapter provides access to flat files and represents them as read-only tables. The following settings are required at a minimum:

Parameter Name	Type	Comment
<b>Name</b>	string	The name of the CSV definition
<b>Column Delimiter</b>	string	The file column delimiter
<b>Columns on First Row</b>	bool	Yes if file contains headers
<b>Column Widths</b>	string	Comma-separated list of column widths (for fixed width files only)

In addition, a Columns tab is available allowing you to specify a list of columns for the file. Add a column definition for each consecutive header in the flat file.

## DataGov

This adapter provides access to demographics information as provided by public US Government data sources. No specific configuration is required.

## Facebook

This adapter provides access to certain Facebook requests.

Parameter Name	Type	Comment
<b>accessToken</b>	string	The temporary access token for Facebook as returned by the User Authorization sequence provided by Facebook.

## Equifax

Provides access to name/address verification from Equifax's EID Verifier.

Signup URL: <https://www.equifax.com/business/eidverifier>

Parameter Name	Type	Comment
<b>userName</b>	string	User Name of your Equifax account
<b>password</b>	string	Password of your Equifax account

## Files

Provides access to files and directories on your network. This adapter has no configuration settings.

## FlightAware

Provides access to many of the APIs made available by FlightAware.

Signup URL: <http://flightaware.com/account/join/?referer=/account/join/>

Parameter Name	Type	Comment
<b>userName</b>	string	The user name of your FlightAware account

<b>apiKey</b>	string	The FlightAware API Key
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### FTP

Provides access to files on FTP and FTPS servers.

Parameter Name	Type	Comment
<b>URI</b>	string	The FTP site address
<b>uid</b>	string	The user id of the FTP site
<b>pwd</b>	string	The password of the FTP site
<b>isPassive</b>	bool	True if using passive FTP connection
<b>isBinary</b>	bool	True if accessing binary data (obsolete)
<b>isSSL</b>	bool	True if using FTPS

### GeoNames

Provides access to Geo-coding information from GeoNames.

Signup URL: <http://www.geonames.org/login>

Parameter Name	Type	Comment
<b>userName</b>	string	The user name of your FlightAware account

### Insteon

Provides access to certain Insteon devices (SmartHome HouseLinc devices). Requires downloading a driver to be installed on the server where Enzo Unified is installed.

General information: <http://www.smarthome.com/houselinc.html>

Driver download [http://cache-m2.smarthome.com/manuals/2413U\\_Drivers.zip](http://cache-m2.smarthome.com/manuals/2413U_Drivers.zip)

Parameter Name	Type	Comment
<b>commPort</b>	string	The COM port where the device modem is located

### Intacct

Provides access to the Intacct cloud accounting software.

Signup URL: <https://developer.intacct.com/>

Parameter Name	Type	Comment
<b>senderId</b>	string	senderId for control element
<b>senderPassword</b>	string	senderPassword for control element
<b>userId</b>	string	userId for authorization element
<b>companyId</b>	string	companyId for authorization element
<b>password</b>	string	password for authorization element
<b>url</b>	string	URL to access Intacct web services



## Messaging

Provides access to SMTP servers to send text messages and emails.

Parameter Name	Type	Comment
<b>MailServerType</b>	string	(ignored)
<b>FromName</b>	string	The From name
<b>FromEmail</b>	string	The From email
<b>Host</b>	string	The address of the SMTP host
<b>Port</b>	int	The SMTP port number
<b>userId</b>	string	The user id for authenticated SMTP servers
<b>password</b>	string	The password for authenticated servers
<b>enableSSL</b>	bool	True if the SMTP server requires SSL connections

## Msad

Provides access to Active Directory user management.

Parameter Name	Type	Comment
<b>userName</b>	string	A domain user with sufficient administrative privileges
<b>Domain</b>	string	The domain name
<b>Password</b>	string	The password for the user
<b>Server</b>	string	The domain server name or IP address

## MSMQ

Provides access to local and remote Microsoft queues (MSMQ).

## SalesForce

This adapter provides the ability to connect to a SalesForce site in order to read/write any data element in SalesForce.

Parameter Name	Type	Comment
<b>userId</b>	string	The user id to impersonate
<b>Password</b>	string	The password of the user to impersonate
<b>authToken</b>	string	The account AuthToken as provided by SalesForce

This adapter also allows defining virtual tables that abstract a SalesForce SOQL query, so that any information provided by SalesForce can be accessible through LinkedServer and simple SQL syntax. In addition, it is possible to update one or more records through special Enzo Unified handlers that accept XML as input.

## Shard

This adapter provides the ability to connect to multiple databases and adapters in parallel, and represents the information as single result set. Setting up this adapter requires an understanding on how shards are implemented in Enzo Unified; contact support for further information.

Parameter Name	Type	Comment
<b>type</b>	string	The type of definition (data, view, shard)
<b>connectionString</b>	string	Database connection string or comma-separated list of shard names, views, or data sources.
<b>sqlCommand</b>	string	Default SQL command to use for 'data' connection types. For 'view' connection types, overrides the default SQL statement of downstream data sources.
<b>options</b>	string	Comma-separated list of options for the definition: strict, breadcrumb,readonly
<b>tableName</b>	string	Actual table name of the underlying data source when issuing DELETE, INSERT or UPDATE operations.

This adapter also allows defining virtual tables that point to a shard, view, or data source. Virtual Tables are necessary to perform searches across data sources and to be used through Linked Server.

### SharePoint

Provides access to SharePoint lists and documents. You will need to install the SharePoint 2013 SDK to run this adapter: <http://www.microsoft.com/en-us/download/details.aspx?id=35585>.

Parameter Name	Type	Comment
<b>userName</b>	string	A SharePoint user with sufficient administrative privileges
<b>Password</b>	string	The password for the user
<b>Url</b>	string	The HTTP endpoint where SharePoint is listening on. Example: <a href="https://mysitename.sharepoint.com/teamsite/">https://mysitename.sharepoint.com/teamsite/</a>

### SQLX

This adapter provides the ability to transform certain data sets from SQL (such as compression, or RegEx). Contact support for further information.

Parameter Name	Type	Comment
<b>type</b>	string	The type of definition (data, group)
<b>connectionString</b>	string	Database connection string or comma-separated list of data sources.
<b>sqlCommand</b>	string	Default SQL command to use for 'data' connection types.
<b>options</b>	string	Comma-separated list of options for the definition: strict, breadcrumb

### Twilio

This adapter provides the ability to send Text messages and making phone calls. For this adapter to work, Enzo Unified must be reachable from the Internet as Twilio makes HTTP callbacks. If Enzo Unified is not installed on an Internet facing machine, you will need to configure port forwarding rules so that Enzo Unified can receive the callbacks. If the machine Enzo Unified is installed on does not have a static public IP address, you can use a Dynamic IP service (such as DynAlias) to enable the callbacks.

Signup URL: <https://www.twilio.com/api>

*The URL ports are those defined during the installation of Enzo Unified.*

Parameter Name	Type	Comment
<b>AccountSid</b>	string	The Twilio account Sid
<b>AuthToken</b>	string	The Twilio auth token
<b>CallerId</b>	string	Your Twilio called id
<b>defaultCountryCode</b>	string	Your country code (ex: +1)
<b>StatusUrl</b>	string	The Status Twilio URL where Enzo can be reached (ex: <a href="http://www.machinerunningenzo.com:19550/bsc/twilio/status">http://www.machinerunningenzo.com:19550/bsc/twilio/status</a> )
<b>TwimlUrl</b>	string	The Twiml XML Twilio URL where Enzo can be reached (ex: <a href="http://www.machinerunningenzo.com:19550/bsc/twilio/twiml.xml">http://www.machinerunningenzo.com:19550/bsc/twilio/twiml.xml</a> )
<b>mediaUrl</b>	string	The Media Twilio URL where Enzo can be reached (ex: <a href="http://www.machinerunningenzo.com:19550/bsc/twilio/media">http://www.machinerunningenzo.com:19550/bsc/twilio/media</a> )

### Twitter

Provides access to Twitter search and posting. This adapter requires you to register a new Application that Enzo Unified can impersonate.

Signup URL: <https://dev.twitter.com/>

Parameter Name	Type	Comment
<b>accessToken</b>	string	Your Twitter access token
<b>accessTokenSecret</b>	string	Your Twitter access secret
<b>apiSecret</b>	string	Your API secret
<b>apiKey</b>	string	Your API Key

### US Census

Accesses some of the US Census data sets.

Signup URL: <http://www.census.gov/developers/>

Parameter Name	Type	Comment
<b>apiKey</b>	string	Your US Census API Key

### Velleman DMX

Accesses devices exposed through the Velleman DMX interface (K8062 DMX lighting controllers). This adapter does not use configuration settings.

## Weather

Accesses the Weather Underground service.

Signup URL: <https://www.wunderground.com/weather/api/>

Parameter Name	Type	Comment
apiKey	string	Your API Key

## Managing Logins

The Enzo Manager application allows you to create logins in Enzo, and manage their Access Control List (ACL) for enhanced security. To manage logins, select **Configuration -> Manage Logins**.

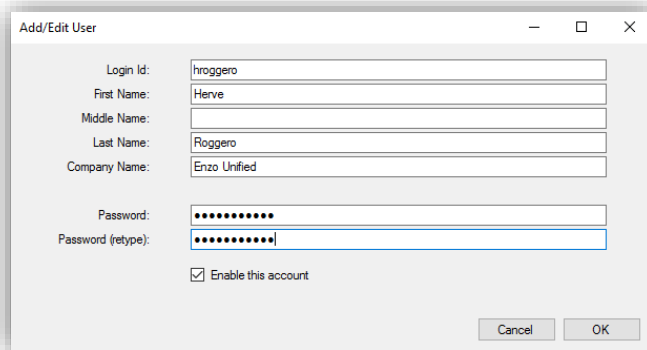
*NOTE: The 'sa' account has access to all features and all adapters of Enzo Unified and as a result its password should be strong and secured.*

### Add/Edit a Login

To add a login, click on the Add button; to edit a login select the login and click on Edit. Enter the necessary information and click OK.

By default, a new login will not have access to any adapter. You must define permissions for the login in order to use adapters.

*NOTE: In edit mode, the login and password fields are disabled. To change the password of a login, select the login id and choose Change Password.*



### Enable/Disable a Login

To disable a login, select the login id and click on the Disable button. Once disabled, the login will not be able to connect to Enzo Unified. If a login id is disabled, you can click on the Enable button to enable the login.

### Change Password

To change the password of a login, select the login id and click on Change Password. The change takes place immediately.

*NOTE: If you change the 'sa' password, you will need to reconnect Enzo Manager by selecting File -> Connect.*

### Copy the REST Authentication Key

The REST Authentication Token can be used by REST clients, such as mobile phones, to connect to Enzo Unified. To copy the REST token, select the login id and click the **Copy Auth Token** button.

### Change Login Permissions

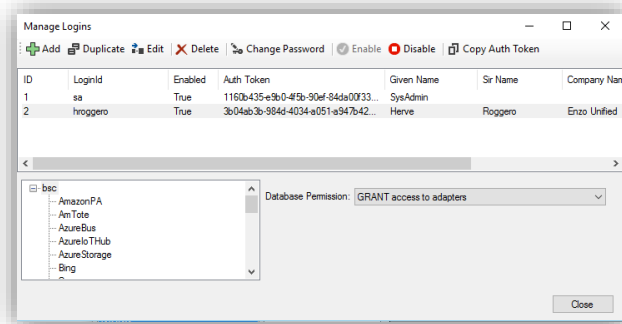
To change the permissions of a login, select the login id from the list. The permissions section will show the list of adapters available for configuration.

### Enable bsc Access Permission

By default the ACL on the bsc database is set to **Deny Access to all adapters**; this setting prevents the login from using Enzo. To allow the login to use adapters, click on the 'bsc' database and set the permission to **Grant Access to Adapters**.

*NOTE: Permission changes are saved immediately; however it may take a minute for the new permissions to take effect in Enzo.*

Once the login has been granted access at the database level, all the adapters and their methods are also available unless otherwise specified.

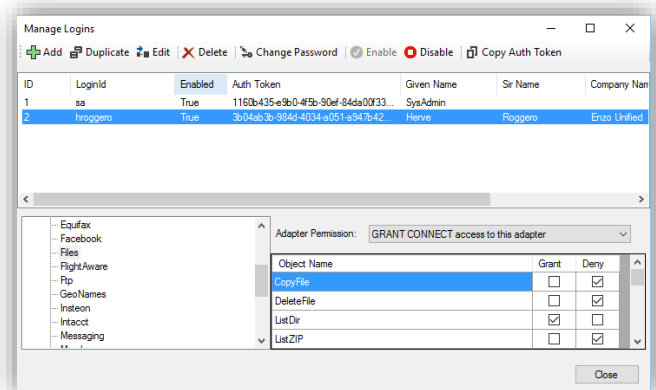


### Change Adapter Permissions

Select an adapter by clicking on the adapter name under the bsc database. Choose from one of the following options:

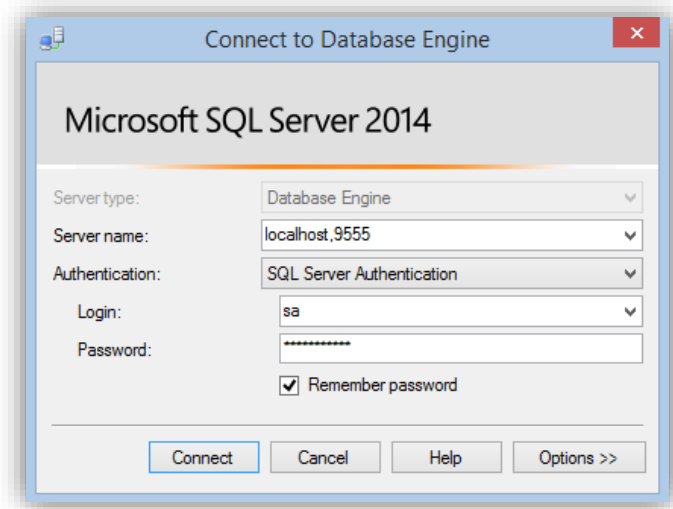
- DENY access to this adapter
- GRANT ALL access to this adapter
- GRANT CONNECT access to this adapter

When granting the CONNECT permission to an adapter, you will need to specify which methods are available for access; by default none of the methods are accessible. To grant access to the **ListDir** method on the Files adapter, click on the **Grant** checkbox on the **ListDir** method.



## Connecting to Enzo Unified

Once Enzo has been configured and is running, you can connect to it using SQL Server Management Studio (SSMS). Start SSMS and login to Enzo using the sa account.



## Adapter Built-In Help

Each adapter provides built-in documentation on its use.

To get help on an adapter, such as the AzureStorage adapter, login to Enzo using SQL Server Management Studio, and type the following command:

### **EXEC AzureStorage.help**

This will return all the available commands for the AzureStorage adapter.

You can also request help on a specific method within the adapter; for example you can get help on the CreateVirtualTable method on the AzureStorage adapter by running this command:

### **EXEC AzureStorage.CreateVirtualTable help**

## Known Issues and Limitations

The Enzo Unified 1.6RC2 build has a few known issues which will be addressed in a future release:

- **Cache adapter methods not supported**

At this time, the internal methods of every adapter that start with **\_cache** are not supported and may not yield the expected result. Declarative Cache support is planned for a future release. You may instead use the **\_async** calls to provide a form of caching.

- **TDS Encryption**

Generally speaking the SQL traffic is not encrypted, with the exception of the pre-login handshake during which the credentials (user id and password) are sent to Enzo Unified using SSL. Support for TDS encryption is planned for a future release.

- **ADO.NET and Entity Framework**

It is possible to connect to Enzo Unified with ADO.NET with the SqlCommand object, including support for SqlParameter as long as a value is provided. However the Entity Framework is not supported.

- **Linked Server**

Linked Server is supported with the following options set:

Collation Compatible	<b>False</b>
Data Access	<b>True</b>
RPC	<b>True</b>
RPC Out	<b>True</b>
Use Remote Collation	<b>True</b>
Collation Name	
Connection Timeout	<b>3600</b>
Query Timeout	<b>0</b>
Distributor	<b>False</b>
Publisher	<b>False</b>
Subscriber	<b>False</b>
Lazy Schema Validation	<b>False</b>
Enable Promotion of Distributed Transaction	<b>False</b>