23.0

Invantive Data Access Point

Reference Manual

invantive
the SQL company

Contents

1 Invantive Data Access Point

1.1 Introduction

Invantive Data Access Point is a web-based solution for exchanging data with over 50 platforms using Invantive SQL. Using popular output formats such as JSON, XML and HTML it is also used to develop interactive websites on top of these platforms.

1.2 Endpoints

Invantive Data Access Point supports a number of endpoints:

- /Preset: execute a preset stored in a file on the server. The preset contains query, format, action, XSL, database and content type.
- /Results: execute a query provided in the HTTP requests and return the results.
- /Transform: first perform the action as with /Results and then apply a XSL transformation.
- /Logoff: log off the current user by releasing all credentials managed by Data Access Point for the web session.
- /Ping: light-weight call to check whether the service is running.

When no endpoint is presented, a default page is shown which allows you to enter a query to be run against a database in the group 'PUBLIC'.

1.3 Request Parameters

Invantive Data Access Point supports a list of pre-defined URL parameters for which a value can be supplied as GET or POST parameters. The following pre-defined parameters are supported:

- connection: name of the database to use, in the format 'GROUP\DATABASE'.
- query: SQL statement(s) to execute.
- printparameters: flag whether to print the parameters and their values in the output ('true' for yes, 'false' for no, default is no).
- includeheaders: flag whether to include the headers in the output ('true' for yes, 'false' for no, default is no).
- usetechnicalheaders: flag whether to use technical headers instead of functional headers in the output ('true' for yes, 'false' for no, default is no).
- format: output format in which the results must be presented (Html, Xml, Json, NDJSON, JsonDataSet, Atom, Rss, Csv, Tsv, Text, Xlsx, MsExcel, Data, default is Html).
- xsl: Filename or URL of XSL to apply on the output, preferrably located in the Templates folder.
- contenttype: Content type of the output.
- dispositiontype: Disposition type of the output.
- preset: use a specific preset configuration defined on the server and located by default in the Templates folder.

The value of all other GET and/or POST parameters provided will be bound as parameters to the SQL statement(s).

POST parameters take precedence above GET parameters.

RSS and Atom Format

For RSS and Atom format, please using the following column aliases: `content`, `title`, `id` and `updated`.

Data Format

The data format returns a binary download, such as a ZIP file.

For Data format, please using the following column aliases: `Contents`, `FileName`, `ContentCreationDate`, `DispositionType` and `ContentType`.

1.4 Transferring Credentials

Credentials for the database chosen can be provided in various ways.

Explicit Logon Credentials

The logon code and password can be provided as parameters named 'user' and 'password'.

Basic Authentication

When present, a header named "Authorization" or "HTTP_AUTHORIZATION" is used for Basic Authentication. Logon code and password are taken from the header value following W3C Standards for Basic Authentication.

The authentication realm with Basic Authentication matches the database name when present and "Invantive Data Access Point Default" otherwise.

When Basic Authentication and Explicit Logon Credentials are combined, the logon codes must match. Otherwise, an error is returned.

OAuth Code Grant Flow Preauthenticated

The value of the X-Refresh-Token header is used to authenticate on the OAuth Code Grant Flow as specified for the database chosen in the settings.xml. When not specified as a header, the values of a GET or POST parameter with that name will be used.

OAuth Code Grant Flow Interactive HTML

In general, it is not necessary to make changes to accomodate the Code Grant Flow with a normal HTML site based upon Data Access Point creating pages one-by-one. When necessary, please use the '/token' path with the code and returnUrl parameters to authenticate.

OAuth Code Grant Flow Interactive AJAX

The '/auth' path allows AJAX calls to redirect to a log on page, returning JSON which can be evaluated from code like:

```
    {
      //
      // Get user information for picture and name in header.
      //
      var url = "auth?preset=nl-some-query" + "&returnUrl=" +
encodeURIComponent(window.location.href);
```

```
    $scope.spinnerGet = $http.get(url)
        .then
          ( function successCallback(response)
            {
              var isAuthenticated =
response.data.isAuthenticated;
              var authenticationUrl =
response.data.authenticationUrl;

              if (isAuthenticated)
              {
                //
                // Get data.
                //
                $scope.spinnerGet = $http.get("Preset?preset=nl-
some-query")
                    .then
                      ( function successCallback(response)
                        {
                          var me =
response.data.Results[0].Data[0];

                          var image = me.THUMBNAILPICTURE;
                          var imageFormat =
me.THUMBNAILPICTUREFORMAT;
                          ...
                        }
                      , function errorCallback(response)
                        {
                          alert('Could not load user
information.');
                        }
                      );
              }
              else
              {
                window.location.href = authenticationUrl;
              }
            }
          , function errorCallback(response)
            {
              alert('Could not load authentication
information.');
            }
          );
  }
```

1.5 Special Cases

A number of special cases exist.

1.5.1 Transferring Refresh Token to Zoho Reports

The 2018 releases of Zoho Reports allow you to retrieve data using a URL with a mix of parameters specified as:

- Headers
- GET parameters
- POST parameters

All three categories of parameters are handled by the Zoho backend. However, a number of non-industry standard restrictions apply:

- The parameter value may not contain an exclamation mark ('!').
- The parameter value length may not exceed 240 characters.

Specification of a refresh token such as for Facebook or Exact Online is there not possible in general; they can be up to 1.000 characters and most of them contain an exclamation mark.

As a workaround, you can transport the refresh token to Data Access Point directly from Zoho using one of the following workarounds:

- When no exclamation mark is present in your refresh token: split the value for the X-Refresh-Token into multiple parts (at most 10). Provide the values by adding a header "X-Refresh-Token-Part" plus a number from 1 to 10 to the list of parameters and assign each one a piece of the refresh token. The resulting parameters will be named "X-Refresh-Token-Part1", "X-Refresh-Token-Part2", etc.
- When an exclamation mark is present in your refresh token: base64 encode the refresh token and split the base64 encoded value into multiple parts (at most 10). Provide the values by adding a header "X-Refresh-Token-Part" plus a number from 1 to 10, plus a prefix "-Base64" to the list of parameters and assign each one a piece of the refresh token. The resulting parameters will be named "X-Refresh-Token-Part1-Base64", "X-Refresh-Token-Part2-Base64", etc.

On reception, the parts will be assembled together and considered as follows to be used as a refresh token:

- When a X-Refresh-Token header or parameter is present, it will be preferred.
- When a non-base64 encoded value is present, that one will be used.
- Otherwise, the value provided by base64 encoding will be used as a refresh token.

1.5.2 Process Files

Files can be presented for use in Invantive SQL using the following steps:

- Use one POST parameter per file.
- Define in the preset a parameter of type ByteArray with a name identical to the POST parameter.
- The parameter can be used in Invantive SQL.

Example

HTML

```
<body>
  <form action="/Preset?preset=some-preset" method="POST"
enctype="multipart/form-data">
    <ul>
```

```
      <li>
        <label class="label">File</label>
        <input type="file" title="Choose file."
name="upload_file">
      </li>
    </ul>

    <div class="buttonbar">
      <button class="requestButton download"
type="submit">Download</button>
    </div>
  </form>
</body>
```

Preset

```
<?xml version="1.0" encoding="utf-8" ?>
<PresetInfo>
  <Action>Results</Action>
  <Code>SOME-CODE</Code>
  <SqlFile>some-code.sql</SqlFile>
  <Format>Xlsx</Format>
  <ConnectionName>...\...</ConnectionName>
  <ParameterValues>
    <Parameter><Name>upload_file</Name><DotnetDataType>ByteArray
</DotnetDataType></Parameter>
  </ParameterValues>
</PresetInfo>
```

SQL

```
select *
from   exceltable
       ( table 'Sheet1'
         passing :upload_file
         columns some_column varchar2 position 1
       )
```

1.6 Presets

A preset is a file preferably in the Templates folder that pre-defines a number of settings for an interaction. The format is based upon the following XML structure:

```
<?xml version="1.0" encoding="utf-8" ?>
<PresetInfo>
  <Code>ENTRIES</Code>
  <SqlFile>file.sql</SqlFile>
  <Format>Xml</Format>
  <Action>Transform</Action>
  <Xsl>ecotaksen-all.xsl</Xsl>
  <XslOutputTranslate>true</XslOutputTranslate>
  <LogRequestProgress>true</LogRequestProgress>
  <ConnectionName>ECOTAKSEN\MAIN</ConnectionName>
  <ParameterValues>
    <Parameter><Name>par</Name><DotnetDataType>int32</DotnetData
Type><ForceValue>true</ForceValue><Value>25</Value></Parameter>
    <Parameter><Name>upload_file</Name><DotnetDataType>ByteArray
</DotnetDataType></Parameter>
```

```
    </ParameterValues>
  </PresetInfo>
```

with the following meaning:

- the optional module code is registered as 'Code'.
- the SQL file (`SqlFile`) is preferably located also in the Templates and the contents of this file will be used as a pre-set for the request parameter 'query'.
- As an alternative you can provide a SQL statement in the preset, using `SqlStatement`.
- the format (`Format`) has the same meaning as the request parameter 'format'.
- the action (`Action`) has the same meaning as the endpoints Results and Transform. Other values are not supported.
- the xsl (`Xsl`) is the name of an XSL-file which is used in combination with the format XML. It defines the mapping through which the XML is processed. Many XSL transformation parameters are available.
- the `XslOutputTranslate` specifies whether to apply XSL transformation.
- the `IncludeHeaders` specifies whether to add headers to the output where applicable. The associated request parameter is 'includeheaders'
- the `HeaderFormat` specifies what type of headers to include and can be '{name}' for a technical name and '{labelsingularcomposed}' for a user friendly name. The related request parameter is 'usetechnicalheaders' which can be true or false.
- the `PrintParameters` specifies whether to print parameters in the output and can be true or false. The associated request parameter is 'printparameters'.
- the `ContentType` specifies a deviating desired MIME content-type. The associated request parameter is 'contenttype'.
- the `DispositionType` specifies a deviating desired disposition type. The associated request parameter is 'dispositiontype'.
- the `ContentFileName` specifies a deviating desired file name and download as attachment. The associated request parameter is 'contentfilename'.
- the `AccessControl` is follows definition on all Invantive Web projects for access control, but specifically for the preset provided.
- the `LogRequestProgress` is a boolean value whether for the specific preset request logging is required.
- the connection name (`ConnectionName`) has the same meaning as the request parameter 'connection'.

Parameter Values

Values to bind to SQL parameters can be specified using `ParameterValues`. Parameter values specified in a preset overrule identically named request parameters. Parameter values consist of a list of parameters and their values, where each parameter has three elements:

- Name (`Name`) of the parameter.
- Data type (`DotnetDataType`) of the parameter.

- String representation (`Value`) of the parameter value.
- Whether for force the use of the parameter value specified or only use it as a default (`ForceValue`).

The following data types are available:

- bool
- byte
- ByteArray: to process files presented as POST parameters.
- char
- datetime
- datetimeoffset
- decimal
- double
- float
- guid
- int16
- int32
- int64
- uint16
- uint32
- uint64
- object
- sbyte
- string: texts.
- timespan
- null

1.7 XSL Transformation Parameters

The XSL transformation is executed using a number of pre-defined XSL parameters. These XSL parameters consist of all parameters provided to Data Access Point through the URL, plus the following.

The following values based upon the URL:

- DAPURIOriginalString: the original value.
- DAPURIAbsolutePath: the absolute path.
- DAPURIHost: the host name.

- DAPURILocalPath: the local path.
- DAPURIPathAndQuery: the path and query.
- DAPURIPort: the port number.
- DAPURIQuery: the query.
- DAPURIScheme: the scheme.
- DAPURIUserInfo: the user information.

The following values based upon the current connected user:

- DAPUserInfoCompanyID: the company ID.
- DAPUserInfoCompanyName: the company name.
- DAPUserInfoCompanyPhone: the company phone number.
- DAPUserInfoCompanyWebSite: the company web site.
- DAPUserInfoEmailAddress: the email address.
- DAPUserInfoFirstName: the first name.
- DAPUserInfoFullName: the full name.
- DAPUserInfoGender: the gender.
- DAPUserInfoLanguage: the user interface language.
- DAPUserInfoLastLogon: the last log on moment.
- DAPUserInfoLastName: the last name.
- DAPUserInfoLinkedIn: the LinkedIn profile.
- DAPUserInfoLogOnCode: the log on code.
- DAPUserInfoMiddleName: the middle name.
- DAPUserInfoMobileNumber: the mobile phone number.
- DAPUserInfoNationality: the nationality.
- DAPUserInfoPhoneNumber: the phone number.
- DAPUserInfoPictureUrl: the picture (URL).
- DAPUserInfoSkype: the Skype profile.
- DAPUserInfoTitle: the title.
- DAPUserInfoTwitter: the Twitter profile.
- DAPUserInfoWebSite: the web site.

The following values based upon the current preset:

- DAPPresetFileName: the file name.
- DAPPresetAction: the action.

- DAPPresetCode: the code.
- DAPPresetConnectionName: the full name of the connection.
- DAPPresetContentType: the content type of the output.
- DAPPresetDispositionType: the dispostion type of the output.
- DAPPresetFormat: the format.
- DAPPresetSQLFile: the SQL file name.
- DAPPresetSQLStatement: the SQL statement.
- DAPPresetXSLLocation: the XSL file name.
- DAPPresetIncludeHeaders: whether to include headers in the output.
- DAPPresetHeaderFormat: the header format of the output.
- DAPPresetPrintParameters: whether to print parameters and their values in the output.

Plus the following:

- DAPSystemIPAddressDeviceExternal: the external IP address of the web server.
- DAPSystemIPAddressDeviceInternal: the internal IP address of the web server.
- DAPSystemIPAddressUserExternal: the external IP address of the current user.
- DAPSystemIPAddressUserInternal: the internal IP address of the current user.
- DAPShowConfidentialDetails: whether to include confidential details.
- DAPPrintParameters: whether to print and their values in the output.
- DAPIncludeHeaders: whether to include headers in the output.
- DAPSQLFile: the SQL file name.
- DAPXSLLocation: the XSL file name.
- DAPDeviatingConnectionName: the forced different full connection name.
- DAPDeviatingContentType: the forced different content type of the output.
- DAPDeviatingDispositionType: the forced different disposition type of the output.
- DAPDeviatingContentFileName: the forced different content file name of the output.

1.8 SQL Parameters

The SQL statements are provided with parameters. The parameters can be used using the syntax ':NAME'.

These parameters consist of all HTTP parameters provided through GET and/or POST, excluding the following which are reserved for use by Invantive Data Access Point itself:

- connection,
- contenttype,
- contentfilename,

- format,
- includeheaders,
- usetechnicalheaders,
- password,
- preset,
- printparameters,
- query,
- user,
- xsl.

The list of parameter values is extended by values from the context in which Data Access Point runs.

The following parameter values are added based upon the URL:

- DAPURIOriginalString: the original value.
- DAPURIAbsolutePath: the absolute path.
- DAPURIHost: the host name.
- DAPURILocalPath: the local path.
- DAPURIPathAndQuery: the path and query.
- DAPURIPort: the port number.
- DAPURIQuery: the query.
- DAPURIScheme: the scheme.
- DAPURIUserInfo: the user information.

The following values based upon the current connected user:

- DAPUserInfoCompanyID: the company ID.
- DAPUserInfoCompanyName: the company name.
- DAPUserInfoCompanyPhone: the company phone number.
- DAPUserInfoCompanyWebSite: the company web site.
- DAPUserInfoEmailAddress: the email address.
- DAPUserInfoFirstName: the first name.
- DAPUserInfoFullName: the full name.
- DAPUserInfoGender: the gender.
- DAPUserInfoLanguage: the user interface language.
- DAPUserInfoLastLogon: the last log on moment.
- DAPUserInfoLastName: the last name.

- DAPUserInfoLinkedIn: the LinkedIn profile.
- DAPUserInfoLogOnCode: the log on code.
- DAPUserInfoMiddleName: the middle name.
- DAPUserInfoMobileNumber: the mobile phone number.
- DAPUserInfoNationality: the nationality.
- DAPUserInfoPhoneNumber: the phone number.
- DAPUserInfoPictureUrl: the picture (URL).
- DAPUserInfoSkype: the Skype profile.
- DAPUserInfoTitle: the title.
- DAPUserInfoTwitter: the Twitter profile.
- DAPUserInfoWebSite: the web site.

The following parameter values are added based upon the current preset:

- DAPPresetFileName: the file name.
- DAPPresetAction: the action.
- DAPPresetCode: the code.
- DAPPresetConnectionName: the full name of the connection.
- DAPPresetContentType: the content type of the output.
- DAPPresetFormat: the format.
- DAPPresetSQLFile: the SQL file name.
- DAPPresetSQLStatement: the SQL statement.
- DAPPresetXSLLocation: the XSL file name.
- DAPPresetIncludeHeaders: whether to include headers in the output.
- DAPPresetHeaderFormat: the header format of the output.
- DAPPresetPrintParameters: whether to print parameters and their values in the output.

Plus the following parameter values:

- DAPSystemIPAddressDeviceExternal: the external IP address of the web server.
- DAPSystemIPAddressDeviceInternal: the internal IP address of the web server.
- DAPSystemIPAddressUserExternal: the external IP address of the current user.
- DAPSystemIPAddressUserInternal: the internal IP address of the current user.
- DAPShowConfidentialDetails: whether to include confidential details.
- DAPPrintParameters: whether to print and their values in the output.
- DAPIncludeHeaders: whether to include headers in the output.

- DAPUseTechnicalHeaders: whether to use technical headers in the output (column name) instead of user-friendly label.
- DAPSQLFile: the SQL file name.
- DAPXSLLocation: the XSL file name.
- DAPDeviatingConnectionName: the forced different full connection name.
- DAPDeviatingContentType: the forced different content type of the output.
- DAPDeviatingContentFileName: the forced different content file name of the output.

1.9 Folder Structure

The folder structure of Invantive Data Access Point has the following contents:

- root: some images and css that must be in root and Web.config.
- bin: executable code.
- images: images.
- App_Data: configuration folder.

App_Data Folder

The App_Data folder can have the following contents:

- Backup: previously used copies of the `settings.xml` database with defined databases.
- Cache: disk cache of HTTP requests.
- Config: detail configuration files.
- Log: folder in which copies are placed of received requests and their results on a high level.
- Templates: preferred folder with preset files, SQL and XSL files.
- Trace: folder in which the trace files are stored when tracing is configured.

Config Folder

The Config folder in the App_Data folder can have the following contents:

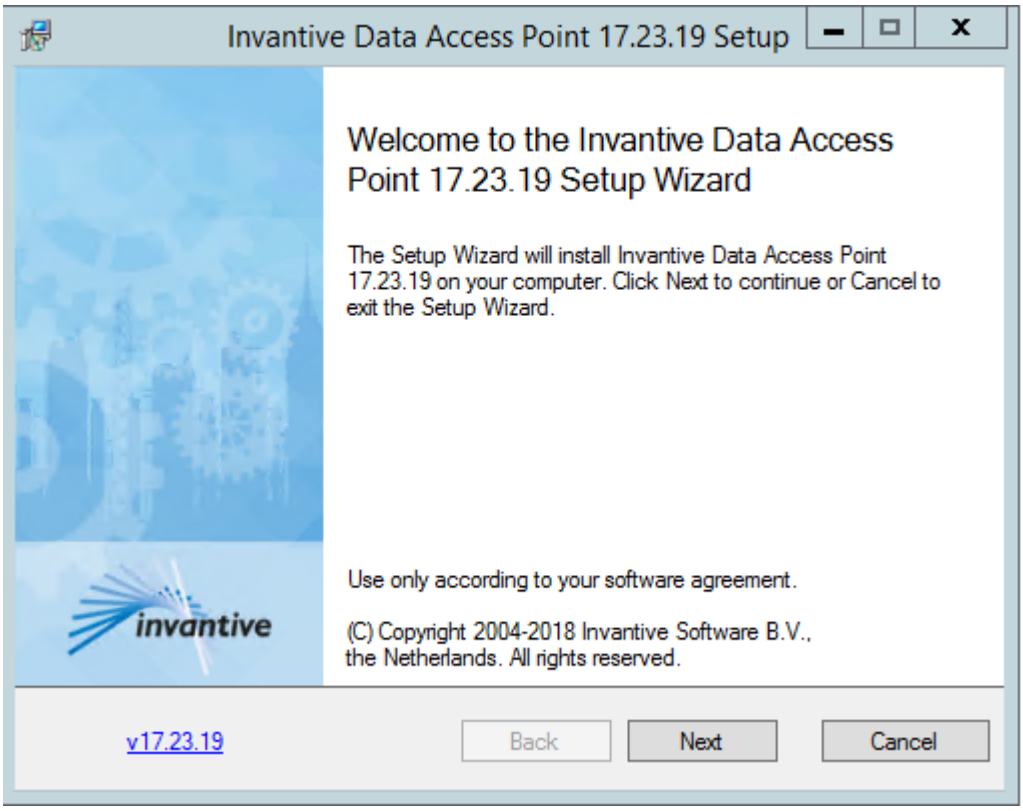
- application.xml: an Invantive web application configuration file with log and trace settings and Access Control Lists.
- invantive.lic: license file.
- settings*.xml: databases with defined databases.

1.10 Installation

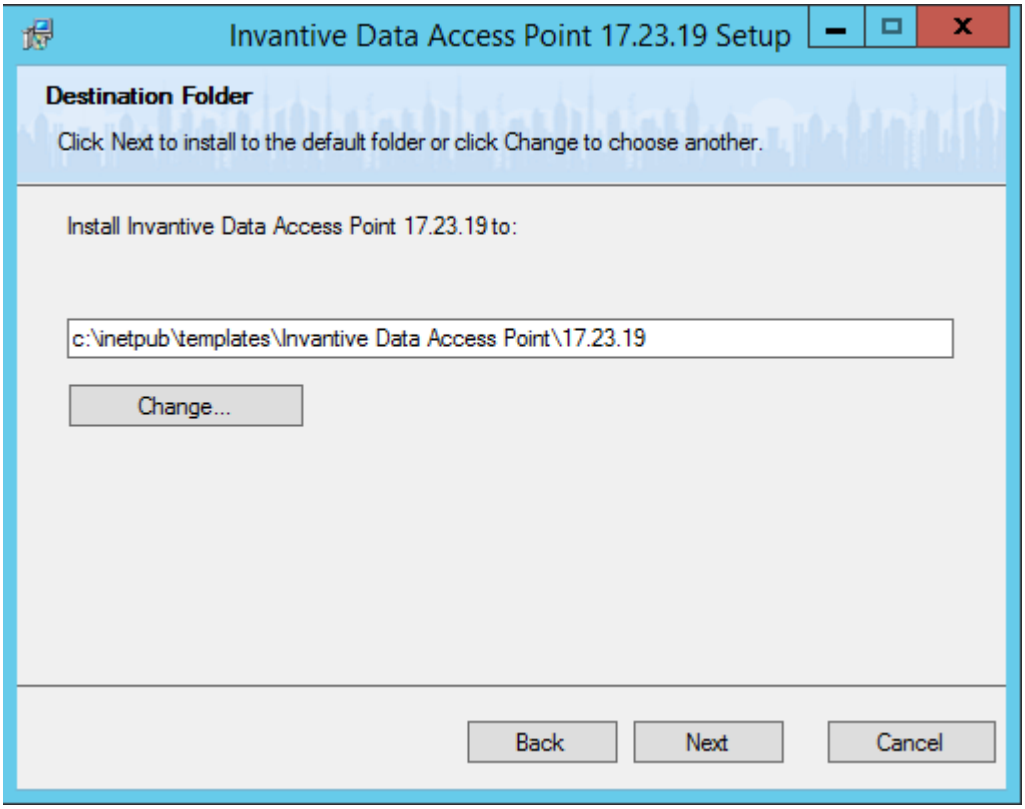
To install Invantive Data Access Point perform the following steps:

- Make sure the server meets the requirements.
- Copy the msi file to the server which should run the web site.

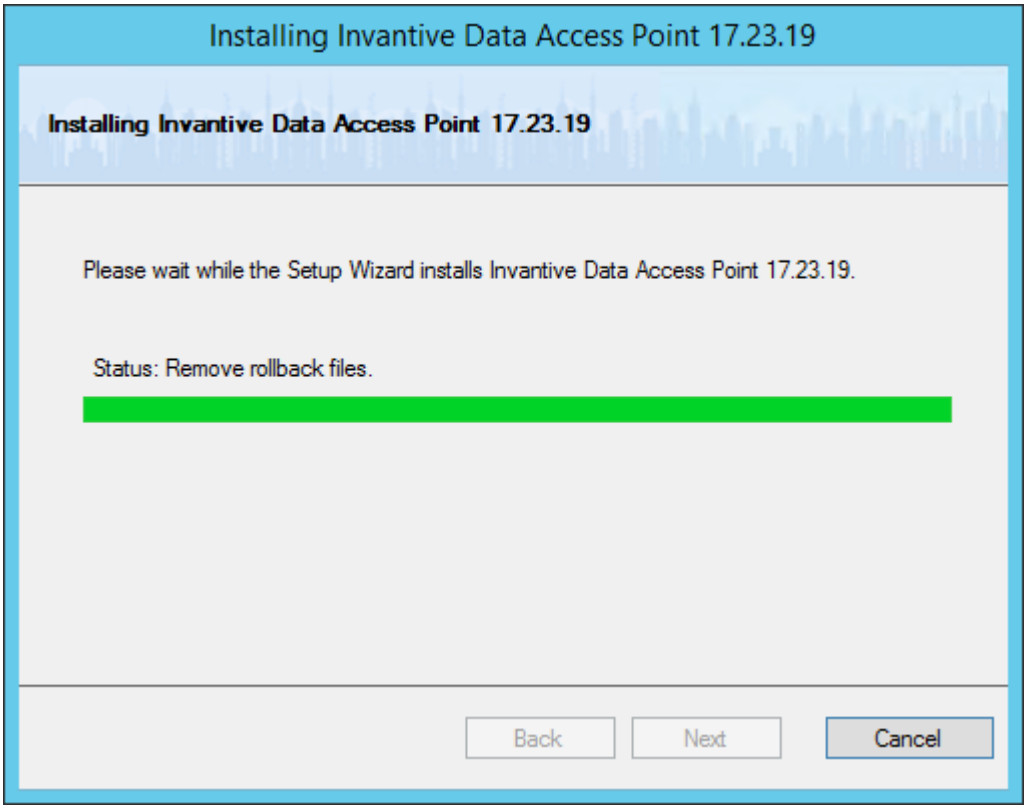
- Run the installer and press 'Next':



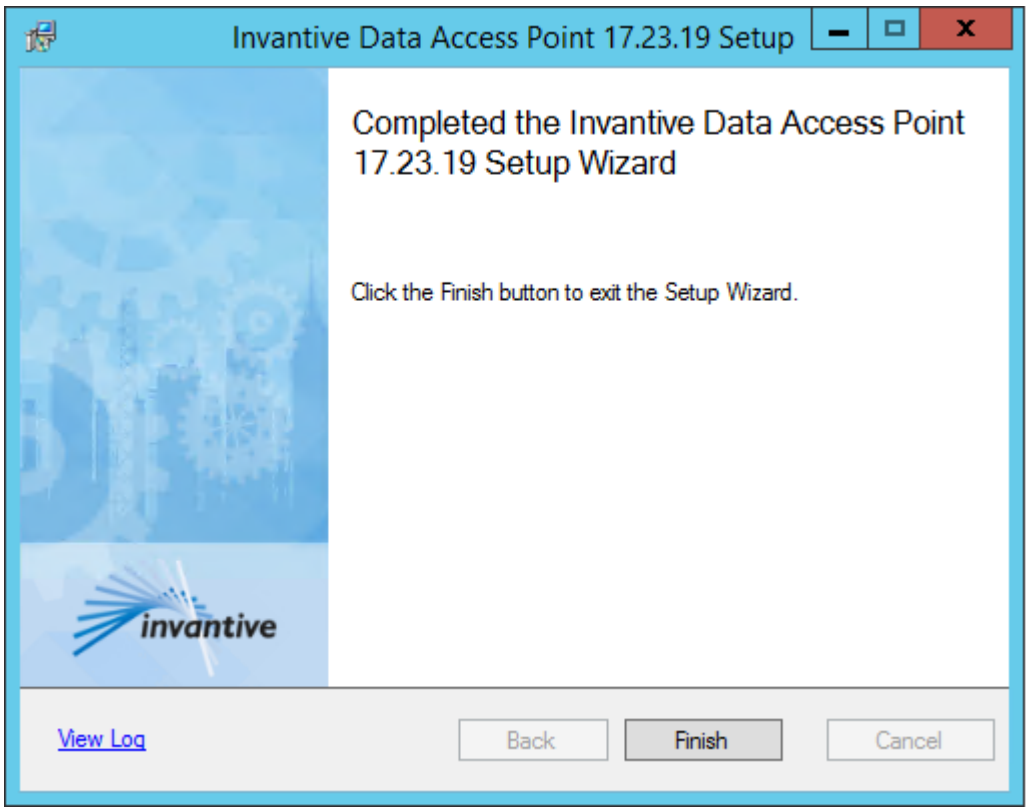
- Accept the default folder and press 'Next':



- Wait for the installer to finish:



- Close the installer by clicking on 'Finish':



- Copy the files to the folder where the site should be hosted.
- Add the folder to Microsoft IIS as a site.

1.11 Configuration

Security

Please make sure that the group IIS_IUSRS has write access to the following folders in the App_Data folder:

- Backup
- Cache
- Log

License

Please place the license file as invantive.lic in the App_Data/Config folder.

Configuration

Please create a file config.json in the App_Data/Config folder.

Databases

Please create a database settings file as settings*.xml in the App_Data/Config folder.

2 Invantive Basics

2.1 Configuration

2.1.1 Customer Service

All Invantive products exchanges messages with a central Customer Service node. These messages include:

- error messages for analysis,
- usage statistics for billing.

On Invantive-internal development workstations only, a non-standard Customer Service node can be selected by specifying a deviating URL in the environment variable `INVANTIVE_CS_BASE_URL`.

2.1.2 OS Platform

A variety of Invantive products is available on Windows, Linux and Mac OSX. The list of supported platforms varies per product, depending on the availability of the libraries such as Microsoft .NET Core.

The OS platform is automatically determined by Invantive software, but sometimes can raise bugs given the bleeding edge nature of Microsoft .NET Core. It is possible to overrule the automatic detection of the OS platform by assigning a value to the environment variable `INVANTIVE_FORCED_OS`. The following values are supported:

- windows: Microsoft Windows,
- linux: Linux,
- osx: Mac OSX.

2.1.3 Startup Checks

The Invantive products execute a number of checks at application start to ensure that the environment running the software meets a number of pre-conditions as established by Invantive. These checks can be disabled for analysis purposes and out-of-the-ordinary deployment scenarios.

Support on products is only available when checks are not manually configured.

All Platforms

The following settings are available on all platforms:

- `INVANTIVE_MIN_GB_FREE_SYSTEM`: minimum amount of free disk space in GB on the system disk during startup. Defaults to 5 GB.

Microsoft Windows

Configuration of these checks is solely available on the Windows OS platform.

The following environment variables allow manual configuration of the checks by setting them to 'true' or 'false':

- `INVANTIVE_CHECK_SYSTEM_COMPATIBILITY`: validate system compatibility.
- `INVANTIVE_MAINTAIN_VSTO`: re-activate Invantive VSTO add-ins when disabled.
- `INVANTIVE_CHECK_OS_UPDATES`: validate OS updates have been applied sufficiently recent.

2.1.4 Cryptography

The Invantive products use cryptographic operations to protect:

- License key
- Invantive Keychain

By default, a key pair is used and stored in the profile of the user for encryption and decryption.

Windows

On Windows, the encryption is normally done using Windows-managed encryption protocols. The key elements are stored in the roaming profile of the current user.

In some deployment scenarios, a user has only a temporary Windows profile. In that case it is not possible to store a key pair. This is typically signaled by an itgenlic510 error code.

As an alternative, you can configure the environment variable `INVANTIVE_CRYPTOGRAPHY` to the value "MACHINE" to use a key pair that is stored solely on the device.

By setting the environment variable `INVANTIVE_RSA` to `INVANTIVE`, encryption on Windows is also managed as on other platforms by custom Invantive code at the expense of loss of some security features. Often Windows patches break the functionality of previously Windows-managed encryption keys, typically signaled by a error like "Key not valid for use in specified state". Switching to custom Invantive code will solve this problem.

Linux, Mac OSX, Android, iPhone, Windows on Parallels

On all other platforms, Invantive offers solely encryption using key elements stored in files in the RSA folder.

2.1.5 UI Language

The Invantive products supported approximately ten languages. On first startup, the language of the Windows version will be used when supported. Otherwise US-English is used.

The license decides which from the languages are supported.

Additionally, the user interface language chosen can further be restricted by setting the environment variable `INVANTIVE_ALLOWED_LANGUAGE_CODES` to a comma-separated list of two characters ISO 639-1 codes.

2.1.6 Folders

The Invantive products store configuration and runtime information in a folder hierarchy. This hierarchy is located within the Invantive folder of the user profile. It can be opened in Windows Explorer by entering `%USERPROFILE%\Invantive` in the location bar.

The location of the folder hierarchy can be changed using environment variables. The central location can be changed by setting the environment variable `INVANTIVE_CONFIGURATION_FOLDER` to a different folder.

A number of subfolders can be relocated too:

- INVANTIVE_CONFIGURATION_BACKUP_FOLDER: the folder with backups of settings files. Defaults to the master folder plus "Backup".
- INVANTIVE_CONFIGURATION_CACHE_FOLDER: the folder with disk cache files. Defaults to the master folder plus "Cache".
- INVANTIVE_CONFIGURATION_HTTP_CACHE_FOLDER: the folder with HTTP disk cache files. Defaults to the root cache folder plus "http" and the OS-user and front-end user.
- INVANTIVE_CONFIGURATION_PERMANENT_CACHE_FOLDER: the folder with permanent disk cache files such as backups of Swagger specification files. Defaults to the root cache folder plus "permanent" and the OS-user and front-end user.
- INVANTIVE_CONFIGURATION_INCREMENTAL_DATA_FOLDER: the folder with permanent incremental data files such as Exact Online sync APIs. Defaults to the root cache folder plus "incdata" and the OS-user and front-end user.
- INVANTIVE_CONFIGURATION_DATA_CACHE_CACHE_FOLDER: the folder with Data Cache disk cache files. Defaults to the root cache folder plus "datacache". Disk cache files improve performance of HTTP downloads, but when necessary can be purged.
- INVANTIVE_CONFIGURATION_LOG_FOLDER: the folder with log files. Defaults to the master folder plus "Log".
- INVANTIVE_CONFIGURATION_DATABASES_FOLDER: the folder with databases files. Defaults to the master folder.
- INVANTIVE_CONFIGURATION_PLUGINS_FOLDER: the folder with plugin files. Defaults to the master folder plus "Plugins".
- INVANTIVE_CONFIGURATION_PROVIDERS_FOLDER: the folder with provider files. Defaults to the master folder plus "Providers".

- INVANTIVE_CONFIGURATION_RSA_FOLDER: the folder with RSA configuration files. Defaults to the master folder plus "RSA".
- INVANTIVE_CONFIGURATION_TEMPLATES_FOLDER: the folder with template files. Defaults to the master folder plus "Templates".
- INVANTIVE_CONFIGURATION_TRACE_FOLDER: the folder with trace files. Defaults to the master folder plus "Trace".

The values may contain any combination of the following placeholders which will be expanded:

- iiid: Invantive Installation ID.
- sessionid: Invantiv session ID.
- frontenduser: name of front-end user (when available).
- osuser: name of operating system user.

A folder can be configured for custom translations which overrule all default translations using the environment variable INVANTIVE_I18N_FOLDER.

2.1.7 Capacity

The Invantive products can configure the capacity of various elements using environment variables.

Support on products is only available when checks are not manually configured.

The following settings are available on all platforms:

- `INVANTIVE_DEFAULT_THREAD_POOL_MIN_WORKER_THREADS`: minimum number of worker threads in default pool. Defaults to twice the number of processors.
- `INVANTIVE_DEFAULT_THREAD_POOL_MIN_ASYNC_IO_THREADS`: minimum number of asynchronous I/O threads in default pool. Defaults to twice the number of processors.

3 Invantive SQL

One of the most familiar questions at our support desk is "what functions are available" in Invantive UniversalSQL to query data in Exact Online.

This second-generation SQL parser is an extensive implementation of many commonly found SQL constructs from the ANSI SQL standard.

It includes in addition to the features of the first-generation SQL parser also:

- joins,
- outer joins,
- cross joins,
- group functions such as stddev, avg and listagg,
- value functions such as xmlescape and round.

There are two flavors shipped:

- Free version: second-generation SQL parser without joins and some upcoming non-ANSI standard advanced mapping functions for large volume financial analysis and reporting.

- Paid version: identical to the free version but with joins and advanced mapping functions.

The EBNF-grammar in Grammar 21 depicts the possibilities.

3.1 Language

3.1.1 Compatibility

The Invantive implementation of SQL is based upon ANSI SQL, extended by aspects from popular SQL implementations such as PostgreSQL, MySQL, Oracle, Teradata and Microsoft SQL Server. It is topped of with Invantive-specific extensions, especially for procedural SQL, distributed SQL and distributed transactions. The basis is to implement functions such that as little as possible changes are necessary to run a SQL statement originating from another SQL implementation on Invantive UniversalSQL. For instance, to retrieve the current time you can use 'sysdate', 'now', 'getdate()' and 'sysdatetime' to name a few. The same holds for the procedural extension Invantive Procedural SQL, which reflects SQL/PSM and makes it easy to port Oracle PL/SQL or PostgreSQL PL/pgSQL statements.

3.1.2 Distributed SQL, Databases and Data Containers

It is easy to exchange and/or combine data across the supported platforms with data. To each platform (such as Salesforce or Exact Online Belgium) multiple connections can be active with the same or different platform-specific connection settings. Each open connection to a platform is named a 'data container'.

All opened connections together are named a 'database'.

When multiple data containers have been opened, each one has an alias to refer it by in Invantive UniversalSQL statements. For instance, a connection can be open for two different customer accounts on Exact Online Netherlands aliased as 'eolnl_comp1' and 'eolnl_comp55') and one for an Exact Online Belgium custom, aliased as 'eolbe_my_new_company'. The aliases can be freely chosen as long as they are valid identifiers and defined in the databases configuration file 'settings.xml'.

3.1.3 Service Providers

A number of special connections are always made, each of which can occur at most once. These are the 'service providers' such as:

- 'datadictionary': metadata of the current database, such as list of tables and executed SQL statements performance.
- 'os': information on the operating system running the SQL engine, such as reading file contents.
- 'smtp': synchronously send mails through SMTP.

3.1.4 Partitioning

Especially online platforms have a multi-tenant structure, in which the data is partitioned per customer, company or person. When the data model is identical across tenants, Invantive UniversalSQL considers them 'partitions'. SQL statements can run across multiple or one partitions, often in parallel. This enables consolidation scenarios across partitions (such as Exact Online or Nmbrs companies) as well as high-performance in MPP environments.

The partitions to be used can be specified with the 'use' statement, either through an explicit list of partitions to be selected across data containers, or through a SQL select statement returning the list of partitions to use. Please note that although the 'use' statement resembles the 'use DATABASE' statement on Microsoft SQL Server or PostgreSQL you can on Invantive UniversalSQL have multiple partitions active at the same time in one user session.

3.1.5 Identifiers

For identifiers, the regular conventions hold for the set of allowed characters. Depending on the platform, the identifiers are case sensitive or not. In general, it is best to assume that the identifier are case insensitive. There is no length limit on an identifier imposed by Invantive UniversalSQL.

3.1.6 Procedural SQL

Invantive Procedural SQL (or "PSQL" for short) is a procedural extension on top of Invantive UniversalSQL. It is based on the ISO-standard 9075-4:2016 (SQL/PSM) and extends Invantive UniversalSQL with procedural options like blocks, variables, conditional execution and loops. The procedural code is - together with the Invantive UniversalSQL contained - as a whole into pseudo-code and then executed.

The procedural code does not lean on the procedural options of the platforms being used, so it is easy to retrieve and change data in all supported cloud, file and database platforms. The pre-compiled procedural code does not perform context switches between procedural and SQL logic.

3.1.7 Licensing

The available functionality of Invantive UniversalSQL features is based upon the license features. For instance the free implementation of Invantive UniversalSQL is limited to 1.000 rows and no access to group functions. Please consult the data dictionary contents for your license features.

3.1.8 Settings.xml

The file settings.xml defines for a user or program the list of defined databases. Databases are grouped in 'database groups' for visual display. Database groups have no further functionality. Each database consists of one or multiple data containers.

The file 'settings.xml' is most often found on Microsoft Windows in your '%USERPROFILE%\invantive' folder, such as 'c:\users\john.doe\invantive\settings.xml'. It is shared across all Invantive UniversalSQL product installations for the user.

There are many scenarios to share database specifications across a user community, such as WAN-scenarios with Invantive Web Service, large corporate scenarios using DNS-entries as well as file shares, included files as well as single user solutions. Please involve a consultant when you want to deploy across thousands of users or more.

For user communities of up to 10 users, we recommend that company-specific settings are grouped per role in a separate file named 'settings-ROLE.xml' and placed in the default folder. Invantive UniversalSQL will automatically merge these files in the main settings.xml file.

3.1.9 Group Functions

The Invantive implementation of SQL is based upon ANSI SQL, extended by aspects from popular SQL implementations such as PostgreSQL, MySQL, Oracle, Teradata and Microsoft SQL Server. It is topped of with Invantive-specific extensions, especially for distributed SQL and distributed transactions. The basis is to implement functions such that as little as possible changes are necessary to run a SQL statement originating from another SQL implementation on Invantive UniversalSQL. For instance, to retrieve the current time you can use 'sysdate', 'now', 'getdate()' and 'sysdatetime' to name a few.

Popular group functions such as 'stddev' are available. However, currently you can not combine in one unnested SQL statement both group functions as well as expressions on the variables. In that case use an inner (nested) SQL statement to apply the expressions on the

data, and execute the group functions in the outer SQL statement with the syntax 'select group() from (select ... from ...)'.

3.1.10 Locking

An Invantive UniversalSQL statement can work with many traditional and online platforms. There are no locking features on data and objects, since few online and traditional platforms connected provide these and the typical use of distributed transactions leave even less opportunity for data and object locking.

3.1.11 Transactions

Invantive UniversalSQL has limited support for transactions. DML is forwarded to a platform and depending on the platform an error can cause part of the work to be registered or everything to be rolled back. Within the SQL engine, multiple changes can be collected and forwarded to the platform at once. For instance, when creating an EDIFACT message you need to combine an invoice header with invoice lines into one EDIFACT message. Collection of multiple changes is done using the 'identified by' and 'attach to' syntax, optionally preceded by 'begin transaction'.

3.1.12 Grammar

sqlBatch:

sqlOrPSqlStatement BATCHSEPARATOR BATCHSEPARATOR

```
sqlBatch[21] ::= sqlOrPSqlStatement[21] ( BATCHSEPARATOR[21]
  sqlOrPSqlStatement[21] )* BATCHSEPARATOR[21]?
```

no references

sqlOrPSqlStatement:

sqlStatement pSqlStatement

```
sqlOrPSqlStatement[21]
          ::= sqlStatement[21]
            | pSqlStatement[108]
```

referenced by:

- sqlBatch[21]

sqlStatement:

An Invantive UniversalSQL can retrieve data from many traditional and online platforms. Many platforms also support the use of DML (Data Manipulation Language) statements to change the data contained. On a few platforms you can execute DDL (Data Definition Language) statements to create new data structure or objects such as tables, procedures or sequences.

selectStatement insertStatement updateStatement deleteStatement ddlStatement setStatement useStatement transactionStatement executeFileStatement

sqlStatement 21
::= selectStatement 22
| insertStatement 51
| updateStatement 53
| deleteStatement 53
| ddlStatement 44
| setStatement 48
| useStatement 50
| transactionStatement 48
| executeFileStatement 49

referenced by:

- pSqlStatement 108
- sqlOrPSqlStatement 21

selectStatement:

A SQL select statement retrieves data from one or multiple data containers. A select statement can be composed of multiple data sets retrieved from many platforms, combined by set operators such as 'union'.

Often the performance of cloud platforms is less than traditional database platforms. With the 'limit' clause a limited number of rows can be retrieved quickly from a table or view after applying sorting as specified by the possibly present 'order by'. An alternative for a 'limit' clause is to use the 'top' clause.

A sequence of Invantive UniversalSQL statements, separated by the semi-colon separator character.

Each statement in the SQL batch will be executed consecutively. Execution will be stopped when an error occurs during execution of a statement.

uniqueSelectStatement setOperatorSelectStatement orderBy limitClause
selectStatement 22
::= uniqueSelectStatement 23
setOperatorSelectStatement 23* orderBy 35? limitClause 28?

referenced by:

- arithmeticExpression 61
- createTableStatement 47
- embeddedSelect 28
- inSelectStatement 22
- insertStatement 51
- pSqlForRecordLoopStatement 111
- sqlStatement 21
- useStatement 50

inSelectStatement:

A SQL select statement retrieves data from one or multiple data containers. This variant makes this data available to a containing SQL select statement. This feature is also known as an 'inline view'.

selectStatement
inSelectStatement 22
::= selectStatement 22

referenced by:

- predicateExpression 58

setOperatorSelectStatement:

SQL is based upon a solid mathematical foundation named 'set theory' with some exceptions. The set operators of Invantive UniversalSQL enable you to combine sets of data sets such as merging two sets of data. Please note that SQL actually uses 'bags', which opposed to 'sets', allow duplicates. To change bags of data into sets, either use 'distinct' or the 'union' set operator without 'all'. In general, the extensive use of 'distinct' signals bad database design.

The 'union' set operator returns the union of the data on the left and right side of the union while removing duplicate rows. The 'union all' set operator returns the union of the data on the left and right side of the union without removing duplicate rows. The 'minus' set operator returns all rows from the left side which do not occur in the right side. The 'intersect' set operator returns all rows that occur both in the left and right side.

UNION ALL MINUS_C INTERSECT uniqueSelectStatement
setOperatorSelectStatement 23
::= (UNION 21 ALL 21 ? | MINUS_C 21 | INTERSECT 21)
uniqueSelectStatement 23

referenced by:

- selectStatement 22

uniqueSelectStatement:

Retrieves a data set from one or more data containers.

select executionHints distinct topClause selectList INTO variableList FROM dataSource joinStatements whereClause groupBy
uniqueSelectStatement 23
::= select 24 executionHints 24 ? distinct 27 ? topClause 27 ? selectList 41 (INTO 52 variableList 27) ? FROM 21 dataSource 23 joinStatements 36 ? whereClause 36 ? groupBy 35 ?

referenced by:

- selectStatement 22
- setOperatorSelectStatement 23

dataSource:

A data source can be a table, a table with parameters or a nested select (an 'inline view').

tableOrFunctionSpec embeddedSelect xmlTableSpec csvTableSpec jsonTableSpec aliased
dataSource 23
::= (tableOrFunctionSpec 29 | embeddedSelect 28 | xmlTableSpec 30 | csvTableSpec 32 | jsonTableSpec 31) aliased 41 ?

referenced by:

- joinStatement 37
- uniqueSelectStatement 23

select:

SELECT

select 24 ::= SELECT 24

referenced by:

- uniqueSelectStatement 23

executionHints:

Execution hints allow you to control individually the execution of SQL statements. Whenever possible, the hints will be used. In contrary to other platforms, Invantive UniversalSQL requires a hint to be valid according to the grammar when specified. This reduces the engineering risk that hints become invalid by accident.

EXECUTION_HINT_START joinSet noJoinSet ods resultSetName lowCost httpDiskCache httpMemoryCache EXECUTION_HINT_END

executionHints 24
::= EXECUTION_HINT_START 21 (joinSet 26 | noJoinSet 26 | ods 25 | resultSetName 25 | lowCost 27 | httpDiskCache 24 | httpMemoryCache 25)* EXECUTION_HINT_END 21

referenced by:

- uniqueSelectStatement 23

httpDiskCache:

The http_disk_cache-hint specifies whether messages may be cached on disk when the provider uses HTTP to exchange data with the backing platform. This typically holds only for cloud-based platforms such as Exact Online, Teamleader or Salesforce. The default setting is false. The first parameter is a boolean whether data may be taken from the disk cache, the second parameter is a boolean whether data retrieved must be stored also in the disk cache and the third parameter is an integer that specifies the number of seconds before a disk cache hit found is to considered stale.

The use of the http_disk-cache-hint is recommended for data which is known to change seldom such as seeded or reference data. The contents of the disk cache are persistent across Invantive UniversalSQL sessions.

The disk cache is located in the Cache folder of the Invantive configuration folder.

HTTP_DISK_CACHE PARENTHESIS_OPEN booleanConstant COMMA booleanConstant COMMA intervalConstant PARENTHESIS_CLOSE

httpDiskCache 24
::= HTTP_DISK_CACHE 21 (PARENTHESIS_OPEN 21 booleanConstant 106 (COMMA 21 booleanConstant 106 (COMMA 21 intervalConstant 105)?)? PARENTHESIS_CLOSE 21)?

referenced by:

- executionHints 24

httpMemoryCache:

The http_memory_cache-hint specifies whether messages may be cached in memory when the provider uses HTTP to exchange data with the backing platform. This typically holds only for cloud-based platforms such as Exact Online, Teamleader or Salesforce. The default setting is false. The first parameter is a boolean whether data may be taken from the memory cache, the second parameter is a boolean whether data retrieved must be stored also in the memory cache and the third parameter is an integer that specifies the number of seconds before a memory cache hit found is to considered stale.

The use of the http_memory-cache-hint is recommended for data which is known to change seldom such as seeded or reference data. The contents in the memory cache are forgotten across Invantive UniversalSQL sessions.

The memory cache is located in the Cache folder of the Invantive configuration folder.

HTTP_MEMORY_CACHE PARENTHESIS_OPEN booleanConstant COMMA booleanConstant COMMA intervalConstant PARENTHESIS_CLOSE

```
httpMemoryCache 25
          ::= HTTP_MEMORY_CACHE 21 ( PARENTHESIS_OPEN 21
booleanConstant 106 ( COMMA 21 booleanConstant 106 ( COMMA 21
intervalConstant 105 )? )? PARENTHESIS_CLOSE 21 )?
```

referenced by:

- executionHints 24

ods:

The ods-hint controls the use of the Invantive Data Cache stored in a relational database. The Invantive Data Cache is also the basis of the Operational Data Store managed by Invantive Data Replicator and the data warehouses managed by Invantive Data Vault. The ods-hint specifies the maximum age data from the data cache eligible for use.

The boolean specifies whether the Data Cache may be used to answer a query. Set it to false to disable use of Data Cache for the duration of the query. Keep it on the default true to use Data Cache.

The interval specifies the period of time during which cached results are considered sufficiently fresh for use, such as '30 minutes'.

When no interval is present, the actual platform is consulted. The default with Invantive Data Cache enabled is to always use the data cache contents when not stale according to the metadata of the data cache. In general, that defaults to a maximum age of 7 days.

ODS PARENTHESIS_OPEN booleanConstant COMMA intervalConstant PARENTHESIS_CLOSE

```
ods 25      ::= ODS 25 ( PARENTHESIS_OPEN 21 booleanConstant 106
( COMMA 21 intervalConstant 105 )? PARENTHESIS_CLOSE 21 )?
```

referenced by:

- executionHints 24

resultSetName:

RESULT_SET_NAME PARENTHESIS_OPEN stringConstant PARENTHESIS_CLOSE

resultSetName[25] ::= RESULT_SET_NAME[21] (PARENTHESIS_OPEN[21] stringConstant[105] PARENTHESIS_CLOSE[21])?

referenced by:

- executionHints[24]

joinSet:

Control join approach between two data sources. A column-indexed lookup will be used instead of a full table scan when the number of rows on the left-hand side does not exceed the maximum number of rows specified in the hint. When not specified, a hash lookup will only be used when the number of rows on the left-side does not exceed 5.000.

The actual implementation of a hash lookup depends on the platform on which the data container runs. For instance with OData, a number of requests will be made using an in-construct with a limited number of in-values. With a relation database platform, a native SQL 'in' will be used.

The first identifier is the alias of the table on the right-hand side of the join. The second identifier is the name of the column used to join upon in the right-hand side. The numeric constant specifies upto what number of rows on the left-hand side of the join will allow the join set hint to be used. When the number of rows exceeds the numeric constant, a full table join is made.

The following example takes for instances 5.000 sales invoices from an Exact Online environment with 100.000 sales invoices. Each sales invoice has 4..10 lines. The join does not retrieve all sales invoices nor all invoice lines, but instead fetches the 5.000 sales invoices using the where-clause, and then retrieves the related invoice lines using a column-indexed lookup by invoiceid. Since Exact Online is an OData source, the approximately 30.000 invoice lines will be retrieves in 300 session I/Os each having an in-construct for 100 lines on invoiceid.

select /*+ join_set(sil, invoiceid, 10000) */ * from ExactOnlineREST..SalesInvoices sik join ExactOnlineREST..SalesInvoiceLines sil on sil.invoiceid = sik.invoiceid where sik.status = 50 and sik.InvoiceDate between to_date(:P_RECEIPT_DATE_FROM, 'yyyymmdd') and to_date(:P_RECEIPT_DATE_TO, 'yyyymmdd')

JOIN_SET PARENTHESIS_OPEN identifier COMMA identifier COMMA numericConstant PARENTHESIS_CLOSE

joinSet[26] ::= JOIN_SET[21] PARENTHESIS_OPEN[21] identifier[98] (COMMA[21] identifier[98] (COMMA[21] numericConstant[106])?)? PARENTHESIS_CLOSE[21]

referenced by:

- executionHints[24]

noJoinSet:

The no_join_set hint disables the use of hash-joins. It can be enabled using the join_set hint.

NO_JOIN_SET PARENTHESIS_OPEN identifier COMMA identifier PARENTHESIS_CLOSE

noJoinSet 26
::= NO_JOIN_SET 21 PARENTHESIS_OPEN 21 identifier 98
(COMMA 21 identifier 98)? PARENTHESIS_CLOSE 21

referenced by:

- executionHints 24

variableList:

variableName COMMA variableName
variableList 27
::= variableName 111 (COMMA 21 variableName 111)?

referenced by:

- uniqueSelectStatement 23

lowCost:

The low_cost-hint specifies that the select with the hint must be considered a select with low execution costs. Low execution costs trigger early evaluation during parsing. By default, select statements using solely in memory storage, dummy and data dictionary are considered low cost and evaluated early. The evaluation of all others is delayed as long as possible.

The use of the low_cost-hint is recommended when the select is used with a 'in (select ...)' syntax and the developer knows beforehand that it will evaluate fast to values and that the use of these values will allow the use of server-side filtering for the outer select.

LOW_COST
lowCost 27 ::= LOW_COST 21

referenced by:

- executionHints 24

distinct:

Addition of the 'distinct' keyword to a SQL select statement de-duplicates the rows returned. Rows are considered duplicates when the values in all selected columns are identical, with two null-values considered equal.

DISTINCT
distinct 27 ::= DISTINCT 27

referenced by:

- aggregateFunction 42
- uniqueSelectStatement 23

topClause:

With the 'top' clause a limited number of rows can be retrieved quickly from a table or view after applying sorting as specified by the possibly present 'order by'.

TOP numericConstant

topClause 27
::= TOP 21 numericConstant 106

referenced by:

- uniqueSelectStatement 23

limitClause:

With the 'limit' clause a limited number of rows can be retrieved quickly from a table or view after applying sorting as specified by the possibly present 'order by'.

LIMIT numericConstant
limitClause 28
::= LIMIT 21 numericConstant 106

referenced by:

- selectStatement 22

embeddedSelect:

An embedded select, also known as an 'inline view', retrieves rows using the specified select statement. These rows are consumed by the outer select as were it the results of retrieving the rows from a table.

Invantive UniversalSQL does not allow grouping rows with expressions as columns. An embedded select is typically used to evaluate expressions to rows with solely constants. After applying the embedded select the group operators can be applied.

parenthesisOpen selectStatement parenthesisClose
embeddedSelect 28
::= parenthesisOpen 55 selectStatement 22
parenthesisClose 56

referenced by:

- dataSource 23

tableSpec:

A table specification without parameters. The optional alias after the at-sign specifies a specific data source to be used, such as 'exactonlinerest..journals@eolbe' specifying the use of Exact Online Belgium when 'eolbe' is associated by the database definitions in settings.xml with Exact Online Belgium.

A number of special so-called 'service providers' are always present, such as 'datadictionary' for use by an alias.

fullTableIdentifier distributedAliasDirective
tableSpec 28
::= fullTableIdentifier 96 distributedAliasDirective 29?

referenced by:

- alterPersistentCacheDropStatement 46
- alterPersistentCacheSetTableOptions 47
- alterPersistentCacheTableRefreshStatement 46

- createTableStatement 47
- deleteStatement 53
- dropTableStatement 48
- insertStatement 51
- updateStatement 53

tableOrFunctionSpec:

A table specification requiring a comma-separated list of parameters to determine the rows to be retrieved.

Traditional SQL syntax did not provide for parameterized queries, matching set theory. Modern variants such as pipelined table functions allow a stored procedure or other imperative language-based approaches to generate rows based upon parameter values. Many data containers support queries that returns rows based upon parameter values. This holds especially for SOAP web services. Table specifications with parameters ease queries on such data containers.

The optional alias after the at-sign specifies a specific data source to be used, such as 'exactonlinerest..journals@eolbe' specifying the use of Exact Online Belgium when 'eolbe' is associated by the database definitions in settings.xml with Exact Online Belgium.

fullTableIdentifier tableFunctionSpec distributedAliasDirective

```
tableOrFunctionSpec 29
          ::= fullTableIdentifier 96 tableFunctionSpec 29?
distributedAliasDirective 29?
```

referenced by:

- dataSource 23

tableFunctionSpec:

A comma-separated list of parametres to determine the rows to be retrieved by a tableOrFunctionSpec.

parenthesisOpen expression COMMA parenthesisClose

```
tableFunctionSpec 29
          ::= parenthesisOpen 55 ( expression 54 ( COMMA 21
 expression 54 )* )? parenthesisClose 56
```

referenced by:

- tableOrFunctionSpec 29

distributedAliasDirective:

The distributed alias after the at-sign specifies a specific data source to be used, such as 'exactonlinerest..journals@eolbe' specifying the use of Exact Online Belgium when 'eolbe' is associated by the database definitions in settings.xml with Exact Online Belgium.

A number of special so-called 'service providers' are always present, such as 'datadictionary' for use by an alias.

AT dataContainerAlias

distributedAliasDirective 29
::= AT 21 dataContainerAlias 30

referenced by:

- partitionIdentifierWithAlias 51
- setIdentifier 48
- tableOrFunctionSpec 29
- tableSpec 28

dataContainerAlias:

When multiple data containers have been defined in settings.xml for a database, each one is assigned an alias. An alias typically takes the form of a limited number of characters. The presence of an alias allows Invantive UniversalSQL to precisely determine to what data container forward a request for data.

identifier

dataContainerAlias 30
::= identifier 98

referenced by:

- alterPersistentCacheRefreshStatement 45
- distributedAliasDirective 29

xmlTableSpec:

XMLTABLE parenthesisOpen stringConstant null xmlTablePassing xmlTableLiteral xmlTableColumns parenthesisClose

xmlTableSpec 30
::= XMLTABLE 21 parenthesisOpen 55 (stringConstant 105 | null 107) (xmlTablePassing 30 | xmlTableLiteral 30) xmlTableColumns 31 parenthesisClose 56

referenced by:

- dataSource 23

xmlTablePassing:

PASSING expression

xmlTablePassing 30
::= PASSING 21 expression 54

referenced by:

- xmlTableSpec 30

xmlTableLiteral:

LITERAL expression

xmlTableLiteral 30
::= LITERAL 21 expression 54

referenced by:

- xmlTableSpec 30

xmlTableColumns:

COLUMNS xmlTableColumSpec COMMA
xmlTableColumns 31
::= COLUMNS 21 xmlTableColumSpec 31 (COMMA 21 xmlTableColumSpec 31) *

referenced by:
- xmlTableSpec 30

xmlTableColumSpec:

identifier dataType PATH stringConstant
xmlTableColumSpec 31
::= identifier 98 dataType 33 PATH 21 stringConstant 105

referenced by:
- xmlTableColumns 31

jsonTableSpec:

JSONTABLE parenthesisOpen stringConstant null jsonTablePassing jsonTableLiteral jsonTableColumns parenthesisClose
jsonTableSpec 31
::= JSONTABLE 21 parenthesisOpen 55 (stringConstant 105 | null 107) (jsonTablePassing 31 | jsonTableLiteral 31) jsonTableColumns 32 parenthesisClose 56

referenced by:
- dataSource 23

jsonTablePassing:

PASSING expression
jsonTablePassing 31
::= PASSING 21 expression 54

referenced by:
- jsonTableSpec 31

jsonTableLiteral:

LITERAL expression
jsonTableLiteral 31
::= LITERAL 21 expression 54

referenced by:
- jsonTableSpec 31

jsonTableColumns:

COLUMNS jsonTableColumSpec COMMA
jsonTableColumns[32]
::= COLUMNS[21] jsonTableColumSpec[32] (COMMA[21] jsonTableColumSpec[32])*

referenced by:
- jsonTableSpec[31]

jsonTableColumSpec:

identifier dataType PATH stringConstant
jsonTableColumSpec[32]
::= identifier[98] dataType[33] PATH[21] stringConstant[105]

referenced by:
- jsonTableColumns[32]

csvTableSpec:

CSVTABLE parenthesisOpen csvTablePassing csvTableLiteral csvTableOptions csvTableColumns parenthesisClose
csvTableSpec[32]
::= CSVTABLE[21] parenthesisOpen[55] (csvTablePassing[33] | csvTableLiteral[32]) csvTableOptions[32] csvTableColumns[33] parenthesisClose[56]

referenced by:
- dataSource[23]

csvTableOptions:

ROW DELIMITER stringConstant COLUMN DELIMITER stringConstant SKIP_ LINES numericConstant
csvTableOptions[32]
::= (ROW[21] DELIMITER[21] stringConstant[105])? (COLUMN[36] DELIMITER[21] stringConstant[105])? (SKIP_[21] LINES[21] numericConstant[106])?

referenced by:
- csvTableSpec[32]

csvTableLiteral:

LITERAL expression
csvTableLiteral[32]
::= LITERAL[21] expression[54]

referenced by:

- csvTableSpec 32

csvTablePassing:

PASSING expression
csvTablePassing 33
::= PASSING 21 expression 54

referenced by:
- csvTableSpec 32

csvTableColumns:

COLUMNS csvTableColumSpec COMMA
csvTableColumns 33
::= COLUMNS 21 csvTableColumSpec 33 (COMMA 21 csvTableColumSpec 33) *

referenced by:
- csvTableSpec 32

csvTableColumSpec:

identifier dataType POSITION numericConstant
csvTableColumSpec 33
::= identifier 98 dataType 33 POSITION 21 numericConstant 106

referenced by:
- csvTableColumns 33

dataType:

BFILE BIGINT BIGSERIAL BIT BLOB BOOL BOOLEAN BPCHAR BYTE BYTEA CHAR CHARACTER CLOB DATE DATETIME DATETIMEOFFSET DEC DECIMAL DOUBLE FLOAT FLOAT4 FLOAT8 GUID IMAGE INT INT16 INT2 INT32 INT4 INT64 INT8 INTEGER INTERVAL LONGBLOB LONGTEXT MEDIUMBLOB MEDIUMINT MEDIUMTEXT MONEY NAME NCHAR NUMBER NUMERIC NVARCHAR OID RAW REAL SERIAL SMALLDATETIME SMALLINT SMALLMONEY SMALLSERIAL TEXT TIME TIMESTAMP TIMESTAMPTZ TIMETZ TINYBLOB TINYINT TINYTEXT UINT16 UINT32 UINT64 UNIQUEIDENTIFIER UUID VARBINARY VARCHAR VARCHAR2 XML XMLTYPE YEAR

```
dataType[33] ::= BFILE[21]
               | BIGINT[21]
               | BIGSERIAL[21]
               | BIT[21]
               | BLOB[21]
               | BOOL[21]
               | BOOLEAN[21]
               | BPCHAR[21]
               | BYTE[21]
               | BYTEA[21]
               | CHAR[21]
               | CHARACTER[21]
               | CLOB[21]
               | DATE[21]
               | DATETIME[21]
               | DATETIMEOFFSET[21]
               | DEC[21]
               | DECIMAL[21]
               | DOUBLE[21]
               | FLOAT[21]
               | FLOAT4[21]
               | FLOAT8[21]
               | GUID[21]
               | IMAGE[21]
               | INT[21]
               | INT16[21]
               | INT2[21]
               | INT32[21]
               | INT4[21]
               | INT64[21]
               | INT8[21]
               | INTEGER[21]
               | INTERVAL[21]
               | LONGBLOB[21]
               | LONGTEXT[21]
               | MEDIUMBLOB[21]
               | MEDIUMINT[21]
               | MEDIUMTEXT[21]
               | MONEY[21]
               | NAME[21]
               | NCHAR[21]
               | NUMBER[21]
               | NUMERIC[21]
               | NVARCHAR[21]
               | OID[21]
               | RAW[21]
               | REAL[21]
               | SERIAL[21]
               | SMALLDATETIME[21]
               | SMALLINT[21]
               | SMALLMONEY[21]
               | SMALLSERIAL[21]
```

| TEXT 21
| TIME 21
| TIMESTAMP 21
| TIMESTAMPTZ 21
| TIMETZ 21
| TINYBLOB 21
| TINYINT 21
| TINYTEXT 21
| UINT16 21
| UINT32 21
| UINT64 21
| UNIQUEIDENTIFIER 21
| UUID 21
| VARBINARY 21
| VARCHAR 21
| VARCHAR2 21
| XML 21
| XMLTYPE 21
| YEAR 94

referenced by:

- csvTableColumSpec 33
- jsonTableColumSpec 32
- pSqlItemDeclaration 107
- xmlTableColumSpec 31

groupBy:

Grouping of multiple rows into groups is specified by the groupBy. A group will be introduced for each distinct combination of column values for the columns listed. The values of grouped columns can be used in the select clause. Columns not being grouped upon can only be used within the context of a group function listed as 'aggregateFunction'.

GROUP BY columnList

groupBy 35 ::= GROUP 21 BY 21 columnList 36

referenced by:

- uniqueSelectStatement 23

orderBy:

Sort the rows returned as specified by the list of columns. Values are either sorted ascending (the default) or descending.

ORDER BY column sortDirection COMMA

orderBy 35 ::= ORDER 21 BY 21 column 36 sortDirection 36 ? (COMMA 21 column 36 sortDirection 36 ?) *

referenced by:

- aggregateFunction 42
- selectStatement 22

sortDirection:

A sort direction can be either 'asc' for 'ascending' (the default) or 'desc' for 'descending'.

asc desc

```
sortDirection 36
          ::= asc 41
            | desc 41
```

referenced by:

- orderBy 35

columnList:

A comma-separated list of columns.

column COMMA

```
columnList 36
          ::= column 36 ( COMMA 21 column 36 )*
```

referenced by:

- groupBy 35
- insertFieldList 52

column:

A column is identified by an identifier, possibly prefixed by the name of the table or the alias of the table from which the column is to be taken.

identifier DOT identifier

```
column 36    ::= identifier 98 ( DOT 21 identifier 98 )?
```

referenced by:

- columnList 36
- orderBy 35
- updateValue 53

whereClause:

The where-clause restricts the number of rows in a result set by applying one or more boolean condiditions which rows must satisfy.

WHERE booleanExpression

```
whereClause 36
          ::= WHERE 21 booleanExpression 54
```

referenced by:

- deleteStatement 53
- uniqueSelectStatement 23
- updateStatement 53

joinStatements:

A list of join statement.

joinStatement
joinStatements[36]
::= joinStatement[37]+

referenced by:

- uniqueSelectStatement[23]

joinStatement:

A join statement combines two result sets. Only combinations of rows taken from both result sets are returned when they meet the join conditions.

joinCategory join dataSource joinConditions
joinStatement[37]
::= joinCategory[37] join[38] dataSource[23]
joinConditions[41]?

referenced by:

- joinStatements[36]

joinCategory:

The join category specifies what combinations of rows are considered. The following variants can be used:

- inner join, as indicated by 'join' or 'inner join': an inner join returns all combinations of rows from both result sets that meet the join conditions.
- left outer, as indicated by 'left outer join': a left outer join returns the same rows as an inner join, extended by one row for each row in the left result set having no matching rows in the right result set. Each column that originates from the right result set is assigned a null value.
- right outer, as indicated by 'right outer join': a right outer join returns the same rows as an inner join, extended by one row for each row in the right result set having no matching rows in the left result set. Each column that originates from the left result set is assigned a null value.
- full outer, as indicated by 'full outer join': a full outer join returns the same rows as an inner join, extended by one row for each row in the right result set having no matching rows in the left result set. Each column that originates from the left result set is assigned a null value. The results are also extended by one row for each row in the left result set having no matching rows in the right result set. Each column that originates from the right result set is assigned a null value.
- cross join, as indicated by 'cross join': a cross join returns a Cartesian product of the rows from both result sets. A 'Cartesian product' is a term from set theory, which indicates that all combinations are returned.

inner joinSubCategory outer cross
joinCategory[37]
::= (inner[38] | joinSubCategory[38] outer[38]? | cross[39]
) ?

referenced by:

- joinStatement[37]

joinSubCategory:

The join sub-category refines the join category. Please see 'joinCategory' for an explanation.

left right full

joinSubCategory 38
::= left 38
| right 38
| full 39

referenced by:

- joinCategory 37

join:

JOIN

join 38 ::= JOIN 38

referenced by:

- joinStatement 37

inner:

INNER

inner 38 ::= INNER 38

referenced by:

- joinCategory 37

outer:

OUTER

outer 38 ::= OUTER 38

referenced by:

- joinCategory 37

left:

LEFT

left 38 ::= LEFT 38

referenced by:

- functionExpression 62
- joinSubCategory 38

right:

Extracts a substring from a value with the given length from the right side.

Parameters:

- Input: Text to extract substring from.
- Length: Maximum length of the substring.

Returns: Substring from the right side of the input. RIGHT

right 38 ::= RIGHT 38

referenced by:

- functionExpression 62
- joinSubCategory 38

full:

FULL

full 39 ::= FULL 39

referenced by:

- joinSubCategory 38

cross:

CROSS

cross 39 ::= CROSS 39

referenced by:

- joinCategory 37

sum:

Group function to sum together individual numerical values. Occurrences of null are considered 0, unless there are only null values. In that case the outcome is null.

SUM

sum 39 ::= SUM 39

referenced by:

- aggregateFunction 42

product:

Group function to multiply together individual numerical values. Multiplying large values can quickly exceed the range of the resulting Decimal data type. The product group function is typically used in financial and probability calculations with values near 1.

PRODUCT

product 39 ::= PRODUCT 39

referenced by:

- aggregateFunction 42

min:

Group function to find the minimum value from a group of numerical values.

MIN
min 39 ::= MIN 39

referenced by:
- aggregateFunction 42

max:

Group function to find the maximum value from a group of numerical values.

MAX
max 40 ::= MAX 40

referenced by:
- aggregateFunction 42

avg:

Group function to find the average value from a group of numerical values.

AVG
avg 40 ::= AVG 40

referenced by:
- aggregateFunction 42

stddev:

Group function to find the standard deviation from a group of numerical values.

STDDEV
stddev 40 ::= STDDEV 40

referenced by:
- aggregateFunction 42

count:

Group function to find the number of values from a group of values.

COUNT
count 40 ::= COUNT 40

referenced by:
- aggregateFunction 42

listagg:

Group function which concatenates all individual values, separated by the separator when provided and comma plus space otherwise.

LISTAGG
listagg 40 ::= LISTAGG 40

referenced by:
- aggregateFunction 42

asc:

ASC
asc 41 ::= ASC 41

referenced by:
- sortDirection 36

desc:

DESC
desc 41 ::= DESC 41

referenced by:
- sortDirection 36

joinConditions:

ON booleanExpression
joinConditions 41
::= ON 21 booleanExpression 54

referenced by:
- joinStatement 37

selectList:

selectPart COMMA
selectList 41
::= selectPart 41 (COMMA 21 selectPart 41)*

referenced by:
- uniqueSelectStatement 23

selectPart:

part aliased labeled
selectPart 41
::= part 42 aliased 41? labeled 42?

referenced by:
- selectList 41

aliased:

AS alias
aliased[41] ::= AS[21]? alias[98]

referenced by:
- dataSource[23]
- selectPart[41]

labeled:

LABEL stringConstant
labeled[42] ::= LABEL[21] stringConstant[105]

referenced by:
- selectPart[41]

part:

expression aggregateFunction allColumnsSpec
part[42] ::= expression[54]
| aggregateFunction[42]
| allColumnsSpec[42]

referenced by:
- aggregateFunction[42]
- selectPart[41]

aggregateFunction:

sum product avg stddev parenthesisOpen distinct min max parenthesisOpen arithmeticExpression count parenthesisOpen distinct part listagg parenthesisOpen distinct arithmeticExpressionList parenthesisClose WITHIN GROUP parenthesisOpen orderBy parenthesisClose
aggregateFunction[42]
::= (((sum[39] | product[39] | avg[40] | stddev[40])
parenthesisOpen[55] distinct[27]? | (min[39] | max[40])
parenthesisOpen[55]) arithmeticExpression[61] | count[40]
parenthesisOpen[55] distinct[27]? part[42] | listagg[40]
parenthesisOpen[55] distinct[27]? arithmeticExpressionList[62]
(parenthesisClose[56] WITHIN[21] GROUP[21] parenthesisOpen[55]
orderBy[35])?) parenthesisClose[56]

referenced by:
- part[42]

allColumnsSpec:

allColumnsSpecId allColumnsSpecColumnNamePrefix allColumnsSpecColumnNamePostfix allColumnsSpecLabelPrefix allColumnsSpecLabelPostfix

allColumnsSpec 42
::= allColumnsSpecId 43
allColumnsSpecColumnNamePrefix 43 ?
allColumnsSpecColumnNamePostfix 43 ? allColumnsSpecLabelPrefix 43 ?
allColumnsSpecLabelPostfix 43 ?

referenced by:

- part 42

allColumnsSpecId:

alias DOT ASTERIX
allColumnsSpecId 43
::= (alias 98 DOT 21) ? ASTERIX 21

referenced by:

- allColumnsSpec 42

allColumnsSpecColumnNamePrefix:

PREFIX WITH stringConstant
allColumnsSpecColumnNamePrefix 43
::= PREFIX 21 WITH 21 stringConstant 105

referenced by:

- allColumnsSpec 42

allColumnsSpecColumnNamePostfix:

POSTFIX WITH stringConstant
allColumnsSpecColumnNamePostfix 43
::= POSTFIX 21 WITH 21 stringConstant 105

referenced by:

- allColumnsSpec 42

allColumnsSpecLabelPrefix:

LABEL PREFIX WITH stringConstant
allColumnsSpecLabelPrefix 43
::= LABEL 21 PREFIX 21 WITH 21 stringConstant 105

referenced by:

- allColumnsSpec 42

allColumnsSpecLabelPostfix:

LABEL POSTFIX WITH stringConstant
allColumnsSpecLabelPostfix 43
::= LABEL 21 POSTFIX 21 WITH 21 stringConstant 105

referenced by:

- allColumnsSpec 42

ddlStatement:

createTableStatement dropTableStatement alterPersistentCacheStatement

```
ddlStatement 44
          ::= createTableStatement 47
            | dropTableStatement 48
            | alterPersistentCacheStatement 44
```

referenced by:

- sqlStatement 21

alterPersistentCacheStatement:

Besides an in-memory cache valid during the duration of a session, Invantive UniversalSQL offers an integrated cache storing data persistently using an on-premise or cloud relation database such as SQL Server or PostgreSQL. When configured, Invantive UniversalSQL first tries to find sufficiently fresh data in the cache. This reduces the number of data loads from slow data containers such as some cloud platforms. In general, the performance increase when the rows can be fully retrieved from a cache is between a factor 25 and 2.500.

Invantive UniversalSQL itself manages the table structure and table contents in the relation database used as a data cache. On initial use just provide an empty database. Invantive UniversalSQL installs a repository consisting of a few tables. The repository tables have names starting with 'dc_'.

For each table partition version, a so-called facts table is created. A facts table contains a full copy of the rows retrieved from the data container. Facts tables have names starting with 'dcd_', followed by a unique hash signaling the table partition version. When necessary, additional database objects are maintained such as indexes to improve performance. As with facts table names, all column names are also hashed based upon an algorithm including the original column name. These facts tables are not intended for direct use using native SQL.

Each facts table has a unique state from the following state, with Ready state signaling the now current version:

- Initializing ('I'): the facts table will be created.
- View creation ('V'): logical views will be created.
- Prepared ('P'): the facts table has been created, but contains yet no rows.
- Seeding ('S'): the facts table is being seeded with the contents of the previously current version.
- Loading ('L'): loading new facts from data container using water shed or another algorithm.
- Ready ('R'): the facts table is available and the current one to be used.
- Obsoleted ('O'): the facts table still exists, but the data has passed it's conservation period. Often a newer version is now current.
- Dropped ('D'): the facts table now longer exist, but the metadata is still present in the repository tables.

The persistent cache in the database can be used with native SQL when extended by Invantive Data Replicator. Invantive Data Replicator can create and maintain a database view (a so-called 'partition view') for the now current version of table partition. Similarly, it can cre-

ate an 'overall view', showing the rows across all partitions of the now current versions per partition.

The overall views are typically used for consolidation purposes, bringing together data across multiple companies or persons.

alterPersistentCacheSetStatement alterPersistentCacheDownloadStatement alterPersistentCachePurgeStatement alterPersistentCacheRefreshStatement alterPersistentCacheLoadStatement alterPersistentCacheTableRefreshStatement alterPersistentCachePartitionRefreshStatement alterPersistentCacheDropStatement

```
alterPersistentCacheStatement 44
          ::= alterPersistentCacheSetStatement 47
            | alterPersistentCacheDownloadStatement 45
            | alterPersistentCachePurgeStatement 45
            | alterPersistentCacheRefreshStatement 45
            | alterPersistentCacheLoadStatement 46
            | alterPersistentCacheTableRefreshStatement 46
            | alterPersistentCachePartitionRefreshStatement 46
            | alterPersistentCacheDropStatement 46
```

referenced by:

- ddlStatement 44

alterPersistentCachePurgeStatement:

ALTER PERSISTENT CACHE PURGE UNKNOWN OBSOLETE READY DROPPABLE ALL TABLE PARTITION VERSIONS

```
alterPersistentCachePurgeStatement 45
          ::= ALTER 21 PERSISTENT 21 CACHE 21 PURGE 21 ( UNKNOWN 21 |
OBSOLETE 21 | READY 21 | DROPPABLE 21 | ALL 21 ) TABLE 21
 PARTITION 21 VERSIONS 21
```

referenced by:

- alterPersistentCacheStatement 44

alterPersistentCacheDownloadStatement:

ALTER PERSISTENT CACHE DOWNLOAD FEED LICENSE CONTRACT CODE stringConstant DATA_CONTAINER stringConstant PARTITION partitionSimpleIdentifier LIMIT numericConstant

```
alterPersistentCacheDownloadStatement 45
          ::= ALTER 21 PERSISTENT 21 CACHE 21 DOWNLOAD 21 FEED 21
( LICENSE 21 CONTRACT 21 CODE 21 stringConstant 105 )?
( DATA_CONTAINER 21 stringConstant 105 )? ( PARTITION 21
 partitionSimpleIdentifier 51 )? ( LIMIT 21 numericConstant 106 )?
```

referenced by:

- alterPersistentCacheStatement 44

alterPersistentCacheRefreshStatement:

ALTER PERSISTENT CACHE FORCE REFRESH DATA_CONTAINER dataContainerAlias PARALLEL numericConstant

alterPersistentCacheRefreshStatement[45]
::= ALTER[21] PERSISTENT[21] CACHE[21] FORCE[21]? REFRESH[21] (DATA_CONTAINER[21] dataContainerAlias[30]?)? (PARALLEL[21] numericConstant[106])?

referenced by:

- alterPersistentCacheStatement[44]

alterPersistentCacheLoadStatement:

ALTER PERSISTENT CACHE LOAD

alterPersistentCacheLoadStatement[46]
::= ALTER[21] PERSISTENT[21] CACHE[21] LOAD[21]

referenced by:

- alterPersistentCacheStatement[44]

alterPersistentCacheTableRefreshStatement:

ALTER PERSISTENT CACHE TABLE tableSpec FORCE REFRESH PARTITION partitionIdentifier PARALLEL numericConstant

alterPersistentCacheTableRefreshStatement[46]
::= ALTER[21] PERSISTENT[21] CACHE[21] TABLE[21] tableSpec[28] FORCE[21]? REFRESH[21] (PARTITION[21] partitionIdentifier[50])? (PARALLEL[21] numericConstant[106])?

referenced by:

- alterPersistentCacheStatement[44]

alterPersistentCachePartitionRefreshStatement:

ALTER PERSISTENT CACHE PARTITION partitionIdentifier FORCE REFRESH PARALLEL numericConstant

alterPersistentCachePartitionRefreshStatement[46]
::= ALTER[21] PERSISTENT[21] CACHE[21] PARTITION[21] partitionIdentifier[50] FORCE[21]? REFRESH[21] (PARALLEL[21] numericConstant[106])?

referenced by:

- alterPersistentCacheStatement[44]

alterPersistentCacheDropStatement:

ALTER PERSISTENT CACHE DROP TABLE tableSpec PARTITION partitionIdentifier PARTITION partitionIdentifier DATA_CONTAINER stringConstant

alterPersistentCacheDropStatement[46]
::= ALTER[21] PERSISTENT[21] CACHE[21] DROP[21] (TABLE[21] tableSpec[28] (PARTITION[21] partitionIdentifier[50])? | PARTITION[21] partitionIdentifier[50] | DATA_CONTAINER[21] stringConstant[105])

referenced by:

- alterPersistentCacheStatement[44]

alterPersistentCacheSetStatement:

ALTER PERSISTENT CACHE SET FRESH RETENTION FORWARDED INCOMING MESSAGES METADATA RECYCLEBIN DATA MODEL VERSION numericConstant TOKEN stringConstant LOGICAL OVERALL PARTITION VIEW NAME PREFIX POSTFIX stringConstant MAINTAIN booleanConstant LOAD MY MESSAGES booleanConstant AUTO UPGRADE ONCE alterPersistentCacheSetTableOptions

alterPersistentCacheSetStatement[47]
::= ALTER[21] PERSISTENT[21] CACHE[21] SET[21] ((FRESH[21] | RETENTION[21] FORWARDED[21] INCOMING[21] MESSAGES[21] | METADATA[21]? RECYCLEBIN[21] | DATA[21] MODEL[21] VERSION[21]) numericConstant[106] | TOKEN[21] stringConstant[105] | LOGICAL[21] (OVERALL[21] | PARTITION[21]) VIEW[21] (NAME[21] (PREFIX[21] | POSTFIX[21]) stringConstant[105] | MAINTAIN[21] booleanConstant[106]) | LOAD[21] MY[21] MESSAGES[21] booleanConstant[106] | AUTO[21] UPGRADE[21] ONCE[21] | alterPersistentCacheSetTableOptions[47])

referenced by:

- alterPersistentCacheStatement[44]

alterPersistentCacheSetTableOptions:

TABLE tableSpec LOGICAL OVERALL VIEW MAINTAIN booleanConstant NAME stringConstant PARTITION VIEW MAINTAIN booleanConstant NAME PREFIX POSTFIX stringConstant STATE OBSOLETE DROPPED PARTITION partitionIdentifier APPROACH COPY TRICKLE SAMPLE

alterPersistentCacheSetTableOptions[47]
::= TABLE[21] tableSpec[28] (LOGICAL[21] (OVERALL[21] VIEW[21] (MAINTAIN[21] booleanConstant[106] | NAME[21] stringConstant[105]) | PARTITION[21] VIEW[21] (MAINTAIN[21] booleanConstant[106] | NAME[21] (PREFIX[21] | POSTFIX[21]) stringConstant[105])) | STATE[21] (OBSOLETE[21] | DROPPED[21]) | (PARTITION[21] partitionIdentifier[50])? APPROACH[21] (COPY[21] | TRICKLE[21] | SAMPLE[21]))

referenced by:

- alterPersistentCacheSetStatement[47]

createTableStatement:

CREATE orReplace TABLE tableSpec AS selectStatement

createTableStatement 47
::= CREATE 21 orReplace 48 ? TABLE 21 tableSpec 28 AS 21 selectStatement 22

referenced by:

- ddlStatement 44

dropTableStatement:

DROP TABLE tableSpec

dropTableStatement 48
::= DROP 21 TABLE 21 tableSpec 28

referenced by:

- ddlStatement 44

orReplace:

OR REPLACE

orReplace 48
::= OR 58 REPLACE 82

referenced by:

- createTableStatement 47

setStatement:

Replaces the value of a provider attribute by a new value.

SET setIdentifier expression

setStatement 48
::= SET 21 setIdentifier 48 expression 54

referenced by:

- sqlStatement 21

setIdentifier:

attributeIdentifier distributedAliasDirective

setIdentifier 48
::= attributeIdentifier 97 distributedAliasDirective 29 ?

referenced by:

- setStatement 48

transactionStatement:

beginTransactionStatement rollbackTransactionStatement commitTransactionStatement

transactionStatement 48
::= beginTransactionStatement 49
| rollbackTransactionStatement 49
| commitTransactionStatement 49

referenced by:

- sqlStatement 21

executeFileStatement:

FILE_PATH
executeFileStatement 49
::= FILE_PATH 21

referenced by:

- sqlStatement 21

beginTransactionStatement:

A begin transaction statement initiates a transaction. Invantive UniversalSQL typically provides no transaction logic given the distributed nature and the limitations of the possible platforms. Some platforms enable collection of transaction data, which are to be handed over to the backing platform all together.

BEGIN TRANSACTION
beginTransactionStatement 49
::= BEGIN 21 TRANSACTION 21?

referenced by:

- transactionStatement 48

rollbackTransactionStatement:

Forgets all collected transaction data not yet handed over to the backing platform.

ROLLBACK TRANSACTION
rollbackTransactionStatement 49
::= ROLLBACK 21 TRANSACTION 21?

referenced by:

- transactionStatement 48

commitTransactionStatement:

Hand over all collected transaction to the backing platform for registration.

COMMIT TRANSACTION
commitTransactionStatement 49
::= COMMIT 21 TRANSACTION 21?

referenced by:

- transactionStatement 48

useStatement:

The use statement enables you to specify which partitions should be accessed by subsequent select, insert, update and delete statements. You can specify one or multiple partitions as a comma-separated list, possibly for a specific data container by appending an at-sign plus data container alias to the partition code. The value 'default' has a special meaning; it specifies to use the partition(s) originally selected when you logged on. The value 'all' also has a special meaning: it selects all partitions available.

For instance, to select partition '35' in the data container with alias 'eolnl' and partition '57345' in the data container with alias 'nmbrsnl', you can execute: 'use 35@eolnl, 57345@nmbrsnl'.

For complex scenarios, you can specify any valid Invantive UniversalSQL select statement which returns one or two columns. Each row from the query specifies one partition to select. The first column specifies the partition code, whereas the optional second column specifies a specific data container alias.

For instance, to select partition '35' in the data container with alias 'eolnl' and partition '57345' in the data container with alias 'nmbrsnl', you can execute: 'use select '35', 'eolnl' from dual@datadictionary union all select '57345', 'nmbrsnl' from dual@datadictionary'.

USE partitionIdentifiersList selectStatement

```
useStatement 50
          ::= USE 21 ( partitionIdentifiersList 50 |
selectStatement 22 )
```

referenced by:

- sqlStatement 21

partitionIdentifiersList:

partitionIdentifierWithAlias COMMA

```
partitionIdentifiersList 50
          ::= partitionIdentifierWithAlias 51 ( COMMA 21
 partitionIdentifierWithAlias 51 ) *
```

referenced by:

- useStatement 50

partitionIdentifier:

parameterExpression numericConstant identifier ALL DEFAULT

```
partitionIdentifier 50
          ::= parameterExpression 59
            | numericConstant 106
            | identifier 98
            | ALL 21
            | DEFAULT 21
```

referenced by:

- alterPersistentCacheDropStatement 46
- alterPersistentCachePartitionRefreshStatement 46
- alterPersistentCacheSetTableOptions 47
- alterPersistentCacheTableRefreshStatement 46

- partitionIdentifierWithAlias 51

partitionIdentifierWithAlias:

partitionIdentifier distributedAliasDirective
partitionIdentifierWithAlias 51
::= partitionIdentifier 50 distributedAliasDirective 29 ?

referenced by:
- partitionIdentifiersList 50

partitionSimpleIdentifier:

numericConstant identifier
partitionSimpleIdentifier 51
::= numericConstant 106
| identifier 98

referenced by:
- alterPersistentCacheDownloadStatement 45

insertStatement:

bulk insert into tableSpec insertFieldList valuesExpression insertFieldList selectStatement identifiedByClause attachToClause
insertStatement 51
::= bulk 51 ? insert 52 into 52 tableSpec 28
(insertFieldList 52 valuesExpression 51 | insertFieldList 52 ?
selectStatement 22) identifiedByClause 53 ? attachToClause 53 ?

referenced by:
- sqlStatement 21

valuesExpression:

values_ insertValues
valuesExpression 51
::= values_ 52 insertValues 52

referenced by:
- insertStatement 51

bulk:

BULK
bulk 51 ::= BULK 51

referenced by:
- insertStatement 51

into:

INTO
into 52 ::= INTO 52

referenced by:
- insertStatement 51

insert:

INSERT
insert 52 ::= INSERT 52

referenced by:
- insertStatement 51

values_:

VALUES
values_ 52 ::= VALUES 21

referenced by:
- valuesExpression 51

insertFieldList:

parenthesisOpen columnList parenthesisClose
insertFieldList 52
::= parenthesisOpen 55 columnList 36 parenthesisClose 56

referenced by:
- insertStatement 51

insertValues:

parenthesisOpen insertValuesList parenthesisClose
insertValues 52
::= parenthesisOpen 55 insertValuesList 52
parenthesisClose 56

referenced by:
- valuesExpression 51

insertValuesList:

arithmeticExpression COMMA
insertValuesList 52
::= arithmeticExpression 61 (COMMA 21
arithmeticExpression 61)*

referenced by:

- insertValues 52

identifiedByClause:

IDENTIFIED BY arithmeticExpression
identifiedByClause 53
::= IDENTIFIED 21 BY 21 arithmeticExpression 61

referenced by:
- insertStatement 51

attachToClause:

ATTACH TO arithmeticExpression
attachToClause 53
::= ATTACH 21 TO 21 arithmeticExpression 61

referenced by:
- insertStatement 51

updateStatement:

UPDATE FROM tableSpec SET updateValuesList whereClause
updateStatement 53
::= UPDATE 21 FROM 21 ? tableSpec 28 SET 21
updateValuesList 53 whereClause 36 ?

referenced by:
- sqlStatement 21

updateValuesList:

updateValue COMMA
updateValuesList 53
::= updateValue 53 (COMMA 21 updateValue 53) *

referenced by:
- updateStatement 53

updateValue:

column EQ arithmeticExpression
updateValue 53
::= column 36 EQ 60 arithmeticExpression 61

referenced by:
- updateValuesList 53

deleteStatement:

delete FROM tableSpec whereClause
deleteStatement 53
::= delete 54 FROM 21? tableSpec 28 whereClause 36?

referenced by:
- sqlStatement 21

delete:

DELETE
delete 54 ::= DELETE 54

referenced by:
- deleteStatement 53

expression:

booleanExpression arithmeticExpression
expression 54
::= booleanExpression 54
| arithmeticExpression 61

referenced by:
- caseElseExpression 55
- caseWhenThenExpression 55
- csvTableLiteral 32
- csvTablePassing 33
- jsonTableLiteral 31
- jsonTablePassing 31
- pSqlAssignmentStatement 109
- pSqlExecuteImmediateStatement 109
- part 42
- setStatement 48
- tableFunctionSpec 29
- xmlTableLiteral 30
- xmlTablePassing 30

booleanExpression:

not booleanExpression and or booleanExpression parenthesisOpen booleanExpression parenthesisClose predicateExpression true false
booleanExpression 54
::= (not 57 | booleanExpression 54 (and 58 | or 58))
booleanExpression 54
| parenthesisOpen 55 booleanExpression 54
parenthesisClose 56
| predicateExpression 58
| true 58
| false 58

referenced by:

- booleanExpression 54
- expression 54
- joinConditions 41
- pSqlElsIfExpression 110
- pSqlIfStatement 110
- pSqlWhileLoopStatement 111
- whereClause 36

caseExpression:

case caseWhenThenExpression caseElseExpression end

caseExpression 55
::= case 56 caseWhenThenExpression 55+
caseElseExpression 55? end 57

referenced by:

- arithmeticExpression 61

caseWhenThenExpression:

when expression then arithmeticExpression

caseWhenThenExpression 55
::= when 56 expression 54 then 57 arithmeticExpression 61

referenced by:

- caseExpression 55

caseElseExpression:

else expression

caseElseExpression 55
::= else 57 expression 54

referenced by:

- caseExpression 55

parenthesisOpen:

PARENTHESIS_OPEN

parenthesisOpen 55
::= PARENTHESIS_OPEN 21

referenced by:

- aggregateFunction 42
- arithmeticExpression 61
- booleanExpression 54
- csvTableSpec 32
- embeddedSelect 28

- functionExpression 62
- insertFieldList 52
- insertValues 52
- jsonTableSpec 31
- now 96
- predicateExpression 58
- tableFunctionSpec 29
- utc 96
- xmlTableSpec 30

parenthesisClose:

PARENTHESIS_CLOSE
parenthesisClose 56
::= PARENTHESIS_CLOSE 21

referenced by:

- aggregateFunction 42
- arithmeticExpression 61
- booleanExpression 54
- csvTableSpec 32
- embeddedSelect 28
- functionExpression 62
- insertFieldList 52
- insertValues 52
- jsonTableSpec 31
- now 96
- predicateExpression 58
- tableFunctionSpec 29
- utc 96
- xmlTableSpec 30

case:

CASE
case 56 ::= CASE 56

referenced by:

- caseExpression 55

when:

WHEN
when 56 ::= WHEN 56

referenced by:

- caseWhenThenExpression 55

then:

THEN
then 57 ::= THEN 57

referenced by:

- caseWhenThenExpression 55

else:

ELSE
else 57 ::= ELSE 57

referenced by:

- caseElseExpression 55

end:

END
end 57 ::= END 57

referenced by:

- caseExpression 55

not:

NOT
not 57 ::= NOT 57

referenced by:

- booleanExpression 54
- isLikeComparingExpression 61
- isNullComparingExpression 60
- predicateExpression 58

is:

IS
is 57 ::= IS 57

referenced by:

- isNullComparingExpression 60

are:

ARE
are 57 ::= ARE 57

referenced by:

- isEqualComparingExpression 61

and:

AND
and 58 ::= AND 58

referenced by:
- booleanExpression 54
- predicateExpression 58

or:

OR
or 58 ::= OR 58

referenced by:
- booleanExpression 54

true:

TRUE
true 58 ::= TRUE 58

referenced by:
- booleanConstant 106
- booleanExpression 54

false:

FALSE
false 58 ::= FALSE 58

referenced by:
- booleanConstant 106
- booleanExpression 54

predicateExpression:

arithmeticExpression not in_ parenthesisOpen arithmeticExpression COMMA inSelectStatement parenthesisClose between arithmeticExpression and arithmeticExpression gt ge lt le eq neq arithmeticExpression isNullComparingExpression isLikeComparingExpression isEqualComparingExpression
predicateExpression 58
::= arithmeticExpression 61 ((gt 59 | ge 59 | lt 59 | le 59 | eq 60 | neq 60) arithmeticExpression 61 | not 57 ?
(between 60 arithmeticExpression 61 and 58 arithmeticExpression 61
| in_ 60 parenthesisOpen 55 (arithmeticExpression 61 (COMMA 21
arithmeticExpression 61) * | inSelectStatement 22)
parenthesisClose 56) | isNullComparingExpression 60 |
isLikeComparingExpression 61 | isEqualComparingExpression 61)

referenced by:

- booleanExpression 54

parameterExpression:

COLON identifier

parameterExpression 59
::= COLON 21 identifier 98

referenced by:

- arithmeticExpression 61
- partitionIdentifier 50

gt:

Greater then is a binary operator which returns true when the left value is greater than the right value. When one of both values is null, the outcome is null. Otherwise it is false.

GT

gt 59 ::= GT 59

referenced by:

- predicateExpression 58

ge:

Greater or equal is a binary operator which returns true when the left value is greater than or equal to the right value. When one of both values is null, the outcome is null. Otherwise it is false.

GE

ge 59 ::= GE 59

referenced by:

- predicateExpression 58

lt:

Less then is a binary operator which returns true when the left value is less than the right value. When one of both values is null, the outcome is null. Otherwise it is false.

LT

lt 59 ::= LT 59

referenced by:

- predicateExpression 58

le:

Less or equal is a binary operator which returns true when the left value is less than or equal to the right value. When one of both values is null, the outcome is null. Otherwise it is false.

LE
le 59 ::= LE 59

referenced by:
- predicateExpression 58

eq:

EQ
eq 60 ::= EQ 60

referenced by:
- predicateExpression 58

neq:

NEQ
neq 60 ::= NEQ 60

referenced by:
- predicateExpression 58

like:

LIKE
like 60 ::= LIKE 60

referenced by:
- isLikeComparingExpression 61

between:

BETWEEN
between 60 ::= BETWEEN 60

referenced by:
- predicateExpression 58

in_:

IN
in_ 60 ::= IN 21

referenced by:
- predicateExpression 58

isNullComparingExpression:

is not NULL

isNullComparingExpression 60
::= is 57 not 57 ? NULL 107

referenced by:

- predicateExpression 58

isEqualComparingExpression:

are EQUAL
isEqualComparingExpression 61
::= are 57 ? EQUAL 21

referenced by:

- predicateExpression 58

isLikeComparingExpression:

not like arithmeticExpression
isLikeComparingExpression 61
::= not 57 ? like 60 arithmeticExpression 61

referenced by:

- predicateExpression 58

arithmeticExpression:

minus plus arithmeticExpression times divide plus minus concat arithmeticExpression parenthesisOpen arithmeticExpression selectStatement parenthesisClose functionExpression parameterExpression caseExpression fieldIdentifier constant
arithmeticExpression 61
::= (minus 78 | plus 79 | arithmeticExpression 61
(times 88 | divide 72 | plus 79 | minus 78 | concat 69))
arithmeticExpression 61
| parenthesisOpen 55 (arithmeticExpression 61 |
selectStatement 22) parenthesisClose 56
| functionExpression 62
| parameterExpression 59
| caseExpression 55
| fieldIdentifier 97
| constant 104

referenced by:

- aggregateFunction 42
- arithmeticExpression 61
- arithmeticExpressionList 62
- attachToClause 53
- caseWhenThenExpression 55
- expression 54
- identifiedByClause 53
- insertValuesList 52
- isLikeComparingExpression 61

- predicateExpression 58
- updateValue 53

arithmeticExpressionList:

arithmeticExpression list

```
arithmeticExpressionList 62
          ::= arithmeticExpression 61 ( list 75
arithmeticExpression 61 )*
```

referenced by:

- aggregateFunction 42
- functionExpression 62

functionExpression:

abs acos anonymize ascii asin atan atan2 base64_decode base64_encode bit_length octet_length camel ceil chr coalesce concat_func cos covfefify compress uncompress dateadd datepart date_ceil date_floor date_round date_trunc day dayofweek dayofyear dense_rank double_metaphone double_metaphone_alt exp_func floor from_unixtime hour httpget httpget_text httppost initcap instr jsondecode jsonencode left length levenshtein ln log lower lpad ltrim md5 metaphone metaphone3 metaphone3_alt microsecond millisecond minute mod month newid number_to_speech normalize nvl power quarter quote_ident quote_literal quote_nullable raise_error random random_blob rand rank regexp_instr regexp_replace regexp_substr remainder replace repeat reverse right round row_number rpad rtrim second sin soundex sqrt substr sys_context tan to_binary to_char to_date to_number to_guid to_hex translate translate_resources trim trunc unistr unix_timestamp upper urldecode urlencode user unzip zip xmlcomment xmldecode xmlencode xmlelement xmlformat xmltransform year add_months zero_blob parenthesisOpen arithmeticExpressionList parenthesisClose random rand row_number now utc user

functionExpression62
::= (abs63 | acos64 | anonymize64 | ascii65 | asin65 | atan65 | atan265 | base64_decode66 | base64_encode66 | bit_length67 | octet_length68 | camel67 | ceil67 | chr67 | coalesce68 | concat_func69 | cos69 | covfefify69 | compress69 | uncompress70 | dateadd70 | datepart70 | date_ceil70 | date_floor70 | date_round71 | date_trunc71 | day71 | dayofweek71 | dayofyear72 | dense_rank72 | double_metaphone72 | double_metaphone_alt72 | exp_func73 | floor73 | from_unixtime73 | hour74 | httpget93 | httpget_text93 | httppost93 | initcap74 | instr74 | jsondecode74 | jsonencode75 | left38 | length75 | levenshtein75 | ln75 | log76 | lower76 | lpad76 | ltrim76 | md577 | metaphone77 | metaphone377 | metaphone3_alt77 | microsecond83 | millisecond84 | minute78 | mod77 | month78 | newid78 | number_to_speech84 | normalize84 | nvl79 | power79 | quarter93 | quote_ident94 | quote_literal94 | quote_nullable94 | raise_error68 | random79 | random_blob80 | rand80 | rank80 | regexp_instr81 | regexp_replace81 | regexp_substr80 | remainder82 | replace82 | repeat68 | reverse82 | right38 | round82 | row_number83 | rpad83 | rtrim83 | second85 | sin85 | soundex85 | sqrt85 | substr85 | sys_context86 | tan88 | to_binary95 | to_char95 | to_date95 | to_number96 | to_guid95 | to_hex89 | translate88 | translate_resources88 | trim89 | trunc89 | unistr89 | unix_timestamp90 | upper90 | urldecode90 | urlencode90 | user94 | unzip91 | zip91 | xmlcomment91 | xmldecode91 | xmlencode92 | xmlelement92 | xmlformat92 | xmltransform92 | year94 | add_months66 | zero_blob96)
parenthesisOpen55 arithmeticExpressionList62? parenthesisClose56
| random79
| rand80
| row_number83
| now96
| utc96
| user94

referenced by:

- arithmeticExpression61

abs:

Returns the absolute value of a double-precision floating-point number.

Parameters:

- Input: A number that is greater than or equal to System.Double.MinValue, but less than or equal to System.Double.MaxValue.

Returns: A double-precision floating-point number. ABS
abs63 ::= ABS63

referenced by:

- functionExpression62

acos:

Returns the angle of the provided cosine.

Parameters:

- Input: the cosine to get the angle of.

Returns: A number which represents the angle of the provided cosine. ACOS

acos 64 ::= ACOS 64

referenced by:

- functionExpression 62

anonymize:

Anonymize a text or number. Anonymization is executed such that when the same original value is anonymized within the same session, the anonymized value will be identical. The anonymized value also uniquely matches the original value. With no access to the anonymization map however, the original value can however not be calculated from the anonymized value.

In mathematics, the anonymization function is a bijection: each element of the original set is paired with exactly one element of the anonymized set, and each element of the anonymized set is paired with exactly one element of the original set.

Parameters:

- Value: A text or number to be obfuscated.
- Maximum length (optional): Maximum length in digits for numbers or characters for text of anonymized value. Null means no restriction on maximum length.
- Mapping (optional): algorithm to use. The default algorithm is 'DEFAULT' which maps text values to a range of hexadecimal characters and numbers to a range of numbers. Alternative mappings are described below.

The following anonymization maps are available on installation:

- DEFAULT: the default algorithm.
- IVE-GL-JOURNAL-DESCRIPTION: general ledger journal descriptions: no preferred anonymizations, leave familiar and non-confidential descriptions in original state.
- IVE-GL-ACCOUNT-DESCRIPTION: general ledger account descriptions: no preferred anonymizations, leave familiar and non-confidential descriptions in original state.
- IVE-PSN-FIRST-NAME: person first names: prefer readable alternative first names, anonymize all.
- IVE-PSN-LAST-NAME: person last names: prefer readable alternative last names, anonymize all.
- IVE-ADS-CITY-NAME: address city names: prefer readable alternative city names, anonymize all.
- IVE-ADS-STREET-NAME: address street names: prefer readable alternative street names, anonymize all.

The data dictionary contains the anonymization maps used sofar in the session and their corresponding values:

select * from SystemAnonymizationMaps@DataDictionary select * from SystemAnonymizationMapValues@DataDictionary select * from SystemAnonymizationPredefinedMaps@DataDictionary

Returns: Anonymized value. ANONYMIZE

anonymize 64
::= ANONYMIZE 64

referenced by:

- functionExpression 62

ascii:

Get the position of a character on database character set.

Parameters:

- Input: character to get position from.

Returns: The position of the character on database character set. ASCII

ascii 65 ::= ASCII 65

referenced by:

- functionExpression 62

asin:

Returns the angle of the provided sine.

Parameters:

- Input: the sine to get the angle of.

Returns: A number which represents the angle of the provided sine. ASIN

asin 65 ::= ASIN 65

referenced by:

- functionExpression 62

atan:

Returns the angle of the provided tangent.

Parameters:

- Input: the tangent to get the angle of.

Returns: A number which represents the angle of the provided tangent. ATAN

atan 65 ::= ATAN 65

referenced by:

- functionExpression 62

atan2:

Returns the angle of the provided tangent.

Parameters:

- First number: the first number to get the angle of.
- Second number: the second to get the angle of.

Returns: A number which represents the angle of the provided tangent. ATAN2

atan2 65 ::= ATAN2 65

referenced by:

- functionExpression 62

add_months:

Add an amount of months to a datetime.

Parameters:

- Date: datetime to ass the months to.
- Months: the amount of months to add.

Returns: A new datetime with the amount of months added. ADD_MONTHS

add_months 66 ::= ADD_MONTHS 66

referenced by:

- functionExpression 62

base64_decode:

Converts the base64_encoded value back to the binairy value as defined on Wikipedia.

Parameters:

- Input: value to convert back to the original.

Returns: The input decoded back to the binairy value. BASE64_DECODE

base64_decode 66 ::= BASE64_DECODE 66

referenced by:

- functionExpression 62

base64_encode:

Converts a binairy value to base64_encoded characters as defined on Wikipedia.

Parameters:

- Input: value to convert to base64 characters.

Returns: The input encoded to base64 characters. BASE64_ENCODE

base64_encode 66 ::= BASE64_ENCODE 66

referenced by:

- functionExpression 62

camel:

Converts provided string to Camel case.

Parameters:

- Input: the string that will be converted to Camel case.

Returns: A string converted to Camel case. CAMEL

```
camel 67      ::= CAMEL 67
```

referenced by:

- functionExpression 62

ceil:

Rounds the input to the largest following integer. Unless an amount of decimals is defined, in which case it rounds to the largest integer number with the amount of decimals or date with the amount of positions.

Parameters:

- Input: A number or datetime to ceil.
- Decimals [optional]: A number to specify how many decimals it may ceil to in case of a number. In case of a datetime, it reflects the number of time positions, ranging from -2 for years to 2 for minutes.

Returns: The ceiling of the input. CEIL

```
ceil 67       ::= CEIL 67
```

referenced by:

- functionExpression 62

chr:

Get a character from database character set.

Parameters:

- Input: a numeric value of a character.

Returns: A character from the database character set. CHR CHAR

```
chr 67        ::= CHR 67
                | CHAR 21
```

referenced by:

- functionExpression 62

bit_length:

Get the number of bits needed to represent a value. For a blob, this is the number of bits for the bytes of the blob. For all other data types, the value is first converted to a string and then the number of bits of the UTF8 representation is determined.

Parameters:

- Value: value to determine length in bits for.

Returns: number of bits needed to represent the value. BIT_LENGTH

bit_length[67]
::= BIT_LENGTH[67]

referenced by:

- functionExpression[62]

octet_length:

Get the number of bytes needed to represent a value. For a blob, this is the number of bytes of the blob. For all other data types, the value is first converted to a string and then the number of bytes of the UTF8 representation is determined.

Parameters:

- Value: value to determine length in bytes for.

Returns: number of bytes needed to represent the value. OCTET_LENGTH
octet_length[68]
::= OCTET_LENGTH[68]

referenced by:

- functionExpression[62]

repeat:

Get a concatenation of the text by a number of times.

Parameters:

- Text: text to repeat.
- Times: number of time to repeat the text.

Returns: the text repeated a number of times. REPEAT
repeat[68] ::= REPEAT[68]

referenced by:

- functionExpression[62]

raise_error:

RAISE_ERROR
raise_error[68]
::= RAISE_ERROR[68]

referenced by:

- functionExpression[62]

coalesce:

Performs a coalescing operation.

Parameters:

- Left: an object.
- Right: an object.

Returns: the left value if right is empty, otherwise the right value. COALESCE

coalesce 68 ::= COALESCE 68

referenced by:

- functionExpression 62

concat:

Concatenate the left and right values together as a text.

CONCAT_OP

concat 69 ::= CONCAT_OP 21

referenced by:

- arithmeticExpression 61

concat_func:

Concatenate a list of values together as a text.

CONCAT

concat_func 69

::= CONCAT 69

referenced by:

- functionExpression 62

cos:

Returns the cosine of the provided angle.

Parameters:

- Input: the angle to get the cosine of.

Returns: A number which represents the cosine of the provided angle. COS

cos 69 ::= COS 69

referenced by:

- functionExpression 62

covfefify:

COVFEFIFY

covfefify 69

::= COVFEFIFY 69

referenced by:

- functionExpression 62

compress:

COMPRESS

compress 69 ::= COMPRESS 69

referenced by:

- functionExpression 62

uncompress:

UNCOMPRESS

uncompress 70 ::= UNCOMPRESS 70

referenced by:

- functionExpression 62

dateadd:

Adds an amount of time to a date.

Parameters:

- Interval: the date interval to be added.
- Number: the number of intervals to add.
- Date: the date to wich the interval should be added.

Returns: The original date with the number of intervals added. DATEADD

dateadd 70 ::= DATEADD 70

referenced by:

- functionExpression 62

datepart:

Get the specified datepart from a datetime.

Parameters:

- datepart: a part of a date.
- date: a datetime to get the datepart from.

Returns: a part of a datetime. DATEPART

datepart 70 ::= DATEPART 70

referenced by:

- functionExpression 62

date_ceil:

DATE_CEIL

date_ceil 70 ::= DATE_CEIL 70

referenced by:

- functionExpression 62

date_floor:

DATE_FLOOR
date_floor 70
::= DATE_FLOOR 70

referenced by:
- functionExpression 62

date_round:

DATE_ROUND
date_round 71
::= DATE_ROUND 71

referenced by:
- functionExpression 62

date_trunc:

DATE_TRUNC
date_trunc 71
::= DATE_TRUNC 71

referenced by:
- functionExpression 62

day:

Collect the day from a date.

Parameters:
- Input: A dateTime.

Returns: The day as an integer. DAY
day 71 ::= DAY 71

referenced by:
- functionExpression 62

dayofweek:

Collect the day of a week from a date.

Parameters:
- Input: A dateTime.

Returns: The day of a week as an integer. DAYOFWEEK
dayofweek 71
::= DAYOFWEEK 71

referenced by:
- functionExpression 62

dayofyear:

Collect the day of a year from a date.

Parameters:

- Input: A dateTime.

Returns: The day of a year as an integer. DAYOFYEAR

dayofyear 72
::= DAYOFYEAR 72

referenced by:

- functionExpression 62

dense_rank:

DENSE_RANK

dense_rank 72
::= DENSE_RANK 72

referenced by:

- functionExpression 62

double_metaphone:

DOUBLE_METAPHONE

double_metaphone 72
::= DOUBLE_METAPHONE 72

referenced by:

- functionExpression 62

double_metaphone_alt:

DOUBLE_METAPHONE_ALT

double_metaphone_alt 72
::= DOUBLE_METAPHONE_ALT 72

referenced by:

- functionExpression 62

divide:

Divide one number by the second number.

Parameters:

- first: a number to divide.
- second: a number to divide with.

Returns: the divided output. DIVIDE

divide 72 ::= DIVIDE 72

referenced by:

- arithmeticExpression 61

exp:

Returns the provided number raised to the specified power.

Parameters:

- Input: the number to raise by the specified power.

Returns: A number which is the provided number raised to the specified power. EXP_OP
exp 73 ::= EXP_OP 21

no references

exp_func:

EXP
exp_func 73 ::= EXP 73

referenced by:

- functionExpression 62

floor:

Rounds the input to the smallest following integer. Unless an amount of decimals is defined, in which case it rounds to the smallest integer with the amount of decimals or date with the amount of positions.

Parameters:

- Input: A number or datetime to floor.
- Decimals [optional]: A number to specify how many decimals it may floor to in case of a number. In case of a datetime, it reflects the number of time positions, ranging from -2 for years to 2 for minutes.

Returns: The floor of the input. FLOOR
floor 73 ::= FLOOR 73

referenced by:

- functionExpression 62

from_unixtime:

Get the date/time from an integer representing a UNIX epoch time.

Parameters:

- Input: An integer.

Returns: The date/time which the UNIX epoch time represents. FROM_UNIXTIME
from_unixtime 73
::= FROM_UNIXTIME 73

referenced by:

- functionExpression 62

hour:

Collect the hour from a date.

Parameters:

- Input: A dateTime.

Returns: The hour as an integer. HOUR

hour 74 ::= HOUR 74

referenced by:

- functionExpression 62

initcap:

Changes the first letter of each word in uppercase, all other letters in lowercase.

Parameters:

- Input: Text to convert.

Returns: The input with the first letter of each word in uppercase. INITCAP

initcap 74 ::= INITCAP 74

referenced by:

- functionExpression 62

instr:

Get a number which is a position of the first occurrence of substring in the string.

Parameters:

- String: String to be searched.
- Substring: Text to search for.
- StartPosition [optional]: Position of string to start searching.
- occurrence [optional]: Return the position of the occurrence.

Returns: The position of the substring inside the original string. INSTR

instr 74 ::= INSTR 74

referenced by:

- functionExpression 62

jsondecode:

JSONDECODE

jsondecode 74

::= JSONDECODE 74

referenced by:

- functionExpression 62

jsonencode:

JSONENCODE
jsonencode 75
::= JSONENCODE 75

referenced by:
- functionExpression 62

length:

Gets the number of characters in provided string.

Parameters:
- Input: the string to get the length of.

Returns: A number which represents the number of characters in the provided string.
LENGTH
length 75 ::= LENGTH 75

referenced by:
- functionExpression 62

levenshtein:

Determine the Levenshtein distance between two values as defined on Wikipedia.

LEVENSHTEIN
levenshtein 75
::= LEVENSHTEIN 75

referenced by:
- functionExpression 62

list:

COMMA
list 75 ::= COMMA 21

referenced by:
- arithmeticExpressionList 62

ln:

Get the natural logarithm of a number.

Parameters:
- Input: a number to get the natural logarithm from.

Returns: The natural logarithm of the input. LN
ln 75 ::= LN 75

referenced by:
- functionExpression 62

log:

Get the natural logarithm of a number in a specified base.

Parameters:

- Input: a number to get the natural logarithm from.
- Base [optional]: the base to get the natural logarithm from.

Returns: The natural logarithm of the input in the specified base. LOG

log 76 ::= LOG 76

referenced by:

- functionExpression 62

lower:

Converts provided string to lowercase.

Parameters:

- Input: the string that will be converted to lowercase.

Returns: A string converted to lowercase. LOWER

lower 76 ::= LOWER 76

referenced by:

- functionExpression 62

lpad:

Pad a string to the left to make it a specified length.

Parameters:

- Input: string to be padded.
- Lenght: the length the string should be padded to.
- Characters [optional]: Characters to pad with.

Returns: A string padded to the left to a given length with the optional specified characters. LPAD

lpad 76 ::= LPAD 76

referenced by:

- functionExpression 62

ltrim:

Trims characters from the left side of a string.

Parameters:

- Input: the string from to trim characters from the left side.
- (Optinial) Chars to trim: the character to trim. Default is " ".

Returns: A string with chars trimmed from the left. LTRIM

ltrim 76 ::= LTRIM 76

referenced by:

- functionExpression 62

md5:

Converts a value to a 128-bit hash value as defined on Wikipedia.

Parameters:

- Input: Text to convert with MD5.

Returns: The input converted with MD5. MD5

```
md5 77          ::= MD5 77
```

referenced by:

- functionExpression 62

metaphone:

Converts a value to the Metaphone code as defined on Wikipedia.

Parameters:

- Input: value to convert to metaphone.
- Length: maximum output length of the given input.

Returns: The input converted to metaphone, with a given output length. METAPHONE

```
metaphone 77
                ::= METAPHONE 77
```

referenced by:

- functionExpression 62

metaphone3:

METAPHONE3

```
metaphone3 77
                ::= METAPHONE3 77
```

referenced by:

- functionExpression 62

metaphone3_alt:

METAPHONE3_ALT

```
metaphone3_alt 77
                ::= METAPHONE3_ALT 77
```

referenced by:

- functionExpression 62

mod:

Get the remainder of a divide calculation.

Parameters:

- dividend: a number.
- divider: a number.

Returns: The remainder. MOD

mod 77 ::= MOD 77

referenced by:

- functionExpression 62

minus:

Subtracts a value from another.

Parameters:

- Value: a number or datetime.
- Subtract: a number or datetime.

Returns: The value minus the subtraction. MINUS

minus 78 ::= MINUS 78

referenced by:

- arithmeticExpression 61

minute:

Collect the minute from a date.

Parameters:

- Input: A dateTime.

Returns: The minute as an integer. MINUTE

minute 78 ::= MINUTE 78

referenced by:

- functionExpression 62

month:

Collect the month from a date.

Parameters:

- Input: A dateTime.

Returns: The month as an integer. MONTH

month 78 ::= MONTH 78

referenced by:

- functionExpression 62

newid:

Creates a new Guid id.

Returns: The new Guid id.

NEWID
newid 78 ::= NEWID 78

referenced by:
- functionExpression 62

nvl:

Coalesce all values together.

Returns: All values coalesced together.

NVL
nvl 79 ::= NVL 79

referenced by:
- functionExpression 62

plus:

Adding a value to another.

Parameters:
- Value: a number or datetime.
- add: a number or datetime.

Returns: A new value with both values added to eachother. PLUS
plus 79 ::= PLUS 79

referenced by:
- arithmeticExpression 61

power:

Gets a value of a number raised to another.

Parameters:
- Value: a number.
- exponent: a number.

Returns: The value of a number raised to another. POWER
power 79 ::= POWER 79

referenced by:
- functionExpression 62

random:

Generates a random number between 0 and 1.

Parameters:

- Seed: Produce a repeatable sequence of random numbers each time that seed value is provided.

Returns: A random number between 0 and 1. RANDOM

random 79 ::= RANDOM 79

referenced by:

- functionExpression 62

random_blob:

Generates a blob with pseudo-random values.

Parameters:

- Length: Produce a blob with this length in terms of bytes.

Returns: A blob with pseudo-random values. RANDOM_BLOB

random_blob 80 ::= RANDOM_BLOB 80

referenced by:

- functionExpression 62

rand:

RAND

rand 80 ::= RAND 80

referenced by:

- functionExpression 62

rank:

RANK

rank 80 ::= RANK 80

referenced by:

- functionExpression 62

regexp_substr:

Extracts a substring from the given value using regular expression.

Parameters:

- Input: The text to get the substring from.
- Pattern: Regular expression pattern.
- Start position [optional]: The start index from the input.
- Appearance [optional]: Indicating the appearance of the substr operation.
- Match_parameter [optional]: A text literal that lets you change the default matching behavior of the function.

Returns: The substring from the input. REGEXP_SUBSTR

regexp_substr 80
::= REGEXP_SUBSTR 80

referenced by:

- functionExpression 62

regexp_instr:

Determine the position of the regular expression in the given value. Returns 0 when the regular expression is not contained in the given value.

Parameters:

- Input: The text to get the regular expression position from.
- Pattern: Regular expression pattern.
- Start position [optional]: The start index from the input.
- Appearance [optional]: Indicating the appearance of the instr operation.
- ReturnOption [optional]: Select either the first character found or the first character after the occurrence of the pattern.
- Match_parameter [optional]: A text literal that lets you change the default matching behavior of the function.

Returns: The location of a regular expression pattern in the input. REGEXP_INSTR

regexp_instr 81
::= REGEXP_INSTR 81

referenced by:

- functionExpression 62

regexp_replace:

Replaces all occurrences matching the regular expression with the replacement value. The replacement value may contain references to matches in the regular expression by using the dollar-sign ('$') plus the reference number.

Parameters:

- Input: The text to get the substring from.
- Pattern: Regular expression pattern.
- Replacement [optional]: Text to replace with.
- Start position [optional]: The start index from the input.
- Appearance [optional]: Indicating the appearance of the replace operation.
- Match_parameter [optional]: A text literal that lets you change the default matching behavior of the function. The available options are 'c' for case-sensitive, 'i' for ignore case, 'n' for single-line, 'm' for multi-line and 'x' for ignore pattern white space.

Returns: The input with every occurrence of the regular expression pattern replaced with the replacement.

REGEXP_REPLACE

regexp_replace 81
::= REGEXP_REPLACE 81

referenced by:

- functionExpression 62

remainder:

Get the remainder of a divide calculation.

The REMAINDER function uses the round function in its formula, whereas the MOD function uses the floor function in its formula.

Parameters:

- Number1: a number.
- Number2: a number.

Returns: The remainder. REMAINDER

remainder 82
::= REMAINDER 82

referenced by:

- functionExpression 62

replace:

Replaces a string with string in given string.

Parameters:

- Input: the string to replace a string in.
- Old text: the string to be replaced.
- New text: the string which 'Old text' will be replaced with.

Returns: A string with the replaced string. REPLACE

replace 82 ::= REPLACE 82

referenced by:

- functionExpression 62

reverse:

Flips the input around.

Parameters:

- Input: text to flip around.

Returns: The text with it's characters in reversed order. REVERSE

reverse 82 ::= REVERSE 82

referenced by:

- functionExpression 62

round:

Rounds the input to the closest following integer. Unless an amount of decimals is defined, in which case it rounds to the closest integer number with the amount of decimals or date with the amount of positions.

Parameters:

- Input: A number or datetime to round.
- Decimals [optional]: A number to specify how many decimals it may round to in case of a number. In case of a datetime, it reflects the number of time positions, ranging from -2 for years to 2 for minutes.

Returns: The rounded input. ROUND

round 82 ::= ROUND 82

referenced by:

- functionExpression 62

row_number:

ROW_NUMBER

row_number 83 ::= ROW_NUMBER 83

referenced by:

- functionExpression 62

rpad:

Rightpad function pads the right-side of a string with a specific set of characters to the given length. When no set of characters given, it will pad with a whitespace.

Parameters:

- Input: Text to be padded.
- Length: The length to make the input to.
- Pad text [optional]: Text to add to the input if the length is larger then the input.

Returns: The padded text, or null if the string cannot be padded. RPAD

rpad 83 ::= RPAD 83

referenced by:

- functionExpression 62

rtrim:

Trims characters from the right side of a string.

Parameters:

- Input: the string from which to trim characters from the right side.
- (Optional) Chars to trim: the character to trim. Default is " ".

Returns: A string with chars trimmed from the right. RTRIM

rtrim 83 ::= RTRIM 83

referenced by:

- functionExpression 62

microsecond:

Collect the microsecond from a date.

Parameters:

- Input: A dateTime.

Returns: The microsecond as an integer. MICROSECOND

microsecond 83
::= MICROSECOND 83

referenced by:

- functionExpression 62

millisecond:

Collect the millisecond from a date.

Parameters:

- Input: A dateTime.

Returns: The millisecond as an integer. MILLISECOND

millisecond 84
::= MILLISECOND 84

referenced by:

- functionExpression 62

number_to_speech:

NUMBER_TO_SPEECH

number_to_speech 84
::= NUMBER_TO_SPEECH 84

referenced by:

- functionExpression 62

normalize:

Normalize a file path by replacing all invalid and non-ASCII characters for use in a file path by underscore. After that, the file path is made more readable by various operations such as removal of duplicate whitespace and underscore characters.

Parameters:

- Original file path: path of the file.
- Maximum file name length: length in characters into which the normalized file name must fit.
- Allow path separator: whether to allow the path separator '\' in the normalized file name. When not, occurrences are replaced.

Returns: a normalized file path. NORMALIZE

normalize 84
::= NORMALIZE 84

referenced by:

- functionExpression 62

second:

Collect the second from a date.

Parameters:

- Input: A dateTime.

Returns: The second as an integer. SECOND

second 85 ::= SECOND 85

referenced by:

- functionExpression 62

soundex:

Converts a value to the Soundex code as defined on Wikipedia.

Parameters:

- Input: Text to that retrieve the soundex value from.

Returns: A text started with a number and followed by 3 digits. SOUNDEX

soundex 85 ::= SOUNDEX 85

referenced by:

- functionExpression 62

sin:

Returns the sine of the provided angle.

Parameters:

- Input: the angle to get the sine of.

Returns: A number which represents the sine of the provided angle. SIN

sin 85 ::= SIN 85

referenced by:

- functionExpression 62

sqrt:

Returns the square root of the provided number.

Parameters:

- Input: the number to get the square root of.

Returns: A number which represents the square root of the provided number. SQRT

sqrt 85 ::= SQRT 85

referenced by:

- functionExpression 62

substr:

Gets a substring from the input.

Parameters:

- Input: text to gather the substring from.
- Start: start position.
- Lenght: maximum lenght of the substring.

Returns: The substring from the original input. SUBSTR

substr 85 ::= SUBSTR 85

referenced by:

- functionExpression 62

sys_context:

Text value of a parameter associated with a context.

Parameters:

- context: a namespace.
- parameter: name of the parameter.

Solely the namespace USERENV is available with the following parameter names:

- APPLICATION_VERSION: version of the client application.
- APPLICATION_FULL: name and version of the client application.
- APPLICATION_BUILD_EXPIRATION_DATE: build expiration date of the client application.
- AUTHENTICATION_METHOD: current authentication method.
- CLIENT_IP_ADDRESS_INTERNAL: internal IP address of the client device.
- CLIENT_IP_ADDRESS_EXTERNAL: external IP address of the client device.
- CLIENT_LOGICAL_CORE_COUNT: number of logical processor cores in the client device.
- CLIENT_MACHINE_NAME: machine name of the client device.
- CLIENT_SYSTEM_64_BIT: whether the OS is 64-bit on the client device.
- CLIENT_SYSTEM_NAME: full OS name running on the client device.
- CLIENT_SYSTEM_DIRECTORY: system directory of the client device.
- CLIENT_SYSTEM_PAGE_SIZE: system page size of the client device.
- CLIENT_VIRTUAL_MACHINE: whether the client device is a virtual machine.
- CLR_VERSION_BUILD: build version of the Common Language Runtime.
- CLR_VERSION_MAJOR: major version of the Common Language Runtime.
- CLR_VERSION_MAJOR_REVISION: major revision of the Common Language Runtime.
- CLR_VERSION_MINOR: minor version of the Common Language Runtime.
- CLR_VERSION_MIN_REVISION: minor revision of the Common Language Runtime.
- COMPANY_ID: ID of the company of current user.
- COMPANY_NAME: name of the company of current user.
- COMPANY_PHONE: phone of the company of current user.
- COMPANY_WEB_SITE: web site of the company of current user.
- DATA_CONTAINER_ALIAS: alias of active data container.
- DATA_CONTAINER_ID: ID of active data container.
- DATABASE_DESCRIPTION: description of database.
- DATABASE_FULL_NAME: full name of database.
- DATABASE_VERSION: version of database.

- LANG: ISO abbreviation for the language name of the user. Alternative: USER_LANGUAGE_CODE.
- MODULE: name of the client application. Alternative: APPLICATION_NAME.
- PROCESS_64_BIT: whether the OS process on the client device runs as 64-bit.
- PROCESS_COMMAND_LINE: command line used to start the OS process.
- PROCESS_CURRENT_DIRECTORY: current directory of the OS process.
- PROCESS_STACK_TRACE: current stack trace of the OS process.
- PROCESS_WORKING_SET: working set of the OS process.
- PROVIDER_DESCRIPTION: description of active data container.
- PROVIDER_DOCUMENTATION_URL: documentation (URL) of active data container.
- PROVIDER_DOWNLOAD_IMPLEMENTATION_URL: download driver (URL) of active data container.
- PROVIDER_NAME: name of active data container.
- PROVIDER_SHORT_NAME: short name of active data container.
- PROVIDER_TECHNICAL_DOCUMENTATION_URL: technical documentation (URL) of active data container.
- SESSION_USER: log on code of the current user. Alternative: CURRENT_USER.
- SESSIONID: session ID of current session.
- USER_DOMAIN_NAME: Windows domain name of current user.
- USER_EMAIL_ADDRESS: email address of current user.
- USER_FIRST_NAME: first name of current user.
- USER_FULL_NAME: full name of current user.
- USER_GENDER: gender of current user.
- USER_HOME_DIRECTORY: home directory of current user on client device.
- USER_INTERACTIVE: whether the current user works interactive.
- USER_PICTURES_DIRECTORY: pictures directory of current user on client device.
- USER_FAVORITES_DIRECTORY: favorites directory of current user on client device.
- USER_DESKTOP_DIRECTORY: desktop directory of current user on client device.
- USER_DOCUMENTS_DIRECTORY: documents directory of current user on client device.
- USER_PROFILE_DIRECTORY: profile directory of current user on client device.
- USER_LAST_LOG_ON: time of last log on of current user.
- USER_LAST_NAME: last name of current user.
- USER_LINKED_IN: LinkedIn name of current user.
- USER_MIDDLE_NAME: middle name of current user.
- USER_MOBILE_NUMBER: mobile number of current user.
- USER_NATIONALITY: nationality of current user.
- USER_PHONE_NUMBER: phone number of current user.
- USER_PICTURE_URL: picturel (URL) of current user.
- USER_SKYPE: Skype name of current user.
- USER_TITLE: title of current user.
- USER_TWITTER: Twitter name of current user.
- USER_WEB_SITE: personal web site of current user.

Returns: Value of the parameter in the context namespace. SYS_CONTEXT

sys_context 86

::= SYS_CONTEXT 86

referenced by:

- functionExpression 62

tan:

Returns the tangent of the provided angle.

Parameters:

- Input: the angle to get the tangent of.

Returns: A number which represents the tangent of the provided angle. TAN

tan 88 ::= TAN 88

referenced by:

- functionExpression 62

times:

Multiplies one number by the second number.

Parameters:

- First: a number to multiply.
- Second: a number to multiply with.

Returns: The first number multiplied by the second number. ASTERIX

times 88 ::= ASTERIX 21

referenced by:

- arithmeticExpression 61

translate:

Translate replaces all occurrences of each character in from_string to its corresponding character in to_string.

Parameters:

- input: The string to replace a sequence of characters with another set of characters.
- from_string: The string that will be searched for in the input.
- to_string: All characters in the from_string will be replaced with the corresponding character in the to_string

Returns: the input with all occurrences of each character in from_string replaced by its corresponding character in to_string. TRANSLATE

translate 88 ::= TRANSLATE 88

referenced by:

- functionExpression 62

translate_resources:

Replace all Invantive-style resources ('{res:...}') by their translation in the current language.

Parameters:

- txt: The string to replace resources in.

Returns: the input with all resources replaced by their translation.
TRANSLATE_RESOURCES
translate_resources 88
::= TRANSLATE_RESOURCES 88

referenced by:

- functionExpression 62

trim:

Trims whitespaces from both sides of the provided string.

Parameters:

- Input: the string from which to trim characters.

Returns: A string trimmed from whitespaces from both sides. TRIM
trim 89 ::= TRIM 89

referenced by:

- functionExpression 62

trunc:

Calculates the integral part of a number. Unless an amount of decimals is defined, in which case it calculates to the integer with the amount of decimals or date with the amount of positions.

Parameters:

- Input: A number or datetime to truncate.
- Decimals [optional]: A number to specify how many decimals it may truncate to in case of a number. In case of a datetime, it reflects the number of time positions, ranging from -2 for years to 2 for minutes.

Returns: The truncated input. TRUNC
trunc 89 ::= TRUNC 89

referenced by:

- functionExpression 62

to_hex:

TO_HEX
to_hex 89 ::= TO_HEX 89

referenced by:

- functionExpression 62

unistr:

Converts a text with unicodes to regular characters.

Parameters:

- Input: text with unicodes.

Returns: The input converted to all regular characters. UNISTR

unistr 89 ::= UNISTR 89

referenced by:

- functionExpression 62

upper:

Converts provided string to uppercase.

Parameters:

- Input: the string that will be converted to uppercase.

Returns: A string converted to uppercase. UPPER

upper 90 ::= UPPER 90

referenced by:

- functionExpression 62

urldecode:

Decodes a url.

Parameters:

- Url: url to decode.

Returns: The decoded url. URLDECODE

urldecode 90
::= URLDECODE 90

referenced by:

- functionExpression 62

urlencode:

Encodes a url.

Parameters:

- Url: url to encode.

Returns: The encoded url. URLENCODE

urlencode 90
::= URLENCODE 90

referenced by:

- functionExpression 62

unix_timestamp:

Get the UNIX epoch time of a date/time.

Parameters:

- Input: A dateTime. Current date/time is used when no value is specified.

Returns: The UNIX epoch time. UNIX_TIMESTAMP

unix_timestamp 90
::= UNIX_TIMESTAMP 90

referenced by:

- functionExpression 62

unzip:

UNZIP

unzip 91 ::= UNZIP 91

referenced by:

- functionExpression 62

zip:

ZIP

zip 91 ::= ZIP 91

referenced by:

- functionExpression 62

xmlcomment:

Format a text as an XML comment.

Parameters:

- Input: the input which will be formatted as XML comment.

Returns: A text with the input as XML comment. XMLCOMMENT

xmlcomment 91
::= XMLCOMMENT 91

referenced by:

- functionExpression 62

xmldecode:

Returns the XML decoded input.

Parameters:

- Input: the input which will be decoded into XML.

Returns: An object which is the XML decoded input. XMLDECODE

xmldecode 91
::= XMLDECODE 91

referenced by:

- functionExpression 62

xmlencode:

Returns the XML encoded input.

Parameters:

- Input: the input which will be encoded into XML.

Returns: An object which is the XML encoded input. XMLENCODE

xmlencode 92
::= XMLENCODE 92

referenced by:

- functionExpression 62

xmlelement:

XMLELEMENT

xmlelement 92
::= XMLELEMENT 92

referenced by:

- functionExpression 62

xmltransform:

Applies an XSL style sheet to the XML instance.

Parameters:

- XML: XML type instance to be transformed with the XSL style sheet.
- Style sheet: The XSL style sheet to apply.

Returns: The XML instance with the style sheet applied to it. XMLTRANSFORM

xmltransform 92
::= XMLTRANSFORM 92

referenced by:

- functionExpression 62

xmlformat:

Pretty-print xml text.

Parameters:

- Xml: xml to pretty-print.

Returns: The pretty-printed XML text. XMLFORMAT

xmlformat 92
::= XMLFORMAT 92

referenced by:

- functionExpression 62

httpget:

Collects all data from the URL as binary data.

The URL must be publicly accessible. Use the NativePlatformScalarRequest view on cloud applications to directly access their web APIs.

Parameters:

- URL: the URL to collect the data from.

Returns: The collected data as an byte array. HTTPGET

httpget 93 ::= HTTPGET 93

referenced by:

- functionExpression 62

httpget_text:

Collects all data from the URL as text.

The URL must be publicly accessible. Use the NativePlatformScalarRequest view on cloud applications to directly access their web APIs.

Parameters:

- URL: the URL to collect the data from.
- Encoding: the encoding from the data to receive, which is by default UTF8.

Returns: The collected data as text. HTTPGET_TEXT

httpget_text 93
::= HTTPGET_TEXT 93

referenced by:

- functionExpression 62

httppost:

HTTPPOST

httppost 93 ::= HTTPPOST 93

referenced by:

- functionExpression 62

quarter:

Collect the quarter from a date.

Parameters:

- Input: A dateTime.

Returns: The quarter as an integer. QUARTER

quarter 93 ::= QUARTER 93

referenced by:

- functionExpression 62

quote_ident:

QUOTE_IDENT
quote_ident 94
::= QUOTE_IDENT 94

referenced by:
- functionExpression 62

quote_literal:

QUOTE_LITERAL
quote_literal 94
::= QUOTE_LITERAL 94

referenced by:
- functionExpression 62

quote_nullable:

QUOTE_NULLABLE
quote_nullable 94
::= QUOTE_NULLABLE 94

referenced by:
- functionExpression 62

user:

Gets the user log on code.

Returns: The user log on code.

USER
user 94 ::= USER 94

referenced by:
- functionExpression 62

year:

Collect the year from a date.

Parameters:
- Input: A dateTime.

Returns: The year as an integer. YEAR
year 94 ::= YEAR 94

referenced by:
- functionExpression 62

to_binary:

TO_BINARY
to_binary 95
::= TO_BINARY 95

referenced by:

- functionExpression 62

to_char:

Converts a value into text.

Parameters:

- Input: value to convert.

Returns: The input converted to text. TO_CHAR
to_char 95 ::= TO_CHAR 95

referenced by:

- functionExpression 62

to_date:

Converts a value into a datetime.

Parameters:

- Input: value to convert.

Returns: The input converted to a datetime. TO_DATE
to_date 95 ::= TO_DATE 95

referenced by:

- functionExpression 62

to_guid:

Converts a value into a guid.

Parameters:

- Input: value to convert.

Returns: The input converted to a guid.

Converts a value into a number.

Parameters:

- Input: value to convert.

Returns: The input converted to a number. TO_GUID
to_guid 95 ::= TO_GUID 95

referenced by:

- functionExpression 62

to_number:

TO_NUMBER
to_number[96]
::= TO_NUMBER[96]

referenced by:

- functionExpression[62]

zero_blob:

Generates a blob with 0-byte values.

Parameters:

- Length: Produce a blob with this length in terms of bytes.

Returns: A blob with 0-byte values. ZERO_BLOB
zero_blob[96]
::= ZERO_BLOB[96]

referenced by:

- functionExpression[62]

now:

The time of the system clock in local time at the device where Invantive UniversalSQL runs.

Returns: current date/time.

NOW GETDATE SYSDATETIME parenthesisOpen parenthesisClose SYSDATE
now[96] ::= (NOW[96] | GETDATE[21] | SYSDATETIME[21])
parenthesisOpen[55] parenthesisClose[56]
| SYSDATE[21]

referenced by:

- functionExpression[62]

utc:

UTC_DATE parenthesisOpen parenthesisClose GETUTCDATE NOWUTC parenthesisOpen parenthesisClose SYSDATEUTC
utc[96] ::= UTC_DATE[21] (parenthesisOpen[55]
parenthesisClose[56])?
| (GETUTCDATE[21] | NOWUTC[21]) parenthesisOpen[55]
parenthesisClose[56]
| SYSDATEUTC[21]

referenced by:

- functionExpression[62]

fullTableIdentifier:

catalogIdentifier DOT schemaIdentifier DOT tableIdentifier

fullTableIdentifier[96]
::= (catalogIdentifier[97] DOT[21] (schemaIdentifier[97]? DOT[21])?)? tableIdentifier[97]

referenced by:
- tableOrFunctionSpec[29]
- tableSpec[28]

catalogIdentifier:

identifier
catalogIdentifier[97]
::= identifier[98]

referenced by:
- fullTableIdentifier[96]

schemaIdentifier:

identifier
schemaIdentifier[97]
::= identifier[98]

referenced by:
- fullTableIdentifier[96]

tableIdentifier:

identifier
tableIdentifier[97]
::= identifier[98]

referenced by:
- fullTableIdentifier[96]

fieldIdentifier:

alias DOT identifier
fieldIdentifier[97]
::= (alias[98] DOT[21])? identifier[98]

referenced by:
- arithmeticExpression[61]

attributeIdentifier:

identifierWithMinus keywordsAsIdentifierOrAlias
attributeIdentifier[97]
::= identifierWithMinus[98]
| keywordsAsIdentifierOrAlias[99]

referenced by:

- setIdentifier 48

identifierWithMinus:

identifier MINUS identifier INT_OR_DECIMAL_C ESCAPED_IDENTIFIER

```
identifierWithMinus 98
          ::= ESCAPED_IDENTIFIER 21
            | identifier 98 ( MINUS 78 ( identifier 98 |
INT_OR_DECIMAL_C 21 )? )*
```

referenced by:

- attributeIdentifier 97

identifier:

ESCAPED_IDENTIFIER IDENTIFIER keywordsAsIdentifierOrAlias

```
identifier 98
          ::= ESCAPED_IDENTIFIER 21
            | IDENTIFIER 98
            | keywordsAsIdentifierOrAlias 99
```

referenced by:

- catalogIdentifier 97
- column 36
- csvTableColumSpec 33
- dataContainerAlias 30
- fieldIdentifier 97
- identifierWithMinus 98
- joinSet 26
- jsonTableColumSpec 32
- noJoinSet 26
- parameterExpression 59
- partitionIdentifier 50
- partitionSimpleIdentifier 51
- schemaIdentifier 97
- tableIdentifier 97
- xmlTableColumSpec 31

alias:

ESCAPED_IDENTIFIER IDENTIFIER keywordsAsIdentifierOrAlias

```
alias 98      ::= ESCAPED_IDENTIFIER 21
            | IDENTIFIER 98
            | keywordsAsIdentifierOrAlias 99
```

referenced by:

- aliased 41
- allColumnsSpecId 43

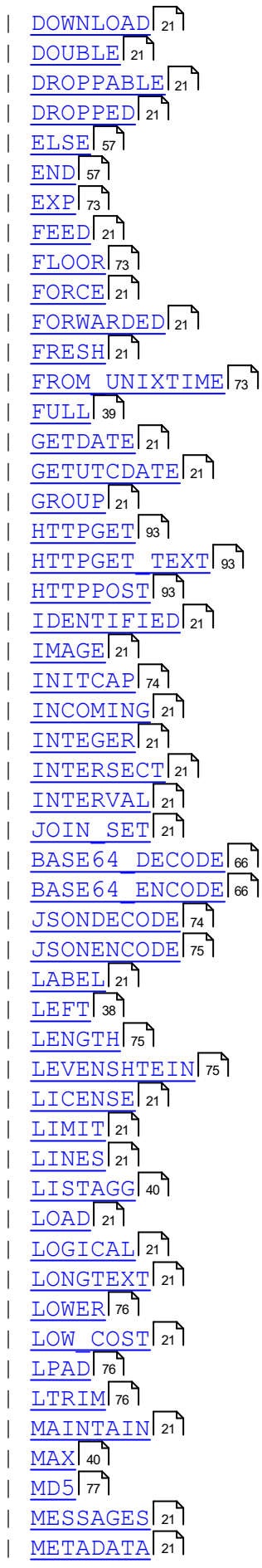
- fieldIdentifier 97

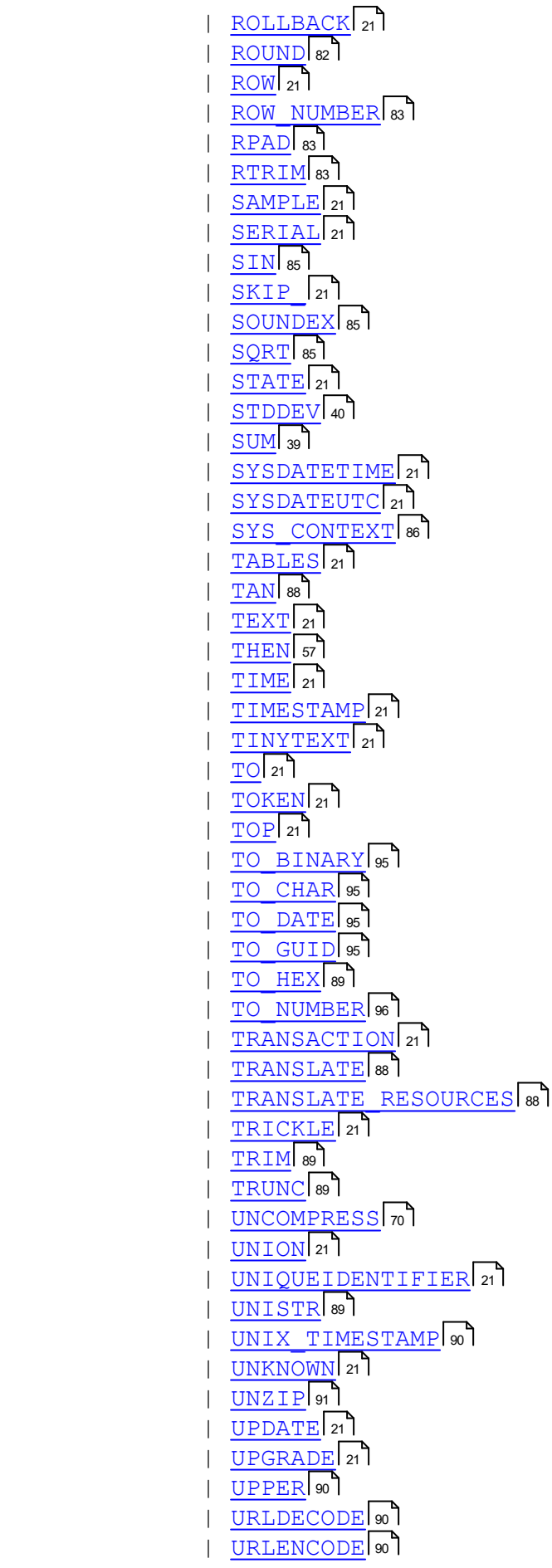
keywordsAsIdentifierOrAlias:

ABS ACOS ADD_MONTHS ANONYMIZE APPROACH ASC ASCII ASIN ADD_MONTHS ATAN ATAN2 ATTACH AUTO AVG BEGIN BIT BIT_LENGTH BY CACHE CAMEL CASE CEIL CHAR CHR COALESCE COMMIT COMPRESS CODE COLUMN COLUMNS CONTRACT COPY COS COUNT COVFEFIFY CROSS CSVTABLE DATA DATE DATEADD DATEPART DATETIME DATETIMEOFFSET DATE_CEIL DATE_FLOOR DATE_ROUND DATE_TRUNC DEC DELIMITER DENSE_RANK DESC DOWNLOAD DOUBLE DROPPABLE DROPPED ELSE END EXP FEED FLOOR FORCE FORWARDED FRESH FROM_UNIXTIME FULL GETDATE GETUTCDATE GROUP HTTPGET HTTPGET_TEXT HTTPPOST IDENTIFIED IMAGE INITCAP INCOMING INTEGER INTERSECT INTERVAL JOIN_SET BASE64_DECODE BASE64_ENCODE JSONDECODE JSONENCODE LABEL LEFT LENGTH LEVENSHTEIN LICENSE LIMIT LINES LISTAGG LOAD LOGICAL LONGTEXT LOWER LOW_COST LPAD LTRIM MAINTAIN MAX MD5 MESSAGES METADATA MEDIUMTEXT MIN MINUS_C MOD MODEL MONEY MY NAME NEWID NO_JOIN_SET NORMALIZE NOWUTC NUMBER NUMBER_TO_SPEECH NVL OBSOLETE OCTET_LENGTH ODS ONCE OUTER OVERALL PARALLEL PASSING PARTITION PATH PERSISTENT POSITION POSTFIX POWER PREFIX PRODUCT PURGE QUOTE_IDENT QUOTE_LITERAL QUOTE_NULLABLE RAISE_ERROR RAND RANK RANDOM RANDOM_BLOB READY RECYCLEBIN REFRESH REGEXP_INSTR REGEXP_REPLACE REGEXP_SUBSTR REMAINDER REPEAT RESULT_SET_NAME RETENTION REVERSE RIGHT ROLLBACK ROUND ROW ROW_NUMBER RPAD RTRIM SAMPLE SERIAL SIN SKIP_ SOUNDEX SQRT STATE STDDEV SUM SYSDATETIME SYSDATEUTC SYS_CONTEXT TABLES TAN TEXT THEN TIME TIMESTAMP TINYTEXT TO TOKEN TOP TO_BINARY TO_CHAR TO_DATE TO_GUID TO_HEX TO_NUMBER TRANSACTION TRANSLATE TRANSLATE_RESOURCES TRICKLE TRIM TRUNC UNCOMPRESS UNION UNIQUEIDENTIFIER UNISTR UNIX_TIMESTAMP UNKNOWN UNZIP UPDATE UPGRADE UPPER URLDECODE URLENCODE USE USER UTC UTC_DATE VERSION VERSIONS WHEN XML XMLCOMMENT XMLDECODE XMLELEMENT XMLENCODE XMLFORMAT XMLTABLE XMLTRANSFORM XMLTYPE YEAR ZERO_BLOB ZIP LOG LN MICROSECOND MILLISECOND SECOND MINUTE HOUR INSTR DAY DAYOFWEEK DAYOFYEAR MONTH QUARTER YEAR CONCAT WITH EQUAL SUBSTR

keywordsAsIdentifierOrAlias 99

::= ABS 63
| ACOS 64
| ADD_MONTHS 66
| ANONYMIZE 64
| APPROACH 21
| ASC 41
| ASCII 65
| ASIN 65
| ADD_MONTHS 66
| ATAN 65
| ATAN2 65
| ATTACH 21
| AUTO 21
| AVG 40
| BEGIN 21
| BIT 21
| BIT_LENGTH 67
| BY 21
| CACHE 21
| CAMEL 67
| CASE 56
| CEIL 67
| CHAR 21
| CHR 67
| COALESCE 68
| COMMIT 21
| COMPRESS 69
| CODE 21
| COLUMN 36
| COLUMNS 21
| CONTRACT 21
| COPY 21
| COS 69
| COUNT 40
| COVFEFIFY 69
| CROSS 39
| CSVTABLE 21
| DATA 21
| DATE 21
| DATEADD 70
| DATEPART 70
| DATETIME 21
| DATETIMEOFFSET 21
| DATE_CEIL 70
| DATE_FLOOR 70
| DATE_ROUND 71
| DATE_TRUNC 71
| DEC 21
| DELIMITER 21
| DENSE_RANK 72
| DESC 41





| USE 21
| USER 94
| UTC 96
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| VERSION 21
| VERSIONS 21
| WHEN 56
| XML 21
| XMLCOMMENT 91
| XMLDECODE 91
| XMLELEMENT 92
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| XMLFORMAT 92
| XMLTABLE 21
| XMLTRANSFORM 92
| XMLTYPE 21
| YEAR 94
| ZERO_BLOB 96
| ZIP 91
| LOG 76
| LN 75
| MICROSECOND 83
| MILLISECOND 84
| SECOND 85
| MINUTE 78
| HOUR 74
| INSTR 74
| DAY 71
| DAYOFWEEK 71
| DAYOFYEAR 72
| MONTH 78
| QUARTER 93
| YEAR 94
| CONCAT 69
| WITH 21
| EQUAL 21
| SUBSTR 85

referenced by:

- alias 98
- attributeIdentifier 97
- identifier 98

constant:

A constant value with associated data type. The null value is typically associated with the null data type.

stringConstant numericConstant booleanConstant intervalConstant null

```
constant 104 ::= stringConstant 105
               | numericConstant 106
               | booleanConstant 106
               | intervalConstant 105
               | null 107
```

referenced by:

- arithmeticExpression 61
- pSqlItemDeclaration 107

stringConstant:

A constant text value with varchar2 data type.

```
STRING_C
stringConstant 105
          ::= STRING_C 21
```

referenced by:

- allColumnsSpecColumnNamePostfix 43
- allColumnsSpecColumnNamePrefix 43
- allColumnsSpecLabelPostfix 43
- allColumnsSpecLabelPrefix 43
- alterPersistentCacheDownloadStatement 45
- alterPersistentCacheDropStatement 46
- alterPersistentCacheSetStatement 47
- alterPersistentCacheSetTableOptions 47
- constant 104
- csvTableOptions 32
- intervalConstant 105
- jsonTableColumSpec 32
- jsonTableSpec 31
- labeled 42
- resultSetName 25
- xmlTableColumSpec 31
- xmlTableSpec 30

intervalConstant:

A constant interval value, reflecting the time span between two dates. The string constant consists of an integer number and unit of time, taken from the following list:

- Millisecond,
- second,
- minute,
- hour,
- day,
- week, and
- year.

The units may be postfixed with an 's' without changing meaning, like 'years'.

Valid interval values are for example: "5 seconds", "20 hours" and "1 year". There is no support for combined intervals such as "30 minutes and 30 seconds".

INTERVAL stringConstant
intervalConstant 105
::= INTERVAL 21 stringConstant 105

referenced by:

- constant 104
- httpDiskCache 24
- httpMemoryCache 25
- ods 25

numericConstant:

A constant numeric value with numeric data type.

INT_OR_DECIMAL_C E_NOTATION_C
numericConstant 106
::= INT_OR_DECIMAL_C 21
| E_NOTATION_C 21

referenced by:

- alterPersistentCacheDownloadStatement 45
- alterPersistentCachePartitionRefreshStatement 46
- alterPersistentCacheRefreshStatement 45
- alterPersistentCacheSetStatement 47
- alterPersistentCacheTableRefreshStatement 46
- constant 104
- csvTableColumSpec 33
- csvTableOptions 32
- joinSet 26
- limitClause 28
- pSqlForNumberLoopStatement 110
- partitionIdentifier 50
- partitionSimpleIdentifier 51
- topClause 27

booleanConstant:

true false
booleanConstant 106
::= true 58
| false 58

referenced by:

- alterPersistentCacheSetStatement 47
- alterPersistentCacheSetTableOptions 47
- constant 104
- httpDiskCache 24

- httpMemoryCache 25
- ods 25

null:

The "unknown" value null.

NULL
null 107 ::= NULL 107

referenced by:
- constant 104
- jsonTableSpec 31
- xmlTableSpec 30

pSqlBlock:

A PSQL block is a structure to define procedural logic. It can contain both procedural logic as well as SQL statements like "select".

pSqlDeclareSection pSqlBody
pSqlBlock 107
::= pSqlDeclareSection 107? pSqlBody 108

referenced by:
- pSqlBlockOrStatement 108
- pSqlStatement 108

pSqlDeclareSection:

A PSQL declare section defines one or more local variables, which are available in the block and nested blocks.

DECLARE pSqlDeclaration
pSqlDeclareSection 107
::= DECLARE 21 pSqlDeclaration 107+

referenced by:
- pSqlBlock 107

pSqlDeclaration:

pSqlItemDeclaration
pSqlDeclaration 107
::= pSqlItemDeclaration 107

referenced by:
- pSqlDeclareSection 107

pSqlItemDeclaration:

An item declaration defines one named variable, based upon data type. The initial value can be added as a constant.

variableName dataType ASSIGNMENT_OPERATOR constant BATCHSEPARATOR
pSqlItemDeclaration[107]
::= variableName[111] dataType[33] (ASSIGNMENT_OPERATOR[21] constant[104])? BATCHSEPARATOR[21]

referenced by:
- pSqlDeclaration[107]

pSqlBody:

A PSQL body contains the procedural logic as well as SQL statements. Variables must have been declared beforehand.

BEGIN pSqlStatement END BATCHSEPARATOR
pSqlBody[108] ::= BEGIN[21] pSqlStatement[108]+ END[57] BATCHSEPARATOR[21]

referenced by:
- pSqlBlock[107]

pSqlStatement:

A number of basic PSQL statements are available.

pSqlAssignmentStatement pSqlExecuteImmediateStatement pSqlIfStatement pSqlLoopStatement pSqlNullStatement pSqlBlock sqlStatement BATCHSEPARATOR
pSqlStatement[108]
::= pSqlAssignmentStatement[109]
| pSqlExecuteImmediateStatement[109]
| pSqlIfStatement[110]
| pSqlLoopStatement[110]
| pSqlNullStatement[109]
| pSqlBlock[107]
| sqlStatement[21] BATCHSEPARATOR[21]

referenced by:
- pSqlBlockOrStatement[108]
- pSqlBody[108]
- sqlOrPSqlStatement[21]

pSqlBlockOrStatement:

A PSQL block or statement defines a procedural step or a SQL statement to be executed.

pSqlBlock pSqlStatement
pSqlBlockOrStatement[108]
::= pSqlBlock[107]
| pSqlStatement[108]

referenced by:
- pSqlBlockOrStatements[109]

pSqlBlockOrStatements:

pSqlBlockOrStatement
pSqlBlockOrStatements 109
::= pSqlBlockOrStatement 108+

referenced by:

- pSqlElsIfExpression 110
- pSqlForNumberLoopStatement 110
- pSqlForRecordLoopStatement 111
- pSqlIfStatement 110
- pSqlWhileLoopStatement 111

pSqlNullStatement:

The null-statement is a NOP-statement (No Operator). The use of the null-statement is necessary when a PSQL statement is needed, but no activity needs to be performed such as with an if statement. The null-statement also makes explicit that a developer has considered the actions needed and found that no action applies to a specific scenario. This leads to improved code documentation.

NULL BATCHSEPARATOR
pSqlNullStatement 109
::= NULL 107 BATCHSEPARATOR 21

referenced by:

- pSqlStatement 108

pSqlAssignmentStatement:

The assignment statement assign a new value to a variable. To assign the results of a SQL query to a value, use a select ... into ... statement.

variableName ASSIGNMENT_OPERATOR expression BATCHSEPARATOR
pSqlAssignmentStatement 109
::= variableName 111 ASSIGNMENT_OPERATOR 21 expression 54 BATCHSEPARATOR 21

referenced by:

- pSqlStatement 108

pSqlExecuteImmediateStatement:

The execute immediate PSQL statement enables the use of SQL statements that are compiled at runtime. For instance dynamic DDL statements can not always be executed on compiled time and the execute immediate enables these.

EXECUTE IMMEDIATE expression BATCHSEPARATOR
pSqlExecuteImmediateStatement 109
::= EXECUTE 21 IMMEDIATE 21 expression 54 BATCHSEPARATOR 21

referenced by:

- pSqlStatement 108

pSqlIfStatement:

The if-statement performs conditional logic. When the boolean expression after if holds, the PSQL block after the 'then' will be executed. Other branches can be specified using an elsif. Otherwise, and only when specified, the logic after the else is executed.

IF booleanExpression THEN pSqlBlockOrStatements pSqlElsIfExpression ELSE pSqlBlock-OrStatements END IF BATCHSEPARATOR

```
pSqlIfStatement 110
          ::= IF 21 booleanExpression 54 THEN 57
 pSqlBlockOrStatements 109 pSqlElsIfExpression 110 * ( ELSE 57
 pSqlBlockOrStatements 109 ) ? END 57 IF 21 BATCHSEPARATOR 21
```

referenced by:

- pSqlStatement 108

pSqlElsIfExpression:

ELSIF booleanExpression THEN pSqlBlockOrStatements

```
pSqlElsIfExpression 110
          ::= ELSIF 21 booleanExpression 54 THEN 57
 pSqlBlockOrStatements 109
```

referenced by:

- pSqlIfStatement 110

pSqlLoopStatement:

A variety of PSQL statements for loops are available.

pSqlForNumberLoopStatement pSqlForRecordLoopStatement pSqlWhileLoopStatement

```
pSqlLoopStatement 110
          ::= pSqlForNumberLoopStatement 110
            | pSqlForRecordLoopStatement 111
            | pSqlWhileLoopStatement 111
```

referenced by:

- pSqlStatement 108

pSqlForNumberLoopStatement:

This PSQL integer loop statement iterates over a range of integer values, executing PSQL statements for each iterated value. The iterations goes from the first value to the last value in increments of 1. The iterations go backward in decrements of 1 when 'reverse' is specified.

FOR variableName IN REVERSE numericConstant variableName DOT DOT numericCon-stant variableName LOOP pSqlBlockOrStatements END LOOP BATCHSEPARATOR

pSqlForNumberLoopStatement[110]
::= FOR[21] variableName[111] IN[21] REVERSE[82]?
(numericConstant[106] | variableName[111]) DOT[21] DOT[21]
(numericConstant[106] | variableName[111]) LOOP[21]
pSqlBlockOrStatements[109] END[57] LOOP[21] BATCHSEPARATOR[21]

referenced by:

- pSqlLoopStatement[110]

pSqlForRecordLoopStatement:

This PSQL result set loop statement iterates over a result set returned by an Invantive UniversalSQL query. The PSQL statements are executed for each record. The record's specific values can be retrieved using the variable.

FOR variableName IN PARENTHESIS_OPEN selectStatement PARENTHESIS_CLOSE LOOP pSqlBlockOrStatements END LOOP BATCHSEPARATOR

pSqlForRecordLoopStatement[111]
::= FOR[21] variableName[111] IN[21] PARENTHESIS_OPEN[21]
selectStatement[22] PARENTHESIS_CLOSE[21] LOOP[21]
pSqlBlockOrStatements[109] END[57] LOOP[21] BATCHSEPARATOR[21]

referenced by:

- pSqlLoopStatement[110]

pSqlWhileLoopStatement:

This PSQL while loop statement executes PSQL statements as long as the specified boolean condition evaluates to true at loop end.

WHILE booleanExpression LOOP pSqlBlockOrStatements END LOOP BATCHSEPARATOR

pSqlWhileLoopStatement[111]
::= WHILE[21] booleanExpression[54] LOOP[21]
pSqlBlockOrStatements[109] END[57] LOOP[21] BATCHSEPARATOR[21]

referenced by:

- pSqlLoopStatement[110]

variableName:

IDENTIFIER

variableName[111]
::= IDENTIFIER[98]

referenced by:

- pSqlAssignmentStatement[109]
- pSqlForNumberLoopStatement[110]
- pSqlForRecordLoopStatement[111]
- pSqlItemDeclaration[107]
- variableList[27]

3.2 Providers

The providers described here are available on all platforms.

3.2.1 Provider Atom10

Atom version 1.0.

Code for use in settings.xml: Atom10

Alias: atom

Status: Production

Available in Editions: Paid, Open Data, Community

3.2.2 Provider AutoTask

AutoTask service management.

Code for use in settings.xml: AutoTask

Alias: autotask

Status: Non-production

Available in Editions: Paid

Technical Documentation: http://severa.visma.com/en/support/severaapi/

Non-technical Documentation: http://severa.visma.com

3.2.3 Provider CbsNl

Centraal Bureau voor de Statistiek.

Code for use in settings.xml: CbsNl

Alias: cbsnl

Status: Production

Available in Editions: Paid, Open Data, Community

Technical Documentation: https://www.cbs.nl/nl-nl/onze-diensten/open-data/statline-als-open-data

Provider Attributes

The following provider attributes are available for CbsNl:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-url	URL to access the API.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

Generated 11-01-2019 21:08 on version 17.30.0-PROD+1821.

3.2.4 Provider Conversion

Conversion table functions.

Code for use in settings.xml: Conversion

Alias: conversion

Status: Production

Available in Editions: Paid

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
invantive-sql-forward-filters-to-data-containers	Whether to	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	forwardfil-terstodataacon-tain-ers.				
invantive-sql-shuffle-fetch-results-data-containers	Whethertoshuffler	False	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	esultsfetchedfromdataconnectainers.				
invantive-use-cache	Whethertocachether	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	esultsofaquery.				
pre-request-delay-ms	Pre-request delay in milli-seconds per r	0	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	e-quest.				
requests-parallel-max	Maximum number of parallel data area-quests from	32	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	individual parameters on the data container.				

3.2.5 Provider DataCache

Persistent data cache, data replication or data vault.

Code for use in settings.xml: DataCache

Alias: cache

Abbreviation: idc

Status: Production

Available in Editions: Paid

String-comparison is Case-sensitive: true

Use Catalog in Full Name: true

Use Schema in Full Name: true

Updated: 26-06-2020 06:48 using Invantive UniversalSQL version 20.1.99-BETA+2846.

Technical Documentation: https://documentation.invantive.com/2017R2/data-cache-data-model/webhelp/index.html

Provider Attributes

The following provider attributes are available for DataCache:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
application-prefix-facts	A prefix applied after the environment prefix to every facts table, index and view.	dcd_	✓			
application-prefix-history	A prefix applied after the environment prefix to every history table, index and view.	dcs_	✓			
application-prefix-repository	A prefix applied after the environment prefix to every repository table, index and view.	dc_	✓			
backing-bulk-insert-page-size-bytes	Approximate maximum size in bytes of page when bulk inserting on backing database.		✓	✓	✓	
backing-bulk-insert-page-size-rows	Number of rows to insert per page when bulk inserting on backing database.		✓	✓	✓	
backing-bulk-insert-timeout-sec	Number of seconds after which a bulk insert on backing database times out.	3600	✓	✓	✓	
backing-command-timeout-sec	Number of seconds after which a command on backing database times out.	3600	✓	✓	✓	
backing-connection-string	The connection string for the backing database		✓		✓	
backing-force-case-sensitive-identifiers	Consider identifiers on the backing database as case-sensitive independent of the platform capabilities.	False	✓	✓	✓	
backing-forced-casing-identifiers	Forced casing of identifiers on the backing database. Choose from Unset, Lower, Upper and Mixed.	Unset	✓	✓	✓	
backing-maximum-length-identifiers	Non-default maximum length on the backing database in characters of identifier names.		✓	✓	✓	
backing-maximum-number-of-pooled-connec-	Maximum number of concurrent pooled connections on backing database.		✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
tions						
backing-maximum-sleep-acquire-pooled-connection-ms	Maximum time in ms to wait for acquiring a free connection from a pool of connections on backing database.	300000	✓	✓	✓	
backing-maximum-sleep-acquire-un-pooled-connection-ms	Maximum time in ms to wait for acquire a free connection when there is no connection pooling on backing database.	600000	✓	✓	✓	
backing-minimum-connection-timeout-sec	Minimum number of seconds after which a newly requested connection on backing database times out.	300	✓	✓	✓	
backing-preferred-number-of-pooled-connections	Preferred number of concurrent pooled connections on backing database.		✓	✓	✓	
backing-provider	Name of the Invantive connector for the backing database		✓		✓	
backing-sql-server-connect-retry-count	Number of connect retries on connection failed on the backing SQL Server database (SQL Server only).	60	✓	✓	✓	
backing-sql-server-connect-retry-interval-sec	Interval between connect retries on connection failed on the backing SQL Server database (SQL Server only)..	15	✓	✓	✓	
backing-standardize-identifiers	Rewrite all identifiers on the backing database to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓	
backing-standardize-identifiers-casing	Rewrite all identifiers on the backing database to the platform-specific recommended standard casing when changing a data model on a case-dependent platform.	True	✓	✓	✓	
beta-compress-facts-on-disk	Whether to compress facts in the disk cache.	True	✓	✓	✓	
beta-encrypt-facts-on-disk	Whether to encrypt facts in the disk cache.	True	✓	✓	✓	
beta-store-facts-in-database	Whether to store facts in the database containing the repository.	True	✓	✓	✓	
beta-store-facts-on-disk	Whether to store facts in the disk cache.	True	✓	✓	✓	
beta-use-facts-in-database	Whether to use facts in the database cache.	True	✓	✓	✓	
beta-use-facts-on-disk	Whether to use facts in the disk cache.	False	✓	✓	✓	
bulk-delete-page-size-rows	Number of rows to delete per batch when bulk deleting	10000	✓	✓	✓	
bulk-insert-page-size-bytes	Approximate maximum size in bytes of batch when bulk inserting	10000000	✓	✓	✓	
bulk-insert-page-size-rows	Number of rows to insert per batch when bulk inserting	10000	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
cache-folder	Folder to store Data Cache cache files in.	C:\Users\gle3.WS212\Invantive\Cache\datacache	✓	✓	✓	
default-skip-client-side-cacheable	Whether to skip client-side cacheable tables by default.	True	✓	✓	✓	
default-use-ods	Whether to use the Operational Data Store when no hint is specified.	True	✓	✓	✓	
delete-number-table-partition-versions-per-group	Maximum number of table partition versions selected in the IN-clause for a delete of facts.	50	✓	✓	✓	
development-use-http-disk-cache	Whether to allow use of the disk cache for platform HTTP requests.	False	✓	✓		
drop-backlog-factor	Maximum ratio between number of versions dropped and new versions loaded on refresh.		✓	✓	✓	
environment-prefix-all	A prefix applied to repository, facts and history database tables, indexes and views.		✓			
environment-prefix-facts	A prefix applied to every facts table, index and view.		✓			
environment-prefix-history	A prefix applied to every history table, index and view.		✓			
environment-prefix-logical-view	A prefix applied to every logical view.		✓			
environment-prefix-repository	A prefix applied to every repository table, index and view.		✓			
event-log-entries-delete-page-size-rows	Number of rows to delete per batch on maintaining facts.	1000	✓	✓	✓	
event-log-memory-cache-flush-interval-sec	Maximum intervla in seconds between flushes of in-memory cache of event log entries to database.	15	✓			
event-log-memory-cache-size	Size of in-memory cache of event log entries before they are written to the database.	100	✓			
facts-delete-page-size-characters	Number of characters to delete per batch on maintaining facts.	10000000	✓	✓	✓	
facts-delete-page-size-rows	Number of rows to delete per batch on maintaining facts.		✓	✓	✓	
facts-insert-page-size-rows	Number of rows to insert per batch on maintaining facts.		✓	✓	✓	
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓	
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓	
forced-casing-logical-view-column-name	Forced casing of logical view column names. Choose from Unset, Lower, Up-	Unset	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
	per and Mixed.					
forced-casing-logical-view-name	Forced casing of logical view names. Choose from Unset, Lower, Upper and Mixed.	Unset	✓	✓	✓	
forwarded-incoming-messages-delete-max-runtime-sec	Maximum runtime of purge forwarded incoming messages in seconds.	3600	✓	✓	✓	
forwarded-incoming-messages-delete-page-size-rows	Number of rows to delete per batch on maintaining forwarded incoming messages.	10000	✓	✓	✓	
garbage-collection-physical-memory-load-threshold	Percentage of physical memory load above which a full garbage collection is run after replication.	80	✓	✓	✓	
garbage-collection-replication-interval-count	Number of replications after last garbage collection after which a full garbage collection is run.	100	✓	✓	✓	
garbage-collection-replication-minimum-interval-sec	Minimum interval in seconds between two full garbage collections..	30	✓	✓	✓	
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓	
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓	
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓	
log-native-calls-to-disk	Registers native calls to data container backend as disk files.	False	✓	✓	✓	
log-native-calls-to-trace	Log native calls to data container backend on the trace.	False	✓	✓	✓	
max-delete-facts-parallel	Maximum number of parallel deletes on facts tables.	8	✓	✓	✓	
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓	
maximum-length-logical-view-column-name	Maximum length of logical view column names.		✓	✓	✓	
maximum-length-logical-view-name	Maximum length of logical view names.		✓	✓	✓	
max-messages-per-customer-service-request	Maximum number of messages to download from Customer Service per request.	10000	✓	✓	✓	
max-refreshes-parallel	Maximum number of parallel refreshes.	32	✓	✓	✓	
max-url-length-accepted	The maximum accepted URL length before raising an error.	8000	✓	✓	✓	
max-url-length-desired	The maximum desired URL length.	8000	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
orphaned-facts-delete-page-size-rows	Number of rows to delete per batch on purging orphaned facts during repository upgrade or maintenance.	10000	✓	✓	✓	
partition-slot-based-rate-limit-length-ms	Total length in ms across all slots of a partition-based rate limit.	60000	✓		✓	
partition-slot-based-rate-limit-slots	Number of slots per partition-based rate limit. Null means no slot-based rate limit		✓		✓	
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓	
purge-interval-event-log-entries-minutes	Interval in minutes between completed purges of ancient event log entries.	60	✓	✓	✓	
requested-page-size	Preferred number of rows to exchange per round trip; only effective on limited platforms such as AFAS Online		✓	✓	✓	
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓	
retention-event-log-entries-days	Retention of event log entries in days.	35	✓	✓	✓	
slot-based-rate-limit-length-ms	Total length in ms across all slots of a slot-based rate limit.	60000	✓		✓	
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓	
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓	
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓	
update-number-table-partition-versions-per-group	Maximum number of table partition versions selected in the IN-clause for an update of metadata.	1000	✓	✓	✓	
upgrade-force-execute	Whether to force execution of possible upgrade steps, even when there are no reasons to perform an upgrade.	False	✓			
upgrade-force-repository-version-start	Specifies the repository version to start upgrade from when specified.		✓			
upgrade-force-specials	Execute special operations before the repository is opened.		✓			

3.2.6 Provider DataDictionary

Invantive UniversalSQL data dictionary.

Code for use in settings.xml: DataDictionary

Alias: dd

Abbreviation: dd

Status: Production

Available in Editions: Paid

String-comparison is Case-sensitive: true

Use Catalog in Full Name: true

Use Schema in Full Name: true

Updated: 10-09-2020 00:07 using Invantive UniversalSQL version 20.1.206-BETA+2915.

Connector Attributes

The Data Dictionary connector can be configured using the following attributes:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
bulk-delete-page-size-rows	Number of rows to delete per batch when bulk deleting	10000	✓	✓	✓	
bulk-insert-page-size-bytes	Approximate maximum size in bytes of batch when bulk inserting	10000000	✓	✓	✓	
bulk-insert-page-size-rows	Number of rows to insert per batch when bulk inserting	10000	✓	✓	✓	
connection-string	The connection string for the backing database		✓		✓	
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓	
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓	
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓	
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3.WS212\Invantive\Cache\http\gle3\shared	✓	✓	✓	
http-disk-cache-ignore-write-errors	Whether to ignore write errors to disk cache.	False	✓	✓	✓	
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓	
invantive-sql-correct-invalid-date	Whether to correct invalid dates.	False	✓	✓	✓	
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓	
invantive-sql-shuffle-fetch-results-data-con-	Whether to shuffle results fetched from data containers.	False	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
tainers						
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓	
log-native-calls-to-disk	Registers native calls to data container backend as disk files.	False	✓	✓	✓	
log-native-calls-to-trace	Log native calls to data container backend on the trace.	False	✓	✓	✓	
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓	
max-url-length-accepted	The maximum accepted URL length before raising an error.	8000	✓	✓	✓	
max-url-length-desired	The maximum desired URL length.	8000	✓	✓	✓	
partition-slot-based-rate-limit-length-ms	Total length in ms across all slots of a partition-based rate limit.	60000	✓		✓	
partition-slot-based-rate-limit-slots	Number of slots per partition-based rate limit. Null means no slot-based rate limit		✓		✓	
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓	
provider	Name of the Invantive connector for the backing database		✓		✓	
requested-page-size	Preferred number of rows to exchange per round trip; only effective on limited platforms such as AFAS Online		✓	✓	✓	
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓	
slot-based-rate-limit-length-ms	Total length in ms across all slots of a slot-based rate limit.	60000	✓		✓	
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓	
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓	
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓	
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	False	✓	✓	✓	
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	False	✓	✓	✓	

3.2.7 Provider DocumentCloud

DocumentCloud.

Code for use in settings.xml: DocumentCloud

Alias: docc

Status: Production

Available in Editions: Paid, Open Data, Community

Technical Documentation: https://www.documentcloud.org/help/api

Non-technical Documentation: https://www.documentcloud.org/home

Provider Attributes

The following provider attributes are available for DocumentCloud:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-url	URL to access the API.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

Generated 11-01-2019 20:08 on version 17.30.0-PROD+1821.

3.2.8 Provider Dropbox

Dropbox information.

Code for use in settings.xml: Dropbox

Alias: dropbox

Status: Non-production

Available in Editions: Paid, Open Data, Community

Technical Documentation: https://www.dropbox.com/developers

3.2.9 Provider Dummy

Fixed memory provider with fixed data set for regression testing and demos.

Code for use in settings.xml: Dummy

Alias: dummy

Status: Production

Available in Editions: Paid

Updated: 08-02-2019 16:03 using Invantive UniversalSQL version 17.31.26-BETA+1898.

Provider Attributes

The following provider attributes are available for Dummy:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
partition-slot-based-rate-limit-length-ms	Length in ms of a partition-based rate limit across all slots.	60000	✓		✓
partition-slot-based-rate-limit-slots	Number of slots per partition-based rate limit. Null means no slot-based rate limit		✓		✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit across all slots.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓

3.2.10 Provider DynamicsCrm

Microsoft Dynamics CRM.

Code for use in settings.xml: DynamicsCrm

Alias: dyncrm

Status: Production

Available in Editions: Paid

3.2.11 Provider EcbExchangeRates

ECB Exchange Rates.

Code for use in settings.xml: EcbExchangeRates

Alias: ecbexref

Status: Production

Available in Editions: Paid, Open Data, Community

Non-technical Documentation: https://www.ecb.europa.eu/stats/policy_and_exchange_rates/euro_reference_exchange_rates/html/index.en.html

3.2.12 Provider Edifact

EDIFACT.

Code for use in settings.xml: Edifact

Alias: edi

Status: Production

Available in Editions: Paid

Technical Documentation: https://www.unece.org/cefact/edifact/welcome.html

Non-technical Documentation: https://www.unece.org/trade/untdid/texts/d421_d.htm

Provider Attributes

The following provider attributes are available for Edifact:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
edi-extension	{res:itgen_provider_attribute_edi_extension_description}	*.*	✓	✓	✓
edi-input-directories	{res:itgen_provider_attribute_edi_input_directories_description}		✓	✓	✓
edi-output-directory	{res:itgen_provider_attribute_edi_output_directory_description}		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓

Generated 11-01-2019 20:45 on version 17.30.0-PROD+1821.

3.2.13 Provider ExactOnlineAll

Exact Online (XML, REST and undocumented).

Code for use in settings.xml: ExactOnlineAll

Alias: eol

Abbreviation: eol

Status: Production

Available in Editions: Paid

String-comparison is Case-sensitive: true

Use Catalog in Full Name: true

Use Schema in Full Name: true

Partition Column: division

Updated: 02-12-2019 15:47 using Invantive UniversalSQL version 17.33.216-BETA+2512.

Technical Documentation: https://support.exactonline.com/community/s/knowledge-base#All-All-HNO-Content-resources-eol-files-homeexactonlinehelpcentre

Provider Attributes

The following provider attributes are available for ExactOnlineAll:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
api-client-id	The client ID is a unique identifier of your application. It is generated by registering an application.		✓		✓	✓
api-client-secret	The client secret is to be kept confidential. Such as a password for a logon code, the client secret is the confidential part of an app identified by a client ID. It is needed during the OAuth2 Code Grant Flow together with the refresh token to get access.	***	✓		✓	✓
api-refresh-token	Refresh Token is a security token for the OAuth2 Code Grant Flow. With a Refresh Token and client secret you can retrieve a renewed access token to access protected resources. A Refresh Token and client secret must be stored securely since once compromised allows access to your protected resources.	***	✓		✓	✓
api-redirect-url	The redirect URI is the website a browser session is redirected to after the OAuth2 authentication process has been completed.		✓		✓	✓
totp-secret	Shared secret key to generate one-time password using TOTP RFC 6238. For improved security, manually enter the one-time password asked during login.	***	✓		✓	✓
api-token-url	The token URI is the OAuth2 endpoint to exchange tokens.		✓		✓	
api-url	URL to access the API.		✓		✓	
bulk-delete-page-size-rows	Number of rows to delete per batch when bulk deleting	10000	✓	✓	✓	
bulk-insert-page-size-bytes	Approximate maximum size in bytes of batch when bulk inserting	10000000	✓	✓	✓	
bulk-insert-page-size-rows	Number of rows to insert per batch when bulk inserting	250	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
download-error-400-bad-request-max-tries	Maximum number of tries when Akamai reports that the API server is unavailable during retrieval of data.	30	✓	✓	✓	
download-error-400-bad-request-sleep-initial-ms	Initial sleep in milliseconds between retries when Akamai reports that the API server is unavailable during retrieval of data.	5000	✓	✓	✓	
download-error-400-bad-request-sleep-max-ms	Maximum sleep in milliseconds between retries when Akamai reports that the API server is unavailable during retrieval of data.	60000	✓	✓	✓	
download-error-400-bad-request-sleep-multiplicator	Multiplication factor for sleep between retries Akamai reports that the API server is unavailable during retrieval of data.	2	✓	✓	✓	
download-error-429-too-many-requests-max-tries	Maximum number of tries when the website reports that too many requests have been made during a timeslot of one minute or one day.	10	✓	✓	✓	
download-error-429-too-many-requests-sleep-initial-ms	Initial sleep in milliseconds between retries when the website reports that too many requests have been made during a timeslot of one minute or one day.	5000	✓	✓	✓	
download-error-429-too-many-requests-sleep-max-ms	Maximum sleep in milliseconds between retries when the website reports that too many requests have been made during a timeslot of one minute or one day.	60000	✓	✓	✓	
download-error-429-too-many-requests-sleep-multiplicator	Multiplication factor for sleep between retries when the website reports that too many requests have been made during a timeslot of one minute or one day.	2	✓	✓	✓	
download-error-503-server-unavailable-max-tries	Maximum number of tries when Akamai reports that the API server is unavailable during retrieval of data.	30	✓	✓	✓	
download-error-503-server-unavailable-sleep-initial-ms	Initial sleep in milliseconds between retries when Akamai reports that the API server is unavailable during retrieval of data.	5000	✓	✓	✓	
download-error-503-server-unavailable-sleep-max-ms	Maximum sleep in milliseconds between retries when Akamai reports that the API server is unavailable during retrieval of data.	60000	✓	✓	✓	
download-error-503-server-unavailable-sleep-multiplicator	Multiplication factor for sleep between retries Akamai reports that the API server is unavailable during retrieval of data.	2	✓	✓	✓	
download-error-504-gateway-timeout-max-tries	Maximum number of tries when the website reports a gateway timeout.	10	✓	✓	✓	
download-error-504-gateway-timeout-sleep-initial-ms	Initial sleep in milliseconds between retries when the website reports a gateway timeout.	5000	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
download-error-504-gateway-timeout-sleep-max-ms	Maximum sleep in milliseconds between retries when the website reports a gateway timeout.	60000	✓	✓	✓	
download-error-504-gateway-timeout-sleep-multiplicator	Multiplication factor for sleep between retries when the website reports a gateway timeout.	2	✓	✓	✓	
download-error-argument-exception-max-tries	Maximum number of tries when an argument exception is returned when downloading a blob.	10	✓	✓	✓	
download-error-argument-exception-sleep-initial-ms	Initial sleep in milliseconds between retries when an argument exception is returned when downloading a blob.	1000	✓	✓	✓	
download-error-argument-exception-sleep-max-ms	Maximum sleep in milliseconds between retries when an argument exception is returned when downloading a blob.	60000	✓	✓	✓	
download-error-argument-exception-sleep-multiplicator	Multiplication factor for sleep between retries when an argument exception is returned when downloading a blob.	2	✓	✓	✓	
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.	10	✓	✓	✓	
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.	10000	✓	✓	✓	
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.	60000	✓	✓	✓	
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.	2	✓	✓	✓	
download-error-io-exception-max-tries	Maximum number of tries when a network I/O connection failure occurs during retrieval of data.	10	✓	✓	✓	
download-error-io-exception-sleep-initial-ms	Initial sleep in milliseconds between retries when a network I/O connection failure occurs during retrieval of data.	10000	✓	✓	✓	
download-error-io-exception-sleep-max-ms	Maximum sleep in milliseconds between retries when a network I/O connection failure occurs during retrieval of data.	60000	✓	✓	✓	
download-error-io-exception-sleep-multiplicator	Multiplication factor for sleep between retries when a network I/O connection failure occurs during retrieval of data.	2	✓	✓	✓	
download-error-json-exception-max-tries	Maximum number of tries when an invalid JSON body is returned.	3	✓	✓	✓	
download-error-json-exception-sleep-initial-ms	Initial sleep in milliseconds between retries when an invalid JSON body is returned.	1000	✓	✓	✓	
download-error-json-exception-sleep-max-ms	Maximum sleep in milliseconds between retries when an invalid JSON body is returned.	10000	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
download-error-json-exception-sleep-multiplicator	Multiplication factor for sleep between retries when an invalid JSON body is returned.	2	✓	✓	✓	
download-error-other-exception-max-tries	Maximum number of tries when an unqualified error occurs during retrieval of data.	3	✓	✓	✓	
download-error-other-exception-sleep-initial-ms	Initial sleep in milliseconds between retries when an unqualified error ocurrs during retrieval of data.	5000	✓	✓	✓	
download-error-other-exception-sleep-max-ms	Maximum sleep in milliseconds between retries when an unqualified error ocurrs during retrieval of data.	30000	✓	✓	✓	
download-error-other-exception-sleep-multiplicator	Multiplication factor for sleep between retries when an unqualified error ocurrs during retrieval of data.	2	✓	✓	✓	
download-error-socket-exception-max-tries	Maximum number of tries when the network connection is forcible dropped during retrieval of data.	10	✓	✓	✓	
download-error-socket-exception-sleep-initial-ms	Initial sleep in milliseconds between retries when the network connection is forcible dropped during retrieval of data.	10000	✓	✓	✓	
download-error-socket-exception-sleep-max-ms	Maximum sleep in milliseconds between retries when the network connection is forcible dropped during retrieval of data.	60000	✓	✓	✓	
download-error-socket-exception-sleep-multiplicator	Multiplication factor for sleep between retries when the network connection is forcible dropped during retrieval of data.	2	✓	✓	✓	
download-error-web-exception-max-tries	Maximum number of tries when a web connection failure occurs during retrieval of data.	10	✓	✓	✓	
download-error-web-exception-sleep-initial-ms	Initial sleep in milliseconds between retries when a web connection failure occurs during retrieval of data.	10000	✓	✓	✓	
download-error-web-exception-sleep-max-ms	Maximum sleep in milliseconds between retries when a web connection failure occurs during retrieval of data.	60000	✓	✓	✓	
download-error-web-exception-sleep-multiplicator	Multiplication factor for sleep between retries when a web connection failure occurs during retrieval of data.	2	✓	✓	✓	
download-error-web-not-implemented-max-tries	Maximum number of tries when the connection reports not implemented.	1	✓	✓	✓	
download-error-web-not-implemented-sleep-initial-ms	Initial sleep in milliseconds between retries when the connection reports not implemented.	5000	✓	✓	✓	
download-error-web-not-implemented-sleep-max-ms	Maximum sleep in milliseconds between retries when the connection reports not implemented.	60000	✓	✓	✓	
download-error-web-not-implemented-sleep-	Multiplication factor for sleep between retries when the connection reports not im-	2	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
multiplicator	plemented.					
download-error-web-timeout-max-tries	Maximum number of tries when the connection reports a timeout.	10	✓	✓	✓	
download-error-web-timeout-sleep-initial-ms	Initial sleep in milliseconds between retries when the connection reports a timeout.	5000	✓	✓	✓	
download-error-web-timeout-sleep-max-ms	Maximum sleep in milliseconds between retries when the connection reports a timeout.	60000	✓	✓	✓	
download-error-web-timeout-sleep-multiplicator	Multiplication factor for sleep between retries when the connection reports a timeout.	2	✓	✓	✓	
download-error-web-unauthorized-max-tries	Maximum number of tries when the connection reports an unauthorized error.	1	✓	✓	✓	
download-error-web-unauthorized-sleep-initial-ms	Initial sleep in milliseconds between retries when the connection reports an unauthorized error.	5000	✓	✓	✓	
download-error-web-unauthorized-sleep-max-ms	Maximum sleep in milliseconds between retries when the connection reports an unauthorized error.	60000	✓	✓	✓	
download-error-web-unauthorized-sleep-multiplicator	Multiplication factor for sleep between retries when the connection reports an unauthorized error.	2	✓	✓	✓	
encrypt-http-disk-cache	Whether to encrypt the contents of the disk cache when used. Disable only when performance is a premium above data security.	True	✓	✓	✓	
exact-development-mode	True if we have to connect to the Exact development instance		✓	✓	✓	
exact-online-url	URL of Exact Online web service		✓		✓	
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓	
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓	
hide-empty-columns	Whether to exclude columns without a value from a result set when using 'select *' With this XML provider, often more than 95% of the columns are empty due to limitations of the XSD specification. Should be enabled in general.	True	✓	✓	✓	
http-disk-cache	Action: provide 'empty' to empty HTTP disk cache.			✓		
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓	
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache\	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
		http\gle3\shared				
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓	
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓	
http-memory-cache	Action: provide 'empty' to empty HTTP memory cache.			✓		
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓	
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓	
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓	
ignore-document-download-errors	Ignore all errors when fetching the document contents from Exact Online.	False	✓	✓	✓	
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
ignore-http-429-errors	Ignore HTTP 429 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
ignore-http-500-errors	Ignore HTTP 500 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
ignore-xml-errors	Ignore normal errors within the XML returned by the API.	False	✓	✓	✓	
ignore-xml-fatal-errors	Ignore fatal errors within the XML returned by the API.	False	✓	✓	✓	
ignore-xml-no-access-errors	Ignore no access errors within the XML returned by the API.	False	✓	✓	✓	
ignore-xml-warnings	Ignore warnings within the XML returned by the API.	False	✓	✓	✓	
insert-allowed	Allow use of the BETA functionality for inserts	False	✓	✓	✓	
invalid-json-on-get-max-tries	Maximum number of tries when the JSON received on GET is invalid.	10	✓	✓	✓	
invalid-json-on-get-sleep-initial-ms	Initial sleep in milliseconds between retries when the JSON received on GET is invalid.	10000	✓	✓	✓	
invalid-json-on-get-sleep-max-ms	Maximum sleep in milliseconds between retries when the JSON received on GET is invalid.	60000	✓	✓	✓	
invalid-json-on-get-sleep-multiplicator	Multiplication factor for sleep between retries when the JSON received on GET is invalid.	2	✓	✓	✓	
invalid-json-on-post-max-tries	Maximum number of tries when the JSON received on POST is invalid.	1	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
invalid-json-on-post-sleep-initial-ms	Initial sleep in milliseconds between retries when the JSON received on POST is invalid.	10000	✓	✓	✓	
invalid-json-on-post-sleep-max-ms	Maximum sleep in milliseconds between retries when the JSON received on POST is invalid.	60000	✓	✓	✓	
invalid-json-on-post-sleep-multiplicator	Multiplication factor for sleep between retries when the JSON received on POST is invalid.	2	✓	✓	✓	
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓	
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓	
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓	
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓	
limit-partition-calls-left	Minimum number of remaining API calls on a partition towards a hard limit. When below, an error is raised.	500	✓	✓	✓	
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓	
max-url-length-accepted	The maximum accepted URL length before raising an error.	2800	✓	✓	✓	
max-url-length-desired	The maximum desired URL length.	2500	✓	✓	✓	
metadata-cache-max-age-sec	Maximum acceptable age in seconds for re-use of metadata.		✓	✓	✓	
partition-slot-based-rate-limit-length-ms	Total length in ms across all slots of a partition-based rate limit.	66000	✓		✓	
partition-slot-based-rate-limit-slots	Number of slots per partition-based rate limit. Null means no slot-based rate limit	272	✓		✓	
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓	
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	16	✓	✓	✓	
result-set-cache	Action: provide 'empty' to empty.			✓		
simulate-http-400-errors	Simulate HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-400-errors-percentage	Percentage of simulated HTTP 400 errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
simulate-http-403-errors	Simulate HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-403-errors-percentage	Percentage of simulated HTTP 403 errors when exchanging results with the OData	0	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
	endpoint.					
simulate-http-429-errors	Simulate HTTP 429 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-429-errors-percentage	Percentage of simulated HTTP 429 errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
simulate-http-500-errors	Simulate HTTP 500 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-500-errors-percentage	Percentage of simulated HTTP 500 errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
simulate-http-protocol-errors	Simulate HTTP protocol errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-protocol-errors-percentage	Percentage of simulated HTTP protocol errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
simulate-http-timeout-errors	Simulate HTTP timeout errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-timeout-errors-percentage	Percentage of simulated HTTP timeout errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
slot-based-rate-limit-length-ms	Total length in ms across all slots of a slot-based rate limit.	60000	✓		✓	
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓	
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓	
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓	
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓	
update-allowed	Allow use of the BETA functionality for updates	False	✓	✓	✓	
use-batch-insert	Whether to use batch insert.	False	✓	✓	✓	
use-http-disk-cache	Combination of use-http-disk-cache-read and use-http-disk-cache-write.		✓	✓	✓	
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓	
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓	
use-http-memory-cache	Combination of use-http-memory-cache-read and use-http-memory-cache-write.		✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓	
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓	
use-metadata-cache	Whether to use the metadata calculated previously Has only practical use during development on a XML provider.	True	✓	✓	✓	
use-result-cache	Whether to use result sets from previous queries that can answer the current query	True	✓	✓	✓	

3.2.14 Provider EzBase

EZ-Base

Code for use in settings.xml: EzBase

Alias: ezbase

Status: Production

Available in Editions: Paid

Provider Attributes

The following provider attributes are available for EzBase:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data con-	32	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	tainer.				
result-set-cache	Action: provide 'empty' to empty.			✓	
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-metadata-cache	Whether to use the metadata calculated previously Has only practical use during development on a XML provider.	True	✓	✓	✓
use-result-cache	Whether to use result sets from previous queries that can answer the current query	True	✓	✓	✓
xml-directories	{res:itgen_provider_attribute_xml_directories_description}		✓	✓	✓
xml-extension	{res:itgen_provider_attribute_xml_extension_description}	*.xml	✓	✓	✓
xml-namespaces	Comma-separated list of namespace prefixes and their URI		✓	✓	✓

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3.2.15 Provider Facebook

Facebook.

Code for use in settings.xml: Facebook

Alias: facebook

Status: Non-production

Available in Editions: Paid

Technical Documentation: https://developers.facebook.com/

Provider Attributes

The following provider attributes are available for Facebook:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-client-id	The client ID is a unique identifier of your application. It is generated by registering an application.		✓		✓
api-client-secret	The client secret is to be kept confidential. Such as a password for a logon code, the client secret is the confidential part of an app identified by a client ID. It is needed during the OAuth2 Code Grant Flow together with the refresh token to get access.	***	✓		✓
api-redirect-url	The redirect URI is the website a browser session is redirected to after the OAuth2 authentication process has been completed.		✓		✓
api-refresh-token	Refresh Token is a security token for the OAuth2 Code Grant Flow. With a Refresh Token and client secret you can retrieve a renewed access token to access protected resources. A Refresh Token and client secret must be stored securely since once compromised allows access to your protected resources.	***	✓		✓
api-url	URL to access the API.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

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3.2.16 Provider Freshdesk

Freshdesk, customer happiness for exceptional customer service.

Code for use in settings.xml: Freshdesk

Alias: freshdesk

Status: Production

Available in Editions: Paid

Technical Documentation: https://developer.freshdesk.com/api/#quick-reference

Documentation

Authentication

Authentication can be done using one of the following two alternatives:

1. Using the user log on code, password and company also used on the Freshdesk website.

2. Using an API key and company.

Authentication using user log on code and password is recommended for general use. The company is the name before '.freshdesk.com' in the URL used to log on to Freshdesk in a browser.

The API key can be found in the 'Edit Profile' page in Freshdesk, as described on https://support.freshdesk.com/support/solutions/articles/225435-where-can-i-find-my-api-key.

Usage Limits

Invantive UniversalSQL executes API calls to retrieve and upload data. The number of API calls allowed per hour depends on your Freshdesk plan. The default usage limits vary between 1.000 and 5.000 calls per hour. Invantive UniversalSQL ensures that within your session the number of calls allowed per hour is not exceeded.

To get an impression of how Invantive UniversalSQL translates into API calls, please query the data dictionary view 'sessionios', such as with 'select * from sessionios@datadictionary'.

Provider Attributes

The following provider attributes are available for Freshdesk:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-url	URL to access the API.		✓		✓
company	{res:itgen_freshdesk_company_description}		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

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3.2.17 Provider Ftp

FTP.

Code for use in settings.xml: Ftp

Alias: ftp

Abbreviation: ftp

Status: Production

Available in Editions: Paid

String-comparison is Case-sensitive: true

Use Catalog in Full Name: true

Use Schema in Full Name: true

Updated: 23-06-2019 19:40 using Invantive UniversalSQL version 17.33.48-BETA+2173.

Provider Attributes

The following provider attributes are available for Ftp:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
site	{res:itgen_ftp_site_description}		✓		✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
port	{res:itgen_ftp_port_description}	21	✓		✓	✓
use-ssl	Use SSL for the connection (FTPS).	False	✓		✓	✓
use-passive	Use passive FTP(S) instead of active.	True	✓		✓	✓
use-binary	Use binary mode (true) or ASCII mode (false) transfers by default.	True	✓		✓	✓
timeout-connection-sec	Seconds to wait for a connection attempt to succeed before giving up.	30	✓		✓	✓
timeout-data-connection-sec	Seconds for a data connection to be established before giving up.	30	✓		✓	✓
timeout-data-read-sec	Seconds the data channel should wait for the server to send data.	30	✓		✓	✓
timeout-read-sec	Seconds for data to be read from the underlying stream.	30	✓		✓	✓
socket-poll-interval-sec	Seconds between two poll intervals when enabled.	15	✓		✓	✓
socket-keep-alive	Whether to keep the connection alive by polling.	False	✓		✓	✓
special-connection-type	Special connection types for specialized use.		✓		✓	✓
ssl-protocols	Comma-separated list of SSL protocols, defaults to TLS 1.1 and TLS 1.2.		✓		✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓	
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓	
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓	
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓	
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓	
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓	
max-url-length-accepted	The maximum accepted URL length before raising an error.	8000	✓	✓	✓	
max-url-length-desired	The maximum desired URL length.	8000	✓	✓	✓	
partition-slot-based-rate-limit-length-ms	Total length in ms across all slots of a partition-based rate limit.	60000	✓		✓	
partition-slot-based-rate-limit-slots	Number of slots per partition-based rate limit. Null means no slot-based rate limit		✓		✓	
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓	
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
slot-based-rate-limit-length-ms	Total length in ms across all slots of a slot-based rate limit.	60000	✓		✓	
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓	
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓	
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓	
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓	

3.2.18 Provider GitLab

GitLab version control in the cloud or on-premises.

Code for use in settings.xml: GitLab

Alias: GitLab

Status: Production

Available in Editions: Paid

Technical Documentation: https://docs.gitlab.com/ee/api/

Non-technical Documentation: https://gitlab-apps.com

3.2.19 Provider IbmDb2Udb

IBM DB2/UDB.

Code for use in settings.xml: IbmDb2Udb

Alias: db2

Status: Production

Available in Editions: Paid

Additional Driver to install: https://support.invantive.com/download-driver-ibm-db2

3.2.20 Provider InMemoryStorage

Session-specific temporary storage of result sets.

Code for use in settings.xml: InMemoryStorage

Alias: inmem

Status: Production

Available in Editions: Paid

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether t	False	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	oshuffleresultsfetchedfromdataconnectainers.				
invantive-use-cache	Whether to	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	cachetheresultsofaquery.				
pre-request-delay-ms	Pre-request delay in milli-lise	0	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	conds per request.				
requests-parallel-max	Maximum number of parallel-level data area-q	32	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	uestsfromin-di-vidualpar-ti-tionsonthedataacon-tainer.				

3.2.21 Provider Invantive.Producer

Invantive Producer repository.

Code for use in settings.xml: Invantive.Producer

Alias: producer

Status: Production

Available in Editions: Paid

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
models	XML specification of folders with model per p		✓		✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	roduct				
templates	XML specification of folders with templates per pro		✓		✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	duct				

3.2.22 Provider JIRA

JIRA, ticketing.

Code for use in settings.xml: JIRA

Alias: jira

Status: Non-production

Available in Editions: Paid

Technical Documentation: https://developer.atlassian.com/server/jira/platform/rest-apis/

Non-technical Documentation: https://jira-apps.com

Provider Attributes

The following provider attributes are available for JIRA:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-url	URL to access the API.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
server	{res:itgen_provider_attribute_jira_server_description}		✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

Generated 11-01-2019 22:00 on version 17.30.0-PROD+1821.

3.2.23 Provider Kadaster

Kadaster.

Code for use in settings.xml: Kadaster

Alias: kadaster

Status: Production

Available in Editions: Paid, Open Data, Community

Technical Documentation: https://app.swaggerhub.com/api/pdok/brk

Provider Attributes

The following provider attributes are available for Kadaster:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-url	URL to access the API.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

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3.2.24 Provider KeePass

Security-sensitive storage of keys.

Code for use in settings.xml: KeePass

Alias: KeePass

Abbreviation: kp

Status: Non-production

Available in Editions: Paid

String-comparison is Case-sensitive: true

Use Catalog in Full Name: true

Use Schema in Full Name: true

Updated: 10-09-2020 00:09 using Invantive UniversalSQL version 20.1.206-BETA+2915.

Connector Attributes

The KeePass connector can be configured using the following attributes:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
bulk-delete-page-size-rows	Number of rows to delete per batch when bulk deleting	10000	✓	✓	✓	
bulk-insert-page-size-bytes	Approximate maximum size in bytes of batch when bulk inserting	10000000	✓	✓	✓	
bulk-insert-page-size-rows	Number of rows to insert per batch when bulk inserting	10000	✓	✓	✓	
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓	
invantive-sql-correct-invalid-date	Whether to correct invalid dates.	False	✓	✓	✓	
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓	
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓	
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓	
log-native-calls-to-disk	Registers native calls to data container backend as disk files.	False	✓	✓	✓	
log-native-calls-to-trace	Log native calls to data container backend on the trace.	False	✓	✓	✓	
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓	
max-url-length-accepted	The maximum accepted URL length before raising an error.	8000	✓	✓	✓	
max-url-length-desired	The maximum desired URL length.	8000	✓	✓	✓	
partition-slot-based-rate-limit-length-ms	Total length in ms across all slots of a partition-based rate limit.	60000	✓		✓	
partition-slot-based-rate-limit-slots	Number of slots per partition-based rate limit. Null means no slot-based rate limit		✓		✓	
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓	
requested-page-size	Preferred number of rows to exchange per round trip; only effective on limited platforms such as AFAS Online		✓	✓	✓	
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓	
slot-based-rate-limit-length-ms	Total length in ms across all slots of a slot-based rate limit.	60000	✓		✓	
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓	
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓	
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓	

3.2.25 Provider LastResort

Provider always available as a last resort for translations.

Code for use in settings.xml: LastResort

Alias: last

Status: Production

Available in Editions: Paid

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	s.				
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data container.	False	✓	✓	✓

Code	Description.	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
pre-request-delay-ms	Pre-request delay	0	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	in milli-seconds per request.				
requests-parallel-max	Maximum number of parallel	32	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	Ieldatarequestsfromindividualparticipationsonthedatac				

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	ontainer.				
translations	Folder containing translation files		✓		✓

3.2.26 Provider LinkedIn

LinkedIn.

Code for use in settings.xml: LinkedIn

Alias: linkedin

Status: Production

Available in Editions: Paid

Technical Documentation: https://developer.linkedin.com/

3.2.27 Provider LoketNl

Loket.nl information.

Code for use in settings.xml: LoketNl

Alias: LoketNl

Status: Production

Available in Editions: Paid

Technical Documentation: https://helpdesk.loket.nl/hc/nl/articles/206244508

Provider Attributes

The following provider attributes are available for LoketNl:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
environment-code	Environment code. The environment code signals the unique database to use. The code is a small integer. Please append '@test' to use a test environment located at the test data centre.		✓		✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms)	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptableage in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms)	300000	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-con-	Whether to shuffle results fetched from data containers.	False	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
tainers					
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
partition-slot-based-rate-limit-length-ms	Length in ms of a partition-based rate limit across all slots.	60000	✓		✓
partition-slot-based-rate-limit-slots	Number of slots per partition-based rate limit. Null means no slot-based rate limit		✓		✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
result-set-cache	Action: provide 'empty' to empty.			✓	
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit across all slots.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory to answer the current query	True	✓	✓	✓
use-http-memory-cache-write	Whether to memorize HTTP responses in memory	True	✓	✓	✓
use-metadata-cache	Whether to use the metadata calculated previously Has only practical use during development on a XML provider.	True	✓	✓	✓
use-result-cache	Whether to use result sets from previous queries that can answer the current query	True	✓	✓	✓
use-test-environment	OBSOLETED. USE @test INSTEAD.		✓		✓

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3.2.28 Provider Magento

Magento web shop.

Code for use in settings.xml: Magento

Alias: magento

Status: Non-production

Available in Editions: Paid

Technical Documentation: https://devdocs.magento.com/guides/v2.0/rest/bk-rest.html

3.2.29 Provider Mail

SMTP mail.

Code for use in settings.xml: Mail

Alias: mail

Abbreviation: ml

Status: Production

Available in Editions: Paid

String-comparison is Case-sensitive: true

Use Catalog in Full Name: true

Use Schema in Full Name: true

Updated: 10-09-2020 00:08 using Invantive UniversalSQL version 20.1.206-BETA+2915.

Connector Attributes

The Mail connector can be configured using the following attributes:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
bulk-delete-page-size-rows	Number of rows to delete per batch when bulk deleting	10000	✓	✓	✓	
bulk-insert-page-size-bytes	Approximate maximum size in bytes of batch when bulk inserting	10000000	✓	✓	✓	
bulk-insert-page-size-rows	Number of rows to insert per batch when bulk inserting	10000	✓	✓	✓	
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓	
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓	
invantive-sql-correct-invalid-date	Whether to correct invalid dates.	False	✓	✓	✓	
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓	
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓	
log-native-calls-to-disk	Registers native calls to data container backend as disk files.	False	✓	✓	✓	
log-native-calls-to-trace	Log native calls to data container backend on the trace.	False	✓	✓	✓	
mail-body-html	Set w hether the mail body is HTML.		✓	✓	✓	
mail-from-email	The default FROM email address.		✓	✓	✓	
mail-from-name	The default FROM name.		✓	✓	✓	
mail-priority	Priority of the mail; negative is bulk, 0 is neutral, positive is urgent.		✓	✓	✓	
mail-reply-to-email	The default REPLY TO email address.		✓	✓	✓	
mail-reply-to-name	The default REPLY TO name.		✓	✓	✓	
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓	
max-url-length-accepted	The maximum accepted URL length before raising an error.	8000	✓	✓	✓	
max-url-length-desired	The maximum desired URL length.	8000	✓	✓	✓	
partition-slot-based-rate-limit-length-ms	Total length in ms across all slots of a partition-based rate limit.	60000	✓		✓	
partition-slot-based-rate-limit-slots	Number of slots per partition-based rate limit. Null means no slot-based rate limit		✓		✓	
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓	
requested-page-size	Preferred number of row s to exchange per round trip; only effective on limited platforms such as AFAS Online		✓	✓	✓	
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓	
slot-based-rate-limit-length-ms	Total length in ms across all slots of a slot-based rate limit.	60000	✓		✓	
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓	
smtp-enable-ssl	Set w hether SSL is enabled for SMTP connections.	False	✓	✓	✓	
smtp-host-address	The default SMTP host address to use.		✓	✓	✓	
smtp-host-port-number	The default SMTP host post number to use.		✓	✓	✓	
smtp-minimum-deliver-duration-ms	Minimum deliver duration in milliseconds for the SMTP send plus inserted sleep w hen SMTP send finished earlier than the minimum.		✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
smtp-password	The default SMTP password to authenticate with.		✓	✓	✓	
smtp-send-timeout-ms	Timeout in milliseconds after which the SMTP send times out.		✓	✓	✓	
smtp-user-name	The default SMTP user name to authenticate with.		✓	✓	✓	
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓	
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓	

3.2.30 Provider Mendix

Mendix version control in the cloud or on-premises.

Code for use in settings.xml: Mendix

Alias: Mendix

Status: Non-production

Available in Editions: Paid

Technical Documentation: https://docs.mendix.com/apidocs-mxsdk/apidocs/

Non-technical Documentation: https://mendix-apps.com

3.2.31 Provider MicrosoftGraph

Microsoft Graph (as used by Office 365).

Code for use in settings.xml: MicrosoftGraph

Alias: graph

Status: Production

Available in Editions: Paid

Technical Documentation: https://developer.microsoft.com/en-us/graph

3.2.32 Provider MySql

Oracle MySQL.

Code for use in settings.xml: MySql

Alias: mysql

Status: Production

Available in Editions: Paid

Additional Driver to install: https://support.invantive.com/download-driver-mysql

Provider Attributes

The following provider attributes are available for MySql:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
command-timeout-sec	Number of seconds after which a command times out.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
maximum-number-of-pooled-connections	Maximum number of concurrent pooled connections.		✓	✓	✓
maximum-sleep-acquire-pooled-connection-ms	Maximum time in ms to wait for acquiring a free connection from a pool of connections.	30000	✓	✓	✓
maximum-sleep-acquire-unpooled-connection-ms	Maximum time in ms to wait for acquire a free connection when there is no connection pooling.	60000	✓	✓	✓
preferred-number-of-pooled-connections	Preferred number of concurrent pooled connections.		✓	✓	✓
prefix-bind-variable-in-list	Prefix for bind variables used in an IN-list	i	✓	✓	✓
prefix-bind-variable-normal	Prefix for bind variables used in all cases except in an IN-list	w	✓	✓	✓
prefix-renamed-columns	Prefix appended to columns whose names occur multiple times in the column list of a query	column	✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	changing a data model on a case-dependent platform.				
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓

3.2.33 Provider Nasa

NASA space information.

Code for use in settings.xml: Nasa

Alias: nasa

Status: Production

Available in Editions: Paid, Open Data, Community

Technical Documentation: https://api.nasa.gov/

Non-technical Documentation: https://api.nasa.gov/

Provider Attributes

The following provider attributes are available for Nasa:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-url	URL to access the API.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

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3.2.34 Provider NmbrsNl

Payrolling and HR management.

Code for use in settings.xml: NmbrsNl

Alias: nmbrs

Abbreviation: nms

Status: Production

Available in Editions: Paid

String-comparison is Case-sensitive: true

Use Catalog in Full Name: true

Use Schema in Full Name: true

Partition Column: COMPANY_CODE

Updated: 14-05-2020 17:13 using Invantive UniversalSQL version 20.1.36-BETA+2798.

Technical Documentation: https://api.nmbrs.nl

Provider Attributes

The following provider attributes are available for NmbrsNl:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
minimum-length-text	Extend all text columns to this length to allow processing of XML that uses longer text values than the XSD specifies.		✓			✓
api-url	URL of Nmbrs web service		✓		✓	
bulk-delete-page-size-rows	Number of rows to delete per batch when bulk deleting	10000	✓	✓	✓	
bulk-insert-page-size-bytes	Approximate maximum size in bytes of batch when bulk inserting	10000000	✓	✓	✓	
bulk-insert-page-size-rows	Number of rows to insert per batch when bulk inserting	10000	✓	✓	✓	
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓	
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓	
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3.WS212\Invantive\Cache\http\gle3\shared	✓	✓	✓	
http-disk-cache-ignore-write-errors	Whether to ignore write errors to disk cache.	False	✓	✓	✓	
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓	
http-get-timeout-ms	HTTP GET timeout (ms)	300000	✓	✓	✓	
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓	
http-memory-cache-max-age-sec	Maximum acceptableage in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓	
http-post-timeout-ms	HTTP POST timeout (ms)	300000	✓	✓	✓	
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓	
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓	
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓	
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓	
max-url-length-accepted	The maximum accepted URL length before raising an error.	8000	✓	✓	✓	
max-url-length-desired	The maximum desired URL length.	8000	✓	✓	✓	
partition-slot-based-rate-limit-length-ms	Total length in ms across all slots of a partition-based rate limit.	60000	✓		✓	
partition-slot-based-rate-limit-slots	Number of slots per partition-based rate limit. Null means no slot-based rate limit		✓		✓	
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓	
requested-page-size	Preferred number of rows to exchange per round trip; only effective on limited platforms such as AFAS Online		✓	✓	✓	
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File	Set from Log On
result-set-memory-cache	Action: provide 'empty' to empty.			✓		
slot-based-rate-limit-length-ms	Total length in ms across all slots of a slot-based rate limit.	60000	✓		✓	
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓	
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓	
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓	
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓	
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	False	✓	✓	✓	
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	False	✓	✓	✓	
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory to answer the current query	True	✓	✓	✓	
use-http-memory-cache-write	Whether to memorize HTTP responses in memory	True	✓	✓	✓	
use-metadata-memory-cache	Whether to use the metadata in memory calculated previously Has only practical use during development on a XML provider.	True	✓	✓	✓	
use-result-memory-cache	Whether to use result sets cached in memory from previous queries that can answer the current query	True	✓	✓	✓	

3.2.35 Provider OAuth UI provider

OAuth provider for Windows user-interface integrated OAuth authentication with a pop-up browser.

Code for use in settings.xml: OAuth UI provider

Alias: oauth

Status: Production

Available in Editions: Paid

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether t	False	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	oshufflelerres-ultsfetchedfromdataacon-tain-ers.				
invantive-use-cache	Whetherto	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	cachetheresultsofaquery.				
pre-request-delay-ms	Pre-request delay in milli-lise	0	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	conds per re-quest.				
requests-parallel-max	Maximum number of parallel-level data are-q	32	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	uestsfromin-di-vidualpar-ti-tionsonthedataacon-tainer.				

3.2.36 Provider Odbc

ODBC.

Code for use in settings.xml: Odbc

Alias: odbc

Status: Production

Available in Editions: Paid

3.2.37 Provider OpenArch: OPENARCH (NL) information.

OPENARCH (NL) information.

Code for use in settings.xml: OpenArch

Alias: openarch

Status: Non-production

Available in Editions: Paid, Open Data, Community

Technical Documentation: https://www.openarch.nl/api/docs/

Provider Attributes

The following provider attributes are available for OpenArch:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-url	URL to access the API.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

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3.2.38 Provider OpenExchangeRates: Open Exchange Rates.

Open Exchange Rates.

Code for use in settings.xml: OpenExchangeRates

Alias: openexra

Status: Production

Available in Editions: Paid

Technical Documentation: https://docs.openexchangerates.org/

Non-technical Documentation: https://docs.openexchangerates.org/docs

Provider Attributes

The following provider attributes are available for OpenExchangeRates:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-url	URL to access the API.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

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3.2.39 Provider OpenSpendingNl: Openspending.nl.

Openspending.nl.

Code for use in settings.xml: OpenSpendingNl

Alias: osnl

Status: Production

Available in Editions: Paid, Open Data, Community

Technical Documentation: https://openspending.nl/api/v1/doc

Non-technical Documentation: https://openspending.nl/pagina/data

Provider Attributes

The following provider attributes are available for OpenSpendingNl:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-url	URL to access the API.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

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3.2.40 Provider Oracle: Oracle C driver-based provider.

Oracle C driver-based provider.

Code for use in settings.xml: Oracle

Alias: oracle

Status: Production

Available in Editions: Paid

3.2.41 Provider OracleManaged: Oracle .NET driver-based.

Oracle .NET driver-based provider.

Code for use in settings.xml: OracleManaged

Alias: oracle

Status: Production

Available in Editions: Paid

Additional Driver to install: https://support.invantive.com/download-driver-oracle

Provider Attributes

The following provider attributes are available for OracleManaged:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
command-timeout-sec	Number of seconds after which a command times out.		✓	✓	✓
connection-string-self-tuning-add	Should the 'Self Tuning' be added automatically to the connection string?	True	✓	✓	✓
connection-string-self-tuning-value	Value of self tuning to be added to the connection string	True	✓	✓	✓
connection-string-statement-cache-size-add	Should the 'Statement Cache Size' be added automatically to the connection string?	True	✓	✓	✓
connection-string-statement-cache-size-value	Size of the statement cache size to be added to the connection string	250	✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
maximum-number-of-pooled-connections	Maximum number of concurrent pooled connections.		✓	✓	✓
maximum-sleep-acquire-pooled-connection-ms	Maximum time in ms to wait for acquiring a free connection from a pool of connections.	30000	✓	✓	✓
maximum-sleep-acquire-unpooled-connection-ms	Maximum time in ms to wait for acquire a free connection when there is no connection pooling.	60000	✓	✓	✓
preferred-number-of-pooled-connections	Preferred number of concurrent pooled connections.		✓	✓	✓
prefix-bind-variable-in-list	Prefix for bind variables used in an IN-list	i	✓	✓	✓
prefix-bind-variable-normal	Prefix for bind variables used in all cases except in an IN-list	w	✓	✓	✓
prefix-renamed-columns	Prefix appended to columns whose names occur multiple times in the column list of a query	column	✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
return-null-on-ora-22288	Return a null value instead of an exception when Oracle returns ORA-22288 when querying a bfile column	False	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓

3.2.42 Provider Os: Windows operating system objects.

Windows operating system objects.

Code for use in settings.xml: Os

Alias: os

Status: Production

Available in Editions: Paid

Provider Attributes

The following provider attributes are available for Os:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓

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3.2.43 Provider PayPal: PayPal.

PayPal.

Code for use in settings.xml: PayPal

Alias: paypal

Status: Production

Available in Editions: Paid

Technical Documentation: https://developer.paypal.com/docs/

3.2.44 Provider PostgreSql: PostgreSQL.

PostgreSQL.

Code for use in settings.xml: PostgreSql

Alias: pg

Status: Production

Available in Editions: Paid

Additional Driver to install: https://support.invantive.com/download-driver-postgresql

Provider Attributes

The following provider attributes are available for PostgreSql:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
bulk-insert-page-size-rows	Number of rows to insert per page when bulk inserting	1000	✓	✓	✓
command-timeout-sec	Number of seconds after which a command times out.		✓	✓	✓
database	Database to open when connecting.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
maximum-number-of-pooled-connections	Maximum number of concurrent pooled connections.		✓	✓	✓
maximum-sleep-acquire-pooled-connection-ms	Maximum time in ms to wait for acquiring a free connection from a pool of connections.	30000	✓	✓	✓
maximum-sleep-acquire-unpooled-connection-ms	Maximum time in ms to wait for acquire a free connection when there is no connection pooling.	60000	✓	✓	✓
npgsql-log	Whether to log messages of the npgsql provider	False	✓	✓	✓
preferred-number-of-pooled-connections	Preferred number of concurrent pooled connections.		✓	✓	✓
prefix-bind-variable-in-list	Prefix for bind variables used in an IN-list	i	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
prefix-bind-variable-normal	Prefix for bind variables used in all cases except in an IN-list	w	✓	✓	✓
prefix-renamed-columns	Prefix appended to columns whose names occur multiple times in the column list of a query	column	✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓

3.2.45 Provider RdwNl: RDW (NL) information.

RDW (NL) information.

Code for use in settings.xml: RdwNl

Alias: rdwnl

Status: Production

Available in Editions: Paid, Open Data, Community

Technical Documentation: https://www.rdw.nl/over-rdw/dienstverlening/open-data

Provider Attributes

The following provider attributes are available for RdwNl:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-url	URL to access the API.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down		✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
	during retrieval of data.				
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

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3.2.46 Provider Rss20: RSS version 2.0.

RSS version 2.0.

Code for use in settings.xml: Rss20

Alias: rss

Status: Production

Available in Editions: Paid, Open Data, Community

Technical Documentation: https://www.rssboard.org/rss-specification

Provider Attributes

The following provider attributes are available for Rss20:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-con-	Whether to shuffle results fetched from data containers.	False	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
tainers					
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
result-set-cache	Action: provide 'empty' to empty.			✓	
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-metadata-cache	Whether to use the metadata calculated previously Has only practical use during development on a XML provider.	True	✓	✓	✓
use-result-cache	Whether to use result sets from previous queries that can answer the current query	True	✓	✓	✓
xml-directories	{res:itgen_provider_attribute_xml_directories_description}		✓	✓	✓
xml-extension	{res:itgen_provider_attribute_xml_extension_description}	*.rss	✓	✓	✓
xml-namespaces	Comma-separated list of namespace prefixes and their URI		✓	✓	✓

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3.2.47 Provider Salesforce: Salesforce CRM and other applications.

Salesforce CRM and other applications.

Code for use in settings.xml: Salesforce

Alias: sf

Status: Production

Available in Editions: Paid

Technical Documentation: https://developer.salesforce.com

Non-technical Documentation: https://www.salesforce.com/nl/?ir=1

Provider Attributes

The following provider attributes are available for Salesforce:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-client-id	The client ID is a unique identifier of your application. It is generated by registering an application.		✓		✓
api-client-secret	The client secret is to be kept confidential. Such as a password for a logon code, the client secret is the confidential part of an app identified by a client ID. It is needed during the OAuth2 Code Grant Flow together with the refresh token to get access.	***	✓		✓
api-redirect-url	The redirect URI is the website a browser session is redirected to after the OAuth2 authentication process has been completed.		✓		✓
api-refresh-token	Refresh Token is a security token for the OAuth2 Code Grant Flow. With a Refresh Token and client secret you can retrieve a renewed access token to access protected resources. A Refresh Token and client secret must be stored securely since once compromised allows access to your protected resources.	***	✓		✓
api-url	URL to access the API.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-429-errors	Ignore HTTP 429 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
partition-slot-based-rate-limit-length-ms	Length in ms of a partition-based rate limit across all slots.	60000	✓		✓
partition-slot-based-rate-limit-slots	Number of slots per partition-based rate limit. Null means no slot-based rate limit		✓		✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit across all slots.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

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3.2.48 Provider Sftp: Secure FTP.

Secure FTP.

Code for use in settings.xml: Sftp

Alias: sftp

Status: Production

Available in Editions: Paid

3.2.49 Provider SilverEssence: SilverEssence.

SilverEssence.

Code for use in settings.xml: SilverEssence

Alias: silver

Status: Non-production

Available in Editions: Paid

3.2.50 Provider Slack: Slack

Slack

Code for use in settings.xml: Slack

Alias: Slack

Status: Non-production

Available in Editions: Paid

Technical Documentation: https://api.slack.com

3.2.51 Provider Snelstart: Snelstart (NL) information.

Snelstart (NL) information.

Code for use in settings.xml: Snelstart

Alias: Snelstart

Status: Non-production

Available in Editions: Paid, Open Data, Community

Technical Documentation: https://www.snelstart.nl/api

3.2.52 Provider SqlServer: Microsoft SQL Server.

Microsoft SQL Server.

Code for use in settings.xml: SqlServer

Alias: mssql

Status: Production

Available in Editions: Paid

Provider Attributes

The following provider attributes are available for SqlServer:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
bulk-insert-page-size-rows	Number of rows to insert per page when bulk inserting	1000	✓	✓	✓
bulk-insert-timeout-sec	Number of seconds after which a bulk insert times out	300	✓	✓	✓
command-timeout-sec	Number of seconds after which a command times out.		✓	✓	✓
connection-string-async-add	Should the 'Async' be added automatically to the connection string?	True	✓	✓	✓
connection-string-async-value	Size of the Async to be added to the connection string	True	✓	✓	✓
connection-string-multiple-active-result-sets-add	Should the 'MultipleActiveResultSets' be added automatically to the connection string?	True	✓	✓	✓
connection-string-multiple-active-result-sets-value	Value of MultipleActiveResultSets to be added to the connection string	True	✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
maximum-number-of-pooled-connections	Maximum number of concurrent pooled connections.		✓	✓	✓
maximum-sleep-acquire-pooled-connection-ms	Maximum time in ms to wait for acquiring a free connection from a pool of connections.	30000	✓	✓	✓
maximum-sleep-acquire-unpooled-connection-ms	Maximum time in ms to wait for acquire a free connection when there is no connection pooling.	60000	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
preferred-number-of-pooled-connections	Preferred number of concurrent pooled connections.		✓	✓	✓
prefix-bind-variable-in-list	Prefix for bind variables used in an IN-list	i	✓	✓	✓
prefix-bind-variable-normal	Prefix for bind variables used in all cases except in an IN-list	w	✓	✓	✓
prefix-renamed-columns	Prefix appended to columns whose names occur multiple times in the column list of a query	column	✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓

3.2.53 Provider StackExchange: StackExchange.

StackExchange.

Code for use in settings.xml: StackExchange

Alias: StackExchange

Status: Production

Available in Editions: Paid, Open Data, Community

Technical Documentation: https://api.stackexchange.com

Non-technical Documentation: https://stackexchange-apps.com

Provider Attributes

The following provider attributes are available for StackExchange:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-client-id	The client ID is a unique identifier of your application. It is generated by registering an application.		✓		✓
api-client-secret	The client secret is to be kept confidential. Such as a password for a logon code, the client secret is the confidential part of an app identified by a client ID. It is needed during the OAuth2 Code Grant Flow together with the refresh token to get access.	***	✓		✓
api-redirect-url	The redirect URI is the website a browser session is redirected to after the OAuth2 authentication process has been completed.		✓		✓
api-refresh-token	Refresh Token is a security token for the OAuth2 Code Grant Flow. With a Refresh Token and client secret you can retrieve a renewed access token to access protected resources. A Refresh Token and client secret must be stored securely since once compromised allows access to your protected resources.	***	✓		✓
api-url	URL to access the API.		✓		✓
authentication-key	The authentication key of the app on StackApps.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

Generated 11-01-2019 21:54 on version 17.30.0-PROD+1821.

3.2.54 Provider SwiftMt940Rabo: Swift MT940 Rabobank.

Swift MT940 Rabobank.

Code for use in settings.xml: SwiftMt940Rabo

Alias: mt940rabo

Status: Non-production

Available in Editions: Paid

Non-technical Documentation: https://www.sepaforcorporates.com/swift-for-corporates/account-statement-mt940-file-format-overview/

Provider Attributes

The following provider attributes are available for SwiftMt940Rabo:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
directories	{res:itgen_provider_attribute_directories_description}	c:\temp	✓	✓	✓
extension	{res:itgen_provider_attribute_extension_description}	*.swi	✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
log-directory	Directory where the text messages are stored	c:\temp	✓	✓	✓
log-text	Whether to log the text messages exchanged to disk	False	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓

Generated 11-01-2019 22:18 on version 17.30.0-PROD+1821.

3.2.55 Provider Teamleader: Teamleader CRM.

Teamleader is a cloud solution for customer management. Teamleader includes CRM as well as project and tickets. Teamleader can be extended by defining custom fields on several core concepts.

Code for use in settings.xml: Teamleader

Alias: teamleader

Abbreviation: tlr

Status: Production

Available in Editions: Paid

String-comparison is Case-sensitive: true

Use Catalog in Full Name: true

Use Schema in Full Name: true

Updated: 10-09-2020 00:09 using Invantive UniversalSQL version 20.1.206-BETA+2915.

Technical Documentation: https://apidocs.teamleader.be/

Documentation

Authentication

Authentication can be done using one of the following two alternatives:

1. Using the user log on code and password also used on the Teamleader website.

2. Using an API group and API secret.

Authentication using user log on code and password is recommended for general use. The user must have access to all functionality since by default all so-called 'scopes' are requested. The scopes can be manually entered to be able to log in with a restricted accounts. Please provide a space-separated list chosen from companies, contacts, deals, departments, events, invoices, products, projects, quotations, subscriptions, tickets, todos, users.

The API group and secret can be found on https://app.teamleader.eu/apiwebhooks.php?show_key.

Usage Limits

Invantive UniversalSQL executes API calls to retrieve and upload data. The number of API calls allowed per 5 seconds is 25. Invantive UniversalSQL ensures that within your session the number of calls allowed per hour is not exceeded.

To get an impression of how Invantive UniversalSQL translates into API calls, please query the data dictionary view 'sessionios', such as with 'select * from sessionios@datadictionary'.

Custom Fields

Custom fields for which one value can be entered on an object are added to the table representing the object. For instance, a custom field 'needsaudit' on 'project', will be added as a column 'c_needsaudit' on the 'project' table. The name of the additional column directly derives from the custom field name. Almost all changes, including adding numbers or reading characters, will result in the data model being changed.

Custom fields which can have no, one or multiple values ('set' custom fields) are reflected in the data model by tables with a name constructed of the object name, an underscore plus the name of the custom field. For example, a custom field named 'Multiple Selection' on 'Task' will add a table 'task_multipleselection' to the data model.

Custom fields are unique to each Teamleader environment. When the existence of specific custom field is not guaranteed, please use generic solutions like the tables 'CustomFieldDefinitions', 'custom_fields', 'custom_field_options', 'custom_field', 'Custom_Fields_All', 'Custom_Field_Types' and their object-specific custom field value tables like 'ticket_custom_field_values_by_id'.

Connector Attributes

The Teamleader connector can be configured using the following attributes:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
force-custom-field-to-string	Whether to force custom field values shown in columns to be represented as string instead of the registered type.	False	✓		✓	✓
scopes	Space-separated and case-sensitive list of scope for OAuth only. Leave empty for all.		✓		✓	✓
api-client-id	The client ID is a unique identifier of your application. It is generated by registering an application.		✓		✓	✓
api-client-secret	The client secret is to be kept confidential. Such as a password for a logon code, the client secret is the confidential part of an app identified by a client ID. It is needed during the OAuth2 Code Grant Flow together with the refresh token to get access.	***	✓		✓	✓
api-refresh-token	Refresh Token is a security token for the OAuth2 Code Grant Flow. With a Refresh Token and client secret you can retrieve a renewed access token to access protected resources. A Refresh Token and	***	✓		✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
	client secret must be stored securely since once compromised allows access to your protected resources.					
api-redirect-url	The redirect URI is the website a browser session is redirected to after the OAuth2 authentication process has been completed.		✓		✓	✓
api-group-authentication	Use API group authentication when true. OAuth otherwise.		✓		✓	
api-scope	The scope to request an OAuth token for.		✓		✓	
api-token-url	The token URI is the OAuth2 endpoint to exchange tokens.		✓		✓	
api-url	URL to access the API.		✓		✓	
bulk-delete-page-size-rows	Number of rows to delete per batch when bulk deleting	10000	✓	✓	✓	
bulk-insert-page-size-bytes	Approximate maximum size in bytes of batch when bulk inserting	10000000	✓	✓	✓	
bulk-insert-page-size-rows	Number of rows to insert per batch when bulk inserting	250	✓	✓	✓	
download-error-400-bad-request-max-tries	Maximum number of tries when OData server reports bad format during retrieval of data.	30	✓	✓	✓	
download-error-400-bad-request-sleep-initial-ms	Initial sleep in milliseconds between retries when OData server reports that the API server is unavailable during retrieval of data.	5000	✓	✓	✓	
download-error-400-bad-request-sleep-max-ms	Maximum sleep in milliseconds between retries when OData server reports that the API server is unavailable during retrieval of data.	60000	✓	✓	✓	
download-error-400-bad-request-sleep-multiplicator	Multiplication factor for sleep between retries OData server reports that the API server is unavailable during retrieval of data.	2	✓	✓	✓	
download-error-422-bad-request-max-tries	Maximum number of tries when OData server reports unprocessable entity during retrieval of data.	30	✓	✓	✓	
download-error-422-bad-request-sleep-initial-ms	Initial sleep in milliseconds between retries when OData server reports unprocessable entity during retrieval of data.	5000	✓	✓	✓	
download-error-422-bad-request-sleep-max-ms	Maximum sleep in milliseconds between retries when OData server reports unprocessable entity during retrieval of data.	60000	✓	✓	✓	
download-error-422-bad-request-sleep-multiplicator	Multiplication factor for sleep between retries OData server reports unprocessable entity during retrieval of data.	2	✓	✓	✓	
download-error-429-too-many-requests-	Maximum number of tries when the website reports that too many requests have	10	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
max-tries	been made during a timeslot of one minute or one day.					
download-error-429-too-many-requests-sleep-initial-ms	Initial sleep in milliseconds between retries when the website reports that too many requests have been made during a timeslot of one minute or one day.	5000	✓	✓	✓	
download-error-429-too-many-requests-sleep-max-ms	Maximum sleep in milliseconds between retries when the website reports that too many requests have been made during a timeslot of one minute or one day.	60000	✓	✓	✓	
download-error-429-too-many-requests-sleep-multiplicator	Multiplication factor for sleep between retries when the website reports that too many requests have been made during a timeslot of one minute or one day.	2	✓	✓	✓	
download-error-502-server-unavailable-max-tries	Maximum number of tries when OData server reports a bad gateway during retrieval of data.	30	✓	✓	✓	
download-error-502-server-unavailable-sleep-initial-ms	Initial sleep in milliseconds between retries when OData server reports a bad gateway during retrieval of data.	10000	✓	✓	✓	
download-error-502-server-unavailable-sleep-max-ms	Maximum sleep in milliseconds between retries when OData server reports that a bad gateway during retrieval of data.	60000	✓	✓	✓	
download-error-502-server-unavailable-sleep-multiplicator	Multiplication factor for sleep between retries OData server reports a bad gateway during retrieval of data.	2	✓	✓	✓	
download-error-503-server-unavailable-max-tries	Maximum number of tries when OData server reports that the API server is unavailable during retrieval of data.	30	✓	✓	✓	
download-error-503-server-unavailable-sleep-initial-ms	Initial sleep in milliseconds between retries when OData server reports that the API server is unavailable during retrieval of data.	5000	✓	✓	✓	
download-error-503-server-unavailable-sleep-max-ms	Maximum sleep in milliseconds between retries when OData server reports that the API server is unavailable during retrieval of data.	60000	✓	✓	✓	
download-error-503-server-unavailable-sleep-multiplicator	Multiplication factor for sleep between retries OData server reports that the API server is unavailable during retrieval of data.	2	✓	✓	✓	
download-error-504-gateway-timeout-max-tries	Maximum number of tries when the website reports a gateway timeout.	10	✓	✓	✓	
download-error-504-gateway-timeout-sleep-initial-ms	Initial sleep in milliseconds between retries when the website reports a gateway timeout.	5000	✓	✓	✓	
download-error-504-gateway-timeout-sleep-max-ms	Maximum sleep in milliseconds between retries when the website reports a gateway timeout.	60000	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
download-error-504-gateway-timeout-sleep-multiplicator	Multiplication factor for sleep between retries when the website reports a gateway timeout.	2	✓	✓	✓	
download-error-argument-exception-max-tries	Maximum number of tries when an argument exception is returned when downloading a blob.	10	✓	✓	✓	
download-error-argument-exception-sleep-initial-ms	Initial sleep in milliseconds between retries when an argument exception is returned when downloading a blob.	1000	✓	✓	✓	
download-error-argument-exception-sleep-max-ms	Maximum sleep in milliseconds between retries when an argument exception is returned when downloading a blob.	60000	✓	✓	✓	
download-error-argument-exception-sleep-multiplicator	Multiplication factor for sleep between retries when an argument exception is returned when downloading a blob.	2	✓	✓	✓	
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.	10	✓	✓	✓	
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.	10000	✓	✓	✓	
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.	60000	✓	✓	✓	
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.	2	✓	✓	✓	
download-error-io-exception-max-tries	Maximum number of tries when a network I/O connection failure occurs during retrieval of data.	10	✓	✓	✓	
download-error-io-exception-sleep-initial-ms	Initial sleep in milliseconds between retries when a network I/O connection failure occurs during retrieval of data.	10000	✓	✓	✓	
download-error-io-exception-sleep-max-ms	Maximum sleep in milliseconds between retries when a network I/O connection failure occurs during retrieval of data.	60000	✓	✓	✓	
download-error-io-exception-sleep-multiplicator	Multiplication factor for sleep between retries when a network I/O connection failure occurs during retrieval of data.	2	✓	✓	✓	
download-error-json-exception-max-tries	Maximum number of tries when an invalid JSON body is returned.	3	✓	✓	✓	
download-error-json-exception-sleep-initial-ms	Initial sleep in milliseconds between retries when an invalid JSON body is returned.	1000	✓	✓	✓	
download-error-json-exception-sleep-max-ms	Maximum sleep in milliseconds between retries when an invalid JSON body is returned.	10000	✓	✓	✓	
download-error-json-exception-sleep-multiplicator	Multiplication factor for sleep between retries when an invalid JSON body is returned.	2	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
download-error-other-exception-max-tries	Maximum number of tries when an unqualified error occurs during retrieval of data.	3	✓	✓	✓	
download-error-other-exception-sleep-initial-ms	Initial sleep in milliseconds between retries when an unqualified error ocurrs during retrieval of data.	5000	✓	✓	✓	
download-error-other-exception-sleep-max-ms	Maximum sleep in milliseconds between retries when an unqualified error ocurrs during retrieval of data.	30000	✓	✓	✓	
download-error-other-exception-sleep-multiplicator	Multiplication factor for sleep between retries when an unqualified error ocurrs during retrieval of data.	2	✓	✓	✓	
download-error-socket-exception-max-tries	Maximum number of tries when the network connection is forcible dropped during retrieval of data.	10	✓	✓	✓	
download-error-socket-exception-sleep-initial-ms	Initial sleep in milliseconds between retries when the network connection is forcible dropped during retrieval of data.	10000	✓	✓	✓	
download-error-socket-exception-sleep-max-ms	Maximum sleep in milliseconds between retries when the network connection is forcible dropped during retrieval of data.	60000	✓	✓	✓	
download-error-socket-exception-sleep-multiplicator	Multiplication factor for sleep between retries when the network connection is forcible dropped during retrieval of data.	2	✓	✓	✓	
download-error-web-exception-max-tries	Maximum number of tries when a web connection failure occurs during retrieval of data.	10	✓	✓	✓	
download-error-web-exception-sleep-initial-ms	Initial sleep in milliseconds between retries when a web connection failure occurs during retrieval of data.	10000	✓	✓	✓	
download-error-web-exception-sleep-max-ms	Maximum sleep in milliseconds between retries when a web connection failure occurs during retrieval of data.	60000	✓	✓	✓	
download-error-web-exception-sleep-multiplicator	Multiplication factor for sleep between retries when a web connection failure occurs during retrieval of data.	2	✓	✓	✓	
download-error-web-not-implemented-max-tries	Maximum number of tries when the connection reports not implemented.	1	✓	✓	✓	
download-error-web-not-implemented-sleep-initial-ms	Initial sleep in milliseconds between retries when the connection reports not implemented.	5000	✓	✓	✓	
download-error-web-not-implemented-sleep-max-ms	Maximum sleep in milliseconds between retries when the connection reports not implemented.	60000	✓	✓	✓	
download-error-web-not-implemented-sleep-multiplicator	Multiplication factor for sleep between retries when the connection reports not implemented.	2	✓	✓	✓	
download-error-web-timeout-max-tries	Maximum number of tries when the connection reports a timeout.	10	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
download-error-web-timeout-sleep-initial-ms	Initial sleep in milliseconds between retries when the connection reports a timeout.	5000	✓	✓	✓	
download-error-web-timeout-sleep-max-ms	Maximum sleep in milliseconds between retries when the connection reports a timeout.	60000	✓	✓	✓	
download-error-web-timeout-sleep-multiplicator	Multiplication factor for sleep between retries when the connection reports a timeout.	2	✓	✓	✓	
download-error-web-unauthorized-max-tries	Maximum number of tries when the connection reports an unauthorized error.	1	✓	✓	✓	
download-error-web-unauthorized-sleep-initial-ms	Initial sleep in milliseconds between retries when the connection reports an unauthorized error.	5000	✓	✓	✓	
download-error-web-unauthorized-sleep-max-ms	Maximum sleep in milliseconds between retries when the connection reports an unauthorized error.	60000	✓	✓	✓	
download-error-web-unauthorized-sleep-multiplicator	Multiplication factor for sleep between retries when the connection reports an unauthorized error.	2	✓	✓	✓	
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓	
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓	
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓	
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3.WS212\Invantive\Cache\http\gle3\shared	✓	✓	✓	
http-disk-cache-ignore-write-errors	Whether to ignore write errors to disk cache.	False	✓	✓	✓	
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓	
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓	
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓	
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓	
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓	
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
ignore-http-401-errors	Ignore HTTP 401 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
ignore-http-404-errors	Ignore HTTP 404 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
ignore-http-422-errors	Ignore HTTP 422 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
ignore-http-429-errors	Ignore HTTP 429 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
ignore-http-500-errors	Ignore HTTP 500 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
ignore-http-502-errors	Ignore HTTP 502 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
invalid-json-on-get-max-tries	Maximum number of tries when the JSON received on GET is invalid.	10	✓	✓	✓	
invalid-json-on-get-sleep-initial-ms	Initial sleep in milliseconds between retries when the JSON received on GET is invalid.	10000	✓	✓	✓	
invalid-json-on-get-sleep-max-ms	Maximum sleep in milliseconds between retries when the JSON received on GET is invalid.	60000	✓	✓	✓	
invalid-json-on-get-sleep-multiplicator	Multiplication factor for sleep between retries when the JSON received on GET is invalid.	2	✓	✓	✓	
invalid-json-on-post-max-tries	Maximum number of tries when the JSON received on POST is invalid.	1	✓	✓	✓	
invalid-json-on-post-sleep-initial-ms	Initial sleep in milliseconds between retries when the JSON received on POST is invalid.	10000	✓	✓	✓	
invalid-json-on-post-sleep-max-ms	Maximum sleep in milliseconds between retries when the JSON received on POST is invalid.	60000	✓	✓	✓	
invalid-json-on-post-sleep-multiplicator	Multiplication factor for sleep between retries when the JSON received on POST is invalid.	2	✓	✓	✓	
invantive-sql-correct-invalid-date	Whether to correct invalid dates.	False	✓	✓	✓	
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓	
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓	
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓	
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓	
limit-partition-calls-left	Minimum number of remaining API calls on a partition towards a hard limit. When below, an error is raised.	500	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
log-native-calls-to-disk	Registers native calls to data container backend as disk files.	False	✓	✓	✓	
log-native-calls-to-trace	Log native calls to data container backend on the trace.	False	✓	✓	✓	
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓	
max-odata-filters	The maximum number of OData filter elements.	100	✓	✓	✓	
max-url-length-accepted	The maximum accepted URL length before raising an error.	8000	✓	✓	✓	
max-url-length-desired	The maximum desired URL length.	8000	✓	✓	✓	
metadata-cache-max-age-sec	Maximum acceptable age in seconds for re-use of metadata.		✓	✓	✓	
partition-slot-based-rate-limit-length-ms	Total length in ms across all slots of a partition-based rate limit.	60000	✓		✓	
partition-slot-based-rate-limit-slots	Number of slots per partition-based rate limit. Null means no slot-based rate limit		✓		✓	
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓	
requested-page-size	Preferred number of rows to exchange per round trip; only effective on limited platforms such as AFAS Online		✓	✓	✓	
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓	
simulate-http-400-errors	Simulate HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-400-errors-percentage	Percentage of simulated HTTP 400 errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
simulate-http-401-errors	Simulate HTTP 401 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-401-errors-percentage	Percentage of simulated HTTP 401 errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
simulate-http-403-errors	Simulate HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-403-errors-percentage	Percentage of simulated HTTP 403 errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
simulate-http-429-errors	Simulate HTTP 429 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-429-errors-percentage	Percentage of simulated HTTP 429 errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
simulate-http-500-errors	Simulate HTTP 500 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Connectors File	Set from Log On
simulate-http-500-errors-percentage	Percentage of simulated HTTP 500 errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
simulate-http-502-errors	Simulate HTTP 502 errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-502-errors-percentage	Percentage of simulated HTTP 502 errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
simulate-http-protocol-errors	Simulate HTTP protocol errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-protocol-errors-percentage	Percentage of simulated HTTP protocol errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
simulate-http-timeout-errors	Simulate HTTP timeout errors when exchanging results with the OData endpoint.	False	✓	✓	✓	
simulate-http-timeout-errors-percentage	Percentage of simulated HTTP timeout errors when exchanging results with the OData endpoint.	0	✓	✓	✓	
slot-based-rate-limit-length-ms	Total length in ms across all slots of a slot-based rate limit.	6000	✓		✓	
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit	21	✓		✓	
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓	
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓	
use-batch-insert	Whether to use batch insert.	True	✓	✓	✓	
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓	
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓	
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓	
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓	

3.2.56 Provider TeamViewer: TeamViewer online assistance.

TeamViewer online assistance.

Code for use in settings.xml: TeamViewer

Alias: teamviewer

Status: Production

Available in Editions: Paid

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
http-get-timeout-ms	HTTP GET timeout (ms)	30000	✓	✓	✓

3.2.57 Provider Teradata: Teradata data warehousing.

Teradata data warehousing.

Code for use in settings.xml: Teradata

Alias: teradata

Status: Production

Available in Editions: Paid

Additional Driver to install: https://support.invantive.com/download-driver-teradata

3.2.58 Provider Ubl20: UBL version 2.0.

UBL version 2.0.

Code for use in settings.xml: Ubl20

Alias: ubl20

Status: Non-production

Available in Editions: Paid

Technical Documentation: http://docs.oasis-open.org/ubl/cs-UBL-2.0/xsd/

3.2.59 Provider Ubl21: UBL version 2.1.

UBL version 2.1.

Code for use in settings.xml: Ubl21

Alias: ubl21

Status: Non-production

Available in Editions: Paid

Technical Documentation: http://docs.oasis-open.org/ubl/cs1-UBL-2.1/xsd/

3.2.60 Provider Vies: AutoTask service management.

AutoTask service management.

Code for use in settings.xml: Vies

Alias: vies

Status: Non-production

Available in Editions: Paid

Technical Documentation: http://severa.visma.com/en/support/severaapi/

Non-technical Documentation: http://severa.visma.com

3.2.61 Provider VirusTotal: VirusTotal.

VirusTotal.

Code for use in settings.xml: VirusTotal

Alias: virustotal

Status: Non-production

Available in Editions: Paid

Technical Documentation: https://developers.virustotal.com/v2.0/reference/getting-started

3.2.62 Provider VismaSevera: Visma Severa project management.

Visma Severa project management.

Code for use in settings.xml: VismaSevera

Alias: severa

Status: Production

Available in Editions: Paid

Technical Documentation: http://severa.visma.com/en/support/severaapi/

Non-technical Documentation: http://severa.visma.com

Provider Attributes

The following provider attributes are available for VismaSevera:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-url	URL of Visma Severa web service		✓		✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms)	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptableage in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms)	300000	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
result-set-cache	Action: provide 'empty' to empty.			✓	
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory to answer the current query	True	✓	✓	✓
use-http-memory-cache-write	Whether to memorize HTTP responses in memory	True	✓	✓	✓
use-metadata-cache	Whether to use the metadata calculated previously Has only practical use during development on a XML provider.	True	✓	✓	✓
use-result-cache	Whether to use result sets from previous queries that can answer the current query	True	✓	✓	✓

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3.2.63 Provider WebService: Invantive Web Service HTTPS data protocol.

Invantive Web Service HTTPS data protocol.

Code for use in settings.xml: WebService

Alias: ws

Status: Production

Available in Editions: Paid

3.2.64 Provider Wikipedia: Wikipedia information.

Wikipedia information.

Code for use in settings.xml: Wikipedia

Alias: Wikipedia

Status: Non-production

Available in Editions: Paid, Open Data, Community

Provider Attributes

The following provider attributes are available for Wikipedia:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
api-url	URL to access the API.		✓		✓
download-error-internet-down-max-tries	Maximum number of tries when the Internet connection seems down during retrieval of data.		✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
download-error-internet-down-sleep-initial-ms	Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-max-ms	Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
download-error-internet-down-sleep-multiplicator	Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data.		✓	✓	✓
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-disk-cache-directory	Directory where HTTP cache is stored.	C:\Users\gle3\Invantive\Cache	✓	✓	✓
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	2592000	✓	✓	✓
http-get-timeout-ms	HTTP GET timeout (ms).	300000	✓	✓	✓
http-memory-cache-compression-level	Compression level for the HTTP memory cache, ranging from 1 (little) to 9 (intense). Default is 5.	5	✓	✓	✓
http-memory-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP memory cache.	14400	✓	✓	✓
http-post-timeout-ms	HTTP POST timeout (ms).	300000	✓	✓	✓
ignore-http-400-errors	Ignore HTTP 400 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
ignore-http-403-errors	Ignore HTTP 403 errors when exchanging results with the OData endpoint.	False	✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
join-set-points-per-request	Maximum number of values in a request when executing a join set.	60	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	True	✓	✓	✓
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	True	✓	✓	✓
use-http-memory-cache-read	Whether to use HTTP responses from previous queries stored in memory that can answer the current query.	True	✓	✓	✓
use-http-memory-cache-write	Whether to memorize HTTP responses from previous queries for use by future queries.	True	✓	✓	✓

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3.2.65 Provider Wmi: Windows Management Instrumentation.

Windows Management Instrumentation.

Code for use in settings.xml: Wmi

Alias: wmi

Status: Production

Available in Editions: Paid

3.2.66 Provider Xaa30: XML Auditfile Afrekensystemen version 3.0.

XML Auditfile Afrekensystemen version 3.0.

Code for use in settings.xml: Xaa30

Alias: xaa

Status: Production

Available in Editions: Paid

3.2.67 Provider Xaa31: XML Auditfile Afrekensystemen version 3.1.

XML Auditfile Afrekensystemen version 3.1.

Code for use in settings.xml: Xaa31

Alias: xaa

Status: Production

Available in Editions: Paid

Technical Documentation:
https://www.softwarepakket.nl/upload/auditfiles/xaa/XmlAuditfileAfrekensystemen_3.1.zip

Non-technical Documentation:
https://www.softwarepakket.nl/swpakketten/auditfiles/auditfile_afrekensystemen.php?bronw=6

Provider Attributes

The following provider attributes are available for Xaa31:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
result-set-cache	Action: provide 'empty' to empty.			✓	
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-metadata-cache	Whether to use the metadata calculated previously Has only practical use during development on a XML provider.	True	✓	✓	✓
use-result-cache	Whether to use result sets from previous queries that can answer the current query	True	✓	✓	✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
xml-directories	{res:itgen_provider_attribute_xml_directories_description}		✓	✓	✓
xml-extension	{res:itgen_provider_attribute_xml_extension_description}	*.xaa	✓	✓	✓
xml-namespaces	Comma-separated list of namespace prefixes and their URI	xaa=http://www.auditfiles.nl/XAA/3.1	✓	✓	✓

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3.2.68 Provider Xaf10: XML Auditfile Financieel version 1.0.

XML Auditfile Financieel version 1.0.

Code for use in settings.xml: Xaf10

Alias: xaf

Status: Production

Available in Editions: Paid

Technical Documentation:
https://www.oswo.nl/pluginfile.php/13189/mod_folder/content/0/AuditfileFinancieelVersie1.0.zip

Non-technical Documentation:
https://www.softwarepakket.nl/swpakketten/auditfiles/auditfile_financieel.php?bronw=6

3.2.69 Provider Xaf30: XML Auditfile Financieel version 3.0.

XML Auditfile Financieel version 3.0.

Code for use in settings.xml: Xaf30

Alias: xaf

Status: Production

Available in Editions: Paid

Technical Documentation:
https://www.oswo.nl/pluginfile.php/13189/mod_folder/content/0/XAF_V3.0.zip

Non-technical Documentation:
https://www.softwarepakket.nl/swpakketten/auditfiles/auditfile_financieel.php?bronw=6

3.2.70 Provider Xaf31: XML Auditfile Financieel version 3.1.

XML Auditfile Financieel version 3.1.

Code for use in settings.xml: Xaf31

Alias: xaf

Status: Production

Available in Editions: Paid

Technical Documentation:
https://www.oswo.nl/pluginfile.php/13189/mod_folder/content/0/_AuditfileFinancieelVersie_3_1.zip

Non-technical Documentation:
https://www.softwarepakket.nl/swpakketten/auditfiles/auditfile_financieel.php?bronw=6

3.2.71 Provider Xaf32: XML Auditfile Financieel version 3.2.

XML Auditfile Financieel version 3.2.

Code for use in settings.xml: Xaf32

Alias: xaf

Status: Production

Available in Editions: Paid

Technical Documentation:
http://www.ictplaza.nl/uploads/xml_auditfiles/xmlfinancieel/20140402_AuditfileFinancieelVersie_3_2.zip

Non-technical Documentation:
https://www.softwarepakket.nl/swpakketten/auditfiles/auditfile_financieel.php?bronw=6

Provider Attributes

The following provider attributes are available for Xaf32:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
result-set-cache	Action: provide 'empty' to empty.			✓	
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-metadata-cache	Whether to use the metadata calculated previously Has only practical use during development on a XML provider.	True	✓	✓	✓
use-result-cache	Whether to use result sets from previous queries that can answer the current query	True	✓	✓	✓
xml-directories	{res:itgen_provider_attribute_xml_directories_description}		✓	✓	✓
xml-extension	{res:itgen_provider_attribute_xml_extension_description}	*.xaf	✓	✓	✓
xml-namespaces	Comma-separated list of namespace prefixes and their URI	xaf=http://www.auditfiles.nl/XAF/3.2	✓	✓	✓

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3.2.72 Provider Xas70: XML Auditfile Salaris version 7.0.

XML Auditfile Salaris version 7.0.

Code for use in settings.xml: Xas70

Alias: xas

Status: Production

Available in Editions: Paid

Technical Documentation:
https://www.oswo.nl/pluginfile.php/13189/mod_folder/content/0/AuditfileFinancieelVersie1.0.zip

Non-technical Documentation:
https://www.softwarepakket.nl/swpakketten/auditfiles/auditfile_financieel.php?bronw=6

Provider Attributes

The following provider attributes are available for Xas70:

Code	Description	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Providers File
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	False	✓	✓	✓
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.		✓	✓	✓
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	True	✓	✓	✓
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	False	✓	✓	✓
invantive-use-cache	Whether to cache the results of a query.	True	✓	✓	✓
maximum-length-identifiers	Non-default maximum length in characters of identifier names.		✓	✓	✓
pre-request-delay-ms	Pre-request delay in milliseconds per request.	0	✓	✓	✓
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	32	✓	✓	✓
result-set-cache	Action: provide 'empty' to empty.			✓	
slot-based-rate-limit-length-ms	Length in ms of a slot-based rate limit.	60000	✓		✓
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate limit		✓		✓
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	True	✓	✓	✓
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	True	✓	✓	✓
trace-native-calls	Trace native calls to data container backend.	False	✓	✓	✓
use-metadata-cache	Whether to use the metadata calculated previously Has only practical use during development on a XML provider.	True	✓	✓	✓
use-result-cache	Whether to use result sets from previous queries that can answer the current query	True	✓	✓	✓
xml-directories	{res:itgen_provider_attribute_xml_directories_description}		✓	✓	✓
xml-extension	{res:itgen_provider_attribute_xml_extension_description}	*.xas	✓	✓	✓
xml-namespaces	Comma-separated list of namespace prefixes and their URI	xas=http://www.audit-files.nl/XAS/7	✓	✓	✓

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3.2.73 Providers

The providers described here are available on all platforms.

3.3 Configuration

3.3.1 Network

The list of available databases is maintained in so-called 'settings.xml' files. These file names all start with 'settings' and end with '.xml'.

Interactive and OS-Applications

A default file 'settings.xml' is placed in the user's home directory folder 'Invantive' during discovery of databases in interactive or OS-applications. Additional settings files may be placed in this folder too.

Web Applications

For web applications, the folder App_Data/Config must contain the settings.xml files. Additional settings files may be placed in this folder too.

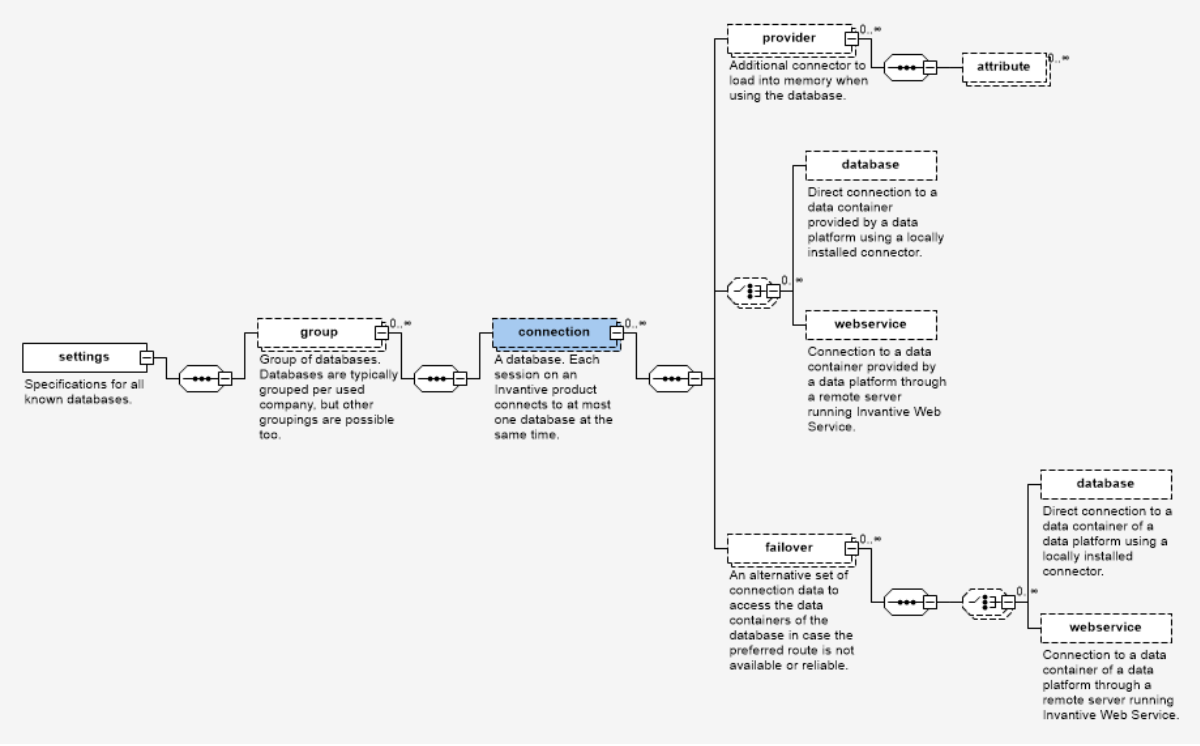
Additional Locations

Using the environment variable INVANTIVE_SETTINGS_FILE_PATH, you can specify a different file name and path for the default settings.xml file.

Settings.xml is not searched for at other locations.

Structure

The settings files all have the following structure in XML format; The full specification is available in xsd format and online.



3.3.2 License

The license key controls the availability of functionality, providers and limits of your Invantive products. A license key is associated with a license contract. A license contract has a unique code consisting of a 'L' plus a number. Each license contract can have multiple license keys.

License keys are automatically revoked when they have not been used for three months.

When a license contract concerns a subscription, the contract is automatically ended when it has not been used for three months.

Interactive and OS-Applications

For interactive and OS-applications, a file named 'invantive.lic' is searched within the user's home directory folder 'Invantive'. The license key for use of Invantive products is normally stored within the product's configuration files after loading it through the user interface of the product.

Web Applications

For web applications, a file named 'invantive.lic' is searched within the folder 'App_Data/Config'.

Additional Locations

Using the environment variable INVANTIVE_LICENSE_FILE_PATH, you can specify a deviating location for the default license file 'invantive.lic'.

3.3.3 Logging

3.3.3.1 Trace

During use of the products, a continuous stream of relevant trace messages is being sent to the trace listeners. On Microsoft Windows, you can use the Microsoft program 'dbgview.exe' to see the trace messages.

Trace options are only available when the environment variable 'INVANTIVE_TRACE_ACTIVE' is set to any non-empty value.

The trace messages are also stored in trace files when the environment variable 'INVANTIVE_TRACE_TO_FILE' is set to 'true'.

The trace messages are also sent to the stderr when the environment variable 'INVANTIVE_TRACE_STDERR' is set to 'true'.

PSQL compilation is also logged when additionally the environment variable 'INVANTIVE_TRACE_PSQL' is set to 'true'.

The default location of the trace files is the folder for temporary files on interactive and OS-applications. The default location for web applications is 'App_Data\Trace'. An alternative folder for trace files can be specified by setting the environment variable 'INVANTIVE_TRACE_FOLDER'.

The default number of seconds after which trace files in the trace folder structure are purged is 7 days. This can be altered by setting the environment variable 'INVANTIVE_TRACE_DELETE_AGE_SEC'. Only files in the configured trace folder are studied for purge; when the trace folder location is changed the software does not study files in the previous locations.

A limited amount of information is sent to the trace when an error occurs. The call stack and the natural key can be sent to trace by setting the environment variable 'INVANTIVE_TRACE_OWN_EXCEPTION_DETAILS' to 'true'.

Log to Amazon CloudWatch

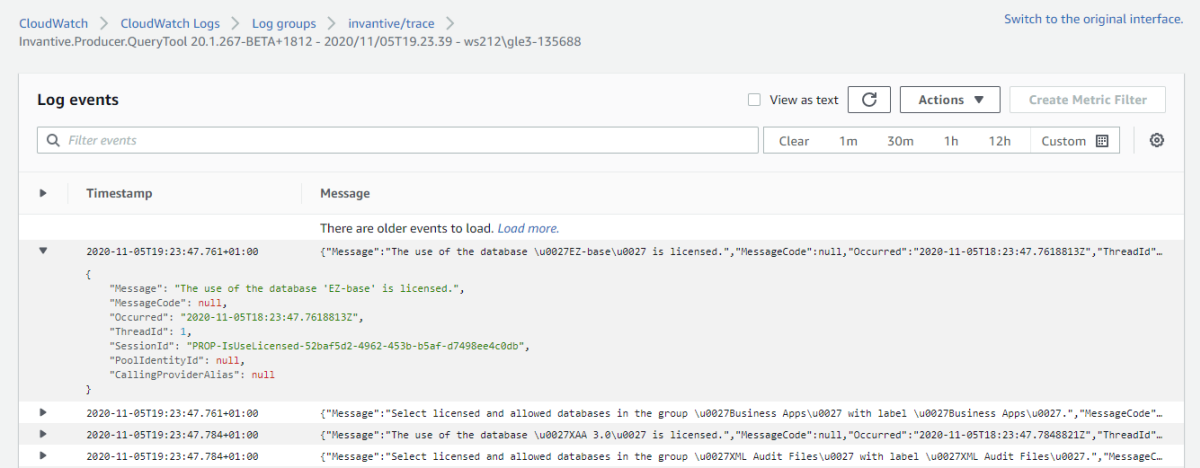
The trace can be logged to Amazon CloudWatch by configuring the following environment variables:

- INVANTIVE_TRACE_TO_CLOUDWATCH: change to True to activate logging to CloudWatch
- INVANTIVE_TRACE_CLOUDWATCH_ACCESS_KEY: the access key as generated on Amazon.
- INVANTIVE_TRACE_CLOUDWATCH_SECRET_KEY: the corresponding secret key.
- INVANTIVE_TRACE_CLOUDWATCH_REGION: the geographical region to log the messages.
- INVANTIVE_TRACE_CLOUDWATCH_GROUP: the log group to use for logging.

The identity associated with the access key must allow logging to CloudWatch.

Amazon CloudWatch logging is rate limited. Messages may not be logged during periods of intensive activity.

The log format is JSON-based as shown:



Microsoft Power BI

When used in combination with Microsoft Power BI, please note that Power BI tries to disable all trace logging by third party drivers. Invantive UniversalSQL has limited tracing available through Power BI. To activate: in Power BI go to 'Options and Settings' , then 'Options' and choose 'Diagnostics' in the Global group. Place a checkmark next to 'Enable tracing'. This setting will remain effective till you restart Microsoft Power BI.

Direct Trace

Trace messages generated by Invantive can also be logged to file outside the Microsoft .NET trace mechanism. This is called "direct trace".

The advantages of direct trace are:

- Direct trace starts very early in program execution, even before the normal trace mechanism is activates. It therefore allows analysis of start-up problems.
- Direct trace works independent of the normal trace mechanism. It is therefore available even when the environment manages Microsoft .NET trace, such as with Power BI.

The disadvantages of direct trace are:

- The use of direct trace reduces performance significantly. Therefore only enable direct trace when needed.

To activate direct trace, please set the environment variable 'INVANTIVE_DIRECT_TRACE_FILE_PATH' to the file path of the intended log file.

It is recommended to include the placeholder '{PID}' in the file name when you expect to run multiple OS-processes with direct trace.

A commonly used setting for INVANTIVE_DIRECT_TRACE_FILE_PATH is `c:\temp\invantive-direct-trace-{PID}.log`.

Mac OSX and Linux

Set the environment variable `COMPlus_DebugWriteToStdErr` to write trace messages to the console of Microsoft .NET Core applications:

```
export COMPlus_DebugWriteToStdErr=1
```

Note that the Microsoft .NET Core implementation on Mac OSX and Linux are restrained in the default stack size. On StackOverflowException such as with Exact Online, please increase stacksize first using:

```
export COMPlus_DefaultStackSize=10000000
```

3.3.3.2 Execution Log

Every completed execution of an Invantive product appends an entry to the local execution log. The execution log is in XML-format and located by default at `%USERPROFILE%\executionlog.xml`.

The name and location of the execution log can be altered by placing the full path and file name in the environment variable `INVANTIVE_EXECUTION_LOG_FILE`.

The root tag `EXECUTIONLOGS` contains an `EXECUTIONLOG` for every execution once finished. The following elements are available:

- VERSION: the record format, always '1'.
- MESSAGEUID: the UID of the message as registered on Invantive Cloud.
- IID: the Invantive Installation ID of the device.
- SESSIONID: the ID of the session.
- LICENSECODE: the code of the subscription contract.
- LICENSEKEYID: the numeric ID of the license key.
- MACHINENAME: the name of the device.
- EXECUTABLENAME: the name and path of the executable.
- APPLICATIONNAME: the name of the Invantive application.
- APPLICATIONVERSION: the version of the Invantive application.
- USERNAME: the name of the operating system user.

- PROCESSID: the ID of the OS process.
- STARTTIMEUTC: the start time of the process (UTC).
- ENDTIMEUTC: the end time of the process (UTC).
- EXITCODE: the exit code of the process.
- EXITLEVEL: the textual description of the exit code.
- EXITMESSAGECODE: the message code associated with the execution exit.
- ISHEADLESS: whether the proces ran headless.
- COMPUTERMANUFACTURER: the name of the device's manufacturer.
- COMPUTERMODEL: the model of the device.
- OSVERSION: the version of the operating system.
- PHYSICALMEMORYINBYTES: the number of bytes in the physical memory.

3.3.4 Debugging

Invantive software products contain a number of features to aid analysis of problems.

3.3.4.1 Translations

During use of the products, the user interface is adapted to the user interface language based upon the environment.

The translation involves replacing so-called "resource codes" by their translation.

The translation can be disabled by setting the environment variable 'INVANTIVE_NO_TRANSLATE' to a non-empty value.

4 Invantive SQL for Windows

The Windows-specific features of Invantive SQL are documented in this section.

4.1 Internal Consistency Checks

Invantive SQL executes many internal consistency to ensure correctness of the results. Some of these consistency checks are only done during testing phases for reasons such as performance. These checks are automatically checked on testing environments and excluded on production environments.

However, during test or production use you can explicitly disable or enable these checks by setting environment variables to the value 'true' or 'false'. The checks can individually be disabled or enabled, or all together.

To explicitly enable all consistency checks, set the environment variable `INVANTIVE_CHECK_ALL` to true. To explicitly disable all consistency checks, set the environment variable `INVANTIVE_CHECK_ALL` to false.

First determine with help of support the message code to explicitly enable or disable a consistency check. Then set the environment variable `INVANTIVE_CHECK_<message code>` to the correct value.

4.2 OS Upgrade Checks

Invantive SQL executes many internal consistency to ensure correctness of the results. A check is made that the device is patched with recent updates upon start on Windows platforms. This check ensures that known security risks will have been fixed within months or else Invantive SQL will not run.

However, for some enterprise environments it can be necessary to explicitly disable or enable these checks by setting environment variables to the value 'true' or 'false'.

To explicitly enable all OS upgrade checks, set the environment variable `INVANTIVE_CHECK_OS_UPGRADES` to true. To explicitly disable it, set the environment variable `INVANTIVE_CHECK_OS_UPGRADES` to false.

The default setting used when no deviating value is configured is true.

5 application.xml

The application.xml file in the `App_Data/Config` folder allows configuration of the behavior of the application.

The main structure is:

```
<?xml version="1.0" encoding="utf-8" ?>
<WebApplicationSetting>
...
</WebApplicationSetting>
```

The following elements are available within `WebApplicationSetting`:

- `LogRequestProgress`: whether to log request to the `App_Data/Log` folder; unset, true or false (unset defaults to false).
- `LogTraceToFile`: whether to log trace events to the default files; unset, true or false (unset defaults to false).
- `AccessControl`: access control limitations (unset defaults to no restrictions).
- `RateLimitControl`: limitations on rate of use (unset defaults to no restrictions).

5.1 Access Control Limitations

The access control limitations control what requests may be served and what should return an error.

The element `DefaultAllow` specifies what the default action should be when no rule matches; unset, true or false, with unset defaults to true.

The list `AccessControlList` consists of multiple `AccessControlElement` elements.

AccessControlElement

Each `AccessControlElement` has the following elements, in which the first matching rule applies:

- `Context`: context to match against. A trailing '*' matches any sequence of characters. Unset defaults to always.
- `Description`: textual description of the rule. Has no further functional meaning.

- `Url`: URL to match against. A trailing '*' matches any sequence of characters. Unset defaults to always.
- `ErrorCode`: deviating error code to be returned upon rejection.
- `ErrorMessage`: deviating error message to be returned upon rejection.
- `Allow`: whether the rule causes rejection (false) or acceptance (true).
- `ValidFrom`: date at which the rule starts being applicable; unset defaults to always.
- `ValidTo`: date after which the rule no longer applies; unset defaults to always.
- `LogOnCode`: user log on code; unset always matches.
- `DataContainerId`: ID of a data container; unset always matches.
- `IpAddressClientCidr`: an IP address mask with number of significant bits, such as 8.8.0.0/16; unset always matches.

5.2 Rate Limits

The rate limitations control what how many requests may be served and when a delay should be introduced or an error returned.

The list `RateLimitControlElementList` consists of multiple ordered `RateLimitControlElement` elements.

The list `RateLimitControlSlotList` consists of multiple unordered `RateLimitControlSlot` elements.

RateLimitControlElement

Each `RateLimitControlElement` has the following elements, in which the first matching rule applies:

- `SlotName`: name of the rate limit slot to apply.
- `Context`: context to match against. A trailing '*' matches any sequence of characters. Unset defaults to always.
- `Description`: textual description of the rule. Has no further functional meaning.
- `Url`: URL to match against. A trailing '*' matches any sequence of characters. Unset defaults to always.
- `ValidFrom`: date at which the rule starts being applicable; unset defaults to always.
- `ValidTo`: date after which the rule no longer applies; unset defaults to always.
- `LogOnCode`: user log on code; unset always matches.
- `DataContainerId`: ID of a data container; unset always matches.
- `IpAddressClientCidr`: an IP address mask with number of significant bits, such as 8.8.0.0/16; unset always matches.

RateLimitControlSlot

Each `RateLimitControlSlot` has the following elements, in which the first matching rule applies:

- `Name`: name of the slot (required).
- `Description`: textual description of the rule. Has no further functional meaning.
- `ActionsPerSecond`: maximum number of actions per second; reset on every second switch. Unset defaults to no limitations.
- `ActionsPerMinute`: maximum number of actions per minute; reset on every minute switch. Unset defaults to no limitations.
- `ActionsPerHour`: maximum number of actions per hour; reset on every hour switch. Unset defaults to no limitations.
- `DelayMsOnOverflowSecond`: number of milliseconds to delay an answer when the second level rate limited is exceeded. Unset defaults to no delay.
- `DelayMsOnOverflowMinute`: number of milliseconds to delay an answer when the minute level rate limited is exceeded. Unset defaults to no delay.
- `DelayMsOnOverflowHour`: number of milliseconds to delay an answer when the hour level rate limited is exceeded. Unset defaults to no delay.
- `FailOnOverflowSecond`: whether to fail on an overflow on the second level rate limit. Unset defaults to true (fail).
- `FailOnOverflowMinute`: whether to fail on an overflow on the minute level rate limit. Unset defaults to true (fail).
- `FailOnOverflowHour`: whether to fail on an overflow on the hour level rate limit. Unset defaults to true (fail).

5.3 Application.xml Sample

The following sample implements the following settings:

- Log all requests to disk.
- Log trace events to the default file location.
- Allow access from any location at any moment.
- Limit calls to '/bras' to at most 2 calls per second. On failure, introduce an additional delay of 250 ms.
- Limit calls to '/Ping' to at most 50 calls per minute. On failure, introduce an additional delay of 6.000 ms.

Code:

```
<?xml version="1.0" encoding="utf-8" ?>
<WebApplicationSetting>
  <LogRequestProgress>true</LogRequestProgress>
  <LogTraceToFile>true</LogTraceToFile>
  <AccessControl>
    <DefaultAllow>true</DefaultAllow>
  </AccessControl>
  <RateLimitControl>
    <RateLimitControlElementList>
```

```
        <RateLimitControlElement>
          <Url>/bras</Url>
          <SlotName>2persec</SlotName>
        </RateLimitControlElement>
        <RateLimitControlElement>
          <Url>/Ping*</Url>
          <SlotName>50permin</SlotName>
        </RateLimitControlElement>
      </RateLimitControlElementList>
      <RateLimitControlSlotList>
        <RateLimitControlSlot>
          <Name>2persec</Name>
          <ActionsPerSecond>2</ActionsPerSecond>
          <DelayMsOnOverflowSecond>250</DelayMsOnOverflowSecond>
        </RateLimitControlSlot>
        <RateLimitControlSlot>
          <Name>50permin</Name>
          <ActionsPerMinute>50</ActionsPerMinute>
          <DelayMsOnOverflowMinute>6000</DelayMsOnOverflowMinute>
        </RateLimitControlSlot>
      </RateLimitControlSlotList>
    </RateLimitControl>
  </WebApplicationSetting>
```

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