23.0

Invantive Business

Reference Manual

Contents

1 Invantive Business Server

Invantive Business Server is an FTP-bridge between data contained in your cloud- and on-premise business platforms and an FTP client such as Windows Explorer. It facilitates mass upload and download of files. Your business platform can be any of the supported platforms of Invantive SQL, such as:

- Exact Online
- Teamleader
- Salesforce
- Visma.net
- Flat files
- Oracle
- PostgreSQL
- MySQL
- Teradata
- IBM DB2
- PayPal
- and logic coded in Invantive Procedural SQL and/or native database logic.

1.1 Installation

The installation of Invantive Business Server requires a .NET Framework 4.7.2 or .NET Core 2.x supported Windows device. Execute the following the following steps:

- Download InvantiveBbusiness Server from https://download.invantive.com.
- Execute the MSI file.
- Click 'Next'.
- Click 'Next'.
- Click 'Install'.
- Click 'Finish'.

1.2 License

Invantive Business Server requires an applicable subscription of Invantive. The existence of such a subscription is verified using a license key file. Perform the following steps to make the license key available:

- Copy the full contents of the license text in your license mail to the clipboard using Ctrl-A or Select All and then Copy.
- Run notepad from the start menu.
- Paste the license text into notepad.

- Save the file as 'invantive.lic' in the folder %USERPROFILE%\invantive', which typically evaluates to the `invantive` subfolder of your user profile folder such as `c:\users\my-name\invantive`.
- The file can also be saved to a different folder, when the folder name is specified as the value of the environment variable `INVANTIVE_LICENSE_FILE_PATH`.

1.3 Configuration

Invantive Business Server is configured using two JSON files whose location is specified at Start 10.

The first JSON file specifies the members: the user accounts and their credentials.

The second JSON file specifies per folder the associated Invantive SQL statements. The file system structure is fully dynamic and can reflect the company's business data, such as a folder per customer, each customer's folder filled with the customer's documents and a document with a historical overview of it's sales.

1.3.1 Members

The members file specifies in JSON format a list of user accounts, their passwords and their definition of the backing data container. Each member consists of four elements:

- Username: user name for FTP access.
- Password: password of the FTP user.
- Provider: code name of an available provider.
- ConnectionString: data required to establish the connection to the data container, including authentication.

The provider and connection string are identical to the definition of a data container in an Invantive SQL database definition in a settings*.xml file. The provider code can be found in the data model documentation as 'Code for use in settings.xml'. The connection string consists of key/value pairs. The available key names can be found also in the data model documentation under the heading 'Connector Attributes'.

Example Exact Online

The following members JSON file specifies two user accounts, each connecting to another Exact Online environment using the Code Grant flow:

```
{ "Members":
  [ { "Username": "ftp-user-code-1"
    , "Password": "something-secret"
    , "Provider": "ExactOnlineAll"
    , "ConnectionString": "api-
url=https://start.exactonline.nl;api-client-id=abc-def-ghi;api-
redirect-
url=https://exactonlineclientredirect.invantive.com;api-client-
secret=secret;api-refresh-token=abcdefghijklmnopqrstuvwxyz"
    }
  , { "Username": "ftp-user-code-2"
    , "Password": "more-secret-stuff"
    , "Provider": "ExactOnlineAll"
```

```
    , "ConnectionString": "api-
url=https://start.exactonline.nl;api-client-id=...;api-redirect-
url=https://exactonlineclientredirect.invantive.com;api-client-
secret=secret;api-refresh-token=..."
    }
  ]
}
```

1.3.2 File System Structure

The file system structure of the FTP server is dynamically established using Invantive SQL queries. For the folder structure, a hierarchical structure of JSON specifies the structure in which values from an enclosing folder can be used on deeper levels to limit the folders and files to those applicable to the parent folder. For the file structure, an Invantive SQL statement specifies the contents of the file and another SQL statement specifies the action to execute on upload.

Each folder can contain:

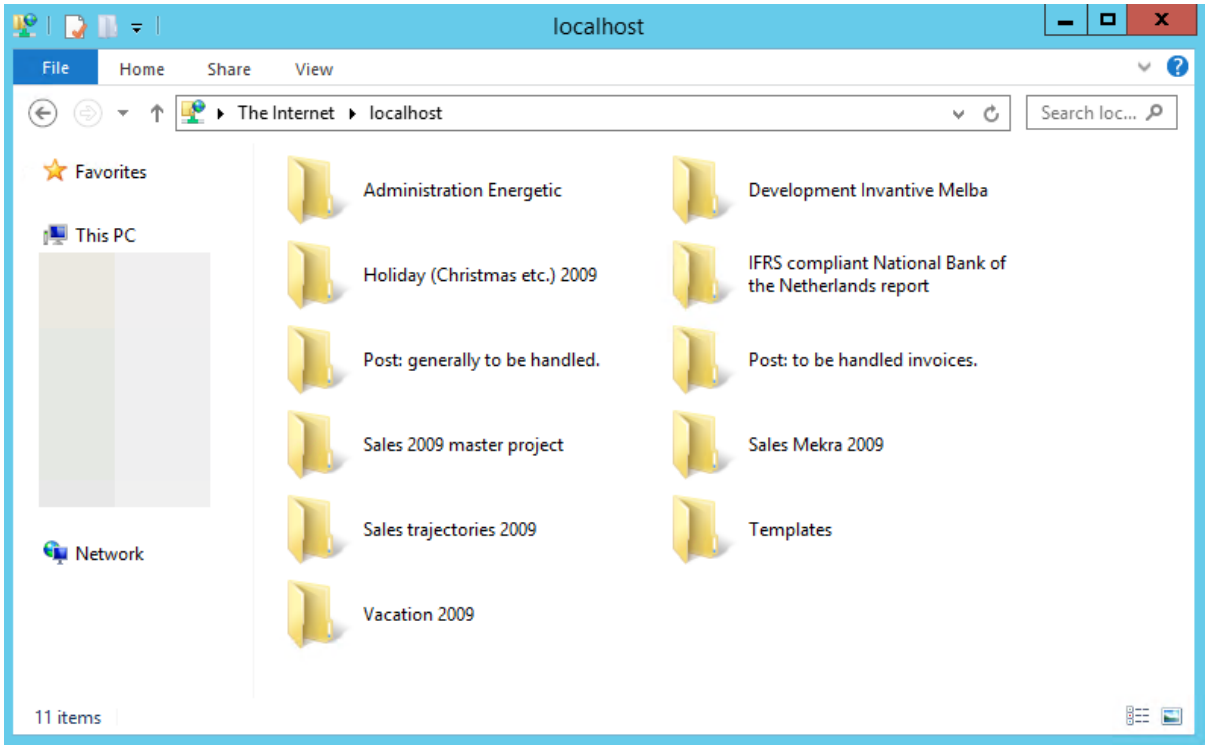
- `SupportsListing`: a boolean indicating whether a user can list the contents of the folder (default: false).
- `SupportsDownloading`: a boolean indicating whether a user can download files (default: false).
- `SupportsCreating`: a boolean indicating whether a user can create files (default: false).
- `ListSqlStatement`: an Invantive SQL query to define the folders and files listed with at least a column named `name` and `type` (being either `DIR` or `FILE`). Additionally, a value can be used to uniquely identify the row with a column name `code`. Files can have file size and creation and modification date/time using the column names `FILE_SIZE`, `DATE_CREATED` and `DATE_MODIFIED`. Each entry is tagged with tuples of name and values of all columns returned by the query.
- `CreateSqlStatement`: an Invantive SQL statement run upon FTP upload which at least accepts bind parameter names `FILE_NAME` and `FILE_CONTENTS`. All tag names and values from the parent levels are also provided as bind parameters.
- `DownloadSqlStatement`: an Invantive SQL statement run upon FTP download which at least accepts bind parameter names `FILE_NAME` and `FILE_CONTENTS`. All tag names and values from the parent levels are also provided as bind parameters.
- Nested folders with the same possibilities.

The root level in the JSON can contain also:

- `SystemName`: the name of the system to display upon connect.
- `Version`: the version of the system to display upon connect.

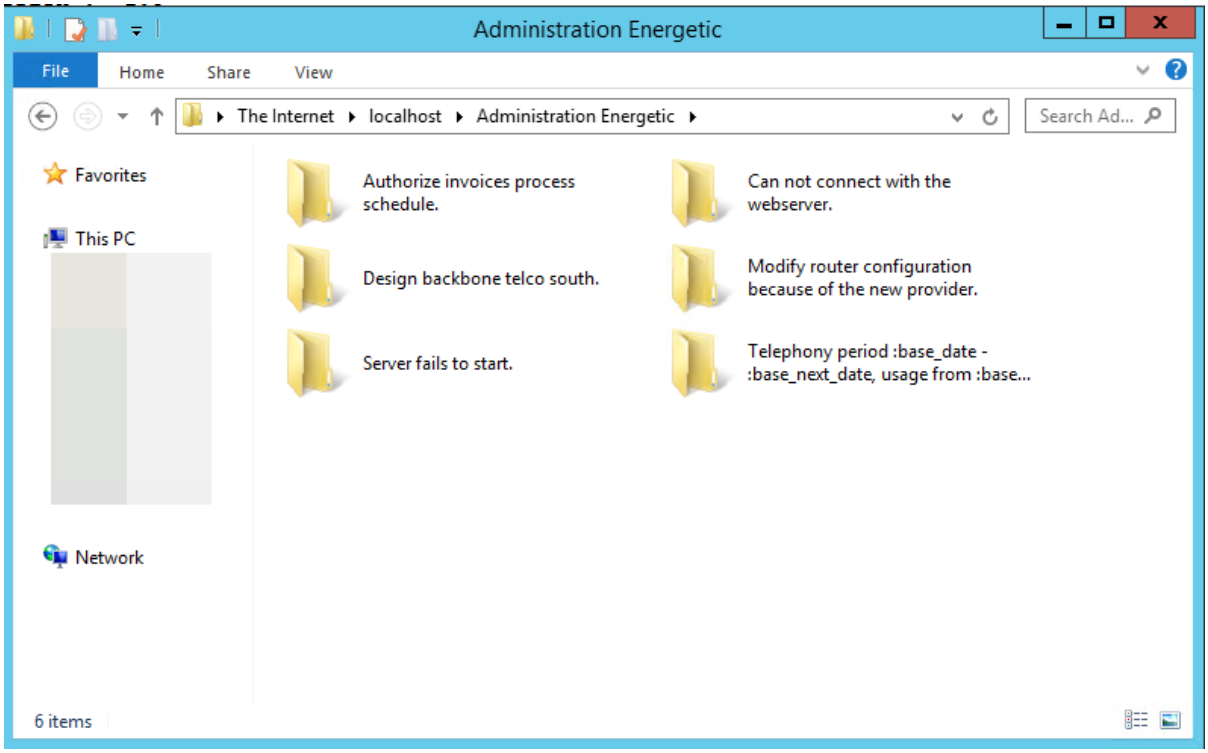
1.3.3 File System Stub

The following sample specifies a folder structure on the Invantive Dummy connector, which contains project stubs:



Dynamic list of projects on FTP server.

Each folder contains a number of tasks on each project:



Dynamic list of tasks per project on FTP server.

The levels are:

- Root folder
- Containing projects.
- Each containing tasks on the project.

The root folder with projects is defined using the following query:

```
select to_char(pjt.pjt_id) code
,      pjt.pjt_naam name
,      'DIR' type
from   projects pjt
```

Each project folder with individual tasks is defined using the following query:

```
select to_char(tak.tak_id) code
,      tak.tak_omschrijving name
,      'DIR' TYPE
from   tasks tak
where  tak.pjt_id = to_number(:code)
```

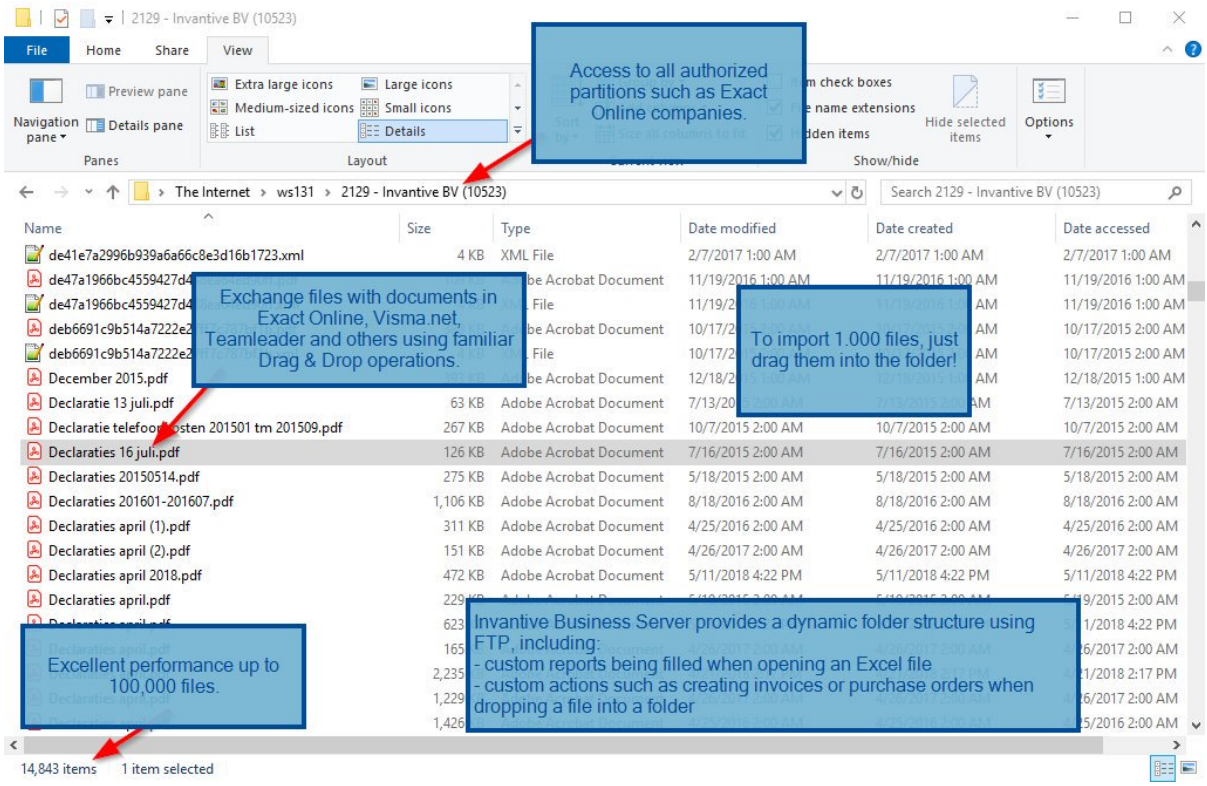
1.3.4 File System Stub (JSON)

Contents of the JSON file setup.config:

```
{ "SystemName": "Dummy"
, "Version": "1.0"
, "SupportsListing": "true"
, "ListSqlStatement": "select to_char(pjt.pjt_id) code,
pjt.pjt_naam name, 'DIR' type from projects pjt"
, "Folder":
  { "SupportsListing": "true"
  , "ListSqlStatement": "select to_char(tak.tak_id) code,
tak.tak_omschrijving name, 'DIR' TYPE from tasks tak where
tak.pjt_id = to_number(:code)"
  }
}
```

1.3.5 File System Exact Online

The following sample specifies a folder structure for Exact Online consisting of a number of levels as shown in the picture:



Exact Online FTP Server using Invantive Business Server

The levels are:

- Root folder
- Containing Exact Online companies.
- Each containing a folder 'Accounts'.
- Each containing all document attachment files of that account.

In more detail, the root folder has the following structure:

- The root folder allows the user to get a list of files and folders contained as specified by `SupportsListing`.
- The root folder contains solely directories as specified by the type 'DIR' in the query.
- One folder exists per Exact Online company listed in the table `SystemDivisions` using the query in `ListSqlStatement`:

```
select sdn.Code code, sdn.Label name, 'DIR' type, sdn.code
division from SystemDivisions sdn
```

Each Exact Online company folder has a query that specifies a folder named 'Accounts':

```
select :code CODE, 'Accounts' name, 'DIR' type
```

The Accounts folder contains all customers and suppliers using:

```
--
-- Switch to Exact Online company of the parent parent folder.
--
use :code;
--
-- Get a list of account folders, irrespective whether they have
```

```
-- any associated documents.
--
select to_char(id) code
,      name
,      'DIR' type
,      Division
from   ExactOnlineREST..Accounts
```

The Accounts folder contains all available documents on an account using the (annotated) query:

```
--
-- Select the Exact Online company using the division from the
parent folder.
--
use :division;
--
-- Get list of the attachments on the account withut
-- retrieving the actual contents.
--
select /*+ http_disk_cache(false) http_memory_cache(false) */
to_char(dae.ID) code
,      dae.FileName name
,      dct.Created date_created
,      dct.Modified date_modified
,      dae.FileSize file_size
,      'FILE' type
,      dct.Division Division
from   ExactOnlineREST.Documents.DocumentAttachmentsBulk dae
join   ExactOnlineREST.Documents.DocumentsBulk dct
on     dct.id = dae.Document
and    dct.Account = :code
```

When a user downloads a document, the following code is executed:

```
use :division;
select coalesce(dae.Attachment, dae.AttachmentFromUrl)
file_contents
from   ExactOnlineREST.Documents.DocumentAttachmentFiles dae
where  dae.id = :code
```

When a user uploads a document, the following code is executed to upload the document into Exact Online:

```
--
-- Switch to the right Exact Online company.
--
use :division;
--
-- Invantive Procedural SQL executed on upload file to FTP
server.
-- Uploads the file into Exact Online as a document of type
-- 'Attachment'.
--
declare
  l_dct_subject       varchar2;
  l_dct_type          pls_integer := 183; /* Attachment. */
  l_dct_category_name varchar2    := 'General';
  l_dct_date          date;
```

```
  l_account           varchar2    := :code;
begin
  --
  -- Generate unique subject for the document. The file
  -- is added as an attachment to the document.
  --
  l_dct_subject := :file_name || ' ' || to_char(sysdate,
'YYYYMMDDHH24MISS') || '-' || newid();
  l_dct_date    := trunc(sysdate);
  --
  -- Create document.
  --
  insert into exactonlinerest..documents
  ( division
  , account
  , body
  , category
  , contact
  , documentdate
  , financialtransactionentryid
  , opportunity
  , project
  , salesinvoicenumber
  , salesordernumber
  , shopordernumber
  , subject
  , type
  )
  select :division
  ,      l_account
  ,      'Invantive Business Server' body
  ,      dcy.id
  ,      null
  ,      l_dct_date
  ,      null
  ,      null
  ,      null
  ,      null
  ,      null
  ,      null
  ,      l_dct_subject subject
  ,      l_dct_type type
  from   DocumentCategories dcy
  where  dcy.division    = :division
  and    dcy.description = l_dct_category_name
  ;
  --
  -- Attach a file to the document in Exact Online.
  --
  -- Contents of the file will match the value of the bind
  -- parameter :file_contents, whereas :file_name is filled
  -- with the name of the file uploaded to the FTP server.
  --
  -- The document previously created in Exact Online is matched
  -- using the unique subject.
```

```
  --
  insert into exactonlinerest..documentattachmentfiles
  ( division
  , document
  , attachment
  , filename
  )
  select :division
  ,      dct.id
  ,      :file_contents
  ,      :file_name
  from   exactonlinerest..documents dct
  where  dct.division     = :division
  and    dct.subject      = l_dct_subject
  and    dct.documentdate = l_dct_date
  ;
end;
```

1.3.6 File System Exact Online (JSON)

Contents of the JSON file setup.config:

```
{ "SystemName": "ExactOnline"
, "Version": "1.0"
, "SupportsListing": "true"
, "ListSqlStatement": "select sdn.Code code, sdn.Label name,
'DIR' type from SystemDivisions sdn"
, "Folder":
  { "SupportsListing": "true"
  , "ListSqlStatement": "select :code code, 'Accounts' name,
'DIR' type"
  , "Folder":
    { "SupportsListing": "true"
    , "ListSqlStatement": "use :code; select to_char(id) code,
name, 'DIR' type, Division from ExactOnlineREST..Accounts"
    , "Folder":
      { "SupportsListing": "true"
      , "ListSqlStatement": "use :division; select /*+
http_disk_cache(false) http_memory_cache(false) */
to_char(dae.ID) code, dae.FileName name, dct.Created
date_created, dct.Modified date_modified, dae.FileSize
file_size, 'FILE' type, dct.Division Division from
ExactOnlineREST.Documents.DocumentAttachmentsBulk dae join
ExactOnlineREST.Documents.DocumentsBulk dct on dct.id =
dae.Document and dct.Account = :code"
      , "SupportsDownloading": "true"
      , "DownloadSqlStatement": "use :division; select
coalesce(dae.Attachment, dae.AttachmentFromUrl) file_contents
from ExactOnlineREST.Documents.DocumentAttachmentFiles dae where
dae.id = :code"
      , "SupportsCreating": "true"
```

```
      , "CreateSqlStatement": "use :division;\r\n\r\ndeclare\r\n
 l_dct_subject       varchar2;\r\n  l_dct_type
pls_integer := 183; /* Attachment. */\r\n  l_dct_category_name
varchar2    := 'General';\r\n  l_dct_date          date;\r\n
l_account           varchar2    := :code;\r\nbegin\r\n
l_dct_subject := :file_name || ' ' || to_char(sysdate,
'YYYYMMDDHH24MISS') || '-' || newid();\r\n  l_dct_date    :=
trunc(sysdate);\r\n  --\r\n  insert into
exactonlinerest..documents\r\n  ( division\r\n  , account\r\n  ,
body\r\n  , category\r\n  , contact\r\n  , documentdate\r\n  ,
financialtransactionentryid\r\n  , opportunity\r\n  ,
project\r\n  , salesinvoicenumber\r\n  , salesordernumber\r\n  ,
shoporder number\r\n  , subject\r\n  , type\r\n  )\r\n  select
:division\r\n  ,      l_account\r\n  ,      'Invantive Business
Server' body\r\n  ,      dcy.id\r\n  ,      null\r\n  ,
l_dct_date\r\n  ,      null\r\n  ,      null\r\n  ,
null\r\n  ,      null\r\n  ,      null\r\n  ,      null\r\n  ,
    l_dct_subject subject\r\n  ,      l_dct_type type\r\n  from
  DocumentCategories dcy\r\n  where  dcy.division    =
:division\r\n  and    dcy.description = l_dct_category_name\r\n
 ;\r\n  --\r\n  insert into
exactonlinerest..documentattachmentfiles\r\n  ( division\r\n  ,
document\r\n  , attachment\r\n  , filename\r\n  )\r\n  select
:division\r\n  ,      dct.id\r\n  ,      :file_contents\r\n  ,
    :file_name\r\n  from   exactonlinerest..documents dct\r\n
where  dct.division     = :division\r\n  and    dct.subject
 = l_dct_subject\r\n  and    dct.documentdate = l_dct_date\r\n
;\r\nend;"
      }
    }
  }
}
```

1.4 Start

Start Invantive Business Server by running it either from a command-line or from an unattended executable starter. The following command-line arguments are supported:

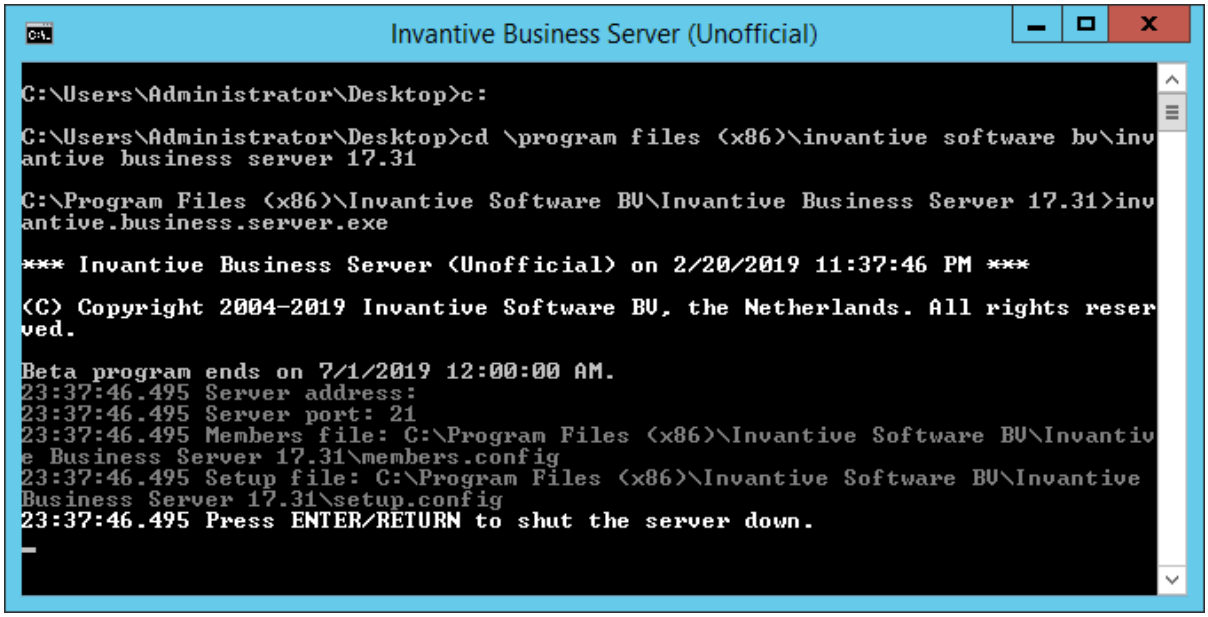
- members: name of file containing pre-defined users, their password and the associated Invantive database connection string (see Members) 2. Defaults to `members.config` in the installation folder.
- setup: name of file containing the dynamic FTP folder and file structures, defined using Invantive SQL statements for retrieval and uploads (see File System Structure 3). Defaults to `setup.config` in the installation folder.
- usage: print the command-line arguments and their meaning.

The command-line arguments are shown when the program is run without arguments:

```
C:\Program Files (x86)\Invantive Software BV\Invantive Business Server 17.31>.\I
nvantive.Business.Server.exe

*** Invantive Business Server (Unofficial) on 2/20/2019 8:35:38 PM ***

(C) Copyright 2004-2019 Invantive Software BV, the Netherlands. All rights reser
ved.

Beta program ends on 7/1/2019 12:00:00 AM.
PROGRAM --members FILE --setup FILE --usage

--member: specifies the file containing pre-defined users, their passwords and t
he associated connection string.
--setup: specifies the file containing the dynamic FTP folder and file structure
 using Invantive SQL statement for retrieval and uploads.
--usage: displays this text.
An unhandled error occurred.
Invantive.Basics.InvantiveSystemException: bussvr001: Unknown command line argum
ent ''.
   at IBS.Z.F(String[] )

C:\Program Files (x86)\Invantive Software BV\Invantive Business Server 17.31>.\I
```

Print command-line arguments of Invantive Business Server.

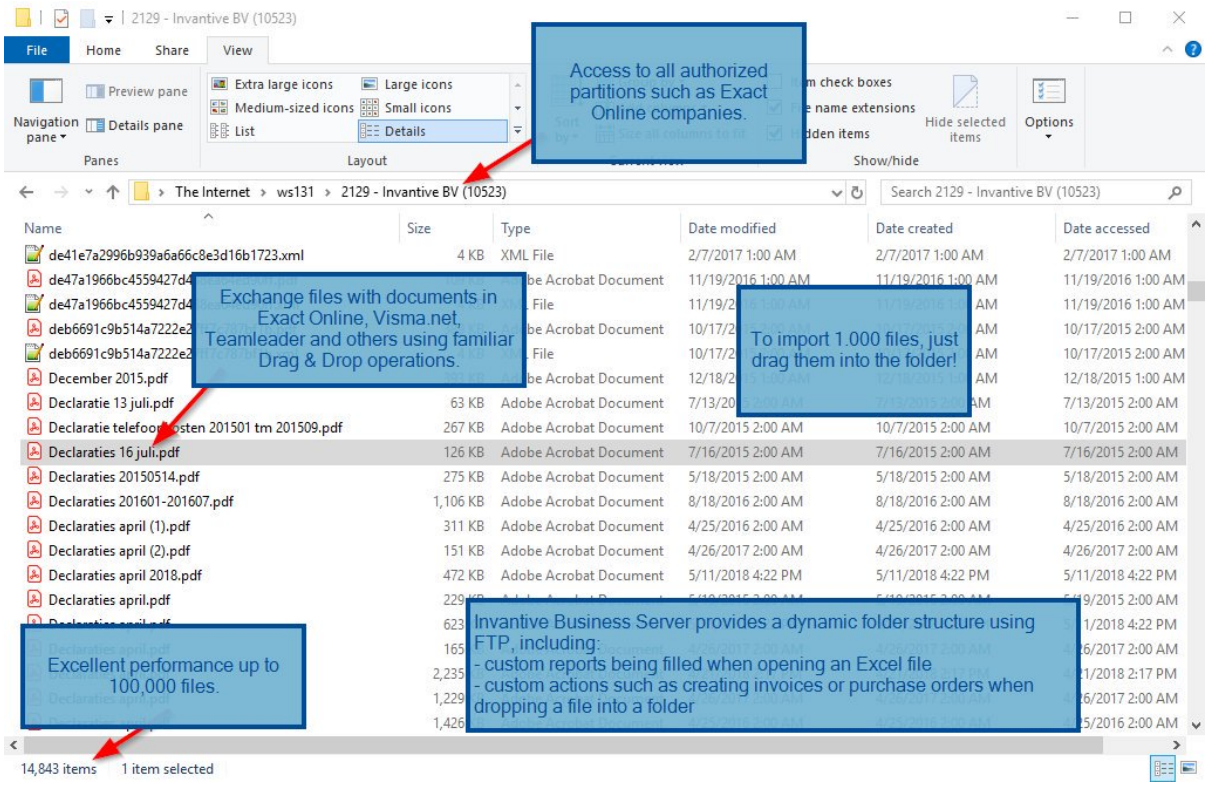
When the program is provided with the locations of existing files, the server process will start such as:



Invantive Business Server running.

1.5 Download Files

To download files from the Invantive Business Server, just enter the FTP protocol name followed by the host name in Windows Explorer.



Download files

1.6 Upload Files

To upload files to Invantive Business, triggering the specified actions, just drag & drop files into the FTP server using Windows Explorer or another FTP client.

2 Invantive Business for Outlook

Invantive Business for Outlook is an add-on on top of Microsoft Outlook. It provides access to business data contained in one or more environments of:

- Exact Online
- Visma.net
- XML audit files
- business data stub.

3 Invantive Business for Windows

Invantive Business for Windows is an application running outside of Microsoft Office. It provides access to business data contained in one or more environments of:

- Exact Online
- Visma.net
- XML audit files
- business data stub.

4 Invantive Basics

4.1 Configuration

4.1.1 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`.

4.1.2 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.

4.1.3 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.

4.1.4 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.

4.1.5 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.

4.1.6 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.

4.1.7 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.

5 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 18 depicts the possibilities.

5.1 Language

5.1.1 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.

5.1.2 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'.

5.1.3 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.

5.1.4 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.

5.1.5 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.

5.1.6 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.

5.1.7 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.

5.1.8 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.

5.1.9 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 ...)'.

5.1.10 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.

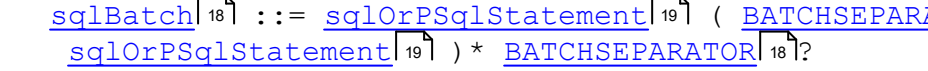
5.1.11 Transactions

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'.

5.1.12 Grammar

sqlBatch:

sqlOrPSqlStatement BATCHSEPARATOR BATCHSEPARATOR



no references

sqlOrPSqlStatement:

sqlStatement pSqlStatement
sqlOrPSqlStatement 19
::= sqlStatement 19
| pSqlStatement 106

referenced by:

- sqlBatch 18

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 19
::= selectStatement 19
| insertStatement 49
| updateStatement 51
| deleteStatement 51
| ddlStatement 42
| setStatement 46
| useStatement 48
| transactionStatement 46
| executeFileStatement 47

referenced by:

- pSqlStatement 106
- sqlOrPSqlStatement 19

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 19
::= uniqueSelectStatement 20
setOperatorSelectStatement 20 * orderBy 33 ? limitClause 25 ?

referenced by:

- arithmeticExpression 59
- createTableStatement 45
- embeddedSelect 25
- inSelectStatement 20
- insertStatement 49
- pSqlForRecordLoopStatement 109
- sqlStatement 19
- useStatement 48

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 20
::= selectStatement 19

referenced by:

- predicateExpression 56

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 20
::= (UNION 18 ALL 18 ? | MINUS_C 18 | INTERSECT 18)
uniqueSelectStatement 20

referenced by:

- selectStatement 19

uniqueSelectStatement:

Retrieves a data set from one or more data containers.

select executionHints distinct topClause selectList INTO variableList FROM dataSource joinStatements whereClause groupBy
uniqueSelectStatement 20
::= select 21 executionHints 21 ? distinct 25 ? topClause 25 ? selectList 39 (INTO 50 variableList 24) ? FROM 18 dataSource 21 joinStatements 34 ? whereClause 34 ? groupBy 33 ?

referenced by:
- selectStatement 19
- setOperatorSelectStatement 20

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 21
::= (tableOrFunctionSpec 26 | embeddedSelect 25 | xmlTableSpec 27 | csvTableSpec 29 | jsonTableSpec 28) aliased 39 ?

referenced by:
- joinStatement 35
- uniqueSelectStatement 20

select:

SELECT
select 21 ::= SELECT 21

referenced by:
- uniqueSelectStatement 20

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 21
::= EXECUTION_HINT_START 18 (joinSet 23 | noJoinSet 24 | ods 22 | resultSetName 23 | lowCost 24 | httpDiskCache 21 | httpMemoryCache 22) * EXECUTION_HINT_END 18

referenced by:
- uniqueSelectStatement 20

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[21]
          ::= HTTP_DISK_CACHE[18] ( PARENTHESIS_OPEN[18]
 booleanConstant[104] ( COMMA[18] booleanConstant[104] ( COMMA[18]
 intervalConstant[103] )? )? PARENTHESIS_CLOSE[18] )?
```

referenced by:

- executionHints[21]

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[22]
          ::= HTTP_MEMORY_CACHE[18] ( PARENTHESIS_OPEN[18]
 booleanConstant[104] ( COMMA[18] booleanConstant[104] ( COMMA[18]
 intervalConstant[103] )? )? PARENTHESIS_CLOSE[18] )?
```

referenced by:

- executionHints[21]

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 In-

vantive 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 22        ::= ODS 22 ( PARENTHESIS_OPEN 18 booleanConstant 104
( COMMA 18 intervalConstant 103 )? PARENTHESIS_CLOSE 18 )?
```

referenced by:

- executionHints 21

resultSetName:

RESULT_SET_NAME PARENTHESIS_OPEN stringConstant PARENTHESIS_CLOSE

```
resultSetName 23
          ::= RESULT_SET_NAME 18 ( PARENTHESIS_OPEN 18
 stringConstant 103 PARENTHESIS_CLOSE 18 )?
```

referenced by:

- executionHints 21

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 in-

voice 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[23] ::= JOIN_SET[18] PARENTHESIS_OPEN[18] identifier[96] (COMMA[18] identifier[96] (COMMA[18] numericConstant[104])?)? PARENTHESIS_CLOSE[18]

referenced by:

- executionHints[21]

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[24] ::= NO_JOIN_SET[18] PARENTHESIS_OPEN[18] identifier[96] (COMMA[18] identifier[96])? PARENTHESIS_CLOSE[18]

referenced by:

- executionHints[21]

variableList:

variableName COMMA variableName

variableList[24] ::= variableName[109] (COMMA[18] variableName[109])?

referenced by:

- uniqueSelectStatement[20]

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[24] ::= LOW_COST[18]

referenced by:

- executionHints[21]

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 25 ::= DISTINCT 25

referenced by:

- aggregateFunction 40
- uniqueSelectStatement 20

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 25
::= TOP 18 numericConstant 104

referenced by:

- uniqueSelectStatement 20

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 25
::= LIMIT 18 numericConstant 104

referenced by:

- selectStatement 19

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 25
::= parenthesisOpen 53 selectStatement 19
parenthesisClose 54

referenced by:

- dataSource 21

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 26
::= fullTableIdentifier 94 distributedAliasDirective 27?

referenced by:

- alterPersistentCacheDropStatement 44
- alterPersistentCacheSetTableOptions 45
- alterPersistentCacheTableRefreshStatement 44
- createTableStatement 45
- deleteStatement 51
- dropTableStatement 46
- insertStatement 49
- updateStatement 51

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 26
::= fullTableIdentifier 94 tableFunctionSpec 26?
distributedAliasDirective 27?

referenced by:

- dataSource 21

tableFunctionSpec:

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

parenthesisOpen expression COMMA parenthesisClose

```
tableFunctionSpec 26
          ::= parenthesisOpen 53 ( expression 52 ( COMMA 18
 expression 52 )* )? parenthesisClose 54
```

referenced by:

- tableOrFunctionSpec 26

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 27
          ::= AT 18 dataContainerAlias 27
```

referenced by:

- partitionIdentifierWithAlias 49
- setIdentifier 46
- tableOrFunctionSpec 26
- tableSpec 26

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 27
          ::= identifier 96
```

referenced by:

- alterPersistentCacheRefreshStatement 43
- distributedAliasDirective 27

xmlTableSpec:

XMLTABLE parenthesisOpen stringConstant null xmlTablePassing xmlTableLiteral xmlTableColumns parenthesisClose

```
xmlTableSpec 27
          ::= XMLTABLE 18 parenthesisOpen 53 ( stringConstant 103 |
null 105 ) ( xmlTablePassing 28 | xmlTableLiteral 28 )
xmlTableColumns 28 parenthesisClose 54
```

referenced by:

- dataSource 21

xmlTablePassing:

PASSING expression

xmlTablePassing 28
::= PASSING 18 expression 52

referenced by:

- xmlTableSpec 27

xmlTableLiteral:

LITERAL expression

xmlTableLiteral 28
::= LITERAL 18 expression 52

referenced by:

- xmlTableSpec 27

xmlTableColumns:

COLUMNS xmlTableColumSpec COMMA

xmlTableColumns 28
::= COLUMNS 18 xmlTableColumSpec 28 (COMMA 18
xmlTableColumSpec 28)*

referenced by:

- xmlTableSpec 27

xmlTableColumSpec:

identifier dataType PATH stringConstant

xmlTableColumSpec 28
::= identifier 96 dataType 31 PATH 18 stringConstant 103

referenced by:

- xmlTableColumns 28

jsonTableSpec:

JSONTABLE parenthesisOpen stringConstant null jsonTablePassing jsonTableLiteral jsonTableColumns parenthesisClose

jsonTableSpec 28
::= JSONTABLE 18 parenthesisOpen 53 (stringConstant 103 |
null 105) (jsonTablePassing 29 | jsonTableLiteral 29)
jsonTableColumns 29 parenthesisClose 54

referenced by:

- dataSource 21

jsonTablePassing:

PASSING expression
jsonTablePassing 29
::= PASSING 18 expression 52

referenced by:
- jsonTableSpec 28

jsonTableLiteral:

LITERAL expression
jsonTableLiteral 29
::= LITERAL 18 expression 52

referenced by:
- jsonTableSpec 28

jsonTableColumns:

COLUMNS jsonTableColumSpec COMMA
jsonTableColumns 29
::= COLUMNS 18 jsonTableColumSpec 29 (COMMA 18 jsonTableColumSpec 29)*

referenced by:
- jsonTableSpec 28

jsonTableColumSpec:

identifier dataType PATH stringConstant
jsonTableColumSpec 29
::= identifier 96 dataType 31 PATH 18 stringConstant 103

referenced by:
- jsonTableColumns 29

csvTableSpec:

CSVTABLE parenthesisOpen csvTablePassing csvTableLiteral csvTableOptions csvTableColumns parenthesisClose
csvTableSpec 29
::= CSVTABLE 18 parenthesisOpen 53 (csvTablePassing 30 | csvTableLiteral 30) csvTableOptions 30 csvTableColumns 30 parenthesisClose 54

referenced by:
- dataSource 21

csvTableOptions:

ROW DELIMITER stringConstant COLUMN DELIMITER stringConstant SKIP_ LINES numericConstant

csvTableOptions[30]
::= (ROW[18] DELIMITER[18] stringConstant[103])? (COLUMN[34] DELIMITER[18] stringConstant[103])? (SKIP_[18] LINES[18] numericConstant[104])?

referenced by:

- csvTableSpec[29]

csvTableLiteral:

LITERAL expression

csvTableLiteral[30]
::= LITERAL[18] expression[52]

referenced by:

- csvTableSpec[29]

csvTablePassing:

PASSING expression

csvTablePassing[30]
::= PASSING[18] expression[52]

referenced by:

- csvTableSpec[29]

csvTableColumns:

COLUMNS csvTableColumSpec COMMA

csvTableColumns[30]
::= COLUMNS[18] csvTableColumSpec[30] (COMMA[18] csvTableColumSpec[30])*

referenced by:

- csvTableSpec[29]

csvTableColumSpec:

identifier dataType POSITION numericConstant

csvTableColumSpec[30]
::= identifier[96] dataType[31] POSITION[18] numericConstant[104]

referenced by:

- csvTableColumns[30]

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[31] ::= BFILE[18]
               | BIGINT[18]
               | BIGSERIAL[18]
               | BIT[18]
               | BLOB[18]
               | BOOL[18]
               | BOOLEAN[18]
               | BPCHAR[18]
               | BYTE[18]
               | BYTEA[18]
               | CHAR[18]
               | CHARACTER[18]
               | CLOB[18]
               | DATE[18]
               | DATETIME[18]
               | DATETIMEOFFSET[18]
               | DEC[18]
               | DECIMAL[18]
               | DOUBLE[18]
               | FLOAT[18]
               | FLOAT4[18]
               | FLOAT8[18]
               | GUID[18]
               | IMAGE[18]
               | INT[18]
               | INT16[18]
               | INT2[18]
               | INT32[18]
               | INT4[18]
               | INT64[18]
               | INT8[18]
               | INTEGER[18]
               | INTERVAL[18]
               | LONGBLOB[18]
               | LONGTEXT[18]
               | MEDIUMBLOB[18]
               | MEDIUMINT[18]
               | MEDIUMTEXT[18]
               | MONEY[18]
               | NAME[18]
               | NCHAR[18]
               | NUMBER[18]
               | NUMERIC[18]
               | NVARCHAR[18]
               | OID[18]
               | RAW[18]
               | REAL[18]
               | SERIAL[18]
               | SMALLDATETIME[18]
               | SMALLINT[18]
               | SMALLMONEY[18]
               | SMALLSERIAL[18]
```

| TEXT 18
| TIME 18
| TIMESTAMP 18
| TIMESTAMPTZ 18
| TIMETZ 18
| TINYBLOB 18
| TINYINT 18
| TINYTEXT 18
| UINT16 18
| UINT32 18
| UINT64 18
| UNIQUEIDENTIFIER 18
| UUID 18
| VARBINARY 18
| VARCHAR 18
| VARCHAR2 18
| XML 18
| XMLTYPE 18
| YEAR 92

referenced by:

- csvTableColumSpec 30
- jsonTableColumSpec 29
- pSqlItemDeclaration 105
- xmlTableColumSpec 28

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 33 ::= GROUP 18 BY 18 columnList 34

referenced by:

- uniqueSelectStatement 20

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 33 ::= ORDER 18 BY 18 column 34 sortDirection 34 ? (COMMA 18 column 34 sortDirection 34 ?) *

referenced by:

- aggregateFunction 40
- selectStatement 19

sortDirection:

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

asc desc

```
sortDirection 34
          ::= asc 39
            | desc 39
```

referenced by:

- orderBy 33

columnList:

A comma-separated list of columns.

column COMMA

```
columnList 34
          ::= column 34 ( COMMA 18 column 34 )*
```

referenced by:

- groupBy 33
- insertFieldList 50

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 34    ::= identifier 96 ( DOT 18 identifier 96 )?
```

referenced by:

- columnList 34
- orderBy 33
- updateValue 51

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 34
          ::= WHERE 18 booleanExpression 52
```

referenced by:

- deleteStatement 51
- uniqueSelectStatement 20
- updateStatement 51

joinStatements:

A list of join statement.

joinStatement
joinStatements 34
::= joinStatement 35 +

referenced by:

- uniqueSelectStatement 20

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 35
::= joinCategory 35 join 36 dataSource 21
joinConditions 39 ?

referenced by:

- joinStatements 34

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 35
::= (inner 36 | joinSubCategory 36 outer 36 ? | cross 37
) ?

referenced by:

- joinStatement 35

joinSubCategory:

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

left right full

joinSubCategory 36
::= left 36
| right 36
| full 37

referenced by:

- joinCategory 35

join:

JOIN

join 36 ::= JOIN 36

referenced by:

- joinStatement 35

inner:

INNER

inner 36 ::= INNER 36

referenced by:

- joinCategory 35

outer:

OUTER

outer 36 ::= OUTER 36

referenced by:

- joinCategory 35

left:

LEFT

left 36 ::= LEFT 36

referenced by:

- functionExpression 60
- joinSubCategory 36

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 36 ::= RIGHT 36

referenced by:

- functionExpression 60
- joinSubCategory 36

full:

FULL

full 37 ::= FULL 37

referenced by:

- joinSubCategory 36

cross:

CROSS

cross 37 ::= CROSS 37

referenced by:

- joinCategory 35

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 37 ::= SUM 37

referenced by:

- aggregateFunction 40

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 37 ::= PRODUCT 37

referenced by:

- aggregateFunction 40

min:

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

MIN
min 37 ::= MIN 37

referenced by:
- aggregateFunction 40

max:

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

MAX
max 38 ::= MAX 38

referenced by:
- aggregateFunction 40

avg:

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

AVG
avg 38 ::= AVG 38

referenced by:
- aggregateFunction 40

stddev:

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

STDDEV
stddev 38 ::= STDDEV 38

referenced by:
- aggregateFunction 40

count:

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

COUNT
count 38 ::= COUNT 38

referenced by:
- aggregateFunction 40

listagg:

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

LISTAGG
listagg 38 ::= LISTAGG 38

referenced by:
- aggregateFunction 40

asc:

ASC
asc 39 ::= ASC 39

referenced by:
- sortDirection 34

desc:

DESC
desc 39 ::= DESC 39

referenced by:
- sortDirection 34

joinConditions:

ON booleanExpression
joinConditions 39
::= ON 18 booleanExpression 52

referenced by:
- joinStatement 35

selectList:

selectPart COMMA
selectList 39
::= selectPart 39 (COMMA 18 selectPart 39)*

referenced by:
- uniqueSelectStatement 20

selectPart:

part aliased labeled
selectPart 39
::= part 40 aliased 39? labeled 40?

referenced by:
- selectList 39

aliased:

AS alias
aliased 39 ::= AS 18 ? alias 96

referenced by:
- dataSource 21
- selectPart 39

labeled:

LABEL stringConstant
labeled 40 ::= LABEL 18 stringConstant 103

referenced by:
- selectPart 39

part:

expression aggregateFunction allColumnsSpec
part 40 ::= expression 52
| aggregateFunction 40
| allColumnsSpec 40

referenced by:
- aggregateFunction 40
- selectPart 39

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 40
::= (((sum 37 | product 37 | avg 38 | stddev 38)
parenthesisOpen 53 distinct 25 ? | (min 37 | max 38)
parenthesisOpen 53) arithmeticExpression 59 | count 38
parenthesisOpen 53 distinct 25 ? part 40 | listagg 38
parenthesisOpen 53 distinct 25 ? arithmeticExpressionList 60
(parenthesisClose 54 WITHIN 18 GROUP 18 parenthesisOpen 53
orderBy 33) ?) parenthesisClose 54

referenced by:
- part 40

allColumnsSpec:

allColumnsSpecId allColumnsSpecColumnNamePrefix allColumnsSpecColumnNamePostfix allColumnsSpecLabelPrefix allColumnsSpecLabelPostfix

allColumnsSpec 40
::= allColumnsSpecId 41
allColumnsSpecColumnNamePrefix 41 ?
allColumnsSpecColumnNamePostfix 41 ? allColumnsSpecLabelPrefix 41 ?
allColumnsSpecLabelPostfix 41 ?

referenced by:

- part 40

allColumnsSpecId:

alias DOT ASTERIX

allColumnsSpecId 41
::= (alias 96 DOT 18) ? ASTERIX 18

referenced by:

- allColumnsSpec 40

allColumnsSpecColumnNamePrefix:

PREFIX WITH stringConstant

allColumnsSpecColumnNamePrefix 41
::= PREFIX 18 WITH 18 stringConstant 103

referenced by:

- allColumnsSpec 40

allColumnsSpecColumnNamePostfix:

POSTFIX WITH stringConstant

allColumnsSpecColumnNamePostfix 41
::= POSTFIX 18 WITH 18 stringConstant 103

referenced by:

- allColumnsSpec 40

allColumnsSpecLabelPrefix:

LABEL PREFIX WITH stringConstant

allColumnsSpecLabelPrefix 41
::= LABEL 18 PREFIX 18 WITH 18 stringConstant 103

referenced by:

- allColumnsSpec 40

allColumnsSpecLabelPostfix:

LABEL POSTFIX WITH stringConstant

allColumnsSpecLabelPostfix 41
::= LABEL 18 POSTFIX 18 WITH 18 stringConstant 103

referenced by:

- allColumnsSpec 40

ddlStatement:

createTableStatement dropTableStatement alterPersistentCacheStatement

```
ddlStatement 42
          ::= createTableStatement 45
            | dropTableStatement 46
            | alterPersistentCacheStatement 42
```

referenced by:

- sqlStatement 19

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 42
::= alterPersistentCacheSetStatement 45
| alterPersistentCacheDownloadStatement 43
| alterPersistentCachePurgeStatement 43
| alterPersistentCacheRefreshStatement 43
| alterPersistentCacheLoadStatement 44
| alterPersistentCacheTableRefreshStatement 44
| alterPersistentCachePartitionRefreshStatement 44
| alterPersistentCacheDropStatement 44

referenced by:

- ddlStatement 42

alterPersistentCachePurgeStatement:

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

alterPersistentCachePurgeStatement 43
::= ALTER 18 PERSISTENT 18 CACHE 18 PURGE 18 (UNKNOWN 18 | OBSOLETE 18 | READY 18 | DROPPABLE 18 | ALL 18) TABLE 18 PARTITION 18 VERSIONS 18

referenced by:

- alterPersistentCacheStatement 42

alterPersistentCacheDownloadStatement:

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

alterPersistentCacheDownloadStatement 43
::= ALTER 18 PERSISTENT 18 CACHE 18 DOWNLOAD 18 FEED 18 (LICENSE 18 CONTRACT 18 CODE 18 stringConstant 103)? (DATA_CONTAINER 18 stringConstant 103)? (PARTITION 18 partitionSimpleIdentifier 49)? (LIMIT 18 numericConstant 104)?

referenced by:

- alterPersistentCacheStatement 42

alterPersistentCacheRefreshStatement:

ALTER PERSISTENT CACHE FORCE REFRESH DATA_CONTAINER dataContainerAlias PARALLEL numericConstant

alterPersistentCacheRefreshStatement[43]
::= ALTER[18] PERSISTENT[18] CACHE[18] FORCE[18]? REFRESH[18] (DATA_CONTAINER[18] dataContainerAlias[27]?)? (PARALLEL[18] numericConstant[104])?

referenced by:

- alterPersistentCacheStatement[42]

alterPersistentCacheLoadStatement:

ALTER PERSISTENT CACHE LOAD

alterPersistentCacheLoadStatement[44]
::= ALTER[18] PERSISTENT[18] CACHE[18] LOAD[18]

referenced by:

- alterPersistentCacheStatement[42]

alterPersistentCacheTableRefreshStatement:

ALTER PERSISTENT CACHE TABLE tableSpec FORCE REFRESH PARTITION partitionIdentifier PARALLEL numericConstant

alterPersistentCacheTableRefreshStatement[44]
::= ALTER[18] PERSISTENT[18] CACHE[18] TABLE[18] tableSpec[26] FORCE[18]? REFRESH[18] (PARTITION[18] partitionIdentifier[48])? (PARALLEL[18] numericConstant[104])?

referenced by:

- alterPersistentCacheStatement[42]

alterPersistentCachePartitionRefreshStatement:

ALTER PERSISTENT CACHE PARTITION partitionIdentifier FORCE REFRESH PARALLEL numericConstant

alterPersistentCachePartitionRefreshStatement[44]
::= ALTER[18] PERSISTENT[18] CACHE[18] PARTITION[18] partitionIdentifier[48] FORCE[18]? REFRESH[18] (PARALLEL[18] numericConstant[104])?

referenced by:

- alterPersistentCacheStatement[42]

alterPersistentCacheDropStatement:

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

alterPersistentCacheDropStatement[44]
::= ALTER[18] PERSISTENT[18] CACHE[18] DROP[18] (TABLE[18] tableSpec[26] (PARTITION[18] partitionIdentifier[48])? | PARTITION[18] partitionIdentifier[48] | DATA_CONTAINER[18] stringConstant[103])

referenced by:

- alterPersistentCacheStatement[42]

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[45]
::= ALTER[18] PERSISTENT[18] CACHE[18] SET[18] ((FRESH[18] | RETENTION[18] FORWARDED[18] INCOMING[18] MESSAGES[18] | METADATA[18]? RECYCLEBIN[18] | DATA[18] MODEL[18] VERSION[18]) numericConstant[104] | TOKEN[18] stringConstant[103] | LOGICAL[18] (OVERALL[18] | PARTITION[18]) VIEW[18] (NAME[18] (PREFIX[18] | POSTFIX[18]) stringConstant[103] | MAINTAIN[18] booleanConstant[104]) | LOAD[18] MY[18] MESSAGES[18] booleanConstant[104] | AUTO[18] UPGRADE[18] ONCE[18] | alterPersistentCacheSetTableOptions[45])

referenced by:

- alterPersistentCacheStatement[42]

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[45]
::= TABLE[18] tableSpec[26] (LOGICAL[18] (OVERALL[18] VIEW[18] (MAINTAIN[18] booleanConstant[104] | NAME[18] stringConstant[103]) | PARTITION[18] VIEW[18] (MAINTAIN[18] booleanConstant[104] | NAME[18] (PREFIX[18] | POSTFIX[18]) stringConstant[103])) | STATE[18] (OBSOLETE[18] | DROPPED[18]) | (PARTITION[18] partitionIdentifier[48])? APPROACH[18] (COPY[18] | TRICKLE[18] | SAMPLE[18]))

referenced by:

- alterPersistentCacheSetStatement[45]

createTableStatement:

CREATE orReplace TABLE tableSpec AS selectStatement

createTableStatement 45
::= CREATE 18 orReplace 46 ? TABLE 18 tableSpec 26 AS 18 selectStatement 19

referenced by:

- ddlStatement 42

dropTableStatement:

DROP TABLE tableSpec

dropTableStatement 46
::= DROP 18 TABLE 18 tableSpec 26

referenced by:

- ddlStatement 42

orReplace:

OR REPLACE

orReplace 46
::= OR 56 REPLACE 80

referenced by:

- createTableStatement 45

setStatement:

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

SET setIdentifier expression

setStatement 46
::= SET 18 setIdentifier 46 expression 52

referenced by:

- sqlStatement 19

setIdentifier:

attributeIdentifier distributedAliasDirective

setIdentifier 46
::= attributeIdentifier 95 distributedAliasDirective 27 ?

referenced by:

- setStatement 46

transactionStatement:

beginTransactionStatement rollbackTransactionStatement commitTransactionStatement

transactionStatement 46
::= beginTransactionStatement 47
| rollbackTransactionStatement 47
| commitTransactionStatement 47

referenced by:

- sqlStatement 19

executeFileStatement:

FILE_PATH
executeFileStatement 47
::= FILE_PATH 18

referenced by:

- sqlStatement 19

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 47
::= BEGIN 18 TRANSACTION 18?

referenced by:

- transactionStatement 46

rollbackTransactionStatement:

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

ROLLBACK TRANSACTION
rollbackTransactionStatement 47
::= ROLLBACK 18 TRANSACTION 18?

referenced by:

- transactionStatement 46

commitTransactionStatement:

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

COMMIT TRANSACTION
commitTransactionStatement 47
::= COMMIT 18 TRANSACTION 18?

referenced by:

- transactionStatement 46

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 48
          ::= USE 18 ( partitionIdentifiersList 48 |
selectStatement 19 )
```

referenced by:

- sqlStatement 19

partitionIdentifiersList:

partitionIdentifierWithAlias COMMA

```
partitionIdentifiersList 48
          ::= partitionIdentifierWithAlias 49 ( COMMA 18
 partitionIdentifierWithAlias 49 ) *
```

referenced by:

- useStatement 48

partitionIdentifier:

parameterExpression numericConstant identifier ALL DEFAULT

```
partitionIdentifier 48
          ::= parameterExpression 57
            | numericConstant 104
            | identifier 96
            | ALL 18
            | DEFAULT 18
```

referenced by:

- alterPersistentCacheDropStatement 44
- alterPersistentCachePartitionRefreshStatement 44
- alterPersistentCacheSetTableOptions 45
- alterPersistentCacheTableRefreshStatement 44

- partitionIdentifierWithAlias 49

partitionIdentifierWithAlias:

partitionIdentifier distributedAliasDirective
partitionIdentifierWithAlias 49
::= partitionIdentifier 48 distributedAliasDirective 27 ?

referenced by:
- partitionIdentifiersList 48

partitionSimpleIdentifier:

numericConstant identifier
partitionSimpleIdentifier 49
::= numericConstant 104
| identifier 96

referenced by:
- alterPersistentCacheDownloadStatement 43

insertStatement:

bulk insert into tableSpec insertFieldList valuesExpression insertFieldList selectStatement identifiedByClause attachToClause
insertStatement 49
::= bulk 49 ? insert 50 into 50 tableSpec 26
(insertFieldList 50 valuesExpression 49 | insertFieldList 50 ?
selectStatement 19) identifiedByClause 51 ? attachToClause 51 ?

referenced by:
- sqlStatement 19

valuesExpression:

values_ insertValues
valuesExpression 49
::= values_ 50 insertValues 50

referenced by:
- insertStatement 49

bulk:

BULK
bulk 49 ::= BULK 49

referenced by:
- insertStatement 49

into:

INTO
into 50 ::= INTO 50

referenced by:
- insertStatement 49

insert:

INSERT
insert 50 ::= INSERT 50

referenced by:
- insertStatement 49

values_:

VALUES
values_ 50 ::= VALUES 18

referenced by:
- valuesExpression 49

insertFieldList:

parenthesisOpen columnList parenthesisClose
insertFieldList 50
::= parenthesisOpen 53 columnList 34 parenthesisClose 54

referenced by:
- insertStatement 49

insertValues:

parenthesisOpen insertValuesList parenthesisClose
insertValues 50
::= parenthesisOpen 53 insertValuesList 50
parenthesisClose 54

referenced by:
- valuesExpression 49

insertValuesList:

arithmeticExpression COMMA
insertValuesList 50
::= arithmeticExpression 59 (COMMA 18
arithmeticExpression 59)*

referenced by:

- insertValues 50

identifiedByClause:

IDENTIFIED BY arithmeticExpression
identifiedByClause 51
::= IDENTIFIED 18 BY 18 arithmeticExpression 59

referenced by:
- insertStatement 49

attachToClause:

ATTACH TO arithmeticExpression
attachToClause 51
::= ATTACH 18 TO 18 arithmeticExpression 59

referenced by:
- insertStatement 49

updateStatement:

UPDATE FROM tableSpec SET updateValuesList whereClause
updateStatement 51
::= UPDATE 18 FROM 18 ? tableSpec 26 SET 18
updateValuesList 51 whereClause 34 ?

referenced by:
- sqlStatement 19

updateValuesList:

updateValue COMMA
updateValuesList 51
::= updateValue 51 (COMMA 18 updateValue 51) *

referenced by:
- updateStatement 51

updateValue:

column EQ arithmeticExpression
updateValue 51
::= column 34 EQ 58 arithmeticExpression 59

referenced by:
- updateValuesList 51

deleteStatement:

delete FROM tableSpec whereClause
deleteStatement 51
::= delete 52 FROM 18 ? tableSpec 26 whereClause 34 ?

referenced by:
- sqlStatement 19

delete:

DELETE
delete 52 ::= DELETE 52

referenced by:
- deleteStatement 51

expression:

booleanExpression arithmeticExpression
expression 52
::= booleanExpression 52
| arithmeticExpression 59

referenced by:
- caseElseExpression 53
- caseWhenThenExpression 53
- csvTableLiteral 30
- csvTablePassing 30
- jsonTableLiteral 29
- jsonTablePassing 29
- pSqlAssignmentStatement 107
- pSqlExecuteImmediateStatement 107
- part 40
- setStatement 46
- tableFunctionSpec 26
- xmlTableLiteral 28
- xmlTablePassing 28

booleanExpression:

not booleanExpression and or booleanExpression parenthesisOpen booleanExpression parenthesisClose predicateExpression true false
booleanExpression 52
::= (not 55 | booleanExpression 52 (and 56 | or 56))
booleanExpression 52
| parenthesisOpen 53 booleanExpression 52
parenthesisClose 54
| predicateExpression 56
| true 56
| false 56

referenced by:

- booleanExpression 52
- expression 52
- joinConditions 39
- pSqlElsIfExpression 108
- pSqlIfStatement 108
- pSqlWhileLoopStatement 109
- whereClause 34

caseExpression:

case caseWhenThenExpression caseElseExpression end

caseExpression 53
::= case 54 caseWhenThenExpression 53+
caseElseExpression 53? end 55

referenced by:

- arithmeticExpression 59

caseWhenThenExpression:

when expression then arithmeticExpression

caseWhenThenExpression 53
::= when 54 expression 52 then 55 arithmeticExpression 59

referenced by:

- caseExpression 53

caseElseExpression:

else expression

caseElseExpression 53
::= else 55 expression 52

referenced by:

- caseExpression 53

parenthesisOpen:

PARENTHESIS_OPEN

parenthesisOpen 53
::= PARENTHESIS_OPEN 18

referenced by:

- aggregateFunction 40
- arithmeticExpression 59
- booleanExpression 52
- csvTableSpec 29
- embeddedSelect 25

- functionExpression 60
- insertFieldList 50
- insertValues 50
- jsonTableSpec 28
- now 94
- predicateExpression 56
- tableFunctionSpec 26
- utc 94
- xmlTableSpec 27

parenthesisClose:

PARENTHESIS_CLOSE
parenthesisClose 54
::= PARENTHESIS_CLOSE 18

referenced by:

- aggregateFunction 40
- arithmeticExpression 59
- booleanExpression 52
- csvTableSpec 29
- embeddedSelect 25
- functionExpression 60
- insertFieldList 50
- insertValues 50
- jsonTableSpec 28
- now 94
- predicateExpression 56
- tableFunctionSpec 26
- utc 94
- xmlTableSpec 27

case:

CASE
case 54 ::= CASE 54

referenced by:

- caseExpression 53

when:

WHEN
when 54 ::= WHEN 54

referenced by:

- caseWhenThenExpression 53

then:

THEN
then 55 ::= THEN 55

referenced by:

- caseWhenThenExpression 53

else:

ELSE
else 55 ::= ELSE 55

referenced by:

- caseElseExpression 53

end:

END
end 55 ::= END 55

referenced by:

- caseExpression 53

not:

NOT
not 55 ::= NOT 55

referenced by:

- booleanExpression 52
- isLikeComparingExpression 59
- isNullComparingExpression 58
- predicateExpression 56

is:

IS
is 55 ::= IS 55

referenced by:

- isNullComparingExpression 58

are:

ARE
are 55 ::= ARE 55

referenced by:

- isEqualComparingExpression 59

and:

AND
and 56 ::= AND 56

referenced by:
- booleanExpression 52
- predicateExpression 56

or:

OR
or 56 ::= OR 56

referenced by:
- booleanExpression 52

true:

TRUE
true 56 ::= TRUE 56

referenced by:
- booleanConstant 104
- booleanExpression 52

false:

FALSE
false 56 ::= FALSE 56

referenced by:
- booleanConstant 104
- booleanExpression 52

predicateExpression:

arithmeticExpression not in_ parenthesisOpen arithmeticExpression COMMA inSelectStatement parenthesisClose between arithmeticExpression and arithmeticExpression gt ge lt le eq neq arithmeticExpression isNullComparingExpression isLikeComparingExpression isEqualComparingExpression
predicateExpression 56
::= arithmeticExpression 59 ((gt 57 | ge 57 | lt 57 | le 57 | eq 58 | neq 58) arithmeticExpression 59 | not 55 ?
(between 58 arithmeticExpression 59 and 56 arithmeticExpression 59
| in_ 58 parenthesisOpen 53 (arithmeticExpression 59 (COMMA 18
arithmeticExpression 59) * | inSelectStatement 20)
parenthesisClose 54) | isNullComparingExpression 58 |
isLikeComparingExpression 59 | isEqualComparingExpression 59)

referenced by:

- booleanExpression 52

parameterExpression:

COLON identifier

parameterExpression 57
::= COLON 18 identifier 96

referenced by:

- arithmeticExpression 59
- partitionIdentifier 48

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 57 ::= GT 57

referenced by:

- predicateExpression 56

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 57 ::= GE 57

referenced by:

- predicateExpression 56

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 57 ::= LT 57

referenced by:

- predicateExpression 56

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 57 ::= LE 57

referenced by:
- predicateExpression 56

eq:

EQ
eq 58 ::= EQ 58

referenced by:
- predicateExpression 56

neq:

NEQ
neq 58 ::= NEQ 58

referenced by:
- predicateExpression 56

like:

LIKE
like 58 ::= LIKE 58

referenced by:
- isLikeComparingExpression 59

between:

BETWEEN
between 58 ::= BETWEEN 58

referenced by:
- predicateExpression 56

in_:

IN
in_ 58 ::= IN 18

referenced by:
- predicateExpression 56

isNullComparingExpression:

is not NULL

isNullComparingExpression 58
::= is 55 not 55 ? NULL 105

referenced by:

- predicateExpression 56

isEqualComparingExpression:

are EQUAL
isEqualComparingExpression 59
::= are 55 ? EQUAL 18

referenced by:

- predicateExpression 56

isLikeComparingExpression:

not like arithmeticExpression
isLikeComparingExpression 59
::= not 55 ? like 58 arithmeticExpression 59

referenced by:

- predicateExpression 56

arithmeticExpression:

minus plus arithmeticExpression times divide plus minus concat arithmeticExpression parenthesisOpen arithmeticExpression selectStatement parenthesisClose functionExpression parameterExpression caseExpression fieldIdentifier constant
arithmeticExpression 59
::= (minus 76 | plus 77 | arithmeticExpression 59
(times 86 | divide 70 | plus 77 | minus 76 | concat 67))
arithmeticExpression 59
| parenthesisOpen 53 (arithmeticExpression 59 |
selectStatement 19) parenthesisClose 54
| functionExpression 60
| parameterExpression 57
| caseExpression 53
| fieldIdentifier 95
| constant 102

referenced by:

- aggregateFunction 40
- arithmeticExpression 59
- arithmeticExpressionList 60
- attachToClause 51
- caseWhenThenExpression 53
- expression 52
- identifiedByClause 51
- insertValuesList 50
- isLikeComparingExpression 59

- predicateExpression 56
- updateValue 51

arithmeticExpressionList:

arithmeticExpression list
arithmeticExpressionList 60
::= arithmeticExpression 59 (list 73
arithmeticExpression 59)*

referenced by:

- aggregateFunction 40
- functionExpression 60

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

functionExpression 60
::= (abs 61 | acos 62 | anonymize 62 | ascii 63 | asin 63 | atan 63 | atan2 63 | base64_decode 64 | base64_encode 64 | bit_length 65 | octet_length 66 | camel 65 | ceil 65 | chr 65 | coalesce 66 | concat_func 67 | cos 67 | covfefify 67 | compress 67 | uncompress 68 | dateadd 68 | datepart 68 | date_ceil 68 | date_floor 68 | date_round 69 | date_trunc 69 | day 69 | dayofweek 69 | dayofyear 70 | dense_rank 70 | double_metaphone 70 | double_metaphone_alt 70 | exp_func 71 | floor 71 | from_unixtime 71 | hour 72 | httpget 91 | httpget_text 91 | httppost 91 | initcap 72 | instr 72 | jsondecode 72 | jsonencode 73 | left 36 | length 73 | levenshtein 73 | ln 73 | log 74 | lower 74 | lpad 74 | ltrim 74 | md5 75 | metaphone 75 | metaphone3 75 | metaphone3_alt 75 | microsecond 81 | millisecond 82 | minute 76 | mod 75 | month 76 | newid 76 | number_to_speech 82 | normalize 82 | nvl 77 | power 77 | quarter 91 | quote_ident 92 | quote_literal 92 | quote_nullable 92 | raise_error 66 | random 77 | random_blob 78 | rand 78 | rank 78 | regexp_instr 79 | regexp_replace 79 | regexp_substr 78 | remainder 80 | replace 80 | repeat 66 | reverse 80 | right 36 | round 80 | row_number 81 | rpad 81 | rtrim 81 | second 83 | sin 83 | soundex 83 | sqrt 83 | substr 83 | sys_context 84 | tan 86 | to_binary 93 | to_char 93 | to_date 93 | to_number 94 | to_guid 93 | to_hex 87 | translate 86 | translate_resources 86 | trim 87 | trunc 87 | unistr 87 | unix_timestamp 88 | upper 88 | urldecode 88 | urlencode 88 | user 92 | unzip 89 | zip 89 | xmlcomment 89 | xmldecode 89 | xmlencode 90 | xmlelement 90 | xmlformat 90 | xmltransform 90 | year 92 | add_months 64 | zero_blob 94)
parenthesisOpen 53 arithmeticExpressionList 60? parenthesisClose 54
| random 77
| rand 78
| row_number 81
| now 94
| utc 94
| user 92

referenced by:

- arithmeticExpression 59

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
abs 61 ::= ABS 61

referenced by:

- functionExpression 60

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 62 ::= ACOS 62

referenced by:

- functionExpression 60

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 62
::= ANONYMIZE 62

referenced by:
- functionExpression 60

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 63 ::= ASCII 63

referenced by:
- functionExpression 60

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 63 ::= ASIN 63

referenced by:
- functionExpression 60

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 63 ::= ATAN 63

referenced by:
- functionExpression 60

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 63 ::= ATAN2 63

referenced by:

- functionExpression 60

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 64 ::= ADD_MONTHS 64

referenced by:

- functionExpression 60

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 64 ::= BASE64_DECODE 64

referenced by:

- functionExpression 60

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 64 ::= BASE64_ENCODE 64

referenced by:

- functionExpression 60

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 65    ::= CAMEL 65
```

referenced by:

- functionExpression 60

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 65     ::= CEIL 65
```

referenced by:

- functionExpression 60

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 65      ::= CHR 65
              | CHAR 18
```

referenced by:

- functionExpression 60

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 65
::= BIT_LENGTH 65

referenced by:

- functionExpression 60

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 66
::= OCTET_LENGTH 66

referenced by:

- functionExpression 60

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 66 ::= REPEAT 66

referenced by:

- functionExpression 60

raise_error:

RAISE_ERROR

raise_error 66
::= RAISE_ERROR 66

referenced by:

- functionExpression 60

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 66 ::= COALESCE 66

referenced by:

- functionExpression 60

concat:

Concatenate the left and right values together as a text.

CONCAT_OP

concat 67 ::= CONCAT_OP 18

referenced by:

- arithmeticExpression 59

concat_func:

Concatenate a list of values together as a text.

CONCAT

concat_func 67
::= CONCAT 67

referenced by:

- functionExpression 60

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 67 ::= COS 67

referenced by:

- functionExpression 60

covfefify:

COVFEFIFY

covfefify 67
::= COVFEFIFY 67

referenced by:

- functionExpression 60

compress:

COMPRESS

compress 67 ::= COMPRESS 67

referenced by:

- functionExpression 60

uncompress:

UNCOMPRESS
uncompress 68
::= UNCOMPRESS 68

referenced by:

- functionExpression 60

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 68 ::= DATEADD 68

referenced by:

- functionExpression 60

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 68 ::= DATEPART 68

referenced by:

- functionExpression 60

date_ceil:

DATE_CEIL
date_ceil 68
::= DATE_CEIL 68

referenced by:

- functionExpression 60

date_floor:

DATE_FLOOR
date_floor 68
::= DATE_FLOOR 68

referenced by:
- functionExpression 60

date_round:

DATE_ROUND
date_round 69
::= DATE_ROUND 69

referenced by:
- functionExpression 60

date_trunc:

DATE_TRUNC
date_trunc 69
::= DATE_TRUNC 69

referenced by:
- functionExpression 60

day:

Collect the day from a date.

Parameters:
- Input: A dateTime.

Returns: The day as an integer. DAY
day 69 ::= DAY 69

referenced by:
- functionExpression 60

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 69
::= DAYOFWEEK 69

referenced by:
- functionExpression 60

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 70
::= DAYOFYEAR 70

referenced by:

- functionExpression 60

dense_rank:

DENSE_RANK

dense_rank 70
::= DENSE_RANK 70

referenced by:

- functionExpression 60

double_metaphone:

DOUBLE_METAPHONE

double_metaphone 70
::= DOUBLE_METAPHONE 70

referenced by:

- functionExpression 60

double_metaphone_alt:

DOUBLE_METAPHONE_ALT

double_metaphone_alt 70
::= DOUBLE_METAPHONE_ALT 70

referenced by:

- functionExpression 60

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 70 ::= DIVIDE 70

referenced by:

- arithmeticExpression 59

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 71 ::= EXP_OP 18

no references

exp_func:

EXP
exp_func 71 ::= EXP 71

referenced by:

- functionExpression 60

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 71 ::= FLOOR 71

referenced by:

- functionExpression 60

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 71
::= FROM_UNIXTIME 71

referenced by:

- functionExpression 60

hour:

Collect the hour from a date.

Parameters:

- Input: A dateTime.

Returns: The hour as an integer. HOUR

hour 72 ::= HOUR 72

referenced by:

- functionExpression 60

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 72 ::= INITCAP 72

referenced by:

- functionExpression 60

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 72 ::= INSTR 72

referenced by:

- functionExpression 60

jsondecode:

JSONDECODE

jsondecode 72
::= JSONDECODE 72

referenced by:

- functionExpression 60

jsonencode:

JSONENCODE
jsonencode 73
::= JSONENCODE 73

referenced by:
- functionExpression 60

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 73 ::= LENGTH 73

referenced by:
- functionExpression 60

levenshtein:

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

LEVENSHTEIN
levenshtein 73
::= LEVENSHTEIN 73

referenced by:
- functionExpression 60

list:

COMMA
list 73 ::= COMMA 18

referenced by:
- arithmeticExpressionList 60

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 73 ::= LN 73

referenced by:
- functionExpression 60

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 74 ::= LOG 74

referenced by:

- functionExpression 60

lower:

Converts provided string to lowercase.

Parameters:

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

Returns: A string converted to lowercase. LOWER

lower 74 ::= LOWER 74

referenced by:

- functionExpression 60

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 74 ::= LPAD 74

referenced by:

- functionExpression 60

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 74 ::= LTRIM 74

referenced by:

- functionExpression 60

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 75 ::= MD5 75

referenced by:

- functionExpression 60

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 75
::= METAPHONE 75

referenced by:

- functionExpression 60

metaphone3:

METAPHONE3

metaphone3 75
::= METAPHONE3 75

referenced by:

- functionExpression 60

metaphone3_alt:

METAPHONE3_ALT

metaphone3_alt 75
::= METAPHONE3_ALT 75

referenced by:

- functionExpression 60

mod:

Get the remainder of a divide calculation.

Parameters:

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

Returns: The remainder. MOD

mod 75 ::= MOD 75

referenced by:

- functionExpression 60

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 76 ::= MINUS 76

referenced by:

- arithmeticExpression 59

minute:

Collect the minute from a date.

Parameters:

- Input: A dateTime.

Returns: The minute as an integer. MINUTE

minute 76 ::= MINUTE 76

referenced by:

- functionExpression 60

month:

Collect the month from a date.

Parameters:

- Input: A dateTime.

Returns: The month as an integer. MONTH

month 76 ::= MONTH 76

referenced by:

- functionExpression 60

newid:

Creates a new Guid id.

Returns: The new Guid id.

NEWID
newid 76 ::= NEWID 76

referenced by:
- functionExpression 60

nvl:

Coalesce all values together.

Returns: All values coalesced together.

NVL
nvl 77 ::= NVL 77

referenced by:
- functionExpression 60

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 77 ::= PLUS 77

referenced by:
- arithmeticExpression 59

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 77 ::= POWER 77

referenced by:
- functionExpression 60

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 77 ::= RANDOM 77

referenced by:

- functionExpression 60

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 78 ::= RANDOM_BLOB 78

referenced by:

- functionExpression 60

rand:

RAND

rand 78 ::= RAND 78

referenced by:

- functionExpression 60

rank:

RANK

rank 78 ::= RANK 78

referenced by:

- functionExpression 60

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 78
::= REGEXP_SUBSTR 78

referenced by:

- functionExpression 60

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 79
::= REGEXP_INSTR 79

referenced by:

- functionExpression 60

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 79
::= REGEXP_REPLACE 79

referenced by:

- functionExpression 60

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 80
::= REMAINDER 80

referenced by:

- functionExpression 60

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 80 ::= REPLACE 80

referenced by:

- functionExpression 60

reverse:

Flips the input around.

Parameters:

- Input: text to flip around.

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

reverse 80 ::= REVERSE 80

referenced by:

- functionExpression 60

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 80 ::= ROUND 80

referenced by:

- functionExpression 60

row_number:

ROW_NUMBER

row_number 81 ::= ROW_NUMBER 81

referenced by:

- functionExpression 60

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 81 ::= RPAD 81

referenced by:

- functionExpression 60

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 81 ::= RTRIM 81

referenced by:

- functionExpression 60

microsecond:

Collect the microsecond from a date.

Parameters:

- Input: A dateTime.

Returns: The microsecond as an integer. MICROSECOND

microsecond 81
::= MICROSECOND 81

referenced by:

- functionExpression 60

millisecond:

Collect the millisecond from a date.

Parameters:

- Input: A dateTime.

Returns: The millisecond as an integer. MILLISECOND

millisecond 82
::= MILLISECOND 82

referenced by:

- functionExpression 60

number_to_speech:

NUMBER_TO_SPEECH

number_to_speech 82
::= NUMBER_TO_SPEECH 82

referenced by:

- functionExpression 60

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 82
::= NORMALIZE 82

referenced by:

- functionExpression 60

second:

Collect the second from a date.

Parameters:

- Input: A dateTime.

Returns: The second as an integer. SECOND

second 83 ::= SECOND 83

referenced by:

- functionExpression 60

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 83 ::= SOUNDEX 83

referenced by:

- functionExpression 60

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 83 ::= SIN 83

referenced by:

- functionExpression 60

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 83 ::= SQRT 83

referenced by:

- functionExpression 60

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 83 ::= SUBSTR 83

referenced by:

- functionExpression 60

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[84]
::= SYS_CONTEXT[84]

referenced by:

- functionExpression 60

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 86 ::= TAN 86

referenced by:

- functionExpression 60

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 86 ::= ASTERIX 18

referenced by:

- arithmeticExpression 59

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 86 ::= TRANSLATE 86

referenced by:

- functionExpression 60

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 86
::= TRANSLATE_RESOURCES 86

referenced by:

- functionExpression 60

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 87 ::= TRIM 87

referenced by:

- functionExpression 60

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 87 ::= TRUNC 87

referenced by:

- functionExpression 60

to_hex:

TO_HEX
to_hex 87 ::= TO_HEX 87

referenced by:

- functionExpression 60

unistr:

Converts a text with unicodes to regular characters.

Parameters:

- Input: text with unicodes.

Returns: The input converted to all regular characters. UNISTR

unistr 87 ::= UNISTR 87

referenced by:

- functionExpression 60

upper:

Converts provided string to uppercase.

Parameters:

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

Returns: A string converted to uppercase. UPPER

upper 88 ::= UPPER 88

referenced by:

- functionExpression 60

urldecode:

Decodes a url.

Parameters:

- Url: url to decode.

Returns: The decoded url. URLDECODE

urldecode 88
::= URLDECODE 88

referenced by:

- functionExpression 60

urlencode:

Encodes a url.

Parameters:

- Url: url to encode.

Returns: The encoded url. URLENCODE

urlencode 88
::= URLENCODE 88

referenced by:

- functionExpression 60

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 88
::= UNIX_TIMESTAMP 88

referenced by:

- functionExpression 60

unzip:

UNZIP

unzip 89 ::= UNZIP 89

referenced by:

- functionExpression 60

zip:

ZIP

zip 89 ::= ZIP 89

referenced by:

- functionExpression 60

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 89
::= XMLCOMMENT 89

referenced by:

- functionExpression 60

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 89
::= XMLDECODE 89

referenced by:

- functionExpression 60

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 90
: := XMLENCODE 90

referenced by:

- functionExpression 60

xmlelement:

XMLELEMENT

xmlelement 90
: := XMLELEMENT 90

referenced by:

- functionExpression 60

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 90
: := XMLTRANSFORM 90

referenced by:

- functionExpression 60

xmlformat:

Pretty-print xml text.

Parameters:

- Xml: xml to pretty-print.

Returns: The pretty-printed XML text. XMLFORMAT

xmlformat 90
: := XMLFORMAT 90

referenced by:

- functionExpression 60

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 91  ::= HTTPGET 91
```

referenced by:

- functionExpression 60

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 91
          ::= HTTPGET_TEXT 91
```

referenced by:

- functionExpression 60

httppost:

HTTPPOST

```
httppost 91  ::= HTTPPOST 91
```

referenced by:

- functionExpression 60

quarter:

Collect the quarter from a date.

Parameters:

- Input: A dateTime.

Returns: The quarter as an integer. QUARTER

```
quarter 91  ::= QUARTER 91
```

referenced by:

- functionExpression 60

quote_ident:

QUOTE_IDENT
quote_ident 92
::= QUOTE_IDENT 92

referenced by:
- functionExpression 60

quote_literal:

QUOTE_LITERAL
quote_literal 92
::= QUOTE_LITERAL 92

referenced by:
- functionExpression 60

quote_nullable:

QUOTE_NULLABLE
quote_nullable 92
::= QUOTE_NULLABLE 92

referenced by:
- functionExpression 60

user:

Gets the user log on code.

Returns: The user log on code.

USER
user 92 ::= USER 92

referenced by:
- functionExpression 60

year:

Collect the year from a date.

Parameters:
- Input: A dateTime.

Returns: The year as an integer. YEAR
year 92 ::= YEAR 92

referenced by:
- functionExpression 60

to_binary:

TO_BINARY
to_binary 93
::= TO_BINARY 93

referenced by:

- functionExpression 60

to_char:

Converts a value into text.

Parameters:

- Input: value to convert.

Returns: The input converted to text. TO_CHAR
to_char 93 ::= TO_CHAR 93

referenced by:

- functionExpression 60

to_date:

Converts a value into a datetime.

Parameters:

- Input: value to convert.

Returns: The input converted to a datetime. TO_DATE
to_date 93 ::= TO_DATE 93

referenced by:

- functionExpression 60

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 93 ::= TO_GUID 93

referenced by:

- functionExpression 60

to_number:

TO_NUMBER
to_number 94
::= TO_NUMBER 94

referenced by:

- functionExpression 60

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 94
::= ZERO_BLOB 94

referenced by:

- functionExpression 60

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 94 ::= (NOW 94 | GETDATE 18 | SYSDATETIME 18)
parenthesisOpen 53 parenthesisClose 54
| SYSDATE 18

referenced by:

- functionExpression 60

utc:

UTC_DATE parenthesisOpen parenthesisClose GETUTCDATE NOWUTC parenthesisOpen parenthesisClose SYSDATEUTC
utc 94 ::= UTC_DATE 18 (parenthesisOpen 53
parenthesisClose 54)?
| (GETUTCDATE 18 | NOWUTC 18) parenthesisOpen 53
parenthesisClose 54
| SYSDATEUTC 18

referenced by:

- functionExpression 60

fullTableIdentifier:

catalogIdentifier DOT schemaIdentifier DOT tableIdentifier

fullTableIdentifier 94
::= (catalogIdentifier 95 DOT 18 (schemaIdentifier 95 ? DOT 18) ?) ? tableIdentifier 95

referenced by:

- tableOrFunctionSpec 26
- tableSpec 26

catalogIdentifier:

identifier
catalogIdentifier 95
::= identifier 96

referenced by:

- fullTableIdentifier 94

schemaIdentifier:

identifier
schemaIdentifier 95
::= identifier 96

referenced by:

- fullTableIdentifier 94

tableIdentifier:

identifier
tableIdentifier 95
::= identifier 96

referenced by:

- fullTableIdentifier 94

fieldIdentifier:

alias DOT identifier
fieldIdentifier 95
::= (alias 96 DOT 18) ? identifier 96

referenced by:

- arithmeticExpression 59

attributeIdentifier:

identifierWithMinus keywordsAsIdentifierOrAlias
attributeIdentifier 95
::= identifierWithMinus 96
| keywordsAsIdentifierOrAlias 97

referenced by:

- setIdentifier 46

identifierWithMinus:

identifier MINUS identifier INT_OR_DECIMAL_C ESCAPED_IDENTIFIER

```
identifierWithMinus 96
          ::= ESCAPED_IDENTIFIER 18
            | identifier 96 ( MINUS 76 ( identifier 96 |
INT_OR_DECIMAL_C 18 )? )*
```

referenced by:

- attributeIdentifier 95

identifier:

ESCAPED_IDENTIFIER IDENTIFIER keywordsAsIdentifierOrAlias

```
identifier 96
          ::= ESCAPED_IDENTIFIER 18
            | IDENTIFIER 96
            | keywordsAsIdentifierOrAlias 97
```

referenced by:

- catalogIdentifier 95
- column 34
- csvTableColumSpec 30
- dataContainerAlias 27
- fieldIdentifier 95
- identifierWithMinus 96
- joinSet 23
- jsonTableColumSpec 29
- noJoinSet 24
- parameterExpression 57
- partitionIdentifier 48
- partitionSimpleIdentifier 49
- schemaIdentifier 95
- tableIdentifier 95
- xmlTableColumSpec 28

alias:

ESCAPED_IDENTIFIER IDENTIFIER keywordsAsIdentifierOrAlias

```
alias 96      ::= ESCAPED_IDENTIFIER 18
            | IDENTIFIER 96
            | keywordsAsIdentifierOrAlias 97
```

referenced by:

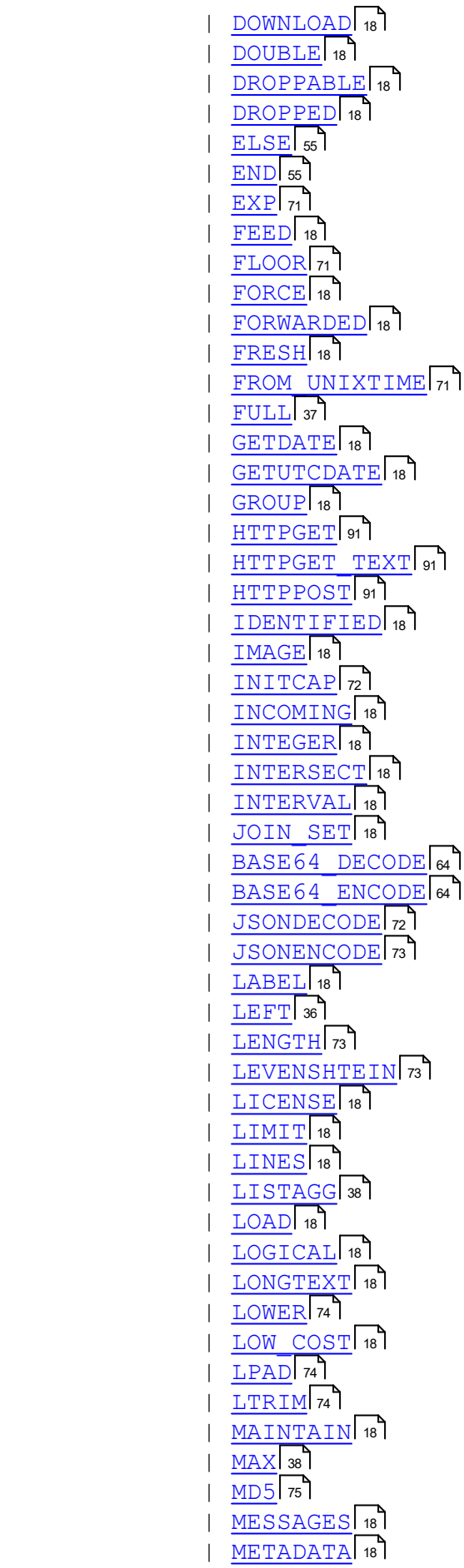
- aliased 39
- allColumnsSpecId 41

- fieldIdentifier 95

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 97
::= ABS 61
| ACOS 62
| ADD_MONTHS 64
| ANONYMIZE 62
| APPROACH 18
| ASC 39
| ASCII 63
| ASIN 63
| ADD_MONTHS 64
| ATAN 63
| ATAN2 63
| ATTACH 18
| AUTO 18
| AVG 38
| BEGIN 18
| BIT 18
| BIT_LENGTH 65
| BY 18
| CACHE 18
| CAMEL 65
| CASE 54
| CEIL 65
| CHAR 18
| CHR 65
| COALESCE 66
| COMMIT 18
| COMPRESS 67
| CODE 18
| COLUMN 34
| COLUMNS 18
| CONTRACT 18
| COPY 18
| COS 67
| COUNT 38
| COVFEFIFY 67
| CROSS 37
| CSVTABLE 18
| DATA 18
| DATE 18
| DATEADD 68
| DATEPART 68
| DATETIME 18
| DATETIMEOFFSET 18
| DATE_CEIL 68
| DATE_FLOOR 68
| DATE_ROUND 69
| DATE_TRUNC 69
| DEC 18
| DELIMITER 18
| DENSE_RANK 70
| DESC 39



| USE 18
| USER 92
| UTC 94
| UTC_DATE 18
| VERSION 18
| VERSIONS 18
| WHEN 54
| XML 18
| XMLCOMMENT 89
| XMLDECODE 89
| XMLELEMENT 90
| XMLENCODE 90
| XMLFORMAT 90
| XMLTABLE 18
| XMLTRANSFORM 90
| XMLTYPE 18
| YEAR 92
| ZERO_BLOB 94
| ZIP 89
| LOG 74
| LN 73
| MICROSECOND 81
| MILLISECOND 82
| SECOND 83
| MINUTE 76
| HOUR 72
| INSTR 72
| DAY 69
| DAYOFWEEK 69
| DAYOFYEAR 70
| MONTH 76
| QUARTER 91
| YEAR 92
| CONCAT 67
| WITH 18
| EQUAL 18
| SUBSTR 83

referenced by:

- alias 96
- attributeIdentifier 95
- identifier 96

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 102 ::= stringConstant 103
               | numericConstant 104
               | booleanConstant 104
               | intervalConstant 103
               | null 105
```

referenced by:

- arithmeticExpression 59
- pSqlItemDeclaration 105

stringConstant:

A constant text value with varchar2 data type.

STRING_C

```
stringConstant 103
          ::= STRING_C 18
```

referenced by:

- allColumnsSpecColumnNamePostfix 41
- allColumnsSpecColumnNamePrefix 41
- allColumnsSpecLabelPostfix 41
- allColumnsSpecLabelPrefix 41
- alterPersistentCacheDownloadStatement 43
- alterPersistentCacheDropStatement 44
- alterPersistentCacheSetStatement 45
- alterPersistentCacheSetTableOptions 45
- constant 102
- csvTableOptions 30
- intervalConstant 103
- jsonTableColumSpec 29
- jsonTableSpec 28
- labeled 40
- resultSetName 23
- xmlTableColumSpec 28
- xmlTableSpec 27

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 103
::= INTERVAL 18 stringConstant 103

referenced by:

- constant 102
- httpDiskCache 21
- httpMemoryCache 22
- ods 22

numericConstant:

A constant numeric value with numeric data type.

INT_OR_DECIMAL_C E_NOTATION_C
numericConstant 104
::= INT_OR_DECIMAL_C 18
| E_NOTATION_C 18

referenced by:

- alterPersistentCacheDownloadStatement 43
- alterPersistentCachePartitionRefreshStatement 44
- alterPersistentCacheRefreshStatement 43
- alterPersistentCacheSetStatement 45
- alterPersistentCacheTableRefreshStatement 44
- constant 102
- csvTableColumSpec 30
- csvTableOptions 30
- joinSet 23
- limitClause 25
- pSqlForNumberLoopStatement 108
- partitionIdentifier 48
- partitionSimpleIdentifier 49
- topClause 25

booleanConstant:

true false
booleanConstant 104
::= true 56
| false 56

referenced by:

- alterPersistentCacheSetStatement 45
- alterPersistentCacheSetTableOptions 45
- constant 102
- httpDiskCache 21

- httpMemoryCache 22
- ods 22

null:

The "unknown" value null.

NULL
null 105 ::= NULL 105

referenced by:
- constant 102
- jsonTableSpec 28
- xmlTableSpec 27

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 105
::= pSqlDeclareSection 105? pSqlBody 106

referenced by:
- pSqlBlockOrStatement 106
- pSqlStatement 106

pSqlDeclareSection:

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

DECLARE pSqlDeclaration
pSqlDeclareSection 105
::= DECLARE 18 pSqlDeclaration 105+

referenced by:
- pSqlBlock 105

pSqlDeclaration:

pSqlItemDeclaration
pSqlDeclaration 105
::= pSqlItemDeclaration 105

referenced by:
- pSqlDeclareSection 105

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 105
::= variableName 109 dataType 31 (ASSIGNMENT_OPERATOR 18 constant 102)? BATCHSEPARATOR 18

referenced by:
- pSqlDeclaration 105

pSqlBody:

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

BEGIN pSqlStatement END BATCHSEPARATOR
pSqlBody 106 ::= BEGIN 18 pSqlStatement 106+ END 55 BATCHSEPARATOR 18

referenced by:
- pSqlBlock 105

pSqlStatement:

A number of basic PSQL statements are available.

pSqlAssignmentStatement pSqlExecuteImmediateStatement pSqlIfStatement pSqlLoopStatement pSqlNullStatement pSqlBlock sqlStatement BATCHSEPARATOR
pSqlStatement 106
::= pSqlAssignmentStatement 107
| pSqlExecuteImmediateStatement 107
| pSqlIfStatement 108
| pSqlLoopStatement 108
| pSqlNullStatement 107
| pSqlBlock 105
| sqlStatement 19 BATCHSEPARATOR 18

referenced by:
- pSqlBlockOrStatement 106
- pSqlBody 106
- sqlOrPSqlStatement 19

pSqlBlockOrStatement:

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

pSqlBlock pSqlStatement
pSqlBlockOrStatement 106
::= pSqlBlock 105
| pSqlStatement 106

referenced by:
- pSqlBlockOrStatements 107

pSqlBlockOrStatements:

pSqlBlockOrStatement
pSqlBlockOrStatements 107
::= pSqlBlockOrStatement 106+

referenced by:

- pSqlElsIfExpression 108
- pSqlForNumberLoopStatement 108
- pSqlForRecordLoopStatement 109
- pSqlIfStatement 108
- pSqlWhileLoopStatement 109

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 107
::= NULL 105 BATCHSEPARATOR 18

referenced by:

- pSqlStatement 106

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 107
::= variableName 109 ASSIGNMENT_OPERATOR 18 expression 52 BATCHSEPARATOR 18

referenced by:

- pSqlStatement 106

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 107
::= EXECUTE 18 IMMEDIATE 18 expression 52 BATCHSEPARATOR 18

referenced by:

- pSqlStatement 106

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 108
          ::= IF 18 booleanExpression 52 THEN 55
 pSqlBlockOrStatements 107 pSqlElsIfExpression 108 * ( ELSE 55
 pSqlBlockOrStatements 107 ) ? END 55 IF 18 BATCHSEPARATOR 18
```

referenced by:

- pSqlStatement 106

pSqlElsIfExpression:

ELSIF booleanExpression THEN pSqlBlockOrStatements

```
pSqlElsIfExpression 108
          ::= ELSIF 18 booleanExpression 52 THEN 55
 pSqlBlockOrStatements 107
```

referenced by:

- pSqlIfStatement 108

pSqlLoopStatement:

A variety of PSQL statements for loops are available.

pSqlForNumberLoopStatement pSqlForRecordLoopStatement pSqlWhileLoopStatement

```
pSqlLoopStatement 108
          ::= pSqlForNumberLoopStatement 108
            | pSqlForRecordLoopStatement 109
            | pSqlWhileLoopStatement 109
```

referenced by:

- pSqlStatement 106

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[108]
::= FOR[18] variableName[109] IN[18] REVERSE[80]?
(numericConstant[104] | variableName[109]) DOT[18] DOT[18]
(numericConstant[104] | variableName[109]) LOOP[18]
pSqlBlockOrStatements[107] END[55] LOOP[18] BATCHSEPARATOR[18]

referenced by:

- pSqlLoopStatement[108]

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[109]
::= FOR[18] variableName[109] IN[18] PARENTHESIS_OPEN[18]
selectStatement[19] PARENTHESIS_CLOSE[18] LOOP[18]
pSqlBlockOrStatements[107] END[55] LOOP[18] BATCHSEPARATOR[18]

referenced by:

- pSqlLoopStatement[108]

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[109]
::= WHILE[18] booleanExpression[52] LOOP[18]
pSqlBlockOrStatements[107] END[55] LOOP[18] BATCHSEPARATOR[18]

referenced by:

- pSqlLoopStatement[108]

variableName:

IDENTIFIER

variableName[109]
::= IDENTIFIER[96]

referenced by:

- pSqlAssignmentStatement[107]
- pSqlForNumberLoopStatement[108]
- pSqlForRecordLoopStatement[109]
- pSqlItemDeclaration[105]
- variableList[24]

5.2 Providers

The providers described here are available on all platforms.

5.2.1 Provider Atom10

Atom version 1.0.

Code for use in settings.xml: Atom10

Alias: atom

Status: Production

Available in Editions: Paid, Open Data, Community

5.2.2 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

5.2.3 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.

5.2.4 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 request 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.				

5.2.5 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-unpooled-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.		✓			

5.2.6 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	✓	✓	✓	

5.2.7 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.

5.2.8 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

5.2.9 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	✓	✓	✓

5.2.10 Provider DynamicsCrm

Microsoft Dynamics CRM.

Code for use in settings.xml: DynamicsCrm

Alias: dyncrm

Status: Production

Available in Editions: Paid

5.2.11 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

5.2.12 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.

5.2.13 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	✓	✓	✓	

5.2.14 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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5.2.15 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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5.2.16 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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5.2.17 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	✓	✓	✓	

5.2.18 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

5.2.19 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

5.2.20 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
	oshufflerres-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 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.				

5.2.21 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				

5.2.22 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.

5.2.23 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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5.2.24 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	✓	✓	✓	

5.2.25 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 container	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
	on-tainer.				
translations	Folder con-taining trans-lation files		✓		✓

5.2.26 Provider LinkedIn

LinkedIn.

Code for use in settings.xml: LinkedIn

Alias: linkedin

Status: Production

Available in Editions: Paid

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

5.2.27 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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5.2.28 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

5.2.29 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	✓	✓	✓	

5.2.30 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

5.2.31 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

5.2.32 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	✓	✓	✓

5.2.33 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	✓	✓	✓

Generated 11-01-2019 21:40 on version 17.30.0-PROD+1821.

5.2.34 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	✓	✓	✓	

5.2.35 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
	oshufflerres-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 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.				

5.2.36 Provider Odbc

ODBC.

Code for use in settings.xml: Odbc

Alias: odbc

Status: Production

Available in Editions: Paid

5.2.37 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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5.2.38 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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5.2.39 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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5.2.40 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

5.2.41 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	✓	✓	✓

5.2.42 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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5.2.43 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/

5.2.44 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	✓	✓	✓

5.2.45 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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5.2.46 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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5.2.47 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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5.2.48 Provider Sftp: Secure FTP.

Secure FTP.

Code for use in settings.xml: Sftp

Alias: sftp

Status: Production

Available in Editions: Paid

5.2.49 Provider SilverEssence: SilverEssence.

SilverEssence.

Code for use in settings.xml: SilverEssence

Alias: silver

Status: Non-production

Available in Editions: Paid

5.2.50 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

5.2.51 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

5.2.52 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	✓	✓	✓

5.2.53 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.

5.2.54 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.

5.2.55 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	✓	✓	✓	

5.2.56 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	✓	✓	✓

5.2.57 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

5.2.58 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/

5.2.59 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/

5.2.60 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

5.2.61 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

5.2.62 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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5.2.63 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

5.2.64 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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5.2.65 Provider Wmi: Windows Management Instrumentation.

Windows Management Instrumentation.

Code for use in settings.xml: Wmi

Alias: wmi

Status: Production

Available in Editions: Paid

5.2.66 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

5.2.67 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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5.2.68 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

5.2.69 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

5.2.70 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

5.2.71 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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5.2.72 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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5.2.73 Providers

The providers described here are available on all platforms.

5.3 Configuration

5.3.1 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.

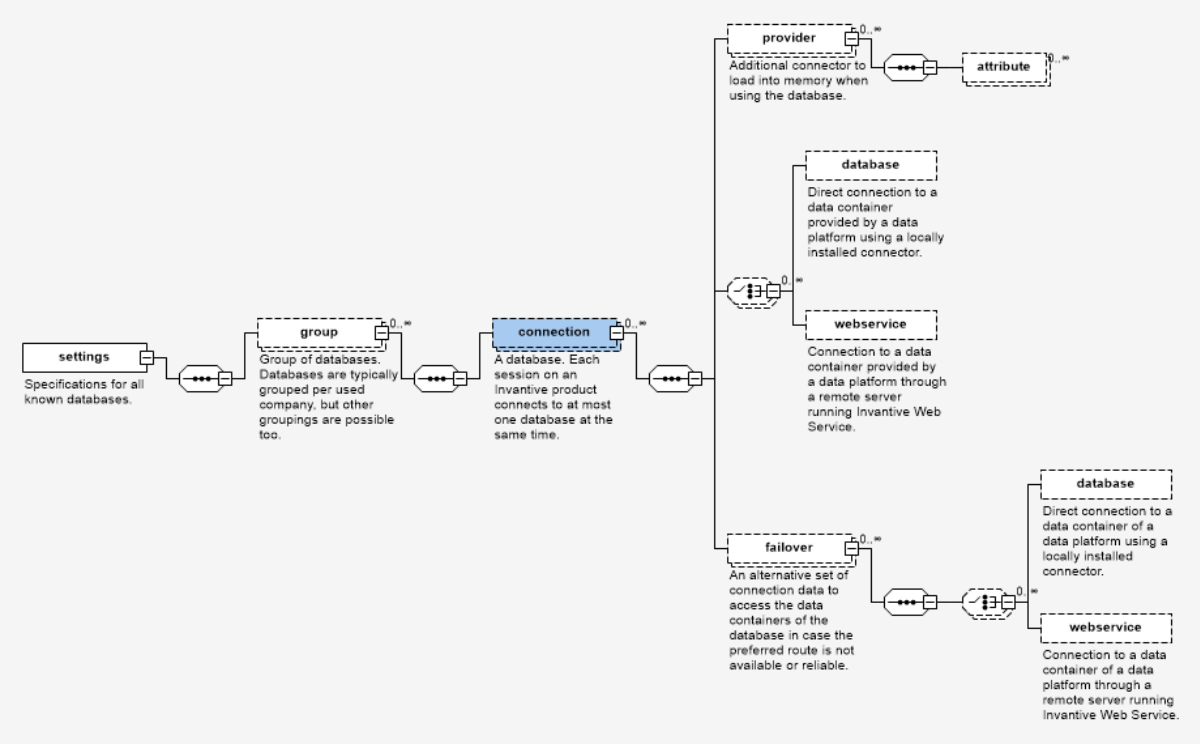
Additional Locations

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.



5.3.2 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'.

5.3.3 Logging

5.3.3.1 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

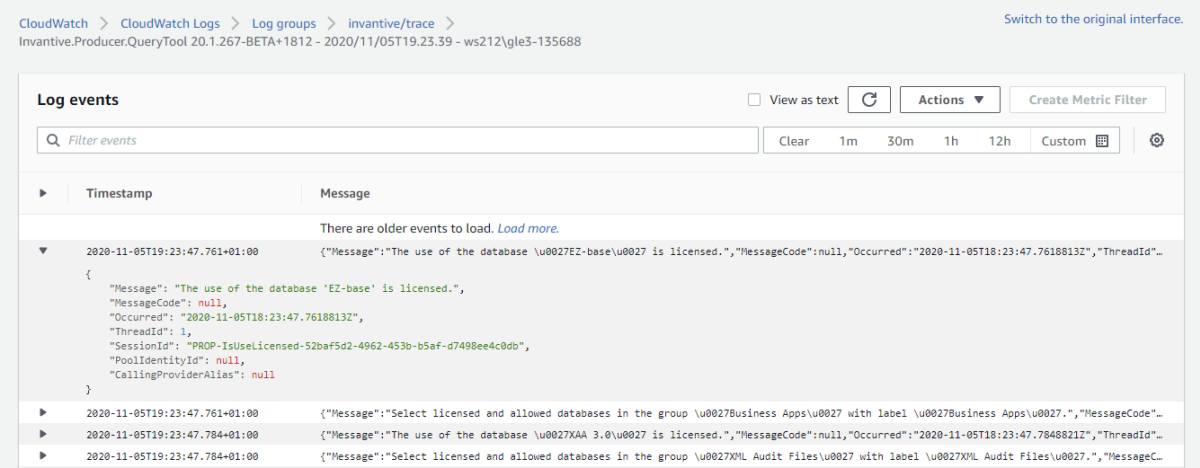
The trace can be logged to Amazon CloudWatch by configuring the following environment variables:

- 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
```

5.3.3.2 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.
- IIID: 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.

5.3.4 Debugging

Invantive software products contain a number of features to aid analysis of problems.

5.3.4.1 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.

6 Invantive SQL for Windows

The Windows-specific features of Invantive SQL are documented in this section.

6.1 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.

6.2 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.

7 Contact Information

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Always include your telephone number, your e-mail address and a short description. Please do not give sensitive details until a secure communication channel has been established.

For urgent security incidents please send both an email outside of opening hours and call with number display on. You will be called back as soon as possible.

We use the threat matrix of NCSC to classify a reported incident. We use the Responsible Disclosure Guideline of NCSC as basis for our policy.

You will always receive a confirmation of receipt within 1 working day.

We ask you not to share information about the security incident with others until Invantive has had sufficient opportunity to resolve the problem and users have had sufficient opportunity to use a possibly updated version of the software. We ask you to not further use any knowledge of the security incident and to omit any actions made possible after the existence of the security problem.

If you are not satisfied with the handling, we would like to ask you to contact the NCSC.

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