

Invantive Data Hub

Reference Manual



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1 Variants

Enter topic text here.

2 Command Line Arguments

Invantive Data Hub support the command line arguments in three modes:

- default,
- provider attributes, and
- Invantive Script variable values.

Initially, Invantive Data Hub only accepts arguments in default mode. To switch to provider attributes, use the default mode argument `attributes`. Use `variables` to switch to Invantive Script variable values.

Default Mode Arguments

In default mode the arguments are listed below in a long and abbreviated form (between parentheses):

- `help (?)`: print a list of available command line arguments and exit.
- `interactive (i)`: allows interaction with a user behind the console when "true", such as on errors. Otherwise disallow interaction. Default is "true".
- `timestamp (t)`: whether to prefix each line of messages with a timestamp. Default is "true".
- `file (f)`: relative or absolute file path of the Invantive SQL file with instructions to execute.
- `user (u)`: name of the user to be used for authentication on the database.
- `encryptedpassword (e)`: password of the user to be used, encrypted by the device key. Only applied to data container with specified alias. Applies to data container without alias when no alias is specified.
- `password (e)`: password of the user to be used in plain text. Only applied to data container with specified alias. Applies to data container without alias when no alias is specified.
- `connection (c)`: full name of the database in the format 'GROUP\NAME'.
- `logfile (l)`: relative or absolute file path of the log file.
- `verbose (v)`: print extensive progress messages when "true". Default is "false".
- `logoverwrite (lo)`: overwrite an already existing log file when "true". Otherwise append to an existing log file. Default is "false".
- `licensekey (lk)`: use the license key provided instead of the license key loaded from the user profile.
- `attributes (a)`: switch to provider attributes mode.
- `variables (v)`: switch to Invantive Script variable values mode.
- The value of the argument is provided after the argument name and a colon (':').

Multiple command line arguments can be provided in any order and in any form.

Provider Attributes Mode Arguments

In provider attributes mode, the following arguments are recognized:

- `name=value`: set the value of a provider attribute on the default data container to the specified fixed value.
- `name@alias=value`: set the value of a provider attribute on the data container with the specified alias to the specified fixed value.
- Any default mode argument.

Invantive Script Variable Values Arguments

In Invantive Script variable values mode, the following arguments are recognized:

- `variable=value`: set the value of an Invantive Script variable on the default data container to the specified value, after expanding Invantive Script variables..
- Any default mode argument.

Data Container Aliasing

The command line arguments `attribute`, `user` and `encryptedpassword` can be followed by the at-sign ('@') and the alias of a data container. The value is then only used for the data container with the specified alias. When no alias is specified, the value is used on the data container without an alias.

Log File Pattern

The file path of the log file may contain characters with a special meaning. These characters are expanded when the program starts:

- `%Y`: year.
- `%j`: day of year (001..366).
- `%m`: month (01..12).
- `%d`: day of month (01..31).
- `%u`: day of week (1..7).
- `%H`: hour (00..23).
- `%M`: minute (00..59).
- `%S`: second (00..59).
- `%D`: Windows domain name.
- `%U`: Windows user name.
- `%h`: Windows machine name.

Expansion takes place both in folder names as well as file name itself.

Compliance

The command line argument `password (p)` is no longer supported as of 2018. Please use either interactive logins, preauthenticated connections or a password encrypted with the device key.

Example

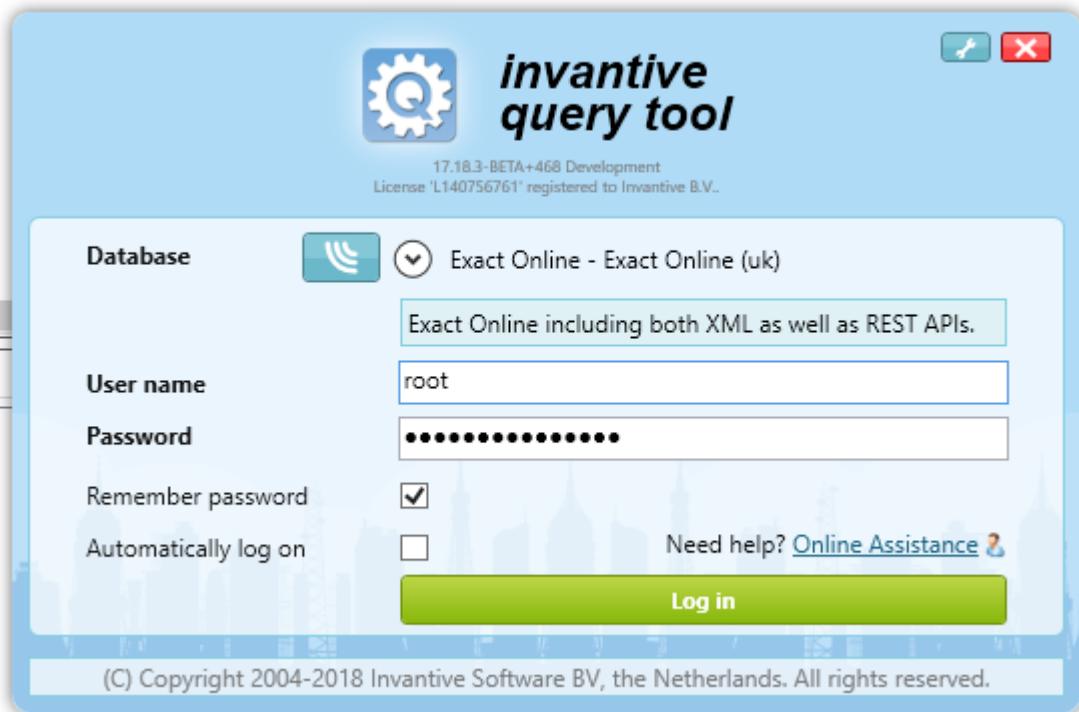
The following command line arguments change:

- the database to the group 'WS203' with database 'invoicing',
- choose the SQL file 'c:\jobs\first-job.sql' to run,
- disable interaction,
- change the provider attribute 'api-url' to '<https://start2.exactonline.nl>',
- change the provider attribute 'api-redirect-url' to '<https://eolclientredirect.invantive.com>' and
- change the Invantive Script variable 'MY_NAME' to 'John Doe':
`/database:WS203\invoicing /file:c:\jobs\first-job.sql /interactive:false /attribute api-url=https://start2.exactonline.nl api-redirect-url=https://eolclientredirect.invantive.com /variable "MY_NAME=John Doe"`

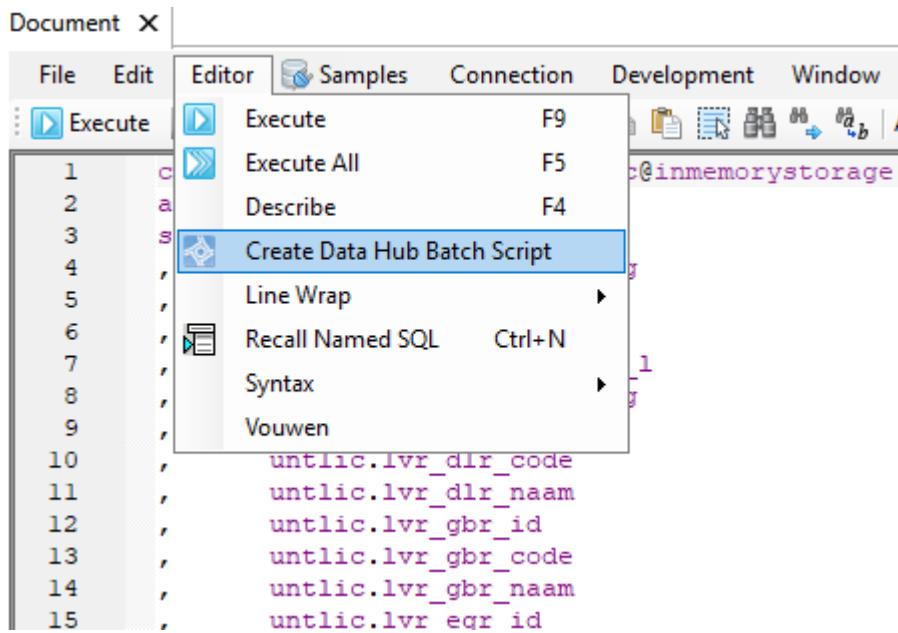
3 Batch File

Invantive Data Hub is typically started from a batch file, such as below. The contents below can be used to create your own batch file, but it is far more easy to create such a batch file from Invantive Query Tool as follows:

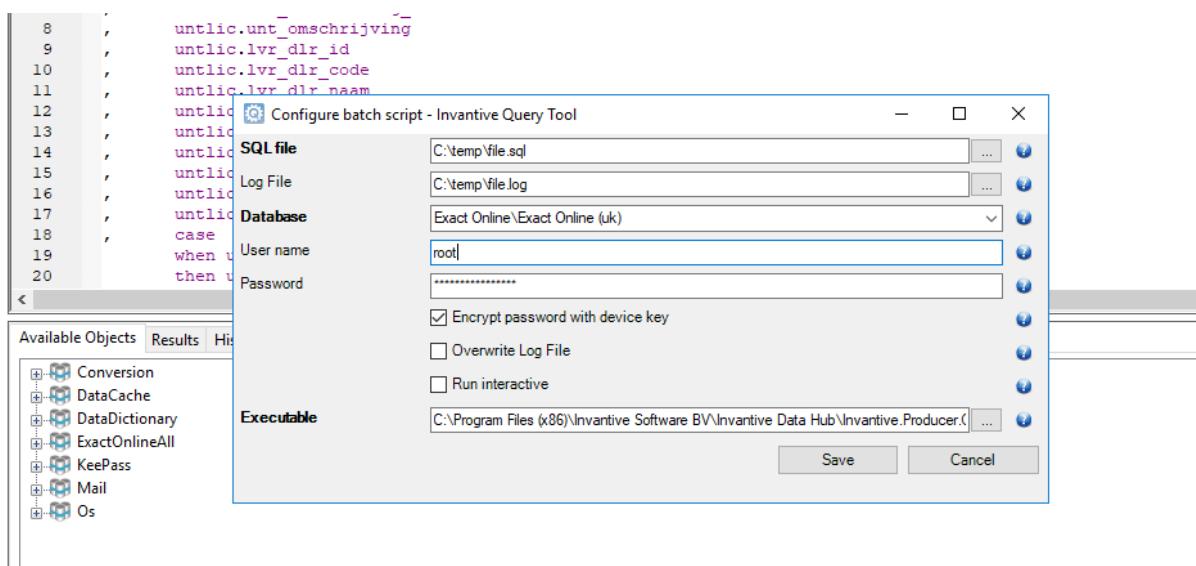
- Start Invantive Query Tool.
- Run it on the same device as Invantive Data Hub must run the script to allow the generation of the correct password encrypted with the device key. When not possible, see [Generate encrypted password](#) [6].
- Log on to the database on which the script should run:



- Open the script.
- Go to the Editor menu.
- Choose the 'Create Data Hub Batch Script' menu option:



- Fill out the form:



- Click on the Save button.
- Result will be a batch file like in [Sample Batch File](#).

4 Sample Batch File

Invantive Data Hub is typically started from a batch file, such as below. The contents below can be used to create your own batch file, but it is far more easy to create such a batch file from Invantive Query Tool as described in [Batch File](#).

```
@echo off
rem
rem Script to run an Invantive SQL file with possible Invantive
Script statements.
rem
rem Please note that the encrypted password is bound to the PC
used to generate this file.
rem When you want to run this batch file on another PC, please
generate a new encrypted password at that PC.
rem
rem In Invantive Query Tool and Data Hub you can use the 'local
encrypt password' statement to generate.
rem a new password.
rem

set INVANTIVE_PRG=C:\Program Files (x86)\Invantive Software
BV\Invantive Data Hub\Invantive.Producer.QueryEngine.exe

set INVANTIVE_USR=<<USERNAME>>

set INVANTIVE_ENCRYPTED_PWD=<<ENCRYPTED_PWD>>

set INVANTIVE_CONN=<<GROUP>>\<<NAME>>

set INVANTIVE_SQL_FILE=C:\temp\file.sql

set INVANTIVE_LOG_FILE=C:\temp\file.log
```

```

set INVANTIVE_INTERACTIVE=False

"%INVANTIVE_PRG%" /user:"%INVANTIVE_USR%" /connection:"%
INVANTIVE_CONN%" /encryptedpassword:"%INVANTIVE_ENCRYPTED_PWD%
" /file:"%INVANTIVE_SQL_FILE%" /logfile:"%INVANTIVE_LOG_FILE%
" /logoverwrite:"%INVANTIVE_LOG_FILE_OVERWRITE%" /interactive:%
INVANTIVE_INTERACTIVE%

pause

```

5 Generate encrypted password

A password can be encrypted using the device key using both Invantive Query Tool as well as using Invantive Data Hub.

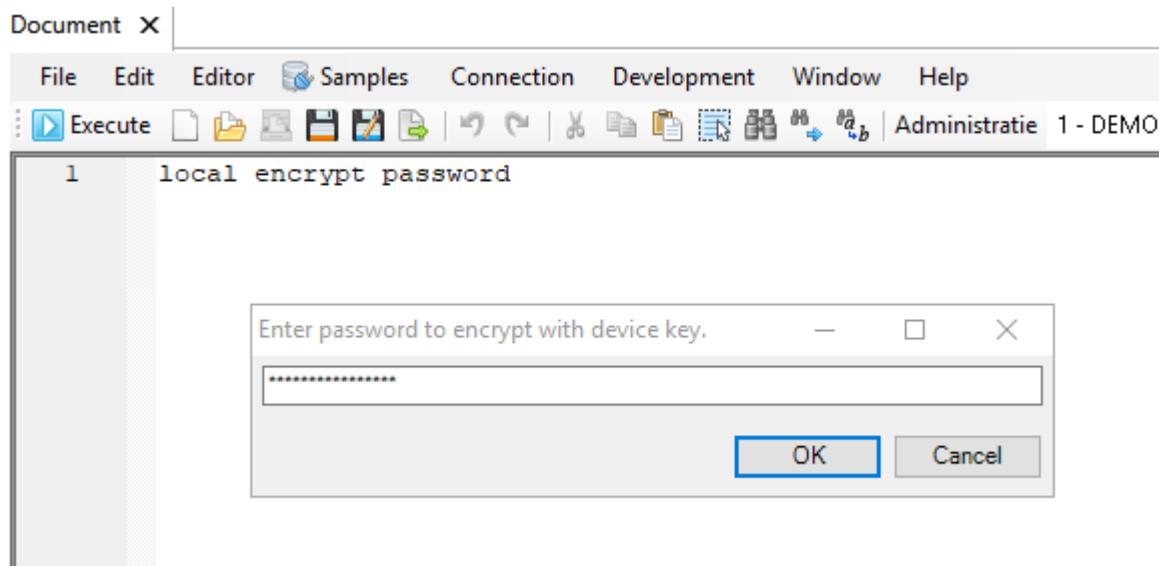
Such an encrypted password can only be decrypted on the device it was generated. Encrypting the password provides an extra line of defense for information security since it requires access to the device to decrypt it.

Note that the encryption used is based upon the less secure symmetric approach since most platforms connected to Invantive SQL do not support asymmetric encryption for authentication.

Encryption with Invantive Query Tool

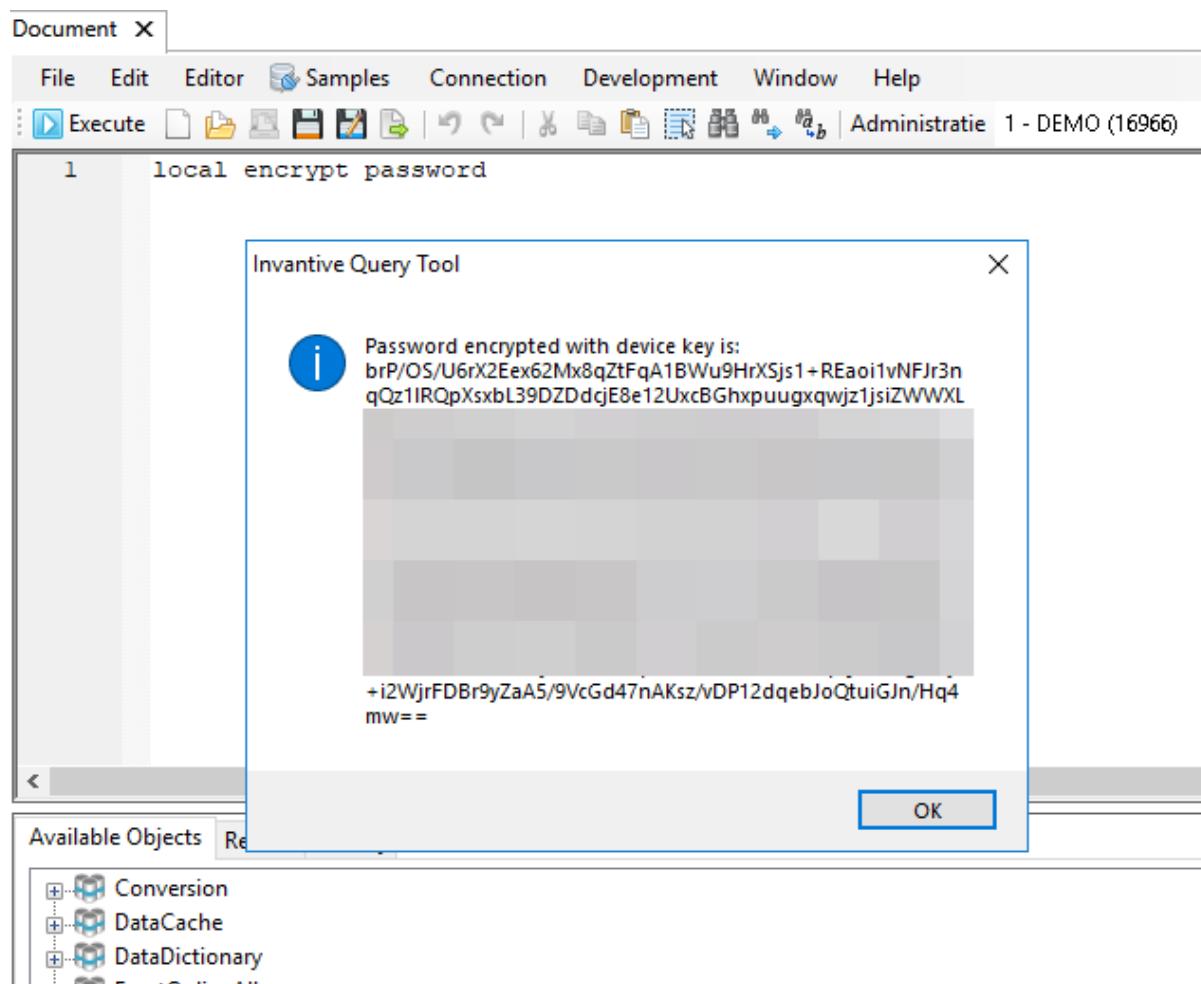
Perform the following steps to encrypt a password with the device key using Invantive Query Tool:

- Start Invantive Query Tool.
- Log on.
- Enter the statement:
`local encrypt password`
- Press CTRL+enter to execute the statement or use the Execute button.
- The password used to log on will be used by default. Replace it when necessary:



- Press OK.

- Enter password again.
- Press OK.
- The encrypted password is shown (note that the encrypted password is blurred although it is only usable on the device itself, just in case someone might get a hand on the device used for this picture):

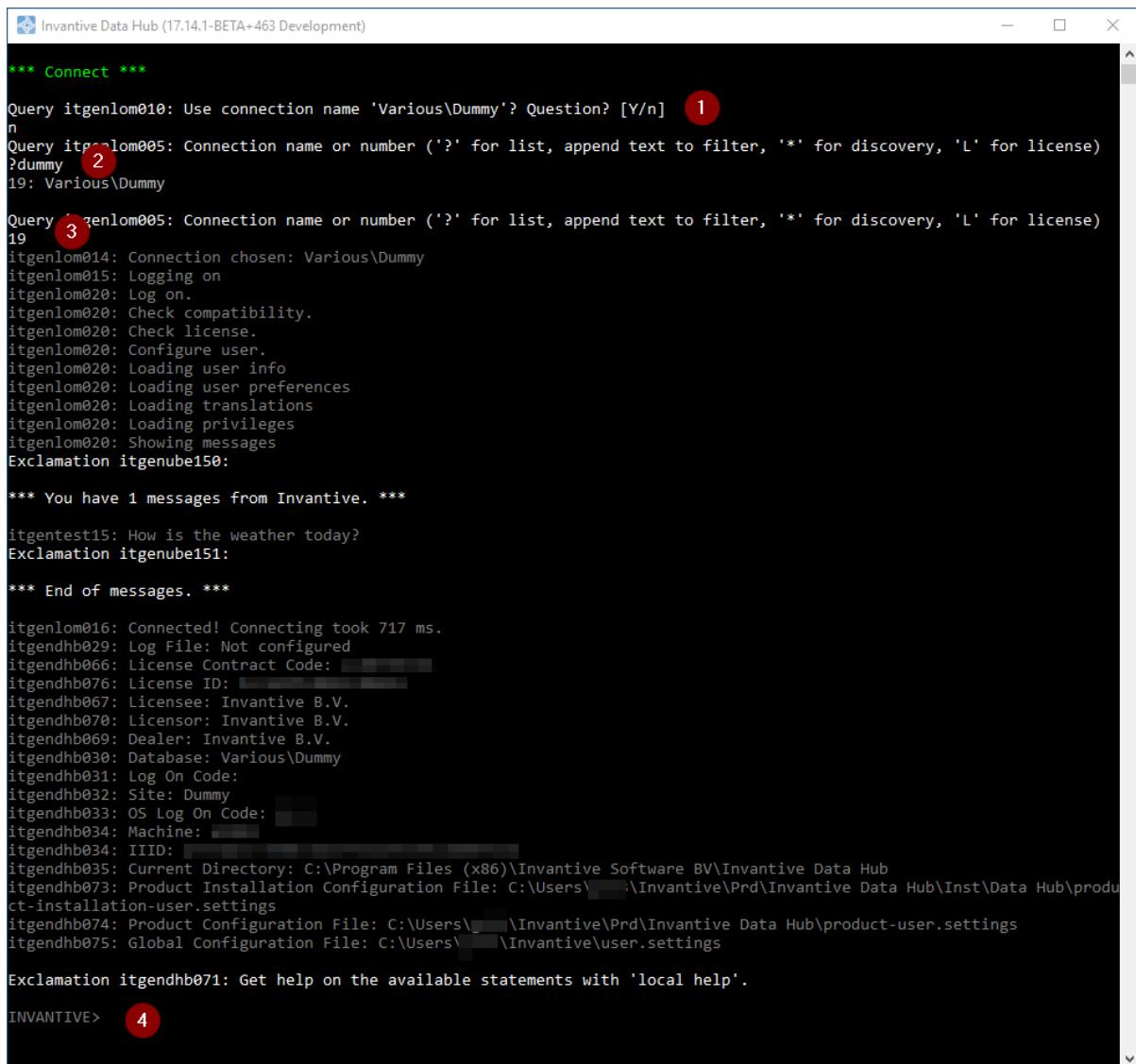


- Confirm the message that the encrypted password is for use with Invantive products solely on the device on which it was generated.
- Optionally save the encrypted password to a file.

Encryption with Invantive Data Hub

Perform the following steps to encrypt a password with the device key using Invantive Data Hub:

- Start Invantive Data Hub.
- Either log on to the database you want to encrypt the password for.
- Or choose one which does not require authentication like the Dummy database shown below:



The screenshot shows a terminal window titled "Invantive Data Hub (17.14.1-BETA+463 Development)". The window contains the following text:

```

*** Connect ***
Query itgenlom010: Use connection name 'Various\Dummy'? Question? [Y/n] 1
n
Query itgenlom005: Connection name or number ('?' for list, append text to filter, '*' for discovery, 'L' for license)
?dummy 2
19: Various\Dummy

Query itgenlom005: Connection name or number ('?' for list, append text to filter, '*' for discovery, 'L' for license)
19 3
itgenlom014: Connection chosen: Various\Dummy
itgenlom015: Logging on
itgenlom020: Log on.
itgenlom020: Check compatibility.
itgenlom020: Check license.
itgenlom020: Configure user.
itgenlom020: Loading user info
itgenlom020: Loading user preferences
itgenlom020: Loading translations
itgenlom020: Loading privileges
itgenlom020: Showing messages
Exclamation itgenube150:

*** You have 1 messages from Invantive. ***

itgentest15: How is the weather today?
Exclamation itgenube151:

*** End of messages. ***

itgenlom016: Connected! Connecting took 717 ms.
itgendhb029: Log File: Not configured
itgendhb066: License Contract Code: [REDACTED]
itgendhb076: License ID: [REDACTED]
itgendhb067: Licensee: Invantive B.V.
itgendhb070: Licensor: Invantive B.V.
itgendhb069: Dealer: Invantive B.V.
itgendhb030: Database: Various\Dummy
itgendhb031: Log On Code:
itgendhb032: Site: Dummy
itgendhb033: OS Log On Code:
itgendhb034: Machine:
itgendhb034: IID: [REDACTED]
itgendhb035: Current Directory: C:\Program Files (x86)\Invantive Software BV\Invantive Data Hub
itgendhb073: Product Installation Configuration File: C:\Users\[REDACTED]\Invantive\Prd\Invantive Data Hub\Inst\Data Hub\product-installation-user.settings
itgendhb074: Product Configuration File: C:\Users\[REDACTED]\Invantive\Prd\Invantive Data Hub\product-user.settings
itgendhb075: Global Configuration File: C:\Users\[REDACTED]\Invantive\user.settings

Exclamation itgendhb071: Get help on the available statements with 'local help'.

INVANTIVE> 4

```

Annotations with red circles and numbers:

- Annotation 1: A red circle with the number 1 is placed over the question mark in the "Question? [Y/n]" prompt.
- Annotation 2: A red circle with the number 2 is placed over the database name "Various\Dummy" in the search results.
- Annotation 3: A red circle with the number 3 is placed over the database name "Various\Dummy" in the search results.
- Annotation 4: A red circle with the number 4 is placed over the "INVANTIVE>" prompt.

- Note that at (2) the user searches for a database with 'dummy' in the name and at (3) the user enters the number of the database given by the search.
- At the INVANTIVE prompt enter the following statement and press enter:
`local encrypt password`
- Enter the password and press enter.
- Enter the password again and press enter:

```
INVANTIVE> local encrypt password
Query itgenql070: Enter password to encrypt with device key.
*****
Query itgenlqr002: Enter password again.
*****
itgenql071: Password encrypted with device key is: Ub+Vt9w4ayTSPbmM+FzwTGodZVvUY93val
a2fYYW0sgHML/yQCu4VHbfN+84U15XfxC9I/jxifLKjrSVUyFbXBTzsGJD0hVfMwm0w1sLgVDZH+CSGk1WGg
IcYJCUfxqsjR3cCFXXvFNn5aQdSnP9/8/V7h
**** Warning itgenlqr001: This encrypted password is for use with Invantive products
which it was generated.
Query itgenlqr003: Save encrypted password to a file? Question? [y/N]
```

- The encrypted password will be shown.
- Optionally save the encrypted password to a file.

6 Exit Code

The exit code reflects whether execution was successful. The following exit codes are used:

- 0: Execution was completely successful.
- 1: Warning. A warning status indicates that something went wrong, but that the program completed correctly.
- 2: Error. An error status indicates an error raised by Invantive SQL or Data Hub.
- 3: Fatal. A fatal status means that an error occurred that was raised by code not maintained by Invantive, such as a file I/O error by Microsoft Windows.
- 4: Unhandled. An unhandled status means that the program was confronted with a situation it could not resolve. Please contact Invantive Support.

7 Invantive Script Extensions

Invantive Data Hub supports Invantive Script in addition to support for both Invantive SQL and native SQL databases. Invantive Script is executed on the device running the program.

The following statements are available on top of the regular Invantive Script statements:

- @@: run a SQL script file from the folder in which the current executing file is loaded.
- @: run a SQL script file from the working directory of the program.

8 Invantive Basics

8.1 Configuration

8.1.1 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`.

8.1.2 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.

8.1.3 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.

8.1.4 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.

8.1.5 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.

8.1.6 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:

- iid: 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.

8.1.7 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.

9 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](#)¹⁵ depicts the possibilities.

9.1 Language

9.1.1 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 off 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.

9.1.2 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_comp5') 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'.

9.1.3 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.

9.1.4 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.

9.1.5 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.

9.1.6 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.

9.1.7 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.

9.1.8 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.

9.1.9 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 off 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 ...)'.

9.1.10 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.

9.1.11 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'.

9.1.12 Grammar

sqlBatch:

```
sqlOrPSqlStatement BATCHSEPARATOR BATCHSEPARATOR  
sqlBatch15 ::= sqlOrPSqlStatement15 ( BATCHSEPARATOR15?  
sqlOrPSqlStatement15 ) * BATCHSEPARATOR15?
```

no references

sqlOrPSqlStatement:

```
sqlStatement pSqlStatement
  sqlOrPsqlStatement[15]
    ::= sqlStatement[16]
    | pSqlStatement[103]
```

referenced by:

- [sqlBatch](#)[15]

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[16]
  ::= selectStatement[16]
  | insertStatement[46]
  | updateStatement[48]
  | deleteStatement[48]
  | ddlStatement[39]
  | setStatement[43]
  | useStatement[45]
  | transactionStatement[43]
  | executeFileStatement[44]
```

referenced by:

- [pSqlStatement](#)[103]
- [sqlOrPsqlStatement](#)[15]

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[16]
  ::= uniqueSelectStatement[17]
  | setOperatorSelectStatement[17]* orderBy[30]?
  | limitClause[22]?
```

referenced by:

- [arithmeticExpression](#)⁵⁶
- [createTableStatement](#)⁴²
- [embeddedSelect](#)²²
- [inSelectStatement](#)¹⁷
- [insertStatement](#)⁴⁶
- [pSqlForRecordLoopStatement](#)¹⁰⁶
- [sqlStatement](#)¹⁶
- [useStatement](#)⁴⁵

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

```
inSelectStatement17
    ::= selectStatement16
```

referenced by:

- [predicateExpression](#)⁵³

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

```
setOperatorSelectStatement17
    ::= ( UNION15 ALL15? | MINUS_C15 | INTERSECT15 )
uniqueSelectStatement17
```

referenced by:

- [selectStatement](#)¹⁶

uniqueSelectStatement:

Retrieves a data set from one or more data containers.

select executionHints distinct topClause selectList INTO variableList FROM dataSource
joinStatements whereClause groupBy

```
uniqueSelectStatement17
  ::= select18 executionHints? distinct? topClause22?
    selectList36 ( INTO47 variableList21 )? FROM15 dataSource18?
    joinStatements31? whereClause31? groupBy30?
```

referenced by:

- [selectStatement](#)¹⁶
- [setOperatorSelectStatement](#)¹⁷

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
dataSource18
  ::= ( tableOrFunctionSpec23 | embeddedSelect22 |
    xmlTableSpec24 | csvTableSpec26 | jsonTableSpec25 ) aliased36?
```

referenced by:

- [joinStatement](#)³²
- [uniqueSelectStatement](#)¹⁷

select:

```
SELECT
  select18 ::= SELECT18
```

referenced by:

- [uniqueSelectStatement](#)¹⁷

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
executionHints18
  ::= EXECUTION_HINT_START15 ( joinSet20 | noJoinSet21 |
    ods19 | resultSetName20 | lowCost21 | httpDiskCache18 |
    httpMemoryCache19 ) * EXECUTION_HINT_END15
```

referenced by:

- [uniqueSelectStatement](#)¹⁷

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 18
  ::= HTTP_DISK_CACHE 15 ( PARENTHESIS_OPEN 15
booleanConstant 101 ( COMMA 15 booleanConstant 101 ( COMMA 15
intervalConstant 100 ) ? ) ? PARENTHESIS_CLOSE 15 ) ?
```

referenced by:

- executionHints 18

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 19
  ::= HTTP_MEMORY_CACHE 15 ( PARENTHESIS_OPEN 15
booleanConstant 101 ( COMMA 15 booleanConstant 101 ( COMMA 15
intervalConstant 100 ) ? ) ? PARENTHESIS_CLOSE 15 ) ?
```

referenced by:

- executionHints 18

ods:

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

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

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

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

ODS PARENTHESIS_OPEN booleanConstant COMMA intervalConstant
PARENTHESIS_CLOSE

```
ods19 ::= ODS19 ( PARENTHESIS_OPEN15 booleanConstant101  
( COMMA15 intervalConstant100 )? PARENTHESIS_CLOSE15 )?
```

referenced by:

- [executionHints](#)¹⁸

resultSetName:

RESULT_SET_NAME PARENTHESIS_OPEN stringConstant PARENTHESIS_CLOSE

```
resultSetName20 ::= RESULT_SET_NAME15 ( PARENTHESIS_OPEN15  
stringConstant100 PARENTHESIS_CLOSE15 )?
```

referenced by:

- [executionHints](#)¹⁸

joinSet:

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

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

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

The following example takes for instances 5.000 sales invoices from an Exact Online environment with 100.000 sales invoices. Each sales invoice has 4..10 lines. The join does not retrieve all sales invoices nor all invoice lines, but instead fetches the 5.000 sales invoices using the where-clause, and then retrieves the related invoice lines using a column-indexed lookup by invoiceid. Since Exact Online is an OData source, the approximately 30.000 invoice lines will be retrieved 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_d-
ate( :P_RECEIPT_DATE_TO, 'yyyymmdd')
```

JOIN_SET PARENTHESIS_OPEN identifier COMMA identifier COMMA numericConstant
PARENTHESIS CLOSE

```
joinSet[20] ::= JOIN_SET[15] PARENTHESIS_OPEN[15] identifier[93]
( COMMA[15] identifier[93] ( COMMA[15] numericConstant[101] )? )?
PARENTHESIS_CLOSE[15]
```

referenced by:

- [executionHints](#)

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[21]
 ::= NO_JOIN_SET[15] PARENTHESIS_OPEN[15] identifier[93]
( COMMA[15] identifier[93] )? PARENTHESIS_CLOSE[15]
```

referenced by:

- [executionHints](#)

variableList:

variableName COMMA variableName

```
variableList[21]
 ::= variableName[106] ( COMMA[15] variableName[106] )?
```

referenced by:

- [uniqueSelectStatement](#)

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[21] ::= LOW_COST[15]
```

referenced by:

- [executionHints](#)

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

distinct²¹ ::= DISTINCT²¹

referenced by:

- aggregateFunction³⁷
- uniqueSelectStatement¹⁷

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

topClause²²
::= TOP¹⁵ numericConstant¹⁰¹

referenced by:

- uniqueSelectStatement¹⁷

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

limitClause²²
::= LIMIT¹⁵ numericConstant¹⁰¹

referenced by:

- selectStatement¹⁶

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

embeddedSelect²²
::= parenthesisOpen⁵⁰ selectStatement¹⁶
parenthesisClose⁵¹

referenced by:

- dataSource¹⁸

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

```
tableSpec23
  ::= fullTableIdentifier91 distributedAliasDirective24?
```

referenced by:

- [alterPersistentCacheDropStatement](#)⁴¹
- [alterPersistentCacheSetTableOptions](#)⁴²
- [alterPersistentCacheTableRefreshStatement](#)⁴¹
- [createTableStatement](#)⁴²
- [deleteStatement](#)⁴⁸
- [dropTableStatement](#)⁴³
- [insertStatement](#)⁴⁶
- [updateStatement](#)⁴⁸

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

```
tableOrFunctionSpec23
  ::= fullTableIdentifier91 tableFunctionSpec23?
distributedAliasDirective24?
```

referenced by:

- [dataSource](#)¹⁸

tableFunctionSpec:

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

parenthesisOpen expression COMMA parenthesisClose

```
tableFunctionSpec [23]
  ::= parenthesisOpen [50] ( expression [49] ( COMMA [15]
expression [49] ) * )? parenthesisClose [51]
```

referenced by:

- [tableOrFunctionSpec](#) [23]

distributedAliasDirective:

The distributed alias after the at-sign specifies a specific data source to be used, such as 'exactonline@rest..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 [24]
  ::= AT [15] dataContainerAlias [24]
```

referenced by:

- [partitionIdentifierWithAlias](#) [46]
- [setIdentifier](#) [43]
- [tableOrFunctionSpec](#) [23]
- [tableSpec](#) [23]

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 [24]
  ::= identifier [93]
```

referenced by:

- [alterPersistentCacheRefreshStatement](#) [40]
- [distributedAliasDirective](#) [24]

xmlTableSpec:

XMLTABLE parenthesisOpen stringConstant null xmlTablePassing xmlTableLiteral xmlTableColumns parenthesisClose

```
xmlTableSpec [24]
  ::= XMLTABLE [15] parenthesisOpen [50] ( stringConstant [100] |
null [102] ) ( xmlTablePassing [25] | xmlTableLiteral [25] )
xmlTableColumns [25] parenthesisClose [51]
```

referenced by:

- [dataSource](#) [18]

xmlTablePassing:

PASSING expression

```
xmlTablePassing25
  ::= PASSING15 expression49
```

referenced by:

- xmlTableSpec²⁴

xmlTableLiteral:

LITERAL expression

```
xmlTableLiteral25
  ::= LITERAL15 expression49
```

referenced by:

- xmlTableSpec²⁴

xmlTableColumns:

COLUMNS xmlTableColumSpec COMMA

```
xmlTableColumns25
  ::= COLUMNS15 xmlTableColumSpec25 ( COMMA15
    xmlTableColumSpec25 ) *
```

referenced by:

- xmlTableSpec²⁴

xmlTableColumSpec:

identifier dataType PATH stringConstant

```
xmlTableColumSpec25
  ::= identifier93 dataType27 PATH15 stringConstant100
```

referenced by:

- xmlTableColumns²⁵

jsonTableSpec:

JSONTABLE parenthesisOpen stringConstant null jsonTablePassing jsonTableLiteral jsonTableColumns parenthesisClose

```
jsonTableSpec25
  ::= JSONTABLE15 parenthesisOpen50 ( stringConstant100 |
    null102 ) ( jsonTablePassing25 | jsonTableLiteral26 )
    jsonTableColumns26 parenthesisClose51
```

referenced by:

- dataSource¹⁸

jsonTablePassing:

PASSING expression

```
jsonTablePassing25
  ::= PASSING15 expression49
```

referenced by:

- jsonTableSpec²⁵

jsonTableLiteral:

LITERAL expression

```
jsonTableLiteral26
  ::= LITERAL15 expression49
```

referenced by:

- jsonTableSpec²⁵

jsonTableColumns:

COLUMNS jsonTableColumSpec COMMA

```
jsonTableColumns26
  ::= COLUMNS15 jsonTableColumSpec26 ( COMMA15
jsonTableColumSpec26 ) *
```

referenced by:

- jsonTableSpec²⁵

jsonTableColumSpec:

identifier dataType PATH stringConstant

```
jsonTableColumSpec26
  ::= identifier93 dataType27 PATH15 stringConstant100
```

referenced by:

- jsonTableColumns²⁶

csvTableSpec:

CSVTABLE parenthesisOpen csvTablePassing csvTableLiteral csvTableOptions csvTableColumns parenthesisClose

```
csvTableSpec26
  ::= CSVTABLE15 parenthesisOpen50 ( csvTablePassing27 |
csvTableLiteral27 ) csvTableOptions26 csvTableColumns27
parenthesisClose51
```

referenced by:

- dataSource¹⁸

csvTableOptions:

ROW DELIMITER stringConstant COLUMN DELIMITER stringConstant SKIP_ LINES numericConstant

```
csvTableOptions26
  ::= ( ROW15 DELIMITER15 stringConstant100 ) ? ( COLUMN31
DELIMITER15 stringConstant100 ) ? ( SKIP15 LINES15
numericConstant101 ) ?
```

referenced by:

- csvTableSpec²⁶

csvTableLiteral:

LITERAL expression

```
csvTableLiteral27
  ::= LITERAL15 expression49
```

referenced by:

- csvTableSpec²⁶

csvTablePassing:

PASSING expression

```
csvTablePassing27
  ::= PASSING15 expression49
```

referenced by:

- csvTableSpec²⁶

csvTableColumns:

COLUMNS csvTableColumSpec COMMA

```
csvTableColumns27
  ::= COLUMNS15 csvTableColumSpec27 ( COMMA15
csvTableColumSpec27 ) *
```

referenced by:

- csvTableSpec²⁶

csvTableColumSpec:

identifier dataType POSITION numericConstant

```
csvTableColumSpec27
  ::= identifier93 dataType27 POSITION15
numericConstant101
```

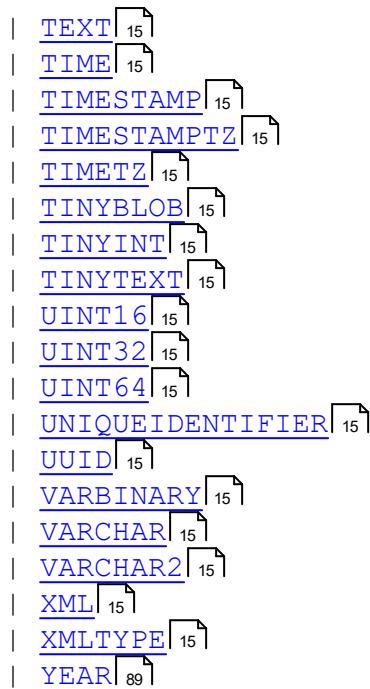
referenced by:

- csvTableColumns²⁷

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[27] ::= BFILE[15]
| BIGINT[15]
| BIGSERIAL[15]
| BIT[15]
| BLOB[15]
| BOOL[15]
| BOOLEAN[15]
| BPCHAR[15]
| BYTE[15]
| BYTEA[15]
| CHAR[15]
| CHARACTER[15]
| CLOB[15]
| DATE[15]
| DATETIME[15]
| DATETIMEOFFSET[15]
| DEC[15]
| DECIMAL[15]
| DOUBLE[15]
| FLOAT[15]
| FLOAT4[15]
| FLOAT8[15]
| GUID[15]
| IMAGE[15]
| INT[15]
| INT16[15]
| INT2[15]
| INT32[15]
| INT4[15]
| INT64[15]
| INT8[15]
| INTEGER[15]
| INTERVAL[15]
| LONGBLOB[15]
| LONGTEXT[15]
| MEDIUMBLOB[15]
| MEDIUMINT[15]
| MEDIUMTEXT[15]
| MONEY[15]
| NAME[15]
| NCHAR[15]
| NUMBER[15]
| NUMERIC[15]
| NVARCHAR[15]
| OID[15]
| RAW[15]
| REAL[15]
| SERIAL[15]
| SMALLDATETIME[15]
| SMALLINT[15]
| SMALLMONEY[15]
| SMALLSERIAL[15]
```



referenced by:

- [csvTableColumSpec](#)[27]
- [jsonTableColumSpec](#)[26]
- [pSqlItemDeclaration](#)[102]
- [xmlTableColumSpec](#)[25]

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](#)[30] ::= [GROUP](#)[15] [BY](#)[15] [columnList](#)[31]

referenced by:

- [uniqueSelectStatement](#)[17]

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](#)[30] ::= [ORDER](#)[15] [BY](#)[15] [column](#)[31] [sortDirection](#)[31]? ([COMMA](#)[15] [column](#)[31] [sortDirection](#)[31]?) *

referenced by:

- [aggregateFunction](#)[37]
- [selectStatement](#)[16]

sortDirection:

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

asc desc

```
sortDirection31
  ::= asc36
    | desc36
```

referenced by:

- orderBy³⁰

columnList:

A comma-separated list of columns.

column COMMA

```
columnList31
  ::= column31 ( COMMA15 column31 ) *
```

referenced by:

- groupBy³⁰
- insertFieldList⁴⁷

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

```
column31 ::= identifier93 ( DOT15 identifier93 ) ?
```

referenced by:

- columnList³¹
- orderBy³⁰
- updateValue⁴⁸

whereClause:

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

WHERE booleanExpression

```
whereClause31
  ::= WHERE15 booleanExpression49
```

referenced by:

- deleteStatement⁴⁸
- uniqueSelectStatement¹⁷
- updateStatement⁴⁸

joinStatements:

A list of join statement.

joinStatement

```
joinStatements31  
: := joinStatement32+
```

referenced by:

- uniqueSelectStatement¹⁷

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

```
joinStatement32  
: := joinCategory32 join33 dataSource18  
joinConditions36?
```

referenced by:

- joinStatements³¹

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

```
joinCategory32  
: := ( inner33 | joinSubCategory33 outer33? | cross34  
)?
```

referenced by:

- joinStatement³²

joinSubCategory:

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

left right full

```
joinSubCategory [33]
  ::= left [33]
  | right [33]
  | full [34]
```

referenced by:

- [joinCategory](#) [32]

join:

JOIN
join [33] ::= JOIN [33]

referenced by:

- [joinStatement](#) [32]

inner:

INNER
inner [33] ::= INNER [33]

referenced by:

- [joinCategory](#) [32]

outer:

OUTER
outer [33] ::= OUTER [33]

referenced by:

- [joinCategory](#) [32]

left:

LEFT
left [33] ::= LEFT [33]

referenced by:

- [functionExpression](#) [57]
- [joinSubCategory](#) [33]

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

right³³ ::= RIGHT³³

referenced by:

- functionExpression⁵⁷
- joinSubCategory³³

full:

FULL

full³⁴ ::= FULL³⁴

referenced by:

- joinSubCategory³³

cross:

CROSS

cross³⁴ ::= CROSS³⁴

referenced by:

- joinCategory³²

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

sum³⁴ ::= SUM³⁴

referenced by:

- aggregateFunction³⁷

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

product³⁴ ::= PRODUCT³⁴

referenced by:

- aggregateFunction³⁷

min:

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

MIN

min³⁴ ::= MIN³⁴

referenced by:

- [aggregateFunction](#)³⁷

max:

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

MAX

max³⁵ ::= MAX³⁵

referenced by:

- [aggregateFunction](#)³⁷

avg:

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

AVG

avg³⁵ ::= AVG³⁵

referenced by:

- [aggregateFunction](#)³⁷

stddev:

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

STDDEV

stddev³⁵ ::= STDDEV³⁵

referenced by:

- [aggregateFunction](#)³⁷

count:

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

COUNT

count³⁵ ::= COUNT³⁵

referenced by:

- [aggregateFunction](#)³⁷

listagg:

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

LISTAGG

listagg³⁵ ::= LISTAGG³⁵

referenced by:

- aggregateFunction³⁷

asc:**ASC**

asc³⁶ ::= ASC³⁶

referenced by:

- sortDirection³¹

desc:**DESC**

desc³⁶ ::= DESC³⁶

referenced by:

- sortDirection³¹

joinConditions:**ON booleanExpression**

joinConditions³⁶ ::= ON¹⁵ booleanExpression⁴⁹

referenced by:

- joinStatement³²

selectList:**selectPart COMMA**

selectList³⁶ ::= selectPart³⁶ (COMMA¹⁵ selectPart³⁶) *

referenced by:

- uniqueSelectStatement¹⁷

selectPart:**part aliased labeled**

selectPart³⁶ ::= part³⁷ aliased³⁶? labeled³⁷?

referenced by:

- selectList³⁶

aliased:

AS alias

aliased³⁶ ::= AS¹⁵? alias⁹³

referenced by:

- dataSource¹⁸
- selectPart³⁶

labeled:**LABEL stringConstant**

labeled³⁷ ::= LABEL¹⁵ stringConstant¹⁰⁰

referenced by:

- selectPart³⁶

part:**expression aggregateFunction allColumnsSpec**

part³⁷ ::= expression⁴⁹
 | aggregateFunction³⁷
 | allColumnsSpec³⁷

referenced by:

- aggregateFunction³⁷
- selectPart³⁶

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
aggregateFunction³⁷
 ::= (((sum³⁴ | product³⁴ | avg³⁵ | stddev³⁵)
 parenthesisOpen⁵⁰ distinct²¹? | (min³⁴ | max³⁵)
 parenthesisOpen⁵⁰) arithmeticExpression⁵⁶ | count³⁵
 parenthesisOpen⁵⁰ distinct²¹? part³⁷ | listagg³⁵
 parenthesisOpen⁵⁰ distinct²¹? arithmeticExpressionList⁵⁷
 (parenthesisClose⁵¹ WITHIN¹⁵ GROUP¹⁵ parenthesisOpen⁵⁰
 orderBy³⁰)?) parenthesisClose⁵¹

referenced by:

- part³⁷

allColumnsSpec:

allColumnsSpecId allColumnsSpecColumnNamePrefix allColumnsSpecColumnNamePostfix allColumnsSpecLabelPrefix allColumnsSpecLabelPostfix

```
allColumnsSpec37
  ::= allColumnsSpecId38
    allColumnsSpecColumnNamePrefix38?
    allColumnsSpecColumnNamePostfix38? allColumnsSpecLabelPrefix38?
    allColumnsSpecLabelPostfix38?
```

referenced by:

- part³⁷

allColumnsSpecId:

alias DOT ASTERIX

```
allColumnsSpecId38
  ::= ( alias93 DOT15 )? ASTERIX15
```

referenced by:

- allColumnsSpec³⁷

allColumnsSpecColumnNamePrefix:

PREFIX WITH stringConstant

```
allColumnsSpecColumnNamePrefix38
  ::= PREFIX15 WITH15 stringConstant100
```

referenced by:

- allColumnsSpec³⁷

allColumnsSpecColumnNamePostfix:

POSTFIX WITH stringConstant

```
allColumnsSpecColumnNamePostfix38
  ::= POSTFIX15 WITH15 stringConstant100
```

referenced by:

- allColumnsSpec³⁷

allColumnsSpecLabelPrefix:

LABEL PREFIX WITH stringConstant

```
allColumnsSpecLabelPrefix38
  ::= LABEL15 PREFIX15 WITH15 stringConstant100
```

referenced by:

- allColumnsSpec³⁷

allColumnsSpecLabelPostfix:

LABEL POSTFIX WITH stringConstant

```
allColumnsSpecLabelPostfix38
  ::= LABEL15 POSTFIX15 WITH15 stringConstant100
```

referenced by:

- [allColumnsSpec](#)³⁷

ddlStatement:

```
createTableStatement dropTableStatement alterPersistentCacheStatement
ddlStatement39
  ::= createTableStatement42
  | dropTableStatement43
  | alterPersistentCacheStatement39
```

referenced by:

- [sqlStatement](#)¹⁶

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 its 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 [39]
  ::= alterPersistentCacheSetStatement [42]
    | alterPersistentCacheDownloadStatement [40]
    | alterPersistentCachePurgeStatement [40]
    | alterPersistentCacheRefreshStatement [40]
    | alterPersistentCacheLoadStatement [41]
    | alterPersistentCacheTableRefreshStatement [41]
    | alterPersistentCachePartitionRefreshStatement [41]
    | alterPersistentCacheDropStatement [41]
```

referenced by:

- [ddlStatement](#) [39]

alterPersistentCachePurgeStatement:

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

```
alterPersistentCachePurgeStatement [40]
  ::= ALTER [15] PERSISTENT [15] CACHE [15] PURGE [15] ( UNKNOWN [15] |
OBSOLETE [15] | READY [15] | DROPPABLE [15] | ALL [15] ) TABLE [15]
PARTITION [15] VERSIONS [15]
```

referenced by:

- [alterPersistentCacheStatement](#) [39]

alterPersistentCacheDownloadStatement:

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

```
alterPersistentCacheDownloadStatement [40]
  ::= ALTER [15] PERSISTENT [15] CACHE [15] DOWNLOAD [15] FEED [15]
( LICENSE [15] CONTRACT [15] CODE [15] stringConstant [100] ) ?
( DATA_CONTAINER [15] stringConstant [100] ) ? ( PARTITION [15]
partitionSimpleIdentifier [46] ) ? ( LIMIT [15] numericConstant [101] ) ?
```

referenced by:

- [alterPersistentCacheStatement](#) [39]

alterPersistentCacheRefreshStatement:

ALTER PERSISTENT CACHE FORCE REFRESH DATA_CONTAINER dataContainerAlias PARALLEL numericConstant

```
alterPersistentCacheRefreshStatement [40]
  ::= ALTER [15] PERSISTENT [15] CACHE [15] FORCE [15]? REFRESH [15]
  ( DATA_CONTAINER [15] dataContainerAlias [24]? )? ( PARALLEL [15]
  numericConstant [101] )?
```

referenced by:

- [alterPersistentCacheStatement](#) [39]

alterPersistentCacheLoadStatement:

ALTER PERSISTENT CACHE LOAD

```
alterPersistentCacheLoadStatement [41]
  ::= ALTER [15] PERSISTENT [15] CACHE [15] LOAD [15]
```

referenced by:

- [alterPersistentCacheStatement](#) [39]

alterPersistentCacheTableRefreshStatement:

ALTER PERSISTENT CACHE TABLE tableSpec FORCE REFRESH PARTITION partitionIdentifier PARALLEL numericConstant

```
alterPersistentCacheTableRefreshStatement [41]
  ::= ALTER [15] PERSISTENT [15] CACHE [15] TABLE [15] tableSpec [23]
  FORCE [15]? REFRESH [15] ( PARTITION [15] partitionIdentifier [45]? )
  ( PARALLEL [15] numericConstant [101] )?
```

referenced by:

- [alterPersistentCacheStatement](#) [39]

alterPersistentCachePartitionRefreshStatement:

ALTER PERSISTENT CACHE PARTITION partitionIdentifier FORCE REFRESH PARALLEL numericConstant

```
alterPersistentCachePartitionRefreshStatement [41]
  ::= ALTER [15] PERSISTENT [15] CACHE [15] PARTITION [15]
  partitionIdentifier [45] FORCE [15]? REFRESH [15] ( PARALLEL [15]
  numericConstant [101] )?
```

referenced by:

- [alterPersistentCacheStatement](#) [39]

alterPersistentCacheDropStatement:

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

```
alterPersistentCacheDropStatement[41]
      ::= ALTER[15] PERSISTENT[15] CACHE[15] DROP[15] ( TABLE[15]
tableSpec[23] ( PARTITION[15] partitionIdentifier[45] )? | PARTITION[15] partitionIdentifier[45] | DATA CONTAINER[15]
stringConstant[100] )
```

referenced by:

- [alterPersistentCacheStatement](#)[39]

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[42]
      ::= ALTER[15] PERSISTENT[15] CACHE[15] SET[15] ( ( FRESH[15] | RETENTION[15] FORWARDED[15] INCOMING[15] MESSAGES[15] | METADATA[15]? RECYCLEBIN[15] | DATA[15] MODEL[15] VERSION[15] ) numericConstant[101] | TOKEN[15] stringConstant[100] | LOGICAL[15] ( OVERALL[15] | PARTITION[15] ) VIEW[15] ( NAME[15] ( PREFIX[15] | POSTFIX[15] ) stringConstant[100] | MAINTAIN[15] booleanConstant[101] ) | LOAD[15] MY[15] MESSAGES[15] | booleanConstant[101] | AUTO[15] UPGRADE[15] ONCE[15] | alterPersistentCacheSetTableOptions[42] )
```

referenced by:

- [alterPersistentCacheStatement](#)[39]

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[42]
      ::= TABLE[15] tableSpec[23] ( LOGICAL[15] ( OVERALL[15] VIEW[15] ( MAINTAIN[15] booleanConstant[101] | NAME[15] stringConstant[100] ) | PARTITION[15] VIEW[15] ( MAINTAIN[15] booleanConstant[101] | NAME[15] ( PREFIX[15] | POSTFIX[15] ) stringConstant[100] ) ) | STATE[15] ( OBSOLETE[15] | DROPPED[15] ) | ( PARTITION[15] partitionIdentifier[45] )? APPROACH[15] ( COPY[15] | TRICKLE[15] | SAMPLE[15] ) )
```

referenced by:

- [alterPersistentCacheSetStatement](#)[42]

createTableStatement:

CREATE orReplace TABLE tableSpec AS selectStatement

```
createTableStatement[42]
  ::= CREATE[15] orReplace[43]? TABLE[15] tableSpec[23] AS[15]
  selectStatement[16]
```

referenced by:

- [ddlStatement](#)[39]

dropTableStatement:

DROP TABLE tableSpec

```
dropTableStatement[43]
  ::= DROP[15] TABLE[15] tableSpec[23]
```

referenced by:

- [ddlStatement](#)[39]

orReplace:

OR REPLACE

```
orReplace[43]
  ::= OR[53] REPLACE[77]
```

referenced by:

- [createTableStatement](#)[42]

setStatement:

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

SET setIdentifier expression

```
setStatement[43]
  ::= SET[15] setIdentifier[43] expression[49]
```

referenced by:

- [sqlStatement](#)[16]

setIdentifier:

attributelIdentifier distributedAliasDirective

```
setIdentifier[43]
  ::= attributeIdentifier[92] distributedAliasDirective[24]?
```

referenced by:

- [setStatement](#)[43]

transactionStatement:

beginTransactionStatement rollbackTransactionStatement commitTransactionStatement

```
transactionStatement43
  ::= beginTransactionStatement44
    | rollbackTransactionStatement44
    | commitTransactionStatement44
```

referenced by:

- sqlStatement¹⁶

executeFileStatement:

FILE_PATH

```
executeFileStatement44
  ::= FILE_PATH15
```

referenced by:

- sqlStatement¹⁶

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

```
beginTransactionStatement44
  ::= BEGIN15 TRANSACTION15?
```

referenced by:

- transactionStatement⁴³

rollbackTransactionStatement:

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

ROLLBACK TRANSACTION

```
rollbackTransactionStatement44
  ::= ROLLBACK15 TRANSACTION15?
```

referenced by:

- transactionStatement⁴³

commitTransactionStatement:

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

COMMIT TRANSACTION

```
commitTransactionStatement44
  ::= COMMIT15 TRANSACTION15?
```

referenced by:

- transactionStatement⁴³

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 [45]
  ::= USE [15] ( partitionIdentifiersList [45] |
selectStatement [16] )
```

referenced by:

- [sqlStatement](#) [16]

partitionIdentifiersList:

partitionIdentifierWithAlias COMMA

```
partitionIdentifiersList [45]
  ::= partitionIdentifierWithAlias [46] ( COMMA [15]
partitionIdentifierWithAlias [46] ) *
```

referenced by:

- [useStatement](#) [45]

partitionIdentifier:

parameterExpression numericConstant identifier ALL DEFAULT

```
partitionIdentifier [45]
  ::= parameterExpression [54]
    | numericConstant [101]
    | identifier [93]
    | ALL [15]
    | DEFAULT [15]
```

referenced by:

- [alterPersistentCacheDropStatement](#) [41]
- [alterPersistentCachePartitionRefreshStatement](#) [41]
- [alterPersistentCacheSetTableOptions](#) [42]
- [alterPersistentCacheTableRefreshStatement](#) [41]

- [partitionIdentifierWithAlias](#)⁴⁶

partitionIdentifierWithAlias:

partitionIdentifier distributedAliasDirective

```
partitionIdentifierWithAlias46
  ::= partitionIdentifier45 distributedAliasDirective24?
```

referenced by:

- [partitionIdentifiersList](#)⁴⁵

partitionSimpleIdentifier:

numericConstant identifier

```
partitionSimpleIdentifier46
  ::= numericConstant101
    | identifier93
```

referenced by:

- [alterPersistentCacheDownloadStatement](#)⁴⁰

insertStatement:

bulk insert into tableSpec insertFieldList valuesExpression insertFieldList selectStatement
identifiedByClause attachToClause

```
insertStatement46
  ::= bulk46? insert47 into47 tableSpec23
    ( insertFieldList47 valuesExpression46 | insertFieldList47?
      selectStatement16 ) identifiedByClause48? attachToClause48?
```

referenced by:

- [sqlStatement](#)¹⁶

valuesExpression:

values_insertValues

```
valuesExpression46
  ::= values47 insertValues47
```

referenced by:

- [insertStatement](#)⁴⁶

bulk:

BULK

```
bulk46      ::= BULK46
```

referenced by:

- [insertStatement](#)⁴⁶

into:

INTO
 [into](#) ::= [INTO](#)

referenced by:

- [insertStatement](#)

insert:

INSERT
 [insert](#) ::= [INSERT](#)

referenced by:

- [insertStatement](#)

values_:

VALUES
 [values](#) ::= [VALUES](#)

referenced by:

- [valuesExpression](#)

insertFieldList:

parenthesisOpen columnList parenthesisClose

[insertFieldList](#)
 ::= [parenthesisOpen](#) [columnList](#) [parenthesisClose](#)

referenced by:

- [insertStatement](#)

insertValues:

parenthesisOpen insertValuesList parenthesisClose

[insertValues](#)
 ::= [parenthesisOpen](#) [insertValuesList](#) [parenthesisClose](#)

referenced by:

- [valuesExpression](#)

insertValuesList:

arithmeticExpression COMMA

[insertValuesList](#)
 ::= [arithmeticExpression](#) [COMMA](#) [arithmeticExpression](#) *

referenced by:

- [insertValues](#)⁴⁷

identifiedByClause:

IDENTIFIED BY arithmeticExpression

```

identifiedByClause48
 ::= IDENTIFIED15 BY15 arithmeticExpression56

```

referenced by:

- [insertStatement](#)⁴⁶

attachToClause:

ATTACH TO arithmeticExpression

```

attachToClause48
 ::= ATTACH15 TO15 arithmeticExpression56

```

referenced by:

- [insertStatement](#)⁴⁶

updateStatement:

UPDATE FROM tableSpec SET updateValuesList whereClause

```

updateStatement48
 ::= UPDATE15 FROM15? tableSpec23 SET15
    updateValuesList48 whereClause31?

```

referenced by:

- [sqlStatement](#)¹⁶

updateValuesList:

updateValue COMMA

```

updateValuesList48
 ::= updateValue48 ( COMMA15 updateValue48 ) *

```

referenced by:

- [updateStatement](#)⁴⁸

updateValue:

column EQ arithmeticExpression

```

updateValue48
 ::= column31 EQ55 arithmeticExpression56

```

referenced by:

- [updateValuesList](#)⁴⁸

deleteStatement:

delete FROM tableSpec whereClause

```
deleteStatement48
  ::= delete49 FROM15? tableSpec23 whereClause31?
```

referenced by:

- sqlStatement¹⁶

delete:

DELETE

```
delete49  ::= DELETE49
```

referenced by:

- deleteStatement⁴⁸

expression:

booleanExpression arithmeticExpression

```
expression49
  ::= booleanExpression49
    | arithmeticExpression56
```

referenced by:

- caseElseExpression⁵⁰
- caseWhenThenExpression⁵⁰
- csvTableLiteral²⁷
- csvTablePassing²⁷
- jsonTableLiteral²⁶
- jsonTablePassing²⁵
- pSqlAssignmentStatement¹⁰⁴
- pSqlExecuteImmediateStatement¹⁰⁴
- part³⁷
- setStatement⁴³
- tableFunctionSpec²³
- xmlTableLiteral²⁵
- xmlTablePassing²⁵

booleanExpression:

not booleanExpression and or booleanExpression parenthesisOpen booleanExpression parenthesisClose predicateExpression true false

```
booleanExpression49
  ::= ( not52 | booleanExpression49 ( and53 | or53 ) )
booleanExpression49
  | parenthesisOpen50 booleanExpression49
parenthesisClose51
  | predicateExpression53
  | true53
  | false53
```

referenced by:

- [booleanExpression](#) 49
- [expression](#) 49
- [joinConditions](#) 36
- [pSqlElIfExpression](#) 105
- [pSqlIfStatement](#) 105
- [pSqlWhileLoopStatement](#) 106
- [whereClause](#) 31

caseExpression:

case caseWhenThenExpression caseElseExpression end
[caseExpression](#) 50
 ::= [case](#) 51 [caseWhenThenExpression](#) 50+
[caseElseExpression](#) 50? [end](#) 52

referenced by:

- [arithmeticExpression](#) 56

caseWhenThenExpression:

when expression then arithmeticExpression

[caseWhenThenExpression](#) 50
 ::= [when](#) 51 [expression](#) 49 [then](#) 52 [arithmeticExpression](#) 56

referenced by:

- [caseExpression](#) 50

caseElseExpression:

else expression

[caseElseExpression](#) 50
 ::= [else](#) 52 [expression](#) 49

referenced by:

- [caseExpression](#) 50

parenthesisOpen:

PARENTHESIS_OPEN
[parenthesisOpen](#) 50
 ::= [PARENTHESIS_OPEN](#) 15

referenced by:

- [aggregateFunction](#) 37
- [arithmeticExpression](#) 56
- [booleanExpression](#) 49
- [csvTableSpec](#) 26
- [embeddedSelect](#) 22

- [functionExpression](#)⁵⁷
- [insertFieldList](#)⁴⁷
- [insertValues](#)⁴⁷
- [jsonTableSpec](#)²⁵
- [now](#)⁹¹
- [predicateExpression](#)⁵³
- [tableFunctionSpec](#)²³
- [utc](#)⁹¹
- [xmlTableSpec](#)²⁴

parenthesisClose:

PARENTHESIS_CLOSE
`parenthesisClose`⁵¹
`::= PARENTHESIS CLOSE`¹⁵

referenced by:

- [aggregateFunction](#)³⁷
- [arithmeticExpression](#)⁵⁶
- [booleanExpression](#)⁴⁹
- [csvTableSpec](#)²⁶
- [embeddedSelect](#)²²
- [functionExpression](#)⁵⁷
- [insertFieldList](#)⁴⁷
- [insertValues](#)⁴⁷
- [jsonTableSpec](#)²⁵
- [now](#)⁹¹
- [predicateExpression](#)⁵³
- [tableFunctionSpec](#)²³
- [utc](#)⁹¹
- [xmlTableSpec](#)²⁴

case:

CASE
`case`⁵¹ `::= CASE`⁵¹

referenced by:

- [caseExpression](#)⁵⁰

when:

WHEN
`when`⁵¹ `::= WHEN`⁵¹

referenced by:

- [caseWhenThenExpression](#)⁵⁰

then:

THEN
 then⁵² ::= THEN⁵²

referenced by:

- [caseWhenThenExpression](#)⁵⁰

else:

ELSE
 else⁵² ::= ELSE⁵²

referenced by:

- [caseElseExpression](#)⁵⁰

end:

END
 end⁵² ::= END⁵²

referenced by:

- [caseExpression](#)⁵⁰

not:

NOT
 not⁵² ::= NOT⁵²

referenced by:

- [booleanExpression](#)⁴⁹
- [isLikeComparingExpression](#)⁵⁶
- [isNullComparingExpression](#)⁵⁵
- [predicateExpression](#)⁵³

is:

IS
 is⁵² ::= IS⁵²

referenced by:

- [isNullComparingExpression](#)⁵⁵

are:

ARE
 are⁵² ::= ARE⁵²

referenced by:

- [isEqualComparingExpression](#)⁵⁶

and:

AND

and⁵³ ::= AND⁵³

referenced by:

- booleanExpression⁴⁹
- predicateExpression⁵³

or:

OR

or⁵³ ::= OR⁵³

referenced by:

- booleanExpression⁴⁹

true:

TRUE

true⁵³ ::= TRUE⁵³

referenced by:

- booleanConstant¹⁰¹
- booleanExpression⁴⁹

false:

FALSE

false⁵³ ::= FALSE⁵³

referenced by:

- booleanConstant¹⁰¹
- booleanExpression⁴⁹

predicateExpression:

arithmeticExpression not in_ parenthesisOpen arithmeticExpression COMMA inSelectStatement parenthesisClose between arithmeticExpression and arithmeticExpression gt ge lt le eq neq arithmeticExpression isNullComparingExpression isLikeComparingExpression isEqualComparingExpression

predicateExpression⁵³ ::= arithmeticExpression⁵⁶ ((gt⁵⁴ | ge⁵⁴ | lt⁵⁴ | le⁵⁴ | eq⁵⁵ | neq⁵⁵) arithmeticExpression⁵⁶ | not⁵²? (between⁵⁵ arithmeticExpression⁵⁶ and⁵³ arithmeticExpression⁵⁶ | in⁵⁵ parenthesisOpen⁵⁰ (arithmeticExpression⁵⁶ (COMMA¹⁵ arithmeticExpression⁵⁶) * | inSelectStatement¹⁷) parenthesisClose⁵¹) | isNullComparingExpression⁵⁵ | isLikeComparingExpression⁵⁶ | isEqualComparingExpression⁵⁶))

referenced by:

- [booleanExpression](#) [49]

parameterExpression:

COLON identifier

[parameterExpression](#) [54]
::= [COLON](#) [15] [identifier](#) [93]

referenced by:

- [arithmeticExpression](#) [56]
- [partitionIdentifier](#) [45]

gt:

Greater than 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](#) [54] ::= [GT](#) [54]

referenced by:

- [predicateExpression](#) [53]

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](#) [54] ::= [GE](#) [54]

referenced by:

- [predicateExpression](#) [53]

lt:

Less than 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](#) [54] ::= [LT](#) [54]

referenced by:

- [predicateExpression](#) [53]

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

le⁵⁴ ::= LE⁵⁴

referenced by:

- [predicateExpression](#)⁵³

eq:

EQ

eq⁵⁵ ::= EQ⁵⁵

referenced by:

- [predicateExpression](#)⁵³

neq:

NEQ

neq⁵⁵ ::= NEQ⁵⁵

referenced by:

- [predicateExpression](#)⁵³

like:

LIKE

like⁵⁵ ::= LIKE⁵⁵

referenced by:

- [isLikeComparingExpression](#)⁵⁶

between:

BETWEEN

between⁵⁵ ::= BETWEEN⁵⁵

referenced by:

- [predicateExpression](#)⁵³

in_:

IN

in⁵⁵ ::= IN¹⁵

referenced by:

- [predicateExpression](#)⁵³

isNullComparingExpression:

is not NULL

[isNullComparingExpression](#)⁵⁵
 $::= \text{is} \square_{52} \text{ not} \square_{52} ? \text{NULL} \square_{102}$

referenced by:

- [predicateExpression](#)⁵³

isEqualComparingExpression:

are EQUAL

[isEqualComparingExpression](#)⁵⁶
 $::= \text{are} \square_{52} ? \text{EQUAL} \square_{15}$

referenced by:

- [predicateExpression](#)⁵³

isLikeComparingExpression:

not like arithmeticExpression

[isLikeComparingExpression](#)⁵⁶
 $::= \text{not} \square_{52} ? \text{like} \square_{55} \text{ arithmeticExpression} \square_{56}$

referenced by:

- [predicateExpression](#)⁵³

arithmeticExpression:

minus plus arithmeticExpression times divide plus minus concat arithmeticExpression parenthesisOpen arithmeticExpression selectStatement parenthesisClose functionExpression parameterExpression caseExpression fieldIdentifier constant

```
arithmeticExpression56  

 $::= ( \text{minus} \square_{73} | \text{plus} \square_{74} | \text{arithmeticExpression} \square_{56} )$   

 $( \text{times} \square_{83} | \text{divide} \square_{67} | \text{plus} \square_{74} | \text{minus} \square_{73} | \text{concat} \square_{64} ) )$   

arithmeticExpression56  

 $| \text{parenthesisOpen} \square_{50} ( \text{arithmeticExpression} \square_{56} |$   

selectStatement16 ) parenthesisClose51  

 $| \text{functionExpression} \square_{57}$   

 $| \text{parameterExpression} \square_{54}$   

 $| \text{caseExpression} \square_{50}$   

 $| \text{fieldIdentifier} \square_{92}$   

 $| \text{constant} \square_{99}$ 
```

referenced by:

- [aggregateFunction](#)³⁷
- [arithmeticExpression](#)⁵⁶
- [arithmeticExpressionList](#)⁵⁷
- [attachToClause](#)⁴⁸
- [caseWhenThenExpression](#)⁵⁰
- [expression](#)⁴⁹
- [identifiedByClause](#)⁴⁸
- [insertValuesList](#)⁴⁷
- [isLikeComparingExpression](#)⁵⁶

- [predicateExpression](#)⁵³
- [updateValue](#)⁴⁸

arithmeticExpressionList:

arithmeticExpression list

```
arithmeticExpressionList57
 ::= arithmeticExpression56 ( list70
    arithmeticExpression56 ) *
```

referenced by:

- [aggregateFunction](#)³⁷
- [functionExpression](#)⁵⁷

functionExpression:

abs acos anonymize ascii asin atan atan2 base64_decode base64_encode bit_length octet_length camel ceil chr coalesce concat_func cos covfify 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[57]
  ::= ( abs[58] | acos[59] | anonymize[59] | ascii[60] | asin[60]
  | atan[60] | atan2[60] | base64 decode[61] | base64 encode[61] |
  bit length[62] | octet length[63] | camel[62] | ceil[62] | chr[62] |
  coalesce[63] | concat func[64] | cos[64] | covfify[64] | compress[64] |
  uncompress[65] | dateadd[65] | datepart[65] | date ceil[65] |
  date floor[65] | date round[66] | date trunc[66] | day[66] |
  dayofweek[66] | dayofyear[67] | dense rank[67] | double metaphone[67] |
  double metaphone alt[67] | exp func[68] | floor[68] | from unixtime[68]
  | hour[69] | httpget[88] | httpget text[88] | httppost[88] | initcap[69]
  | instr[69] | jsondecode[69] | jsonencode[70] | left[33] | length[70] |
  levenshtein[70] | ln[70] | log[71] | lower[71] | lpad[71] | ltrim[71] |
  md5[72] | metaphone[72] | metaphone3[72] | metaphone3 alt[72] |
  microsecond[78] | millisecond[79] | minute[73] | mod[72] | month[73] |
  newid[73] | number to speech[79] | normalize[79] | nvl[74] | power[74] |
  quarter[88] | quote ident[89] | quote literal[89] | quote nullable[89] |
  | raise error[63] | random[74] | random blob[75] | rand[75] | rank[75] |
  regexp instr[76] | regexp replace[76] | regexp substr[75] |
  remainder[77] | replace[77] | repeat[63] | reverse[77] | right[33] |
  round[77] | row number[78] | rpad[78] | rtrim[78] | second[80] | sin[80] |
  soundex[80] | sqrt[80] | substr[80] | sys context[81] | tan[83] |
  to binary[90] | to char[90] | to date[90] | to number[91] | to guid[90] |
  to hex[84] | translate[83] | translate resources[83] | trim[84] |
  trunc[84] | unistr[84] | unix timestamp[85] | upper[85] | urldecode[85] |
  urlencode[85] | user[89] | unzip[86] | zip[86] | xmlcomment[86] |
  xmldecode[86] | xmlencode[87] | xmlement[87] | xmlformat[87] |
  xmlexport[87] | year[89] | add months[61] | zero blob[91] )
parenthesisOpen[50] arithmeticExpressionList[57]?
parenthesisClose[51]
  | random[74]
  | rand[75]
  | row number[78]
  | now[91]
  | utc[91]
  | user[89]

```

referenced by:

- [arithmeticExpression](#)[56]

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](#)[58] ::= [ABS](#)[58]

referenced by:

- [functionExpression](#)[57]

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](#)⁵⁹ : := [ACOS](#)⁵⁹

referenced by:

- [functionExpression](#)⁵⁷

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 SystemAnonymizationPre-definedMaps@DataDictionary
```

Returns: Anonymized value. ANONYMIZE

[anonymize](#)⁵⁹
::= [ANONYMIZE](#)⁵⁹

referenced by:

- [functionExpression](#)⁵⁷

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](#)⁶⁰
::= [ASCII](#)⁶⁰

referenced by:

- [functionExpression](#)⁵⁷

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](#)⁶⁰
::= [ASIN](#)⁶⁰

referenced by:

- [functionExpression](#)⁵⁷

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](#)⁶⁰
::= [ATAN](#)⁶⁰

referenced by:

- [functionExpression](#)⁵⁷

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

atan2⁶⁰ ::= ATAN2⁶⁰

referenced by:

- functionExpression⁵⁷

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_months⁶¹
::= ADD_MONTHS⁶¹

referenced by:

- functionExpression⁵⁷

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_decode⁶¹
::= BASE64_DECODE⁶¹

referenced by:

- functionExpression⁵⁷

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_encode⁶¹
::= BASE64_ENCODE⁶¹

referenced by:

- functionExpression⁵⁷

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

camel⁶² :::= CAMEL⁶²

referenced by:

- functionExpression⁵⁷

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. CELL

ceil⁶² :::= CEIL⁶²

referenced by:

- functionExpression⁵⁷

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

chr⁶² :::= CHR⁶²
| CHAR¹⁵

referenced by:

- functionExpression⁵⁷

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_length⁶²
 ::= BIT_LENGTH⁶²

referenced by:

- functionExpression⁵⁷

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_length⁶³
 ::= OCTET_LENGTH⁶³

referenced by:

- functionExpression⁵⁷

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

repeat⁶³ ::= REPEAT⁶³

referenced by:

- functionExpression⁵⁷

raise_error:

RAISE_ERROR
raise_error⁶³
 ::= RAISE_ERROR⁶³

referenced by:

- functionExpression⁵⁷

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](#)⁶³ ::= [COALESCE](#)⁶³

referenced by:

- [functionExpression](#)⁵⁷

concat:

Concatenate the left and right values together as a text.

CONCAT_OP

[concat](#)⁶⁴ ::= [CONCAT_OP](#)¹⁵

referenced by:

- [arithmeticExpression](#)⁵⁶

concat_func:

Concatenate a list of values together as a text.

CONCAT

[concat_func](#)⁶⁴
::= [CONCAT](#)⁶⁴

referenced by:

- [functionExpression](#)⁵⁷

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](#)⁶⁴ ::= [COS](#)⁶⁴

referenced by:

- [functionExpression](#)⁵⁷

covfefify:

COVFEFIFY

[covfefify](#)⁶⁴
::= [COVFEFIFY](#)⁶⁴

referenced by:

- [functionExpression](#)⁵⁷

compress:

COMPRESS

[compress](#)⁶⁴ ::= [COMPRESS](#)⁶⁴

referenced by:

- [functionExpression](#) 57

uncompress:

UNCOMPRESS

[uncompress](#) 65

$::=$ [UNCOMPRESS](#) 65

referenced by:

- [functionExpression](#) 57

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 which the interval should be added.

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

[dateadd](#) 65 $::=$ [DATEADD](#) 65

referenced by:

- [functionExpression](#) 57

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](#) 65 $::=$ [DATEPART](#) 65

referenced by:

- [functionExpression](#) 57

date_ceil:

DATE_CEIL

[date_ceil](#) 65

$::=$ [DATE_CEIL](#) 65

referenced by:

- [functionExpression](#) 57

date_floor:

DATE_FLOOR

date_floor⁶⁵
: := DATE_FLOOR⁶⁵

referenced by:

- functionExpression⁵⁷

date_round:**DATE_ROUND**

date_round⁶⁶
: := DATE_ROUND⁶⁶

referenced by:

- functionExpression⁵⁷

date_trunc:**DATE_TRUNC**

date_trunc⁶⁶
: := DATE_TRUNC⁶⁶

referenced by:

- functionExpression⁵⁷

day:

Collect the day from a date.

Parameters:

- Input: A dateTime.

Returns: The day as an integer. DAY

day⁶⁶ : := DAY⁶⁶

referenced by:

- functionExpression⁵⁷

dayofweek:

Collect the day of a week from a date.

Parameters:

- Input: A dateTime.

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

dayofweek⁶⁶
: := DAYOFWEEK⁶⁶

referenced by:

- functionExpression⁵⁷

dayofyear:

Collect the day of a year from a date.

Parameters:

- Input: A dateTime.

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

dayofyear⁶⁷
::= DAYOFYEAR⁶⁷

referenced by:

- functionExpression⁵⁷

dense_rank:

DENSE_RANK

dense_rank⁶⁷
::= DENSE_RANK⁶⁷

referenced by:

- functionExpression⁵⁷

double_metaphone:

DOUBLE_METAPHONE

double_metaphone⁶⁷
::= DOUBLE_METAPHONE⁶⁷

referenced by:

- functionExpression⁵⁷

double_metaphone_alt:

DOUBLE_METAPHONE_ALT

double_metaphone_alt⁶⁷
::= DOUBLE_METAPHONE_ALT⁶⁷

referenced by:

- functionExpression⁵⁷

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

divide⁶⁷ ::= DIVIDE⁶⁷

referenced by:

- [arithmeticExpression](#)⁵⁶

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](#)⁶⁸ ::= [EXP_OP](#)¹⁵

no references

exp_func:

EXP

[exp_func](#)⁶⁸ ::= [EXP](#)⁶⁸

referenced by:

- [functionExpression](#)⁵⁷

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](#)⁶⁸ ::= [FLOOR](#)⁶⁸

referenced by:

- [functionExpression](#)⁵⁷

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](#)⁶⁸ ::= [FROM_UNIXTIME](#)⁶⁸

referenced by:

- [functionExpression](#)⁵⁷

hour:

Collect the hour from a date.

Parameters:

- Input: A `dateTime`.

Returns: The hour as an integer. `HOUR`

hour 69 ::= HOUR 69

referenced by:

- functionExpression 57

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 69 ::= INITCAP 69

referenced by:

- functionExpression 57

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 69 ::= INSTR 69

referenced by:

- functionExpression 57

jsondecode:

`JSONDECODE`

jsondecode 69

::= JSONDECODE 69

referenced by:

- functionExpression 57

jsonencode:

JSONENCODE

jsonencode⁷⁰: := JSONENCODE⁷⁰

referenced by:

- functionExpression⁵⁷

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

length⁷⁰: := LENGTH⁷⁰

referenced by:

- functionExpression⁵⁷

levenshtein:Determine the Levenshtein distance between two values as defined on [Wikipedia](#).

LEVENSHTEIN

levenshtein⁷⁰: := LEVENSHTEIN⁷⁰

referenced by:

- functionExpression⁵⁷

list:

COMMA

list⁷⁰: := COMMA¹⁵

referenced by:

- arithmeticExpressionList⁵⁷

In:

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

ln⁷⁰: := LN⁷⁰

referenced by:

- functionExpression⁵⁷

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

log⁷¹ ::= LOG⁷¹

referenced by:

- functionExpression⁵⁷

lower:

Converts provided string to lowercase.

Parameters:

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

Returns: A string converted to lowercase. LOWER

lower⁷¹ ::= LOWER⁷¹

referenced by:

- functionExpression⁵⁷

lpad:

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

Parameters:

- Input: string to be padded.
- Length: 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

lpad⁷¹ ::= LPAD⁷¹

referenced by:

- functionExpression⁵⁷

ltrim:

Trims characters from the left side of a string.

Parameters:

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

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

ltrim⁷¹ ::= LTRIM⁷¹

referenced by:

- [functionExpression](#) 

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](#)  ::= [MD5](#) 

referenced by:

- [functionExpression](#) 

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](#)  ::= [METAPHONE](#) 

referenced by:

- [functionExpression](#) 

metaphone3:

METAPHONE3

[metaphone3](#)  ::= [METAPHONE3](#) 

referenced by:

- [functionExpression](#) 

metaphone3_alt:

METAPHONE3_ALT

[metaphone3_alt](#)  ::= [METAPHONE3_ALT](#) 

referenced by:

- [functionExpression](#) 

mod:

Get the remainder of a divide calculation.

Parameters:

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

Returns: The remainder. MOD

mod⁷² ::= MOD⁷²

referenced by:

- functionExpression⁵⁷

minus:

Subtracts a value from another.

Parameters:

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

Returns: The value minus the subtraction. MINUS

minus⁷³ ::= MINUS⁷³

referenced by:

- arithmeticExpression⁵⁶

minute:

Collect the minute from a date.

Parameters:

- Input: A dateTime.

Returns: The minute as an integer. MINUTE

minute⁷³ ::= MINUTE⁷³

referenced by:

- functionExpression⁵⁷

month:

Collect the month from a date.

Parameters:

- Input: A dateTime.

Returns: The month as an integer. MONTH

month⁷³ ::= MONTH⁷³

referenced by:

- functionExpression⁵⁷

newid:

Creates a new Guid id.

Returns: The new Guid id.

NEWID

newid⁷³ :::= NEWID⁷³

referenced by:

- [functionExpression](#)⁵⁷

nvl:

Coalesce all values together.

Returns: All values coalesced together.

NVL

nvl⁷⁴ :::= NVL⁷⁴

referenced by:

- [functionExpression](#)⁵⁷

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

plus⁷⁴ :::= PLUS⁷⁴

referenced by:

- [arithmeticExpression](#)⁵⁶

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

power⁷⁴ :::= POWER⁷⁴

referenced by:

- [functionExpression](#)⁵⁷

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

random⁷⁴ ::= RANDOM⁷⁴

referenced by:

- functionExpression⁵⁷

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_blob⁷⁵ ::= RANDOM_BLOB⁷⁵

referenced by:

- functionExpression⁵⁷

rand:

RAND
rand⁷⁵ ::= RAND⁷⁵

referenced by:

- functionExpression⁵⁷

rank:

RANK
rank⁷⁵ ::= RANK⁷⁵

referenced by:

- functionExpression⁵⁷

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](#)⁷⁵
 $\text{:= } \text{REGEXP_SUBSTR}$ ⁷⁵

referenced by:

- [functionExpression](#)⁵⁷

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](#)⁷⁶
 $\text{:= } \text{REGEXP_INSTR}$ ⁷⁶

referenced by:

- [functionExpression](#)⁵⁷

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](#)⁷⁶
 $\text{:= } \text{REGEXP_REPLACE}$ ⁷⁶

referenced by:

- [functionExpression](#)⁵⁷

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

remainder⁷⁷
: := REMAINDER⁷⁷

referenced by:

- functionExpression⁵⁷

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

replace⁷⁷
: := REPLACE⁷⁷

referenced by:

- functionExpression⁵⁷

reverse:

Flips the input around.

Parameters:

- Input: text to flip around.

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

reverse⁷⁷
: := REVERSE⁷⁷

referenced by:

- functionExpression⁵⁷

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](#) 77 ::= [ROUND](#) 77

referenced by:

- [functionExpression](#) 57

row_number:

ROW_NUMBER

[row_number](#) 78
 ::= [ROW_NUMBER](#) 78

referenced by:

- [functionExpression](#) 57

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](#) 78 ::= [RPAD](#) 78

referenced by:

- [functionExpression](#) 57

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](#) 78 ::= [RTRIM](#) 78

referenced by:

- [functionExpression](#) 57

microsecond:

Collect the microsecond from a date.

Parameters:

- Input: A dateTIme.

Returns: The microsecond as an integer. MICROSECOND

microsecond⁷⁸
: := MICROSECOND⁷⁸

referenced by:

- functionExpression⁵⁷

millisecond:

Collect the millisecond from a date.

Parameters:

- Input: A dateTIme.

Returns: The millisecond as an integer. MILLISECOND

millisecond⁷⁹
: := MILLISECOND⁷⁹

referenced by:

- functionExpression⁵⁷

number_to_speech:

NUMBER_TO_SPEECH

number to speech⁷⁹
: := NUMBER TO SPEECH⁷⁹

referenced by:

- functionExpression⁵⁷

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

normalize⁷⁹
: := NORMALIZE⁷⁹

referenced by:

- functionExpression⁵⁷

second:

Collect the second from a date.

Parameters:

- Input: A `dateTime`.

Returns: The second as an integer. `SECOND`

[second](#) \Rightarrow [SECOND](#)

referenced by:

- [functionExpression](#)

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](#) \Rightarrow [SOUNDEX](#)

referenced by:

- [functionExpression](#)

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](#) \Rightarrow [SIN](#)

referenced by:

- [functionExpression](#)

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](#) \Rightarrow [SQRT](#)

referenced by:

- [functionExpression](#)

substr:

Gets a substring from the input.

Parameters:

- Input: text to gather the substring from.
- Start: start position.
- Length: maximum length of the substring.

Returns: The substring from the original input. SUBSTR

substr⁸⁰ ::= SUBSTR⁸⁰

referenced by:

- functionExpression⁵⁷

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: picture (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_context⁸¹
:= SYS_CONTEXT⁸¹

referenced by:

- [functionExpression](#) 57

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](#) 83 $::=$ [TAN](#) 83

referenced by:

- [functionExpression](#) 57

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](#) 83 $::=$ [ASTERIX](#) 15

referenced by:

- [arithmeticExpression](#) 56

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](#) 83 $::=$ [TRANSLATE](#) 83

referenced by:

- [functionExpression](#) 57

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](#)⁸³
: := [TRANSLATE_RESOURCES](#)⁸³

referenced by:

- [functionExpression](#)⁵⁷

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](#)⁸⁴
: := [TRIM](#)⁸⁴

referenced by:

- [functionExpression](#)⁵⁷

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](#)⁸⁴
: := [TRUNC](#)⁸⁴

referenced by:

- [functionExpression](#)⁵⁷

to_hex:

TO_HEX
[to_hex](#)⁸⁴
: := [TO_HEX](#)⁸⁴

referenced by:

- [functionExpression](#)⁵⁷

unistr:

Converts a text with unicodes to regular characters.

Parameters:

- Input: text with unicodes.

Returns: The input converted to all regular characters. UNISTR

unistr⁸⁴ ::= UNISTR⁸⁴

referenced by:

- [functionExpression](#)⁵⁷

upper:

Converts provided string to uppercase.

Parameters:

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

Returns: A string converted to uppercase. UPPER

upper⁸⁵ ::= UPPER⁸⁵

referenced by:

- [functionExpression](#)⁵⁷

urldownload:

Decodes a url.

Parameters:

- Url: url to decode.

Returns: The decoded url. URLDECODE

urldownload⁸⁵ ::= URLDECODE⁸⁵

referenced by:

- [functionExpression](#)⁵⁷

urlencode:

Encodes a url.

Parameters:

- Url: url to encode.

Returns: The encoded url. URLENCODE

urlencode⁸⁵ ::= URLENCODE⁸⁵

referenced by:

- [functionExpression](#)⁵⁷

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_timestamp⁸⁵
::= UNIX_TIMESTAMP⁸⁵

referenced by:

- functionExpression⁵⁷

unzip:

UNZIP
unzip⁸⁶ ::= UNZIP⁸⁶

referenced by:

- functionExpression⁵⁷

zip:

ZIP
zip⁸⁶ ::= ZIP⁸⁶

referenced by:

- functionExpression⁵⁷

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

xmlcomment⁸⁶
::= XMLCOMMENT⁸⁶

referenced by:

- functionExpression⁵⁷

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

xmldecode⁸⁶
::= XMLDECODE⁸⁶

referenced by:

- functionExpression⁵⁷

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](#)⁸⁷
::= [XMLENCODE](#)⁸⁷

referenced by:

- [functionExpression](#)⁵⁷

xmlelement:

XMLELEMENT

[xmlelement](#)⁸⁷
::= [XMLELEMENT](#)⁸⁷

referenced by:

- [functionExpression](#)⁵⁷

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](#)⁸⁷
::= [XMLTRANSFORM](#)⁸⁷

referenced by:

- [functionExpression](#)⁵⁷

xmlformat:

Pretty-print xml text.

Parameters:

- Xml: xml to pretty-print.

Returns: The pretty-printed XML text. XMLFORMAT

[xmlformat](#)⁸⁷
::= [XMLFORMAT](#)⁸⁷

referenced by:

- [functionExpression](#)⁵⁷

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](#) [88] ::= [HTTPGET](#) [88]

referenced by:

- [functionExpression](#) [57]

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](#) [88] ::= [HTTPGET_TEXT](#) [88]

referenced by:

- [functionExpression](#) [57]

httppost:

HTTPPOST

[httppost](#) [88] ::= [HTTPPOST](#) [88]

referenced by:

- [functionExpression](#) [57]

quarter:

Collect the quarter from a date.

Parameters:

- Input: A dateTime.

Returns: The quarter as an integer. QUARTER

[quarter](#) [88] ::= [QUARTER](#) [88]

referenced by:

- [functionExpression](#) [57]

quote_ident:

QUOTE_IDENT

quote_ident 89: := QUOTE IDENT 89

referenced by:

- functionExpression 57

quote_literal:

QUOTE_LITERAL

quote_literal 89: := QUOTE LITERAL 89

referenced by:

- functionExpression 57

quote_nullable:

QUOTE_NULLABLE

quote_nullable 89: := QUOTE NULLABLE 89

referenced by:

- functionExpression 57

user:

Gets the user log on code.

Returns: The user log on code.

USER

user 89: := USER 89

referenced by:

- functionExpression 57

year:

Collect the year from a date.

Parameters:

- Input: A dateTime.

Returns: The year as an integer. YEAR

year 89: := YEAR 89

referenced by:

- functionExpression 57

to_binary:

TO_BINARY
 to_binary⁹⁰
 ::= TO_BINARY⁹⁰

referenced by:

- [functionExpression](#)⁵⁷

to_char:

Converts a value into text.

Parameters:

- Input: value to convert.

Returns: The input converted to text. TO_CHAR
 to_char⁹⁰
 ::= TO_CHAR⁹⁰

referenced by:

- [functionExpression](#)⁵⁷

to_date:

Converts a value into a datetime.

Parameters:

- Input: value to convert.

Returns: The input converted to a datetime. TO_DATE
 to_date⁹⁰
 ::= TO_DATE⁹⁰

referenced by:

- [functionExpression](#)⁵⁷

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_guid⁹⁰
 ::= TO_GUID⁹⁰

referenced by:

- [functionExpression](#)⁵⁷

to_number:

```
TO_NUMBER
  to_number91
    ::= TO_NUMBER91
```

referenced by:

- [functionExpression](#)⁵⁷

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_BLOB⁹¹

```
zero_blob91
  ::= ZERO_BLOB91
```

referenced by:

- [functionExpression](#)⁵⁷

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
  now91      ::= ( NOW91 | GETDATE15 | SYSDATETIME15 )
  parenthesisOpen50 parenthesisClose51
    | SYSDATE15
```

referenced by:

- [functionExpression](#)⁵⁷

utc:

UTC_DATE parenthesisOpen parenthesisClose GETUTCDATE NOWUTC parenthesisOpen parenthesisClose SYSDATEUTC

```
utc91      ::= UTC_DATE15 ( parenthesisOpen50
  parenthesisClose51 ) ?
  | ( GETUTCDATE15 | NOWUTC15 ) parenthesisOpen50
  parenthesisClose51
    | SYSDATEUTC15
```

referenced by:

- [functionExpression](#)⁵⁷

fullTableIdentifier:

catalogIdentifier DOT schemaIdentifier DOT tableIdentifier

[fullTableIdentifier](#)⁹¹
 $::= (\text{catalogIdentifier}$ ⁹² [DOT](#)¹⁵ $(\text{schemaIdentifier}$ ⁹²?
[DOT](#)¹⁵)?)? [tableIdentifier](#)⁹²

referenced by:

- [tableOrFunctionSpec](#)²³
- [tableSpec](#)²³

catalogIdentifier:

identifier

[catalogIdentifier](#)⁹²
 $::= \text{identifier}$ ⁹³

referenced by:

- [fullTableIdentifier](#)⁹¹

schemaIdentifier:

identifier

[schemaIdentifier](#)⁹²
 $::= \text{identifier}$ ⁹³

referenced by:

- [fullTableIdentifier](#)⁹¹

tableIdentifier:

identifier

[tableIdentifier](#)⁹²
 $::= \text{identifier}$ ⁹³

referenced by:

- [fullTableIdentifier](#)⁹¹

fieldIdentifier:

alias DOT identifier

[fieldIdentifier](#)⁹²
 $::= (\text{alias}$ ⁹³ [DOT](#)¹⁵)? [identifier](#)⁹³

referenced by:

- [arithmeticExpression](#)⁵⁶

attributIdentifier:

identifierWithMinus keywordsAsIdentifierOrAlias

[attributeIdentifier](#)⁹²
 $::= \text{identifierWithMinus}$ ⁹³
 | [keywordsAsIdentifierOrAlias](#)⁹⁴

referenced by:

- [setIdentifier](#)⁴³

identifierWithMinus:

```
identifier MINUS identifier INT_OR_DECIMAL_C ESCAPED_IDENTIFIER
identifierWithMinus93
      ::= ESCAPED_IDENTIFIER15
      | identifier93 ( MINUS73 ( identifier93 |
INT_OR_DECIMAL_C15 )? )*
```

referenced by:

- [attributeIdentifier](#)⁹²

identifier:

```
ESCAPED_IDENTIFIER IDENTIFIER keywordsAsIdentifierOrAlias
identifier93
      ::= ESCAPED_IDENTIFIER15
      | IDENTIFIER93
      | keywordsAsIdentifierOrAlias94
```

referenced by:

- [catalogIdentifier](#)⁹²
- [column](#)³¹
- [csvTableColumnSpec](#)²⁷
- [dataContainerAlias](#)²⁴
- [fieldIdentifier](#)⁹²
- [identifierWithMinus](#)⁹³
- [joinSet](#)²⁰
- [jsonTableColumnSpec](#)²⁶
- [noJoinSet](#)²¹
- [parameterExpression](#)⁵⁴
- [partitionIdentifier](#)⁴⁵
- [partitionSimpleIdentifier](#)⁴⁶
- [schemaIdentifier](#)⁹²
- [tableIdentifier](#)⁹²
- [xmlTableColumnSpec](#)²⁵

alias:

```
ESCAPED_IDENTIFIER IDENTIFIER keywordsAsIdentifierOrAlias
alias93
      ::= ESCAPED_IDENTIFIER15
      | IDENTIFIER93
      | keywordsAsIdentifierOrAlias94
```

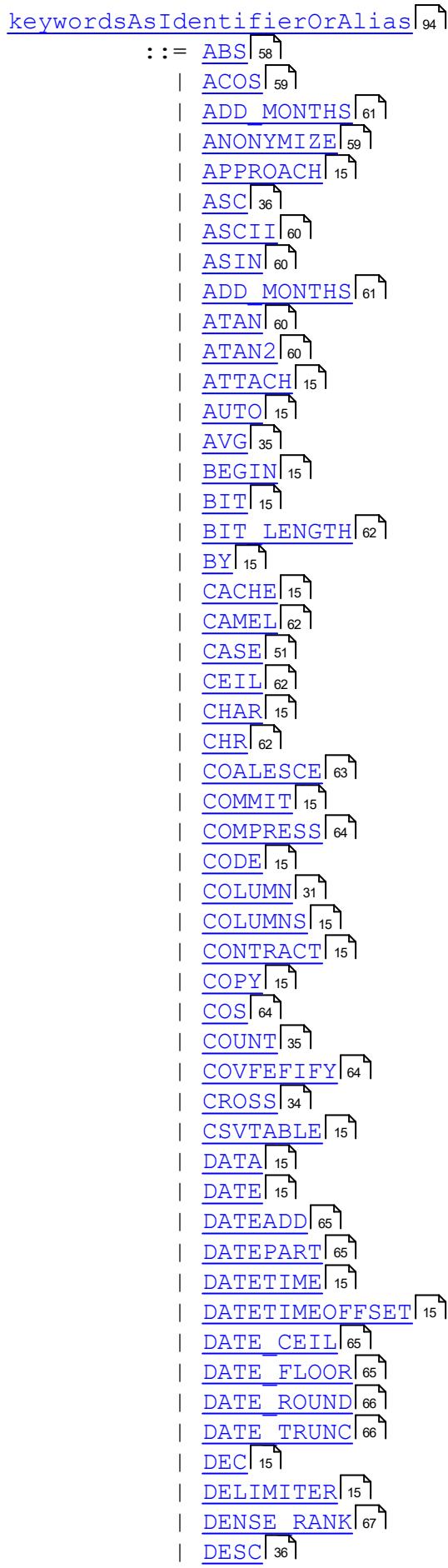
referenced by:

- [aliased](#)³⁶
- [allColumnsSpecId](#)³⁸

- [fieldIdentifier](#) [92]

keywordsAsIdentifierOrAlias:

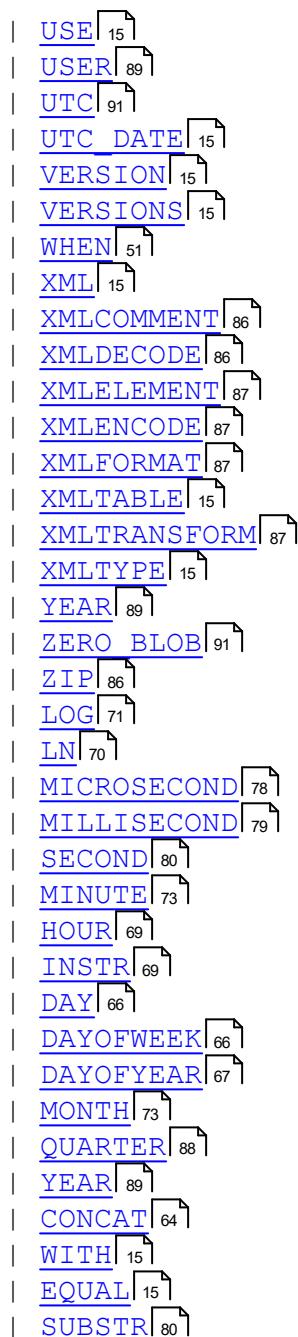
ABS ACOS ADD_MONTHS ANONYMIZE APPROACH ASC ASCII ASIN ADD_MONTHS
ATAN ATAN2 ATTACH AUTO AVG BEGIN BIT BIT_LENGTH BY CACHE CAMEL CASE
CEIL CHAR CHR COALESCE COMMIT COMPRESS CODE COLUMN COLUMNS
CONTRACT COPY COS COUNT COVFEFIFY CROSS CSVTABLE DATA DATE
DATEADD DATEPART DATETIME DATETIMEOFFSET DATE_CEIL 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_SOUNDDEX
SQRT STATE STDDDEV 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



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referenced by:

- [alias](#) [93]
- [attributeIdentifier](#) [92]
- [identifier](#) [93]

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[99] ::= stringConstant[100]
| numericConstant[101]
| booleanConstant[101]
| intervalConstant[100]
| null[102]
```

referenced by:

- [arithmeticExpression](#)[56]
- [pSqlItemDeclaration](#)[102]

stringConstant:

A constant text value with varchar2 data type.

STRING_C

```
stringConstant[100]
 ::= STRING_C[15]
```

referenced by:

- [allColumnsSpecColumnNamePostfix](#)[38]
- [allColumnsSpecColumnNamePrefix](#)[38]
- [allColumnsSpecLabelPostfix](#)[38]
- [allColumnsSpecLabelPrefix](#)[38]
- [alterPersistentCacheDownloadStatement](#)[40]
- [alterPersistentCacheDropStatement](#)[41]
- [alterPersistentCacheSetStatement](#)[42]
- [alterPersistentCacheSetTableOptions](#)[42]
- [constant](#)[99]
- [csvTableOptions](#)[26]
- [intervalConstant](#)[100]
- [jsonTableColumSpec](#)[26]
- [jsonTableSpec](#)[25]
- [labeled](#)[37]
- [resultSetName](#)[20]
- [xmlTableColumSpec](#)[25]
- [xmlTableSpec](#)[24]

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 [100]
  ::= INTERVAL [15] stringConstant [100]
```

referenced by:

- [constant](#) [99]
- [httpDiskCache](#) [18]
- [httpMemoryCache](#) [19]
- [ods](#) [19]

numericConstant:

A constant numeric value with numeric data type.

INT_OR_DECIMAL_C E NOTATION_C

```
numericConstant [101]
  ::= INT_OR_DECIMAL_C [15]
    | E_NOTATION_C [15]
```

referenced by:

- [alterPersistentCacheDownloadStatement](#) [40]
- [alterPersistentCachePartitionRefreshStatement](#) [41]
- [alterPersistentCacheRefreshStatement](#) [40]
- [alterPersistentCacheSetStatement](#) [42]
- [alterPersistentCacheTableRefreshStatement](#) [41]
- [constant](#) [99]
- [csvTableColumnSpec](#) [27]
- [csvTableOptions](#) [26]
- [joinSet](#) [20]
- [limitClause](#) [22]
- [pSqlForNumberLoopStatement](#) [105]
- [partitionIdentifier](#) [45]
- [partitionSimpleIdentifier](#) [46]
- [topClause](#) [22]

booleanConstant:

true false

```
booleanConstant [101]
  ::= true [53]
    | false [53]
```

referenced by:

- [alterPersistentCacheSetStatement](#) [42]
- [alterPersistentCacheSetTableOptions](#) [42]
- [constant](#) [99]
- [httpDiskCache](#) [18]

- [httpMemoryCache](#)¹⁹
- [ods](#)¹⁹

null:

The "unknown" value null.

NULL

[null](#)¹⁰² ::= [NULL](#)¹⁰²

referenced by:

- [constant](#)⁹⁹
- [jsonTableSpec](#)²⁵
- [xmlTableSpec](#)²⁴

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](#)¹⁰² ::= [pSqlDeclareSection](#)¹⁰²? [pSqlBody](#)¹⁰³

referenced by:

- [pSqlBlockOrStatement](#)¹⁰³
- [pSqlStatement](#)¹⁰³

pSqlDeclareSection:

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

DECLARE pSqlDeclaration

[pSqlDeclareSection](#)¹⁰² ::= [DECLARE](#)¹⁵ [pSqlDeclaration](#)¹⁰²+

referenced by:

- [pSqlBlock](#)¹⁰²

pSqlDeclaration:**pSqlItemDeclaration**

[pSqlDeclaration](#)¹⁰² ::= [pSqlItemDeclaration](#)¹⁰²

referenced by:

- [pSqlDeclareSection](#)¹⁰²

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`¹⁰²
`::= variableName`¹⁰⁶ `dataType`²⁷ (`ASSIGNMENT_OPERATOR`¹⁵
`constant`⁹⁹)? `BATCHSEPARATOR`¹⁵

referenced by:

- `pSqlDeclaration`¹⁰²

pSqlBody:

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

BEGIN pSqlStatement END BATCHSEPARATOR
`pSqlBody`¹⁰³ ::= `BEGIN`¹⁵ `pSqlStatement`¹⁰³+ `END`⁵² `BATCHSEPARATOR`¹⁵

referenced by:

- `pSqlBlock`¹⁰²

pSqlStatement:

A number of basic PSQL statements are available.

pSqlAssignmentStatement pSqlExecuteImmediateStatement pSqlIfStatement
pSqlLoopStatement pSqlNullStatement pSqlBlock sqlStatement BATCHSEPARATOR
`pSqlStatement`¹⁰³
`::= pSqlAssignmentStatement`¹⁰⁴
`| pSqlExecuteImmediateStatement`¹⁰⁴
`| pSqlIfStatement`¹⁰⁵
`| pSqlLoopStatement`¹⁰⁵
`| pSqlNullStatement`¹⁰⁴
`| pSqlBlock`¹⁰²
`| sqlStatement`¹⁶ `BATCHSEPARATOR`¹⁵

referenced by:

- `pSqlBlockOrStatement`¹⁰³
- `pSqlBody`¹⁰³
- `sqlOrPsqlStatement`¹⁵

pSqlBlockOrStatement:

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

pSqlBlock pSqlStatement
`pSqlBlockOrStatement`¹⁰³
`::= pSqlBlock`¹⁰²
`| pSqlStatement`¹⁰³

referenced by:

- `pSqlBlockOrStatements`¹⁰⁴

pSqlBlockOrStatements:

pSqlBlockOrStatement

```
pSqlBlockOrStatements [104]
  ::= pSqlBlockOrStatement [103] +
```

referenced by:

- pSqlElseIfExpression [105]
- pSqlForNumberLoopStatement [105]
- pSqlForRecordLoopStatement [106]
- pSqlIfStatement [105]
- pSqlWhileLoopStatement [106]

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 [104]
  ::= NULL [102] BATCHSEPARATOR [15]
```

referenced by:

- pSqlStatement [103]

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 [104]
  ::= variableName [106] ASSIGNMENT_OPERATOR [15] expression [49]
    BATCHSEPARATOR [15]
```

referenced by:

- pSqlStatement [103]

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 [104]
  ::= EXECUTE [15] IMMEDIATE [15] expression [49]
    BATCHSEPARATOR [15]
```

referenced by:

- [pSqlStatement](#)¹⁰³

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 pSqlBlockOrStatements END IF BATCHSEPARATOR

```

pSqlIfStatement105
  ::= IF15 booleanExpression49 THEN52
pSqlBlockOrStatements104 pSqlElsIfExpression105* ( ELSE52
pSqlBlockOrStatements104 )? END52 IF15 BATCHSEPARATOR15

```

referenced by:

- [pSqlStatement](#)¹⁰³

pSqlElsIfExpression:

ELSIF booleanExpression THEN pSqlBlockOrStatements

```

pSqlElsIfExpression105
  ::= ELSIF15 booleanExpression49 THEN52
pSqlBlockOrStatements104

```

referenced by:

- [pSqlIfStatement](#)¹⁰⁵

pSqlLoopStatement:

A variety of PSQL statements for loops are available.

pSqlForNumberLoopStatement pSqlForRecordLoopStatement pSqlWhileLoopStatement

```

pSqlLoopStatement105
  ::= pSqlForNumberLoopStatement105
  | pSqlForRecordLoopStatement106
  | pSqlWhileLoopStatement106

```

referenced by:

- [pSqlStatement](#)¹⁰³

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 numericConstant variableName LOOP pSqlBlockOrStatements END LOOP BATCHSEPARATOR

```
pSqlForNumberLoopStatement ::= FOR [15] variableName [106] IN [15] REVERSE [77]?
( numericConstant [101] | variableName [106] ) DOT [15] DOT [15]
( numericConstant [101] | variableName [106] ) LOOP [15]
pSqlBlockOrStatements [104] END [52] LOOP [15] BATCHSEPARATOR [15]
```

referenced by:

- [pSqlLoopStatement](#) [105]

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 ::= FOR [15] variableName [106] IN [15] PARENTHESIS_OPEN [15]
selectStatement [16] PARENTHESIS_CLOSE [15] LOOP [15]
pSqlBlockOrStatements [104] END [52] LOOP [15] BATCHSEPARATOR [15]
```

referenced by:

- [pSqlLoopStatement](#) [105]

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 ::= WHILE [15] booleanExpression [49] LOOP [15]
pSqlBlockOrStatements [104] END [52] LOOP [15] BATCHSEPARATOR [15]
```

referenced by:

- [pSqlLoopStatement](#) [105]

variableName:

IDENTIFIER

```
variableName ::= IDENTIFIER [93]
```

referenced by:

- [pSqlAssignmentStatement](#) [104]
- [pSqlForNumberLoopStatement](#) [105]
- [pSqlForRecordLoopStatement](#) [106]
- [pSqlItemDeclaration](#) [102]
- [variableList](#) [21]

9.2 Providers

The providers described here are available on all platforms.

9.2.1 Provider Atom10

Atom version 1.0.

Code for use in settings.xml: Atom10

Alias: atom

Status: Production

Available in Editions: Paid, Open Data, Community

9.2.2 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>

9.2.3 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. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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 |
|---|---|-------------------------------|----------------------------|----------------------------|-------------------------|
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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.

9.2.4 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 | Wether to forward filters to data containers | True | ✓ | ✓ | ✓ |

| Code | Default Value D e - s c r i p - t i o n | Set from Connection String | Set from Set SQL-State- ment | Set from Pro- viders File |
|---|---|----------------------------|---------------------------------|------------------------------|
| | f o r - w a r d f i l - t e r s t o d a t a c o n - t a i n - e r s . | | | |
| invantive-sql-shuffle-fetch-results-data-containers | W h e t h e r t o s h u f f l e r False | ✓ | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|---------------------|---|---------------|----------------------------|----------------------------|-------------------------|
| | esultsetcachedfromdataconnection-tainers. | | | | |
| invantine-use-cache | Whether to cache the results. | True | ✓ | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|----------------------|--|---------------|----------------------------|----------------------------|-------------------------|
| | esults of a query. | | | | |
| pre-request-delay-ms | Pre-request delay in milliseconds per request. | 0 | | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|-----------------------|---|---------------|----------------------------|----------------------------|-------------------------|
| | e - q u e s t . | | | | |
| requests-parallel-max | M a x - i m u m n u m - b e r o f p a r - a l - l e l d a t a r e - q u e s t s f r o m | 32 | | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|------|--|---------------|----------------------------|----------------------------|-------------------------|
| | invantive individual partitions on the data action - retainener. | | | | |

9.2.5 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-connections | Maximum number of concurrent pooled connections on backing database. | | ✓ | ✓ | ✓ | |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File | Set from Log On |
|---|--|---------------|----------------------------|----------------------------|-------------------------|-----------------|
| tions | | | | | | |
| backing-maximum-sleep-acquire-pooled-connection-ms | Maximum time in ms to wait for acquiring a free connection from a pool of connections on backing database. | 300000 | ✓ | ✓ | ✓ | |
| backing-maximum-sleep-acquire-un-pooled-connection-ms | Maximum time in ms to wait for acquire a free connection when there is no connection pooling on backing database. | 600000 | ✓ | ✓ | ✓ | |
| backing-minimum-connection-timeout-sec | Minimum number of seconds after which a new ly 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 | Rew rite 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 | Rew rite 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 interval 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 | ✓ | ✓ | ✓ | |
| forw arded-incoming-messages-delete-max-runtime-sec | Maximum runtime of purge forw arded incoming messages in seconds. | 3600 | ✓ | ✓ | ✓ | |
| forw arded-incoming-messages-delete-page-size-rows | Number of rows to delete per batch on maintaining forw arded 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-forw ards-filters-to-data-containers | Whether to forw ard 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. | | ✓ | | | |

9.2.6 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\In-vantive\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 | ✓ | ✓ | ✓ | |

9.2.7 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. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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.

9.2.8 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>

9.2.9 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 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 | ✓ | ✓ | ✓ |

9.2.10 Provider DynamicsCrm

Microsoft Dynamics CRM.

Code for use in settings.xml: DynamicsCrm

Alias: dyncrm

Status: Production

Available in Editions: Paid

9.2.11 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

9.2.12 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 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.

9.2.13 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 |
|--|--|---------------|----------------------------|----------------------------|-------------------------|-----------------|
| dow nload-error-400-bad-request-max-tries | Maximum number of tries when Akamai reports that the API server is unavailable during retrieval of data. | 30 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-error-503-server-unavailable-max-tries | Maximum number of tries when Akamai reports that the API server is unavailable during retrieval of data. | 30 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-error-504-gateway-timeout-max-tries | Maximum number of tries when the website reports a gateway timeout. | 10 | ✓ | ✓ | ✓ | |
| dow nload-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 |
|---|--|---------------|----------------------------|----------------------------|-------------------------|-----------------|
| dow nload-error-504-gateway-timeout-sleep-max-ms | Maximum sleep in milliseconds between retries when the website reports a gateway timeout. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-504-gateway-timeout-sleep-multiplicator | Multiplication factor for sleep between retries when the website reports a gateway timeout. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-argument-exception-max-tries | Maximum number of tries when an argument exception is returned when downloading a blob. | 10 | ✓ | ✓ | ✓ | |
| dow nload-error-argument-exception-sleep-initial-ms | Initial sleep in milliseconds between retries when an argument exception is returned when downloading a blob. | 1000 | ✓ | ✓ | ✓ | |
| dow nload-error-argument-exception-sleep-max-ms | Maximum sleep in milliseconds between retries when an argument exception is returned when downloading a blob. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-argument-exception-sleep-multiplicator | Multiplication factor for sleep between retries when an argument exception is returned when downloading a blob. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | 10 | ✓ | ✓ | ✓ | |
| dow nload-error-internet-dow n-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | 10000 | ✓ | ✓ | ✓ | |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-internet-dow n-sleep-multiplicator | Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-io-exception-max-tries | Maximum number of tries when a network I/O connection failure occurs during retrieval of data. | 10 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-error-io-exception-sleep-multiplicator | Multiplication factor for sleep between retries when a network I/O connection failure occurs during retrieval of data. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-json-exception-max-tries | Maximum number of tries when an invalid JSON body is returned. | 3 | ✓ | ✓ | ✓ | |
| dow nload-error-json-exception-sleep-initial-ms | Initial sleep in milliseconds between retries when an invalid JSON body is returned. | 1000 | ✓ | ✓ | ✓ | |
| dow nload-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 |
|--|---|---------------|----------------------------|----------------------------|-------------------------|-----------------|
| dow nload-error-json-exception-sleep-multiplicator | Multiplication factor for sleep between retries when an invalid JSON body is returned. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-other-exception-max-tries | Maximum number of tries when an unqualified error occurs during retrieval of data. | 3 | ✓ | ✓ | ✓ | |
| dow nload-error-other-exception-sleep-initial-ms | Initial sleep in milliseconds between retries when an unqualified error occurs during retrieval of data. | 5000 | ✓ | ✓ | ✓ | |
| dow nload-error-other-exception-sleep-max-ms | Maximum sleep in milliseconds between retries when an unqualified error occurs during retrieval of data. | 30000 | ✓ | ✓ | ✓ | |
| dow nload-error-other-exception-sleep-multiplicator | Multiplication factor for sleep between retries when an unqualified error occurs during retrieval of data. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-socket-exception-max-tries | Maximum number of tries when the network connection is forcibly dropped during retrieval of data. | 10 | ✓ | ✓ | ✓ | |
| dow nload-error-socket-exception-sleep-initial-ms | Initial sleep in milliseconds between retries when the network connection is forcibly dropped during retrieval of data. | 10000 | ✓ | ✓ | ✓ | |
| dow nload-error-socket-exception-sleep-max-ms | Maximum sleep in milliseconds between retries when the network connection is forcibly dropped during retrieval of data. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-socket-exception-sleep-multiplicator | Multiplication factor for sleep between retries when the network connection is forcibly dropped during retrieval of data. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-exception-max-tries | Maximum number of tries when a web connection failure occurs during retrieval of data. | 10 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-exception-sleep-initial-ms | Initial sleep in milliseconds between retries when a web connection failure occurs during retrieval of data. | 10000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-exception-sleep-max-ms | Maximum sleep in milliseconds between retries when a web connection failure occurs during retrieval of data. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-exception-sleep-multiplicator | Multiplication factor for sleep between retries when a web connection failure occurs during retrieval of data. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-not-implemented-max-tries | Maximum number of tries when the connection reports not implemented. | 1 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-not-implemented-sleep-initial-ms | Initial sleep in milliseconds between retries when the connection reports not implemented. | 5000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-not-implemented-sleep-max-ms | Maximum sleep in milliseconds between retries when the connection reports not implemented. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-not-implemented-sleep-multiplicator | Multiplication factor for sleep between retries when the connection reports not implemented. | 2 | ✓ | ✓ | ✓ | |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File | Set from Log On |
|---|--|--------------------------------|----------------------------|----------------------------|-------------------------|-----------------|
| multiplicator | plemented. | | | | | |
| dow nload-error-w eb-timeout-max-tries | Maximum number of tries w hen the connection reports a timeout. | 10 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-timeout-sleep-initial-ms | Initial sleep in milliseconds btween retries w hen the connection reports a timeout. | 5000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-timeout-sleep-max-ms | Maximum sleep in milliseconds btween retries w hen the connection reports a timeout. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-timeout-sleep-multiplicator | Multiplication factor for sleep btween retries w hen the connection reports a timeout. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-unauthorized-max-tries | Maximum number of tries w hen the connection reports an unauthorized error. | 1 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-unauthorized-sleep-initial-ms | Initial sleep in milliseconds btween retries w hen the connection reports an unauthorized error. | 5000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-unauthorized-sleep-max-ms | Maximum sleep in milliseconds btween retries w hen the connection reports an unauthorized error. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-unauthorized-sleep-multiplicator | Multiplication factor for sleep btween retries w hen the connection reports an unauthorized error. | 2 | ✓ | ✓ | ✓ | |
| encrypt-http-disk-cache | Whether to encrypt the contents of the disk cache w hen used. Disable only w hen performance is a premium above data security. | True | ✓ | ✓ | ✓ | |
| exact-development-mode | True if w e have to connect to the Exact development instance | | ✓ | ✓ | ✓ | |
| exact-online-url | URL of Exact Online w eb 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 w ithout a value from a result set w hen 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 w here 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 endpoint. | 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 | ✓ | ✓ | ✓ | |

9.2.14 Provider EzBase

EZ-Base

Code for use in settings.xml: EzBase

Alias: ezbbase

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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9.2.15 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 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. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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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9.2.16 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} | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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 |
|---|---|-------------------------------|----------------------------|----------------------------|-------------------------|
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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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9.2.17 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 | ✓ | ✓ | ✓ | |

9.2.18 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>

9.2.19 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>

9.2.20 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 or not filters should be forwarded to data containers. | True | | | |
| invantive-sql-shuffle-fetch-results-data-containers | Whether or not results should be shuffled when fetched from data containers. | False | | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|---------------------|--|---------------|----------------------------|----------------------------|-------------------------|
| | os h u f f l e r e s - u l t s f e t c h e d f r o m d a t a c o n - t a i n - e r s . | | | | |
| invantive-use-cache | W h e t h e r t o | 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 milliseconds | 0 | | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|-----------------------|------------------------------------|---------------|----------------------------|----------------------------|-------------------------|
| | condsperrere-quest. | | | | |
| requests-parallel-max | Maximun number of parallel queries | 32 | ✓ | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|------|--|---------------|----------------------------|----------------------------|-------------------------|
| | uses form individual properties on the data container. | | | | |

9.2.21 Provider Invantive.Producer

Invantive Producer repository.

Code for use in settings.xml: Invantive.Producer

Alias: producer

Status: Production

Available in Editions: Paid

| Code | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|--------|---|----------------------------|----------------------------|-------------------------|
| models | X M L s p e - c i f i c - a - t i o n o f f o l d e r s w i t h m o d e l p e r p | | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|-----------|--|---------------|----------------------------|----------------------------|-------------------------|
| | product | | | | |
| templates | X M L s p e - c i f i c - a - t i o n o f f o l d e r s w i t h t e m - p l a t e s p e r p r o | | ✓ | | ✓ |

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

9.2.22 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. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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 Un-set, 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 | ✓ | ✓ | ✓ |

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9.2.23 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. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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 Un-set, 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 | ✓ | ✓ | ✓ |

Generated 11-01-2019 22:02 on version 17.30.0-PROD+1821.

9.2.24 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 | ✓ | ✓ | ✓ | |

9.2.25 Provider LastResort

Provider always available as a last resort for translations.

Code for use in settings.xml: LastResort

Alias: last

Status: Production

Available in Editions: Paid

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

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|---|--|---------------|----------------------------|----------------------------|-------------------------|
| | s. | | | | |
| invantive-sql-shuffle-fetch-results-data-containers | W h e t h e r t o s h u f f l e r e s - u lt s f e t c h e d f r o m d a t a c o n - t a i n - e r | False | ✓ | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|----------------------|--------------------------------------|---------------|----------------------------|----------------------------|-------------------------|
| | s. | | | | |
| invantive-use-cache | Whether to cache 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 |
|-----------------------|-------------------------------------|---------------|----------------------------|----------------------------|-------------------------|
| | initial-connection-spooler-request. | | | | |
| requests-parallel-max | Maximum number of parallel requests | 32 | ✓ | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|--|-------------|---------------|----------------------------|----------------------------|-------------------------|
| l e l d a t a r e - q u e s t s f r o m i n - d i - v i d u a l p a r - t i - ti o n s o n t h e d a t a c | | | | | |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|--------------|---|---------------|----------------------------|----------------------------|-------------------------|
| | on - tainer . | | | | |
| translations | F o l d e r c o n - t a i n - i n g t r a n s - l a - t i o n f i l e s | | ✓ | ✓ | |

9.2.26 Provider LinkedIn

LinkedIn.

Code for use in settings.xml: LinkedIn

Alias: linkedin

Status: Production

Available in Editions: Paid

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

9.2.27 Provider LoketNI

Loket.nl information.

Code for use in settings.xml: LoketNI

Alias: LoketNI

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 LoketNI:

| Code | Description | Default Value | Set from Connection String | Set from 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 acceptable age 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 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 | OBSOLETE. USE @test INSTEAD. | | ✓ | | ✓ |

Generated 04-02-2019 9:03: on version 17.31.23-BETA+1887.

9.2.28 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>

9.2.29 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 whether 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 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 | | ✓ | | ✓ | |
| smtp-enable-ssl | Set whether 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 port number to use. | | ✓ | ✓ | ✓ | |
| smtp-minimum-deliver-duration-ms | Minimum deliver duration in milliseconds for the SMTP send plus inserted sleep when 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 | ✓ | ✓ | ✓ | |

9.2.30 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-mxdk/apidocs/>

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

9.2.31 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>

9.2.32 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 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 | ✓ | ✓ | ✓ |

9.2.33 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. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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 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.

9.2.34 Provider NmbrsNI

Payrolling and HR management.

Code for use in settings.xml: NmbrsNI

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 NmbrsNI:

| 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 acceptable age 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 | ✓ | ✓ | ✓ | |

9.2.35 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 or not filters should be forwarded to data containers. | True | | | |
| invantive-sql-shuffle-fetch-results-data-containers | Whether or not results should be shuffled when fetched from data containers. | False | | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|---------------------|--|---------------|----------------------------|----------------------------|-------------------------|
| | os h u f f l e r e s - u l t s f e t c h e d f r o m d a t a c o n - t a i n - e r s . | | | | |
| invantive-use-cache | W h e t h e r t o | True | ✓ | ✓ | ✓ |

| Code | Default Value D e - s c r i p - t i o n | Set from Connection String | Set from Set SQL-State- ment | Set from Pro- viders File |
|----------------------|---|----------------------------|---------------------------------|------------------------------|
| | c a c h e t h e r e s - u l t s o f a q u e r y . | | | |
| pre-request-delay-ms | P r e - r e - q u e s t d e l a y i n m i l i -s e 0 | | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|-----------------------|------------------------------------|---------------|----------------------------|----------------------------|-------------------------|
| | condsperrere-quest. | | | | |
| requests-parallel-max | Maximun number of parallel queries | 32 | ✓ | ✓ | ✓ |

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|------|--|---------------|----------------------------|----------------------------|-------------------------|
| | uses form individual properties on the data container. | | | | |

9.2.36 Provider Odbc

ODBC.

Code for use in settings.xml: Odbc

Alias: odbc

Status: Production

Available in Editions: Paid

9.2.37 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. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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 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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9.2.38 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. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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 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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9.2.39 Provider OpenSpendingNI: Openspending.nl.

Openspending.nl.

Code for use in settings.xml: OpenSpendingNI

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 OpenSpendingNI:

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|--|---|-------------------------------|----------------------------|----------------------------|-------------------------|
| api-url | URL to access the API. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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 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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9.2.40 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

9.2.41 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 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 | ✓ | ✓ | ✓ |

9.2.42 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 Un-set, 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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9.2.43 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/>

9.2.44 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 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 | ✓ | ✓ | ✓ |

9.2.45 Provider RdwNI: RDW (NL) information.

RDW (NL) information.

Code for use in settings.xml: RdwNI

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 RdwNI:

| Code | Description | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Providers File |
|---|---|---------------|----------------------------|----------------------------|-------------------------|
| api-url | URL to access the API. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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 SQL-Statement | Set from Providers File |
|---|---|-------------------------------|----------------------------|------------------------|-------------------------|
| | during retrieval of data. | | | | |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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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9.2.46 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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9.2.47 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. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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 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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9.2.48 Provider Sftp: Secure FTP.

Secure FTP.

Code for use in settings.xml: Sftp

Alias: sftp

Status: Production

Available in Editions: Paid

9.2.49 Provider SilverEssence: SilverEssence.

SilverEssence.

Code for use in settings.xml: SilverEssence

Alias: silver

Status: Non-production

Available in Editions: Paid

9.2.50 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>

9.2.51 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>

9.2.52 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 | ✓ | ✓ | ✓ |

9.2.53 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 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 Stack-Apps. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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 | ✓ | ✓ | ✓ |
| invantine-sql-forward-filters-to-data-containers | Whether to forward filters to data containers. | True | ✓ | ✓ | ✓ |
| invantine-sql-shuffle-fetch-results-data-containers | Whether to shuffle results fetched from data containers. | False | ✓ | ✓ | ✓ |
| invantine-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 | ✓ | ✓ | ✓ |

9.2.54 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.

9.2.55 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, 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 | ✓ | ✓ | ✓ | |
| dow nload-error-400-bad-request-max-tries | Maximum number of tries when OData server reports bad format during retrieval of data. | 30 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-error-422-bad-request-max-tries | Maximum number of tries when OData server reports unprocessable entity during retrieval of data. | 30 | ✓ | ✓ | ✓ | |
| dow nload-error-422-bad-request-sleep-initial-ms | Initial sleep in milliseconds between retries when OData server reports unprocessable entity during retrieval of data. | 5000 | ✓ | ✓ | ✓ | |
| dow nload-error-422-bad-request-sleep-max-ms | Maximum sleep in milliseconds between retries when OData server reports unprocessable entity during retrieval of data. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-422-bad-request-sleep-multiplicator | Multiplication factor for sleep between retries OData server reports unprocessable entity during retrieval of data. | 2 | ✓ | ✓ | ✓ | |
| dow nload-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. | | | | | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-error-502-server-unavailable-max-tries | Maximum number of tries when OData server reports a bad gateway during retrieval of data. | 30 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-error-502-server-unavailable-sleep-multiplicator | Multiplication factor for sleep between retries OData server reports a bad gateway during retrieval of data. | 2 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-error-504-gateway-timeout-max-tries | Maximum number of tries when the website reports a gateway timeout. | 10 | ✓ | ✓ | ✓ | |
| dow nload-error-504-gateway-timeout-sleep-initial-ms | Initial sleep in milliseconds between retries when the website reports a gateway timeout. | 5000 | ✓ | ✓ | ✓ | |
| dow nload-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 |
|---|--|---------------|----------------------------|----------------------------|--------------------------|-----------------|
| dow nload-error-504-gateway-timeout-sleep-multiplicator | Multiplication factor for sleep between retries when the website reports a gateway timeout. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-argument-exception-max-tries | Maximum number of tries when an argument exception is returned when download a blob. | 10 | ✓ | ✓ | ✓ | |
| dow nload-error-argument-exception-sleep-initial-ms | Initial sleep in milliseconds between retries when an argument exception is returned when download a blob. | 1000 | ✓ | ✓ | ✓ | |
| dow nload-error-argument-exception-sleep-max-ms | Maximum sleep in milliseconds between retries when an argument exception is returned when download a blob. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-argument-exception-sleep-multiplicator | Multiplication factor for sleep between retries when an argument exception is returned when download a blob. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-internet-download-max-tries | Maximum number of tries when the Internet connection seems down during retrieval of data. | 10 | ✓ | ✓ | ✓ | |
| dow nload-error-internet-download-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | 10000 | ✓ | ✓ | ✓ | |
| dow nload-error-internet-download-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-internet-download-sleep-multiplicator | Multiplication factor for sleep between retries when the Internet connection seems down during retrieval of data. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-io-exception-max-tries | Maximum number of tries when a network I/O connection failure occurs during retrieval of data. | 10 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-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 | ✓ | ✓ | ✓ | |
| dow nload-error-io-exception-sleep-multiplicator | Multiplication factor for sleep between retries when a network I/O connection failure occurs during retrieval of data. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-json-exception-max-tries | Maximum number of tries when an invalid JSON body is returned. | 3 | ✓ | ✓ | ✓ | |
| dow nload-error-json-exception-sleep-initial-ms | Initial sleep in milliseconds between retries when an invalid JSON body is returned. | 1000 | ✓ | ✓ | ✓ | |
| dow nload-error-json-exception-sleep-max-ms | Maximum sleep in milliseconds between retries when an invalid JSON body is returned. | 10000 | ✓ | ✓ | ✓ | |
| dow nload-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 |
|--|---|---------------|----------------------------|----------------------------|--------------------------|-----------------|
| dow nload-error-other-exception-max-tries | Maximum number of tries when an unqualified error occurs during retrieval of data. | 3 | ✓ | ✓ | ✓ | |
| dow nload-error-other-exception-sleep-initial-ms | Initial sleep in milliseconds between retries when an unqualified error occurs during retrieval of data. | 5000 | ✓ | ✓ | ✓ | |
| dow nload-error-other-exception-sleep-max-ms | Maximum sleep in milliseconds between retries when an unqualified error occurs during retrieval of data. | 30000 | ✓ | ✓ | ✓ | |
| dow nload-error-other-exception-sleep-multiplicator | Multiplication factor for sleep between retries when an unqualified error occurs during retrieval of data. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-socket-exception-max-tries | Maximum number of tries when the network connection is forcibly dropped during retrieval of data. | 10 | ✓ | ✓ | ✓ | |
| dow nload-error-socket-exception-sleep-initial-ms | Initial sleep in milliseconds between retries when the network connection is forcibly dropped during retrieval of data. | 10000 | ✓ | ✓ | ✓ | |
| dow nload-error-socket-exception-sleep-max-ms | Maximum sleep in milliseconds between retries when the network connection is forcibly dropped during retrieval of data. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-socket-exception-sleep-multiplicator | Multiplication factor for sleep between retries when the network connection is forcibly dropped during retrieval of data. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-exception-max-tries | Maximum number of tries when a web connection failure occurs during retrieval of data. | 10 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-exception-sleep-initial-ms | Initial sleep in milliseconds between retries when a web connection failure occurs during retrieval of data. | 10000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-exception-sleep-max-ms | Maximum sleep in milliseconds between retries when a web connection failure occurs during retrieval of data. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-exception-sleep-multiplicator | Multiplication factor for sleep between retries when a web connection failure occurs during retrieval of data. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-not-implemented-max-tries | Maximum number of tries when the connection reports not implemented. | 1 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-not-implemented-sleep-initial-ms | Initial sleep in milliseconds between retries when the connection reports not implemented. | 5000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-not-implemented-sleep-max-ms | Maximum sleep in milliseconds between retries when the connection reports not implemented. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-not-implemented-sleep-multiplicator | Multiplication factor for sleep between retries when the connection reports not implemented. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-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 |
|---|--|--|----------------------------|----------------------------|--------------------------|-----------------|
| dow nload-error-w eb-timeout-sleep-initial-ms | Initial sleep in milliseconds between retries when the connection reports a timeout. | 5000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-timeout-sleep-max-ms | Maximum sleep in milliseconds between retries when the connection reports a timeout. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-timeout-sleep-multiplicator | Multiplication factor for sleep between retries when the connection reports a timeout. | 2 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-unauthorized-max-tries | Maximum number of tries when the connection reports an unauthorized error. | 1 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-unauthorized-sleep-initial-ms | Initial sleep in milliseconds between retries when the connection reports an unauthorized error. | 5000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-unauthorized-sleep-max-ms | Maximum sleep in milliseconds between retries when the connection reports an unauthorized error. | 60000 | ✓ | ✓ | ✓ | |
| dow nload-error-w eb-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 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 | ✓ | ✓ | ✓ | |

9.2.56 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 | | ✓ | ✓ |

9.2.57 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>

9.2.58 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/>

9.2.59 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/>

9.2.60 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>

9.2.61 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>

9.2.62 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 acceptable age 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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9.2.63 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

9.2.64 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. | | ✓ | | ✓ |
| dow nload-error-internet-dow n-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 |
|---|---|-------------------------------|----------------------------|----------------------------|-------------------------|
| dow nload-error-internet-dow n-sleep-initial-ms | Initial sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-sleep-max-ms | Maximum sleep in milliseconds between retries when the Internet connection seems down during retrieval of data. | | ✓ | ✓ | ✓ |
| dow nload-error-internet-dow n-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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9.2.65 Provider Wmi: Windows Management Instrumentation.

Windows Management Instrumentation.

Code for use in settings.xml: Wmi

Alias: wmi

Status: Production

Available in Editions: Paid

9.2.66 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

9.2.67 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/xaalAuditfileAfrekensystemen_3.1.zip

Non-technical Documentation:

https://www.softwarepakket.nl/swpakketten/auditfiles/auditfile_afrekensystemen.php?brnw=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.audit-files.nl/XAA/3.1 | ✓ | ✓ | ✓ |

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9.2.68 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

9.2.69 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

9.2.70 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

9.2.71 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 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.audit-files.nl/XAF/3.2 | ✓ | ✓ | ✓ |

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9.2.72 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 | ✓ | ✓ | ✓ |

Generated 11-01-2019 19:48 on version 17.30.0-PROD+1821.

9.2.73 Providers

The providers described here are available on all platforms.

9.3 Configuration

9.3.1 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.

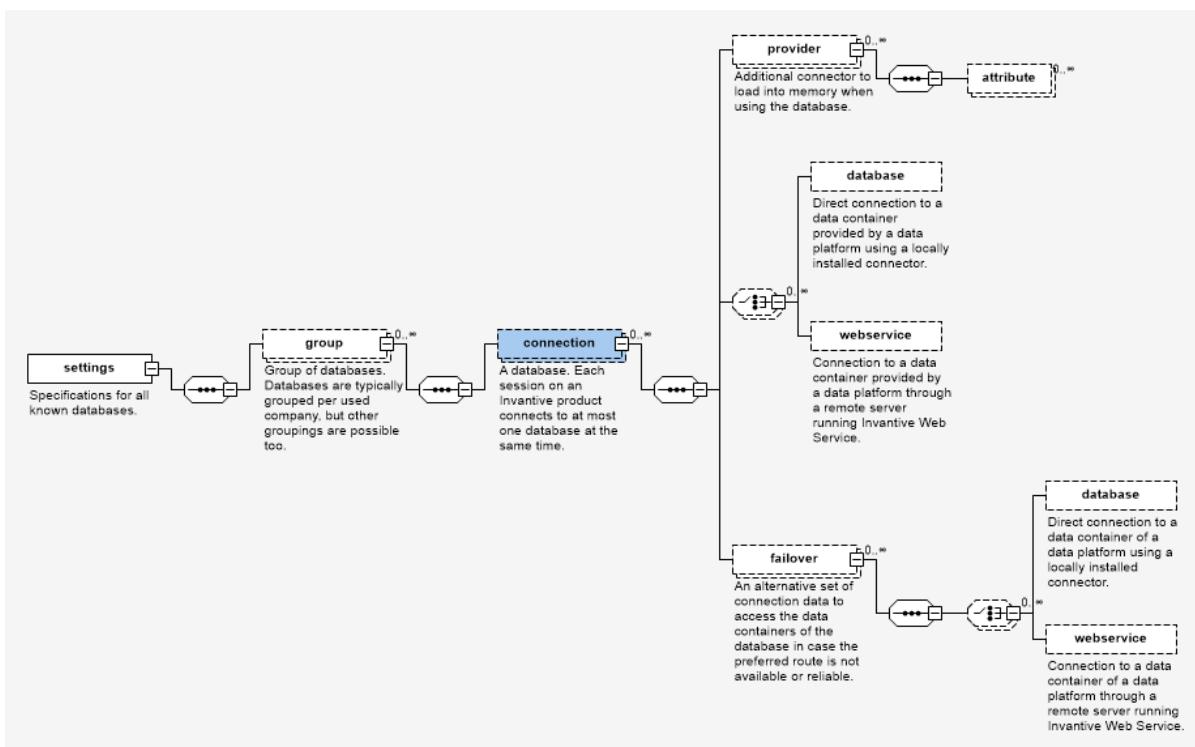
Additional Locations

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](#).



9.3.2 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'.

9.3.3 Logging

9.3.3.1 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:

The screenshot shows the AWS CloudWatch Logs interface. At the top, there's a breadcrumb navigation: CloudWatch > CloudWatch Logs > Log groups > invantive/trace. To the right, there's a link to 'Switch to the original interface.' Below the navigation, the log group name 'invantive/trace' is displayed along with a timestamp range from 2020-11-05T19:23:47.761+01:00 to 2020-11-05T19:23:47.784+01:00. The main area is titled 'Log events' and contains a table with two columns: 'Timestamp' and 'Message'. The 'Timestamp' column shows the log time, and the 'Message' column shows the JSON-formatted log entries. There are four log entries visible, each containing a timestamp, a message, and some internal log details like session ID and thread ID.

| Timestamp | Message |
|-------------------------------|---|
| 2020-11-05T19:23:47.761+01:00 | {"Message": "The use of the database 'EZ-base' is licensed.", "MessageCode": null, "Occurred": "2020-11-05T18:23:47.7618813Z", "ThreadId": "...", "Message": "The use of the database 'EZ-base' is licensed.", "MessageCode": null, "Occurred": "2020-11-05T18:23:47.7618813Z", "ThreadId": "...", "SessionId": "PROP-1suselicensed-52baef5d2-4962-453b-b5af-d7498ee4c0db", "PoolIdentityId": null, "CallingProviderAlias": null} |
| 2020-11-05T19:23:47.761+01:00 | {"Message": "Select licensed and allowed databases in the group \u0027Business Apps\u0027 with label \u0027Business Apps\u0027.", "MessageCode": null, "Occurred": "2020-11-05T18:23:47.7618813Z", "ThreadId": "...", "Message": "Select licensed and allowed databases in the group \u0027Business Apps\u0027 with label \u0027Business Apps\u0027.", "MessageCode": null, "Occurred": "2020-11-05T18:23:47.7618813Z", "ThreadId": "...", "SessionId": "PROP-1suselicensed-52baef5d2-4962-453b-b5af-d7498ee4c0db", "PoolIdentityId": null, "CallingProviderAlias": null} |
| 2020-11-05T19:23:47.784+01:00 | {"Message": "The use of the database '\u0027XAA 3.0\u0027' is licensed.", "MessageCode": null, "Occurred": "2020-11-05T18:23:47.7848821Z", "ThreadId": "...", "Message": "The use of the database '\u0027XAA 3.0\u0027' is licensed.", "MessageCode": null, "Occurred": "2020-11-05T18:23:47.7848821Z", "ThreadId": "...", "SessionId": "PROP-1suselicensed-52baef5d2-4962-453b-b5af-d7498ee4c0db", "PoolIdentityId": null, "CallingProviderAlias": null} |
| 2020-11-05T19:23:47.784+01:00 | {"Message": "Select licensed and allowed databases in the group \u0027XML Audit Files\u0027 with label \u0027XML Audit Files\u0027.", "MessageCode": null, "Occurred": "2020-11-05T18:23:47.7848821Z", "ThreadId": "...", "Message": "Select licensed and allowed databases in the group \u0027XML Audit Files\u0027 with label \u0027XML Audit Files\u0027.", "MessageCode": null, "Occurred": "2020-11-05T18:23:47.7848821Z", "ThreadId": "...", "SessionId": "PROP-1suselicensed-52baef5d2-4962-453b-b5af-d7498ee4c0db", "PoolIdentityId": null, "CallingProviderAlias": null} |

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 activated. 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
```

9.3.3.2 Execution Log

Every completed execution of an Invantive product appends an entry to the local execution log. The execution log is in XML-format and located by default at `%USERPROFILE%\executionlog.xml`.

The name and location of the execution log can be altered by placing the full path and file name in the environment variable `INVANTIVE_EXECUTION_LOG_FILE`.

The root tag `EXECUTIONLOGS` contains an `EXECUTIONLOG` for every execution once finished. The following elements are available:

- VERSION: the record format, always '1'.
- MESSAGEUID: the UID of the message as registered on Invantive Cloud.
- IID: the Invantive Installation ID of the device.
- SESSIONID: the ID of the session.
- LICENSECODE: the code of the subscription contract.
- LICENSEKEYID: the numeric ID of the license key.
- MACHINENAME: the name of the device.
- EXECUTABLENAME: the name and path of the executable.
- APPLICATIONNAME: the name of the Invantive application.
- APPLICATIONVERSION: the version of the Invantive application.
- USERNAME: the name of the operating system user.

- PROCESSID: the ID of the OS process.
- STARTTIMEUTC: the start time of the process (UTC).
- ENDTIMEUTC: the end time of the process (UTC).
- EXITCODE: the exit code of the process.
- EXITLEVEL: the textual description of the exit code.
- EXITMESSAGECODE: the message code associated with the execution exit.
- ISHEADLESS: whether the process 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.

9.3.4 Debugging

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

9.3.4.1 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.

10 Invantive SQL for Windows

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

10.1 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.

10.2 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.

11 Invantive Script

11.1 Introduction

Invantive Script is a scripting language available within the independent and embedded Invantive Query Tool and Invantive Data Hub. Invantive Script extends Invantive SQL, but also works in combination with native SQL databases. It is always executed on the device running the program.

11.2 Variables

Invantive Script variables are globally named variables with a string value. The names are all case-insensitive.

The value of an Invantive Script can be used in SQL statements or variable value assignment by using the syntax

```
{ NAME }
```

which expands run-time to the string value of the variable. Expansion is recursive: it repeats itself till there are no Invantive Script variables left to expand.

An error is triggered when an undefined variable name is used.

11.2.1 Define Variable Value

A variable is defined and assigned a value in one combined statement using the syntax:

```
local define NAME "VALUE"
```

The value may refer to other variables using the `$(NAME)` notation, such as:

```
local define OUT_PATH "c:\temp"
local define OUT_FILE_NAME_PATH "$(OUT_PATH)\my-file.txt"
```

[Encrypted values](#)²³³ can also be used as source for a variable using the syntax:

```
local define encrypted NAME "ENCRYPTED VALUE"
```

11.2.2 Undefine Variable

The definition of a variable can be removed using:

```
local undefine NAME
```

11.2.3 Pre-defined Variables

A number of pre-defined variables exist:

- Translation resources: name starts with 'res:', followed by a resource code. For instance, the variable 'res:itgen_description' will expand to the string value of the resource 'itgen_de-

scription' which is 'Description' on an English user interface and 'Omschrijving' on a Dutch user interface.

- Last result outcome: name starts with 'outcome:', followed by a 0-based row and column number separated by comma. The variable 'outcome:0,0' will expand to the string value of the first row and column in the result of the last SQL executed.
- Local statement executions: name starts with local:. Pre-defined list of:
 - hoststdout: regular output of the last (successful) host statement.
 - hoststderr: error output of the last (successful) host statement.
 - hostexitcode: exit code of the last (successful) host statement.
- Execution statistics: name starts with 'stat:. Pre-defined list of:
 - errorcountignore: number of errors fully ignored.
 - errorcountdefault: number of errors during default setting.
 - errorcountcontinue: number of errors ignored, but memorized for exit code.
 - statementcount: number of statements executed.
- Application variables: name starts with 'application:'.
- Database variables: name starts with 'database:'.
- System variables: name starts with 'system:'.

11.2.4 System Variables

A number of pre-defined system variables exist:

- environmentvariable:NAME: value of the operating system environment variable with the name 'NAME'.
- antivirusinfo: description of the anti-virus product in use.
- clipboardtext: current contents of the Windows clipboard.
- clrversion: full version of the Common Language Runtime.
- clrversion:build: build of the Common Language Runtime.
- clrversion:major: major version of the Common Language Runtime.
- clrversion:majorrevision: major revision of the Common Language Runtime.
- clrversion:minor: minor version of the Common Language Runtime.
- clrversion:minorreversion: minor revision of the Common Language Runtime.
- commandline: command line for this process.
- currentdirectory: path of the current working directory.
- date: date of the workstation.
- datetime: date and time of the workstation.
- directoryseparator: OS-specific separator for directory.

- `directoryseparatoralt`: alternative OS-specific separator for directory.
- `hasteamviewer`: whether TeamViewer in version 10 is present.
- `installationfolder`: Obsoleted.
- `ipaddress`: primary IP-address of the workstation on the internal network.
- `ipaddressexternal`: primary IP-address of the workstation on the Internet.
- `is64bitoperatingsystem`: whether the operating system runs in 64-bit mode.
- `is64bitprocess`: whether the current process runs in 64-bit mode.
- `isvirtualmachine`: whether the workstation is a virtual machine.
- `logicalcorecount`: number of logical cores of the workstation.
- `machinename`: NetBIOS name of the workstation.
- `now`: date and time of the workstation in the format YYYYMMDDHH24MISS.
- `os`: current platform version number.
- `osname`: human-friendly name of the operating system.
- `pathseparator`: OS-specific separator for path.
- `physicalcorecount`: number of physical cores in the workstation.
- `physicalmemoryinbytes`: number of bytes in the physical memory of the workstation.
- `processorcount`: number of physical processors in the workstation.
- `processorid`: ID of the processor.
- `sid`: security identifier.
- `stacktrace`: stack trace of the program.
- `systemdirectory`: fully qualified path of the system directory.
- `systempagesize`: number of bytes in the system memory page.
- `time`: time of the workstation.
- `user`: user of the workstation.
- `userdesktopdirectory`: fully qualified path of the desktop directory of the current user.
- `userdocumentsdirectory`: fully qualified path of the documents directory of the current user.
- `userdomain`: network domain name associated with the current user.
- `userfavoritesdirectory`: fully qualified path of the favorites directory of the current user.
- `userhomedirectory`: fully qualified path of the home directory of the current user.
- `userinteractive`: whether the current process is running in interactive mode.

- `userpicturesdirectory`: fully qualified path of the pictures directory of the current user.
- `userprofiledirectory`: fully qualified path of the profile directory of the current user.
- `volumeseparator`: OS-specific separator for volume.
- `workingset`: amount of physical memory mapped to the process context.

11.2.5 Application Variables

A number of pre-defined application variables exist:

- `applicationfolder`: folder from which the application is running.
- `cachedirectory`: directory in which the cached files for the current application version are loaded.
- `centralsettingsdirectory`: directory below which all configuration settings are stored.
- `connectionname`: name of last used database in Invantive Keychain.
- `containertitle`: title of the form containing the control (extended with tab page title if present).
- `copyright`: application's copyright text.
- `currentversion`: label of the application's version.
- `currentversionshort`: short description of the application's version.
- `datadirectory`: directory in which deployed data files are stored.
- `defaultsettingsfile`: default databases settings configuration file.
- `expirationdate`: application's build expiration date (if any).
- `globalfirstuse`: date time of any first use of any Invantive product.
- `globalnumberofapplicationstarts`: number of application starts of any Invantive application.
- `globalusersettingsfile`: global user.settings file with preferences.
- `hasbeenoptimized`: whether or not the application has been optimized.
- `helpfilelocationproducer`: full path to the help file.
- `installericonfile`: name of the icon file to be used located within the startup directory.
- `internalname`: application's internal name.
- `invantivetempdirectory`: directory in which the temp files for Invantive software are stored.
- `iscurrentusersystemuser`: whether the current user is a system user.
- `isfirstrun`: whether this is the first run of the application installation since installation or upgrade.

- **isloggedon:** whether a connection has been made and is still open to a database.
- **lastavailablebandwidth:** last available measured bandwidth.
- **lastavailablelatency:** last available measured latency.
- **lastlanguage:** last user user interface language.
- **loggingfile:** full file name of the logging file with unprocessed log messages.
- **multicorejitprofilefile:** full file name of the Multi-Core JIT Profile file.
- **name:** name of the application used in dialogs.
- **nameversion:** name of the application used in dialogs, followed by the version in brackets.
- **newsitemcachefile:** full file name of the news items cache.
- **numberofconnectionsmade:** number of database connections made by any Invantive application.
- **optimizationdirectory:** directory in which the application optimization files for the current application are loaded.
- **optimizationlogfile:** full file name and path to the optimization log file for this process.
- **productinstallationfirstuse:** date time of any first use of this Invantive product installation.
- **productinstallationnumberofapplicationstarts:** number of application starts of this Invantive product installation.
- **productinstallationusersettingsfile:** user's settings for a specific product and its installation.
- **productnumberofapplicationstarts:** number of application starts of this Invantive product.
- **productusersettingsfile:** user's settings for a specific product.
- **querytoolcentraldirectory:** central folder for Invantive Query Tool.
- **serverlicenseexists:** whether the server license exists.
- **serverprefixurl:** server prefix URL.
- **starterdirectory:** directory in which the Invantive Starter parameter files are stored.
- **supportemail:** localized support email address.
- **supportwebsite:** support website.
- **tempdirectory:** directory in which the temp files for the current application are stored.
- **translationfilename:** translation file name and path.
- **urllobcache:** full path to the URL LOB cache file.
- **usedsettingsfilename:** file name for the used 'settings.xml'.

- `userlayoutdirectory`: directory where user specific layouts of the user interface are stored.

11.2.6 Database Variables

A number of pre-defined database variables exist:

- `connection`: name of the last used database according to Invantive Keychain.
- `datacontainerid`: ID of the first data container used.
- `partitions`: comma-separated list of partition codes across all data containers used.
- `ultimateprovider`: name of the ultimately used first provider across Invantive Web Service hops.
- `useremailaddress`: email address of the user on the first data container used.
- `userfullname`: full name of the user on the first data container used.
- `userldapusername`: LDAP user name of the user on the first data container used.
- `userlogincode`: login code of the user on the first data container used.
- `version`: version of the RDBMS platform of the first data container used.

11.3 Statements

Invantive Script supports a number of statements.

11.3.1 Comment

Using the syntax

```
local remark TEXT
```

you can add a remark to your script.

11.3.2 Sleep

When a wait statement is executed following the syntax

```
local wait SECONDS
```

such as

```
local wait 5
```

the execution of an Invantive Script will be postponed during the indicated number of seconds.

11.3.3 On Error

The default behavior of Invantive Script is to end the execution of a script when an error occurs and to continue when no error occurs.

Using the on error statement with the syntax:

```
local on error SPECIFICATION
```

you can control the behavior when an error occurs. The available variants for specification are:

- `default`: as described above.
- `continue`: remember that an error occurred, continue execution but exit the program with the exit code that would have been raised during default behavior.

- ignore: ignore the error and forget it ever occurred.
- exit success: exit the program with exit code 0.
- exit failure: exit the program with exit code 1.
- exit warning: exit the program with exit code 2.

11.3.4 Encrypt Value

A value can be encrypted with reversible encryption on Windows platforms using the roaming profile key and on other platforms using an Invantive-managed key. The syntax is:

```
local encrypt variable value "VALUE" [label "LABEL"]
```

The encrypted value can be used for an encrypted connection string in settings.xml. The encrypted value can also be used to assign a [variable a value](#)²²⁷.

11.3.5 Encrypt Password

A password can be encrypted with reversible encryption on Windows platforms using the roaming profile key and on other platforms using an Invantive-managed key. The syntax is:

```
local encrypt password ["VALUE"] [label "LABEL"]
```

The encrypted value can be used for an encrypted connection string in settings.xml. The encrypted value can also be used to assign a [variable a value](#)²²⁷.

11.3.6 Encrypt Connection String

A connection string can be encrypted with reversible encryption on Windows platforms using the roaming profile key and on other platforms using an Invantive-managed key. The syntax is:

```
local encrypt connection string ["VALUE"] [label "LABEL"]
```

The encrypted value can be used for an encrypted connection string in settings.xml. The encrypted value can also be used to assign a [variable a value](#)²²⁷.

11.3.7 Define Output Column

Output can be printed in text mode using a columnar layout. The column statement enables configuration of the layout using the syntax:

```
local column NAME heading "HEADING" (width "WIDTH")
```

The heading is printed above the column contents and the width in characters allows control of the column's width.

The layout for a column can be undefined using

```
local column NAME clear
```

11.3.8 Show Message

A message can be shown to the user using the syntax:

```
local show message "TEXT"
```

11.3.9 Re-execute Last SQL

The last SQL statement can be executed again using the syntax:

```
local execute last sql
```

11.3.10 Exit

The program can be exited using the syntax:

```
local exit [EXITCODE]
```

in which the exit code is optional.

11.3.11 Log on

A connection to a database can be made using the syntax:

```
local log on connection "<DATABASENAME>" user "<LOGONCODE>"  
encryptedpassword "<ENCRYPTEDPASSWORD>" silent
```

where the database name consists of the group name, a back slash and the database name.

11.3.12 Discovery

The database discovery process can be initiated using the syntax:

```
local discover connections
```

11.3.13 Create Directory

A directory can be created using the syntax:

```
local create directory "NAME"
```

11.3.14 Move Files

Files can be moved using the syntax:

```
local move files "SPECIFICATION" to "SPECIFICATION"
```

11.3.15 Delete Files

Files can be deleted using the syntax:

```
local delete files "SPECIFICATION"
```

11.3.16 Open File

A file can be opened using the default handler using the syntax:

```
local open file "FILENAME"
```

11.3.17 Open URL

A URL can be opened using the default handler using the syntax:

```
local open url "FILENAME"
```

11.3.18 Host

An operating-system command can be executed using the syntax:

```
local host "EXECUTABLE" "ARGUMENTS" "WORKING  
DIRECTORY" ["MAXIMUM DURATION IN MS"]
```

For example, the following statement starts the Windows Explorer:

```
local host "explorer.exe" "" ""
```

11.3.19 Export Results

The results from the last query can be exported to a file using the syntax:

```
local export results  
(as "<FILENAME-WITH-PATH>"|using filename column <COLUMN-NAME>  
format FORMAT  
[split on <COLUMN-NAME>]  
[tablename <TABLE-NAME-FOR-SQL>]  
[columns <COLUMN1>[,<COLUMN2>]*]  
[HEADERS]  
[fieldseparator "<FIELD-SEPARATOR-TEXT>"]  
[recordseparator "<RECORD-SEPARATOR-TEXT>"]
```

```
[quotingcharacter "<QUOTING-TEXT>"]
[escapedquotingcharacter "<ESCAPED-QUOTING-TEXT>"]
[(include|exclude) sql]
[limit <NUMBER> rows]
[when contains at least <NUMBER> rows]
[((remove|keep) field separator in content)|replace field
separator in content by "<REPLACEMENT-TEXT>"]
[((remove|keep) record separator in content)|replace record
separator in content by "<REPLACEMENT-TEXT>"]
```

The most frequently used variant is:

```
local export results as "c:\temp\output.xlsx" format xlsx
```

which exports the results as an Excel workbook.

Output File Name

The name of the output file can either be hard-coded using
as "<FILENAME-WITH-PATH>"

or taken from a column using

```
using filename column <COLUMN-NAME>
```

Multiple output files can be generated, each with different part of the results, when 'split on' is specified. A new output file is started on every change on the value of the split on column.

Output Formats

The following export formats are supported:

- xlsx: Excel xlsx file.
- csv: comma-separated values.
- tsv: tab-separated values.
- txt: text.
- html: HTML.
- rtf: Rich Text Format.
- docx: Word docx format.
- xps: Microsoft XPS page format.
- sql: SQL statements.
- pdf: PDF page format.
- json: JSON format.
- jsondataset: JSON data set format.
- xml: XML.
- sqlselect: SQL select query.
- sqlcreatetable: SQL create table statement. The table name can be specified by specifying a value for 'tablename'.

The csv, tsv and text output formats allow specification of separator and quoting behavior:

- fieldseparator: the characters to use as field separator.
- recordseparator: the characters to use as record separator.
- quotingcharacter: the character to use as quoting character for field and record separator in content.
- escapedquotingcharacter: the character to use to escape the quoting character.

The field and record separators in content can also be removed or replaced by a value using the 'remove/keep' specification.

Rows

The maximum number of rows to include in the export can be specified using a 'limit' specification.

The minimum number of rows the export must contain for it to create a file can be specified using a 'when contains at least' specification.

Columns

The list of columns to include can be specified using a list of column names specified after 'columns'.

Headers

The headers can be configured using one of the following three options:

- exclude headers: no headers are included.
- include headers: headers with user-friendly labels are included.
- include technical headers: headers with the column names are included.

11.3.20 Export Documents

Results from queries containing documents in binary or text format can be exported to output files using the syntax:

```
local export documents in <COLUMN-NAME> to "<DIRECTORY>"  
filename (automatic|column <COLUMN-NAME>) [actions  
<ACTION1>[,<ACTION2>*]]
```

The document contents are retrieved from a column and save in the specified directory. One output file is created per row. The name of the output files can be automatically generated or retrieved from another column.

The automatic generation process of file names tries to detect the MIME type of each document with its's associated extension. When it can not be determined, it uses 'txt' as extension. The documents are number sequentially.

Post-process actions can be specified. The supported actions are:

- onerrorcontinue: operation normally fails when an error occurs during data retrieval or storage. Operation continues in onerrorcontinue mode.
- onerrorfail: fail when an error occurs during data retrieval or storage.
- extractzip: consider the document to be a ZIP archive and extract it to a subfolder of the output folder named after the ZIP file name.

11.3.21 Memorize on Clipboard

The results of the last query can be memorized on a named clipboard using the syntax:

```
local memorize results clipboard NAME
```

11.3.22 Clear Results

The contents of a named clipboard can be cleared using the syntax:

```
local clear results clipboard NAME
```

11.3.23 Load Clipboard

The contents of a file in XML or JSON format can be loaded into a named clipboard using the syntax:

```
local load results clipboard <NAME> from "<DIRECTORY-OR-FILE-  
NAME>" format (xml|json) [compression level <DIGIT>]
```

11.3.24 Save Clipboard

The contents of a named clipboard can be saved in XML or JSON format to a file using the syntax:

```
local save results clipboard <NAME> to "<FILENAME>" format (xml|  
json) [compression level <DIGIT>]
```

11.3.25 Load Clipboard to Table

Data on a named clipboard can be inserted into a table using the syntax:

```
local insert results clipboard <NAME> in table <TABLE-NAME>  
[create]
```

By using 'create' the table will be created first.

11.3.26 Load Exact Online XML Files

Specifically on Exact Online databases you can upload pre-formatted XML upload files for Exact Online using the syntax:

```
local eol batch import xml "TOPIC-NAME"  
in "SOURCE-DIRECTORY-OR-FILE"  
success "TARGET-DIRECTORY-WHEN-PROCESSED"  
[fail "TARGET-DIRECTORY-WHEN-FAILED"]
```

This statement is deprecated. Please use the `UploadXMLTopics` table for more flexibility and improved throughput.

11.3.27 Diagnostics Statements

The following statements allow simple maintenance tasks to be scripted:

- local preferences: open the preferences window.
- local enable event log: enable event log logging.
- local configure license: open the license configuration window.
- local load license "FILENAME": load the license key stored in the file.
- local deploy static "DIRECTORY": (deprecated) deploy the software to a specific folder; only applies to pre-2019 ClickOnce-based releases.
- local diagnostics: open the diagnostics window.
- local keychain: open the keychain window.

- local garbage collection: run garbage collection.
- local data cache: open the data cache window.
- local help: open help window.
- local feedback: open feedback window.
- local optimize application: (deprecated) run the ngen application optimization; only applies to pre-2019 ClickOnce-based releases.

12 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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