


# WMI Data Model

*for use with Invantive SQL*

24.0

invantive
the SQL company

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This manual is a reference guide intended to clarify usage. If data in the sample images match data in your system, the similarity is coincidental.

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# 1 SQL Driver for Wmi API

Invantive SQL is the fastest, easiest and most reliable way to exchange data with the Wmi API.

Use the "Search" option in the left menu to search for a specific term such as the table or column description. When you already know the term, please use the "Index" option. When you can't find the information needed, please click on the Chat button at the bottom or place your question in the user community. Other users or Invantive Support will try to help you to our best.

Windows Management Instrumentation.

The Wmi driver covers 32 tables and 0 columns.

## Wmi API Clients

Invantive SQL is available on many user interfaces ("clients" in traditional server-client paradigma). All Invantive SQL statements can be exchanged with a close to 100% compatibility across all clients and operating systems (Windows, MacOS, Linux, iOS, Android).

The clients include Microsoft Excel, Microsoft Power BI, Microsoft Power Query, Microsoft Word and Microsoft Outlook. Web-based clients include Invantive Cloud, Invantive Bridge Online as OData proxy, Invantive App Online for interactive apps, Online SQL Editor for query execution and Invantive Data Access Point as extended proxy.

For technical users there are command-line editions of Invantive Data Hub running on iOS, Android, Windows, MacOS and Linux. Invantive Data Hub is also often used for enterprise server applications such as ETL. High-volume replication of data taken from the Wmi API into traditional databases such as SQL Server (on-premise and Azure), MySQL, PostgreSQL and Oracle is possible using Invantive Data Replicator. Invantive Data Replicator automatically creates and maintains Wmi datawarehouses, possibly in combination with data from over 70 other (cloud) platforms. Data Replicator supports data volumes up to over 1 TB and over 5.000 companies. The on-premise edition of Invantive Bridge offers an Wmi ADO.net provider.

## Monitor API Calls

When a query or DML-statement has been executed on Invantive SQL a developer can evaluate the actual calls made to the Wmi API using a query on sessionios@DataDictionary. As an alternative, extensive request and response logging can be enabled by setting log-native-calls-to-disk to true. In the %USERPROFILE%\Invantive\NativeLog folder Invantive SQL will create log files per API request and response.

## Specifications

The SQL driver for Wmi does not support partitioning. Define one data container in a database for each company in Wmi to enable parallel access for data from multiple companies.

An introduction into the concepts of Invantive SQL such as databases, data containers and partitioning can be found in the Invantive SQL grammar.

The configuration can be changed using various attributes during log on and use. A full list of configuration options is listed in the driver attributes 2.

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The catalog name is used to compose the full qualified name of an object like a table or view. The schema name is used to compose the full qualified name of an object like a table or view. On Wmi the comparison of two texts is case sensitive by default.

Changes and bug fixes on the Wmi SQL driver can be found in the release notes. There is currently no specific section on the Invantive forums for Wmi. Please reach out to other users of Wmi by leaving a question or contact request.

Driver code for use in settings.xml: `Wmi`

Alias: `wmi`

Recommended alias: `wmi`

Updated: 15-06-2022 20:33 using Invantive SQL version 22.0.232-PROD+3445.

# 2 SQL Driver Attributes for Wmi API

The SQL driver for Wmi has many attributes that can be finetuned to improve handling in scenarios with unreliable network connections to the API server of Wmi or high-volumes of data. Also, many drivers have driver-specific attributes to finetune actual behaviour or handle data not matching specifications.

The Wmi driver attributes are assigned a default value which seldom requires change. However, changes can be applied when needed on four levels, which are reflected in the table below by separate checkmarks:

- Connection string: the connection string from the settings*.xml file and applied during log on.
- Set SQL statement: a set SQL-statement to be executed once connection has been established.
- Drivers file: the providers.xml file (obsolete starting release 17.32).
- Log on: value to be specified interactively by user during log on in a user interface.

The connection string for Wmi can be found in the settings*.xml file used for the database. Settings*.xml files are typically located in the `%USERPROFILE%\invantive` folder in most deployment scenarios. The reference manuals contain instructions how to relocate the settings*.xml files. Each data container of a database in the connection string can have a `connectionString` element specifying the name and values of attributes. Both name and value must be properly escaped according to XML-semantics. Actual application of the value is solely done during log on. A new connection must be established to change the value of a driver attribute using a connection string.

The set SQL statement can be executed after log on. The syntax is: `set NAME VALUE`, or for a distributed database: `set NAME@ALIAS VALUE`. In some scenarios you may need to enclose the driver attribute name in square brackets to escape it from parsing, for instance when a reserved SQL keyword is part of the name. The new value takes effect straight after execution of the set-statement. The set-statement can be executed as often as needed during a session.

Driver attributes that can be interactively set to a value are typically presented in the log on window. Depending on the platform and design decisions of the user interface designer, some or all of the available driver attributes can have been made available.

The Wmi driver can be configured using the following attributes:

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| Code | Description | Origin | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Drivers File | Set from Log On |
|---|---|---|---|---|---|---|---|
| analysis-enforce-row-uniqueness | Use for analysis only! Enforce rows to be unique. | Shared | False | ✓ | ✓ | ✓ | |
| bulk-delete-page-size-rows | Number of rows to delete per batch when bulk deleting | Shared | 10000 | ✓ | ✓ | ✓ | |
| bulk-insert-page-size-bytes | Approximate maximum size in bytes of batch when bulk inserting | Shared | 10000000 | ✓ | ✓ | ✓ | |
| bulk-insert-page-size-rows | Number of rows to insert per batch when bulk inserting | Shared | 10000 | ✓ | ✓ | ✓ | |
| force-case-sensitive-identifiers | Consider identifiers as case-sensitive independent of the platform capabilities. | Shared | False | ✓ | ✓ | ✓ | |
| forced-casing-identifiers | Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed. | Shared | | ✓ | ✓ | ✓ | |
| invantive-sql-compress-sparse-arrays | Whether to compress sparse arrays in result sets during compression. | SQL Engine V1 | True | ✓ | ✓ | ✓ | |
| invantive-sql-correct-invalid-date | Whether to correct dates considered invalid since they are before 01-01-1753. When nullable, they are removed. Otherwise they are replaced by 01-01-1753. | SQL Engine V1 | False | ✓ | ✓ | ✓ | |
| invantive-sql-forward-filters-to-data-containers | Whether to forward filters to data containers. | SQL Engine V1 | True | ✓ | ✓ | ✓ | |
| invantive-sql-share-byte-arrays | Whether to share the memory used by identical byte arrays in result sets during compression. | SQL Engine V1 | True | ✓ | ✓ | ✓ | |
| invantive-sql-share-strings | Whether to share the memory used by identical strings in result sets during compression. | SQL Engine V1 | True | ✓ | ✓ | ✓ | |
| invantive-sql-shuffle-fetch-results-data-containers | Whether to shuffle results fetched from data containers. | SQL Engine V1 | False | ✓ | ✓ | ✓ | |
| invantive-use-cache | Whether to cache the results of a query. | SQL Engine V1 | True | ✓ | ✓ | ✓ | |
| log-native-calls-to-disk-max-events | Maximum number of events to register from last activation. | Shared | | ✓ | ✓ | ✓ | |
| log-native-calls-to-disk-max-seconds | Maximum number of seconds to register from last activation. | Shared | | ✓ | ✓ | ✓ | |
| log-native-calls-to-disk-on-error | Registers native calls to data container backend as disk files when an error occurred. | Shared | False | ✓ | ✓ | ✓ | |
| log-native-calls-to-disk-on-success | Registers native calls to data container backend as disk files when successful. | Shared | False | ✓ | ✓ | ✓ | |
| log-native-calls-to-trace | Log native calls to data container backend on the trace. | Shared | False | ✓ | ✓ | ✓ | |

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| Code | Description | Origin | Default Value | Set from Connection String | Set from Set SQL-Statement | Set from Drivers File | Set from Log On |
|---|---|---|---|---|---|---|---|
| maximum-length-identifiers | Non-default maximum length in characters of identifier names. | Shared | | ✓ | ✓ | ✓ | |
| max-url-length-accepted | The maximum accepted URL length before raising an error. | Shared | 8000 | ✓ | ✓ | ✓ | |
| max-url-length-desired | The maximum desired URL length. | Shared | 8000 | ✓ | ✓ | ✓ | |
| partition-slot-based-rate-limit-length-ms | Total length in ms across all slots of a partition-based rate limit. | Shared | 60000 | ✓ | | ✓ | |
| partition-slot-based-rate-limit-slots | Number of slots per partition-based rate limit. Null means no slot-based rate limit | Shared | | ✓ | | ✓ | |
| pre-request-delay-ms | Pre-request delay in milliseconds per request. | Shared | 0 | ✓ | ✓ | ✓ | |
| requested-page-size | Preferred number of rows to exchange per round trip; only effective on limited platforms such as AFAS Online | Shared | | ✓ | ✓ | ✓ | |
| requests-parallel-max | Maximum number of parallel data requests from individual partitions on the data container. | Shared | 32 | ✓ | ✓ | ✓ | |
| slot-based-rate-limit-length-ms | Total length in ms across all slots of a slot-based rate limit. | Shared | 60000 | ✓ | | ✓ | |
| slot-based-rate-limit-slots | Number of slots of a slot-based rate limit. Null means no slot-based rate limit | Shared | | ✓ | | ✓ | |
| standardize-identifiers | Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers. | Shared | True | ✓ | ✓ | ✓ | |
| standardize-identifiers-casing | Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform. | Shared | True | ✓ | ✓ | ✓ | |

# 3 Win32_bios

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

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# 4 Win32_COMApplication

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 5 Win32_COMApplicationSettings

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 6 Win32_Desktop

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 7 Win32_DiskDrive

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 8 Win32_DMAChannel

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 9 Win32_Environment

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

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## 10 Win32_Fan

Retrieve: true

### System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

## 11 Win32_FileSpecification

Retrieve: true

### System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

## 12 Win32_GroupUser

Retrieve: true

### System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

## 13 Win32_HeatPipe

Retrieve: true

### System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

## 14 Win32_IP4RouteTable

Retrieve: true

### System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

## 15 Win32_Keyboard

Retrieve: true

### System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

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# 16 Win32_LocalTime

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 17 Win32_NetworkAdapter

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 18 Win32_NetworkAdapterConfiguration

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 19 Win32_NTEventlogFile

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 20 Win32_PageFileSetting

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 21 Win32_Perf

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

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## 22 Win32_PerfFormattedData_PerfOS_Memory

Retrieve: true

### System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

## 23 Win32_PerfFormattedData_TapiSrv_Telephony

Retrieve: true

### System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

## 24 Win32_PerfRawData_PerfOS_System

Retrieve: true

### System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

## 25 Win32_PerfRawData_Tcpip_IPv4

Retrieve: true

### System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

## 26 Win32_PnPDevice

Retrieve: true

### System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

## 27 Win32_Printer

Retrieve: true

### System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

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# 28 Win32_Process

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 29 Win32_SystemDriver

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 30 Win32_SystemSetting

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 31 Win32_TimeZone

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 32 Win32_UserDesktop

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

# 33 Win32_Volume

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

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# 34 Win32_WMISetting

Retrieve: true

## System View Columns

This table has too many columns to be included. Please enter the table name in Invantive Query Tool and press F4 (Describe) to get the column list.

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