

# [MS-TSQLISO11]: SQL Server Transact-SQL ISO/IEC 9075-11 Standards Support Document

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## Revision Summary

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# 1 Introduction

SQL Server Transact-SQL ISO/IEC 9075-11 Standards Support Document describes the level of support that is provided by Transact-SQL in both SQL Server 2008 R2 and SQL Server 2012 for Part 11: Information and Definition Schemas (SQL/Schemata) of both the [\[ISO/IEC9075-11:2008\]](#) and [\[ISO/IEC9075-11:2011\]](#) specifications.

The **Transact-SQL** language is a procedural extension of the SQL database programming language as implemented by Microsoft [\[MSDN-Transact-SQLRef\]](#). Transact-SQL supports and extends ANSI SQL. The Transact-SQL dialect is based on the SQL language specification (International Standard ISO/IEC 9075).

Unless otherwise stated, the specification excerpts are quoted from [\[ISO/IEC9075-11:2011\]](#). Differences between the [\[ISO/IEC9075-11:2008\]](#) and [\[ISO/IEC9075-11:2011\]](#) excerpts are called out where they occur, unless the difference is minor, such as in subclause renumbering.

This document is intended for use in conjunction with the Microsoft technical specifications, publicly available standards specifications, network programming art, and Microsoft distributed systems concepts. It assumes that the reader is either familiar with the aforementioned material or has immediate access to it.

A Standards Support document does not require the use of Microsoft programming tools or programming environments in order to implement the standard. Developers who have access to Microsoft programming tools and environments are free to take advantage of them.

## 1.1 Glossary

The following terms are defined in [\[MS-RDL\]](#):

### **join**

The following terms are specific to this document:

**Transact-SQL:** The Microsoft proprietary version of SQL, the structured query language.

## 1.2 References

References to Microsoft Open Specifications documentation do not include a publishing year because links are to the latest version of the documents, which are updated frequently. References to other documents include a publishing year when one is available.

### 1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact [dochelp@microsoft.com](mailto:dochelp@microsoft.com). We will assist you in finding the relevant information. Please check the archive site, <http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624>, as an additional source.

[ISO/IEC9075-11:2008] ISO/IEC, "Information technology -- Database languages -- SQL -- Part 11: Information and Definition Schemas (SQL/Schemata)", INCITS/ISO/IEC 9075-11:2008, January 2009, <http://webstore.ansi.org/RecordDetail.aspx?sku=INCITS%2fISO%2fIEC+9075-11-2008>

**Note** There is a charge to download the specification.

[ISO/IEC9075-11:2011] ISO/IEC, "Information technology -- Database languages -- SQL -- Part 11: Information and Definition Schemas (SQL/Schemata)", ISO/IEC 9075-11:2008, December 2011, [http://www.iso.org/iso/iso\\_catalogue/catalogue\\_tc/catalogue\\_detail.htm?csnumber=53685](http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=53685)

**Note** There is a charge to download the specification.

[ISO/IEC9075-14:2008] ISO/IEC, "Information technology -- Database languages -- SQL -- Part 14: XML-Related Specifications (SQL/XML)", INCITS/ISO/IEC 9075-14:2008, <http://webstore.ansi.org/RecordDetail.aspx?sku=INCITS%2fISO%2fIEC+9075-14-2008>

**Note** There is a charge to download the specification.

[ISO/IEC9075-14:2011] ISO/IEC, "Information technology -- Database languages -- SQL -- Part 14: XML-Related Specifications (SQL/XML)", ISO/IEC 9075-14:2011, December 2011, [http://www.iso.org/iso/iso\\_catalogue/catalogue\\_tc/catalogue\\_detail.htm?csnumber=53686](http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=53686)

**Note** There is a charge to download the specification.

## 1.2.2 Informative References

[ISO/IEC9075-1:2011] ISO/IEC, "Information technology -- Database languages -- SQL -- Part 1: Framework (SQL/Framework)", ISO/IEC 9075-1:2011, December 2011, [http://www.iso.org/iso/iso\\_catalogue/catalogue\\_tc/catalogue\\_detail.htm?csnumber=53681](http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=53681)

**Note** There is a charge to download the specification.

[MSDN-Transact-SQLRef] Microsoft Corporation, "Transact-SQL Reference (Database Engine)", <http://msdn.microsoft.com/en-us/library/bb510741.aspx>

## 1.3 Microsoft Implementations

Microsoft SQL Server 2008 R2

Microsoft SQL Server 2012

Transact-SQL

## 1.4 Standards Support Requirements

An SQL implementation that is fully compliant with the SQL standards implements all mandatory features and optionally implements any optional features. For Part 11 of the standards (International Standard ISO/IEC 9075), the normative variations from mandatory features are listed in Mandatory Features (section [2.1.1](#)) and the normative variations from optional features are listed in Optional Features (section [2.1.2](#)).

This document covers Transact-SQL alignment with normative statements in the ISO/IEC standard. This document does not include:

- Clarifications of ambiguity in the target specification.
- Intended points of variability in the target specification, such as the use of MAY, SHOULD, or RECOMMENDED.
- The use of extensibility points (such as optional implementation-specific data).

The following table lists the sections of [\[ISO/IEC9075-11:2011\]](#) that are considered normative and that are considered informative.

Section(s)	Normative/Informative
1 - 3	Informative
4 - 7	Normative
Appendices A - G	Informative

## 1.5 Notation

The following notations are used to identify clarifications in the Standards Support Statements (section 2).

Notation	Explanation
C####	This notation identifies a clarification of ambiguity in the target specification. This includes imprecise statements, omitted information, discrepancies, and errata. This does not include data formatting clarifications.
V####	This notation identifies an intended point of variability in the target specification, such as the use of MAY, SHOULD, or RECOMMENDED. This does not include extensibility points.
E####	Because the use of extensibility points (such as optional implementation-specific data) could impair interoperability, this notation identifies such points in the target specification.

## 2 Standards Support Statements

This document addresses individual subclauses related to SQL features, not the features themselves. For example, Transact-SQL supports updatable joins, unions, and columns as an SQL feature. However, Transact-SQL does not support this information in the COLUMNS view. Therefore, section 2.1.2.20, T111, Updatable **joins**, unions, and columns, of this document, identifies and describes only the COLUMNS view of Feature T111 ([\[ISO/IEC9075-11:2011\]](#) subclause 5.21) as not supported by Transact-SQL.

See [\[ISO/IEC9075-1:2011\]](#) for the definition of "column".

For more information about how Transact-SQL complies with the SQL features that are detailed in International Standard 9075, consult the corresponding sections in [\[MS-TSQLISO02\]](#).

### 2.1 Normative Variations

The following subsections detail the normative variations in Transact-SQL from [\[ISO/IEC9075-11:2008\]](#) and [\[ISO/IEC9075-11:2011\]](#), as applicable. .

#### 2.1.1 Mandatory Features

##### 2.1.1.1 F501, Features and conformance views

V0001:

The specification states the following:

Subclause 5.56, "SQL\_FEATURES view":

Function

List the features and subfeatures of this standard, and indicate which of these the SQL-implementation supports.

Subclause 5.59, "SQL\_SIZING view":

Function

List the sizing items defined in this standard and, for each of these, indicate the size supported by the SQL-implementation.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

##### 2.1.1.2 F501-01, SQL\_FEATURES view

V0002:

The specification states the following:

Subclause 5.56, "SQL\_FEATURES view":



Function

List the features and subfeatures of this standard, and indicate which of these the SQL-implementation supports.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### 2.1.1.3 F501-02, SQL\_SIZING view

V0003:

The specification states the following:

Subclause 5.59, "SQL\_SIZING view":

Function

List the sizing items defined in this standard and, for each of these, indicate the size supported by the SQL-implementation.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### 2.1.1.4 S011, Distinct data types

V0004:

The [\[ISO/IEC 9075-14:2011\]](#) specification states the following:

Subclause 12.6, "<user-defined type definition>": When <representation> is <predefined type>

Format

```
<user-defined type definition> ::=  
CREATE TYPE <user-defined type body>
```

```
<user-defined type body> ::=  
<schema-resolved user-defined type name>  
[ <subtype clause> ]  
[ AS <representation> ]  
[ <user-defined type option list> ]  
[ <method specification list> ]
```

...

```
<representation> ::=  
<predefined type>  
| <member list>
```

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### 2.1.1.1.5 S011-01, USER\_DEFINED\_TYPES view

V0005:

The [\[ISO/IEC9075-14:2008\]](#) specification states the following:

Subclause 12.8, "<SQL-invoked routine>": If Feature T041, "Basic LOB data type support", is supported, then the <locator indication> clause shall also be supported

Format

```
<SQL-invoked routine> ::=
<schema routine>

<schema routine> ::=
<schema procedure>
| <schema function>

<schema procedure> ::=
CREATE <SQL-invoked procedure>

<schema function> ::=
CREATE <SQL-invoked function>

<SQL-invoked procedure> ::=
PROCEDURE <schema qualified routine name> <SQL parameter declaration list>
<routine characteristics>
<routine body>

<SQL-invoked function> ::=
{ <function specification> | <method specification designator> } <routine body>

<SQL parameter declaration list> ::=
<left paren> [ <SQL parameter declaration>
[ { <comma> <SQL parameter declaration> }... ] ] <right paren>

<SQL parameter declaration> ::=
[ <parameter mode> ]
[ <SQL parameter name> ]
<parameter type> [ RESULT ]

...

<parameter mode> ::=
IN
| OUT
| INOUT

<parameter type> ::=
<data type> [ <locator indication> ]

<locator indication> ::=
AS LOCATOR
```

Microsoft SQL Server 2008 R2 varies as follows:

Transact-SQL partially supports this feature. Only the ROUTINES and PARAMETERS views are supported.

Microsoft SQL Server 2012 varies as follows:

This feature is absent in the [\[ISO/IEC9075-11:2011\]](#) specification.

### 2.1.1.6 T321, Basic SQL-invoked routines

V0006:

The [\[ISO/IEC9075-14:2008\]](#) specification states the following:

Subclause 12.8, "<SQL-invoked routine>": If Feature T041, "Basic LOB data type support", is supported, then the <locator indication> clause shall also be supported

Format

```
<SQL-invoked routine> ::=
<schema routine>
```

```
<schema routine> ::=
<schema procedure>
| <schema function>
```

```
<schema procedure> ::=
CREATE <SQL-invoked procedure>
```

```
<schema function> ::=
CREATE <SQL-invoked function>
```

```
<SQL-invoked procedure> ::=
PROCEDURE <schema qualified routine name> <SQL parameter declaration list>
<routine characteristics>
<routine body>
```

```
<SQL-invoked function> ::=
{ <function specification> | <method specification designator> } <routine body>
```

```
<SQL parameter declaration list> ::=
<left paren> [ <SQL parameter declaration>
[ { <comma> <SQL parameter declaration> }... ] ] <right paren>
```

```
<SQL parameter declaration> ::=
[ <parameter mode> ]
[ <SQL parameter name> ]
<parameter type> [ RESULT ]
```

...

```
<parameter mode> ::=
IN
| OUT
| INOUT
```

```
<parameter type> ::=
<data type> [ <locator indication> ]
```

```
<locator indication> ::=  
AS LOCATOR
```

Microsoft SQL Server 2008 R2 varies as follows:

Transact-SQL partially supports this feature. Only the ROUTINES and PARAMETERS views are supported.

Microsoft SQL Server 2012 varies as follows:

This feature is absent in the [\[ISO/IEC9075-11:2011\]](#) specification.

## 2.1.2 Optional Features

### 2.1.2.1 F231, Privilege tables

V0007:

The specification states the following:

Subclause 5.19, "COLUMN\_PRIVILEGES view":

Without Feature F231, "Privilege tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMN\_PRIVILEGES.

Function

Identify the privileges on columns of tables defined in this catalog that are available to or granted by a given user or role.

Subclause 5.25, "DATA\_TYPE\_PRIVILEGES view":

Without Feature F231, "Privilege tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.DATA\_TYPE\_PRIVILEGES.

Function

Identify those schema objects whose included data type descriptors are accessible to a given user or role.

Subclause 5.41, "ROLE\_COLUMN\_GRANTS view":

Without Feature F231, "Privilege tables", and Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_COLUMN\_GRANTS.

Function

Identifies the privileges on columns defined in this catalog that are available to or granted by the currently enabled roles.

Subclause 5.42, "ROLE\_ROUTINE\_GRANTS view":

Without Feature F231, "Privilege tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_ROUTINE\_GRANTS.

Function

Identify the privileges on SQL-invoked routines defined in this catalog that are available to or granted by the currently enabled roles.

Subclause 5.43, "ROLE\_TABLE\_GRANTS view":

Without Feature F231, "Privilege tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_TABLE\_GRANTS.

Function

Identifies the privileges on tables defined in this catalog that are available to or granted by the currently applicable roles.

Subclause 5.46, "ROLE\_UDT\_GRANTS view":

Without Feature F231, "Privilege tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_UDT\_GRANTS.

Function

Identify the privileges on user-defined types defined in this catalog that are available to or granted by the currently enabled roles.

Subclause 5.49, "ROUTINE\_PRIVILEGES view":

Without Feature F231, "Privilege tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_PRIVILEGES.

Function

Identify the privileges on SQL-invoked routines defined in this catalog that are available to or granted by a given user or role.

Subclause 5.62, "TABLE\_PRIVILEGES view":

Without Feature F231, "Privilege tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.TABLE\_PRIVILEGES.

Function

Identify the privileges on tables defined in this catalog that are available to or granted by a given user or role.

Subclause 5.73, "UDT\_PRIVILEGES view":

Without Feature F231, "Privilege tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.UDT\_PRIVILEGES.

Function

Identify the privileges on user-defined types defined in this catalog that are accessible to or granted by a given user or role.

Subclause 5.74, "USAGE\_PRIVILEGES view":

Without Feature F231, "Privilege tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.USAGE\_PRIVILEGES.

Function

Identify the USAGE privileges on objects defined in this catalog that are available to or granted by a given user or role.

Subclause 5.81, "Short name views":

Without Feature F231, "Privilege tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_ROUT\_GRANTS.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL partially supports this feature. Only the TABLE\_PRIVILEGES and COLUMN\_PRIVILEGES views are supported.

See [\[ISO/IEC9075-1:2011\]](#) for the definition of "view".

### 2.1.2.2 F251, Domain support

V0008:

The specification states the following:

Subclause 5.3, "CARDINAL\_NUMBER domain":

Without Feature F251, "Domain support", conforming SQL language shall not reference INFORMATION\_SCHEMA.CARDINAL\_NUMBER.

Function

Define a domain that contains a non-negative number.

Subclause 5.4, CHARACTER\_DATA domain:

Without Feature F251, "Domain support", conforming SQL language shall not reference INFORMATION\_SCHEMA.CHARACTER\_DATA.

Function

Define a domain that contains any character data.

Subclause 5.5, "SQL\_IDENTIFIER domain":

Without Feature F251, "Domain support", conforming SQL language shall not reference INFORMATION\_SCHEMA.SQL\_IDENTIFIER.

Function

Define a domain that contains all valid <identifier body>s and <delimited identifier body>s.

Subclause 5.6, "TIME\_STAMP domain":

Without Feature F251, "Domain support", and Feature T011, "Timestamp in Information Schema", conforming SQL language shall not reference INFORMATION\_SCHEMA.TIME\_STAMP.

Function

Define a domain that contains a timestamp.

Subclause 5.7, "YES\_OR\_NO domain":

Without Feature F251, "Domain support", conforming SQL language shall not reference INFORMATION\_SCHEMA.YES\_OR\_NO.

Function

Define a domain that is a character string value, but allows only two possible strings, YES or NO.

Subclause 5.18, "COLUMN\_DOMAIN\_USAGE view":

Without Feature F251, "Domain support", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMN\_DOMAIN\_USAGE.

Function

Identify the columns defined that are dependent on a domain defined in this catalog and owned by a user or role.

Subclause 5.28, "DOMAIN\_CONSTRAINTS view":

Without Feature F251, "Domain support", conforming SQL language shall not reference INFORMATION\_SCHEMA.DOMAIN\_CONSTRAINTS.

Function

Identify the domain constraints of domains in this catalog that are accessible to a given user or role.

Subclause 5.29, "DOMAINS view":

Without Feature F251, "Domain support", conforming SQL language shall not reference INFORMATION\_SCHEMA.DOMAINS.

Function

Identify the domains defined in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

i) Without Feature F251, "Domain support", conforming SQL language shall not reference INFORMATION\_SCHEMA.DOMAINS\_S.

ii) Without Feature F251, "Domain support", conforming SQL language shall not reference INFORMATION\_SCHEMA.COL\_DOMAINS\_USAGE.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### 2.1.2.3 F341, Usage tables

V0009:

The specification states the following:

Subclause 5.13, "CHECK\_CONSTRAINT\_ROUTINE\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.CHECK\_CONSTRAINT\_ROUTINE\_USAGE.

Function

Identify each SQL-invoked routine owned by a given user or role on which a domain constraint, table check constraint or assertion defined in this catalog is dependent.

Subclause 5.17, "COLUMN\_COLUMN\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMN\_COLUMN\_USAGE.

Function

Identify each case where a generated column depends on a base column in a base table owned by a given user or role.

Subclause 5.18, "COLUMN\_DOMAIN\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMN\_DOMAIN\_USAGE.

Function

Identify the columns defined that are dependent on a domain defined in this catalog and owned by a user or role.

Subclause 5.20, "COLUMN\_UDT\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMN\_UDT\_USAGE.

Function

Identify the columns defined that are dependent on a user-defined type defined in this catalog and owned by a given user or role.

Subclause 5.22, "CONSTRAINT\_COLUMN\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.CONSTRAINT\_COLUMN\_USAGE.

Function

Identify the columns used by referential constraints, unique constraints, check constraints, and assertions defined in this catalog and owned by a given user or role.

Subclause 5.24, "CONSTRAINT\_TABLE\_USAGE view":



Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.CONSTRAINT\_TABLE\_USAGE.

Function

Identify the tables that are used by referential constraints, unique constraints, check constraints, and assertions defined in this catalog and owned by a given user or role.

Subclause 5.33, "KEY\_COLUMN\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.KEY\_COLUMN\_USAGE.

Function

Identify the columns defined in this catalog that are constrained as keys and that are accessible by a given user or role.

Subclause 5.45, "ROLE\_USAGE\_GRANTS view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_USAGE\_GRANTS.

Function

Identify the USAGE privileges on objects defined in this catalog that are available to or granted by the currently enabled roles.

Subclause 5.47, "ROUTINE\_COLUMN\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_COLUMN\_USAGE.

Function

Identify the columns owned by a given user or role on which SQL routines defined in this catalog are dependent.

Subclause 5.50, "ROUTINE\_ROUTINE\_USAGE view":

i) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_ROUTINE\_USAGE.

Function

Identify each SQL-invoked routine owned by a given user or role on which an SQL routine defined in this catalog is dependent.

Subclause 5.51, "ROUTINE\_SEQUENCE\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_SEQUENCE\_USAGE.

Function

Identify each external sequence generator owned by a given user or role on which some SQL routine defined in this catalog is dependent.

Subclause 5.52, "ROUTINE\_TABLE\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_TABLE\_USAGE.

Function

Identify the tables owned by a given user or role on which SQL routines defined in this catalog are dependent.

Subclause 5.67, "TRIGGER\_COLUMN\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_COLUMN\_USAGE.

Function

Identify the columns on which triggers defined in this catalog and owned by a given user are dependent because of their reference by the search condition or in their appearance in a triggered SQL statement of a trigger owned by a given user or role.

Subclause 5.69, "TRIGGER\_ROUTINE\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_ROUTINE\_USAGE.

Function

Identify each SQL-invoked routine owned by a given user or role on which some trigger defined in this catalog is dependent.

Subclause 5.70, "TRIGGER\_SEQUENCE\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_SEQUENCE\_USAGE.

Function

Identify each external sequence generator owned by a given user or role on which some trigger defined in this catalog is dependent.

Subclause 5.71, "TRIGGER\_TABLE\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_TABLE\_USAGE.

Function

Identify the tables on which triggers defined in this catalog and owned by a given user or role are dependent.

Subclause 5.76, "VIEW\_COLUMN\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.VIEW\_COLUMN\_USAGE.

Function

Identify the columns on which viewed tables defined in this catalog and owned by a given user or role are dependent.

Subclause 5.78, "VIEW\_ROUTINE\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.VIEW\_ROUTINE\_USAGE.

Function

Identify each routine owned by a given user or role on which a view defined in this catalog is dependent.

Subclause 5.79, "VIEW\_TABLE\_USAGE view":

Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.VIEW\_TABLE\_USAGE.

Function

Identify the tables on which viewed tables defined in this catalog and owned by a given user or role are dependent.

Subclause 5.81, "Short name views":

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

i) Without Feature F341, "Usage tables", conforming SQL language shall not reference the INFORMATION\_SCHEMA.TRIG\_TABLE\_USAGE view.

ii) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIG\_UPDATE\_COLS.

iii) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.COL\_DOMAIN\_USAGE.

iv) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.CONST\_COL\_USAGE.

v) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.CONST\_TABLE\_USAGE.

vi) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.KEY\_COLUMN\_USAGE\_S.

vii) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_COL\_USAGE.

viii) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUT\_TABLE\_USAGE.

ix) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUT\_ROUT\_USAGE\_S.

x) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.CONSTR\_ROUT\_USE\_S.

xi) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIG\_ROUT\_USAGE\_S.

xii) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUT\_SEQ\_USAGE\_S.

xiii) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIG\_COLUMN\_USAGE.

xiv) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIG\_SEQ\_USAGE\_S.

xv) Without Feature F341, "Usage tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.COL\_COL\_USAGE.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL partially supports this feature. Only the COLUMN\_DOMAIN\_USAGE, CONSTRAINT\_COLUMN\_USAGE, CONSTRAINT\_TABLE\_USAGE, KEY\_COLUMN\_USAGE, VIEW\_COLUMN\_USAGE, and VIEW\_TABLE\_USAGE views are supported.

#### 2.1.2.4 F391, Long identifiers

V0010:

The specification states the following:

Subclause 5.2, "INFORMATION\_SCHEMA.CATALOG\_NAME base table":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.INFORMATION\_SCHEMA\_CATALOG\_NAME.

Function

Identify the catalog that contains the Information Schema.

Subclause 5.8, "ADMINISTRABLE\_ROLE\_AUTHORIZATIONS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.ADMINISTRABLE\_ROLE\_AUTHORIZATIONS.

Function

Identify role authorizations for which the current user or role has WITH ADMIN OPTION.

Subclause 5.11, "ATTRIBUTES view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.ATTRIBUTES.

Function

Identify the attributes of user-defined types defined in this catalog that are accessible to a given user or role.

Subclause 5.12, "CHARACTER\_SETS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.CHARACTER\_SETS.

Function

Identify the character sets defined in this catalog that are accessible to a given user or role.

Subclause 5.13, "CHECK\_CONSTRAINT\_ROUTINE\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.CHECK\_CONSTRAINT\_ROUTINE\_USAGE.

Function

Identify each SQL-invoked routine owned by a given user or role on which a domain constraint, table check constraint or assertion defined in this catalog is dependent.

Subclause 5.15, "COLLATIONS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLLATIONS.

Function

Identify the character collations defined in this catalog that are accessible to a given user or role.

Subclause 5.16, "COLLATION\_CHARACTER\_SET\_APPLICABILITY view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLLATION\_CHARACTER\_SET\_APPLICABILITY.

Function

Identify the character sets to which each collation is applicable.

Subclause 5.17, "COLUMN\_COLUMN\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMN\_COLUMN\_USAGE.

Function

Identify each case where a generated column depends on a base column in a base table owned by a given user or role.

Subclause 5.18, "COLUMN\_DOMAIN\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMN\_DOMAIN\_USAGE.

Function

Identify the columns defined that are dependent on a domain defined in this catalog and owned by a user or role.

Subclause 5.21, "COLUMNS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMNS.

Function

Identify the columns of tables defined in this catalog that are accessible to a given user or role.

Subclause 5.22, "CONSTRAINT\_COLUMN\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.CONSTRAINT\_COLUMN\_USAGE.

Function

Identify the columns used by referential constraints, unique constraints, check constraints, and assertions defined in this catalog and owned by a given user or role.

Subclause 5.24, "CONSTRAINT\_TABLE\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.CONSTRAINT\_TABLE\_USAGE.

Function

Identify the tables that are used by referential constraints, unique constraints, check constraints, and assertions defined in this catalog and owned by a given user or role.

Subclause 5.29, "DOMAINS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.DOMAINS.

Function

Identify the domains defined in this catalog that are accessible to a given user or role.

Subclause 5.30, "ELEMENT\_TYPES view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.ELEMENT\_TYPES.

Function

Identify the collection element types defined in this catalog that are accessible to a given user or role.

Subclause 5.32, "FIELDS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.FIELDS.

Function

Identify the field types defined in this catalog that are accessible to a given user or role.

Subclause 5.33, "KEY\_COLUMN\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.KEY\_COLUMN\_USAGE.

Function

Identify the columns defined in this catalog that are constrained as keys and that are accessible by a given user or role.

Subclause 5.35, "METHOD\_SPECIFICATION\_PARAMETERS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.METHOD\_SPECIFICATION\_PARAMETERS.

Function

Identify the SQL parameters of method specifications described in the METHOD\_SPECIFICATIONS view that are accessible to a given user or role.

Subclause 5.36, "METHOD\_SPECIFICATIONS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.METHOD\_SPECIFICATIONS.

Function

Identify the SQL-invoked methods in the catalog that are accessible to a given user or role.

Subclause 5.37, "PARAMETERS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.PARAMETERS.

Function

Identify the SQL parameters of SQL-invoked routines defined in this catalog that are accessible to a given user or role.

Subclause 5.39, "REFERENCED\_TYPES view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.REFERENCED\_TYPES.

Function

Identify the referenced types of reference types defined in this catalog that are accessible to a given user or role.

Subclause 5.40, "REFERENTIAL\_CONSTRAINTS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.REFERENTIAL\_CONSTRAINTS.

Function

Identify the referential constraints defined on tables in this catalog that are accessible to a given user or role.

Subclause 5.42, "ROLE\_ROUTINE\_GRANTS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_ROUTINE\_GRANTS.

Function

Identify the privileges on SQL-invoked routines defined in this catalog that are available to or granted by the currently enabled roles.

Subclause 5.44, "ROLE\_TABLE\_METHOD\_GRANTS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_TABLE\_METHOD\_GRANTS.

Function

Identify the privileges on methods of tables of structured types defined in this catalog that are available to or granted by the currently enabled roles.

Subclause 5.47, "ROUTINE\_COLUMN\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_COLUMN\_USAGE.

Function

Identify the columns owned by a given user or role on which SQL routines defined in this catalog are dependent.

Subclause 5.50, "ROUTINE\_ROUTINE\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_ROUTINE\_USAGE.

Function

Identify each SQL-invoked routine owned by a given user or role on which an SQL routine defined in this catalog is dependent.

Subclause 5.51, "ROUTINE\_SEQUENCE\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_SEQUENCE\_USAGE.

Function

Identify each external sequence generator owned by a given user or role on which some SQL routine defined in this catalog is dependent.

Subclause 5.52, "ROUTINE\_TABLE\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_TABLE\_USAGE.

Function

Identify the tables owned by a given user or role on which SQL routines defined in this catalog are dependent.

Subclause 5.53, "ROUTINES view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINES.

Function



Identify the SQL-invoked routines in this catalog that are accessible to a given user or role.

Subclause 5.54, "SCHEMATA view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.SCHEMATA.

Function

Identify the schemata in a catalog that are owned by a given user or role.

Subclause 5.55, "SEQUENCES view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.SEQUENCES.

Function

Identify the external sequence generators defined in this catalog that are accessible to a given user or role.

Subclause 5.57, "SQL\_IMPLEMENTATION\_INFO view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.SQL\_IMPLEMENTATION\_INFO.

Function

List the SQL-implementation information items defined in this standard and, for each of these, indicate the value supported by the SQL-implementation.

Subclause 5.61, "TABLE\_METHOD\_PRIVILEGES view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.TABLE\_METHOD\_PRIVILEGES.

Function

Identify the privileges on methods of tables of structured type defined in those catalogs that are available to or granted by a given user or role.

Subclause 5.63, "TABLES view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.TABLES.

Function

Identify the tables defined in this catalog that are accessible to a given user or role.

Subclause 5.65, "TRANSLATIONS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRANSLATIONS.

Function

Identify the character transliterations defined in this catalog that are accessible to a given user or role.

Subclause 5.66, "TRIGGERED\_UPDATE\_COLUMNS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGERED\_UPDATE\_COLUMNS.

Function

Identify the columns in this catalog that are identified by the explicit UPDATE trigger event columns of a trigger defined in this catalog that are accessible to a given user or role.

Subclause 5.67, "TRIGGER\_COLUMN\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGERED\_COLUMN\_USAGE.

Function

Identify the columns on which triggers defined in this catalog and owned by a given user are dependent because of their reference by the search condition or in their appearance in a triggered SQL statement of a trigger owned by a given user or role.

Subclause 5.69, "TRIGGER\_ROUTINE\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_ROUTINE\_USAGE.

Function

Identify each SQL-invoked routine owned by a given user or role on which some trigger defined in this catalog is dependent.

Subclause 5.70, "TRIGGER\_SEQUENCE\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_SEQUENCE\_USAGE.

Function

Identify each external sequence generator owned by a given user or role on which some trigger defined in this catalog is dependent.

Subclause 5.71, "TRIGGER\_TABLE\_USAGE view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_TABLE\_USAGE.

Function

Identify the tables on which triggers defined in this catalog and owned by a given user or role are dependent.

Subclause 5.72, "TRIGGERS view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGERS.

Function

Identify the triggers defined on tables in this catalog that are accessible to a given user or role.

Subclause 5.75, "USER\_DEFINED\_TYPES view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.USER\_DEFINED\_TYPES.

Function

Identify the user-defined types defined in this catalog that are accessible to a given user or role.

The following additional subclause is present in the [\[ISO/IEC9075-11:2008\]](#) specification:

Subclause 5.57, "SQL\_SIZING\_PROFILES view":

Without Feature F391, "Long identifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.SQL\_SIZING\_PROFILES.

Function

List the sizing items defined in this standard and, for each of these, indicate the size required by one or more profiles of the standard.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL partially supports this feature. Only the COLUMN\_DOMAIN\_USAGE, COLUMNS, CONSTRAINT\_COLUMN\_USAGE, CONSTRAINT\_TABLE\_USAGE, DOMAINS, KEY\_COLUMN\_USAGE, PARAMETERS, REFERENTIAL CONSTRAINTS, ROUTINES, SCHEMATA, and TABLES views are supported.

### **2.1.2.5 F502, Enhanced documentation tables**

V0011:

The specification states the following:

Subclause 5.537, "SQL\_IMPLEMENTATION\_INFO view":

Without Feature F502, "Enhanced documentation tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.SQL\_IMPLEMENTATION\_INFO.

Function

List the SQL-implementation information items defined in this standard and, for each of these, indicate the value supported by the SQL-implementation.

Subclause 5.58, "SQL\_PARTS view":

Without Feature F502, "Enhanced documentation tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.SQL\_PARTS.

Function

List the parts of this standard, and indicate which of these the SQL-implementation supports.

Subclause 5.81, "Short name views":

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

i) Without Feature F502, "Enhanced documentation tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.SQL\_IMPL\_INFO.

ii) Without Feature F502, "Enhanced documentation tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.SQL\_SIZING\_PROFS.

The following additional subclauses are present in the [ISO/IEC9075-11:2008](#) specification:

Subclause 5.54, "SQL\_PACKAGES view":

Without Feature F502, "Enhanced documentation tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.SQL\_PACKAGES.

Function

List the packages of this standard, and indicate which of these the SQL-implementation supports.

Subclause 5.57, "SQL\_SIZING\_PROFILES view":

Without Feature F502, "Enhanced documentation tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.SQL\_SIZING\_PROFILES.

Function

List the sizing items defined in this standard and, for each of these, indicate the size required by one or more profiles of the standard.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.6 F521, Assertions**

V0012:

The specification states the following:

Subclause 5.10, "ASSERTIONS view":

Without Feature F521, "Assertions", conforming SQL language shall not reference INFORMATION\_SCHEMA.ASSERTIONS.

Function

Identify the assertions defined in this catalog that are owned by a given user or role.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.7 F651, Catalog name qualifiers**

V0013:

The specification states the following:

Subclause 5.2, "INFORMATION\_SCHEMA\_CATALOG\_NAME base table":

Without Feature F651, "Catalog name qualifiers", conforming SQL language shall not reference INFORMATION\_SCHEMA.INFORMATION\_SCHEMA\_CATALOG\_NAME.

Function

Identify the catalog that contains the Information Schema.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.8 F690, Collation support**

V0014:

The specification states the following:

Subclause 5.15, "COLLATIONS view":

Without Feature F690, "Collation support", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLLATIONS.

Function

Identify the character collations defined in this catalog that are accessible to a given user or role.

Subclause 5.16, "COLLATION\_CHARACTER\_SET\_APPLICABILITY view":

Without Feature F690, "Collation support ", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLLATION\_CHARACTER\_SET\_APPLICABILITY.

Function

Identify the character sets to which each collation is applicable.

Subclause 5.81, "Short name views":

Without Feature F690, "Collation support", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLLATIONS\_S.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.9 F695, Translation support**

V0015:

The specification states the following:

Subclause 5.65, "TRANSLATIONS view":

Without Feature F695, "Translation support", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRANSLATIONS.

Function

Identify the character transliterations defined in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Without Feature F695, "Translation support", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRANSLATIONS\_S.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.10 F696, Additional translation documentation**

V0016:

The specification states the following:

Subclause 5.65, "TRANSLATIONS view":

Without Feature F696, "Additional translation documentation", conforming SQL language shall not reference TRANSLATION\_SOURCE\_CATALOG, TRANSLATION\_SOURCE\_SCHEMA, TRANSLATION\_SOURCE\_NAME.

Function

Identify the character transliterations defined in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Without Feature F696, "Additional translation documentation", conforming SQL language shall not reference TRANSLATIONS\_S.TRANS\_SRC\_CATALOG, TRANSLATIONS\_S.TRANS\_SRC\_SCHEMA, or TRANSLATIONS\_S.TRANS\_SRC\_NAME.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.11 S023, Basic structured types**

V0017:

The specification states the following:

Subclause 5.11, "ATTRIBUTES view":

Without Feature S023, "Basic structured types", conforming SQL language shall not reference INFORMATION\_SCHEMA.ATTRIBUTES.

Function

Identify the attributes of user-defined types defined in this catalog that are accessible to a given user or role.

Subclause 5.35, "METHOD\_SPECIFICATION\_PARAMETERS view":

Without Feature S023, "Basic structured types", conforming SQL language shall not reference INFORMATION\_SCHEMA.METHOD\_SPECIFICATION\_PARAMETERS.

Function

Identify the SQL parameters of method specifications described in the METHOD\_SPECIFICATIONS view that are accessible to a given user or role.

Subclause 5.36, "METHOD\_SPECIFICATIONS view":

Without Feature S023, "Basic structured types", conforming SQL language shall not reference INFORMATION\_SCHEMA.METHOD\_SPECIFICATIONS.

Function

Identify the SQL-invoked methods in the catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

i) Without Feature S023, "Basic structured types", conforming SQL language shall not reference INFORMATION\_SCHEMA.ATTRIBUTES\_S.

ii) Without Feature S023, "Basic structured types", conforming SQL language shall not reference INFORMATION\_SCHEMA.METHOD\_SPECS.

iii) Without Feature S023, "Basic structured types", conforming SQL language shall not reference INFORMATION\_SCHEMA.METHOD\_SPEC\_PARAMS.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.12 S024, Enhanced structured types**

V0018:

The specification states the following:

Subclause 5.27, "DIRECT\_SUPERTYPES view":

Without Feature S024, "Enhanced structured types", conforming SQL language shall not reference INFORMATION\_SCHEMA.DIRECT\_SUPERTYPES.

Function

Identify the direct supertypes related to a user-defined type that are defined in this catalog and owned by a given user or role.

Subclause 5.44, "ROLE\_TABLE\_METHOD\_GRANTS view":

Without Feature S024, "Enhanced structured types", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_TABLE\_METHOD\_GRANTS.

Function

Identify the privileges on methods of tables of structured types defined in this catalog that are available to or granted by the currently enabled roles.

Subclause 5.61, "TABLE\_METHOD\_PRIVILEGES view":

Without Feature S024, "Enhanced structured types", conforming SQL language shall not reference INFORMATION\_SCHEMA.TABLE\_METHOD\_PRIVILEGES.

Function

Identify the privileges on methods of tables of structured type defined in those catalogs that are available to or granted by a given user or role.

Subclause 5.81, "Short name views":

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".



i) Without Feature S024, "Enhanced structured types", conforming SQL language shall not reference INFORMATION\_SCHEMA.TABLE\_METHOD\_PRIVS.

ii) Without Feature S024, "Enhanced structured types", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROL\_TAB\_METH\_GRNTS.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.13 S041, Basic reference types**

V0019:

The specification states the following:

Subclause 5.39, "REFERENCED\_TYPES view":

Without Feature S041, "Basic reference types", conforming SQL language shall not reference INFORMATION\_SCHEMA.REFERENCED\_TYPES.

Function

Identify the referenced types of reference types defined in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Without Feature S041, "Basic reference types", conforming SQL language shall not reference INFORMATION\_SCHEMA.REFERENCED\_TYPES\_S.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.14 S081, Subtables**

V0014:

The specification states the following:

Subclause 5.26, "DIRECT\_SUPERTABLES view":

Without Feature S081, "Subtables", conforming SQL language shall not reference INFORMATION\_SCHEMA.DIRECT\_SUPERTABLES.

Function

Identify the direct supertables related to a table that are defined in this catalog and owned by a given user or role.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.15 S091, Basic array support**

V0021:

The specification states the following:

Subclause 5.30, "ELEMENT\_TYPES view":

Without Feature S091, "Basic array support", or Feature S271, "Basic multiset support", conforming SQL language shall not reference INFORMATION\_SCHEMA.ELEMENT\_TYPES.

Function

Identify the collection element types defined in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Without Feature S091, "Basic array support" or Feature S271, "Basic multiset support" , conforming SQL language shall not reference INFORMATION\_SCHEMA.ELEMENT\_TYPES\_S.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.16 S241, Transform functions**

V0022:

The specification states the following:

Subclause 5.64, "TRANSFORMS view":

Without Feature S241, "Transform functions", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRANSFORMS.

Function

Identify the transforms on user-defined types defined in this catalog that are accessible to a given user or role.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.17 S271, Basic multiset support**

V0023:

The specification states the following:

Subclause 5.30, "ELEMENT\_TYPES view":

Without Feature S091, "Basic array support", or Feature S271, "Basic multiset support", conforming SQL language shall not reference INFORMATION\_SCHEMA.ELEMENT\_TYPES.

Function

Identify the collection element types defined in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Without Feature S091, "Basic array support" or Feature S271, "Basic multiset support" , conforming SQL language shall not reference INFORMATION\_SCHEMA.ELEMENT\_TYPES\_S.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.18 S401, Distinct types based on array types**

V0024:

The specification states the following:

Subclause 5.75, "USER\_DEFINED\_TYPES view":

Without Feature S401, "Distinct types based on array types", conforming SQL language shall not reference INFORMATION\_SCHEMA.USER\_DEFINED\_TYPES.MAXIMUM\_CARDINALITY.

Function

Identify the user-defined types defined in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Without Feature S401, "Distinct types based on array types", conforming SQL language shall not reference INFORMATION\_SCHEMA.UDT\_S.MAX\_CARDINALITY

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.19 T011, Timestamp in Information Schema**

V0025:

The specification states the following:

Subclause 5.6, "TIME\_STAMP domain":

Without Feature F251, "Domain support", and Feature T011, "Timestamp in Information Schema", conforming SQL language shall not reference INFORMATION\_SCHEMA.TIME\_STAMP.

Function

Define a domain that contains a timestamp.

Subclause 5.36, "METHOD\_SPECIFICATIONS view":

i) Without Feature T011, "Timestamp in Information Schema", conforming SQL language shall not reference INFORMATION\_SCHEMA.METHOD\_SPECIFICATIONS.CREATED.

ii) Without Feature T011, "Timestamp in Information Schema", conforming SQL language shall not reference INFORMATION\_SCHEMA.METHOD\_SPECIFICATIONS.LAST\_ALTERED.

Function

Identify the SQL-invoked methods in the catalog that are accessible to a given user or role.

Subclause 5.53, "ROUTINES view":

i) Without Feature T011, "Timestamp in Information Schema", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINES.CREATED.

ii) Without Feature T011, "Timestamp in Information Schema", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINES.LAST\_ALTERED.

Function

Identify the SQL-invoked routines in this catalog that are accessible to a given user or role.

Subclause 5.72, "TRIGGERS view":

Without Feature T011, "Timestamp in Information Schema", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGERS.TRIGGER\_CREATED.

Function

Identify the triggers defined on tables in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

i) Without Feature T011, "Timestamp in Information Schema", conforming SQL language shall not reference INFORMATION\_SCHEMA.METHOD\_SPEC.CREATED.

ii) Without Feature T011, "Timestamp in Information Schema", conforming SQL language shall not reference INFORMATION\_SCHEMA.METHOD\_SPEC.LAST\_ALTERED.

iii) Without Feature T011, "Timestamp in Information Schema", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINES\_S.CREATED.

iv) Without Feature T011, "Timestamp in Information Schema", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINES\_S.LAST\_ALTERED.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.20 T051, Row types**

V0026:

The specification states the following:

Subclause 5.32, "FIELDS view":

Without Feature T051, "Row types", conforming SQL language shall not reference INFORMATION\_SCHEMA.FIELDS.

Function

Identify the field types defined in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Without Feature T051, "Row types", conforming SQL language shall not reference INFORMATION\_SCHEMA.FIELDS\_S.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.21 T111, Updatable joins, unions, and columns**

V0027:

The specification states the following:

Subclause 5.21, "COLUMNS view":

Without Feature T111, "Updatable joins, unions, and columns", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMNS.IS\_UPDATABLE.

Function

Identify the columns of tables defined in this catalog that are accessible to a given user or role.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.22 T175, Generated columns**

V0028:

The specification states the following:

Subclause 5.17, "COLUMN\_COLUMN\_USAGE view":

Without Feature T175, "Generated columns", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMN\_COLUMN\_USAGE.

Function

Identify each case where a generated column depends on a base column in a base table owned by a given user or role.

Subclause 5.21, "COLUMNS view":

i) Without Feature T175, "Generated columns", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMNS.IS\_GENERATED.

ii) Without Feature T175, "Generated columns", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMNS.GENERATION\_EXPRESSION.

Function

Identify the columns of tables defined in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

i) Without Feature T175, "Generated columns", conforming SQL language shall not reference INFORMATION\_SCHEMA.COL\_COL\_USAGE.

ii) Without Feature T175, "Generated columns", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMNS.IS\_GENERATED

iii) Without Feature T175, "Generated columns", conforming SQL language shall not reference INFORMATION\_SCHEMA.COLUMNS.S.GENERATION\_EXPR.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.23 T176, Sequence generator support**

V0029:

The specification states the following:

Subclause 5.51, "ROUTINE\_SEQUENCE\_USAGE view":

Without Feature T176, "Sequence generator support", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_SEQUENCE\_USAGE.

Function

Identify each external sequence generator owned by a given user or role on which some SQL routine defined in this catalog is dependent.

Subclause 5.55, "SEQUENCES view":

Without Feature T176, "Sequence generator support", conforming SQL language shall not reference INFORMATION\_SCHEMA.SEQUENCES.

Function

Identify the external sequence generators defined in this catalog that are accessible to a given user or role.

Subclause 5.70, "TRIGGER\_SEQUENCE\_USAGE view":

Without Feature T176, "Sequence generator support", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_SEQUENCE\_USAGE.

Function

Identify each external sequence generator owned by a given user or role on which some trigger defined in this catalog is dependent.

Subclause 5.81, "Short name views":

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

i) Without Feature T176, "Sequence generator support", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUT\_SEQ\_USAGE\_S.

ii) Without Feature T176, "Sequence generator support", conforming SQL language shall not reference INFORMATION\_SCHEMA.SEQUENCES\_S.

iii) Without Feature T176, "Sequence generator support", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_SEQ\_USAGE\_S.

Microsoft SQL Server 2008 R2 varies as follows:

Transact-SQL does not support this feature.

Microsoft SQL Server 2012 varies as follows:

Transact-SQL partially supports this feature. Only the INFORMATION\_SCHEMA.SEQUENCES view is supported.

### 2.1.2.24 T180, System-versioned tables

V0030:

The specification states the following:

Subclause 5.21, "COLUMNS view":

Without Feature T180, "System-versioned tables", conforming SQL language shall not reference any of the columns IS\_SYSTEM\_TIME\_PERIOD\_START, IS\_SYSTEM\_TIME\_PERIOD\_END, and SYSTEM\_TIME\_PERIOD\_TIMESTAMP\_GENERATION.

Function

Identify the columns of tables defined in this catalog that are accessible to a given user or role.

Subclause 5.38, "PERIODS view":

Without Feature T180, "System-versioned tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.PERIODS.

Function

Identify the periods of tables defined in this catalog that are accessible to a given user or role.

Subclause 5.48, "ROUTINE\_PERIOD\_USAGE view":

Without Feature T180, "System-versioned tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_PERIOD\_USAGE.

Function

Identify the periods of tables owned by a given user or role on which SQL routines defined in this catalog are dependent.



Subclause 5.68, "TRIGGER\_PERIOD\_USAGE view":

Without Feature T180, "System-versioned tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_PERIOD\_USAGE.

Function

Identify the periods in which triggers defined in this catalog and owned by a given user or role are dependent because of their reference by the search condition or in their appearance in a triggered SQL statement of a trigger owned by a given user or role.

Subclause 5.77, "VIEW\_PERIOD\_USAGE view":

Without Feature T180, "System-versioned tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.VIEW\_PERIOD\_USAGE.

Function

Identify the periods on which viewed tables defined in this catalog and owned by a given user or role are dependent.

Subclause 5.81, "Short name views":

Without Feature T180, "System-versioned tables", conforming SQL language shall not reference any of the columns COLUMNS\_S.IS\_SYSPER\_START, COLUMNS\_S.IS\_SYSPER\_END, and COLUMNS\_S.SYSPER\_TSTMP\_GEN.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 varies as follows:

This feature is absent in the [ISO/IEC9075-11:2008](#) specification.

Microsoft SQL Server 2012 varies as follows:

Transact-SQL does not support this feature.

### **2.1.2.25 T181, Application-time period tables**

V0031:

The specification states the following:

Subclause 5.23, "CONSTRAINT\_PERIOD\_USAGE view":

Without Feature T181, "Application-time period tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.CONSTRAINT\_PERIOD\_USAGE.

Function

Identify the periods used by referential constraints, unique constraints, check constraints, and assertions defined in this catalog and owned by a given user or role.

Subclause 5.34, "KEY\_PERIOD\_USAGE view":

Without Feature T181, "Application-time period tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.KEY\_PERIOD\_USAGE.

Function

Identify the periods defined in this catalog that participate in the definition of unique, primary, and foreign keys and that are accessible by a given user or role.

Subclause 5.38, "PERIODS view":

Without Feature T181, "Application-time period tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.PERIODS.

Function

Identify the periods of tables defined in this catalog that are accessible to a given user or role.

Subclause 5.48, "ROUTINE\_PERIOD\_USAGE view":

Without Feature T181, "Application-time period tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINE\_PERIOD\_USAGE.

Function

Identify the periods of tables owned by a given user or role on which SQL routines defined in this catalog are dependent.

Subclause 5.68, "TRIGGER\_PERIOD\_USAGE view":

Without Feature T181, "Application-time period tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_PERIOD\_USAGE.

Function

Identify the periods in which triggers defined in this catalog and owned by a given user or role are dependent because of their reference by the search condition or in their appearance in a triggered SQL statement of a trigger owned by a given user or role.

Subclause 5.77, "VIEW\_PERIOD\_USAGE view":

Without Feature T181, "Application-time period tables", conforming SQL language shall not reference INFORMATION\_SCHEMA.VIEW\_PERIOD\_USAGE.

Function

Identify the periods on which viewed tables defined in this catalog and owned by a given user or role are dependent.

Microsoft SQL Server 2008 R2 varies as follows:

This feature is absent in the [\[ISO/IEC9075-11:2008\]](#) specification.

Microsoft SQL Server 2012 varies as follows:

Transact-SQL does not support this feature.

### 2.1.2.26 T211, Basic trigger capability

V0032:

The specification states the following:

Subclause 5.66, "TRIGGERED\_UPDATE\_COLUMNS view":

Without Feature T211, "Basic trigger capability", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGERED\_UPDATE\_COLUMNS.

Function

Identify the columns in this catalog that are identified by the explicit UPDATE trigger event columns of a trigger defined in this catalog that are accessible to a given user or role.

Subclause 5.667, "TRIGGER\_COLUMN\_USAGE view":

Without Feature T211, "Basic trigger capability", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_COLUMN\_USAGE.

Function

Identify the columns on which triggers defined in this catalog and owned by a given user are dependent because of their reference by the search condition or in their appearance in a triggered SQL statement of a trigger owned by a given user or role.

Subclause 5.69, "TRIGGER\_ROUTINE\_USAGE view":

Without Feature T211, "Basic trigger capability", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_ROUTINE\_USAGE.

Function

Identify each SQL-invoked routine owned by a given user or role on which some trigger defined in this catalog is dependent.

Subclause 5.70, "TRIGGER\_SEQUENCE\_USAGE view":

Without Feature T211, "Basic trigger capability", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_SEQUENCE\_USAGE.

Function

Identify each external sequence generator owned by a given user or role on which some trigger defined in this catalog is dependent.

Subclause 5.71, "TRIGGER\_TABLE\_USAGE view":

Without Feature T211, "Basic trigger capability", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGER\_TABLE\_USAGE.

Function

Identify the tables on which triggers defined in this catalog and owned by a given user or role are dependent.

Subclause 5.72, "TRIGGERS view":

Without Feature T211, "Basic trigger capability", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGERS.

Function

Identify the triggers defined on tables in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

i) Without Feature T211, "Basic trigger capability", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIG\_UPDATE\_COLS

ii) Without Feature T211, "Basic trigger capability", conforming SQL language shall not reference the INFORMATION\_SCHEMA.TRIG\_TABLE\_USAGE view.

iii) Without Feature T211, "Basic trigger capability", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIG\_ROUT\_USAGE\_S.

iv) Without Feature T211, "Basic trigger capability", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIG\_SEQ\_USAGE\_S.

v) Without Feature T211, "Basic trigger capability", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIGGERS\_S.

vi) Without Feature T211, "Basic trigger capability", conforming SQL language shall not reference INFORMATION\_SCHEMA.TRIG\_COLUMN\_USAGE.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.27 T213, INSTEAD OF triggers**

V0033:

The specification states the following:

Subclause 5.80, "VIEWS view":

Without Feature T213, "INSTEAD OF triggers", conforming SQL language shall not reference any of the columns IS\_TRIGGER\_UPDATABLE, IS\_TRIGGER\_DELETABLE, IS\_TRIGGER\_INSERTABLE\_INTO.

Function

Identify the viewed tables defined in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Without Feature T213, "INSTEAD OF triggers", conforming SQL language shall not reference any of IS\_TRIG\_UPDATABLE, IS\_TRIG\_DELETABLE, IS\_TRIG\_INS\_INTTO.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.28 T272, Enhanced savepoint management**

V0034:

The specification states the following:

Subclause 5.53, "ROUTINES view":

Without Feature T272, "Enhanced savepoint management", conforming SQL-language shall not reference INFORMATION\_SCHEMA.ROUTINES.NEW\_SAVEPOINT\_LEVEL.

Function

Identify the SQL-invoked routines in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Without Feature T272, "Enhanced savepoint management", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROUTINES\_S.NEW\_SAVEPOINT\_LEVEL.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### **2.1.2.29 T331, Basic Roles**

V0035:

The specification states the following:

Subclause 5.8, "ADMINISTRABLE\_ROLE\_AUTHORIZATIONS view":

Without Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.ADMINISTRABLE\_ROLE\_AUTHORIZATIONS.

Function

Identify role authorizations for which the current user or role has WITH ADMIN OPTION.

Subclause 5.9, "APPLICABLE\_ROLES view":

Without Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.APPLICABLE\_ROLES.

Function

Identifies the applicable roles for the current user.

Subclause 5.31, "ENABLED\_ROLES view":

Without Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.ENABLED\_ROLES.

Function

Identify the enabled roles for the current SQL-session.

Subclause 5.41, "ROLE\_COLUMN\_GRANTS view":

Without Feature F231, "Privilege tables", and Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_COLUMN\_GRANTS.

Function

Identifies the privileges on columns defined in this catalog that are available to or granted by the currently enabled roles.

Subclause 5.42, "ROLE\_ROUTINE\_GRANTS view":

Without Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_ROUTINE\_GRANTS.

Function

Identify the privileges on SQL-invoked routines defined in this catalog that are available to or granted by the currently enabled roles.

Subclause 5.43, "ROLE\_TABLE\_GRANTS view":

Without Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_TABLE\_GRANTS.

Function

Identifies the privileges on tables defined in this catalog that are available to or granted by the currently applicable roles.

Subclause 5.44, "ROLE\_TABLE\_METHOD\_GRANTS view":

Without Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_TABLE\_METHOD\_GRANTS.

Function

Identify the privileges on methods of tables of structured types defined in this catalog that are available to or granted by the currently enabled roles.

Subclause 5.45, "ROLE\_USAGE\_GRANTS view":

Without Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_USAGE\_GRANTS.

Function

Identify the USAGE privileges on objects defined in this catalog that are available to or granted by the currently enabled roles.

Subclause 5.46 "ROLE\_UDT\_GRANTS view":

Without Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_UDT\_GRANTS.

Function

Identify the privileges on user-defined types defined in this catalog that are available to or granted by the currently enabled roles.

Subclause 5.81, "Short name views":

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

i) Without Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.ADMIN\_ROLE\_AUTHS.

ii) Without Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_ROUT\_GRANTS.

iii) Without Feature T331, "Basic roles", conforming SQL language shall not reference INFORMATION\_SCHEMA.ROLE\_TAB\_METH\_GRANTS.

Microsoft SQL Server 2008 R2 and Microsoft SQL Server 2012 vary as follows:

Transact-SQL does not support this feature.

### 2.1.2.30 T332, Declared data type attributes

V0036:

The [\[ISO/IEC9075-11:2008\]](#) specification states the following:

Subclause 5.11, "ATTRIBUTES view":

Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of the columns DECLARED\_DATA\_TYPE, DECLARED\_NUMERIC\_PRECISION and DECLARED\_NUMERIC\_SCALE.

Function

Identify the attributes of user-defined types defined in this catalog that are accessible to a given user or role.

Subclause 5.21, "COLUMNS view":

Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of the columns DECLARED\_DATA\_TYPE, DECLARED\_NUMERIC\_PRECISION and DECLARED\_NUMERIC\_SCALE.

Function

Identify the columns of tables defined in this catalog that are accessible to a given user or role.

Subclause 5.28, "DOMAINS view":

Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of the columns DECLARED\_DATA\_TYPE, DECLARED\_NUMERIC\_PRECISION and DECLARED\_NUMERIC\_SCALE.

Function

Identify the domains defined in this catalog that are accessible to a given user or role.

Subclause 5.29, "ELEMENT\_TYPES view":

Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of the columns DECLARED\_DATA\_TYPE, DECLARED\_NUMERIC\_PRECISION and DECLARED\_NUMERIC\_SCALE.

Function

Identify the collection element types defined in this catalog that are accessible to a given user or role.

Subclause 5.31, "FIELDS view":

Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of the columns DECLARED\_DATA\_TYPE, DECLARED\_NUMERIC\_PRECISION and DECLARED\_NUMERIC\_SCALE.

Function

Identify the field types defined in this catalog that are accessible to a given user or role.

Subclause 5.33, "METHOD\_SPECIFICATION\_PARAMETERS view":

Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of the columns DECLARED\_DATA\_TYPE, DECLARED\_NUMERIC\_PRECISION and DECLARED\_NUMERIC\_SCALE.

Function

Identify the SQL parameters of method specifications described in the METHOD\_SPECIFICATIONS view that are accessible to a given user or role.

Subclause 5.35, "PARAMETERS view":

Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of the columns DECLARED\_DATA\_TYPE,



DECLARED\_NUMERIC\_PRECISION and DECLARED\_NUMERIC\_SCALE.

Function

Identify the SQL parameters of SQL-invoked routines defined in this catalog that are accessible to a given user or role.

Subclause 5.36, "REFERENCED\_TYPES view":

Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of the columns DECLARED\_DATA\_TYPE, DECLARED\_NUMERIC\_PRECISION and DECLARED\_NUMERIC\_SCALE.

Function

Identify the referenced types of reference types defined in this catalog that are accessible to a given user or role.

Subclause 5.49, "ROUTINES view":

Without Feature T332, "Declared data type attributes", conforming SQL-language shall not reference any of the columns DECLARED\_DATA\_TYPE, DECLARED\_NUMERIC\_PRECISION, DECLARED\_NUMERIC\_SCALE, RESULT\_CAST\_FROM\_DECLARED\_DATA\_TYPE, RESULT\_CAST\_DECLARED\_NUMERIC\_PRECISION and RESULT\_CAST\_DECLARED\_NUMERIC\_SCALE.

Function

Identify the SQL-invoked routines in this catalog that are accessible to a given user or role.

Subclause 5.51, "SEQUENCES view":

Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of the columns DECLARED\_DATA\_TYPE, DECLARED\_NUMERIC\_PRECISION and DECLARED\_NUMERIC\_SCALE.

Function

Identify the external sequence generators defined in this catalog that are accessible to a given user or role.

Subclause 5.72, "USER\_DEFINED\_TYPES view":

Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of the columns DECLARED\_DATA\_TYPE, DECLARED\_NUMERIC\_PRECISION and DECLARED\_NUMERIC\_SCALE.

Function

Identify the user-defined types defined in this catalog that are accessible to a given user or role.

Subclause 5.77, "Short name views":

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

- i) Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of ATTRIBUTES\_S.DECLARED\_DATA\_TYPE, ATTRIBUTES\_S.DEC\_NUMERIC\_PREC and ATTRIBUTES\_S.DEC\_NUM\_SCALE.
- ii) Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of COLUMNS\_S.DECLARED\_DATA\_TYPE, COLUMNS\_S.DEC\_NUMERIC\_PREC and COLUMNS\_S.DEC\_NUM\_SCALE.
- iii) Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of DOMAINS\_S.DECLARED\_DATA\_TYPE, DOMAINS\_S.DEC\_NUMERIC\_PREC and DOMAINS\_S.DEC\_NUM\_SCALE.
- iv) Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of ELEMENT\_TYPES\_S.DECLARED\_DATA\_TYPE, ELEMENT\_TYPES\_S.DEC\_NUMERIC\_PREC and ELEMENT\_TYPES\_S.DEC\_NUM\_SCALE.
- v) Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of FIELDS\_S.DECLARED\_DATA\_TYPE, FIELDS\_S.DEC\_NUMERIC\_PREC and FIELDS\_S.DEC\_NUM\_SCALE.
- vi) Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of METHOD\_SPECS.DECLARED\_DATA\_TYPE, METHOD\_SPECS.DEC\_NUMERIC\_PREC and METHOD\_SPECS.DEC\_NUM\_SCALE.
- vii) Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of METHOD\_SPEC\_PARAMS.DECLARED\_DATA\_TYPE, METHOD\_SPEC\_PARAMS.DEC\_NUMERIC\_PREC and METHOD\_SPEC\_PARAMS.DEC\_NUM\_SCALE.
- viii) Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of PARAMETERS\_S.DECLARED\_DATA\_TYPE, PARAMETERS\_S.DEC\_NUMERIC\_PREC and PARAMETERS\_S.DEC\_NUM\_SCALE.
- ix) Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of REFERENCED\_TYPES\_S.DECLARED\_DATA\_TYPE, REFERENCED\_TYPES\_S.DEC\_NUMERIC\_PREC and REFERENCED\_TYPES\_S.DEC\_NUM\_SCALE.
- x) Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of ROUTINES\_S.DECLARED\_DATA\_TYPE, ROUTINES\_S.DEC\_NUMERIC\_PREC and ROUTINES\_S.DEC\_NUM\_SCALE.
- xi) Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of SEQUENCES\_S.DECLARED\_DATA\_TYPE, SEQUENCES\_S.DEC\_NUMERIC\_PREC and SEQUENCES\_S.DEC\_NUM\_SCALE.
- xii) Without Feature T332, "Declared data type attributes", conforming SQL language shall not reference any of UDT\_S.DECLARED\_DATA\_TYPE, UDT\_S.DEC\_NUMERIC\_PREC and UDT\_S.DEC\_NUM\_SCALE.

Microsoft SQL Server 2008 R2 varies as follows:

Transact-SQL does not support this feature.

Microsoft SQL Server 2012 varies as follows:

This feature is absent in the [\[ISO/IEC9075-11:2011\]](#) specification.

### **2.1.2.31 T522, Default values for IN parameters of SQL-invoked procedures**

V0037:

The specification states the following:

Subclause 5.37, "PARAMETERS view":

Without Feature T522, "Default values for IN parameters of SQL-invoked procedures", conforming SQL language shall not reference INFORMATION\_SCHEMA.PARAMETERS.PARAMETER\_DEFAULT.

Function

Identify the SQL parameters of SQL-invoked routines defined in this catalog that are accessible to a given user or role.

Subclause 5.81, "Short name views":

Without Feature T522, "Default values for IN parameters of SQL-invoked procedures", conforming SQL language shall not reference INFORMATION\_SCHEMA.PARAMETERS\_S.PARAMETER\_DEFAULT.

Function

Provide alternative views that use only identifiers that do not require Feature F391, "Long identifiers".

Microsoft SQL Server 2008 R2 varies as follows:

This feature is absent in the [\[ISO/IEC9075-11:2008\]](#) specification.

Microsoft SQL Server 2012 varies as follows:

Transact-SQL does not support this feature.

### 3 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

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