**[MC-CSDL]:**

**Conceptual Schema Definition File Format**

**Intellectual Property Rights Notice for Open Specifications Documentation**

* **Technical Documentation.** Microsoft publishes Open Specifications documentation for protocols, file formats, languages, standards as well as overviews of the interaction among each of these technologies.
* **Copyrights**. This documentation is covered by Microsoft copyrights. Regardless of any other terms that are contained in the terms of use for the Microsoft website that hosts this documentation, you may make copies of it in order to develop implementations of the technologies described in the Open Specifications and may distribute portions of it in your implementations using these technologies or your documentation as necessary to properly document the implementation. You may also distribute in your implementation, with or without modification, any schema, IDL's, or code samples that are included in the documentation. This permission also applies to any documents that are referenced in the Open Specifications.
* **No Trade Secrets**. Microsoft does not claim any trade secret rights in this documentation.
* **Patents**. Microsoft has patents that may cover your implementations of the technologies described in the Open Specifications. Neither this notice nor Microsoft's delivery of the documentation grants any licenses under those or any other Microsoft patents. However, a given Open Specification may be covered by Microsoft [Open Specification Promise](http://go.microsoft.com/fwlink/?LinkId=214445) or the [Community Promise](http://go.microsoft.com/fwlink/?LinkId=214448). If you would prefer a written license, or if the technologies described in the Open Specifications are not covered by the Open Specifications Promise or Community Promise, as applicable, patent licenses are available by contacting [iplg@microsoft.com](mailto:iplg@microsoft.com).
* **Trademarks**. The names of companies and products contained in this documentation may be covered by trademarks or similar intellectual property rights. This notice does not grant any licenses under those rights. For a list of Microsoft trademarks, visit [www.microsoft.com/trademarks](http://www.microsoft.com/trademarks).
* **Fictitious Names**. The example companies, organizations, products, domain names, e-mail addresses, logos, people, places, and events depicted in this documentation are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

**Reservation of Rights**. All other rights are reserved, and this notice does not grant any rights other than specifically described above, whether by implication, estoppel, or otherwise.

**Tools**. The Open Specifications do not require the use of Microsoft programming tools or programming environments in order for you to develop an implementation. If you have access to Microsoft programming tools and environments you are free to take advantage of them. Certain Open Specifications are intended for use in conjunction with publicly available standard specifications and network programming art, and assumes that the reader either is familiar with the aforementioned material or has immediate access to it.

**Revision Summary**

| Date | Revision History | Revision Class | Comments |
| --- | --- | --- | --- |
| 2/27/2009 | 0.1 | Major | First Release. |
| 4/10/2009 | 0.1.1 | Editorial | Changed language and formatting in the technical content. |
| 5/22/2009 | 0.1.2 | Editorial | Changed language and formatting in the technical content. |
| 7/2/2009 | 0.2 | Minor | Clarified the meaning of the technical content. |
| 8/14/2009 | 0.2.1 | Editorial | Changed language and formatting in the technical content. |
| 9/25/2009 | 1.0 | Major | Updated and revised the technical content. |
| 11/6/2009 | 1.0.1 | Editorial | Changed language and formatting in the technical content. |
| 12/18/2009 | 1.0.2 | Editorial | Changed language and formatting in the technical content. |
| 1/29/2010 | 1.1 | Minor | Clarified the meaning of the technical content. |
| 3/12/2010 | 1.1.1 | Editorial | Changed language and formatting in the technical content. |
| 4/23/2010 | 1.1.2 | Editorial | Changed language and formatting in the technical content. |
| 6/4/2010 | 1.1.3 | Editorial | Changed language and formatting in the technical content. |
| 7/16/2010 | 1.2 | Minor | Clarified the meaning of the technical content. |
| 8/27/2010 | 1.3 | Minor | Clarified the meaning of the technical content. |
| 10/8/2010 | 2.0 | Major | Updated and revised the technical content. |
| 11/19/2010 | 3.0 | Major | Updated and revised the technical content. |
| 1/7/2011 | 4.0 | Major | Updated and revised the technical content. |
| 2/11/2011 | 4.1 | Minor | Clarified the meaning of the technical content. |
| 3/25/2011 | 4.2 | Minor | Clarified the meaning of the technical content. |
| 5/6/2011 | 5.0 | Major | Updated and revised the technical content. |
| 6/17/2011 | 5.1 | Minor | Clarified the meaning of the technical content. |
| 9/23/2011 | 5.1 | None | No changes to the meaning, language, or formatting of the technical content. |
| 12/16/2011 | 6.0 | Major | Updated and revised the technical content. |
| 3/30/2012 | 7.0 | Major | Updated and revised the technical content. |
| 7/12/2012 | 7.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 10/25/2012 | 8.0 | Major | Updated and revised the technical content. |
| 1/31/2013 | 9.0 | Major | Updated and revised the technical content. |
| 8/8/2013 | 10.0 | Major | Updated and revised the technical content. |
| 11/14/2013 | 10.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 2/13/2014 | 10.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 5/15/2014 | 10.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 6/30/2015 | 11.0 | Major | Significantly changed the technical content. |

Table of Contents

[1 Introduction 8](#_Toc423367492)

[1.1 Glossary 9](#_Toc423367493)

[1.2 References 11](#_Toc423367494)

[1.2.1 Normative References 11](#_Toc423367495)

[1.2.2 Informative References 12](#_Toc423367496)

[1.3 Overview 12](#_Toc423367497)

[1.4 Relationship to Protocols and Other Structures 12](#_Toc423367498)

[1.5 Applicability Statement 12](#_Toc423367499)

[1.6 Versioning and Localization 13](#_Toc423367500)

[1.7 Vendor-Extensible Fields 13](#_Toc423367501)

[2 Structures 14](#_Toc423367502)

[2.1 Elements 14](#_Toc423367503)

[2.1.1 Schema 14](#_Toc423367504)

[2.1.2 EntityType 15](#_Toc423367505)

[2.1.3 Property 17](#_Toc423367506)

[2.1.4 NavigationProperty 19](#_Toc423367507)

[2.1.5 Entity Key 21](#_Toc423367508)

[2.1.6 PropertyRef 21](#_Toc423367509)

[2.1.7 ComplexType 22](#_Toc423367510)

[2.1.8 Association 23](#_Toc423367511)

[2.1.9 Association End 24](#_Toc423367512)

[2.1.10 OnDelete 25](#_Toc423367513)

[2.1.11 ReferentialConstraint 26](#_Toc423367514)

[2.1.12 ReferentialConstraint Role 27](#_Toc423367515)

[2.1.12.1 Principal 28](#_Toc423367516)

[2.1.12.2 Dependent 29](#_Toc423367517)

[2.1.13 Using 30](#_Toc423367518)

[2.1.14 EntityContainer 31](#_Toc423367519)

[2.1.15 FunctionImport 32](#_Toc423367520)

[2.1.16 FunctionImport ReturnType 34](#_Toc423367521)

[2.1.17 FunctionImport Parameter 35](#_Toc423367522)

[2.1.18 EntitySet 36](#_Toc423367523)

[2.1.19 AssociationSet 37](#_Toc423367524)

[2.1.20 AssociationSet End 38](#_Toc423367525)

[2.1.21 Documentation 39](#_Toc423367526)

[2.1.22 AnnotationElement 41](#_Toc423367527)

[2.1.23 Model Function 42](#_Toc423367528)

[2.1.24 Model Function Parameter 44](#_Toc423367529)

[2.1.25 CollectionType 45](#_Toc423367530)

[2.1.26 TypeRef 46](#_Toc423367531)

[2.1.27 ReferenceType 47](#_Toc423367532)

[2.1.28 RowType 48](#_Toc423367533)

[2.1.29 RowType Property 49](#_Toc423367534)

[2.1.30 Function ReturnType 51](#_Toc423367535)

[2.1.31 ValueTerm 52](#_Toc423367536)

[2.1.32 TypeAnnotation 52](#_Toc423367537)

[2.1.33 PropertyValue 53](#_Toc423367538)

[2.1.34 ValueAnnotation 53](#_Toc423367539)

[2.1.35 Annotations 55](#_Toc423367540)

[2.1.36 Expressions 55](#_Toc423367541)

[2.1.36.1 Core Expressions 56](#_Toc423367542)

[2.1.36.1.1 Null 56](#_Toc423367543)

[2.1.36.1.2 Primitive Scalar Constant Expressions 56](#_Toc423367544)

[2.1.36.1.3 Record Expression 56](#_Toc423367545)

[2.1.36.1.4 Collection Expression 57](#_Toc423367546)

[2.1.36.1.5 LabeledElement Expression 57](#_Toc423367547)

[2.1.36.1.6 Path Expression 57](#_Toc423367548)

[2.1.36.2 Extended Expressions 58](#_Toc423367549)

[2.1.36.2.1 Apply Expression 58](#_Toc423367550)

[2.1.36.2.2 If Expression 58](#_Toc423367551)

[2.1.36.2.3 IsType Expression 59](#_Toc423367552)

[2.1.36.2.4 AssertType Expression 59](#_Toc423367553)

[2.1.37 EnumType 60](#_Toc423367554)

[2.1.38 EnumType Member 60](#_Toc423367555)

[2.1.39 Containment NavigationProperty 61](#_Toc423367556)

[2.2 Attributes 62](#_Toc423367557)

[2.2.1 EDMSimpleType 62](#_Toc423367558)

[2.2.1.1 Commonly Applicable Facets 62](#_Toc423367559)

[2.2.1.1.1 Nullable 62](#_Toc423367560)

[2.2.1.1.2 ReadOnly 62](#_Toc423367561)

[2.2.1.1.3 Default 62](#_Toc423367562)

[2.2.1.2 Binary 62](#_Toc423367563)

[2.2.1.2.1 Facets 62](#_Toc423367564)

[2.2.1.2.1.1 MaxLength 62](#_Toc423367565)

[2.2.1.2.1.2 FixedLength 62](#_Toc423367566)

[2.2.1.3 Boolean 63](#_Toc423367567)

[2.2.1.4 DateTime 63](#_Toc423367568)

[2.2.1.4.1 Facets 63](#_Toc423367569)

[2.2.1.4.1.1 Precision 63](#_Toc423367570)

[2.2.1.5 Time 63](#_Toc423367571)

[2.2.1.5.1 Facets 63](#_Toc423367572)

[2.2.1.5.1.1 Precision 63](#_Toc423367573)

[2.2.1.6 DateTimeOffset 63](#_Toc423367574)

[2.2.1.6.1 Facets 63](#_Toc423367575)

[2.2.1.6.1.1 Precision 63](#_Toc423367576)

[2.2.1.7 Decimal 63](#_Toc423367577)

[2.2.1.7.1 Facets 63](#_Toc423367578)

[2.2.1.7.1.1 Precision 64](#_Toc423367579)

[2.2.1.7.1.2 Scale 64](#_Toc423367580)

[2.2.1.8 Single 64](#_Toc423367581)

[2.2.1.9 Double 64](#_Toc423367582)

[2.2.1.10 Guid 64](#_Toc423367583)

[2.2.1.11 SByte 64](#_Toc423367584)

[2.2.1.12 Int16 64](#_Toc423367585)

[2.2.1.13 Int32 64](#_Toc423367586)

[2.2.1.14 Int64 64](#_Toc423367587)

[2.2.1.15 Byte 64](#_Toc423367588)

[2.2.1.16 String 64](#_Toc423367589)

[2.2.1.16.1 Facets 64](#_Toc423367590)

[2.2.1.16.1.1 Unicode 65](#_Toc423367591)

[2.2.1.16.1.2 FixedLength 65](#_Toc423367592)

[2.2.1.16.1.3 MaxLength 65](#_Toc423367593)

[2.2.1.16.1.4 Collation 65](#_Toc423367594)

[2.2.1.17 Stream 65](#_Toc423367595)

[2.2.1.17.1 Facets 65](#_Toc423367596)

[2.2.1.18 Geography 66](#_Toc423367597)

[2.2.1.18.1 Facets 66](#_Toc423367598)

[2.2.1.18.1.1 SRID 66](#_Toc423367599)

[2.2.1.19 GeographyPoint 66](#_Toc423367600)

[2.2.1.19.1 Facets 66](#_Toc423367601)

[2.2.1.20 GeographyLineString 66](#_Toc423367602)

[2.2.1.20.1 Facets 66](#_Toc423367603)

[2.2.1.21 GeographyPolygon 66](#_Toc423367604)

[2.2.1.21.1 Facets 67](#_Toc423367605)

[2.2.1.22 GeographyCollection 67](#_Toc423367606)

[2.2.1.22.1 Facets 67](#_Toc423367607)

[2.2.1.23 GeographyMultiPoint 67](#_Toc423367608)

[2.2.1.23.1 Facets 67](#_Toc423367609)

[2.2.1.24 GeographyMultiLineString 67](#_Toc423367610)

[2.2.1.24.1 Facets 67](#_Toc423367611)

[2.2.1.25 GeographyMultiPolygon 67](#_Toc423367612)

[2.2.1.25.1 Facets 67](#_Toc423367613)

[2.2.1.26 Geometry 68](#_Toc423367614)

[2.2.1.26.1 Facets 68](#_Toc423367615)

[2.2.1.26.1.1 SRID 68](#_Toc423367616)

[2.2.1.27 GeometryPoint 68](#_Toc423367617)

[2.2.1.27.1 Facets 68](#_Toc423367618)

[2.2.1.28 GeometryLineString 68](#_Toc423367619)

[2.2.1.28.1 Facets 68](#_Toc423367620)

[2.2.1.29 GeometryPolygon 68](#_Toc423367621)

[2.2.1.29.1 Facets 68](#_Toc423367622)

[2.2.1.30 GeometryCollection 69](#_Toc423367623)

[2.2.1.30.1 Facets 69](#_Toc423367624)

[2.2.1.31 GeometryMultiPoint 69](#_Toc423367625)

[2.2.1.31.1 Facets 69](#_Toc423367626)

[2.2.1.32 GeometryMultiLineString 69](#_Toc423367627)

[2.2.1.32.1 Facets 69](#_Toc423367628)

[2.2.1.33 GeometryMultiPolygon 69](#_Toc423367629)

[2.2.1.33.1 Facets 69](#_Toc423367630)

[2.2.2 Action 69](#_Toc423367631)

[2.2.3 Multiplicity 70](#_Toc423367632)

[2.2.4 ConcurrencyMode 70](#_Toc423367633)

[2.2.5 QualifiedName 70](#_Toc423367634)

[2.2.6 SimpleIdentifier 70](#_Toc423367635)

[2.2.7 AnnotationAttribute 71](#_Toc423367636)

[2.2.8 OpenType 71](#_Toc423367637)

[2.2.9 TypeTerm 71](#_Toc423367638)

[2.3 Facet Application 71](#_Toc423367639)

[3 Structure Examples 72](#_Toc423367640)

[3.1 ValueAnnotation Example 73](#_Toc423367641)

[3.2 ValueTerm and Edm.TypeTerm Example 74](#_Toc423367642)

[4 Security Considerations 75](#_Toc423367643)

[5 Appendix A: Full XML Schemas 76](#_Toc423367644)

[5.1 CSDL Schema 1.0 76](#_Toc423367645)

[5.2 CSDL Schema 1.1 82](#_Toc423367646)

[5.3 CSDL Schema 2.0 89](#_Toc423367647)

[5.4 CSDL Schema 3.0 99](#_Toc423367648)

[6 Appendix B: Differences Between CSDL 1.0 and CSDL 1.1 117](#_Toc423367649)

[7 Appendix C: Differences Between CSDL 1.1 and CSDL 1.2 118](#_Toc423367650)

[8 Appendix D: Differences Between CSDL 1.2 and CSDL 2.0 119](#_Toc423367651)

[9 Appendix E: Differences Between CSDL 2.0 and CSDL 3.0 120](#_Toc423367652)

[10 Appendix F: Product Behavior 122](#_Toc423367653)

[11 Change Tracking 123](#_Toc423367654)

[12 Index 125](#_Toc423367655)

# Introduction

The conceptual schema definition file format provides the structure and semantics of the conceptual schema definition language (CSDL) for the Entity Data Model (EDM). CSDL is a language based on XML that can be used for defining EDM-based conceptual models.

The EDM is an entity-relationship (ER) model. The ER model has existed for more than 30 years and differs from the more familiar relational model, because associations and entities are all first-class concepts.

The EDM defines some well-known primitive types, such as Edm.String, that are used as the building blocks for structural types such as entity types and complex types.

Entities are instances of entity types (for example, customer or employee) that are richly structured records with a key. The structure of an entity type is provided by its properties. An entity key is formed from a subset of the properties of the entity type. The entity key (for example, CustomerId or EmployeeId) is a fundamental concept that is used to uniquely identify and persist entity instances and to allow entity instances to participate in relationships or associations.

Entities are grouped in entity sets; for example, the entity set customers is a set of customer instances.

Associations (occasionally referred to as relationships) are instances of association types. Association types are used to specify a named relationship between two entity types. Thus, an association is a named relationship between two or more entities. Associations are grouped into association sets.

Entity types may include one or more navigation properties. A navigation property is tied to an association type and allows the navigation from one end of an association--the entity type that declares the navigation property--to the other related end, which can be anything from 0 or more related entities. Unlike standard properties, navigation properties are not considered to be structurally part of an entity.

Complex types, which are structural types similar to an entity type, are also supported by the EDM. The main difference is that complex types have no identity and cannot support associations. For these reasons, complex types instances only exist as properties of entity types (or other complex types).

The EDM also supports entity type and complex type inheritance.

Inheritance is a fundamental modeling concept that allows different types to be related in an "Is a" relationship that makes it possible to extend and reuse existing entity types and complex types. When type B inherits from type A, type A is the base-type of B, and B is a sub-type or derived-type of A. The derived-type inherits all the properties of its base-type; these properties are called inherited-properties. The derived-type can be extended to have more properties; these additional properties are called direct-properties. A direct-property name has to be unique; it cannot be the same as an inherited-property name. All valid derived-type instances at all times are also valid base-type instances and can be substituted for the parent instance. In the EDM a derived entity type always inherits the definition of its entity key from its base type.

Function imports are also supported by the EDM. A function import is conceptually similar to a method declaration in a header file, in that a function import defines a function signature, but includes no definition. The parameters and return type of the function import must either be one of the EDM's built-in primitive types, one of the structural types defined in the rest of the model, or a collection of primitive types and structural types.

Entity sets, association sets, and function imports are grouped into one or more entity containers. Entity containers are conceptually similar to databases; however, because entity types, association types, and complex types are declared outside of an entity container, entity types, association types, and complex types can be re-used across entity containers.

An example of a model that is defined by using CSDL is shown in section [3](#Section_82fcb04eab294227a9728155fb6786f4).

Sections 1.7 and 2 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in [[RFC2119]](http://go.microsoft.com/fwlink/?LinkId=90317). All other sections and examples in this specification are informative.

## Glossary

The following terms are specific to this document:

**.NET Framework**: An integral Windows component that supports building and running applications and XML web services. The Microsoft .NET Framework has two main components: the common language runtime and the .NET Framework class library. For more information about the .NET Framework, see [[MSDN-.NET-FRAMEWORK]](http://go.microsoft.com/fwlink/?LinkId=195551). The following versions of the .NET Framework are available in the following released Windows products or as supplemental software. Microsoft .NET Framework 1.0: Windows NT 4.0 operating system, Microsoft Windows 98 operating system, Windows 2000 operating system, Windows Millennium Edition operating system, Windows XP operating system, and Windows Server 2003 operating system. Microsoft .NET Framework 1.1: Windows 98, Windows 2000, Windows Millennium Edition, Windows XP, Windows Server 2003, Windows Server 2003 R2 operating system, Windows Vista operating system, and Windows Server 2008 operating system. Microsoft .NET Framework 2.0: Windows 98, Windows 2000, Windows Millennium Edition, Windows XP, Windows Server 2003, Windows Server 2003 R2, Windows Vista, Windows Server 2008, Windows 7 operating system, Windows Server 2008 R2 operating system, Windows 8 operating system, Windows Server 2012 operating system, Windows 8.1 operating system, Windows Server 2012 R2 operating system, Windows 10 operating system, and Windows Server 2016 Technical Preview operating system. Microsoft .NET Framework 3.0: Windows XP, Windows Server 2003, Windows Server 2003 R2, Windows Vista, Windows Server 2008, Windows 7, Windows Server 2008 R2, Windows 8, Windows Server 2012, Windows 8.1, Windows Server 2012 R2, Windows 10, and Windows Server 2016 Technical Preview. Microsoft .NET Framework 3.5: Windows XP, Windows Server 2003, Windows Server 2003 R2, Windows Vista, Windows Server 2008, Windows 7, Windows Server 2008 R2, Windows 8, Windows Server 2012, Windows 8.1, Windows Server 2012 R2, Windows 10, and Windows Server 2016 Technical Preview. Microsoft .NET Framework 4.0: Windows XP, Windows Server 2003, Windows Server 2003 R2, Windows Vista, Windows Server 2008, Windows 7, Windows Server 2008 R2, Windows 8, Windows Server 2012, Windows 8.1, Windows Server 2012 R2, Windows 10, and Windows Server 2016 Technical Preview. Microsoft .NET Framework 4.5: Windows Vista, Windows Server 2008, Windows 7, Windows Server 2008 R2, Windows 8, Windows Server 2012, Windows 8.1, Windows Server 2012 R2, and Windows 10. Microsoft .NET Framework 4.6: Windows Vista, Windows Server 2008, Windows 7, Windows Server 2008 R2, Windows 8, Windows Server 2012, Windows 8.1, Windows Server 2012 R2, and Windows 10.

**ADO.NET Entity Framework**: A set of technologies that enables developers to create data access applications by programming against the conceptual application model instead of programming directly against a relational storage schema.

**alias**: A simple identifier that is typically used as a short name for a [**namespace**](#gt_165fda5c-ed85-42c2-bd8c-1bbbde70cee9).

**alias qualified name**: A qualified name that is used to refer to a structural type, with the exception of a namespace that is replaced by the namespace's [**alias**](#gt_d046b6e2-3f79-47e1-87d7-754566744dcd). For example, if an entity type called "Person" is defined in the "Model.Store" namespace, and if that namespace's alias is "Self", the alias qualified name for the "Person" entity type is "Self.Person" rather than "Model.Store.Person".

**annotation**: Any custom, application-specific extension that is applied to an instance of a schema definition language through the use of custom attributes and elements that are not a part of that schema definition language.

**association**: A named independent relationship between two entity type definitions. Associations in the [**Entity Data Model (EDM)**](#gt_f37cd759-8ec2-49ff-9f87-b040e54d4ddf) are first-class concepts and are always bidirectional. Indeed, the first-class nature of associations helps distinguish the [**EDM**](#gt_f37cd759-8ec2-49ff-9f87-b040e54d4ddf) from the relational model. Every association includes exactly two association ends.

**cardinality**: The measure of the number of elements in a set.

**collection**: A grouping of one or more [**EDM types**](#gt_c4c8ecf6-0072-4a69-91ca-0eec7e1ea9a5) that are type compatible.

**conceptual schema definition language (CSDL)**: A language that is based on XML and that can be used to define conceptual models that are based on the [**Entity Data Model (EDM)**](#gt_f37cd759-8ec2-49ff-9f87-b040e54d4ddf).

**conceptual schema definition language (CSDL) document**: A document that contains a conceptual model that is described by using the [**CSDL**](#gt_200534ba-17ae-4f18-899d-d56d1f51eaaa) code.

**declared property**: A property that is statically declared by a Property element as part of the definition of a structural type. For example, in the context of an EntityType, a declared property includes all properties of an EntityType that are represented by the Property child elements of the EntityType element that defines the EntityType.

**derived type**: A type that is derived from the BaseType. Only ComplexType and EntityType can define a BaseType.

**dynamic property**: A designation for an instance of an OpenEntityType that includes additional nullable properties (of a scalar type or ComplexType) beyond its [**declared properties**](#gt_5892b75f-1b8f-4934-984e-aa21beeddc57). The set of additional properties, and the type of each, may vary between instances of the same OpenEntityType. Such additional properties are referred to as dynamic properties and do not have a representation in a [**CSDL document**](#gt_bae7ed93-a390-4017-9d1a-8a3da753ed40).

**EDM type**: A categorization that includes the following types: [**association**](#gt_3a629986-156f-48fa-ae7b-bb46b8f9dc61), ComplexType, EDMSimpleType, EntityType, and enumeration.

**entity**: An instance of an EntityType element that has a unique identity and an independent existence. An entity is an operational unit of consistency.

**Entity Data Model (EDM)**: A set of concepts that describes the structure of data, regardless of its stored form.

**enumeration type**: A type that represents a custom enumeration that is declared by using the EnumType element.

**facet**: An element that provides information that specializes the usage of a type. For example, the precision (that is, accuracy) [**facet**](#gt_71e285ee-43d0-43d0-a25a-8ae5b5df050a) can be used to define the precision of a DateTime property.

**identifier**: A string value that is used to uniquely identify a component of the [**CSDL**](#gt_200534ba-17ae-4f18-899d-d56d1f51eaaa) and that is of type SimpleIdentifier.

**in scope**: A designation that is applied to an XML construct that is visible or can be referenced, assuming that all other applicable rules are satisfied. Types that are in scope include all [**scalar types**](#gt_96da02b2-ac1a-4969-ba9c-1eb32dd33faa) and structural types that are defined in [**namespaces**](#gt_165fda5c-ed85-42c2-bd8c-1bbbde70cee9) that are in scope. [**Namespaces**](#gt_165fda5c-ed85-42c2-bd8c-1bbbde70cee9) that are in scope include the [**namespace**](#gt_165fda5c-ed85-42c2-bd8c-1bbbde70cee9) of the current [**schema**](#gt_fd49ea36-576c-4417-93bd-d1ac63e71093) and other [**namespaces**](#gt_165fda5c-ed85-42c2-bd8c-1bbbde70cee9) that are referenced in the current [**schema**](#gt_fd49ea36-576c-4417-93bd-d1ac63e71093) by using the Using element.

**namespace**: A name that is defined on the [**schema**](#gt_fd49ea36-576c-4417-93bd-d1ac63e71093) and that is subsequently used to prefix [**identifiers**](#gt_62f400ab-0d69-4ca6-9c6f-12fc7b6f1ea2) to form the [**namespace qualified name**](#gt_6ff9c4fd-ce55-4940-bb28-d6111ebe7e5d) of a structural type.

**namespace qualified name**: A qualified name that refers to a structural type by using the name of the [**namespace**](#gt_165fda5c-ed85-42c2-bd8c-1bbbde70cee9), followed by a period, followed by the name of the structural type.

**nominal type**: A designation that applies to the types that can be referenced. Nominal types include all primitive types and named EDM types. Nominal types are frequently used inline with collection in the following format: collection(nominal\_type).

**scalar type**: A designation that applies to all EDMSimpleType and [**enumeration types**](#gt_53314ed5-ba09-4e24-8c2f-ea0324bff497). Scalar types do not include structural types.

**schema**: A container that defines a [**namespace**](#gt_165fda5c-ed85-42c2-bd8c-1bbbde70cee9) that describes the scope of [**EDM types**](#gt_c4c8ecf6-0072-4a69-91ca-0eec7e1ea9a5). All [**EDM types**](#gt_c4c8ecf6-0072-4a69-91ca-0eec7e1ea9a5) are contained within some [**namespace**](#gt_165fda5c-ed85-42c2-bd8c-1bbbde70cee9).

**schema level named element**: An element that is a child element of the [**schema**](#gt_fd49ea36-576c-4417-93bd-d1ac63e71093) and contains a Name attribute that must have a unique value.

**value term**: A term with a single property in EDM.

**vocabulary**: A schema that contains definitions of [**value terms**](#gt_5b5f5bb6-0684-4a3f-a513-96e06076ff51) and entity type terms.

**XML namespace**: A collection of names that is used to identify elements, types, and attributes in XML documents identified in a URI reference [[RFC3986]](http://go.microsoft.com/fwlink/?LinkId=90453). A combination of XML namespace and local name allows XML documents to use elements, types, and attributes that have the same names but come from different sources. For more information, see [[XMLNS-2ED]](http://go.microsoft.com/fwlink/?LinkId=90602).

**MAY, SHOULD, MUST, SHOULD NOT, MUST NOT:** These terms (in all caps) are used as defined in [[RFC2119]](http://go.microsoft.com/fwlink/?LinkId=90317). All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

## References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the [Errata](http://msdn.microsoft.com/en-us/library/dn781092.aspx).

### 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.

[MC-EDMX] Microsoft Corporation, "[Entity Data Model for Data Services Packaging Format](file:///E:\Target\Windows\Published\Books\MC-CSDL\%5bMC-EDMX%5d.pdf)".

[MS-ODATA] Microsoft Corporation, "[Open Data Protocol (OData)](file:///E:\Target\Windows\Published\Books\MC-CSDL\%5bMS-ODATA%5d.pdf)".

[OGC-SFACA/1.2.1] Open Geospatial Consortium, ""OpenGIS Implementation Specification for Geographic Information - Simple feature access – Part 1: Common architecture"", 06-103r4, version 1.2.1, May 2011, [http://www.opengeospatial.org/standards/sfa](http://go.microsoft.com/fwlink/?LinkID=231880)

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, [http://www.rfc-editor.org/rfc/rfc2119.txt](http://go.microsoft.com/fwlink/?LinkId=90317)

[RFC4122] Leach, P., Mealling, M., and Salz, R., "A Universally Unique Identifier (UUID) URN Namespace", RFC 4122, July 2005, [http://www.ietf.org/rfc/rfc4122.txt](http://go.microsoft.com/fwlink/?LinkId=90460)

[XML1.0] Bray, T., Paoli, J., Sperberg-McQueen, C.M., and Maler, E., "Extensible Markup Language (XML) 1.0 (Second Edition)", W3C Recommendation, October 2000, [http://www.w3.org/TR/2000/REC-xml-20001006](http://go.microsoft.com/fwlink/?LinkId=90599)

[XMLNS-2ED] World Wide Web Consortium, "Namespaces in XML 1.0 (Second Edition)", August 2006, [http://www.w3.org/TR/2006/REC-xml-names-20060816/](http://go.microsoft.com/fwlink/?LinkId=90602)

[XMLSCHEMA1] Thompson, H., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, [http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/](http://go.microsoft.com/fwlink/?LinkId=90608)

### Informative References

[EPSG] International Association of Oil & Gas Producers, "About the EPSG Dataset", [http://www.epsg.org/](http://go.microsoft.com/fwlink/?LinkID=148018)

## Overview

The [**conceptual schema definition language (CSDL)**](#gt_200534ba-17ae-4f18-899d-d56d1f51eaaa) is an XML-based file format that describes the [**Entity Data Model (EDM)**](#gt_f37cd759-8ec2-49ff-9f87-b040e54d4ddf). CSDL is based on standards defined in [[XML1.0]](http://go.microsoft.com/fwlink/?LinkId=90599) and [[XMLSCHEMA1]](http://go.microsoft.com/fwlink/?LinkId=90608). The root of the CSDL is a [Schema](#Section_f7d957653b644c77b1449d28862b0403) element. Following that root, these child elements are supported: [Using](#Section_e8b9dda037b24ab08f67cab8b8a54150), [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008), [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09), [Association](#Section_77d7ccbbbda8444aa160f4581172322f), and [EntityContainer](#Section_031f2e18935b461b95ce62e11432047a). In CSDL 2.0 and CSDL 3.0, **Schema** elements may have [Function](#Section_49cbc245e5434cc9bc7d712aa617ae64) as a child element. **EntityContainer** elements conceptually represent a **DataSource** and can contain [EntitySet](#Section_4a09a48c1da34d8487b42b6c46731470), [AssociationSet](#Section_84fdfd027b124aa3a2eb51bab109f439), and [FunctionImport](#Section_d867e86a69054d059145d677b11f8c39) as child elements. In CSDL 3.0, **Schema** elements may have [ValueTerm](#Section_86cc0386637a4c6cbdb59cc6e2c65647) and [Annotations](#Section_9fb2fa3c5aac443087c66786314b1588) as child elements.

Conceptually, a CSDL file has an overall structure that resembles the following schema.

1. <Schema>
2. <Using/>
3. <Using/>
4. <Annotations />
5. <ValueTerm />
6. <EntityType/>
7. <EntityType/>
8. <ComplexType/>
9. <Association/>
10. <Association/>
11. <Function/>
12. <Function/>
13. <EntityContainer>
14. <EntitySet/>
15. <EntitySet/>
16. <AssociationSet/>
17. <AssociationSet/>
18. <FunctionImport/>
19. <FunctionImport/>
20. </EntityContainer>
21. <EntityContainer/>
22. </Schema>

**Note**  The previous example is not a detailed specification. It is meant to provide only a visual overview.

## Relationship to Protocols and Other Structures

Both Entity Data Model for Data Services Packaging Format [[MC-EDMX]](file:///E:\Target\Windows\Published\Books\MC-CSDL\%5bMC-EDMX%5d.pdf) and Open Data Protocol [[MS-ODATA]](file:///E:\Target\Windows\Published\Books\MC-CSDL\%5bMS-ODATA%5d.pdf) use the structures defined in conceptual schema definition language (CSDL).

## Applicability Statement

The conceptual schema definition language (CSDL) is an XML format that describes the structure and semantics of the Entity Data Model (EDM) [**schemas**](#gt_fd49ea36-576c-4417-93bd-d1ac63e71093). All [**identifiers**](#gt_62f400ab-0d69-4ca6-9c6f-12fc7b6f1ea2), such as names, [**namespaces**](#gt_165fda5c-ed85-42c2-bd8c-1bbbde70cee9), and so on, are case sensitive.

EDM is a specification for defining conceptual data models. Applications can use the EDM to define a conceptual model that describes the [**entity**](#gt_3b609270-c0f5-4220-8cf0-4c328f73684e), relationships, and sets required in the domain served by the application.

## Versioning and Localization

This document describes the following conceptual schema definition language (CSDL) versions: CSDL 1.0, CSDL 1.1, CSDL 1.2, CSDL 2.0, and CSDL 3.0. Aspects of later CSDL versions that do not apply to earlier versions are identified in the text.

## Vendor-Extensible Fields

The conceptual schema definition language (CSDL) supports application-specific customization and extension through the use of [**annotations**](#gt_4d55a9ca-5ad9-44f7-b034-e03207153ec7). These annotations allow applications to embed application-specific or vendor-specific information into CSDL. The CSDL format does not specify how to process these custom-defined structures or how to distinguish structures from multiple vendors or layers. Parsers of the CSDL can ignore annotations that are not expected or not understood.

Annotations can be of two types: **AnnotationAttribute** and **AnnotationElement**.

An **AnnotationAttribute** is a custom XML attribute applied to a CSDL element. The attribute can belong to any [**XML namespace**](#gt_485f05b3-df3b-45ac-b8bf-d05f5d185a24) (as defined in [[XMLNS-2ED]](http://go.microsoft.com/fwlink/?LinkId=90602)) that is not in the list of reserved XML namespaces for CSDL. Consult the reference for each CSDL element within this document to determine whether **AnnotationAttribute** can be used for that element.

The reserved XML namespaces for CSDL are:

http://schemas.microsoft.com/ado/2006/04/edm

http://schemas.microsoft.com/ado/2007/05/edm

http://schemas.microsoft.com/ado/2008/01/edm

http://schemas.microsoft.com/ado/2008/09/edm

http://schemas.microsoft.com/ado/2009/11/edm

# Structures

## Elements

### Schema

The **Schema** element is the top-level conceptual schema definition language (CSDL) construct that allows creation of a namespace.

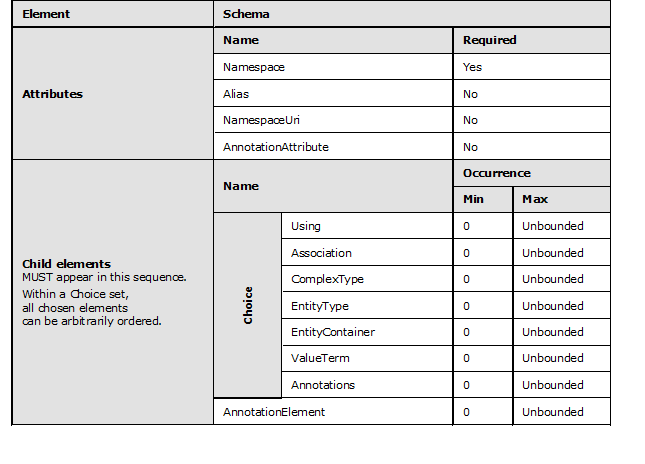
The contents of a namespace can be defined by one or more **Schema** instances. The identifiers that are used to name types MUST be unique within a **Namespace**. For instance, an [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) cannot have the same name as a [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09) within the same namespace. The **Namespace** forms a part of the type's fully qualified name.

The following is an example of the **Schema** element:

1. <Schema Alias="Model" Namespace="Test.Simple.Model"
2. xmlns:edm="http://schemas.microsoft.com/ado/2009/11/edm"
3. xmlns="http://schemas.microsoft.com/ado/2009/11/edm">

The following rules apply to the **Schema** element.

* The [**CSDL document**](#gt_bae7ed93-a390-4017-9d1a-8a3da753ed40) MUST have the **Schema** element as its root element.
* The **Namespace** attribute MUST be defined for each **Schema** element. **Namespace** is of type [QualifiedName](#Section_b70588effb4b4233a3336a9f10aee16b). A namespace is a logical grouping of EntityType elements, ComplexType elements, and [Association](#Section_77d7ccbbbda8444aa160f4581172322f) elements.
* A schema **Namespace** attribute MUST NOT have the values "System", "Transient", or "Edm".
* A schema definition can span across more than one CSDL document.
* The **Alias** attribute can be defined on a **Schema** element. **Alias** is of the type **SimpleIdentifier**.
* **Schema** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **Schema** can contain zero or more of the following child elements. The elements can appear in any given order.
  + [Using](#Section_e8b9dda037b24ab08f67cab8b8a54150)
  + Association
  + ComplexType
  + EntityType
  + [EntityContainer](#Section_031f2e18935b461b95ce62e11432047a)
* In CSDL 2.0 and CSDL 3.0, **Schema** can contain zero or more of the following child elements.
  + **Function**
* **Schema** can contain any number of **AnnotationElement** elements.
* In CSDL 3.0, **Schema** can contain any number of **Annotations** elements.
* In CSDL 3.0, **Schema** can contain any number of **ValueTerm** elements.
* **AnnotationElement** elements MUST appear only after all other child elements of **Schema**.



All child elements MUST appear in the order indicated. For all child elements within a given choice, the child elements can be ordered arbitrarily.

### EntityType

An entity is an instance of an **EntityType** element. An **EntityType** has a unique identity, an independent existence, and forms the operational unit of consistency. **EntityType** elements model the top-level concepts within a data model--such as customers, orders, suppliers, and so on (to take the example of a typical line-of-business system). An entity instance represents one particular instance of the **EntityType**, such as a specific customer or a specific order. An **EntityType** can be either abstract or concrete. An abstract **EntityType** cannot be instantiated.

An **EntityType** has a **Name** attribute, a payload consisting of one or more [**declared properties**](#gt_5892b75f-1b8f-4934-984e-aa21beeddc57), and an entity [Key (section 2.1.5)](#Section_e667c2a894e24874a5cfa74dbd4b3bcd) element that specifies the set of properties whose values uniquely identify an entity within an entity set. An EntityType can have one or more properties of the specified scalar type or ComplexType. A property can be a declared property or a [**dynamic property**](#gt_b7bd2f5b-a008-4711-ac17-1db71f65b0f2).

In CSDL 1.2, CSDL 2.0, and CSDL 3.0, an **EntityType** can be an **OpenEntityType**. An **EntityType** is indicated to be an **OpenEntityType** by the presence of an [OpenType](#Section_daa32788abd34894b164e99a900e96ed)="true" attribute. If an **EntityType** is an **OpenEntityType**, the set of properties that are associated with the **EntityType** can, in addition to declared properties, include dynamic properties.

**Note**  In CSDL, dynamic properties are defined for use only with **OpenEntityType** instances.

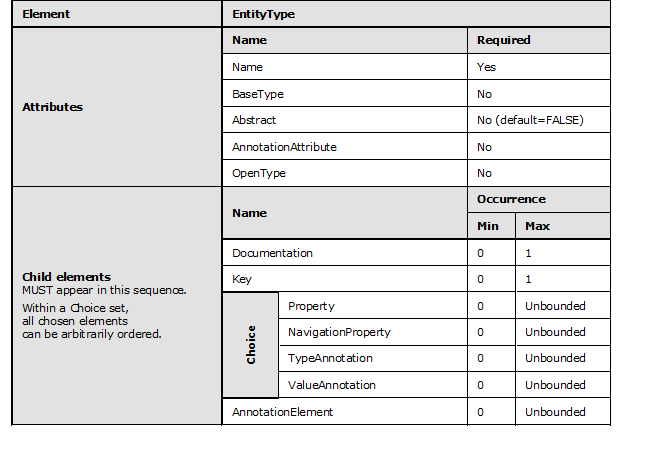
The type of a [Property](#Section_50129087bb7f475ea14d7a8a4bdef966) in an **EntityType** can be a [**scalar type**](#gt_96da02b2-ac1a-4969-ba9c-1eb32dd33faa) or **ComplexType**. **EntityType** can be categorized as an [**EDM type**](#gt_c4c8ecf6-0072-4a69-91ca-0eec7e1ea9a5).

The following is an example of an **EntityType**.

1. <EntityType Name="Customer">
2. <Key>
3. <PropertyRef Name="CustomerId" />
4. </Key>
5. <Property Name="CustomerId" Type="Int32" Nullable="false" />
6. <Property Name="FirstName" Type="String" Nullable="true" />
7. <Property Name="LastName" Type="String" Nullable="true" />
8. <Property Name="AccountNumber" Type="Int32" Nullable="true" />
9. <NavigationProperty Name="Orders" Relationship="Model1.CustomerOrder" FromRole="Customer" ToRole="Order" />
10. </EntityType>

The following rules apply to the **EntityType** element:

* **EntityType** MUST have a **Name** attribute defined. The **Name** attribute is of type **SimpleIdentifier**. The **Name** attribute represents the name of this **EntityType**.
* An **EntityType** is a [**schema level named element**](#gt_be325f20-bba3-430e-b04b-e0744351faea) and MUST have a unique name.
* **EntityType** can derive from a **BaseType**, which is used to specify the parent type of a [**derived type**](#gt_d9adc19d-c5e5-49a0-8a24-c46b07ffd0ea). The derived type inherits properties from the parent type.
* If a **BaseType** is defined, it MUST be a [**namespace qualified name**](#gt_6ff9c4fd-ce55-4940-bb28-d6111ebe7e5d) or an [**alias qualified name**](#gt_d048cb61-6328-4724-a7f5-bf6490979bf1) of an **EntityType** that is in scope.
* An **EntityType** MUST NOT introduce an inheritance cycle via the **BaseType** attribute.
* An **EntityType** can have its **Abstract** attribute set to "true". By default, the **Abstract** attribute is set to "false".
* An **EntityType** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* An **EntityType** element can contain at most one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* An **EntityType** MUST either define an entity **Key** element or derive from a **BaseType**. Derived **EntityType** elements MUST NOT define an entity **Key**. A key forms the identity of the **Entity**.
* An **EntityType** can have any number of **Property** and [NavigationProperty](#Section_e83d21c47f0a4cc7ac38f2fbe15d3398) elements in any given order.
* **EntityTypeProperty** child elements MUST be uniquely named within the inheritance hierarchy for the **EntityType**. **Property** child elements and **NavigationProperty** child elements MUST NOT have the same name as their declaring **EntityType**.
* An **EntityType** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) element blocks.
* In CSDL 1.2, CSDL 2.0, and CSDL 3.0, an **EntityType** representing an **OpenEntityType** MUST have an **OpenType** attribute defined with its value equal to "true".
* In CSDL 1.2, CSDL 2.0, and CSDL 3.0, an **EntityType** that derives from an **OpenEntityType** is itself an **OpenEntityType**. Such a derived **EntityType** MUST NOT have an **OpenType** attribute with its value equal to "false", but the derived **EntityType** can have an **OpenType** attribute defined with its value equal to "true".
* In CSDL 3.0, **EntityType** can contain any number of **TypeAnnotation** elements.
* In CSDL 3.0, **EntityType** can contain any number of **ValueAnnotation** elements.



All child elements MUST appear in the order indicated. For all child elements within a given choice, the child elements can be ordered arbitrarily.

### Property

The declared properties of an [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) element or [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09) element are defined by using the **Property** element. **EntityType** and **ComplexType** can have **Property** elements. **Property** can be a scalar type or **ComplexType**. A declared property description consists of the declared property’s name, type, and a set of [**facets**](#gt_71e285ee-43d0-43d0-a25a-8ae5b5df050a), such as [Nullable](#Section_3a265846e4674643ac9c956f404545ea) or [Default](#Section_4bc7f02a837646cbaab030c0f56cb584). Facets describe further behavior of a given type; they are optional to define.

The following is an example of a **Property** element.

1. <Property Name="ProductName" Type="String" Nullable="false" MaxLength="40">

The following rules apply to the **Property** element:

* The **Property** MUST define the **Name** attribute.
* The **Property** MUST have the **Type** defined.
* The **Property** type MUST be either a scalar type or a namespace qualified name or alias qualified name of a **ComplexType** that is [**in scope**](#gt_8b9ef930-6385-477c-9186-71c87c7dc4a8).
* In CSDL 3.0, a **Type** attribute in the **Property** element can have the value "Collection". "Collection" represents a set of non-nullable scalar type instances or **ComplexType** instances. It can be expressed as an attribute (example 1) or by using child element syntax, see [TypeRef (section 2.1.26)](#Section_305f358f05934a8a9ce8bfcac303f96e) (example 2). **TypeRef** is only allowed if the **Type** attribute value is equal to "Collection".

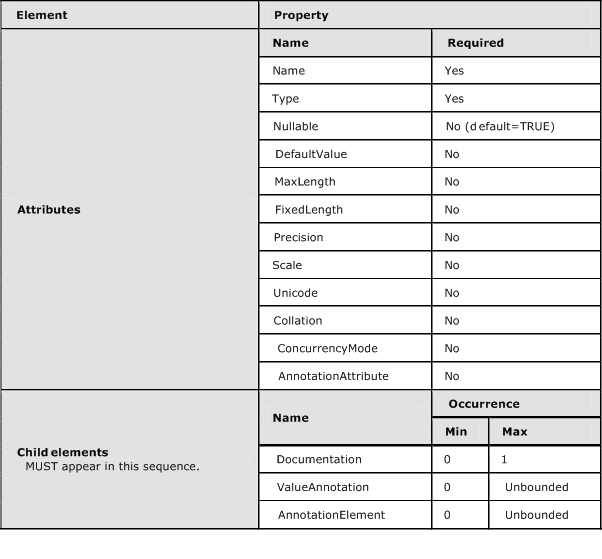
In example 1, **Property** uses a **Type** attribute.

1. <Property Name="AlternateAddresses" Type="Collection(Model.Address)" />

In example 2, **Property** uses child element syntax.

1. <Property Name="AlternateAddresses" Type="Collection">
2. <TypeRef Type="Model.Address" />
3. </Property>

* The **Property** can define a **Nullable** facet. The default value is Nullable=true. (In CSDL 1.0, CSDL 1.1, and CSDL 2.0, any **Property** that has a type of **ComplexType** MUST also define a **Nullable** attribute that MUST be set to "false".)
* The following facets are optional to define on **Property**:
  + **DefaultValue**
  + **MaxLength**
  + **FixedLength**
  + **Precision**
  + **Scale**
  + **Unicode**
  + **Collation**
  + **SRID**
* In CSDL 1.1, CSDL 1.2, CSDL 2.0, and CSDL 3.0, a **Property** element can define a **CollectionKind** attribute. The possible values are "None", "List", and "Bag".
* **Property** can define [ConcurrencyMode](#Section_76b49689935047b497fe2e2ad09df995). The possible values are "None" and "Fixed". However, for an **EntityType** that has a corresponding **EntitySet** defined, any **EntityType** elements that are derived from the **EntitySet** MUST NOT define any new **Property** with **ConcurrencyMode** set to a value other than "None".
* **Property** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* A **Property** element can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **Property** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* In CSDL 3.0, **Property** can contain any number of [ValueAnnotation](#Section_07b06e266f1142d89ce0975a9070c800) elements.
* Child elements of **Property** MUST appear in this sequence: **Documentation**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

A dynamic property follows these rules:

* If an instance of an **OpenEntityType** does not include a value for a dynamic property named *N*, the instance MUST be treated as if it included *N* with a value of "null".
* A dynamic property of an **OpenEntityType** MUST NOT have the same name as a declared property on the same **OpenEntityType**.

### NavigationProperty

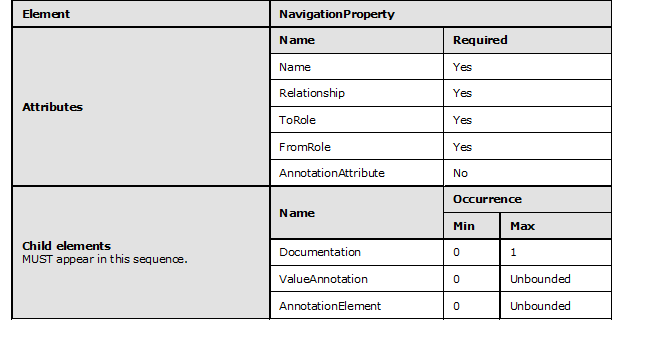
**NavigationProperty** elements define non-structural properties on entities that allow for navigation from one **Entity** to another via a relationship. Standard properties describe a value that is associated with an entity, while navigation properties describe a navigation path over a relationship. For example, given a relationship between Customer and Order entities, an Order [EntityType (section 2.1.2)](#Section_6875ce6c837c4cea8e35441dc2366008) can describe a **NavigationProperty**"OrderedBy" that represents the Customer instance associated with that particular Order instance.

The following is an example of a **NavigationProperty** element.

1. <NavigationProperty Name="Orders" Relationship="Model1.CustomerOrder" FromRole="Customer" ToRole="Order" />

The following rules apply to the **NavigationProperty** element:

* **NavigationProperty** MUST have a **Name** defined.
* **NavigationProperty** MUST have a **Relationship** attribute defined.
* The **Relationship** attribute MUST be either a namespace qualified name or an alias qualified name of an [Association (section 2.1.8)](#Section_77d7ccbbbda8444aa160f4581172322f) element that is in scope.
* **NavigationProperty** MUST have a **ToRole** attribute defined. **ToRole** specifies the other end of the relationship. **ToRole** MUST refer to one of the role names that is defined on the **Association**.
* **NavigationProperty** MUST have a **FromRole** defined. **FromRole** is used to establish the starting point for the navigation and MUST refer to one of the role names that is defined on the **Association**.
* **NavigationProperty** can contain any number of **AnnotationAttribute** attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **NavigationProperty** element can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **NavigationProperty** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* In CSDL 3.0, **NavigationProperty** can have a **ContainsTarget** defined. When **ContainsTarget** is absent, it defaults to false. When it is set to true, **ContainsTarget** indicates [containment NavigationProperty (section 2.1.39)](#Section_bd4e24ac247a4182a35ead563f501a21).
* In CSDL 3.0, **NavigationProperty** can contain any number of [ValueAnnotation](#Section_07b06e266f1142d89ce0975a9070c800) elements.
* Child elements of **NavigationProperty** MUST appear in this sequence: **Documentation**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

### Entity Key

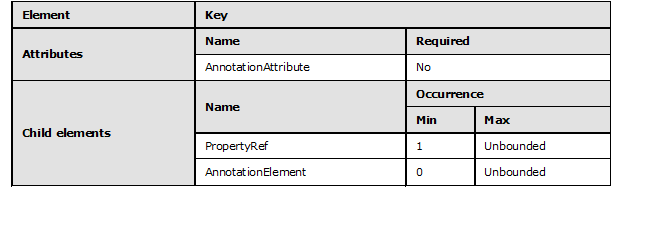
A **Key** element describes which **Property** elements form a key that can uniquely identify instances of an **EntityType**. Any set of non-nullable, immutable, scalar type declared properties can serve as the key.

The following is an example of the **Key** element.

1. <Key>
2. <PropertyRef Name="CustomerId" />
3. </Key>

The following rules apply to the **Key** element:

* **Key** can contain any number of **AnnotationAttribute** attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **Key** MUST have one or more [PropertyRef](#Section_6d3ed37e1d92417ebbed96433d932526) child elements.
* Each **PropertyRef** child element MUST name a [Property](#Section_50129087bb7f475ea14d7a8a4bdef966) of a type that is equality comparable.
* In CSDL 2.0 and CSDL 3.0, **Key** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.



All child elements MUST appear in the order indicated.

### PropertyRef

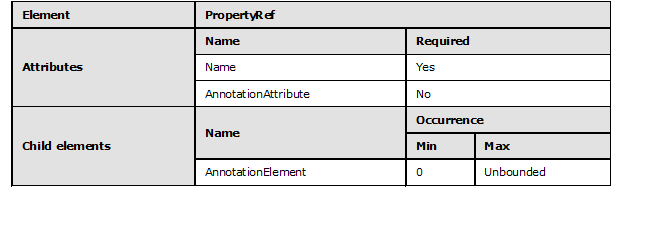
**PropertyRef** element refers to a declared property of an [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008).

The following is an example of **PropertyRef**.

1. <PropertyRef Name="CustomerId" />

The following rules apply to the **PropertyRef** element:

* **PropertyRef** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **PropertyRef** MUST define the **Name** attribute. The **Name** attribute refers to the name of a **Property** defined in the declaring **EntityType**.
* In CSDL 2.0 and CSDL 3.0, **PropertyRef** can contain any number of **AnnotationElement** elements.



All child elements MUST appear in the order indicated.

### ComplexType

A **ComplexType** element represents a set of related information. Like an [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) element, a **ComplexType** element consists of one or more properties of scalar type or complex type. However, unlike an **EntityType** element, a **ComplexType** element cannot have an [entity Key](#Section_e667c2a894e24874a5cfa74dbd4b3bcd) element or any [NavigationProperty](#Section_e83d21c47f0a4cc7ac38f2fbe15d3398) elements. **ComplexType** can be categorized as an EDM type.

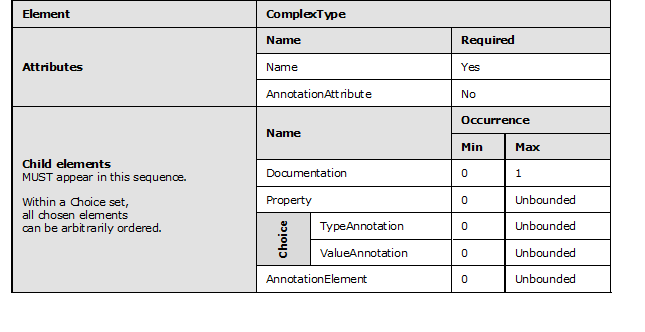
A **ComplexType** element provides a mechanism to create declared properties with a rich (structured) payload. Its definition includes its name and payload. The payload of a **ComplexType** is very similar to that of an **EntityType**.

The following is an example of the **ComplexType** element.

1. <ComplexType Name="CAddress">
2. <Documentation>
3. <Summary>This complextype describes the concept of an Address</Summary>
4. <LongDescription>This complextype describes the concept of an Address for use with Customer and other Entities</LongDescription>
5. </Documentation>
6. <Property Name="StreetAddress" Type="String">
7. <Documentation>
8. <LongDescription>StreetAddress contains the string describing the address of the street associated with an address</LongDescription>
9. </Documentation>
10. </Property>
11. <Property Name="City" Type="String" />
12. <Property Name="Region" Type="String" />
13. <Property Name="PostalCode" Type="String" />
14. </ComplexType>

The following rules apply to the **ComplexType** element:

* A **ComplexType** MUST have a **Name** attribute defined. **Name** attribute is of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6). **Name** attribute represents the name of this **ComplexType**.
* **ComplexType** is a schema level named element and MUST have a unique name.
* In CSDL 1.1, CSDL 1.2, CSDL 2.0, and CSDL 3.0, a **ComplexType** can derive from a **BaseType**. **BaseType** MUST be either the namespace qualified name or alias qualified name of another **ComplexType** that is in scope.
* A **ComplexType** MUST NOT introduce an inheritance cycle via the **BaseType** attribute.
* In CSDL 1.1, CSDL 1.2, CSDL 2.0, and CSDL 3.0, **ComplexType** can have its **Abstract** attribute set to true. By default, **Abstract** is false.
* A **ComplexType** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* A **ComplexType** element can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* A **ComplexType** can have any number of [Property](#Section_50129087bb7f475ea14d7a8a4bdef966) elements.
* In CSDL 1.1, CSDL 1.2, CSDL 2.0, and CSDL 3.0, the property names of a **ComplexType** MUST be uniquely named within the inheritance hierarchy for the **ComplexType**. **ComplexType** properties MUST NOT have the same name as their declaring **ComplexType** or any of its base types.
* **ComplexType** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* Child elements of **ComplexType** MUST appear in this sequence: **Documentation**, **Property**, **AnnotationElement**.
* In CSDL 3.0, **ComplexType** can contain any number of [TypeAnnotation](#Section_7a68e656848340978919e9dd1d2f6da1) elements.
* In CSDL 3.0, **ComplexType** can contain any number of [ValueAnnotation](#Section_07b06e266f1142d89ce0975a9070c800) elements.



All child elements MUST appear in the order indicated. For all child elements within a given choice, the child elements can be ordered arbitrarily.

### Association

An **Association** element defines a peer-to-peer relationship between participating [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) elements and can support different multiplicities at the two ends. [OnDelete](#Section_a4c15a20e3d44419a39164b28e77f68a) operational behavior can be specified at any end of the relationship. An association type can be categorized as an EDM type.

An example of an [**association**](#gt_3a629986-156f-48fa-ae7b-bb46b8f9dc61) is the relationship between the Customer and Order entities. Typically, this relationship has the following characteristics:

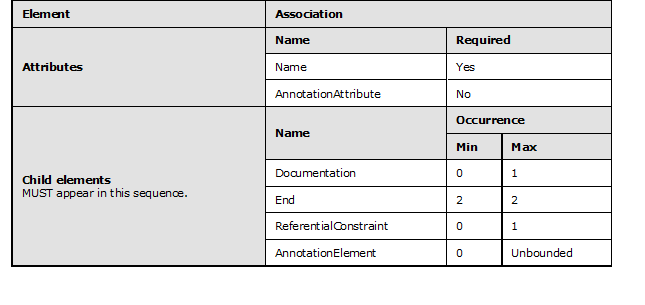
* Multiplicity: Each Order is associated with exactly one Customer. Every Customer has zero or more Orders.
* Operational behavior: **OnDelete** Cascade; when an Order with one or more OrderLines is deleted, the corresponding OrderLines also get deleted.

The following is an example of an **Association** element.

1. <Association Name="CustomerOrder">
2. <End Type="Model1.Customer" Role="Customer" Multiplicity="1" />
3. <End Type="Model1.Order" Role="Order" Multiplicity="\*" />
4. </Association>

The following rules apply to the **Association** element:

* **Association** MUST have a **Name** attribute defined. The **Name** attribute is of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6).
* An **Association** is a schema level named element and MUST have a unique name.
* **Association** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* An **Association** element can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **Association** MUST have exactly two [End](#Section_f5fec50d29304265945d965cd4db8153) elements defined.
* **Association** can have one [ReferentialConstraint](#Section_9ba221133a224fd880c87e0209c33d90) element defined.
* **Association** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* Child elements of **Association** MUST appear in this sequence: **Documentation**, **End**, **ReferentialConstraint**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

### Association End

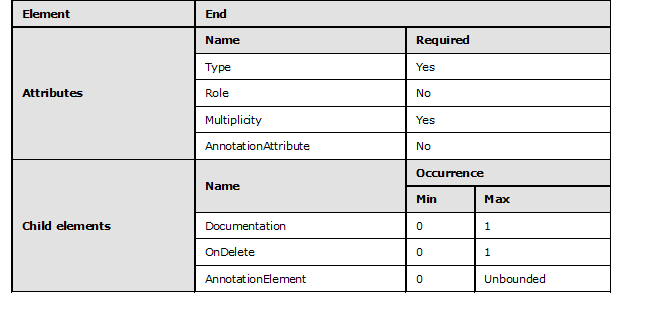
For a given **Association**, the **End** element defines one side of the relationship. **End** defines what type is participating in the relationship, multiplicity or the [**cardinality**](#gt_bad829a3-4350-4a42-b6e3-c4f0829a806f), and if there are any operation associations, like cascade delete.

The following is an example of an **End** element.

1. <End Type="Model1.Customer" Role="Customer" Multiplicity="1" />

The following rules apply to the **AssociationEnd** element:

* **End** MUST define the **EntityType** for this end of the relationship.
* **EntityType** MUST be either a namespace qualified name or an alias qualified name of an **EntityType** that is in scope.
* **End** MUST specify the **Multiplicity** of this end.
* **End** can specify the **Role** name.
* **End** can contain any number of **AnnotationAttribute** attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **End** can contain a maximum of one **Documentation** element.
* At most, one **OnDelete** operation can be defined on a given **End**.
* **End** can contain any number of **AnnotationElement** elements.
* Child elements of **End** MUST appear in this sequence: **Documentation**, **OnDelete**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

### OnDelete

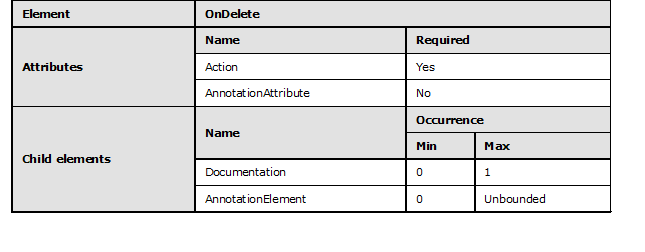
The **OnDelete** element is a trigger that is associated with a relationship. The action is performed on one end of the relationship when the state of the other side of the relationship changes.

The following is an example of the **OnDelete** element.

1. <Association Name="CProductCategory">
2. <End Type="Self.CProduct" Multiplicity="\*" />
3. <End Type="Self.CCategory" Multiplicity="0..1">
4. <OnDelete Action="Cascade" />
5. </End>
6. </Association>

The following rules apply to the **OnDelete** element:

* **OnDelete** MUST specify the action.
* **OnDelete** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* The **OnDelete** element can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **OnDelete** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* Child elements of **OnDelete** MUST appear in this sequence: **Documentation**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

### ReferentialConstraint

In Entity Data Model (EDM), a **ReferentialConstraint** element can exist between the key of one entity type and the primitive property or properties of an associated entity type. A referential constraint is a constraint on the keys contained in the association type. In CSDL 1.0, CSDL 1.1, and CSDL 1.2, the referential constraint can exist only between the key properties of associated entities.

The two entity types are in a [Principal](#Section_b40d83d8270e49ed96437aee8f08c6b5)-to-[Dependent](#Section_d88b1ca8fadf465baab06442d086e782) relationship, which can also be thought of as a type of parent-child relationship. When entities are related by an [Association](#Section_77d7ccbbbda8444aa160f4581172322f) that specifies a referential constraint between the keys of the two entities, the dependent (child) entity object cannot exist without a valid relationship to a principal (parent) entity object.

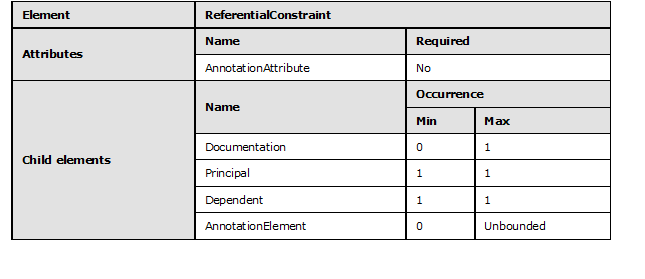
**ReferentialConstraint** MUST specify which end is the **PrincipalRole** and which end is the **DependentRole** for the referential constraint.

The following is an example of **ReferentialConstraint**.

1. <Association Name="FK\_Employee\_Employee\_ManagerID">
2. <End Role="Employee" Type="Adventureworks.Store.Employee" Multiplicity="1" />
3. <End Role="Manager" Type="Adventureworks.Store.Manager" Multiplicity="0..1" />
4. <ReferentialConstraint>
5. <Principal Role="Employee">
6. <PropertyRef Name="EmployeeID" />
7. </Principal>
8. <Dependent Role="Manager">
9. <PropertyRef Name="ManagerID" />
10. </Dependent>
11. </ReferentialConstraint>
12. </Association>

The following rules apply to the **ReferentialConstraint** element:

* **ReferentialConstraint** MUST define exactly one **Principal** end role element and exactly one **Dependent** end role element.
* **ReferentialConstraint** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* A **ReferentialConstraint** element can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **ReferentialConstraint** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* Child elements of **ReferentialConstraint** MUST appear in this sequence: **Documentation**, **Principal**, **Dependent**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

### ReferentialConstraint Role

When defining [ReferentialConstraint](#Section_9ba221133a224fd880c87e0209c33d90) elements, **Role** MUST be used to indicate which end of the association is the [Principal](#Section_b40d83d8270e49ed96437aee8f08c6b5) and which end of the relationship is the [Dependent](#Section_d88b1ca8fadf465baab06442d086e782). Thus, the **ReferentialConstraint** MUST contain two **Role** definitions: the **Principal** and the **Dependent**.

**ReferentialConstraintRole** usage MUST also conform to the ordering rules for the child elements of **ReferentialConstraint** as defined in ReferentialConstraint (section 2.1.11).

The following example of the **ReferentialConstraintRole** defines **Principal** and **Dependent** elements.

1. <ReferentialConstraint>
2. <Principal Role="Employee">
3. <PropertyRef Name="EmployeeID" />
4. </Principal>
5. <Dependent Role="Manager">
6. <PropertyRef Name="ManagerID" />
7. </Dependent>
8. </ReferentialConstraint>

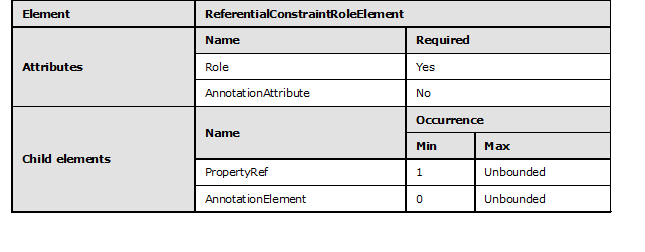
#### Principal

The following example shows the usage of the **PrincipalRole** element in defining a [ReferentialConstraint](#Section_9ba221133a224fd880c87e0209c33d90) element.

1. <Principal Role="Employee">
2. <PropertyRef Name="EmployeeID" />
3. </Principal>

The following rules apply to the **PrincipalRole** element:

* One **PrincipalRole** MUST be used to define the **Principal** end of the **ReferentialConstraint**.
* Each **PrincipalRole** MUST specify one and only one **Role** attribute. **Role** is of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6).
* **Principal** MUST have one or more [PropertyRef](#Section_6d3ed37e1d92417ebbed96433d932526) elements. Each **PropertyRef** element MUST specify a name by using the **Name** attribute.
* For each **Principal**, a **PropertyRef** definition MUST NOT have the same **Name** value specified as another **PropertyRef**.
* **PropertyRef** MUST be used to specify the properties that participate in the **PrincipalRole** of the **ReferentialConstraint**.
* Each **PropertyRef** element on the **Principal** MUST correspond to a **PropertyRef** on the [Dependent](#Section_d88b1ca8fadf465baab06442d086e782). The **Principal** and the **Dependent** of the **ReferentialConstraint** MUST contain the same number of **PropertyRef** elements. The **PropertyRef** elements on the **Dependent** MUST be listed in the same order as the corresponding **PropertyRef** elements on the **Principal**.
* The **Principal** of a **ReferentialConstraint** MUST specify all properties that constitute the **Key** of the **EntityType** that forms the **Principal** of the **ReferentialConstraint**.
* The **Multiplicity** of the **PrincipalRole** MUST be 1. For CSDL 2.0 and CSDL 3.0, the **Multiplicity** of the **PrincipalRole** can be 1 or 0.1.
* The data type of each property that is defined in the **PrincipalRole** MUST be the same as the data type of the corresponding property that is specified in the **DependentRole**.
* In CSDL 2.0 and CSDL 3.0, **Principal** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* Child elements of **Principal** MUST appear in this sequence: **PropertyRef**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

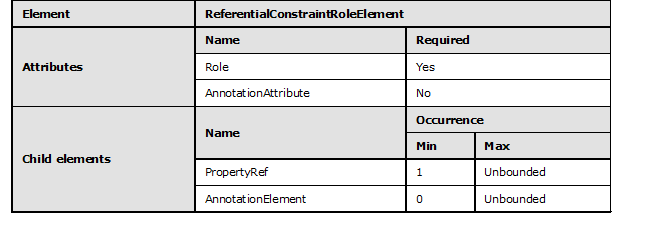
#### Dependent

The following example shows the usage of the **DependentRole** element in defining a [ReferentialConstraint](#Section_9ba221133a224fd880c87e0209c33d90).

1. <Dependent Role="Manager">
2. <PropertyRef Name="ManagerID" />
3. </Dependent>

The following rules apply to the **DependentRole** element:

* One **DependentRole** MUST be used to define the **Dependent** end of the **ReferentialConstraint**.
* Each **DependentRole** MUST specify one and only one **Role** attribute. **Role** is of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6).
* **Dependent** MUST have one or more [PropertyRef](#Section_6d3ed37e1d92417ebbed96433d932526) elements. Each **PropertyRef** element MUST specify a name by using the **Name** attribute.
* For each **Dependent**, a **PropertyRef** definition MUST NOT have the same **Name** value specified as another **PropertyRef**.
* **PropertyRef** MUST be used to specify the properties that participate in the **DependentRole** of the **ReferentialConstraint**.
* Each **PropertyRef** element on the **Principal** MUST correspond to a **PropertyRef** on the **Dependent**. The **Principal** and the **Dependent** of the **ReferentialConstraint** MUST contain the same number of **PropertyRef** elements. The **PropertyRef** elements on the **Dependent** MUST be listed in the same order as the corresponding **PropertyRef** elements on the Principal.
* The data type of each property that is defined in the [Principal](#Section_b40d83d8270e49ed96437aee8f08c6b5) **Role** MUST be the same as the data type of the corresponding property specified in the **DependentRole**.
* In CSDL 2.0 and CSDL 3.0, **Dependent** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* Child elements of **Dependent** MUST appear in this sequence: **PropertyRef**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

### Using

**Using** imports the contents of the specified namespace. A schema can refer to contents of another schema or namespace by importing it by using the **Using** clause. The imported namespace can be associated with an [**alias**](#gt_d046b6e2-3f79-47e1-87d7-754566744dcd) that is then used to refer to its types, or the types can be directly used by specifying its fully qualified name.

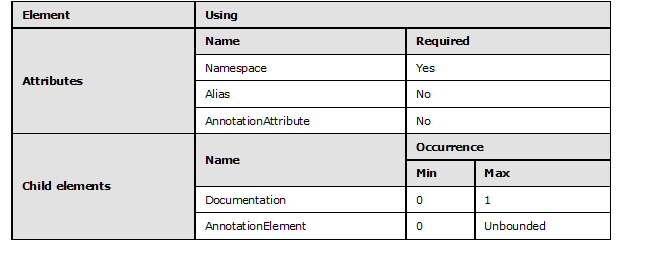
**Note**  Semantically, **Using** is closer to a merge. Unfortunately, the name does not reflect this. If it was truly "using", structures in the schema being used would be unaffected. However, because a dependent schema can derive an **EntityType** from an **EntityType** that is declared in the original schema, this has the potential side-effect of changing what might be found in **EntitySet** elements declared in the schema being used.

The following is an example of the **Using** element.

1. <Using Namespace="Microsoft.Samples.Northwind.Types"
2. Alias="Types" />

The following rules apply to the **Using** element:

* **Using** MUST have a **Namespace** attribute defined. **Namespace** is of type [QualifiedName](#Section_b70588effb4b4233a3336a9f10aee16b).
* **Using** MUST have an **Alias** attribute defined. **Alias** is of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6). The alias can be used as shorthand for referring to the **Namespace** linked to that alias via the **Using** element.
* **Using** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **Using** can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **Using** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* If a **Documentation** element is defined, it MUST come before any **AnnotationElement** elements.



All child elements MUST appear in the order indicated.

### EntityContainer

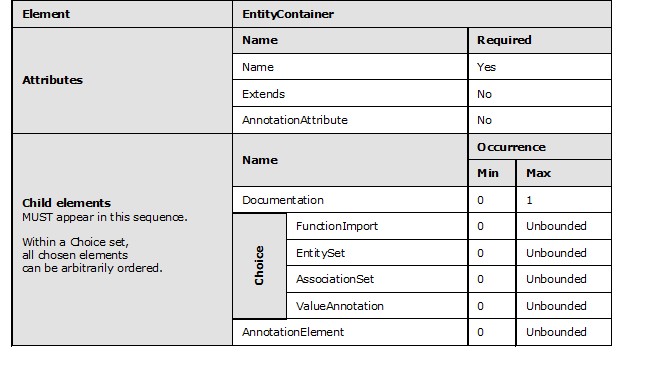
**EntityContainer** is conceptually similar to a database or data source. It groups [EntitySet](#Section_4a09a48c1da34d8487b42b6c46731470), [AssociationSet](#Section_84fdfd027b124aa3a2eb51bab109f439), and [FunctionImport](#Section_d867e86a69054d059145d677b11f8c39) child elements that represent a data source.

The following is an example of the **EntityContainer** element.

1. <EntityContainer Name="Model1Container" >
2. <EntitySet Name="CustomerSet" EntityType="Model1.Customer" />
3. <EntitySet Name="OrderSet" EntityType="Model1.Order" />
4. <AssociationSet Name="CustomerOrder" Association="Model1.CustomerOrder">
5. <End Role="Customer" EntitySet="CustomerSet" />
6. <End Role="Order" EntitySet="OrderSet" />
7. </AssociationSet>
8. </EntityContainer>

The following rules apply to the **EntityContainer** element:

* **EntityContainer** MUST have a **Name** attribute defined. The **Name** attribute is of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6).
* **EntityContainer** can define an **Extends** attribute, which MUST, if present, refer to another **EntityContainer** in scope by name.
* **EntityContainer** elements that extend another **EntityContainer** inherit all of the extended **EntitySet**, **AssociationSet**, and **FunctionImport** child elements from that **EntityContainer**.
* **EntityContainer** can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **EntityContainer** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **EntityContainer** can contain any number of **FunctionImport**, **EntitySet**, and **AssociationSet** elements, which can be defined in any order.
* **FunctionImport**, **EntitySet**, and **AssociationSet** names within an **EntityContainer** MUST NOT collide.
* If present, the **Documentation** child element MUST precede **FunctionImport**, **EntitySet**, and **AssociationSet** child elements.
* In CSDL 2.0 and CSDL 3.0, **EntityContainer** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* In CSDL 3.0, **EntityContainer** can contain any number of **ValueAnnotation** elements.
* In the sequence of child elements under **EntityContainer**, **AnnotationElement** MUST follow all other elements.



All child elements MUST appear in the order indicated. For all child elements within a given choice, the child elements can be ordered arbitrarily.

### FunctionImport

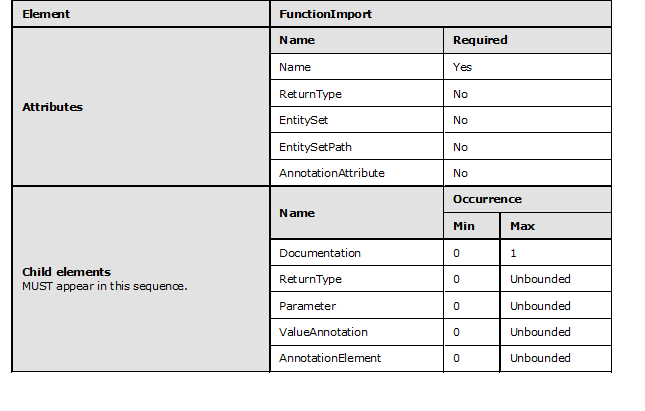
**FunctionImport** element is used to import stored procedures or functions that are defined in the Store Schema Model into Entity Data Model (EDM).

The following is an example of the **FunctionImport** element.

1. <FunctionImport Name="annualCustomerSales" EntitySet="result\_annualCustomerSalesSet" ReturnType="Collection(Self.result\_annualCustomerSales)">
2. <Parameter Name="fiscalyear" Mode="In" Type="String" />
3. </FunctionImport>

The following rules apply to the **FunctionImport** element:

* **FunctionImport** MUST have a **Name** attribute defined. **Name** attribute is of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6).
* **FunctionImport** can define a **ReturnType** as an attribute.
* In CSDL 3.0, the **ReturnType** can be defined as either an attribute or a child element, but not both.
* If defined, the type of **ReturnType** MUST be a scalar type, [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008), or [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09) that is in scope or a [**collection**](#gt_8f0a5e5b-e1b8-409f-936e-8edf43d9f7db) of one of these in-scope types. (In CSDL 1.0, the **ReturnType** MUST be a collection of either scalar type or **EntityType**.)
* Types that are in scope for a **FunctionImport** include all scalar types, **EntityTypes**, and **ComplexTypes** that are defined in the declaring **SchemaNamespace** or in schemas that are in scope of the declaring **Schema**.
* If the return type of **FunctionImport** is a collection of entities, the **EntitySet** attribute MUST be defined.
* If the return type of **FunctionImport** is of **ComplexType** or scalar type, the [EntitySet](#Section_4a09a48c1da34d8487b42b6c46731470) attribute MUST NOT be defined.
* **FunctionImport** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* The **FunctionImport** element can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **FunctionImport** can have zero or more [Parameter](#Section_2d7f0f3e133343098194a0148a9c946c) elements.
* **Parameter** element names inside a **FunctionImport** MUST NOT collide.
* **FunctionImport** can have an **IsSideEffecting** attribute defined. Possible values are "true" and "false". If the **IsSideEffecting** attribute is omitted, the value of the **IsSideEffecting** attribute defaults to "true".
* **FunctionImport** can have an **IsBindable** attribute defined. Possible values are "true" and "false". If the **IsBindable** attribute is omitted, the value of the **IsBindable** attribute MUST be assumed to be "false".
* **FunctionImport** with **IsBindable** set to "true" MUST have at least one **Parameter** element defined.
* **FunctionImport** can have an **IsComposable** attribute defined. Possible values are "true" and "false". If the **IsComposable** attribute is omitted, the value of the **IsComposable** attribute MUST be assumed to be "false".
* **FunctionImport** MUST NOT have **IsComposable** set to "true" if **IsSideEffecting** is set to "true".
* In CSDL 2.0 and CSDL 3.0, **FunctionImport** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* In CSDL 3.0, **FunctionImport** can have an **EntitySetPath** attribute defined. **EntitySetPath** defines the **EntitySet** that contains the entities that are returned by the **FunctionImport** when that **EntitySet** is dependent on one of the **FunctionImport** parameters. For example, the entities returned from a **FunctionImport** can be dependent on the entity set that is passed to the **FunctionImport** as a parameter. In this case, a static **EntitySet** is not sufficient, and an **EntitySetPath** MUST be used. **EntitySetPath** is composed of segments that are separated by a forward slash. The first segment MUST refer to a **FunctionImport** parameter. Each remaining segment MUST represent either navigation, in which case the segment is a **SimpleIdentifier**, or a type cast, in which case the segment is a **QualifiedName**.
* In CSDL 3.0, **FunctionImport** can contain any number of [ValueAnnotation](#Section_07b06e266f1142d89ce0975a9070c800) elements.
* Child elements of **FunctionImport** MUST appear in this sequence: **Documentation** (if present), **ReturnType**, **Parameter**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

### FunctionImport ReturnType

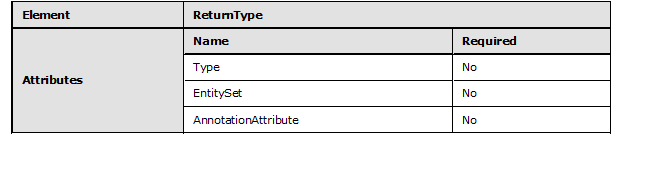
A **ReturnType** describes the shape of data that is returned from a [FunctionImport](#Section_d867e86a69054d059145d677b11f8c39) element. **ReturnType** is used to map to stored procedures with multiple result sets. In CSDL 3.0, the return type of a function import can be declared as a child element.

The following is an example of the **ReturnType** element.

1. <FunctionImport Name="GetOrdersAndProducts"> <ReturnType Type="Collection(Self.Order)" EntitySet="Orders"/> <ReturnType Type="Collection(Self.Product)" EntitySet="Products"/></FunctionImport>

The following rules apply to the **FunctionImport ReturnType** element:

* **ReturnType** can define type declarations as an attribute.
* If defined, the **Type** of **FunctionImport ReturnType** MUST be an [EDMSimpleType](#Section_4e965e03d9ee40b6ab34cd06a576aeb2), [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008), or [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09) that is in scope or a collection of one of these in scope types. (In CSDL 1.0, the **ReturnType** MUST be a collection of either **EDMSimpleType** or **EntityType**).
* **ReturnType** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* The order of the **ReturnType** elements MUST match that of the underlying stored procedure.



### FunctionImport Parameter

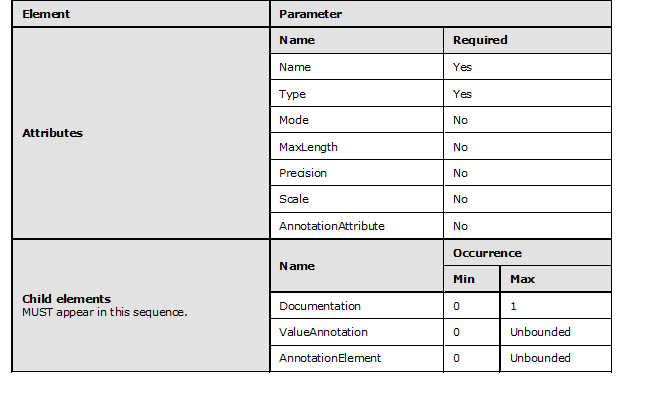
Functions that are defined in conceptual schema definition language (CSDL) optionally accept both in and out **Parameter** elements. Each **Parameter** element MUST have an associated **Name** and **Type** defined.

The following is an example of **FunctionImport Parameter** element.

1. <FunctionImport Name="GetScalar" ReturnType="Collection(String)">
2. <Parameter Name="count" Type="Int32" Mode="Out" />
3. <ValueFunctionImport Anything="bogus1" xmlns="FunctionImportAnnotation"/>
4. </FunctionImport>

The following rules apply to the **FunctionImport Parameter** element:

* **Parameter** MUST have a **Name** defined.
* The **Type** of the **Parameter** MUST be defined. **Type** MUST be a scalar type, a [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09), an [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008), a collection of scalar type, a collection of **ComplexType**, or a collection of **EntityType**.
* **Parameter** can define the **Mode** of the parameter. Possible values are "In", "Out", and "InOut".
* For a given **Parameter**, a [MaxLength](#Section_746bed68a6f747e8a2a78a9fb158e50a) value can be specified.
* [Precision](#Section_ded7c22199a64973b84d6b9645fa1cdc) can be specified for a given **Parameter**.
* [Scale](#Section_ffd73b8e03fa46e0b1790a74fa04b447) can be specified for a given **Parameter**.
* **Parameter** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **Parameter** can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **Parameter** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* In CSDL 3.0, **Parameter** can contain any number of [ValueAnnotation](#Section_07b06e266f1142d89ce0975a9070c800) elements.
* Child elements of **Parameter** MUST appear in this sequence: **Documentation**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

### EntitySet

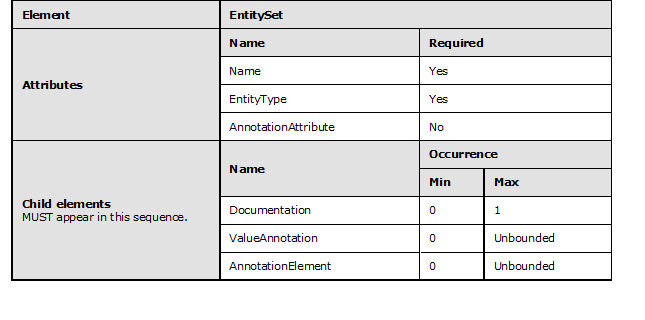
An **EntitySet** element is a named set that can contain instances of a specified [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) element and any of the specified **EntityType** subtypes. More than one **EntitySet** for a particular **EntityType** can be defined.

The following is an example of the **EntitySet** element.

1. <EntitySet Name="CustomerSet" EntityType="Model1.Customer" />

The following rules apply to the **EntitySet** element:

* **EntitySet** MUST have a **Name** attribute defined. **Name** attribute is of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6).
* **EntitySet** MUST have an **EntityType** defined.
* The **EntityType** of an **EntitySet** MUST be in scope of the [Schema](#Section_f7d957653b644c77b1449d28862b0403) that declares the [EntityContainer](#Section_031f2e18935b461b95ce62e11432047a) in which this **EntitySet** resides.
* **EntitySet** can have an abstract **EntityType**. An **EntitySet** for a given **EntityType** can contain instances of that **EntityType** and any of its subtypes.
* Multiple **EntitySet** elements can be defined for a given **EntityType**.
* **EntitySet** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **EntitySet** elements can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **EntitySet** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* In CSDL 3.0, **EntitySet** can contain any number of [ValueAnnotation](#Section_07b06e266f1142d89ce0975a9070c800) elements.
* Child elements of **EntitySet** MUST appear in this sequence: **Documentation**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

### AssociationSet

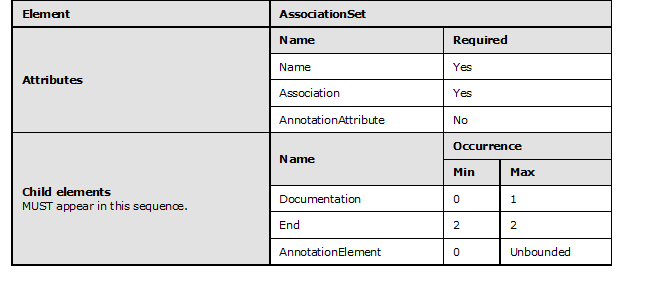
An **AssociationSet** contains relationship instances of the specified association. The association specifies the [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) elements of the two end points, whereas **AssociationSet** specifies the [EntitySet](#Section_4a09a48c1da34d8487b42b6c46731470) element that corresponds to either these **EntityType** elements directly or to derived **EntityType** elements. The association instances that are contained in the **AssociationSet** relate entity instances that belong to these **EntityType** elements.

The following is an example of the **AssociationSet**.

1. <AssociationSet Name="CustomerOrder" Association="Model1.CustomerOrder">
2. <End Role="Customer" EntitySet="CustomerSet" />
3. <End Role="Order" EntitySet="OrderSet" />
4. </AssociationSet>

The following rules apply to the **AssociationSet** element:

* **AssociationSet** MUST have a **Name** attribute defined. **Name** attributes are of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6).
* **AssociationSet** MUST have an **Association** attribute defined. The **Association** attribute should specify a namespace qualified name or an alias qualified name of the **Association** that the **AssociationSet** is being defined for.
* The **Association** of an **AssociationSet** MUST be in scope of the [Schema](#Section_f7d957653b644c77b1449d28862b0403) that declares the [EntityContainer](#Section_031f2e18935b461b95ce62e11432047a) in which this **AssociationSet** resides.
* **AssociationSet** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* An **AssociationSet** element can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **AssociationSet** MUST have exactly two [End](#Section_3c3578f79de94e7b9a852ed690bab9e7) child elements defined.
* **AssociationSet** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) child elements.
* Child elements of **AssociationSet** MUST appear in this sequence: **Documentation**, **End**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

### AssociationSet End

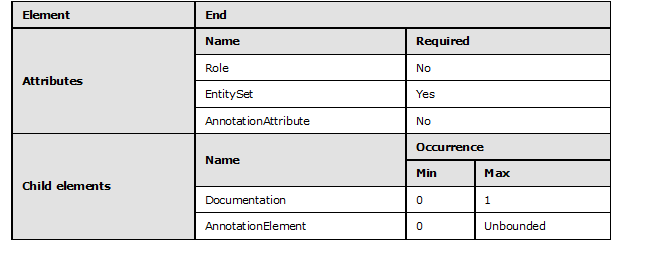
The **End** element defines the two sides of the [AssociationSet](#Section_84fdfd027b124aa3a2eb51bab109f439) element. This association is defined between the two **EntitySets** declared in an [EntitySet](#Section_4a09a48c1da34d8487b42b6c46731470) attribute.

The following is an example of the **End** element.

1. <End Role="Customer" EntitySet="CustomerSet" />

The following rules apply to **End** elements inside an **AssociationSet**:

* **End** element can have the **Role** attribute specified. All **End** elements MUST have the **EntitySet** attribute specified.
* The **EntitySet** MUST be the **Name** of an **EntitySet** defined inside the same **EntityContainer**.
* The **End** element's **Role** MUST map to a **Role** declared on one of the **Ends** of the **Assocation** referenced by the **End** element's declaring AssociationSet.
* Each **End** that is declared by an **AssociationSet** MUST refer to a different **Role**.
* The [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) for a particular **AssociationSetEnd** MUST be the same as or derived from the **EntityType** that is contained by the related **EntitySet**. An **End** element can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **End** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* The child elements of **End** MUST appear in this sequence: **Documentation**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

### Documentation

The **Documentation** element is used to provide documentation of comments on the contents of the conceptual schema definition language (CSDL) file.

The following is an example of the **Documentation** element on the [EntityContainer](#Section_031f2e18935b461b95ce62e11432047a) element.

1. <EntityContainer Name="TwoThreeContainer">
2. <Documentation>
3. <Summary>Summary: Entity Container for storing Northwind instances</Summary>
4. <LongDescription>LongDescription: This Entity Container is for storing Northwind instances</LongDescription>
5. </Documentation>
6. <EntitySet Name="Products" EntityType="Self.Product" />
7. </EntityContainer>

The following is an example of the **Documentation** element on the [EntitySet](#Section_4a09a48c1da34d8487b42b6c46731470) element.

1. <EntitySet Name="Products" EntityType="Self.Product">
2. <Documentation>
3. <Summary>EntitySet Products is for storing instances of EntityType Product</Summary>
4. <LongDescription>This EntitySet having name Products is for storing instances of EntityType Product</LongDescription>
5. </Documentation>
6. </EntitySet>

The following is an example of the **Documentation** element on the [AssociationSet](#Section_84fdfd027b124aa3a2eb51bab109f439) element and **End** role.

1. <AssociationSet Name="CategoryProducts" Association="Self.CategoryProduct">
2. <Documentation>
3. <Summary>AssociationSet CategoryProducts is for storing instances of Association CategoryProduct</Summary>
4. <LongDescription>This AssociationSet having name=CategoryProducts is for storing instances of Association CategoryProduct</LongDescription>
5. </Documentation>
6. <End Role="Category" EntitySet="Categories">
7. <Documentation>
8. <Summary>This end of the relationship-instance describes the Category role for AssociationSet CategoryProducts</Summary>
9. </Documentation>
10. </End>
11. <End Role="Product" EntitySet="Products">
12. <Documentation>
13. <LongDescription>This end of the relationship-instance describes the Product role for AssociationSet CategoryProducts</LongDescription>
14. </Documentation>
15. </End>
16. </AssociationSet>

The following is an example of the **Documentation** element on the [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) element, [Property](#Section_50129087bb7f475ea14d7a8a4bdef966) element, and [NavigationProperty](#Section_e83d21c47f0a4cc7ac38f2fbe15d3398) element.

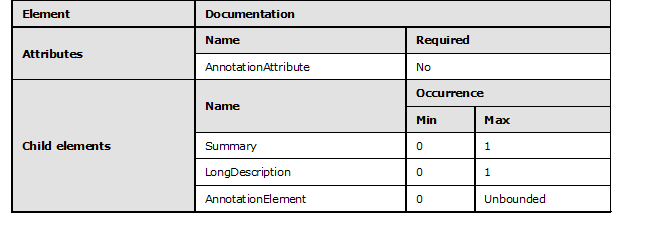
1. <EntityType Name="Product">
2. <Documentation>
3. <Summary>Summary: EntityType named Product describes the content model for Product</Summary>
4. <LongDescription>LongDescription: The EntityType named Product describes the content model for Product</LongDescription>
5. </Documentation>
6. <Key>
7. <PropertyRef Name="ProductID" />
8. </Key>
9. <Property Name="ProductID" Type="Int32" Nullable="false">
10. <Documentation>
11. <Summary>Summary: This is the key property of EntityType Product</Summary>
12. <LongDescription>LongDescription: This is the key property of EntityType Product</LongDescription>
13. </Documentation>
14. </Property>
15. <Property Name="ProductName" Type="String">
16. <Documentation>
17. <Summary>Summary: This property describes the name of the Product</Summary>
18. </Documentation>
19. </Property>
20. <Property Name="QuantityPerUnit" Type="String">
21. <Documentation>
22. <LongDescription>LongDescription: This property describes the quantity per unit corresponding to a product</LongDescription>
23. </Documentation>
24. </Property>
25. <Property Name="PriceInfo" Nullable="false" Type="Self.PriceInfo" />
26. <Property Name="StockInfo" Nullable="false" Type="Self.StockInfo" />
27. <NavigationProperty Name="Category" Relationship="Self.CategoryProduct" FromRole="Product" ToRole="Category">
28. <Documentation>
29. <Summary>This navigation property allows for traversing to Product-instances associated with a Category-instance</Summary>
30. <LongDescription> </LongDescription>
31. </Documentation>
32. </NavigationProperty>
33. </EntityType>

The following is an example of the **Documentation** element on the [Association](#Section_77d7ccbbbda8444aa160f4581172322f) element.

1. <Association Name="CategoryProduct">
2. <Documentation>
3. <Summary>Association CategoryProduct describes the participating end of the CategoryProduct relationship</Summary>
4. </Documentation>
5. <End Role="Category" Type="Self.Category" Multiplicity="1">
6. <Documentation>
7. <Summary>This end of the relationship-instance describes the Category role for Association CategoryProduct</Summary>
8. </Documentation>
9. </End>
10. <End Role="Product" Type="Self.Product" Multiplicity="\*">
11. <Documentation>
12. <LongDescription>This end of the relationship-instance describes the Product role for Association CategoryProduct</LongDescription>
13. </Documentation>
14. </End>
15. </Association>

The following rules apply to the **Documentation** element:

* **Documentation** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **Documentation** can specify a summary of the document inside a **Summary** element.
* **Documentation** can specify a description of the documentation inside a **LongDescription** element.
* The child elements of **Documentation** MUST appear in this sequence: **Summary**, **LongDescription**, **AnnotationElement**.



All child elements MUST appear in the order indicated.

### AnnotationElement

An **AnnotationElement** is a custom XML element that is applied to a conceptual schema definition language (CSDL) element. The **AnnotationElement** element and its child elements can belong to any XML namespace that is not in the list of reserved XML namespaces for CSDL. Consult the section for each CSDL element within this document to determine whether an **AnnotationElement** can be used for that element.

The following is an example of the **AnnotationElement** element.

1. <EntityType Name="Content">
2. <Key>
3. <PropertyRef Name="ID" />
4. </Key>
5. <Property Name="ID" Type="Guid" Nullable="false" />
6. <Property Name="HTML" Type="String" Nullable="false" MaxLength="Max" Unicode="true"
7. FixedLength="false" />
8. <CLR:Attributes>
9. <CLR:Attribute TypeName="System.Runtime.Serialization.DataContract"/>
10. <CLR:Attribute TypeName="MyNamespace.MyAttribute"/>
11. </CLR:Attributes>
12. <RS:Security>
13. <RS:ACE Principal="S-0-123-1321" Rights="+R+W"/>
14. <RS:ACE Principal="S-0-123-2321" Rights="-R-W"/>
15. </RS:Security>
16. </EntityType>

The following rules apply to the **AnnotationElement** element:

* The namespace used in annotations MUST be declared or the namespace declaration MUST be in-lined with the annotation.
* Annotations MUST follow all other child elements. For example, when annotating an [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) element, the **AnnotationElement** element should follow all entity [Key](#Section_e667c2a894e24874a5cfa74dbd4b3bcd), [Property](#Section_50129087bb7f475ea14d7a8a4bdef966), and [NavigationProperty](#Section_e83d21c47f0a4cc7ac38f2fbe15d3398) elements.
* More than one named annotation can be defined per CSDL element.
* For a given CSDL element, annotation element names can collide, as long as the combination of namespace plus element name is unique for a particular element.
* Annotation is an XML element. It MUST contain a valid XML structure.

### Model Function

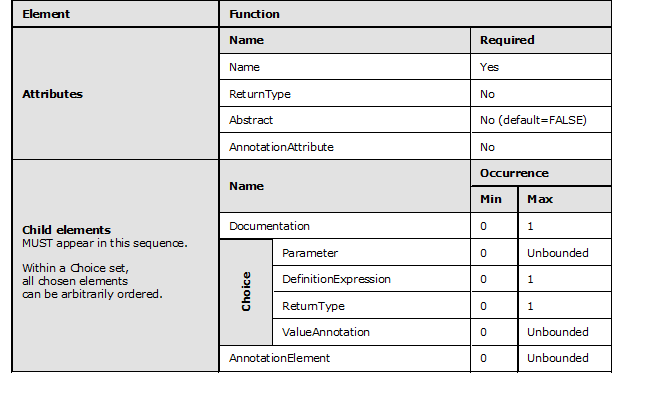
A **Function** element is used to define or declare a user function. These functions are defined as child elements of the [Schema](#Section_f7d957653b644c77b1449d28862b0403) element.

The following is an example of the **Function** element.

1. <Function Name="GetAge" ReturnType="Edm.Int32">
2. <Parameter Name="Person" Type="Model.Person" />
3. <DefiningExpression>
4. Edm.DiffYears(Edm.CurrentDateTime(), Person.Birthday)
5. </DefiningExpression>
6. </Function>

The following rules apply to the **Function** element:

* The **Function** MUST have a **Name** attribute defined. The **Name** attribute is of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6). The **Name** attribute represents the name of this **Function**.
* The **Function** MUST define a return type as an attribute or as a child element.
* The **Function** MUST NOT contain both an attribute and a child element defining the return type.
* If defined, the type of **FunctionReturnType** MUST be:
  + A scalar type, [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008), or [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09) that is in scope.
  + A collection of one of these scalar, **EntityType**, or **ComplexType** in-scope types.
  + A [RowType](#Section_f024e8bab79f444fa93214c8284e505b) element or a collection of **RowType** elements that is defined as a child element of **ReturnType**.
  + A [ReferenceType](#Section_31d87a88430d4e9899346d36ad6a6d6f) element or a collection of **ReferenceType** elements that is defined as a child element of **ReturnType**.
* A single **DefiningExpression** element can be defined for a given **Function**. A **DefiningExpression** is any expression that is intended to be the body of the function. The conceptual schema definition language (CSDL) file format does not specify rules and restrictions regarding what language is to be used for specifying function bodies.
* All *Functionparameters* MUST be inbound.
* **Function** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* Functions are declared as global items inside the **Schema** element.
* **Function** can contain a maximum of one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* The function parameters and return type MUST be of the following types:
  + A scalar type or a collection of scalar types.
  + An entity type or a collection of entity types.
  + A complex type or a collection of complex types.
  + A row type or a collection of row types.
  + A reference type or a collection of reference types.
* **Function** can contain any number of [Parameter](#Section_eeb3339fb68242c0bc19bb6ec448acf7) elements.
* **Function** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* In CSDL 3.0, **Function** can contain any number of [ValueAnnotation](#Section_07b06e266f1142d89ce0975a9070c800) elements.
* **Parameter**, **DefiningExpression**, and **ReturnType** can appear in any order.
* **AnnotationElement** MUST be the last in the sequence of elements of a **Function**.



All child elements MUST appear in the order indicated. For all child elements within a given choice, the child elements can be ordered arbitrarily.

### Model Function Parameter

**Function** elements in conceptual schema definition language (CSDL) only support inbound parameters. CSDL does not allow setting the **FunctionParameter** mode. It is always set to Mode="In".

The type of a **Parameter** can be declared either as an attribute or as a child element.

The following is an example of the type of a **Parameter** declared as an attribute.

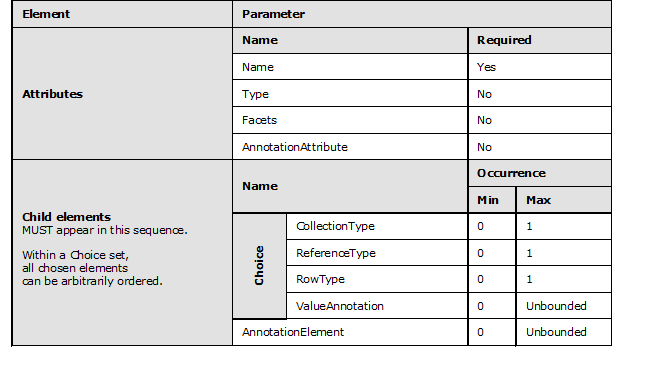
1. <Parameter Name="Age" Type="Edm.Int32"/>

The following is an example of the type of a **Parameter** declared as a child element.

1. <Parameter Name="Owner">
2. <TypeRef Name="Model.Person" />
3. </Parameter>

The following rules apply to the **Parameter** element:

* **Parameter** MUST have a **Name** attribute defined. A **Name** attribute is of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6) and represents the name of this **Parameter**.
* **Parameter** MUST define the type either as an attribute or as a child element.
* **Parameter** can define facets if the type is a scalar type.
* **Parameter** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* A function parameter MUST be one of the following types:
  + A scalar type or a collection of scalar types.
  + An entity type or collection of entity types.
  + A complex type or collection of complex types.
  + A row type or collection of row types.
  + A reference type or collection of reference types.
* **Parameter** can contain a maximum of one [CollectionType](#Section_989fd3db92ae4d339ed21d0037eef219) element.
* **Parameter** can contain a maximum of one [ReferenceType](#Section_31d87a88430d4e9899346d36ad6a6d6f) element.
* **Parameter** can contain a maximum of one [RowType](#Section_f024e8bab79f444fa93214c8284e505b) element.
* **Parameter** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* In CSDL 3.0, **Parameter** can contain any number of [ValueAnnotation](#Section_07b06e266f1142d89ce0975a9070c800) elements.
* **AnnotationElement** elements MUST be last in the sequence of child elements of a **Parameter**.



All child elements MUST appear in the order indicated. For all child elements within a given choice, the child elements can be ordered arbitrarily.

### CollectionType

If the type of the **FunctionParameter** or **ReturnType** is a collection, the type can be expressed as an attribute or by using child element syntax.

The following is an example of the type expressed as an attribute.

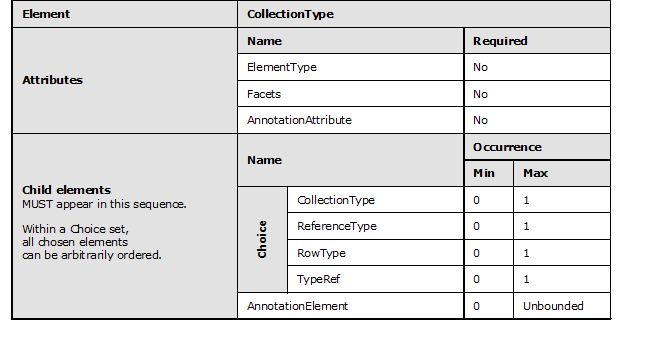
1. <Parameter Name="Owners" Type="Collection(Model.Person)" />

The following is an example of the type expressed by using child element syntax.

1. <Parameter Name="Owners">
2. <CollectionType>
3. <TypeRef Name="Model.Person" />
4. </CollectionType>
5. </Parameter>

The following rules apply to the **CollectionType** element:

* **CollectionType** MUST define the type either as an attribute or as a child element.
* Attribute syntax MUST only be used if the collection is a [**nominal type**](#gt_4216497a-4a62-48d5-8513-e974cf8a885d).
* **CollectionType** can define facets if the type is a scalar type. The **Default** facet MUST NOT be applied to a **CollectionType**.
* **CollectionType** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **CollectionType** can define one of the following as a child element:
  + **CollectionType**
  + [ReferenceType](#Section_31d87a88430d4e9899346d36ad6a6d6f)
  + [RowType](#Section_f024e8bab79f444fa93214c8284e505b)
  + [TypeRef](#Section_305f358f05934a8a9ce8bfcac303f96e)
* **CollectionType** elements can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* **AnnotationElement** MUST be last in the sequence of child elements of **CollectionType**.



All child elements MUST appear in the order indicated. For all child elements within a given choice, the child elements can be ordered arbitrarily.

### TypeRef

The **TypeRef** element is used to reference an existing named type.

The following is an example of a **TypeRef** element with the **Name** attribute specified.

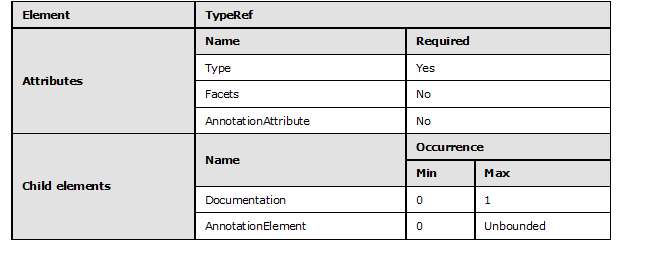
1. <TypeRef Type="Model.Person" />

The following is an example of a **TypeRef** with facets specified.

1. <TypeRef Type="Edm.String" Nullable="true" MaxLength="50"/>

The following rules apply to the **TypeRef** element:

* **TypeRef** MUST have a **Type** attribute defined. The **Type** attribute defines the fully qualified name of the referenced type.
* **TypeRef** MUST be used to reference an existing named type. Named types include:
  + [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008)
  + [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09)
  + Primitive type
  + [EnumType](#Section_2ed5ab29aef241b698f21a011d9a68db)
* **TypeRef** can define facets if the type is a scalar type. The **Default** facet MUST NOT be applied to a **TypeRef**.
* **TypeRef** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **TypeRef** elements can contain at most one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **TypeRef** elements can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* **AnnotationElement** MUST be last in the sequence of child elements of **TypeRef**.



All child elements MUST appear in the order indicated.

### ReferenceType

**ReferenceType** is used to specify the reference to an actual entity either in the return type or in a parameter definition. The reference type can be specified as an attribute or by using child element syntax.

The following is an example of the **ReferenceType** in a return type.

1. <ReferenceType Type="Model.Person" />

The following is an example of the **ReferenceType** in a parameter definition.

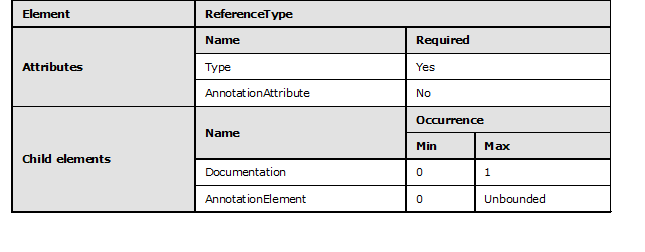
1. <ReturnType>
2. <CollectionType>
3. <ReferenceType Type="Model.Person" />
4. </CollectionType>
5. </ReturnType>

The following is an example of the **ReferenceType** as an attribute.

1. <ReturnType Type="Ref(Model.Person)" />

The following rules apply to the **ReferenceType** element:

* The **Type** attribute on a **ReferenceType** element MUST always be defined.
* The **Type** of the reference MUST always be of [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008).
* **ReferenceType** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **ReferenceType** elements can contain at most one [Documentation](#Section_de1f825b37b34c46990516678abedcd2) element.
* **ReferenceType** elements can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* **AnnotationElement** MUST be last in the sequence of child elements of **ReferenceType**.



All child elements MUST appear in the order indicated.

### RowType

A **RowType** is an unnamed structure. **RowType** is always declared inline.

The following is an example of a **RowType** in a parameter.

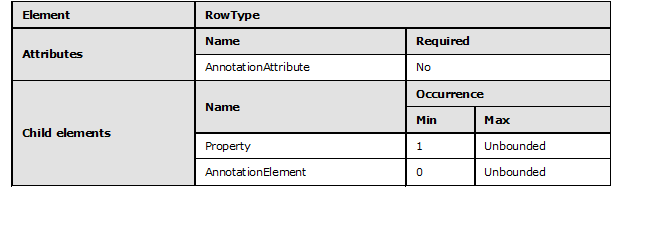
1. <Parameter Name="Coordinate" Mode="In">
2. <RowType>
3. <Property Name="X" Type="int" Nullable="false"/>
4. <Property Name="Y" Type="int" Nullable="false"/>
5. <Property Name="Z" Type="int" Nullable="false"/>
6. </RowType>
7. </Parameter>

The following is an example of a **RowType** defined in a return type.

1. <ReturnType>
2. <CollectionType>
3. <RowType>
4. <Property Name="X" Type="int" Nullable="false"/>
5. <Property Name="Y" Type="int" Nullable="false"/>
6. <Property Name="Z" Type="int" Nullable="false"/>
7. </RowType>
8. </CollectionType>
9. </ReturnType>

The following rules apply to the **RowType** element:

* **RowType** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **RowType** MUST contain at least one [Property](#Section_50129087bb7f475ea14d7a8a4bdef966) element.
* **RowType** can contain more than one **Property** element.
* **RowType** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* AnnotationElement elements MUST be last in the sequence of child elements of RowType.



All child elements MUST appear in the order indicated.

### RowType Property

One or more **Property** elements are used to describe the structure of a [RowType](#Section_f024e8bab79f444fa93214c8284e505b) element.

The following is an example of a **RowType** element with two **Property** elements.

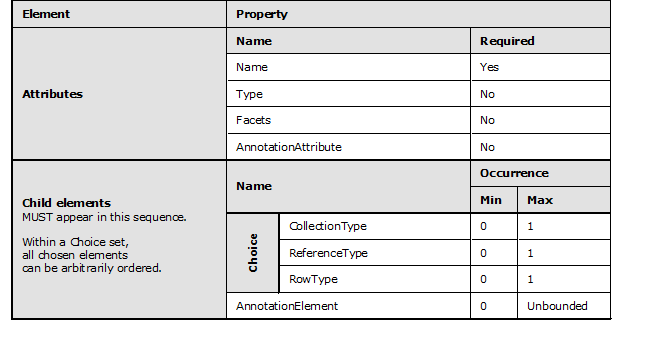
1. <ReturnType>
2. <CollectionType>
3. <RowType>
4. <Property Name="C" Type="Customer"/>
5. <Property Name="Orders" Type="Collection(Order)"/>
6. </RowType>
7. </CollectionType>
8. </ReturnType>

The following is an example of a collection of **RowType** elements that contains a collection of **RowType** elements.

1. <ReturnType>
2. <CollectionType>
3. <RowType>
4. <Property Name="Customer" Type="Customer"/>
5. <Property Name="Orders">
6. <CollectionType>
7. <RowType>
8. <Property Name="OrderNo" Type="Int32"/>
9. <Property Name="OrderDate" Type="Date"/>
10. <RowType>
11. <CollectionType>
12. </Property>
13. </RowType>
14. </CollectionType>
15. </ReturnType>

The following rules apply to the **Property** elements of a **RowType** element:

* The type of a property that belongs to a **RowType** MUST be one of the following:
  + Scalar type
  + [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008)
  + [ReferenceType](#Section_31d87a88430d4e9899346d36ad6a6d6f)
  + RowType
  + [CollectionType](#Section_989fd3db92ae4d339ed21d0037eef219)
* **Property** MUST have a **Name** attribute defined. The **Name** attribute is of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6). The **Name** attribute represents the name of this **Property**.
* **Property** MUST define a type either as an attribute or as a child element.
* **Property** MUST NOT contain both an attribute and a child element that defines the type of the **Property** element.
* **Property** can define facets if the type is a scalar type.
* **Property** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* **Property** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* **AnnotationElement** elements MUST be last in the sequence of child elements of **Property**.



All child elements MUST appear in the order indicated. For all child elements within a given choice, the child elements can be ordered arbitrarily.

### Function ReturnType

**ReturnType** describes the shape of data that is returned from a **Function**. The return type of a function can be declared as a **ReturnType** attribute on a **Function** or as a child element.

The following is an example of the return type of a function declared as a **ReturnType** attribute on a **Function**.

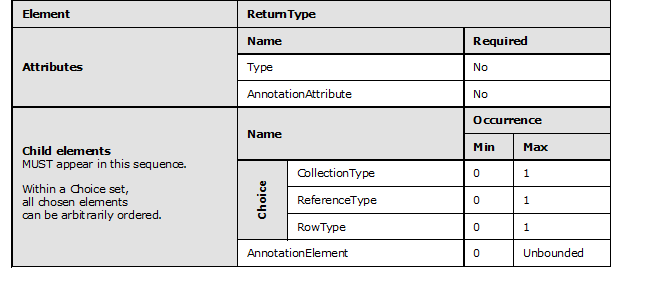
1. <Function Name="GetAge" ReturnType="Edm.Int32">

The following is an example of the return type of a function declared as a child element.

1. <Function Name="GetAge">
2. <ReturnType Type="Edm.Int32" />
3. </Function>

The following rules apply to the **ReturnType** element of a function:

* **ReturnType** MUST define type declaration either as an attribute or as a child element.
* **ReturnType** MUST NOT contain both an attribute and a child element defining the type.
* **ReturnType** can contain any number of [AnnotationAttribute](#Section_2110a8d9984948c392c3e15dd2f5cd08) attributes. The full names of the **AnnotationAttribute** attributes MUST NOT collide.
* The return type of **Function** MUST be one of the following:
  + A scalar type or collection of scalar types.
  + An entity type or collection of entity types.
  + A complex type or collection of complex types.
  + A row type or collection of row types.
  + A reference type or collection of reference types.
* **ReturnType** can contain a maximum of one [CollectionType](#Section_989fd3db92ae4d339ed21d0037eef219) element.
* **ReturnType** can contain a maximum of one [ReferenceType](#Section_31d87a88430d4e9899346d36ad6a6d6f) element.
* **ReturnType** can contain a maximum of one [RowType](#Section_f024e8bab79f444fa93214c8284e505b) element.
* **ReturnType** can contain any number of [AnnotationElement](#Section_d51fd43f1a10431498da7c1650086bc9) elements.
* **AnnotationElement** elements MUST be last in the sequence of child elements of **ReturnType**.



All child elements MUST appear in the order indicated. For all child elements within a given choice, the child elements can be ordered arbitrarily.

### ValueTerm

A **ValueTerm** element is used to define a [**value term**](#gt_5b5f5bb6-0684-4a3f-a513-96e06076ff51) in Entity Data Model (EDM).

The following is an example of a **ValueTerm** element.

1. <ValueTerm Name="Title" Type="Edm.String">

The following rules apply to the **ValueTerm** element:

* The **ValueTerm** element MUST appear under the [Schema](#Section_f7d957653b644c77b1449d28862b0403) element.
* The **ValueTerm** element MUST have a **Name** attribute. **Name** is of the type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6). The **Name** of a **ValueTerm** MUST be unique across all named elements defined in the same namespace.
* The **ValueTerm** element MUST have a **Type** attribute. **Type** is of the type [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09), primitive type, or [EnumType](#Section_2ed5ab29aef241b698f21a011d9a68db), or a collection of ComplexType or primitive types.
* The **ValueTerm** element MAY have a **DefaultValue** attribute to provide a value for the **ValueTerm** if the term is applied but has no value specified.

### TypeAnnotation

A **TypeAnnotation** element is used to annotate a model element with a term and provide zero or more values for the properties of the term.

The following is an example of the **TypeAnnotation** element.

1. <TypeAnnotation Term="ContactInfo">
2. <PropertyValue Property="ContactName" String="ContactName1" />
3. </TypeAnnotation>

The following rules apply to the **TypeAnnotation** element:

* **TypeAnnotation** MUST have a **Term** attribute defined. **Term** MUST be a namespace qualified name, an alias qualified name, or a [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6).
* **TypeAnnotation** can appear only as a child element of the following elements:
  + [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09)
  + [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008)
  + [Annotations](#Section_9fb2fa3c5aac443087c66786314b1588)
* **TypeAnnotation** can have a **Qualifier** attribute defined unless the **TypeAnnotation** is a child element of an **Annotations** element that has a **Qualifier** attribute defined. If a **Qualifier** is defined, it MUST be a **SimpleIdentifier**. **Qualifier** is used to differentiate bindings based on environmental concerns.
* A **TypeAnnotation** can contain any number of [PropertyValue](#Section_cc1d9892120e4446aa0579db89897f4f) elements.

### PropertyValue

A **PropertyValue** element is used to assign the result of an expression to a property of a term.

The following is an example of the **PropertyValue** element.

1. <TypeAnnotation Term="ContactInfo">
2. <PropertyValue Property="ContactName" String="ContactName1" />
3. </TypeAnnotation>

The following rules apply to the **PropertyValue** element:

* A **PropertyValue** MUST have a [Property](#Section_50129087bb7f475ea14d7a8a4bdef966) attribute defined. **Property** MUST be of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6). **Property** names the property for which the value is supplied.
* A **PropertyValue** can specify an expression as a child element or as an expression attribute that gives the value of the property.
* A **PropertyValue** can have one of the following expression attributes defined in place of a child element expression. Each of these is equivalent to the same-named expression with the equivalent spelling:
  + **Path**
  + **String**
  + **Int**
  + **Float**
  + **Decimal**
  + **Bool**
  + **DateTime**

### ValueAnnotation

**ValueAnnotation** is used to attach a named value to a model element.

The following is an example of the **ValueAnnotation** element.

1. <ValueAnnotation Term="Title" String="MyTitle" />
2. <ValueAnnotation Term="ReadOnly" />

The following rules apply to the **ValueAnnotation** element:

* The **ValueAnnotation** element MUST have a **Term** attribute defined. **Term** MUST be a namespace qualified name, an alias qualified name, or a [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6).
* The **ValueAnnotation** can appear only as a child element of the following elements:
  + [Annotations](#Section_9fb2fa3c5aac443087c66786314b1588)
  + [Association](#Section_77d7ccbbbda8444aa160f4581172322f)
  + [AssociationSet](#Section_84fdfd027b124aa3a2eb51bab109f439)
  + [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09)
  + [EntityContainer](#Section_031f2e18935b461b95ce62e11432047a)
  + [EntitySet](#Section_4a09a48c1da34d8487b42b6c46731470)
  + [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008)
  + [FunctionImport](#Section_d867e86a69054d059145d677b11f8c39)
  + [FunctionImport Parameter](#Section_2d7f0f3e133343098194a0148a9c946c)
  + [Model Function](#Section_49cbc245e5434cc9bc7d712aa617ae64)
  + [Model Function Parameter](#Section_eeb3339fb68242c0bc19bb6ec448acf7)
  + [NavigationProperty](#Section_e83d21c47f0a4cc7ac38f2fbe15d3398)
  + [Property](#Section_50129087bb7f475ea14d7a8a4bdef966)
* **ValueAnnotation** can have a **Qualifier** attribute defined unless the **ValueAnnotation** is a child element of an Annotations element that has a **Qualifier** attribute defined. If a **Qualifier** is defined, it MUST be a **SimpleIdentifier**. **Qualifier** is used to differentiate bindings based on external context.
* A **ValueAnnotation** can specify an expression as a child element or as an expression attribute that gives the value of the term.
* A **ValueAnnotation** can have one of the following attributes defined in place of a child element expression. Each of these is equivalent to the same-named expression with the equivalent spelling:
  + **Path**
  + **String**
  + **Int**
  + **Float**
  + **Decimal**
  + **Bool**
  + **DateTime**
* If a **ValueAnnotation** has neither a child expression nor an attribute specifying a value, the value of the annotation is the **DefaultValue** specified for the annotation, or **Null** if no **DefaultValue** is specified. Note that a **Null** value for a term is distinct from the absence of a **ValueAnnotation** element for that term, in which case the term has no value.

### Annotations

The **Annotations** element is used to group one or more [TypeAnnotation](#Section_7a68e656848340978919e9dd1d2f6da1) or [ValueAnnotation](#Section_07b06e266f1142d89ce0975a9070c800) elements that target the same model element.

The following is an example of the **Annotations** element.

1. <Annotations Target="Model" Qualifier="Slate">
2. <ValueAnnotation Term="Title" String="ShortTitle" />
3. </Annotations>

The following rules apply to the **Annotations** element:

* The **Annotations** element MUST have a **Target** attribute defined. The **Target** attribute names the element to which the contained **TypeAnnotation** and **ValueAnnotation** elements apply. **Target** MUST be a namespace qualified name, alias qualified name, or [FunctionImport](#Section_d867e86a69054d059145d677b11f8c39) **Name**.
* The **Target** attribute MUST target one of the following:
  + [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09)
  + [EntitySet](#Section_4a09a48c1da34d8487b42b6c46731470)
  + [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008)
  + [EnumType](#Section_2ed5ab29aef241b698f21a011d9a68db)
  + **Function**
  + **FunctionImport**
  + [NavigationProperty](#Section_e83d21c47f0a4cc7ac38f2fbe15d3398)
  + **Parameter**
  + [Property](#Section_50129087bb7f475ea14d7a8a4bdef966)
  + [ValueTerm](#Section_86cc0386637a4c6cbdb59cc6e2c65647)
  + Entity Data Model (EDM) primitive type
* **Annotations** MUST appear only in [Schema](#Section_f7d957653b644c77b1449d28862b0403) level.
* **Annotations** can have a **Qualifier** attribute. **Qualifier** is of the type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6).
* **Annotations** MUST contain one or more **TypeAnnotation** or **ValueAnnotation** elements.

### Expressions

Expressions are described as core and extended expressions. Core expressions are required to be supported by any Entity Data Model (EDM) client.

#### Core Expressions

##### Null

Null is an expression that produces an untyped value.

##### Primitive Scalar Constant Expressions

The following expression elements are defined as primitive scalar constant expressions:

* **String** allows any sequence of UTF-8 characters.
* **Int** allows content in the following form: [-] [0-9]+.
* **Float** allows content in the following form: [0-9]+ ((.[0-9]+) | [E[+ | -][0-9]+]).
* **Decimal** allows content in the following form: [0-9]+.[0-9]+.
* **Bool** allows content in the following form: true | false.
* **DateTime** allows content in the following form: yyyy-mm-ddThh:mm[:ss[.fffffff]].
* **DateTimeOffset** allows content in the following form: yyyy-mm-ddThh:mm[:ss[.fffffff]]zzzzzz.
* **Guid** allows content in the following form: dddddddd-dddd-dddd-dddd-dddddddddddd where each d represents [A-Fa-f0-9].
* **Binary** allows content in the following form: [A-Fa-f0-9][A-Fa-f0-9]\*.

The following is an example of primitive scalar constant expressions.

1. <String>text</String>
2. <Int>1</Int>
3. <Float>3.14159265</Float>
4. <Decimal>9.8</Decimal>
5. <Bool>true</Bool>
6. <DateTime>2011-08-30T14:30:00.00</DateTime>
7. <DateTimeOffset>2011-08-30T14:30:00.00-09:00</DateTimeOffset>
8. <Guid>707043F1-E7DD-475C-9928-71DA38EA7D57</Guid>
9. <Binary>6E67616F766169732E65</Binary>

##### Record Expression

The **Record** expression constructs a record of type [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) or [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09) with specified properties.

The following is an example of the **Record** expression element.

1. <Record>
2. <PropertyValue Property="Name">
3. <String>AuthorName</String>
4. </PropertyValue>
5. <PropertyValue Property="LastName">
6. <String>AuthorLastName</String>
7. </PropertyValue>
8. </Record>

The following rule applies to the **Record** expression element:

* The **Record** expression element can have zero or more [PropertyValue](#Section_cc1d9892120e4446aa0579db89897f4f) elements.

##### Collection Expression

The **Collection** expression element is used to construct elements with multiple values of specified type.

The **Collection** expression element is used to construct a collection of zero or more record expressions or primitive scalar constant expressions.

The following is an example of the **Collection** expression element.

1. <Collection >
2. <String>Tag1</String>
3. <String>Tag2</String>
4. <String>Tag3</String>
5. </Collection>

The following rule applies to the **Collection** expression element:

* The **Collection** expression element can have zero or more record expressions or primitive scalar constant expressions.

##### LabeledElement Expression

A **LabeledElement** expression is used to assign a name to another expression.

The following is an example of the **LabeledElement** expression.

1. <LabeledElement Name="MyLabel">
2. <Int>1</Int>
3. </LabeledElement>

The following rules apply to the **LabeledElement** expression:

* **LabeledElement** MUST have **Name** attribute. **Name** is of the type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6).
* **LabeledElement** MUST have one expression element as an attribute or as a child element.

##### Path Expression

The **Path** expression element is used to refer to model elements. A **Path** expression can resolve to the following:

* A property of an object
* An enum constant
* An entity set
* A navigation property

A **Path** expression element can refer to any number of navigation properties that represent an arbitrary depth. Furthermore, a **Path** expression element that refers to a navigation property with a cardinality greater than 1 refers to a collection.

The following is an example of the **Path** expression element.

1. <ValueAnnotation Term="Title">
2. <Path>Customer.FirstName</Path>
3. </ValueAnnotation>

The following rule applies to the **Path** expression element:

* The value of a **Path** expression MUST be of the type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6) or **QualifiedName**.

#### Extended Expressions

##### Apply Expression

The **Apply** expression element is used to apply a function for evaluating a value.

The following is an example of the **Apply** expression element.

1. <ValueAnnotation Term="Email">
2. <Apply Function="String.Concat">
3. <Path>Alias</Path>
4. <String>@Microsoft.com</String>
5. </Apply>
6. </ValueAnnotation>

The following rules apply to the **Apply** expression element:

* The **Apply** expression element MUST have a **Function** attribute which specifies the function to apply. **Function** is of type namespace qualified name or an alias qualified name.
* The **Apply** expression element can contain zero or more expression elements that specify the arguments of the function.

##### If Expression

An **If** expression element is used for conditional evaluations.

The following is an example of the **If** expression element.

1. <ValueAnnotation Term="MyVocabulary.MobilePhone">
2. <If>
3. <Apply Function="String.Equals">
4. <Path>Customer.PhoneType</Path>
5. <String>Mobile</String>
6. </Apply>
7. <Path>Contact.Phone</Path>
8. <Null />
9. </If>
10. </ValueAnnotation>

The following rules apply to the **If** expression element:

* The **If** expression element MUST have three expression elements as child elements with the following rules:
  + The first expression element is interpreted as the test expression and MUST evaluate to a Boolean result.
  + The second expression element is evaluated if the test expression evaluates to true.
  + The third expression element is evaluated if the test expression evaluates to false.
  + The second and third expression elements MUST be type compatible.

##### IsType Expression

An **IsType** expression tests whether a child element expression is of a given type. The result of the **IsType** expression is a Boolean value. The following two examples show how you can use either the **Type** attribute or the [TypeRef](#Section_305f358f05934a8a9ce8bfcac303f96e) child element to test the type.

In example 1, **IsType** uses a **Type** attribute.

1. <IsType Type="Edm.String">
2. <String>Tag1</String>
3. </IsType>

In example 2, **IsType** uses a nested **TypeRef** child element.

1. <IsType>
2. <TypeRef Type="Edm.String" />
3. <String>Tag1</String>
4. </IsType>

The following rules apply to the **IsType** expression:

* **IsType** MUST define the type either as an attribute or as a child element **TypeRef**.
* **IsType** MUST contain one expression as a child element. The expression MUST follow **TypeRef** if **TypeRef** is used to define the type.

##### AssertType Expression

An **AssertType** expression casts a child element expression to a given type. The result of the **AssertType** expression is an instance of the specified type or an error. The following two examples show how you can use either the **Type** attribute or the [ReferenceType](#Section_31d87a88430d4e9899346d36ad6a6d6f) child element to assert the type.

In example 1, **AssertType** uses a **Type** attribute.

1. <AssertType Type="Edm.String">
2. <String>Tag1</String>
3. </AssertType>

In example 2, **AssertType** uses a nested **ReferenceType** element.

1. <AssertType>
2. <ReferenceType Type="Edm.String" />
3. <String>Tag1</String>
4. </AssertType>

The following rules apply to the **AssertType** expression:

* **AssertType** MUST define the type, either as an attribute or as a child element **ReferenceType**.
* **AssertType** MUST contain one expression as a child element. The expression MUST follow **ReferenceType** if **ReferenceType** is used to define the type.

### EnumType

An **EnumType** element is used in CSDL 3.0 to declare an [**enumeration type**](#gt_53314ed5-ba09-4e24-8c2f-ea0324bff497). Enumeration types are scalar types.

An enumeration type has a **Name** attribute, an optional **UnderlyingType** attribute, an optional **IsFlags** attribute, and a payload that consists of zero or more declared **Member** elements.

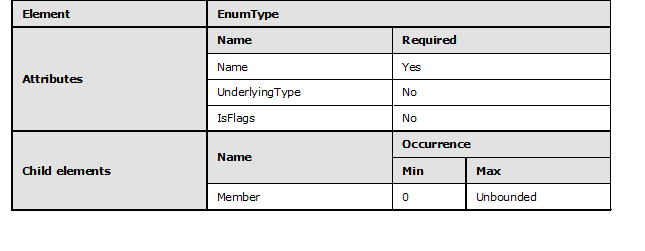
The following is an example of the **EnumType** element.

1. <EnumType Name="ContentType" UnderlyingType="Edm.Int32" IsFlags="true">
2. <Member Name="Liquid" Value="1"/>
3. <Member Name="Perishable" Value="2"/>
4. <Member Name="Edible" Value="4"/>
5. </EnumType>

Enumeration types are equal-comparable, order-comparable, and can participate in entity [Key](#Section_e667c2a894e24874a5cfa74dbd4b3bcd) elements—that is, they can be the **Key** or can be a part of the **Key**. An enumeration can be categorized as an EDM type.

The following rules apply to the **EnumType** element:

* **EnumType** elements MUST specify a **Name** attribute. **Name** attribute is of type [SimpleIdentifier](#Section_56ba037d704b4cc3845c301393e13fe6).
* **EnumType** is a schema level named element and MUST have a unique name.
* **EnumType** elements can specify an **UnderlyingType** attribute which MUST be an integral [EDMSimpleType](#Section_4e965e03d9ee40b6ab34cd06a576aeb2), such as [SByte](#Section_300218ca66b548ed96db28e1f59dbed8), [Int16](#Section_387ae0f67853492882e55dfc50a239e3), [Int32](#Section_ba88b9b46c3d4fa4b33c2dc9f74d3c9b), [Int64](#Section_10ea60fd95c64e558f080a248da2fe65), or [Byte](#Section_1a690ebf273b45fe9e4ee2a247768c34). **Edm.Int32** MUST be assumed if it is not specified in the declaration.
* **EnumType** elements can specify an **IsFlags** Boolean attribute, which MUST be assumed to be false if it is not specified in the declaration. If the enumeration type can be treated as a bit field, **IsFlags** MUST be set to "true".
* **EnumType** elements can contain a list of zero or more **Member** child elements that are referred to as declared enumeration members.

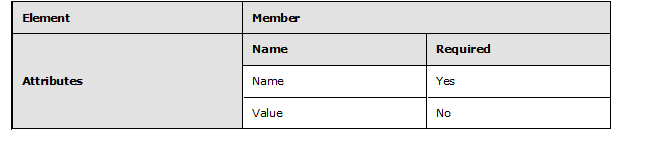


### EnumType Member

A **Member** element is used inside an [EnumType](#Section_2ed5ab29aef241b698f21a011d9a68db) element to declare a member of an enumeration type.

The following rules apply to declared enumeration type members:

* **Member** elements MUST specify a **Name** attribute. The **Name** MUST be unique within the **EnumType** declaration.
* **Member** elements can specify the **Value** attribute. **Value** MUST be a valid **Edm.Long**.
* The order of the **Member** elements has meaning and MUST be preserved.
* If the value of the **Member** element is not specified, the value MUST be zero for the first member and one more than the value of the previous member for subsequent members.
* Multiple members with different **Name** attributes can have the same **Value** attributes. When mapping from a value of the underlying type to a **Member** of an **EnumType**, the first matching **Member** MUST be used.



### Containment NavigationProperty

Containment is specified by using a containment [NavigationProperty](#Section_e83d21c47f0a4cc7ac38f2fbe15d3398) element. A containment **NavigationProperty** is a **NavigationProperty** that has a **ContainsTarget** attribute set to "true".

The [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) that declares the **NavigationProperty** is the container **EntityType**.

The AssociationType that is specified in the containment **NavigationProperty** is the containment **AssociationType**.

The **EntityType** that is specified on the **End** element of the containment **AssociationType**, with the **Name** that is specified by the containment **NavigationProperty** element's **ToRole** attribute, is the contained **EntityType**.

When the instances of both the contained entity and the container entity reside in the same [EntitySet](#Section_4a09a48c1da34d8487b42b6c46731470), it is called recursive containment.

It MUST NOT be possible for an **EntityType** to contain itself by following more than one containment **NavigationProperty**.

The contained **EntityType** can have a **NavigationProperty** that navigates to the container **EntityType** via the containment **AssociationType**.

The **End** of the containment **AssociationType** that is specified by the **ToRole** attribute of the containment **NavigationProperty** can have any multiplicity.

For nonrecursive containment, the **End** of the containment **AssociationType** that is specified by the **FromRole** attribute of the containment **NavigationProperty** MUST have a multiplicity of '1'.

For recursive containment, the **End** of the containment **AssociationType** that is specified by the **FromRole** attribute of the containment **NavigationProperty** MUST have a multiplicity of '0..1'. The **End** that is specified by the **ToRole** MUST NOT have a multiplicity of '1' because this would lead to endless recursion.

An [AssociationSet](#Section_84fdfd027b124aa3a2eb51bab109f439) MUST have the same **EntitySet** on both ends if it is for a containment **AssociationType** that has either the same **EntityType** on both ends or an **EntityType** on one end that derives from the **EntityType** on the other end.

An **EntitySet** MUST NOT be bound by **AssociationSet** to more than one **AssociationType** via a containment **NavigationProperty** that indicates that the **EntityType** (or derived **EntityTypes**) of that **EntitySet** is contained.

**Note**  Because the **EntityType** of an **EntitySet** on an [AssociationSet End](#Section_3c3578f79de94e7b9a852ed690bab9e7) MUST be the same as or derived from the **EntityTypes** on the corresponding **AssociationType End**, the **EntitySet** MUST be either completely contained or completely noncontained.

## Attributes

### EDMSimpleType

The Entity Data Model (EDM) attribute defines an abstract type system that defines the primitive types that are listed in the following sections. All **EDMSimpleTypes** are equality comparable unless the specific section below says otherwise. EDMSimpleType can be categorized as an EDM type.

#### Commonly Applicable Facets

##### Nullable

The **Nullable** facet is a Boolean, which indicates that the **Type** can be null.

##### ReadOnly

The **ReadOnly** facet is a Boolean, which indicates whether a property can be changed. If **ReadOnly** is not specified, its value is assumed to be false.

##### Default

The **Default** facet is a string. Valid values for this facet depend upon the type that is being referenced. The **Default** facet MUST NOT be applied to a **CollectionType** or **TypeRef**.

**Note**  [**ADO.NET Entity Framework**](#gt_36044b46-5efa-40f1-b38b-ca286977584d) does not support the **Default** facet for an Enum.

#### Binary

The **Binary** data type is used to represent fixed-length or variable-length binary data.

##### Facets

The EDM simple type facets applicable for the binary type are **FixedLength** and **MaxLength**.

###### MaxLength

The maximum size of the declared **Binary** data type value is specified by the value of the **MaxLength** facet. The **MaxLength** facet accepts a value of the literal string "Max" or a positive integer with value ranging from 1 to 2^31.

###### FixedLength

The **FixedLength** facet is a Boolean that specifies whether the length can vary.

#### Boolean

The **Boolean** data type is used to represent the mathematical concept of binary valued logic. There are no applicable facets for this type.

#### DateTime

The **DateTime** type represents date and time with values ranging from 12:00:00 midnight, January 1, 1753 A.D. through 11:59:59 P.M, December 31, 9999 A.D.

##### Facets

###### Precision

The **Precision** facet specifies the degree of granularity of the **DateTime** facet in fractions of a second, based on the number of decimal places that are supported. The actual values allowed will depend on the data provider. As an example, if a database allows a **Precision** of 3, the granularity supported is milliseconds.

#### Time

The **Time** type represents a signed duration of time in terms of days, hours, minutes, seconds, and fractional seconds.

##### Facets

###### Precision

The **Precision** facet specifies the degree of granularity of the **Time** type in fractions of a second, based on the number of decimal places that are supported. The actual values allowed will depend on the data provider. As an example, if a database allows a Precision of 3, the granularity supported is milliseconds.

#### DateTimeOffset

The **DateTimeOffset** type represents date and time as an Offset in minutes from GMT, with values ranging from 12:00:00 midnight, January 1, 1753 A.D. through 11:59:59 P.M, December 31, 9999 A.D.

##### Facets

###### Precision

The **Precision** facet specifies the degree of granularity of the **DateTimeOffset** type in fractions of a second, based on the number of decimal places that are supported. For example, a **Precision** of 3 means that the granularity supported is milliseconds.

#### Decimal

The **Decimal** type represents numeric values with fixed precision and scale. The required precision and scale can be specified using its optional **Precision** and **Scale** facets. The Decimal type can describe a numeric value ranging from negative 10^255 + 1 to positive 10^255 -1.

##### Facets

###### Precision

The **Precision** facet is a positive integer that specifies the maximum number of decimal digits that an instance of the decimal type can have, both to the left and to the right of the decimal point.

###### Scale

This is a positive integer that specifies the maximum number of decimal digits to the right of the decimal point that an instance of this type can have. The **Scale** value can range from 0 through the specified **Precision** value*.* The default **Scale** is 0.

#### Single

The **Single** type represents a floating point number with 7 digits precision that can represent values with approximate range of ± 1.18e -38 through ± 3.40e +38.

#### Double

The **Double** type represents a floating point number with 15 digits precision that can represent values with approximate range of ± 2.23e -308 through ± 1.79e +308.

#### Guid

This **Guid** type, as specified in [[RFC4122]](http://go.microsoft.com/fwlink/?LinkId=90460), represents a 16-byte (128-bit) unique identifier value.

#### SByte

The **SByte** type represents a signed 8-bit integer value.

#### Int16

The **Int16** type represents a signed 16-bit integer value.

#### Int32

The **Int32** type represents a signed 32-bit integer value.

#### Int64

The **Int64** type represents a signed 64-bit integer value.

#### Byte

The **Byte** type represents an unsigned 8-bit integer value.

#### String

The **String** type represents fixed-length or variable-length character data. The **EDMSimpleType** facets applicable to **String** type are described below.

##### Facets

The **EDMSimpleType** facets that are applicable for the **String** type are Unicode, Collation, FixedLength, and MaxLength. The facets Unicode and Collation are optional.

###### Unicode

The **Unicode** facet is a Boolean value. This value, when set to true, dictates the **String** type that an instance will store. By default, UNICODE characters are used, otherwise standard ASCII encoding is used. The default value for this facet is true.

**Note**  The **String** data type does not support the kind of UNICODE to be specified, leaving it to the concrete type systems hosting EDM to choose the appropriate UNICODE type.

###### FixedLength

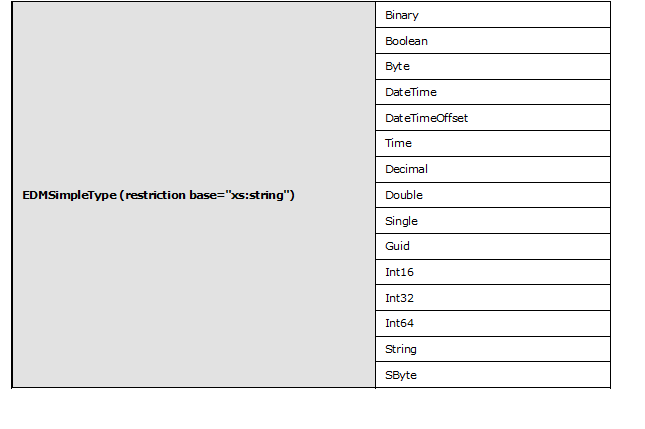
The **FixedLength** facet is a Boolean value. The Boolean value specifies whether the store requires a string to be fixed length or not (that is, setting this facet to true would require a fixed-length field [char or nchar] instead of variable-length [varchar or nvarchar]).

###### MaxLength

The **MaxLength** facet specifies the maximum length of an instance of the **String** type. The **MaxLength** facet accepts a value of the literal string "Max" or a positive integer. For **Unicode** equal to true, **MaxLength** can range from 1 to 2^30, or if false, **MaxLength** can range from 1 to 2^31.

###### Collation

The **Collation** facet is a string value that specifies the collating sequence (or sorting sequence) to be used for performing comparison and ordering operations over string values.



#### Stream

The **Stream** data type is used to represent fixed-length or variable-length data stream.

##### Facets

The **EDMSimpleType** facets applicable for the **String** data type are FixedLength and MaxLength.

#### Geography

The **Geography** type represents any geospatial data type that uses a geographic (round-earth) coordinate system. Each entity’s data can be of any of the geographic primitive types; **Geography** acts as an abstract base class for those types. The subclasses of **Geography** are **GeographyPoint**, **GeographyLineString**, **GeographyPolygon**, **GeographyCollection**, **GeographyMultiPoint**, **GeographyMultiLineString**, and **GeographyMultiPolygon**. **Geography** is not equality comparable, so it cannot be used in keys.

**Geography** is not an instantiable type. An entity can declare a property to be of type **Geography**. An instance of an entity MUST NOT have a value of type **Geography**. Each value MUST be of some subtype.

##### Facets

The **EDMSimpleType** facets applicable for the **Geography** type are **SRID**. SRID is optional.

###### SRID

The **SRID** facet is an Int value. This value corresponds to the System Reference Identifier for the coordinate system that is used. The valid values and their meanings are as defined by the European Petroleum Survey Group (EPSG) [[EPSG]](http://go.microsoft.com/fwlink/?LinkID=148018). If SRID is not specified, the default value of 4326 is assumed, which corresponds to the WGS 84 datum.

**SRID** can also have the special value "variable". This means that the SRID is explicitly stated to vary per entity instance.

#### GeographyPoint

The **GeographyPoint** type represents a single position in a geographic (round-earth) coordinate system. **GeographyPoint** is not equality comparable, so it cannot be used in keys. The meaning of a **GeographyPoint** is as the meaning of **Point** in the OGC Simple Features specification ([[OGC-SFACA/1.2.1]](http://go.microsoft.com/fwlink/?LinkID=231880) section 6.1.4), but for ellipsoidal coordinates.

##### Facets

All facets for the **GeographyPoint** type behave exactly as for its base type, **Geography**.

#### GeographyLineString

The **GeographyLineString** type represents a path in a geographic (round-earth) coordinate system. **GeographyLineString** is not equality comparable, so it cannot be used in keys. The meaning of a **GeographyLineString** is as the meaning of **LineString** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.7), except that interpolation between control points is defined to be along great elliptic arcs.

##### Facets

All facets for **GeographyLineString** behave exactly as for its base type, **Geography**.

#### GeographyPolygon

The **GeographyPolygon** type represents a surface in a geographic (round-earth) coordinate system. **GeographyPolygon** is not equality comparable, so it cannot be used in keys. The meaning of a **GeographyPolygon** is as the meaning of **Polygon** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.11), except for ellipsoidal coordinates.

##### Facets

All facets for **GeographyPolygon** behave exactly as for its base type, **Geography**.

#### GeographyCollection

The **GeographyCollection** type represents a **Geography** that is defined as the union of a set of **Geography** instances. **GeographyCollection** is not equality comparable, so it cannot be used in keys. The meaning of a **GeographyCollection** is as the meaning of **GeometryCollection** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.3), but for ellipsoidal coordinates.

##### Facets

All facets for **GeographyCollection** behave exactly as for its base type, **Geography**.

#### GeographyMultiPoint

The **GeographyMultiPoint** type represents a **Geography** that is defined as the union of a set of **GeographyPoint** instances. **GeographyMultiPoint** is not equality comparable, so it cannot be used in keys. The meaning of a **GeographyMultiPoint** is as the meaning of **MultiPoint** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.5), but for ellipsoidal coordinates.

##### Facets

All facets for **GeographyMultiPoint** behave exactly as for its base type, **Geography**.

#### GeographyMultiLineString

The **GeographyMultiLineString** type represents a **Geography** that is defined as the union of a set of **GeographyLineString** instances. **GeographyMultiLineString** is not equality comparable, so it cannot be used in keys. The meaning of a **GeographyMultiLineString** is as the meaning of **MultiLineString** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.9), but for ellipsoidal coordinates.

##### Facets

All facets for **GeographyMultiLineString** behave exactly as for its base type, **Geography**.

#### GeographyMultiPolygon

The **GeographyMultiPolygon** type represents a **Geography** that is defined as the union of a set of **GeographyPolygon** instances. **GeographyMultiPolygon** is not equality comparable, so it cannot be used in keys. The meaning of a **GeographyMultiPolygon** is as the meaning of **MultiPolygon** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.14), but for ellipsoidal coordinates.

##### Facets

All facets for **GeographyMultiPolygon** behave exactly as for its base type, **Geography**.

#### Geometry

The **Geometry** type represents any geospatial data type that uses a geometric (flat-earth) coordinate system. Each entity’s data can be of any of the geometric primitive types; **Geometry** acts as an abstract base class for those types. The subclasses of **Geometry** are **GeometryPoint**, **GeometryLineString**, **GeometryPolygon**, **GeometryCollection**, **GeometryMultiPoint**, **GeometryMultiLineString**, and **GeometryMultiPolygon**. **Geometry** is not equality comparable, so it cannot be used in keys.

**Geometry** is not an instantiable type. An entity can declare a property to be of type **Geometry**. An instance of an entity MUST NOT have a value of type **Geometry**. Each value MUST be of some subtype.

##### Facets

The EDM simple type facets applicable for this type are **SRID**. **SRID** is optional.

###### SRID

The **SRID** facet is an Int value. This value corresponds to the System Reference Identifier for the coordinate system that is used. The valid values and their meanings are as defined by the European Petroleum Survey Group (EPSG) [[EPSG]](http://go.microsoft.com/fwlink/?LinkID=148018). If SRID is not specified, the default value of 0 is assumed, which corresponds to a unitless planar coordinate system without a defined origin.

**SRID** can also have the special value "variable". This means that the SRID is explicitly stated to vary per entity instance.

#### GeometryPoint

The **GeometryPoint** type represents a single position in a geometric (flat-earth) coordinate system. **GeometryPoint** is not equality comparable, so it cannot be used in keys. The meaning of a **GeometryPoint** is as the meaning of **Point** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.4).

##### Facets

All facets for **GeometryPoint** behave exactly as for its base type, **Geometry**.

#### GeometryLineString

The **GeometryLineString** type represents a path in a geometric (flat-earth) coordinate system. **GeometryLineString** is not equality comparable, so it cannot be used in keys. The meaning of a **GeometryLineString** is as the meaning of **LineString** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.7).

##### Facets

All facets for **GeometryLineString** behave exactly as for its base type, **Geometry**.

#### GeometryPolygon

The **GeometryPolygon** type represents a surface in a geometric (flat-earth) coordinate system. **GeometryPolygon** is not equality comparable, so it cannot be used in keys. The meaning of a **GeometryPolygon** is as the meaning of **Polygon** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.11).

##### Facets

All facets for **GeometryPolygon** behave exactly as for its base type, **Geometry**.

#### GeometryCollection

The **GeometryCollection** type represents a **Geometry** that is defined as the union of a set of **Geometry** instances. **GeometryCollection** is not equality comparable, so it cannot be used in keys. The meaning of a **GeometryCollection** is as the meaning of **GeometryCollection** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.3).

##### Facets

All facets for **GeometryCollection** behave exactly as for its base type, **Geometry**.

#### GeometryMultiPoint

The **GeometryMultiPoint** type represents a **Geometry** that is defined as the union of a set of **GeometryPoint** instances. **GeometryMultiPoint** is not equality comparable, so it cannot be used in keys. The meaning of a **GeometryMultiPoint** is as the meaning of **MultiPoint** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.5).

##### Facets

All facets for **GeometryMultiPoint** behave exactly as for its base type, **Geometry**.

#### GeometryMultiLineString

The **GeometryMultiLineString** type represents a **Geometry** that is defined as the union of a set of **GeometryLineString** instances. **GeometryMultiLineString** is not equality comparable, so it cannot be used in keys. The meaning of a **GeometryMultiLineString** is as the meaning of **MultiLineString** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.9).

##### Facets

All facets for **GeometryMultiLineString** behave exactly as for its base type, **Geometry**.

#### GeometryMultiPolygon

The **GeometryMultiPolygon** type represents a **Geometry** that is defined as the union of a set of **GeometryPolygon** instances. **GeometryMultiPolygon** is not equality comparable, so it cannot be used in keys. The meaning of a **GeometryMultiPolygon** is as the meaning of **MultiPolygon** in the OGC Simple Features specification ([OGC-SFACA/1.2.1] section 6.1.14).

##### Facets

All facets for **GeometryMultiPolygon** behave exactly as for its base type, **Geometry**.

### Action

**Action** can either be "Cascade" or "None".

The cascade action implies that the operation to delete an entity should delete the relationship instance and then apply the action on the entity-instance at the other end of the relationship. For example, when a Customer is deleted, the cascade action specifies to delete all Orders that belong to that Customer.



### Multiplicity

The **Multiplicity** of a relationship describes the cardinality or number of instances of an [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) that can be associated with the instances of another **EntityType**. The possible types of multiplicity are as follows: one-to-one, one-to-many, zero-one to one, zero-one to many, and many-to-many.



### ConcurrencyMode

**ConcurrencyMode** is a special facet that can be applied to any primitive Entity Data Model (EDM) type. Possible values are "None", which is the default, and "Fixed".

When used on an [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008) property, **ConcurrencyMode** specifies that the value of that declared property should be used for optimistic concurrency checks. Essentially, declared properties marked with a fixed **ConcurrencyMode** become part of a **ConcurrencyToken**.

The following rules apply to **ConcurrencyMode**:

* The property's type MUST be a simple type. It cannot be applied to properties of a [ComplexType](#Section_ceb3ffc2812c4cd998e8184deffa9b09).
* The property MUST be a declared property.



### QualifiedName

**QualifiedName** is a string-based representation of the name of the element or attribute.

The following pattern represents the allowed identifiers for **QualifiedName**.

1. Value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}(\.[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}){0,}"

### SimpleIdentifier

**SimpleIdentifier** is a string-based representation. The maximum length of the identifier MUST be less than 480.

The following pattern represents the allowed identifiers in the ECMA specification, [ECMA-334] sections 9.4.2 and A.1.6.

1. value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}"

### AnnotationAttribute

An **AnnotationAttribute** is a custom XML attribute that is applied to a CSDL element. The attribute can belong to any XML namespace (as defined in [[XMLNS-2ED]](http://go.microsoft.com/fwlink/?LinkId=90602)) that is not in the list of reserved XML namespaces for CSDL. Consult the reference for each CSDL element within this document to determine whether **AnnotationAttribute** can be used for that element.

### OpenType

**OpenType** is a facet that can be applied to any [EntityType](#Section_6875ce6c837c4cea8e35441dc2366008). Possible values are "false", which is the default, and "true".

**EntityType** elements marked with OpenType="false" or **EntityType** elements that do not explicitly include an **OpenType** attribute indicate that the element defines an **EntityType**. **EntityType** elements marked with OpenType="true" indicate that the element defines an **OpenEntityType**.



### TypeTerm

**TypeTerm** is a base type that is used to define [**vocabulary**](#gt_b56c5377-8f67-4752-8704-071946d77661) terms.

## Facet Application

Facets apply to the nominal type referenced in the element where the facet is declared. In the following example, the **Nullable** facet applies to the **DateTime** referenced type.

1. <Property Name="SuggestedTimes" Type="Collection(DateTime)" Nullable="true" />

In the following example, the **Nullable** facet can only be placed on the child element that references the **DateTime** type. Facets cannot be applied to **Collection** type references.

1. <ReturnType>
2. <CollectionType TypeRef="DateTime" Nullable="true" />
3. </ReturnType>

# Structure Examples

The following example shows a conceptual schema definition language (CSDL) that defines:

* Customer, Order, and Product entity types.
* **Association** (CustomerOrder) that associates Customer and Order entity types.
* SalesOrder entity type that has Order as the **BaseType**.
* Address complex type.

1. <Schema xmlns="http://schemas.microsoft.com/ado/2009/11/edm" Namespace="Model1" Alias="Self">
2. <EntityContainer Name="Model1Container" >
3. <EntitySet Name="CustomerSet" EntityType="Model1.Customer" />
4. <EntitySet Name="OrderSet" EntityType="Model1.Order" />
5. <AssociationSet Name="CustomerOrder" Association="Model1.CustomerOrder">
6. <End Role="Customer" EntitySet="CustomerSet" />
7. <End Role="Order" EntitySet="OrderSet" />
8. </AssociationSet>
9. </EntityContainer>
10. <EntityType Name="Customer">
11. <Key>
12. <PropertyRef Name="CustomerId" />
13. </Key>
14. <Property Name="CustomerId" Type="Int32" Nullable="false" />
15. <Property Name="FirstName" Type="String" Nullable="true" />
16. <Property Name="LastName" Type="String" Nullable="true" />
17. <Property Name="AccountNumber" Type="Int32" Nullable="true" />
18. <Property Name="Address" Type="Self.Address" Nullable="false" />
19. <NavigationProperty Name="Orders" Relationship="Model1.CustomerOrder" FromRole="Customer" ToRole="Order" />
20. </EntityType>
21. <EntityType Name="Order">
22. <Key>
23. <PropertyRef Name="OrderId" />
24. </Key>
25. <Property Name="OrderId" Type="Int32" Nullable="false" />
26. <Property Name="OrderDate" Type="Int32" Nullable="true" />
27. <Property Name="Description" Type="String" Nullable="true" />
28. <NavigationProperty Name="Customer" Relationship="Model1.CustomerOrder" FromRole="Order" ToRole="Customer" />
29. </EntityType>
30. <EntityType Name="SalesOrder" BaseType="Self.Order">
31. <Property Name="Paid" Type="Boolean" Nullable="false" />
32. </EntityType>
33. <EntityType OpenType="true" Name="Product">
34. <Key>
35. <PropertyRef Name="ProductId" />
36. </Key>
37. <Property Name="ProductId" Type="Int32" Nullable="false" />
38. <Property Name="Name" Type="String" Nullable="false" />
39. <Property Name="Description" Type="String" Nullable="true" />
40. </EntityType>
41. <Association Name="CustomerOrder">
42. <End Type="Model1.Customer" Role="Customer" Multiplicity="1" />
43. <End Type="Model1.Order" Role="Order" Multiplicity="\*" />
44. </Association>
45. <ComplexType Name="Address">
46. <Property Name="Street" Type="String" Nullable="false" />
47. <Property Name="City" Type="String" Nullable="false" />
48. <Property Name="State" Type="String" Nullable="false" />
49. <Property Name="Zip" Type="String" Nullable="false" />
50. <Property Name="Position" Type="GeographyPoint" Nullable="false" SRID="4326" />
51. </ComplexType>
52. </Schema>

## ValueAnnotation Example

The following examples show a conceptual schema definition language (CSDL) in which Model1 is extended with [ValueAnnotation](#Section_07b06e266f1142d89ce0975a9070c800).

1. <Schema xmlns="http://schemas.microsoft.com/ado/2009/11/edm" Namespace="Model1" Alias="Self">
2. <Using Alias="Vocabulary1" Namespace="Vocabulary1" />
3. <EntityContainer Name="Model1Container" >
4. <EntitySet Name="CustomerSet" EntityType="Model1.Customer" />
5. <EntitySet Name="OrderSet" EntityType="Model1.Order" />
6. <AssociationSet Name="CustomerOrder" Association="Model1.CustomerOrder">
7. <End Role="Customer" EntitySet="CustomerSet" />
8. <End Role="Order" EntitySet="OrderSet" />
9. </AssociationSet>
10. </EntityContainer>
11. <Annotations Target="Self.Customer">
12. <ValueAnnotation Term="Vocabulary1.EMail">
13. <Null />
14. </ValueAnnotation>
15. <ValueAnnotation Term="AccountID" Path="AccountNumber" />
16. <ValueAnnotation Term="Title" String="Customer Info"/>
17. </Annotations>
18. <EntityType Name="Customer">
19. <Key>
20. <PropertyRef Name="CustomerId" />
21. </Key>
22. <Property Name="CustomerId" Type="Int32" Nullable="false" />
23. <Property Name="FirstName" Type="String" Nullable="true" />
24. <Property Name="LastName" Type="String" Nullable="true" />
25. <Property Name="AccountNumber" Type="Int32" Nullable="true" />
26. <Property Name="Address" Type="Self.Address" Nullable="false" />
27. <NavigationProperty Name="Orders" Relationship="Model1.CustomerOrder" FromRole="Customer" ToRole="Order" />
28. </EntityType>
29. <EntityType Name="Order">
30. <Key>
31. <PropertyRef Name="OrderId" />
32. </Key>
33. <Property Name="OrderId" Type="Int32" Nullable="false" />
34. <Property Name="OrderDate" Type="Int32" Nullable="true" />
35. <Property Name="Description" Type="String" Nullable="true" />
36. <NavigationProperty Name="Customer" Relationship="Model1.CustomerOrder" FromRole="Order" ToRole="Customer" />
37. </EntityType>
38. <EntityType Name="SalesOrder" BaseType="Self.Order">
39. <Property Name="Paid" Type="Boolean" Nullable="false" />
40. </EntityType>
41. <EntityType OpenType="true" Name="Product">
42. <Key>
43. <PropertyRef Name="ProductId" />
44. </Key>
45. <Property Name="ProductId" Type="Int32" Nullable="false" />
46. <Property Name="Name" Type="String" Nullable="false" />
47. <Property Name="Description" Type="String" Nullable="true" />
48. </EntityType>
49. <Association Name="CustomerOrder">
50. <End Type="Model1.Customer" Role="Customer" Multiplicity="1" />
51. <End Type="Model1.Order" Role="Order" Multiplicity="\*" />
52. </Association>
53. <ComplexType Name="Address">
54. <Property Name="Street" Type="String" Nullable="false" />
55. <Property Name="City" Type="String" Nullable="false" />
56. <Property Name="State" Type="String" Nullable="false" />
57. <Property Name="Zip" Type="String" Nullable="false" />
58. <Property Name="Position" Type="GeographyPoint" Nullable="false" SRID="4326" />
59. </ComplexType>
60. </Schema>

## ValueTerm and Edm.TypeTerm Example

The following example shows a conceptual schema definition language (CSDL) where the [ValueTerm](#Section_86cc0386637a4c6cbdb59cc6e2c65647) and an entity type that is derived from **Edm.TypeTerm** that is used in the previous example is defined.

1. <Schema xmlns="http://schemas.microsoft.com/ado/2009/11/edm"
2. Namespace="Model1"
3. Alias="Self">
4. <ValueTerm Name="Title" Type="String" />
5. <EntityType Name="Person" BaseType="Edm.TypeTerm">
6. <Property Name="DisplayName" Type="String" Nullable="true" />
7. <Property Name="Email" Type="String" Nullable="true" />
8. <Property Name="AccountID" Type="Int32" Nullable="false" />
9. </EntityType>
10. </Schema>

# Security Considerations

None.

# Appendix A: Full XML Schemas

For ease of implementation, full XML schemas are provided in the following sections.

| Schema name | Prefix | Section |
| --- | --- | --- |
| CSDL Schema 1.0 | xs: | [5.1](#Section_a3eb9ce229f241fe8f387de02b309f4a) |
| CSDL Schema 1.1 | xs: | [5.2](#Section_835ec388c2e6441eb7ac2f1649ffe14e) |
| CSDL Schema 2.0 | xs: | [5.3](#Section_59d51c800cb74d1880cbee2c3a4dcdf3) |
| CSDL Schema 3.0 | xs: | [5.4](#Section_b0a27701ed0841e18305ef1943fc77be) |

## CSDL Schema 1.0

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema elementFormDefault="qualified" attributeFormDefault="unqualified" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:cg="http://schemas.microsoft.com/ado/2006/04/codegeneration" xmlns:edm="http://schemas.microsoft.com/ado/2006/04/edm" targetNamespace="http://schemas.microsoft.com/ado/2006/04/edm">
3. <xs:annotation>
4. <xs:documentation xml:lang="en">
5. Common Data Model Schema Definition Language.
6. Copyright (c) Microsoft Corp. All rights reserved.
7. </xs:documentation>
8. </xs:annotation>
9. <xs:import namespace="http://schemas.microsoft.com/ado/2006/04/codegeneration" schemaLocation="System.Data.Resources.CodeGenerationSchema.xsd" />
10. <xs:element name="Schema" type="edm:TSchema" />
11. <xs:complexType name="TSchema">
12. <xs:sequence>
13. <xs:group ref="edm:GSchemaBodyElements" minOccurs="0" maxOccurs="unbounded" />
14. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
15. </xs:sequence>
16. <xs:attribute name="Namespace" type="edm:TNamespaceName" use="required" />
17. <xs:attribute name="Alias" type="edm:TSimpleIdentifier" use="optional" />
18. <xs:anyAttribute namespace="##other" processContents="lax" />
19. </xs:complexType>
20. <xs:group name="GSchemaBodyElements">
21. <xs:choice>
22. <xs:element name="Using" type="edm:TUsing" minOccurs="0" maxOccurs="unbounded" />
23. <xs:element name="Association" type="edm:TAssociation" minOccurs="0" maxOccurs="unbounded" />
24. <xs:element name="ComplexType" type="edm:TComplexType" minOccurs="0" maxOccurs="unbounded" />
25. <xs:element name="EntityType" type="edm:TEntityType" minOccurs="0" maxOccurs="unbounded" />
26. <xs:element ref="edm:EntityContainer" minOccurs="1" maxOccurs="1" />
27. </xs:choice>
28. </xs:group>
29. <!-- EDM SimpleType instances for use by EDM Instance documents-->
30. <xs:simpleType name="EDMSimpleType">
31. <xs:restriction base="xs:string">
32. <xs:enumeration value="Binary" />
33. <xs:enumeration value="Boolean" />
34. <xs:enumeration value="Byte" />
35. <xs:enumeration value="DateTime" />
36. <xs:enumeration value="DateTimeOffset" />
37. <xs:enumeration value="Time" />
38. <xs:enumeration value="Decimal" />
39. <xs:enumeration value="Double" />
40. <xs:enumeration value="Single" />
41. <xs:enumeration value="Guid" />
42. <xs:enumeration value="Int16" />
43. <xs:enumeration value="Int32" />
44. <xs:enumeration value="Int64" />
45. <xs:enumeration value="String" />
46. <xs:enumeration value="SByte" />
47. </xs:restriction>
48. </xs:simpleType>
49. <xs:simpleType name="TMax">
50. <xs:restriction base="xs:string">
51. <xs:enumeration value="Max" />
52. </xs:restriction>
53. </xs:simpleType>
54. <!-- Facets for Primitive types -->
55. <xs:simpleType name="TMaxLengthFacet">
56. <xs:union memberTypes="edm:TMax xs:nonNegativeInteger " />
57. </xs:simpleType>
58. <xs:simpleType name="TIsFixedLengthFacet">
59. <xs:restriction base="xs:boolean" />
60. </xs:simpleType>
61. <xs:simpleType name="TPrecisionFacet">
62. <xs:restriction base="xs:nonNegativeInteger" />
63. </xs:simpleType>
64. <xs:simpleType name="TScaleFacet">
65. <xs:restriction base="xs:nonNegativeInteger" />
66. </xs:simpleType>
67. <xs:simpleType name="TIsUnicodeFacet">
68. <xs:restriction base="xs:boolean" />
69. </xs:simpleType>
70. <xs:simpleType name="TCollationFacet">
71. <xs:restriction base="xs:string" />
72. </xs:simpleType>
73. <!--
74. types at all levels
75. -->
76. <xs:complexType name="TDocumentation">
77. <xs:annotation>
78. <xs:documentation>The Documentation element is used to provide documentation of comments on the contents of the XML file. It is valid under Schema, Type, Index and Relationship elements.</xs:documentation>
79. </xs:annotation>
80. <xs:sequence>
81. <xs:element name="Summary" type="edm:TText" minOccurs="0" maxOccurs="1" />
82. <xs:element name="LongDescription" type="edm:TText" minOccurs="0" maxOccurs="1" />
83. </xs:sequence>
84. <xs:anyAttribute processContents="lax" namespace="##other" />
85. </xs:complexType>
86. <xs:complexType name="TText" mixed="true">
87. <xs:sequence>
88. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
89. </xs:sequence>
90. <xs:anyAttribute processContents="lax" namespace="##other" />
91. </xs:complexType>
92. <xs:complexType name="TXmlOrText" mixed="true">
93. <xs:annotation>
94. <xs:documentation>This type allows pretty much any content</xs:documentation>
95. </xs:annotation>
96. <xs:sequence>
97. <xs:any namespace="##any" processContents="skip" minOccurs="0" maxOccurs="unbounded" />
98. </xs:sequence>
99. <xs:anyAttribute processContents="skip" namespace="##any" />
100. </xs:complexType>
101. <!--
102. types of the top level elements
103. -->
104. <xs:complexType name="TUsing">
105. <xs:sequence>
106. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
107. </xs:sequence>
108. <xs:attribute name="Namespace" type="edm:TNamespaceName" use="required" />
109. <xs:attribute name="Alias" type="edm:TSimpleIdentifier" use="required" />
110. <xs:anyAttribute namespace="##other" processContents="lax" />
111. </xs:complexType>
112. <xs:complexType name="TAssociation">
113. <xs:sequence>
114. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
115. <xs:element name="End" type="edm:TAssociationEnd" minOccurs="2" maxOccurs="2" />
116. <xs:element name="ReferentialConstraint" type="edm:TConstraint" minOccurs="0" maxOccurs="1" />
117. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
118. </xs:sequence>
119. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
120. <xs:anyAttribute namespace="##other" processContents="lax" />
121. </xs:complexType>
122. <xs:complexType name="TComplexType">
123. <xs:sequence>
124. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
125. <xs:element name="Property" type="edm:TComplexTypeProperty" minOccurs="0" maxOccurs="unbounded" />
126. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
127. </xs:sequence>
128. <xs:attributeGroup ref="edm:TTypeAttributes" />
129. <xs:attribute ref="cg:TypeAccess" use="optional" />
130. <xs:anyAttribute namespace="##other" processContents="lax" />
131. </xs:complexType>
132. <xs:complexType name="TConstraint">
133. <xs:sequence>
134. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
135. <xs:element name="Principal" type="edm:TReferentialConstraintRoleElement" minOccurs="1" maxOccurs="1" />
136. <xs:element name="Dependent" type="edm:TReferentialConstraintRoleElement" minOccurs="1" maxOccurs="1" />
137. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
138. </xs:sequence>
139. <xs:anyAttribute namespace="##other" processContents="lax" />
140. </xs:complexType>
141. <xs:complexType name="TReferentialConstraintRoleElement">
142. <xs:sequence>
143. <xs:element name="PropertyRef" type="edm:TPropertyRef" minOccurs="1" maxOccurs="unbounded" />
144. </xs:sequence>
145. <xs:attribute name="Role" type="edm:TSimpleIdentifier" use="required" />
146. </xs:complexType>
147. <xs:complexType name="TNavigationProperty">
148. <xs:sequence>
149. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
150. </xs:sequence>
151. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
152. <xs:attribute name="Relationship" type="edm:TQualifiedName" use="required" />
153. <xs:attribute name="ToRole" type="edm:TSimpleIdentifier" use="required" />
154. <xs:attribute name="FromRole" type="edm:TSimpleIdentifier" use="required" />
155. <xs:attribute ref="cg:GetterAccess" use="optional" />
156. <xs:attribute ref="cg:SetterAccess" use="optional" />
157. <xs:anyAttribute namespace="##other" processContents="lax" />
158. </xs:complexType>
159. <xs:complexType name="TEntityType">
160. <xs:sequence>
161. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
162. <xs:element name="Key" type="edm:TEntityKeyElement" minOccurs="0" maxOccurs="1" />
163. <xs:choice minOccurs="0" maxOccurs="unbounded">
164. <xs:element name="Property" type="edm:TEntityProperty" minOccurs="0" maxOccurs="unbounded" />
165. <xs:element name="NavigationProperty" type="edm:TNavigationProperty" minOccurs="0" maxOccurs="unbounded" />
166. </xs:choice>
167. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
168. </xs:sequence>
169. <xs:attributeGroup ref="edm:TDerivableTypeAttributes" />
170. <xs:attribute ref="cg:TypeAccess" use="optional" />
171. <xs:anyAttribute namespace="##other" processContents="lax" />
172. </xs:complexType>
173. <xs:complexType name="TEntityKeyElement">
174. <xs:sequence>
175. <xs:element name="PropertyRef" type="edm:TPropertyRef" minOccurs="1" maxOccurs="unbounded" />
176. </xs:sequence>
177. </xs:complexType>
178. <xs:complexType name="TPropertyRef">
179. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
180. </xs:complexType>
181. <xs:group name="GEmptyElementExtensibility">
182. <xs:sequence>
183. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
184. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
185. </xs:sequence>
186. </xs:group>
187. <!--
188. base types
189. -->
190. <xs:complexType name="TAssociationEnd">
191. <xs:sequence>
192. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
193. <xs:group ref="edm:TOperations" minOccurs="0" maxOccurs="unbounded" />
194. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
195. </xs:sequence>
196. <xs:attribute name="Type" type="edm:TQualifiedName" use="required" />
197. <xs:attribute name="Role" type="edm:TSimpleIdentifier" use="optional" />
198. <xs:attribute name="Multiplicity" type="edm:TMultiplicity" use="required" />
199. <xs:anyAttribute namespace="##other" processContents="lax" />
200. </xs:complexType>
201. <xs:group name="TOperations">
202. <xs:choice>
203. <xs:element name="OnDelete" type="edm:TOnAction" maxOccurs="1" minOccurs="0" />
204. </xs:choice>
205. </xs:group>
206. <xs:complexType name="TOnAction">
207. <xs:sequence>
208. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
209. </xs:sequence>
210. <xs:attribute name="Action" type="edm:TAction" use="required" />
211. <xs:anyAttribute namespace="##other" processContents="lax" />
212. </xs:complexType>
213. <xs:complexType name="TEntityProperty">
214. <xs:sequence>
215. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
216. </xs:sequence>
217. <xs:attributeGroup ref="edm:TCommonPropertyAttributes" />
218. <xs:anyAttribute namespace="##other" processContents="lax" />
219. </xs:complexType>
220. <xs:complexType name="TComplexTypeProperty">
221. <xs:sequence>
222. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
223. </xs:sequence>
224. <xs:attributeGroup ref="edm:TCommonPropertyAttributes" />
225. <xs:anyAttribute namespace="##other" processContents="lax" />
226. </xs:complexType>
227. <xs:complexType name="TFunctionImportParameter">
228. <xs:sequence>
229. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
230. </xs:sequence>
231. <xs:attributeGroup ref="edm:TFunctionImportParameterAttributes" />
232. <xs:anyAttribute namespace="##other" processContents="lax" />
233. </xs:complexType>
234. <xs:attributeGroup name="TCommonPropertyAttributes">
235. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
236. <xs:attribute name="Type" type="edm:TPropertyType" use="required" />
237. <xs:attribute name="Nullable" type="xs:boolean" default="true" use="optional" />
238. <xs:attribute name="DefaultValue" type="xs:string" use="optional" />
239. <!-- Start Facets -->
240. <xs:attribute name="MaxLength" type="edm:TMaxLengthFacet" use="optional" />
241. <xs:attribute name="FixedLength" type="edm:TIsFixedLengthFacet" use="optional" />
242. <xs:attribute name="Precision" type="edm:TPrecisionFacet" use="optional" />
243. <xs:attribute name="Scale" type="edm:TScaleFacet" use="optional" />
244. <xs:attribute name="Unicode" type="edm:TIsUnicodeFacet" use="optional" />
245. <xs:attribute name="Collation" type="edm:TCollationFacet" use="optional" />
246. <!--End Facets -->
247. <xs:attribute name="ConcurrencyMode" type="edm:TConcurrencyMode" use="optional" />
248. <xs:attribute ref="cg:SetterAccess" use="optional" />
249. <xs:attribute ref="cg:GetterAccess" use="optional" />
250. </xs:attributeGroup>
251. <xs:attributeGroup name="TFunctionImportParameterAttributes">
252. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
253. <xs:attribute name="Type" type="edm:TPropertyType" use="required" />
254. <xs:attribute name="Mode" type="edm:TParameterMode" use="optional" />
255. <xs:attribute name="MaxLength" type="edm:TMaxLengthFacet" use="optional" />
256. <xs:attribute name="Precision" type="edm:TPrecisionFacet" use="optional" />
257. <xs:attribute name="Scale" type="edm:TScaleFacet" use="optional" />
258. <xs:anyAttribute namespace="##other" processContents="lax" />
259. </xs:attributeGroup>
260. <xs:attributeGroup name="TFunctionImportAttributes">
261. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
262. <xs:attribute name="ReturnType" type="edm:TFunctionType" use="optional" />
263. <xs:attribute name="EntitySet" type="edm:TSimpleIdentifier" use="optional" />
264. <xs:attribute ref="cg:MethodAccess" use="optional" />
265. <xs:anyAttribute namespace="##other" processContents="lax" />
266. </xs:attributeGroup>
267. <xs:attributeGroup name="TTypeAttributes">
268. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
269. </xs:attributeGroup>
270. <xs:attributeGroup name="TDerivableTypeAttributes">
271. <xs:attributeGroup ref="edm:TTypeAttributes" />
272. <xs:attribute name="BaseType" type="edm:TQualifiedName" use="optional" />
273. <xs:attribute name="Abstract" type="xs:boolean" use="optional" default="false" />
274. </xs:attributeGroup>
275. <xs:attributeGroup name="TEntitySetAttributes">
276. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
277. <xs:attribute name="EntityType" type="edm:TQualifiedName" use="required" />
278. <xs:attribute ref="cg:GetterAccess" use="optional" />
279. </xs:attributeGroup>
280. <xs:element name="EntityContainer">
281. <xs:complexType>
282. <xs:sequence>
283. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
284. <xs:choice minOccurs="0" maxOccurs="unbounded">
285. <xs:element name="FunctionImport">
286. <xs:complexType>
287. <xs:sequence>
288. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
289. <xs:element name="Parameter" type="edm:TFunctionImportParameter" minOccurs="0" maxOccurs="unbounded" />
290. </xs:sequence>
291. <xs:attributeGroup ref="edm:TFunctionImportAttributes" />
292. </xs:complexType>
293. </xs:element>
294. <xs:element name="EntitySet">
295. <xs:complexType>
296. <xs:sequence>
297. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
298. </xs:sequence>
299. <xs:attributeGroup ref="edm:TEntitySetAttributes" />
300. <xs:anyAttribute processContents="lax" namespace="##other" />
301. </xs:complexType>
302. </xs:element>
303. <xs:element name="AssociationSet">
304. <xs:complexType>
305. <xs:sequence>
306. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
307. <xs:element name="End" minOccurs="0" maxOccurs="2">
308. <!--
309. 1. The number of Ends has to match with ones defined in AssociationType
310. 2. Value for attribute Name should match the defined ones and EntitySet should be of the
311. defined Entity Type in AssociationType
312. -->
313. <xs:complexType>
314. <xs:sequence>
315. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
316. </xs:sequence>
317. <xs:attribute name="Role" type="edm:TSimpleIdentifier" use="optional" />
318. <xs:attribute name="EntitySet" type="edm:TSimpleIdentifier" use="required" />
319. </xs:complexType>
320. </xs:element>
321. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
322. </xs:sequence>
323. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
324. <xs:attribute name="Association" type="edm:TQualifiedName" use="required" />
325. <xs:anyAttribute namespace="##other" processContents="lax" />
326. </xs:complexType>
327. </xs:element>
328. </xs:choice>
329. </xs:sequence>
330. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
331. <xs:attribute name="Extends" type ="edm:TSimpleIdentifier" use="optional" />
332. </xs:complexType>
333. </xs:element>
334. <!--
335. general (more or less) purpose simple types
336. -->
337. <xs:simpleType name="TParameterMode">
338. <xs:restriction base="xs:token">
339. <xs:enumeration value="In" />
340. <xs:enumeration value="Out" />
341. <xs:enumeration value="InOut" />
342. </xs:restriction>
343. </xs:simpleType>
344. <xs:simpleType name="TNamespaceName">
345. <xs:restriction base="edm:TQualifiedName">
346. <xs:MaxLength value="512" />
347. </xs:restriction>
348. </xs:simpleType>
349. <xs:simpleType name="TQualifiedName">
350. <xs:restriction base="xs:string">
351. <!-- The below pattern represents the allowed identifiers in ECMA specification plus the '.' for namespace qualification -->
352. <xs:pattern value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}(\.[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}){0,}" />
353. </xs:restriction>
354. </xs:simpleType>
355. <xs:simpleType name="TSimpleIdentifier">
356. <xs:restriction base="xs:string">
357. <xs:MaxLength value="480" />
358. <!-- The below pattern represents the allowed identifiers in ECMA specification -->
359. <xs:pattern value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}" />
360. </xs:restriction>
361. </xs:simpleType>
362. <xs:simpleType name="TPropertyType">
363. <xs:union memberTypes="edm:EDMSimpleType edm:TQualifiedName ">
364. <xs:simpleType>
365. <xs:restriction base="xs:token">
366. <!-- The below pattern represents the allowed identifiers in ECMA specification plus the '.' for namespace qualification -->
367. <xs:pattern value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}(\.[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}){0,}" />
368. </xs:restriction>
369. </xs:simpleType>
370. </xs:union>
371. </xs:simpleType>
372. <xs:simpleType name="TFunctionType">
373. <xs:union memberTypes="edm:TQualifiedName ">
374. <xs:simpleType>
375. <xs:restriction base="xs:token">
376. <xs:pattern value="Collection\([^ \t]{1,}(\.[^ \t]{1,}){0,}\)" />
377. </xs:restriction>
378. </xs:simpleType>
379. </xs:union>
380. </xs:simpleType>
381. <xs:simpleType name="TAction">
382. <xs:restriction base="xs:token">
383. <xs:enumeration value="Cascade" />
384. <xs:enumeration value="None" />
385. </xs:restriction>
386. </xs:simpleType>
387. <xs:simpleType name="TMultiplicity">
388. <xs:restriction base="xs:token">
389. <xs:enumeration value="0..1" />
390. <xs:enumeration value="1" />
391. <xs:enumeration value="\*" />
392. </xs:restriction>
393. </xs:simpleType>
394. <xs:simpleType name="TConcurrencyMode">
395. <xs:restriction base="xs:token">
396. <xs:enumeration value="None" />
397. <xs:enumeration value="Fixed" />
398. </xs:restriction>
399. </xs:simpleType>
400. </xs:schema>

## CSDL Schema 1.1

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema elementFormDefault="qualified" attributeFormDefault="unqualified" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:cg="http://schemas.microsoft.com/ado/2006/04/codegeneration" xmlns:edm="http://schemas.microsoft.com/ado/2007/05/edm" targetNamespace="http://schemas.microsoft.com/ado/2007/05/edm">
3. <xs:annotation>
4. <xs:documentation xml:lang="en">
5. Common Data Model Schema Definition Language.
6. Copyright (c) Microsoft Corp. All rights reserved.
7. </xs:documentation>
8. </xs:annotation>
9. <xs:import namespace="http://schemas.microsoft.com/ado/2006/04/codegeneration" schemaLocation="System.Data.Resources.CodeGenerationSchema.xsd" />
10. <xs:element name="Schema" type="edm:TSchema" />
11. <xs:complexType name="TSchema">
12. <xs:sequence>
13. <xs:group ref="edm:GSchemaBodyElements" minOccurs="0" maxOccurs="unbounded" />
14. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
15. </xs:sequence>
16. <xs:attribute name="Namespace" type="edm:TNamespaceName" use="required" />
17. <xs:attribute name="Alias" type="edm:TSimpleIdentifier" use="optional" />
18. <xs:anyAttribute namespace="##other" processContents="lax" />
19. </xs:complexType>
20. <xs:group name="GSchemaBodyElements">
21. <xs:choice>
22. <xs:element name="Using" type="edm:TUsing" minOccurs="0" maxOccurs="unbounded" />
23. <xs:element name="Association" type="edm:TAssociation" minOccurs="0" maxOccurs="unbounded" />
24. <xs:element name="ComplexType" type="edm:TComplexType" minOccurs="0" maxOccurs="unbounded" />
25. <xs:element name="EntityType" type="edm:TEntityType" minOccurs="0" maxOccurs="unbounded" />
26. <xs:element ref="edm:EntityContainer" minOccurs="1" maxOccurs="1" />
27. </xs:choice>
28. </xs:group>
29. <!-- EDM SimpleType instances for use by EDM Instance documents-->
30. <xs:simpleType name="EDMSimpleType">
31. <xs:restriction base="xs:string">
32. <xs:enumeration value="Binary" />
33. <xs:enumeration value="Boolean" />
34. <xs:enumeration value="Byte" />
35. <xs:enumeration value="DateTime" />
36. <xs:enumeration value="DateTimeOffset" />
37. <xs:enumeration value="Time" />
38. <xs:enumeration value="Decimal" />
39. <xs:enumeration value="Double" />
40. <xs:enumeration value="Single" />
41. <xs:enumeration value="Guid" />
42. <xs:enumeration value="Int16" />
43. <xs:enumeration value="Int32" />
44. <xs:enumeration value="Int64" />
45. <xs:enumeration value="String" />
46. <xs:enumeration value="SByte" />
47. </xs:restriction>
48. </xs:simpleType>
49. <xs:simpleType name="TMax">
50. <xs:restriction base="xs:string">
51. <xs:enumeration value="Max" />
52. </xs:restriction>
53. </xs:simpleType>
54. <!-- Facets for Primitive types -->
55. <xs:simpleType name="TMaxLengthFacet">
56. <xs:union memberTypes="edm:TMax xs:nonNegativeInteger " />
57. </xs:simpleType>
58. <xs:simpleType name="TIsFixedLengthFacet">
59. <xs:restriction base="xs:boolean" />
60. </xs:simpleType>
61. <xs:simpleType name="TPrecisionFacet">
62. <xs:restriction base="xs:nonNegativeInteger" />
63. </xs:simpleType>
64. <xs:simpleType name="TScaleFacet">
65. <xs:restriction base="xs:nonNegativeInteger" />
66. </xs:simpleType>
67. <xs:simpleType name="TIsUnicodeFacet">
68. <xs:restriction base="xs:boolean" />
69. </xs:simpleType>
70. <xs:simpleType name="TCollationFacet">
71. <xs:restriction base="xs:string" />
72. </xs:simpleType>
73. <!--
74. types at all levels
75. -->
76. <xs:complexType name="TDocumentation">
77. <xs:annotation>
78. <xs:documentation>The Documentation element is used to provide documentation of comments on the contents of the XML file. It is valid under Schema, Type, Index and Relationship elements.</xs:documentation>
79. </xs:annotation>
80. <xs:sequence>
81. <xs:element name="Summary" type="edm:TText" minOccurs="0" maxOccurs="1" />
82. <xs:element name="LongDescription" type="edm:TText" minOccurs="0" maxOccurs="1" />
83. </xs:sequence>
84. <xs:anyAttribute processContents="lax" namespace="##other" />
85. </xs:complexType>
86. <xs:complexType name="TText" mixed="true">
87. <xs:sequence>
88. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
89. </xs:sequence>
90. <xs:anyAttribute processContents="lax" namespace="##other" />
91. </xs:complexType>
92. <xs:complexType name="TXmlOrText" mixed="true">
93. <xs:annotation>
94. <xs:documentation>This type allows pretty much any content</xs:documentation>
95. </xs:annotation>
96. <xs:sequence>
97. <xs:any namespace="##any" processContents="skip" minOccurs="0" maxOccurs="unbounded" />
98. </xs:sequence>
99. <xs:anyAttribute processContents="skip" namespace="##any" />
100. </xs:complexType>
101. <!--
102. types of the top level elements
103. -->
104. <xs:complexType name="TUsing">
105. <xs:sequence>
106. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
107. </xs:sequence>
108. <xs:attribute name="Namespace" type="edm:TNamespaceName" use="required" />
109. <xs:attribute name="Alias" type="edm:TSimpleIdentifier" use="required" />
110. <xs:anyAttribute namespace="##other" processContents="lax" />
111. </xs:complexType>
112. <xs:complexType name="TAssociation">
113. <xs:sequence>
114. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
115. <xs:element name="End" type="edm:TAssociationEnd" minOccurs="2" maxOccurs="2" />
116. <xs:element name="ReferentialConstraint" type="edm:TConstraint" minOccurs="0" maxOccurs="1" />
117. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
118. </xs:sequence>
119. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
120. <xs:anyAttribute namespace="##other" processContents="lax" />
121. </xs:complexType>
122. <xs:complexType name="TComplexType">
123. <xs:sequence>
124. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
125. <xs:element name="Property" type="edm:TComplexTypeProperty" minOccurs="0" maxOccurs="unbounded" />
126. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
127. </xs:sequence>
128. <xs:attributeGroup ref="edm:TDerivableTypeAttributes" />
129. <xs:attribute ref="cg:TypeAccess" use="optional" />
130. <xs:anyAttribute namespace="##other" processContents="lax" />
131. </xs:complexType>
132. <xs:complexType name="TConstraint">
133. <xs:sequence>
134. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
135. <xs:element name="Principal" type="edm:TReferentialConstraintRoleElement" minOccurs="1" maxOccurs="1" />
136. <xs:element name="Dependent" type="edm:TReferentialConstraintRoleElement" minOccurs="1" maxOccurs="1" />
137. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
138. </xs:sequence>
139. <xs:anyAttribute namespace="##other" processContents="lax" />
140. </xs:complexType>
141. <xs:complexType name="TReferentialConstraintRoleElement">
142. <xs:sequence>
143. <xs:element name="PropertyRef" type="edm:TPropertyRef" minOccurs="1" maxOccurs="unbounded" />
144. </xs:sequence>
145. <xs:attribute name="Role" type="edm:TSimpleIdentifier" use="required" />
146. </xs:complexType>
147. <xs:complexType name="TNavigationProperty">
148. <xs:sequence>
149. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
150. </xs:sequence>
151. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
152. <xs:attribute name="Relationship" type="edm:TQualifiedName" use="required" />
153. <xs:attribute name="ToRole" type="edm:TSimpleIdentifier" use="required" />
154. <xs:attribute name="FromRole" type="edm:TSimpleIdentifier" use="required" />
155. <xs:attribute ref="cg:GetterAccess" use="optional" />
156. <xs:attribute ref="cg:SetterAccess" use="optional" />
157. <xs:anyAttribute namespace="##other" processContents="lax" />
158. </xs:complexType>
159. <xs:complexType name="TEntityType">
160. <xs:sequence>
161. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
162. <xs:element name="Key" type="edm:TEntityKeyElement" minOccurs="0" maxOccurs="1" />
163. <xs:choice minOccurs="0" maxOccurs="unbounded">
164. <xs:element name="Property" type="edm:TEntityProperty" minOccurs="0" maxOccurs="unbounded" />
165. <xs:element name="NavigationProperty" type="edm:TNavigationProperty" minOccurs="0" maxOccurs="unbounded" />
166. </xs:choice>
167. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
168. </xs:sequence>
169. <xs:attributeGroup ref="edm:TDerivableTypeAttributes" />
170. <xs:attribute ref="cg:TypeAccess" use="optional" />
171. <xs:anyAttribute namespace="##other" processContents="lax" />
172. </xs:complexType>
173. <xs:complexType name="TEntityKeyElement">
174. <xs:sequence>
175. <xs:element name="PropertyRef" type="edm:TPropertyRef" minOccurs="1" maxOccurs="unbounded" />
176. </xs:sequence>
177. </xs:complexType>
178. <xs:complexType name="TPropertyRef">
179. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
180. </xs:complexType>
181. <xs:group name="GEmptyElementExtensibility">
182. <xs:sequence>
183. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
184. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
185. </xs:sequence>
186. </xs:group>
187. <!--
188. base types
189. -->
190. <xs:complexType name="TAssociationEnd">
191. <xs:sequence>
192. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
193. <xs:group ref="edm:TOperations" minOccurs="0" maxOccurs="unbounded" />
194. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
195. </xs:sequence>
196. <xs:attribute name="Type" type="edm:TQualifiedName" use="required" />
197. <xs:attribute name="Role" type="edm:TSimpleIdentifier" use="optional" />
198. <xs:attribute name="Multiplicity" type="edm:TMultiplicity" use="required" />
199. <xs:anyAttribute namespace="##other" processContents="lax" />
200. </xs:complexType>
201. <xs:group name="TOperations">
202. <xs:choice>
203. <xs:element name="OnDelete" type="edm:TOnAction" maxOccurs="1" minOccurs="0" />
204. </xs:choice>
205. </xs:group>
206. <xs:complexType name="TOnAction">
207. <xs:sequence>
208. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
209. </xs:sequence>
210. <xs:attribute name="Action" type="edm:TAction" use="required" />
211. <xs:anyAttribute namespace="##other" processContents="lax" />
212. </xs:complexType>
213. <xs:complexType name="TEntityProperty">
214. <xs:sequence>
215. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
216. </xs:sequence>
217. <xs:attributeGroup ref="edm:TCommonPropertyAttributes" />
218. <xs:anyAttribute namespace="##other" processContents="lax" />
219. </xs:complexType>
220. <xs:complexType name="TComplexTypeProperty">
221. <xs:sequence>
222. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
223. </xs:sequence>
224. <xs:attributeGroup ref="edm:TCommonPropertyAttributes" />
225. <xs:anyAttribute namespace="##other" processContents="lax" />
226. </xs:complexType>
227. <xs:complexType name="TFunctionImportParameter">
228. <xs:sequence>
229. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
230. </xs:sequence>
231. <xs:attributeGroup ref="edm:TFunctionImportParameterAttributes" />
232. <xs:anyAttribute namespace="##other" processContents="lax" />
233. </xs:complexType>
234. <xs:attributeGroup name="TCommonPropertyAttributes">
235. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
236. <xs:attribute name="Type" type="edm:TPropertyType" use="required" />
237. <xs:attribute name="Nullable" type="xs:boolean" default="true" use="optional" />
238. <xs:attribute name="DefaultValue" type="xs:string" use="optional" />
239. <xs:attribute name="CollectionKind" type="edm:TPropertyCollectionKind" use="optional" />
240. <!-- Start Facets -->
241. <xs:attribute name="MaxLength" type="edm:TMaxLengthFacet" use="optional" />
242. <xs:attribute name="FixedLength" type="edm:TIsFixedLengthFacet" use="optional" />
243. <xs:attribute name="Precision" type="edm:TPrecisionFacet" use="optional" />
244. <xs:attribute name="Scale" type="edm:TScaleFacet" use="optional" />
245. <xs:attribute name="Unicode" type="edm:TIsUnicodeFacet" use="optional" />
246. <xs:attribute name="Collation" type="edm:TCollationFacet" use="optional" />
247. <!--End Facets -->
248. <xs:attribute name="ConcurrencyMode" type="edm:TConcurrencyMode" use="optional" />
249. <xs:attribute ref="cg:SetterAccess" use="optional" />
250. <xs:attribute ref="cg:GetterAccess" use="optional" />
251. </xs:attributeGroup>
252. <xs:attributeGroup name="TFunctionImportParameterAttributes">
253. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
254. <xs:attribute name="Type" type="edm:TPropertyType" use="required" />
255. <xs:attribute name="Mode" type="edm:TParameterMode" use="optional" />
256. <xs:attribute name="MaxLength" type="edm:TMaxLengthFacet" use="optional" />
257. <xs:attribute name="Precision" type="edm:TPrecisionFacet" use="optional" />
258. <xs:attribute name="Scale" type="edm:TScaleFacet" use="optional" />
259. <xs:anyAttribute namespace="##other" processContents="lax" />
260. </xs:attributeGroup>
261. <xs:attributeGroup name="TFunctionImportAttributes">
262. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
263. <xs:attribute name="ReturnType" type="edm:TFunctionType" use="optional" />
264. <xs:attribute name="EntitySet" type="edm:TSimpleIdentifier" use="optional" />
265. <xs:attribute ref="cg:MethodAccess" use="optional" />
266. <xs:anyAttribute namespace="##other" processContents="lax" />
267. </xs:attributeGroup>
268. <xs:attributeGroup name="TTypeAttributes">
269. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
270. </xs:attributeGroup>
271. <xs:attributeGroup name="TDerivableTypeAttributes">
272. <xs:attributeGroup ref="edm:TTypeAttributes" />
273. <xs:attribute name="BaseType" type="edm:TQualifiedName" use="optional" />
274. <xs:attribute name="Abstract" type="xs:boolean" use="optional" default="false" />
275. </xs:attributeGroup>
276. <xs:attributeGroup name="TEntitySetAttributes">
277. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
278. <xs:attribute name="EntityType" type="edm:TQualifiedName" use="required" />
279. <xs:attribute ref="cg:GetterAccess" use="optional" />
280. </xs:attributeGroup>
281. <xs:element name="EntityContainer">
282. <xs:complexType>
283. <xs:sequence>
284. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
285. <xs:choice minOccurs="0" maxOccurs="unbounded">
286. <xs:element name="FunctionImport">
287. <xs:complexType>
288. <xs:sequence>
289. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
290. <xs:element name="Parameter" type="edm:TFunctionImportParameter" minOccurs="0" maxOccurs="unbounded" />
291. </xs:sequence>
292. <xs:attributeGroup ref="edm:TFunctionImportAttributes" />
293. </xs:complexType>
294. </xs:element>
295. <xs:element name="EntitySet">
296. <xs:complexType>
297. <xs:sequence>
298. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
299. </xs:sequence>
300. <xs:attributeGroup ref="edm:TEntitySetAttributes" />
301. <xs:anyAttribute processContents="lax" namespace="##other" />
302. </xs:complexType>
303. </xs:element>
304. <xs:element name="AssociationSet">
305. <xs:complexType>
306. <xs:sequence>
307. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
308. <xs:element name="End" minOccurs="0" maxOccurs="2">
309. <!--
310. 1. The number of Ends has to match with ones defined in AssociationType
311. 2. Value for attribute Name should match the defined ones and EntitySet should be of the
312. defined Entity Type in AssociationType
313. -->
314. <xs:complexType>
315. <xs:sequence>
316. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
317. </xs:sequence>
318. <xs:attribute name="Role" type="edm:TSimpleIdentifier" use="optional" />
319. <xs:attribute name="EntitySet" type="edm:TSimpleIdentifier" use="required" />
320. </xs:complexType>
321. </xs:element>
322. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
323. </xs:sequence>
324. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
325. <xs:attribute name="Association" type="edm:TQualifiedName" use="required" />
326. <xs:anyAttribute namespace="##other" processContents="lax" />
327. </xs:complexType>
328. </xs:element>
329. </xs:choice>
330. </xs:sequence>
331. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
332. <xs:attribute name="Extends" type ="edm:TSimpleIdentifier" use="optional" />
333. </xs:complexType>
334. </xs:element>
335. <!--
336. general (more or less) purpose simple types
337. -->
338. <xs:simpleType name="TParameterMode">
339. <xs:restriction base="xs:token">
340. <xs:enumeration value="In" />
341. <xs:enumeration value="Out" />
342. <xs:enumeration value="InOut" />
343. </xs:restriction>
344. </xs:simpleType>
345. <xs:simpleType name="TPropertyCollectionKind">
346. <xs:restriction base="xs:token">
347. <xs:enumeration value="None" />
348. <xs:enumeration value="List" />
349. <xs:enumeration value="Bag" />
350. </xs:restriction>
351. </xs:simpleType>
352. <xs:simpleType name="TNamespaceName">
353. <xs:restriction base="edm:TQualifiedName">
354. <xs:MaxLength value="512" />
355. </xs:restriction>
356. </xs:simpleType>
357. <xs:simpleType name="TQualifiedName">
358. <xs:restriction base="xs:string">
359. <!-- The below pattern represents the allowed identifiers in ECMA specification plus the '.' for namespace qualification -->
360. <xs:pattern value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}(\.[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}){0,}" />
361. </xs:restriction>
362. </xs:simpleType>
363. <xs:simpleType name="TSimpleIdentifier">
364. <xs:restriction base="xs:string">
365. <xs:MaxLength value="480" />
366. <!-- The below pattern represents the allowed identifiers in ECMA specification -->
367. <xs:pattern value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}" />
368. </xs:restriction>
369. </xs:simpleType>
370. <xs:simpleType name="TPropertyType">
371. <xs:union memberTypes="edm:EDMSimpleType edm:TQualifiedName ">
372. <xs:simpleType>
373. <xs:restriction base="xs:token">
374. <!-- The below pattern represents the allowed identifiers in ECMA specification plus the '.' for namespace qualification -->
375. <xs:pattern value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}(\.[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}){0,}" />
376. </xs:restriction>
377. </xs:simpleType>
378. </xs:union>
379. </xs:simpleType>
380. <xs:simpleType name="TFunctionType">
381. <xs:union memberTypes="edm:TQualifiedName ">
382. <xs:simpleType>
383. <xs:restriction base="xs:token">
384. <xs:pattern value="Collection\([^ \t]{1,}(\.[^ \t]{1,}){0,}\)" />
385. </xs:restriction>
386. </xs:simpleType>
387. </xs:union>
388. </xs:simpleType>
389. <xs:simpleType name="TAction">
390. <xs:restriction base="xs:token">
391. <xs:enumeration value="Cascade" />
392. <xs:enumeration value="None" />
393. </xs:restriction>
394. </xs:simpleType>
395. <xs:simpleType name="TMultiplicity">
396. <xs:restriction base="xs:token">
397. <xs:enumeration value="0..1" />
398. <xs:enumeration value="1" />
399. <xs:enumeration value="\*" />
400. </xs:restriction>
401. </xs:simpleType>
402. <xs:simpleType name="TConcurrencyMode">
403. <xs:restriction base="xs:token">
404. <xs:enumeration value="None" />
405. <xs:enumeration value="Fixed" />
406. </xs:restriction>
407. </xs:simpleType>
408. </xs:schema>

## CSDL Schema 2.0

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema elementFormDefault="qualified" attributeFormDefault="unqualified" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:annotation="http://schemas.microsoft.com/ado/2009/02/edm/annotation" xmlns:cg="http://schemas.microsoft.com/ado/2006/04/codegeneration" xmlns:edm="http://schemas.microsoft.com/ado/2008/09/edm" targetNamespace="http://schemas.microsoft.com/ado/2008/09/edm">
3. <xs:annotation>
4. <xs:documentation xml:lang="en">
5. Common Data Model Schema Definition Language.
6. Copyright (c) Microsoft Corp. All rights reserved.
7. </xs:documentation>
8. </xs:annotation>
9. <xs:import namespace="http://schemas.microsoft.com/ado/2006/04/codegeneration" schemaLocation="System.Data.Resources.CodeGenerationSchema.xsd" />
10. <xs:import namespace="http://schemas.microsoft.com/ado/2009/02/edm/annotation" schemaLocation="System.Data.Resources.AnnotationSchema.xsd" />
11. <xs:element name="Schema" type="edm:TSchema" />
12. <xs:complexType name="TSchema">
13. <xs:sequence>
14. <xs:group ref="edm:GSchemaBodyElements" minOccurs="0" maxOccurs="unbounded" />
15. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
16. </xs:sequence>
17. <xs:attribute name="Namespace" type="edm:TNamespaceName" use="required" />
18. <xs:attribute name="Alias" type="edm:TSimpleIdentifier" use="optional" />
19. <xs:anyAttribute namespace="##other" processContents="lax" />
20. </xs:complexType>
21. <xs:group name="GSchemaBodyElements">
22. <xs:choice>
23. <xs:element name="Using" type="edm:TUsing" minOccurs="0" maxOccurs="unbounded" />
24. <xs:element name="Association" type="edm:TAssociation" minOccurs="0" maxOccurs="unbounded" />
25. <xs:element name="ComplexType" type="edm:TComplexType" minOccurs="0" maxOccurs="unbounded" />
26. <xs:element name="EntityType" type="edm:TEntityType" minOccurs="0" maxOccurs="unbounded" />
27. <xs:element name="Function" type="edm:TFunction" minOccurs="0" maxOccurs="unbounded" />
28. <xs:element ref="edm:EntityContainer" minOccurs="1" maxOccurs="1" />
29. </xs:choice>
30. </xs:group>
31. <!-- EDM SimpleType instances for use by EDM Instance documents-->
32. <xs:simpleType name="EDMSimpleType">
33. <xs:restriction base="xs:string">
34. <xs:enumeration value="Binary" />
35. <xs:enumeration value="Boolean" />
36. <xs:enumeration value="Byte" />
37. <xs:enumeration value="DateTime" />
38. <xs:enumeration value="DateTimeOffset" />
39. <xs:enumeration value="Time" />
40. <xs:enumeration value="Decimal" />
41. <xs:enumeration value="Double" />
42. <xs:enumeration value="Single" />
43. <xs:enumeration value="Guid" />
44. <xs:enumeration value="Int16" />
45. <xs:enumeration value="Int32" />
46. <xs:enumeration value="Int64" />
47. <xs:enumeration value="String" />
48. <xs:enumeration value="SByte" />
49. </xs:restriction>
50. </xs:simpleType>
51. <xs:simpleType name="TMax">
52. <xs:restriction base="xs:string">
53. <xs:enumeration value="Max" />
54. </xs:restriction>
55. </xs:simpleType>
56. <!-- Facets for Primitive types -->
57. <xs:simpleType name="TMaxLengthFacet">
58. <xs:union memberTypes="edm:TMax xs:nonNegativeInteger " />
59. </xs:simpleType>
60. <xs:simpleType name="TIsFixedLengthFacet">
61. <xs:restriction base="xs:boolean" />
62. </xs:simpleType>
63. <xs:simpleType name="TPrecisionFacet">
64. <xs:restriction base="xs:nonNegativeInteger" />
65. </xs:simpleType>
66. <xs:simpleType name="TScaleFacet">
67. <xs:restriction base="xs:nonNegativeInteger" />
68. </xs:simpleType>
69. <xs:simpleType name="TIsUnicodeFacet">
70. <xs:restriction base="xs:boolean" />
71. </xs:simpleType>
72. <xs:simpleType name="TCollationFacet">
73. <xs:restriction base="xs:string" />
74. </xs:simpleType>
75. <!--
76. types at all levels
77. -->
78. <xs:complexType name="TDocumentation">
79. <xs:annotation>
80. <xs:documentation>The Documentation element is used to provide documentation of comments on the contents of the XML file. It is valid under Schema, Type, Index and Relationship elements.</xs:documentation>
81. </xs:annotation>
82. <xs:sequence>
83. <xs:element name="Summary" type="edm:TText" minOccurs="0" maxOccurs="1" />
84. <xs:element name="LongDescription" type="edm:TText" minOccurs="0" maxOccurs="1" />
85. </xs:sequence>
86. <xs:anyAttribute processContents="lax" namespace="##other" />
87. </xs:complexType>
88. <xs:complexType name="TText" mixed="true">
89. <xs:sequence>
90. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
91. </xs:sequence>
92. <xs:anyAttribute processContents="lax" namespace="##other" />
93. </xs:complexType>
94. <xs:complexType name="TXmlOrText" mixed="true">
95. <xs:annotation>
96. <xs:documentation>This type allows pretty much any content</xs:documentation>
97. </xs:annotation>
98. <xs:sequence>
99. <xs:any namespace="##any" processContents="skip" minOccurs="0" maxOccurs="unbounded" />
100. </xs:sequence>
101. <xs:anyAttribute processContents="skip" namespace="##any" />
102. </xs:complexType>
103. <!--
104. types of the top level elements
105. -->
106. <xs:complexType name="TUsing">
107. <xs:sequence>
108. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
109. </xs:sequence>
110. <xs:attribute name="Namespace" type="edm:TNamespaceName" use="required" />
111. <xs:attribute name="Alias" type="edm:TSimpleIdentifier" use="required" />
112. <xs:anyAttribute namespace="##other" processContents="lax" />
113. </xs:complexType>
114. <xs:complexType name="TAssociation">
115. <xs:sequence>
116. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
117. <xs:element name="End" type="edm:TAssociationEnd" minOccurs="2" maxOccurs="2" />
118. <xs:element name="ReferentialConstraint" type="edm:TConstraint" minOccurs="0" maxOccurs="1" />
119. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
120. </xs:sequence>
121. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
122. <xs:anyAttribute namespace="##other" processContents="lax" />
123. </xs:complexType>
124. <xs:complexType name="TComplexType">
125. <xs:sequence>
126. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
127. <xs:element name="Property" type="edm:TComplexTypeProperty" minOccurs="0" maxOccurs="unbounded" />
128. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
129. </xs:sequence>
130. <xs:attributeGroup ref="edm:TTypeAttributes" />
131. <xs:attribute ref="cg:TypeAccess" use="optional" />
132. <xs:anyAttribute namespace="##other" processContents="lax" />
133. </xs:complexType>
134. <xs:complexType name="TConstraint">
135. <xs:sequence>
136. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
137. <xs:element name="Principal" type="edm:TReferentialConstraintRoleElement" minOccurs="1" maxOccurs="1" />
138. <xs:element name="Dependent" type="edm:TReferentialConstraintRoleElement" minOccurs="1" maxOccurs="1" />
139. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
140. </xs:sequence>
141. <xs:anyAttribute namespace="##other" processContents="lax" />
142. </xs:complexType>
143. <xs:complexType name="TReferentialConstraintRoleElement">
144. <xs:sequence>
145. <xs:element name="PropertyRef" type="edm:TPropertyRef" minOccurs="1" maxOccurs="unbounded" />
146. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
147. </xs:sequence>
148. <xs:attribute name="Role" type="edm:TSimpleIdentifier" use="required" />
149. </xs:complexType>
150. <xs:complexType name="TNavigationProperty">
151. <xs:sequence>
152. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
153. </xs:sequence>
154. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
155. <xs:attribute name="Relationship" type="edm:TQualifiedName" use="required" />
156. <xs:attribute name="ToRole" type="edm:TSimpleIdentifier" use="required" />
157. <xs:attribute name="FromRole" type="edm:TSimpleIdentifier" use="required" />
158. <xs:attribute ref="cg:GetterAccess" use="optional" />
159. <xs:attribute ref="cg:SetterAccess" use="optional" />
160. <xs:anyAttribute namespace="##other" processContents="lax" />
161. </xs:complexType>
162. <xs:complexType name="TEntityType">
163. <xs:sequence>
164. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
165. <xs:element name="Key" type="edm:TEntityKeyElement" minOccurs="0" maxOccurs="1" />
166. <xs:choice minOccurs="0" maxOccurs="unbounded">
167. <xs:element name="Property" type="edm:TEntityProperty" minOccurs="0" maxOccurs="unbounded" />
168. <xs:element name="NavigationProperty" type="edm:TNavigationProperty" minOccurs="0" maxOccurs="unbounded" />
169. </xs:choice>
170. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
171. </xs:sequence>
172. <xs:attributeGroup ref="edm:TDerivableTypeAttributes" />
173. <xs:attribute ref="cg:TypeAccess" use="optional" />
174. <xs:anyAttribute namespace="##other" processContents="lax" />
175. </xs:complexType>

























202. <xs:complexType name="TFunction">
203. <xs:sequence>
204. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
205. <xs:choice minOccurs="0" maxOccurs="unbounded">
206. <xs:element name="Parameter" type="edm:TFunctionParameter" minOccurs="0" maxOccurs="unbounded" />
207. <xs:element name="DefiningExpression" type="edm:TCommandText" minOccurs="0" maxOccurs="1" />
208. <xs:element name="ReturnType" type="edm:TFunctionReturnType" minOccurs="0" maxOccurs="1" />
209. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
210. </xs:choice>
211. </xs:sequence>
212. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
213. <xs:attribute name="ReturnType" type="edm:TWrappedFunctionType" use="optional" />
214. <xs:attributeGroup ref="edm:TFacetAttributes" />
215. <xs:anyAttribute namespace="##other" processContents="lax" />
216. </xs:complexType>
217. <xs:complexType name="TFunctionParameter">
218. <xs:sequence>
219. <xs:choice minOccurs="0" maxOccurs="1">
220. <xs:element name="CollectionType" type="edm:TCollectionType" minOccurs="0" maxOccurs="1" />
221. <xs:element name="ReferenceType" type="edm:TReferenceType" minOccurs="0" maxOccurs="1" />
222. <xs:element name="RowType" type="edm:TRowType" minOccurs="0" maxOccurs="1" />
223. </xs:choice>
224. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
225. </xs:sequence>
226. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
227. <xs:attribute name="Type" type="edm:TWrappedFunctionType" use="optional" />
228. <xs:attributeGroup ref="edm:TFacetAttributes" />
229. <xs:anyAttribute namespace="##other" processContents="lax" />
230. </xs:complexType>
231. <xs:complexType name="TCollectionType">
232. <xs:sequence minOccurs ="1" maxOccurs="1">
233. <xs:choice minOccurs="0" maxOccurs="1">
234. <xs:element name="CollectionType" type="edm:TCollectionType" minOccurs="0" maxOccurs="1" />
235. <xs:element name="ReferenceType" type="edm:TReferenceType" minOccurs="0" maxOccurs="1" />
236. <xs:element name="RowType" type="edm:TRowType" minOccurs="0" maxOccurs="1" />
237. <xs:element name="TypeRef" type="edm:TTypeRef" minOccurs="0" maxOccurs="1" />
238. </xs:choice>
239. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
240. </xs:sequence>
241. <xs:attribute name="ElementType" type="edm:TUnwrappedFunctionType" use="optional" />
242. <xs:attributeGroup ref="edm:TFacetAttributes" />
243. <xs:anyAttribute namespace="##other" processContents="lax" />
244. </xs:complexType>
245. <xs:complexType name="TTypeRef">
246. <xs:sequence>
247. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
248. </xs:sequence>
249. <xs:attribute name="Type" type="edm:TUnwrappedFunctionType" use="required" />
250. <xs:attributeGroup ref="edm:TFacetAttributes" />
251. <xs:anyAttribute namespace="##other" processContents="lax" />
252. </xs:complexType>
253. <xs:complexType name="TReferenceType">
254. <xs:sequence>
255. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
256. </xs:sequence>
257. <xs:attribute name="Type" type="edm:TUnwrappedFunctionType" use="required" />
258. <xs:anyAttribute namespace="##other" processContents="lax" />
259. </xs:complexType>
260. <xs:complexType name="TRowType">
261. <xs:choice minOccurs="1" maxOccurs="unbounded">
262. <xs:element name="Property" type="edm:TProperty" minOccurs="0" maxOccurs="1" />
263. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
264. </xs:choice>
265. <xs:anyAttribute namespace="##other" processContents="lax" />
266. </xs:complexType>
267. <xs:complexType name="TProperty">
268. <xs:sequence>
269. <xs:choice minOccurs="0" maxOccurs="1">
270. <xs:element name="CollectionType" type="edm:TCollectionType" minOccurs="0" maxOccurs="1" />
271. <xs:element name="ReferenceType" type="edm:TReferenceType" minOccurs="0" maxOccurs="1" />
272. <xs:element name="RowType" type="edm:TRowType" minOccurs="0" maxOccurs="1" />
273. </xs:choice>
274. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
275. </xs:sequence>
276. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
277. <xs:attribute name="Type" type="edm:TWrappedFunctionType" use="optional" />
278. <xs:attributeGroup ref="edm:TFacetAttributes" />
279. <xs:anyAttribute namespace="##other" processContents="lax" />
280. </xs:complexType>
281. <xs:complexType name="TFunctionReturnType">
282. <xs:sequence>
283. <xs:choice minOccurs="0" maxOccurs="1">
284. <xs:element name="CollectionType" type="edm:TCollectionType" minOccurs="0" maxOccurs="1" />
285. <xs:element name="ReferenceType" type="edm:TReferenceType" minOccurs="0" maxOccurs="1" />
286. <xs:element name="RowType" type="edm:TRowType" minOccurs="0" maxOccurs="1" />
287. </xs:choice>
288. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
289. </xs:sequence>
290. <xs:attribute name="Type" type="edm:TWrappedFunctionType" use="optional" />
291. <xs:attributeGroup ref="edm:TFacetAttributes" />
292. <xs:anyAttribute namespace="##other" processContents="lax" />
293. </xs:complexType>





















316. <xs:complexType name="TEntityKeyElement">
317. <xs:sequence>
318. <xs:element name="PropertyRef" type="edm:TPropertyRef" minOccurs="1" maxOccurs="unbounded" />
319. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
320. </xs:sequence>
321. </xs:complexType>
322. <xs:complexType name="TPropertyRef">
323. <xs:sequence>
324. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
325. </xs:sequence>
326. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
327. </xs:complexType>
328. <xs:group name="GEmptyElementExtensibility">
329. <xs:sequence>
330. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
331. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
332. </xs:sequence>
333. </xs:group>
334. <!--
335. base types
336. -->
337. <xs:complexType name="TAssociationEnd">
338. <xs:sequence>
339. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
340. <xs:group ref="edm:TOperations" minOccurs="0" maxOccurs="unbounded" />
341. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
342. </xs:sequence>
343. <xs:attribute name="Type" type="edm:TQualifiedName" use="required" />
344. <xs:attribute name="Role" type="edm:TSimpleIdentifier" use="optional" />
345. <xs:attribute name="Multiplicity" type="edm:TMultiplicity" use="optional" />
346. <xs:anyAttribute namespace="##other" processContents="lax" />
347. </xs:complexType>
348. <xs:group name="TOperations">
349. <xs:choice>
350. <xs:element name="OnDelete" type="edm:TOnAction" maxOccurs="1" minOccurs="0" />
351. </xs:choice>
352. </xs:group>
353. <xs:complexType name="TOnAction">
354. <xs:sequence>
355. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
356. </xs:sequence>
357. <xs:attribute name="Action" type="edm:TAction" use="required" />
358. <xs:anyAttribute namespace="##other" processContents="lax" />
359. </xs:complexType>
360. <xs:complexType name="TEntityProperty">
361. <xs:sequence>
362. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
363. </xs:sequence>
364. <xs:attributeGroup ref="edm:TCommonPropertyAttributes" />
365. <xs:attribute ref="annotation:StoreGeneratedPattern" use="optional" />
366. <xs:anyAttribute namespace="##other" processContents="lax" />
367. </xs:complexType>
368. <xs:complexType name="TComplexTypeProperty">
369. <xs:sequence>
370. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
371. </xs:sequence>
372. <xs:attributeGroup ref="edm:TCommonPropertyAttributes" />
373. <xs:anyAttribute namespace="##other" processContents="lax" />
374. </xs:complexType>
375. <xs:complexType name="TFunctionImportParameter">
376. <xs:sequence>
377. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
378. </xs:sequence>
379. <xs:attributeGroup ref="edm:TFunctionImportParameterAttributes" />
380. <xs:anyAttribute namespace="##other" processContents="lax" />
381. </xs:complexType>
382. <xs:attributeGroup name="TFacetAttributes">
383. <xs:attribute name="Nullable" type="xs:boolean" use="optional" />
384. <xs:attribute name="DefaultValue" type="xs:string" use="optional" />
385. <xs:attribute name="MaxLength" type="edm:TMaxLengthFacet" use="optional" />
386. <xs:attribute name="FixedLength" type="edm:TIsFixedLengthFacet" use="optional" />
387. <xs:attribute name="Precision" type="edm:TPrecisionFacet" use="optional" />
388. <xs:attribute name="Scale" type="edm:TScaleFacet" use="optional" />
389. <xs:attribute name="Unicode" type="edm:TIsUnicodeFacet" use="optional" />
390. <xs:attribute name="Collation" type="edm:TCollationFacet" use="optional" />
391. </xs:attributeGroup>
392. <xs:attributeGroup name="TCommonPropertyAttributes">
393. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
394. <xs:attribute name="Type" type="edm:TPropertyType" use="required" />
395. <xs:attribute name="Nullable" type="xs:boolean" default="true" use="optional" />
396. <xs:attribute name="DefaultValue" type="xs:string" use="optional" />
397. <!-- Start Facets -->
398. <xs:attribute name="MaxLength" type="edm:TMaxLengthFacet" use="optional" />
399. <xs:attribute name="FixedLength" type="edm:TIsFixedLengthFacet" use="optional" />
400. <xs:attribute name="Precision" type="edm:TPrecisionFacet" use="optional" />
401. <xs:attribute name="Scale" type="edm:TScaleFacet" use="optional" />
402. <xs:attribute name="Unicode" type="edm:TIsUnicodeFacet" use="optional" />
403. <xs:attribute name="Collation" type="edm:TCollationFacet" use="optional" />
404. <!--End Facets -->
405. <xs:attribute name="ConcurrencyMode" type="edm:TConcurrencyMode" use="optional" />
406. <xs:attribute ref="cg:SetterAccess" use="optional" />
407. <xs:attribute ref="cg:GetterAccess" use="optional" />
408. </xs:attributeGroup>
409. <xs:attributeGroup name="TFunctionImportParameterAttributes">
410. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
411. <xs:attribute name="Type" type="edm:TPropertyType" use="required" />
412. <xs:attribute name="Mode" type="edm:TParameterMode" use="optional" />
413. <xs:attribute name="MaxLength" type="edm:TMaxLengthFacet" use="optional" />
414. <xs:attribute name="Precision" type="edm:TPrecisionFacet" use="optional" />
415. <xs:attribute name="Scale" type="edm:TScaleFacet" use="optional" />
416. <xs:anyAttribute namespace="##other" processContents="lax" />
417. </xs:attributeGroup>
418. <xs:attributeGroup name="TFunctionImportAttributes">
419. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
420. <xs:attribute name="ReturnType" type="edm:TFunctionType" use="optional" />
421. <xs:attribute name="EntitySet" type="edm:TSimpleIdentifier" use="optional" />
422. <xs:attribute ref="cg:MethodAccess" use="optional" />
423. <xs:anyAttribute namespace="##other" processContents="lax" />
424. </xs:attributeGroup>
425. <xs:attributeGroup name="TTypeAttributes">
426. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
427. </xs:attributeGroup>
428. <xs:attributeGroup name="TDerivableTypeAttributes">
429. <xs:attributeGroup ref="edm:TTypeAttributes" />
430. <xs:attribute name="BaseType" type="edm:TQualifiedName" use="optional" />
431. <xs:attribute name="Abstract" type="xs:boolean" use="optional" default="false" />
432. </xs:attributeGroup>
433. <xs:attributeGroup name="TEntitySetAttributes">
434. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
435. <xs:attribute name="EntityType" type="edm:TQualifiedName" use="required" />
436. <xs:attribute ref="cg:GetterAccess" use="optional" />
437. </xs:attributeGroup>
438. <xs:element name="EntityContainer">
439. <xs:complexType>
440. <xs:sequence>
441. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
442. <xs:choice minOccurs="0" maxOccurs="unbounded">
443. <xs:element name="FunctionImport">
444. <xs:complexType>
445. <xs:sequence>
446. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
447. <xs:element name="Parameter" type="edm:TFunctionImportParameter" minOccurs="0" maxOccurs="unbounded" />
448. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
449. </xs:sequence>
450. <xs:attributeGroup ref="edm:TFunctionImportAttributes" />
451. </xs:complexType>
452. </xs:element>
453. <xs:element name="EntitySet">
454. <xs:complexType>
455. <xs:sequence>
456. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
457. </xs:sequence>
458. <xs:attributeGroup ref="edm:TEntitySetAttributes" />
459. <xs:anyAttribute processContents="lax" namespace="##other" />
460. </xs:complexType>
461. </xs:element>
462. <xs:element name="AssociationSet">
463. <xs:complexType>
464. <xs:sequence>
465. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
466. <xs:element name="End" minOccurs="0" maxOccurs="2">
467. <!--
468. 1. The number of Ends has to match with ones defined in AssociationType
469. 2. Value for attribute Name should match the defined ones and EntitySet should be of the
470. defined Entity Type in AssociationType
471. -->
472. <xs:complexType>
473. <xs:sequence>
474. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
475. </xs:sequence>
476. <xs:attribute name="Role" type="edm:TSimpleIdentifier" use="optional" />
477. <xs:attribute name="EntitySet" type="edm:TSimpleIdentifier" use="required" />
478. </xs:complexType>
479. </xs:element>
480. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
481. </xs:sequence>
482. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
483. <xs:attribute name="Association" type="edm:TQualifiedName" use="required" />
484. <xs:anyAttribute namespace="##other" processContents="lax" />
485. </xs:complexType>
486. </xs:element>
487. </xs:choice>
488. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
489. </xs:sequence>
490. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
491. <xs:attribute name="Extends" type ="edm:TSimpleIdentifier" use="optional" />
492. <xs:attribute ref="cg:TypeAccess" use="optional" />
493. <xs:attribute ref="annotation:LazyLoadingEnabled" use="optional" />
494. <xs:anyAttribute namespace="##other" processContents="lax" />
495. </xs:complexType>
496. </xs:element>
497. <!--
498. general (more or less) purpose simple types
499. -->
500. <xs:simpleType name="TParameterMode">
501. <xs:restriction base="xs:token">
502. <xs:enumeration value="In" />
503. <xs:enumeration value="Out" />
504. <xs:enumeration value="InOut" />
505. </xs:restriction>
506. </xs:simpleType>
507. <xs:simpleType name="TNamespaceName">
508. <xs:restriction base="edm:TQualifiedName">
509. <xs:MaxLength value="512" />
510. </xs:restriction>
511. </xs:simpleType>
512. <xs:simpleType name="TQualifiedName">
513. <xs:restriction base="xs:string">
514. <!-- The below pattern represents the allowed identifiers in ECMA specification plus the '.' for namespace qualification -->
515. <xs:pattern value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}(\.[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}){0,}" />
516. </xs:restriction>
517. </xs:simpleType>
518. <xs:simpleType name="TSimpleIdentifier">
519. <xs:restriction base="xs:string">
520. <xs:MaxLength value="480" />
521. <!-- The below pattern represents the allowed identifiers in ECMA specification -->
522. <xs:pattern value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}" />
523. </xs:restriction>
524. </xs:simpleType>
525. <xs:simpleType name="TPropertyType">
526. <xs:union memberTypes="edm:EDMSimpleType edm:TQualifiedName ">
527. <xs:simpleType>
528. <xs:restriction base="xs:token">
529. <!-- The below pattern represents the allowed identifiers in ECMA specification plus the '.' for namespace qualification -->
530. <xs:pattern value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}(\.[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}){0,}" />
531. </xs:restriction>
532. </xs:simpleType>
533. </xs:union>
534. </xs:simpleType>
535. <xs:simpleType name="TCommandText">
536. <xs:restriction base="xs:string">
537. <xs:whiteSpace value="preserve" />
538. </xs:restriction>
539. </xs:simpleType>
540. <xs:simpleType name="TFunctionType">
541. <xs:union memberTypes="edm:TQualifiedName ">
542. <xs:simpleType>
543. <xs:restriction base="xs:token">
544. <xs:pattern value="Collection\([^ \t]{1,}(\.[^ \t]{1,}){0,}\)" />
545. </xs:restriction>
546. </xs:simpleType>
547. </xs:union>
548. </xs:simpleType>
549. <xs:simpleType name="TWrappedFunctionType">
550. <xs:union memberTypes="edm:TQualifiedName ">
551. <xs:simpleType>
552. <xs:restriction base="xs:token">
553. <xs:pattern value="(Collection|Ref)\([^ \t]{1,}(\.[^ \t]{1,}){0,}\)" />
554. </xs:restriction>
555. </xs:simpleType>
556. </xs:union>
557. </xs:simpleType>
558. <xs:simpleType name="TUnwrappedFunctionType">
559. <xs:union memberTypes="edm:TQualifiedName ">
560. <xs:simpleType>
561. <xs:restriction base="xs:token">
562. <xs:pattern value="[^ \t]{1,}(\.[^ \t]{1,}){0,}" />
563. </xs:restriction>
564. </xs:simpleType>
565. </xs:union>
566. </xs:simpleType>
567. <xs:simpleType name="TAction">
568. <xs:restriction base="xs:token">
569. <xs:enumeration value="Cascade" />
570. <xs:enumeration value="None" />
571. </xs:restriction>
572. </xs:simpleType>
573. <xs:simpleType name="TMultiplicity">
574. <xs:restriction base="xs:token">
575. <xs:enumeration value="0..1" />
576. <xs:enumeration value="1" />
577. <xs:enumeration value="\*" />
578. </xs:restriction>
579. </xs:simpleType>
580. <xs:simpleType name="TConcurrencyMode">
581. <xs:restriction base="xs:token">
582. <xs:enumeration value="None" />
583. <xs:enumeration value="Fixed" />
584. </xs:restriction>
585. </xs:simpleType>
586. </xs:schema>

## CSDL Schema 3.0

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema elementFormDefault="qualified" attributeFormDefault="unqualified" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:annotation="http://schemas.microsoft.com/ado/2009/02/edm/annotation" xmlns:cg="http://schemas.microsoft.com/ado/2006/04/codegeneration" xmlns:edm="http://schemas.microsoft.com/ado/2009/11/edm" targetNamespace="http://schemas.microsoft.com/ado/2009/11/edm">
3. <xs:annotation>
4. <xs:documentation xml:lang="en">
5. Common Data Model Schema Definition Language.
6. Copyright (c) Microsoft Corp. All rights reserved.
7. </xs:documentation>
8. </xs:annotation>
9. <xs:import namespace="http://schemas.microsoft.com/ado/2006/04/codegeneration" schemaLocation="System.Data.Resources.CodeGenerationSchema.xsd" />
10. <xs:import namespace="http://schemas.microsoft.com/ado/2009/02/edm/annotation" schemaLocation="System.Data.Resources.AnnotationSchema.xsd" />
11. <xs:element name="Schema" type="edm:TSchema" />
12. <xs:complexType name="TSchema">
13. <xs:sequence>
14. <xs:group ref="edm:GSchemaBodyElements" minOccurs="0" maxOccurs="unbounded" />
15. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
16. </xs:sequence>
17. <xs:attribute name="Namespace" type="edm:TNamespaceName" use="optional" />
18. <xs:attribute name="Alias" type="edm:TSimpleIdentifier" use="optional" />
19. <xs:anyAttribute namespace="##other" processContents="lax" />
20. </xs:complexType>
21. <xs:group name="GSchemaBodyElements">
22. <xs:choice>
23. <xs:element name="Using" type="edm:TUsing" minOccurs="0" maxOccurs="unbounded" />
24. <xs:element name="Association" type="edm:TAssociation" minOccurs="0" maxOccurs="unbounded" />
25. <xs:element name="ComplexType" type="edm:TComplexType" minOccurs="0" maxOccurs="unbounded" />
26. <xs:element name="EntityType" type="edm:TEntityType" minOccurs="0" maxOccurs="unbounded" />
27. <xs:element name="EnumType" type="edm:TEnumType" minOccurs="0" maxOccurs="unbounded" />
28. <xs:element name="ValueTerm" type="edm:TValueTerm" minOccurs="0" maxOccurs="unbounded" />
29. <xs:element name="Function" type="edm:TFunction" minOccurs="0" maxOccurs="unbounded" />
30. <xs:element name="Annotations" type="edm:TAnnotations" minOccurs="0" maxOccurs="unbounded" />
31. <xs:element ref="edm:EntityContainer" minOccurs="1" maxOccurs="1" />
32. </xs:choice>
33. </xs:group>
34. <!-- EDM SimpleType instances for use by EDM Instance documents-->
35. <xs:simpleType name="EDMSimpleType">
36. <xs:restriction base="xs:string">
37. <xs:enumeration value="Binary" />
38. <xs:enumeration value="Boolean" />
39. <xs:enumeration value="Byte" />
40. <xs:enumeration value="DateTime" />
41. <xs:enumeration value="DateTimeOffset" />
42. <xs:enumeration value="Time" />
43. <xs:enumeration value="Decimal" />
44. <xs:enumeration value="Double" />
45. <xs:enumeration value="Single" />
46. <xs:enumeration value="Geography" />
47. <xs:enumeration value="GeographyPoint" />
48. <xs:enumeration value="GeographyLineString" />
49. <xs:enumeration value="GeographyPolygon" />
50. <xs:enumeration value="GeographyMultiPoint" />
51. <xs:enumeration value="GeographyMultiLineString" />
52. <xs:enumeration value="GeographyMultiPolygon" />
53. <xs:enumeration value="GeographyCollection" />
54. <xs:enumeration value="Geometry" />
55. <xs:enumeration value="GeometryPoint" />
56. <xs:enumeration value="GeometryLineString" />
57. <xs:enumeration value="GeometryPolygon" />
58. <xs:enumeration value="GeometryMultiPoint" />
59. <xs:enumeration value="GeometryMultiLineString" />
60. <xs:enumeration value="GeometryMultiPolygon" />
61. <xs:enumeration value="GeometryCollection" />
62. <xs:enumeration value="Guid" />
63. <xs:enumeration value="Int16" />
64. <xs:enumeration value="Int32" />
65. <xs:enumeration value="Int64" />
66. <xs:enumeration value="String" />
67. <xs:enumeration value="SByte" />
68. <xs:enumeration value="Stream" />
69. </xs:restriction>
70. </xs:simpleType>
71. <xs:simpleType name="TMax">
72. <xs:restriction base="xs:string">
73. <xs:enumeration value="Max" />
74. </xs:restriction>
75. </xs:simpleType>
76. <xs:simpleType name="TVariable">
77. <xs:restriction base="xs:string">
78. <xs:enumeration value="Variable" />
79. </xs:restriction>
80. </xs:simpleType>
81. <!-- Facets for Primitive types -->
82. <xs:simpleType name="TMaxLengthFacet">
83. <xs:union memberTypes="edm:TMax xs:nonNegativeInteger " />
84. </xs:simpleType>
85. <xs:simpleType name="TIsFixedLengthFacet">
86. <xs:restriction base="xs:boolean" />
87. </xs:simpleType>
88. <xs:simpleType name="TPrecisionFacet">
89. <xs:restriction base="xs:nonNegativeInteger" />
90. </xs:simpleType>
91. <xs:simpleType name="TScaleFacet">
92. <xs:restriction base="xs:nonNegativeInteger" />
93. </xs:simpleType>
94. <xs:simpleType name="TIsUnicodeFacet">
95. <xs:restriction base="xs:boolean" />
96. </xs:simpleType>
97. <xs:simpleType name="TCollationFacet">
98. <xs:restriction base="xs:string" />
99. </xs:simpleType>
100. <xs:simpleType name="TSridFacet">
101. <xs:union memberTypes="edm:TVariable xs:nonNegativeInteger " />
102. </xs:simpleType>
103. <!--
104. types at all levels
105. -->
106. <xs:complexType name="TDocumentation">
107. <xs:annotation>
108. <xs:documentation>The Documentation element is used to provide documentation of comments on the contents of the XML file. It is valid under Schema, Type, Index and Relationship elements.</xs:documentation>
109. </xs:annotation>
110. <xs:sequence>
111. <xs:element name="Summary" type="edm:TText" minOccurs="0" maxOccurs="1" />
112. <xs:element name="LongDescription" type="edm:TText" minOccurs="0" maxOccurs="1" />
113. </xs:sequence>
114. <xs:anyAttribute processContents="lax" namespace="##other" />
115. </xs:complexType>
116. <xs:complexType name="TText" mixed="true">
117. <xs:sequence>
118. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
119. </xs:sequence>
120. <xs:anyAttribute processContents="lax" namespace="##other" />
121. </xs:complexType>
122. <xs:complexType name="TXmlOrText" mixed="true">
123. <xs:annotation>
124. <xs:documentation>This type allows pretty much any content</xs:documentation>
125. </xs:annotation>
126. <xs:sequence>
127. <xs:any namespace="##any" processContents="skip" minOccurs="0" maxOccurs="unbounded" />
128. </xs:sequence>
129. <xs:anyAttribute processContents="skip" namespace="##any" />
130. </xs:complexType>
131. <!--
132. types of the top level elements
133. -->
134. <xs:complexType name="TUsing">
135. <xs:sequence>
136. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
137. </xs:sequence>
138. <xs:attribute name="Namespace" type="edm:TNamespaceName" use="required" />
139. <xs:attribute name="Alias" type="edm:TSimpleIdentifier" use="required" />
140. <xs:anyAttribute namespace="##other" processContents="lax" />
141. </xs:complexType>
142. <xs:complexType name="TAssociation">
143. <xs:sequence>
144. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
145. <xs:element name="End" type="edm:TAssociationEnd" minOccurs="2" maxOccurs="2" />
146. <xs:element name="ReferentialConstraint" type="edm:TConstraint" minOccurs="0" maxOccurs="1" />
147. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
148. </xs:sequence>
149. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
150. <xs:anyAttribute namespace="##other" processContents="lax" />
151. </xs:complexType>
152. <xs:complexType name="TComplexType">
153. <xs:sequence>
154. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
155. <xs:choice minOccurs="0" maxOccurs="unbounded">
156. <xs:element name="Property" type="edm:TComplexTypeProperty" minOccurs="0" maxOccurs="unbounded" />
157. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" minOccurs="0" maxOccurs="unbounded" />
158. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" minOccurs="0" maxOccurs="unbounded" />
159. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
160. </xs:choice>
161. </xs:sequence>
162. <xs:attributeGroup ref="edm:TTypeAttributes" />
163. <xs:attribute ref="cg:TypeAccess" use="optional" />
164. <xs:anyAttribute namespace="##other" processContents="lax" />
165. </xs:complexType>
166. <xs:complexType name="TConstraint">
167. <xs:sequence>
168. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
169. <xs:element name="Principal" type="edm:TReferentialConstraintRoleElement" minOccurs="1" maxOccurs="1" />
170. <xs:element name="Dependent" type="edm:TReferentialConstraintRoleElement" minOccurs="1" maxOccurs="1" />
171. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
172. </xs:sequence>
173. <xs:anyAttribute namespace="##other" processContents="lax" />
174. </xs:complexType>
175. <xs:complexType name="TReferentialConstraintRoleElement">
176. <xs:sequence>
177. <xs:element name="PropertyRef" type="edm:TPropertyRef" minOccurs="1" maxOccurs="unbounded" />
178. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
179. </xs:sequence>
180. <xs:attribute name="Role" type="edm:TSimpleIdentifier" use="required" />
181. </xs:complexType>
182. <xs:complexType name="TNavigationProperty">
183. <xs:sequence>
184. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
185. <xs:choice minOccurs="0" maxOccurs="unbounded">
186. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" minOccurs="0" maxOccurs="unbounded" />
187. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" minOccurs="0" maxOccurs="unbounded" />
188. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
189. </xs:choice>
190. </xs:sequence>
191. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
192. <xs:attribute name="Relationship" type="edm:TQualifiedName" use="required" />
193. <xs:attribute name="ToRole" type="edm:TSimpleIdentifier" use="required" />
194. <xs:attribute name="FromRole" type="edm:TSimpleIdentifier" use="required" />
195. <xs:attribute name="ContainsTarget" type="xs:boolean" use="optional" />
196. <xs:attribute ref="cg:GetterAccess" use="optional" />
197. <xs:attribute ref="cg:SetterAccess" use="optional" />
198. <xs:anyAttribute namespace="##other" processContents="lax" />
199. </xs:complexType>
200. <xs:complexType name="TEntityType">
201. <xs:sequence>
202. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
203. <xs:element name="Key" type="edm:TEntityKeyElement" minOccurs="0" maxOccurs="1" />
204. <xs:choice minOccurs="0" maxOccurs="unbounded">
205. <xs:element name="Property" type="edm:TEntityProperty" minOccurs="0" maxOccurs="unbounded" />
206. <xs:element name="NavigationProperty" type="edm:TNavigationProperty" minOccurs="0" maxOccurs="unbounded" />
207. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" minOccurs="0" maxOccurs="unbounded" />
208. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" minOccurs="0" maxOccurs="unbounded" />
209. </xs:choice>
210. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
211. </xs:sequence>
212. <xs:attributeGroup ref="edm:TDerivableTypeAttributes" />
213. <xs:attribute name="OpenType" type="xs:boolean" use="optional" default="false" />
214. <xs:attribute ref="cg:TypeAccess" use="optional" />
215. <xs:anyAttribute namespace="##other" processContents="lax" />
216. </xs:complexType>
217. <xs:complexType name="TEnumTypeMember">
218. <xs:sequence>
219. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
220. </xs:sequence>
221. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
222. <xs:attribute name="Value" type="xs:long" use="optional" />
223. <xs:anyAttribute namespace="##other" processContents="lax" />
224. </xs:complexType>
225. <xs:complexType name="TEnumType">
226. <xs:sequence>
227. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
228. <xs:choice minOccurs="0" maxOccurs="unbounded">
229. <xs:element name="Member" type="edm:TEnumTypeMember" minOccurs="0" maxOccurs="unbounded" />
230. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" minOccurs="0" maxOccurs="unbounded" />
231. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" minOccurs="0" maxOccurs="unbounded" />
232. </xs:choice>
233. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
234. </xs:sequence>
235. <xs:attributeGroup ref="edm:TTypeAttributes" />
236. <xs:attribute name="IsFlags" type="xs:boolean" use="optional" />
237. <xs:attribute name="UnderlyingType" type="edm:TPropertyType" use="optional" />
238. <xs:attribute ref="cg:TypeAccess" use="optional" />
239. <xs:anyAttribute namespace="##other" processContents="lax" />
240. </xs:complexType>
241. <xs:complexType name="TFunction">
242. <xs:sequence>
243. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
244. <xs:choice minOccurs="0" maxOccurs="unbounded">
245. <xs:element name="Parameter" type="edm:TFunctionParameter" minOccurs="0" maxOccurs="unbounded" />
246. <xs:element name="DefiningExpression" type="edm:TCommandText" minOccurs="0" maxOccurs="1" />
247. <xs:element name="ReturnType" type="edm:TFunctionReturnType" minOccurs="0" maxOccurs="1" />
248. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" minOccurs="0" maxOccurs="unbounded" />
249. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" minOccurs="0" maxOccurs="unbounded" />
250. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
251. </xs:choice>
252. </xs:sequence>
253. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
254. <xs:attribute name="ReturnType" type="edm:TWrappedFunctionType" use="optional" />
255. <xs:attributeGroup ref="edm:TFacetAttributes" />
256. <xs:anyAttribute namespace="##other" processContents="lax" />
257. </xs:complexType>
258. <xs:complexType name="TFunctionParameter">
259. <xs:sequence>
260. <xs:choice minOccurs="0" maxOccurs="unbounded">
261. <xs:choice minOccurs="0" maxOccurs="1">
262. <xs:element name="CollectionType" type="edm:TCollectionType" minOccurs="0" maxOccurs="1" />
263. <xs:element name="ReferenceType" type="edm:TReferenceType" minOccurs="0" maxOccurs="1" />
264. <xs:element name="RowType" type="edm:TRowType" minOccurs="0" maxOccurs="1" />
265. </xs:choice>
266. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" minOccurs="0" maxOccurs="unbounded" />
267. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" minOccurs="0" maxOccurs="unbounded" />
268. </xs:choice>
269. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
270. </xs:sequence>
271. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
272. <xs:attribute name="Type" type="edm:TWrappedFunctionType" use="optional" />
273. <xs:attributeGroup ref="edm:TFacetAttributes" />
274. <xs:anyAttribute namespace="##other" processContents="lax" />
275. </xs:complexType>
276. <xs:complexType name="TCollectionType">
277. <xs:sequence minOccurs ="1" maxOccurs="1">
278. <xs:choice minOccurs="0" maxOccurs="1">
279. <xs:element name="CollectionType" type="edm:TCollectionType" minOccurs="0" maxOccurs="1" />
280. <xs:element name="ReferenceType" type="edm:TReferenceType" minOccurs="0" maxOccurs="1" />
281. <xs:element name="RowType" type="edm:TRowType" minOccurs="0" maxOccurs="1" />
282. <xs:element name="TypeRef" type="edm:TTypeRef" minOccurs="0" maxOccurs="1" />
283. </xs:choice>
284. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
285. </xs:sequence>
286. <xs:attribute name="ElementType" type="edm:TUnwrappedFunctionType" use="optional" />
287. <xs:attributeGroup ref="edm:TFacetAttributes" />
288. <xs:anyAttribute namespace="##other" processContents="lax" />
289. </xs:complexType>
290. <xs:complexType name="TTypeRef">
291. <xs:sequence>
292. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
293. </xs:sequence>
294. <xs:attribute name="Type" type="edm:TUnwrappedFunctionType" use="required" />
295. <xs:attributeGroup ref="edm:TFacetAttributes" />
296. <xs:anyAttribute namespace="##other" processContents="lax" />
297. </xs:complexType>
298. <xs:complexType name="TReferenceType">
299. <xs:sequence>
300. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
301. </xs:sequence>
302. <xs:attribute name="Type" type="edm:TUnwrappedFunctionType" use="required" />
303. <xs:anyAttribute namespace="##other" processContents="lax" />
304. </xs:complexType>
305. <xs:complexType name="TRowType">
306. <xs:choice minOccurs="1" maxOccurs="unbounded">
307. <xs:element name="Property" type="edm:TRowProperty" minOccurs="0" maxOccurs="1" />
308. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
309. </xs:choice>
310. <xs:anyAttribute namespace="##other" processContents="lax" />
311. </xs:complexType>
312. <xs:complexType name="TRowProperty">
313. <xs:sequence>
314. <xs:choice minOccurs="0" maxOccurs="1">
315. <xs:element name="CollectionType" type="edm:TCollectionType" minOccurs="0" maxOccurs="1" />
316. <xs:element name="ReferenceType" type="edm:TReferenceType" minOccurs="0" maxOccurs="1" />
317. <xs:element name="RowType" type="edm:TRowType" minOccurs="0" maxOccurs="1" />
318. </xs:choice>
319. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
320. </xs:sequence>
321. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
322. <xs:attribute name="Type" type="edm:TWrappedFunctionType" use="optional" />
323. <xs:attributeGroup ref="edm:TFacetAttributes" />
324. <xs:anyAttribute namespace="##other" processContents="lax" />
325. </xs:complexType>
326. <xs:complexType name="TFunctionReturnType">
327. <xs:sequence>
328. <xs:choice minOccurs="0" maxOccurs="1">
329. <xs:element name="CollectionType" type="edm:TCollectionType" minOccurs="0" maxOccurs="1" />
330. <xs:element name="ReferenceType" type="edm:TReferenceType" minOccurs="0" maxOccurs="1" />
331. <xs:element name="RowType" type="edm:TRowType" minOccurs="0" maxOccurs="1" />
332. </xs:choice>
333. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
334. </xs:sequence>
335. <xs:attribute name="Type" type="edm:TFunctionImportParameterAndReturnType" use="optional" />
336. <xs:attributeGroup ref="edm:TFacetAttributes" />
337. <xs:anyAttribute namespace="##other" processContents="lax" />
338. </xs:complexType>
339. <xs:complexType name="TFunctionImportReturnType">
340. <xs:sequence>
341. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
342. </xs:sequence>
343. <xs:attribute name="Type" type="edm:TFunctionImportParameterAndReturnType" use="optional" />
344. <!-- EntitySet and EntitySetPath are mutually exclusive. -->
345. <xs:attribute name="EntitySet" type="edm:TSimpleIdentifier" use="optional" />
346. <xs:attribute name="EntitySetPath" type="edm:TPath" use="optional" />
347. <xs:anyAttribute namespace="##other" processContents="lax" />
348. </xs:complexType>
349. <xs:complexType name="TEntityKeyElement">
350. <xs:sequence>
351. <xs:element name="PropertyRef" type="edm:TPropertyRef" minOccurs="1" maxOccurs="unbounded" />
352. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
353. </xs:sequence>
354. </xs:complexType>
355. <xs:complexType name="TPropertyRef">
356. <xs:sequence>
357. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
358. </xs:sequence>
359. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
360. </xs:complexType>
361. <xs:group name="GEmptyElementExtensibility">
362. <xs:sequence>
363. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
364. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
365. </xs:sequence>
366. </xs:group>
367. <!--
368. Vocabulary annotations.
369. -->
370. <xs:complexType name="TAnnotations">
371. <xs:sequence>
372. <xs:choice minOccurs="0" maxOccurs="unbounded">
373. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" minOccurs="0" maxOccurs="unbounded" />
374. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" minOccurs="0" maxOccurs="unbounded" />
375. </xs:choice>
376. </xs:sequence>
377. <xs:attribute name="Target" type="edm:TPath" use="required" />
378. <xs:attribute name="Qualifier" type="edm:TSimpleIdentifier" use="optional" />
379. </xs:complexType>
380. <xs:complexType name="TValueAnnotation">
381. <xs:sequence>
382. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
383. <xs:group ref="edm:GExpression" minOccurs="1" maxOccurs="1" />
384. </xs:sequence>
385. <xs:attribute name="Term" type="edm:TQualifiedName" use="required" />
386. <xs:attribute name="Qualifier" type="edm:TSimpleIdentifier" use="optional" />
387. <xs:attributeGroup ref="edm:GInlineExpressions" />
388. <xs:anyAttribute namespace="##other" processContents="lax" />
389. </xs:complexType>
390. <xs:complexType name="TTypeAnnotation">
391. <xs:sequence>
392. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
393. <xs:choice minOccurs="0" maxOccurs="unbounded">
394. <xs:element name="PropertyValue" type="edm:TPropertyValue" minOccurs="0" maxOccurs="unbounded" />
395. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
396. </xs:choice>
397. </xs:sequence>
398. <xs:attribute name="Term" type="edm:TQualifiedName" use="required" />
399. <xs:attribute name="Qualifier" type="edm:TSimpleIdentifier" use="optional" />
400. <xs:attributeGroup ref="edm:GInlineExpressions" />
401. <xs:anyAttribute namespace="##other" processContents="lax" />
402. </xs:complexType>
403. <xs:group name="GExpression">
404. <xs:sequence>
405. <!-- Logically this group means one of the expressions plus an arbitrary number of CSDL annotations,
406. syntactically we have to make the inner sequence unbounded to allow elements in any order. -->
407. <xs:sequence maxOccurs="unbounded">
408. <xs:choice>
409. <xs:element name="String" type="edm:TStringConstantExpression" minOccurs="0" />
410. <xs:element name="Binary" type="edm:TBinaryConstantExpression" minOccurs="0" />
411. <xs:element name="Int" type="edm:TIntConstantExpression" minOccurs="0" />
412. <xs:element name="Float" type="edm:TFloatConstantExpression" minOccurs="0" />
413. <xs:element name="Guid" type="edm:TGuidConstantExpression" minOccurs="0" />
414. <xs:element name="Decimal" type="edm:TDecimalConstantExpression" minOccurs="0" />
415. <xs:element name="Bool" type="edm:TBoolConstantExpression" minOccurs="0" />
416. <xs:element name="Time" type="edm:TTimeConstantExpression" minOccurs="0" />
417. <xs:element name="DateTime" type="edm:TDateTimeConstantExpression" minOccurs="0" />
418. <xs:element name="DateTimeOffset" type="edm:TDateTimeOffsetConstantExpression" minOccurs="0" />
419. <xs:element name="EnumMemberReference" type="edm:TEnumMemberReferenceExpression" minOccurs="0" />
420. <xs:element name="Null" type="edm:TNullExpression" minOccurs="0" />
421. <xs:element name="Path" type="edm:TPathExpression" minOccurs="0" />
422. <xs:element name="If" type="edm:TIfExpression" minOccurs="0" />
423. <xs:element name="Record" type="edm:TRecordExpression" minOccurs="0" />
424. <xs:element name="Collection" type="edm:TCollectionExpression" minOccurs="0" />
425. <xs:element name="AssertType" type="edm:TAssertTypeExpression" minOccurs="0" />
426. <xs:element name="IsType" type="edm:TIsTypeExpression" minOccurs="0" />
427. <xs:element name="FunctionReference" type="edm:TFunctionReferenceExpression" minOccurs="0" />
428. <xs:element name="EntitySetReference" type="edm:TEntitySetReferenceExpression" minOccurs="0" />
429. <xs:element name="ParameterReference" type="edm:TParameterReferenceExpression" minOccurs="0" />
430. <xs:element name="Apply" type="edm:TApplyExpression" minOccurs="0" />
431. <xs:element name="PropertyReference" type="edm:TPropertyReferenceExpression" minOccurs="0" />
432. <xs:element name="ValueTermReference" type="edm:TValueTermReferenceExpression" minOccurs="0" />
433. <xs:element name="LabeledElement" type="edm:TLabeledElement" minOccurs="0" />
434. <xs:element name="LabeledElementReference" type="edm:TLabeledElementReferenceExpression" minOccurs="0" />
435. </xs:choice>
436. <xs:any namespace="##other" processContents="lax" minOccurs="0" />
437. </xs:sequence>
438. </xs:sequence>
439. </xs:group>
440. <xs:attributeGroup name="GInlineExpressions">
441. <xs:attribute name="String" type="xs:string" use="optional" />
442. <xs:attribute name="Binary" type="xs:hexBinary" use="optional" />
443. <xs:attribute name="Int" type="xs:integer" use="optional" />
444. <xs:attribute name="Float" type="xs:double" use="optional" />
445. <xs:attribute name="Guid" type="edm:TGuidLiteral" use="optional" />
446. <xs:attribute name="Decimal" type="xs:decimal" use="optional" />
447. <xs:attribute name="Bool" type="xs:boolean" use="optional" />
448. <xs:attribute name="Time" type="xs:time" use="optional" />
449. <xs:attribute name="DateTime" type="xs:dateTime" use="optional" />
450. <xs:attribute name="DateTimeOffset" type="xs:dateTime" use="optional" />
451. <xs:attribute name="Path" type="edm:TPath" use="optional" />
452. </xs:attributeGroup>
453. <xs:complexType name="TStringConstantExpression">
454. <xs:simpleContent>
455. <xs:extension base="xs:string">
456. <xs:anyAttribute namespace="##other" processContents="lax" />
457. </xs:extension>
458. </xs:simpleContent>
459. </xs:complexType>
460. <xs:complexType name="TBinaryConstantExpression">
461. <xs:simpleContent>
462. <xs:extension base="xs:hexBinary">
463. <xs:anyAttribute namespace="##other" processContents="lax" />
464. </xs:extension>
465. </xs:simpleContent>
466. </xs:complexType>
467. <xs:complexType name="TIntConstantExpression">
468. <xs:simpleContent>
469. <xs:extension base="xs:integer">
470. <xs:anyAttribute namespace="##other" processContents="lax" />
471. </xs:extension>
472. </xs:simpleContent>
473. </xs:complexType>
474. <xs:complexType name="TFloatConstantExpression">
475. <xs:simpleContent>
476. <xs:extension base="xs:double">
477. <xs:anyAttribute namespace="##other" processContents="lax" />
478. </xs:extension>
479. </xs:simpleContent>
480. </xs:complexType>
481. <xs:complexType name="TGuidConstantExpression">
482. <xs:simpleContent>
483. <xs:extension base="edm:TGuidLiteral">
484. <xs:anyAttribute namespace="##other" processContents="lax" />
485. </xs:extension>
486. </xs:simpleContent>
487. </xs:complexType>
488. <xs:simpleType name="TGuidLiteral">
489. <xs:restriction base="xs:string">
490. <xs:pattern value="[0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12}"/>
491. </xs:restriction>
492. </xs:simpleType>
493. <xs:complexType name="TDecimalConstantExpression">
494. <xs:simpleContent>
495. <xs:extension base="xs:decimal">
496. <xs:anyAttribute namespace="##other" processContents="lax" />
497. </xs:extension>
498. </xs:simpleContent>
499. </xs:complexType>
500. <xs:complexType name="TBoolConstantExpression">
501. <xs:simpleContent>
502. <xs:extension base="xs:boolean">
503. <xs:anyAttribute namespace="##other" processContents="lax" />
504. </xs:extension>
505. </xs:simpleContent>
506. </xs:complexType>
507. <xs:complexType name="TTimeConstantExpression">
508. <xs:simpleContent>
509. <xs:extension base="xs:time">
510. <xs:anyAttribute namespace="##other" processContents="lax" />
511. </xs:extension>
512. </xs:simpleContent>
513. </xs:complexType>
514. <xs:complexType name="TDateTimeConstantExpression">
515. <xs:simpleContent>
516. <xs:extension base="xs:dateTime">
517. <xs:anyAttribute namespace="##other" processContents="lax" />
518. </xs:extension>
519. </xs:simpleContent>
520. </xs:complexType>
521. <xs:complexType name="TDateTimeOffsetConstantExpression">
522. <xs:simpleContent>
523. <xs:extension base="xs:dateTime">
524. <xs:anyAttribute namespace="##other" processContents="lax" />
525. </xs:extension>
526. </xs:simpleContent>
527. </xs:complexType>
528. <xs:complexType name="TEnumMemberReferenceExpression">
529. <xs:simpleContent>
530. <xs:extension base="edm:TPath">
531. <xs:anyAttribute namespace="##other" processContents="lax" />
532. </xs:extension>
533. </xs:simpleContent>
534. </xs:complexType>
535. <xs:complexType name="TNullExpression">
536. <xs:sequence>
537. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
538. </xs:sequence>
539. <xs:anyAttribute namespace="##other" processContents="lax" />
540. </xs:complexType>
541. <xs:complexType name="TPathExpression">
542. <xs:simpleContent>
543. <xs:extension base="edm:TPath">
544. <xs:anyAttribute namespace="##other" processContents="lax" />
545. </xs:extension>
546. </xs:simpleContent>
547. </xs:complexType>
548. <xs:complexType name="TIfExpression">
549. <xs:sequence>
550. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
551. <!-- Test, IfTrue, IfFalse -->
552. <xs:group ref="edm:GExpression" minOccurs="3" maxOccurs="3" />
553. </xs:sequence>
554. <xs:anyAttribute namespace="##other" processContents="lax" />
555. </xs:complexType>
556. <xs:complexType name="TRecordExpression">
557. <xs:sequence>
558. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
559. <xs:choice minOccurs="0" maxOccurs="unbounded">
560. <xs:element name="PropertyValue" type="edm:TPropertyValue" minOccurs="0" maxOccurs="unbounded" />
561. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
562. </xs:choice>
563. </xs:sequence>
564. <xs:attribute name="Type" type="edm:TUnwrappedFunctionType" use="optional" />
565. <xs:anyAttribute namespace="##other" processContents="lax" />
566. </xs:complexType>
567. <xs:complexType name="TPropertyValue">
568. <xs:sequence>
569. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
570. <xs:group ref="edm:GExpression" minOccurs="1" maxOccurs="1" />
571. </xs:sequence>
572. <xs:attribute name="Property" type="edm:TSimpleIdentifier" use="required" />
573. <xs:attributeGroup ref="edm:GInlineExpressions" />
574. <xs:anyAttribute namespace="##other" processContents="lax" />
575. </xs:complexType>
576. <xs:complexType name="TCollectionExpression">
577. <xs:sequence>
578. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
579. <xs:group ref="edm:GExpression" minOccurs="0" maxOccurs="unbounded"/>
580. </xs:sequence>
581. <xs:anyAttribute namespace="##other" processContents="lax" />
582. </xs:complexType>
583. <xs:complexType name="TAssertTypeExpression">
584. <xs:sequence>
585. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
586. <xs:choice maxOccurs="unbounded">
587. <xs:group ref="edm:GExpression" minOccurs="1" maxOccurs="1" />
588. <xs:choice minOccurs="0" maxOccurs="1">
589. <xs:element name="CollectionType" type="edm:TCollectionType" minOccurs="0" maxOccurs="1" />
590. <xs:element name="ReferenceType" type="edm:TReferenceType" minOccurs="0" maxOccurs="1" />
591. <xs:element name="RowType" type="edm:TRowType" minOccurs="0" maxOccurs="1" />
592. </xs:choice>
593. </xs:choice>
594. </xs:sequence>
595. <xs:attribute name="Type" type="edm:TWrappedFunctionType" use="optional" />
596. <xs:attributeGroup ref="edm:TFacetAttributes" />
597. <xs:anyAttribute namespace="##other" processContents="lax" />
598. </xs:complexType>
599. <xs:complexType name="TIsTypeExpression">
600. <xs:sequence>
601. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
602. <xs:choice maxOccurs="unbounded">
603. <xs:group ref="edm:GExpression" minOccurs="1" maxOccurs="1" />
604. <xs:choice minOccurs="0" maxOccurs="1">
605. <xs:element name="CollectionType" type="edm:TCollectionType" minOccurs="0" maxOccurs="1" />
606. <xs:element name="ReferenceType" type="edm:TReferenceType" minOccurs="0" maxOccurs="1" />
607. <xs:element name="RowType" type="edm:TRowType" minOccurs="0" maxOccurs="1" />
608. </xs:choice>
609. </xs:choice>
610. </xs:sequence>
611. <xs:attribute name="Type" type="edm:TWrappedFunctionType" use="optional" />
612. <xs:attributeGroup ref="edm:TFacetAttributes" />
613. <xs:anyAttribute namespace="##other" processContents="lax" />
614. </xs:complexType>
615. <xs:complexType name="TFunctionReferenceExpression">
616. <xs:sequence>
617. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
618. <xs:choice maxOccurs="unbounded">
619. <!-- Parameter is used to complete function signature: type only. -->
620. <xs:element name="Parameter" maxOccurs="unbounded">
621. <xs:complexType>
622. <xs:choice maxOccurs="unbounded">
623. <xs:choice minOccurs="0" maxOccurs="1">
624. <xs:element name="CollectionType" type="edm:TCollectionType" minOccurs="0" maxOccurs="1" />
625. <xs:element name="ReferenceType" type="edm:TReferenceType" minOccurs="0" maxOccurs="1" />
626. <xs:element name="RowType" type="edm:TRowType" minOccurs="0" maxOccurs="1" />
627. </xs:choice>
628. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
629. </xs:choice>
630. <xs:attribute name="Type" type="edm:TWrappedFunctionType" use="optional" />
631. <xs:anyAttribute namespace="##other" processContents="lax" />
632. </xs:complexType>
633. </xs:element>
634. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
635. </xs:choice>
636. </xs:sequence>
637. <xs:attribute name="Function" type="edm:TQualifiedName" use="required" />
638. <xs:anyAttribute namespace="##other" processContents="lax" />
639. </xs:complexType>
640. <xs:complexType name="TEntitySetReferenceExpression">
641. <xs:simpleContent>
642. <xs:extension base="edm:TPath">
643. <xs:anyAttribute namespace="##other" processContents="lax" />
644. </xs:extension>
645. </xs:simpleContent>
646. </xs:complexType>
647. <xs:complexType name="TParameterReferenceExpression">
648. <xs:simpleContent>
649. <xs:extension base="edm:TSimpleIdentifier">
650. <xs:anyAttribute namespace="##other" processContents="lax" />
651. </xs:extension>
652. </xs:simpleContent>
653. </xs:complexType>
654. <xs:complexType name="TApplyExpression">
655. <xs:sequence>
656. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
657. <xs:group ref="edm:GExpression" minOccurs="0" maxOccurs="unbounded" />
658. </xs:sequence>
659. <xs:attribute name="Function" type="edm:TQualifiedName" use="optional" />
660. <xs:anyAttribute namespace="##other" processContents="lax" />
661. </xs:complexType>
662. <xs:complexType name="TPropertyReferenceExpression">
663. <xs:sequence>
664. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
665. <xs:group ref="edm:GExpression" minOccurs="1" maxOccurs="1"/>
666. </xs:sequence>
667. <xs:attribute name="Property" type="edm:TSimpleIdentifier" use="required" />
668. <xs:anyAttribute namespace="##other" processContents="lax" />
669. </xs:complexType>
670. <xs:complexType name="TValueTermReferenceExpression">
671. <xs:sequence>
672. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
673. <xs:group ref="edm:GExpression" minOccurs="1" maxOccurs="1"/>
674. </xs:sequence>
675. <xs:attribute name="Term" type="edm:TQualifiedName" use="required" />
676. <xs:attribute name="Qualifier" type="edm:TSimpleIdentifier" use="optional" />
677. <xs:anyAttribute namespace="##other" processContents="lax" />
678. </xs:complexType>
679. <xs:complexType name="TLabeledElement">
680. <xs:sequence>
681. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
682. <xs:group ref="edm:GExpression" minOccurs="1" maxOccurs="1" />
683. </xs:sequence>
684. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
685. <xs:anyAttribute namespace="##other" processContents="lax" />
686. </xs:complexType>
687. <xs:complexType name="TLabeledElementReferenceExpression">
688. <xs:simpleContent>
689. <xs:extension base="edm:TSimpleIdentifier">
690. <xs:anyAttribute namespace="##other" processContents="lax" />
691. </xs:extension>
692. </xs:simpleContent>
693. </xs:complexType>
694. <!--
695. base types
696. -->
697. <xs:complexType name="TAssociationEnd">
698. <xs:sequence>
699. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
700. <xs:group ref="edm:TOperations" minOccurs="0" maxOccurs="unbounded" />
701. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
702. </xs:sequence>
703. <xs:attribute name="Type" type="edm:TQualifiedName" use="required" />
704. <xs:attribute name="Role" type="edm:TSimpleIdentifier" use="optional" />
705. <xs:attribute name="Multiplicity" type="edm:TMultiplicity" use="optional" />
706. <xs:anyAttribute namespace="##other" processContents="lax" />
707. </xs:complexType>
708. <xs:group name="TOperations">
709. <xs:choice>
710. <xs:element name="OnDelete" type="edm:TOnAction" maxOccurs="1" minOccurs="0" />
711. </xs:choice>
712. </xs:group>
713. <xs:complexType name="TOnAction">
714. <xs:sequence>
715. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
716. </xs:sequence>
717. <xs:attribute name="Action" type="edm:TAction" use="required" />
718. <xs:anyAttribute namespace="##other" processContents="lax" />
719. </xs:complexType>
720. <xs:complexType name="TEntityProperty">
721. <xs:sequence>
722. <xs:choice maxOccurs="unbounded">
723. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
724. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" minOccurs="0" maxOccurs="unbounded" />
725. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" minOccurs="0" maxOccurs="unbounded" />
726. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
727. </xs:choice>
728. </xs:sequence>
729. <xs:attributeGroup ref="edm:TCommonPropertyAttributes" />
730. <xs:attribute ref="annotation:StoreGeneratedPattern" use="optional" />
731. <xs:anyAttribute namespace="##other" processContents="lax" />
732. </xs:complexType>
733. <xs:complexType name="TComplexTypeProperty">
734. <xs:sequence>
735. <xs:choice maxOccurs="unbounded">
736. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
737. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" minOccurs="0" maxOccurs="unbounded" />
738. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" minOccurs="0" maxOccurs="unbounded" />
739. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
740. </xs:choice>
741. </xs:sequence>
742. <xs:attributeGroup ref="edm:TCommonPropertyAttributes" />
743. <xs:anyAttribute namespace="##other" processContents="lax" />
744. </xs:complexType>
745. <xs:complexType name="TValueTerm">
746. <xs:sequence>
747. <xs:choice minOccurs="0" maxOccurs="1">
748. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
749. <xs:element name="CollectionType" type="edm:TCollectionType" minOccurs="0" maxOccurs="1" />
750. <xs:element name="ReferenceType" type="edm:TReferenceType" minOccurs="0" maxOccurs="1" />
751. <xs:element name="RowType" type="edm:TRowType" minOccurs="0" maxOccurs="1" />
752. </xs:choice>
753. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
754. </xs:sequence>
755. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
756. <xs:attribute name="Type" type="edm:TWrappedFunctionType" use="optional" />
757. <xs:attributeGroup ref="edm:TFacetAttributes" />
758. <xs:anyAttribute namespace="##other" processContents="lax" />
759. </xs:complexType>
760. <xs:complexType name="TFunctionImportParameter">
761. <xs:sequence>
762. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
763. <xs:choice minOccurs="0" maxOccurs="unbounded">
764. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" minOccurs="0" maxOccurs="unbounded" />
765. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" minOccurs="0" maxOccurs="unbounded" />
766. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
767. </xs:choice>
768. </xs:sequence>
769. <xs:attributeGroup ref="edm:TFunctionImportParameterAttributes" />
770. <xs:anyAttribute namespace="##other" processContents="lax" />
771. </xs:complexType>
772. <xs:attributeGroup name="TFacetAttributes">
773. <xs:attribute name="Nullable" type="xs:boolean" use="optional" />
774. <xs:attribute name="DefaultValue" type="xs:string" use="optional" />
775. <xs:attribute name="MaxLength" type="edm:TMaxLengthFacet" use="optional" />
776. <xs:attribute name="FixedLength" type="edm:TIsFixedLengthFacet" use="optional" />
777. <xs:attribute name="Precision" type="edm:TPrecisionFacet" use="optional" />
778. <xs:attribute name="Scale" type="edm:TScaleFacet" use="optional" />
779. <xs:attribute name="Unicode" type="edm:TIsUnicodeFacet" use="optional" />
780. <xs:attribute name="Collation" type="edm:TCollationFacet" use="optional" />
781. <xs:attribute name="SRID" type="edm:TSridFacet" use="optional" />
782. </xs:attributeGroup>
783. <xs:attributeGroup name="TCommonPropertyAttributes">
784. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
785. <xs:attribute name="Type" type="edm:TPropertyType" use="required" />
786. <xs:attribute name="Nullable" type="xs:boolean" default="true" use="optional" />
787. <xs:attribute name="DefaultValue" type="xs:string" use="optional" />
788. <!-- Start Facets -->
789. <xs:attribute name="MaxLength" type="edm:TMaxLengthFacet" use="optional" />
790. <xs:attribute name="FixedLength" type="edm:TIsFixedLengthFacet" use="optional" />
791. <xs:attribute name="Precision" type="edm:TPrecisionFacet" use="optional" />
792. <xs:attribute name="Scale" type="edm:TScaleFacet" use="optional" />
793. <xs:attribute name="Unicode" type="edm:TIsUnicodeFacet" use="optional" />
794. <xs:attribute name="Collation" type="edm:TCollationFacet" use="optional" />
795. <xs:attribute name="SRID" type="edm:TSridFacet" use="optional" />
796. <!--End Facets -->
797. <xs:attribute name="ConcurrencyMode" type="edm:TConcurrencyMode" use="optional" />
798. <xs:attribute ref="cg:SetterAccess" use="optional" />
799. <xs:attribute ref="cg:GetterAccess" use="optional" />
800. </xs:attributeGroup>
801. <xs:attributeGroup name="TFunctionImportParameterAttributes">
802. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
803. <xs:attribute name="Type" type="edm:TFunctionImportParameterAndReturnType" use="required" />
804. <xs:attribute name="Mode" type="edm:TParameterMode" use="optional" />
805. <xs:attribute name="Nullable" type="xs:boolean" use="optional" />
806. <xs:attribute name="MaxLength" type="edm:TMaxLengthFacet" use="optional" />
807. <xs:attribute name="Precision" type="edm:TPrecisionFacet" use="optional" />
808. <xs:attribute name="Scale" type="edm:TScaleFacet" use="optional" />
809. <xs:attribute name="SRID" type="edm:TSridFacet" use="optional" />
810. <xs:anyAttribute namespace="##other" processContents="lax" />
811. </xs:attributeGroup>
812. <xs:attributeGroup name="TFunctionImportAttributes">
813. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
814. <xs:attribute name="ReturnType" type="edm:TFunctionImportParameterAndReturnType" use="optional" />
815. <!-- EntitySet and EntitySetPath are mutually exclusive. -->
816. <xs:attribute name="EntitySet" type="edm:TSimpleIdentifier" use="optional" />
817. <xs:attribute name="EntitySetPath" type="xs:string" use="optional" />
818. <xs:attribute name="IsComposable" type="xs:boolean" use="optional" default="false" />
819. <xs:attribute name="IsSideEffecting" type="xs:boolean" use="optional" />
820. <xs:attribute name="IsBindable" type="xs:boolean" use="optional" default="false" />
821. <xs:attribute ref="cg:MethodAccess" use="optional" />
822. <xs:anyAttribute namespace="##other" processContents="lax" />
823. </xs:attributeGroup>
824. <xs:attributeGroup name="TTypeAttributes">
825. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
826. </xs:attributeGroup>
827. <xs:attributeGroup name="TDerivableTypeAttributes">
828. <xs:attributeGroup ref="edm:TTypeAttributes" />
829. <xs:attribute name="BaseType" type="edm:TQualifiedName" use="optional" />
830. <xs:attribute name="Abstract" type="xs:boolean" use="optional" default="false" />
831. </xs:attributeGroup>
832. <xs:attributeGroup name="TEntitySetAttributes">
833. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
834. <xs:attribute name="EntityType" type="edm:TQualifiedName" use="required" />
835. <xs:attribute ref="cg:GetterAccess" use="optional" />
836. </xs:attributeGroup>
837. <xs:element name="EntityContainer">
838. <xs:complexType>
839. <xs:sequence>
840. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
841. <xs:choice minOccurs="0" maxOccurs="unbounded">
842. <xs:element name="FunctionImport">
843. <xs:complexType>
844. <xs:sequence>
845. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
846. <xs:choice minOccurs="0" maxOccurs="unbounded">
847. <xs:element name="ReturnType" type="edm:TFunctionImportReturnType" minOccurs="0" maxOccurs="unbounded" />
848. <xs:element name="Parameter" type="edm:TFunctionImportParameter" minOccurs="0" maxOccurs="unbounded" />
849. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" minOccurs="0" maxOccurs="unbounded" />
850. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" minOccurs="0" maxOccurs="unbounded" />
851. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
852. </xs:choice>
853. </xs:sequence>
854. <xs:attributeGroup ref="edm:TFunctionImportAttributes" />
855. </xs:complexType>
856. </xs:element>
857. <xs:element name="EntitySet">
858. <xs:complexType>
859. <xs:sequence>
860. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
861. <xs:choice minOccurs="0" maxOccurs="unbounded">
862. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" minOccurs="0" maxOccurs="unbounded" />
863. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" minOccurs="0" maxOccurs="unbounded" />
864. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
865. </xs:choice>
866. </xs:sequence>
867. <xs:attributeGroup ref="edm:TEntitySetAttributes" />
868. <xs:anyAttribute processContents="lax" namespace="##other" />
869. </xs:complexType>
870. </xs:element>
871. <xs:element name="AssociationSet">
872. <xs:complexType>
873. <xs:sequence>
874. <xs:element name="Documentation" type="edm:TDocumentation" minOccurs="0" maxOccurs="1" />
875. <xs:element name="End" minOccurs="0" maxOccurs="2">
876. <!--
877. 1. The number of Ends has to match with ones defined in AssociationType
878. 2. Value for attribute Name should match the defined ones and EntitySet should be of the
879. defined Entity Type in AssociationType
880. -->
881. <xs:complexType>
882. <xs:sequence>
883. <xs:group ref="edm:GEmptyElementExtensibility" minOccurs="0" maxOccurs="1" />
884. </xs:sequence>
885. <xs:attribute name="Role" type="edm:TSimpleIdentifier" use="optional" />
886. <xs:attribute name="EntitySet" type="edm:TSimpleIdentifier" use="required" />
887. </xs:complexType>
888. </xs:element>
889. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
890. </xs:sequence>
891. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
892. <xs:attribute name="Association" type="edm:TQualifiedName" use="required" />
893. <xs:anyAttribute namespace="##other" processContents="lax" />
894. </xs:complexType>
895. </xs:element>
896. <xs:element name="ValueAnnotation" type="edm:TValueAnnotation" />
897. <xs:element name="TypeAnnotation" type="edm:TTypeAnnotation" />
898. </xs:choice>
899. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
900. </xs:sequence>
901. <xs:attribute name="Name" type="edm:TSimpleIdentifier" use="required" />
902. <xs:attribute name="Extends" type ="edm:TSimpleIdentifier" use="optional" />
903. <xs:attribute ref="cg:TypeAccess" use="optional" />
904. <xs:attribute ref="annotation:LazyLoadingEnabled" use="optional" />
905. <xs:anyAttribute namespace="##other" processContents="lax" />
906. </xs:complexType>
907. </xs:element>
908. <!--
909. general (more or less) purpose simple types
910. -->
911. <xs:simpleType name="TParameterMode">
912. <xs:restriction base="xs:token">
913. <xs:enumeration value="In" />
914. <xs:enumeration value="Out" />
915. <xs:enumeration value="InOut" />
916. </xs:restriction>
917. </xs:simpleType>
918. <xs:simpleType name="TNamespaceName">
919. <xs:restriction base="edm:TQualifiedName">
920. <xs:MaxLength value="512" />
921. </xs:restriction>
922. </xs:simpleType>
923. <xs:simpleType name="TQualifiedName">
924. <xs:restriction base="xs:string">
925. <!-- The below pattern represents the allowed identifiers in ECMA specification plus the '.' for namespace qualification -->
926. <xs:pattern value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}(\.[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}){0,}" />
927. </xs:restriction>
928. </xs:simpleType>
929. <xs:simpleType name="TPath">
930. <xs:restriction base="xs:string">
931. <!-- The below pattern represents the allowed identifiers in ECMA specification plus the '/' for path segment separation and
932. the '.' for namespace qualification inside the segments. It also allows using parens and commas to designate function signatures
933. such as "Namespace1.Namespace2.Function1(String,Collection(Int32))/Parameter1".-->
934. <xs:pattern value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}\(\)\,]{0,}([/\.][\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}\(\)\,]{0,}){0,}" />
935. </xs:restriction>
936. </xs:simpleType>
937. <xs:simpleType name="TSimpleIdentifier">
938. <xs:restriction base="xs:string">
939. <xs:MaxLength value="480" />
940. <!-- The below pattern represents the allowed identifiers in ECMA specification -->
941. <xs:pattern value="[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}" />
942. </xs:restriction>
943. </xs:simpleType>
944. <xs:simpleType name="TPropertyType">
945. <xs:union memberTypes="edm:EDMSimpleType edm:TQualifiedName">
946. <xs:simpleType>
947. <xs:restriction base="xs:token">
948. <!-- The below pattern represents the allowed identifiers in ECMA specification plus the '.' for namespace qualification and Collection() wrapper -->
949. <xs:pattern value="Collection\([\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}(\.[\p{L}\p{Nl}][\p{L}\p{Nl}\p{Nd}\p{Mn}\p{Mc}\p{Pc}\p{Cf}]{0,}){0,}\)" />
950. </xs:restriction>
951. </xs:simpleType>
952. </xs:union>
953. </xs:simpleType>
954. <xs:simpleType name="TCommandText">
955. <xs:restriction base="xs:string">
956. <xs:whiteSpace value="preserve" />
957. </xs:restriction>
958. </xs:simpleType>
959. <xs:simpleType name="TFunctionImportParameterAndReturnType">
960. <xs:union memberTypes="edm:EDMSimpleType edm:TQualifiedName">
961. <xs:simpleType>
962. <xs:restriction base="xs:token">
963. <xs:pattern value="Collection\([^\. \t]{1,}(\.[^\. \t]{1,}){0,}\)" />
964. </xs:restriction>
965. </xs:simpleType>
966. </xs:union>
967. </xs:simpleType>
968. <xs:simpleType name="TWrappedFunctionType">
969. <xs:union memberTypes="edm:TQualifiedName">
970. <xs:simpleType>
971. <xs:restriction base="xs:token">
972. <xs:pattern value="(Collection|Ref)\([^\. \t]{1,}(\.[^\. \t]{1,}){0,}\)" />
973. </xs:restriction>
974. </xs:simpleType>
975. </xs:union>
976. </xs:simpleType>
977. <xs:simpleType name="TUnwrappedFunctionType">
978. <xs:union memberTypes="edm:TQualifiedName">
979. <xs:simpleType>
980. <xs:restriction base="xs:token">
981. <xs:pattern value="[^\. \t]{1,}(\.[^\. \t]{1,}){0,}" />
982. </xs:restriction>
983. </xs:simpleType>
984. </xs:union>
985. </xs:simpleType>
986. <xs:simpleType name="TAction">
987. <xs:restriction base="xs:token">
988. <xs:enumeration value="Cascade" />
989. <xs:enumeration value="None" />
990. </xs:restriction>
991. </xs:simpleType>
992. <xs:simpleType name="TMultiplicity">
993. <xs:restriction base="xs:token">
994. <xs:enumeration value="0..1" />
995. <xs:enumeration value="1" />
996. <xs:enumeration value="\*" />
997. </xs:restriction>
998. </xs:simpleType>
999. <xs:simpleType name="TConcurrencyMode">
1000. <xs:restriction base="xs:token">
1001. <xs:enumeration value="None" />
1002. <xs:enumeration value="Fixed" />
1003. </xs:restriction>
1004. </xs:simpleType>
1005. </xs:schema>

# Appendix B: Differences Between CSDL 1.0 and CSDL 1.1

CSDL 1.1 is a superset of CSDL 1.0.

This section summarizes the differences between CSDL 1.0 and CSDL 1.1.

CSDL 1.0 is restricted in the following ways:

* **ComplexType** cannot define an **Abstract** attribute.
* **ComplexType** cannot define a **BaseType** attribute.
* **ReturnType** for a **FunctionImport** can be a collection.
* **ReturnType** for a **FunctionImport** cannot be a collection of **ComplexType**.
* **Property** cannot define a **CollectionKind** attribute.
* **Property** of type **ComplexType** cannot be Nullable.

# Appendix C: Differences Between CSDL 1.1 and CSDL 1.2

CSDL 1.2 is a superset of CSDL 1.1.

This section summarizes the differences between CSDL 1.1 and CSDL 1.2.

CSDL 1.1 is restricted in the following ways:

* **EntityType** cannot define an **OpenType** attribute.

# Appendix D: Differences Between CSDL 1.2 and CSDL 2.0

CSDL 2.0 is a superset of CSDL 1.2.

This section summarizes the differences between CSDL 1.2 and CSDL 2.0.

CSDL 1.2 is restricted in the following ways:

* ADO.NET Entity Framework does not support CSDL 1.2.
* **Schema** cannot contain any **Function** child elements.
* Entity **Key** cannot define any **AnnotationElement** elements.
* In CSDL 1.0, CSDL 1.1, and CSDL 1.2, binary data type is not supported for defining **Key**.
* Entity **PropertyRef** cannot define any **AnnotationElement** elements.
* **ReferentialConstraint**, **Role** cannot define any **AnnotationElement** elements.
* **EntityContainer** cannot define any **AnnotationElement** elements.
* **FunctionImport** cannot define any **AnnotationElement** elements.
* **ReferentialConstraint** can only exist between the key properties of associated entities.

# Appendix E: Differences Between CSDL 2.0 and CSDL 3.0

CSDL 3.0 is a superset of CSDL 2.0.

This section summarizes the differences between CSDL 2.0 and CSDL 3.0.

CSDL 2.0 is restricted in the following ways:

* **Property** cannot define a **Type** attribute with a value of "Collection".
* **Property** cannot use **EDMSimpleType** value of "Stream".
* **Property** cannot use the following **EDMSimpleType** values:
  + "Geography"
  + "GeographyPoint"
  + "GeographyLineString"
  + "GeographyPolygon"
  + "GeographyCollection"
  + "GeographyMultiPoint"
  + "GeographyMultiLineString"
  + "GeographyMultiPolygon"
  + "Geometry"
  + "GeometryPoint"
  + "GeometryLineString"
  + "GeometryPolygon"
  + "GeometryCollection"
  + "GeometryMultiPoint"
  + "GeometryMultiLineString"
  + "GeometryMultiPolygon"
* **FunctionImport** cannot define an **IsSideEffecting** attribute.
* **FunctionImport** cannot define an **IsComposable** attribute.
* **FunctionImport** cannot define an **IsBindable** attribute.
* **FunctionImport** cannot define a **ReturnType** as a child element.
* The following elements cannot appear:
  + **Annotations**
  + **Null**
  + **String**
  + **Int**
  + **Float**
  + **Decimal**
  + **Bool**
  + **DateTime**
  + **DateTimeOffset**
  + **Guid**
  + **Binary**
  + **Record**
  + **Collection**
  + **LabeledElement**
  + **Path**
  + **Apply**
  + **If**
  + **IsType**
  + **AssertType**
  + **EnumType**
  + **EnumType Member**
  + **TypeAnnotation**
  + **ValueAnnotation**
* **NavigationProperty** cannot have a **ContainsTarget** attribute.

# Appendix F: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs.

This document specifies version-specific details in the Microsoft .NET Framework. For information about which versions of .NET Framework are available in each released Windows product or as supplemental software, see [**.NET Framework**](#gt_90f32a86-5dd2-489f-9032-7721ab096242).

* Microsoft .NET Framework 3.5
* Microsoft .NET Framework 4.0
* Microsoft .NET Framework 4.5
* Microsoft .NET Framework 4.6

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms SHOULD or SHOULD NOT implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies that the product does not follow the prescription.

# Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as New, Major, Minor, Editorial, or No change.

The revision class **New** means that a new document is being released.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

* A document revision that incorporates changes to interoperability requirements or functionality.
* The removal of a document from the documentation set.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **Editorial** means that the formatting in the technical content was changed. Editorial changes apply to grammatical, formatting, and style issues.

The revision class **No change** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the technical content of the document is identical to the last released version.

Major and minor changes can be described further using the following change types:

* New content added.
* Content updated.
* Content removed.
* New product behavior note added.
* Product behavior note updated.
* Product behavior note removed.
* New protocol syntax added.
* Protocol syntax updated.
* Protocol syntax removed.
* New content added due to protocol revision.
* Content updated due to protocol revision.
* Content removed due to protocol revision.
* New protocol syntax added due to protocol revision.
* Protocol syntax updated due to protocol revision.
* Protocol syntax removed due to protocol revision.
* Obsolete document removed.

Editorial changes are always classified with the change type **Editorially updated**.

Some important terms used in the change type descriptions are defined as follows:

* **Protocol syntax** refers to data elements (such as packets, structures, enumerations, and methods) as well as interfaces.
* **Protocol revision** refers to changes made to a protocol that affect the bits that are sent over the wire.

The changes made to this document are listed in the following table. For more information, please contact [dochelp@microsoft.com](mailto:dochelp@microsoft.com).

| Section | Tracking number (if applicable) and description | Major change (Y or N) | Change type |
| --- | --- | --- | --- |
| [10](#Section_930e0bc8d2b94e4689d0e9393d936409) Appendix F: Product Behavior | Added .NET Framework 4.6 to list of applicable products. | Y | Content update. |

# Index

**A**

[Action attribute](#section_506d957c7ea74575888e048055204a79) 69

[AnnotationAttribute attribute](#section_2110a8d9984948c392c3e15dd2f5cd08) 71

[AnnotationElement element](#section_d51fd43f1a10431498da7c1650086bc9) 41

[Annotations element](#section_9fb2fa3c5aac443087c66786314b1588) 55

[Applicability](#section_969b9b71803b49069f261e891534d591) 12

[Apply Expression](#section_2ab2b71dcaa847cda8709214f99df76c) 58

[AssertType Expression](#section_015711f5ee68472482a527f4d9a66319) 59

[Association element](#section_77d7ccbbbda8444aa160f4581172322f) 23

[Association End element](#section_f5fec50d29304265945d965cd4db8153) 24

[AssociationSet element](#section_84fdfd027b124aa3a2eb51bab109f439) 37

[AssociationSet End element](#section_3c3578f79de94e7b9a852ed690bab9e7) 38

**B**

Binary data type

facets

[FixedLength](#section_236e2f1288644d2aa87536d7dc63904f) 62

[MaxLength](#section_746bed68a6f747e8a2a78a9fb158e50a) 62

[overview](#section_9f7e064f40ee4f31a3b14bd725066a6f) 62

[overview](#section_7f98fc8a614141429d35d2ef36af5b93) 62

[Boolean data type](#section_853e9d7b85ba4f9aa4a07be23d9ad908) 63

[Byte data type](#section_1a690ebf273b45fe9e4ee2a247768c34) 64

**C**

[Change tracking](#section_60222cd1a90f4c44b0674cef792f0f43) 123

[Collation facet - String data type](#section_0b4d59049514422593f45d1fb59cb490) 65

[Collection Expression](#section_ecc942a0af884012be6f439c706641d4) 57

[CollectionType element](#section_989fd3db92ae4d339ed21d0037eef219) 45

[ComplexType element](#section_ceb3ffc2812c4cd998e8184deffa9b09) 22

[ConcurrencyMode attribute](#section_76b49689935047b497fe2e2ad09df995) 70

[Containment NavigationProperty](#section_bd4e24ac247a4182a35ead563f501a21) 61

**D**

DateTime data type

[overview](#section_0d84a8c85f144567b9b7651f69c13df8) 63

[Precision facet](#section_ded7c22199a64973b84d6b9645fa1cdc) 63

DateTimeOffset data type

[overview](#section_352cece0c8b94e21b258170b77900502) 63

[Precision facet](#section_c3afbae772e84232ac59a787c1e76d81) 63

Decimal data type

facets

[Precision](#section_a7312581faec432299b4ebd497ef182e) 64

[Scale](#section_ffd73b8e03fa46e0b1790a74fa04b447) 64

[overview](#section_07d7b56d51384de7a15fcdcbbe47522b) 63

[Default facet](#section_4bc7f02a837646cbaab030c0f56cb584) 62

[Documentation element](#section_de1f825b37b34c46990516678abedcd2) 39

[Double data type](#section_677adb0204e24d719f620d3c5feaf372) 64

**E**

[Edm.TypeTerm example](#section_7c24db44c6bb4ccba0289b9850da0446) 74

EDMSimpleType attribute

[binary data type](#section_7f98fc8a614141429d35d2ef36af5b93) 62

[Boolean data type](#section_853e9d7b85ba4f9aa4a07be23d9ad908) 63

[Byte data type](#section_1a690ebf273b45fe9e4ee2a247768c34) 64

commonly applicable facets

[Default](#section_4bc7f02a837646cbaab030c0f56cb584) 62

[Nullable](#section_3a265846e4674643ac9c956f404545ea) 62

[DateTime data type](#section_0d84a8c85f144567b9b7651f69c13df8) 63

[DateTimeOffset data type](#section_352cece0c8b94e21b258170b77900502) 63

[Decimal data type](#section_07d7b56d51384de7a15fcdcbbe47522b) 63

[Double data type](#section_677adb0204e24d719f620d3c5feaf372) 64

[Geography data type](#section_5b8e0e22a0ed494dbfe283ed886f4c74) 66

[GeographyCollection data type](#section_553e1a8c52ef4e58b24a80b122357e0f) 67

[GeographyLineString data type](#section_46c9ebf65819499d94623b63532370f8) 66

[GeographyMultiLineString data type](#section_d26d9bd2044d4997bd0b80fafd8a5ac3) 67

[GeographyMultiPoint data type](#section_6e7ff6faf6ae4398a736a571987ff476) 67

[GeographyMultiPolygon data type](#section_ec0ee5b98830415e86c668b98ea43087) 67

[GeographyPoint data type](#section_ee0d9beeb2f240bc9fd5aaa712f2e02f) 66

[GeographyPolygon data type](#section_5234f907611b46819672025510ba1540) 66

[Geometry data type](#section_19ff2d9feb3a49a099acc477cfbd5601) 68

[GeometryCollection data type](#section_a6cfb94f82e540bf897f220b8fb97307) 69

[GeometryLineString data type](#section_a83a50fbb82b4868a60ac3004ad2b7c3) 68

[GeometryMultiLineString data type](#section_d04befd2712f442c9f72077ef9e6066a) 69

[GeometryMultiPoint data type](#section_2057b88582e2417187d140ec856f265c) 69

[GeometryMultiPolygon data type](#section_aa061d3e38be445683a51870c7e8984f) 69

[GeometryPoint data type](#section_90396d3623c34b9baaed40d730ce9422) 68

[GeometryPolygon data type](#section_f3628912e1a04cefba9ad66c78a33885) 68

[Guid data type](#section_e78aa7e319d1489e9244bdc452c7317c) 64

[Int16 data type](#section_387ae0f67853492882e55dfc50a239e3) 64

[Int32 data type](#section_ba88b9b46c3d4fa4b33c2dc9f74d3c9b) 64

[Int64 data type](#section_10ea60fd95c64e558f080a248da2fe65) 64

[overview](#section_4e965e03d9ee40b6ab34cd06a576aeb2) 62

[SByte data type](#section_300218ca66b548ed96db28e1f59dbed8) 64

[Single data type](#section_7108ae9f828a41d9aab552eb703cf2f4) 64

[Stream data type](#section_072832bbd6184af9b17db95a77177955) 65

[String data type](#section_064f144630a642b09e0ee49f4879acc0) 64

[Time data type](#section_e41eeac751974da1baccf7a70b5c825f) 63

[Entity Key element](#section_e667c2a894e24874a5cfa74dbd4b3bcd) 21

[EntityContainer element](#section_031f2e18935b461b95ce62e11432047a) 31

[EntitySet element](#section_4a09a48c1da34d8487b42b6c46731470) 36

[EntityType element](#section_6875ce6c837c4cea8e35441dc2366008) 15

[EnumType element](#section_2ed5ab29aef241b698f21a011d9a68db) 60

[EnumType Member element](#section_758db35e4af94268bb5ad1dfdf534c55) 60

[Examples](#section_82fcb04eab294227a9728155fb6786f4) 72

[overview](#section_82fcb04eab294227a9728155fb6786f4) 72

[ValueAnnotation](#section_76d6d3972c3940f891bee91f9c17d65d) 73

[ValueAnnotation Example](#section_76d6d3972c3940f891bee91f9c17d65d) 73

[ValueTerm and Edm.TypeTerm](#section_7c24db44c6bb4ccba0289b9850da0446) 74

[ValueTerm and Edm.TypeTerm Example](#section_7c24db44c6bb4ccba0289b9850da0446) 74

Expressions

[core](#section_6dcb633dcd2f4f309bf58cca9412c855) 56

[extended](#section_27579644830b45c38207a16b125d7e9a) 58

[overview](#section_51902ca1f745410397cfd19ba354272f) 55

[primitive scalar constant](#section_49b26b50f27046228b4e5221e2ec0706) 56

**F**

[Fields - vendor-extensible](#section_250f93a580b54f1fadf1dd83126257f0) 13

FixedLength facet

[binary data type](#section_236e2f1288644d2aa87536d7dc63904f) 62

[String data type](#section_015430b0b42c4b1fb236015af9461014) 65

[Full XML schema](#section_41ddb58b6dee4dca9c1228f237e4835f) 76

[Function ReturnType element](#section_08948be1f76849c8961cb22c760015a4) 51

[FunctionImport element](#section_d867e86a69054d059145d677b11f8c39) 32

[FunctionImport Parameter element](#section_2d7f0f3e133343098194a0148a9c946c) 35

[FunctionImport ReturnType element](#section_f510f36a36bf47f4ac414a0ff921fbfa) 34

**G**

[Geography data type](#section_5b8e0e22a0ed494dbfe283ed886f4c74) 66

[facets](#section_cc349030f68746ccaca2cded1e4544ca) 66

[GeographyCollection data type](#section_553e1a8c52ef4e58b24a80b122357e0f) 67

[facets](#section_3ecd6d866fb545c7a37eb6c027adec02) 67

[GeographyLineString data type](#section_46c9ebf65819499d94623b63532370f8) 66

[facets](#section_cdfde0aae340499fb002e89971a6054c) 66

[GeographyMultiLineString data type](#section_d26d9bd2044d4997bd0b80fafd8a5ac3) 67

[facets](#section_0c06093cc581430584c9f5c54572725d) 67

[GeographyMultiPoint data type](#section_6e7ff6faf6ae4398a736a571987ff476) 67

[facets](#section_7acc559e8b4a47829012388971b81ea3) 67

[GeographyMultiPolygon data type](#section_ec0ee5b98830415e86c668b98ea43087) 67

[facets](#section_ef776a3af41f43bb9e8879b0da6f8847) 67

[GeographyPoint data type](#section_ee0d9beeb2f240bc9fd5aaa712f2e02f) 66

[facets](#section_977758f1bfdc4fe3a15ce5dbb6f8dd2c) 66

[GeographyPolygon data type](#section_5234f907611b46819672025510ba1540) 66

[facets](#section_f1750008e52e4faa9da575a88dd7e7a8) 67

[Geometry data type](#section_19ff2d9feb3a49a099acc477cfbd5601) 68

[facets](#section_59e166aa6bb4429a88e37cf5ac398695) 68

[GeometryCollection data type](#section_a6cfb94f82e540bf897f220b8fb97307) 69

[facets](#section_dc8d2e0af0774f6cb248afc92f5c28c7) 69

[GeometryLineString data type](#section_a83a50fbb82b4868a60ac3004ad2b7c3) 68

[facets](#section_9f36f9a3decd4622926edd322a464e97) 68

[GeometryMultiLineString data type](#section_d04befd2712f442c9f72077ef9e6066a) 69

[facets](#section_ed7a6d19b9a1412ea05e9a33e8d5e7ea) 69

[GeometryMultiPoint data type](#section_2057b88582e2417187d140ec856f265c) 69

[facets](#section_d58234cfb9014a928dc415cb628d18f9) 69

[GeometryMultiPolygon data type](#section_aa061d3e38be445683a51870c7e8984f) 69

[facets](#section_898300b779cb415495ce3090fd9e6d2a) 69

[GeometryPoint data type](#section_90396d3623c34b9baaed40d730ce9422) 68

[facets](#section_feef106531384be39a276fb52eeb02bb) 68

[GeometryPolygon data type](#section_f3628912e1a04cefba9ad66c78a33885) 68

[facets](#section_1a1ada69aa6c47b5b00c7b3367356bc0) 68

[Glossary](#section_5fb358df38b0422d9640a636231507a7) 9

[Guid data type](#section_e78aa7e319d1489e9244bdc452c7317c) 64

**I**

[If Expression](#section_120e2b40c73a4b0b98c28d2ab6b8dfd3) 58

[Implementer - security considerations](#section_bc7fbb65fcd847079c8fe193e4d311e6) 75

[Informative references](#section_009a100a3b9a4cfdb9c683d9e81d7ac4) 12

[Int16 data type](#section_387ae0f67853492882e55dfc50a239e3) 64

[Int32 data type](#section_ba88b9b46c3d4fa4b33c2dc9f74d3c9b) 64

[Int64 data type](#section_10ea60fd95c64e558f080a248da2fe65) 64

[Introduction](#section_366fd24e0b414b74b3137310fe3e255b) 8

[IsType Expression](#section_8b2e749377f54729ab84e0b0f75de2f2) 59

**L**

[LabeledElement Expression](#section_32d84017fbce49f78de0873e58edd259) 57

[Localization](#section_2f0c2edc719a4aad93ad025cbde3a5a0) 13

**M**

MaxLength facet

[binary data type](#section_746bed68a6f747e8a2a78a9fb158e50a) 62

[String data type](#section_b8b378884ffc44d68e6aa55d13e21128) 65

[Model Function element](#section_49cbc245e5434cc9bc7d712aa617ae64) 42

[Model Function Parameter element](#section_eeb3339fb68242c0bc19bb6ec448acf7) 44

[Multiplicity attribute](#section_41e71d72b3284972b42ef92c95be648b) 70

**N**

[NavigationProperty element](#section_e83d21c47f0a4cc7ac38f2fbe15d3398) 19

[Normative references](#section_91b2f13db0a341f7888a45596b42d137) 11

[Null](#section_9e0ac041e2044a9ba52e07a72ee5114a) 56

[Nullable facet](#section_3a265846e4674643ac9c956f404545ea) 62

**O**

[OnDelete element](#section_a4c15a20e3d44419a39164b28e77f68a) 25

[OpenType attribute](#section_daa32788abd34894b164e99a900e96ed) 71

[Overview (synopsis)](#section_5deb6a213be2450b9e68f2a94fe69483) 12

**P**

[Path Expression](#section_3f24f40ef24d4c7b8407b75a90566806) 57

Precision facet

[DateTime data type](#section_ded7c22199a64973b84d6b9645fa1cdc) 63

[DateTimeOffset data type](#section_c3afbae772e84232ac59a787c1e76d81) 63

[Decimal data type](#section_a7312581faec432299b4ebd497ef182e) 64

[Time data type](#section_c5fa68ad391146f59af48d3d59973ec3) 63

[Product behavior](#section_930e0bc8d2b94e4689d0e9393d936409) 122

[Property element](#section_50129087bb7f475ea14d7a8a4bdef966) 17

[PropertyRef element](#section_6d3ed37e1d92417ebbed96433d932526) 21

[PropertyValue element](#section_cc1d9892120e4446aa0579db89897f4f) 53

**Q**

[QualifiedName attribute](#section_b70588effb4b4233a3336a9f10aee16b) 70

**R**

[ReadOnly](#section_93d5b8e441ad47a19b607a01411e4756) 62

[Record Expression](#section_acee574d2fe14da7a65eacf35643eb1d) 56

[References](#section_1949e23c7f10404da16872a6f6f7ddfd) 11

[informative](#section_009a100a3b9a4cfdb9c683d9e81d7ac4) 12

[normative](#section_91b2f13db0a341f7888a45596b42d137) 11

[ReferenceType element](#section_31d87a88430d4e9899346d36ad6a6d6f) 47

[ReferentialConstraint element](#section_9ba221133a224fd880c87e0209c33d90) 26

ReferentialConstraint Role element

[Dependent](#section_d88b1ca8fadf465baab06442d086e782) 29

[overview](#section_1957435eb0f54743a63e5396f9874b00) 27

[Principal](#section_b40d83d8270e49ed96437aee8f08c6b5) 28

[Relationship to protocols and other structures](#section_5efd78ce922e49fd9ce70e965027ad41) 12

[RowType element](#section_f024e8bab79f444fa93214c8284e505b) 48

[RowType Property element](#section_4277304cfd7b48119e36fd28eaf20ece) 49

**S**

[SByte data type](#section_300218ca66b548ed96db28e1f59dbed8) 64

[Scale facet - Decimal data type](#section_ffd73b8e03fa46e0b1790a74fa04b447) 64

[Schema element](#section_f7d957653b644c77b1449d28862b0403) 14

[Security](#section_bc7fbb65fcd847079c8fe193e4d311e6) 75

[Security - implementer considerations](#section_bc7fbb65fcd847079c8fe193e4d311e6) 75

[SimpleIdentifier attribute](#section_56ba037d704b4cc3845c301393e13fe6) 70

[Single data type](#section_7108ae9f828a41d9aab552eb703cf2f4) 64

SRID facet ([section 2.2.1.18.1.1](#section_34dec9ab9a2f47bb9d984ad114832431) 66, [section 2.2.1.26.1.1](#section_b25171ed76514548adc7383d37c77bf7) 68)

Stream data type

[facets](#section_0b97fd6dd040459ba512e943f00fdee9) 65

[overview](#section_072832bbd6184af9b17db95a77177955) 65

String data type

facets

[Collation](#section_0b4d59049514422593f45d1fb59cb490) 65

[FixedLength](#section_015430b0b42c4b1fb236015af9461014) 65

[MaxLength](#section_b8b378884ffc44d68e6aa55d13e21128) 65

[overview](#section_360fd935a3a04f038fa1bf9b05794b01) 64

[Unicode](#section_ad2b64a36b9f4697bb694ac1f99b7edc) 65

[overview](#section_064f144630a642b09e0ee49f4879acc0) 64

Structures

[attributes](#section_90a25f6c122e40579d27d76fd65d0568) 62

[elements](#section_5cf26e5b090348289ca4d4bf31977bf8) 14

[facets](#section_ce0f3dd1ce9949cdaf061e28055889f8) 71

**T**

Time data type

[overview](#section_e41eeac751974da1baccf7a70b5c825f) 63

[Precision facet](#section_c5fa68ad391146f59af48d3d59973ec3) 63

[Tracking changes](#section_60222cd1a90f4c44b0674cef792f0f43) 123

[TypeAnnotation element](#section_7a68e656848340978919e9dd1d2f6da1) 52

[TypeRef element](#section_305f358f05934a8a9ce8bfcac303f96e) 46

[TypeTerm attribute](#section_7191d6fdd0af45a89fbfa0f4998a0d0e) 71

**U**

[Unicode facet - String data type](#section_ad2b64a36b9f4697bb694ac1f99b7edc) 65

[Using element](#section_e8b9dda037b24ab08f67cab8b8a54150) 30

**V**

[ValueAnnotation element](#section_07b06e266f1142d89ce0975a9070c800) 53

[ValueAnnotation example](#section_76d6d3972c3940f891bee91f9c17d65d) 73

[ValueAnnotation Example example](#section_76d6d3972c3940f891bee91f9c17d65d) 73

[ValueTerm and Edm.TypeTerm Example example](#section_7c24db44c6bb4ccba0289b9850da0446) 74

[ValueTerm element](#section_86cc0386637a4c6cbdb59cc6e2c65647) 52

[ValueTerm example](#section_7c24db44c6bb4ccba0289b9850da0446) 74

[Vendor-extensible fields](#section_250f93a580b54f1fadf1dd83126257f0) 13

[Versioning](#section_2f0c2edc719a4aad93ad025cbde3a5a0) 13

Version-specific behavior ([section 6](#section_3084b19abdcf45a4b8b11b400fc240eb) 117, [section 7](#section_57dafe31c2e3412e9daadd359e9569b0) 118, [section 8](#section_baadaf46a8004d14a1bffae842309e3e) 119, [section 9](#section_de9f62a152ce4fd996ccc6c93697a19b) 120)

**X**

[XML schema](#section_41ddb58b6dee4dca9c1228f237e4835f) 76