

# [MS-RSREST]:

## Reporting Services REST API

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## Revision Summary

Date	Revision History	Revision Class	Comments
5/10/2016	1.0	New	Initial Availability
7/14/2016	2.0	Major	Significantly changed the technical content.

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# 1 Introduction

The Microsoft SQL Server Reporting Services REST API protocol specifies an HTTP-based web service API for a client to communicate with a Reporting Services server.

Sections 1.5, 1.8, 1.9, 2, and 3 of this specification are normative. All other sections and examples in this specification are informative.

## 1.1 Glossary

This document uses the following terms:

**Basic:** An authentication access type supported by HTTP as defined by [\[RFC2617\]](#).

**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).

**data source:** A database, web service, disk, file, or other collection of information from which data is queried or submitted. Supported data sources vary based on application and data provider.

**dataset:** A named specification that includes a data source definition, a query definition, and optional parameter values, calculated fields, and filtering and collation information as part of a report definition.

**folder:** A file system construct. File systems organize a volume's data by providing a hierarchy of objects, which are referred to as folders or directories, that contain files and can also contain other folders.

**JavaScript Object Notation (JSON):** A text-based, data interchange format that is used to transmit structured data, typically in Asynchronous JavaScript + XML (AJAX) web applications, as described in [\[RFC4627\]](#). The JSON format is based on the structure of ECMAScript (Jscript, JavaScript) objects.

**key performance indicator (KPI):** A predefined measure that is used to track performance against a strategic goal, objective, plan, initiative, or business process. A visual cue is frequently used to communicate performance against the measure.

**linked report:** A **report server** item that provides an access point to an existing report. Conceptually, it is similar to a program shortcut that is used to run a program or open a file. A linked report is derived from an existing report and retains the **report definition** of the original report. A linked report always inherits report layout and **data source** properties of the original report. All other properties and settings can be different from those of the original report, including security, parameters, location, subscriptions, and schedules.

**MIME type:** A method that is used by protocol clients to associate files of a certain type with applications that can open or access files of that type.

**mobile report:** A report that is optimized for a mobile device such as a phone or tablet. Mobile reports scale well to any screen size, on a design surface with adjustable grid rows and columns, and flexible mobile report elements.

**NT LAN Manager (NTLM) Authentication Protocol:** A protocol using a challenge-response mechanism for authentication (2) in which clients are able to verify their identities without sending a password to the server. It consists of three messages, commonly referred to as Type 1 (negotiation), Type 2 (challenge) and Type 3 (authentication). For more information, see [\[MS-NLMP\]](#).

**Open Data Protocol (OData):** A web protocol for querying and updating data specified in the OData protocol.



**report:** An object that is a combination of three kinds of information: data or other kinds of information about how to obtain the data (queries) as well as the structure of the data; layout or formatting information that describes how the data is presented; and properties of the report, such as author of the report, report parameters, and images included in the report.

**report definition:** The blueprint for a report before the report is processed or rendered. A report definition contains information about the query and layout for the report.

**report model:** A user-friendly description of an underlying database, with pre-established data relationships and auto-generated queries.

**report server:** A location on the network to which clients can connect by using SOAP over HTTP or SOAP over HTTPS to publish, manage, and execute reports.

**XML:** The Extensible Markup Language, as described in [\[XML1.0\]](#).

**XML namespace:** A collection of names that is used to identify elements, types, and attributes in XML documents identified in a URI reference [\[RFC3986\]](#). 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 [\[XMLNS-2ED\]](#).

**XML schema definition (XSD):** The World Wide Web Consortium (W3C) standard language that is used in defining XML schemas. Schemas are useful for enforcing structure and constraining the types of data that can be used validly within other XML documents. XML schema definition refers to the fully specified and currently recommended standard for use in authoring XML schemas.

**MAY, SHOULD, MUST, SHOULD NOT, MUST NOT:** These terms (in all caps) are used as defined in [\[RFC2119\]](#). All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

## 1.2 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](#).

### 1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact [dochelp@microsoft.com](mailto:dochelp@microsoft.com). We will assist you in finding the relevant information.

[MC-CSDL] Microsoft Corporation, "[Conceptual Schema Definition File Format](#)".

[MS-ODATAJSON] Microsoft Corporation, "[OData Protocol JSON Format Standards Support Document](#)".

[OData-Protocol] OASIS, "OData Version 4.0 Part 1: Protocol", OASIS Standard, <http://docs.oasis-open.org/odata/odata/v4.0/odata-v4.0-part1-protocol.doc>

[ODataJSON4.0] OASIS, "OData JSON Format Version 4.0", OASIS Standard, February 2014, <http://docs.oasis-open.org/odata/odata-json-format/v4.0/os/odata-json-format-v4.0-os.doc>

[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>

[RFC2616] Fielding, R., Gettys, J., Mogul, J., et al., "Hypertext Transfer Protocol -- HTTP/1.1", RFC 2616, June 1999, <http://www.rfc-editor.org/rfc/rfc2616.txt>

[RFC2818] Rescorla, E., "HTTP Over TLS", RFC 2818, May 2000, <http://www.rfc-editor.org/rfc/rfc2818.txt>

[RFC7230] Fielding, R., and Reschke, J., Eds., "Hypertext Transfer Protocol -- HTTP/1.1: Message Syntax and Routing", RFC 7230, June 2014, <http://www.rfc-editor.org/rfc/rfc7230.txt>

[XMLNS] Bray, T., Hollander, D., Layman, A., et al., Eds., "Namespaces in XML 1.0 (Third Edition)", W3C Recommendation, December 2009, <http://www.w3.org/TR/2009/REC-xml-names-20091208/>

[XMLSCHEMA1/2] Thompson, H., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "XML Schema Part 1: Structures Second Edition", W3C Recommendation, October 2004, <http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/>

[XMLSCHEMA2/2] Biron, P., and Malhotra, A., Eds., "XML Schema Part 2: Datatypes Second Edition", W3C Recommendation, October 2004, <http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/>

### 1.2.2 Informative References

[CSRF] Anderson, R., "XSRF/CSRF Prevention in ASP.NET MVC and Web Pages", March 2013, <http://www.asp.net/mvc/overview/security/xsrfsrf-prevention-in-aspnet-mvc-and-web-pages>

[MSDN-RSCONFIG] Microsoft Corporation, "RsReportServer.config Configuration File", <https://msdn.microsoft.com/en-us/library/ms157273.aspx>

[MSDN-SHA256CL] Microsoft Corporation, "SHA256 Class", [https://msdn.microsoft.com/en-us/library/system.security.cryptography.sha256\(v=vs.110\).aspx](https://msdn.microsoft.com/en-us/library/system.security.cryptography.sha256(v=vs.110).aspx)

[REST] Fielding, R., "Architectural Styles and the Design of Network-based Software Architectures", 2000, <http://www.ics.uci.edu/~fielding/pubs/dissertation/top.htm>

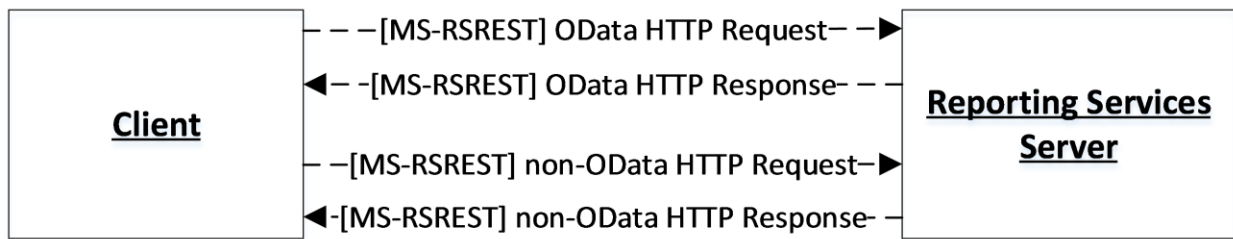
### 1.3 Overview

The Reporting Services REST API protocol specifies a web service API for a client to perform the following actions.

- Navigate the report catalog.
- Retrieve information about **folders, KPIs, mobile reports**, paginated reports, and other items.
- Retrieve a particular user's favorite KPIs and reports.
- Retrieve information that the client would need to display or embed a particular report and to serve reports to a client.

The API also allows the client to designate **reports** as favorites and remove reports from its favorite list. The API does not allow the client to define, modify, or manipulate reports. That work is done elsewhere. The Reporting Services Web Service API is built on top of the OData protocol [\[OData-Protocol\]](#) unless otherwise noted, and is constructed to be a RESTful API. For more information on REST, see [\[REST\]](#) chapter 5.

All requests are initiated by the client. The server responds to client requests. Some server responses are provided as in the **JSON** format [\[ODataJSON4.0\]](#), and some server responses are provided in an **XML** format [\[XMLSCHEMA1/2\]](#) [\[XMLSCHEMA2/2\]](#), as illustrated in the following diagram.

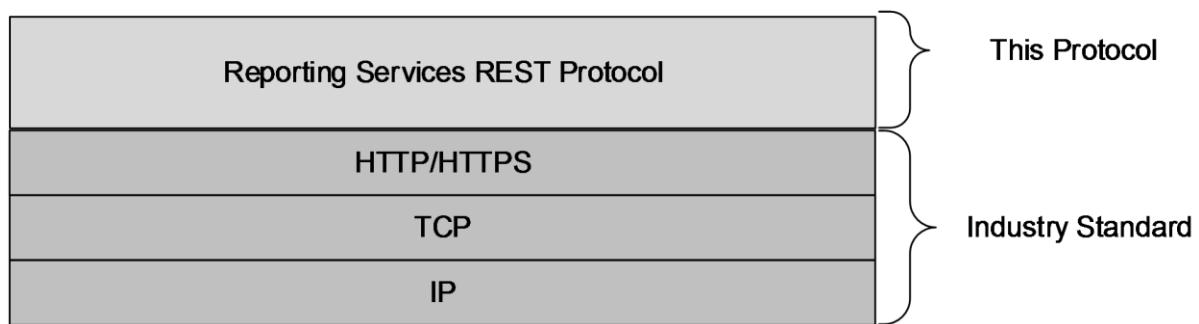


**Figure 1: Communication flow for OData and non-OData requests**

## 1.4 Relationship to Other Protocols

The Reporting Services REST API protocol transmits messages by using HTTP [\[RFC2616\]](#) or HTTPS [\[RFC2818\]](#).

The following diagram shows the protocol layering.



**Figure 2: Protocol layering**

## 1.5 Prerequisites/Preconditions

None.

## 1.6 Applicability Statement

This protocol supports exchanging messages between a client and a Reporting Services server.

## 1.7 Versioning and Capability Negotiation

This protocol does not include capability negotiation features. The API does allow for a client to query the server as to which protocol versions are supported.

## 1.8 Vendor-Extensible Fields

None.

## 1.9 Standards Assignments

None.

## 2 Messages

### 2.1 Transport

The Microsoft SQL Server Reporting Services REST API protocol uses HTTP or HTTPS as the transport.

The protocol does not define authentication. Implementers utilize authentication outside of this protocol. Implementers MAY configure their servers to use standard authentication such as HTTP **Basic** or **NTLM**, or any other standard or non-standard authentication of their choice. <1>

The protocol is encoded by Open Data standards [\[OData-Protocol\]](#) except as noted.

The protocol does not require any specific HTTP ports, character sets, or transfer encoding.

### 2.2 Common Data Types

#### 2.2.1 Namespaces

This specification defines and references various **XML namespaces** that use the mechanisms specified in [\[XMLNS\]](#). Although this specification associates a specific XML namespace prefix with each XML namespace that is used, the choice of any particular XML namespace prefix is implementation-specific and not significant for interoperability.

Prefix	Namespace URI	Reference
xs	<a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a>	<a href="#">[XMLSCHEMA1/2]</a> <a href="#">[XMLSCHEMA2/2]</a>
edmx	<a href="http://docs.oasis-open.org/odata/ns/edmx">http://docs.oasis-open.org/odata/ns/edmx</a>	<a href="#">[OData-Protocol]</a>
edm	<a href="http://docs.oasis-open.org/odata/ns/edm">http://docs.oasis-open.org/odata/ns/edm</a>	[OData-Protocol]
Model	<a href="http://docs.oasis-open.org/odata/ns/edm">http://docs.oasis-open.org/odata/ns/edm</a>	[OData-Protocol]

#### 2.2.2 HTTP Methods

This protocol uses HTTP methods GET and POST.

#### 2.2.3 HTTP Headers

All headers use syntax that is compliant with [\[RFC7230\]](#).

All HTTP POST, PUT, and DELETE operations MUST contain an X-XSRF-TOKEN header in the request. This token is obtained in a server response as an XSRF-TOKEN cookie. All server responses contain this cookie, so the client MUST copy the cookie from the previous response into the next request, if the request is an HTTP POST, PUT, or DELETE. For more information on the intended use of this token, see [\[CSRF\]](#).

## 2.2.4 Complex Types

### 2.2.4.1 CSDL Complex Types

All types defined in this section flow through the protocol in JSON and are defined in [CSDL \[MC-CSDL\]](#). They are part of the **OData** implementation [\[OData-Protocol\]](#).

#### 2.2.4.1.1 Property

The **Property** complex type specifies a name/value pair that represents a property.

The following CSDL defines the **Property** complex type.

```
<ComplexType Name="Property">
  <Property Name="Name" Type="Edm.String" />
  <Property Name="Value" Type="Edm.String" />
</ComplexType>
```

The following table describes the properties for the **Property** complex type.

Property	Type	Description
Name	Edm.String	The name of the property.
Value	Edm.String	The value of the property.

#### 2.2.4.1.2 MobileReportManifest

The **MobileReportManifest** complex type specifies the contents of a mobile report.

The following CSDL defines the **MobileReportManifest** complex type.

```
<ComplexType Name="MobileReportManifest">
  <Property Name="Definition" Type="Model.DefinitionItem" />
  <Property Name="Resources" Type="Collection(Model.ResourceGroup)" />
  <Property Name="DataSets" Type="Collection(Model.DataSetItem)" />
  <Property Name="Thumbnails" Type="Collection(Model.ThumbnailItem)" />
</ComplexType>
```

The following table describes the properties for the **MobileReportManifest** complex type.

Property	Type	Description
Definition	Model.DefinitionItem	A complex type that contains the definition of the mobile report.
Resources	Collection(Model.ResourceGroup)	A collection of resources for this mobile report.
DataSets	Collection(Model.DataSetItem)	A collection of <b>datasets</b> for this mobile report.
Thumbnails	Collection(Model.ThumbnailItem)	A collection of thumbnails for this mobile report.

#### 2.2.4.1.2.1 DefinitionItem

The **DefinitionItem** complex type specifies the metadata for a mobile report.

The following CSDL defines the **DefinitionItem** complex type.

```
<ComplexType Name="DefinitionItem">
  <Property Name="Id" Type="Edm.Guid" Nullable="false" />
  <Property Name="Path" Type="Edm.String" />
  <Property Name="Name" Type="Edm.String" />
  <Property Name="Hash" Type="Edm.String" />
</ComplexType>
```

The following table describes the properties for the **DefinitionItem** complex type.

Property	Type	Description
Id	Edm.Guid	The identifier with which the item can be referenced.
Path	Edm.String	The path to the item within a catalog.
Name	Edm.String	The name of the item.
Hash	Edm.String	An SHA256 hash of the contents of the mobile report. For more information on SHA256, see <a href="#">[MSDN-SHA256CL]</a> .

#### 2.2.4.1.2.2 ResourceGroup

The **ResourceGroup** complex type specifies the instance contents of a Resource within a catalog item.

The following CSDL defines the **ResourceGroup** complex type.

```
<ComplexType Name="ResourceGroup">
  <Property Name="Name" Type="Edm.String"/>
  <Property Name="Type" Type="Model.MobileReportResourceGroupType"
    Nullable="false"/>
  <Property Name="Items" Type="Collection(Model.ResourceItem)"/>
</ComplexType>
```

The following table describes the properties for the **ResourceGroup** complex type.

Property	Type	Description
Name	Edm.String	The name of the resource.
Type	Model.MobileReportResourceGroupType	An enumeration of items that represents the type of the mobile report resource.
Items	Model.ResourceItem	A collection of items of type Model.ResourceItem. The contents of each item in the collection is a resource for the catalog item entity within which this collection resides.

#### 2.2.4.1.2.3 ResourceItem

The **ResourceItem** complex type specifies metadata about an item of a resource.

The following CSDL defines the **ResourceItem** complex type.

```
<ComplexType Name="ResourceItem">
  <Property Name="Key" Type="Edm.String"/>
  <Property Name="Id" Type="Edm.Guid" Nullable="false"/>
  <Property Name="Path" Type="Edm.String"/>
  <Property Name="Name" Type="Edm.String"/>
  <Property Name="Hash" Type="Edm.String"/>
</ComplexType>
```

The following table describes the properties for the **ResourceItem** complex type.

Property	Type	Description
Key	Edm.String	The key for the item.
Id	Edm.Guid	The identifier with which the item can be referenced.
Path	Edm.String	The path to the item.
Name	Edm.String	The name of the item.
Hash	Edm.String	An SHA256 hash of the contents of the item. For more information on SHA256, see <a href="#">[MSDN-SHA256CL]</a> .

#### 2.2.4.1.2.4 DataSetItem

The **DataSetItem** complex type specifies the contents of a dataset item.

The following CSDL defines the **DataSetItem** complex type.

```
<ComplexType Name="DataSetItem">
  <Property Name="Type" Type="Model.MobileReportDataSetType" Nullable="false" />
  <Property Name="TimeUnit" Type="Edm.String" />
  <Property Name="DateTimeColumn" Type="Edm.String" />
  <Property Name="IsParameterized" Type="Edm.Boolean" Nullable="false" />
  <Property Name="Id" Type="Edm.Guid" Nullable="false" />
  <Property Name="Path" Type="Edm.String" />
  <Property Name="Name" Type="Edm.String" />
  <Property Name="Hash" Type="Edm.String" />
</ComplexType>
```

The following table describes the properties for the **DataSetItem** complex type.

Property	Type	Description
Type	Model.MobileReportDataSetType	An enumeration value that indicates the type of the dataset item.
TimeUnit	Edm.String	The time unit for the dataset item. The possible values for this string are as follows. <ul style="list-style-type: none"> <li>▪ Year</li> <li>▪ Quarter</li> <li>▪ Month</li> </ul>

Property	Type	Description
		<ul style="list-style-type: none"> <li>▪ Week</li> <li>▪ Day</li> <li>▪ Hour</li> </ul>
DateTimeColumn	Edm.String	A string value that indicates the column in the dataset item that represents date and time.
IsParameterized	Edm.boolean	A Boolean value that indicates whether the dataset item is parameterized. TRUE indicates that the dataset item is parameterized and FALSE indicates that the dataset item is not parameterized.
Id	Edm.Guid	A unique identifier by which this dataset item can be identified and retrieved.
Path	Edm.String	The path, within the catalog, to this dataset item.
Name	Edm.String	The name of the dataset item.
Hash	Edm.String	An SHA256 hash of the contents of the dataset item. For more information on SHA256, see <a href="#">[MSDN-SHA256CL]</a> .

#### 2.2.4.1.2.5 ThumbnailItem

The **ThumbnailItem** complex type specifies the metadata for a thumbnail in a report.

The following CSDL defines the **ThumbnailItem** complex type.

```

<ComplexType Name="ThumbnailItem">
  <Property Name="Type" Type="Model.MobileReportThumbnailType" Nullable="false"/>
  <Property Name="Id" Type="Edm.Guid" Nullable="false" />
  <Property Name="Path" Type="Edm.String" />
  <Property Name="Name" Type="Edm.String" />
  <Property Name="Hash" Type="Edm.String" />
</ComplexType>

```

The following table describes the properties for the **ThumbnailItem** complex type.

Property	Type	Description
Type	Model.MobileReportThumbnailType	An enumeration value that indicates the type of the thumbnail.
Id	Edm.Guid	A unique identifier by which this thumbnail item can be identified and retrieved.
Path	Edm.String	The path, within the catalog, to this thumbnail item.
Name	Edm.String	The name of the thumbnail item.
Hash	Edm.String	An SHA256 hash of the contents of the thumbnail item. For more information on SHA256, see <a href="#">[MSDN-SHA256CL]</a> .



### 2.2.4.1.3 CredentialsSuppliedByUser

The **CredentialsSuppliedByUser** complex type specifies how credentials supplied by the user are prompted for and utilized.

The following CSDL defines the **CredentialsSuppliedByUser** complex type.

```
<ComplexType Name="CredentialsSuppliedByUser">
  <Property Name="DisplayText" Type="Edm.String" />
  <Property Name="UseAsWindowsCredentials" Type="Edm.Boolean" Nullable="false" />
</ComplexType>
```

The following table describes the properties of the **CredentialsSuppliedByUser** complex type.

Property	Type	Description
DisplayText	Edm.String	A prompt string to be used when prompting the user to supply credentials.
UseAsWindowsCredentials	Edm.Boolean	A Boolean value that indicates whether the user-supplied credentials are used as Windows credentials. TRUE indicates that the supplied credentials are used as Windows credentials.

### 2.2.4.1.4 CredentialsStoredInServer

The **CredentialsStoredInServer** complex type specifies credential information that is stored in the server.

The following CSDL defines the **CredentialsStoredInServer** complex type.

```
<ComplexType Name="CredentialsStoredInServer">
  <Property Name="UserName" Type="Edm.String" />
  <Property Name="Password" Type="Edm.String" />
  <Property Name="UseAsWindowsCredentials" Type="Edm.Boolean"
    Nullable="false" />
  <Property Name="ImpersonateAuthenticatedUser"
    Type="Edm.Boolean" Nullable="false" />
</ComplexType>
```

The following table describes the properties of the **CredentialsStoredInServer** complex type.

Property	Type	Description
UserName	Edm.String	A string value that indicates the user name.
Password	Edm.String	A string value that indicates the password.
UseAsWindowsCredentials	Edm.Boolean	A Boolean value that indicates whether the credentials are used as Windows credentials. TRUE indicates that the credentials are used as Windows credentials.
ImpersonateAuthenticatedUser	Edm.Boolean	A Boolean value that indicates whether to impersonate the logged in user after using the stored credentials to log in. TRUE indicates that the logged in

Property	Type	Description
		user is to be impersonated after login. FALSE indicates that the logged in user is not to be impersonated after login.

### 2.2.4.1.5 DataSetParameter

The **DataSetParameter** complex type specifies a name/value pair for a parameter of a dataset.

The following CSDL defines the **DataSetParameter** complex type.

```
<ComplexType Name="DataSetParameter">
  <Property Name="Name" Type="Edm.String" />
  <Property Name="Value" Type="Edm.String" />
</ComplexType>
```

The following table describes the properties of the **DataSetParameter** complex type.

Property	Type	Description
Name	Edm.String	A string value that indicates the name of a column in a dataset.
Value	Edm.String	A string value that indicates the value of a column in a dataset.

### 2.2.4.1.6 DrillthroughTarget

The **DrillthroughTarget** complex type specifies the type of the target of a drillthrough operation.

The following CSDL defines the **DrillthroughTarget** complex type.

```
<ComplexType Name="DrillthroughTarget" Abstract="true">
  <Property Name="Type" Type="Model.DrillthroughTargetType"
    Nullable="false"/>
</ComplexType>
```

The following table describes the properties of the **DrillthroughTarget** complex type.

Property	Type	Description
Type	Model.DrillthroughTargetType	An enumeration value that indicates the type of the target of a drillthrough operation.

### 2.2.4.1.7 KpiValues

The **KpiValues** complex type specifies the current value, goal, status, and trend of the KPI.

The following CSDL defines the **KpiValues** complex type.

```
<ComplexType Name="KpiValues">
  <Property Name="Value" Type="Edm.String"/>
</ComplexType>
```

```

<Property Name="Goal" Type="Edm.Double"/>
<Property Name="Status" Type="Edm.Double"/>
<Property Name="TrendSet" Type="Collection(Edm.Double)"/>
</ComplexType>

```

The following table describes the properties of the **KpiValues** complex type.

Property	Type	Description
Value	Edm.String	A string that indicates the value of the variable.
Goal	Edm.Double	Indicates the targeted value for the variable.
Status	Edm.Double	Indicates the status of the variable when compared to the target.
TrendSet	Collection(Edm.Double)	A series of values that indicate the trend of the KPI.

### 2.2.4.1.8 KpiData

The **KpiData** complex type specifies metadata for the computation of a KPI.

The following CSDL defines the **KpiData** complex type.

```

<ComplexType Name="KpiData">
  <Property Name="Value" Type="Model.KpiDataItem"/>
  <Property Name="Goal" Type="Model.KpiDataItem"/>
  <Property Name="Status" Type="Model.KpiDataItem"/>
  <Property Name="TrendSet" Type="Model.KpiDataItem"/>
</ComplexType>

```

The following table describes the properties of the **KpiData** complex type.

Property	Type	Description
Value	Model.KpiDataItem	Indicates the value of the KPI data item
Goal	Model.KpiDataItem	Indicates the targeted value of the KPI data item.
Status	Model.KpiDataItem	Indicates the status of the KPI data item when compared to the target.
TrendSet	Model.KpiDataItem	A series of values that indicate the recent trend of the value of the KPI data item.

### 2.2.4.1.8.1 KpiDataItem

The **KpiDataItem** complex type specifies one of the data items of a KPI. This abstract type can also be used to derive further types.

The following CSDL defines the **KpiDataItem** complex type.

```

<ComplexType Name="KpiDataItem" Abstract="true">
  <Property Name="Type" Type="Model.KpiDataItemType" Nullable="false"/>
</ComplexType>

```

The following table describes the properties of the **KpiDataItem** complex type.

Property	Type	Description
Type	Model.KpiDataItemType	An enumeration value that indicates the type of the KPI data item.

#### 2.2.4.1.8.2 KpiStaticDataItem

The **KpiStaticDataItem** complex type specifies the value of a static KPI data item. It is derived from **KpiDataItem** (see section [2.2.4.1.8.1](#)).

The following CSDL defines the **KpiStaticDataItem** complex type.

```
<ComplexType Name="KpiStaticDataItem" BaseType="Model.KpiDataItem">
  <Property Name="Value" Type="Edm.String"/>
</ComplexType>
```

The following table describes the properties of the **KpiStaticDataItem** complex type. All properties of **KpiDataItem** are also included because it is a derived type.

Property	Type	Description
Value	Edm.String	A string that indicates the value of the static data item.

#### 2.2.4.1.8.3 KpiSharedDataItem

The **KpiSharedDataItem** complex type specifies a shared KPI data item. It is derived from **KpiDataItem** (see section [2.2.4.1.8.1](#)).

The following CSDL defines the **KpiSharedDataItem** complex type.

```
<ComplexType Name="KpiSharedDataItem" BaseType="Model.KpiDataItem">
  <Property Name="Id" Type="Edm.Guid" Nullable="false"/>
  <Property Name="Path" Type="Edm.String"/>
  <Property Name="Parameters" Type="Collection(Model.DataSetParameter)"
    Nullable="false"/>
  <Property Name="Aggregation" Type="Model.KpiSharedDataItemAggregation"
    Nullable="false"/>
  <Property Name="Column" Type="Edm.String"/>
</ComplexType>
```

The following table describes the properties of the **KpiSharedDataItem** complex type. All properties of **KpiDataItem** are also included because it is a derived type.

Property	Type	Description
Id	Edm.Guid	The identifier for the shared data item.
Path	Edm.String	A string value that indicates the path, within the catalog, to the shared data item.
Parameters	Collection(Model.DataSetParameter)	A collection of parameters for the shared data item.

Property	Type	Description
Aggregation	Model.KpiSharedDataItemAggregation	An enumeration value that specifies the aggregation for a shared data item.
Column	Edm.String	A string value that indicates the source column for the shared data item.

### 2.2.4.1.9 ServiceState

The **ServiceState** complex type specifies whether a server is available. It also contains information that a client MAY use to determine whether certain server product features are enabled in the edition of the server currently being connected to. [<2>](#)

The following CSDL defines the **ServiceState** complex type.

```
<ComplexType Name="ServiceState">
  <Property Name="IsAvailable" Type="Edm.Boolean" Nullable="false"/>
  <Property Name="RestrictedFeatures" Type="Collection(Edm.String)"/>
  <Property Name="AllowedSystemActions" Type="Collection(Edm.String)"/>
</ComplexType>
```

The following table describes the properties of the **ServiceState** complex type.

Property	Type	Description
IsAvailable	Edm.Boolean	A Boolean value that indicates whether the server is operating and available to be accessed by this protocol. TRUE indicates that the server is available.
RestrictedFeatures	Collection(Edm.String)	A collection of string vales that indicate features that the protocol is restricted from using with this edition of the server. Valid values are described below in this section.
AllowedSystemActions	Collection(Edm.String)	A collection of string values that indicate which system functions the protocol is allowed to perform with this edition of the server. Valid values are described below in this section.

The following table describes the strings that are returned for the **RestrictedFeatures** property.

Value	Description
NonSqlDataSources	The server edition cannot access non-SQL <b>data sources</b> .
OtherSkuDatasources	The server edition cannot access product server editions other than the edition currently being accessed by the protocol.
RemoteDataSources	The server edition cannot access remote data sources.
Caching	The server edition cannot cache query results within a report.
ExecutionSnapshots	The server edition cannot access execution snapshots.
History	The server edition cannot be used to access history.
Delivery	The server edition cannot be used to initiate delivery of reports.

Value	Description
Scheduling	The server edition cannot be used to initiate scheduling of reports.
Extensibility	The server edition does not support extensibility.
CustomAuth	The server edition does not support the capability to add custom authorization.
Sharepoint	The server edition does not support SharePoint integrated mode.
ScaleOut	The server edition does not support scaling out to a server farm.
Subscriptions	The server edition does not support subscriptions to reports.
CustomRolesSecurity	The server edition does not support custom roles security.
ReportBuilder	The server edition does not support the report builder.
ModelItemSecurity	The server edition does not support security at the individual model item level.
DynamicDrillthrough	The server edition cannot be used to perform dynamic drillthrough.
NoCpuThrottling	The server edition does not support CPU throttling.
EventGeneration	The server edition cannot be used for event generation.
ComponentLibrary	The server edition does not support report parts.
SharedDataset	The server edition does not support shared datasets.
DataAlerting	The server edition does not support data alerting.
Crescent	The server edition does not support the Power View feature of Microsoft Excel.
KpiItems	The server edition does not support KPIs.
MobileReportItems	The server edition does not support mobile reports.
Branding	The server edition does not support custom branding.
PowerBI	The server edition does not support Microsoft Power BI integration.

The following table describes the strings that are returned for the **AllowedSystemActions** property.

Value	Description
Create Roles	The server edition can be used to create roles.
Delete Roles	The server edition can be used to delete roles
Read Role Properties	The server edition can be used to read role properties.
Read System Properties	The server edition can be used to read system properties
Update System Properties	The server edition can be used to update system properties.
Create Schedules	The server edition can be used to create schedules.
Delete Schedules	The server edition can be used to delete schedules.
Read Schedules	The server edition can be used to read schedules.
Update Schedules	The server edition can be used to update schedules.

Value	Description
List Jobs	The server edition can be used to list jobs.
Cancel Jobs	The server edition can be used to cancel jobs.
Execute Report Definition	The server edition can be used to execute <b>report definition</b> .
Read System Security Policies	The server edition can be used to read system security policies.
Update System Security Policies	The server edition can be used to update system security policies.

## 2.2.4.2 XML Complex Types

All types defined in this section flow through the protocol in XML and are defined in **XSD**.

### 2.2.4.2.1 DashboardParameterType Complex Type

The **DashboardParameterType** complex type specifies the attributes of a single dashboard parameter.

The following is the XSD for the **DashboardParameterType** complex type.

```
<xs:complexType name="DashboardParameterType">
  <xs:attribute name="ObjectName" type="xs:string" use="required" />
  <xs:attribute name="Name" type="xs:string" use="required" />
  <xs:attribute name="Kind" type="DashboardParameterKindEnum" use="required" />
  <xs:attribute name="ObjectDescription" type="xs:string"
    use="required" />
</xs:complexType>
```

The **DashboardParameterType** complex type contains no elements.

The following table describes the XML attributes for the **DashboardParameterType** complex type.

Attribute	Type	Description
ObjectName	xs:string	The name of the object that the dashboard parameter applies to.
Name	xs:string	The name of the dashboard parameter.
Kind	DashboardParameterKindEnum	An enumeration of values that indicate the type of the dashboard parameter.
ObjectDescription	xs:string	A description of the object that the dashboard parameter applies to.

### 2.2.4.2.2 DashboardElementType Complex Type

The **DashboardElementType** complex type specifies the collection of elements that will appear in a dashboard gallery.

The following is the XSD for the **DashboardElementType** complex type.

```

<xs:complexType name="DashboardElementType">
  <xs:sequence>
    <xs:element name="GalleryElement" type="GalleryElementType"
      maxOccurs="unbounded" />
  </xs:sequence>
</xs:complexType>

```

The following table describes the XML elements for the **DashboardElementType** complex type.

Element	Type	Description
GalleryElement	GalleryElementType	A collection of the definitions for each element that will appear in the gallery.

#### 2.2.4.2.2.1 GalleryElementType Complex Type

The **GalleryElementType** complex type defines one element of a gallery. Gallery elements are a heterogeneous collection. This type holds the diverse attributes for the entire superset of possible gallery elements.

The following is the XSD for the **GalleryElementType** complex type.

```

<xs:complexType name="GalleryElementType">
  <xs:sequence>
    <xs:element name="SchemaItem" type="SchemaItemType" minOccurs="0"
      maxOccurs="unbounded" />
    <xs:element name="Title" type="xs:string" minOccurs="0" />
    <xs:element name="SubTitle" type="xs:string" minOccurs="0" />
    <xs:element name="ColumnDefinitions" type="ColumnDefinitionsType"
      minOccurs="0" />
    <xs:element name="TimeLevels" type="xs:string" minOccurs="0" />
    <xs:element name="TimeRangePresets" type="xs:string" minOccurs="0" />
    <xs:element name="DefaultTimeRangePreset" type="xs:string" minOccurs="0" />
    <xs:element name="TimeRangeVisualization"
      type="GalleryElementTimeRangeVisualization" minOccurs="0" />
    <xs:element name="DrillThroughDashboardSchema"
      type="DrillThroughDashboardSchemaType" minOccurs="0"/>
    <xs:element name="DataSourceConnections" type="GalleryElementDataSourceConnectionsType"
      minOccurs="0" />
  </xs:sequence>
  <xs:attribute name="Name" type="xs:string" use="required" />
  <xs:attribute name="Type" type="xs:string" use="required" />
  <xs:attribute name="Accent" type="xs:boolean" use="required" />
  <xs:attribute name="NumberFormat" type="GalleryElementNumberFormatEnum"
    use="optional" />
  <xs:attribute name="ShowComparisonDelta" type="xs:boolean" use="optional" />
  <xs:attribute name="ValueOrientation" type="GalleryElementValueOrientationEnum"
    use="optional" />
  <xs:attribute name="AdjustYRangeToValues" type="xs:boolean" use="optional" />
  <xs:attribute name="MinimumRangeStop" type="xs:decimal" use="optional" />
  <xs:attribute name="MaximumRangeStop" type="xs:decimal" use="optional" />
  <xs:attribute name="NeutralStartRangeStop" type="xs:decimal" use="optional" />
  <xs:attribute name="NeutralEndRangeStop" type="xs:decimal" use="optional" />
  <xs:attribute name="AllowMultiSelect" type="xs:boolean" use="optional" />
  <xs:attribute name="SelectAll" type="xs:boolean" use="optional" />
  <xs:attribute name="SelectAllText" type="xs:string" use="optional" />
  <xs:attribute name="ShowIcons" type="xs:boolean" use="optional" />
  <xs:attribute name="Structure" type="GalleryElementStructureEnum" use="optional" />
  <xs:attribute name="FilterTargets" type="xs:string" use="optional" />
  <xs:attribute name="DeltaFormat" type="GalleryElementDeltaFormatEnum" use="optional" />
  <xs:attribute name="Visualization" type="GalleryElementVisualizationEnum"
    use="optional" />

```



```

<xs:attribute name="RingType" type="GalleryElementRingTypeEnum" use="optional" />
<xs:attribute name="DisplayMode" type="GalleryElementDisplayModeEnum" use="optional" />
<xs:attribute name="ChartUnit" type="GalleryElementChartTimeUnitEnum" use="optional" />
<xs:attribute name="IndependentAxisAnnotations"
  type="GalleryElementIndependentAxisAnnotationsEnum" use="optional" />
<xs:attribute name="ShowLegend" type="xs:boolean" use="optional" />
<xs:attribute name="Sorting" type="GalleryElementSortingEnum" use="optional" />
<xs:attribute name="Orientation" type="GalleryElementOrientationEnum" use="optional" />
<xs:attribute name="ShowPercentageTotals" type="xs:boolean" use="optional" />
<xs:attribute name="ReuseColorsOnComparisonSeries" type="xs:boolean" use="optional" />
<xs:attribute name="ValueDirection" type="GalleryElementValueOrientationEnum"
  use="optional" />
<xs:attribute name="TypeOfInputData" type="GalleryElementTypeOfInputDataEnum"
  use="optional" />
<xs:attribute name="LastColumnLabel" type="xs:string" use="optional" />
<xs:attribute name="AnnotationVisualization"
  type="GalleryElementAnnotationVisualizationEnum" use="optional" />
<xs:attribute name="Is3D" type="xs:boolean" use="optional" />
<xs:attribute name="HasReflection" type="xs:boolean" use="optional" />
<xs:attribute name="ShowPopup" type="xs:boolean" use="optional" />
<xs:attribute name="TwoLevel" type="xs:boolean" use="optional" />
<xs:attribute name="InputDataAggregation" type="xs:boolean" use="optional" />
<xs:attribute name="ShowHeader" type="xs:boolean" use="optional" />
<xs:attribute name="Map" type="GalleryElementMapEnum" use="optional" />
<xs:attribute name="UseDifferentColors" type="xs:boolean" use="optional" />
<xs:attribute name="AggregateByCategory" type="xs:boolean" use="optional" />
<xs:attribute name="AggregateByTime" type="xs:boolean" use="optional" />
<xs:attribute name="RowNumbers" type="GalleryElementRowNumbersEnum" use="optional" />
<xs:attribute name="MapCustomPath" type="xs:string" use="optional" />
</xs:complexType>

```

The following table describes the XML elements for the **GalleryElementType** complex type.

Element	Type	Description
SchemaItem	SchemaItemType	A complex type that indicates the schema items that pertain to the gallery element.
Title	xs:string	A string value that indicates the title of the gallery element.
SubTitle	xs:string	A string value that indicates the subtitle of the gallery element.
ColumnDefinitions	ColumnDefinitionsType	A complex type that contains a collection of column definitions for the gallery element.
TimeLevels	xs:string	A string value that contains a comma-separated list of time levels for this gallery element.
TimeRangePresets	xs:string	A string value that contains a comma-separated list of preset time ranges for the gallery element.
DefaultTimeRangePreset	xs:string	A string value that contains a comma-separated list of defaults for the preset time ranges for the gallery element.
TimeRangeVisualization	GalleryElementTimeRangeVisualization	A string value that indicates the way that the time range is

Element	Type	Description
		visualized.
DrillThroughDashboardSchema	DrillThroughDashboardSchemaType	A complex type that specifies the parameters and targets of this gallery element drillthrough.
DataSourceConnections	GalleryElementDataSourceConnectionsType	A complex type that specifies data source connections for the gallery element.

The following table describes the XML attributes for the **GalleryElementType** complex type.

Attribute	Type	Description
Name	xs:string	A string value that indicates the name of the gallery element.
Type	xs:string	<p>A string value that indicates the type of visualization offered in the gallery element. The possible values are as follows.</p> <ul style="list-style-type: none"> <li>▪ SimpleTimeNavigator</li> <li>▪ NavigationGrid</li> <li>▪ SelectionList</li> <li>▪ Number</li> <li>▪ DeltaNumber</li> <li>▪ DeltaIndicator</li> <li>▪ NumberWithDelta</li> <li>▪ RadialGauge</li> <li>▪ LinearGauge</li> <li>▪ BulletGraph</li> <li>▪ ProgressBar</li> <li>▪ CylinderGauge</li> <li>▪ HalfDonutGauge</li> <li>▪ Thermometer</li> <li>▪ TimeChart</li> <li>▪ CategoryChart</li> <li>▪ TotalsChart</li> <li>▪ ComparisonTimeChart</li> <li>▪ ComparisonCategoryChart</li> </ul>

Attribute	Type	Description
		<ul style="list-style-type: none"> <li>▪ ComparisonTotalsChart</li> <li>▪ PieChart</li> <li>▪ FunnelChart</li> <li>▪ TreeMap</li> <li>▪ HeatMap</li> <li>▪ RangeHeatMap</li> <li>▪ BubbleMap</li> <li>▪ SimpleDataGrid</li> <li>▪ IndicatorDataGrid</li> <li>▪ Chart DataGrid</li> </ul>
Accent	xs:Boolean	A Boolean value that indicates whether an accent color is present for the gallery item. TRUE indicates that an accent is present.
NumberFormat	GalleryElementNumberFormatEnum	An enumeration value that indicates the number format to be used for the gallery item.
ShowComparisonDelta	xs:Boolean	A Boolean value that indicates whether the comparison delta is shown. TRUE indicates that the comparison delta is shown.
ValueOrientation	GalleryElementValueOrientationEnum	An enumeration value that indicates whether high or low values are considered good for this gallery element.
AdjustYRangeToValues	xs:Boolean	A Boolean value that indicates whether to adjust the Y axis to closely span the data value range. TRUE indicates that the values will be adjusted.
MinimumRangeStop	xs:decimal	A decimal value that indicates the minimum value of a gauge expressed as a percentage of target.
MaximumRangeStop	xs:decimal	A decimal value that indicates the maximum value of a gauge expressed as a percentage of target.
NeutralStartRangeStop	xs:decimal	A decimal value that is used in conjunction with <b>NeutralEndRangeStop</b> to form three ranges of data for

Attribute	Type	Description
		display purposes. Data is classified as one of the following. <ul style="list-style-type: none"> <li>▪ Below <b>NeutralStartRangeStop</b></li> <li>▪ Above <b>NeutralEndRangeStop</b></li> <li>▪ Between <b>NeutralStartRangeStop</b> and <b>NeutralEndRangeStop</b></li> </ul>
NeutralEndRangeStop	xs:decimal	A decimal value that is used in conjunction with <b>NeutralStartRangeStop</b> . See the explanation for <b>NeutralStartRangeStop</b> .
AllowMultiSelect	xs:boolean	A Boolean value that indicates whether multi-select is allowed for this gallery item. TRUE indicates that multi-select is allowed.
SelectAll	xs:boolean	A Boolean value that indicates whether to offer a user an option to select all categories. TRUE indicates that such a user option is offered. This attribute applies only to galleries that contain data in categories.
SelectAllText	xs:string	A string value that indicates how to label the option to select all text, if it is offered (in the case that <b>SelectAll=TRUE</b> ).
ShowIcons	xs:boolean	A Boolean value that indicates whether to show icons in this gallery element. TRUE indicates that icons are shown in this gallery element.
Structure	GalleryElementStructureEnum	An enumeration value that indicates what structure is shown for this gallery element.
FilterTargets	xs:string	A string value that contains a comma-separated list of data columns to filter by.
DeltaFormat	GalleryElementDeltaFormatEnum	An enumeration value that indicates how to indicate the delta value for this gallery

Attribute	Type	Description
		element.
Visualization	GalleryElementVisualizationEnum	An enumeration value that indicates which visualization element to use for this gallery element.
RingType	GalleryElementRingTypeEnum	An enumeration value that indicates which ring type to use for this gallery element.
DisplayMode	GalleryElementDisplayModeEnum	An enumeration value that indicates whether each row is a data series or each column is a data series.
ChartUnit	GalleryElementChartTimeUnitEnum	An enumeration value that indicates what time unit is used for the charts for this gallery element.
IndependentAxisAnnotations	GalleryElementIndependentAxisAnnotationsEnum	An enumeration value that indicates whether there is independent axis annotation.
ShowLegend	xs:boolean	A Boolean value that indicates whether to show a legend for this gallery element.
Sorting	GalleryElementSortingEnum	An enumeration value that indicates the type of sorting to use for this gallery element.
Orientation	GalleryElementOrientationEnum	An enumeration value that indicates the orientation for this gallery element.
ShowPercentageTotals	xs:boolean	A Boolean value that indicates whether percentage totals are shown for this gallery element.
ReuseColorsOnComparisonSeries	xs:boolean	For gallery elements that have a value to compare against, a Boolean value that indicates whether to use the same color or colors for the comparison value as the data being compared to it.
ValueDirection	GalleryElementValueOrientationEnum	An enumeration value that indicates whether higher or lower values are considered good for this gallery element.
TypeOfInputData	GalleryElementTypeOfInputDataEnum	An enumeration value that indicates the type of the input data for this gallery element.
LastColumnLabel	xs:string	A string value that indicates

Attribute	Type	Description
		the label of the last column. The default value is "Total".
AnnotationVisualization	GalleryElementAnnotationVisualizationEnum	An enumeration value that indicates the type of annotation to use in the visualization for this gallery element.
Is3D	xs:boolean	This value is ignored.
HasReflection	xs:boolean	This value is ignored.
ShowPopup	xs:boolean	A Boolean value that indicates whether to show a popup when hovering over or tapping on a tree node. This setting applies only if the <b>Type</b> attribute is set to Tree Map. TRUE indicates that a popup is shown.
TwoLevel	xs:boolean	A Boolean value that indicates whether to show a two-level tree map. This setting applies only if the <b>Type</b> attribute is set to Tree Map. If TRUE, data is grouped on an additional layer in the tree map. If FALSE, no additional level grouping is done.
InputDataAggregation	xs:boolean	A Boolean value that indicates whether to aggregate data for the tree map. This setting applies only if the <b>Type</b> attribute is set to Tree Map. TRUE indicates that the data for the tree map is aggregated.
ShowHeader	xs:boolean	A Boolean value that indicates whether to show a header for this gallery element. TRUE indicates that a header is shown.
Map	GalleryElementMapEnum	An enumeration value that indicates what geographic map to use in this gallery element.
UseDifferentColors	xs:boolean	A Boolean value that indicates whether to use different colors for bubbles. This setting applies only if the <b>Type</b> attribute is set to Bubble Map. TRUE indicates that different colors are used.
AggregateByCategory	xs:boolean	A Boolean value that

Attribute	Type	Description
		indicates whether to aggregate this gallery element by category.
AggregateByTime	xs:boolean	A Boolean value that indicates whether to aggregate this gallery element by time.
RowNumbers	GalleryElementRowNumbersEnum	An enumeration value that indicates whether to show row numbers for this gallery element.
MapCustomPath	xs:string	A string value that contains a custom path to a map file.

### 2.2.4.2.2.1.1 DrillThroughDashboardSchemaType

The **DrillThroughDashboardSchemaType** complex type defines information about the target and parameters of this gallery element's drillthrough.

The following is the XSD for the **DrillThroughDashboardSchemaType** complex type.

```
<xs:complexType name="DrillThroughDashboardSchemaType">
  <xs:sequence>
    <xs:element name="MappingItem" type="MappingItemType"
      maxOccurs="unbounded" />
    <xs:choice>
      <xs:element name="TargetReport" type="TargetReportType" />
      <xs:element name="TargetUri" type="TargetUriType" />
    </xs:choice>
  </xs:sequence>
</xs:complexType>
```

The following table describes the XML elements for the **DrillThroughDashboardSchemaType** complex type.

Element	Type	Description
MappingItem	MappingItemType	A complex type that defines the mapping for this gallery element's drillthrough.
TargetReport	TargetReportType	A complex type that defines the target report for this gallery element's drillthrough.
TargetUri	TargetUriType	A complex type that defines a URI target for this gallery element's drillthrough.

### 2.2.4.2.2.1.2 MappingItemType

The **MappingItemType** complex type defines the information that is used to map a source report parameter to the target report's parameter.

The following is the XSD for the **MappingItemType** complex type.

```

<xs:complexType name="MappingItemType">
  <xs:sequence>
    <xs:element name="DashboardParameter" type="DashboardParameterType" />
  </xs:sequence>
  <xs:attribute name="DestinationObjectName" type="xs:string"
    use="required" />
  <xs:attribute name="DestinationName" type="xs:string" use="required" />
</xs:complexType>

```

The following table describes the XML elements for the **MappingItemType** complex type.

Element	Type	Description
DashboardParameter	DashboardParameterType	A complex type that represents the source parameter of the mapping.

The following table describes the XML attributes for the **MappingItemType** complex type.

Attribute	Type	Description
DestinationObjectName	xs:string	A string value that indicates the name of the target destination object.
DestinationName	xs:string	A string value that indicates the name of the mapped parameter on the destination object.

#### 2.2.4.2.2.1.3 TargetReportType

The **TargetReportType** complex type specifies the report that is targeted by a drillthrough operation.

The following is the XSD for the **TargetReportType** complex type.

```

<xs:complexType name="TargetReportType">
  <xs:attribute name="Id" type="xs:string" use="required" />
  <xs:attribute name="Path" type="xs:string" use="required" />
  <xs:attribute name="Server" type="xs:string" use="required" />
</xs:complexType>

```

The **TargetReportType** contains no XML elements.

The following table describes the XML attributes for the **TargetReportType** complex type.

Attribute	Type	Description
Id	xs:string	A string value that indicates an identifier for the target report.
Path	xs:string	A string value that indicates the path to the targeted report.
Server	xs:string	A string value that indicates the server that hosts the target report.

#### 2.2.4.2.2.1.4 TargetUriType

The **TargetUriType** complex type specifies the URI targeted by a drillthrough operation.



The following is the XSD for the **TargetUriType** complex type.

```
<xs:complexType name="TargetUriType">
  <xs:attribute name="Uri" type="xs:string" use="required" />
</xs:complexType>
```

The **TargetUriType** contains no XML elements.

The following table describes the XML attributes for the **TargetUriType** complex type.

Attribute	Type	Description
Uri	xs:string	A string value that indicates the URI that is targeted by a drillthrough operation.

#### 2.2.4.2.2.1.5 GalleryElementDataSourceConnectionsType

The **GalleryElementDataSourceConnectionsType** complex type specifies the data source connections for a gallery element.

The following is the XSD for the **GalleryElementDataSourceConnectionsType** complex type.

```
<xs:complexType name="GalleryElementDataSourceConnectionsType">
  <xs:sequence>
    <xs:element name="Connection"
      type="GalleryElementDataSourceConnectionsConnectionType"
      maxOccurs="unbounded" />
  </xs:sequence>
</xs:complexType>
```

The following table describes the XML elements for the **GalleryElementDataSourceConnectionsType** complex type.

Element	Type	Description
Connection	GalleryElementDataSourceConnectionsConnectionType	A complex type that specifies the definition for a single connection for a gallery element, within the list of available connections.

#### 2.2.4.2.2.1.6 GalleryElementDataSourceConnectionsConnectionType

The **GalleryElementDataSourceConnectionsConnectionType** complex type specifies a single connection for a gallery element.

The following is the XSD for the **GalleryElementDataSourceConnectionsConnectionType** complex type.

```
<xs:complexType name="GalleryElementDataSourceConnectionsConnectionType">
  <xs:attribute name="DataSource" type="xs:string" use="required" />
  <xs:attribute name="Parameter" type="xs:string" use="required" />
  <xs:attribute name="ConnectionPoint" type="xs:string" use="required" />
</xs:complexType>
```

```
</xs:complexType>
```

The **GalleryElementDataSourceConnectionsConnectionType** complex type contains no elements.

The following table describes the XML attributes for the **GalleryElementDataSourceConnectionsConnectionType** complex type.

Attribute	Type	Description
DataSource	xs:string	A string value that indicates a name for the data source.
Parameter	xs:string	A string value that indicates a parameter that can be passed to a data source.
ConnectionPoint	xs:string	A string value that indicates the name of the parameter to which the element is connected.

### 2.2.4.2.3 DashboardLayoutType Complex Type

The **DashboardLayoutType** complex type specifies the layout position of each element of a dashboard.

The following is the XSD for the **DashboardLayoutType** complex type.

```
<xs:complexType name="DashboardLayoutType">  
  <xs:sequence>  
    <xs:element name="ElementPosition" type="ElementPositionType"  
      minOccurs="0" maxOccurs="unbounded" >  
    </xs:element>  
  </xs:sequence>  
  <xs:attribute name="Name" type="xs:string" use="required" />  
  <xs:attribute name="RowCount" type="xs:int" use="required" />  
  <xs:attribute name="ColumnCount" type="xs:int" use="required" />  
  <xs:attribute name="CellSpacing" type="xs:int" use="required" />  
</xs:complexType>
```

The following table describes the XML elements for the **DashboardLayoutType** complex type.

Element	Type	Description
ElementPosition	ElementPositionType	A collection of the elements that define the position of each element in a dashboard.

The following table describes the XML attributes for the **DashboardLayoutType** complex type.

Attribute	Type	Description
Name	xs:string	A string value that indicates the name for the dashboard layout.
RowCount	xs:int	An integer value that indicates the count of rows in the dashboard layout.
ColumnCount	xs:int	An integer value that indicates the count of columns in the dashboard layout.
CellSpacing	xs:int	An integer value that indicates the cell spacing of the dashboard layout.

### 2.2.4.2.3.1 ElementPositionType Complex Type

The **ElementPositionType** complex type specifies the position information for the elements that will appear in a dashboard gallery.

The following is the XSD for the **ElementPositionType** complex type.

```
<xs:complexType name="ElementPositionType">
  <xs:attribute name="Name" type="xs:string" use="required" />
  <xs:attribute name="Row" type="xs:int" use="required" />
  <xs:attribute name="Column" type="xs:int" use="required" />
  <xs:attribute name="RowSpan" type="xs:int" use="required" />
  <xs:attribute name="ColumnSpan" type="xs:int" use="required" />
</xs:complexType>
```

The **ElementPositionType** complex type contains no XML elements.

The following table describes the XML attributes for the **ElementPositionType** complex type.

Attribute	Type	Description
Name	xs:string	A string value that indicates the name of the element to use at this element position.
Row	xs:int	An integer value that indicates the row position in which the element will appear.
Column	xs:int	An integer value that indicates the column position in which the element will appear.
RowSpan	xs:int	An integer value that indicates the number of rows spanned by the element.
ColumnSpan	xs:int	An integer value that indicates the number of columns spanned by the element.

### 2.2.4.2.3.2 SchemaItemType Complex Type

The **SchemaItemType** complex type specifies the type information for each schema item that pertains to a gallery element.

The following is the XSD for the **SchemaItemType** complex type.

```
<xs:complexType name="SchemaItemType">
  <xs:attribute name="Id" type="xs:string" use="required" />
  <xs:attribute name="Input" type="xs:string" use="required" />
  <xs:attribute name="AggregationRule" type="AggregationTypesEnum" use="required" />
  <xs:attribute name="Filters" type="xs:string" use="required" />
</xs:complexType>
```

The **SchemaItemType** complex type contains no XML elements.

The following table describes the XML attributes for the **SchemaItemType** complex type.

Attribute	Type	Description
Id	xs:string	A string value that indicates the identifier for the schema item.
Input	xs:string	A string value that indicates the source data for the schema item.
AggregationRule	AggregationTypesEnum	An enumeration value that indicates the numeric aggregation function to use for this schema item.
Filters	xs:string	A comma-separated list of filters that are applied to the source data of the schema item.

### 2.2.4.2.3.3 ColumnDefinitionsType Complex Type

The **ColumnDefinitionsType** complex type specifies a collection of definitions of columns.

The following is the XSD for the **ColumnDefinitionsType** complex type.

```
<xs:complexType name="ColumnDefinitionsType" >
  <xs:sequence>
    <xs:choice maxOccurs="unbounded">
      <xs:element name="GridViewTextColumnDefinition"
        type="GridViewTextColumnDefinitionType"
        minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="GridViewGaugeColumnDefinition"
        type="GridViewGaugeColumnDefinitionType"
        minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="ScoreCardColumnDefinition"
        type="ScoreCardColumnDefinitionType"
        minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="GridViewChartColumnDefinition"
        type="GridViewChartColumnDefinitionType"
        minOccurs="0" maxOccurs="unbounded"/>
    </xs:choice>
  </xs:sequence>
</xs:complexType>
```

The following table describes the XML elements for the **ColumnDefinitionsType** complex type.

Element	Type	Description
GridViewTextColumnDefinition	GridViewTextColumnDefinitionType	Indicates the details for the definition of a grid view column that contains text.
GridViewGaugeColumnDefinition	GridViewGaugeColumnDefinitionType	Indicates the details for the definition of a grid view column that contains a gauge.
ScoreCardColumnDefinition	ScoreCardColumnDefinitionType	Indicates the details for the definition of a grid view column that contains a score card.
GridViewChartColumnDefinition	GridViewChartColumnDefinitionType	Indicates the details for the definition of a grid view column that contains a chart.

#### 2.2.4.2.3.3.1 GridViewTextColumnDefinitionType Complex Type

The **GridViewTextColumnDefinitionType** complex type specifies the metadata for a grid view column that contains text.

The following is the XSD for the **GridViewTextColumnDefinitionType** complex type.

```
<xs:complexType name="GridViewTextColumnDefinitionType">
  <xs:attribute name="Title" type="xs:string" use="required" />
  <xs:attribute name="ColumnType" type="ColumnTypeEnum" use="required" />
  <xs:attribute name="AggregationType" type="AggregationTypesEnum" use="required" />
  <xs:attribute name="IsVisible" type="xs:boolean" use="required" />
  <xs:attribute name="ValueColumn" type="xs:string" use="required" />
  <xs:attribute name="StringFormat" type="xs:string" use="required" />
</xs:complexType>
```

The **GridViewTextColumnDefinitionType** complex type contains no XML elements.

The following table describes the XML attributes for the **GridViewTextColumnDefinitionType** complex type.

Attribute	Type	Description
Title	xs:string	A string value that indicates the title of the grid view text column.
ColumnType	ColumnTypeEnum	An enumeration value that indicates the type of the grid view text column.
AggregationType	AggregationTypesEnum	An enumeration value that indicates the type of numeric aggregation for the grid view text column.
IsVisible	xs:Boolean	A Boolean value that indicates whether the grid view text column is visible. TRUE indicates that the column is visible.
ValueColumn	xs:string	A string value that indicates the column name of the source data column for this grid view text column.
StringFormat	xs:string	<p>This string is dependent upon the type of gallery element. It can be one of the following.</p> <ul style="list-style-type: none"> <li>▪ A value in <b>GalleryElementNumberFormatEnum</b> (see section <a href="#">2.2.5.2.11</a>).</li> <li>▪ Other possible values are as follows. <ul style="list-style-type: none"> <li>▪ Yes or No</li> <li>▪ True or False</li> <li>▪ 1 or 0</li> <li>▪ Check</li> <li>▪ HH:MM</li> <li>▪ HH:MM:SS</li> <li>▪ MM/YY</li> <li>▪ MMM YYYY</li> <li>▪ YYYY/MM/DD</li> <li>▪ YYYY/MM/DD HH:MM:SS</li> </ul> </li> </ul>

### 2.2.4.2.3.3.2 GridViewGaugeColumnDefinitionType

The **GridViewGaugeColumnDefinitionType** complex type specifies the metadata for a grid view column that contains a gauge.

The following is the XSD for the **GridViewGaugeColumnDefinitionType** complex type.

```
<xs:complexType name="GridViewGaugeColumnDefinitionType">
  <xs:attribute name="Title" type="xs:string" use="required" />
  <xs:attribute name="ColumnType" type="ColumnTypeEnum" use="required" />
  <xs:attribute name="AggregationType" type="AggregationTypesEnum"
    use="required" />
  <xs:attribute name="IsVisible" type="xs:boolean" use="required" />
  <xs:attribute name="ValueColumn" type="xs:string" use="required" />
  <xs:attribute name="TargetColumn" type="xs:string" use="required" />
  <xs:attribute name="ValueOrientation" type="xs:string" use="required" />
</xs:complexType>
```

The **GridViewGaugeColumnDefinitionType** complex type contains no XML elements.

The following table describes the XML attributes for the **GridViewGaugeColumnDefinitionType** complex type.

Attribute	Type	Description
Title	xs:string	A string value that indicates the title for the grid view gauge column.
ColumnType	ColumnTypeEnum	An enumeration value that indicates the type of the grid view gauge column.
AggregationType	AggregationTypesEnum	An enumeration value that indicates the type of numeric aggregation that is used for the grid view column.
IsVisible	xs:Boolean	A Boolean value that indicates whether the grid view column is visible. TRUE indicates that the column is visible.
ValueColumn	xs:string	A string value that indicates the column name of the source data column for this grid view gauge column.
TargetColumn	xs:string	A string value that indicates the name of the grid view column to compare with the <b>ValueColumn</b> value.
ValueOrientation	xs:string	An enumeration value that indicates which directional trend for the value considered good, the higher value or the lower value. It is used in conjunction with <b>NeutralStartRangeStop</b> and <b>NeutralEndRangeStop</b> to determine whether the values above or below those values are considered to be good (see section <a href="#">2.2.4.2.2.1</a> ). The possible values are as follows. <ul style="list-style-type: none"><li>Higher Is Good</li><li>Lower Is Good</li></ul>

### 2.2.4.2.3.3.3 GridViewChartColumnDefinitionType

The **GridViewChartColumnDefinitionType** complex type specifies the metadata for a grid view column that contains a chart.

The following is the XSD for the **GridViewChartColumnDefinitionType** complex type.

```
<xs:complexType name="GridViewChartColumnDefinitionType">
  <xs:attribute name="Title" type="xs:string" use="required" />
  <xs:attribute name="ColumnType" type="ColumnTypeEnum" use="required" />
  <xs:attribute name="AggregationType" type="AggregationTypesEnum" use="required" />
  <xs:attribute name="IsVisible" type="xs:boolean" use="required" />
  <xs:attribute name="DataColumn" type="xs:string" use="required" />
  <xs:attribute name="SourceColumn" type="xs:string" use="required" />
  <xs:attribute name="DestinationColumn" type="xs:string" use="required" />
</xs:complexType>
```

The **GridViewChartColumnDefinitionType** complex type contains no XML elements.

The following table describes the XML attributes for the **GridViewChartColumnDefinitionType** complex type.

Attribute	Type	Description
Title	xs:string	A string value that indicates the title for the grid view chart column.
ColumnType	ColumnTypeEnum	An enumeration value that indicates the type of the grid view chart column.
AggregationType	AggregationTypesEnum	An enumeration value that indicates the type of numeric aggregation that is used for the grid view chart column.
IsVisible	xs:Boolean	A Boolean value that indicates whether the grid view chart column is visible. TRUE indicates that the column is visible.
DataColumn	xs:string	A string value that indicates the name of the grid view column that contains the data for the chart.
SourceColumn	xs:string	A string value that indicates the name of the source column for this grid view chart column.
DestinationColumn	xs:string	A string value that indicates the name of the destination column for this grid view chart column.

#### 2.2.4.2.3.3.4 ScoreCardColumnDefinitionType Complex Type

The **ScoreCardColumnDefinitionType** complex type specifies the metadata for a grid view column that contains a score card.

The following is the XSD for the **ScoreCardColumnDefinitionType** complex type.

```
<xs:complexType name="ScoreCardColumnDefinitionType">
  <xs:attribute name="ColumnType" type="ScorecardColumnTypeEnum"
    use="required" />
  <xs:attribute name="ComparisonField" type="xs:string" use="required" />
  <xs:attribute name="StringFormat" type="xs:string" use="required" />
  <xs:attribute name="ValueField" type="xs:string" use="required" />
  <xs:attribute name="ValueOrientation"
    type="GalleryElementValueOrientationEnum" use="required" />
  <xs:attribute name="Title" type="xs:string" use="required" />
</xs:complexType>
```

</xs:complexType>

The **ScoreCardColumnDefinitionType** complex type contains no XML elements.

The following table describes the XML attributes for the **ScoreCardColumnDefinitionType** complex type.

Attribute	Type	Description
ColumnType	ScorecardColumnTypeEnum	An enumeration value that indicates the type of comparison for this scorecard column.
ComparisonField	xs:string	A string value that indicates the name of the field to be used for the status comparison.
StringFormat	xs:string	This string is dependent upon the type of gallery element. It can be one of the following. <ul style="list-style-type: none"><li>A value in <b>GalleryElementNumberFormatEnum</b> (see section <a href="#">2.2.5.2.11</a>).</li><li>Other possible values are as follows.<ul style="list-style-type: none"><li>Yes or No</li><li>True or False</li><li>1 or 0</li><li>Check</li><li>HH:MM</li><li>HH:MM:SS</li><li>MM/YY</li><li>MMM YYYY</li><li>YYYY/MM/DD</li><li>YYYY/MM/DD HH:MM:SS</li></ul></li></ul>
ValueField	xs:string	A string value that indicates the name of the field that contains that status value to be compared.
ValueOrientation	GalleryElementValueOrientationEnum	An enumeration value that indicates which trend (up or down) is considered good for this scorecard column.
Title	xs:string	The title of the scorecard column.

#### 2.2.4.2.4 DataSourceType

The **DataSourceType** complex type specifies the name and connection information to an external data source.

The following is the XSD for the **DataSourceType** complex type.



```

<xs:complexType name="DataSourceType">
  <xs:sequence>
    <xs:element name="Connection" type="DataSourceConnectionType"
      maxOccurs="unbounded" />
  </xs:sequence>
  <xs:attribute name="Name" type="xs:string" />
</xs:complexType>

```

The following table describes the XML elements for the **DataSourceType** complex type.

Element	Type	Description
Connection	DataSourceConnectionType	A complex type that specifies information to connect to an external data source connection.

The following table describes the XML attributes for the **DataSourceType** complex type.

Attribute	Type	Description
Name	xs:string	A string value that indicates the name of the data source.

#### 2.2.4.2.4.1 DataSourceConnectionType

The **DataSourceConnectionType** complex type specifies the connection information to an external data source.

The following is the XSD for the **DataSourceConnectionType** complex type.

```

<xs:complexType name="DataSourceConnectionType">
  <xs:simpleContent>
    <xs:extension base="xs:string">
      <xs:attribute name="Parameter" type="xs:string" use="required" />
    </xs:extension>
  </xs:simpleContent>
</xs:complexType>

```

The **DataSourceConnectionType** complex type has no elements.

The following table describes the XML attributes for the **DataSourceConnectionType** complex type.

Attribute	Type	Description
Parameter	xs:string	A string value that indicates the name of the data source parameter to which to connect.

#### 2.2.4.3 JSON Complex Types

JSON complex types flow through the protocol in JSON. They are not part of the OData implementation [\[OData-Protocol\]](#).

##### 2.2.4.3.1 RowsetRowType

The **RowsetRowType** JSON complex type specifies a single row in a tabular data structure.

The following JSON schema defines the **RowsetRowType** complex type.

```
"RowsetRowType": {
  "properties": {
    "Rows": {
      "description": "The data values for a row of a tabular structure",
      "type": "array",
      "items": { "type": "string" },
      "minItems": 1,
      "uniqueItems": false
    }
  }
}
```

The following table describes the properties of the **RowsetRowType** complex type.

Property	Type	Description
Rows	array of string	A collection of string values. Each string value indicates a data value for a column of the represented row.

#### 2.2.4.3.2 RowsetColumnType

The **RowsetColumnType** JSON complex type specifies the metadata for a single column of a tabular data structure.

The following JSON schema defines the **RowsetColumnType** complex type.

```
"RowsetColumnType": {
  "properties": {
    "Columns": {
      "type": "array",
      "minItems": 1,
      "uniqueItems": true,
      "items": {
        "type": "object",
        "properties": {
          "Name": {
            "description": "The name of the column",
            "type": "string"
          },
          "Type": { "$ref": "#/definitions/RowsetColumnTypesType" }
        }
      }
    }
  }
}
```

The following table describes the properties of the **RowsetColumnType** complex type.

Property	Type	Description
Name	string	A string value that indicates the name of a column in a tabular data structure.
Type	RowsetColumnTypesType	An enumeration value that indicates the type of a column in a tabular data structure.

### 2.2.4.3.3 ColorsInterfaceType

The **ColorsInterfaceType** JSON complex type specifies a set of colors that comprise a user interface.

The following JSON schema defines the **ColorsInterfaceType** complex type.

```
"ColorsInterfaceType": {
  "properties": {
    "primary": {
      "type": "string",
      "description": "Primary color for this style"
    },
    "primaryAlt": {
      "type": "string",
      "description": "Alternate primary color for this style"
    },
    "primaryAlt2": {
      "type": "string",
      "description": "Alternate primary color for this style"
    },
    "primaryAlt3": {
      "type": "string",
      "description": "Alternate primary color for this style"
    },
    "primaryAlt4": {
      "type": "string",
      "description": "Alternate primary color for this style"
    },
    "primaryContrast": {
      "type": "string",
      "description": "The contrasting color for the primary color"
    },
    "secondary": {
      "type": "string",
      "description": "Secondary color for this style"
    },
    "secondaryAlt": {
      "type": "string",
      "description": "Alternate secondary color for this style"
    },
    "secondaryAlt2": {
      "type": "string",
      "description": "Alternate secondary color for this style"
    },
    "secondaryAlt3": {
      "type": "string",
      "description": "Alternate secondary color for this style"
    },
    "secondaryContrast": {
      "type": "string",
      "description": "Contrast to secondary color for this style"
    },
    "neutralPrimary": {
      "type": "string",
      "description": "A non-impactful complementary color to primary color"
    },
    "neutralPrimaryAlt": {
      "type": "string",
      "description": "An alternate non-impactful complementary color to primary color"
    },
    "neutralPrimaryAlt2": {
      "type": "string",
      "description": "An alternate non-impactful complementary color to primary color"
    },
    "neutralPrimaryAlt3": {
      "type": "string",
      "description": "An alternate non-impactful complementary color to primary color"
    }
  }
},
```

```

"neutralPrimaryContrast": {
  "type": "string",
  "description": "A non-impactful contrast to the primary color"
},
"neutralSecondary": {
  "type": "string",
  "description": "A non-impactful secondary color"
},
"neutralSecondaryAlt": {
  "type": "string",
  "description": "An alternate non-impactful secondary color"
},
"neutralSecondaryAlt2": {
  "type": "string",
  "description": "An alternate non-impactful secondary color"
},
"neutralSecondaryAlt3": {
  "type": "string",
  "description": "An alternate non-impactful secondary color"
},
"neutralSecondaryContrast": {
  "type": "string",
  "description": "A non-impactful secondary contrast color"
},
"neutralTertiary": {
  "type": "string",
  "description": "A non-impactful tertiary color"
},
"neutralTertiaryAlt": {
  "type": "string",
  "description": "A non-impactful alternate tertiary color"
},
"neutralTertiaryAlt2": {
  "type": "string",
  "description": "A non-impactful alternate tertiary color"
},
"neutralTertiaryAlt3": {
  "type": "string",
  "description": "A non-impactful alternate tertiary color"
},
"neutralTertiaryContrast": {
  "type": "string",
  "description": "A non-impactful tertiary contrast color"
},
"danger": {
  "type": "string",
  "description": "Error notification color"
},
"success": {
  "type": "string",
  "description": "Success notification color"
},
"warning": {
  "type": "string",
  "description": "Warning notification color"
},
"info": {
  "type": "string",
  "description": "Informational notification color"
},
"dangerContrast": {
  "type": "string",
  "description": "Error notification contrast color"
},
"successContrast": {
  "type": "string",
  "description": "Success notification contrast color"
},
},

```

```

    "warningContrast": {
      "type": "string",
      "description": "Warning notification contrast color"
    },
    "infoContrast": {
      "type": "string",
      "description": "Informational notification contrast color"
    },
    "kpiGood": {
      "type": "string",
      "description": "The good or positive KPI color"
    },
    "kpiBad": {
      "type": "string",
      "description": "The bad or negative KPI color"
    },
    "kpiNeutral": {
      "type": "string",
      "description": "The neutral KPI color"
    },
    "kpiNone": {
      "type": "string",
      "description": "An unspecified KPI color"
    },
    "kpiGoodContrast": {
      "type": "string",
      "description": "The good or positive contrast KPI color"
    },
    "kpiBadContrast": {
      "type": "string",
      "description": "The bad or negative contrast KPI color"
    },
    "kpiNeutralContrast": {
      "type": "string",
      "description": "The neutral contrast KPI color"
    },
    "kpiNoneContrast": {
      "type": "string",
      "description": "The contrasting unspecified KPI color"
    }
  }
}

```

The following table describes the properties of the **ColorsInterfaceType** complex type.

Property	Type	Description
primary	string	A string value that is a hexadecimal representation of a color that is the brand primary color for this style.
primaryAlt	string	A string value that is a hexadecimal representation of a color that is an additional primary color that can be used in this style.
primaryAlt2	string	A string value that is a hexadecimal representation of a color that is an additional primary color that can be used in this style.
primaryAlt3	string	A string value that is a hexadecimal representation of a color that is an additional primary color that can be used in this style.
primaryAlt4	string	A string value that is a hexadecimal representation of a color that is an additional primary color that can be used in this style.

Property	Type	Description
primaryContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color to primary for this style.
secondary	string	A string value that is a hexadecimal representation of a color that is the secondary color for this style.
secondaryAlt	string	A string value that is a hexadecimal representation of a color that is an additional secondary color that can be used in this style.
secondaryAlt2	string	A string value that is a hexadecimal representation of a color that is an additional secondary color that can be used in this style.
secondaryAlt3	string	A string value that is a hexadecimal representation of a color that is an additional secondary color that can be used in this style.
secondaryContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color to the secondary color for this style.
neutralPrimary	string	A string value that is a hexadecimal representation of a color that is muted but complementary to the primary color for this style.
neutralPrimaryAlt	string	A string value that is a hexadecimal representation of a color that is an additional muted but complementary color for this style.
neutralPrimaryAlt2	string	A string value that is a hexadecimal representation of a color that is an additional muted but complementary color for this style.
neutralPrimaryAlt3	string	A string value that is a hexadecimal representation of a color that is an additional muted but complementary color for this style.
neutralPrimaryContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color to the color specified in the <b>neutralPrimary</b> property for this style.
neutralSecondary	string	A string value that is a hexadecimal representation of a color that is an additional muted but complementary to the primary color for this style.
neutralSecondaryAlt	string	A string value that is a hexadecimal representation of a color which is an additional muted but complementary color for this style.
neutralSecondaryAlt2	string	A string value that is a hexadecimal representation of a color that is an additional muted but complementary color for this style.
neutralSecondaryAlt3	string	A string value that is a hexadecimal representation of a color that is an additional muted but complementary color for this style.
neutralSecondaryContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color to the color specified in the <b>neutralSecondary</b> property for this style.

Property	Type	Description
neutralTertiary	string	A string value that is a hexadecimal representation of a color that is muted but complementary to the primary color for this style.
neutralTertiaryAlt	string	A string value that is a hexadecimal representation of a color that is an additional muted but complementary color for this style.
neutralTertiaryAlt2	string	A string value that is a hexadecimal representation of a color that is an additional muted but complementary color for this style.
neutralTertiaryAlt3	string	A string value that is a hexadecimal representation of a color that is an additional muted but complementary color for this style.
neutralTertiaryContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color to the color specified in the <b>neutralTertiary</b> property for this style.
danger	string	A string value that is a hexadecimal representation of a color that is the error notification color for this style.
success	string	A string value that is a hexadecimal representation of a color that is the success notification color for this style.
warning	string	A string value that is a hexadecimal representation of a color that is the warning notification color for this style.
info	string	A string value that is a hexadecimal representation of a color that is the informational notification color for this style.
dangerContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color for error notifications for this style.
successContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color for success notifications for this style.
warningContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color for warning notifications for this style.
infoContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color for informational notifications for this style.
kpiGood	string	A string value that is a hexadecimal representation of a color that is the "good" or "positive" KPI color for this style.
kpiBad	string	A string value that is a hexadecimal representation of a color that is the "bad" or "negative" KPI color for this style.
kpiNeutral	string	A string value that is a hexadecimal representation of a color that is the "neutral" or "arbitrary" KPI color for this style.
kpiNone	string	A string value that is a hexadecimal representation of a color that is the "none" or unspecified KPI color for this

Property	Type	Description
		style.
kpiGoodContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color to the color specified in the <b>kpiGood</b> property for this style.
kpiBadContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color to the color specified in the <b>kpiBad</b> property for this style.
kpiNeutralContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color to the color specified in the <b>kpiNeutral</b> property for this style.
kpiNoneContrast	string	A string value that is a hexadecimal representation of a color that is the contrasting color to the color specified in the <b>kpiNone</b> property for this style.

#### 2.2.4.3.4 ColorsThemeType

The **ColorsThemeType** complex type specifies the set of colors used in a theme.

The following JSON schema defines the **ColorsThemeType** complex type.

```

"ColorsThemeType": {
  "properties": {
    "dataPoints": {
      "description": "The colors to use for each data series",
      "type": "array",
      "minItems": 12,
      "maxItems": 12,
      "items": { "type": "string" }
    },
    "good": {
      "type": "string",
      "description": "Color to indicate good/positive state"
    },
    "bad": {
      "type": "string",
      "description": "Color to indicate bad/negative state"
    },
    "neutral": {
      "type": "string",
      "description": "Color to indicate neutral state"
    },
    "none": {
      "type": "string",
      "description": "Additional unspecified color"
    },
    "background": {
      "type": "string",
      "description": "Background color"
    },
    "foreground": {
      "type": "string",
      "description": "Foreground color"
    },
    "mapBase": {
      "type": "string",
      "description": "Base map color"
    }
  }
}

```



```

    "panelBackground": {
      "type": "string",
      "description": "Panel background color"
    },
    "panelForeground": {
      "type": "string",
      "description": "Panel foreground color"
    },
    "panelAccent": {
      "type": "string",
      "description": "Panel accent color"
    },
    "tableAccent": {
      "type": "string",
      "description": "Table header color"
    },
    "altBackground": {
      "type": "string",
      "description": "Alternate background color"
    },
    "altForeground": {
      "type": "string",
      "description": "Alternate foreground color"
    },
    "altMapBase": {
      "type": "string",
      "description": "Alternate map base color"
    },
    "altPanelBackground": {
      "type": "string",
      "description": "Alternate panel background color"
    },
    "altPanelForeground": {
      "type": "string",
      "description": "Alternate panel foreground color"
    },
    "altPanelAccent": {
      "type": "string",
      "description": "Alternate panel accent color"
    },
    "altTableAccent": {
      "type": "string",
      "description": "Alternate table accent color"
    }
  }
}

```

The following table describes the properties of the **ColorsThemeType** complex type.

Property	Type	Description
dataPoints	array of string	A collection of values that represent the colors to use in a data series. The first color is used for the first series, the second color for the second series, etc.
good	string	A string value that is a hexadecimal representation of a color that is used to indicate a "good" or "positive" state for a theme. Green is the color often specified for this property.
bad	string	A string value that is a hexadecimal representation of a color that is used to indicate a "bad" or "negative" state for a theme. Red is the color often specified for this property.
neutral	string	A string value that is a hexadecimal representation of a color that is used to indicate a "neutral" state for a theme. Amber

Property	Type	Description
		is the color often specified for this property.
none	string	A string value that is a hexadecimal representation of a color that is used as the unspecified KPI background color for a theme. Grey is the color often specified for this property.
background	string	A string value that is a hexadecimal representation of a color that is used as the overall background color for a theme.
foreground	string	A string value that is a hexadecimal representation of a color that is used as the overall foreground color for a theme.
mapBase	string	A string value that is a hexadecimal representation of a color that is used as the base color for mapping data from which other tones and hues are extrapolated for a theme.
panelBackground	string	A string value that is a hexadecimal representation of a color that is used as the background color for panels for a theme.
panelForeground	string	A string value that is a hexadecimal representation of a color that is used as the foreground color for panels for a theme.
panelAccent	string	A string value that is a hexadecimal representation of a color that is used as the panel highlight color for a theme.
tableAccent	string	A string value that is a hexadecimal representation of a color that is used as the table header color for a theme.
altBackground	string	A string value that is a hexadecimal representation of a color that is the alternate overall background color for a theme.
altForeground	string	A string value that is a hexadecimal representation of a color that is the alternate overall foreground color for a theme.
altMapBase	string	A string value that is a hexadecimal representation of a color that is the alternate base color for mapping data from which other tones and hues are extrapolated for a theme.
altPanelBackground	string	A string value that is a hexadecimal representation of a color that is the alternate background color for panels for a theme.
altPanelForeground	string	A string value that is a hexadecimal representation of a color that is the alternate foreground color for panels for a theme.
altPanelAccent	string	A string value that is a hexadecimal representation of a color that is the alternate panel highlight color for a theme.
altTableAccent	string	A string value that is a hexadecimal representation of a color that is the alternate table header color for a theme.

## 2.2.5 Simple Types

### 2.2.5.1 CSDL Simple Types

All types defined in this section flow through the protocol in JSON and are defined in CSDL [\[MC-CSDL\]](#). They are part of the OData implementation [\[OData-Protocol\]](#).

#### 2.2.5.1.1 CatalogItemType

The **CatalogItemType** simple type specifies the list of available item types for items within a catalog item.

The following CSDL schema defines the **CatalogItemType** simple type.

```
<EnumType Name="CatalogItemType">
  <Member Name="Unknown" Value="0" />
  <Member Name="Folder" Value="1" />
  <Member Name="Report" Value="2" />
  <Member Name="DataSource" Value="3" />
  <Member Name="DataSet" Value="4" />
  <Member Name="Component" Value="5" />
  <Member Name="Resource" Value="6" />
  <Member Name="Kpi" Value="7" />
  <Member Name="MobileReport" Value="8" />
  <Member Name="LinkedReport" Value="9" />
  <Member Name="ReportModel" Value="10" />
</EnumType>
```

The following table describes the values of the **CatalogItemType** simple type.

Name	Value	Description
Unknown	0	The catalog item type is unknown.
Folder	1	The catalog item type is a folder.
Report	2	The catalog item type is a report.
DataSource	3	The catalog item type is data source.
DataSet	4	The catalog item type is dataset.
Component	5	The catalog item type is a component.
Resource	6	The catalog item type is a resource.
Kpi	7	The catalog item type is a KPI.
MobileReport	8	The catalog item type is a mobile report.
LinkedReport	9	The catalog item type is <b>linked report</b> .
ReportModel	10	The catalog item type is a <b>report model</b> .

### 2.2.5.1.2 CredentialRetrievalType

The **CredentialRetrievalType** simple type specifies the type of a connection to an external data source.

The following CSDL schema defines the **CredentialRetrievalType** simple type.

```
<EnumType Name="CredentialRetrievalType">
  <Member Name="prompt" Value="0" />
  <Member Name="store" Value="1" />
  <Member Name="integrated" Value="2" />
  <Member Name="none" Value="3" />
</EnumType>
```

The following table describes the values of the **CredentialRetrievalType** simple type.

Name	Value	Description
prompt	0	Credential retrieval is obtained by prompting the user
store	1	Credential retrieval is obtained from stored information.
integrated	2	Credential retrieval is integrated.
none	3	There is no designated credential retrieval type for the connection.

### 2.2.5.1.3 DrillthroughTargetType

The **DrillthroughTargetType** simple type specifies the available destinations for a drillthrough operation.

The following CSDL schema defines the **DrillthroughTargetType** simple type.

```
<EnumType Name="DrillthroughTargetType">
  <Member Name="Url" Value="0"/>
  <Member Name="CatalogItem" Value="1"/>
</EnumType>
```

The following table describes the values for the **DrillthroughTargetType** simple type.

Name	Value	Description
Url	0	The destination of a drillthrough operation is a URL.
CatalogItem	1	The destination of a drillthrough operation is a catalog item.

### 2.2.5.1.4 KpiDataItemType

The **KpiDataItemType** simple type specifies the possible types for a KPI data item.

The following CSDL schema defines the **KpiDataItemType** simple type.

```
<EnumType Name="KpiDataItemType">
  <Member Name="Static" Value="0"/>
  <Member Name="Shared" Value="1"/>
</EnumType>
```

The following table describes the values for the **KpiDataItemType** simple type.

Name	Value	Description
Static	0	The type of the KPI data items is static, which means that the data is contained within this object.
Shared	1	The type of the KPI data items is shared, which means that the data is external to this object.

### 2.2.5.1.5 KpiSharedDataItemAggregation

The **KpiSharedDataItemAggregation** simple type specifies the possible types for aggregation of a shared item.

The following CSDL schema defines the **KpiSharedDataItemAggregation** simple type.

```
<EnumType Name="KpiSharedDataItemAggregation">
  <Member Name="None" Value="0"/>
  <Member Name="First" Value="1"/>
  <Member Name="Last" Value="2"/>
  <Member Name="Min" Value="3"/>
  <Member Name="Max" Value="4"/>
  <Member Name="Average" Value="5"/>
  <Member Name="Sum" Value="6"/>
</EnumType>
```

The following table describes the values for the **KpiSharedDataItemAggregation** simple type.

Name	Value	Description
None	0	There is no aggregation.
First	1	Aggregation is performed by using the first value.
Last	2	Aggregation is performed by using the last value.
Min	3	Aggregation is performed by using the minimum value.
Max	4	Aggregation is performed by using the maximum value.
Average	5	Aggregation is performed by using the average value.
Sum	6	Aggregation is performed by summation.

### 2.2.5.1.6 KpiValueFormat

The **KpiValueFormat** simple type specifies the available formats for KPI values.

The following CSDL schema defines the **KpiValueFormat** simple type.

```
<EnumType Name="KpiValueFormat">
  <Member Name="General" Value="0"/>
  <Member Name="Abbreviated" Value="1"/>
  <Member Name="DefaultCurrency" Value="2"/>
  <Member Name="DefaultCurrencyWithDecimals" Value="3"/>
  <Member Name="AbbreviatedDefaultCurrency" Value="4"/>
  <Member Name="Percent" Value="5"/>
  <Member Name="PercentWithDecimals" Value="6"/>
</EnumType>
```

The following table describes the values for the **KpiValueFormat** simple type.

Name	Value	Description
General	0	The number format is general and the system determines how to format the number.
Abbreviated	1	Numbers are formatted in the abbreviated format
DefaultCurrency	2	Numbers are formatted in the format of the default currency in whole numbers.
DefaultCurrencyWithDecimals	3	Numbers are formatted in the format of the default currency including decimals.
AbbreviatedDefaultCurrency	4	Numbers are formatted in the abbreviated default currency format.
Percent	5	Numbers are formatted as a percentage, rounded to a whole number.
PercentWithDecimals	6	Numbers are formatted as a percentage with decimals.

### 2.2.5.1.7 KpiVisualization

The **KpiVisualization** simple type specifies the available visualizations for a KPI.

The following CSDL schema defines the **KpiVisualization** simple type.

```
<EnumType Name="KpiVisualization">
  <Member Name="None" Value="0"/>
  <Member Name="Bar" Value="1"/>
  <Member Name="Line" Value="2"/>
  <Member Name="Step" Value="3"/>
  <Member Name="Area" Value="4"/>
</EnumType>
```

The following table describes the values for the **KpiVisualization** simple type.

Name	Value	Description
None	0	No visualization is used.
Bar	1	A bar chart is used for visualization.
Line	2	A line chart is used for visualization.
Step	3	A step chart is used for visualization.
Area	4	An area chart is used for visualization.

### 2.2.5.1.8 MobileReportDataSetType

The **MobileReportDataSetType** simple type specifies the type of a mobile report dataset.

The following CSDL schema defines the **MobileReportDataSetType** simple type.

```
<EnumType Name="MobileReportDataSetType">
```

```

<Member Name="Unknown" Value="0" />
<Member Name="Embedded" Value="1" />
<Member Name="Shared" Value="2" />
</EnumType>

```

The following table describes the values of the **MobileReportDataSetType** simple type.

Name	Value	Description
Unknown	0	The mobile report dataset type is unknown.
Embedded	1	The mobile report dataset type is embedded.
Shared	2	The mobile report dataset type is shared.

### 2.2.5.1.9 MobileReportResourceGroupType

The **MobileReportResourceGroupType** simple type specifies the type of a mobile report resource.

The following CSDL schema defines the **MobileReportResourceGroupType** simple type.

```

<EnumType Name="MobileReportResourceGroupType">
  <Member Name="Unknown" Value="0" />
  <Member Name="Style" Value="1" />
  <Member Name="Map" Value="2" />
</EnumType>

```

The following table describes the values of the **MobileReportResourceGroupType** simple type.

Name	Value	Description
Unknown	0	The mobile report resource type is unknown.
Style	1	The mobile report resource is a style.
Map	2	The mobile report resource is a map.

### 2.2.5.1.10 MobileReportThumbnailType

The **MobileReportThumbnailType** simple type specifies the type of a mobile report thumbnail.

The following CSDL schema defines the **MobileReportThumbnailType** simple type.

```

<EnumType Name="MobileReportThumbnailType">
  <Member Name="Unknown" Value="0" />
  <Member Name="Landscape" Value="1" />
  <Member Name="Portrait" Value="2" />
</EnumType>

```

The following table describes the values of the **MobileReportThumbnailType** simple type.

Name	Value	Description
Unknown	0	The mobile report thumbnail orientation is unknown.
Landscape	1	The mobile report thumbnail is in landscape orientation.
Portrait	2	The mobile report thumbnail is in portrait orientation.

### 2.2.5.1.11 SystemResourceType

The **SystemResourceType** simple type enumerates the possible types of a system resource.

The following CSDL schema defines the **SystemResourceType** simple type.

```
<EnumType Name="SystemResourceType">
  <Member Name="Unknown" Value="0"/>
  <Member Name="Brand" Value="1"/>
  <Member Name="MobileReportRuntime" Value="2"/>
  <Member Name="UniversalBrand" Value="3"/>
</EnumType>
```

The following table describes the values of the **SystemResourceType** simple type.

Name	Value	Description
Unknown	0	The system resource type is not known.
Brand	1	This value is ignored.
MobileReportRuntime	2	The system resource is a mobile report runtime zip file. The file contains one metadata file that describes the contents and two HTML files, one appropriate for web display and one appropriate for mobile device display.
UniversalBrand	3	The system resource pertains to the visual definition of a brand.

## 2.2.5.2 XML Simple Types

All types defined in this section flow through the protocol in XML and are defined in XSD.

### 2.2.5.2.1 FirstDayOfWeekEnum

The **FirstDayOfWeekEnum** simple type is an enumeration that specifies the values used to represent the first day of the week.

The following is the XSD for the **FirstDayOfWeekEnum** simple type.

```
<xs:simpleType name="FirstDayOfWeekEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Sunday" />
    <xs:enumeration value="Monday" />
    <xs:enumeration value="Tuesday" />
    <xs:enumeration value="Wednesday" />
    <xs:enumeration value="Thursday" />
    <xs:enumeration value="Friday" />
    <xs:enumeration value="Saturday" />
  </xs:restriction >
</xs:simpleType>
```



```

    </xs:restriction>
  </xs:simpleType>

```

The following table describes the enumeration values for the **FirstDayOfWeekEnum** simple type.

Value	Description
Sunday	Sunday is set as the first day of the week.
Monday	Monday is set as the first day of the week.
Tuesday	Tuesday is set as the first day of the week.
Wednesday	Wednesday set as is the first day of the week.
Thursday	Thursday is set as the first day of the week.
Friday	Friday is set as the first day of the week.
Saturday	Saturday is set as the first day of the week.

### 2.2.5.2.2 DashboardParameterKindEnum

The **DashboardParameterKindEnum** simple type is an enumeration that specifies the data types for a dashboard parameter.

The following is the XSD for the **DashboardParameterKindEnum** simple type.

```

<xs:simpleType name="DashboardParameterKindEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Numeric" />
    <xs:enumeration value="String" />
    <xs:enumeration value="DateTime" />
    <xs:enumeration value="Boolean" />
  </xs:restriction>
</xs:simpleType>

```

The following table describes the enumeration values for the **DashboardParameterKindEnum** simple type.

Value	Description
Numeric	The dashboard parameter is a numeric value.
String	The dashboard parameter is a string value.
DateTime	The dashboard parameter is a date-time value.
Boolean	The dashboard parameter is a Boolean value.

### 2.2.5.2.3 ColumnTypeEnum

The **ColumnTypeEnum** simple type is an enumeration that specifies the data types for columns that appear in a dashboard.

The following is the XSD for the **ColumnTypeEnum** simple type.

```
<xs:simpleType name="ColumnTypeEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Text" />
    <xs:enumeration value="Number" />
    <xs:enumeration value="Date" />
    <xs:enumeration value="Boolean" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the enumeration values for the **ColumnTypeEnum** simple type.

Value	Description
Text	The column contains a text value.
Number	The column contains a numeric value.
Date	The column contains a date value.
Boolean	The column contains a boolean value.

#### 2.2.5.2.4 AggregationTypesEnum

The **AggregationTypesEnum** simple type is an enumeration that specifies the types of aggregation that are available for objects that appear in a dashboard.

The following is the XSD for the **AggregationTypesEnum** simple type.

```
<xs:simpleType name="AggregationTypesEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="None" />
    <xs:enumeration value="Sum" />
    <xs:enumeration value="Avg" />
    <xs:enumeration value="Count" />
    <xs:enumeration value="Min" />
    <xs:enumeration value="Max" />
    <xs:enumeration value="First" />
    <xs:enumeration value="Last" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the enumeration values for the **AggregationTypesEnum** simple type.

Value	Description
None	There is no aggregation.
Sum	Aggregation is performed by addition.
Avg	Aggregation is performed by computing the average.
Count	Aggregation is performed by computing the count.
Min	Aggregation is performed by computing the minimum.
Max	Aggregation is performed by computing the maximum.

Value	Description
First	Aggregation is performed by using the first value.
Last	Aggregation is performed by using the last value.

### 2.2.5.2.5 GalleryElementAnnotationVisualizationEnum

The **GalleryElementAnnotationVisualizationEnum** simple type is an enumeration that specifies the location and type of annotations for visualizations that can appear in a gallery element.

The following is the XSD for the **GalleryElementAnnotationVisualizationEnum** simple type.

```
<xs:simpleType name="GalleryElementAnnotationVisualizationEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="None" />
    <xs:enumeration value="ValueOnChart" />
    <xs:enumeration value="PercentageOnChart" />
    <xs:enumeration value="ValueOnLegend" />
    <xs:enumeration value="ValueOnChartPercentageOnLegend" />
    <xs:enumeration value="PercentageOnChartValueOnLegend" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the enumeration values for the **GalleryElementAnnotationVisualizationEnum** simple type.

Value	Description
None	No visualization is used.
ValueOnChart	The gallery element is annotated with a value on the chart.
PercentageOnChart	The gallery element is annotated with a percentage on the chart.
ValueOnLegend	The gallery element is annotated with a value on the legend.
ValueOnChartPercentageOnLegend	The gallery element is annotated with a value on the chart and a percentage on the legend.
PercentageOnChartValueOnLegend	The gallery element is annotated with a percentage on the chart and a value on the legend.

### 2.2.5.2.6 GalleryElementChartTimeUnitEnum

The **GalleryElementChartTimeUnitEnum** simple type is an enumeration that specifies the values for the time units on chart gallery elements.

The following is the XSD for the **GalleryElementChartTimeUnitEnum** simple type.

```
<xs:simpleType name="GalleryElementChartTimeUnitEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Auto" />
    <xs:enumeration value="Decade" />
    <xs:enumeration value="Year" />
    <xs:enumeration value="Quarter" />
  </xs:restriction>
</xs:simpleType>
```

```

    <xs:enumeration value="Month" />
    <xs:enumeration value="Week" />
    <xs:enumeration value="Day" />
    <xs:enumeration value="Hour" />
  </xs:restriction>
</xs:simpleType>

```

The following table describes the enumeration values for the **GalleryElementChartTimeUnitEnum** simple type.

Value	Description
Auto	The time unit is automatically determined by the system.
Decade	The time unit is given in decades.
Year	The time unit is given in years.
Quarter	The time unit is given in three-month periods.
Month	The time unit is given in months.
Week	The time unit is given in weeks.
Day	The time unit is given in days.
Hour	The time unit is given in hours.

#### 2.2.5.2.7 GalleryElementDeltaFormatEnum

The **GalleryElementDeltaFormatEnum** simple type is an enumeration that specifies the options for how a gallery element represents change.

The following is the XSD for the **GalleryElementDeltaFormatEnum** simple type.

```

<xs:simpleType name="GalleryElementDeltaFormatEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="None" />
    <xs:enumeration value="Value" />
    <xs:enumeration value="PercentageFromTarget" />
    <xs:enumeration value="PercentageOfTarget" />
    <xs:enumeration value="ValueAndPercentageFromTarget" />
  </xs:restriction>
</xs:simpleType>

```

The following table describes the enumeration values for the **GalleryElementDeltaFormatEnum** simple type.

Value	Description
None	Change is not indicated for the gallery element.
Value	Change for the gallery element is represented by the delta of the value.
PercentageFromTarget	Change for the gallery element is represented as a percentage difference from a target value.

Value	Description
PercentageOfTarget	Change for the gallery element is represented by its percentage of target.
ValueAndPercentageFromTarget	Change for the gallery element is represented by both the value and the percentage from its target value.

### 2.2.5.2.8 GalleryElementDisplayModeEnum

The **GalleryElementDisplayModeEnum** simple type is an enumeration that specifies the manner in which the display is filled. The manner can be by rows or by columns.

The following is the XSD for the **GalleryElementDisplayModeEnum** simple type.

```
<xs:simpleType name="GalleryElementDisplayModeEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="ByColumns" />
    <xs:enumeration value="ByRows" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the enumeration values for the **GalleryElementDisplayModeEnum** simple type.

Value	Description
ByColumns	A column of the gallery element is filled in with elements before moving to the next row.
ByRows	A row of the gallery element is filled in with elements before moving to the next column.

### 2.2.5.2.9 GalleryElementIndependentAxisAnnotationsEnum

The **GalleryElementIndependentAxisAnnotationsEnum** simple type is an enumeration that specifies the possible settings for annotations on the independent axis in a dashboard.

The following is the XSD for the **GalleryElementIndependentAxisAnnotationsEnum** simple type.

```
<xs:simpleType name="GalleryElementIndependentAxisAnnotationsEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="No" />
    <xs:enumeration value="Yes" />
    <xs:enumeration value="Auto" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the enumeration values for the **GalleryElementIndependentAxisAnnotationsEnum** simple type.

Value	Description
No	There are no annotations on the independent axis.

Value	Description
Yes	There are annotations on the independent axis.
Auto	The presence or absence of annotations on the independent axis is determined automatically by the system.

### 2.2.5.2.10 GalleryElementMapEnum

The **GalleryElementMapEnum** simple type is an enumeration that specifies the available map types for gallery elements.

The following is the XSD for the **GalleryElementMapEnum** simple type.

```
<xs:simpleType name="GalleryElementMapEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="NorthAmerica" />
    <xs:enumeration value="SouthAmerica" />
    <xs:enumeration value="WorldContinents" />
    <xs:enumeration value="WorldRegions" />
    <xs:enumeration value="Australia" />
    <xs:enumeration value="Austria" />
    <xs:enumeration value="Brazil" />
    <xs:enumeration value="Canada" />
    <xs:enumeration value="Cuba" />
    <xs:enumeration value="France" />
    <xs:enumeration value="Germany" />
    <xs:enumeration value="Greece" />
    <xs:enumeration value="Ireland" />
    <xs:enumeration value="Italy" />
    <xs:enumeration value="Mexico" />
    <xs:enumeration value="Netherlands" />
    <xs:enumeration value="Poland" />
    <xs:enumeration value="Portugal" />
    <xs:enumeration value="Switzerland" />
    <xs:enumeration value="UnitedKingdom" />
    <xs:enumeration value="USA" />
    <xs:enumeration value="Custom" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the enumeration values for the **GalleryElementMapEnum** simple type.

Value	Description
NorthAmerica	The map is of North America.
SouthAmerica	The map is of South America.
WorldContinents	The map is of the continents of the world.
WorldRegions	The map is of the regions of the world.
Australia	The map is of Australia.
Austria	The map is of Austria.
Brazil	The map is of Brazil.
Canada	The map is of Canada.

Value	Description
Cuba	The map is of Cuba.
France	The map is of France.
Germany	The map is of Germany.
Greece	The map is of Greece.
Ireland	The map is of Ireland.
Italy	The map is of Italy.
Mexico	The map is of Mexico.
Netherlands	The map is of the Netherlands.
Poland	The map is of Poland.
Portugal	The map is of Portugal.
Switzerland	The map is of Switzerland.
UnitedKingdom	The map is of the United Kingdom.
USA	The map is of the United States of America.
Custom	The map is a custom map.

### 2.2.5.2.11 GalleryElementNumberFormatEnum

The **GalleryElementNumberFormatEnum** simple type is an enumeration that specifies the available formats for numbers in a gallery element.

The following is the XSD for the **GalleryElementNumberFormatEnum** simple type.

```
<xs:simpleType name="GalleryElementNumberFormatEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="General" />
    <xs:enumeration value="Abbreviated" />
    <xs:enumeration value="DefaultCurrency" />
    <xs:enumeration value="DefaultCurrencyWithDecimals" />
    <xs:enumeration value="AbbreviatedDefaultCurrency" />
    <xs:enumeration value="Percent" />
    <xs:enumeration value="PercentWithDecimals" />
    <xs:enumeration value="GeneralWithoutDecimals" />
    <xs:enumeration value="TimeSpanGeneral" />
    <xs:enumeration value="TimeSpanHoursAndMinutes" />
    <xs:enumeration value="TimeSpanMinutesAndSeconds" />
    <xs:enumeration value="None" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the enumeration values for the **GalleryElementNumberFormatEnum** simple type.

Value	Description
General	The number format is general and the system will determine how to

Value	Description
	format the number.
Abbreviated	The column contains a numeric value with large numbers scaled with scaling units.
DefaultCurrency	Numbers are formatted in the format of the default currency in whole numbers.
DefaultCurrencyWithDecimals	Numbers are formatted in the format of the default currency including decimals.
AbbreviatedDefaultCurrency	Numbers are formatted in the abbreviated default currency format.
Percent	Numbers are formatted as a percentage, rounded to a whole number.
PercentWithDecimals	Numbers are formatted as a percentage with decimals.
GeneralWithoutDecimals	The format is not specified. The system determines a format that is rounded to a whole number.
TimeSpanGeneral	Numbers are formatted as a time span, and the system determines the units for the time span.
TimeSpanHoursAndMinutes	Numbers are formatted as a time span in hours and minutes.
TimeSpanMinutesAndSeconds	Numbers are formatted as a time span in minutes and seconds.
None	No number formatting will be applied.

### 2.2.5.2.12 GalleryElementRingTypeEnum

The **GalleryElementRingTypeEnum** simple type is an enumeration that specifies the available types of rings available in a gallery element.

The following is the XSD for the **GalleryElementRingTypeEnum** simple type.

```
<xs:simpleType name="GalleryElementRingTypeEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="HalfRing" />
    <xs:enumeration value="FullRing" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the enumeration values for the **GalleryElementRingTypeEnum** simple type.

Value	Description
HalfRing	The ring type is a half ring.
FullRing	The ring type is a full ring.

### 2.2.5.2.13 GalleryElementOrientationEnum



The **GalleryElementOrientationEnum** simple type is an enumeration that specifies the orientation for a gallery element.

The following is the XSD for the **GalleryElementOrientationEnum** simple type.

```
<xs:simpleType name="GalleryElementOrientationEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Horizontal" />
    <xs:enumeration value="Vertical" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the enumeration values for the **GalleryElementOrientationEnum** simple type.

Value	Description
Horizontal	The gallery element is in horizontal orientation.
Vertical	The gallery element is in vertical orientation.

#### 2.2.5.2.14 GalleryElementRowNumbersEnum

The **GalleryElementRowNumbersEnum** simple type is an enumeration that specifies whether row numbers appear in a gallery element in a dashboard.

The following is the XSD for the **GalleryElementRowNumbersEnum** simple type.

```
<xs:simpleType name="GalleryElementRowNumbersEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Hide" />
    <xs:enumeration value="Show" />
    <xs:enumeration value="Auto" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the enumeration values for the **GalleryElementRowNumbersEnum** simple type.

Value	Description
Hide	Row numbers are hidden.
Show	Row numbers are shown.
Auto	The system automatically determines whether row numbers are shown or hidden.

#### 2.2.5.2.15 GalleryElementSortingEnum

The **GalleryElementSortingEnum** simple type is an enumeration that specifies the type of sorting to be done on a gallery element.

The following is the XSD for the **GalleryElementSortingEnum** simple type.

```

<xs:simpleType name="GalleryElementSortingEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="None" />
    <xs:enumeration value="AlphabeticAscending" />
    <xs:enumeration value="AlphabeticDescending" />
    <xs:enumeration value="NumericAscending" />
    <xs:enumeration value="NumericDescending" />
  </xs:restriction>
</xs:simpleType>

```

The following table describes the enumeration values for the **GalleryElementSortingEnum** simple type.

Value	Description
None	No sorting is performed.
AlphabeticAscending	Sorting is alphabetic, in alphabetical order.
AlphabeticDescending	Sorting is alphabetic, in reverse alphabetical order.
NumericAscending	Sorting is numeric, in ascending order.
NumericDescending	Sorting is numeric, in descending order.

#### 2.2.5.2.16 GalleryElementStructureEnum

The **GalleryElementStructureEnum** simple type is an enumeration that specifies whether the structure of a gallery element is as a list or as a tree.

The following is the XSD for the **GalleryElementStructureEnum** simple type.

```

<xs:simpleType name="GalleryElementStructureEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="List" />
    <xs:enumeration value="Tree" />
  </xs:restriction>
</xs:simpleType>

```

The following table describes the enumeration values for the **GalleryElementStructureEnum** simple type.

Value	Description
List	The gallery element is structured as a list.
Tree	The gallery element is structured as a tree.

#### 2.2.5.2.17 GalleryElementTimeLevelsEnum

The **GalleryElementTimeLevelsEnum** simple type is an enumeration that specifies time levels in a gallery element of a dashboard.

The following is the XSD for the **GalleryElementTimeLevelsEnum** simple type.

```

<xs:simpleType name="GalleryElementTimeLevelsEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="None" />
    <xs:enumeration value="Years" />
    <xs:enumeration value="Quarters" />
    <xs:enumeration value="Months" />
    <xs:enumeration value="Weeks" />
    <xs:enumeration value="Days" />
    <xs:enumeration value="Hours" />
  </xs:restriction>
</xs:simpleType>

```

The following table describes the enumeration values for the **GalleryElementTimeLevelsEnum** simple type.

Value	Description
None	There is no designation for time levels.
Years	Time levels appear in years.
Quarters	Time levels appear in three-month periods.
Months	Time levels appear in months.
Weeks	Time levels appear in weeks.
Days	Time levels appear in days.
Hours	Time levels appear in hours.

#### 2.2.5.2.18 GalleryElementTimeRangePresetsEnum

The **GalleryElementTimeRangePresetsEnum** simple type is an enumeration that specifies preset values that a user can easily use to view different time periods in the dashboard.

The following is the XSD for the **GalleryElementTimeRangePresetsEnum** simple type.

```

<xs:simpleType name="GalleryElementTimeRangePresetsEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="None" />
    <xs:enumeration value="All" />
    <xs:enumeration value="LastYear" />
    <xs:enumeration value="ThisYear" />
    <xs:enumeration value="YearToDate" />
    <xs:enumeration value="Last6Months" />
    <xs:enumeration value="Last3Months" />
    <xs:enumeration value="LastQuarter" />
    <xs:enumeration value="ThisQuarter" />
    <xs:enumeration value="QuarterToDate" />
    <xs:enumeration value="Last30Days" />
    <xs:enumeration value="LastMonth" />
    <xs:enumeration value="ThisMonth" />
    <xs:enumeration value="MonthToDate" />
    <xs:enumeration value="Last7Days" />
    <xs:enumeration value="LastWeek" />
    <xs:enumeration value="ThisWeek" />
    <xs:enumeration value="WeekToDate" />
    <xs:enumeration value="Yesterday" />
    <xs:enumeration value="Today" />
  </xs:restriction>
</xs:simpleType>

```

```

</xs:restriction>
</xs:simpleType>

```

The following table describes the enumeration values for the **GalleryElementTimeRangePresetsEnum** simple type.

Value	Description
None	There are no presets for viewing.
All	All of the presets are offered for viewing.
LastYear	The last year of data is a preset offered for viewing.
ThisYear	The current year is a preset offered for viewing. This year means the entire current calendar year even if the year is not entirely over.
YearToDate	Year-to-date is a preset offered for viewing. This means the current calendar year through the current date.
Last6Months	The last six months are offered as a preset for viewing.
Last3Months	The last three months are offered as a preset for viewing.
LastQuarter	The last quarter is offered as a preset for viewing.
ThisQuarter	The current quarter is offered as a preset for viewing.
QuarterToDate	The current quarter to date is offered as a preset for viewing.
Last30Days	The last 30 days are offered as a preset for viewing.
LastMonth	The last month is offered as a preset for viewing.
ThisMonth	The current month is offered as a preset for viewing.
MonthToDate	The current month up to the current date is offered as a preset for viewing.
Last7Days	The last seven days are offered as a preset for viewing.
LastWeek	The last week is offered as a preset for viewing.
ThisWeek	The current week is offered as a preset for viewing.
WeekToDate	The current week to date is offered as a preset for viewing.
Yesterday	Yesterday is offered as a preset for viewing.
Today	Today is offered as a preset for viewing.

### 2.2.5.2.19 GalleryElementTimeRangeVisualization

The **GalleryElementTimeRangeVisualization** simple type is an enumeration that specifies the types of displays that appear in a dashboard to visualize a trend over a range of time.

The following is the XSD for the **GalleryElementTimeRangeVisualization** simple type.

```

<xs:simpleType name="GalleryElementTimeRangeVisualization">
  <xs:restriction base="xs:string" >

```

```

    <xs:enumeration value="Bar" />
    <xs:enumeration value="Line" />
    <xs:enumeration value="Area" />
    <xs:enumeration value="StepArea" />
  </xs:restriction>
</xs:simpleType>

```

The following table describes the enumeration values for the **GalleryElementTimeRangeVisualization** simple type.

Value	Description
Bar	The gallery element uses a bar chart for the time range visualization.
Line	The gallery element uses a line chart for the time range visualization.
Area	The gallery element uses an area chart for the time range visualization.
StepArea	The gallery element uses a step area chart for the time range visualization.

#### 2.2.5.2.20 GalleryElementTypeOfInputDataEnum

The **GalleryElementTypeOfInputDataEnum** simple type is an enumeration that specifies whether a gallery item that appears in a dashboard contains delta values or total values for input.

The following is the XSD for the **GalleryElementTypeOfInputDataEnum** enumeration.

```

<xs:simpleType name="GalleryElementTypeOfInputDataEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="InputContainsDeltaValues" />
    <xs:enumeration value="InputContainsTotalValues" />
  </xs:restriction>
</xs:simpleType>

```

The following table describes the enumeration values for the **GalleryElementTypeOfInputDataEnum** simple type.

Value	Description
InputContainsDeltaValues	The input for the gallery element contains deltas as its values.
InputContainsTotalValues	The input for the gallery element contains total values as its values.

#### 2.2.5.2.21 GalleryElementValueOrientationEnum

The **GalleryElementValueOrientationEnum** simple type is an enumeration that specifies whether a gallery element contains values where higher is better or lower is better.

The following is the XSD for the **GalleryElementValueOrientationEnum** simple type.

```

<xs:simpleType name="GalleryElementValueOrientationEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="HigherValuesAreBetter" />
    <xs:enumeration value="LowerValuesAreBetter" />
  </xs:restriction>
</xs:simpleType>

```

The following table describes the enumeration values for the **GalleryElementValueOrientationEnum** simple type.

Value	Description
HigherValuesAreBetter	Higher values are better than lower values for this measure.
LowerValuesAreBetter	Lower values are better than higher values for this measure.

### 2.2.5.2.22 GalleryElementVisualizationEnum

The **GalleryElementVisualizationEnum** simple type is an enumeration that specifies the type of visualization that is used in the gallery element.

The following is the XSD for the **GalleryElementVisualizationEnum** simple type.

```

<xs:simpleType name="GalleryElementVisualizationEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="AreaStacked" />
    <xs:enumeration value="Bar" />
    <xs:enumeration value="BarsSideBySide" />
    <xs:enumeration value="BarsStacked" />
    <xs:enumeration value="BarsStacked100" />
    <xs:enumeration value="BarVsStepArea" />
    <xs:enumeration value="BarVsThinBar" />
    <xs:enumeration value="ColorGroups" />
    <xs:enumeration value="Default" />
    <xs:enumeration value="Donut" />
    <xs:enumeration value="DonutWithTotal" />
    <xs:enumeration value="HeatMap" />
    <xs:enumeration value="HeatMapWithCustomCenterValue" />
    <xs:enumeration value="Line" />
    <xs:enumeration value="LineVsBar" />
    <xs:enumeration value="Pie" />
    <xs:enumeration value="StepArea" />
    <xs:enumeration value="StepAreaStacked" />
  </xs:restriction>
</xs:simpleType>

```

The following table describes the enumeration values for the **GalleryElementVisualizationEnum** simple type.

Value	Description
AreaStacked	A stacked area chart is used as the visualization for the gallery element.
Bar	A bar chart is used as the visualization for the gallery element.
BarsSideBySide	Side-by-side bar charts are used as the visualization for the gallery element.

Value	Description
BarsStacked	A stacked bar chart is used as the visualization for the gallery element.
BarsStacked100	A bar chart stacked to 100% is used as the visualization for the gallery element.
BarVsStepArea	A bar chart contrasted with a step area chart is used as the visualization for the gallery element.
BarVsThinBar	A bar chart contrasted with a thin bar chart is used as the visualization for the gallery element.
ColorGroups	Color groups are used as the visualization for the gallery element.
Default	The default visualization is used for the gallery element.
Donut	A donut chart is used as the visualization for the gallery element.
DonutWithTotal	A donut chart with a total is used as the visualization for the gallery element.
HeatMap	A heat map visualization is used for the gallery element.
HeatMapWithCustomCenterValue	A heat map with a custom centering value visualization is used for the gallery element.
Line	A line is used as the visualization for the gallery element.
LineVsBar	A line contrasted with a bar chart is used as the visualization for the gallery element.
Pie	A pie chart is used as the visualization for the gallery element.
StepArea	A stepped area chart is used as the visualization for the gallery element.
StepAreaStacked	An area chart stacked in steps is used as the visualization for the gallery element.

### 2.2.5.2.23 ScoreCardColumnTypeEnum

The **ScoreCardColumnTypeEnum** simple type is an enumeration that specifies the type of visual change that is used in the scorecard to illustrate a status change in a value.

The following is the XSD for the **ScoreCardColumnTypeEnum** simple type.

```
<xs:simpleType name="ScorecardColumnTypeEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Delta Arrow" />
    <xs:enumeration value="Delta Indicator" />
    <xs:enumeration value="Delta Background" />
    <xs:enumeration value="Delta Foreground" />
    <xs:enumeration value="Progress Bar" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the enumeration values for the **ScorecardColumnTypeEnum** simple type.

Value	Description
Delta Arrow	An arrow is used to indicate delta of value compared to the target.
Delta Indicator	A graphic indicator is used to indicate delta of value compared to the target.
Delta Background	A change in background color is used to indicate delta of value compared to the target.
Delta Foreground	A change in foreground color is used to indicate delta of value compared to the target.
Progress Bar	A horizontal progress bar is used to indicate delta of value compared to the target.

### 2.2.5.3 JSON Simple Types

The simple types defined in this section flow through the protocol in JSON. They are not part of the OData implementation [\[OData-Protocol\]](#).

#### 2.2.5.3.1 RowsetColumnTypeType

The **RowsetColumnTypeType** enumeration specifies the available column types.

The following JSON schema defines the **RowsetColumnTypesEnum** simple type.

```
"RowsetColumnTypesType": {
  "properties": {
    "type": { "enum": [ "Double", "Boolean", "DateTime", "String" ] }
  }
}
```

The following table describes the values for the **RowsetColumnTypeType** enumeration.

Value	Description
Double	The rowset column type is Double.
Boolean	The rowset column type is Boolean.
DateTime	The rowset column type is DateTime.
String	The rowset column type is String.

## 2.2.6 Data Structures

### 2.2.6.1 CSDL Data Structures

All data structures defined in this section flow through the protocol in JSON and are defined in CSDL [\[MC-CSDL\]](#). They are part of the OData implementation [\[OData-Protocol\]](#).

#### 2.2.6.1.1 CatalogItem



The **CatalogItem** data structure is an abstract base type that specifies the properties of a catalog item entry. Catalog items of a specific type derive from these base properties of a catalog item, and add additional properties specific to other specific catalog item types.

The following CSDL defines the **CatalogItem** data structure.

```
<EntityType Name="CatalogItem" Abstract="true">
  <Key>
    <PropertyRef Name="Id" />
  </Key>
  <Property Name="Id" Type="Edm.Guid" Nullable="false" />
  <Property Name="Name" Type="Edm.String" />
  <Property Name="Description" Type="Edm.String" />
  <Property Name="Path" Type="Edm.String" />
  <Property Name="Type" Type="Model.CatalogItemType"
    Nullable="false" />
  <Property Name="Hidden" Type="Edm.Boolean" Nullable="false" />
  <Property Name="Size" Type="Edm.Int64" Nullable="false" />
  <Property Name="ModifiedBy" Type="Edm.String" />
  <Property Name="ModifiedDate" Type="Edm.DateTimeOffset"
    Nullable="false" />
  <Property Name="CreatedBy" Type="Edm.String" />
  <Property Name="CreatedDate" Type="Edm.DateTimeOffset"
    Nullable="false" />
  <Property Name="ParentFolderId" Type="Edm.Guid" />
  <Property Name="ContentType" Type="Edm.String" />
  <Property Name="Content" Type="Edm.Binary" />
  <Property Name="Properties" Type="Collection(Model.Property)" />
  <Property Name="IsFavorite" Type="Edm.Boolean"
    Nullable="false" />
  <NavigationProperty Name="ParentFolder" Type="Model.Folder" />
</EntityType>
```

The following table describes the properties of the **CatalogItem** data structure.

Property	Type	Description
Id	Edm.Guid	A GUID that serves as a unique identifier for the catalog item.
Name	Edm.String	A string value that indicates the name of the catalog item.
Description	Edm.String	A string value that indicates a description of the catalog item.
Path	Edm.String	A string value that indicates the path location for the catalog item.
Type	Model.CatalogItemType	An enumeration value that indicates the type of item that this catalog item is.
Hidden	Edm.Boolean	A Boolean value that indicates whether the catalog item is hidden. TRUE indicates that the item is hidden.
Size	Edm.Int64	An Int64 value that indicates the size of the item in bytes.
ModifiedBy	Edm.String	A string value that indicates the name of the user that last modified the catalog item.
ModifiedDate	Edm.DateTimeOffset	A DateTimeOffset value that indicates the date and time of the last modification to the catalog item.
CreatedBy	Edm.String	A string value that indicates the name of the user who created the catalog item.
CreatedDate	Edm.DateTimeOffset	A DateTimeOffset value that indicates the date and time that

Property	Type	Description
		the catalog item was created.
ParentFolderId	Edm.Guid	The GUID of the Folder item in which a catalog item is contained.
ContentType	Edm.String	A string value that is equivalent to a SOAP <b>MIME type</b> .
Content	Edm.Binary	A binary representation of the catalog item. This binary content can be stored on and returned by the server, but it is not interpreted by the server.
Properties	Collection(Model.Property)	A collection of properties for this catalog item.
IsFavorite	Edm.Boolean	A Boolean value that indicates whether this catalog item has been marked as a favorite.
ParentFolder	Model.Folder	An item that indicates the parent folder of this catalog item.

### 2.2.6.1.2 Folder

The **Folder** data structure specifies a folder within a **report server**. **Folder** is one of the types of a catalog item, and so it is derived from the **CatalogItem** abstract type.

The following CSDL defines the **Folder** data structure.

```
<EntityType Name="Folder" BaseType="Model.CatalogItem">
  <NavigationProperty Name="CatalogItems"
    Type="Collection(Model.CatalogItem)" />
</EntityType>
```

The **Folder** data structure contains all of the properties of the abstract type **CatalogItem**, and does not contain additional properties in its structure. However, its definition contains a navigation property to reference its association with a collection of **ModelCatalogItem** items.

### 2.2.6.1.3 MobileReport

The **MobileReport** data structure represents a mobile report within a report server. **MobileReport** is one of the types of a catalog item, and so it is derived from the **CatalogItem** abstract type.

The following CSDL defines the **MobileReport** data structure.

```
<EntityType Name="MobileReport" BaseType="Model.CatalogItem">
  <Property Name="AllowCaching" Type="Edm.Boolean"
    Nullable="false" />
  <Property Name="Manifest" Type="Model.MobileReportManifest" />
</EntityType>
```

The **MobileReport** data structure contains all of the properties of the abstract type **CatalogItem**, and contains the additional properties described in the following table.

Property	Type	Description
AllowCaching	Edm.Boolean	A Boolean value that indicates whether the mobile report allows data caching. TRUE indicates that the mobile report allows caching. FALSE indicates that the mobile report does

Property	Type	Description
		not allow caching.
Manifest	Model.MobileReportManifest	Specifies the content of the mobile report.

#### 2.2.6.1.4 Resource

The **Resource** data structure is an available resource of another item.

The following CSDL defines the **Resource** data structure.

```
<EntityType Name="Resource" BaseType="Model.CatalogItem" />
```

The **Resource** structure has no additional properties beyond those of its base type, **CatalogItem**.

#### 2.2.6.1.5 SystemResource

The **SystemResource** data structure specifies a system resource. A system resource is a representation of a heterogeneous set of possible resources of different types. These types are specified in **SystemResourceType** (see section [2.2.5.1.11](#)).

The following CSDL defines the **SystemResource** data structure.

```
<EntityType Name="SystemResource">
  <Key>
    <PropertyRef Name="Id" />
  </Key>
  <Property Name="Id" Type="Edm.Guid" Nullable="false" />
  <Property Name="Type" Type="Model.SystemResourceType"
    Nullable="false" />
  <Property Name="TypeName" Type="Edm.String" />
  <Property Name="Name" Type="Edm.String" />
  <Property Name="Version" Type="Edm.String" />
  <Property Name="IsEmbedded" Type="Edm.Boolean" Nullable="false" />
  <NavigationProperty Name="PackageContent" Type="Model.CatalogItem" />
  <NavigationProperty Name="Items"
    Type="Collection(Model.SystemResourceItem)" />
</EntityType>
```

The following table describes the properties of the **SystemResource** data structure.

Property	Type	Description
Id	Edm.Guid	The identifier for the system resource.
Type	Model.SystemResourceType	The type of the system resource.
TypeName	Edm.String	A string value that indicates the name of the type.
Name	Edm.String	A string value that indicates the name of the system resource.
Version	Edm.String	A string value that indicates the version of the system resource.
IsEmbedded	Edm.Boolean	A Boolean value that indicates whether the item is embedded. TRUE indicates that the item is

Property	Type	Description
		embedded.
PackageContent	Model.CatalogItem	The <b>CatalogItem</b> item represented by the system resource. In some cases, this item is replaced by its readLink in the output instead of the actual value. For more information, see <a href="#">[MS-ODATAJSON]</a> section 2.1.14.
Items	Collection(Model.SystemResourceItem)	A collection of the items contained in the system resource.

### 2.2.6.1.5.1 SystemResourceItem

The **SystemResourceItem** data structure specifies a single item that is a system resource.

The following CSDL defines the **SystemResourceItem** data structure.

```
<EntityType Name="SystemResourceItem">
  <Key>
    <PropertyRef Name="Id" />
  </Key>
  <Property Name="Id" Type="Edm.Guid" Nullable="false" />
  <Property Name="Key" Type="Edm.String" />
  <NavigationProperty Name="ItemContent" Type="Model.CatalogItem" />
</EntityType>
```

The following table describes the properties of the **SystemResourceItem** data structure.

Property	Type	Description
Id	Edm.Guid	The identifier for the system resource.
Key	Edm.String	A restricted string value that is dependent on the type of the <b>SystemResourceItem</b> . If the <b>SystemResourceItem</b> is a <b>MobileReportRuntime</b> , then the available key values are "web" and "mobile". If the <b>SystemResourceItem</b> is a <b>UniversalBrand</b> , then the available key values are "Colors" and "Stylesheet".
ItemContent	Model.CatalogItem	The content of the requested item. It is a type derived from <b>Model.CatalogItem</b> .

### 2.2.6.1.6 User

The **User** data structure specifies information about a system user.

The following CSDL defines the **User** data structure.

```
<EntityType Name="User">
  <Key>
    <PropertyRef Name="Id" />
  </Key>
  <Property Name="Id" Type="Edm.Guid" Nullable="false" />
  <Property Name="Username" Type="Edm.String" />
  <Property Name="DisplayName" Type="Edm.String" />
</EntityType>
```

```
<Property Name="MyReportsPath" Type="Edm.String"/>
</EntityType>
```

The following table describes the properties of the **User** data structure.

Property	Type	Description
Id	Edm.Guid	The identifier for the system resource. <3>
Username	Edm.String	A string value that indicates the authenticated login name of a user
DisplayName	Edm.String	A string value that indicates the name of the user as it is displayed.
MyReportsPath	Edm.String	A string value that indicates the path of the user's <b>My Reports</b> folder. If the <b>My Reports</b> feature is disabled, the returned value is Null.

### 2.2.6.1.7 Kpi

The **Kpi** data structure specifies a KPI within a report server. **Kpi** is one of the types of a catalog item, and so it is derived from the **CatalogItem** abstract type.

The following CSDL defines the **Kpi** data structure.

```
<EntityType Name="Kpi" BaseType="Model.CatalogItem">
  <Property Name="ValueFormat" Type="Model.KpiValueFormat"
    Nullable="false"/>
  <Property Name="Visualization" Type="Model.KpiVisualization"
    Nullable="false"/>
  <Property Name="DrillthroughTarget" Type="Model.DrillthroughTarget"/>
  <Property Name="Currency" Type="Edm.String"/>
  <Property Name="Values" Type="Model.KpiValues"/>
  <Property Name="Data" Type="Model.KpiData"/>
</EntityType>
```

The **Kpi** data structure contains all of the properties of the abstract type **CatalogItem**, and contains the additional properties described in the following table.

Property	Type	Description
ValueFormat	Model.KpiValueFormat	An enumeration value that indicates the format for KPI values.
Visualization	Model.KpiVisualization	An enumeration value that indicates the visualization to be presented in a KPI.
DrillthroughTarget	Model.DrillthroughTarget	An enumeration value that indicates the target of a drillthrough operation.
Currency	Edm.String	A string value that indicates the currency for the KPI.
Values	Model.KpiValues	A complex type that specifies the KPI value at a point in time.
Data	Model.KpiData	A complex type that specifies the data that underlies the KPI value.

## 2.2.6.2 XML Data Structures

All data structures defined in this section flow through the protocol in XML and are defined in XSD.

### 2.2.6.2.1 DatazenDashboard

The **DatazenDashboard** data structure contains a description of the elements to paint on the screen to display a mobile report. The structure is represented in XML.

The following is the XSD for the **DatazenDashboard** data structure.

```
<xs:element name="DatazenDashboard">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="DashboardTitle" type="xs:string" />
      <xs:element name="DashboardGroup" type="xs:string" />
      <xs:element name="DashboardTexture" type="xs:string" />
      <xs:element name="DashboardStyle" type="xs:string" />
      <xs:element name="DashboardAccent" type="xs:boolean" />
      <xs:element name="Currency" type="xs:string" />
      <xs:element name="FiscalMonthOffset" type="xs:int" />
      <xs:element name="FiscalDayOffset" type="xs:int" />
      <xs:element name="FirstDayOfWeek" type="FirstDayOfWeekEnum" />
      <xs:element name="EffectiveDate" type="xs:date" />
      <xs:element name="EnableDataCaching" type="xs:boolean" />
      <xs:element name="EncryptServerData" type="xs:boolean" />
      <xs:element name="DashboardParameters" type="DashboardParametersType"
        minOccurs="0" />
      <xs:element name="Elements" type="DashboardElementsType" />
      <xs:element name="Layouts" type="DashboardLayoutsType" />
      <xs:element name="DataSourceConnections" type="DataSourceConnectionsType"
        minOccurs="0" />
    </xs:sequence>
    <xs:attribute name="Version" type="xs:string" use="required" />
  </xs:complexType>
</xs:element>
```

The following table describes the XML elements of the **DatazenDashboard** data structure.

Element	Type	Description
DashboardTitle	xs:string	A string value that indicates the title for the dashboard.
DashboardGroup	xs:string	This value is ignored.
DashboardTexture	xs:string	This value is ignored.
DashboardStyle	xs:string	This value is ignored.
DashboardAccent	xs:boolean	A Boolean value that indicates whether to use the alternative color theme for the dashboard.
Currency	xs:string	A string value that indicates the currency used in the dashboard.
FiscalMonthOffset	xs:int	An integer value that indicates the number of months that the fiscal month is offset from January.
FiscalDayOffset	xs:int	An integer value that indicates the number of days that the day of the month for the fiscal calendar is offset from the 1 <sup>st</sup> .

Element	Type	Description
FirstDayOfWeek	FirstDayOfWeekEnum	An enumeration value that indicates which weekday is the first day in a week.
EffectiveDate	xs:date	A date value that is the reference date for time navigation. If not specified, the current date is used. It is the reference point for time periods like "previous month" and so on.
EnableDataCaching	xs:boolean	A Boolean value that indicates whether data caching on the client is allowed. TRUE indicates that data caching on the client is allowed.
EncryptServerData	xs:boolean	A Boolean value that indicates whether server data is encrypted. TRUE indicates that server data is encrypted.
DashboardParameters	DashboardParametersType	A collection of parameters that describe the dashboard.
Elements	DashboardElementsType	A collection of elements that the dashboard contains.
Layouts	DashboardLayoutsType	A collection of layouts that are applied to the dashboard elements.
DataSourceConnections	DataSourceConnectionsType	A Collection of items of complex type that specify the data source connections for the dashboard.

The following table describes the XML attributes for the **DatazenDashboard** data structure.

Attribute	Type	Description
Version	xs:string	A string value that represents the version of the DatazenDashboard instance.

### 2.2.6.2.1.1 DashboardParametersType Complex Type

The **DashboardParametersType** complex type specifies a collection of **DashboardParameter** elements that describe parameters for a dashboard.

The following is the XSD for the **DashboardParametersType** complex type.

```
<xs:complexType name="DashboardParametersType">
  <xs:sequence>
    <xs:element name="DashboardParameter" type="DashboardParameterType"
      minOccurs="0" maxOccurs="unbounded" >
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

The following table describes the XML elements for the **DashboardParametersType** complex type.

Element	Type	Description
DashboardParameter	DashboardParameterType	A complex type that contains the parameters of a report.

### 2.2.6.2.1.2 DashboardElements Complex Type

The **DashboardElementsType** complex type specifies a collection of **DashboardElement** elements that describe the elements to be included in a dashboard.

The following is the XSD for the **DashboardElementsType** complex type.

```
<xs:complexType name="DashboardElementsType">
  <xs:sequence>
    <xs:element name="DashboardElement" type="DashboardElementType"
      minOccurs="0" maxOccurs="unbounded" >
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

The following table describes the XML elements for the **DashboardElementsType** complex type.

Element	Type	Description
DashboardElement	DashboardElementType	A collection of complex types that specify the elements for this dashboard.

### 2.2.6.2.1.3 DashboardLayoutsType Complex Type

The **DashboardLayoutsType** complex type specifies a collection of **DashboardLayout** elements that together describe the layout of a dashboard.

The following is the XSD for the **DashboardLayoutsType** complex type.

```
<xs:complexType name="DashboardLayoutsType">
  <xs:sequence>
    <xs:element name="DashboardLayout" type="DashboardLayoutType"
      maxOccurs="unbounded" >
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

The following table describes the XML elements for the **DashboardLayoutsType** complex type.

Element	Type	Description
DashboardLayout	DashboardLayoutType	A collection of elements that defines the position and area for each element of a dashboard's layout.

### 2.2.6.2.1.4 DataSourceConnectionsType Complex Type

The **DataSourceConnectionsType** complex type specifies a collection of **DataSource** elements that define external data sources for the dashboard.

The following is the XSD for the **DataSourceConnectionsType** complex type.

```
<xs:complexType name="DataSourceConnectionsType">
```



```

<xs:sequence>
  <xs:element name="DataSource" type="DataSourceType"
    maxOccurs="unbounded" />
</xs:sequence>
</xs:complexType>

```

The following table describes the XML elements for the **DataSourceConnectionsType** complex type.

Element	Type	Description
DataSource	DataSourceType	A collection of elements that each defines an external data source for this dashboard.

### 2.2.6.3 JSON Data Structures

Data structures defined in this section flow through the protocol in JSON. They are not part of the OData implementation [\[OData-Protocol\]](#).

#### 2.2.6.3.1 Rowset

The **Rowset** JSON data structure specifies a rowset of a tabular data structure.

The following JSON schema defines the **Rowset** data structure.

```

{
  "type": "object",
  "required": [ "Rows", "Columns", "Name" ],
  "properties": {
    "Rows": { "$ref": "#/definitions/RowsetRowType" },
    "Columns": { "$ref": "#/definitions/RowsetColumnType" },
    "Name": {
      "description": "Name of the rowset",
      "type": "string"
    }
  }
}

```

The following table describes the properties of the **Rowset** data structure.

Property	Type	Description
Rows	RowsetRowType	A collection of items of type <b>RowType</b> . Each item in the collection represents a row of data from a tabular data structure.
Columns	RowsetColumnType	A collection of items of type <b>ColumnType</b> . Each item in the collection represents the metadata for a column in a tabular data structure.
Name	string	A string that gives a name for the tabular data structure.

#### 2.2.6.3.2 Style

The **Style** JSON data structure specifies sets of colors assigned to specific purposes that together form a presentation for display of a report.

The following JSON schema defines the **Style** data structure.

```
{
  "type": "object",
  "required": [ "Name", "Version", "Interface", "Theme" ],
  "properties": {
    "Name": {
      "description": "The name of the stylesheet",
      "type": "string"
    },
    "Version": {
      "description": "The version of the stylesheet",
      "type": "string"
    },
    "Interface": {
      "type": "object",
      "description": "Defines colors in a user interface theme",
      "$ref": "#/definitions/ColorsInterfaceType"
    },
    "Theme": {
      "type": "object",
      "description": "Defines colors in a user interface theme",
      "$ref": "#/definitions/ColorsThemeType"
    }
  }
}
```

The following table describes the properties of the **Style** data structure.

Property	Type	Description
Name	string	A string value that indicates the name of the Style entity.
Version	string	A string value that indicates the version of the Style entity.
Interface	ColorsInterfaceType	A complex type that defines a set of colors and their purposes in a user interface.
Theme	ColorsThemeType	A complex type that defines a set of colors and their purposes in a theme for a user interface.

### 2.2.6.3.3 Endpoints

The **Endpoints** JSON data structure specifies which versions of the protocol are supported by a server, and which versions have had support discontinued by a server.

The following JSON schema defines the **Endpoints** data structure.

```
{
  "type": "object",
  "required": [ "supportedEndpoints" ],
  "properties": {
    "supportedEndpoints": {
      "type": "array",
      "items": { "type": "string" },
      "minItems": 1,
    }
  }
}
```

```

    "uniqueItems": true,
    "description": "Endpoints supported by this server version"
  },
  "discontinuedEndpoints": {
    "type": "array",
    "items": { "type": "string" },
    "minItems": 0,
    "uniqueItems": true,
    "description": "Endpoints no longer supported"
  }
}
}
}

```

The following table describes the properties of the **Endpoints** data structure.

Property	Type	Description
supportedEndpoints	array of string	A list of versions currently supported by the server.
discontinuedEndpoints	array of string	A list of versions for which support has been discontinued by the server.

#### 2.2.6.3.4 ErrorMessage

The **ErrorMessage** data structure is used by the server to transmit information about an error to the calling client when the system encounters an error.

The following JSON schema defines the **ErrorMessage** data structure.

```

{
  "type": "object",
  "required": [ "DisplayMessage", "Description" , "Code" ],
  "properties": {
    "DisplayMessage": {
      "type": "string",
      "description": "Message text for display"
    },
    "Description": {
      "type": "string",
      "description": "Message Description"
    },
    "Code": {
      "type": "integer",
      "description": "Error code"
    }
  }
}
}

```

The following table describes the properties of the **ErrorMessage** data structure.

Property	Type	Description
DisplayMessage	string	A string value that indicates an error message for display.
Description	string	A string value that indicates a description of an error.
Code	integer	An integer value that indicates a code for the error

Property	Type	Description
		that was encountered.

## 3 Protocol Details

### 3.1 Client and Server Details

The protocol server receives request messages from the protocol client in the URL which can contain parameters, and in the HTTP Body in JSON format. The request messages can be for the purposes of requesting a list of items available in a catalog, requesting the content of one of the available items in a catalog, or for adding or removing an available catalog item to or from the Favorites list. The protocol server processes the request, and then returns the result to the protocol client. The protocol server never initiates communication with other endpoints of the protocol.

#### 3.1.1 Abstract Data Model

A report server maintains items that are available to a client for viewing.

The server can provide the client, upon request, a listing of the available items and whether any available item is marked as a Favorite. The server can provide a thumbnail representation of those available items and, upon request, the content of those items.

#### 3.1.2 Timers

All protocol requests are initiated by the client.

#### 3.1.3 Initialization

In order for a client to utilize this protocol, the report server MUST be running and be listening for requests.

#### 3.1.4 Higher-Layer Triggered Events

None.

#### 3.1.5 Message Processing Events and Sequencing Rules

Request headers are encoded according to the rules prescribed by the Open Data (OData) protocol [[OData-Protocol](#)] and by the mapping defined in the CSDL specification [[MC-CSDL](#)].

For this protocol, the URL is formed by a concatenation of the following components.

- The absolute URI to the local report server root.
- The string `"/api/"`.
- A string that represents the endpoint to access (see section [3.1.5.1](#)).
- The rest of the desired HTTP URL as described in this document containing specific API calls and any desired parameters that appear within the URL.

The only exception is a call to the Endpoints API itself, where the client can retrieve the list of available endpoints, which does not require that an endpoint be part of the requesting URL. It is recommended that most sessions begin with this call to the Endpoints API (section [3.1.5.1](#)) in order to correctly construct the rest of the URLs for a session.

The fact that all HTTP POST, PUT, or DELETE operations MUST contain a custom HTTP Header (see section [2.2.3](#)) implies that the client cannot initiate contact with the server by using an HTTP POST, PUT, or DELETE operation.

### 3.1.5.1 Endpoints

The **Endpoints** HTTP request is used for a client to understand the versions supported by a server and which versions the server no longer supports.

The **Endpoints** request URL is the only URL in this protocol that does not require an Endpoint to appear within the URL. All other HTTP URLs in this protocol will contain an endpoint encoded into the URL. Usually a protocol user uses this API call first in a session to determine the available endpoints, and then encodes the rest of the API calls with the desired endpoint, selected from among those available as indicated by the return result to this API call.

The **Endpoints** request is not part of the OData implementation [\[OData-Protocol\]](#).

The HTTP GET request URL is formed as "`~/api/endpoints`" where the "`~`" is replaced with the HTTP absolute URI to the report server. For an example, see section [4.1.1](#).

#### 3.1.5.1.1 Request Body

The HTTP GET operation is used. The request body is empty. There are no parameters.

#### 3.1.5.1.2 Response Body

The response body contains a response in JSON of type **Endpoints** (see section [2.2.6.3.3](#)).

#### 3.1.5.1.3 Processing Details

There are no special processing details. The request is received by the server and the response is returned.

### 3.1.5.2 CatalogItemByPath

The **CatalogItemByPath** function is used to request a listing of available catalog items by referencing the path.

The following CSDL defines the **CatalogItemByPath** function.

```
<Function Name="CatalogItemByPath">
  <Parameter Name="path" Type="Edm.String" Unicode="false" />
  <ReturnType Type="Model.CatalogItem" />
</Function>
```

#### 3.1.5.2.1 Request Body

The HTTP GET operation is used. The request body is empty. The **path** parameter appears within the URL, as defined by the CSDL. For an example, see section [4.1.4](#).

#### 3.1.5.2.2 Response Body

The response body contains the requested entity, a **Model.CatalogItem** item in JSON format (see section [2.2.6.1.1](#).)

#### 3.1.5.2.3 Processing Details

There are no special processing details. The request is received by the server and the response is returned.

### 3.1.5.3 CatalogItem

Any **CatalogItem** can be retrieved by using an HTTP GET operation that uses the OData standard and references the **CatalogItem** by its **Id** property for the construction of the URL. For more information, see [\[OData-Protocol\]](#) section 11.2.

#### 3.1.5.3.1 Request Body

The HTTP GET operation is used. The request body is empty. There are no parameters. The URL contains all the information needed to access the specific requested item from the system. For an example, see section [4.4](#).

#### 3.1.5.3.2 Response Body

The response body contains the requested entity, a **Model.CatalogItem** item in JSON format (see section [2.2.6.1.1](#)). The **CatalogItem** is of the type that is requested in the request.

#### 3.1.5.3.3 Processing Details

There are no special processing details. The request is received by the server and the response is returned.

### 3.1.5.4 Me

The **Me** request is used to request information about the current user.

**Me** is a singleton within an entity container. The following CSDL defines the **Me** singleton.

```
<Singleton Name="Me" Type="Model.User" />
```

#### 3.1.5.4.1 Request Body

The HTTP GET operation is used. The request body is empty. There are no parameters. For an example, see section [4.3](#).

#### 3.1.5.4.2 Response Body

The response body is in JSON and contains an entity of type **Model.User** in JSON format (see section [2.2.6.1.6](#)).

#### 3.1.5.4.3 Processing Details

There are no special processing details. The request is received by the server and the response is returned.

### 3.1.5.5 SafeGetSystemResourceContent

The **SafeGetSystemResourceContent** function is used to retrieve a system resource. The HTTP GET operation is used. If the requested system resource does not exist, this request will return an empty result, instead of an error.

The following CSDL defines the **SafeGetSystemResourceContent** function.

```
<Function Name="SafeGetSystemResourceContent">
  <Parameter Name="type" Type="Edm.String" Unicode="false" />
  <Parameter Name="key" Type="Edm.String" Unicode="false" />
```

```
<ReturnType Type="Edm.Binary" />
</Function>
```

### 3.1.5.5.1 Request Body

The request is formed by using the CSDL function signature and the OData protocol [\[OData-Protocol\]](#). The HTTP GET operation is used. The **type** parameter and the **key** parameter appear within the URL. The request body is empty.

### 3.1.5.5.2 Response Body

The response body contains a response of type **Edm.Binary**. The client interprets the response on the basis of the type that it is expecting from the requested item.

Although a system resource is defined as binary and therefore can be any stream of bytes that is originally stored on the server as a resource, the following two specific objects described in this protocol document are stored as system resources and therefore are retrieved by using the **SafeGetSystemResourceContent** function.

- A **Style** object (JSON format). See section [2.2.6.3.2](#).
- A **DatazenDashboard** object (XML content). See section [2.2.6.2.1](#).

### 3.1.5.5.3 Processing Details

There are no special processing details. The request is received by the server and the response is returned.

### 3.1.5.6 AddToFavorites

The **AddToFavorites** action is used to mark a catalog item as a favorite. The HTTP POST command is used.

The following CSDL defines the **AddToFavorites** action.

```
<Action Name="AddToFavorites" IsBound="true">
  <Parameter Name="bindingParameter" Type="Model.CatalogItem" />
  <ReturnType Type="Edm.Boolean" Nullable="false" />
</Action>
```

#### 3.1.5.6.1 Request Body

The request body is empty. The **bindingParameter** for a **CatalogItem** appears within the URL. For an example, see section [4.2](#).

#### 3.1.5.6.2 Response Body

The response body contains a Boolean return result in JSON format. The result represents the success or failure of the operation.

#### 3.1.5.6.3 Processing Details

The request is received by the server. The requested referenced item is marked as a Favorite.



### 3.1.5.7 RemoveFromFavorites

The **RemoveFromFavorites** action is used to remove a catalog item's designation as a favorite. The HTTP POST command is used.

The following CSDL defines the **RemoveFromFavorites** action.

```
<Action Name="RemoveFromFavorites" IsBound="true">
  <Parameter Name="bindingParameter" Type="Model.CatalogItem" />
  <ReturnType Type="Edm.Boolean" Nullable="false" />
</Action>
```

#### 3.1.5.7.1 Request Body

The request body is empty. The **bindingParameter** for a **CatalogItem** appears within the URL.

#### 3.1.5.7.2 Response Body

The response body contains a Boolean return result in JSON format. The result represents the success or failure of the operation.

#### 3.1.5.7.3 Processing Details

The request is received by the server. The requested referenced item is removed from being marked as a Favorite.

### 3.1.5.8 SystemResources

The **SystemResources** HTTP GET operation is used to request the contents of a system resource.

#### 3.1.5.8.1 Request Body

The **SystemResources** request contains no parameters. The request body is empty. The request URL is formed according to OData rules [\[OData-Protocol\]](#). Normally, the system resources request will contain a filter in the URL so that a specific type of requested system resource is returned. If no filter is used, all available system resources are returned as a collection.

#### 3.1.5.8.2 Response Body

The response body contains a collection of the requested system resources in JSON format. If the requesting URL had a filter, the returned collection would reflect that filtering. This call will return an error if the requested system resource is not found. To avoid an error return in the case that a resource is not found, use the **SafeGetSystemResourceContent** function (see section [3.1.5.5](#)).

#### 3.1.5.8.3 Processing Details

There are no special processing details. The request is received by the server and the response is returned.

### 3.1.5.9 GetData

The **GetData** action is used to retrieve data from an external data source. The HTTP POST command is used.

The following CSDL defines the **GetData** action.

```

<Action Name="GetData" IsBound="true">
  <Parameter Name="bindingParameter" Type="Model.DataSet"/>
  <Parameter Name="Parameters" Type="Collection(Model.DataSetParameter)"/>
  <Parameter Name="maxRows" Type="Edm.Int32"/>
  <ReturnType Type="RowsetEntity" />
</Action>

```

### 3.1.5.9.1 Request Body

The HTTP POST request URL is formed by using the CSDL function signature and the OData protocol [\[OData-Protocol\]](#). The parameter named **bindingParameter** appears within the URL. The request body optionally contains the **Parameters** and **maxRows** parameters. If those parameters are present in the request body, they are in JSON format. For an example see section [4.1.6](#).

### 3.1.5.9.2 Response Body

The response body is in JSON format. The result is of type **Rowset** (see section [2.2.6.3.1](#)).

### 3.1.5.9.3 Processing Details

The request is received by the server. The requested external data is retrieved and returned to the client. This operation can result in use of network access to retrieve data from a remote server.

### 3.1.5.10 FavoriteItems

The **FavoriteItems** action is used to retrieve all items in a user's catalog that are designated as Favorite. The HTTP GET command is used.

The following CSDL defines the **FavoriteItems** action.

```

<Function Name="FavoriteItems">
  <ReturnType Type="Collection(Model.CatalogItem)"/>
</Function>

```

#### 3.1.5.10.1 Request Body

The HTTP GET request URL is formed by using the CSDL function signature and the OData protocol [\[OData-Protocol\]](#). The **FavoriteItems** request contains no parameters.

#### 3.1.5.10.2 Response Body

The response body is in JSON format. The result is a collection of items of type **CatalogItem**. See section [2.2.6.1.1](#).

#### 3.1.5.10.3 Processing Details

There are no special processing details. The request is received by the server. The requested favorite item list is retrieved and returned to the client.

### 3.1.5.11 ServiceState

The **ServiceState** function is used to retrieve information about the service state of the server. The HTTP GET command is used.

The following CSDL defines the **ServiceState** action.

```
<Function Name="ServiceState">
  <ReturnType Type="Model.ServiceState"/>
</Function>
```

#### **3.1.5.11.1 Request Body**

The HTTP GET request URL is formed by using the CSDL function signature and the OData protocol [\[OData-Protocol\]](#). The **ServiceState** request contains no parameters. For an example, see section [4.1.2](#).

#### **3.1.5.11.2 Response Body**

The response body is in JSON format. The return result is a JSON object of type **ServiceState**. See section [2.2.4.1.9](#).

#### **3.1.5.11.3 Processing Details**

There are no special processing details. The request is received by the server. The requested information is retrieved and returned to the client.

#### **3.1.6 Timer Events**

None.

#### **3.1.7 Other Local Events**

None.

## 4 Protocol Examples

### 4.1 Session to Retrieve Contents of a Mobile Report

In this example, the client requests the contents of a mobile report in order to display it. A sequence of multiple requests is used to retrieve the contents of the mobile report. These requests are described in sections [4.1.1](#) through [4.1.7](#).

#### 4.1.1 Client Requests List of Endpoints Available on Server

The first request of the sequence to retrieve the contents of a mobile report is to obtain a list of endpoints that are available on the server.

##### 4.1.1.1 HTTP Request

```
GET /reports_preview/api/endpoints HTTP/1.1
```

##### 4.1.1.2 Server Response

The server responds in JSON format. This response indicates that the only version supported is v1.0. The string that represents this supported endpoint ("v1.0") becomes part of the URL in all subsequent communications between the client and server.

```
{ "supportedEndpoints": [ "v1.0" ] }
```

#### 4.1.2 Client Checks Service State of Server

The client verifies that the server is available, which features are restricted from the current user, and which allowed system actions the current user can perform.

##### 4.1.2.1 HTTP Request

```
GET /reports/api/v1.0/ServiceState HTTP/1.1
```

##### 4.1.2.2 Server Response

The server responds in JSON format with an object of type **Model.ServiceState**.

```
{
  "@odata.context": "http://rsportal/reports/api/v1.0/$metadata#Model.ServiceState",
  "IsAvailable": true,
  "RestrictedFeatures": [
  ],
  "AllowedSystemActions": [
    "Create Roles",
    "Delete Roles",
    "Read Role Properties",
    "Update Role Properties",
    "Read System Properties",
    "Update System Properties",
    "Create Schedules",
    "Delete Schedules",
    "Read Schedules",
  ]
}
```

```

    "Update Schedules",
    "List Jobs",
    "Cancel Jobs",
    "Execute Report Definition",
    "Read System Security Policies",
    "Update System Security Policies"
  ],
  "TimeZone": "(UTC-07:00) Pacific Daylight Time"
}

```

### 4.1.3 Client Requests List of Mobile Reports in a Folder

This request is for a list of all the mobile reports in the folder that has the specified **Id**.

#### 4.1.3.1 HTTP Request

```

GET /reports/api/v1.0/catalogitems(d46848ed-3e31-440f-81d4-
a424199f2850)/Model.Folder/catalogitems/Model.MobileReport?$orderby=name%20ASC HTTP/1.1

```

#### 4.1.3.2 Server Response

The following example uses placeholders for the user's domain and alias.

```

{
  "@odata.context":
  "http://rsportal/reports/api/v1.0/$metadata#CatalogItems/Model.MobileReport",
  "value": [
    {
      "Id": "d843452d-be0c-4b66-a7bb-a450ce038ad4",
      "Name": "Marketing Dashboard",
      "Description": null,
      "Path": "/OIPi/MobRepFold/Marketing Dashboard",
      "Type": "MobileReport",
      "Hidden": false,
      "Size": 1689,
      "ModifiedBy": "domain\\useralias",
      "ModifiedDate": "2016-03-21T18:50:59.2-07:00",
      "CreatedBy": "domain\\useralias",
      "CreatedDate": "2016-03-21T18:44:14.857-07:00",
      "ParentFolderId": null,
      "ContentType": null,
      "Content": "",
      "Properties": [
        {
          "Name": "PackageId",
          "Value": "b8cb3a52-0d09-481c-92ae-7727515411bb"
        },
        {
          "Name": "PackageName",
          "Value": "Marketing Dashboard.rsmobile"
        }
      ],
      "IsFavorite": false,
      "AllowCaching": true,
      "Manifest": {
        "Definition": {
          "Id": "04922748-b93c-436d-9fae-53e99766176b",
          "Path": "/OIPi/Marketing Dashboard/contents/Definition",
          "Name": "Definition",
          "Hash": "701382451f73a4b495e651d79079adb595d282b1383db1d33aa71606ae1e2517"
        },
        "Resources": [

```

```

    "Name": "UniversalBrand",
    "Type": "Style",
    "Items": [
      {
        "Key": "colors",
        "Id": "a9864a8f-2e9c-48fe-b276-5e44c4b7e4ea",
        "Path": "/OIP/Marketing Dashboard/contents/UniversalBrand.colors",
        "Name": "UniversalBrand.colors",
        "Hash": "8f1bb5a9c26952864228e383b72940960af5b23843c1770bbb03f95a4a9cc005"
      }
    ]
  },
  "DataSets": [
    {
      "Type": "Embedded",
      "TimeUnit": null,
      "DateTimeColumn": null,
      "IsParameterized": false,
      "Id": "fe55223a-f9c9-490f-89c5-e36faecd32d0",
      "Path": "/OIP/Marketing Dashboard/contents/MainTable",
      "Name": "MainTable",
      "Hash": "68221e3f5cdc3669b13f9c02e4164e82ef8a9a23f6da25ce74c5f93705966e10"
    }
  ],
  "Thumbnails": [
    {
      "Type": "Landscape",
      "Id": "f1fe5576-527c-492f-adeb-512afb5e4185",
      "Path": "/OIP/Marketing Dashboard/contents/Landscape",
      "Name": "Landscape",
      "Hash": "cbf362e59cc2897511f7b6864884fc6e961346f0e928db15aaf4c7a0dcf96acf"
    },
    {
      "Type": "Portrait",
      "Id": "c7b950fb-d0ba-43ed-81ed-a2b6b4873753",
      "Path": "/OIP/Marketing Dashboard/contents/Portrait",
      "Name": "Portrait",
      "Hash": "02c39a8245778109a68b9ad99bd307638cb061528720245176e3ea20bf70fab1"
    }
  ]
},
{
  "Id": "de7b1313-4cc7-4330-b76a-87e3a85786b4",
  "Name": "New Mobile Report",
  "Description": null,
  "Path": "/OIP/MobRepFold/New Mobile Report",
  "Type": "MobileReport",
  "Hidden": false,
  "Size": 996,
  "ModifiedBy": "domain\\useralias",
  "ModifiedDate": "2016-02-10T16:14:46.01-08:00",
  "CreatedBy": "domain\\useralias",
  "CreatedDate": "2016-02-10T16:14:45.93-08:00",
  "ParentFolderId": null,
  "ContentType": null,
  "Content": "",
  "Properties": [
  ],
  "IsFavorite": false,
  "AllowCaching": true,
  "Manifest": {
    "Definition": {
      "Id": "a969dbff-4e58-4adc-a711-79df26afdf40",
      "Path": "/OIP/folder1/New Mobile Report/Definition",
      "Name": "Definition",
      "Hash": "83294d34f0a15ede6497840f04521fbb72520e7c0a843ae713735f33d938244f"
    }
  }
}

```

```

    },
    "Resources": [
      {
        "Name": "Style",
        "Type": "Style",
        "Items": [
          {
            "Key": "Windows8-Style.xaml",
            "Id": "7bd48e39-2612-4ae3-af9e-5e426129190a",
            "Path": "/OIPi/folder1/New Mobile Report/Resources/Style.Windows8-
Style.xaml",
            "Name": "Style.Windows8-Style.xaml",
            "Hash": "d1987eb460d29d423afcbfb5297f45ba833f1d15bf31ee26f50306a0c88b3efb"
          }
        ]
      }
    ],
    "DataSets": [
    ],
    "Thumbnails": [
      {
        "Type": "Landscape",
        "Id": "df90142d-21b6-42ce-b913-8cd9a451d610",
        "Path": "/OIPi/folder1/New Mobile Report/Thumbnails/Landscape",
        "Name": "Landscape",
        "Hash": "9a424cf318a90b3d0da5763692e6ba38d678ca6c28402116b230367ab00326a4"
      },
      {
        "Type": "Portrait",
        "Id": "0868f908-bd37-480d-b38d-5f364488f542",
        "Path": "/OIPi/folder1/New Mobile Report/Thumbnails/Portrait",
        "Name": "Portrait",
        "Hash": "40dbe5642fac293186bb0eb9855ae6b2b7a4de07842ea91aea3039171a50f4a8"
      }
    ]
  }
]
}

```

#### 4.1.4 Client Requests JSON Representation of the Mobile Report as a CatalogItem

In this request, the client uses **CatalogItemByPath** to reference a specific mobile report.

##### 4.1.4.1 HTTP Request

```

GET
/reports/api/v1.0/CatalogItemByPath(path=@path)?@path=%27%2FOIPi%2FMobRepFold%2FMarketing%20D
ashboard%27 HTTP/1.1

```

##### 4.1.4.2 Server Response

The server responds in JSON format with the definition of the metadata for the requested **MobileReport** object. The **Id** of the resources in this response is used in the URL of subsequent requests to retrieve a specific resource. The following example uses placeholders for the user's domain and alias.

```

{
  "@odata.context": "http://rsportal/reports/api/v1.0/$metadata#CatalogItems/$entity",
  "@odata.type": "#Model.MobileReport",
  "Id": "d843452d-be0c-4b66-a7bb-a450ce038ad4",

```

```

"Name": "Marketing Dashboard",
"Description": null,
"Path": "/OIPI/MobRepFold/Marketing Dashboard",
"Type": "MobileReport",
"Hidden": false,
"Size": 1689,
"ModifiedBy": "domain\\useralias",
"ModifiedDate": "2016-03-21T18:50:59.2-07:00",
"CreatedBy": "domain\\useralias",
"CreatedDate": "2016-03-21T18:44:14.857-07:00",
"ParentFolderId": null,
"ContentType": null,
"Content": "",
"Properties": [
  {
    "Name": "PackageId",
    "Value": "b8cb3a52-0d09-481c-92ae-7727515411bb"
  },
  {
    "Name": "PackageName",
    "Value": "Marketing Dashboard.rsmobile"
  }
],
"IsFavorite": false,
"AllowCaching": true,
"Manifest": {
  "Definition": {
    "Id": "04922748-b93c-436d-9fae-53e99766176b",
    "Path": "/OIPI/Marketing Dashboard/contents/Definition",
    "Name": "Definition",
    "Hash": "701382451f73a4b495e651d79079adb595d282b1383db1d33aa71606ae1e2517"
  },
  "Resources": [
    {
      "Name": "UniversalBrand",
      "Type": "Style",
      "Items": [
        {
          "Key": "colors",
          "Id": "a9864a8f-2e9c-48fe-b276-5e44c4b7e4ea",
          "Path": "/OIPI/Marketing Dashboard/contents/UniversalBrand.colors",
          "Name": "UniversalBrand.colors",
          "Hash": "8f1bb5a9c26952864228e383b72940960af5b23843c1770bbb03f95a4a9cc005"
        }
      ]
    }
  ]
},
"DataSets": [
  {
    "Type": "Embedded",
    "TimeUnit": null,
    "DateTimeColumn": null,
    "IsParameterized": false,
    "Id": "fe55223a-f9c9-490f-89c5-e36faecd32d0",
    "Path": "/OIPI/Marketing Dashboard/contents/MainTable",
    "Name": "MainTable",
    "Hash": "68221e3f5cdc3669b13f9c02e4164e82ef8a9a23f6da25ce74c5f93705966e10"
  }
],
"Thumbnails": [
  {
    "Type": "Landscape",
    "Id": "f1fe5576-527c-492f-adeb-512afb5e4185",
    "Path": "/OIPI/Marketing Dashboard/contents/Landscape",
    "Name": "Landscape",
    "Hash": "cbf362e59cc2897511f7b6864884fc6e961346f0e928db15aaf4c7a0dcf96acf"
  },
  {
    "Type": "Portrait",

```



```

      "Id": "c7b950fb-d0ba-43ed-81ed-a2b6b4873753",
      "Path": "/OIP/Marketing Dashboard/contents/Portrait",
      "Name": "Portrait",
      "Hash": "02c39a8245778109a68b9ad99bd307638cb061528720245176e3ea20bf70fab1"
    }
  ]
}
}
}

```

## 4.1.5 Client Requests Content of the Style Resource for the Mobile Report

Using the **Id** property obtained in the server response in section [4.1.4](#), the client now uses the **CatalogItems(Id)** API to request the content of each resource contained in the report. This call requests the content of the **Style** resource.

### 4.1.5.1 HTTP Request

```

GET /reports/api/v1.0/CatalogItems(a9864a8f-2e9c-48fe-b276-5e44c4b7e4ea)/Model.Resource/Content/$value HTTP/1.1

```

### 4.1.5.2 Server Response

The server response is the JSON **Style** data structure (see section [2.2.6.3.2](#)).

```

{
  "version": "1.0",
  "name": "Default",
  "interface": {
    "primary": "#ffffff",
    "primaryAlt": "#ffffff",
    "primaryAlt2": "#ffffff",
    "primaryAlt3": "#ffffff",
    "primaryAlt4": "#ffffff",
    "primaryContrast": "#ffffff",
    "secondary": "#ffffff",
    "secondaryAlt": "#ffffff",
    "secondaryAlt2": "#ffffff",
    "secondaryAlt3": "#ffffff",
    "secondaryContrast": "#ffffff",
    "neutralPrimary": "#ffffff",
    "neutralPrimaryAlt": "#ffffff",
    "neutralPrimaryAlt2": "#ffffff",
    "neutralPrimaryAlt3": "#ffffff",
    "neutralPrimaryContrast": "#ffffff",
    "neutralSecondary": "#ffffff",
    "neutralSecondaryAlt": "#ffffff",
    "neutralSecondaryAlt2": "#ffffff",
    "neutralSecondaryAlt3": "#ffffff",
    "neutralSecondaryContrast": "#ffffff",
    "neutralTertiary": "#ffffff",
    "neutralTertiaryAlt": "#ffffff",
    "neutralTertiaryAlt2": "#ffffff",
    "neutralTertiaryAlt3": "#ffffff",
    "neutralTertiaryContrast": "#ffffff",
    "danger": "#ffffff",
    "success": "#ffffff",
    "warning": "#ffffff",
    "info": "#ffffff",
    "dangerContrast": "#ffffff",
    "successContrast": "#ffffff",
    "warningContrast": "#ffffff",
    "infoContrast": "#ffffff",
  }
}

```

```

    "kpiGood": "#ffffff",
    "kpiBad": "#ffffff",
    "kpiNeutral": "#ffffff",
    "kpiNone": "#ffffff",
    "kpiGoodContrast": "#ffffff",
    "kpiBadContrast": "#ffffff",
    "kpiNeutralContrast": "#ffffff",
    "kpiNoneContrast": "#ffffff"
  },
  "theme": {
    "dataPoints": [
      "#01b8aa",
      "#374649",
      "#fd625e",
      "#f2c80f",
      "#5f6b6d",
      "#8ad4eb",
      "#fe9666",
      "#a66999",
      "#3599b8",
      "#dfbfbf",
      "#4ac5bb",
      "#5f6b6d"
    ],
    "good": "#3bb44a",
    "bad": "#e92031",
    "neutral": "#ddb53b",
    "none": "#7f7f7f",
    "background": "#eaeaea",
    "foreground": "#000000",
    "mapBase": "#01b8aa",
    "panelBackground": "#ffffff",
    "panelForeground": "#212121",
    "panelAccent": "#888888",
    "tableAccent": "#888888",
    "altBackground": "#eaeaea",
    "altForeground": "#ffffff",
    "altMapBase": "#01b8aa",
    "altPanelBackground": "#212121",
    "altPanelForeground": "#212121",
    "altPanelAccent": "#888888",
    "altTableAccent": "#888888"
  }
}

```

#### 4.1.6 Client Requests Content of the DataSet Resource for the Mobile Report

This request uses the **Id** for the **DataSet** resource that was obtained in the example in section [4.1.4](#).

##### 4.1.6.1 HTTP Request

```
GET /reports/api/v1.0/CatalogItems(fe55223a-f9c9-490f-89c5-
e36faecd32d0)/Model.Resource/Content/$value HTTP/1.1
```

##### 4.1.6.2 Server Response

The server response is a JSON **Rowset** data structure (see section [2.2.6.3.1](#)).

```

{
  "Name": "MainTable",
  "Columns": [
    {
      "Name": "Date",

```

```

    "Type": "DateTime"
  },
  {
    "Name": "Online Leads",
    "Type": "Double"
  },
  {
    "Name": "Print Leads",
    "Type": "Double"
  },
  {
    "Name": "Tradeshow Leads",
    "Type": "Double"
  },
  {
    "Name": "Reference Leads",
    "Type": "Double"
  },
  {
    "Name": "Total Leads",
    "Type": "Double"
  },
  {
    "Name": "Lead Targets",
    "Type": "Double"
  },
  {
    "Name": "Total Leads Previous Year",
    "Type": "Double"
  },
  {
    "Name": "Scheduled Demos",
    "Type": "Double"
  },
  {
    "Name": "Evaluation",
    "Type": "Double"
  },
  {
    "Name": "Negotiation",
    "Type": "Double"
  },
  {
    "Name": "Sales",
    "Type": "Double"
  }
],
"Rows": [
  [ "2012-01-01T00:00:00", 43.0, 22.0, 18.0, 8.0, 91.0, 200.0, 83.0, 31.0, 16.0, 8.0, 4.0
],
  [ "2012-02-01T00:00:00", 47.0, 18.0, 12.0, 1.0, 78.0, 200.0, 80.0, 26.0, 13.0, 7.0, 4.0
],
  [ "2012-03-01T00:00:00", 41.0, 14.0, 10.0, 5.0, 70.0, 200.0, 62.0, 24.0, 12.0, 6.0, 3.0
],
  [ "2012-04-01T00:00:00", 55.0, 32.0, 20.0, 12.0, 119.0, 200.0, 89.0, 40.0, 20.0, 10.0,
5.0 ],
  [ "2012-05-01T00:00:00", 75.0, 44.0, 34.0, 25.0, 178.0, 200.0, 130.0, 60.0, 30.0, 15.0,
8.0 ],
  [ "2012-06-01T00:00:00", 45.0, 30.0, 22.0, 6.0, 103.0, 120.0, 93.0, 35.0, 18.0, 9.0, 5.0
],
  [ "2012-07-01T00:00:00", 41.0, 21.0, 8.0, 15.0, 85.0, 120.0, 80.0, 29.0, 15.0, 8.0, 4.0
],
  [ "2012-08-01T00:00:00", 63.0, 32.0, 17.0, 10.0, 122.0, 120.0, 130.0, 41.0, 21.0, 11.0,
6.0 ],
  [ "2012-09-01T00:00:00", 56.0, 25.0, 10.0, 4.0, 95.0, 120.0, 80.0, 32.0, 16.0, 8.0, 4.0
],
  [ "2012-10-01T00:00:00", 72.0, 51.0, 32.0, 21.0, 176.0, 120.0, 124.0, 59.0, 30.0, 15.0,
8.0 ],

```

```

    [ "2012-11-01T00:00:00", 98.0, 61.0, 37.0, 12.0, 208.0, 120.0, 200.0, 70.0, 35.0, 18.0,
9.0 ],
    [ "2012-12-01T00:00:00", 95.0, 42.0, 30.0, 17.0, 184.0, 120.0, 180.0, 62.0, 31.0, 16.0,
8.0 ],
    [ "2013-01-01T00:00:00", 89.0, 58.0, 48.0, 26.0, 221.0, 150.0, 220.0, 74.0, 37.0, 19.0,
10.0 ],
    [ "2013-02-01T00:00:00", 115.0, 61.0, 34.0, 30.0, 240.0, 150.0, 47.0, 80.0, 40.0, 20.0,
10.0 ],
    [ "2013-03-01T00:00:00", 99.0, 78.0, 54.0, 41.0, 272.0, 150.0, 41.0, 91.0, 46.0, 23.0,
12.0 ],
    [ "2013-04-01T00:00:00", 82.0, 24.0, 32.0, 21.0, 159.0, 150.0, 38.0, 53.0, 27.0, 14.0,
7.0 ],
    [ "2013-05-01T00:00:00", 120.0, 17.0, 21.0, 16.0, 174.0, 150.0, 35.0, 58.0, 29.0, 15.0,
8.0 ],
    [ "2013-06-01T00:00:00", 92.0, 32.0, 14.0, 6.0, 144.0, 150.0, 32.0, 48.0, 24.0, 12.0, 6.0
],
    [ "2013-07-01T00:00:00", 111.0, 61.0, 35.0, 31.0, 238.0, 150.0, 41.0, 80.0, 40.0, 20.0,
10.0 ],
    [ "2013-08-01T00:00:00", 71.0, 52.0, 39.0, 15.0, 177.0, 150.0, 63.0, 59.0, 30.0, 15.0,
8.0 ],
    [ "2013-09-01T00:00:00", 132.0, 43.0, 21.0, 19.0, 215.0, 150.0, 56.0, 72.0, 36.0, 18.0,
9.0 ],
    [ "2013-10-01T00:00:00", 90.0, 61.0, 26.0, 9.0, 186.0, 150.0, 72.0, 62.0, 31.0, 16.0, 8.0
],
    [ "2013-11-01T00:00:00", 85.0, 85.0, 44.0, 12.0, 226.0, 150.0, 112.0, 76.0, 38.0, 19.0,
10.0 ],
    [ "2013-12-01T00:00:00", 123.0, 72.0, 5.0, 9.0, 209.0, 150.0, 95.0, 70.0, 35.0, 18.0, 9.0
],
    [ "2014-01-01T00:00:00", 76.0, 81.0, 71.0, 23.0, 251.0, 200.0, 89.0, 84.0, 42.0, 21.0,
11.0 ],
    [ "2014-02-01T00:00:00", 82.0, 61.0, 40.0, 29.0, 212.0, 200.0, 115.0, 71.0, 36.0, 18.0,
9.0 ],
    [ "2014-03-01T00:00:00", 145.0, 100.0, 51.0, 31.0, 327.0, 200.0, 99.0, 109.0, 55.0, 28.0,
14.0 ],
    [ "2014-04-01T00:00:00", 120.0, 82.0, 57.0, 24.0, 283.0, 200.0, 82.0, 95.0, 48.0, 24.0,
12.0 ],
    [ "2014-05-01T00:00:00", 92.0, 71.0, 60.0, 27.0, 250.0, 200.0, 120.0, 84.0, 42.0, 21.0,
11.0 ],
    [ "2014-06-01T00:00:00", 81.0, 73.0, 58.0, 31.0, 243.0, 200.0, 92.0, 81.0, 41.0, 21.0,
11.0 ],
    [ "2014-07-01T00:00:00", 145.0, 99.0, 34.0, 28.0, 306.0, 200.0, 111.0, 102.0, 51.0, 26.0,
13.0 ],
    [ "2014-08-01T00:00:00", 152.0, 112.0, 28.0, 20.0, 312.0, 200.0, 71.0, 104.0, 52.0, 26.0,
13.0 ],
    [ "2014-09-01T00:00:00", 139.0, 108.0, 38.0, 30.0, 315.0, 200.0, 132.0, 105.0, 53.0,
27.0, 14.0 ],
    [ "2014-10-01T00:00:00", 181.0, 156.0, 49.0, 40.0, 426.0, 200.0, 90.0, 142.0, 71.0, 36.0,
18.0 ],
    [ "2014-11-01T00:00:00", 130.0, 109.0, 62.0, 31.0, 332.0, 200.0, 85.0, 111.0, 56.0, 28.0,
14.0 ],
    [ "2014-12-01T00:00:00", 122.0, 82.0, 55.0, 23.0, 282.0, 200.0, 123.0, 94.0, 47.0, 24.0,
12.0 ]
]
}

```

#### 4.1.7 Client Requests Content of the Definition Resource for the Mobile Report

This request uses the **Id** for the **Definition** resource that was obtained in the example in section [4.1.4](#).

##### 4.1.7.1 HTTP Request

```

GET /reports/api/v1.0/CatalogItems(04922748-b93c-436d-9fae-
53e99766176b)/Model.Resource/Content/$value HTTP/1.1

```

### 4.1.7.2 Server Response

The server response is the **DatazenDashboard** XML structure (see section [2.2.6.2.1](#)).

```
<DatazenDashboard Version="1.0.3626.0">
  <DashboardTitle>Marketing Dashboard</DashboardTitle>
  <DashboardGroup></DashboardGroup>
  <DashboardTexture></DashboardTexture>
  <DashboardStyle>Custom</DashboardStyle>
  <DashboardAccent>False</DashboardAccent>
  <Currency>JPY</Currency>
  <FiscalMonthOffset>0</FiscalMonthOffset>
  <FiscalDayOffset>0</FiscalDayOffset>
  <FirstDayOfWeek>Sunday</FirstDayOfWeek>
  <EffectiveDate>2014-12-30T00:00:00</EffectiveDate>
  <EnableDataCaching>True</EnableDataCaching>
  <EncryptServerData>False</EncryptServerData>
  <DashboardParameters>
    <DashboardParameter ObjectName="TimeNavigator" Name="SelectedStartTime" Kind="DateTime"
      ObjectDescription="Time Navigator 1" />
    <DashboardParameter ObjectName="TimeNavigator" Name="SelectedEndTime" Kind="DateTime"
      ObjectDescription="Time Navigator 1" />
    <DashboardParameter ObjectName="TimeNavigator" Name="ViewportStartTime" Kind="DateTime"
      ObjectDescription="Time Navigator 1" />
    <DashboardParameter ObjectName="TimeNavigator" Name="ViewportEndTime" Kind="DateTime"
      ObjectDescription="Time Navigator 1" />
    <DashboardParameter ObjectName="TimeNavigator" Name="TimeUnit" Kind="String"
      ObjectDescription="Time Navigator 1" />
  </DashboardParameters>
  <Elements>
    <GalleryElement Name="TimeNavigator"
      Type="Microsoft.ReportingServices.MobileReportPublisher.Gallery.
        SimpleTimeNavigator,
        Microsoft.ReportingServices.MobileReportPublisher.Gallery
          , Version=1.0.3626.0, Culture=neutral, PublicKeyToken=89845dcd8080cc91"
      Accent="False" NumberFormat="General" ShowComparisonDelta="False"
      ValueOrientation="HigherValuesAreBetter" AdjustYRangeToValues="False"
      MinimumRangeStop="0" MaximumRangeStop="1.5" NeutralStartRangeStop="0.75"
      NeutralEndRangeStop="1">
      <SchemaItem Id="MainSeries" Input="MainTable.Online Leads,MainTable.Print Leads,
        MainTable.Tradeshows Leads,MainTable.Reference Leads" AggregationRule="Sum"
      Filters="" />
      <Title>Time Navigator 1</Title>
      <TimeLevels>Years, Months</TimeLevels>
      <TimeRangePresets>All, LastYear, ThisYear, YearToDate, Last6Months,
        LastQuarter</TimeRangePresets>
      <DefaultTimeRangePreset>All</DefaultTimeRangePreset>
      <TimeRangeVisualization>Line</TimeRangeVisualization>
    </GalleryElement>
    <GalleryElement Name="Number" Type="Microsoft.ReportingServices.MobileReportPublisher.
      Gallery.Number, Microsoft.ReportingServices.MobileReportPublisher.Gallery,
      Version=1.0.3626.0, Culture=neutral, PublicKeyToken=89845dcd8080cc91"
      Accent="False" NumberFormat="General">
      <SchemaItem Id="Value" Input="MainTable.Total Leads" AggregationRule="Sum"
      Filters="TimeNavigator" />
      <Title>Total Leads</Title>
      <SubTitle></SubTitle>
    </GalleryElement>
    <GalleryElement Name="DeltaIndicator"
      Type="Microsoft.ReportingServices.MobileReportPublisher.
        Gallery.DeltaIndicator,
        Microsoft.ReportingServices.MobileReportPublisher.Gallery,
          Version=1.0.3626.0, Culture=neutral, PublicKeyToken=89845dcd8080cc91"
      Accent="False" ValueOrientation="HigherValuesAreBetter"
      NumberFormat="DefaultCurrency"
      DeltaFormat="ValueAndPercentageFromTarget" MinimumRangeStop="0"
      MaximumRangeStop="2"
      NeutralStartRangeStop="1" NeutralEndRangeStop="1">
```

```

    <SchemaItem Id="Value" Input="MainTable.Total Leads" AggregationRule="Sum"
Filters="TimeNavigator" />
    <SchemaItem Id="ComparisonValue" Input="MainTable.Lead Targets" AggregationRule="Sum"
        Filters="TimeNavigator" />
    <Title>vs. Target</Title>
    <SubTitle></SubTitle>
</GalleryElement>
<GalleryElement Name="DeltaIndicator2"
Type="Microsoft.ReportingServices.MobileReportPublisher.
    Gallery.DeltaIndicator,
Microsoft.ReportingServices.MobileReportPublisher.Gallery,
    Version=1.0.3626.0, Culture=neutral, PublicKeyToken=89845dcd8080cc91"
    Accent="False" ValueOrientation="HigherValuesAreBetter"
NumberFormat="DefaultCurrency"
    DeltaFormat="ValueAndPercentageFromTarget" MinimumRangeStop="0"
MaximumRangeStop="2"
    NeutralStartRangeStop="1" NeutralEndRangeStop="1">
    <SchemaItem Id="Value" Input="MainTable.Total Leads" AggregationRule="Sum"
        Filters="TimeNavigator" />
    <SchemaItem Id="ComparisonValue" Input="MainTable.Total Leads Previous Year"
AggregationRule="Sum"
        Filters="TimeNavigator" />
    <Title>vs. Prev Year</Title>
    <SubTitle></SubTitle>
</GalleryElement>
<GalleryElement Name="FunnelChart" Type="Microsoft.ReportingServices.MobileReportPublisher.
    Gallery.FunnelChart,
Microsoft.ReportingServices.MobileReportPublisher.Gallery,
    Version=1.0.3626.0, Culture=neutral, PublicKeyToken=89845dcd8080cc91"
    Accent="False" DisplayMode="ByColumns" Is3D="False" HasReflection="False"
    NumberFormat="General" ShowLegend="False">
    <SchemaItem Id="MainSeries" Input="MainTable.Total Leads,MainTable.Scheduled
Demos,MainTable.
    Evaluation,MainTable.Negotiation,MainTable.Sales" AggregationRule="Sum"
        Filters="TimeNavigator" />
    <Title>Lead Conversion Funnel</Title>
    <SubTitle></SubTitle>
</GalleryElement>
<GalleryElement Name="TimeChart" Type="Microsoft.ReportingServices.MobileReportPublisher.
    Gallery.TimeChart,
Microsoft.ReportingServices.MobileReportPublisher.Gallery,
    Version=1.0.3626.0, Culture=neutral, PublicKeyToken=89845dcd8080cc91"
    Accent="False" NumberFormat="General" DisplayMode="ByColumns"
    AdjustYRangeToValues="False" ChartUnit="Auto"
IndependentAxisAnnotations="No"
    Visualization="Line" ShowLegend="True">
    <SchemaItem Id="MainSeries" Input="MainTable.Online Leads,MainTable.Print
Leads,MainTable.
    Tradeshow Leads,MainTable.Reference Leads" AggregationRule="Sum"
Filters="TimeNavigator" />
    <Title>Leads by Origin Over Time</Title>
    <SubTitle></SubTitle>
</GalleryElement>
</Elements>
<Layouts>
<DashboardLayout Name="Master" RowCount="5" ColumnCount="11" CellSpacing="6">
    <ElementPosition Name="Number" Row="0" Column="0" RowSpan="1" ColumnSpan="4" />
    <ElementPosition Name="DeltaIndicator" Row="0" Column="4" RowSpan="1" ColumnSpan="1" />
    <ElementPosition Name="DeltaIndicator2" Row="0" Column="5" RowSpan="1" ColumnSpan="1" />
    <ElementPosition Name="TimeNavigator" Row="0" Column="6" RowSpan="1" ColumnSpan="5" />
    <ElementPosition Name="FunnelChart" Row="1" Column="0" RowSpan="4" ColumnSpan="4" />
    <ElementPosition Name="TimeChart" Row="1" Column="6" RowSpan="4" ColumnSpan="5" />
</DashboardLayout>
<DashboardLayout Name="TabletPortrait" RowCount="8" ColumnCount="5" CellSpacing="6">
    <ElementPosition Name="TimeNavigator" Row="0" Column="0" RowSpan="1" ColumnSpan="5" />
    <ElementPosition Name="FunnelChart" Row="1" Column="0" RowSpan="3" ColumnSpan="4" />
    <ElementPosition Name="Number" Row="1" Column="4" RowSpan="1" ColumnSpan="1" />
    <ElementPosition Name="DeltaIndicator" Row="2" Column="4" RowSpan="1" ColumnSpan="1" />
    <ElementPosition Name="DeltaIndicator2" Row="3" Column="4" RowSpan="1" ColumnSpan="1" />

```

```

    <ElementPosition Name="TimeChart" Row="4" Column="0" RowSpan="4" ColumnSpan="5" />
  </DashboardLayout>
  <DashboardLayout Name="Phone" RowCount="6" ColumnCount="4" CellSpacing="6">
    <ElementPosition Name="TimeNavigator" Row="0" Column="0" RowSpan="1" ColumnSpan="4" />
    <ElementPosition Name="FunnelChart" Row="1" Column="0" RowSpan="3" ColumnSpan="4" />
    <ElementPosition Name="TimeChart" Row="4" Column="0" RowSpan="2" ColumnSpan="4" />
  </DashboardLayout>
</Layouts>
</DatazenDashboard>

```

## 4.2 Add Item to Favorites

In this example, the client designates an item as a Favorite.

A request to add an item to Favorites is typically preceded by a request to enumerate all of the available items in a folder. The effect of that request is to obtain the **Id** for each item, including the specific **Id** for the item to be added to the Favorites list. This request then references the **CatalogItem** by its **Id**.

### 4.2.1 HTTP Request

```

POST /reports_preview/api/v1.0/catalogitems(95c169d7-4e8e-40e5-b95f-68305a39c0ae)/Model.CatalogItem/Model.AddToFavorites HTTP/1.1

```

### 4.2.2 Server Response

The server responds in JSON format indicating that the request was successfully completed.

```

{
  "@odata.context": "http://rsportal/reports_preview/api/v1.0/$metadata#Edm.Boolean",
  "value":true
}

```

## 4.3 Retrieve Information about the Current User

In this example, the client requests information about the current authenticated user.

### 4.3.1 HTTP Request

```

GET /reports_preview/api/v1.0/me HTTP/1.1

```

### 4.3.2 Server Response

The server responds in JSON format with a **Model.User** data structure. The following example uses placeholders for the user's domain, user name, and display name.

```

{
  "@odata.context": "http://rsportal/reports_preview/api/v1.0/$metadata#Me",
  "Id": "00000000-0000-0000-0000-000000000000",
  "Username": "domain\\useralias",
  "DisplayName": "User Name",
  "MyReportsPath": "/Users Folders/domain useralias/My Reports"
}

```

## 4.4 Retrieve a List of Subfolders for a Folder

A sequence of multiple requests is used to obtain a list the subfolders of a folder. These requests are described in sections [4.4.1](#) and [4.4.2](#).

### 4.4.1 Get the Id for the Target Folder

The initial request obtains the **CatalogItem** contents of the desired folder by referencing it by its path.

#### 4.4.1.1 HTTP Request

```
GET /reports/api/v1.0/CatalogItemByPath(path=@path)?@path=%27/OIPI%27 HTTP/1.1
```

#### 4.4.1.2 Server Response

The following example uses placeholders for domain and username.

```
{
  "@odata.context": "http://rsportal/reports/api/v1.0/$metadata#CatalogItems/$entity",
  "@odata.type": "#Model.Folder",
  "Id": "d6fe6f40-bdaf-4519-badd-f4ee81a79ff7",
  "Name": "OIPI",
  "Description": null,
  "Path": "/OIPI",
  "Type": "Folder",
  "Hidden": false,
  "Size": 0,
  "ModifiedBy": "domain\\useralias",
  "ModifiedDate": "2016-03-21T17:21:20.42-07:00",
  "CreatedBy": "domain\\useralias",
  "CreatedDate": "2016-02-08T14:21:48.22-08:00",
  "ParentFolderId": null,
  "ContentType": null,
  "Content": "",
  "Properties": [
  ],
  "IsFavorite": false
}
```

### 4.4.2 Request a List of Folders Contained in That Folder

The **Id** property that was returned in the request in section [4.4.1](#) is used to form the HTTP GET command to obtain the list of subfolders.

#### 4.4.2.1 HTTP Request

```
GET /reports/api/v1.0/catalogitems(d6fe6f40-bdaf-4519-badd-f4ee81a79ff7)/Model.Folder/catalogitems/Model.Folder?$orderby=name%20ASC HTTP/1.1
```

#### 4.4.2.2 Server Response

The following example uses placeholders for domain and user name.

```
{
  "@odata.context": "http://rsportal/reports/api/v1.0/$metadata#CatalogItems/Model.Folder",
```



```

"value": [
  {
    "Id": "2908b204-fee4-447e-94ff-c49fe4f7327b",
    "Name": "CaptureNewFolder",
    "Description": null,
    "Path": "/OIPI/CaptureNewFolder",
    "Type": "Folder",
    "Hidden": false,
    "Size": -1,
    "ModifiedBy": "domain\\useralias",
    "ModifiedDate": "2016-02-18T18:38:23.907-08:00",
    "CreatedBy": "domain\\useralias",
    "CreatedDate": "2016-02-18T18:38:23.907-08:00",
    "ParentFolderId": null,
    "ContentType": null,
    "Content": "",
    "Properties": [
    ],
    "IsFavorite": false
  },
  {
    "Id": "d46848ed-3e31-440f-81d4-a424199f2850",
    "Name": "MobRepFold",
    "Description": "Folder containing mobile reports",
    "Path": "/OIPI/MobRepFold",
    "Type": "Folder",
    "Hidden": false,
    "Size": -1,
    "ModifiedBy": "domain\\useralias",
    "ModifiedDate": "2016-03-21T17:21:20.42-07:00",
    "CreatedBy": "domain\\useralias",
    "CreatedDate": "2016-02-10T16:09:40.487-08:00",
    "ParentFolderId": null,
    "ContentType": null,
    "Content": "",
    "Properties": [
    ],
    "IsFavorite": false
  },
  {
    "Id": "a2d6b06b-056f-48aa-b4d5-55a87d15e5c9",
    "Name": "TestSubfolder",
    "Description": null,
    "Path": "/OIPI/TestSubfolder",
    "Type": "Folder",
    "Hidden": false,
    "Size": -1,
    "ModifiedBy": "domain\\useralias",
    "ModifiedDate": "2016-02-08T14:36:35.837-08:00",
    "CreatedBy": "domain\\useralias",
    "CreatedDate": "2016-02-08T14:36:35.837-08:00",
    "ParentFolderId": null,
    "ContentType": null,
    "Content": "",
    "Properties": [
    ],
    "IsFavorite": false
  },
  {
    "Id": "6d4982c3-6c08-48f1-be82-6615f6676ba4",
    "Name": "TestSubfolder2",
    "Description": null,
    "Path": "/OIPI/TestSubfolder2",
    "Type": "Folder",
    "Hidden": false,
    "Size": -1,

```

```
"ModifiedBy": "domain\\useralias",
"ModifiedDate": "2016-02-08T14:36:45.407-08:00",
"CreatedBy": "domain\\useralias",
"CreatedDate": "2016-02-08T14:36:45.407-08:00",
"ParentFolderId": null,
"ContentType": null,
"Content": "",
"Properties": [
],
"IsFavorite": false
}
]
```

## 5 Security

### 5.1 Security Considerations for Implementers

The response from a server can contain potentially sensitive data. Microsoft SQL Server Reporting Services has a built-in role-based security model by which the security of items can be specified to the individual item level and individual user level, and roles can be defined for groups of users.

Careful administration of roles and security for access to reports, KPIs, and all other items hosted on the server includes the use of HTTPS on servers hosting the protocol, even though the protocol permits HTTP to be used. For example, the **CredentialsStoredInServer** object (see section [2.2.4.1.4](#)) has the sensitive property, **Password**. It will be transmitted in plain text unless HTTPS is used.

### 5.2 Index of Security Parameters

None.

## 6 Appendix A: Full XML Schema

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema targetNamespace="http://tempuri.org/XMLSchema.xsd"
  elementFormDefault="qualified"
  xmlns="http://tempuri.org/XMLSchema.xsd"
  xmlns:mstns="http://tempuri.org/XMLSchema.xsd"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  >

  <xs:element name="DatazenDashboard">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="DashboardTitle" type="xs:string" />
        <xs:element name="DashboardGroup" type="xs:string" />
        <xs:element name="DashboardTexture" type="xs:string" />
        <xs:element name="DashboardStyle" type="xs:string" />
        <xs:element name="DashboardAccent" type="xs:boolean" />
        <xs:element name="Currency" type="xs:string" />
        <xs:element name="FiscalMonthOffset" type="xs:int" />
        <xs:element name="FiscalDayOffset" type="xs:int" />
        <xs:element name="FirstDayOfWeek" type="FirstDayOfWeekEnum" />
        <xs:element name="EffectiveDate" type="xs:date" />
        <xs:element name="EnableDataCaching" type="xs:boolean" />
        <xs:element name="EncryptServerData" type="xs:boolean" />
        <xs:element name="DashboardParameters" type="DashboardParametersType"
          minOccurs="0" />
        <xs:element name="Elements" type="DashboardElementsType" />
        <xs:element name="Layouts" type="DashboardLayoutsType" />
        <xs:element name="DataSourceConnections"
          type="DataSourceConnectionsType"
          minOccurs="0" />
      </xs:sequence>
      <xs:attribute name="Version" type="xs:string" use="required" />
    </xs:complexType>
  </xs:element>

  <xs:complexType name="DashboardParametersType">
    <xs:sequence>
      <xs:element name="DashboardParameter" type="DashboardParameterType"
        minOccurs="0" maxOccurs="unbounded" >
      </xs:element>
    </xs:sequence>
  </xs:complexType>

  <xs:complexType name="DashboardElementsType">
    <xs:sequence>
      <xs:element name="DashboardElement" type="DashboardElementType"
        minOccurs="0" maxOccurs="unbounded" >
      </xs:element>
    </xs:sequence>
  </xs:complexType>

  <xs:complexType name="DashboardLayoutsType">
    <xs:sequence>
      <xs:element name="DashboardLayout" type="DashboardLayoutType"
        maxOccurs="unbounded" >
      </xs:element>
    </xs:sequence>
  </xs:complexType>

  <xs:complexType name="DashboardLayoutType">
    <xs:sequence>
      <xs:element name="ElementPosition" type="ElementPositionType"
        minOccurs="0" maxOccurs="unbounded" >
      </xs:element>
    </xs:sequence>
  </xs:complexType>
```

```

    <xs:attribute name="Name" type="xs:string" use="required" />
    <xs:attribute name="RowCount" type="xs:int" use="required" />
    <xs:attribute name="ColumnCount" type="xs:int" use="required" />
    <xs:attribute name="CellSpacing" type="xs:int" use="required" />
</xs:complexType>

<xs:complexType name="ElementPositionType">
  <xs:attribute name="Name" type="xs:string" use="required" />
  <xs:attribute name="Row" type="xs:int" use="required" />
  <xs:attribute name="Column" type="xs:int" use="required" />
  <xs:attribute name="RowSpan" type="xs:int" use="required" />
  <xs:attribute name="ColumnSpan" type="xs:int" use="required" />
</xs:complexType>

<xs:complexType name="DataSourceConnectionsType">
  <xs:sequence>
    <xs:element name="DataSource" type="DataSourceType"
      maxOccurs="unbounded" />
  </xs:sequence>
</xs:complexType>

<xs:complexType name="DataSourceType">
  <xs:sequence>
    <xs:element name="Connection" type="DataSourceConnectionType"
      maxOccurs="unbounded" />
  </xs:sequence>
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</xs:complexType>

<xs:complexType name="DataSourceConnectionType">
  <xs:simpleContent>
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      <xs:attribute name="Parameter" type="xs:string" use="required" />
    </xs:extension>
  </xs:simpleContent>
</xs:complexType>

<xs:complexType name="DashboardElementType">
  <xs:sequence>
    <xs:element name="GalleryElement" type="GalleryElementType"
      maxOccurs="unbounded" />
  </xs:sequence>
</xs:complexType>

<xs:complexType name="GalleryElementType">
  <xs:sequence>
    <xs:element name="SchemaItem" type="SchemaItemType" minOccurs="0"
      maxOccurs="unbounded" />
    <xs:element name="Title" type="xs:string" minOccurs="0" />
    <xs:element name="SubTitle" type="xs:string" minOccurs="0" />
    <xs:element name="ColumnDefinitions" type="ColumnDefinitionsType"
      minOccurs="0" />
    <xs:element name="TimeLevels" type="xs:string" minOccurs="0" />
    <xs:element name="TimeRangePresets" type="xs:string" minOccurs="0" />
    <xs:element name="DefaultTimeRangePreset" type="xs:string" minOccurs="0" />
    <xs:element name="TimeRangeVisualization"
      type="GalleryElementTimeRangeVisualization" minOccurs="0" />
    <xs:element name="DrillThroughDashboardSchema"
      type="DrillThroughDashboardSchemaType" minOccurs="0"/>
    <xs:element name="DataSourceConnections" type="GalleryElementDataSourceConnectionsType"
      minOccurs="0" />
  </xs:sequence>
  <xs:attribute name="Name" type="xs:string" use="required" />
  <xs:attribute name="Type" type="xs:string" use="required" />
  <xs:attribute name="Accent" type="xs:boolean" use="required" />
  <xs:attribute name="NumberFormat" type="GalleryElementNumberFormatEnum"
    use="optional" />
  <xs:attribute name="ShowComparisonDelta" type="xs:boolean" use="optional" />
  <xs:attribute name="ValueOrientation" type="GalleryElementValueOrientationEnum"

```

```

        use="optional" />
<xs:attribute name="AdjustYRangeToValues" type="xs:boolean" use="optional" />
<xs:attribute name="MinimumRangeStop" type="xs:decimal" use="optional" />
<xs:attribute name="MaximumRangeStop" type="xs:decimal" use="optional" />
<xs:attribute name="NeutralStartRangeStop" type="xs:decimal" use="optional" />
<xs:attribute name="NeutralEndRangeStop" type="xs:decimal" use="optional" />
<xs:attribute name="AllowMultiSelect" type="xs:boolean" use="optional" />
<xs:attribute name="SelectAll" type="xs:boolean" use="optional" />
<xs:attribute name="SelectAllText" type="xs:string" use="optional" />
<xs:attribute name="ShowIcons" type="xs:boolean" use="optional" />
<xs:attribute name="Structure" type="GalleryElementStructureEnum" use="optional" />
<xs:attribute name="FilterTargets" type="xs:string" use="optional" />
<xs:attribute name="DeltaFormat" type="GalleryElementDeltaFormatEnum" use="optional" />
<xs:attribute name="Visualization" type="GalleryElementVisualizationEnum"
    use="optional" />
<xs:attribute name="RingType" type="GalleryElementRingTypeEnum" use="optional" />
<xs:attribute name="DisplayMode" type="GalleryElementDisplayModeEnum" use="optional" />
<xs:attribute name="ChartUnit" type="GalleryElementChartTimeUnitEnum" use="optional" />
<xs:attribute name="IndependentAxisAnnotations"
    type="GalleryElementIndependentAxisAnnotationsEnum" use="optional" />
<xs:attribute name="ShowLegend" type="xs:boolean" use="optional" />
<xs:attribute name="Sorting" type="GalleryElementSortingEnum" use="optional" />
<xs:attribute name="Orientation" type="GalleryElementOrientationEnum" use="optional" />
<xs:attribute name="ShowPercentageTotals" type="xs:boolean" use="optional" />
<xs:attribute name="ReuseColorsOnComparisonSeries" type="xs:boolean" use="optional" />
<xs:attribute name="ValueDirection" type="GalleryElementValueOrientationEnum"
    use="optional" />
<xs:attribute name="TypeOfInputData" type="GalleryElementTypeOfInputDataEnum"
    use="optional" />
<xs:attribute name="LastColumnLabel" type="xs:string" use="optional" />
<xs:attribute name="AnnotationVisualization"
    type="GalleryElementAnnotationVisualizationEnum" use="optional" />
<xs:attribute name="Is3D" type="xs:boolean" use="optional" />
<xs:attribute name="HasReflection" type="xs:boolean" use="optional" />
<xs:attribute name="ShowPopup" type="xs:boolean" use="optional" />
<xs:attribute name="TwoLevel" type="xs:boolean" use="optional" />
<xs:attribute name="InputDataAggregation" type="xs:boolean" use="optional" />
<xs:attribute name="ShowHeader" type="xs:boolean" use="optional" />
<xs:attribute name="Map" type="GalleryElementMapEnum" use="optional" />
<xs:attribute name="UseDifferentColors" type="xs:boolean" use="optional" />
<xs:attribute name="AggregateByCategory" type="xs:boolean" use="optional" />
<xs:attribute name="AggregateByTime" type="xs:boolean" use="optional" />
<xs:attribute name="RowNumbers" type="GalleryElementRowNumbersEnum" use="optional" />
<xs:attribute name="MapCustomPath" type="xs:string" use="optional" />
</xs:complexType>

<xs:complexType name="GalleryElementDataSourceConnectionsType">
  <xs:sequence>
    <xs:element name="Connection"
        type="GalleryElementDataSourceConnectionsConnectionType"
        maxOccurs="unbounded" />
  </xs:sequence>
</xs:complexType>

<xs:complexType name="GalleryElementDataSourceConnectionsConnectionType">
  <xs:attribute name="DataSource" type="xs:string" use="required" />
  <xs:attribute name="Parameter" type="xs:string" use="required" />
  <xs:attribute name="ConnectionPoint" type="xs:string" use="required" />
</xs:complexType>

<xs:complexType name="DrillThroughDashboardSchemaType">
  <xs:sequence>
    <xs:element name="MappingItem" type="MappingItemType"
        maxOccurs="unbounded" />
    <xs:choice>
      <xs:element name="TargetReport" type="TargetReportType" />
      <xs:element name="TargetUri" type="TargetUriType" />
    </xs:choice>
  </xs:sequence>
</xs:complexType>

```

```

</xs:complexType>

<xs:complexType name="MappingItemType">
  <xs:sequence>
    <xs:element name="DashboardParameter" type="DashboardParameterType" />
  </xs:sequence>
  <xs:attribute name="DestinationObjectName" type="xs:string"
    use="required" />
  <xs:attribute name="DestinationName" type="xs:string" use="required" />
</xs:complexType>

<xs:complexType name="TargetReportType">
  <xs:attribute name="Id" type="xs:string" use="required" />
  <xs:attribute name="Path" type="xs:string" use="required" />
  <xs:attribute name="Server" type="xs:string" use="required" />
</xs:complexType>

<xs:complexType name="TargetUriType">
  <xs:attribute name="Uri" type="xs:string" use="required" />
</xs:complexType>

<xs:complexType name="ColumnDefinitionsType" >
  <xs:sequence>
    <xs:choice maxOccurs="unbounded">
      <xs:element name="GridViewTextColumnDefinition"
        type="GridViewTextColumnDefinitionType"
        minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="GridViewGaugeColumnDefinition"
        type="GridViewGaugeColumnDefinitionType"
        minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="ScoreCardColumnDefinition"
        type="ScoreCardColumnDefinitionType"
        minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="GridViewChartColumnDefinition"
        type="GridViewChartColumnDefinitionType"
        minOccurs="0" maxOccurs="unbounded"/>
    </xs:choice>
  </xs:sequence>
</xs:complexType>

<xs:complexType name="GridViewChartColumnDefinitionType">
  <xs:attribute name="Title" type="xs:string" use="required" />
  <xs:attribute name="ColumnType" type="ColumnTypeEnum" use="required" />
  <xs:attribute name="AggregationType" type="AggregationTypesEnum"
    use="required" />
  <xs:attribute name="IsVisible" type="xs:boolean" use="required" />
  <xs:attribute name="DataColumn" type="xs:string" use="required" />
  <xs:attribute name="SourceColumn" type="xs:string" use="required" />
  <xs:attribute name="DestinationColumn" type="xs:string" use="required" />
</xs:complexType>

<xs:complexType name="ScoreCardColumnDefinitionType">
  <xs:attribute name="ColumnType" type="ScorecardColumnTypeEnum"
    use="required" />
  <xs:attribute name="ComparisonField" type="xs:string" use="required" />
  <xs:attribute name="StringFormat" type="xs:string" use="required" />
  <xs:attribute name="ValueField" type="xs:string" use="required" />
  <xs:attribute name="ValueOrientation"
    type="GalleryElementValueOrientationEnum" use="required" />
  <xs:attribute name="Title" type="xs:string" use="required" />
</xs:complexType>

<xs:complexType name="GridViewGaugeColumnDefinitionType">
  <xs:attribute name="Title" type="xs:string" use="required" />
  <xs:attribute name="ColumnType" type="ColumnTypeEnum" use="required" />
  <xs:attribute name="AggregationType" type="AggregationTypesEnum"
    use="required" />
  <xs:attribute name="IsVisible" type="xs:boolean" use="required" />
  <xs:attribute name="ValueColumn" type="xs:string" use="required" />

```

```

    <xs:attribute name="TargetColumn" type="xs:string" use="required" />
    <xs:attribute name="ValueOrientation" type="xs:string" use="required" />
</xs:complexType>

<xs:complexType name="GridViewTextColumnDefinitionType">
  <xs:attribute name="Title" type="xs:string" use="required" />
  <xs:attribute name="ColumnType" type="ColumnTypeEnum" use="required" />
  <xs:attribute name="AggregationType" type="AggregationTypesEnum"
    use="required" />
  <xs:attribute name="IsVisible" type="xs:boolean" use="required" />
  <xs:attribute name="ValueColumn" type="xs:string" use="required" />
  <xs:attribute name="StringFormat" type="xs:string" use="required" />
</xs:complexType>

<xs:complexType name="SchemaItemType">
  <xs:attribute name="Id" type="xs:string" use="required" />
  <xs:attribute name="Input" type="xs:string" use="required" />
  <xs:attribute name="AggregationRule" type="AggregationTypesEnum"
    use="required" />
  <xs:attribute name="Filters" type="xs:string" use="required" />
</xs:complexType>

<xs:complexType name="DashboardParameterType">
  <xs:attribute name="ObjectName" type="xs:string" use="required" />
  <xs:attribute name="Name" type="xs:string" use="required" />
  <xs:attribute name="Kind" type="DashboardParameterKindEnum" use="required" />
  <xs:attribute name="ObjectDescription" type="xs:string"
    use="required" />
</xs:complexType>

<xs:simpleType name="ColumnTypeEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Text" />
    <xs:enumeration value="Number" />
    <xs:enumeration value="Date" />
    <xs:enumeration value="Boolean" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementTimeLevelsEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="None" />
    <xs:enumeration value="Years" />
    <xs:enumeration value="Quarters" />
    <xs:enumeration value="Months" />
    <xs:enumeration value="Weeks" />
    <xs:enumeration value="Days" />
    <xs:enumeration value="Hours" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementTimeRangePresetsEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="None" />
    <xs:enumeration value="All" />
    <xs:enumeration value="LastYear" />
    <xs:enumeration value="ThisYear" />
    <xs:enumeration value="YearToDate" />
    <xs:enumeration value="Last6Months" />
    <xs:enumeration value="Last3Months" />
    <xs:enumeration value="LastQuarter" />
    <xs:enumeration value="ThisQuarter" />
    <xs:enumeration value="QuarterToDate" />
    <xs:enumeration value="Last30Days" />
    <xs:enumeration value="LastMonth" />
    <xs:enumeration value="ThisMonth" />
    <xs:enumeration value="MonthToDate" />
    <xs:enumeration value="Last7Days" />
    <xs:enumeration value="LastWeek" />
  </xs:restriction>
</xs:simpleType>

```



```

    <xs:enumeration value="ThisWeek" />
    <xs:enumeration value="WeekToDate" />
    <xs:enumeration value="Yesterday" />
    <xs:enumeration value="Today" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementTimeRangeVisualization">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Bar" />
    <xs:enumeration value="Line" />
    <xs:enumeration value="Area" />
    <xs:enumeration value="StepArea" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="AggregationTypesEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="None" />
    <xs:enumeration value="Sum" />
    <xs:enumeration value="Avg" />
    <xs:enumeration value="Count" />
    <xs:enumeration value="Min" />
    <xs:enumeration value="Max" />
    <xs:enumeration value="First" />
    <xs:enumeration value="Last" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementNumberFormatEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="General" />
    <xs:enumeration value="Abbreviated" />
    <xs:enumeration value="DefaultCurrency" />
    <xs:enumeration value="DefaultCurrencyWithDecimals" />
    <xs:enumeration value="AbbreviatedDefaultCurrency" />
    <xs:enumeration value="Percent" />
    <xs:enumeration value="PercentWithDecimals" />
    <xs:enumeration value="GeneralWithoutDecimals" />
    <xs:enumeration value="TimeSpanGeneral" />
    <xs:enumeration value="TimeSpanHoursAndMinutes" />
    <xs:enumeration value="TimeSpanMinutesAndSeconds" />
    <xs:enumeration value="None" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementOrientationEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Horizontal" />
    <xs:enumeration value="Vertical" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementRowNumbersEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Hide" />
    <xs:enumeration value="Show" />
    <xs:enumeration value="Auto" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementMapEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="NorthAmerica" />
    <xs:enumeration value="SouthAmerica" />
    <xs:enumeration value="WorldContinents" />
    <xs:enumeration value="WorldRegions" />
    <xs:enumeration value="Australia" />
    <xs:enumeration value="Austria" />
  </xs:restriction>
</xs:simpleType>

```

```

    <xs:enumeration value="Brazil" />
    <xs:enumeration value="Canada" />
    <xs:enumeration value="Cuba" />
    <xs:enumeration value="France" />
    <xs:enumeration value="Germany" />
    <xs:enumeration value="Greece" />
    <xs:enumeration value="Ireland" />
    <xs:enumeration value="Italy" />
    <xs:enumeration value="Mexico" />
    <xs:enumeration value="Netherlands" />
    <xs:enumeration value="Poland" />
    <xs:enumeration value="Portugal" />
    <xs:enumeration value="Switzerland" />
    <xs:enumeration value="UnitedKingdom" />
    <xs:enumeration value="USA" />
    <xs:enumeration value="Custom" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementAnnotationVisualizationEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="None" />
    <xs:enumeration value="ValueOnChart" />
    <xs:enumeration value="PercentageOnChart" />
    <xs:enumeration value="ValueOnLegend" />
    <xs:enumeration value="ValueOnChartPercentageOnLegend" />
    <xs:enumeration value="PercentageOnChartValueOnLegend" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementTypeOfInputDataEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="InputContainsDeltaValues" />
    <xs:enumeration value="InputContainsTotalValues" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementValueOrientationEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="HigherValuesAreBetter" />
    <xs:enumeration value="LowerValuesAreBetter" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementSortingEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="None" />
    <xs:enumeration value="AlphabeticAscending" />
    <xs:enumeration value="AlphabeticDescending" />
    <xs:enumeration value="NumericAscending" />
    <xs:enumeration value="NumericDescending" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementIndependentAxisAnnotationsEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="No" />
    <xs:enumeration value="Yes" />
    <xs:enumeration value="Auto" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementChartTimeUnitEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Auto" />
    <xs:enumeration value="Decade" />
    <xs:enumeration value="Year" />
    <xs:enumeration value="Quarter" />
    <xs:enumeration value="Month" />
  </xs:restriction>
</xs:simpleType>

```

```

        <xs:enumeration value="Week" />
        <xs:enumeration value="Day" />
        <xs:enumeration value="Hour" />
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementDisplayModeEnum">
    <xs:restriction base="xs:string" >
        <xs:enumeration value="ByColumns" />
        <xs:enumeration value="ByRows" />
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementRingTypeEnum">
    <xs:restriction base="xs:string" >
        <xs:enumeration value="HalfRing" />
        <xs:enumeration value="FullRing" />
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementVisualizationEnum">
    <xs:restriction base="xs:string" >
        <xs:enumeration value="AreaStacked" />
        <xs:enumeration value="Bar" />
        <xs:enumeration value="BarsSideBySide" />
        <xs:enumeration value="BarsStacked" />
        <xs:enumeration value="BarsStacked100" />
        <xs:enumeration value="BarVsStepArea" />
        <xs:enumeration value="BarVsThinBar" />
        <xs:enumeration value="ColorGroups" />
        <xs:enumeration value="Default" />
        <xs:enumeration value="Donut" />
        <xs:enumeration value="DonutWithTotal" />
        <xs:enumeration value="HeatMap" />
        <xs:enumeration value="HeatMapWithCustomCenterValue" />
        <xs:enumeration value="Line" />
        <xs:enumeration value="LineVsBar" />
        <xs:enumeration value="Pie" />
        <xs:enumeration value="StepArea" />
        <xs:enumeration value="StepAreaStacked" />
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementDeltaFormatEnum">
    <xs:restriction base="xs:string" >
        <xs:enumeration value="None" />
        <xs:enumeration value="Value" />
        <xs:enumeration value="PercentageFromTarget" />
        <xs:enumeration value="PercentageOfTarget" />
        <xs:enumeration value="ValueAndPercentageFromTarget" />
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GalleryElementStructureEnum">
    <xs:restriction base="xs:string" >
        <xs:enumeration value="List" />
        <xs:enumeration value="Tree" />
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="DashboardParameterKindEnum">
    <xs:restriction base="xs:string" >
        <xs:enumeration value="Numeric" />
        <xs:enumeration value="String" />
        <xs:enumeration value="DateTime" />
        <xs:enumeration value="Boolean" />
    </xs:restriction>
</xs:simpleType>

```

```
<xs:simpleType name="FirstDayOfWeekEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Sunday" />
    <xs:enumeration value="Monday" />
    <xs:enumeration value="Tuesday" />
    <xs:enumeration value="Wednesday" />
    <xs:enumeration value="Thursday" />
    <xs:enumeration value="Friday" />
    <xs:enumeration value="Saturday" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="ScorecardColumnTypeEnum">
  <xs:restriction base="xs:string" >
    <xs:enumeration value="Delta Arrow" />
    <xs:enumeration value="Delta Indicator" />
    <xs:enumeration value="Delta Background" />
    <xs:enumeration value="Delta Foreground" />
    <xs:enumeration value="Progress Bar" />
  </xs:restriction>
</xs:simpleType>

</xs:schema>
```

## 7 Appendix B: Full JSON Schema

JSON schema name	Section
JSON Rowset Schema	<a href="#">7.1</a>
JSON Style Schema	<a href="#">7.2</a>
JSON Endpoints Schema	<a href="#">7.3</a>
JSON ErrorMessage Schema	<a href="#">7.4</a>

### 7.1 JSON Rowset Schema

```
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "title": "JSON Rowset Schema",
  "description": "JSON Schema for Rowset data structure",
  "type": "object",
  "required": [ "Rows", "Columns", "Name" ],
  "properties": {
    "Rows": { "$ref": "#/definitions/RowsetRowType" },
    "Columns": { "$ref": "#/definitions/RowsetColumnType" },
    "Name": {
      "description": "Name of the rowset",
      "type": "string"
    }
  }
},
"definitions": {
  "RowsetRowType": {
    "properties": {
      "Rows": {
        "description": "The data values for a row of a tabular structure",
        "type": "array",
        "items": { "type": "string" },
        "minItems": 1,
        "uniqueItems": false
      }
    }
  },
  "RowsetColumnType": {
    "properties": {
      "Columns": {
        "type": "array",
        "minItems": 1,
        "uniqueItems": true,
        "items": {
          "type": "object",
          "properties": {
            "Name": {
              "description": "The name of the column",
              "type": "string"
            }
          },
          "Type": { "$ref": "#/definitions/RowsetColumnTypesType" }
        }
      }
    }
  },
  "RowsetColumnTypesType": {
    "properties": {
      "type": { "enum": [ "Double", "Boolean", "DateTime", "String" ] }
    }
  }
}
}
```

```
    }
  }
}
```

## 7.2 JSON Style Schema

```
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "title": "JSON Style Schema",
  "description": "JSON Schema for Style data structure",
  "type": "object",
  "required": [ "Name", "Version", "Interface", "Theme" ],
  "properties": {
    "Name": {
      "description": "The name of the stylesheet",
      "type": "string"
    },
    "Version": {
      "description": "The version of the stylesheet",
      "type": "string"
    },
    "Interface": {
      "type": "object",
      "description": "Defines colors in a user interface theme",
      "$ref": "#/definitions/ColorsInterfaceType"
    },
    "Theme": {
      "type": "object",
      "description": "Defines colors in a user interface theme",
      "$ref": "#/definitions/ColorsThemeType"
    }
  },
  "definitions": {
    "ColorsInterfaceType": {
      "properties": {
        "primary": {
          "type": "string",
          "description": "Primary color for this style"
        },
        "primaryAlt": {
          "type": "string",
          "description": "Alternate primary color for this style"
        },
        "primaryAlt2": {
          "type": "string",
          "description": "Alternate primary color for this style"
        },
        "primaryAlt3": {
          "type": "string",
          "description": "Alternate primary color for this style"
        },
        "primaryAlt4": {
          "type": "string",
          "description": "Alternate primary color for this style"
        },
        "primaryContrast": {
          "type": "string",
          "description": "The contrasting color for the primary color"
        },
        "secondary": {
          "type": "string",
          "description": "Secondary color for this style"
        },
        "secondaryAlt": {
          "type": "string",
          "description": "Alternate secondary color for this style"
        }
      }
    }
  }
}
```

```

},
"secondaryAlt2": {
  "type": "string",
  "description": "Alternate secondary color for this style"
},
"secondaryAlt3": {
  "type": "string",
  "description": "Alternate secondary color for this style"
},
"secondaryContrast": {
  "type": "string",
  "description": "Contrast to secondary color for this style"
},
"neutralPrimary": {
  "type": "string",
  "description": "A non-impactful complementary color to primary color"
},
"neutralPrimaryAlt": {
  "type": "string",
  "description": "An alternate non-impactful complementary color to primary color"
},
"neutralPrimaryAlt2": {
  "type": "string",
  "description": "An alternate non-impactful complementary color to primary color"
},
"neutralPrimaryAlt3": {
  "type": "string",
  "description": "An alternate non-impactful complementary color to primary color"
},
"neutralPrimaryContrast": {
  "type": "string",
  "description": "A non-impactful contrast to the primary color"
},
"neutralSecondary": {
  "type": "string",
  "description": "A non-impactful secondary color"
},
"neutralSecondaryAlt": {
  "type": "string",
  "description": "An alternate non-impactful secondary color"
},
"neutralSecondaryAlt2": {
  "type": "string",
  "description": "An alternate non-impactful secondary color"
},
"neutralSecondaryAlt3": {
  "type": "string",
  "description": "An alternate non-impactful secondary color"
},
"neutralSecondaryContrast": {
  "type": "string",
  "description": "A non-impactful secondary contrast color"
},
"neutralTertiary": {
  "type": "string",
  "description": "A non-impactful tertiary color"
},
"neutralTertiaryAlt": {
  "type": "string",
  "description": "A non-impactful alternate tertiary color"
},
"neutralTertiaryAlt2": {
  "type": "string",
  "description": "A non-impactful alternate tertiary color"
},
"neutralTertiaryAlt3": {
  "type": "string",
  "description": "A non-impactful alternate tertiary color"
},
},

```

```

"neutralTertiaryContrast": {
  "type": "string",
  "description": "A non-impactful tertiary contrast color"
},
"danger": {
  "type": "string",
  "description": "Error notification color"
},
"success": {
  "type": "string",
  "description": "Success notification color"
},
"warning": {
  "type": "string",
  "description": "Warning notification color"
},
"info": {
  "type": "string",
  "description": "Informational notification color"
},
"dangerContrast": {
  "type": "string",
  "description": "Error notification contrast color"
},
"successContrast": {
  "type": "string",
  "description": "Success notification contrast color"
},
"warningContrast": {
  "type": "string",
  "description": "Warning notification contrast color"
},
"infoContrast": {
  "type": "string",
  "description": "Informational notification contrast color"
},
"kpiGood": {
  "type": "string",
  "description": "The good or positive KPI color"
},
"kpiBad": {
  "type": "string",
  "description": "The bad or negative KPI color"
},
"kpiNeutral": {
  "type": "string",
  "description": "The neutral KPI color"
},
"kpiNone": {
  "type": "string",
  "description": "An unspecified KPI color"
},
"kpiGoodContrast": {
  "type": "string",
  "description": "The good or positive contrast KPI color"
},
"kpiBadContrast": {
  "type": "string",
  "description": "The bad or negative contrast KPI color"
},
"kpiNeutralContrast": {
  "type": "string",
  "description": "The neutral contrast KPI color"
},
"kpiNoneContrast": {
  "type": "string",
  "description": "The contrasting unspecified KPI color"
}
}

```



```

},
"ColorsThemeType": {
  "properties": {
    "dataPoints": {
      "description": "The colors to use for each data series",
      "type": "array",
      "minItems": 12,
      "maxItems": 12,
      "items": { "type": "string" }
    },
    "good": {
      "type": "string",
      "description": "Color to indicate good/positive state"
    },
    "bad": {
      "type": "string",
      "description": "Color to indicate bad/negative state"
    },
    "neutral": {
      "type": "string",
      "description": "Color to indicate neutral state"
    },
    "none": {
      "type": "string",
      "description": "Additional unspecified color"
    },
    "background": {
      "type": "string",
      "description": "Background color"
    },
    "foreground": {
      "type": "string",
      "description": "Foreground color"
    },
    "mapBase": {
      "type": "string",
      "description": "Base map color"
    },
    "panelBackground": {
      "type": "string",
      "description": "Panel background color"
    },
    "panelForeground": {
      "type": "string",
      "description": "Panel foreground color"
    },
    "panelAccent": {
      "type": "string",
      "description": "Panel accent color"
    },
    "tableAccent": {
      "type": "string",
      "description": "Table header color"
    },
    "altBackground": {
      "type": "string",
      "description": "Alternate background color"
    },
    "altForeground": {
      "type": "string",
      "description": "Alternate foreground color"
    },
    "altMapBase": {
      "type": "string",
      "description": "Alternate map base color"
    },
    "altPanelBackground": {
      "type": "string",
      "description": "Alternate panel background color"
    }
  }
}

```

```
    },
    "altPanelForeground": {
      "type": "string",
      "description": "Alternate panel foreground color"
    },
    "altPanelAccent": {
      "type": "string",
      "description": "Alternate panel accent color"
    },
    "altTableAccent": {
      "type": "string",
      "description": "Alternate table accent color"
    }
  }
}
}
```

### 7.3 JSON Endpoints Schema

```
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "title": "JSON Endpoints Schema",
  "description": "JSON Schema for Endpoint data structure",
  "type": "object",
  "required": [ "supportedEndpoints" ],
  "properties": {
    "supportedEndpoints": {
      "type": "array",
      "items": { "type": "string" },
      "minItems": 1,
      "uniqueItems": true,
      "description": "Endpoints supported by this server version"
    },
    "discontinuedEndpoints": {
      "type": "array",
      "items": { "type": "string" },
      "minItems": 0,
      "uniqueItems": true,
      "description": "Endpoints no longer supported"
    }
  }
}
```

### 7.4 JSON ErrorMessage Schema

```
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "title": "JSON ErrorMessage Schema",
  "description": "JSON Schema for ErrorMessage data structure",
  "type": "object",
  "required": [ "DisplayMessage", "Description", "Code" ],
  "properties": {
    "DisplayMessage": {
      "type": "string",
      "description": "Message text for display"
    },
    "Description": {
      "type": "string",
      "description": "Message Description"
    },
    "Code": {
      "type": "integer",
      "description": "Error code"
    }
  }
}
```

}  
}

## 8 Appendix C: Full CSDL

```
<?xml version="1.0" encoding="utf-8"?>
<edmx:Edmx xmlns:edmx="http://docs.oasis-open.org/odata/ns/edmx" Version="4.0">
  <edmx:DataServices>
    <Schema xmlns="http://docs.oasis-open.org/odata/ns/edm" Namespace="Model">
      <ComplexType Name="Property">
        <Property Name="Name" Type="Edm.String"/>
        <Property Name="Value" Type="Edm.String"/>
      </ComplexType>
      <ComplexType Name="MobileReportManifest">
        <Property Name="Definition" Type="Model.DefinitionItem"/>
        <Property Name="Resources" Type="Collection(Model.ResourceGroup)"/>
        <Property Name="DataSets" Type="Collection(Model.DataSetItem)"/>
        <Property Name="Thumbnails" Type="Collection(Model.ThumbnailItem)"/>
      </ComplexType>
      <ComplexType Name="DefinitionItem">
        <Property Name="Id" Type="Edm.Guid" Nullable="false"/>
        <Property Name="Path" Type="Edm.String"/>
        <Property Name="Name" Type="Edm.String"/>
        <Property Name="Hash" Type="Edm.String"/>
      </ComplexType>
      <ComplexType Name="ResourceGroup">
        <Property Name="Name" Type="Edm.String"/>
        <Property Name="Type" Type="Model.MobileReportResourceGroupType"
          Nullable="false"/>
        <Property Name="Items" Type="Collection(Model.ResourceItem)"/>
      </ComplexType>
      <ComplexType Name="ResourceItem">
        <Property Name="Key" Type="Edm.String"/>
        <Property Name="Id" Type="Edm.Guid" Nullable="false"/>
        <Property Name="Path" Type="Edm.String"/>
        <Property Name="Name" Type="Edm.String"/>
        <Property Name="Hash" Type="Edm.String"/>
      </ComplexType>
      <ComplexType Name="DataSetItem">
        <Property Name="Type" Type="Model.MobileReportDataSetType"
          Nullable="false" />
        <Property Name="TimeUnit" Type="Edm.String"/>
        <Property Name="DateTimeColumn" Type="Edm.String"/>
        <Property Name="IsParameterized" Type="Edm.Boolean" Nullable="false"/>
        <Property Name="Id" Type="Edm.Guid" Nullable="false"/>
        <Property Name="Path" Type="Edm.String"/>
        <Property Name="Name" Type="Edm.String"/>
        <Property Name="Hash" Type="Edm.String"/>
      </ComplexType>
      <ComplexType Name="ThumbnailItem">
        <Property Name="Type" Type="Model.MobileReportThumbnailType"
          Nullable="false"/>
        <Property Name="Id" Type="Edm.Guid" Nullable="false"/>
        <Property Name="Path" Type="Edm.String"/>
        <Property Name="Name" Type="Edm.String"/>
        <Property Name="Hash" Type="Edm.String"/>
      </ComplexType>
      <ComplexType Name="CredentialsSuppliedByUser">
        <Property Name="DisplayText" Type="Edm.String"/>
        <Property Name="UseAsWindowsCredentials" Type="Edm.Boolean"
          Nullable="false"/>
      </ComplexType>
      <ComplexType Name="CredentialsStoredInServer">
        <Property Name="UserName" Type="Edm.String"/>
        <Property Name="Password" Type="Edm.String"/>
        <Property Name="UseAsWindowsCredentials" Type="Edm.Boolean"
          Nullable="false"/>
        <Property Name="ImpersonateAuthenticatedUser" Type="Edm.Boolean"
          Nullable="false"/>
      </ComplexType>
      <ComplexType Name="DataSetParameter">
        <Property Name="Name" Type="Edm.String"/>
      </ComplexType>
    </Schema>
  </edmx:DataServices>
</edmx:Edmx>
```

```

    <Property Name="Value" Type="Edm.String"/>
  </ComplexType>
  <ComplexType Name="DrillthroughTarget" Abstract="true">
    <Property Name="Type" Type="Model.DrillthroughTargetType"
      Nullable="false"/>
  </ComplexType>
  <ComplexType Name="KpiValues">
    <Property Name="Value" Type="Edm.String"/>
    <Property Name="Goal" Type="Edm.Double"/>
    <Property Name="Status" Type="Edm.Double"/>
    <Property Name="TrendSet" Type="Collection(Edm.Double)"/>
  </ComplexType>
  <ComplexType Name="KpiData">
    <Property Name="Value" Type="Model.KpiDataItem"/>
    <Property Name="Goal" Type="Model.KpiDataItem"/>
    <Property Name="Status" Type="Model.KpiDataItem"/>
    <Property Name="TrendSet" Type="Model.KpiDataItem"/>
  </ComplexType>
  <ComplexType Name="KpiDataItem" Abstract="true">
    <Property Name="Type" Type="Model.KpiDataItemType" Nullable="false"/>
  </ComplexType>
  <ComplexType Name="KpiSharedDataItem" BaseType="Model.KpiDataItem">
    <Property Name="Id" Type="Edm.Guid" Nullable="false"/>
    <Property Name="Path" Type="Edm.String"/>
    <Property Name="Parameters" Type="Collection(Model.DataSetParameter)"
      Nullable="false"/>
    <Property Name="Aggregation" Type="Model.KpiSharedDataItemAggregation"
      Nullable="false"/>
    <Property Name="Column" Type="Edm.String"/>
  </ComplexType>
  <ComplexType Name="KpiStaticDataItem" BaseType="Model.KpiDataItem">
    <Property Name="Value" Type="Edm.String"/>
  </ComplexType>
  <ComplexType Name="ServiceState">
    <Property Name="IsAvailable" Type="Edm.Boolean" Nullable="false"/>
    <Property Name="RestrictedFeatures" Type="Collection(Edm.String)"/>
    <Property Name="AllowedSystemActions" Type="Collection(Edm.String)"/>
  </ComplexType>
  <EnumType Name="KpiDataItemType">
    <Member Name="Static" Value="0"/>
    <Member Name="Shared" Value="1"/>
  </EnumType>
  <EnumType Name="SystemResourceType">
    <Member Name="Unknown" Value="0"/>
    <Member Name="Brand" Value="1"/>
    <Member Name="MobileReportRuntime" Value="2"/>
    <Member Name="UniversalBrand" Value="3"/>
  </EnumType>
  <EnumType Name="CatalogItemType">
    <Member Name="Unknown" Value="0"/>
    <Member Name="Folder" Value="1"/>
    <Member Name="Report" Value="2"/>
    <Member Name="DataSource" Value="3"/>
    <Member Name="DataSet" Value="4"/>
    <Member Name="Component" Value="5"/>
    <Member Name="Resource" Value="6"/>
    <Member Name="Kpi" Value="7"/>
    <Member Name="MobileReport" Value="8"/>
    <Member Name="LinkedReport" Value="9"/>
    <Member Name="ReportModel" Value="10"/>
  </EnumType>
  <EnumType Name="MobileReportDataSetType">
    <Member Name="Unknown" Value="0"/>
    <Member Name="Embedded" Value="1"/>
    <Member Name="Shared" Value="2"/>
  </EnumType>
  <EnumType Name="CredentialRetrievalType">
    <Member Name="prompt" Value="0"/>
    <Member Name="store" Value="1"/>
  </EnumType>

```

```

    <Member Name="integrated" Value="2"/>
    <Member Name="none" Value="3"/>
  </EnumType>
  <EnumType Name="MobileReportThumbnailType">
    <Member Name="Unknown" Value="0"/>
    <Member Name="Landscape" Value="1"/>
    <Member Name="Portrait" Value="2"/>
  </EnumType>
  <EnumType Name="MobileReportResourceGroupType">
    <Member Name="Unknown" Value="0"/>
    <Member Name="Style" Value="1"/>
    <Member Name="Map" Value="2"/>
  </EnumType>
  <EnumType Name="KpiValueFormat">
    <Member Name="General" Value="0"/>
    <Member Name="Abbreviated" Value="1"/>
    <Member Name="DefaultCurrency" Value="2"/>
    <Member Name="DefaultCurrencyWithDecimals" Value="3"/>
    <Member Name="AbbreviatedDefaultCurrency" Value="4"/>
    <Member Name="Percent" Value="5"/>
    <Member Name="PercentWithDecimals" Value="6"/>
  </EnumType>
  <EnumType Name="KpiVisualization">
    <Member Name="None" Value="0"/>
    <Member Name="Bar" Value="1"/>
    <Member Name="Line" Value="2"/>
    <Member Name="Step" Value="3"/>
    <Member Name="Area" Value="4"/>
  </EnumType>
  <EnumType Name="DrillthroughTargetType">
    <Member Name="Url" Value="0"/>
    <Member Name="CatalogItem" Value="1"/>
  </EnumType>
  <EnumType Name="KpiDataItemType">
    <Member Name="Static" Value="0"/>
    <Member Name="Shared" Value="1"/>
  </EnumType>
  <EntityType Name="CatalogItem" Abstract="true">
    <Key>
      <PropertyRef Name="Id"/>
    </Key>
    <Property Name="Id" Type="Edm.Guid" Nullable="false"/>
    <Property Name="Name" Type="Edm.String"/>
    <Property Name="Description" Type="Edm.String"/>
    <Property Name="Path" Type="Edm.String"/>
    <Property Name="Type" Type="Model.CatalogItemType" Nullable="false"/>
    <Property Name="Hidden" Type="Edm.Boolean" Nullable="false"/>
    <Property Name="Size" Type="Edm.Int64" Nullable="false"/>
    <Property Name="ModifiedBy" Type="Edm.String"/>
    <Property Name="ModifiedDate" Type="Edm.DateTimeOffset" Nullable="false"/>
    <Property Name="CreatedBy" Type="Edm.String"/>
    <Property Name="CreatedDate" Type="Edm.DateTimeOffset" Nullable="false"/>
    <Property Name="ParentFolderId" Type="Edm.Guid"/>
    <Property Name="ContentType" Type="Edm.String"/>
    <Property Name="Content" Type="Edm.Binary"/>
    <Property Name="Properties" Type="Collection(Model.Property)"/>
    <Property Name="IsFavorite" Type="Edm.Boolean" Nullable="false"/>
    <NavigationProperty Name="ParentFolder" Type="Model.Folder"/>
  </EntityType>
  <EntityType Name="Folder" BaseType="Model.CatalogItem">
    <NavigationProperty Name="CatalogItems"
      Type="Collection(Model.CatalogItem)"/>
  </EntityType>
  <EntityType Name="MobileReport" BaseType="Model.CatalogItem">
    <Property Name="AllowCaching" Type="Edm.Boolean" Nullable="false"/>
    <Property Name="Manifest" Type="Model.MobileReportManifest"/>
  </EntityType>
  <EntityType Name="Resource" BaseType="Model.CatalogItem"/>
  <EntityType Name="SystemResource">

```

```

    <Key>
      <PropertyRef Name="Id"/>
    </Key>
    <Property Name="Id" Type="Edm.Guid" Nullable="false"/>
    <Property Name="Type" Type="Model.SystemResourceType"
      Nullable="false"/>
    <Property Name="TypeName" Type="Edm.String"/>
    <Property Name="Name" Type="Edm.String"/>
    <Property Name="Version" Type="Edm.String"/>
    <Property Name="IsEmbedded" Type="Edm.Boolean" Nullable="false"/>
    <NavigationProperty Name="PackageContent" Type="Model.CatalogItem"/>
    <NavigationProperty Name="Items"
      Type="Collection (Model.SystemResourceItem)"/>
  </EntityType>
  <EntityType Name="SystemResourceItem">
    <Key>
      <PropertyRef Name="Id"/>
    </Key>
    <Property Name="Id" Type="Edm.Guid" Nullable="false"/>
    <Property Name="Key" Type="Edm.String"/>
    <NavigationProperty Name="ItemContent" Type="Model.CatalogItem"/>
  </EntityType>
  <EntityType Name="User">
    <Key>
      <PropertyRef Name="Id"/>
    </Key>
    <Property Name="Id" Type="Edm.Guid" Nullable="false"/>
    <Property Name="Username" Type="Edm.String"/>
    <Property Name="DisplayName" Type="Edm.String"/>
    <Property Name="MyReportsPath" Type="Edm.String"/>
  </EntityType>
  <EntityType Name="Endpoints">
    <Property Name="supportedEndpoints"
      Type="Collection (Edm.String) " />
    <Property Name="discontinuedEndpoints"
      Type="Collection (Edm.String) " />
  </EntityType>
  <EntityType Name="ErrorMessage">
    <Property Name="DisplayMessage" Type="Edm.String" />
    <Property Name="Description" Type="Edm.String" />
    <Property Name="Code" Type="Edm.Int64" />
  </EntityType>
  <EntityType Name="Kpi" BaseType="Model.CatalogItem">
    <Property Name="ValueFormat" Type="Model.KpiValueFormat"
      Nullable="false"/>
    <Property Name="Visualization" Type="Model.KpiVisualization"
      Nullable="false"/>
    <Property Name="DrillthroughTarget" Type="Model.DrillthroughTarget"/>
    <Property Name="Currency" Type="Edm.String"/>
    <Property Name="Values" Type="Model.KpiValues"/>
    <Property Name="Data" Type="Model.KpiData"/>
  </EntityType>
  <Function Name="CatalogItemByPath">
    <Parameter Name="path" Type="Edm.String" Unicode="false"/>
    <ReturnType Type="Model.CatalogItem"/>
  </Function>
  <Function Name="SafeGetSystemResourceContent">
    <Parameter Name="type" Type="Edm.String" Unicode="false"/>
    <Parameter Name="key" Type="Edm.String" Unicode="false"/>
    <ReturnType Type="Edm.Binary"/>
  </Function>
  <Action Name="AddToFavorites" IsBound="true">
    <Parameter Name="bindingParameter" Type="Model.CatalogItem"/>
    <ReturnType Type="Edm.Boolean" Nullable="false"/>
  </Action>
  <Action Name="RemoveFromFavorites" IsBound="true">
    <Parameter Name="bindingParameter" Type="Model.CatalogItem"/>
    <ReturnType Type="Edm.Boolean" Nullable="false"/>
  </Action>

```

```

<Action Name="GetData" IsBound="true">
  <Parameter Name="bindingParameter" Type="Model.DataSet"/>
  <Parameter Name="Parameters" Type="Collection(Model.DataSetParameter)"/>
  <Parameter Name="maxRows" Type="Edm.Int32"/>
  <ReturnType Type="RowsetEntity" />
</Action>
<Function Name="FavoriteItems">
  <ReturnType Type="Collection(Model.CatalogItem)"/>
</Function>

<EntityContainer Name="Container">
  <EntitySet Name="Subscriptions" EntityType="Model.Subscription">
    <NavigationPropertyBinding Path="DataSource" Target="CatalogItems"/>
  </EntitySet>
  <EntitySet Name="CacheRefreshPlan" EntityType="Model.CacheRefreshPlan"/>
  <EntitySet Name="CatalogItems" EntityType="Model.CatalogItem">
    <NavigationPropertyBinding Path="ParentFolder" Target="CatalogItems"/>
    <NavigationPropertyBinding Path="Model.Report/Subscriptions"
      Target="Subscriptions"/>
    <NavigationPropertyBinding Path="Model.Report/CacheRefreshPlans"
      Target="CacheRefreshPlan"/>
    <NavigationPropertyBinding Path="Model.Report/DataSources"
      Target="CatalogItems"/>
    <NavigationPropertyBinding Path="Model.Report/SharedDataSets"
      Target="CatalogItems"/>
    <NavigationPropertyBinding Path="Model.Report/ParameterDefinitions"
      Target="ReportParameters"/>
    <NavigationPropertyBinding Path="Model.LinkedReport/Subscriptions"
      Target="Subscriptions"/>
    <NavigationPropertyBinding Path="Model.LinkedReport/CacheRefreshPlans"
      Target="CacheRefreshPlan"/>
    <NavigationPropertyBinding Path="Model.LinkedReport/ParameterDefinitions"
      Target="ReportParameters"/>
    <NavigationPropertyBinding Path="Model.DataSet/DataSources"
      Target="CatalogItems"/>
    <NavigationPropertyBinding Path="Model.DataSet/CacheRefreshPlans"
      Target="CacheRefreshPlan"/>
    <NavigationPropertyBinding Path="Model.DataSet/ParameterDefinitions"
      Target="ReportParameters"/>
    <NavigationPropertyBinding Path="Model.DataSource/Subscriptions"
      Target="Subscriptions"/>
    <NavigationPropertyBinding Path="Model.Folder/CatalogItems"
      Target="CatalogItems"/>
  </EntitySet>
  <EntitySet Name="ReportParameters" EntityType="Model.ReportParameter"/>
  <EntitySet Name="Schedules" EntityType="Model.Schedule"/>
  <EntitySet Name="SystemResources" EntityType="Model.SystemResource">
    <NavigationPropertyBinding Path="PackageContent" Target="CatalogItems"/>
    <NavigationPropertyBinding Path="Items" Target="SystemResourceItems"/>
  </EntitySet>
  <EntitySet Name="SystemResourceItems" EntityType="Model.SystemResourceItem">
    <NavigationPropertyBinding Path="ItemContent" Target="CatalogItems"/>
  </EntitySet>
  <EntitySet Name="Notifications" EntityType="Model.Notification"/>
  <Singleton Name="ReportServerInfo" Type="Model.ReportServerInfo"/>
  <Singleton Name="Me" Type="Model.User"/>
  <Singleton Name="PowerBIIntegration" Type="Model.PowerBIUserInfo"/>
  <FunctionImport Name="CatalogItemByPath" Function="Model.CatalogItemByPath"
    EntitySet="CatalogItems" IncludeInServiceDocument="true"/>
  <FunctionImport Name="FavoriteItems" Function="Model.FavoriteItems"
    EntitySet="CatalogItems" IncludeInServiceDocument="true"/>
  <FunctionImport Name="RestrictedFeatures"
    Function="Model.RestrictedFeatures"
    IncludeInServiceDocument="true"/>
  <FunctionImport Name="ServiceState" Function="Model.ServiceState"
    IncludeInServiceDocument="true"/>
  <FunctionImport Name="AllowedActions" Function="Model.AllowedActions"
    IncludeInServiceDocument="true"/>
  <FunctionImport Name="SafeGetSystemResourceContent"

```



```
        Function="Model.SafeGetSystemResourceContent"
        IncludeInServiceDocument="true"/>
    </EntityContainer>
</Schema>
<Schema xmlns="http://docs.oasis-open.org/odata/ns/edm" Namespace="PowerBIIntegration">
    <Action Name="Logout" IsBound="true">
        <Parameter Name="bindingParameter" Type="Model.PowerBIUserInfo"/>
    </Action>
    <Function Name="IsEnabled" IsBound="true">
        <Parameter Name="bindingParameter" Type="Model.PowerBIUserInfo"/>
        <ReturnType Type="Edm.Boolean" Nullable="false"/>
    </Function>
</Schema>
</edmx:DataServices>
</edmx:Edmx>
```

## 9 Appendix D: 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.

- Microsoft SQL Server 2016

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.

[<1> Section 2.1](#): In Microsoft SQL Server Reporting Services, authentication is configured in the report server configuration file. See [\[MSDN-RSCONFIG\]](#).

[<2> Section 2.2.4.1.9](#): Microsoft implementations use information in the **ServiceState** complex type to determine which features are supported by the installed server edition.

[<3> Section 2.2.6.1.6](#): In Microsoft implementations, this value is set to 0.

## 10 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
<a href="#">2.2.4.1.5</a> DataSetParameter	7673453 : Clarified descriptions of Name and Value properties.	Y	Content update.
<a href="#">2.2.4.1.9</a> ServiceState	7673464 : Removed TimeZone and UserHasFavorites properties.	Y	Content update.
<a href="#">2.2.4.2.2.1</a> GalleryElementType Complex Type	7673417 : Clarified type definitions for TimeLevels, TimeRangePresets, and DefaultTimeRangePreset per TDIs 7673417, 7673421, and 7673430.	Y	Content update.
<a href="#">2.2.4.2.3.2</a> SchemaItemType Complex Type	7673372 : Clarified description of SchemaItemType complex type.	Y	Content update.
<a href="#">2.2.4.2.3.3.1</a> GridViewTextColumnDefinitionType Complex Type	7673377 : Clarified description of GridViewTextColumnDefinitionType complex type.	Y	Content update.
<a href="#">2.2.4.2.3.3.2</a> GridViewGaugeColumnDefinitionType	7673381 : Clarified description of GridViewGaugeColumnDefinitionType complex type.	Y	Content update.
<a href="#">2.2.4.2.3.3.3</a> GridViewChartColumnDefinitionType	7673385 : Clarified description of GridViewChartColumnDefinitionType complex type.	Y	Content update.
<a href="#">2.2.4.2.3.3.4</a> ScoreCardColumnDefinitionType Complex Type	7673393 : Clarified description of ScoreCardColumnDefinitionType complex type.	Y	Content update.
<a href="#">2.2.5.2.22</a> GalleryElementVisualizationEnum	7673434 : Added section.	Y	New content added.
<a href="#">2.2.6.2.1</a> DatazenDashboard	7673396 : Clarified descriptions of Currency, FiscalMonthOffset, and FiscalDayOffset per VSTS 7673396, 7673398, and 7673401.	Y	Content update.
<a href="#">2.2.6.3.1</a> Rowset	7673322 : Clarified name of data structure.	Y	Content update.
<a href="#">6</a> Appendix A: Full XML Schema	7673417 : Clarified type definitions of TimeLevels, TimeRangePresets, and DefaultTimeRangePreset per TDIs 7673417, 7673421, and 7673430.	Y	Content update.
<a href="#">8</a> Appendix C: Full CSDL	7673462 : Clarified names of Endpoints and ErrorMessage data structures.	Y	Content update.

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