[MS-MAVA]:
Microsoft Office SharePoint Server (MOSS) Analytics View Access Protocol Specification

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Revision Summary

Date	Revision History	Revision Class	Comments
07/13/2009	0.1	Major	Initial Availability
08/28/2009	0.2	Editorial	Revised and edited the technical content
11/06/2009	0.3	Editorial	Revised and edited the technical content
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1 Introduction

This document specifies the Microsoft Office SharePoint Server (MOSS) Analytics View Access Protocol. This protocol enables a protocol client to retrieve analytical data about web-traffic, searches and inventory of various entities in the **farm** from a store on the protocol server.

1.1 Glossary

The following terms are defined in [MS-GLOS]:

Coordinated Universal Time (UTC)
globally unique identifier (GUID)

The following terms are defined in [MS-OFCGLOS]:

best bet
content type
farm
list template
query text
search scope
site
site collection
site template
URL (Uniform Resource Locator)
Web application

The following terms are specific to this document:

table-valued function: A SQL function that returns a table data type and can be used where table or view expressions are permitted in Transact-SQL queries.

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

1.2 References

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. We will assist you in finding the relevant information. Please check the archive site, http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624, as an additional source.

[MSDN-TSQL-Ref] Microsoft Corporation, "Transact-SQL Reference", http://msdn.microsoft.com/en-us/library/ms189826(SQL.90).aspx

[MS-SQL] Microsoft Corporation, "SQL Server 2000 Architecture and XML/Internet Support", Volume 1 of Microsoft SQL Server 2000 Reference Library, Microsoft Press, 2001, ISBN 0-7356-1280-3, http://msdn.microsoft.com/en-us/library/dd631854(v=SQL.10).aspx

[MS-TDS] Microsoft Corporation, "Tabular Data Stream Protocol Specification", February 2008.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, http://www.ietf.org/rfc/rfc2119.txt

1.2.2 Informative References

[MS-GLOS] Microsoft Corporation, "Windows Protocols Master Glossary", March 2007.

[MS-OFCGLOS] Microsoft Corporation, "Microsoft Office Master Glossary", June 2008.

1.3 Protocol Overview (Synopsis)

This protocol enables a protocol client to retrieve analytical data from a store on the protocol server. There are three categories of analytical data that the protocol can retrieve. These three categories are:

- **Traffic data**: This data is about web-traffic. Examples are top visited web-pages and trends about web-page visits, top visitors and trends about number of unique visitors.
- **Search reports:** This data is about search queries and search results. Examples are top queries, failed queries and number of queries.
- **Inventory reports:** This data is about utilization of various entities such as storage, libraries and templates.

For example, the protocol enables a client to retrieve data about the traffic volume per day for a particular site, the top pages visited for that site and the top visitors for that particular site. If hierarchical relationships between the various entities are present in the store, then such analytical data can also be retrieved for various entities at various levels in the farm, such as **site (2)**, **site collection** and **Web application (1)**.

The protocol defines a set of **table-valued functions** that enable retrieving such data from the server.

1.4 Relationship to Other Protocols

This protocol communicates with the database server using T-SQL. The communication of T-SQL to TDS, TCP and IP is an industry standard.

The following diagram shows the transport stack for this protocol and its relationship to other protocols:

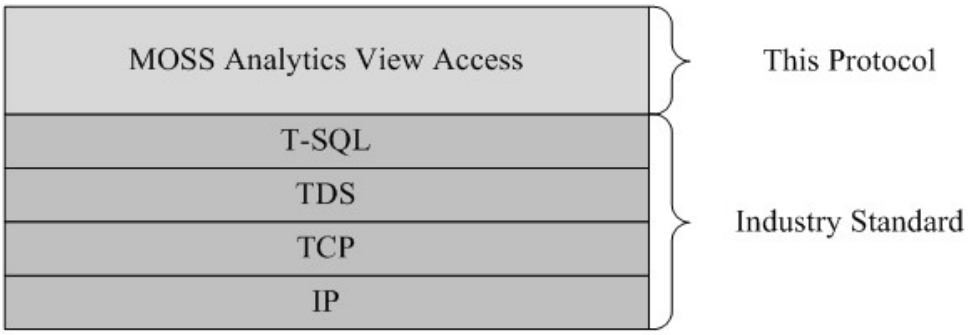

Figure 1: This protocol in relation to other protocols

1.5 Prerequisites/Preconditions

The operations described by this protocol operate between a protocol client and a protocol server. The client is expected to have the location and connection information for the required databases on the protocol server.

This protocol requires that the protocol client has appropriate permissions to call the table-valued functions in the required databases on the protocol server.

1.6 Applicability Statement

This protocol is intended for use by protocol clients and protocol servers that are both connected by high-bandwidth, low latency network connections.

1.7 Versioning and Capability Negotiation

Security and Authentication Methods: This protocol supports the SSPI and SQL Authentication with the Protocol Server role specified in [MS-TDS].

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

2.1 Transport

[MS-TDS] specifies the transport protocol used to call the table-valued functions.

2.2 Common Data Types

2.2.1 Simple Data Types and Enumerations

The following table lists the user-defined types specified in this protocol:

Type Name	Description	Equivalent Type
QueryStringDataType	This type is used to specify search query text.	nvarchar (1024)
AssetIdDataType	This type is used to specify a **URL**.	nvarchar (2083)
AssetTitleDataType	This type is used to specify a URL's title.	nvarchar (255)
SiteInventoryDimensionDataType	This type is used to specify the name of a dimension. See section 2.2.5.4 for valid dimension names.	nvarchar (255)
UserDepartmentDataType	This type is used to specify the name of a user department.	nvarchar (400)
UserTitleDataType	This type is used to specify the name of a user title.	nvarchar (400)
BrowserNameDataType	This type is used to specify the name of a browser.	nvarchar (128)
OriginDataType	This type is used to specify the URL of a referrer, as described in section 2.2.5.21.	nvarchar (2083)
UserIdDataType	This type is used to specify a user name.	nvarchar (400)

2.2.2 Bit Fields and Flag Structures

No common bit field or flag structures are defined in this protocol.

2.2.3 Binary Structures

No common binary structures are defined in this protocol.

2.2.4 Result Sets

No result sets are defined in this protocol.

2.2.5 Tables and Views

The following are the table-valued functions defined by this protocol.

2.2.5.1 fn_WA_GetBestBetSuggestions

This table-valued function MUST return a table that represents all the queries and URL **best bets** recommended by the protocol for the specified entity.

CREATE FUNCTION fn_WA_GetBestBetSuggestions(@AggregationId)

```
QueryText QueryStringDataType NOT NULL,
PageId AssetIdDataType NOT NULL,
PageTitle AssetTitleDataType NULL,
Status varchar(10) NULL,
CreationDateTime datetime NOT NULL,
ActionDateTime datetime NULL,
```

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be **GUID**.

QueryText: The query text associated with a best bet recommendation.

PageId: The URL that is a recommended best bet for **QueryText**.

PageTitle: The title of the page that's associated with the URL.

Status: The last action taken for this best bet recommendation. If action is taken it MUST be one of the strings "Accepted" or "Rejected". If no action is taken then it can be NULL.

CreationDateTime: The date and time when the best bet was created. MUST be in **UTC**.

ActionDateTime: The date and time when the action represented by **Status** was taken. MUST be in UTC.

2.2.5.2 fn_WA_GetBestBetUsage

This table-valued function MUST return a table that represents best bet queries, query frequency, best bet URL, the URL's click frequency and percentage of clicks of the best bet URL versus overall clicks for the specified entity.

CREATE FUNCTION fn_WA_GetBestBetUsage(@StartDateId, @EndDateId, @AggregationId)

```
QueryText QueryStringDataType NOT NULL,
PageId AssetIdDataType NOT NULL,
PageTitle AssetTitleDataType NULL,
QueryFrequency bigint NOT NULL,
ClickFrequency bigint NOT NULL,
ClickPercentage real NULL,
Status varchar(10) NULL,
ActionDateTime datetime NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

QueryText: The query text associated with a best bet recommendation.

PageId: The URL that is a recommended best bet for **QueryText**.

PageTitle: The title of the page that's associated with the URL.

QueryFrequency: The number of times the **QueryText** was issued for the **AggregationId** in the given date range specified by **StartDateId** and **EndDateId**.

ClickFrequency: The number of times the **PageId** was clicked when the **QueryText** was issued for the **AggregationId** in the given date range specified by **StartDateId** and **EndDateId**.

ClickPercentage: The percentage of clicks of the **PageId** vs. other URLs clicked from the search results for the given **QueryText**.

Status: The last action taken for this best bet recommendation. MUST be one of the strings "Accepted" or "Rejected".

ActionDateTime: The date and time when the action represented by **Status** was taken. MUST be in UTC.

2.2.5.3 fn_WA_GetClickthroughChanges

This table-valued function MUST return a table that represents the pages that were most visited along with their previous rank, current frequency and previous frequency for the specified entity.

CREATE FUNCTION fn_WA_GetClickthroughChanges(@CurrentStartDateId, @PreviousStartDateId, @Duration, @AggregationId, @IncludeSubSites, @ContentType, @UserTitle, @UserDepartment)

```
PageId AssetIdDataType NULL,
PageTitle AssetTitleDataType NULL,
CurrentFrequency bigint NOT NULL,
PreviousFrequency bigint NOT NULL,
PreviousRank bigint NULL,
```

@CurrentStartDateId: The start date of the current date range. The type of **CurrentStartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@PreviousStartDateId: The start date of the previous date range. The type of **PreviousStartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@Duration: The duration of the current date range and previous date range in number of days. The type of **Duration** MUST be an integer.

@AggregationId: Identifier of entity for which data is being requested. The MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When its 1 it means data includes the entity and the entire hierarchy under the entity and 0 means it includes data for the entity only.

@ContentType: A string value that specifies that the data MUST be scoped to the specified **content type**. MUST be NULL when **EventType** = "Search"

@UserTitle: A string value that specifies that the data MUST be scoped to the specified user title.

@UserDepartment: A string value that specifies that the data MUST be scoped to the specified user department.

PageId: The URL of the visited page.

PageTitle: The title of the visited page.

CurrentFrequency: The number of times the **PageId** was visited in the current date range.

PreviousFrequency: The number of times the **PageId** was visited in the past date range.

PreviousRank: The previous rank of **PageId** where rank specifies the position of **PageId** in a descending ordered list of most visited **PageId**s.

2.2.5.4 fn_WA_GetInventory

This table-valued function MUST return a table that represents the **site templates**, product versions, languages and **list templates** present in the specified entity.

CREATE FUNCTION fn_WA_GetInventory(@AggregationId, @IncludeSubSites, @MetricType, @DimensionType)

```
DimensionName SiteInventoryDimensionDataType NULL,
Frequency bigint NOT NULL,
Percentage real NULL,
```

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@MetricType: An integer value that specifies the type of metric being requested. The value MUST be one of the following:

- **MetricType** = **1**: Data is being requested for a site (2).
- **MetricType** = **2**: Data is being requested for a site collection.
- **MetricType** = **5**: Data is being requested for maximum storage.

@DimensionType: An integer value that specifies the type of inventory being requested. The value MUST be one of the following:

- **DimensionType** = **0**: Data is being requested for templates.
- **DimensionType** = **1**: Data is being requested for product versions.
- **DimensionType** = **2**: Data is being requested for languages.

DimensionName: The name of the dimension. The value MUST be a name of a template, the value of a product version or the name of a language, depending on the requested **DimensionType**.

Frequency: The number of sites (2) as specified by **MetricType**, of the dimension present in the entity.

Percentage: The percentage of the dimension specified by **DimensionName** compared to all dimensions.

2.2.5.5 fn_WA_GetInventoryPerDay

This table-valued function MUST return a table that represents the number of sites (2), site collections and storage size per day present in the specified entity.

CREATE FUNCTION fn_WA_GetInventoryPerDay(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites)

```
DateId int NOT NULL,
Sites int NOT NULL,
Webs bigint NOT NULL,
StorageSize bigint NOT NULL,
MaxStorage bigint NOT NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

DateId: An integer representing the date for which data is being provided. **DateId** MUST have been calculated using the following formula:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

Sites: The number of site collections present in the entity on the **DateId**.

Webs: The number of sites (2) present in the entity on the **DateId**.

StorageSize: The storage size of the entity on the **DateId**.

MaxStorage: The maximum storage size of the entity on the **DateId**.

2.2.5.6 fn_WA_GetLast24HourClickthroughChanges

This table-valued function MUST return a table that represents the pages that were most visited in the last 24 hours along with their previous rank, current frequency and previous frequency for the specified entity.

CREATE FUNCTION fn_WA_GetLast24HourClickthroughChanges(@AggregationId, @IncludeSubSites, @ContentType, @UserTitle, @UserDepartment)

```
PageId AssetIdDataType NULL,
PageTitle int NULL,
CurrentFrequency bigint NOT NULL,
PreviousFrequency bigint NOT NULL,
PreviousRank bigint NULL,
```

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@ContentType: A string value that specifies that the data MUST be scoped to the specified content type. MUST be NULL when **EventType** = "Search"

@UserTitle: A string value that specifies that the data MUST be scoped to the specified user title.

@UserDepartment: A string value that specifies that the data MUST be scoped to the specified user department.

PageId: The URL of the visited page.

PageTitle: The title of the visited page.

CurrentFrequency: The number of times the **PageId** was visited in the last 24 hours.

PreviousFrequency: The number of times the **PageId** was visited in the 24 hours prior to the last 24 hours.

PreviousRank: The previous rank of **PageId** where rank specifies the position of **PageId** in a descending ordered list of most visited **PageId**s.

2.2.5.7 fn_WA_GetLast24HourSearchQueryChanges

This table-valued function MUST return a table that represents the search queries most issued in the last 24 hours along with their previous rank, current frequency and previous frequency for the specified entity.

CREATE FUNCTION fn_WA_GetLast24HourSearchQueryChanges(@AggregationId, @IncludeSubSites, @ScopeName, @UserTitle, @UserDepartment)

```
QueryText QueryStringDataType NULL,
CurrentFrequency bigint NOT NULL,
PreviousFrequency bigint NOT NULL,
PreviousRank bigint NULL,
```

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@ScopeName: A string value that specifies the name of the **search scope** specified for the query text.

@UserTitle: A string value that specifies that the data MUST be scoped to the specified user title.

@UserDepartment: A string value that specifies that the data MUST be scoped to the specified user department.

QueryText: The **query text** associated with the search query.

CurrentFrequency: The number of times the **QueryText** was issued in the last 24 hours.

PreviousFrequency: The number of times the **QueryText** was issued in the 24 hours prior to the last 24 hours.

PreviousRank: The previous rank of the **QueryText** where rank specifies the position of the **QueryText** in a descending ordered list of most issued queries.

2.2.5.8 fn_WA_GetLast24HourUserDepartments

This table-valued function MUST return a table that represents the user departments of the users with page view or search events in the last 24 hours for the specified entity.

CREATE FUNCTION fn_WA_GetLast24HourUserDepartments(@AggregationId, @IncludeSubSites)

```
  UserDepartment UserDepartmentDataType NULL,
```

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

UserDepartment: A string value that specifies the user department.

2.2.5.9 fn_WA_GetLast24HourUserTitles

This table-valued function MUST return a table that represents the user titles of the users with page view or search events in the last 24 hours for the specified entity.

CREATE FUNCTION fn_WA_GetLast24HourUserTitles(@AggregationId, @IncludeSubSites)

```
  UserTitle UserTitleDataType NULL,
```

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

UserTitle: A string value that specifies the user title.

2.2.5.10 fn_WA_GetNumberOfClickthroughs

This table-valued function MUST return a table that represents the number of page views for the specified entity grouped per day or grouped by URL.

CREATE FUNCTION fn_WA_GetNumberOfClickthroughs(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites, @ContentType, @UserTitle, @UserDepartment, @GroupByDate, @GroupByPageId)

```
DateId int NULL,
PageId AssetIdDataType NULL,
PageTitle AssetTitleDataType NULL,
Frequency bigint NOT NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@ContentType: A string value that specifies that the data MUST be scoped to the specified content type. MUST be NULL when **EventType** = "Search".

@UserTitle: A string value that specifies that the data MUST be scoped to the specified user title.

@UserDepartment: A string value that specifies that the data MUST be scoped to the specified user department.

@GroupByDate: A boolean value that specifies if the data is to be grouped by date. MUST be either 0 or 1. If both **GroupByDate** and **GroupByPageId** are set to 1, each row is the total frequency of the page per **DateId** per **PageId**.

@GroupByPageId: A boolean value that specifies if the data is to be grouped by **PageId**. MUST be either 0 or 1. If both **GroupByDate** and **GroupByPageId** is set to 1 each row is the total frequency of the page per **DateId** per **PageId**.

DateId: An integer representing the date for which data is being provided. **DateId** MUST have been calculated using the following formula:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively. If **GroupByDate** is 0, **DateId** MUST be NULL.

PageId: The URL of the visited page. If **GroupByPageId** is 0, **PageId** MUST be NULL.

PageTitle: The title of the visited page. If **GroupByPageId** is 0, **PageTitle** MUST be NULL

Frequency: The number of page views in the given date range specified by **StartDateId** and **EndDateId**. If **GroupByDate** is 1, **Frequency** MUST be grouped by **DateId**. If **GroupByPageId** is 1, **Frequency** must be grouped by **PageId**.

2.2.5.11 fn_WA_GetNumberOfFailedSearchQueriesPerDay

This table-valued function MUST return a table that represents the number of search queries per day for the specified entity that didn't give satisfactory results.

CREATE FUNCTION fn_WA_GetNumberOfFailedSearchQueriesPerDay(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites)

```
DateId int NOT NULL,
TotalFrequency bigint NOT NULL,
AbandonedFrequency bigint NOT NULL,
ZeroResultFrequency bigint NOT NULL,
AbandonedPercentage real NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

DateId: An integer representing the date for which data is being provided. **DateId** MUST have been calculated using the following formula:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

TotalFrequency: The total number of search queries issued on **DateId**.

AbandonedFrequency: The number of search queries for which the user did not click any search results on **DateId**.

ZeroResultFrequency: The number of search queries which did not return any search results on **DateId**.

AbandonedPercentage: The ratio of **AbandonedFrequency** to **TotalFrequency** expressed as a percentage.

```
AbandonedPercentage = (AbandonedFrequency/TotalFrequency) * 100
```

2.2.5.12 fn_WA_GetNumberOfSearchQueries

This table-valued function MUST return a table that represents the number of search queries for the specified entity grouped per day or grouped by query text.

CREATE FUNCTION fn_WA_GetNumberOfSearchQueries(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites, @ScopeName, @UserTitle, @UserDepartment, @GroupByDate, @GroupByQueryText)

```
DateId int NULL,
QueryText QueryStringDataType NULL,
Frequency bigint NOT NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@ScopeName: A string value that specifies the name of the search scope specified for the query text.

@UserTitle: A string value that specifies that the data MUST be scoped to the specified user title.

@UserDepartment: A string value that specifies that the data MUST be scoped to the specified user department.

@GroupByDate: A boolean value that specifies if the data is to be grouped by date. MUST be either 0 or 1. If both **GroupByDate** and **GroupByQueryText** are set to 1, each row is the total frequency of the page per **DateId** per **QueryText**.

@GroupByQueryText: A Boolean value that specifies if the data is to be grouped by **QueryText**. MUST be either 0 or 1. If both **GroupByDate** and **GroupByQueryText** is set to 1 each row is the total frequency of the page per **DateId** per **QueryText**.

DateId: An integer representing the date for which data is being provided. **DateId** MUST have been calculated using the following formula:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively. If **GroupByDate** is 0, **DateId** MUST be NULL.

QueryText: The query text associated with the search. If **GroupByQueryText** is 0, **QueryText** MUST be NULL.

Frequency: The number of search queries issued in the given date range specified by **StartDateId** and **EndDateId**. If **GroupByDate** is 1, **Frequency** MUST be grouped by **DateId**. If **GroupByQueryText** is 1, **Frequency** MUST be grouped by **QueryText**.

2.2.5.13 fn_WA_GetNumberOfSearchQueriesPerDay

This table-valued function MUST return a table that represents the number of search queries per day for the specified entity within the specified date range.

CREATE FUNCTION fn_WA_GetNumberOfSearchQueriesPerDay(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites, @ScopeName)

```
DateId int NOT NULL,
Frequency bigint NOT NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@ScopeName: A string value that specifies the name of the search scope specified for the query text.

DateId: An integer representing the date for which data is being provided. **DateId** MUST have been calculated using the following formula:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

Frequency: The total number of search queries issued on **DateId**.

2.2.5.14 fn_WA_GetNumberOfSearchQueriesPerQueryTextHash

CREATE FUNCTION fn_WA_GetNumberOfSearchQueriesPerQueryTextHash(@StartDateId, @Duration, @AggregationId, @IncludeSubSites, @ScopeName, @UserTitle, @UserDepartment)

```
QueryTextHash StringHashIdDataType NOT NULL,
Frequency bigint NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@Duration: The duration of the current date range and previous date range in number of days. The type of **value** MUST be an integer.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@ScopeName: A string value that specifies the name of the search scope specified for the query text. MUST be NULL when **EventType** = "PageView"

@UserTitle: A string value that specifies that the data MUST be scoped to the specified user title.

@UserDepartment: A string value that specifies that the data MUST be scoped to the specified user department.

QueryTextHash: An MD5 Hash of the query text that was issued.

Frequency: The number of times the query text was issued.

2.2.5.15 fn_WA_GetSearchQueryChanges

This table-valued function MUST return a table that represents the search queries most issued along with their previous rank, current frequency and previous frequency for the specified entity.

CREATE FUNCTION fn_WA_GetSearchQueryChanges(@CurrentStartDateId, @PreviousStartDateId, @Duration, @AggregationId, @IncludeSubSites, @ScopeName, @UserTitle, @UserDepartment)

```
QueryText QueryStringDataType NOT NULL,
CurrentFrequency bigint NOT NULL,
PreviousFrequency bigint NOT NULL,
FrequencyChanges bigint NULL,
PreviousRank bigint NULL,
```

@CurrentStartDateId: The start date of the current date range. The type of **CurrentStartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@PreviousStartDateId: The start date of the previous date range. The type of **PreviousStartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@Duration: The duration of the current date range and previous date range in number of days. The type of **value** MUST be an integer.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@ScopeName: A string value that specifies the name of the search scope specified for the query text.

@UserTitle: A string value that specifies that the data MUST be scoped to the specified user title.

@UserDepartment: A string value that specifies that the data MUST be scoped to the specified user department.

QueryText: The query text associated with the search query.

CurrentFrequency: The number of times the **QueryText** was issued in the current date range.

PreviousFrequency: The number of times the **QueryText** was issued in the previous date range.

FrequencyChanges: Change in frequency value from previous date range to current date range.

PreviousRank: The previous rank of the **QueryText** where rank specifies the position of the **QueryText** in a descending ordered list of most issued queries.

2.2.5.16 fn_WA_GetSummary

This table-valued function MUST return a table that summarizes Traffic, Search and Inventory data for the specified entity.

CREATE FUNCTION fn_WA_GetSummary(@CurrentStartDateId, @PreviousStartDateId, @Duration, @AggregationId, @IncludeSubSites)

```
PropertyName varchar(60) NOT NULL,
CurrentValue bigint NULL,
PreviousValue bigint NULL,
PercentageChange real NULL,
```

@CurrentStartDateId: The start date of the current date range. The type of **CurrentStartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@PreviousStartDateId: The start date of the previous date range. The type of **PreviousStartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@Duration: The duration of the current date range and previous date range in number of days. The type of **Duration** MUST be an integer.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

PropertyName: A string value that MUST be one of the following:

PropertyName	Meaning
PageViews	Number of page views
UniqueVisitors	Number of unique visitors
Referrers	Number of referrers
Searches	Number of search queries
Sites	Number of site collections
Webs	Number of sites (2)
StorageSize	Storage size in bytes
InventoryDateId	Date when inventory was taken for **Sites**, **Webs** and **StorageSize**. Date MUST be in integer format, and MUST have been calculated as the following: `value = (((year*100) + month)*100 + day)`

CurrentValue: Value of the **PropertyName** for the current date range.

PreviousValue: Value of the **PropertyName** for the prior date range.

PercentageChange: Change in value from previous date range to current date range, expressed as a percentage.

2.2.5.17 fn_WA_GetTopBrowsers

This table-valued function MUST return a table that represents the web browsers most used to browse the specified entity within the specified date range.

CREATE FUNCTION fn_WA_GetTopBrowsers(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites)

```
BrowserName BrowserNameDataType NOT NULL,
Frequency bigint NOT NULL,
Percentage real NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

BrowserName: The name of the web browser.

Frequency: The number of times **BrowserName** was used in the specified date range.

Percentage: Ratio of **Frequency** to sum of frequencies for all web browsers used in the specified date range, expressed as a percentage.

2.2.5.18 fn_WA_GetTopDestinations

This table-valued function MUST return a table that represents the most referred URLs that are outside the specified entity and are referred by the specified entity.

CREATE FUNCTION fn_WA_GetTopDestinations(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites)

```
PageId AssetIdDataType NULL,
Frequency bigint NOT NULL,
Percentage real NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

PageId: The URL of the referred page.

Frequency: The number of times **PageId** was referred by **AggregationId** in the specified date range.

Percentage: The ratio of **Frequency** to sum of frequencies of all referrals from the specified **AggregationId** in the specified date range, expressed as a percentage.

2.2.5.19 fn_WA_GetTopFailedSearchQueries

This table-valued function MUST return a table that represents the most issued search queries for the specified entity in the specified date range that didn't give satisfactory results.

CREATE FUNCTION fn_WA_GetTopFailedSearchQueries(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites, @ScopeName)

```
QueryText QueryStringDataType NULL,
TotalFrequency bigint NOT NULL,
AbandonedFrequency bigint NOT NULL,
ZeroResultFrequency bigint NOT NULL,
AbandonedPercentage real NULL,
ZeroResultPercentage real NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1.

@ScopeName: A string value that specifies the name of the search scope specified for the query text.

QueryText: The query text associated with the search query.

TotalFrequency: The number of times **QueryText** was issued in the specified date range.

AbandonedFrequency: The number of times **QueryText** was issued in the specified date range and the user did not click any search results.

ZeroResultFrequency: The number of times **QueryText** was issued in the specified date range and the query did not return any search results.

AbandonedPercentage: The ratio of AbandonedFrequency to TotalFrequency expressed as a percentage.

```
AbandonedPercentage = (AbandonedFrequency/TotalFrequency) * 100
```

ZeroResultPercentage: The ratio of ZeroResultFrequency to TotalFrequency expressed as a percentage.

AbandonedPercentage = (ZeroResultFrequency /TotalFrequency) * 100

2.2.5.20 fn_WA_GetTopPages

This table-valued function MUST return a table that represents the pages that were most visited for the specified entity in the specified date range.

CREATE FUNCTION fn_WA_GetTopPages(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites)

```
PageId AssetIdDataType NULL,
PageTitle AssetTitleDataType NULL,
Frequency bigint NOT NULL,
Percentage real NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

PageId: The URL of the visited page.

PageTitle: The title of the visited page.

Frequency: The number of times **PageId** was visited in the specified date range.

Percentage: The ratio of **Frequency** to sum of frequencies for all **PageId** visits in the specified date range, expressed as a percentage.

2.2.5.21 fn_WA_GetTopReferrers

This table-valued function MUST return a table that represents the URLs that are outside the specified entity and most referred the specified entity.

CREATE FUNCTION fn_WA_GetTopReferrers(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites)

```
ReferrerId OriginDataType NULL,
Frequency bigint NOT NULL,
Percentage real NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

ReferrerId: The URL of the referring page.

Frequency: The number of times **ReferrerId** referred **AggregationId** in the specified date range.

Percentage: The ratio of **Frequency** to sum of frequencies of all referrals to the specified **AggregationId** in the specified date range, expressed as a percentage.

2.2.5.22 fn_WA_GetTopSearchQueries

This table-valued function MUST return a table that represents the search queries most issued for the specified entity in the specified date range.

CREATE FUNCTION fn_WA_GetTopSearchQueries(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites, @ScopeName)

```
QueryText QueryStringDataType NOT NULL,
Frequency bigint NOT NULL,
Percentage real NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@ScopeName: A string value that specifies the name of the search scope specified for the query text.

QueryText: The query text associated with the query.

Frequency: The number of times **QueryText** was issued in the specified date range.

Percentage: The ratio of **Frequency** to sum of frequencies for all search queries in the specified date range, expressed as a percentage.

2.2.5.23 fn_WA_GetTopVisitors

This table-valued function MUST return a table that represents the visitors who most visited the specified entity in the specified date range.

CREATE FUNCTION fn_WA_GetTopVisitors(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites)

```
UserName UserIdDataType NOT NULL,
Frequency bigint NOT NULL,
Percentage real NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

UserName: A string value that specifies the user name.

Frequency: The number of times **UserName** visited **AggregationId** in the specified date range.

Percentage: The ratio of **Frequency** to sum of frequencies for all visits to **AggregationId** in the specified date range, expressed as a percentage.

2.2.5.24 fn_WA_GetTotalTrafficVolume

This table-valued function MUST return a table that represents the number of page views, unique visitors, referrers, destinations or search queries as specified by **MetricType** for the specified entity within the specified date range.

CREATE FUNCTION fn_WA_GetTotalTrafficVolume(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites, @MetricType)

```
Frequency bigint NOT NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@MetricType: An integer value that MUST be one of the following:

MetricType	Meaning
1	Number of page views
2	Number of unique visitors
3	Number of URLs that referred this entity
4	Number of URLs that were referred by this entity
5	Number of search queries

Frequency: Value of **MetricType** for the specified date range.

2.2.5.25 fn_WA_GetTrafficVolumePerDay

This table-valued function MUST return a table that represents the number of page views, unique visitors, referrers, destinations or search queries as specified by **MetricType** for the specified entity grouped per day within the specified date range.

CREATE FUNCTION fn_WA_GetTrafficVolumePerDay(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites, @MetricType)

```
DateId int NOT NULL,
Frequency bigint NOT NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@MetricType: An integer value that MUST be one of the following:

MetricType	Meaning
1	Number of page views
2	Number of unique visitors
3	Number of URLs that referred this entity
4	Number of URLs that were referred by this entity
5	Number of search queries

DateId: An integer representing the date for which data is being provided. **DateId** MUST have been calculated using the following formula:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

Frequency: Value of **MetricType** for the specific **DateId**.

2.2.5.26 fn_WA_GetUserDepartments

This table-valued function MUST return a table that represents the user departments of the users with page view or search events for the specified entity in the specified date range.

CREATE FUNCTION fn_WA_GetUserDepartments(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites)

```
UserDepartment UserDepartmentDataType NOT NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

UserDepartment: A string value that specifies the user department.

2.2.5.27 fn_WA_GetUserTitles

This table-valued function MUST return a table that represents the user titles of the users with page view or search events for the specified entity in the specified date range.

CREATE FUNCTION fn_WA_GetUserTitles(@StartDateId, @EndDateId, @AggregationId, @IncludeSubSites)

```
UserTitle UserTitleDataType NOT NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@EndDateId: The end date of the data being requested. The type of **EndDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites:

UserTitle: A string value that specifies the user title.

2.2.5.28 fn_WA_GetLast24HourNumberOfClickthroughs

CREATE FUNCTION fn_WA_GetLast24HourNumberOfClickthroughs(@AggregationId, @IncludeSubSites, @ContentType, @UserTitle, @UserDepartment)

```
PageId AssetIdDataType NULL,
PageTitle int NULL,
Frequency bigint NULL,
```

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@ContentType: A string value that specifies that the data MUST be scoped to the specified content type. MUST be NULL when **EventType** = "Search"

@UserTitle: A string value that specifies that the data MUST be scoped to the specified user title.

@UserDepartment: A string value that specifies that the data MUST be scoped to the specified user department.

PageId: The URL of the visited page.

PageTitle: The title of the visited page.

Frequency: The number of times the **PageId** was visited in the date range.

2.2.5.29 fn_WA_GetLast24HourNumberOfSearchQueries

CREATE FUNCTION fn_WA_GetLast24HourNumberOfSearchQueries(@AggregationId, @IncludeSubSites, @ScopeName, @UserTitle, @UserDepartment)

```
QueryText QueryStringDataType NULL,
Frequency bigint NULL,
```

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@ScopeName: A string value that specifies the name of the search scope specified for the query text. MUST be NULL when **EventType** = "PageView"

@UserTitle: A string value that specifies that the data MUST be scoped to the specified user title.

@UserDepartment: A string value that specifies that the data MUST be scoped to the specified user department.

QueryText: The query text associated with the search query.

Frequency: The number of times the **QueryText** was issued in the date range.

2.2.5.30 fn_WA_GetNumberOfClickthroughsPerPageIdHash

CREATE FUNCTION fn_WA_GetNumberOfClickthroughsPerPageIdHash(@StartDateId, @Duration, @AggregationId, @IncludeSubSites, @ContentType, @UserTitle, @UserDepartment)

```
ClickedAssetIdHash StringHashIdDataType NULL,
Frequency bigint NOT NULL,
```

@StartDateId: The start date of the data being requested. The type of **StartDateId** MUST be an integer. The value MUST be calculated as the following:

```
value = (((year*100) + month)*100 + day)
```

where year, month and day are the 4-digit year, 2-digit month and 2-digit day of the date respectively.

@Duration: The duration of the current date range and previous date range in number of days. The type of **value** MUST be an integer..

@AggregationId: Identifier of entity for which data is being requested. The type of **AggregationId** MUST be GUID.

@IncludeSubSites: A Boolean value that specifies if the data being requested SHOULD include the entire hierarchy under the entity specified by **AggregationId**. The value MUST be either 0 or 1. When it is 1 it means data includes the entity and the entire hierarchy under the entity and when it is 0 it means it includes data for the entity only.

@ContentType: A string value that specifies that the data MUST be scoped to the specified content type. MUST be NULL when **EventType** = "Search"

@UserTitle: A string value that specifies that the data MUST be scoped to the specified user title.

@UserDepartment: A string value that specifies that the data MUST be scoped to the specified user department.

ClickedAssetIdHash: The MD5 Hash of the identifier of the asset that was clicked.

Frequency: The number of times the asset was clicked in the date range

2.2.6 XML Structures

No XML structures are defined in this protocol.

2.2.6.1 Namespaces

This specification does not define any common XML Schema Namespaces definitions.

2.2.6.2 Simple Types

This specification does not define any common XML Schema simple types definitions.

2.2.6.3 Complex Types

This specification does not define any common XML Schema complex types definitions.

2.2.6.4 Elements

This specification does not define any common XML Schema elements definitions.

2.2.6.5 Attributes

This specification does not define any common XML Schema attributes definitions.

2.2.6.6 Groups

This specification does not define any common XML Schema groups definitions.

2.2.6.7 Attribute Groups

This specification does not define any common XML Schema attribute groups definitions.

3 Protocol Details

3.1 Server Details

The database server responds to table-valued function calls. Each table-valued function call returns a table. The protocol never initiates communication with other endpoints of the protocol.

3.1.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

The server stores data about page view events, search events and utilization of various entities such as storage, site, templates in the farm. The server aggregates such data and makes them available via table-valued functions. The table-valued functions specified in this protocol are stateless and can be called in any order.

3.1.2 Timers

None.

3.1.3 Initialization

Before using this protocol, a connection that uses the underlying protocol layers specified in section 1.4, Relationship to Other Protocols, MUST be established as specified in [MS-TDS].

3.1.4 Higher-Layer Triggered Events

None.

3.1.5 Message Processing Events and Sequencing Rules

None.

3.1.6 Timer Events

None.

3.1.7 Other Local Events

None.

3.2 Client Details

None.

3.2.1 Abstract Data Model

None.

3.2.2 Timers

None.

3.2.3 Initialization

None.

3.2.4 Higher-Layer Triggered Events

None.

3.2.5 Message Processing Events and Sequencing Rules

None.

3.2.6 Timer Events

None.

3.2.7 Other Local Events

None.

4 Protocol Examples

The following examples contain a sample interaction between the protocol client and the protocol server.

4.1 Obtaining Information About Web Traffic Volume

The protocol client MAY request information about the web traffic volume in the last 30 days. The following shows the request that MAY be sent to the protocol server:

```
SELECT * FROM [Web Analytics Service Application_Reporting_DB_c65079d6-c620-438f-9270-
1360b54871a6].[dbo].[fn_WA_GetTrafficVolumePerDay] (
   20090510,
   20090608,
   '19dda115-1550-3943-729a-df3828df9352',
   1,
   1)
```

The protocol server MAY return the following table:

DateId	Frequency
20090519	2
20090520	9
20090525	5
20090529	1
20090530	1
20090601	5
20090602	24
20090603	13
20090604	1
20090605	6

4.2 Obtaining Information About the Top Pages Visited

The protocol client MAY request information about the top pages visited in the last 30 days. The following shows the request that MAY be sent to the protocol server:

```
SELECT * FROM [Web Analytics Service Application_Reporting_DB_c65079d6-c620-438f-9270-
1360b54871a6].[dbo].[fn_WA_GetTopPages] (
   20090510,
   20090608,
   '19dda115-1550-3943-729a-df3828df9352',
   1,
   'PageView')
```

The protocol server MAY return the following table:

PageId	PageTitle	Frequency	Percentage
http://contoso.com/searchcenter/pages/default.aspx	Search Center	1	1.492537
http://contoso.com/reports/pages/default.aspx	Contoso	1	1.492537
http://contoso.com/pages/newpage0601-1356.aspx	My page	1	1.492537
http://contoso.com/docs/default.aspx	Main page	1	1.492537
http://contoso.com/_layouts/chart/webui/controls/chartpreviewimage.aspx	Charts	47	70.14925
http://contoso.com/pages/default.aspx	Default	11	16.41791
http://contoso.com/searchcenter/pages/results.aspx	results	5	7.462687

4.3 Obtaining Information About the Top Visitors

The protocol client MAY request information about the top visitors in the last 30 days. The following shows the request that MAY be sent to the protocol server:

```
SELECT * FROM [Web Analytics Service Application_Reporting_DB_c65079d6-c620-438f-9270-
1360b54871a6].[dbo].[fn_WA_GetTopVisitors] (
   20090510,
   20090608,
   '19dda115-1550-3943-729a-df3828df9352',
   1)
```

The protocol server MAY return the following table:

UserName	Frequency	Percentage
Joe_user	5	7.462687
John_user	54	80.59702
Jack_user	8	11.9403

5 Security

5.1 Security Considerations for Implementers

Interactions with SQL are susceptible to tampering and other forms of security risks. Implementers are advised to sanitize input parameters for table-valued functions prior to invoking the table-valued function.

There are no additional security considerations for implementers. Security assumptions of this protocol are documented in Versioning and Capability Negotiation..

5.2 Index of Security Parameters

None.

6 Appendix A: 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® FAST™ Search Server 2010
- Microsoft® SharePoint® Server 2010

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.

7 Change Tracking

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

8 Index

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