[MS-QSSWS]:
Search Query Shared Services 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
02/19/2010	1.0	Minor	Updated the technical content
03/31/2010	1.01	Editorial	Revised and edited the technical content
04/30/2010	1.02	Editorial	Revised and edited the technical content
06/07/2010	1.03	Editorial	Revised and edited the technical content
06/29/2010	1.04	Editorial	Changed language and formatting in the technical content.
07/23/2010	1.05	Minor	Clarified the meaning of the technical content.
09/27/2010	1.05	No change	No changes to the meaning, language, or formatting of the technical content.
11/15/2010	1.05	No change	No changes to the meaning, language, or formatting of the technical content.
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Table of Contents

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1 Introduction

This document specifies the Search Query Shared Services Protocol, which enables the protocol client to issue queries against a search service application.

1.1 Glossary

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

context
Coordinated Universal Time (UTC)
globally unique identifier (GUID)
Hypertext Transfer Protocol (HTTP)
Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)
language code identifier (LCID)
Transmission Control Protocol (TCP)
Windows security descriptor

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

alert subscription
application server
ascending order
best bet
clickthrough
contextual search scope
cookie
descending order
duplicate result removal
empty GUID
empty string
endpoint
extracted definition
federated location
front-end Web server
full-text index catalog
high confidence results
host name
inflectional form
item
keyword
keyword query
keyword synonym
local search scope
managed property
metadata index
noise word
object model
partition
pluggable security authentication
query result
query text
ranking model
refinement bin
refinement token

refinement value
refiner
result provider
search alert
search application
search provider
search query
search scope
search scope consumer
search scope rule
search security descriptor
search service application
search setting context
security descriptor
security trimming
shared search scope
site
site collection
site identifier
SOAP (Simple Object Access Protocol)
SOAP action
SOAP body
SOAP fault
stemming
tenant
token
URI (Uniform Resource Identifier)
URL (Uniform Resource Locator)
visual best bet
Web Part
WSDL (Web Services Description Language)
WSDL operation
XML namespace
XML namespace prefix
XML Schema

The following terms are specific to this document:

alternate access mapping: A mapping of URLs to Web applications. Incoming alternate access mappings are used to provide multiple URL entry points for the same set of content. Outgoing alternate access mappings are used to ensure that content is rendered in the correct URL context.

duplicate: A search result that is identified as having identical or near identical content.

query logging: The process of recording information about user searches, such as search terms and time of access.

search query log: A record of information about user searches, such as search terms and time of access.

verbose query monitoring: The process of tracking and recording information about the time that is spent by a protocol server to process each search query.

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.

[MS-DSDIFFGRAM] Microsoft Corporation, "SharePoint Web Services: DataSet DiffGram Structure Specification", June 2008.

[MS-FSAS] Microsoft Corporation, "Administration Services Protocol Specification", November 2009.

[MS-FSDQE] Microsoft Corporation, "Distributed Query Execution Protocol Specification", November 2009.

[MS-FSFQL] Microsoft Corporation, "Fast Query Language Structure", November 2009.

[MS-FSQR] Microsoft Corporation, "Query and Result Protocol Specification", November 2009.

[MS-FSRS] Microsoft Corporation, "Resource Store Protocol Specification", November 2009.

[MS-SADMWS] Microsoft Corporation, "Search Site Administration Web Service Protocol Specification", July 2009.

[MS-SEARCH] Microsoft Corporation, "Search Protocol Specification", June 2008.

[MS-SPSTWS] Microsoft Corporation, "SharePoint Security Token Service Web Service Protocol Specification", July 2009.

[MS-SQLPADM] Microsoft Corporation, "SQL Administration Protocol Specification", June 2008.

[MS-SQLPADM2] Microsoft Corporation, "SQL Administration Version 2 Protocol Specification", July 2009.

[RFC1738] Berners-Lee, T., Masinter, L., and McCahill, M., "Uniform Resource Locators (URL)", RFC 1738, December 1994, http://www.ietf.org/rfc/rfc1738.txt

[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

[RFC2396] Berners-Lee, T., Fielding, R., and Masinter, L., "Uniform Resource Identifiers (URI): Generic Syntax", RFC 2396, August 1998, http://www.ietf.org/rfc/rfc2396.txt

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

[RFC3066] Alvestrand, H., "Tags for the Identification of Language", RFC 3066, January 2001, http://www.ietf.org/rfc/rfc3066.txt

[SOAP1.1] Box, D., Ehnebuske, D., Kakivaya, G., et al., "Simple Object Access Protocol (SOAP) 1.1", May 2000, http://www.w3.org/TR/2000/NOTE-SOAP-20000508/

[SOAP1.2/1] Gudgin, M., Hadley, M., Mendelsohn, N., Moreau, J., and Nielsen, H.F., "SOAP Version 1.2 Part 1: Messaging Framework", W3C Recommendation, June 2003, http://www.w3.org/TR/2003/REC-soap12-part1-20030624

[SOAP1.2/2] Gudgin, M., Hadley, M., Mendelsohn, N., Moreau, J., and Nielsen, H.F., "SOAP Version 1.2 Part 2: Adjuncts", W3C Recommendation, June 2003, http://www.w3.org/TR/2003/REC-soap12-part2-20030624

[WSDL] Christensen, E., Curbera, F., Meredith, G., and Weerawarana, S., "Web Services Description Language (WSDL) 1.1", W3C Note, March 2001, http://www.w3.org/TR/2001/NOTE-wsdl-20010315

[XMLNS] World Wide Web Consortium, "Namespaces in XML 1.0 (Third Edition)", W3C Recommendation 8 December 2009, http://www.w3.org/TR/REC-xml-names/

[XMLSCHEMA1] Thompson, H.S., Ed., Beech, D., Ed., Maloney, M., Ed., and Mendelsohn, N., Ed., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/

[XMLSCHEMA2] Biron, P.V., Ed. and Malhotra, A., Ed., "XML Schema Part 2: Datatypes", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/

1.2.2   Informative References

[MS-FSO] Microsoft Corporation, "FAST Search System Overview", November 2009.

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

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

[MS-SPTWS] Microsoft Corporation, "Service Platform Topology Web Service Protocol Specification", July 2009.

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

1.3   Protocol Overview (Synopsis)

This protocol allows a protocol client to issue **search queries** against a protocol server hosting a **search service application**.

Typical scenarios for using this protocol include:

- Protocol client issues a search query to the protocol server, and the protocol server responds with **query results**

- Protocol client issues a search query to the protocol server, and the protocol server responds with query suggestions

- Protocol client submits the search query and clicked query results to the protocol server for logging

- Protocol client notifies the protocol server of errors encountered on the protocol client and timing of protocol client processing stages, the protocol server records these errors and time intervals for logging

Two distinct roles are served by this protocol:

- Sharepoint Server search query role: This role handles the search query requests for enterprise query server.<1>

- FAST search query role: This role handles the search query request for advanced query server.<2>

1.4 Relationship to Other Protocols

This protocol uses the **SOAP** message protocol for formatting request and response messages, as described in [SOAP1.1], [SOAP1.2/1] and [SOAP1.2/2]. It transmits those messages by using **HTTP**, as described in [RFC2616], or **HTTPS**, as described in [RFC2818].

The following diagram shows the underlying messaging and transport stack used by the protocol:
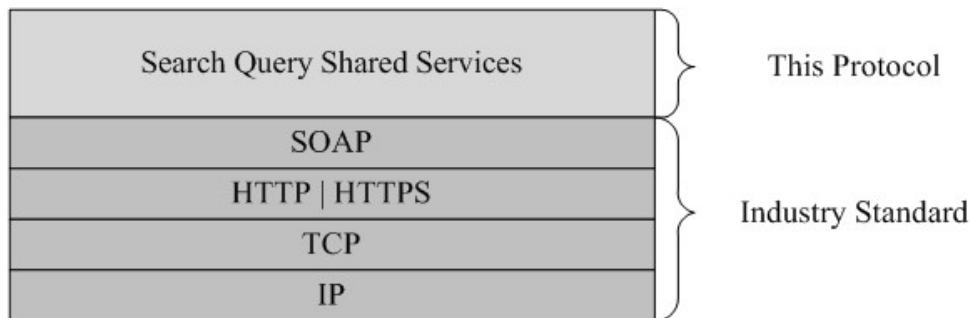
Figure 1: This protocol in relation to other protocols

1.5 Prerequisites/Preconditions

This protocol operates against a protocol server that exposes one or more **endpoint (4) URIs** that are known by protocol clients. The endpoint (4) URI of the protocol server and the transport that is used by the protocol server are either known by the protocol client or obtained by using the discovery mechanism that is described in [MS-SPTWS].

The protocol client obtains the requisite ApplicationClassId and ApplicationVersion values and the endpoint (4) URI of the protocol server that provides the discovery mechanism, as described in [MS-SPTWS], by means that are independent of either protocol.

This protocol requires the protocol client to have appropriate permission to call the methods on the protocol server.

The protocol client implements the token-based security mechanisms that are required by the protocol server and related security protocols, as described in [MS-SPSTWS].

1.6 Applicability Statement

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

This protocol was designed to query search service applications on an **application server** from a **front-end Web server**. This protocol was designed for returning results sets containing less than or equal to 10,000 rows.

1.7 Versioning and Capability Negotiation

This document covers versioning issues in the following areas:

- **Supported Transports**: This protocol can be implemented by using transports that support sending SOAP messages, as described in section 2.1.

- **Protocol Versions**: This protocol is not versioned.

Capability Negotiation: This protocol does not support version negotiation.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

In the following sections, the schema definition might be less restrictive than the processing rules imposed by the protocol. The **WSDL** in this specification matches the WSDL that shipped with the product and provides a base description of the schema. The text that introduces the WSDL specifies additional restrictions that reflect protocol behavior. For example, the schema definition might allow for an element to be **empty**, **null**, or **not present** but the behavior of the protocol as specified restricts the same elements to being **non-empty**, **present**, and **not null**.

2.1 Transport

Protocol servers MUST support SOAP over HTTP, HTTPS, or **TCP**.

All protocol messages MUST be transported by using HTTP or TCP bindings at the transport level.

Protocol messages MUST be formatted as specified in either [SOAP1.1] section 4 or [SOAP1.2/1] section 5. Protocol server faults MUST be returned by using HTTP status codes, as specified in [RFC2616] section 10, or **SOAP faults**, as specified in [SOAP1.1] section 4.4 or [SOAP1.2/1] section 5.4.

If the HTTPS transport is used, a server certificate MUST be deployed.

This protocol MAY transmit an additional SOAP header, the **ServiceContext** header, as specified in [MS-SPSTWS].

This protocol does not define any means for activating a protocol server or protocol client. The protocol server MUST be configured and begin listening in an implementation-specific way. In addition, the protocol client MUST know the format and transport that is used by the server, for example, the SOAP format over an HTTP transport.

2.2 Common Message Syntax

This section contains common definitions that are used by this protocol. The syntax of the definitions uses **XML Schema**, as specified in [XMLSCHEMA1] and [XMLSCHEMA2], and WSDL, as specified in [WSDL].

2.2.1 Namespaces

This specification defines and references various **XML namespaces** using the mechanisms specified in [XMLNS]. Although this specification associates a specific **XML namespace prefix** for 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
wsu	http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd	
tns3	http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query	
xsd	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1] [XMLSCHEMA2]

Prefix	Namespace URI	Reference
tns2	http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08	
ser	http://schemas.microsoft.com/2003/10/Serialization/	
wsa10	http://www.w3.org/2005/08/addressing	
tns	http://tempuri.org/	
wsap	http://schemas.xmlsoap.org/ws/2004/08/addressing/policy	
xs	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA 1] [XMLSCHEMA 2]
msc	http://schemas.microsoft.com/ws/2005/12/wsdl/contract	
wsam	http://www.w3.org/2007/05/addressing/metadata	
tns5	http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Administration	
soap	http://schemas.xmlsoap.org/wsdl/soap/	[SOAP1.1]
soap12	http://schemas.xmlsoap.org/wsdl/soap12/	[SOAP1.2/1] [SOAP1.2/2]
soapenc	http://schemas.xmlsoap.org/soap/encoding/	
wsa	http://schemas.xmlsoap.org/ws/2004/08/addressing	
wsaw	http://www.w3.org/2006/05/addressing/wsdl	
tns1	http://schemas.microsoft.com/2003/10/Serialization/	
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]
tns7	http://schemas.datacontract.org/2004/07/System.Data	
wsx	http://schemas.xmlsoap.org/ws/2004/09/mex	
tns6	http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administration	
tns8	http://tempuri.org/Imports	
tns4	http://schemas.microsoft.com/2003/10/Serialization/Arrays	
wsp	http://www.w3.org/ns/ws-policy	

2.2.2 Messages

2.2.3 Elements

2.2.4 Complex Types

2.2.4.1 SearchServiceApplicationFault (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administration)

The **SearchServiceApplicationFault** type represents the error detail of a SOAP fault generated by an operation.

```
<xs:complexType name="SearchServiceApplicationFault">
  <xs:sequence>
    <xs:element minOccurs="0" name="FaultType"
xmlns:q1="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q1:SearchServiceApplicationFaultType"/>
    <xs:element minOccurs="0" name="Message" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

FaultType: The specific kind of error specified by the **SearchServiceApplicationFault**. MUST be of type **SearchServiceApplicationFaultType**, as specified by section 2.2.5.9.

Message: The error message associated with the error detail given by the **SearchServiceApplicationFault**.

2.2.4.2 PagingCookie (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The contents of this complex type are specific to the implementation of the protocol server. For more details on the usage of this complex type, see **QueryProperties.PagingCookie** as specified in section 2.2.4.12

```
<xs:complexType name="PagingCookie">
  <xs:sequence>
    <xs:any minOccurs="0" maxOccurs="unbounded" namespace="##local" processContents="skip"/>
  </xs:sequence>
  <xs:attribute ref="ser:FactoryType"/>
</xs:complexType>
```

ser:FactoryType: This specifies a factory class that can deserialize the type. The factory class must be part of the known types collection of the DataContractSerializer instance being used. For more information about known types, see Data Contract Known Types.

2.2.4.3 ArrayOfanyType (from namespace http://schemas.microsoft.com/2003/10/Serialization/Arrays)

The **ArrayOfanyType** represents an array of arbitrary object values.

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

```
   <xs:sequence>
     <xs:element minOccurs="0" maxOccurs="unbounded" name="anyType" nillable="true"
   type="xs:anyType"/>
   </xs:sequence>
 </xs:complexType>
```

anyType: Specifies an element of any arbitrary object type. The meaning of the element and whether the element's value is limited to a certain range depend on the context of usage.

2.2.4.4 ArrayOfstring (from namespace http://schemas.microsoft.com/2003/10/Serialization/Arrays)

The **ArrayOfstring** type represents an array of arbitrary string values.

```
 <xs:complexType name="ArrayOfstring">
   <xs:sequence>
     <xs:element minOccurs="0" maxOccurs="unbounded" name="string" nillable="true"
   type="xs:string"/>
   </xs:sequence>
 </xs:complexType>
```

string: A single string value.

2.2.4.5 AlertInfo (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **AlertInfo** complex type contains information about a **search alert**.

```
 <xs:complexType name="AlertInfo">
   <xs:sequence>
     <xs:element minOccurs="0" name="ChangeType"
   xmlns:q15="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
   type="q15:AlertChangeType"/>
     <xs:element minOccurs="0" name="LastUpdateTime" type="xs:dateTime"/>
   </xs:sequence>
 </xs:complexType>
```

ChangeType: Specifies the type of changes for which a search alert MUST be generated. MUST be a **AlertChangeType** data type as specified in Section 2.2.5.1.

LastUpdateTime: Specifies the date and time, in **Coordinated Universal Time (UTC)** format, when the search alert was last generated.

2.2.4.6 DataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

This object defines a common set of properties that are used by the different types of **DataBuffer** objects as specified in abstract data model section 3.1.1.6.

```
 <xs:complexType name="DataBuffer">
   <xs:sequence>
     <xs:element minOccurs="0" name="ApplicationId" type="ser:guid"/>
     <xs:element minOccurs="0" name="EventTime" type="xs:dateTime"/>
```

```
        <xs:element minOccurs="0" name="MachineName" nillable="true" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
```

ApplicationId: The unique identifier of the search service application.

EventTime: The date and time, in Coordinated Universal Time (UTC) format, at which the event occurred.

MachineName: The name of the computer on which the event occurred.

2.2.4.7   DateRefinementInterval (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **DateRefinementInterval** complex type contains information about a **refinement bin** for a **refiner** of type DateTime. The protocol server MUST use this as a refinement bin if returning **refinement values** for a refiner where this is specified.

```
<xs:complexType name="DateRefinementInterval">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:RefinementInterval">
      <xs:sequence>
        <xs:element minOccurs="0" name="LowerDate" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="UpperDate" type="xs:dateTime"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

LowerDate: The lower bound of this refinement bin. Only dates later than or equal to this date can be part of this refinement bin.

UpperDate: The upper bound of this refinement bin. Only dates before or equal to this date can be part of this refinement bin.

2.2.4.8   FullTextSqlQueryProperties (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **FullTextSqlQueryProperties** complex type contains information about a full-text Structured Query Language (SQL) search query. The **FullTextSqlQueryProperties** extends the **QueryProperties** data type as specified in section 2.2.4.12. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

```
<xs:complexType name="FullTextSqlQueryProperties">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:QueryProperties">
      <xs:sequence/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.9 HighlightedString (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **HighlightedString** type represents a particular highlighted string within a text.

```
<xs:complexType name="HighlightedString">
  <xs:sequence>
    <xs:element minOccurs="0" name="HighlightCount" type="xs:int"/>
    <xs:element minOccurs="0" name="Value" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

HighlightCount: Specifies the number of occurrence of search terms that were highlighted. The value MUST greater than or equal to zero.

Value: The string that was highlighted.

2.2.4.10 NumericRefinementInterval (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **NumericRefinementInterval** complex type contains information about a refinement bin for a numeric refiner. The protocol server MUST use this as a refinement bin if returning refinement values for a refiner where this is specified.

```
<xs:complexType name="NumericRefinementInterval">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:RefinementInterval">
      <xs:sequence>
        <xs:element minOccurs="0" name="LowerNum" type="xs:long"/>
        <xs:element minOccurs="0" name="UpperNum" type="xs:long"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

LowerNum: The lower bound of this refinement bin. Only numbers larger than or equal to this value MUST be part of this refinement bin.

UpperNum: The upper bound of this refinement bin. Only numbers smaller than or equal to this value MUST be part of this refinement bin.

2.2.4.11 QueryPersonalizationData (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

This type contains a unique identifier for the current user who is executing a search query.

```
<xs:complexType name="QueryPersonalizationData">
  <xs:sequence>
    <xs:element minOccurs="0" name="UserId" type="ser:guid"/>
  </xs:sequence>
</xs:complexType>
```

UserId: Specifies a **GUID** that identifies the user profile of the current user.

2.2.4.12 QueryProperties (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **QueryProperties** complex type contains information common to all types of search queries. The **QueryProperties** data type is extended by **KeywordQueryProperties** data type as specified in section 3.1.4.7.3.1 and **FullTextSqlQueryProperties** data type as specified in section 2.2.4.8.

```xml
<xs:complexType name="QueryProperties">
  <xs:sequence>
    <xs:element minOccurs="0" name="AlertInfo" nillable="true" type="tns:AlertInfo"/>
    <xs:element minOccurs="0" name="AuthenticationType"
xmlns:q7="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
type="q7:QueryAuthenticationType"/>
    <xs:element minOccurs="0" name="CorrelationId" type="ser:guid"/>
    <xs:element minOccurs="0" name="EnableNicknames" type="xs:boolean"/>
    <xs:element minOccurs="0" name="EnablePhonetic" type="xs:boolean"/>
    <xs:element minOccurs="0" name="EnableStemming" type="xs:boolean"/>
    <xs:element minOccurs="0" name="HighlightedSentenceCount" type="xs:int"/>
    <xs:element minOccurs="0" name="Hint"
xmlns:q8="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
type="q8:QueryHint"/>
    <xs:element minOccurs="0" name="HitHighlightedProperties" nillable="true"
xmlns:q9="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
type="q9:ArrayOfanyType"/>
    <xs:element minOccurs="0" name="IgnoreAllNoiseQuery" type="xs:boolean"/>
    <xs:element minOccurs="0" name="KeywordInclusion"
xmlns:q10="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
type="q10:KeywordInclusion"/>
    <xs:element minOccurs="0" name="Locale" type="xs:int"/>
    <xs:element minOccurs="0" name="MergeWithDefaultPartition" type="xs:boolean"/>
    <xs:element minOccurs="0" name="PagingCookie" nillable="true"
xmlns:q11="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
type="q11:PagingCookie"/>
    <xs:element minOccurs="0" name="PartitionId" type="ser:guid"/>
    <xs:element minOccurs="0" name="PersonalizationData" nillable="true"
type="tns:QueryPersonalizationData"/>
    <xs:element minOccurs="0" name="QueryText" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="RankingModelId" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ResultTypes"
xmlns:q12="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
type="q12:ResultType"/>
    <xs:element minOccurs="0" name="ResultsProvider"
xmlns:q13="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
type="q13:SearchProvider"/>
    <xs:element minOccurs="0" name="RowLimit" type="xs:int"/>
    <xs:element minOccurs="0" name="RowsPerPage" type="xs:int"/>
    <xs:element minOccurs="0" name="Sid" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="SiteId" type="ser:guid"/>
    <xs:element minOccurs="0" name="StartRow" type="xs:int"/>
    <xs:element minOccurs="0" name="SummaryLength" type="xs:int"/>
    <xs:element minOccurs="0" name="TimeZoneID" type="xs:int"/>
    <xs:element minOccurs="0" name="Timeout" type="xs:int"/>
    <xs:element minOccurs="0" name="TotalRowsExactMinimum" type="xs:int"/>
    <xs:element minOccurs="0" name="TrimDuplicates" type="xs:boolean"/>
    <xs:element minOccurs="0" name="UrlZone"
xmlns:q14="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Administration"
type="q14:SPUrlZone"/>
  </xs:sequence>
</xs:complexType>
```

AlertInfo: Specifies information about a search alert. MUST be an **AlertInfo** data type as specified in section 2.2.4.5. If the **ResultsProvider** element of **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

AuthenticationType: Specifies type of search **security descriptor** that MUST be used for **security trimming**. MUST be a **QueryAuthenticationType** as specified in Section 2.2.5.3. If this element is not present or a value is not specified, a default value of **NtAuthenticatedQuery** MUST be used. If the **ResultsProvider** element of **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

CorrelationId: Specifies the GUID that MUST be used to log all the information for a search query in ULS logs and trace logs.

EnableNicknames: Specifies whether the exact tokens in the query text are used to find crawled items or if the nicknames of the tokens are considered as well. A value of **true** indicates that the protocol server MAY consider nicknames; a value of **false** indicates that the protocol server MUST NOT consider the nicknames. If this element is not present or a value is not specified, a default value of **false** MUST be used.

If this element is set to **true**, the protocol server MUST use the **Language Resources Set** as specified in [MS-SQLPADM2] section 3.1.1.7 to identify the nicknames for each token. For each token in the query text the nicknames are defined in the **Mapping** element of the **language resource item** for which the **Phrase** element is equal to the token and the **Type** element is equal to 5.

If **QueryProperties** is extended by **KeywordQueryProperties** data type then this element applies to the whole query text.

If **QueryProperties** is extended by **FullTextSqlQueryProperties** data type then this element applies to the **FREETEXT** predicate the **SharePoint Search SQL syntax** as specified in [MS-SEARCH] section 2.2.12.3.1.2.

If the **ResultsProvider** element **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

EnablePhonetic: Specifies whether the phonetic forms of the given tokens are used to locate crawled items or not. A value of **true** indicates that the protocol server MUST consider phonetic forms; a value of **false** indicates that the protocol server MUST NOT consider the phonetic forms.

If this element is not present or a value is not specified, a default value of **false** MUST be used.

If this element is set to **true**, the Protocol server MUST do a fuzzy match between the phonetic representation of each token against all the values of all the managed properties for which the value of **ManagedPropertyInformation.Pronunciation** is set to true as specified in the abstract data model in section 3.1.1.4.

If **QueryProperties** is extended by **KeywordQueryProperties** data type then this element applies to the whole **query text**

If **QueryProperties** is extended by **FullTextSqlQueryProperties** data type then this element applies to the **FREETEXT** predicate the **SharePoint Search SQL syntax** as specified in [MS-SEARCH] section 2.2.12.3.1.2.

If the **ResultsProvider** element of **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

EnableStemming: Specifies whether **inflectional forms** of the given tokens are used to locate crawled items or not. If this element is set to **true**, the protocol server MAY use inflectional forms to locate crawled items. If this element is set to **false**, the protocol server MUST NOT use inflectional forms to locate crawled items. For example, search queries with query text of "car" will return crawled items containing the token "car" or the token "cars" if such items exist.

If this element is not present or a value is not specified, a default value of **false** MUST be used.

If **QueryProperties** is extended by **KeywordQueryProperties** data type then this element applies to the whole query text.

If **QueryProperties** is extended by **FullTextSqlQueryProperties** data type then this element applies to the **FREETEXT** predicate of the **SharePoint Search SQL syntax** as specified in [MS-SEARCH] section 2.2.12.3.1.2.

HighlightedSentenceCount: Specifies in multiples of 65 characters, the maximum length of the property with name **HitHighlightedSummary**, that the protocol server MUST limit to, if requested by the protocol client. **HitHighlightedSummary** is a **managed property** with type of string, which displays an excerpt from the item that contains the query text and applies highlight formatting to the occurrences of query text in the except. For example, if this is set to 3, the protocol server limits the length of **HitHighlightedSummary** property to *3 x 65 = 195* characters.

If this element is not present or a value is not specified, a default value of 3 MUST be used.

If **QueryProperties** is extended by **KeywordQueryProperties** data type then the protocol client can request the **HitHighlightedSummary** property to be returned by the protocol server for each search result by adding the property name to the **KeywordQueryProperties.selectProeprties** element.

If **QueryProperties** is extended by **FullTextSqlQueryProperties** data type then the protocol client can request the **HitHighlightedSummary** property to be returned by the protocol server for each search result by adding the property name in the **SELECT** statement of the **SharePoint Search SQL syntax** as specified in [MS-SEARCH] section 2.2.10.3.

If the **ResultsProvider** element of **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

Hint: Specifies whether the protocol server MUST use the **metadata index** or the **full-text index catalog** when processing a search query. MUST be a **QueryHint** type as specified in Section 2.2.5.4. If this element is not present or a value is not specified, a default value of **QueryHint.None** MUST be used.

HitHighlightedProperties: Specifies a list of properties that the protocol server MUST include in the hit highlighted properties for each result. MUST be an **ArrayOfanyType** type as specified in Section 2.2.4.3. If this element is not present or a value is not specified, a default value of an empty **ArrayOfanyType** MUST be used.

For each result, the protocol server MUST include properties in this element only if **PropertyInformation. M_TypeFullName** is equal to **System.String** as specified in section 3.1.4.3.3.2.

If **QueryProperties** is extended by the **KeywordQueryProperties** data type, for each result, the protocol server MUST include only properties in this element and the properties specified in the **KeywordQueryProperties.selectProperties** element.

If **QueryProperties** is extended by **FullTextSqlQueryProperties** data type, for each search result, the protocol server MUST include only properties in this element and the properties specified

in the **SELECT** statement of the **SharePoint Search SQL syntax** as specified in [MS-SEARCH] section 2.2.10.3.

If the **ResultsProvider** element of **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

IgnoreAllNoiseQuery: Specifies how to respond to query text that contains only **noise words**. If this element is not present or a value is not specified, a default value of **true** MUST be used.

If **QueryProperties** is extended by the **KeywordQueryProperties** data type, this element MUST be ignored.

If **QueryProperties** is extended by **FullTextSqlQueryProperties** data type, a value of **true** indicates that the full-text predicates that contains only noise words MUST be ignored and assumed **true** for all the crawled items; a value of **false** indicates that the search query where all the full text predicates contains only noise words MUST fail and the protocol server MUST return a **FaultException<ExceptionDetail>** message.

If the **ResultsProvider** element of **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

KeywordInclusion: Specifies whether all the tokens in the search query are required. MUST be a **KeywordInclusion** type as specified in Section 2.2.5.2. If this element is not present or a value is not specified, a default value of **KeywordInclusion.AllKeywords** MUST be used.

If **QueryProperties** is extended by the **KeywordQueryProperties** complex type then this element applies to the whole query text.

If **QueryProperties** is extended by **FullTextSqlQueryProperties** complex type then this element applies to the text specified in the **FREETEXT** statement of the **SharePoint Search SQL syntax** as specified in [MS-SEARCH] section 2.2.12.3.1.2.

Locale: Specifies the language of the query text as an **LCID**. The protocol server SHOULD use this information to influence its interpretation of the query text. If this element is not present or a value is not specified, the LCID of the currently running process using this data type MUST be used.

MergeWithDefaultPartition: Specifies whether the protocol server MUST also query the default search partition, which is a special search partition with ID='0C37852B-34D0-418e-91C6-2AC25AF4BE5B'. If the element is set to **true** the protocol server MUST query the default search partition and merge with the result. If the element is set to **false** the protocol server MUST NOT query the default search partition.

PagingCookie: Specifies the client-side state **cookie**. If this element is not present or a value is not specified, a default value of **null** MUST be used. The protocol server SHOULD use this element to round trip the internal state required for paging of query results. The contents and usage of this element are specific to the implementation of the protocol server. If this element is present and is non-empty then the protocol client MUST transfer the contents of this element as is to the **PagingCookie** element that is sent on subsequent calls to the protocol server for additional query results for the same search query.

If the **ResultsProvider** element of **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

PartitionId: Specifies the GUID of the search partition that MUST be used for this search query. If this element is not present or a value is not specified, a default value of an **empty GUID** MUST be used.

If the **ResultsProvider** element of **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

PersonalizationData: Specifies a unique identifier for the current user on whose behalf the search query is executed. MUST be a **QueryPersonalizationData** type as specified in section 2.2.4.11. The usage of this identifier is specific to the implementation of the protocol server.

If the **ResultsProvider** element of **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

QueryText: Specifies the query text of the search query. If this element is not present or a value is not specified, a default value of an **empty string** MUST be used.

If **QueryProperties** is extended by the **KeywordQueryProperties** complex type, the number of characters in **QueryText** MUST be less than or equal to 2048, and the value of **QueryText** MUST conform to the **SharePoint Search Keyword Syntax** as specified in [MS-SEARCH] section 2.2.9 and 2.2.10.

If **QueryProperties** is extended by **FullTextSqlQueryProperties** complex type then the number of characters in **QueryText** MUST be less than or equal to 4096, and the value of **QueryText** MUST confirm to the **SharePoint Search SQL Syntax** as specified in [MS-SEARCH] section 2.2.11 and 2.2.12.

RankingModelId: Specifies the GUID of the Ranking Model that MUST be used for this search query. For more details on ranking models, see [MS-SQLPADM2] section 3.1.1.5. If this element is not present or a value is not specified, the protocol server MUST use default ranking model.

If the **ResultsProvider** element of **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

ResultTypes: Specifies the type of search results that MUST be returned for the search query. MUST be a **ResultType** data type as specified in section 2.2.5.5. If this element is not present or a value is not specified, a default value of **ResultType.None** MUST be used.

ResultsProvider: Specifies the **result provider** that MUST be used for this search query. MUST be a **SearchProvider** type as specified in section 2.2.5.6. The valid values for this element depend on the query role of the protocol server as specified in the following table.

Query role for the protocol	Result provider computation
Sharepoint Server search query role	The value of the **ResultsProvider** element that is set by the protocol client MUST be ignored and the protocol server MUST use **SearchProvider.SharepointSearch** as the value for **ResultsProvider**.
FAST search query role	Protocol server MUST maintain a user configurable default value for the result provider as specified in **SearchServiceApplication.DefaultSearchProvider** in abstract data model section 3.1.1.2. This value MUST be either **SearchProvider.FASTSearch** or **SearchProvider.SharepointSearch**. If the **ResultsProvider** element is specified, the protocol MUST use the value specified in the **ResultsProvider** element. If the value specified is **SearchProvider.Default**, or if the **ResultsProvider** element is not specified, the protocol server MUST use the configured default value as the value for **ResultsProvider**.

RowLimit: Specifies the number of search results the protocol client wants to receive, starting at the index specified in the **StartRow** element.

The protocol server MUST return at most this many search results from the sorted list of all search results.

If **QueryProperties** is extended by **KeywordQueryProperties** data type, the sort order for the list of search results is specified by the **KeywordQueryProperties.SortList** element.

If **QueryProperties** is extended by **FullTextSqlQueryProperties** data type, the sort order for the list of search results is specified in the **ORDER BY** statement of the **SharePoint Search SQL syntax** as specified in [MS-SEARCH] section 2.2.10.3.

If the total number of search results returned for a search query is greater than or equal to the value of the **StartRow** element, but less than the value of the **StartRow** element and the **RowLimit** element combined, the protocol server MUST return as many search results as available.

If this element is not present or a value is not specified, a default value of 50 MUST be used. MUST be greater than or equal to 0.

RowsPerPage: Specifies the number of result items the protocol client will display per page. If this element is set to an integer value less than 1, the value of **RowLimit** element MUST be used as the default value.

Sid: Specifies the security descriptor (SID) of the user for whom the protocol client is requesting search results. If this element is non-empty, the protocol server MUST use this value for security trimming.

SiteId: Specifies the **site identifier** of the **site** that MUST be used by the protocol server to identify the **context** of the search query. MUST be a **guid** type as specified in section 2.2.5.8. If this element is not present or a value is not specified, a default value of **Guid.Empty**, which is an instance of **guid** type with value of all zeros, MUST be used.

StartRow: Specifies a zero-based index of the first search result in the list of all search results the protocol server MUST return.

If this element is not present or a value is not specified, a default value of 0 MUST be used. MUST be greater than or equal to 0.

SummaryLength: Specifies the maximum number of characters in the result summary. The protocol server MUST return result summary that contains less than or equal to **SummaryLength** number of characters. SummaryLength value MUST be greater or equal 0 and less or equal to 10000.

TimeZoneID: Specifies the local time zone identifier which represents the local time zone of the web site that processes the search query. The protocol server MUST return local time identifier according to the specified time zone.

Timeout: Specifies the maximum time in milliseconds that the protocol server MUST spend in executing a search query. If this element is not present or a value is not specified, a default value of 10000 MUST be used.

TotalRowsExactMinimum: Specifies the total number of search results, starting at the index specified in **StartRow** element, up till which the protocol server MUST return the exact count in **ResultTable.TotalRows** (see section 3.1.4.1.3.6). If this element is not present or a value is not specified, a default value of 200 MUST be used.

This property is used by a Search Paging control to accurately show the number of pages of results that are available for this search query.

If the **ResultsProvider** element of **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

TrimDuplicates: Specifies whether **duplicates** are removed by the protocol server before sorting, selecting and sending the search results. A value of **true** indicates that the protocol server SHOULD perform **duplicate result removal**; a value of **false** indicates that the protocol server MUST NOT attempt to perform duplicate result removal. If this element is not present or a value is not specified a default value of **true** MUST be used. The algorithm used for duplicate detection is specific to the implementation of the protocol server.

UrlZone: Specifies the zone that MUST be used for alternate access mapping for this search request. MUST be a **SPUrlZone** data type as specified in Section 2.2.5.7. If this element is not present or a value is not specified, the protocol server MUST use **SPUrlZone.Default** as the default.

If the **ResultsProvider** element of **QueryProperties** is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

2.2.4.13   RefinementInterval (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **RefinementInterval** complex type contains information about a refinement bin for a refiner. The protocol server MUST use this as a refinement bin if returning refinement values for a refiner when this is specified in **CustomRefinementIntervals**, as specified in 3.1.4.7.3.1.

```
<xs:complexType name="RefinementInterval">
  <xs:sequence>
    <xs:element minOccurs="0" name="CustomValue" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Lower" nillable="true" type="xs:anyType"/>
    <xs:element minOccurs="0" name="Upper" nillable="true" type="xs:anyType"/>
  </xs:sequence>
</xs:complexType>
```

CustomValue: The custom value for this refinement bin. The protocol client MAY label the refinement bin with a custom string value.

Lower: The lower bound of this refinement bin. Only values larger than or equal to this value MUST be part of this refinement bin.

Upper: The upper bound of this refinement bin. Only values smaller than or equal to this value MUST be part of this refinement bin.

2.2.5   Simple Types

2.2.5.1   AlertChangeType (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The **AlertChangeType** simple type is used to represent the change types for which a search alert MUST be generated.

```
<xs:simpleType name="AlertChangeType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Discovered">
      <xs:annotation>
        <xs:appinfo>
```

```
                <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">1</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Modified">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">2</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="DiscoveredOrModified">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">3</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
    </xs:restriction>
  </xs:simpleType>
```

The following table specifies the allowable values for AlertChangeType:

Value	Meaning
Discovered	A search alert MUST be generated if at least 1 new search result matches the search query which was registered as part of the **alert subscription**. The new search result MUST be crawled after the last time the alert for the search query was generated.
Modified	A search alert MUST be generated if at least 1 existing search result that matches the search query which was registered as part of the alert subscription was modified after the last time the alert for the registered search query was generated.
DiscoveredOrModified	A search alerts MUST be generated if either a new result is discovered or an existing result is modified after the last time the alert for the registered search query was generated.

2.2.5.2 KeywordInclusion (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The **KeywordInclusion** simple type is used to represent how the protocol server combines tokens in a search query to form the query text that is used to find indexed items that match the search query.

```
  <xs:simpleType name="KeywordInclusion">
    <xs:restriction base="xs:string">
      <xs:enumeration value="AllKeywords"/>
      <xs:enumeration value="AnyKeyword"/>
    </xs:restriction>
  </xs:simpleType>
```

The following table specifies the allowable values for KeywordInclusion:

Value	Meaning
AllKeywords	The protocol server combines the individual tokens by using the Boolean AND operation. The protocol server MUST find all token in the search query in a crawled item for the crawled item to be part of the search results
AnyKeyword	The protocol server combines the individual tokens by using the Boolean OR operation. The protocol server MUST find at least one token in the search query in a crawled item for the crawled item to be part of the search results.

2.2.5.3   QueryAuthenticationType (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The **QueryAuthenticationType** simple type is used to represent the type **search security descriptor**.

```
<xs:simpleType name="QueryAuthenticationType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="NtAuthenticatedQuery"/>
    <xs:enumeration value="PluggableAuthenticatedQuery"/>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for QueryAuthenticationType:

Value	Meaning
NtAuthenticatedQuery	MUST be a **Windows security descriptor**
PluggableAuthenticatedQuery	MUST be a custom security descriptor used in **pluggable security authentication**.

2.2.5.4   QueryHint (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The **QueryHint** simple type is used to represent how the protocol server processes a search query.

```
<xs:simpleType name="QueryHint">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="None">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">0</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="OptimizeWithFullTextIndex">
          <xs:annotation>
```

```
                    <xs:appinfo>
                        <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">1</EnumerationValue>
                    </xs:appinfo>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="OptimizeWithPropertyStore">
                <xs:annotation>
                    <xs:appinfo>
                        <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">2</EnumerationValue>
                    </xs:appinfo>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="PropertySelectWithInClause">
                <xs:annotation>
                    <xs:appinfo>
                        <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">16777216</EnumerationValue>
                    </xs:appinfo>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="PropertySelectWithTempTable">
                <xs:annotation>
                    <xs:appinfo>
                        <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">33554432</EnumerationValue>
                    </xs:appinfo>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="UseSqlFirstJoinStrategy">
                <xs:annotation>
                    <xs:appinfo>
                        <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">8</EnumerationValue>
                    </xs:appinfo>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="AvoidSqlOuterJoins">
                <xs:annotation>
                    <xs:appinfo>
                        <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">16</EnumerationValue>
                    </xs:appinfo>
                </xs:annotation>
            </xs:enumeration>
          </xs:restriction>
        </xs:simpleType>
      </xs:list>
    </xs:simpleType>
```

The following table specifies the allowable values for QueryHint:

Value	Meaning
None	The protocol server MUST determine whether to use the metadata index or the full-text index catalog first when processing a query.

Value	Meaning
OptimizeWithFullTextIndex	The protocol server MUST use the full-text index catalog first when processing a query.
OptimizeWithPropertyStore	The protocol server MUST use the metadata index first when processing a query.
PropertySelectWithInClause	Obsolete.
PropertySelectWithTempTable	Obsolete.
UseSqlFirstJoinStrategy	The protocol server MUST use the metadata index first when it guarantees correctness of the results. Otherwise, MUST use the full-text index.
AvoidSqlOuterJoins	The protocol server MUST NOT use outer joins when processing a query.

2.2.5.5 ResultType (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The **ResultType** type specifies an enumeration of the types of search results to return for a search query. Any element of this type MUST contain one or more of the enumeration values specified in this section.

```
<xs:simpleType name="ResultType">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="None">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">0</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="RelevantResults">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">1</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="SpecialTermResults">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">8</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="HighConfidenceResults">
          <xs:annotation>
            <xs:appinfo>
```

```
                <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">4</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="DefinitionResults">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue xmlns="http://schemas.microsoft.com/2003/10/Serialization/">-
2147483648</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="VisualBestBetsResults">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">16</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="RefinementResults">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">32</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
    </xs:restriction>
  </xs:simpleType>
  </xs:list>
</xs:simpleType>
```

The following table specifies the allowable values for ResultType:

Value	Meaning
None	No result type is specified.
RelevantResults	Specifies that the protocol server MUST return the result set that contains the actual query results from the crawled items that apply to the search query.
SpecialTermResults	Specifies that the protocol server MUST return the result set that contains **best bets** that apply to the search query. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchServer.FASTSearch,** this value MUST be ignored by the protocol server.
HighConfidenceResults	Specifies that the protocol server MUST return the result set that contains the high confidence results that apply to the search query. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchServer.FASTSearch,** this value MUST be ignored by the protocol server.
DefinitionResults	Specifies that the protocol server MUST return the **extracted definitions** that apply to the search query. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchServer.FASTSearch,** this value MUST be ignored by the protocol server.

Value	Meaning
VisualBestBetsResults	Specifies that the protocol server MUST return the result set that contains the **visual best bets** results that apply to the search query. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchServer.SharepointSearch**, this value MUST be ignored by the protocol server.
RefinementResults	Specifies that the protocol server MUST return the result set that contains the refinement results that apply to the search query. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchServer.SharepointSearch**, this value MUST be ignored by the protocol server.

2.2.5.6 SearchProvider (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The **SearchProvider** simple type represents the **search provider** that MUST be used to handle the current request.

```
<xs:simpleType name="SearchProvider">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Default"/>
    <xs:enumeration value="SharepointSearch"/>
    <xs:enumeration value="FASTSearch"/>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for SearchProvider:

Value	Meaning
Default	Specifies that the default search provider specified in **SearchServiceApplication.DefaultSearchProvider** as specified in abstract data model section 3.1.1.2 MUST be used for the current request.
SharepointSearch	Specifies that the search provider with name **SharePointSearch** MUST be used for the current request.
FASTSearch	Specifies that the search provider with name FASTSearch MUST be used for the current request

2.2.5.7 SPUrlZone (from namespace http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Administration)

The **SPUrlZone** simple type contains information about the zone that MUST be used for **alternate access mapping** of incoming **URL**(s) to the right content and vice versa.

```
<xs:simpleType name="SPUrlZone">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Default"/>
    <xs:enumeration value="Intranet"/>
    <xs:enumeration value="Internet"/>
```

```
    <xs:enumeration value="Custom"/>
    <xs:enumeration value="Extranet"/>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for SPUrlZone:

Value	Meaning
Default	Specifies that the protocol server MUST use the mappings defined in the default zone for alternate access mapping.
Intranet	Specifies that the protocol server MUST use the mappings defined in the Intranet zone for alternate access mapping.
Internet	Specifies that the protocol server MUST use the mappings defined in the Internet zone for alternate access mapping.
Custom	Specifies that the protocol server MUST use the mappings defined in the Custom zone for alternate access mapping.
Extranet	Specifies that the protocol server MUST use the mappings defined in the Extranet zone for alternate access mapping.

2.2.5.8   guid (from namespace http://schemas.microsoft.com/2003/10/Serialization/)

The **guid** simple type represents a **globally unique identifier (GUID)**.

```
<xs:simpleType name="guid">
  <xs:restriction base="xs:string">
    <xs:pattern value="[\da-fA-F]{8}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{12}"/>
  </xs:restriction>
</xs:simpleType>
```

2.2.5.9   SearchServiceApplicationFaultType (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **SearchServiceApplicationFaultType** type represents the type of failure for a **SearchServiceApplicationFault**, as specified by section 2.2.4.1.

```
<xs:simpleType name="SearchServiceApplicationFaultType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="SpecialTerm_NotFound"/>
    <xs:enumeration value="SpecialTerm_DuplicateError"/>
    <xs:enumeration value="Synonym_NotFound"/>
    <xs:enumeration value="BestBet_NotFound"/>
    <xs:enumeration value="BestBet_OrderDuplicationError"/>
    <xs:enumeration value="AllNoiseQuery"/>
    <xs:enumeration value="SearchServiceNotFound"/>
    <xs:enumeration value="QueryMalformed"/>
    <xs:enumeration value="ScopeNotFound"/>
    <xs:enumeration value="InvalidProperty"/>
    <xs:enumeration value="OnlyExcludedTerms"/>
```

```
      <xs:enumeration value="RankingModelNotFound"/>
      <xs:enumeration value="UnSupportedTopology"/>
      <xs:enumeration value="FASTSearchQuery"/>
      <xs:enumeration value="Timeout"/>
      <xs:enumeration value="ExtendedConnectorApplicaion"/>
      <xs:enumeration value="PartitionOptionsMismatch"/>
      <xs:enumeration value="TooComplexQueryException"/>
   </xs:restriction>
 </xs:simpleType>
```

The following table specifies the allowable values for SearchServiceApplicationFaultType:

Value	Meaning
SpecialTerm_NotFound	The specified **keyword** was not found on the protocol server.
SpecialTerm_DuplicateError	The search term specified cannot be used, because it is already a keyword or **keyword synonym**.
Synonym_NotFound	The specified keyword synonym was not found on the protocol server.
BestBet_NotFound	The specified best bet was not found on the protocol server.
BestBet_OrderDuplicationError	The best bet cannot be added to the keyword, because there is already a best bet at the specified position.
AllNoiseQuery	Cannot complete the search query, because it is composed of nothing but noise words.
SearchServiceNotFound	The protocol server was unable to connect to the search service application.
QueryMalformed	Cannot complete the search query, because its syntax is invalid.
ScopeNotFound	The specified **search scope** was not found on the protocol server.
InvalidProperty	Cannot complete the search query, because it is uses an invalid **managed property**.
OnlyExcludedTerms	Cannot complete the search query, because it is composed of nothing but noise words.
RankingModelNotFound	Cannot complete the search query, because the **ranking model** does not exist.
UnSupportedTopology	Cannot complete the search query, because the farm uses a topology unsupported by its version of the protocol server software.
FASTSearchQuery	Cannot complete the search query from the FAST search provider. The **SearchServiceApplicationFault** Message element provides details of the error as specified by section 2.2.4.1.
Timeout	Cannot complete the search query, because the query took too long to be processed by the protocol server.
ExtendedConnectorApplicaion	Cannot complete the search query, because the extended search service application cannot process queries. An extended search service application is specific for the FAST search provider and is used only in crawling and not for query processing.

Value	Meaning
PartitionOptionsMismatch	Cannot complete the search query, because the **partition** options of the search service application do not match partition options of the search service application proxy.
TooComplexQueryException	Cannot complete the search query, because there too many results for it.

2.2.6 Attributes

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

2.2.7 Groups

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

2.2.8 Attribute Groups

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

3   Protocol Details

In the following sections, the schema definition might be less restrictive than the processing rules imposed by the protocol. The WSDL in this specification matches the WSDL that shipped with the product and provides a base description of the schema. The text that introduces the WSDL specifies additional restrictions that reflect protocol behavior. For example, the schema definition might allow for an element to be **empty**, **null**, or **not present** but the behavior of the protocol as specified restricts the same elements to being **non-empty**, **present**, and **not null**.

The client side of this protocol is simply a pass-through. That is, no additional timers or other state is required on the client side of this protocol. Calls that are made by the higher-layer protocol or application are passed directly to the transport, and the results that are returned by the transport are passed directly to the higher-layer protocol or application.

Except where specified, protocol clients SHOULD interpret HTTP status codes that are returned by the protocol server as specified in [RFC2616], section 10.

This protocol allows protocol servers to notify protocol clients of application-level faults by using SOAP faults. Except where otherwise specified, these SOAP faults are not significant for interoperability and protocol clients can interpret them in an implementation-specific manner.

This protocol allows protocol servers to perform implementation-specific authorization checks and to notify protocol clients of authorization faults by using either HTTP status codes or SOAP faults, as specified previously in this section.

3.1   Server Details

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.

3.1.1.1   Object Hierarchy

The protocol server maintains a hierarchy of objects representing the state of the Search Query Shared Services Protocol. These objects are primarily used by the protocol server to respond to protocol client requests for information about Search Service, to execute a search query, for storing verbose query monitoring data, or to store query log data. The following figure is a diagram of these objects. Properties followed by [0..n] are collections of items of the same kind, whereas those followed by [1] are single properties. Following the diagram are descriptions of each property.
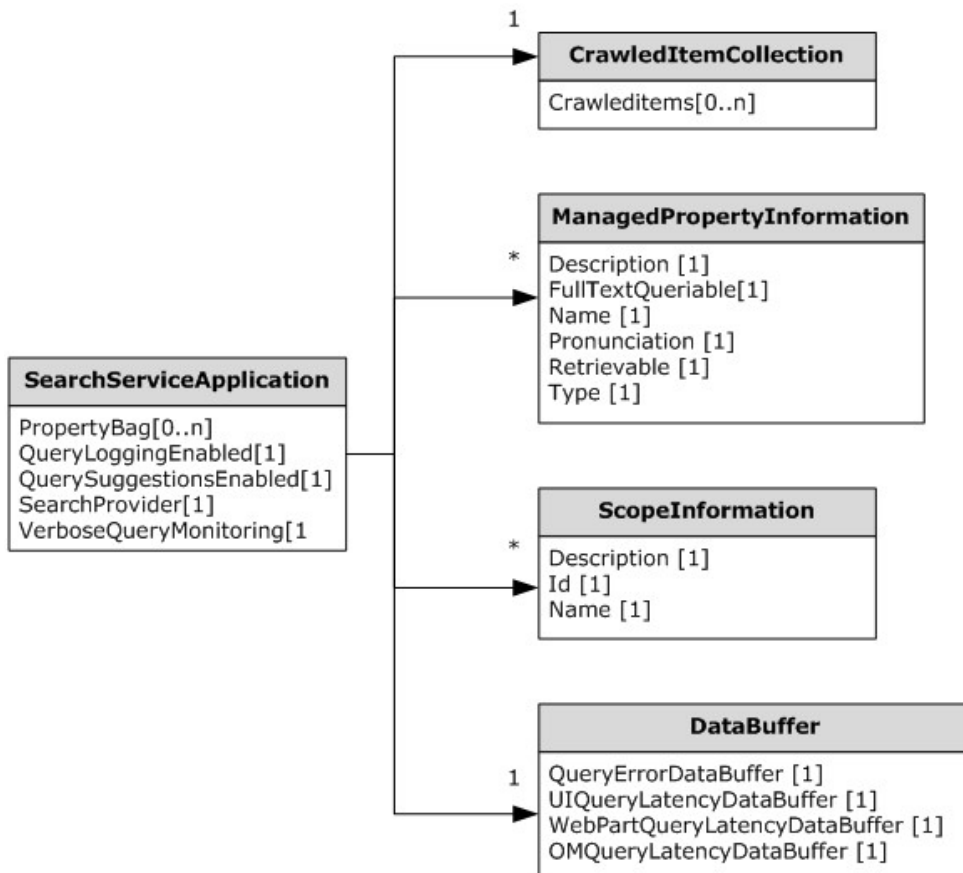
Figure 2: Object hierarchy

SearchServiceApplication: This object represents information about the search service application.

CrawledItemCollection: This object maintains a list of crawled items and a list of properties associated with each crawled item.

ManagedPropertyInformation: This object stores information about managed properties defined in the protocol server.

ScopeInformation: This object stores information about search scopes defined in the protocol server.

DataBuffer: This object stores query monitoring data sent from protocol client which assists the administrators of the protocol server to collect information about query performance as well as errors encountered in the protocol client.

3.1.1.2   Search Service Application Information

The protocol server maintains a **SearchServiceApplication** object to store information configured for the search service application. The protocol client can request this information to get the properties for the search service application and call operations based on the properties.

SearchServiceApplication: This object represents information about the search service application.

- **PropertyBag:** Specifies configuration settings as key-value pairs. This property exists only if **QueryProperties.ResultsProvider** is equal to **SearchProvider.FASTSearch**.<3>

- **QueryLoggingEnabled:** If **true**, the query logging is enabled for the search service application.

- **QuerySuggestionsEnabled:** If **true**, the query suggestions are turned on for the search service application.

- **DefaultSearchProvider:** The default search provider configured for this search service application.

- **VerboseQueryMonitoring:** If **true**, verbose query monitoring is turned on for the search service application.

3.1.1.3 CrawledItemCollection and Properties

For more information, see [MS-SEARCH] section 3.1.1.1.

3.1.1.4 Managed Property Information

The protocol server maintains a collection of **ManagedPropertyInformation** objects to store information about managed properties defined in the protocol server. The protocol client can request this information to get details about the managed properties and then use that information to create search queries.

For more information about how managed property information can be added to the protocol server, see [MS-SQLPADM] section 3.1.1.1.

ManagedPropertyInformation: This object represents information about a managed property defined in the protocol server.

- **Description:** The description of the managed property.

- **FullTextQueriable:** If **true**, the managed property is a full-text searchable property. Otherwise, the managed property is not a full-text searchable property.

- **Name:** The name for the managed property.

- **Pronunciation:** If **true**, the protocol server maintains a phonetic form of the managed property values, otherwise, the protocol server does not maintain a phonetic form of the managed property values.

- **Retrievable:** If **true**, the managed property is a retrievable managed property. That is, it can be returned as part of a search result. Otherwise, the managed property is not a retrievable property.

- **Type:** Specifies the type of the managed property.

3.1.1.5 Scope Information

The protocol server maintains a collection of **ScopeInformation** objects to store information about search scopes defined in the protocol server. The protocol client can request these objects to get details about the search scopes defined in the protocol server and then generate search queries using those scopes. The protocol server also maintains a collection of **search scope consumers**.

For details on how search scope information can be added to the protocol server, see [MS-SQLPADM] section 3.1.1.3 or [MS-SADMWS] section 3.1.1.2.

For details of search scope consumers, see [MS-SQLPADM] section 3.1.1.3 or [MS-SADMWS] section 3.1.1.2.

ScopeInformation: This object represents information about a search scope defined in the protocol server. The protocol client can request this information to identify which scopes are defined in the protocol server and then use those for search queries.

- **Description:** The description of the search scope.

- **ID:** The unique identifier of the search scope.

- **Name:** The name of the search scope.

3.1.1.6 Query Monitoring Information

The following diagram shows the hierarchy of objects representing information about query monitoring data. Properties followed by "[0..n]" are collections of items of the same kind, whereas those followed by [1] are single properties. The protocol server stores the query monitoring data in the hierarchy of objects in the following figure. The query monitoring data is available to assist the administrators of the protocol server to collect information about query performance as well as errors encountered in the protocol client.
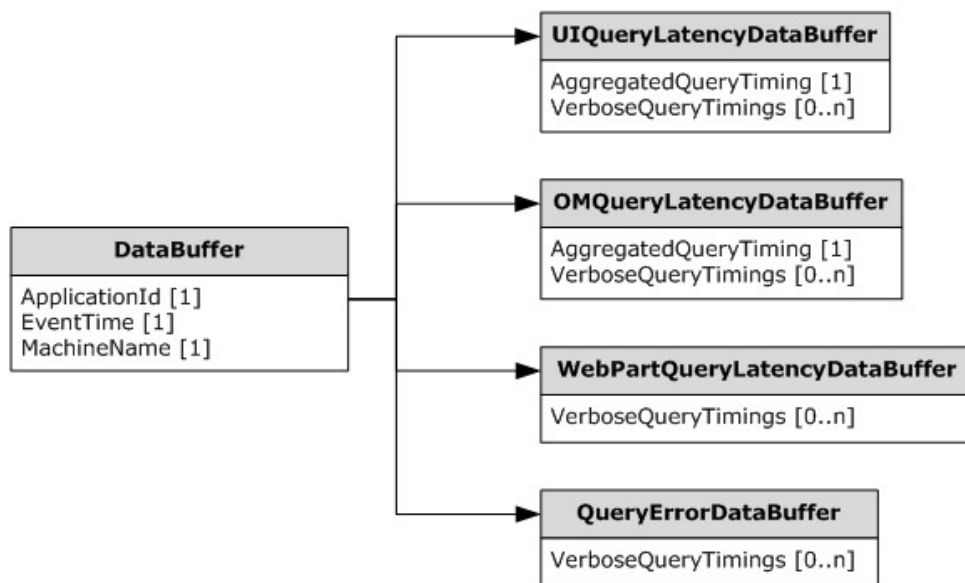
Figure 3: Query monitoring information

DataBuffer: This is the base object used by all the different types of **DataBuffer** objects. This object defines a common set of properties for all types of **DataBuffer** object. The protocol server maintains one object for each type of **DataBuffer**.

- **ApplicationId:** The unique identifier of the search service application.

- **EventTime:** The date and time, in Coordinated universal Time (UTC) format, at which the event occurred.

- **MachineName:** The name of the computer on which the event occurred.

OMQueryLatencyDataBuffer: This is the top-level object that represents information about time spent in processing of search queries in the protocol server.

This object extends the **DataBuffer** object. The protocol sever maintains one object of this type per search service application. It contains aggregated latency information for processing all search queries in the protocol server. If verbose query monitoring is turned on, it also contains latency information for processing every single search query in the protocol server. It has the following properties:

- **AggregatedQueryTiming:** The aggregated latency information for all search queries. It contains:

  - **NumQueries:** The total number of search queries processed.

  - **QPTimeMs:** The total time in milliseconds taken by any intermediate processing of all search queries in the protocol server. The value stored here is specific to the implementation of the protocol server.

  - **TotalQueryTimeMs:** The total time, in milliseconds, taken by the protocol server to process all the search queries.

- **VerboseQueryTimings:** The collection of the latency information for each search query. It will be maintained by the protocol server only if **SearchServiceApplication.VerboseQueryMonitoring** is set to **true**. Each item in the collection holds:

  - **CorrelationId:** The unique identifier used to identify all the query monitoring data for the search query.

  - **QPMachine:** The name of the computer that processed the search query in the protocol server.

  - **QPTimeMs:** The time in milliseconds taken by intermediate processing of the search query in the protocol server. The value stored here is specific to the implementation of the protocol server.

  - **QueryTerms:** The query terms of the search query.

  - **TotalQueryTimeMs:** The total latency, in milliseconds, taken by the protocol server to process the search query.

UIQueryLatencyDataBuffer: This is the top-level object that represents information about time spent in rendering search results in the search results page in the protocol client.

This object extends the **DataBuffer** object. The protocol sever maintains one object of this type per search service application. It contains aggregated latency information for all search queries as well as information for each query, if verbose query monitoring is turned on. The object has the following properties:

- **AggregatedQueryTiming:** The aggregated latency information for all search queries. It contains:

  - **ExclusiveWebpartTimeMs:** The total time, in milliseconds, consumed exclusively by search **Web Parts** to process all the search queries.

  - **InclusiveWebpartTimeMs:** The total time, in milliseconds, consumed by all Web Parts during the processing of all the search queries.

▪ **NumQueries**: The total number of search queries processed by the protocol client.

▪ **TotalQueryTimeMs:** The total time, in milliseconds, consumed by the search results page to process all the search queries.

▪ **VerboseQueryTimings:** The collection of the latency information for each search query. It will be maintained by the protocol server only if **SearchServiceApplication.VerboseQueryMonitoring** is set to **true**. Each item in the collection holds:

▪ **CorrelationId:** The unique identifier used to identify all the query monitoring data for the search query.

▪ **ExclusiveWebpartTimeMs:** The time in milliseconds consumed exclusively by search Web Parts to process the search query.

▪ **InclusiveWebpartTimeMs:** The time in milliseconds consumed by all Web Parts during the processing of the search query.

▪ **QueryTerms:** The query terms of the search query.

▪ **TotalQueryTimeMs:** The latency in milliseconds consumed by search results page to execute the search query.

▪ **Url:** The URI of the page that issued the search query.

WebPartQueryLatencyDataBuffer: This is the top level object that represents information about time spent to render each search Web Part on the search results page on every query executed. This object extends the **DataBuffer** object. If verbose query monitoring is turned on, the protocol server maintains one object of this type per search service application. Its properties are:

▪ **VerboseQueryTimings:** The collection of the rendering time information for each search query and search Web Part. Each item in the collection has these properties:

▪ **CorrelationId:** The unique identifier used to identify all the query monitoring data for the search query.

▪ **ExclusiveWebpartTimeMs:** The time spent in milliseconds to render the search Web Part with the specified **WebPartId**.

▪ **InclusiveWebpartTimeMs:** The time spent in milliseconds to render all the search Web Parts on the search results page.

▪ **WebPartId:** The unique identifier of the search Web Part for which the latency information is represented.

▪ **WebPartTitle:** The title of the search Web Part.

QueryErrorDataBuffer: This is the top level object that represents information about errors occurred during processing of search queries in the protocol client. This object extends the **DataBuffer** object. The protocol sever maintains one object of this type, that contains query error information if verbose query monitoring is turned on. This object has the following properties:

▪ **VerboseQueryTimings:** The list of errors occurred during the processing of all the search queries in the protocol client. It is maintained by the protocol server only if **SearchServiceApplication.VerboseQueryMonitoring** is set to **true**. Each item in the collection represents an error and has the following properties:

- **CorrelationId:** The unique identifier used to identify all the query monitoring data for the search query.

- **Exception:** The details of the exception that is specific to the implementation of the protocol client.

- **Operation:** The details of the operation that caused the exception of the search query in the protocol client

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Message Processing Events and Sequencing Rules

This specification includes the following **WSDL operations**:

WSDL Operation	Description
Execute	This operation is used to execute a search query and retrieve a list of links to crawled **items** that are relevant to the search query, together with associated properties.
GetClickFrequenciesForUrl	This operation is used to retrieve the click frequencies of a given URI for the past week and the past month from a given reference date.
GetProperties	This operation is used by the protocol client to retrieve information about all the managed properties defined in the protocol server.
GetQuerySuggestions	This operation is used to retrieve a list of query suggestions to match a search query. There are two types of query suggestions: pre query suggestions and post query suggestions. In pre query suggestions, the last term in search box SHOULD be matched by prefix. In post query suggestions, query suggestions the last term SHOULD be matched exactly.
GetScopes	This operation is used by the protocol client to retrieve information about all the search scopes that are available on the protocol server for the specified search scope consumer.
GetSearchServiceApplicationInfo	This operation is used by the protocol client to get the properties configured for the **search application**.
GetSearchTerms	This operation is used by the protocol client to retrieve the text restriction of a keyword query as interpreted by the protocol server.
GetTopQueryStringsForUrl	For each crawled item that is identified by a URI, the protocol server MUST store a list of executed search queries that return this item in their query results within 366 days. This list MUST be sorted in descending order by the frequency of occurrence of the search queries. This operation returns a specified number of search queries from this sorted list for a given URI.

WSDL Operation	Description
HighlightStringValue	This operation is used by the protocol client to highlight all the occurrences of specified query terms in a specified string value by enclosing each of them with in an open () and close () tag.
HighlightStringValueQuerySuggestions	This operation is used by the protocol client to highlight all the occurrences of specified query terms in a specified string value by enclosing each of them with in an open () and close () tag in the context of query suggestions.
RecordClick	This operation is used by the protocol client to inform the protocol server that a **clickthrough** happened or user navigated away from the page. When a clickthrough happens, the protocol client sends the details of the clickthrough and the search query for which the query result was clicked to the protocol server. When a use navigated away from the page, the protocol client sends the details of the search query to the protocol server.
RecordOMQueryDoneEvent	This operation is used by the protocol client to inform the protocol server about the latency for processing the search query on the protocol server as reported by the protocol server in the **ExecuteResult** element of the **ExecuteResponse** message (see section 3.1.4.1.2.2) for a search query. The protocol client MUST collect this latency information for search queries executed within each 60 second time period and send it in a single message to the protocol server.
RecordQueryErrorEvent	This operation is used by the protocol client to inform the protocol server of any errors that occurred during the processing of search queries in the protocol client. The protocol client MUST collect the error information for all queries executed within each 60 second time period and send them in a single message.
RecordUIQueryDoneEvent	This operation is used to inform the protocol server about the search query latency of the search results page. The protocol client MUST collect the latency information for all search queries executed in each 60 second time period and send it in a single message to the protocol server.
RecordWebPartQueryDoneEvent	This operation is used by the protocol client to inform the protocol server about the search query latency of the Web Parts on the search results page. The protocol client MUST collect the latency information for search queries executed within each 60 second time period and send it in a single message to the protocol server.

3.1.4.1 Execute

This operation is used to execute a search query and retrieve a list of links to crawled items that are relevant to the search query, together with associated properties.

```
<wsdl:operation name="Execute">
  <wsdl:input wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/Execute"
message="tns:ISearchQueryServiceApplication_Execute_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/ExecuteResponse"
message="tns:ISearchQueryServiceApplication_Execute_OutputMessage"/>
```

```
   <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/ExecuteSearchServiceApplicatio
nFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_Execute_SearchServiceApplicationFaultFault_FaultM
essage"/>
   </wsdl:operation>
```

The protocol client sends a ISearchQueryServiceApplication_Execute_InputMessage request message and the protocol server responds with a ISearchQueryServiceApplication_Execute_OutputMessage response message, as follows:

▪ The client formulates a search query that specifies which crawled items to retrieve, how to sort the retrieved items and which properties to retrieve for each crawled item (see section 3.1.1). On receipt, the protocol server interprets the search query and assembles a list of crawled items that are relevant to the search query. Then, it retrieves the properties for each result that were specified in the search query, and includes them in the response to the search query.

▪ If the **properties** element is absent or is empty, the protocol server MUST return a **FaultException<ExceptionDetail>** error message.

▪ If the properties element confirms to the schema of **KeywordQueryProperties** data type as specified in section 3.1.4.7.3.1 and if for at least one managed property specified in the **properties.SelectProperties** element, the **Retrievable** flag as specified in section 3.1.1.4 is not set to **true** and the protocol server MUST return a **FaultException<ExceptionDetails>** error message.

▪ If the properties element confirms to the schema of **KeywordQueryProperties** data type as specified in section 3.1.4.7.3.1 and if the same managed property is specified more than once in the **properties.SelectProperties** element, the protocol server MUST return a **FaultException<ExceptionDetails>** error message.

▪ If the time required by the protocol server to interpret the search query and assemble the list of crawled items that are relevant to the search query takes longer than the time specified in the **properties.Timeout** element, the protocol server MUST return a **FaultException<ExceptionDetail>** error message.

▪ On any error processing the request, the protocol server MUST return a F**aultException<ExceptionDetail>** error message.

3.1.4.1.1   Messages

3.1.4.1.1.1   ISearchQueryServiceApplication_Execute_InputMessage

The requested WSDL message for the **Execute** WSDL operation.

The **SOAP action** value is:

```
http://tempuri.org/ISearchQueryServiceApplication/Execute
```

The **SOAP body** contains the **Execute** element.

3.1.4.1.1.2   ISearchQueryServiceApplication_Execute_OutputMessage

The response WSDL message for the **Execute** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/ExecuteResponse
```

The SOAP body contains the **ExecuteResponse** element.

3.1.4.1.2 Elements

3.1.4.1.2.1 Execute

The input data for the **Execute** WSDL operation.

```
<xs:element name="Execute">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="properties" nillable="true"
xmlns:q2="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q2:QueryProperties"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

properties: Specifies the properties for the search query. This element MUST not be empty. This element MUST conform to the schema of either the KeywordQueryProperties complex type or the FullTextSqlQueryProperties complex type.

3.1.4.1.2.2 ExecuteResponse

The result data for the **Execute** WSDL operation.

```
<xs:element name="ExecuteResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ExecuteResult" nillable="true"
xmlns:q3="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q3:ResultTableCollection"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

ExecuteResult: This element contains the query results for the search query. This element MUST conform to the schema of the **ResultTableCollection** complex type.

3.1.4.1.3 Complex Types

3.1.4.1.3.1 ResultTableCollection (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

Contains the search results and associated properties for a search query.

```
<xs:complexType name="ResultTableCollection">
  <xs:sequence>
    <xs:element minOccurs="0" name="DatabaseTime" type="xs:int"/>
```

```
        <xs:element minOccurs="0" name="Definition" nillable="true"
  type="tns:ArrayOfResultDefinition"/>
        <xs:element minOccurs="0" name="ElapsedTime" type="xs:int"/>
        <xs:element minOccurs="0" name="IgnoredNoiseWords" nillable="true"
  xmlns:q17="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
  type="q17:ArrayOfstring"/>
        <xs:element minOccurs="0" name="KeywordInformation" nillable="true"
  type="tns:KeywordInformation"/>
        <xs:element minOccurs="0" name="QueryMachine" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="QueryModification" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="QueryProcessingTime" type="xs:int"/>
        <xs:element minOccurs="0" name="QueryTerms" nillable="true"
  xmlns:q18="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
  type="q18:ArrayOfstring"/>
        <xs:element minOccurs="0" name="SpellingSuggestion" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="m_ResultTables" nillable="true"
  xmlns:q19="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
  type="q19:ArrayOfKeyValueOfResultTypeResultTableUTLV0zE5"/>
      </xs:sequence>
  </xs:complexType>
```

DatabaseTime: The time it took to execute the database operations for retrieving results for a search query, in milliseconds. This element MUST contain a non-negative number. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is equal to **SearchProvider.FASTSearch,** this MUST be the time that was used to process the request by the query processing service, as described in [MS-FSO] section 2.1.1.7.

Definition: This contains an array of zero or more extracted definitions for a search query. The protocol server SHOULD compute a list of crawled items that contain definitions for the search query. The criteria used to determine what constitutes an extracted definition are specific to the implementation of the protocol server. This element MUST only be present if the **ResultTypes** element in the **properties** element of the Execute operation contains **ResultType.DefinitionResults** (as specified in section 2.2.5.5). If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is equal to **SearchProvider.FASTSearch,** the protocol server MUST NOT return any extracted definitions.

ElapsedTime: The time it took to execute the search query, in milliseconds. This element MUST contain a non-negative number.

IgnoredNoiseWords: This contains an array of zero or more noise words that were found in the search query. If the **properties** element specified in **Execute** message is of the complex type FullTextSqlQueryProperties, then this SHOULD include all noise words that are used in the CONTAINS predicate of the search query (as specified in [MS-SEARCH] section 2.2.12.3.1.1) and FREETEXT predicate of the search query (as specified in [MS-SEARCH] section 2.2.12.3.1.2). If the **properties** element specified in **Execute** message is of the complex type KeywordQueryProperties, then this SHOULD include all noise words used in the text of the search query. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is equal to **SearchProvider.FASTSearch,** the protocol server MUST return an empty array.

KeywordInformation: The protocol server SHOULD store a list of user authored definitions for certain tokens. If such a token is found in the query text, this element SHOULD contain the token and associated definition. If no definition could be found for any of the tokens in the query text, this extended property MUST be empty.

QueryMachine: The name of the computer that is running the search service that executes the search query. The value of this element is specific to the implementation of the protocol server.

QueryModification: The modified search query. The protocol server MAY transform query terms if **EnableSpellcheck** is set to **SpellcheckMode.On** on the request**,** and there is a good chance that the modified query terms will increase the quality of the search results<4>. The criteria used to modify the query are specific to the implementation of the protocol server. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is equal to **SearchProvider.SharepointSearch,** the protocol server MUST NOT return a modified search query.

QueryProcessingTime: The time it took for intermediate processing of the search query on the protocol server, in milliseconds. This value is specific to the implementation of the protocol server.

QueryTerms: An array of zero or more tokens extracted from the search query in the order that they occur. If the **properties** element specified in **Execute** message is of the complex type FullTextSqlQueryProperties, then this SHOULD include all tokens that are used in the CONTAINS predicate of the search query (as specified in [MS-SEARCH] section 2.2.12.3.1.1) and FREETEXT predicate of the search query (as specified in [MS-SEARCH] section 2.2.12.3.1.2). If the **properties** element specified in **Execute** message is of the complex type KeywordQueryProperties, then this SHOULD include all tokens used in the text of the search query. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is equal to **SearchProvider.FASTSearch,** the protocol server MUST return the complete search query in the first element of the array.

SpellingSuggestion: The spelling suggestion for the search query. The protocol server MAY suggest a different spelling of the search query if there is a good chance that the spelling suggestion will increase the quality of the search results.<5> The criteria used to determine the spelling suggestion and when to show it are specific to the implementation of the protocol server.

m_ResultTables: This element MUST contain the query results for the search query. Depending on the formulation of the search query, there can be multiple sets of query results contained within this element. Each set MUST contain query results of a specific type.

3.1.4.1.3.2   ArrayOfResultDefinition (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

An array of zero or more extracted definitions for a search query.

```
<xs:complexType name="ArrayOfResultDefinition">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="ResultDefinition"
type="tns:ResultDefinition"/>
  </xs:sequence>
</xs:complexType>
```

ResultDefinition: This contains a single extracted definition for a search query.

3.1.4.1.3.3   ResultDefinition (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

An extracted definition for a search query.

```
<xs:complexType name="ResultDefinition">
  <xs:annotation>
    <xs:appinfo>
      <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
```

```
        </xs:appinfo>
      </xs:annotation>
      <xs:sequence>
        <xs:element minOccurs="0" name="DocHref" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="DocTitle" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="Sentence" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="TermLength" type="xs:int"/>
        <xs:element minOccurs="0" name="TermOffset" type="xs:int"/>
      </xs:sequence>
    </xs:complexType>
```

DocHref: The URL of a document that contains the extracted definition. The URL MUST be in the format specified in [RFC1738]. This element MUST NOT contain more than 2000 characters.

DocTitle: The title of the document that is referenced by **DocHref**. This element MUST NOT contain more than 2000 characters

Sentence: The sentence in the document referenced by **DocHref** that has the extracted definition. This element MUST NOT contain more than 255 characters.

TermLength: This is the number of characters in the search query text. This MUST be a non-negative number.

TermOffset: This is the zero based offset of the search query text in the sentence contained in the **Sentence** element. This MUST be a non-negative number. This value MUST not be greater than the length of the sentence contained in the **Sentence** element.

3.1.4.1.3.4   KeywordInformation (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

This type specifies zero or more tokens and their associated user authored definitions that are stored in the protocol server.

```
    <xs:complexType name="KeywordInformation">
      <xs:sequence>
        <xs:element minOccurs="0" name="Definition" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="Keyword" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:complexType>
```

Definition: The definitions of the tokens specified in the **Keyword** element, separated by semicolons. If the Keyword element is empty, the value of this element MUST also be empty.

Keyword: The extracted tokens from the search query, separated by semicolons, which have associated definitions stored in the protocol server.

3.1.4.1.3.5   ArrayOfKeyValueOfResultTypeResultTableUTLV0zE5 (from namespace http://schemas.microsoft.com/2003/10/Serialization/Arrays)

This element contains a list of zero or more pairs of **Key** and **Value** elements. Each pair represents a set of query results of a specific type. See section 3.1.4.1.3.6 for the available types of query results.

```
    <xs:complexType name="ArrayOfKeyValueOfResultTypeResultTableUTLV0zE5">
```

```
   <xs:annotation>
     <xs:appinfo>
       <IsDictionary
 xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
     </xs:appinfo>
   </xs:annotation>
   <xs:sequence>
     <xs:element minOccurs="0" maxOccurs="unbounded"
 name="KeyValueOfResultTypeResultTableUTLV0zE5">
       <xs:complexType>
         <xs:sequence>
           <xs:element name="Key"
 xmlns:q2="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
 type="q2:ResultType"/>
           <xs:element name="Value" nillable="true"
 xmlns:q3="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
 type="q3:ResultTable"/>
         </xs:sequence>
       </xs:complexType>
     </xs:element>
   </xs:sequence>
 </xs:complexType>
```

KeyValueOfResultTypeResultTableUTLV0zE5: This contains the pairs that represent sets of query results of a specific type.

KeyValueOfResultTypeResultTableUTLV0zE5.Key: The type of the query results present in the **Value** element. MUST be of **ResultType** simple type as specified in section 2.2.5.5.

KeyValueOfResultTypeResultTableUTLV0zE5.Value: The set of query results of the type specified in the **Key** element. MUST be of the **ResultTable** complex type as specified in section 3.1.4.1.3.6.

3.1.4.1.3.6   ResultTable (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

This contains a list of query results, all of which are of the type specified in **ResultType**. The format of the **Table** element depends on the type of query results. The different types of query results are specified in section 2.2.5.5. The protocol server MUST return the following types of results if requested by the protocol client - relevant results, best bet results, high confidence results, visual best bets results and refinement results.

```
  <xs:complexType name="ResultTable">
    <xs:sequence>
      <xs:element minOccurs="0" name="IsTotalRowsExact" type="xs:boolean"/>
      <xs:element minOccurs="0" name="ResultType"
 xmlns:q20="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
 type="q20:ResultType"/>
      <xs:element minOccurs="0" name="RowCount" type="xs:int"/>
      <xs:element minOccurs="0" name="Table" nillable="true">
        <xs:complexType>
          <xs:annotation>
            <xs:appinfo>
              <ActualType Name="DataTable"
 Namespace="http://schemas.datacontract.org/2004/07/System.Data"
 xmlns="http://schemas.microsoft.com/2003/10/Serialization/"/>
            </xs:appinfo>
```

```
        </xs:annotation>
        <xs:sequence>
          <xs:any minOccurs="0" maxOccurs="unbounded"
  namespace="http://www.w3.org/2001/XMLSchema" processContents="lax"/>
          <xs:any minOccurs="1" namespace="urn:schemas-microsoft-com:xml-diffgram-v1"
  processContents="lax"/>
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element minOccurs="0" name="TimeZoneID" type="xs:int"/>
    <xs:element minOccurs="0" name="TotalRows" type="xs:int"/>
    <xs:element minOccurs="0" name="TotalRowsIncludingDuplicates" type="xs:int"/>
  </xs:sequence>
</xs:complexType>
```

IsTotalRowsExact: This MUST be **true** if the number given in **TotalRows** is an exact number, rather than an approximation, and **false** otherwise.

ResultType: The type of query results returned in the **Table** element.

RowCount: The number of query results contained in the **Table** element.

Table: This contains a table of query results. The information MUST be encoded as an ADO.NET DataTable object using the DiffGram format. This format is specified in [MS-DSDIFFGRAM]. This element MUST contain one of the following types of tables.

Type	Description
ReleventResults Table	This table contains the actual query results. It MUST only be present if the **ResultTypes** element in the **properties** element of the Execute message was either absent or contains **ResultType.RelevantResults** (as specified in section 2.2.5.5). The table MUST have one column per requested property that is specified in **KeywordQueryProperties.SelectProperties** (as specified in section 3.1.4.7.3.1) or **SELECT** statement of the **SharePoint Search SQL syntax** (as specified in [MS-SEARCH] section 2.2.10.3). It MUST have one row per search result. In any given row, the values in the columns MUST represent the value that the corresponding property has for that item. The type of the column MUST be the type of the managed property (as specified in **ManagedPropertyInformation.Type** in section 3.1.1.4).
SpecialTermResults Table	The SpecialTermResults table contains best bets that apply to the search query. It MUST only be present if the **ResultTypes** element in the **properties** element of the Execute operation contains **ResultType.SpecialTermResults** (as specified in section 2.2.5.5). It MUST have one row per best bet, and it MUST have the columns *Title, Url and Description*. The columns MUST contain, respectively, the title of the best bet, the URL that the best bet links to, and a human-readable description of the best bet. All of these columns are of the string type.
HighConfidenceResults Table	The HighConfidenceResults table contains high confidence results that apply to the search query. It MUST only be present if the **ResultTypes** element in the **properties** element of the Execute operation contains **ResultType.HighConfidenceResults** (as specified in section 2.2.5.5) and **ResultsProvider** element in the **properties** element of the Execute operation is not **SearchServer.FASTSearch**. It MUST have one row per high confidence result, and it MUST have the following columns - Title, Url, Description, HighConfidenceImageURL, HighConfidenceDisplayProperty1, HighConfidenceDisplayProperty2, HighConfidenceDisplayProperty3, HighConfidenceDisplayProperty4, HighConfidenceDisplayProperty5,

Type	Description
	HighConfidenceDisplayProperty6, HighConfidenceDisplayProperty7, HighConfidenceDisplayProperty8, HighConfidenceDisplayProperty9, HighConfidenceDisplayProperty10, HighConfidenceDisplayProperty11, HighConfidenceDisplayProperty12, HighConfidenceDisplayProperty13, HighConfidenceDisplayProperty14, HighConfidenceDisplayProperty15, HighConfidenceType. All of these columns are of string type. The *Title* column MUST contain the title of the high confidence result. This column MUST not be empty. The *URL* column MUST contain a valid URL that points to the high confidence result. This column MUST not be empty. The *Description* column SHOULD contain a description of the high confidence result. The *HighConfidenceImageUrl* column SHOULD contain the URL of a picture that represents the high confidence result. The *HighConfidenceType* column MUST contain the type of the high confidence result. It MUST NOT be empty. The possible value for this column is defined by the search administrator. The use of all other columns is up to the search administrator.
VisualBestBetsResults Table	The VisualBestBetsResults table contains visual best bets that apply to the search query. It MUST only be present if the **ResultTypes** element in the **properties** element of the Execute operation contains **ResultType.VisualBestBetsResults** (as specified in section 2.2.5.5) and **ResultsProvider** element in the **properties** element of the Execute operation is NOT **SearchServer.SharepointSearch**. It MUST have one row per visual best bet, and it MUST have the columns *Name*, *Uri*, *Description, Keyword, Teaser, TeaserContentType*. The columns MUST contain, respectively, the name of the visual best bet, the URL that the visual best bet links to, a human-readable description of the visual best bet, the keyword term for the visual best bet, a short summary to be displayed, and the content type of the summary. All of these columns are of string type.
RefinementResults Table	The RefinementResults table contains refinement results that apply to the search query. It MUST only be present if the **ResultTypes** element in the **properties** element of the Execute operation contains **ResultType.RefinementResults** (as specified in section 2.2.5.5) and **ResultsProvider** element in the **properties** element of the Execute operation is not **SearchServer.SharepointSearch**. It MUST have one row per **refinement**, and it MUST have the columns "RefinerName", "RefinementName", "RefinementValue", "RefinementCount" and "RefinementToken". The columns MUST contain, respectively, the name of the refined managed property, the display name of the refinement, the value of the refinement bucket, the result count for this refinement, and the token used to apply the refinement through a new query. All of these columns are of string type, except RefinementCount which is of type integer.

TimeZoneID: Contains the local time zone identifier which represents the local time zone of the web site that processes the search query. The protocol server MUST return local time identifier according to the specified time zone.

TotalRows: This element MUST contain an approximation of the total number of results that match the conditions given in the search query and are of the type specified in the **ResultType** element.

TotalRowsIncludingDuplicates: This element MUST contain the total number of results, including duplicates, that match the conditions given in the search query and are of the type specified in the **ResultType** element.

3.1.4.2 GetClickFrequenciesForUrl

This operation is used to retrieve the click frequencies of a given URI for the past week and the past month from a given reference date.

```
<wsdl:operation name="GetClickFrequenciesForUrl">
  <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetClickFrequenciesForUrl"
message="tns:ISearchQueryServiceApplication_GetClickFrequenciesForUrl_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetClickFrequenciesForUrlRespo
nse" message="tns:ISearchQueryServiceApplication_GetClickFrequenciesForUrl_OutputMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetClickFrequenciesForUrlSearc
hServiceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetClickFrequenciesForUrl_SearchServiceApplicatio
nFaultFault_FaultMessage"/>
</wsdl:operation>
```

The protocol client sends an
ISearchQueryServiceApplication_GetClickFrequenciesForUrl_InputMessage request message and the
protocol server responds with an
ISearchQueryServiceApplication_GetClickFrequenciesForUrl_OutputMessage response message, as
follows:

- On receipt, the protocol server checks the value of **url**. If the **url** element is absent, empty or
  contains more than 1024 characters, the protocol server MUST return a
  FaultException<ExceptionDetails> message to the protocol client.

- On success, the protocol server returns the numbers specifying the click frequencies of **url** to the
  protocol client.

- On error, the protocol server MUST return a **FaultException<ExceptionDetails>** message to
  the protocol client.

3.1.4.2.1 Messages

3.1.4.2.1.1 ISearchQueryServiceApplication_GetClickFrequenciesForUrl_InputMessage

The requested WSDL message for the **GetClickFrequenciesForUrl** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetClickFrequenciesForUrl
```

The SOAP body contains the **GetClickFrequenciesForUrl** element.

3.1.4.2.1.2 ISearchQueryServiceApplication_GetClickFrequenciesForUrl_OutputMessage

The response WSDL message for the **GetClickFrequenciesForUrl** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetClickFrequenciesForUrlResponse
```

The SOAP body contains the **GetClickFrequenciesForUrlResponse** element.

3.1.4.2.2 Elements

3.1.4.2.2.1 GetClickFrequenciesForUrl

The input data for the **GetClickFrequenciesForUrl** WSDL operation.

```
<xs:element name="GetClickFrequenciesForUrl">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="url" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="referenceDate" type="xs:dateTime"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

url: Specifies the URI of which the click frequencies MUST be returned. The value MUST have the valid URI format, as specified in [RFC2396].

referenceDate: Specifies the date from which the past 7 days (week) and past 30 days (month) of click frequencies are calculated.

3.1.4.2.2.2 GetClickFrequenciesForUrlResponse

The result data for the **GetClickFrequenciesForUrl** WSDL operation.

```
<xs:element name="GetClickFrequenciesForUrlResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetClickFrequenciesForUrlResult" nillable="true"
xmlns:q14="http://schemas.microsoft.com/2003/10/Serialization/Arrays" type="q14:ArrayOfint"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetClickFrequenciesForUrlResult: Specifies the click frequencies of **url** for the past week (7 days) and past month (30 days) from a given reference date.

3.1.4.2.3 Complex Types

3.1.4.2.3.1 ArrayOfint (from namespace http://schemas.microsoft.com/2003/10/Serialization/Arrays)

The **ArrayOfint** complex type contains the click frequencies of a given URI for the past 7 days and past 30 days from a given reference date, respectively.

```
<xs:complexType name="ArrayOfint">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="int" type="xs:int"/>
  </xs:sequence>
```

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

int: Specifies the number of clicks that happened in a given time period.

3.1.4.3 GetProperties

This operation is used by the protocol client to retrieve information about all the managed properties defined in the protocol server.

```
<wsdl:operation name="GetProperties">
   <wsdl:input wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetProperties"
message="tns:ISearchQueryServiceApplication_GetProperties_InputMessage"/>
   <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetPropertiesResponse"
message="tns:ISearchQueryServiceApplication_GetProperties_OutputMessage"/>
   <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetPropertiesSearchServiceAppl
icationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetProperties_SearchServiceApplicationFaultFault_
FaultMessage"/>
</wsdl:operation>
```

The protocol client sends an ISearchSiteAdministrationServiceApplication_GetProperties_InputMessage request message and the protocol server responds with an ISearchSiteAdministrationServiceApplication_GetProperties_OutputMessage response message, as follows:

▪ The **properties** element in the request message MUST conform to the schema of the **KeywordQueryProperties** data type as specified in section 3.1.4.7.3.1 or MUST conform to the schema of **FullTextSqlQueryProperties** data type as specified in section 2.2.4.8.

▪ On receipt, the protocol server MUST ignore the properties element in the request.

▪ The protocol server returns information about all the managed properties defined in the protocol server.

▪ On any error processing the request, the protocol server MUST return a **FaultException<ExceptionDetail>** error message.

3.1.4.3.1 Messages

3.1.4.3.1.1 ISearchQueryServiceApplication_GetProperties_InputMessage

The requested WSDL message for the **GetProperties** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetProperties
```

The SOAP body contains the **GetProperties** element.

3.1.4.3.1.2   ISearchQueryServiceApplication_GetProperties_OutputMessage

The response WSDL message for the **GetProperties** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetPropertiesResponse
```

The SOAP body contains the **GetPropertiesResponse** element.

3.1.4.3.2   Elements

3.1.4.3.2.1   GetProperties

The input data for the **GetProperties** WSDL operation.

```
<xs:element name="GetProperties">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="properties" nillable="true"
xmlns:q4="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q4:QueryProperties"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

properties: Specifies the properties configured in a search query. This element MUST not be empty. This element MUST conform to the schema of either the **KeywordQueryProperties** data type as specified in section 3.1.4.7.3.1 or the **FullTextSqlQueryProperties** data type as specified in section 2.2.4.8.

3.1.4.3.2.2   GetPropertiesResponse

The result data for the **GetProperties** WSDL operation.

```
<xs:element name="GetPropertiesResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetPropertiesResult" nillable="true"
xmlns:q5="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q5:ArrayOfPropertyInformation"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetPropertiesResult: An ArrayOfPropertyInformation data type as specified in section 3.1.4.3.3.1. Each **PropertyInformation** child element MUST represent information about a managed property defined in the protocol server.

3.1.4.3.3   Complex Types

3.1.4.3.3.1   ArrayOfPropertyInformation (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **ArrayOfPropertyInformation** complex type contains information about a collection of managed properties.

```
<xs:complexType name="ArrayOfPropertyInformation">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="PropertyInformation"
nillable="true" type="tns:PropertyInformation"/>
  </xs:sequence>
</xs:complexType>
```

PropertyInformation: Each **PropertyInformation** child element MUST contain information about a managed property. Each **PropertyInformation** element MUST be of **PropertyInformation** data type as specified in section 3.1.4.3.3.2.

3.1.4.3.3.2   PropertyInformation (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **PropertyInformation** complex type contains information about a managed property

```
<xs:complexType name="PropertyInformation">
  <xs:sequence>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="FullTextQueriable" type="xs:boolean"/>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Refinable" type="xs:boolean"/>
    <xs:element minOccurs="0" name="Retrievable" type="xs:boolean"/>
    <xs:element minOccurs="0" name="Sortable" type="xs:boolean"/>
    <xs:element minOccurs="0" name="m_TypeFullName" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

Description: Specifies the description of the property.

FullTextQueriable: Specifies whether the managed property is a full-text searchable managed property. A value of **true** specifies that the property is a full-text searchable managed property; a value of **false** specifies that the property is not a full-text searchable managed property.

Name: Specifies the name of the managed property.

Refinable: Specifies whether the managed property has a deep refiner. A value of **true** specifies that the property has a refiner; a value of **false** specifies that the property does not have a refiner. If **Query.ResultsProvider** is "SharepointSearch", the property MUST be **false**.

Retrievable: Specifies if the managed property is a retrievable managed property. A value of **true** specifies that the property is a retrievable managed property; a value of **false** specifies that the property is not a retrievable managed property.

Sortable: Specifies whether the managed property can be used to sort search results ascending or descending. A value of **true** specifies that the property can be used for sorting; a value of **false**

specifies that the property cannot be used for sorting. If **Query.ResultsProvider** is "SharepointSearch", the property MUST be **false**.

m_TypeFullName: Specifies the type of the managed property. MUST be one of the following values:

- System.String

- System.Int64

- System.Double

- System.DateTime

- System.Boolean

- System.Byte

3.1.4.4 GetQuerySuggestions

This operation is used to retrieve a list of query suggestions to match a search query. There are two types of query suggestions: pre query suggestions and post query suggestions. In pre query suggestions, the last term in search box SHOULD be matched by prefix. In post query suggestions, query suggestions the last term SHOULD be matched exactly.

```
<wsdl:operation name="GetQuerySuggestions">
  <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetQuerySuggestions"
message="tns:ISearchQueryServiceApplication_GetQuerySuggestions_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetQuerySuggestionsResponse"
message="tns:ISearchQueryServiceApplication_GetQuerySuggestions_OutputMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetQuerySuggestionsSearchServi
ceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetQuerySuggestions_SearchServiceApplicationFault
Fault_FaultMessage"/>
</wsdl:operation>
```

The protocol client sends an ISearchQueryServiceApplication_GetQuerySuggestions_InputMessage request message and the protocol server responds with an ISearchQueryServiceApplication_GetQuerySuggestions_OutputMessage response message, as follows:

- On success, the protocol server returns a list of query suggestions.

- On error, the protocol server MUST send a **FaultException<ExceptionDetails>** message to the protocol client.

3.1.4.4.1 Messages

3.1.4.4.1.1 ISearchQueryServiceApplication_GetQuerySuggestions_InputMessage

The requested WSDL message for the **GetQuerySuggestions** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetQuerySuggestions
```

The SOAP body contains the **GetQuerySuggestions** element.

3.1.4.4.1.2 ISearchQueryServiceApplication_GetQuerySuggestions_OutputMessage

The response WSDL message for the **GetQuerySuggestions** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetQuerySuggestionsResponse
```

The SOAP body contains the **GetQuerySuggestionsResponse** element.

3.1.4.4.2 Elements

3.1.4.4.2.1 GetQuerySuggestions

The input data for the **GetQuerySuggestions** WSDL operation.

```
<xs:element name="GetQuerySuggestions">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="properties" nillable="true"
xmlns:q8="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q8:QueryProperties"/>
      <xs:element minOccurs="0" name="iNumberOfSuggestions" type="xs:int"/>
      <xs:element minOccurs="0" name="fPreQuerySuggestions" type="xs:boolean"/>
      <xs:element minOccurs="0" name="fHitHighlighting" type="xs:boolean"/>
      <xs:element minOccurs="0" name="fCapitalizeFirstLetters" type="xs:boolean"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

properties: Specifies the query properties of the search query. The value MUST be **QueryProperties** data type, as specified in section 2.2.4.12.

iNumberOfSuggestions: Specifies the number of query suggestions to retrieve. The value MUST be a positive integer.

fPreQuerySuggestions: Specifies whether to retrieve pre query suggestions. if **true** the protocol server SHOULD return pre query suggestions. Otherwise, the protocol server SHOULD return post query suggestions.

fHitHighlighting: Specifies whether protocol server SHOULD highlight the collection of query suggestions. If **true** the protocol server SHOULD surround the terms in the returned query suggestions that match terms in the specified query with **B** and **/B** HTML tags. Otherwise, the protocol server SHOULD not surround matching terms by any HTML tags.

fCapitalizeFirstLetters: Specifies whether to capitalize first letters in each term in query suggestions. A value of **true** indicates that protocol server SHOULD capitalize terms. Otherwise, the protocol server SHOULD not capitalize terms.

3.1.4.4.2.2 GetQuerySuggestionsResponse

The result data for the **GetQuerySuggestions** WSDL operation.

```
<xs:element name="GetQuerySuggestionsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetQuerySuggestionsResult" nillable="true"
xmlns:q9="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
type="q9:ArrayOfanyType"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetQuerySuggestionsResult: Specifies a collection of query suggestions for the search query terms in the search box.

3.1.4.5 GetScopes

This operation is used by the protocol client to retrieve information about all the search scopes that are available on the protocol server for the specified search scope consumer.

```
<wsdl:operation name="GetScopes">
  <wsdl:input wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetScopes"
message="tns:ISearchQueryServiceApplication_GetScopes_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetScopesResponse"
message="tns:ISearchQueryServiceApplication_GetScopes_OutputMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetScopesSearchServiceApplicat
ionFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetScopes_SearchServiceApplicationFaultFault_Faul
tMessage"/>
</wsdl:operation>
```

The protocol client sends an ISearch QueryServiceApplication_GetScopes_InputMessage request message and the protocol server responds with an ISearchQueryServiceApplication_GetScopes_OutputMessage response message, as follows:

- The protocol client MUST place in the **properties** element the Identifier of the search scope consumer for which all the search scopes MUST be returned by the protocol server. The properties element MUST conform to the schema of **KeywordQueryProperties** data type as specified in section 3.1.4.7.3.1 or the schema of **FullTextSqlQueryProperties** data type as specified in section 2.2.4.8. The protocol client MUST specify the identifier of the search scope consumer in the **properties.SiteID** child element.

- On receipt the protocol server looks up the value of the **properties.SiteID** child element of the request message in the collection of consumers and return information about all the **shared search scopes** and **local search scopes** defined for the search scope consumer in the protocol server.

- If the **QueryProperties.SiteID** element is not present in the collection of search scope consumers or a value is not specified, then the protocol server MUST only return all the shared search scopes defined in the protocol server.

- The protocol server MUST return a **FaultException<ExceptionDetail>** error message in the following conditions

  - The identifier specified in the **properties.SiteID** child element does not match the identifier of any search scope consumer defined in the protocol server.

  - Any error in interpreting the request message.

3.1.4.5.1 Messages

3.1.4.5.1.1 ISearchQueryServiceApplication_GetScopes_InputMessage

The requested WSDL message for the **GetScopes** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetScopes
```

The SOAP body contains the **GetScopes** element.

3.1.4.5.1.2 ISearchQueryServiceApplication_GetScopes_OutputMessage

The response WSDL message for the **GetScopes** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetScopesResponse
```

The SOAP body contains the **GetScopesResponse** element.

3.1.4.5.2 Elements

3.1.4.5.2.1 GetScopes

The input data for the **GetScopes** WSDL operation.

```
<xs:element name="GetScopes">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="properties" nillable="true"
xmlns:q6="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q6:QueryProperties"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

properties: This element MUST not be empty. This element MUST conform to the schema of **KeywordQueryProperties** data type as specified in section 3.1.4.7.3.1 or the schema of **FullTextSqlQueryProperties** data type as specified in section 2.2.4.8. The protocol client MUST specify the identifier of the search scope consumer in the **properties.SiteID** child element. The value of **properties.SiteID** MUST be used by the protocol server to identify local search scopes that MUST be returned. If **properties.SiteID** is empty or not present then the protocol server MUST return zero local search scopes and all the shared search scopes.

3.1.4.5.2.2 GetScopesResponse

The result data for the **GetScopes** WSDL operation.

```
<xs:element name="GetScopesResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetScopesResult" nillable="true"
xmlns:q7="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q7:ArrayOfScopeInformation"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetScopesResult: An **ArrayOfScopeInformation** data type as specified in section 3.1.4.5.3.1. Each **ScopeInformation** child element MUST represent information about a search scope. The protocol server MUST include all the shared search scopes and all the local search scopes for the specified consumer in the **GetScopesResult** element.

3.1.4.5.3 Complex Types

3.1.4.5.3.1 ArrayOfScopeInformation (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **ArrayOfScopeInformation** complex type contains information about a collection of search scopes.

```
<xs:complexType name="ArrayOfScopeInformation">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="ScopeInformation" nillable="true"
type="tns:ScopeInformation"/>
  </xs:sequence>
</xs:complexType>
```

ScopeInformation: Each **ScopeInformation** child element MUST contain information about a search scope. Each **ScopeInformation** element MUST be a **ScopeInformation** data type as specified in Section 3.1.4.5.3.2.

3.1.4.5.3.2 ScopeInformation (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **ScopeInformation** complex type contains information about a search scope

```
<xs:complexType name="ScopeInformation">
  <xs:sequence>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Filter" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ID" type="xs:int"/>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="State"
xmlns:q21="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrat
ion" type="q21:ScopeCompilationState"/>
  </xs:sequence>
</xs:complexType>
```

Description: Description of the search scope.

Filter: Filter of the search scope. The **Filter** element MUST either contain an expression in **FAST Query Language (FQL)** syntax as described in [MS-FSFQL], the name of a searchable property, or both. The name of a searchable property MUST be prefixed with "fulltextindex=". If both are specified, the FAST Query Language expression MUST be specified first, followed by ",fulltextindex=" and the name of the full-text searchable property. The filter of the scope MUST be ignored by the protocol server if **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**.

ID: Specifies the unique identifier of the search scope.

Name: Specifies the name of the search scope.

State: Specifies the compilation state of the search scope. This element MUST be a **ScopeCompilationState** data type as specified in section 3.1.4.5.4.1.

3.1.4.5.4   Simple Types

3.1.4.5.4.1   ScopeCompilationState (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administration)

The **ScopeCompilationState** simple type contains information about the compilation state of a search scope.

```
<xs:simpleType name="ScopeCompilationState">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Empty"/>
    <xs:enumeration value="Invalid"/>
    <xs:enumeration value="QueryExpanded"/>
    <xs:enumeration value="NeedsCompile"/>
    <xs:enumeration value="Compiled"/>
    <xs:enumeration value="NeedsRecompile"/>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for ScopeCompilationState:

Value	Meaning
Empty	The search scope is empty and there MUST be no **search scope rules** defined for the search scope.
Invalid	The search scope is invalid.
QueryExpanded	The search scope is expanded at query time. The search scope MUST have more than or equal to 1 and less than or equal to 25 search scope rules.
NeedsCompile	The search scope needs to be compiled for the first time.
Compiled	The search scope is compiled.
NeedsRecompile	The search scope needs to be recompiled.

3.1.4.6 GetSearchServiceApplicationInfo

This operation is used by the protocol client to get the properties configured for the search application.

```
<wsdl:operation name="GetSearchServiceApplicationInfo">
  <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetSearchServiceApplicationInf
o"
message="tns:ISearchQueryServiceApplication_GetSearchServiceApplicationInfo_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetSearchServiceApplicationInf
oResponse"
message="tns:ISearchQueryServiceApplication_GetSearchServiceApplicationInfo_OutputMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetSearchServiceApplicationInf
oSearchServiceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetSearchServiceApplicationInfo_SearchServiceAppl
icationFaultFault_FaultMessage"/>
</wsdl:operation>
```

The protocol client sends a
ISearchQueryServiceApplication_getSearchServieApplicationInfo_InputMessage request message
and the protocol server responds with a
ISearchQueryServiceApplication_getSearchServieApplicationInfo_OutputMessage response message,
as follows:

- On receipt, the protocol server returns properties configured by the protocol server for the search application.

- On error, the protocol server MUST send a **FaultException<ExceptionDetail>** message to the protocol client.

3.1.4.6.1 Messages

3.1.4.6.1.1 ISearchQueryServiceApplication_GetSearchServiceApplicationInfo_InputMessage

The requested WSDL message for the **GetSearchServiceApplicationInfo** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetSearchServiceApplicationInfo
```

The SOAP body contains the **GetSearchServiceApplicationInfo** element.

3.1.4.6.1.2 ISearchQueryServiceApplication_GetSearchServiceApplicationInfo_OutputMessage

The response WSDL message for the **GetSearchServiceApplicationInfo** method.

The SOAP action value is:

The SOAP body contains the **GetSearchServiceApplicationInfoResponse** element.

3.1.4.6.2 Elements

3.1.4.6.2.1 GetSearchServiceApplicationInfo

The input data for the **GetSearchServiceApplicationInfo** WSDL operation.

```
<xs:element name="GetSearchServiceApplicationInfo">
  <xs:complexType>
    <xs:sequence/>
  </xs:complexType>
</xs:element>
```

3.1.4.6.2.2 GetSearchServiceApplicationInfoResponse

The result data for the **GetSearchServiceApplicationInfo** WSDL operation.

```
<xs:element name="GetSearchServiceApplicationInfoResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetSearchServiceApplicationInfoResult" nillable="true"
xmlns:q17="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q17:SearchServiceApplicationInfo"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetSearchServiceApplicationInfoResult: Contains properties configured for the search application.

3.1.4.6.3 Complex Types

3.1.4.6.3.1 SearchServiceApplicationInfo (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **SearchSeriveApplicationInfo** complex type represents the properties configured for a search application.

```
<xs:complexType name="SearchServiceApplicationInfo">
  <xs:sequence>
    <xs:element minOccurs="0" name="DefaultSearchProvider"
xmlns:q26="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
type="q26:SearchProvider"/>
    <xs:element minOccurs="0" name="PropertyBag" nillable="true"
xmlns:q27="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
type="q27:ArrayOfKeyValueOfstringstring"/>
    <xs:element minOccurs="0" name="QueryLoggingEnabled" type="xs:boolean"/>
    <xs:element minOccurs="0" name="QuerySuggestionsEnabled" type="xs:boolean"/>
    <xs:element minOccurs="0" name="SearchServiceApplicationId" type="ser:guid"/>
  </xs:sequence>
```

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

DefaultSearchProvider: Specifies the default search provider that will be used to serve the search requests if a search provider is not explicitly provided. This element MUST be **SearchProvider** data type as specified in section 2.2.5.6.

PropertyBag: Specifies configuration settings applicable when **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.FASTSearch**. When **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is NOT **SearchProvider.FASTSearch**, this element MUST be ignored. MUST be key-value pairs, as specified in the following table.

Key	Meaning
FASTSearchContextProperties	A comma separated string of user specific managed properties the protocol server MUST use when allowing a site administrator to define a search setting context to associate with best bets, visual best bets, promotions and demotions. Example value: "title,skills". The protocol client SHOULD submit values for these properties in **UserContextData** when querying, see section 3.1.4.7.3.1.
FASTSearchAdminServiceAuthenticationUser	A user that the protocol server MUST use for authentication and authorization of operations on the site administration and central administration services. The user MUST be part of the **FASTSearchAdministrators** local group, as described in [MS-FSAS] section 2.1. User MUST be a domain user and specified either as *<domain>\<user>* or *<user>@<domain>*, where *<domain>* is the domain the user belongs to, and *<user>* is the user alias.
FASTSearchAdminServiceLocation	The **host name** and port number which the protocol server MUST use to access all administration services, except the resource store service (see **FASTSearchResourceStoreLocation**). These administration services are described in [MS-FSAS]. This value MUST be specified as "*<host>*:*<port>*" where *<host>* MUST be the fully qualified domain name of the computer on which the administration services are running, and *<port>* MUST be the port number on the *<host>* computer on which these services are running.
FASTSearchResourceStoreLocation	The host name and port number that the protocol server MUST use to access the resource store. The resource store is described in [MS-FSRS]. This value MUST be specified as "*<host>*:*<port>*" where *<host>* MUST be the fully qualified domain name of the computer on which the resource store is running, and *<port>* MUST be the port number on the *<host>* computer on which the resource store is running.
FASTSearchQueryServiceLocation	The location of one or more query matching services that the protocol server MUST access to get search results. The query matching service is described in [MS-FSDQE]. A location MUST be specified as "<host>:*<port>*" where *<host>* MUST be the fully qualified domain name of the computer on which the query matching service is available,

Key	Meaning
	and *<port>* MUST be the port number on the *<host>* computer on which the query matching service is available. If multiple service locations are specified, they MUST be separated by comma. The protocol server MUST only access one query matching service for each query.
FASTSearchContextCacheTimeout	The timeout period the protocol client SHOULD use to cache values read in **FASTSearchContextProperties**. When the timeout period expires, the protocol client SHOULD read the value of **FASTSearchContextProperties** into the cache again.
FASTSearchDisableUserContext	If **true**, the protocol client SHOULD not submit values for **FASTSearchContextProperties** in **UserContextData** when querying (see section 3.1.4.7.3.1).
FASTSearchAlternateAccessMapProperties	A comma-separated list of managed properties the protocol server MUST use for alternate access mapping.
FASTSearchManagedPropertyResultMapping	A key-value set of managed properties used to override value of one managed property with value of another managed property. For each set of managed properties specified in the map, the protocol server MUST copy value of **key** managed property into the corresponding **value** managed property from the map. All managed properties in the set MUST be specified in the **KeywordQueryProperties.SelectProperties** property.

QueryLoggingEnabled: Specifies whether **query logging** is enabled for the search application. The protocol server MUST return **true** if query logging is enabled; the protocol server MUST return **false** if query logging is not enabled.

QuerySuggestionsEnabled: Specified whether query suggestions is turned on for the search application. The protocol server MUST return **true** if query suggestions is turned on; the protocol server MUST return **false** if query suggestions are turned off. If query suggestions are turned off the GetQuerySuggestions method MUST return empty list of query suggestions, as specified in as specified in section 3.1.4.4

SearchServiceApplicationId: Specifies a global unique identifier of the **SearchServiceApplication**.

3.1.4.6.3.2 ArrayOfKeyValueOfstringstring (from namespace http://schemas.microsoft.com/2003/10/Serialization/Arrays)

This type represents an array of properties in the form of key-value pairs

```
<xs:complexType name="ArrayOfKeyValueOfstringstring">
  <xs:annotation>
    <xs:appinfo>
      <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="KeyValueOfstringstring">
      <xs:complexType>
```

```
        <xs:sequence>
          <xs:element name="Key" nillable="true" type="xs:string"/>
          <xs:element name="Value" nillable="true" type="xs:string"/>
        </xs:sequence>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

KeyValueOfstringstring: This specifies a single property.

KeyValueOfstringstring.Key: This specifies the a unique identifier for the property.

KeyValueOfstringstring.Value: This specifies the value of the property corresponding to the identifier specified in the **Key** element.

3.1.4.7 GetSearchTerms

This operation is used by the protocol client to retrieve the text restriction of a keyword query as interpreted by the protocol server.

```
<wsdl:operation name="GetSearchTerms">
  <wsdl:input wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetSearchTerms"
message="tns:ISearchQueryServiceApplication_GetSearchTerms_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetSearchTermsResponse"
message="tns:ISearchQueryServiceApplication_GetSearchTerms_OutputMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetSearchTermsSearchServiceApp
licationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetSearchTerms_SearchServiceApplicationFaultFault
_FaultMessage"/>
</wsdl:operation>
```

The protocol client sends an ISearchQueryServiceApplication_GetSearchTerms_InputMessage request message and the protocol server responds with a ISearchQueryServiceApplication_GetSearchTerms_OutputMessage response message, as follows

- The protocol client MUST place in the **properties** element the query text for which the text restriction MUST be returned by the protocol server. The **properties** element MUST conform to the schema of the **KeywordQueryProperties** data type as specified in section 3.1.4.7.3.1. The protocol client MUST specify the query text in the **properties.QueryText** child element.

- On receipt, the protocol server MUST return in the **GetSearchTermsResult** child element of the response message a modified version of the **QueryText** child element of the request message. The modified query MUST have replaced every part of the query text that is interpreted as a property-expression or and-operator, as specified [MS-SEARCH] section 2.2.10.2, with a Unicode code point U+0020 (space character).

- The protocol server MUST return a **FaultException<ExceptionDetail>** error message in the following conditions:

  - The properties element does not conform to the schema of the **KeywordQueryProperties** complex type.

  - Any error in interpreting the **QueryText** child element.

3.1.4.7.1 Messages

3.1.4.7.1.1 ISearchQueryServiceApplication_GetSearchTerms_InputMessage

The requested WSDL message for the **GetSearchTerms** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetSearchTerms
```

The SOAP body contains the **GetSearchTerms** element.

3.1.4.7.1.2 ISearchQueryServiceApplication_GetSearchTerms_OutputMessage

The response WSDL message for the **GetSearchTerms** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetSearchTermsResponse
```

The SOAP body contains the **GetSearchTermsResponse** element.

3.1.4.7.2 Elements

3.1.4.7.2.1 GetSearchTerms

The input data for the **GetSearchTerms** WSDL operation.

```
<xs:element name="GetSearchTerms">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="properties" nillable="true"
xmlns:q1="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q1:KeywordQueryProperties"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

properties: Specifies the properties for the search query. This element MUST not be empty. This element MUST conform to the schema of the **KeywordQueryProperties** data type as specified in section 3.1.4.7.3.1. The protocol client MUST specify the query text for which the text restriction MUST be included in the response from the protocol server in the **properties.QueryText** child element. If the element does not match the schema of the **KeywordQueryProperties** complex type, the protocol server MUST return a **FaultException<ExceptionDetail>** error message.

3.1.4.7.2.2 GetSearchTermsResponse

The result data for the **GetSearchTerms** WSDL operation.

```
<xs:element name="GetSearchTermsResponse">
  <xs:complexType>
    <xs:sequence>
```

```
        <xs:element minOccurs="0" name="GetSearchTermsResult" nillable="true"
type="xs:string"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
```

GetSearchTermsResult: Specifies the text restriction of **properties.QueryText** element as interpreted by the protocol server.

3.1.4.7.3 Complex Types

3.1.4.7.3.1 KeywordQueryProperties (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **KeywordQueryProperties** complex type contains information about a **Keyword query** search query. The **KeywordQueryproperties** extends the **QueryProperties** data type as specified in section 2.2.4.12.

```
  <xs:complexType name="KeywordQueryProperties">
    <xs:complexContent mixed="false">
      <xs:extension base="tns:QueryProperties">
        <xs:sequence>
          <xs:element minOccurs="0" name="CustomRefinementIntervals" nillable="true"
xmlns:q1="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
type="q1:ArrayOfKeyValueOfstringArrayOfRefinementInterval_PFsic3Az"/>
          <xs:element minOccurs="0" name="EnableFQL" type="xs:boolean"/>
          <xs:element minOccurs="0" name="EnableSpellcheck"
xmlns:q2="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
type="q2:SpellcheckMode"/>
          <xs:element minOccurs="0" name="EnableUrlSmashing" type="xs:boolean"/>
          <xs:element minOccurs="0" name="HiddenConstraints" nillable="true" type="xs:string"/>
          <xs:element minOccurs="0" name="MaxShallowRefinementHits" type="xs:int"/>
          <xs:element minOccurs="0" name="MaxSummaryLength" type="xs:int"/>
          <xs:element minOccurs="0" name="MaxUrlLength" type="xs:int"/>
          <xs:element minOccurs="0" name="RefinementFilters" nillable="true"
xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
type="q3:ArrayOfanyType"/>
          <xs:element minOccurs="0" name="Refiners" nillable="true" type="xs:string"/>
          <xs:element minOccurs="0" name="ResubmitFlags"
xmlns:q4="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
type="q4:ResubmitFlag"/>
          <xs:element minOccurs="0" name="SelectProperties" nillable="true"
xmlns:q5="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
type="q5:ArrayOfanyType"/>
          <xs:element minOccurs="0" name="SimilarTo" nillable="true" type="xs:string"/>
          <xs:element minOccurs="0" name="SimilarType"
xmlns:q6="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
type="q6:SimilarType"/>
          <xs:element minOccurs="0" name="SortList" nillable="true" type="tns:SortCollection"/>
          <xs:element minOccurs="0" name="SortSimilar" type="xs:boolean"/>
          <xs:element minOccurs="0" name="TrimDuplicatesIncludeId" type="xs:long"/>
          <xs:element minOccurs="0" name="TrimDuplicatesKeepCount" type="xs:int"/>
          <xs:element minOccurs="0" name="TrimDuplicatesOnProperty" nillable="true"
type="xs:string"/>
          <xs:element minOccurs="0" name="UserContextData" nillable="true" type="xs:string"/>
          <xs:element minOccurs="0" name="UserContextGroupID" nillable="true"
type="xs:string"/>
        </xs:sequence>
```

```
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
```

CustomRefinementIntervals: Specifies the refinement bins for one or more refiners. The protocol server MUST use these refinement bins if returning refinement values for the refiner. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

EnableFQL: Specifies the type of the query. A value of **true** specifies that the query is specified as a **FAST Query Language (FQL)** query as specified in [MS-FSFQL]; a value of **false** indicates that the query is specified as a **SharePoint Search keyword** query as specified in [MS-SEARCH] section 2.2.9. If **EnableFQL** is not set by protocol client, the protocol server MUST behave as if value **false** is specified by protocol client. If **QueryProperties.ResultsProvider** is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

EnableSpellcheck: Specifies how the protocol server SHOULD suggest a different spelling of the search query, as specified in section 3.1.4.7.4.1. If the value is **SpellcheckMode.Off**, the protocol server MUST NOT suggest a different spelling of the search query. If the value is **SpellcheckMode.Suggest**, the protocol server SHOULD suggest a different spelling if there is a good chance that the spelling suggestion will increase the quality of the search results. The criteria used to determine the spelling suggestion is specific to the implementation of the protocol server. If there is a spelling suggestion, the protocol server MUST set it in the **SpellingSuggestion** property of the search result (as specified in 3.1.4.1.3.1). If the value is **SpellcheckMode.On,** the protocol server MUST re-write the search query to be the same as the spelling suggestion before evaluating the query and returning results, if there is a good chance that the spelling suggestion will increase the quality of the search results. The exact details of how the protocol server decides if there is a good chance to improve quality of the search results is implementation detail of the server and not specified by this protocol. If there was a rewrite of the query, the protocol server MUST set it in the **QueryModification** property of the search result (see 3.1.4.1.3.1). If **EnableSpellCheck** is not set by protocol client, the protocol server MUST behave as if value **SpellcheckMode.Suggest** is specified by protocol client. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

EnableUrlSmashing: Specifies whether the protocol server MUST combine all the **tokens** of the query text to form a query result with the URL formed by combining the tokens. A value of **true** specifies that the protocol server SHOULD return the URL formed by combining the tokens as a search result; a value of **false** specifies that the protocol server MUST NOT return the URL formed by combining tokens as a search result. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is equal to **SearchProvider.FASTSearch,** the complex type MUST be ignored by the protocol server.

HiddenConstraints: Specifies additional query terms that MUST be appended to the **QueryProperties.queryText** element. This element is used by the end user interface to pass hidden constraints of the query that are not entered by the end user. If this element is not present or a value is not specified, a default value of an empty string MUST be used.

MaxShallowRefinementHits: Specified in [MS-SEARCH], see **Query.IncludeRefinementResults.MaxShallowRefinementHits** in section 2.2.3.1. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

MaxSummaryLength: Specifies the maximum length of characters of property with name **HitHighlightedSummary**. MUST be a positive integer.

MaxUrlLength: Reserved. MUST be ignored by protocol server.

RefinementFilters: The list of **refinement tokens** for drilldown into search results. Refinement tokens are returned as part of the **RefinementResults** table (see 3.1.4.1.3.6) for the search query. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

Refiners: Specifies a list of refiners as a comma separated list of strings. The syntax for a refiner is specified in [MS-SEARCH], see **Query.IncludeRefinementResults.Refiners.Refiner** in section 2.2.3.1. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

ResubmitFlags: Specifies how the protocol server MUST behave if no query results are returned from original query. If present, the value MUST be a **ResubmitFlag** data type as specified in section 3.1.4.7.4.2. Section 3.1.4.7.4.2 also describes how the protocol server MUST behave. If not present, the protocol server MUST behave as if **ResubmitFlag.NoResubmit** was set. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

SelectProperties: Specifies the list of managed properties **that the protocol server MUST return for each search result. For all the** managed properties **specified in the child elements of this element the value of Retrievable flag MUST be set to true in the search schema, as specified in section** 3.1.1.4**.**

If this element is not present or a value is not specified, the protocol server MUST use the following list of default managed properties **if available:**

- **WorkId**

- **Rank**

- **Title**

- **Author**

- **Size**

- **Path**

- **Description**

- **Write**

- **SiteName**

- **CollapsingStatus**

- **HitHighlightedSummary**

- **HitHighlightedProperties**

- **ContentClass**

- **PictureThumbnailURL**

- **IsDocument**

For a description of these properties, see section 3.1.1.3**.**

If QueryProperties.ResultsProvider (as specified in section 2.2.4.12) is equal to SearchProvider.FASTSearch, the protocol server MUST use the following list of default managed properties if available:

- **WorkId**

- **Rank**

- **Title**

- **Author**

- **Size**

- **Path**

- **Description**

- **Write**

- **SiteName**

- **CollapsingStatus**

- **HitHighlightedSummary**

- **HitHighlightedProperties**

- **ContentClass**

- **IsDocument**

- **PictureThumbnailURL**

- **Url**

- **ServerRedirectUrl**

- **FileExtension**

- **SpSiteUrl**

- **docvector**

- **fcocount**

- **fcoid**

- **PictureHeight**

- **PictureWidth**

SimilarTo: Specified in [MS-SEARCH], see **Query.FindSimilar.SimilarTo** in section 2.2.3.1. [MS-SEARCH] section 2.2.5.6 specifies the syntax. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

SimilarType: Specifies how the protocol server MUST transform the search query when **SimilarTo** is set. The protocol server MUST append the query text in **SimilarTo** to the **QueryText** based on

SimilarType. MUST be one of the values as specified in section 3.1.4.7.4.3. If not set, but **SimilarTo** is set, the protocol server MUST behave as if **SimilarType.Find** was specified. If set, but **SimilarTo** is not set, the protocol server MUST ignore this value and MUST NOT transform the query text. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

SortList: Specifies the list of properties to sort the search results by. MUST be a **SortCollection** data type as specified in section 3.1.4.7.3.4. If this element is not present or a value is not specified, then the default managed property **Rank** and default **direction** of "**Descending**" MUST be used.

SortSimilar: Specified in [MS-SEARCH], see **Query.FindSimilar.SortSimilar** in section 2.2.3.1. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

TrimDuplicatesIncludeId: Specified in [MS-SEARCH], see **Query.TrimDuplicates.includeid** in section 2.2.3.1. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

TrimDuplicatesKeepCount: Specified in [MS-SEARCH], see **Query.TrimDuplicates.keepcount** in section 2.2.3.1. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

TrimDuplicatesOnProperty: Specified in [MS-SEARCH], see **Query.TrimDuplicates.onproperty** in section 2.2.3.1. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

UserContextData: See **Query.UserContext.UserContextData** in section 2.2.3.1 of [MS-SEARCH]. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

UserContextGroupID: Specifies an identifier used to group keywords used for matching best bets and visual best bets to the search query. If the **UserContextGroupID** is present, and **QueryProperties.ResultTypes** is set to include SpecialTermResults, the protocol server MUST only return best bets and visual best bets results when the search query contains a keyword in the specified group. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchServer.SharepointSearch**, the value MUST be ignored by protocol server.

3.1.4.7.3.2 ArrayOfKeyValueOfstringArrayOfRefinementInterval_PFsic3Az (from namespace http://schemas.microsoft.com/2003/10/Serialization/Arrays)

The **ArrayOfKeyValueOfstringArrayOfRefinementInterval_PFsic3Az** complex type contains information about the refinement bins for a collection of refiners. The protocol server MUST use the specified refinement bins when returning refinement values for the refiners.

```
<xs:complexType name="ArrayOfKeyValueOfstringArrayOfRefinementInterval_PFsic3Az">
  <xs:annotation>
    <xs:appinfo>
      <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValueOfstringArrayOfRefinementInterval_PFsic3Az">
      <xs:complexType>
```

```
      <xs:sequence>
        <xs:element name="Key" nillable="true" type="xs:string"/>
        <xs:element name="Value" nillable="true"
xmlns:q1="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q1:ArrayOfRefinementInterval"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
 </xs:sequence>
</xs:complexType>
```

KeyValueOfstringArrayOfRefinementInterval_PFsic3Az: Specifies a collection of refiners and associated refinement bins the protocol server MUST apply to refinement values belonging to a particular refiner.

KeyValueOfstringArrayOfRefinementInterval_PFsic3Az.Key: Specifies the refiner name.

KeyValueOfstringArrayOfRefinementInterval_PFsic3Az.Value: Specifies the refinement bins the protocol server MUST apply to the refinement values for a refiner. The value MUST be of type **ArrayOfRefinementInterval** as described in 3.1.4.7.3.3.

3.1.4.7.3.3   ArrayOfRefinementInterval (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **ArrayOfRefinementInterval** complex type contains the refinement bins the protocol server MUST use when returning refinement values for a refiner.

```
<xs:complexType name="ArrayOfRefinementInterval">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="RefinementInterval" nillable="true"
type="tns:RefinementInterval"/>
  </xs:sequence>
</xs:complexType>
```

RefinementInterval: Specifies the array of refinement bins. The element of the array MUST either be of type **DateRefinementInterval** as described in 2.2.4.7 or **NumericRefinementInterval** as described in 2.2.4.10.

3.1.4.7.3.4   SortCollection (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **SortCollection** complex type contains information about how to sort the search results.

```
<xs:complexType name="SortCollection">
  <xs:sequence>
    <xs:element minOccurs="0" name="m_elements" nillable="true" type="tns:ArrayOfSort"/>
  </xs:sequence>
</xs:complexType>
```

m_elements: Specifies the collection of properties to sort the search results by. MUST be an **ArrayOfSort** data type as specified in section 3.1.4.7.3.5.

3.1.4.7.3.5 ArrayOfSort (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **ArrayOfSort** complex type contains information about a list of properties to sort the search results by. Each child element of this complex type defines a property to sort the search results on, and how to sort on it. If this element contains more than one child element, then, the protocol server MUST sort the search results on the first child element, with ties broken by the second child element and so on. If more than one child element has the same property name, then the protocol server MUST return a **FaultException<ExceptionDetails>**.

```
<xs:complexType name="ArrayOfSort">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Sort" nillable="true"
type="tns:Sort"/>
  </xs:sequence>
</xs:complexType>
```

Sort: Specifies the name of the property to sort the search results on, and the direction in which the results MUST be sorted. MUST be a **Sort** data type as specified in Section 3.1.4.7.3.6.

3.1.4.7.3.6 Sort (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **Sort** complex type contains information about the property to sort the search results on, and how to sort on the property.

```
<xs:complexType name="Sort">
  <xs:sequence>
    <xs:element minOccurs="0" name="direction"
xmlns:q16="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
type="q16:SortDirection"/>
    <xs:element minOccurs="0" name="strProperty" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

direction: The direction in which to sort on the property specified in the **strProperty** element. MUST be a **SortDirection** data type as specified in Section 3.1.4.7.4.4. If the **direction** element is not specified, the protocol server MUST use **SortDirection.Ascending** as the default. If direction is equal to **SortDirection.FQLFormula**, then the **strProperty** MUST specify the formula that MUST be used for sorting the search results, as specified in section 3.1.4.7.4.4. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchServer.SharepointSearch** and direction is set to **SortDirection.FQLFormula**, the value of **strProperty** MUST be ignored by the protocol server.

strProperty: If **direction** is equal to **SortDirection.Ascending** or **SortDirection.Descending** then this element specifies the name of the managed property to sort the search results on. If value of **strProperty** is not equal to a valid property name as defined in the protocol server then the protocol server MUST return a **FaultException<ExceptionDetails>**.

If **direction** is equal to **SortDirection.FQLFormula**, then this element specifies the formula (as specified in section 3.1.4.7.4.4) that MUST be used for sorting the search results.

3.1.4.7.4 Simple Types

3.1.4.7.4.1 SpellcheckMode (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The **SpellcheckMode** simple type represents the type of spelling behavior the protocol server MUST apply to the query text.

```
<xs:simpleType name="SpellcheckMode">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Off">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">1</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Suggest">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">2</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="On">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">4</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for SpellcheckMode:

Value	Meaning
Off	The protocol server MUST NOT suggest or modify the search query.
Suggest	A suggested modification to the search query MUST be returned if there is a good chance that the spelling suggestion will increase the quality of the search results. If there is a suggestion, it MUST be returned in the **SpellingSuggestion** property of the **ResultTableCollection**.
On	The search query MUST be modified automatically if there is a good chance that the spelling suggestion will increase the quality of the search results. If a modification has been done, it MUST be returned in the **QueryModification** property of the **ResultTableCollection**.

3.1.4.7.4.2 ResubmitFlag (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The **ResubmitFlag** simple type is used to specify how the protocol server MUST behave if no results are returned from a search query.

```
<xs:simpleType name="ResubmitFlag">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="NoResubmit"/>
        <xs:enumeration value="EnableSpellcheckOnResubmit">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">7984</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="EnableSpellcheckSuggestOnResubmit">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">8192</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="EnableStemmingOnResubmit">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">64</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="AddSynonymsAutomatically">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">134217728</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
```

The following table specifies the allowable values for ResubmitFlag:

Value	Meaning
NoResubmit	The protocol server MUST NOT resubmit the search query when there are no query results and MUST ignore other **ResubmitFlag** elements.

Value	Meaning
EnableSpellcheckOnResubmit	The protocol server MUST set **EnableSpellcheck** to **SpellcheckMode.On** for the resubmitted search query.
EnableSpellcheckSuggestOnResubmit	The protocol server MUST set **EnableSpellcheck** to **SpellcheckMode.Suggest** for the resubmitted search query.
EnableStemmingOnResubmit	The protocol server MUST set **EnableStemming** to **true** when resubmitting the search query.
AddSynonymsAutomatically	Reserved. MUST be ignored by the protocol server.

3.1.4.7.4.3 SimilarType (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The **SimilarType** simple type represents the type of transformation the protocol server MUST apply to the search query. See [MS-SEARCH] section 2.2.10.2, Keyword Query for a specification of keyword query operators.

```
<xs:simpleType name="SimilarType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="None"/>
    <xs:enumeration value="Find"/>
    <xs:enumeration value="Refine"/>
    <xs:enumeration value="Exclude"/>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for SimilarType:

Value	Meaning
None	The protocol server MUST NOT add any value to the search query in **QueryText**.
Find	The protocol server MUST add the value in **SimilarTo** to **QueryText** using the OR operator.
Refine	The protocol server MUST add the value in **SimilarTo** to **QueryText** using the AND operator.
Exclude	The protocol server MUST add the value in **SimilarTo** to **QueryText** using the ANDNOT operator.

3.1.4.7.4.4 SortDirection (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The **SortDirection** simple type represents the direction in which the search results MUST be sorted.

```
<xs:simpleType name="SortDirection">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Ascending"/>
    <xs:enumeration value="Descending"/>
    <xs:enumeration value="FQLFormula"/>
  </xs:restriction>
```

```
</xs:simpleType>
```

The following table specifies the allowable values for SortDirection:

Value	Meaning
Ascending	The search results MUST be sorted in **ascending order** of the values of the property specified by **Sort.strProperty** as specified in section 3.1.4.7.3.6.
Descending	The search results MUST be sorted in **descending order** of the values of the property specified by **Sort.strProperty** as specified in section 3.1.4.7.3.6.
FQLFormula	The search results MUST be sorted according to formula specified by **Sort.strProperty** as specified in section 3.1.4.7.3.6. The formula MUST be a valid formula expression as specified in section of [MS-FSQR]. If **QueryProperties.ResultsProvider** (as specified in section 2.2.4.12) is **SearchProvider.SharepointSearch**, the value MUST be ignored by the protocol server.

3.1.4.8   GetTopQueryStringsForUrl

For each crawled item that is identified by a URI, the protocol server MUST store a list of executed search queries that return this item in their query results within 366 days. This list MUST be sorted in descending order by the frequency of occurrence of the search queries. This operation returns a specified number of search queries from this sorted list for a given URI.

```
<wsdl:operation name="GetTopQueryStringsForUrl">
  <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetTopQueryStringsForUrl"
message="tns:ISearchQueryServiceApplication_GetTopQueryStringsForUrl_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetTopQueryStringsForUrlRespon
se" message="tns:ISearchQueryServiceApplication_GetTopQueryStringsForUrl_OutputMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetTopQueryStringsForUrlSearch
ServiceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetTopQueryStringsForUrl_SearchServiceApplication
FaultFault_FaultMessage"/>
</wsdl:operation>
```

The protocol client sends an ISearchQueryServiceApplication_GetTopQueryStringForUrl_InputMessage request message and the protocol server responds with an ISearchQueryServiceApplication_GetTopQueryStringForUrl_OutputMessage response message, as follows:

▪ On receipt, the protocol server verifies the value of the URI specified in the **url** element. If the element is absent, empty or contains more than 1024 characters, the protocol server MUST send a **FaultException<ExceptionDetail>** message to the protocol client.

▪ The protocol server verifies the value of the topcount element. If the value is smaller than 0 or greater than 2,147,483,647, the protocol server MUST send a **FaultException<ExceptionDetail>** message to the protocol client.

▪ On success, the protocol server returns the specified number of search queries to the protocol client. If the specified number is greater than the number of search queries that the protocol server stores, the protocol server returns all the search queries it stores to the protocol client.

▪ On error, the protocol server MUST send a **FaultException<ExceptionDetail>** message to the protocol client.

3.1.4.8.1 Messages

3.1.4.8.1.1 ISearchQueryServiceApplication_GetTopQueryStringsForUrl_InputMessage

The requested WSDL message for the **GetTopQueryStringsForUrl** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetTopQueryStringsForUrl
```

The SOAP body contains the **GetTopQueryStringsForUrl** element.

3.1.4.8.1.2 ISearchQueryServiceApplication_GetTopQueryStringsForUrl_OutputMessage

The response WSDL message for the **GetTopQueryStringsForUrl** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/GetTopQueryStringsForUrlResponse
```

The SOAP body contains the **GetTopQueryStringsForUrlResponse** element.

3.1.4.8.2 Elements

3.1.4.8.2.1 GetTopQueryStringsForUrl

The input data for the **GetTopQueryStringsForUrl** WSDL operation.

```
<xs:element name="GetTopQueryStringsForUrl">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="url" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="topCount" type="xs:int"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

url: Specifies the URI for which corresponding search queries MUST be returned by the protocol server.

topCount: Specifies the number of search queries to return, which are associated with the URI specified in **url** element.

3.1.4.8.2.2 GetTopQueryStringsForUrlResponse

The result data for the **GetTopQueryStringsForUrl** WSDL operation.

```
<xs:element name="GetTopQueryStringsForUrlResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetTopQueryStringsForUrlResult" nillable="true"
xmlns:q15="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
type="q15:ArrayOfstring"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetTopQueryStringsForUrlResult: Specifies a list of most frequently occurring search queries corresponding to the given URI.

3.1.4.9   HighlightStringValue

This operation is used by the protocol client to highlight all the occurrences of specified query terms in a specified string value by enclosing each of them with in an open () and close () tag.

```
<wsdl:operation name="HighlightStringValue">
  <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValue"
message="tns:ISearchQueryServiceApplication_HighlightStringValue_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueResponse"
message="tns:ISearchQueryServiceApplication_HighlightStringValue_OutputMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueSearchServ
iceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_HighlightStringValue_SearchServiceApplicationFaul
tFault_FaultMessage"/>
</wsdl:operation>
```

The protocol client sends an ISearchQueryServiceApplication_HighlightStringValue_InputMessage request message and the protocol server responds with a ISearchQueryServiceApplication_HighlightStringValue_OutputMessage response message, as follows:

▪ On receipt, the protocol server returns the details of a string in which all the occurrences of query terms are highlighted.

▪ On error, the protocol server MUST send a **FaultException<ExceptionDetail>** message to the protocol client.

3.1.4.9.1   Messages

3.1.4.9.1.1   ISearchQueryServiceApplication_HighlightStringValue_InputMessage

The requested WSDL message for the **HighlightStringValue** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValue
```

The SOAP body contains the **HighlightStringValue** element.

3.1.4.9.1.2 ISearchQueryServiceApplication_HighlightStringValue_OutputMessage

The response WSDL message for the **HighlightStringValue** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueResponse
```

The SOAP body contains the **HighlightStringValueResponse** element.

3.1.4.9.2 Elements

3.1.4.9.2.1 HighlightStringValue

The input data for the **HighlightStringValue** WSDL operation.

```
<xs:element name="HighlightStringValue">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="properties" nillable="true"
xmlns:q10="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q10:QueryProperties"/>
      <xs:element minOccurs="0" name="strValue" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="fLastTermByPrefix" type="xs:boolean"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

properties: Specifies the properties of the search query for which the strValue MUST be highlighted. The protocol client MUST specify the query terms in the **QueryText** element of the QueryProperties data type. The QueryProperties data type MUST be of KeywordQueryProperties or FullTextSqlQueryProperties type. If it is KeywordQueryProperties, the query terms apply to the whole **QueryText**. If this is FullTextSqlQueryProperties, the query terms apply to the FREETEXT predicate (as specified in [MS-SEARCH] section 2.2.12.3.1.2. The other properties (other than **QueryText**) of this element of the QueryProperties data type MUST be ignored by the protocol server.

strValue: Specifies the value of the string to be highlighted.

fLastTermByPrefix: Specifies whether the last query token MUST be matched by prefix. If **true**, any token in the strValue element that matches the prefix of the last token in the query MUST be highlighted; if **false**, all tokens in the strValue MUST be highlighted only if they match the query tokens exactly. When **stemming** is turned on (see section 2.2.4.12) for the search query, stemming is applied to search terms so that even words in **strValue** matching the stemmed results of search terms MUST be highlighted. When a search term is matched by prefix, no stemming MUST be applied to this term.

3.1.4.9.2.2 HighlightStringValueResponse

The result data for the **HighlightStringValue** WSDL operation.

```
<xs:element name="HighlightStringValueResponse">
  <xs:complexType>
```

```
        <xs:sequence>
            <xs:element minOccurs="0" name="HighlightStringValueResult" nillable="true"
xmlns:q11="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q11:HighlightedString"/>
        </xs:sequence>
    </xs:complexType>
</xs:element>
```

HighlightStringValueResult: Specifies the string in which search terms were highlighted.

3.1.4.10   HighlightStringValueQuerySuggestions

This operation is used by the protocol client to highlight all the occurrences of specified query terms
in a specified string value by enclosing each of them with in an open () and close () tag in
the context of query suggestions.

```
<wsdl:operation name="HighlightStringValueQuerySuggestions">
    <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueQuerySugge
stions"
message="tns:ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_InputMessage
"/>
    <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueQuerySugge
stionsResponse"
message="tns:ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_OutputMessag
e"/>
    <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueQuerySugge
stionsSearchServiceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_SearchServic
eApplicationFaultFault_FaultMessage"/>
</wsdl:operation>
```

The protocol client sends an
ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_InputMessage request
message and the protocol server responds with a
ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_OutputMessage response
message, as follows:

- On receipt, the protocol server returns the details of a string in which all the occurrences of query
  terms are highlighted.

- If the language of the specified query, according to the properties element of the request is
  Chinese, Japanese or Korean, the query terms that MUST be used to match and highlight in the
  string MUST be generated according to the rules of English, in other words based on white space.

- On error, the protocol server MUST send a **FaultException<ExceptionDetail>** message to the
  protocol client.

3.1.4.10.1   Messages

3.1.4.10.1.1   ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_InputMessage

The requested WSDL message for the **HighlightStringValueQuerySuggestions** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueQuerySuggestions
```

The SOAP body contains the **HighlightStringValueQuerySuggestions** element.

3.1.4.10.1.2   ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_OutputMessage

The response WSDL message for the **HighlightStringValueQuerySuggestions** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueQuerySuggestionsRespons
e
```

The SOAP body contains the **HighlightStringValueQuerySuggestionsResponse** element.

3.1.4.10.2   Elements

3.1.4.10.2.1   HighlightStringValueQuerySuggestions

The input data for the **HighlightStringValueQuerySuggestions** WSDL operation.

```
<xs:element name="HighlightStringValueQuerySuggestions">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="properties" nillable="true"
xmlns:q12="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q12:QueryProperties"/>
      <xs:element minOccurs="0" name="strValue" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="fLastTermByPrefix" type="xs:boolean"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

properties: Specifies the properties of the search query for which **strValue** MUST be highligthed. The protocol client MUST specify the query terms in the **QueryText** element of the QueryProperties data type. The QueryProperties data type can be KeywordQueryProperties or FullTextSqlQueryProperties. If it is KeywordQueryProperties, the query terms apply to the whole **QueryText**. If this is FullTextSqlQueryProperties, the query terms apply to the FREETEXT predicate (as specified in [MS-SEARCH] section 2.2.12.3.1.2. The other properties (other than **QueryText**) of this element of the QueryProperties data type MUST be ignored by the protocol server.

strValue: Specifies the value of the string to be highlighted.

fLastTermByPrefix: Specifies whether the last query token MUST be matched by prefix. If it is equal to **true**, any token in the strValue element that matches the prefix of the last token in the query MUST be highlighted; If it is equal to **false**, all tokens in the strValue MUST be highlighted only if they match the query tokens exactly. When stemming is turned on (see section 2.2.4.12) for the search query, stemming is applied to search terms so that even words in **strValue** matching the stemmed results of search terms are highlighted. When a search term is matched by prefix, no stemming MUST apply to this term.

3.1.4.10.2.2   HighlightStringValueQuerySuggestionsResponse

The result data for the **HighlightStringValueQuerySuggestions** WSDL operation.

```
<xs:element name="HighlightStringValueQuerySuggestionsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="HighlightStringValueQuerySuggestionsResult"
nillable="true" xmlns:q13="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q13:HighlightedString"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

HighlightStringValueQuerySuggestionsResult: Specifies the string in which search terms were highlighted. It MUST be of type **HighlightedString** as specified by section 2.2.4.9.

3.1.4.11   RecordClick

This operation is used by the protocol client to inform the protocol server that a clickthrough happened or user navigated away from the page. When a clickthrough happens, the protocol client sends the details of the clickthrough and the search query for which the query result was clicked to the protocol server. When a use navigated away from the page, the protocol client sends the details of the search query to the protocol server.

```
<wsdl:operation name="RecordClick">
  <wsdl:input wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordClick"
message="tns:ISearchQueryServiceApplication_RecordClick_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordClickResponse"
message="tns:ISearchQueryServiceApplication_RecordClick_OutputMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordClickSearchServiceApplic
ationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_RecordClick_SearchServiceApplicationFaultFault_Fa
ultMessage"/>
</wsdl:operation>
```

The protocol client sends an ISearchQueryServiceApplication_RecordClick_InputMessage request message and the protocol server responds with an ISearchQueryServiceApplication_RecordClick_OutputMessage response message, as follows:

▪ On receipt, the protocol server checks if the value of **info.SearchTime** element is earlier than Jan 01, 1900 or later than Jun 5, 2079. If yes, the protocol server MUST ignore the **info** element.

- The protocol server checks if the **info.NumResults** element is less than -2,147,483,648 or greater than 2,147,483,647. If yes, the protocol server MUST ignore the **info** element.

- On success, the protocol server stores the details of the clickthrough and its corresponding search query.

- On error, the protocol server MUST send a **FaultException<ExceptionDetail>** message to the protocol client.

3.1.4.11.1   Messages

3.1.4.11.1.1   ISearchQueryServiceApplication_RecordClick_InputMessage

The requested WSDL message for the **RecordClick** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/RecordClick
```

The SOAP body contains the **RecordClick** element.

3.1.4.11.1.2   ISearchQueryServiceApplication_RecordClick_OutputMessage

The response WSDL message for the **RecordClick** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/RecordClickResponse
```

The SOAP body contains the **RecordClickResponse** element.

3.1.4.11.2   Elements

3.1.4.11.2.1   RecordClick

The input data for the **RecordClick** WSDL operation.

```
<xs:element name="RecordClick">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="Info" nillable="true"
xmlns:q16="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q16:QueryInfo"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

Info: Contains the details about the clickthrough and its corresponding search query.

3.1.4.11.2.2   RecordClickResponse

The result data for the **RecordClick** WSDL operation.

```
<xs:element name="RecordClickResponse">
  <xs:complexType>
    <xs:sequence/>
  </xs:complexType>
</xs:element>
```

3.1.4.11.3 Complex Types

3.1.4.11.3.1 QueryInfo (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **QueryInfo** complex type contains the details about the clickthrough and its corresponding search query.

```
<xs:complexType name="QueryInfo">
  <xs:sequence>
    <xs:element minOccurs="0" name="AdvancedSearch" type="xs:boolean"/>
    <xs:element minOccurs="0" name="BestBetClicked" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ClickTime" type="xs:dateTime"/>
    <xs:element minOccurs="0" name="ClickedUrl" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ClickedUrlRank" type="xs:int"/>
    <xs:element minOccurs="0" name="ClientType"
  xmlns:q22="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
  type="q22:QueryLogClientType"/>
    <xs:element minOccurs="0" name="ContextualScope" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ContextualScopeUrl" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ContinuedSession" type="xs:boolean"/>
    <xs:element minOccurs="0" name="Definitions" type="xs:boolean"/>
    <xs:element minOccurs="0" name="DidYouMean" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="DidYouMeanReturned" type="xs:boolean"/>
    <xs:element minOccurs="0" name="ItemsPerPage" type="xs:int"/>
    <xs:element minOccurs="0" name="Location" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="LogType"
  xmlns:q23="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
  type="q23:QueryLogType"/>
    <xs:element minOccurs="0" name="NonClickedUrls" nillable="true"
  xmlns:q24="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
  type="q24:ArrayOfstring"/>
    <xs:element minOccurs="0" name="NumBestBets" type="xs:int"/>
    <xs:element minOccurs="0" name="NumHighConfidenceResults" type="xs:int"/>
    <xs:element minOccurs="0" name="NumResults" type="xs:long"/>
    <xs:element minOccurs="0" name="QueryCulture" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="QueryGuid" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="QueryServer" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="QueryString" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ReferrerUrl" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ResultView" type="xs:short"/>
    <xs:element minOccurs="0" name="ResultsUrl" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Scopes" nillable="true"
  xmlns:q25="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
  type="q25:ArrayOfstring"/>
    <xs:element minOccurs="0" name="SearchServiceApplicationID" nillable="true"
  type="xs:string"/>
    <xs:element minOccurs="0" name="SearchTime" type="xs:dateTime"/>
    <xs:element minOccurs="0" name="SessionId" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="SiteGuid" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="StartItem" type="xs:int"/>
```

```
      <xs:element minOccurs="0" name="TenantId" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Title" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="TotalResults" type="xs:long"/>
      <xs:element minOccurs="0" name="UserName" nillable="true" type="xs:string"/>
   </xs:sequence>
  </xs:complexType>
```

AdvancedSearch: Specifies whether the search query was issued as an advanced search query. A value of **true** SHOULD indicate the search query was issued as an advanced search query. A value of **false** SHOULD indicate the search query was not issued as an advanced search query. The criteria of what constitutes an Advanced Search Query is implementation-specific.

BestBetClicked: Specifies whether a best bet result was clicked. A value of **true** SHOULD indicate best bet result was clicked. A value of **false** SHOULD indicate no best bet was clicked.

ClickTime: Specifies the date and time, in Coordinated Universal Time (UTC) format, at which the URI specified in **clickedUrl** was clicked. The value MUST be NULL if **clickedUrl** is NULL.

ClickedUrl: Specifies the URI of the query result that was clicked. The value MUST be NULL if search query information was logged in response to user navigating away from the search results page. The value MUST have the valid URI format, as specified in [RFC2396].

ClickedUrlRank: Specifies the position of the search result that was clicked among all search results. The value MUST be NULL if **clickedUrl** is NULL.

ClientType: Specifies the type of the query client. It MUST be of **QueryLogClientType** data type as specified in section 3.1.4.11.4.1.

ContextualScope: Specifies the **contextual search scope** under which the search query was executed.

ContextualScopeUrl: Specifies the URI of the contextual search scope. This value is used in search query to inform the protocol server of the contextual search scope to search from. The value MUST have the valid URI format, as specified in [RFC2396].

ContinuedSession: Specifies whether the info element is the first entry for this search query in the **search query log**. A value of **true** indicates it is NOT the first entry for this search query. A value of **false** indicates it is the first entry for this search query.

Definitions: Specifies whether an extracted definition result is clicked. A value of **true** SHOULD indicate an extracted definition was clicked. a value of **false** SHOULD indicate no extracted definition was clicked.

DidYouMean: Specifies the results that spelling suggestion returned.

DidYouMeanReturned: Specifies whether spelling suggestion returned result for the search query. A value of **true** SHOULD indicate spelling suggestion returned result for the search query. A value of **false** SHOULD indicate no result was returned by the spelling suggestion.

ItemsPerPage: Specifies the number of query results returned for the search query.

Location: Specifies the name of the **federated location** which the search query was executed against.

LogType: Specifies the type of the query log data. It differentiate between a query log for the query and a query log for the user click-throughs on the results of the query. The value MUST be of **QueryLogType** data type, as specified in section 3.1.4.11.4.2.

NonClickedUrls: Specifies the collection of URIs that the search query returned but were not clicked. The value of each URI in the collection MUST have the valid URI format, as specified in [RFC2396].

NumBestBets: Specifies the number of best bet results returned for the search query.

NumHighConfidenceResults: Specifies the number of **high confidence results** returned for the search query.

NumResults: Specifies the number of results returned for the search query.

QueryCulture: Specifies the name of the language culture of the search query. If present, the value MUST be a valid culture name, as specified in [RFC3066].

QueryGuid: Specifies the unique identifier of the Web Part that issued the search query. The value MUST be a **guid** data type, as specified in section 2.2.5.8.

QueryServer: Specifies the name of the server in which the search query was executed. The value MUST NOT contain more than 256 characters.

QueryString: Specifies the query text of the search query. The value MUST NOT contain more than 1024 characters.

ReferrerUrl: Specifies the URI of a page that contains the URI, which directs to the current page where clickthrough happened. The value MUST have a valid URI format specified in [RFC2396].

ResultView: Specifies the results sort view of the query results. The value MUST be the corresponding integer values of the ResultsView enum data type.

ResultsUrl: Specifies the URI of the page where clickthrough happened. The value MUST have valid URI format specified in [RFC2396].

Scopes: Specifies the search scopes, under which the search query was executed.

SearchServiceApplicationID: Specifies a global unique identifier of the SearchServiceApplication.

SearchTime: Specifies the date and time, in Coordinated Universal Time (UTC) format, when the search query was executed.

SessionId: Specifies a unique identifier for the search session of a specific user in which the search query was sent. The value of this element is specific to the implementation of the protocol client.

SiteGuid: Specifies the unique identifier of the **site collection** from which the search request was executed. The value MUST be a valid **guid** type, as specified in section 2.2.5.8. The value of this element is specific to the implementation of the protocol client.

StartItem: Specifies a zero-based index of the first search result in the list of all search results the protocol server MUST return.

TenantId: Specifies the unique identifier for the **tenant** executing the search query. The value of this element is specific to the implementation of the protocol client.

Title: Specifies the title of the query result that was clicked.

TotalResults: This element MUST contain an approximation of the total number of results that match the conditions given in the search query and are of the type specified in the **ResultType** element.

UserName: Specifies the name of the user who issued the search query.

3.1.4.11.4 Simple Types

3.1.4.11.4.1 QueryLogClientType (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The **QueryLogClientType** simple type represents the place where the search query is sent from.

```
<xs:simpleType name="QueryLogClientType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="ObjectModel"/>
    <xs:enumeration value="WebService"/>
    <xs:enumeration value="UI"/>
    <xs:enumeration value="Custom"/>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for QueryLogClientType:

Value	Meaning
ObjectModel	The search query is sent from the query **object model**.
WebService	The search query is sent from the web service.
UI	The search query is sent from a web part.
Custom	The search query is sent from a place which is not the query object model, web service or web part.

3.1.4.11.4.2 QueryLogType (from namespace http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query)

The **QueryLogType** simple type represents the type of event that query logging records.

```
<xs:simpleType name="QueryLogType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Click"/>
    <xs:enumeration value="Query"/>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for QueryLogType:

Value	Meaning
Click	The type of event query logging records is a click on search results.
Query	The type of event query logging records is a search query.

3.1.4.12   RecordOMQueryDoneEvent

This operation is used by the protocol client to inform the protocol server about the latency for processing the search query on the protocol server as reported by the protocol server in the **ExecuteResult** element of the **ExecuteResponse** message (see section 3.1.4.1.2.2) for a search query. The protocol client MUST collect this latency information for search queries executed within each 60 second time period and send it in a single message to the protocol server.

```
<wsdl:operation name="RecordOMQueryDoneEvent">
  <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordOMQueryDoneEvent"
message="tns:ISearchQueryServiceApplication_RecordOMQueryDoneEvent_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordOMQueryDoneEventResponse
" message="tns:ISearchQueryServiceApplication_RecordOMQueryDoneEvent_OutputMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordOMQueryDoneEventSearchSe
rviceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_RecordOMQueryDoneEvent_SearchServiceApplicationFa
ultFault_FaultMessage"/>
</wsdl:operation>
```

The protocol client sends an ISearchQueryServiceApplication_RecordOMQueryDoneEvent_InputMessage request message and the protocol server responds with an ISearchQueryServiceApplication_RecordOMQueryDoneEvent_OutputMessage response message, as follows:

▪ On successfully processing search query latency, the protocol server returns whether verbose query monitoring is turned on for the search service application.

▪ On error, the protocol server MUST send a **FaultException<ExceptionDetail>** message to the protocol client.

3.1.4.12.1   Messages

3.1.4.12.1.1   ISearchQueryServiceApplication_RecordOMQueryDoneEvent_InputMessage

The requested WSDL message for the **RecordOMQueryDoneEvent** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/RecordOMQueryDoneEvent
```

The SOAP body contains the **RecordOMQueryDoneEvent** element.

3.1.4.12.1.2 ISearchQueryServiceApplication_RecordOMQueryDoneEvent_OutputMessage

The response WSDL message for the **RecordOMQueryDoneEvent** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/RecordOMQueryDoneEventResponse
```

The SOAP body contains the **RecordOMQueryDoneEventResponse** element.

3.1.4.12.2 Elements

3.1.4.12.2.1 RecordOMQueryDoneEvent

The input data for the **RecordOMQueryDoneEvent** WSDL operation.

```
<xs:element name="RecordOMQueryDoneEvent">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="buffer" nillable="true"
xmlns:q20="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q20:OMQueryLatencyDataBuffer"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

buffer: Specifies the latency for processing the query on the protocol server. It contains aggregated latency information as well as verbose latency information of every single search query.

3.1.4.12.2.2 RecordOMQueryDoneEventResponse

The result data for the **RecordOMQueryDoneEvent** WSDL operation.

```
<xs:element name="RecordOMQueryDoneEventResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="RecordOMQueryDoneEventResult" type="xs:boolean"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

RecordOMQueryDoneEventResult: Specifies whether the verbose query monitoring is turned on for the search service application. The protocol server MUST return **true** if it is turned on; the protocol server MUST return **false** if it is turned off. If **true** is returned, in the subsequent call the protocol client MUST include verbose and aggregated query latency information in the **buffer** element; if **false** is returned, in the subsequent call the protocol client MUST only include aggregated query latency information in the **buffer** element.

3.1.4.12.3 Complex Types

3.1.4.12.3.1 OMQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **OMQueryLatencyDataBuffer** complex type contains the query latency for processing the search queries on the protocol server within a 60 seconds. It contains aggregated latency information for all search queries as well as verbose latency information for every single search query.

```
<xs:complexType name="OMQueryLatencyDataBuffer">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:DataBuffer">
      <xs:sequence>
        <xs:element minOccurs="0" name="AggregatedQueryTimings" nillable="true"
type="tns:ArrayOfAggregatedOMQueryLatencyDataBuffer"/>
        <xs:element minOccurs="0" name="VerboseQueryTimings" nillable="true"
type="tns:ArrayOfVerboseOMQueryLatencyDataBuffer"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AggregatedQueryTimings: Specifies the aggregated query latency for all search queries executed on the protocol server from the protocol client within a 60 second time period.

VerboseQueryTimings: Specifies details of the search query latency for every single search query.

3.1.4.12.3.2 ArrayOfAggregatedOMQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **ArrayOfAggregatedOMQueryLatencyDataBuffer** complex type contains a list of aggregated latency information. Each entry in the list provides latency information about a set of search queries executed within a 60 second time period.

```
<xs:complexType name="ArrayOfAggregatedOMQueryLatencyDataBuffer">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="AggregatedOMQueryLatencyDataBuffer"
nillable="true" type="tns:AggregatedOMQueryLatencyDataBuffer"/>
  </xs:sequence>
</xs:complexType>
```

AggregatedOMQueryLatencyDataBuffer: Specifies the aggregated search query latency on the protocol server.

3.1.4.12.3.3 AggregatedOMQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **AggregatedOMQueryLatencyDataBuffer** complex type contains the aggregated search query latency for processing queries on the protocol server.

```
<xs:complexType name="AggregatedOMQueryLatencyDataBuffer">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:DataBuffer">
```

```
    <xs:sequence>
      <xs:element minOccurs="0" name="NumQueries" type="xs:int"/>
      <xs:element minOccurs="0" name="QPTimeMs" type="xs:int"/>
      <xs:element minOccurs="0" name="TotalQueryTimeMs" type="xs:int"/>
    </xs:sequence>
  </xs:extension>
</xs:complexContent>
</xs:complexType>
```

NumQueries: The number of search queries processed within a 60 second time period on the protocol server from the protocol client.

QPTimeMs: The total time in milliseconds reported by the protocol server for intermediate processing of all the search queries in a 60 second time period. To calculate the total time specified here, the protocol client MUST sum up the time reported by the protocol server in **ResultTableCollection.QueryProcessingTime** (see section 3.1.4.1.3.1) for all these search queries.

TotalQueryTimeMs: The total time in milliseconds reported by the protocol server for processing of all the search queries in a 60 second time period. To calculate the total time specified here, the protocol client MUST sum up the time reported by the protocol server in **ResultTableCollection.ElapsedTime** (see section 3.1.4.1.3.1) for all these search queries.

3.1.4.12.3.4   ArrayOfVerboseOMQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **ArrayOfVerboseOMQueryLatencyDataBuffer** complex type contains a list of latency information reported by the protocol server for processing individual search queries. Each entry provides information about a single search query.

```
<xs:complexType name="ArrayOfVerboseOMQueryLatencyDataBuffer">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="VerboseOMQueryLatencyDataBuffer"
nillable="true" type="tns:VerboseOMQueryLatencyDataBuffer"/>
  </xs:sequence>
</xs:complexType>
```

VerboseOMQueryLatencyDataBuffer: Specifies the latency for processing a single search query on the protocol server.

3.1.4.12.3.5   VerboseOMQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **VerboseOMQueryLatencyDataBuffer** complex type contains details of search query latency for a single search query.

```
<xs:complexType name="VerboseOMQueryLatencyDataBuffer">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:DataBuffer">
      <xs:sequence>
        <xs:element minOccurs="0" name="CorrelationId" type="ser:guid"/>
        <xs:element minOccurs="0" name="QPMachine" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="QPTimeMs" type="xs:int"/>
        <xs:element minOccurs="0" name="QueryTerms" nillable="true" type="xs:string"/>
```

```
          <xs:element minOccurs="0" name="TotalQueryTimeMs" type="xs:int"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
```

CorrelationId: The unique identifier that the protocol client specified for a search query in **properties.CorrelationId** element in the **Execute** message (see section 3.1.4.1).

QPMachine: The name of the computer that processed the query on the protocol server. This MUST be the same value that is returned by the protocol server in the **ResultTableCollection.QueryMachine** element (see section 3.1.4.1.3.1) for this search query.

QPTimeMs: The time in milliseconds taken by intermediate processing of this search query on the protocol server. This MUST be the same value that is returned by the protocol server in the **ResultTableCollection.QueryProcessingTime** element (see section 3.1.4.1.3.1) for this search query.

QueryTerms: The query terms of the search query. This MUST be the same value that is returned by the protocol server in the **ResultTableCollection.QueryTerms** element (see section 3.1.4.1.3.1) for this search query.

TotalQueryTimeMs: The time in milliseconds for processing of this search query on the protocol server. This MUST be the same value that is returned by the protocol server in the **ResultTableCollection.ElapsedTime** element (see section 3.1.4.1.3.1) for this search query.

3.1.4.13   RecordQueryErrorEvent

This operation is used by the protocol client to inform the protocol server of any errors that occurred during the processing of search queries in the protocol client. The protocol client MUST collect the error information for all queries executed within each 60 second time period and send them in a single message.

```
<wsdl:operation name="RecordQueryErrorEvent">
  <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordQueryErrorEvent"
message="tns:ISearchQueryServiceApplication_RecordQueryErrorEvent_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordQueryErrorEventResponse"
message="tns:ISearchQueryServiceApplication_RecordQueryErrorEvent_OutputMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordQueryErrorEventSearchSer
viceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_RecordQueryErrorEvent_SearchServiceApplicationFau
ltFault_FaultMessage"/>
</wsdl:operation>
```

The protocol client sends a ISearchQueryServiceApplication_RecordQueryErrorEvent_InputMessage request message and the protocol server responds with a ISearchQueryServiceApplication_RecordQueryErrorEvent_OutputMessage response message, as follows:

▪ On successfully processing the error information, the protocol server returns whether **verbose query monitoring** is turned on for the search application.

▪ On error, the protocol server MUST send a **FaultException<ExceptionDetail>** message to the protocol client.

3.1.4.13.1 Messages

3.1.4.13.1.1 ISearchQueryServiceApplication_RecordQueryErrorEvent_InputMessage

The requested WSDL message for the **RecordQueryErrorEvent** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/RecordQueryErrorEvent
```

The SOAP body contains the **RecordQueryErrorEvent** element.

3.1.4.13.1.2 ISearchQueryServiceApplication_RecordQueryErrorEvent_OutputMessage

The response WSDL message for the **RecordQueryErrorEvent** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/RecordQueryErrorEventResponse
```

The SOAP body contains the **RecordQueryErrorEventResponse** element.

3.1.4.13.2 Elements

3.1.4.13.2.1 RecordQueryErrorEvent

The input data for the **RecordQueryErrorEvent** WSDL operation.

```
<xs:element name="RecordQueryErrorEvent">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="buffer" nillable="true"
xmlns:q21="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q21:QueryErrorDataBuffer"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

buffer: Specifies a list of information for errors that occurred during the processing of all search queries executed within a 60 second time period in the protocol client. Each entry in the list corresponds to an error.

3.1.4.13.2.2 RecordQueryErrorEventResponse

The result data for the **RecordQueryErrorEvent** WSDL operation.

```
<xs:element name="RecordQueryErrorEventResponse">
```

```
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="RecordQueryErrorEventResult" type="xs:boolean"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

RecordQueryErrorEventResult: Specifies whether the verbose query monitoring for the search application is turned on. The protocol server MUST return true if it is turned on; the protocol server MUST return false if it is turned off. If the protocol server returns false then subsequent calls to the protocol server MUST NOT include any error information in **QueryErrorDataBuffer**. If the protocol server returns true then subsequent calls to the protocol server MUST include error information in **QueryErrorDataBuffer**.

3.1.4.13.3   Complex Types

3.1.4.13.3.1   QueryErrorDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **QueryErrorDataBuffer** complex type contains a list of information for errors occurred during the processing of search queries in the protocol client. Each entry in the list corresponds to an error.

```
<xs:complexType name="QueryErrorDataBuffer">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:DataBuffer">
      <xs:sequence>
        <xs:element minOccurs="0" name="VerboseQueryTimings" nillable="true"
type="tns:ArrayOfVerboseQueryErrorDataBuffer"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

VerboseQueryTimings: Specifies a list of information for errors occurred during the processing of search queries in the protocol client. This element MUST be empty if verbose query monitoring for the search application is turned off.

3.1.4.13.3.2   ArrayOfVerboseQueryErrorDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **ArrayOfVerboseQueryErrorDataBuffer** complex type contains a list of information for errors occurred during the processing of search queries in the protocol client. Each entry in the list corresponds to an error.

```
<xs:complexType name="ArrayOfVerboseQueryErrorDataBuffer">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="VerboseQueryErrorDataBuffer"
nillable="true" type="tns:VerboseQueryErrorDataBuffer"/>
  </xs:sequence>
</xs:complexType>
```

VerboseQueryErrorDataBuffer: Specifies the information of an error that occurred during the processing of a search query in the protocol client.

3.1.4.13.3.3 VerboseQueryErrorDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **VerboseQueryErrorDataBuffer** complex type contains the information of an error occurred during the processing of a search query in the protocol client.

```
<xs:complexType name="VerboseQueryErrorDataBuffer">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:DataBuffer">
      <xs:sequence>
        <xs:element minOccurs="0" name="CorrelationId" type="ser:guid"/>
        <xs:element minOccurs="0" name="Exception" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="Operation" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

CorrelationId: Specifies the unique identifier for the search query that the protocol client specified in **properties.CorrelationId** element in the **Execute** message (see section 3.1.4.1).

Exception: Specifies the details of the exception if any that occurred on the protocol client while processing the search query. The value of this field is specific to the implementation of the protocol client.

Operation: Specifies the details of the operation that caused an exception during the processing of the search query in the protocol client. The value of this field is specific to the implementation of the protocol client.

3.1.4.14 RecordUIQueryDoneEvent

This operation is used to inform the protocol server about the search query latency of the search results page. The protocol client MUST collect the latency information for all search queries executed in each 60 second time period and send it in a single message to the protocol server.

```
<wsdl:operation name="RecordUIQueryDoneEvent">
  <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordUIQueryDoneEvent"
message="tns:ISearchQueryServiceApplication_RecordUIQueryDoneEvent_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordUIQueryDoneEventResponse
" message="tns:ISearchQueryServiceApplication_RecordUIQueryDoneEvent_OutputMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordUIQueryDoneEventSearchSe
rviceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_RecordUIQueryDoneEvent_SearchServiceApplicationFa
ultFault_FaultMessage"/>
</wsdl:operation>
```

The protocol client sends an ISearchQueryServiceApplication_RecordUIQueryDoneEvent_InputMessage request message and the protocol server responds with an ISearchQueryServiceApplication_RecordUIQueryDoneEvent_OutputMessage response message, as follows:

- On successful processing the search query latency of the results page, the protocol server returns whether verbose query monitoring is turned on for the search application.

- On error, the protocol server MUST send a **FaultException<ExceptionDetail>** message to the protocol client.

3.1.4.14.1 Messages

3.1.4.14.1.1 ISearchQueryServiceApplication_RecordUIQueryDoneEvent_InputMessage

The requested WSDL message for the **RecordUIQueryDoneEvent** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/RecordUIQueryDoneEvent
```

The SOAP body contains the **RecordUIQueryDoneEvent** element.

3.1.4.14.1.2 ISearchQueryServiceApplication_RecordUIQueryDoneEvent_OutputMessage

The response WSDL message for the **RecordUIQueryDoneEvent** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/RecordUIQueryDoneEventResponse
```

The SOAP body contains the **RecordUIQueryDoneEventResponse** element.

3.1.4.14.2 Elements

3.1.4.14.2.1 RecordUIQueryDoneEvent

The input data for the **RecordUIQueryDoneEvent** WSDL operation.

```
<xs:element name="RecordUIQueryDoneEvent">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="buffer" nillable="true"
xmlns:q18="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q18:UIQueryLatencyDataBuffer"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

buffer: Specifies the search query latency of the search results page. It MUST contain aggregated latency information. When verbose query monitoring is turned on for the search application, it MUST also contain verbose latency information for every single search query.

3.1.4.14.2.2 RecordUIQueryDoneEventResponse

The result data for the **RecordUIQueryDoneEvent** WSDL operation.

```
<xs:element name="RecordUIQueryDoneEventResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="RecordUIQueryDoneEventResult" type="xs:boolean"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

RecordUIQueryDoneEventResult: Specifies whether verbose query monitoring is turned on for search application. The protocol server MUST return "true" if it is turned on; the protocol MUST return "false" if it is turned off. If "true" was returned, in the subsequent call the protocol client MUST include both aggregated and verbose query latency information in the **buffer** element; if "false" is returned, in the subsequent call the protocol client MUST only include aggregated query latency information in the **buffer** element.

3.1.4.14.3   Complex Types

3.1.4.14.3.1   UIQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **UIQueryLatencyDataBuffer** complex type contains the search query latency of the search results page for search queries within a 60 second time period. It MUST contain aggregated latency information for all search queries. If verbose query monitoring is turned on, it MUST also contain verbose latency information for every single search query.

```
<xs:complexType name="UIQueryLatencyDataBuffer">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:DataBuffer">
      <xs:sequence>
        <xs:element minOccurs="0" name="AggregatedQueryTimings" nillable="true"
type="tns:ArrayOfAggregatedUIQueryLatencyDataBuffer"/>
        <xs:element minOccurs="0" name="VerboseQueryTimings" nillable="true"
type="tns:ArrayOfVerboseUIQueryLatencyDataBuffer"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AggregatedQueryTimings: Specifies the aggregated latency information for all search queries executed within a 60 second time period.

VerboseQueryTimings: Specifies details of the search query latency for a single search query.

3.1.4.14.3.2   ArrayOfAggregatedUIQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **ArrayOfAggregatedUIQueryLatencyDataBuffer** complex type contains a list of aggregated latency information for the search results page. Each entry in the list provides latency information about a set of search queries within a 60 second time period.

```
<xs:complexType name="ArrayOfAggregatedUIQueryLatencyDataBuffer">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="AggregatedUIQueryLatencyDataBuffer"
nillable="true" type="tns:AggregatedUIQueryLatencyDataBuffer"/>
```

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

AggregatedUIQueryLatencyDataBuffer: Specifies the aggregated search query latency.

3.1.4.14.3.3   AggregatedUIQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **AggregatedUIQueryLatencyDataBuffer** complex type contains aggregated search query latency of search results page.

```
<xs:complexType name="AggregatedUIQueryLatencyDataBuffer">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:DataBuffer">
      <xs:sequence>
        <xs:element minOccurs="0" name="ExclusiveWebpartTimeMs" type="xs:int"/>
        <xs:element minOccurs="0" name="InclusiveWebpartTimeMs" type="xs:int"/>
        <xs:element minOccurs="0" name="NumQueries" type="xs:int"/>
        <xs:element minOccurs="0" name="TotalQueryTimeMs" type="xs:int"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ExclusiveWebpartTimeMs: The total time in milliseconds for the Web Parts on the search results page to process the search queries.

InclusiveWebpartTimeMs: The total time in milliseconds for all Web Parts on the search results page to process the search queries.

NumQueries: The number of search queries within a 60 second time period.

TotalQueryTimeMs: The total time in milliseconds for the search results page to process the search queries.

3.1.4.14.3.4   ArrayOfVerboseUIQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **ArrayOfVerboseUIQueryLatencyDataBuffer** complex type contains a list of latency information about the search results page when processing individual search queries. Each entry provides information about a single search query.

```
<xs:complexType name="ArrayOfVerboseUIQueryLatencyDataBuffer">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="VerboseUIQueryLatencyDataBuffer"
  nillable="true" type="tns:VerboseUIQueryLatencyDataBuffer"/>
  </xs:sequence>
</xs:complexType>
```

VerboseUIQueryLatencyDataBuffer: Specifies the latency in processing a search results page when executing a single search query. MUST be of the VerboseUIQueryLatencyDataBuffer complex type as specified in section 3.1.4.14.3.5.

3.1.4.14.3.5 VerboseUIQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **VerboseUIQueryLatencyDataBuffer** complex type contains details of search query latency for a single search query.

```
<xs:complexType name="VerboseUIQueryLatencyDataBuffer">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:DataBuffer">
      <xs:sequence>
        <xs:element minOccurs="0" name="CorrelationId" type="ser:guid"/>
        <xs:element minOccurs="0" name="ExclusiveWebpartTimeMs" type="xs:int"/>
        <xs:element minOccurs="0" name="InclusiveWebpartTimeMs" type="xs:int"/>
        <xs:element minOccurs="0" name="QueryTerms" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="TotalQueryTimeMs" type="xs:int"/>
        <xs:element minOccurs="0" name="Url" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

CorrelationId: The unique identifier that the protocol client specified for the search query in **properties.CorrelationId** element in the **Execute** message (see section 3.1.4.1).

ExclusiveWebpartTimeMs: The time in milliseconds for all search related Web Parts on the search results page to process the search query.

InclusiveWebpartTimeMs: The time in milliseconds for all Web Parts on the search results page to process the search query.

QueryTerms: The query terms of the search query.

TotalQueryTimeMs: The latency in milliseconds for the search results page to process the search query.

Url: The URI of the page that issues the search query. The value MUST have the valid URI format, as specified in [RFC2396].

3.1.4.15 RecordWebPartQueryDoneEvent

This operation is used by the protocol client to inform the protocol server about the search query latency of the Web Parts on the search results page. The protocol client MUST collect the latency information for search queries executed within each 60 second time period and send it in a single message to the protocol server.

```
<wsdl:operation name="RecordWebPartQueryDoneEvent">
  <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordWebPartQueryDoneEvent"
message="tns:ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_InputMessage"/>
  <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordWebPartQueryDoneEventRes
ponse"
message="tns:ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_OutputMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordWebPartQueryDoneEventSea
rchServiceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
```

```
message="tns:ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_SearchServiceApplicat
ionFaultFault_FaultMessage"/>
    </wsdl:operation>
```

The protocol client sends an
ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_InputMessage request message
and the protocol server responds with an
ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_OutputMessage response
message, as follows:

- On successfully processing the search query latency of the Web Parts, the protocol server returns
  a message that indicates whether verbose query monitoring is turned on for the search service
  application.

- On error, the protocol server MUST return a **FaultException<ExceptionDetail>** message to
  the protocol client.

3.1.4.15.1   Messages

3.1.4.15.1.1 ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_InputMessage

The requested WSDL message for the **RecordWebPartQueryDoneEvent** WSDL operation.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/RecordWebPartQueryDoneEvent
```

The SOAP body contains the **RecordWebPartQueryDoneEvent** element.

3.1.4.15.1.2 ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_OutputMessage

The response WSDL message for the **RecordWebPartQueryDoneEvent** method.

The SOAP action value is:

```
http://tempuri.org/ISearchQueryServiceApplication/RecordWebPartQueryDoneEventResponse
```

The SOAP body contains the **RecordWebPartQueryDoneEventResponse** element.

3.1.4.15.2   Elements

3.1.4.15.2.1   RecordWebPartQueryDoneEvent

The input data for the **RecordWebPartQueryDoneEvent** WSDL operation.

```
<xs:element name="RecordWebPartQueryDoneEvent">
  <xs:complexType>
    <xs:sequence>
```

```
        <xs:element minOccurs="0" name="buffer" nillable="true"
xmlns:q19="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
type="q19:WebPartQueryLatencyDataBuffer"/>
      </xs:sequence>
    </xs:complexType>
</xs:element>
```

buffer: Specifies the verbose search query latency of the Web Parts.

3.1.4.15.2.2 RecordWebPartQueryDoneEventResponse

The result data for the **RecordWebPartQueryDoneEvent** WSDL operation.

```
<xs:element name="RecordWebPartQueryDoneEventResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="RecordWebPartQueryDoneEventResult" type="xs:boolean"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

RecordWebPartQueryDoneEventResult: Specifies whether the verbose query monitoring is turned on for the search service application. The protocol server MUST return **true** if it is turned on; the protocol server MUST return **false** if it is turned off. If **true** is returned, in the subsequent call the protocol client MUST send the search query latency of the Web Parts to the protocol server; if **false** was returned, in the subsequent call the protocol client MUST not send the search query latency of the Web Parts to the protocol server.

3.1.4.15.3 Complex Types

3.1.4.15.3.1 WebPartQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **WebPartQueryLatencyDataBuffer** complex type contains the latency of the Web Parts in processing search queries within a 60-second time period.

```
<xs:complexType name="WebPartQueryLatencyDataBuffer">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:DataBuffer">
      <xs:sequence>
        <xs:element minOccurs="0" name="VerboseQueryTimings" nillable="true"
type="tns:ArrayOfVerboseWebPartQueryLatencyDataBuffer"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

VerboseQueryTimings: Specifies details of the search query latency of every single Web Part.

3.1.4.15.3.2   ArrayOfVerboseWebPartQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **ArrayOfVerboseWebPartQueryLatencyDataBuffer** complex type contains the search query latency of the Web Parts in processing search queries within a 60-second time period. Each entry corresponds to the search query latency of a Web Part on the search results page.

```
<xs:complexType name="ArrayOfVerboseWebPartQueryLatencyDataBuffer">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="VerboseWebPartQueryLatencyDataBuffer" nillable="true"
type="tns:VerboseWebPartQueryLatencyDataBuffer"/>
  </xs:sequence>
</xs:complexType>
```

VerboseWebPartQueryLatencyDataBuffer: Specifies the search query latency of a single Web Part.

3.1.4.15.3.3   VerboseWebPartQueryLatencyDataBuffer (from namespace http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08)

The **VerboseWebPartQueryLatencyDataBuffer** complex type contains detail of search query latency of a single Web Part.

```
<xs:complexType name="VerboseWebPartQueryLatencyDataBuffer">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:DataBuffer">
      <xs:sequence>
        <xs:element minOccurs="0" name="CorrelationId" type="ser:guid"/>
        <xs:element minOccurs="0" name="ExclusiveWebpartTimeMs" type="xs:int"/>
        <xs:element minOccurs="0" name="InclusiveWebpartTimeMs" type="xs:int"/>
        <xs:element minOccurs="0" name="WebPartId" type="ser:guid"/>
        <xs:element minOccurs="0" name="WebPartTitle" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

CorrelationId: The unique identifier that the protocol client specified for a search query in **properties.CorrelationId** element in the **Execute** message (see section 3.1.4.1).

ExclusiveWebpartTimeMs: The time, in milliseconds, for the Web Part with the specified **WebPartId** to process the search query.

InclusiveWebpartTimeMs: The total time in milliseconds for all search Web Parts on the search results page to process the search query.

WebPartId: The unique identifier of the Web Part that processed the search query.

WebPartTitle: The title of the Web Part that processed the search query.

3.1.5   Timer Events

None.

3.1.6   Other Local Events

None.

4 Protocol Examples

4.1 Issue a Search Query

To issue the query "Sample Search Terms", the protocol client sends a message such as this one:

```
<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing"
  xmlns:u="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-
1.0.xsd">
  <s:Header>
    <a:Action s:mustUnderstand="1">
      http://tempuri.org/ISearchQueryServiceApplication/Execute
    </a:Action>
    <a:MessageID>
      urn:uuid:e72b47ca-9794-46f9-8bd3-b0a84c16e4fe
    </a:MessageID>
    <a:ReplyTo>
      <a:Address>
        http://www.w3.org/2005/08/addressing/anonymous
      </a:Address>
    </a:ReplyTo>
    <ServiceContext
      xmlns="http://schemas.microsoft.com/sharepoint/servicecontext"
      xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
      <correlationId>
        2da8038b-27f4-422a-bd8f-e20801fb8980
      </correlationId>
      <language>en-US</language>
      <region>en-US</region>
      <siteSubscriptionId>00000000-0000-0000-0000-000000000000</siteSubscriptionId>
    </ServiceContext>
    <a:To s:mustUnderstand="1" u:Id="_1">
      http://example.com:32843/dc46e19968e743728529b721db8c8c60/SearchService.svc
    </a:To>
  </s:Header>
  <s:Body>
    <Execute xmlns="http://tempuri.org/">
      <properties
        i:type="b:KeywordQueryProperties"
        xmlns:b="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
        xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
        <b:AlertInfo>
          <b:ChangeType>Discovered</b:ChangeType>
          <b:LastUpdateTime>0001-01-01T00:00:00</b:LastUpdateTime>
        </b:AlertInfo>
        <b:AuthenticationType>NtAuthenticatedQuery</b:AuthenticationType>
        <b:CorrelationId>2da8038b-27f4-422a-bd8f-e20801fb8980</b:CorrelationId>
        <b:EnableNicknames>true</b:EnableNicknames>
        <b:EnablePhonetic>true</b:EnablePhonetic>
        <b:EnableStemming>false</b:EnableStemming>
        <b:HighlightedSentenceCount>2</b:HighlightedSentenceCount>
        <b:Hint>None</b:Hint>
        <b:HitHighlightedProperties
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
          <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">PreferredName</c:anyType>
```

```
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">YomiDisplayName</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">JobTitle</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Department</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">WorkPhone</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">OfficeNumber</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">WorkEmail</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Responsibility</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Skills</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">SipAddress</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Schools</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">PastProjects</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Interests</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">OrgNames</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">OrgParentNames</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Memberships</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">AboutMe</c:anyType>
            <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">BaseOfficeLocation</c:anyType>
          </b:HitHighlightedProperties>
          <b:IgnoreAllNoiseQuery>true</b:IgnoreAllNoiseQuery>
          <b:KeywordInclusion>AllKeywords</b:KeywordInclusion>
          <b:Locale>1033</b:Locale>
          <b:MergeWithDefaultPartition>false</b:MergeWithDefaultPartition>
          <b:PagingCookie
            i:nil="true"

xmlns:c="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"></b:Pa
gingCookie>
          <b:PartitionId>00000000-0000-0000-0000-000000000000</b:PartitionId>
          <b:PersonalizationData>
            <b:UserId>8cd810f6-fc28-425c-b6f4-aac2e170699b</b:UserId>
          </b:PersonalizationData>
          <b:QueryText>Sample Search Terms</b:QueryText>
          <b:RankingModelId>D9BFB1A1-9036-4627-83B2-BBD9983AC8A1</b:RankingModelId>
          <b:ResultTypes>RelevantResults</b:ResultTypes>
          <b:ResultsProvider>SharepointSearch</b:ResultsProvider>
          <b:RowLimit>3</b:RowLimit>
          <b:RowsPerPage>3</b:RowsPerPage>
          <b:Sid></b:Sid>
          <b:SiteId>496f265c-4758-4ac5-b14d-d02dfa131a64</b:SiteId>
          <b:StartRow>0</b:StartRow>
          <b:SummaryLength>200</b:SummaryLength>
          <b:TimeZoneID>13</b:TimeZoneID>
          <b:Timeout>90000</b:Timeout>
          <b:TotalRowsExactMinimum>100</b:TotalRowsExactMinimum>
```

```
<b:TrimDuplicates>true</b:TrimDuplicates>
<b:UrlZone>Default</b:UrlZone>
<b:CustomRefinementIntervals
  xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
</b:CustomRefinementIntervals>
<b:EnableFQL>false</b:EnableFQL>
<b:EnableSpellcheck>Suggest</b:EnableSpellcheck>
<b:EnableUrlSmashing>true</b:EnableUrlSmashing>
<b:HiddenConstraints>scope:"People"</b:HiddenConstraints>
<b:MaxShallowRefinementHits>100</b:MaxShallowRefinementHits>
<b:MaxSummaryLength>185</b:MaxSummaryLength>
<b:MaxUrlLength>2048</b:MaxUrlLength>
<b:RefinementFilters
  xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
</b:RefinementFilters>
<b:Refiners></b:Refiners>
<b:ResubmitFlags>NoResubmit</b:ResubmitFlags>
<b:SelectProperties
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">WorkId</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">UserProfile_GUID</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">AccountName</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">PreferredName</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">YomiDisplayName</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">JobTitle</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Department</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">WorkPhone</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">OfficeNumber</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">PictureURL</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">HierarchyUrl</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">WorkEmail</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Path</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">HitHighlightedSummary</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">HitHighlightedProperties</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Responsibility</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Skills</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">SipAddress</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Schools</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">PastProjects</c:anyType>
    <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Interests</c:anyType>
```

```
          <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">OrgNames</c:anyType>
          <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">OrgUrls</c:anyType>
          <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">OrgParentNames</c:anyType>
          <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">OrgParentUrls</c:anyType>
          <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">Memberships</c:anyType>
          <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">AboutMe</c:anyType>
          <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">BaseOfficeLocation</c:anyType>
          <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">ServiceApplicationID</c:anyType>
          <c:anyType i:type="d:string"
xmlns:d="http://www.w3.org/2001/XMLSchema">SocialDistance</c:anyType>
        </b:SelectProperties>
        <b:SimilarTo></b:SimilarTo>
        <b:SimilarType>None</b:SimilarType>
        <b:SortList>
          <b:m_elements>
            <b:Sort>
              <b:direction>Descending</b:direction>
              <b:strProperty>Rank</b:strProperty>
            </b:Sort>
          </b:m_elements>
        </b:SortList>
        <b:SortSimilar>true</b:SortSimilar>
        <b:TrimDuplicatesIncludeId>0</b:TrimDuplicatesIncludeId>
        <b:TrimDuplicatesKeepCount>1</b:TrimDuplicatesKeepCount>
        <b:TrimDuplicatesOnProperty></b:TrimDuplicatesOnProperty>
        <b:UserContextData i:nil="true"></b:UserContextData>
        <b:UserContextGroupID i:nil="true"></b:UserContextGroupID>
      </properties>
    </Execute>
  </s:Body>
</s:Envelope>
```

The protocol server then responds with the following:

```
<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing"
  xmlns:u="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-
1.0.xsd">
  <s:Header>
    <a:Action s:mustUnderstand="1">
      http://tempuri.org/ISearchQueryServiceApplication/ExecuteResponse
    </a:Action>
    <ActivityId
      CorrelationId="b0fc7d5c-0bd2-4724-8aef-d40eb251c154"
      xmlns="http://schemas.microsoft.com/2004/09/ServiceModel/Diagnostics">
      b4751329-28ff-489f-81c7-7c0e5f3dad7a
    </ActivityId>
    <a:RelatesTo>
      urn:uuid:e72b47ca-9794-46f9-8bd3-b0a84c16e4fe
    </a:RelatesTo>
```

```
    </s:Header>
    <s:Body>
      <ExecuteResponse xmlns="http://tempuri.org/">
        <ExecuteResult
          xmlns:b="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
          xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
          <b:DatabaseTime>16</b:DatabaseTime>
          <b:Definition i:nil="true"></b:Definition>
          <b:ElapsedTime>65</b:ElapsedTime>
          <b:IgnoredNoiseWords
            xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
          </b:IgnoredNoiseWords>
          <b:KeywordInformation>
            <b:Definition></b:Definition>
            <b:Keyword></b:Keyword>
          </b:KeywordInformation>
          <b:QueryMachine>.\ff04f7fc-650a-4317-8806-49d4a9b49d43-query-0</b:QueryMachine>
          <b:QueryModification i:nil="true"></b:QueryModification>
          <b:QueryProcessingTime>65</b:QueryProcessingTime>
          <b:QueryTerms xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
            <c:string>Sample Search Terms</c:string>
          </b:QueryTerms>
          <b:SpellingSuggestion></b:SpellingSuggestion>
          <b:m_ResultTables
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
              <c:KeyValueOfResultTypeResultTableUTLV0zE5>
                <c:Key>RelevantResults</c:Key>
                <c:Value>
                  <b:IsTotalRowsExact>true</b:IsTotalRowsExact>
                  <b:ResultType>RelevantResults</b:ResultType>
                  <b:RowCount>0</b:RowCount>
                  <b:Table>
                    <xs:schema id="NewDataSet" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns="" xmlns:msdata="urn:schemas-microsoft-com:xml-msdata">
                      <xs:element name="NewDataSet" msdata:IsDataSet="true"
msdata:MainDataTable="RelevantResults" msdata:UseCurrentLocale="true">
                        <xs:complexType>
                          <xs:choice minOccurs="0" maxOccurs="unbounded">
                            <xs:element name="RelevantResults">
                              <xs:complexType>
                                <xs:sequence>
                                  <xs:element name="WorkId" type="xs:long"
minOccurs="0"></xs:element>
                                    <xs:element name="UserProfile_GUID" type="xs:string"
minOccurs="0"></xs:element>
                                    <xs:element name="AccountName" type="xs:string"
minOccurs="0"></xs:element>
                                    <xs:element name="PreferredName" type="xs:string"
minOccurs="0"></xs:element>
                                    <xs:element name="YomiDisplayName" type="xs:string"
minOccurs="0"></xs:element>
                                    <xs:element name="JobTitle" type="xs:string"
minOccurs="0"></xs:element>
                                    <xs:element name="Department" type="xs:string"
minOccurs="0"></xs:element>
                                    <xs:element name="WorkPhone" type="xs:string"
minOccurs="0"></xs:element>
                                    <xs:element name="OfficeNumber" type="xs:string"
minOccurs="0"></xs:element>
```

```xml
                                <xs:element name="PictureURL" type="xs:string"
minOccurs="0"></xs:element>
                                <xs:element name="HierarchyUrl" type="xs:string"
minOccurs="0"></xs:element>
                                <xs:element name="WorkEmail" type="xs:string"
minOccurs="0"></xs:element>
                                <xs:element name="Path" type="xs:string"
minOccurs="0"></xs:element>
                                <xs:element name="HitHighlightedSummary" type="xs:string"
minOccurs="0"></xs:element>
                                <xs:element name="HitHighlightedProperties" type="xs:string"
minOccurs="0"></xs:element>
                                <xs:element name="Responsibility"
msdata:DataType="System.String[], mscorlib, Version=2.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089" type="xs:anyType" minOccurs="0"></xs:element>
                                <xs:element name="Skills" msdata:DataType="System.String[],
mscorlib, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089"
type="xs:anyType" minOccurs="0"></xs:element>
                                <xs:element name="SipAddress" type="xs:string"
minOccurs="0"></xs:element>
                                <xs:element name="Schools" msdata:DataType="System.String[],
mscorlib, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089"
type="xs:anyType" minOccurs="0"></xs:element>
                                <xs:element name="PastProjects"
msdata:DataType="System.String[], mscorlib, Version=2.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089" type="xs:anyType" minOccurs="0"></xs:element>
                                <xs:element name="Interests" msdata:DataType="System.String[],
mscorlib, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089"
type="xs:anyType" minOccurs="0"></xs:element>
                                <xs:element name="OrgNames" msdata:DataType="System.String[],
mscorlib, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089"
type="xs:anyType" minOccurs="0"></xs:element>
                                <xs:element name="OrgUrls" msdata:DataType="System.String[],
mscorlib, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089"
type="xs:anyType" minOccurs="0"></xs:element>
                                <xs:element name="OrgParentNames"
msdata:DataType="System.String[], mscorlib, Version=2.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089" type="xs:anyType" minOccurs="0"></xs:element>
                                <xs:element name="OrgParentUrls"
msdata:DataType="System.String[], mscorlib, Version=2.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089" type="xs:anyType" minOccurs="0"></xs:element>
                                <xs:element name="Memberships"
msdata:DataType="System.String[], mscorlib, Version=2.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089" type="xs:anyType" minOccurs="0"></xs:element>
                                <xs:element name="AboutMe" type="xs:string"
minOccurs="0"></xs:element>
                                <xs:element name="BaseOfficeLocation" type="xs:string"
minOccurs="0"></xs:element>
                                <xs:element name="ServiceApplicationID" type="xs:string"
minOccurs="0"></xs:element>
                                <xs:element name="SocialDistance" type="xs:long"
minOccurs="0"></xs:element>
                            </xs:sequence>
                          </xs:complexType>
                        </xs:element>
                      </xs:choice>
                    </xs:complexType>
                  </xs:element>
                </xs:schema>
                <diffgr:diffgram xmlns:diffgr="urn:schemas-microsoft-com:xml-diffgram-v1"
xmlns:msdata="urn:schemas-microsoft-com:xml-msdata"></diffgr:diffgram>
            </b:Table>
```

```
            <b:TimeZoneID>13</b:TimeZoneID>
            <b:TotalRows>0</b:TotalRows>
            <b:TotalRowsIncludingDuplicates>0</b:TotalRowsIncludingDuplicates>
          </c:Value>
        </c:KeyValueOfResultTypeResultTableUTLV0zE5>
      </b:m_ResultTables>
    </ExecuteResult>
  </ExecuteResponse>
  </s:Body>
</s:Envelope>
```

4.2 Retrieve Information About the Available Search Scopes

To obtain a list of search scopes, the protocol client sends the following message:

```
<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing"
  xmlns:u="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-
1.0.xsd">
  <s:Header>
    <a:Action s:mustUnderstand="1">
      http://tempuri.org/ISearchQueryServiceApplication/GetScopes
    </a:Action>
    <a:MessageID>
      urn:uuid:d7d4cf86-c037-465c-a3b4-312f815c7389
    </a:MessageID>
    <a:ReplyTo>
      <a:Address>
        http://www.w3.org/2005/08/addressing/anonymous
      </a:Address>
    </a:ReplyTo>
    <ServiceContext
      xmlns="http://schemas.microsoft.com/sharepoint/servicecontext"
      xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
      <correlationId>
        00000000-0000-0000-0000-000000000000
      </correlationId>
      <language>en-US</language>
      <region>en-US</region>
      <siteSubscriptionId i:nil="true"></siteSubscriptionId>
    </ServiceContext>
    <a:To s:mustUnderstand="1" u:Id="_1">
      http://example.com:32843/dc46e19968e743728529b721db8c8c60/SearchService.svc
    </a:To>
  </s:Header>
  <s:Body>
    <GetScopes xmlns="http://tempuri.org/">
      <properties
        i:type="b:KeywordQueryProperties"
        xmlns:b="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
        xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
        <b:AlertInfo>
          <b:ChangeType>Discovered</b:ChangeType>
          <b:LastUpdateTime>0001-01-01T00:00:00</b:LastUpdateTime>
        </b:AlertInfo>
        <b:AuthenticationType>NtAuthenticatedQuery</b:AuthenticationType>
```

```
<b:CorrelationId>00000000-0000-0000-0000-000000000000</b:CorrelationId>
<b:EnableNicknames>false</b:EnableNicknames>
<b:EnablePhonetic>false</b:EnablePhonetic>
<b:EnableStemming>false</b:EnableStemming>
<b:HighlightedSentenceCount>2</b:HighlightedSentenceCount>
<b:Hint>None</b:Hint>
<b:HitHighlightedProperties
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b:HitHighlightedPropert
ies>
<b:IgnoreAllNoiseQuery>true</b:IgnoreAllNoiseQuery>
<b:KeywordInclusion>AllKeywords</b:KeywordInclusion>
<b:Locale>1033</b:Locale>
<b:MergeWithDefaultPartition>false</b:MergeWithDefaultPartition>
<b:PagingCookie i:nil="true"
xmlns:c="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"></b:Pa
gingCookie>
<b:PartitionId>00000000-0000-0000-0000-000000000000</b:PartitionId>
<b:PersonalizationData i:nil="true"></b:PersonalizationData>
<b:QueryText></b:QueryText>
<b:RankingModelId></b:RankingModelId>
<b:ResultTypes>None</b:ResultTypes>
<b:ResultsProvider>Default</b:ResultsProvider>
<b:RowLimit>50</b:RowLimit>
<b:RowsPerPage>50</b:RowsPerPage>
<b:Sid></b:Sid>
<b:SiteId>496f265c-4758-4ac5-b14d-d02dfa131a64</b:SiteId>
<b:StartRow>0</b:StartRow>
<b:SummaryLength>200</b:SummaryLength>
<b:TimeZoneID>-1</b:TimeZoneID>
<b:Timeout>10000</b:Timeout>
<b:TotalRowsExactMinimum>200</b:TotalRowsExactMinimum>
<b:TrimDuplicates>true</b:TrimDuplicates>
<b:UrlZone>Default</b:UrlZone>
<b:CustomRefinementIntervals
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b:CustomRefinementInter
vals>
<b:EnableFQL>false</b:EnableFQL>
<b:EnableSpellcheck>Suggest</b:EnableSpellcheck>
<b:EnableUrlSmashing>true</b:EnableUrlSmashing>
<b:HiddenConstraints></b:HiddenConstraints>
<b:MaxShallowRefinementHits>100</b:MaxShallowRefinementHits>
<b:MaxSummaryLength>185</b:MaxSummaryLength>
<b:MaxUrlLength>2048</b:MaxUrlLength>
<b:RefinementFilters
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b:RefinementFilters>
<b:Refiners></b:Refiners>
<b:ResubmitFlags>NoResubmit</b:ResubmitFlags>
<b:SelectProperties
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b:SelectProperties>
<b:SimilarTo></b:SimilarTo>
<b:SimilarType>None</b:SimilarType>
<b:SortList>
    <b:m_elements></b:m_elements>
</b:SortList>
<b:SortSimilar>true</b:SortSimilar>
<b:TrimDuplicatesIncludeId>0</b:TrimDuplicatesIncludeId>
<b:TrimDuplicatesKeepCount>1</b:TrimDuplicatesKeepCount>
<b:TrimDuplicatesOnProperty></b:TrimDuplicatesOnProperty>
<b:UserContextData i:nil="true"></b:UserContextData>
<b:UserContextGroupID i:nil="true"></b:UserContextGroupID>
```

```
          </properties>
        </GetScopes>
      </s:Body>
    </s:Envelope>
```

The protocol server then responds with the following message:

```
<s:Envelope
    xmlns:s="http://www.w3.org/2003/05/soap-envelope"
    xmlns:a="http://www.w3.org/2005/08/addressing"
    xmlns:u="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-
1.0.xsd">
    <s:Header>
      <a:Action s:mustUnderstand="1">
        http://tempuri.org/ISearchQueryServiceApplication/GetScopesResponse
      </a:Action>
      <ActivityId
        CorrelationId="bdba89e0-c9c9-4666-8e9b-6e6a973698e3"
        xmlns="http://schemas.microsoft.com/2004/09/ServiceModel/Diagnostics">
        91f7046f-9144-48ed-9eb0-4518e8739b56
      </ActivityId>
      <a:RelatesTo>
        urn:uuid:d7d4cf86-c037-465c-a3b4-312f815c7389
      </a:RelatesTo>
    </s:Header>
    <s:Body>
      <GetScopesResponse xmlns="http://tempuri.org/">
        <GetScopesResult
          xmlns:b="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
          xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
          <b:ScopeInformation>
            <b:Description>Search for people.</b:Description>
            <b:Filter i:nil="true"></b:Filter>
            <b:ID>0</b:ID>
            <b:Name>People</b:Name>
            <b:State>Compiled</b:State>
          </b:ScopeInformation>
          <b:ScopeInformation>
            <b:Description>Search for everything available for searching.</b:Description>
            <b:Filter i:nil="true"></b:Filter>
            <b:ID>1</b:ID>
            <b:Name>All Sites</b:Name>
            <b:State>Compiled</b:State>
          </b:ScopeInformation>
          <b:ScopeInformation>
            <b:Description>Everything that should be omitted from all searches by
default.</b:Description>
            <b:Filter i:nil="true"></b:Filter>
            <b:ID>2</b:ID>
            <b:Name>Global Query Exclusion</b:Name>
            <b:State>Empty</b:State>
          </b:ScopeInformation>
          <b:ScopeInformation>
            <b:Description>Sites whose ranks will be demoted in click-distance
calculation.</b:Description>
            <b:Filter i:nil="true"></b:Filter>
            <b:ID>3</b:ID>
            <b:Name>Rank Demoted Sites</b:Name>
```

```
        <b:State>Empty</b:State>
      </b:ScopeInformation>
    </GetScopesResult>
  </GetScopesResponse>
 </s:Body>
</s:Envelope>
```

4.3 Notify the Occurrence of a Clickthrough

To notify the protocol server that a clickthrough occurs, the protocol client sends the following
message:

```
<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing"
  xmlns:u="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-
1.0.xsd">
  <s:Header>
    <a:Action s:mustUnderstand="1">
      http://tempuri.org/ISearchQueryServiceApplication/RecordClick
    </a:Action>
    <a:MessageID>
      urn:uuid:e3abfa76-8102-4474-80dc-c1fb0f4d3e6b
    </a:MessageID>
    <a:ReplyTo>
      <a:Address>
        http://www.w3.org/2005/08/addressing/anonymous
      </a:Address>
    </a:ReplyTo>
    <ServiceContext
      xmlns="http://schemas.microsoft.com/sharepoint/servicecontext"
      xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
      <correlationId>
        e43114bd-1945-4b2a-9b34-2de773bd373d
      </correlationId>
      <language>en-US</language>
      <region>en-US</region>
      <siteSubscriptionId>
        00000000-0000-0000-0000-000000000000
      </siteSubscriptionId>
    </ServiceContext>
    <a:To s:mustUnderstand="1" u:Id="_1">
      http://example.com:32843/dc46e19968e743728529b721db8c8c60/SearchService.svc
    </a:To>
  </s:Header>
  <s:Body>
    <RecordClick xmlns="http://tempuri.org/">
      <Info
        xmlns:b="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
        xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
        <b:AdvancedSearch>false</b:AdvancedSearch>
        <b:BestBetClicked i:nil="true"></b:BestBetClicked>
        <b:ClickTime>2010-01-09T03:02:37.5372195Z</b:ClickTime>
        <b:ClickedUrl>http://example.com:9001/329.htm</b:ClickedUrl>
        <b:ClickedUrlRank>1</b:ClickedUrlRank>
        <b:ClientType>ObjectModel</b:ClientType>
        <b:ContextualScope i:nil="true"></b:ContextualScope>
```

```
        <b:ContextualScopeUrl i:nil="true"></b:ContextualScopeUrl>
        <b:ContinuedSession>false</b:ContinuedSession>
        <b:Definitions>false</b:Definitions>
        <b:DidYouMean i:nil="true"></b:DidYouMean>
        <b:DidYouMeanReturned>false</b:DidYouMeanReturned>
        <b:ItemsPerPage>0</b:ItemsPerPage>
        <b:Location>LocalPeopleSearchIndex</b:Location>
        <b:LogType>Click</b:LogType>
        <b:NonClickedUrls i:nil="true"
  xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b:NonClickedUrls>
        <b:NumBestBets>0</b:NumBestBets>
        <b:NumHighConfidenceResults>0</b:NumHighConfidenceResults>
        <b:NumResults>1</b:NumResults>
        <b:QueryCulture i:nil="true"></b:QueryCulture>
        <b:QueryGuid>f975132d-c078-4d1d-a21a-95e3e4f1236e</b:QueryGuid>
        <b:QueryServer i:nil="true"></b:QueryServer>
        <b:QueryString>username</b:QueryString>
        <b:ReferrerUrl></b:ReferrerUrl>
        <b:ResultView>0</b:ResultView>
        <b:ResultsUrl>
          http://example.com/sites/enterprise/Pages/peopleresults.aspx
        </b:ResultsUrl>
        <b:Scopes i:nil="true"
  xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b:Scopes>
        <b:SearchServiceApplicationID i:nil="true"></b:SearchServiceApplicationID>
        <b:SearchTime>2010-01-08T19:02:33.6804183-08:00</b:SearchTime>
        <b:SessionId>88d37ff3-3032-4db0-afd7-f58a027630d3</b:SessionId>
        <b:SiteGuid>496f265c-4758-4ac5-b14d-d02dfa131a64</b:SiteGuid>
        <b:StartItem>1</b:StartItem>
        <b:TenantId>00000000-0000-0000-0000-000000000000</b:TenantId>
        <b:Title></b:Title>
        <b:TotalResults>1</b:TotalResults>
        <b:UserName>DOMAINNAME\username</b:UserName>
      </Info>
    </RecordClick>
  </s:Body>
</s:Envelope>
```

The protocol server then responds with the message:

```
<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing"
  xmlns:u="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-
1.0.xsd">
  <s:Header>
    <a:Action s:mustUnderstand="1">
      http://tempuri.org/ISearchQueryServiceApplication/RecordClickResponse
    </a:Action>
    <ActivityId
      CorrelationId="70e5cebf-95c6-478d-b4ef-3ff8ab75e1bf"
      xmlns="http://schemas.microsoft.com/2004/09/ServiceModel/Diagnostics">
      b9a7b9dc-5f47-4ff5-be9f-c720f2b687cd
    </ActivityId>
    <a:RelatesTo>urn:uuid:e3abfa76-8102-4474-80dc-c1fb0f4d3e6b</a:RelatesTo>
  </s:Header>
  <s:Body>
    <RecordClickResponse xmlns="http://tempuri.org/"></RecordClickResponse>
```

```
      </s:Body>
   </s:Envelope>
```

4.4 Obtain the Click Frequency for a Given URI

To obtain the frequency of clicks in the last week and in the last month for a given URI, the protocol client sends a message such as this one:

```
<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing"
  xmlns:u="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-
1.0.xsd">
  <s:Header>
    <a:Action s:mustUnderstand="1">
      http://tempuri.org/ISearchQueryServiceApplication/GetClickFrequenciesForUrl
    </a:Action>
    <a:MessageID>
      urn:uuid:b55f5f0f-01fc-4a69-9bb7-c838fc30ab8d
    </a:MessageID>
    <a:ReplyTo>
      <a:Address>
        http://www.w3.org/2005/08/addressing/anonymous
      </a:Address>
    </a:ReplyTo>
    <ServiceContext xmlns="http://schemas.microsoft.com/sharepoint/servicecontext"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
      <correlationId>f6c1f646-bb29-40f4-ae6d-c2fb3b0506a2</correlationId>
      <language>en-US</language>
      <region>en-US</region>
      <siteSubscriptionId>
        00000000-0000-0000-0000-000000000000
      </siteSubscriptionId>
    </ServiceContext>
    <a:To s:mustUnderstand="1" u:Id="_1">
      http://example.com:32843/dc46e19968e743728529b721db8c8c60/SearchService.svc
    </a:To>
  </s:Header>
  <s:Body>
    <GetClickFrequenciesForUrl xmlns="http://tempuri.org/">
      <url>
        http://example.com/my/Person.aspx?accountname=DOMAINNAME\username
      </url>
      <referenceDate>2010-01-09T00:00:00Z</referenceDate>
    </GetClickFrequenciesForUrl>
  </s:Body>
</s:Envelope>
```

And then the protocol server returns the message:

```
<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing"
  xmlns:u="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-
1.0.xsd">
  <s:Header>
```

```
<a:Action s:mustUnderstand="1">
  http://tempuri.org/ISearchQueryServiceApplication/GetClickFrequenciesForUrlResponse
</a:Action>
<ActivityId
  CorrelationId="85651650-f78f-495d-b291-cce8811c72e3"
  xmlns="http://schemas.microsoft.com/2004/09/ServiceModel/Diagnostics">
  3e203fdf-387a-49da-90da-9d6eaef1f9b4
</ActivityId>
<a:RelatesTo>
  urn:uuid:b55f5f0f-01fc-4a69-9bb7-c838fc30ab8d
</a:RelatesTo>
</s:Header>
<s:Body>
  <GetClickFrequenciesForUrlResponse xmlns="http://tempuri.org/">
    <GetClickFrequenciesForUrlResult>
      <int xmlns="http://schemas.microsoft.com/2003/10/Serialization/Arrays">1</int>
      <int xmlns="http://schemas.microsoft.com/2003/10/Serialization/Arrays">1</int>
    </GetClickFrequenciesForUrlResult>
  </GetClickFrequenciesForUrlResponse>
</s:Body>
</s:Envelope>
```

5   Security

5.1   Security Considerations for Implementers

None.

5.2   Index of Security Parameters

None.

6 Appendix A: Full WSDL

For ease of implementation, the full WSDL is provided below:

```xml
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions xmlns:tns="http://tempuri.org/"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" name="ISearchQueryServiceApplication"
targetNamespace="http://tempuri.org/" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types>
    <xs:schema elementFormDefault="qualified" targetNamespace="http://tempuri.org/"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
      <xs:import namespace="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" />
      <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays" />
      <xs:element name="GetSearchTerms">
        <xs:complexType>
          <xs:sequence>
            <xs:element
xmlns:q1="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="properties" nillable="true" type="q1:KeywordQueryProperties" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element name="GetSearchTermsResponse">
        <xs:complexType>
          <xs:sequence>
            <xs:element minOccurs="0" name="GetSearchTermsResult" nillable="true"
type="xs:string" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element name="Execute">
        <xs:complexType>
          <xs:sequence>
            <xs:element
xmlns:q2="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="properties" nillable="true" type="q2:QueryProperties" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element name="ExecuteResponse">
        <xs:complexType>
          <xs:sequence>
            <xs:element
xmlns:q3="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="ExecuteResult" nillable="true" type="q3:ResultTableCollection" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element name="GetProperties">
        <xs:complexType>
          <xs:sequence>
            <xs:element
xmlns:q4="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="properties" nillable="true" type="q4:QueryProperties" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element name="GetPropertiesResponse">
```

```xml
            <xs:complexType>
              <xs:sequence>
                <xs:element
xmlns:q5="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="GetPropertiesResult" nillable="true" type="q5:ArrayOfPropertyInformation" />
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element name="GetScopes">
            <xs:complexType>
              <xs:sequence>
                <xs:element
xmlns:q6="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="properties" nillable="true" type="q6:QueryProperties" />
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element name="GetScopesResponse">
            <xs:complexType>
              <xs:sequence>
                <xs:element
xmlns:q7="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="GetScopesResult" nillable="true" type="q7:ArrayOfScopeInformation" />
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element name="GetQuerySuggestions">
            <xs:complexType>
              <xs:sequence>
                <xs:element
xmlns:q8="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="properties" nillable="true" type="q8:QueryProperties" />
                <xs:element minOccurs="0" name="iNumberOfSuggestions" type="xs:int" />
                <xs:element minOccurs="0" name="fPreQuerySuggestions" type="xs:boolean" />
                <xs:element minOccurs="0" name="fHitHighlighting" type="xs:boolean" />
                <xs:element minOccurs="0" name="fCapitalizeFirstLetters" type="xs:boolean" />
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element name="GetQuerySuggestionsResponse">
            <xs:complexType>
              <xs:sequence>
                <xs:element xmlns:q9="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="GetQuerySuggestionsResult" nillable="true" type="q9:ArrayOfanyType" />
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element name="HighlightStringValue">
            <xs:complexType>
              <xs:sequence>
                <xs:element
xmlns:q10="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="properties" nillable="true" type="q10:QueryProperties" />
                <xs:element minOccurs="0" name="strValue" nillable="true" type="xs:string" />
                <xs:element minOccurs="0" name="fLastTermByPrefix" type="xs:boolean" />
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element name="HighlightStringValueResponse">
            <xs:complexType>
```

```xml
        <xs:sequence>
          <xs:element
xmlns:q11="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="HighlightStringValueResult" nillable="true" type="q11:HighlightedString" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="HighlightStringValueQuerySuggestions">
      <xs:complexType>
        <xs:sequence>
          <xs:element
xmlns:q12="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="properties" nillable="true" type="q12:QueryProperties" />
          <xs:element minOccurs="0" name="strValue" nillable="true" type="xs:string" />
          <xs:element minOccurs="0" name="fLastTermByPrefix" type="xs:boolean" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="HighlightStringValueQuerySuggestionsResponse">
      <xs:complexType>
        <xs:sequence>
          <xs:element
xmlns:q13="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="HighlightStringValueQuerySuggestionsResult" nillable="true"
type="q13:HighlightedString" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="GetClickFrequenciesForUrl">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="url" nillable="true" type="xs:string" />
          <xs:element minOccurs="0" name="referenceDate" type="xs:dateTime" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="GetClickFrequenciesForUrlResponse">
      <xs:complexType>
        <xs:sequence>
          <xs:element xmlns:q14="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="GetClickFrequenciesForUrlResult" nillable="true" type="q14:ArrayOfint" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="GetTopQueryStringsForUrl">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="url" nillable="true" type="xs:string" />
          <xs:element minOccurs="0" name="topCount" type="xs:int" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="GetTopQueryStringsForUrlResponse">
      <xs:complexType>
        <xs:sequence>
          <xs:element xmlns:q15="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="GetTopQueryStringsForUrlResult" nillable="true" type="q15:ArrayOfstring"
/>
        </xs:sequence>
      </xs:complexType>
```

```
          </xs:element>
          <xs:element name="RecordClick">
            <xs:complexType>
              <xs:sequence>
                <xs:element
xmlns:q16="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="Info" nillable="true" type="q16:QueryInfo" />
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element name="RecordClickResponse">
            <xs:complexType>
              <xs:sequence />
            </xs:complexType>
          </xs:element>
          <xs:element name="GetSearchServiceApplicationInfo">
            <xs:complexType>
              <xs:sequence />
            </xs:complexType>
          </xs:element>
          <xs:element name="GetSearchServiceApplicationInfoResponse">
            <xs:complexType>
              <xs:sequence>
                <xs:element
xmlns:q17="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="GetSearchServiceApplicationInfoResult" nillable="true"
type="q17:SearchServiceApplicationInfo" />
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element name="RecordUIQueryDoneEvent">
            <xs:complexType>
              <xs:sequence>
                <xs:element
xmlns:q18="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="buffer" nillable="true" type="q18:UIQueryLatencyDataBuffer" />
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element name="RecordUIQueryDoneEventResponse">
            <xs:complexType>
              <xs:sequence>
                <xs:element minOccurs="0" name="RecordUIQueryDoneEventResult" type="xs:boolean"
/>
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element name="RecordWebPartQueryDoneEvent">
            <xs:complexType>
              <xs:sequence>
                <xs:element
xmlns:q19="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="buffer" nillable="true" type="q19:WebPartQueryLatencyDataBuffer" />
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element name="RecordWebPartQueryDoneEventResponse">
            <xs:complexType>
              <xs:sequence>
```

```
                <xs:element minOccurs="0" name="RecordWebPartQueryDoneEventResult"
type="xs:boolean" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element name="RecordOMQueryDoneEvent">
        <xs:complexType>
          <xs:sequence>
            <xs:element
xmlns:q20="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="buffer" nillable="true" type="q20:OMQueryLatencyDataBuffer" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element name="RecordOMQueryDoneEventResponse">
        <xs:complexType>
          <xs:sequence>
            <xs:element minOccurs="0" name="RecordOMQueryDoneEventResult" type="xs:boolean"
/>
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element name="RecordQueryErrorEvent">
        <xs:complexType>
          <xs:sequence>
            <xs:element
xmlns:q21="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="buffer" nillable="true" type="q21:QueryErrorDataBuffer" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element name="RecordQueryErrorEventResponse">
        <xs:complexType>
          <xs:sequence>
            <xs:element minOccurs="0" name="RecordQueryErrorEventResult" type="xs:boolean" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:schema>
    <xs:schema xmlns:tns="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
xmlns:ser="http://schemas.microsoft.com/2003/10/Serialization/"
elementFormDefault="qualified"
targetNamespace="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
      <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays" />
      <xs:import
namespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query" />
      <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" />
      <xs:import
namespace="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Administration" />
      <xs:import
namespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrat
ion" />
      <xs:complexType name="KeywordQueryProperties">
        <xs:complexContent mixed="false">
          <xs:extension base="tns:QueryProperties">
            <xs:sequence>
              <xs:element
xmlns:q1="http://schemas.microsoft.com/2003/10/Serialization/Arrays" minOccurs="0"
```

```
                name="CustomRefinementIntervals" nillable="true"
        type="q1:ArrayOfKeyValueOfstringArrayOfRefinementInterval_PFsic3Az" />
                        <xs:element minOccurs="0" name="EnableFQL" type="xs:boolean" />
                        <xs:element
        xmlns:q2="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
        minOccurs="0" name="EnableSpellcheck" type="q2:SpellcheckMode" />
                        <xs:element minOccurs="0" name="EnableUrlSmashing" type="xs:boolean" />
                        <xs:element minOccurs="0" name="HiddenConstraints" nillable="true"
        type="xs:string" />
                        <xs:element minOccurs="0" name="MaxShallowRefinementHits" type="xs:int" />
                        <xs:element minOccurs="0" name="MaxSummaryLength" type="xs:int" />
                        <xs:element minOccurs="0" name="MaxUrlLength" type="xs:int" />
                        <xs:element
        xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays" minOccurs="0"
        name="RefinementFilters" nillable="true" type="q3:ArrayOfanyType" />
                        <xs:element minOccurs="0" name="Refiners" nillable="true" type="xs:string" />
                        <xs:element
        xmlns:q4="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
        minOccurs="0" name="ResubmitFlags" type="q4:ResubmitFlag" />
                        <xs:element
        xmlns:q5="http://schemas.microsoft.com/2003/10/Serialization/Arrays" minOccurs="0"
        name="SelectProperties" nillable="true" type="q5:ArrayOfanyType" />
                        <xs:element minOccurs="0" name="SimilarTo" nillable="true" type="xs:string" />
                        <xs:element
        xmlns:q6="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
        minOccurs="0" name="SimilarType" type="q6:SimilarType" />
                        <xs:element minOccurs="0" name="SortList" nillable="true"
        type="tns:SortCollection" />
                        <xs:element minOccurs="0" name="SortSimilar" type="xs:boolean" />
                        <xs:element minOccurs="0" name="TrimDuplicatesIncludeId" type="xs:long" />
                        <xs:element minOccurs="0" name="TrimDuplicatesKeepCount" type="xs:int" />
                        <xs:element minOccurs="0" name="TrimDuplicatesOnProperty" nillable="true"
        type="xs:string" />
                        <xs:element minOccurs="0" name="UserContextData" nillable="true"
        type="xs:string" />
                        <xs:element minOccurs="0" name="UserContextGroupID" nillable="true"
        type="xs:string" />
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
        <xs:element name="KeywordQueryProperties" nillable="true"
        type="tns:KeywordQueryProperties" />
        <xs:complexType name="QueryProperties">
            <xs:sequence>
                <xs:element minOccurs="0" name="AlertInfo" nillable="true" type="tns:AlertInfo" />
                <xs:element
        xmlns:q7="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
        minOccurs="0" name="AuthenticationType" type="q7:QueryAuthenticationType" />
                <xs:element minOccurs="0" name="CorrelationId" type="ser:guid" />
                <xs:element minOccurs="0" name="EnableNicknames" type="xs:boolean" />
                <xs:element minOccurs="0" name="EnablePhonetic" type="xs:boolean" />
                <xs:element minOccurs="0" name="EnableStemming" type="xs:boolean" />
                <xs:element minOccurs="0" name="HighlightedSentenceCount" type="xs:int" />
                <xs:element
        xmlns:q8="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
        minOccurs="0" name="Hint" type="q8:QueryHint" />
                <xs:element xmlns:q9="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
        minOccurs="0" name="HitHighlightedProperties" nillable="true" type="q9:ArrayOfanyType" />
                <xs:element minOccurs="0" name="IgnoreAllNoiseQuery" type="xs:boolean" />
```

```xml
            <xs:element
xmlns:q10="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
minOccurs="0" name="KeywordInclusion" type="q10:KeywordInclusion" />
            <xs:element minOccurs="0" name="Locale" type="xs:int" />
            <xs:element minOccurs="0" name="MergeWithDefaultPartition" type="xs:boolean" />
            <xs:element
xmlns:q11="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
minOccurs="0" name="PagingCookie" nillable="true" type="q11:PagingCookie" />
            <xs:element minOccurs="0" name="PartitionId" type="ser:guid" />
            <xs:element minOccurs="0" name="PersonalizationData" nillable="true"
type="tns:QueryPersonalizationData" />
            <xs:element minOccurs="0" name="QueryText" nillable="true" type="xs:string" />
            <xs:element minOccurs="0" name="RankingModelId" nillable="true" type="xs:string" />
            <xs:element
xmlns:q12="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
minOccurs="0" name="ResultTypes" type="q12:ResultType" />
            <xs:element
xmlns:q13="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
minOccurs="0" name="ResultsProvider" type="q13:SearchProvider" />
            <xs:element minOccurs="0" name="RowLimit" type="xs:int" />
            <xs:element minOccurs="0" name="RowsPerPage" type="xs:int" />
            <xs:element minOccurs="0" name="Sid" nillable="true" type="xs:string" />
            <xs:element minOccurs="0" name="SiteId" type="ser:guid" />
            <xs:element minOccurs="0" name="StartRow" type="xs:int" />
            <xs:element minOccurs="0" name="SummaryLength" type="xs:int" />
            <xs:element minOccurs="0" name="TimeZoneID" type="xs:int" />
            <xs:element minOccurs="0" name="Timeout" type="xs:int" />
            <xs:element minOccurs="0" name="TotalRowsExactMinimum" type="xs:int" />
            <xs:element minOccurs="0" name="TrimDuplicates" type="xs:boolean" />
            <xs:element
xmlns:q14="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Administration"
minOccurs="0" name="UrlZone" type="q14:SPUrlZone" />
          </xs:sequence>
      </xs:complexType>
      <xs:element name="QueryProperties" nillable="true" type="tns:QueryProperties" />
      <xs:complexType name="AlertInfo">
        <xs:sequence>
          <xs:element
xmlns:q15="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
minOccurs="0" name="ChangeType" type="q15:AlertChangeType" />
            <xs:element minOccurs="0" name="LastUpdateTime" type="xs:dateTime" />
        </xs:sequence>
      </xs:complexType>
      <xs:element name="AlertInfo" nillable="true" type="tns:AlertInfo" />
      <xs:complexType name="QueryPersonalizationData">
        <xs:sequence>
          <xs:element minOccurs="0" name="UserId" type="ser:guid" />
        </xs:sequence>
      </xs:complexType>
      <xs:element name="QueryPersonalizationData" nillable="true"
type="tns:QueryPersonalizationData" />
      <xs:complexType name="FullTextSqlQueryProperties">
        <xs:complexContent mixed="false">
          <xs:extension base="tns:QueryProperties">
            <xs:sequence />
          </xs:extension>
        </xs:complexContent>
      </xs:complexType>
      <xs:element name="FullTextSqlQueryProperties" nillable="true"
type="tns:FullTextSqlQueryProperties" />
```

```xml
<xs:complexType name="ArrayOfRefinementInterval">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="RefinementInterval"
nillable="true" type="tns:RefinementInterval" />
  </xs:sequence>
</xs:complexType>
<xs:element name="ArrayOfRefinementInterval" nillable="true"
type="tns:ArrayOfRefinementInterval" />
<xs:complexType name="RefinementInterval">
  <xs:sequence>
    <xs:element minOccurs="0" name="CustomValue" nillable="true" type="xs:string" />
    <xs:element minOccurs="0" name="Lower" nillable="true" type="xs:anyType" />
    <xs:element minOccurs="0" name="Upper" nillable="true" type="xs:anyType" />
  </xs:sequence>
</xs:complexType>
<xs:element name="RefinementInterval" nillable="true" type="tns:RefinementInterval" />
<xs:complexType name="NumericRefinementInterval">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:RefinementInterval">
      <xs:sequence>
        <xs:element minOccurs="0" name="LowerNum" type="xs:long" />
        <xs:element minOccurs="0" name="UpperNum" type="xs:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="NumericRefinementInterval" nillable="true"
type="tns:NumericRefinementInterval" />
<xs:complexType name="DateRefinementInterval">
  <xs:complexContent mixed="false">
    <xs:extension base="tns:RefinementInterval">
      <xs:sequence>
        <xs:element minOccurs="0" name="LowerDate" type="xs:dateTime" />
        <xs:element minOccurs="0" name="UpperDate" type="xs:dateTime" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="DateRefinementInterval" nillable="true"
type="tns:DateRefinementInterval" />
<xs:complexType name="SortCollection">
  <xs:sequence>
    <xs:element minOccurs="0" name="m_elements" nillable="true" type="tns:ArrayOfSort"
/>
  </xs:sequence>
</xs:complexType>
<xs:element name="SortCollection" nillable="true" type="tns:SortCollection" />
<xs:complexType name="ArrayOfSort">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Sort" nillable="true"
type="tns:Sort" />
  </xs:sequence>
</xs:complexType>
<xs:element name="ArrayOfSort" nillable="true" type="tns:ArrayOfSort" />
<xs:complexType name="Sort">
  <xs:sequence>
    <xs:element
xmlns:q16="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
minOccurs="0" name="direction" type="q16:SortDirection" />
    <xs:element minOccurs="0" name="strProperty" nillable="true" type="xs:string" />
```

```
          </xs:sequence>
        </xs:complexType>
        <xs:element name="Sort" nillable="true" type="tns:Sort" />
        <xs:simpleType name="SearchServiceApplicationFaultType">
          <xs:restriction base="xs:string">
            <xs:enumeration value="SpecialTerm_NotFound" />
            <xs:enumeration value="SpecialTerm_DuplicateError" />
            <xs:enumeration value="Synonym_NotFound" />
            <xs:enumeration value="BestBet_NotFound" />
            <xs:enumeration value="BestBet_OrderDuplicationError" />
            <xs:enumeration value="AllNoiseQuery" />
            <xs:enumeration value="SearchServiceNotFound" />
            <xs:enumeration value="QueryMalformed" />
            <xs:enumeration value="ScopeNotFound" />
            <xs:enumeration value="InvalidProperty" />
            <xs:enumeration value="OnlyExcludedTerms" />
            <xs:enumeration value="RankingModelNotFound" />
            <xs:enumeration value="UnSupportedTopology" />
            <xs:enumeration value="FASTSearchQuery" />
            <xs:enumeration value="Timeout" />
            <xs:enumeration value="ExtendedConnectorApplicaion" />
            <xs:enumeration value="PartitionOptionsMismatch" />
            <xs:enumeration value="TooComplexQueryException" />
          </xs:restriction>
        </xs:simpleType>
        <xs:element name="SearchServiceApplicationFaultType" nillable="true"
  type="tns:SearchServiceApplicationFaultType" />
        <xs:complexType name="ResultTableCollection">
          <xs:sequence>
            <xs:element minOccurs="0" name="DatabaseTime" type="xs:int" />
            <xs:element minOccurs="0" name="Definition" nillable="true"
  type="tns:ArrayOfResultDefinition" />
            <xs:element minOccurs="0" name="ElapsedTime" type="xs:int" />
            <xs:element xmlns:q17="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
  minOccurs="0" name="IgnoredNoiseWords" nillable="true" type="q17:ArrayOfstring" />
            <xs:element minOccurs="0" name="KeywordInformation" nillable="true"
  type="tns:KeywordInformation" />
            <xs:element minOccurs="0" name="QueryMachine" nillable="true" type="xs:string" />
            <xs:element minOccurs="0" name="QueryModification" nillable="true" type="xs:string"
  />
            <xs:element minOccurs="0" name="QueryProcessingTime" type="xs:int" />
            <xs:element xmlns:q18="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
  minOccurs="0" name="QueryTerms" nillable="true" type="q18:ArrayOfstring" />
            <xs:element minOccurs="0" name="SpellingSuggestion" nillable="true"
  type="xs:string" />
            <xs:element xmlns:q19="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
  minOccurs="0" name="m_ResultTables" nillable="true"
  type="q19:ArrayOfKeyValueOfResultTypeResultTableUTLV0zE5" />
          </xs:sequence>
        </xs:complexType>
        <xs:element name="ResultTableCollection" nillable="true"
  type="tns:ResultTableCollection" />
        <xs:complexType name="ArrayOfResultDefinition">
          <xs:sequence>
            <xs:element minOccurs="0" maxOccurs="unbounded" name="ResultDefinition"
  type="tns:ResultDefinition" />
          </xs:sequence>
        </xs:complexType>
        <xs:element name="ArrayOfResultDefinition" nillable="true"
  type="tns:ArrayOfResultDefinition" />
```

```xml
<xs:complexType name="ResultDefinition">
  <xs:sequence>
    <xs:element minOccurs="0" name="DocHref" nillable="true" type="xs:string" />
    <xs:element minOccurs="0" name="DocTitle" nillable="true" type="xs:string" />
    <xs:element minOccurs="0" name="Sentence" nillable="true" type="xs:string" />
    <xs:element minOccurs="0" name="TermLength" type="xs:int" />
    <xs:element minOccurs="0" name="TermOffset" type="xs:int" />
  </xs:sequence>
</xs:complexType>
<xs:element name="ResultDefinition" nillable="true" type="tns:ResultDefinition" />
<xs:complexType name="KeywordInformation">
  <xs:sequence>
    <xs:element minOccurs="0" name="Definition" nillable="true" type="xs:string" />
    <xs:element minOccurs="0" name="Keyword" nillable="true" type="xs:string" />
  </xs:sequence>
</xs:complexType>
<xs:element name="KeywordInformation" nillable="true" type="tns:KeywordInformation" />
<xs:complexType name="ResultTable">
  <xs:sequence>
    <xs:element minOccurs="0" name="IsTotalRowsExact" type="xs:boolean" />
    <xs:element
 xmlns:q20="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
 minOccurs="0" name="ResultType" type="q20:ResultType" />
    <xs:element minOccurs="0" name="RowCount" type="xs:int" />
    <xs:element minOccurs="0" name="Table" nillable="true">
      <xs:complexType>
        <xs:sequence>
          <xs:any minOccurs="0" maxOccurs="unbounded"
 namespace="http://www.w3.org/2001/XMLSchema" processContents="lax" />
          <xs:any minOccurs="1" namespace="urn:schemas-microsoft-com:xml-diffgram-v1"
 processContents="lax" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element minOccurs="0" name="TimeZoneID" type="xs:int" />
    <xs:element minOccurs="0" name="TotalRows" type="xs:int" />
    <xs:element minOccurs="0" name="TotalRowsIncludingDuplicates" type="xs:int" />
  </xs:sequence>
</xs:complexType>
<xs:element name="ResultTable" nillable="true" type="tns:ResultTable" />
<xs:complexType name="ArrayOfPropertyInformation">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="PropertyInformation"
 nillable="true" type="tns:PropertyInformation" />
  </xs:sequence>
</xs:complexType>
<xs:element name="ArrayOfPropertyInformation" nillable="true"
 type="tns:ArrayOfPropertyInformation" />
<xs:complexType name="PropertyInformation">
  <xs:sequence>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string" />
    <xs:element minOccurs="0" name="FullTextQueriable" type="xs:boolean" />
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string" />
    <xs:element minOccurs="0" name="Refinable" type="xs:boolean" />
    <xs:element minOccurs="0" name="Retrievable" type="xs:boolean" />
    <xs:element minOccurs="0" name="Sortable" type="xs:boolean" />
    <xs:element minOccurs="0" name="m_TypeFullName" nillable="true" type="xs:string" />
  </xs:sequence>
</xs:complexType>
```

```xml
      <xs:element name="PropertyInformation" nillable="true" type="tns:PropertyInformation"
 />
      <xs:complexType name="ArrayOfScopeInformation">
        <xs:sequence>
          <xs:element minOccurs="0" maxOccurs="unbounded" name="ScopeInformation"
 nillable="true" type="tns:ScopeInformation" />
        </xs:sequence>
      </xs:complexType>
      <xs:element name="ArrayOfScopeInformation" nillable="true"
 type="tns:ArrayOfScopeInformation" />
      <xs:complexType name="ScopeInformation">
        <xs:sequence>
          <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string" />
          <xs:element minOccurs="0" name="Filter" nillable="true" type="xs:string" />
          <xs:element minOccurs="0" name="ID" type="xs:int" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string" />
          <xs:element
 xmlns:q21="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrat
 ion" minOccurs="0" name="State" type="q21:ScopeCompilationState" />
        </xs:sequence>
      </xs:complexType>
      <xs:element name="ScopeInformation" nillable="true" type="tns:ScopeInformation" />
      <xs:complexType name="HighlightedString">
        <xs:sequence>
          <xs:element minOccurs="0" name="HighlightCount" type="xs:int" />
          <xs:element minOccurs="0" name="Value" nillable="true" type="xs:string" />
        </xs:sequence>
      </xs:complexType>
      <xs:element name="HighlightedString" nillable="true" type="tns:HighlightedString" />
      <xs:complexType name="QueryInfo">
        <xs:sequence>
          <xs:element minOccurs="0" name="AdvancedSearch" type="xs:boolean" />
          <xs:element minOccurs="0" name="BestBetClicked" nillable="true" type="xs:string" />
          <xs:element minOccurs="0" name="ClickTime" type="xs:dateTime" />
          <xs:element minOccurs="0" name="ClickedUrl" nillable="true" type="xs:string" />
          <xs:element minOccurs="0" name="ClickedUrlRank" type="xs:int" />
          <xs:element
 xmlns:q22="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
 minOccurs="0" name="ClientType" type="q22:QueryLogClientType" />
          <xs:element minOccurs="0" name="ContextualScope" nillable="true" type="xs:string"
 />
          <xs:element minOccurs="0" name="ContextualScopeUrl" nillable="true"
 type="xs:string" />
          <xs:element minOccurs="0" name="ContinuedSession" type="xs:boolean" />
          <xs:element minOccurs="0" name="Definitions" type="xs:boolean" />
          <xs:element minOccurs="0" name="DidYouMean" nillable="true" type="xs:string" />
          <xs:element minOccurs="0" name="DidYouMeanReturned" type="xs:boolean" />
          <xs:element minOccurs="0" name="ItemsPerPage" type="xs:int" />
          <xs:element minOccurs="0" name="Location" nillable="true" type="xs:string" />
          <xs:element
 xmlns:q23="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
 minOccurs="0" name="LogType" type="q23:QueryLogType" />
          <xs:element xmlns:q24="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
 minOccurs="0" name="NonClickedUrls" nillable="true" type="q24:ArrayOfstring" />
          <xs:element minOccurs="0" name="NumBestBets" type="xs:int" />
          <xs:element minOccurs="0" name="NumHighConfidenceResults" type="xs:int" />
          <xs:element minOccurs="0" name="NumResults" type="xs:long" />
          <xs:element minOccurs="0" name="QueryCulture" nillable="true" type="xs:string" />
          <xs:element minOccurs="0" name="QueryGuid" nillable="true" type="xs:string" />
          <xs:element minOccurs="0" name="QueryServer" nillable="true" type="xs:string" />
```

```xml
              <xs:element minOccurs="0" name="QueryString" nillable="true" type="xs:string" />
              <xs:element minOccurs="0" name="ReferrerUrl" nillable="true" type="xs:string" />
              <xs:element minOccurs="0" name="ResultView" type="xs:short" />
              <xs:element minOccurs="0" name="ResultsUrl" nillable="true" type="xs:string" />
              <xs:element xmlns:q25="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
  minOccurs="0" name="Scopes" nillable="true" type="q25:ArrayOfstring" />
              <xs:element minOccurs="0" name="SearchServiceApplicationID" nillable="true"
  type="xs:string" />
              <xs:element minOccurs="0" name="SearchTime" type="xs:dateTime" />
              <xs:element minOccurs="0" name="SessionId" nillable="true" type="xs:string" />
              <xs:element minOccurs="0" name="SiteGuid" nillable="true" type="xs:string" />
              <xs:element minOccurs="0" name="StartItem" type="xs:int" />
              <xs:element minOccurs="0" name="TenantId" nillable="true" type="xs:string" />
              <xs:element minOccurs="0" name="Title" nillable="true" type="xs:string" />
              <xs:element minOccurs="0" name="TotalResults" type="xs:long" />
              <xs:element minOccurs="0" name="UserName" nillable="true" type="xs:string" />
          </xs:sequence>
      </xs:complexType>
      <xs:element name="QueryInfo" nillable="true" type="tns:QueryInfo" />
      <xs:complexType name="SearchServiceApplicationInfo">
        <xs:sequence>
          <xs:element
  xmlns:q26="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
  minOccurs="0" name="DefaultSearchProvider" type="q26:SearchProvider" />
          <xs:element xmlns:q27="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
  minOccurs="0" name="PropertyBag" nillable="true" type="q27:ArrayOfKeyValueOfstringstring" />
          <xs:element minOccurs="0" name="QueryLoggingEnabled" type="xs:boolean" />
          <xs:element minOccurs="0" name="QuerySuggestionsEnabled" type="xs:boolean" />
          <xs:element minOccurs="0" name="SearchServiceApplicationId" type="ser:guid" />
        </xs:sequence>
      </xs:complexType>
      <xs:element name="SearchServiceApplicationInfo" nillable="true"
  type="tns:SearchServiceApplicationInfo" />
      <xs:complexType name="UIQueryLatencyDataBuffer">
        <xs:complexContent mixed="false">
          <xs:extension base="tns:DataBuffer">
            <xs:sequence>
              <xs:element minOccurs="0" name="AggregatedQueryTimings" nillable="true"
  type="tns:ArrayOfAggregatedUIQueryLatencyDataBuffer" />
              <xs:element minOccurs="0" name="VerboseQueryTimings" nillable="true"
  type="tns:ArrayOfVerboseUIQueryLatencyDataBuffer" />
            </xs:sequence>
          </xs:extension>
        </xs:complexContent>
      </xs:complexType>
      <xs:element name="UIQueryLatencyDataBuffer" nillable="true"
  type="tns:UIQueryLatencyDataBuffer" />
      <xs:complexType name="DataBuffer">
        <xs:sequence>
          <xs:element minOccurs="0" name="ApplicationId" type="ser:guid" />
          <xs:element minOccurs="0" name="EventTime" type="xs:dateTime" />
          <xs:element minOccurs="0" name="MachineName" nillable="true" type="xs:string" />
        </xs:sequence>
      </xs:complexType>
      <xs:element name="DataBuffer" nillable="true" type="tns:DataBuffer" />
      <xs:complexType name="ArrayOfAggregatedUIQueryLatencyDataBuffer">
        <xs:sequence>
          <xs:element minOccurs="0" maxOccurs="unbounded"
  name="AggregatedUIQueryLatencyDataBuffer" nillable="true"
  type="tns:AggregatedUIQueryLatencyDataBuffer" />
```

```
          </xs:sequence>
        </xs:complexType>
        <xs:element name="ArrayOfAggregatedUIQueryLatencyDataBuffer" nillable="true"
  type="tns:ArrayOfAggregatedUIQueryLatencyDataBuffer" />
        <xs:complexType name="AggregatedUIQueryLatencyDataBuffer">
          <xs:complexContent mixed="false">
            <xs:extension base="tns:DataBuffer">
              <xs:sequence>
                <xs:element minOccurs="0" name="ExclusiveWebpartTimeMs" type="xs:int" />
                <xs:element minOccurs="0" name="InclusiveWebpartTimeMs" type="xs:int" />
                <xs:element minOccurs="0" name="NumQueries" type="xs:int" />
                <xs:element minOccurs="0" name="TotalQueryTimeMs" type="xs:int" />
              </xs:sequence>
            </xs:extension>
          </xs:complexContent>
        </xs:complexType>
        <xs:element name="AggregatedUIQueryLatencyDataBuffer" nillable="true"
  type="tns:AggregatedUIQueryLatencyDataBuffer" />
        <xs:complexType name="ArrayOfVerboseUIQueryLatencyDataBuffer">
          <xs:sequence>
            <xs:element minOccurs="0" maxOccurs="unbounded"
  name="VerboseUIQueryLatencyDataBuffer" nillable="true"
  type="tns:VerboseUIQueryLatencyDataBuffer" />
          </xs:sequence>
        </xs:complexType>
        <xs:element name="ArrayOfVerboseUIQueryLatencyDataBuffer" nillable="true"
  type="tns:ArrayOfVerboseUIQueryLatencyDataBuffer" />
        <xs:complexType name="VerboseUIQueryLatencyDataBuffer">
          <xs:complexContent mixed="false">
            <xs:extension base="tns:DataBuffer">
              <xs:sequence>
                <xs:element minOccurs="0" name="CorrelationId" type="ser:guid" />
                <xs:element minOccurs="0" name="ExclusiveWebpartTimeMs" type="xs:int" />
                <xs:element minOccurs="0" name="InclusiveWebpartTimeMs" type="xs:int" />
                <xs:element minOccurs="0" name="QueryTerms" nillable="true" type="xs:string" />
                <xs:element minOccurs="0" name="TotalQueryTimeMs" type="xs:int" />
                <xs:element minOccurs="0" name="Url" nillable="true" type="xs:string" />
              </xs:sequence>
            </xs:extension>
          </xs:complexContent>
        </xs:complexType>
        <xs:element name="VerboseUIQueryLatencyDataBuffer" nillable="true"
  type="tns:VerboseUIQueryLatencyDataBuffer" />
        <xs:complexType name="WebPartQueryLatencyDataBuffer">
          <xs:complexContent mixed="false">
            <xs:extension base="tns:DataBuffer">
              <xs:sequence>
                <xs:element minOccurs="0" name="VerboseQueryTimings" nillable="true"
  type="tns:ArrayOfVerboseWebPartQueryLatencyDataBuffer" />
              </xs:sequence>
            </xs:extension>
          </xs:complexContent>
        </xs:complexType>
        <xs:element name="WebPartQueryLatencyDataBuffer" nillable="true"
  type="tns:WebPartQueryLatencyDataBuffer" />
        <xs:complexType name="ArrayOfVerboseWebPartQueryLatencyDataBuffer">
          <xs:sequence>
            <xs:element minOccurs="0" maxOccurs="unbounded"
  name="VerboseWebPartQueryLatencyDataBuffer" nillable="true"
  type="tns:VerboseWebPartQueryLatencyDataBuffer" />
```

```
        </xs:sequence>
      </xs:complexType>
      <xs:element name="ArrayOfVerboseWebPartQueryLatencyDataBuffer" nillable="true"
type="tns:ArrayOfVerboseWebPartQueryLatencyDataBuffer" />
      <xs:complexType name="VerboseWebPartQueryLatencyDataBuffer">
        <xs:complexContent mixed="false">
          <xs:extension base="tns:DataBuffer">
            <xs:sequence>
              <xs:element minOccurs="0" name="CorrelationId" type="ser:guid" />
              <xs:element minOccurs="0" name="ExclusiveWebpartTimeMs" type="xs:int" />
              <xs:element minOccurs="0" name="InclusiveWebpartTimeMs" type="xs:int" />
              <xs:element minOccurs="0" name="WebPartId" type="ser:guid" />
              <xs:element minOccurs="0" name="WebPartTitle" nillable="true" type="xs:string"
/>
            </xs:sequence>
          </xs:extension>
        </xs:complexContent>
      </xs:complexType>
      <xs:element name="VerboseWebPartQueryLatencyDataBuffer" nillable="true"
type="tns:VerboseWebPartQueryLatencyDataBuffer" />
      <xs:complexType name="OMQueryLatencyDataBuffer">
        <xs:complexContent mixed="false">
          <xs:extension base="tns:DataBuffer">
            <xs:sequence>
              <xs:element minOccurs="0" name="AggregatedQueryTimings" nillable="true"
type="tns:ArrayOfAggregatedOMQueryLatencyDataBuffer" />
              <xs:element minOccurs="0" name="VerboseQueryTimings" nillable="true"
type="tns:ArrayOfVerboseOMQueryLatencyDataBuffer" />
            </xs:sequence>
          </xs:extension>
        </xs:complexContent>
      </xs:complexType>
      <xs:element name="OMQueryLatencyDataBuffer" nillable="true"
type="tns:OMQueryLatencyDataBuffer" />
      <xs:complexType name="ArrayOfAggregatedOMQueryLatencyDataBuffer">
        <xs:sequence>
          <xs:element minOccurs="0" maxOccurs="unbounded"
name="AggregatedOMQueryLatencyDataBuffer" nillable="true"
type="tns:AggregatedOMQueryLatencyDataBuffer" />
        </xs:sequence>
      </xs:complexType>
      <xs:element name="ArrayOfAggregatedOMQueryLatencyDataBuffer" nillable="true"
type="tns:ArrayOfAggregatedOMQueryLatencyDataBuffer" />
      <xs:complexType name="AggregatedOMQueryLatencyDataBuffer">
        <xs:complexContent mixed="false">
          <xs:extension base="tns:DataBuffer">
            <xs:sequence>
              <xs:element minOccurs="0" name="NumQueries" type="xs:int" />
              <xs:element minOccurs="0" name="QPTimeMs" type="xs:int" />
              <xs:element minOccurs="0" name="TotalQueryTimeMs" type="xs:int" />
            </xs:sequence>
          </xs:extension>
        </xs:complexContent>
      </xs:complexType>
      <xs:element name="AggregatedOMQueryLatencyDataBuffer" nillable="true"
type="tns:AggregatedOMQueryLatencyDataBuffer" />
      <xs:complexType name="ArrayOfVerboseOMQueryLatencyDataBuffer">
        <xs:sequence>
```

```
                <xs:element minOccurs="0" maxOccurs="unbounded"
name="VerboseOMQueryLatencyDataBuffer" nillable="true"
type="tns:VerboseOMQueryLatencyDataBuffer" />
            </xs:sequence>
         </xs:complexType>
         <xs:element name="ArrayOfVerboseOMQueryLatencyDataBuffer" nillable="true"
type="tns:ArrayOfVerboseOMQueryLatencyDataBuffer" />
         <xs:complexType name="VerboseOMQueryLatencyDataBuffer">
           <xs:complexContent mixed="false">
             <xs:extension base="tns:DataBuffer">
               <xs:sequence>
                 <xs:element minOccurs="0" name="CorrelationId" type="ser:guid" />
                 <xs:element minOccurs="0" name="QPMachine" nillable="true" type="xs:string" />
                 <xs:element minOccurs="0" name="QPTimeMs" type="xs:int" />
                 <xs:element minOccurs="0" name="QueryTerms" nillable="true" type="xs:string" />
                 <xs:element minOccurs="0" name="TotalQueryTimeMs" type="xs:int" />
               </xs:sequence>
             </xs:extension>
           </xs:complexContent>
         </xs:complexType>
         <xs:element name="VerboseOMQueryLatencyDataBuffer" nillable="true"
type="tns:VerboseOMQueryLatencyDataBuffer" />
         <xs:complexType name="QueryErrorDataBuffer">
           <xs:complexContent mixed="false">
             <xs:extension base="tns:DataBuffer">
               <xs:sequence>
                 <xs:element minOccurs="0" name="VerboseQueryTimings" nillable="true"
type="tns:ArrayOfVerboseQueryErrorDataBuffer" />
               </xs:sequence>
             </xs:extension>
           </xs:complexContent>
         </xs:complexType>
         <xs:element name="QueryErrorDataBuffer" nillable="true" type="tns:QueryErrorDataBuffer"
/>
         <xs:complexType name="ArrayOfVerboseQueryErrorDataBuffer">
           <xs:sequence>
             <xs:element minOccurs="0" maxOccurs="unbounded" name="VerboseQueryErrorDataBuffer"
nillable="true" type="tns:VerboseQueryErrorDataBuffer" />
           </xs:sequence>
         </xs:complexType>
         <xs:element name="ArrayOfVerboseQueryErrorDataBuffer" nillable="true"
type="tns:ArrayOfVerboseQueryErrorDataBuffer" />
         <xs:complexType name="VerboseQueryErrorDataBuffer">
           <xs:complexContent mixed="false">
             <xs:extension base="tns:DataBuffer">
               <xs:sequence>
                 <xs:element minOccurs="0" name="CorrelationId" type="ser:guid" />
                 <xs:element minOccurs="0" name="Exception" nillable="true" type="xs:string" />
                 <xs:element minOccurs="0" name="Operation" nillable="true" type="xs:string" />
               </xs:sequence>
             </xs:extension>
           </xs:complexContent>
         </xs:complexType>
         <xs:element name="VerboseQueryErrorDataBuffer" nillable="true"
type="tns:VerboseQueryErrorDataBuffer" />
      </xs:schema>
      <xs:schema xmlns:tns="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
```

```xml
        <xs:import namespace="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" />
        <xs:import
namespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query" />
        <xs:complexType name="ArrayOfanyType">
          <xs:sequence>
            <xs:element minOccurs="0" maxOccurs="unbounded" name="anyType" nillable="true"
type="xs:anyType" />
          </xs:sequence>
        </xs:complexType>
        <xs:element name="ArrayOfanyType" nillable="true" type="tns:ArrayOfanyType" />
        <xs:complexType name="ArrayOfKeyValueOfstringArrayOfRefinementInterval_PFsic3Az">
          <xs:sequence>
            <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValueOfstringArrayOfRefinementInterval_PFsic3Az">
              <xs:complexType>
                <xs:sequence>
                  <xs:element name="Key" nillable="true" type="xs:string" />
                  <xs:element
xmlns:q1="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" name="Value"
nillable="true" type="q1:ArrayOfRefinementInterval" />
                </xs:sequence>
              </xs:complexType>
            </xs:element>
          </xs:sequence>
        </xs:complexType>
        <xs:element name="ArrayOfKeyValueOfstringArrayOfRefinementInterval_PFsic3Az"
nillable="true" type="tns:ArrayOfKeyValueOfstringArrayOfRefinementInterval_PFsic3Az" />
        <xs:complexType name="ArrayOfstring">
          <xs:sequence>
            <xs:element minOccurs="0" maxOccurs="unbounded" name="string" nillable="true"
type="xs:string" />
          </xs:sequence>
        </xs:complexType>
        <xs:element name="ArrayOfstring" nillable="true" type="tns:ArrayOfstring" />
        <xs:complexType name="ArrayOfKeyValueOfResultTypeResultTableUTLV0zE5">
          <xs:sequence>
            <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValueOfResultTypeResultTableUTLV0zE5">
              <xs:complexType>
                <xs:sequence>
                  <xs:element
xmlns:q2="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
name="Key" type="q2:ResultType" />
                  <xs:element
xmlns:q3="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" name="Value"
nillable="true" type="q3:ResultTable" />
                </xs:sequence>
              </xs:complexType>
            </xs:element>
          </xs:sequence>
        </xs:complexType>
        <xs:element name="ArrayOfKeyValueOfResultTypeResultTableUTLV0zE5" nillable="true"
type="tns:ArrayOfKeyValueOfResultTypeResultTableUTLV0zE5" />
        <xs:complexType name="ArrayOfint">
          <xs:sequence>
            <xs:element minOccurs="0" maxOccurs="unbounded" name="int" type="xs:int" />
          </xs:sequence>
        </xs:complexType>
        <xs:element name="ArrayOfint" nillable="true" type="tns:ArrayOfint" />
        <xs:complexType name="ArrayOfKeyValueOfstringstring">
```

```
            <xs:sequence>
              <xs:element minOccurs="0" maxOccurs="unbounded" name="KeyValueOfstringstring">
                <xs:complexType>
                  <xs:sequence>
                    <xs:element name="Key" nillable="true" type="xs:string" />
                    <xs:element name="Value" nillable="true" type="xs:string" />
                  </xs:sequence>
                </xs:complexType>
              </xs:element>
            </xs:sequence>
          </xs:complexType>
          <xs:element name="ArrayOfKeyValueOfstringstring" nillable="true"
   type="tns:ArrayOfKeyValueOfstringstring" />
        </xs:schema>
        <xs:schema
   xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query"
   xmlns:ser="http://schemas.microsoft.com/2003/10/Serialization/"
   elementFormDefault="qualified"
   targetNamespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Query
   " xmlns:xs="http://www.w3.org/2001/XMLSchema">
          <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" />
          <xs:simpleType name="AlertChangeType">
            <xs:restriction base="xs:string">
              <xs:enumeration value="Discovered" />
              <xs:enumeration value="Modified" />
              <xs:enumeration value="DiscoveredOrModified" />
            </xs:restriction>
          </xs:simpleType>
          <xs:element name="AlertChangeType" nillable="true" type="tns:AlertChangeType" />
          <xs:simpleType name="QueryAuthenticationType">
            <xs:restriction base="xs:string">
              <xs:enumeration value="NtAuthenticatedQuery" />
              <xs:enumeration value="PluggableAuthenticatedQuery" />
            </xs:restriction>
          </xs:simpleType>
          <xs:element name="QueryAuthenticationType" nillable="true"
   type="tns:QueryAuthenticationType" />
          <xs:simpleType name="QueryHint">
            <xs:list>
              <xs:simpleType>
                <xs:restriction base="xs:string">
                  <xs:enumeration value="None" />
                  <xs:enumeration value="OptimizeWithFullTextIndex" />
                  <xs:enumeration value="OptimizeWithPropertyStore" />
                  <xs:enumeration value="PropertySelectWithInClause" />
                  <xs:enumeration value="PropertySelectWithTempTable" />
                  <xs:enumeration value="UseSqlFirstJoinStrategy" />
                  <xs:enumeration value="AvoidSqlOuterJoins" />
                </xs:restriction>
              </xs:simpleType>
            </xs:list>
          </xs:simpleType>
          <xs:element name="QueryHint" nillable="true" type="tns:QueryHint" />
          <xs:simpleType name="KeywordInclusion">
            <xs:restriction base="xs:string">
              <xs:enumeration value="AllKeywords" />
              <xs:enumeration value="AnyKeyword" />
            </xs:restriction>
          </xs:simpleType>
```

```
        <xs:element name="KeywordInclusion" nillable="true" type="tns:KeywordInclusion" />
        <xs:complexType name="PagingCookie">
          <xs:sequence>
            <xs:any minOccurs="0" maxOccurs="unbounded" namespace="##local"
  processContents="skip" />
          </xs:sequence>
          <xs:attribute ref="ser:FactoryType" />
        </xs:complexType>
        <xs:element name="PagingCookie" nillable="true" type="tns:PagingCookie" />
        <xs:simpleType name="ResultType">
          <xs:list>
            <xs:simpleType>
              <xs:restriction base="xs:string">
                <xs:enumeration value="None" />
                <xs:enumeration value="RelevantResults" />
                <xs:enumeration value="SpecialTermResults" />
                <xs:enumeration value="HighConfidenceResults" />
                <xs:enumeration value="DefinitionResults" />
                <xs:enumeration value="VisualBestBetsResults" />
                <xs:enumeration value="RefinementResults" />
              </xs:restriction>
            </xs:simpleType>
          </xs:list>
        </xs:simpleType>
        <xs:element name="ResultType" nillable="true" type="tns:ResultType" />
        <xs:simpleType name="SearchProvider">
          <xs:restriction base="xs:string">
            <xs:enumeration value="Default" />
            <xs:enumeration value="SharepointSearch" />
            <xs:enumeration value="FASTSearch" />
          </xs:restriction>
        </xs:simpleType>
        <xs:element name="SearchProvider" nillable="true" type="tns:SearchProvider" />
        <xs:simpleType name="SpellcheckMode">
          <xs:restriction base="xs:string">
            <xs:enumeration value="Off" />
            <xs:enumeration value="Suggest" />
            <xs:enumeration value="On" />
          </xs:restriction>
        </xs:simpleType>
        <xs:element name="SpellcheckMode" nillable="true" type="tns:SpellcheckMode" />
        <xs:simpleType name="ResubmitFlag">
          <xs:list>
            <xs:simpleType>
              <xs:restriction base="xs:string">
                <xs:enumeration value="NoResubmit" />
                <xs:enumeration value="EnableSpellcheckOnResubmit" />
                <xs:enumeration value="EnableSpellcheckSuggestOnResubmit" />
                <xs:enumeration value="EnableStemmingOnResubmit" />
                <xs:enumeration value="AddSynonymsAutomatically" />
              </xs:restriction>
            </xs:simpleType>
          </xs:list>
        </xs:simpleType>
        <xs:element name="ResubmitFlag" nillable="true" type="tns:ResubmitFlag" />
        <xs:simpleType name="SimilarType">
          <xs:restriction base="xs:string">
            <xs:enumeration value="None" />
            <xs:enumeration value="Find" />
```

```
            <xs:enumeration value="Refine" />
            <xs:enumeration value="Exclude" />
          </xs:restriction>
        </xs:simpleType>
        <xs:element name="SimilarType" nillable="true" type="tns:SimilarType" />
        <xs:simpleType name="SortDirection">
          <xs:restriction base="xs:string">
            <xs:enumeration value="Ascending" />
            <xs:enumeration value="Descending" />
            <xs:enumeration value="FQLFormula" />
          </xs:restriction>
        </xs:simpleType>
        <xs:element name="SortDirection" nillable="true" type="tns:SortDirection" />
        <xs:simpleType name="QueryLogClientType">
          <xs:restriction base="xs:string">
            <xs:enumeration value="ObjectModel" />
            <xs:enumeration value="WebService" />
            <xs:enumeration value="UI" />
            <xs:enumeration value="Custom" />
          </xs:restriction>
        </xs:simpleType>
        <xs:element name="QueryLogClientType" nillable="true" type="tns:QueryLogClientType" />
        <xs:simpleType name="QueryLogType">
          <xs:restriction base="xs:string">
            <xs:enumeration value="Click" />
            <xs:enumeration value="Query" />
          </xs:restriction>
        </xs:simpleType>
        <xs:element name="QueryLogType" nillable="true" type="tns:QueryLogType" />
      </xs:schema>
      <xs:schema xmlns:tns="http://schemas.microsoft.com/2003/10/Serialization/"
  attributeFormDefault="qualified" elementFormDefault="qualified"
  targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
        <xs:element name="anyType" nillable="true" type="xs:anyType" />
        <xs:element name="anyURI" nillable="true" type="xs:anyURI" />
        <xs:element name="base64Binary" nillable="true" type="xs:base64Binary" />
        <xs:element name="boolean" nillable="true" type="xs:boolean" />
        <xs:element name="byte" nillable="true" type="xs:byte" />
        <xs:element name="dateTime" nillable="true" type="xs:dateTime" />
        <xs:element name="decimal" nillable="true" type="xs:decimal" />
        <xs:element name="double" nillable="true" type="xs:double" />
        <xs:element name="float" nillable="true" type="xs:float" />
        <xs:element name="int" nillable="true" type="xs:int" />
        <xs:element name="long" nillable="true" type="xs:long" />
        <xs:element name="QName" nillable="true" type="xs:QName" />
        <xs:element name="short" nillable="true" type="xs:short" />
        <xs:element name="string" nillable="true" type="xs:string" />
        <xs:element name="unsignedByte" nillable="true" type="xs:unsignedByte" />
        <xs:element name="unsignedInt" nillable="true" type="xs:unsignedInt" />
        <xs:element name="unsignedLong" nillable="true" type="xs:unsignedLong" />
        <xs:element name="unsignedShort" nillable="true" type="xs:unsignedShort" />
        <xs:element name="char" nillable="true" type="tns:char" />
        <xs:simpleType name="char">
          <xs:restriction base="xs:int" />
        </xs:simpleType>
        <xs:element name="duration" nillable="true" type="tns:duration" />
        <xs:simpleType name="duration">
          <xs:restriction base="xs:duration">
```

```
              <xs:pattern value="\-?P(\d*D)?(T(\d*H)?(\d*M)?(\d*(\.\d*)?S)?)?" />
              <xs:minInclusive value="-P10675199DT2H48M5.4775808S" />
              <xs:maxInclusive value="P10675199DT2H48M5.4775807S" />
          </xs:restriction>
      </xs:simpleType>
      <xs:element name="guid" nillable="true" type="tns:guid" />
      <xs:simpleType name="guid">
        <xs:restriction base="xs:string">
          <xs:pattern value="[\da-fA-F]{8}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-
F]{12}" />
        </xs:restriction>
      </xs:simpleType>
      <xs:attribute name="FactoryType" type="xs:QName" />
      <xs:attribute name="Id" type="xs:ID" />
      <xs:attribute name="Ref" type="xs:IDREF" />
    </xs:schema>
    <xs:schema
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Administration"
elementFormDefault="qualified"
targetNamespace="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Administration"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
      <xs:simpleType name="SPUrlZone">
        <xs:restriction base="xs:string">
          <xs:enumeration value="Default" />
          <xs:enumeration value="Intranet" />
          <xs:enumeration value="Internet" />
          <xs:enumeration value="Custom" />
          <xs:enumeration value="Extranet" />
        </xs:restriction>
      </xs:simpleType>
      <xs:element name="SPUrlZone" nillable="true" type="tns:SPUrlZone" />
    </xs:schema>
    <xs:schema
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrat
ion" elementFormDefault="qualified"
targetNamespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Admin
istration" xmlns:xs="http://www.w3.org/2001/XMLSchema">
      <xs:import namespace="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" />
      <xs:complexType name="SearchServiceApplicationFault">
        <xs:sequence>
          <xs:element
xmlns:q1="http://www.microsoft.com/sharepoint/search/KnownTypes/2008/08" minOccurs="0"
name="FaultType" type="q1:SearchServiceApplicationFaultType" />
          <xs:element minOccurs="0" name="Message" nillable="true" type="xs:string" />
        </xs:sequence>
      </xs:complexType>
      <xs:element name="SearchServiceApplicationFault" nillable="true"
type="tns:SearchServiceApplicationFault" />
      <xs:simpleType name="ScopeCompilationState">
        <xs:restriction base="xs:string">
          <xs:enumeration value="Empty" />
          <xs:enumeration value="Invalid" />
          <xs:enumeration value="QueryExpanded" />
          <xs:enumeration value="NeedsCompile" />
          <xs:enumeration value="Compiled" />
          <xs:enumeration value="NeedsRecompile" />
        </xs:restriction>
      </xs:simpleType>
      <xs:element name="ScopeCompilationState" nillable="true"
type="tns:ScopeCompilationState" />
```

```
    </xs:schema>
    <xs:schema xmlns:tns="http://schemas.datacontract.org/2004/07/System.Data"
elementFormDefault="qualified"
targetNamespace="http://schemas.datacontract.org/2004/07/System.Data"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
      <xs:element name="DataTable" nillable="true">
        <xs:complexType>
          <xs:sequence>
            <xs:any minOccurs="0" maxOccurs="unbounded"
namespace="http://www.w3.org/2001/XMLSchema" processContents="lax" />
            <xs:any minOccurs="1" namespace="urn:schemas-microsoft-com:xml-diffgram-v1"
processContents="lax" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:schema>
  </wsdl:types>
  <wsdl:message name="ISearchQueryServiceApplication_GetSearchTerms_InputMessage">
    <wsdl:part name="parameters" element="tns:GetSearchTerms" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_GetSearchTerms_OutputMessage">
    <wsdl:part name="parameters" element="tns:GetSearchTermsResponse" />
  </wsdl:message>
  <wsdl:message
name="ISearchQueryServiceApplication_GetSearchTerms_SearchServiceApplicationFaultFault_FaultM
essage">
    <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrati
on" name="detail" element="q1:SearchServiceApplicationFault" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_Execute_InputMessage">
    <wsdl:part name="parameters" element="tns:Execute" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_Execute_OutputMessage">
    <wsdl:part name="parameters" element="tns:ExecuteResponse" />
  </wsdl:message>
  <wsdl:message
name="ISearchQueryServiceApplication_Execute_SearchServiceApplicationFaultFault_FaultMessage"
>
    <wsdl:part
xmlns:q2="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrati
on" name="detail" element="q2:SearchServiceApplicationFault" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_GetProperties_InputMessage">
    <wsdl:part name="parameters" element="tns:GetProperties" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_GetProperties_OutputMessage">
    <wsdl:part name="parameters" element="tns:GetPropertiesResponse" />
  </wsdl:message>
  <wsdl:message
name="ISearchQueryServiceApplication_GetProperties_SearchServiceApplicationFaultFault_FaultMe
ssage">
    <wsdl:part
xmlns:q3="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrati
on" name="detail" element="q3:SearchServiceApplicationFault" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_GetScopes_InputMessage">
    <wsdl:part name="parameters" element="tns:GetScopes" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_GetScopes_OutputMessage">
```

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      <wsdl:part name="parameters" element="tns:GetScopesResponse" />
   </wsdl:message>
   <wsdl:message
name="ISearchQueryServiceApplication_GetScopes_SearchServiceApplicationFaultFault_FaultMessag
e">
     <wsdl:part
xmlns:q4="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrati
on" name="detail" element="q4:SearchServiceApplicationFault" />
   </wsdl:message>
   <wsdl:message name="ISearchQueryServiceApplication_GetQuerySuggestions_InputMessage">
     <wsdl:part name="parameters" element="tns:GetQuerySuggestions" />
   </wsdl:message>
   <wsdl:message name="ISearchQueryServiceApplication_GetQuerySuggestions_OutputMessage">
     <wsdl:part name="parameters" element="tns:GetQuerySuggestionsResponse" />
   </wsdl:message>
   <wsdl:message
name="ISearchQueryServiceApplication_GetQuerySuggestions_SearchServiceApplicationFaultFault_F
aultMessage">
     <wsdl:part
xmlns:q5="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrati
on" name="detail" element="q5:SearchServiceApplicationFault" />
   </wsdl:message>
   <wsdl:message name="ISearchQueryServiceApplication_HighlightStringValue_InputMessage">
     <wsdl:part name="parameters" element="tns:HighlightStringValue" />
   </wsdl:message>
   <wsdl:message name="ISearchQueryServiceApplication_HighlightStringValue_OutputMessage">
     <wsdl:part name="parameters" element="tns:HighlightStringValueResponse" />
   </wsdl:message>
   <wsdl:message
name="ISearchQueryServiceApplication_HighlightStringValue_SearchServiceApplicationFaultFault_
FaultMessage">
     <wsdl:part
xmlns:q6="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrati
on" name="detail" element="q6:SearchServiceApplicationFault" />
   </wsdl:message>
   <wsdl:message
name="ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_InputMessage">
     <wsdl:part name="parameters" element="tns:HighlightStringValueQuerySuggestions" />
   </wsdl:message>
   <wsdl:message
name="ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_OutputMessage">
     <wsdl:part name="parameters" element="tns:HighlightStringValueQuerySuggestionsResponse"
/>
   </wsdl:message>
   <wsdl:message
name="ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_SearchServiceApplic
ationFaultFault_FaultMessage">
     <wsdl:part
xmlns:q7="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrati
on" name="detail" element="q7:SearchServiceApplicationFault" />
   </wsdl:message>
   <wsdl:message name="ISearchQueryServiceApplication_GetClickFrequenciesForUrl_InputMessage">
     <wsdl:part name="parameters" element="tns:GetClickFrequenciesForUrl" />
   </wsdl:message>
   <wsdl:message
name="ISearchQueryServiceApplication_GetClickFrequenciesForUrl_OutputMessage">
     <wsdl:part name="parameters" element="tns:GetClickFrequenciesForUrlResponse" />
   </wsdl:message>
   <wsdl:message
name="ISearchQueryServiceApplication_GetClickFrequenciesForUrl_SearchServiceApplicationFaultF
ault_FaultMessage">
```

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    <wsdl:part
xmlns:q8="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrati
on" name="detail" element="q8:SearchServiceApplicationFault" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_GetTopQueryStringsForUrl_InputMessage">
    <wsdl:part name="parameters" element="tns:GetTopQueryStringsForUrl" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_GetTopQueryStringsForUrl_OutputMessage">
    <wsdl:part name="parameters" element="tns:GetTopQueryStringsForUrlResponse" />
  </wsdl:message>
  <wsdl:message
name="ISearchQueryServiceApplication_GetTopQueryStringsForUrl_SearchServiceApplicationFaultFa
ult_FaultMessage">
    <wsdl:part
xmlns:q9="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrati
on" name="detail" element="q9:SearchServiceApplicationFault" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_RecordClick_InputMessage">
    <wsdl:part name="parameters" element="tns:RecordClick" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_RecordClick_OutputMessage">
    <wsdl:part name="parameters" element="tns:RecordClickResponse" />
  </wsdl:message>
  <wsdl:message
name="ISearchQueryServiceApplication_RecordClick_SearchServiceApplicationFaultFault_FaultMess
age">
    <wsdl:part
xmlns:q10="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrat
ion" name="detail" element="q10:SearchServiceApplicationFault" />
  </wsdl:message>
  <wsdl:message
name="ISearchQueryServiceApplication_GetSearchServiceApplicationInfo_InputMessage">
    <wsdl:part name="parameters" element="tns:GetSearchServiceApplicationInfo" />
  </wsdl:message>
  <wsdl:message
name="ISearchQueryServiceApplication_GetSearchServiceApplicationInfo_OutputMessage">
    <wsdl:part name="parameters" element="tns:GetSearchServiceApplicationInfoResponse" />
  </wsdl:message>
  <wsdl:message
name="ISearchQueryServiceApplication_GetSearchServiceApplicationInfo_SearchServiceApplication
FaultFault_FaultMessage">
    <wsdl:part
xmlns:q11="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrat
ion" name="detail" element="q11:SearchServiceApplicationFault" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_RecordUIQueryDoneEvent_InputMessage">
    <wsdl:part name="parameters" element="tns:RecordUIQueryDoneEvent" />
  </wsdl:message>
  <wsdl:message name="ISearchQueryServiceApplication_RecordUIQueryDoneEvent_OutputMessage">
    <wsdl:part name="parameters" element="tns:RecordUIQueryDoneEventResponse" />
  </wsdl:message>
  <wsdl:message
name="ISearchQueryServiceApplication_RecordUIQueryDoneEvent_SearchServiceApplicationFaultFaul
t_FaultMessage">
    <wsdl:part
xmlns:q12="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrat
ion" name="detail" element="q12:SearchServiceApplicationFault" />
  </wsdl:message>
  <wsdl:message
name="ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_InputMessage">
    <wsdl:part name="parameters" element="tns:RecordWebPartQueryDoneEvent" />
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      </wsdl:message>
      <wsdl:message
name="ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_OutputMessage">
        <wsdl:part name="parameters" element="tns:RecordWebPartQueryDoneEventResponse" />
      </wsdl:message>
      <wsdl:message
name="ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_SearchServiceApplicationFaul
tFault_FaultMessage">
        <wsdl:part
xmlns:q13="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrat
ion" name="detail" element="q13:SearchServiceApplicationFault" />
      </wsdl:message>
      <wsdl:message name="ISearchQueryServiceApplication_RecordOMQueryDoneEvent_InputMessage">
        <wsdl:part name="parameters" element="tns:RecordOMQueryDoneEvent" />
      </wsdl:message>
      <wsdl:message name="ISearchQueryServiceApplication_RecordOMQueryDoneEvent_OutputMessage">
        <wsdl:part name="parameters" element="tns:RecordOMQueryDoneEventResponse" />
      </wsdl:message>
      <wsdl:message
name="ISearchQueryServiceApplication_RecordOMQueryDoneEvent_SearchServiceApplicationFaultFaul
t_FaultMessage">
        <wsdl:part
xmlns:q14="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrat
ion" name="detail" element="q14:SearchServiceApplicationFault" />
      </wsdl:message>
      <wsdl:message name="ISearchQueryServiceApplication_RecordQueryErrorEvent_InputMessage">
        <wsdl:part name="parameters" element="tns:RecordQueryErrorEvent" />
      </wsdl:message>
      <wsdl:message name="ISearchQueryServiceApplication_RecordQueryErrorEvent_OutputMessage">
        <wsdl:part name="parameters" element="tns:RecordQueryErrorEventResponse" />
      </wsdl:message>
      <wsdl:message
name="ISearchQueryServiceApplication_RecordQueryErrorEvent_SearchServiceApplicationFaultFault
_FaultMessage">
        <wsdl:part
xmlns:q15="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Search.Administrat
ion" name="detail" element="q15:SearchServiceApplicationFault" />
      </wsdl:message>
      <wsdl:portType name="ISearchQueryServiceApplication">
        <wsdl:operation name="GetSearchTerms">
          <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetSearchTerms"
message="tns:ISearchQueryServiceApplication_GetSearchTerms_InputMessage" />
          <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetSearchTermsResponse"
message="tns:ISearchQueryServiceApplication_GetSearchTerms_OutputMessage" />
          <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetSearchTermsSearchServiceApp
licationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetSearchTerms_SearchServiceApplicationFaultFault
_FaultMessage" />
        </wsdl:operation>
        <wsdl:operation name="Execute">
          <wsdl:input wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/Execute"
message="tns:ISearchQueryServiceApplication_Execute_InputMessage" />
          <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/ExecuteResponse"
message="tns:ISearchQueryServiceApplication_Execute_OutputMessage" />
          <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/ExecuteSearchServiceApplicatio
nFaultFault" name="SearchServiceApplicationFaultFault"
```

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message="tns:ISearchQueryServiceApplication_Execute_SearchServiceApplicationFaultFault_FaultM
essage" />
    </wsdl:operation>
    <wsdl:operation name="GetProperties">
      <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetProperties"
message="tns:ISearchQueryServiceApplication_GetProperties_InputMessage" />
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetPropertiesResponse"
message="tns:ISearchQueryServiceApplication_GetProperties_OutputMessage" />
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetPropertiesSearchServiceAppl
icationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetProperties_SearchServiceApplicationFaultFault_
FaultMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetScopes">
      <wsdl:input wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetScopes"
message="tns:ISearchQueryServiceApplication_GetScopes_InputMessage" />
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetScopesResponse"
message="tns:ISearchQueryServiceApplication_GetScopes_OutputMessage" />
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetScopesSearchServiceApplicat
ionFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetScopes_SearchServiceApplicationFaultFault_Faul
tMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetQuerySuggestions">
      <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetQuerySuggestions"
message="tns:ISearchQueryServiceApplication_GetQuerySuggestions_InputMessage" />
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetQuerySuggestionsResponse"
message="tns:ISearchQueryServiceApplication_GetQuerySuggestions_OutputMessage" />
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetQuerySuggestionsSearchServi
ceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetQuerySuggestions_SearchServiceApplicationFault
Fault_FaultMessage" />
    </wsdl:operation>
    <wsdl:operation name="HighlightStringValue">
      <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValue"
message="tns:ISearchQueryServiceApplication_HighlightStringValue_InputMessage" />
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueResponse"
message="tns:ISearchQueryServiceApplication_HighlightStringValue_OutputMessage" />
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueSearchServ
iceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_HighlightStringValue_SearchServiceApplicationFaul
tFault_FaultMessage" />
    </wsdl:operation>
    <wsdl:operation name="HighlightStringValueQuerySuggestions">
      <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueQuerySugge
stions"
message="tns:ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_InputMessage
" />
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueQuerySugge
stionsResponse"
```

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        message="tns:ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_OutputMessag
e" />
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueQuerySugge
stionsSearchServiceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_HighlightStringValueQuerySuggestions_SearchServic
eApplicationFaultFault_FaultMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetClickFrequenciesForUrl">
      <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetClickFrequenciesForUrl"
message="tns:ISearchQueryServiceApplication_GetClickFrequenciesForUrl_InputMessage" />
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetClickFrequenciesForUrlRespo
nse" message="tns:ISearchQueryServiceApplication_GetClickFrequenciesForUrl_OutputMessage" />
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetClickFrequenciesForUrlSearc
hServiceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetClickFrequenciesForUrl_SearchServiceApplicatio
nFaultFault_FaultMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetTopQueryStringsForUrl">
      <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetTopQueryStringsForUrl"
message="tns:ISearchQueryServiceApplication_GetTopQueryStringsForUrl_InputMessage" />
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetTopQueryStringsForUrlRespon
se" message="tns:ISearchQueryServiceApplication_GetTopQueryStringsForUrl_OutputMessage" />
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetTopQueryStringsForUrlSearch
ServiceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetTopQueryStringsForUrl_SearchServiceApplication
FaultFault_FaultMessage" />
    </wsdl:operation>
    <wsdl:operation name="RecordClick">
      <wsdl:input wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordClick"
message="tns:ISearchQueryServiceApplication_RecordClick_InputMessage" />
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordClickResponse"
message="tns:ISearchQueryServiceApplication_RecordClick_OutputMessage" />
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordClickSearchServiceApplic
ationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_RecordClick_SearchServiceApplicationFaultFault_Fa
ultMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetSearchServiceApplicationInfo">
      <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetSearchServiceApplicationInf
o" message="tns:ISearchQueryServiceApplication_GetSearchServiceApplicationInfo_InputMessage"
/>
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetSearchServiceApplicationInf
oResponse"
message="tns:ISearchQueryServiceApplication_GetSearchServiceApplicationInfo_OutputMessage" />
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/GetSearchServiceApplicationInf
oSearchServiceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_GetSearchServiceApplicationInfo_SearchServiceAppl
icationFaultFault_FaultMessage" />
    </wsdl:operation>
    <wsdl:operation name="RecordUIQueryDoneEvent">
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      <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordUIQueryDoneEvent"
message="tns:ISearchQueryServiceApplication_RecordUIQueryDoneEvent_InputMessage" />
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordUIQueryDoneEventResponse
" message="tns:ISearchQueryServiceApplication_RecordUIQueryDoneEvent_OutputMessage" />
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordUIQueryDoneEventSearchSe
rviceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_RecordUIQueryDoneEvent_SearchServiceApplicationFa
ultFault_FaultMessage" />
      </wsdl:operation>
      <wsdl:operation name="RecordWebPartQueryDoneEvent">
      <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordWebPartQueryDoneEvent"
message="tns:ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_InputMessage" />
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordWebPartQueryDoneEventRes
ponse" message="tns:ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_OutputMessage"
/>
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordWebPartQueryDoneEventSea
rchServiceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_RecordWebPartQueryDoneEvent_SearchServiceApplicat
ionFaultFault_FaultMessage" />
      </wsdl:operation>
      <wsdl:operation name="RecordOMQueryDoneEvent">
      <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordOMQueryDoneEvent"
message="tns:ISearchQueryServiceApplication_RecordOMQueryDoneEvent_InputMessage" />
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordOMQueryDoneEventResponse
" message="tns:ISearchQueryServiceApplication_RecordOMQueryDoneEvent_OutputMessage" />
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordOMQueryDoneEventSearchSe
rviceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_RecordOMQueryDoneEvent_SearchServiceApplicationFa
ultFault_FaultMessage" />
      </wsdl:operation>
      <wsdl:operation name="RecordQueryErrorEvent">
      <wsdl:input
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordQueryErrorEvent"
message="tns:ISearchQueryServiceApplication_RecordQueryErrorEvent_InputMessage" />
      <wsdl:output
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordQueryErrorEventResponse"
message="tns:ISearchQueryServiceApplication_RecordQueryErrorEvent_OutputMessage" />
      <wsdl:fault
wsam:Action="http://tempuri.org/ISearchQueryServiceApplication/RecordQueryErrorEventSearchSer
viceApplicationFaultFault" name="SearchServiceApplicationFaultFault"
message="tns:ISearchQueryServiceApplication_RecordQueryErrorEvent_SearchServiceApplicationFau
ltFault_FaultMessage" />
      </wsdl:operation>
  </wsdl:portType>
  <wsdl:binding name="CustomBinding_ISearchQueryServiceApplication"
type="tns:ISearchQueryServiceApplication">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="GetSearchTerms">
      <soap:operation
soapAction="http://tempuri.org/ISearchQueryServiceApplication/GetSearchTerms"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
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        </wsdl:input>
        <wsdl:output>
          <soap:body use="literal" />
        </wsdl:output>
        <wsdl:fault name="SearchServiceApplicationFaultFault">
          <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
        </wsdl:fault>
      </wsdl:operation>
      <wsdl:operation name="Execute">
        <soap:operation soapAction="http://tempuri.org/ISearchQueryServiceApplication/Execute"
style="document" />
        <wsdl:input>
          <soap:body use="literal" />
        </wsdl:input>
        <wsdl:output>
          <soap:body use="literal" />
        </wsdl:output>
        <wsdl:fault name="SearchServiceApplicationFaultFault">
          <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
        </wsdl:fault>
      </wsdl:operation>
      <wsdl:operation name="GetProperties">
        <soap:operation
soapAction="http://tempuri.org/ISearchQueryServiceApplication/GetProperties" style="document"
/>
        <wsdl:input>
          <soap:body use="literal" />
        </wsdl:input>
        <wsdl:output>
          <soap:body use="literal" />
        </wsdl:output>
        <wsdl:fault name="SearchServiceApplicationFaultFault">
          <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
        </wsdl:fault>
      </wsdl:operation>
      <wsdl:operation name="GetScopes">
        <soap:operation
soapAction="http://tempuri.org/ISearchQueryServiceApplication/GetScopes" style="document" />
        <wsdl:input>
          <soap:body use="literal" />
        </wsdl:input>
        <wsdl:output>
          <soap:body use="literal" />
        </wsdl:output>
        <wsdl:fault name="SearchServiceApplicationFaultFault">
          <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
        </wsdl:fault>
      </wsdl:operation>
      <wsdl:operation name="GetQuerySuggestions">
        <soap:operation
soapAction="http://tempuri.org/ISearchQueryServiceApplication/GetQuerySuggestions"
style="document" />
        <wsdl:input>
          <soap:body use="literal" />
        </wsdl:input>
        <wsdl:output>
          <soap:body use="literal" />
        </wsdl:output>
        <wsdl:fault name="SearchServiceApplicationFaultFault">
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          <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
        </wsdl:fault>
      </wsdl:operation>
      <wsdl:operation name="HighlightStringValue">
        <soap:operation
  soapAction="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValue"
  style="document" />
        <wsdl:input>
          <soap:body use="literal" />
        </wsdl:input>
        <wsdl:output>
          <soap:body use="literal" />
        </wsdl:output>
        <wsdl:fault name="SearchServiceApplicationFaultFault">
          <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
        </wsdl:fault>
      </wsdl:operation>
      <wsdl:operation name="HighlightStringValueQuerySuggestions">
        <soap:operation
  soapAction="http://tempuri.org/ISearchQueryServiceApplication/HighlightStringValueQuerySugges
  tions" style="document" />
        <wsdl:input>
          <soap:body use="literal" />
        </wsdl:input>
        <wsdl:output>
          <soap:body use="literal" />
        </wsdl:output>
        <wsdl:fault name="SearchServiceApplicationFaultFault">
          <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
        </wsdl:fault>
      </wsdl:operation>
      <wsdl:operation name="GetClickFrequenciesForUrl">
        <soap:operation
  soapAction="http://tempuri.org/ISearchQueryServiceApplication/GetClickFrequenciesForUrl"
  style="document" />
        <wsdl:input>
          <soap:body use="literal" />
        </wsdl:input>
        <wsdl:output>
          <soap:body use="literal" />
        </wsdl:output>
        <wsdl:fault name="SearchServiceApplicationFaultFault">
          <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
        </wsdl:fault>
      </wsdl:operation>
      <wsdl:operation name="GetTopQueryStringsForUrl">
        <soap:operation
  soapAction="http://tempuri.org/ISearchQueryServiceApplication/GetTopQueryStringsForUrl"
  style="document" />
        <wsdl:input>
          <soap:body use="literal" />
        </wsdl:input>
        <wsdl:output>
          <soap:body use="literal" />
        </wsdl:output>
        <wsdl:fault name="SearchServiceApplicationFaultFault">
          <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
        </wsdl:fault>
      </wsdl:operation>
      <wsdl:operation name="RecordClick">
```

```
      <soap:operation
soapAction="http://tempuri.org/ISearchQueryServiceApplication/RecordClick" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
      <wsdl:fault name="SearchServiceApplicationFaultFault">
        <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
      </wsdl:fault>
    </wsdl:operation>
    <wsdl:operation name="GetSearchServiceApplicationInfo">
      <soap:operation
soapAction="http://tempuri.org/ISearchQueryServiceApplication/GetSearchServiceApplicationInfo
" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
      <wsdl:fault name="SearchServiceApplicationFaultFault">
        <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
      </wsdl:fault>
    </wsdl:operation>
    <wsdl:operation name="RecordUIQueryDoneEvent">
      <soap:operation
soapAction="http://tempuri.org/ISearchQueryServiceApplication/RecordUIQueryDoneEvent"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
      <wsdl:fault name="SearchServiceApplicationFaultFault">
        <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
      </wsdl:fault>
    </wsdl:operation>
    <wsdl:operation name="RecordWebPartQueryDoneEvent">
      <soap:operation
soapAction="http://tempuri.org/ISearchQueryServiceApplication/RecordWebPartQueryDoneEvent"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
      <wsdl:fault name="SearchServiceApplicationFaultFault">
        <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
      </wsdl:fault>
    </wsdl:operation>
    <wsdl:operation name="RecordOMQueryDoneEvent">
      <soap:operation
soapAction="http://tempuri.org/ISearchQueryServiceApplication/RecordOMQueryDoneEvent"
style="document" />
      <wsdl:input>
```

```
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
      <wsdl:fault name="SearchServiceApplicationFaultFault">
        <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
      </wsdl:fault>
    </wsdl:operation>
    <wsdl:operation name="RecordQueryErrorEvent">
      <soap:operation
 soapAction="http://tempuri.org/ISearchQueryServiceApplication/RecordQueryErrorEvent"
 style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
      <wsdl:fault name="SearchServiceApplicationFaultFault">
        <soap:fault use="literal" name="SearchServiceApplicationFaultFault" namespace="" />
      </wsdl:fault>
    </wsdl:operation>
  </wsdl:binding>
</wsdl:definitions>
```

7 Appendix B: 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.

<1> Section 1.3: This is supported by SharePoint Server 2010.

<2> Section 1.3: This is supported by FAST Search Server 2010.

<3> Section 3.1.1.2: This property exists only in FAST Search Server 2010 for SharePoint and FAST Search Server 2010 for SharePoint Internet Sites.

<4> Section 3.1.4.1.3.1: FAST Search Server 2010 performs this transformation.

<5> Section 3.1.4.1.3.1: FAST Search Server 2010 performs this suggestion.

8   Change Tracking

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

Release: Sunday, December 19, 2010

9 Index