[MS-FSBEPS]:
Browser Engine Processing and Status Protocol Specification

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Revision Summary

Date	Revision History	Revision Class	Comments
11/06/2009	0.1	Major	Initial Availability
02/19/2010	1.0	Editorial	Revised and edited 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	1.04	No change	No changes to the meaning, language, or formatting of the technical content.
09/27/2010	1.04	No change	No changes to the meaning, language, or formatting of the technical content.
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01/20/2012	1.5	Minor	Clarified the meaning of the technical content.
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07/16/2012	1.5	No change	No changes to the meaning, language, or formatting of the technical content.

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Table of Contents

1 Introduction

This document specifies the Browser Engine Processing and Status Protocol. This protocol handles communication between a protocol client and a protocol server. The protocol server supports methods for processing documents and querying the state of the protocol server.

Sections 1.8, 2, and 3 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in RFC 2119. Sections 1.5 and 1.9 are also normative but cannot contain those terms. All other sections and examples in this specification are informative.

1.1 Glossary

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

HTTP proxy
Hypertext Transfer Protocol (HTTP)
Kerberos
NT LAN Manager (NTLM) Authentication Protocol
Transmission Control Protocol (TCP)
UTF-8

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

base64 encoding
endpoint
forward link
hex-encoded string
host name
HTTP GET
Hypertext Markup Language (HTML)
Hypertext Transfer Protocol 1.1 (HTTP/1.1)
Simple Object Access Protocol (SOAP)
SOAP action
SOAP body
SOAP message
TCP/IP
Uniform Resource Identifier (URI)
virtual directory
Web service
Web Services Description Language (WSDL)
XML namespace
XML namespace prefix

The following terms are specific to this document:

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

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

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. 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.

[DOM Level 1] Worldwide Web Consortium (W3C), "Document Object Model (DOM) Level 1 Specification", Version 1.0, W3C Recommendation, October 1998, http://www.w3.org/TR/1998/REC-DOM-Level-1-19981001/

[HTML] World Wide Web Consortium, "HTML 4.01 Specification", December 1999, http://www.w3.org/TR/html4/

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

[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

[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

[WSA1.0 Core] Gudgin, M., Ed., Hadley, M., Ed., and Rogers, Tony, Ed., "Web Services Addressing 1.0 - Core", W3C Recommendation 9 May 2006, http://www.w3.org/TR/2006/REC-ws-addr-core-20060509/ws-addr-core.pdf

[WSA1.0 SOAP Binding] Gudgin, M., Ed., Hadley, M., Ed., and Rogers, T., Ed., "Web Services Addressing 1.0 - SOAP Binding", W3C Recommendation 9 May 2006, http://www.w3.org/TR/2006/REC-ws-addr-soap-20060509/ws-addr-soap.pdf

[WSA1.0] World Wide Web Consortium, "Web Services Addressing 1.0 - WSDL Binding", W3C Candidate Recommendation, May 2006, http://www.w3.org/TR/2006/CR-ws-addr-wsdl-20060529/

[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

[WS-MetaDataExchange] Ballinger, K. et al., "Web Services Metadata Exchange (WS-MetadataExchange) Version 1.1", August 2006, http://specs.xmlsoap.org/ws/2004/09/mex/WS-MetadataExchange.pdf

[WS-Policy1.2] Don Box, Chris Kaler, et al., "Web Services Policy 1.2 - Framework (WS-Policy)", April 2006, http://www.w3.org/Submission/2006/SUBM-WS-Policy-20060425/

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[WSS] OASIS, "Web Services Security: SOAP Message Security 1.1 (WS-Security 2004)", February 2006, http://www.oasis-open.org/committees/download.php/16790/wss-v1.1-spec-os-SOAPMessageSecurity.pdf

[WSSC1.3] Lawrence, K., Kaler, C., Nadalin, A., et al., "WS-SecureConversation 1.3", March 2007, http://docs.oasis-open.org/ws-sx/ws-secureconversation/200512/ws-secureconversation-1.3-os.html

[WSSE 1.0] Nadalin, A., Kaler, C., Hallam-Baker, P., and Monzillo, R., Eds., "Web Services Security: SOAP Message Security 1.0 (WS-Security 2004)", OASIS Standard 200401, March 2004, http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-message-security-1.0.pdf

[WSSP1.2] OASIS Standard, "WS-SecurityPolicy 1.2", July 2007, http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200702/ws-securitypolicy-1.2-spec-os.pdf

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

[XMLSCHEMA1] 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-GLOS] Microsoft Corporation, "Windows Protocols Master Glossary".

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

1.3   Protocol Overview (Synopsis)

This protocol has two main functions:

Processing: Enables protocol clients to direct the protocol server to process specified Web documents. The Web documents, along with external dependencies such as ECMAScript files, are downloaded and evaluated on the protocol server, after which forwarding links and the resulting **HTML** document are produced and sent to the protocol client.

Status and statistics: Enables the protocol client to query about the status and statistics of the protocol server.

This protocol is a SOAP-based protocol that uses **Hypertext Transfer Protocol 1.1 (HTTP/1.1)** as its transport and is a stateless protocol.

The protocol server never initiates any communication with the protocol client. It uses a simple client request and server response model, as shown in the following diagram.
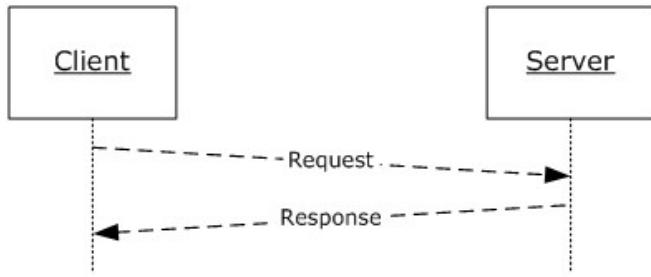
Figure 1: Protocol overview

1.4 Relationship to Other Protocols

This protocol uses SOAP (as described in [SOAP1.2/1]) and [SOAP1.2/2]) over HTTP/1.1 (as described in [RFC2616]) for communication.
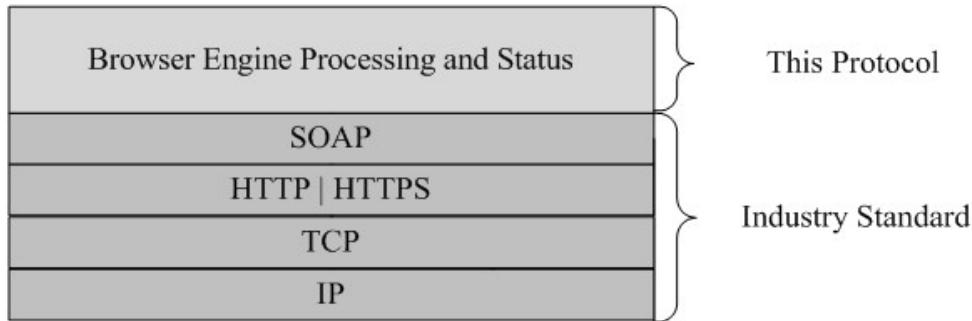
Figure 2: This protocol in relation to other protocols

1.5 Prerequisites/Preconditions

The protocol client is aware of the address and the interface port associated with the protocol server prior to calling this protocol, as described in section 2.1.

This protocol assumes that the underlying protocols have authenticated the connection.

1.6 Applicability Statement

This protocol is designed to remotely process Web documents, to produce content and **forward links** that would typically not be available without executing **ECMAScripts** and events contained in the Web document.

1.7 Versioning and Capability Negotiation

None.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

2.1 Transport

The protocol is carried out over two separate **Web services**.

Each Web service MUST support **Simple Object Access Protocol (SOAP)** (as specified in [SOAP1.2/1]) and [SOAP1.2/2]) over **HTTP** (as specified in [RFC2616]). They support **SOAP message** security and security contexts as specified in [WSSE 1.0] and [WSSC1.3]. Authentication is performed through **Kerberos** or **NTLM**.

Each **virtual directory** supports HTTP (as specified in [RFC2616]) over **TCP/IP**.

The following **TCP** ports are exposed by the protocol server as endpoints for the HTTP over TCP/IP transport.

- **processPort:** Used for processing communication.

- **statusPort:** Used for status and statistics communication.

The following virtual directories MUST be specified by the protocol server as **endpoints** for the HTTP and SOAP over HTTP transports.

- **Processing Web service:** This virtual directory, as specified in section 3.1, is exposed at the following **URI**: http://serverURI:[processPort]/BrowserEngine/http.

- **Status Web service:** This virtual directory, as specified in section 3.2, is exposed at the following URI: http://serverURI[:statusPort]/BrowserEngine/Stat/http.

2.2 Common Message Syntax

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

2.2.1 Namespaces

This protocol specifies and references **XML namespaces** using the mechanisms specified in [XMLNS]. Although this document associates an **XML namespace prefix** for each XML namespace that is used, the choice of any particular XML namespace prefix is implementation-specific. The following table described these namespaces.

Prefix	Namespace URI	Reference
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]
wsa10	http://www.w3.org/2005/08/addressing	[WSA1.0 SOAP Binding] [WSA1.0 Core]
wsx	http://schemas.xmlsoap.org/ws/2004/09/mex	[WS-MetaDataExchange]
soap12	http://schemas.xmlsoap.org/wsdl/soap12/	[SOAP1.2/1] [SOAP1.2/2]

Prefix	Namespace URI	Reference
soape nc	http://schemas.xmlsoap.org/soap/encoding/	[SOAP1.1]
wsu	http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd	[WSS]
wsp	http://schemas.xmlsoap.org/ws/2004/09/policy	[WS-Policy1.2]
wsaw	http://www.w3.org/2006/05/addressing/wsdl	[WSA1.0]
sp	http://schemas.xmlsoap.org/ws/2005/07/securitypolicy	[WSSP1.2]
xs	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1] [XMLSCHEMA2]
tns	http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended.BrowserEngine.Util	
i0	http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server	

2.2.2   Messages

None.

2.2.3   Elements

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

2.2.4   Complex Types

The following table summarizes the set of common XML Schema complex type definitions that are defined in this specification. XML Schema complex type definitions that are specific to a particular operation are specified with the operation.

The sections in the following table specify the complex types that this protocol uses.

Complex type	Description
ArrayOfString	An array of elements of type string.
ProcessingFault	Contains information about processing errors.
Link	Contains information about a URI.
ThreadData	Contains information about URIs that are being processed.
ArrayOfThreadData	An array of elements of type **ThreadData**.
ContinuousVariable	Contains historic state for a value.
ExtractorStat	Contains statistics for a link extractor.
ArrayOfExtractorStat	An array of elements of type **ExtractorStat**.
BEStatistics	Contains statistics for a protocol server.

Complex type	Description
PipelineStat	Contains statistics for a pipeline.
ArrayOfPipelineStat	An array of elements of type **PipelineStat**.
ResultSet	Contains processing results.
Status	Contains status for a protocol server.
Statistics	Contains statistics for a protocol server.

2.2.4.1 ArrayOfString

An array of string values that are used in messages within the protocol.

```
<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 string value.

2.2.4.2 ProcessingFault

An object that the protocol server returns on an unsuccessful completion of the **Process** operation. See section 3.1.4.1 for more information about the **Process** operation.

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

Code: A string that specifies the error code of the error that took place.

Text: A string that specifies the description of the cause of the error.

2.2.4.3 Link

An object that stores information about a URI.

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

Origin: A string that specifies the location of the URI in the document. This string is either an HTML element in the source document, or it is an element associated with the Document Object Model (DOM) core structure, as specified in [DOM Level 1].

Uri: A string that represents a URI, as specified in [RFC2396].

The values of **Origin** elements are specified in the following table. All element references are specified in [HTML].

Origin	Description
META	URI was extracted from a <META/> element.
META-REFRESH	URI was extracted from the **refresh** attribute of a <META/> element.
SCRIPT_JS	URI was extracted from a <SCRIPT/> element.
DOCUMENT.LOCATION	URI was extracted from an ECMAScript document.location DOM structure element.
WINDOW.OPEN	URI was extracted from an ECMAScript window.open method.
A	URI was extracted from an <A/> element.
AREA	URI was extracted from an <AREA/> element.
FRAME	URI was extracted from a <FRAME/> element.
IMG	URI was extracted from an <IMG/> element.
IFRAME	URI was extracted from an <IFRAME/> element.
LAYER	URI was extracted from the **src** attribute of a <LAYER/> element.
LINK	URI was extracted from a <LINK/> element.
OBJECT	URI was extracted from an <OBJECT/> element.
PARAM	URI was extracted from a <PARAM/> element.
SCRIPT	URI was extracted from a <SCRIPT/> element.
BASE	URI was extracted from a <BASE/> element.
BGSOUND	URI was extracted from a <BGSOUND/> element.
BODY	URI was extracted from a <BODY/> element.
EMBED	URI was extracted from an <EMBED/> element.

2.2.4.4 ThreadData

An object that is used to store information about URIs that are currently being processed.

```
<xs:complexType name="ThreadData">
  <xs:sequence>
    <xs:element minOccurs="0" name="Age" type="xs:dateTime"/>
    <xs:element minOccurs="0" name="ThreadId" type="xs:int"/>
    <xs:element minOccurs="0" name="Uri" nillable="true" type="xs:string"/>
```

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

Age: A **DateTime** that specifies the time the thread started processing the URI.

ThreadId: An integer that specifies the identifier of the thread processing the URI.

Uri: A string that specifies the URI that the thread is currently processing.

2.2.4.5   ArrayOfThreadData

An array of type **ThreadData**, as specified in section 2.2.4.4, that are used in messages within the protocol.

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

ThreadData: A **ThreadData** structure as specified in section section 2.2.4.4.

2.2.4.6   ContinuousVariable

This stores historic state information about values.

```
<xs:complexType name="ContinuousVariable">
   <xs:sequence>
      <xs:element minOccurs="0" name="Average" type="xs:float"/>
      <xs:element minOccurs="0" name="Count" type="xs:long"/>
      <xs:element minOccurs="0" name="Max" type="xs:long"/>
      <xs:element minOccurs="0" name="Min" type="xs:long"/>
      <xs:element minOccurs="0" name="Value" type="xs:long"/>
   </xs:sequence>
</xs:complexType>
```

Average: A **float** that specifies the average of all values that are stored.

Count: A **long** that specifies the number of stored values.

Max: A **long** that specifies the maximum value.

Min: A **long** that specifies the minimum value.

Value: A **long** that specifies the sum of all values.

2.2.4.7   ExtractorStat

This stores statistic information about a link extractor.

```
<xs:complexType name="ExtractorStat">
   <xs:sequence>
      <xs:element minOccurs="0" name="LinkCount" type="xs:long"/>
```

```
      <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Time" nillable="true"
        type="tns:ContinuousVariable"/>
    </xs:sequence>
  </xs:complexType>
```

LinkCount: A **long** that specifies the number of links that were extracted by this link extractor.

Name: A string that specifies the name of the link extractor.

Time: A **ContinuousVariable** structure, as specified in section 2.2.4.6, that represents the number of seconds that were spent in the link extractor.

2.2.4.8   ArrayOfExtractorStat

An array of **ExtractorStat** elements as specified in section 2.2.4.7 that are used in protocol messages.

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

ExtractorStat: An **ExtractorStat** structure as specified in section section 2.2.4.7.

2.2.4.9   BEStatistics

This stores statistical information about the protocol server.

```
  <xs:complexType name="BEStatistics">
    <xs:sequence>
      <xs:element minOccurs="0" name="CacheBytes" type="xs:long"/>
      <xs:element minOccurs="0" name="CacheHits" type="xs:long"/>
      <xs:element minOccurs="0" name="CacheInserts" type="xs:long"/>
      <xs:element minOccurs="0" name="CacheMisses" type="xs:long"/>
      <xs:element minOccurs="0" name="CacheSize" type="xs:long"/>
      <xs:element minOccurs="0" name="DownloadRequests" type="xs:long"/>
      <xs:element minOccurs="0" name="DownloadTimeAverage" type="xs:float"/>
      <xs:element minOccurs="0" name="DownloadTimeCount" type="xs:long"/>
      <xs:element minOccurs="0" name="DownloadTimeMax" type="xs:long"/>
      <xs:element minOccurs="0" name="DownloadTimeMin" type="xs:long"/>
      <xs:element minOccurs="0" name="DownloadTimeTotal" type="xs:long"/>
      <xs:element minOccurs="0" name="FailedRequests" type="xs:long"/>
      <xs:element minOccurs="0" name="ProcessTimeAverage" type="xs:float"/>
      <xs:element minOccurs="0" name="ProcessTimeCount" type="xs:long"/>
      <xs:element minOccurs="0" name="ProcessTimeMax" type="xs:long"/>
      <xs:element minOccurs="0" name="ProcessTimeMin" type="xs:long"/>
      <xs:element minOccurs="0" name="ProcessTimeTotal" type="xs:long"/>
      <xs:element minOccurs="0" name="ProcessedRequests" type="xs:long"/>
      <xs:element minOccurs="0" name="TimedOutRequests" type="xs:long"/>
    </xs:sequence>
  </xs:complexType>
```

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CacheBytes: A **long** that specifies the total number of bytes used by the cache.

CacheHits: A **long** that specifies the number of cache hits.

CacheInserts: A **long** that specifies the number of cache inserts.

CacheMisses: A **long** that specifies the number of cache misses.

CacheSize: A **long** that specifies the number of documents in the cache.

DownloadRequests: A **long** that specifies the number of download requests.

DownloadTimeAverage: A **float** that specifies the average time, in seconds, spent downloading documents.

DownloadTimeCount: A **long** that specifies the number of documents downloaded.

DownloadTimeMax: A **long** that specifies the maximum time, in seconds, spent downloading a single document.

DownloadTimeMin: A **long** that specifies the minimum time, in seconds, spent downloading a single document.

DownloadTimeTotal: A **long** that specifies the accumulated time, in seconds, spent downloading documents.

FailedRequests: A **fong** that specifies the number of failed requests.

ProcessTimeAverage: A **float** that specifies the average time, in seconds, spent processing documents.

ProcessTimeCount: A **long** that specifies the number of documents processed.

ProcessTimeMax: A **long** that specifies the maximum time, in seconds, spent processing a single document.

ProcessTimeMin: A **long** that specifies the minimum time, in seconds, spent processing a single document.

ProcessTimeTotal: A **long** that specifies the accumulated time, in seconds, spent processing documents.

ProcessedRequests: A **long** that specifies the number of processed requests.

TimedOutRequests: A **long** that specifies the number of timed out requests.

2.2.4.10 PipelineStat

This stores status information about a pipeline.

```
<xs:complexType name="PipelineStat">
  <xs:sequence>
    <xs:element minOccurs="0" name="ExtractorStat" nillable="true"
      type="tns:ArrayOfExtractorStat"/>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

ExtractorStat: A list of **ExtractorStat** objects for the pipeline as specified in section 2.2.4.7.

Name: A string that specifies the name of the pipeline.

2.2.4.11   ArrayOfPipelineStat

An array of **PipelineStat** elements, as specified in section 2.2.4.10.

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

PipelineStat: A **PipelineStat** structure as specified in section section 2.2.4.10.

2.2.4.12   ResultSet

An object that the protocol server returns on successful completion of the **Process** operation. See section 3.1.4.1 for more information about the **Process** operation.

```
<xs:complexType name="ResultSet">
  <xs:sequence>
    <xs:element minOccurs="0" name="Checksum" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Cookies" nillable="true"
      type="q1:ArrayOfstring"/>
    <xs:element minOccurs="0" name="Flags" type="xs:unsignedInt"/>
    <xs:element minOccurs="0" name="HTML" nillable="true" type="xs:base64Binary"/>
    <xs:element minOccurs="0" name="HTMLEncoding" nillable="true"
      type="xs:string"/>
    <xs:element minOccurs="0" name="Links" nillable="true" type="tns:ArrayOfLink"/>
    <xs:element minOccurs="0" name="Thumbnail" nillable="true"
      type="xs:base64Binary"/>
    <xs:element minOccurs="0" name="ThumbnailFormat" nillable="true"
      type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

Checksum: A 32-byte **hex-encoded string** that specifies a unique fingerprint of the Web document.

Cookies: An array of strings that specify the HTTP cookies of the document in the following format.

```
NAME "=" VALUE
```

Flags: An unsigned integer bit map that represents which flags are set for a document. The bit map values are specified in the following table.

Bit value	Description
0x1	Document contains a META element that has a **name** attribute of "robots" and a **content** attribute value of "noindex", as specified in [HTML].

Bit value	Description
0x2	Document contains a META element that has a **name** attribute of "robots" and a **content** attribute value of "nofollow", as specified in [HTML].

HTML: A byte array encoded with **base64 encoding** specifying the resulting HTML document.

HTMLEncoding: A string that specifies the character encoding of the HTML.

Links: An array of **Link** structures that specify any extracted URIs.

Thumbnail: The value of this parameter MUST be NULL.

ThumbnailFormat: The value of this parameter MUST be NULL.

2.2.4.13   Status

An object that the protocol server returns on successful completion of the **GetStatus** operation. See section 3.2.4.1 for more information about the **GetStatus** operation.

```
<xs:complexType name="Status">
  <xs:sequence>
    <xs:element minOccurs="0" name="threadStatusList" nillable="true"
      type="tns:ArrayOfThreadData"/>
    </xs:sequence>
</xs:complexType>
```

threadStatusList: An array of **ThreadData** structures, as specified in section 2.2.4.4, that specify the status for all threads.

2.2.4.14   Statistics

An object that the protocol server returns on successful completion of the **GetStatistics** operation. See section 2.2.4.2 for more information about the **GetStatistics** operation.

```
<xs:complexType name="Statistics">
  <xs:sequence>
    <xs:element minOccurs="0" name="BEStats" nillable="true"
      type="tns:BEStatistics"/>
    <xs:element minOccurs="0" name="PipelineStatList" nillable="true"
      type="tns:ArrayOfPipelineStat"/>
  </xs:sequence>
</xs:complexType>
```

BEStats: A **BEStatistics** structure for the protocol server, as specified in section 2.2.4.9.

PipelineStatList: An array of **PipelineStat** structures for the protocol server, as specified in section 2.2.4.10.

2.2.5   Simple Types

All strings, unless otherwise specified, MUST be encoded in UTF-8.

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

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 made by the higher-layer protocol or application are passed directly to the transport, and the results returned by the transport are passed directly back to the higher-layer protocol or application.

3.1   IBEServer Server Details

The Processing Web service is used for processing Web documents on the protocol server.

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.

Cache: The protocol server maintains a limited cache of recently downloaded dependencies, which optimizes the use of download processes. When inserting elements into the cache, the protocol server updates corresponding cache statistics to keep them current, as specified in section 2.2.4.9. If a cache is not implemented these values MUST be set to 0.

3.1.2   Timers

None.

3.1.3   Initialization

The Processing Web service within the protocol server MUST begin listening for requests at the respective URI addresses that are in the message transport, as specified in section 2.1.

3.1.4   Message Processing Events and Sequencing Rules

The following table summarizes the list of WSDL operations that are defined for the Processing Web service.

Operation	Description
Process	Processes a given Web document.

3.1.4.1   Process

This method processes a specified Web document.

```
<wsdl:operation name="Process">
 <wsdl:input
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServer/Proce
ss" message="tns:IBEServer_Process_InputMessage"/>
 <wsdl:output
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServer/Proce
ssResponse" message="tns:IBEServer_Process_OutputMessage"/>
 <wsdl:fault
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServer/Proce
```

```
ssProcessingFaultFault" name="ProcessingFaultFault"
message="tns:IBEServer_Process_ProcessingFaultFault_FaultMessage"/>
</wsdl:operation>
```

The protocol client sends a **IBEServer_Process_InputMessage** message. If the operation succeeds, the protocol server responds with a I**BEServer_Process_OutputMessage** message. If the operation fails, the protocol server responds with a **IBEServer_Process_ProcessingFaultFault_FaultMessage** message.

3.1.4.1.1 Messages

The following WSDL message definitions are specific to this operation.

3.1.4.1.1.1 IBEServer_Process_InputMessage

This is the request to initiate the operation that processes a Web document.

The **SOAP action** value is:

```
http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServer/Process
```

The **SOAP body** contains a **Process** element, as specified in section 3.1.4.1.2.1.

3.1.4.1.1.2 IBEServer_Process_OutputMessage

This is the response message for a **Process** method.

The SOAP action value is:

```
http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServer/ProcessResponse
```

The SOAP body contains a **ProcessResponse** element, as specified in section 3.2.4.1.2.2.

3.1.4.1.1.3 IBEServer_Process_ProcessingFaultFault_FaultMessage

This is the SOAP fault message for a **Process** method.

The SOAP action value is:

```
http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServer/ProcessProcessingF
aultFault
```

The SOAP body contains a **ProcessingFault** element, as specified in section 3.1.4.1.2.3.

3.1.4.1.2 Elements

The XML Schema element definitions in the following sections are specific to this operation.

3.1.4.1.2.1 Process

This is the input data for a Process WSDL operation.

```
<xs:element name="Process">
 <xs:complexType>
  <xs:sequence>
   <xs:element minOccurs="0" name="uri" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="proxyHost" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="proxyPort" type="xs:unsignedShort"/>
    <xs:element minOccurs="0" name="proxyHeaders" nillable="true"
     type="xs:string"/>
   </xs:sequence>
 </xs:complexType>
</xs:element>
```

Uri: A string that contains the URI of the document to be processed.

proxyHost: A string that specifies the **host name** of an **HTTP proxy** from which the URI of the document and its dependencies can be downloaded. If the string is empty or **NULL**, the protocol server uses the protocol client as the proxy host name.

proxyPort: An unsigned **Short** that specifies the port number of the HTTP proxy that is specified in **proxyHost**. If the proxy port is 0, the protocol server retrieves the URI and any dependencies directly from the Web servers, regardless of the specified **proxyHost**.

proxyHeaders: A **string** that specifies additional HTTP headers (as specified in [RFC2616]) to include in the **HTTP GET** request for the URI. In all subsequent requests for the document or its dependencies, the protocol server sends specified **proxyHeaders** to the proxy that is specified in **proxyHost**.

3.1.4.1.2.2   ProcessResponse

This is the output data for a **Process** WSDL operation.

```
<xs:element name="ProcessResponse">
 <xs:complexType>
  <xs:sequence>
   <xs:element minOccurs="0" name="ProcessResult" nillable="true" type="q1:ResultSet"/>
   </xs:sequence>
 </xs:complexType>
</xs:element>
```

ProcessResult: The method MUST return this element when it finishes successfully. The syntax of the **ResultSet** type is specified in section 2.2.4.12.

3.1.4.1.2.3   ProcessingFault

This is the output data for a **Process** WSDL operation.

```
<xs:element name="ProcessingFault" nillable="true" type="tns:ProcessingFault"/>
```

ProcessingFault: The method MUST return this element when it does not finish successfully. The syntax of the **ProcessingFault** type is specified in section 2.2.4.2.

3.1.4.1.3   Complex Types

None.

3.1.4.1.4 Simple Types

None.

3.1.4.1.5 Attributes

None.

3.1.4.1.6 Groups

None.

3.1.4.1.7 Attribute Groups

None.

3.1.5 Timer Events

None.

3.1.6 Other Local Events

None.

3.2 IStatServer Server Details

The Status and Monitoring Web service queries the protocol server about status and statistics.

3.2.1 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.

3.2.1.1 Statistics

The protocol server MUST maintain a set of statistics in memory to respond to the protocol client **GetStatistics** request. The values to maintain are specified in section 2.2.4.14.

The protocol server has pipelines of link extractors that process the resulting DOM structure after each document is processed. Statistics are aggregated for each of the pipelines and link extractors. The protocol server maintains the statistics in memory; whenever the protocol server is restarts, any existing statistics are reset.

The protocol server maintains a list of **PipelineStat** objects for each of the available pipelines that contains statistics about each pipeline, as shown in the following diagram.
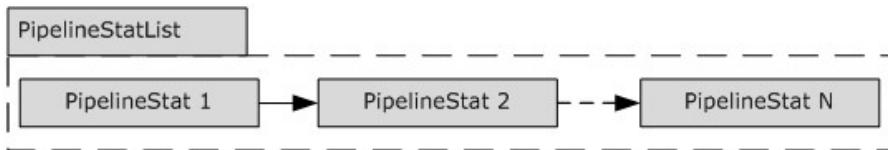
Figure 3: List of PipelineStat objects

Each pipeline contains a set of link extractors. The protocol server maintains a **PipelineStat** object for each of the pipelines. Within the **PipelineStat** object, information about the individual link extractors is maintained in a list of **ExtractorSet** objects, as shown in the following diagram.
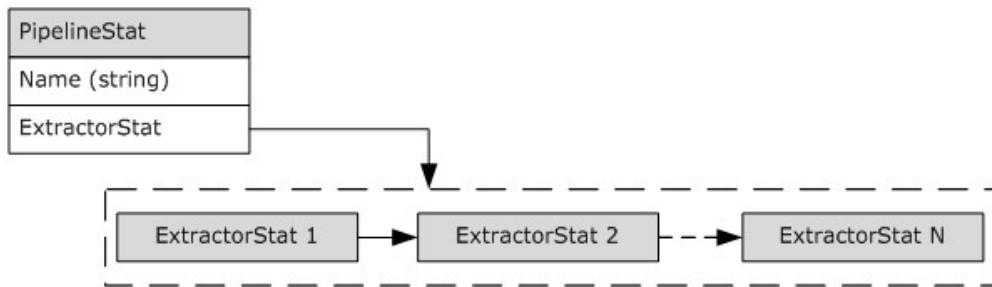

Figure 4: Details of the PipelineStat object

An **ExtractorStat** object maintains statistics for each of the link extractors in a pipeline, as shown in the following diagram.
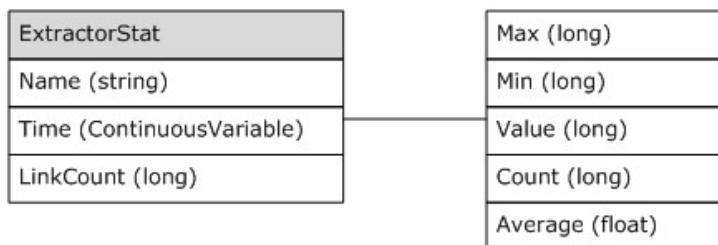

Figure 5: Details of the ExtractorStat object

3.2.1.2   Status

The protocol server maintains information about the documents that are currently being processed, as requested by the protocol client with the **GetStatus** request. The values to maintain are specified in section 2.2.4.13.

The protocol server has a pool of threads. Each thread serves a single **Process** request at a time. The protocol server maintains a list of **ThreadData** objects for the available threads, as shown in the following diagram.
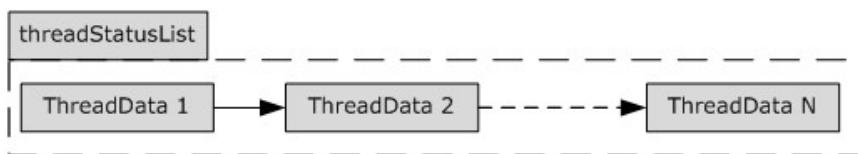

Figure 6: List of ThreadData objects

Information about individual threads is maintained in a **ThreadData** object, as shown in the following diagram.

ThreadData
ThreadId (long)
Uri (string)
Age (DateTime)

Figure 7: Detail of the ThreadData object

3.2.2 Timers

None.

3.2.3 Initialization

The Status and Monitoring Web service within the protocol server MUST begin listening for requests at the respective URI addresses that are in the message transport, as specified in section 2.1.

3.2.4 Message Processing Events and Sequencing Rules

The following table summarizes the list of WSDL operations that are defined in this specification.

Operation	Description
GetStatus	Returns status information about the protocol server.
GetStatistics	Returns statistics information about the protocol server.
Ping	Queries the protocol server for responsiveness.

3.2.4.1 GetStatus

This method queries the protocol server for status information.

```
<wsdl:operation name="GetStatus">
 <wsdl:input
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Get
Status" message="tns:IStatServer_GetStatus_InputMessage"/>
 <wsdl:output
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Get
StatusResponse" message="tns:IStatServer_GetStatus_OutputMessage"/>
</wsdl:operation>
```

The protocol client sends a **IStatServer_GetStatus_InputMessage** request message as specified in section 3.2.4.2.1.1 and the protocol server responds with a **IStatServer_GetStatus_OutputMessage** response message as specified in section 3.2.4.1.1.2.

3.2.4.1.1 Messages

The following WSDL message definitions are specific to this operation.

3.2.4.1.1.1 IStatServer_GetStatus_InputMessage

This is the request to initiate the operation that queries for status information.

The SOAP action value is:

```
http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/GetStatus
```

The SOAP body contains a **GetStatus** element.

3.2.4.1.1.2 IStatServer_GetStatus_OutputMessage

This is the response message for a **GetStatus** method.

The SOAP action value is:

```
http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/GetStatusRespons
e
```

The SOAP body contains a **GetStatusResponse** element as specified in section 3.2.4.1.2.2.

3.2.4.1.2 Elements

The XML Schema element definitions in the following sections are specific to this operation.

3.2.4.1.2.1 GetStatus

The input data for a **GetStatus** operation.

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

There are no parameters.

3.2.4.1.2.2 GetStatusResponse

This is the output data for a **GetStatus** operation.

```
<xs:element name="GetStatusResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetStatusResult" nillable="true" type="q1:Status"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetStatusResult: The method MUST return this element when it finishes successfully. The syntax of the **Status** type is specified in section 2.2.4.13.

3.2.4.1.3 Complex Types

None.

3.2.4.1.4 Simple Types

None.

3.2.4.1.5 Attributes

None.

3.2.4.1.6 Groups

None.

3.2.4.1.7 Attribute Groups

None.

3.2.4.2 GetStatistics

This method queries the protocol server for statistics information.

```
<wsdl:operation name="GetStatistics">
 <wsdl:input
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Get
Statistics" message="tns:IStatServer_GetStatistics_InputMessage"/>
  <wsdl:output
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Get
StatisticsResponse" message="tns:IStatServer_GetStatistics_OutputMessage"/>
</wsdl:operation>
```

The protocol client sends a **IStatServer_GetStatistics_InputMessage** request message as specified in section section 3.2.4.1.1.1 and the protocol server responds with a **IStatServer_GetStatistics_OutputMessage** response message as specified in section 3.2.4.2.1.2.

3.2.4.2.1 Messages

The following WSDL message definitions are specific to this operation.

3.2.4.2.1.1 IStatServer_GetStatistics_InputMessage

This is the request to initiate the operation that queries the protocol server for statistics information.

The SOAP action value is:

```
http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/GetStatistics
```

The SOAP body contains a **GetStatistics** element as specified in section 3.2.4.2.

3.2.4.2.1.2 IStatServer_GetStatistics_OutputMessage

This is the response message for a **GetStatistics** method.

The SOAP action value is:

```
http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/GetStatisticsRes
ponse
```

The SOAP body contains a **GetStatisticsResponse** element, as specified in section 3.2.4.2.2.2).

3.2.4.2.2 Elements

The XML Schema element definitions in the following sections are specific to this operation.

3.2.4.2.2.1 GetStatistics

The input data for a **GetStatistics** operation.

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

There are no parameters.

3.2.4.2.2.2 GetStatisticsResponse

```
<xs:element name="GetStatisticsResponse">
 <xs:complexType>
  <xs:sequence>
   <xs:element minOccurs="0" name="GetStatisticsResult" nillable="true"
type="q2:Statistics"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

GetStatisticsResult: The method MUST return this element when it finishes successfully. The syntax of the **Statistics** type is specified in section 2.2.4.14.

3.2.4.2.3 Complex Types

None.

3.2.4.2.4 Simple Types

None.

3.2.4.2.5 Attributes

None.

3.2.4.2.6 Groups

None.

3.2.4.2.7 Attribute Groups

None.

3.2.4.3 Ping

This method queries the protocol service to verify whether it is running.

```
<wsdl:operation name="Ping">
 <wsdl:input
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Pin
g" message="tns:IStatServer_Ping_InputMessage"/>
 <wsdl:output
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Pin
gResponse" message="tns:IStatServer_Ping_OutputMessage"/>
 </wsdl:operation>
```

The protocol client sends a **IStatServer_Ping_InputMessage** request message, as specified in section 3.2.4.3.1.1, and the protocol server responds with a **IStatServer_Ping_OutputMessage** response message, as specified in section 3.2.4.3.1.2.

3.2.4.3.1 Messages

The WSDL messages defined in this section are specific to this operation.

3.2.4.3.1.1 IStatServer_Ping_InputMessage

This is the request to initiate the operation that verifies whether the protocol server is running.

The SOAP action is:

```
http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IstatServer/Ping
```

The SOAP body contains a **Ping** element, as specified in section 3.2.4.3.3.1.

3.2.4.3.1.2 IStatServer_Ping_OutputMessage

This is the response message for a **Ping** method.

The SOAP action is:

```
http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/PingResponse
```

The SOAP body contains a **PingResponse** element, as specified in section 3.2.4.3.3.2.

3.2.4.3.2 Element

The XML Schema element definitions in the following sections are specific to this operation.

3.2.4.3.3   Elements

3.2.4.3.3.1   Ping

```
The input data for a Ping WSDL operation.
<xs:element name="Ping">
  <xs:complexType>
    <xs:sequence/>
  </xs:complexType>
</xs:element>
```

There are no parameters.

3.2.4.3.3.2   PingResponse

```
The output data for a Ping operation.
<xs:element name="PingResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="PingResult" nillable="true" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

PingResult: The method MUST return a value of "pong" when the method finishes successfully.

3.2.4.3.4   Complex Types

None.

3.2.4.3.5   Simple Types

None.

3.2.4.3.6   Attributes

None.

3.2.4.3.7   Groups

None.

3.2.4.3.8   Attribute Groups

None.

3.2.5   Timer Events

None.

3.2.6   Other Local Events

None.

4   Protocol Examples

4.1   Process

This section contains a **Process** call as described in section 3.1.4.1. The protocol client sends a request to the protocol server to process the URI that contains a value of "http://www.contoso.com/exampleURIA.html". The protocol server downloads the URI and evaluates the ECMAScript and events. Then it sends the resulting HTML document and its extracted forward links to the protocol client.

Formatting has been added to this section to improve the readability of the examples.

4.1.1   HTML Document

The HTML document associated with by the URI is shown in the following example.

```
<HTML>
<HEAD>
<TITLE> Www.contoso.com title  </TITLE>
<SCRIPT LANGUAGE="JAVASCRIPT">
var site = "http://www.contoso.com/"

function test(){
    document.writeln(
      "<A HREF=\"http://www.contoso.com/exampleURIB.html\"> Example URI B </A>");
    document.title = "New www.contoso.com title version 2.0";
}

</SCRIPT>

</HEAD>
<BODY>
<CENTER>
<SCRIPT LANGUAGE="JAVASCRIPT"> test() </SCRIPT>

<A HREF="http://www.contoso.com/exampleURIC.html"> Example URI C </A>
</BODY>
</HTML>
```

4.1.2   Request

The protocol client requests the URI to be processed, as follows.

```
POST /BrowserEngine/http HTTP/1.1Content-Type: application/soap+xml; charset=utf-8Host:
serverURI:processPortContent-Length: 838
Expect: 100-continueConnection: Keep-Alive
HTTP/1.1 100 Continue
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServ
er/Process</a:Action>
    <a:MessageID>urn:uuid:c9e74c80-7e91-4842-ac11-0fa149de60c1</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
```

Release: July 16, 2012

```
      </a:ReplyTo>
      <a:To s:mustUnderstand="1">http://serverURI:processPort/BrowserEngine/http</a:To>
    </s:Header>
    <s:Body>
      <Process xmlns="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server">
        <uri>http://www.contoso.com/exampleURIA.html</uri>
        <proxyHost i:nil="true" xmlns:i="http://www.w3.org/2001/XMLSchema-instance"/>
        <proxyPort>0</proxyPort>
        <proxyHeaders i:nil="true" xmlns:i="http://www.w3.org/2001/XMLSchema-instance"/>
      </Process>
    </s:Body>
  </s:Envelope>
```

4.1.3   Response

The protocol server responds with the results after processing the URI, as follows.

```
HTTP/1.1 200 OKContent-Length: 1550
Content-Type: application/soap+xml; charset=utf-8
Server: Microsoft-HTTPAPI/2.0
Date: Mon, 16 Feb 2009 11:53:33 GMT
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServ
er/ProcessResponse</a:Action>
    <a:RelatesTo>urn:uuid:c9e74c80-7e91-4842-ac11-0fa149de60c1</a:RelatesTo>
  </s:Header>
  <s:Body>
    <ProcessResponse
xmlns="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server">
      <ProcessResult
xmlns:b="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended.Browser
Engine.Util" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
        <b:Checksum>00a04e3e318d3ce369517f5969de1927</b:Checksum>
        <b:Cookies xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"/>
        <b:Flags>0</b:Flags>
        <b:HTML>
PEhUTUw+PEhFQUQ+PFRJVExFPk5ldyB3d3cuY29udG9zby5jb20gdGl0bGUgdmVyc2lvbiAyLjA8L1RJVExFPFg0KDQoNC
jxNRVRBIGNvbnRlbnQ9InRleHQvaHRtbDsgY2hhcnNldD1VVEYtOCIgaHR0cC1lcXVpdj0iQ29udGVudC1UeXBlIj48L0
hFQUQ+DQo8Qk9EWT4NCjxDRU5URVI+DQoNCjxBIGhy\ZWY9Imh0dHA6Ly93d3cuY29udG9zby5jb20vZXhhbXBsZVVSS
UIuaHRtbCI+RXhhbXBsZSBVUkkgQiA8L0E+PEEgaHJlZj0iaHR0cDovL3d3dy5jb250b3NvLmNvbS9leGFtcGxlVVJJQy
5odG1sIj5F\neGFtcGxlIFVSSSBDIDwvQT48L0NFTlRFUj48L0JPRFk+PC9IVE1MPg==
        </b:HTML>
        <b:HTMLEncoding>UTF-8</b:HTMLEncoding>
        <b:Links>
          <b:Link>
            <b:Origin>A</b:Origin>
            <b:Uri>http://www.contoso.com/exampleURIB.html</b:Uri>
          </b:Link>
          <b:Link>
            <b:Origin>A</b:Origin>
            <b:Uri>http://www.contoso.com/exampleURIC.html</b:Uri>
          </b:Link>
        </b:Links>
        <b:Thumbnail i:nil="true"/>
        <b:ThumbnailFormat i:nil="true"/>
```

```
        </ProcessResult>
      </ProcessResponse>
   </s:Body>
</s:Envelope>
```

4.1.4 Base64 Decoded HTML Document

The resulting HTML document decoded, as follows.

```
<HTML>
<HEAD>
<TITLE>New www.contoso.com title version 2.0</TITLE>
<META content="text/html; charset=UTF-8" http-equiv="Content-Type">
</HEAD>
<BODY>
<CENTER>
<A href="http://www.contoso.com/exampleURIB.html">Example URI B </A>
<A href="http://www.contoso.com/exampleURIC.html">Example URI C </A>
</CENTER>
</BODY>
</HTML>
```

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 in the following section.

6.1 Processing Web Service WSDL

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions name="BEServer" targetNamespace="http://tempuri.org/"
          xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
   xmlns:wsa10="http://www.w3.org/2005/08/addressing"
   xmlns:wsx="http://schemas.xmlsoap.org/ws/2004/09/mex"
   xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
   xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-
1.0.xsd"
   xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"
   xmlns:wsap="http://schemas.xmlsoap.org/ws/2004/08/addressing/policy"
   xmlns:msc="http://schemas.microsoft.com/ws/2005/12/wsdl/contract"
   xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
   xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata"
   xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
   xmlns:tns="http://tempuri.org/"
   xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
   xmlns:i0="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server"
   xmlns:xsd="http://www.w3.org/2001/XMLSchema"
   xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">
 <wsp:Policy wsu:Id="WSHttpBinding_IBEServer_policy">
  <wsp:ExactlyOne>
   <wsp:All>
    <sp:SymmetricBinding
       xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
     <wsp:Policy>
      <sp:ProtectionToken>
       <wsp:Policy>
        <sp:SecureConversationToken
sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRe
cipient">
         <wsp:Policy>
          <sp:RequireDerivedKeys/>
          <sp:BootstrapPolicy>
           <wsp:Policy>
            <sp:SignedParts>
             <sp:Body/>
             <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing"/>
             <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing"/>
             <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing"/>
             <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing"/>
             <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing"/>
             <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing"/>
             <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing"/>
            </sp:SignedParts>
            <sp:EncryptedParts>
              <sp:Body/>
            </sp:EncryptedParts>
            <sp:SymmetricBinding>
             <wsp:Policy>
              <sp:ProtectionToken>
               <wsp:Policy>
```

```
                <sp:SpnegoContextToken
sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRe
cipient">
                  <wsp:Policy>
                   <sp:RequireDerivedKeys/>
                  </wsp:Policy>
                 </sp:SpnegoContextToken>
                </wsp:Policy>
              </sp:ProtectionToken>
              <sp:AlgorithmSuite>
               <wsp:Policy>
                <sp:Basic256/>
               </wsp:Policy>
              </sp:AlgorithmSuite>
              <sp:Layout>
               <wsp:Policy>
                <sp:Strict/>
               </wsp:Policy>
              </sp:Layout>
              <sp:IncludeTimestamp/>
              <sp:EncryptSignature/>
              <sp:OnlySignEntireHeadersAndBody/>
             </wsp:Policy>
            </sp:SymmetricBinding>
            <sp:Wss11>
             <wsp:Policy>
              <sp:MustSupportRefKeyIdentifier/>
              <sp:MustSupportRefIssuerSerial/>
              <sp:MustSupportRefThumbprint/>
              <sp:MustSupportRefEncryptedKey/>
             </wsp:Policy>
            </sp:Wss11>
            <sp:Trust10>
             <wsp:Policy>
              <sp:MustSupportIssuedTokens/>
              <sp:RequireClientEntropy/>
              <sp:RequireServerEntropy/>
             </wsp:Policy>
            </sp:Trust10>
           </wsp:Policy>
          </sp:BootstrapPolicy>
         </wsp:Policy>
       </sp:SecureConversationToken>
      </wsp:Policy>
     </sp:ProtectionToken>
     <sp:AlgorithmSuite>
      <wsp:Policy>
       <sp:Basic256/>
      </wsp:Policy>
     </sp:AlgorithmSuite>
     <sp:Layout>
      <wsp:Policy>
       <sp:Strict/>
      </wsp:Policy>
     </sp:Layout>
     <sp:IncludeTimestamp/>
     <sp:EncryptSignature/>
     <sp:OnlySignEntireHeadersAndBody/>
    </wsp:Policy>
```

```
        </sp:SymmetricBinding>
        <sp:Wss11
            xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
         <wsp:Policy>
          <sp:MustSupportRefKeyIdentifier/>
          <sp:MustSupportRefIssuerSerial/>
          <sp:MustSupportRefThumbprint/>
          <sp:MustSupportRefEncryptedKey/>
         </wsp:Policy>
        </sp:Wss11>
        <sp:Trust10 xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
         <wsp:Policy>
          <sp:MustSupportIssuedTokens/>
          <sp:RequireClientEntropy/>
          <sp:RequireServerEntropy/>
         </wsp:Policy>
        </sp:Trust10>
        <wsoma:OptimizedMimeSerialization

 xmlns:wsoma="http://schemas.xmlsoap.org/ws/2004/09/policy/optimizedmimeserialization"/>
        <wsaw:UsingAddressing/>
      </wsp:All>
     </wsp:ExactlyOne>
    </wsp:Policy>
    <wsp:Policy
        wsu:Id="WSHttpBinding_IBEServer_Process_Input_policy">
     <wsp:ExactlyOne>
      <wsp:All>
       <sp:SignedParts
           xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
        <sp:Body/>
        <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing"/>
        <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing"/>
        <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing"/>
        <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing"/>
        <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing"/>
        <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing"/>
        <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing"/>
       </sp:SignedParts>
       <sp:EncryptedParts
           xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
        <sp:Body/>
       </sp:EncryptedParts>
      </wsp:All>
     </wsp:ExactlyOne>
    </wsp:Policy>
    <wsp:Policy wsu:Id="WSHttpBinding_IBEServer_Process_output_policy">
     <wsp:ExactlyOne>
      <wsp:All>
       <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
        <sp:Body/>
        <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing"/>
        <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing"/>
        <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing"/>
        <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing"/>
        <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing"/>
        <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing"/>
        <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing"/>
       </sp:SignedParts>
```

```
     <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
      <sp:Body/>
     </sp:EncryptedParts>
    </wsp:All>
   </wsp:ExactlyOne>
  </wsp:Policy>
  <wsp:Policy wsu:Id="WSHttpBinding_IBEServer_Process_ProcessingFaultFault_Fault">
   <wsp:ExactlyOne>
    <wsp:All>
     <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
      <sp:Body/>
      <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing"/>
      <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing"/>
      <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing"/>
      <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing"/>
      <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing"/>
      <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing"/>
      <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing"/>
     </sp:SignedParts>
     <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
      <sp:Body/>
     </sp:EncryptedParts>
    </wsp:All>
   </wsp:ExactlyOne>
  </wsp:Policy>
  <wsp:Policy wsu:Id="NetTcpBinding_IBEServer_policy">
   <wsp:ExactlyOne>
    <wsp:All>
     <msb:BinaryEncoding
        xmlns:msb="http://schemas.microsoft.com/ws/06/2004/mspolicy/netbinary1"/>
     <sp:TransportBinding xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
      <wsp:Policy>
       <sp:TransportToken>
        <wsp:Policy>
         <msf:WindowsTransportSecurity
            xmlns:msf="http://schemas.microsoft.com/ws/2006/05/framing/policy">
          <msf:ProtectionLevel>EncryptAndSign</msf:ProtectionLevel>
         </msf:WindowsTransportSecurity>
        </wsp:Policy>
       </sp:TransportToken>
       <sp:AlgorithmSuite>
        <wsp:Policy>
         <sp:Basic256/>
        </wsp:Policy>
       </sp:AlgorithmSuite>
       <sp:Layout>
        <wsp:Policy>
         <sp:Strict/>
        </wsp:Policy>
       </sp:Layout>
      </wsp:Policy>
     </sp:TransportBinding>
     <wsaw:UsingAddressing/>
    </wsp:All>
   </wsp:ExactlyOne>
  </wsp:Policy>
  <wsdl:import
     namespace="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server"
     location="http://serverURI:processPort/BrowserEngine?wsdl=wsdl0"/>
```

```
 <wsdl:types/>
 <wsdl:binding name="WSHttpBinding_IBEServer" type="i0:IBEServer">
  <wsp:PolicyReference URI="#WSHttpBinding_IBEServer_policy"/>
  <soap12:binding transport="http://schemas.xmlsoap.org/soap/http"/>
  <wsdl:operation name="Process">
   <soap12:operation
soapAction="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServer/Proces
s"
      style="document"/>
   <wsdl:input>
    <wsp:PolicyReference URI="#WSHttpBinding_IBEServer_Process_Input_policy"/>
    <soap12:body use="literal"/>
   </wsdl:input>
   <wsdl:output>
    <wsp:PolicyReference URI="#WSHttpBinding_IBEServer_Process_output_policy"/>
    <soap12:body use="literal"/>
   </wsdl:output>
   <wsdl:fault name="ProcessingFaultFault">
    <wsp:PolicyReference URI="#WSHttpBinding_IBEServer_Process_ProcessingFaultFault_Fault"/>
    <soap12:fault name="ProcessingFaultFault" use="literal"/>
   </wsdl:fault>
  </wsdl:operation>
 </wsdl:binding>
 <wsdl:binding name="NetTcpBinding_IBEServer" type="i0:IBEServer">
  <wsp:PolicyReference URI="#NetTcpBinding_IBEServer_policy"/>
  <soap12:binding transport="http://schemas.microsoft.com/soap/tcp"/>
  <wsdl:operation name="Process">
   <soap12:operation
soapAction="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServer/Proces
s"
      style="document"/>
   <wsdl:input>
    <soap12:body use="literal"/>
   </wsdl:input>
   <wsdl:output>
    <soap12:body use="literal"/>
   </wsdl:output>
   <wsdl:fault name="ProcessingFaultFault">
    <soap12:fault name="ProcessingFaultFault" use="literal"/>
   </wsdl:fault>
  </wsdl:operation>
 </wsdl:binding>
 <wsdl:service name="BEServer">
  <wsdl:port name="WSHttpBinding_IBEServer" binding="tns:WSHttpBinding_IBEServer">
   <soap12:address location="http://serverURI:processPort/BrowserEngine/http"/>
   <wsa10:EndpointReference>
    <wsa10:Address>http://serverURI:processPort/BrowserEngine/http</wsa10:Address>
    <Identity xmlns="http://schemas.xmlsoap.org/ws/2006/02/addressingidentity">
     <Upn>angeliqa@ad.fast.no</Upn>
    </Identity>
   </wsa10:EndpointReference>
  </wsdl:port>
  <wsdl:port name="NetTcpBinding_IBEServer" binding="tns:NetTcpBinding_IBEServer">
   <soap12:address location="net.tcp://serverURI:14196/BrowserEngine/net.tcp"/>
   <wsa10:EndpointReference>
    <wsa10:Address>net.tcp://serverURI:14196/BrowserEngine/net.tcp</wsa10:Address>
    <Identity xmlns="http://schemas.xmlsoap.org/ws/2006/02/addressingidentity">
     <Upn>angeliqa@ad.fast.no</Upn>
    </Identity>
```

```
      </wsa10:EndpointReference>
    </wsdl:port>
  </wsdl:service>
</wsdl:definitions>
```

6.1.1 http://serverURI:processPort/BrowserEngine?wsdl=wsdl0

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions
targetNamespace="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:wsa10="http://www.w3.org/2005/08/addressing"
xmlns:wsx="http://schemas.xmlsoap.org/ws/2004/09/mex"
xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/" xmlns:wsu="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd"
xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"
xmlns:wsap="http://schemas.xmlsoap.org/ws/2004/08/addressing/policy"
xmlns:msc="http://schemas.microsoft.com/ws/2005/12/wsdl/contract"
xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
xmlns:tns="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">
 <wsdl:types>
  <xsd:schema
targetNamespace="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/Imports">
    <xsd:import schemaLocation="http://serverURI:processPort/BrowserEngine?xsd=xsd0"
namespace="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server"/>
    <xsd:import schemaLocation="http://serverURI:processPort/BrowserEngine?xsd=xsd2"
namespace="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended.Brows
erEngine.Util"/>
    <xsd:import schemaLocation="http://serverURI:processPort/BrowserEngine?xsd=xsd1"
namespace="http://schemas.microsoft.com/2003/10/Serialization/"/>
    <xsd:import schemaLocation="http://serverURI:processPort/BrowserEngine?xsd=xsd3"
namespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays"/>
  </xsd:schema>
 </wsdl:types>
 <wsdl:message name="IBEServer_Process_InputMessage">
  <wsdl:part name="parameters" element="tns:Process"/>
 </wsdl:message>
 <wsdl:message name="IBEServer_Process_OutputMessage">
  <wsdl:part name="parameters" element="tns:ProcessResponse"/>
 </wsdl:message>
 <wsdl:message name="IBEServer_Process_ProcessingFaultFault_FaultMessage">
  <wsdl:part name="detail" element="q1:ProcessingFault"
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended.Browse
rEngine.Util"/>
 </wsdl:message>
 <wsdl:portType name="IBEServer">
  <wsdl:operation name="Process">
   <wsdl:input
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServer/Proce
ss" message="tns:IBEServer_Process_InputMessage"/>
   <wsdl:output
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServer/Proce
ssResponse" message="tns:IBEServer_Process_OutputMessage"/>
   <wsdl:fault
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IBEServer/Proce
```

```
ssProcessingFaultFault" name="ProcessingFaultFault"
message="tns:IBEServer_Process_ProcessingFaultFault_FaultMessage"/>
  </wsdl:operation>
 </wsdl:portType>
</wsdl:definitions>
```

6.1.2 http://serverURI:processPort/BrowserEngine?xsd=xsd0

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema elementFormDefault="qualified"
targetNamespace="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:tns="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server">
 <xs:import schemaLocation="http://serverURI:processPort/BrowserEngine?xsd=xsd2"
namespace="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended.Brows
erEngine.Util"/>
 <xs:element name="Process">
  <xs:complexType>
   <xs:sequence>
    <xs:element minOccurs="0" name="uri" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="proxyHost" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="proxyPort" type="xs:unsignedShort"/>
    <xs:element minOccurs="0" name="proxyHeaders" nillable="true" type="xs:string"/>
   </xs:sequence>
  </xs:complexType>
 </xs:element>
 <xs:element name="ProcessResponse">
  <xs:complexType>
   <xs:sequence>
    <xs:element minOccurs="0" name="ProcessResult" nillable="true" type="q1:ResultSet"
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended.Browse
rEngine.Util"/>
   </xs:sequence>
  </xs:complexType>
 </xs:element>
</xs:schema>
```

6.1.3 http://serverURI:processPort/BrowserEngine?xsd=xsd1

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema attributeFormDefault="qualified" elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:tns="http://schemas.microsoft.com/2003/10/Serialization/">
 <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"/>
```

```xml
    <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>
```

6.1.4   http://serverURI:processPort/BrowserEngine?xsd=xsd2

```xml
<?xml version="1.0" encoding="utf-8"?>
<xs:schema elementFormDefault="qualified"
targetNamespace="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended
.BrowserEngine.Util" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended.Brows
erEngine.Util">
 <xs:import schemaLocation="http://serverURI:processPort/BrowserEngine?xsd=xsd3"
namespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays"/>
 <xs:complexType name="ResultSet">
  <xs:sequence>
   <xs:element minOccurs="0" name="Checksum" nillable="true" type="xs:string"/>
   <xs:element minOccurs="0" name="Cookies" nillable="true" type="q1:ArrayOfstring"
xmlns:q1="http://schemas.microsoft.com/2003/10/Serialization/Arrays"/>
   <xs:element minOccurs="0" name="Flags" type="xs:unsignedInt"/>
   <xs:element minOccurs="0" name="HTML" nillable="true" type="xs:base64Binary"/>
   <xs:element minOccurs="0" name="HTMLEncoding" nillable="true" type="xs:string"/>
   <xs:element minOccurs="0" name="Links" nillable="true" type="tns:ArrayOfLink"/>
   <xs:element minOccurs="0" name="Thumbnail" nillable="true" type="xs:base64Binary"/>
   <xs:element minOccurs="0" name="ThumbnailFormat" nillable="true" type="xs:string"/>
  </xs:sequence>
 </xs:complexType>
 <xs:element name="ResultSet" nillable="true" type="tns:ResultSet"/>
 <xs:complexType name="ArrayOfLink">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="Link" nillable="true"
type="tns:Link"/>
  </xs:sequence>
 </xs:complexType>
```

```xml
  <xs:element name="ArrayOfLink" nillable="true" type="tns:ArrayOfLink"/>
 <xs:complexType name="Link">
  <xs:sequence>
   <xs:element minOccurs="0" name="Origin" nillable="true" type="xs:string"/>
   <xs:element minOccurs="0" name="Uri" nillable="true" type="xs:string"/>
  </xs:sequence>
 </xs:complexType>
 <xs:element name="Link" nillable="true" type="tns:Link"/>
 <xs:complexType name="ProcessingFault">
  <xs:sequence>
   <xs:element minOccurs="0" name="Code" nillable="true" type="xs:string"/>
   <xs:element minOccurs="0" name="Text" nillable="true" type="xs:string"/>
  </xs:sequence>
 </xs:complexType>
 <xs:element name="ProcessingFault" nillable="true" type="tns:ProcessingFault"/>
</xs:schema>
```

6.1.5   http://serverURI:processPort/BrowserEngine?xsd=xsd3

```xml
<?xml version="1.0" encoding="utf-8"?>
<xs:schema elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:tns="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
 <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:schema>
```

6.2   Status Web service WSDL

```xml
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions name="StatServer" targetNamespace="http://tempuri.org/"
   xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
   xmlns:wsa10="http://www.w3.org/2005/08/addressing"
   xmlns:wsx="http://schemas.xmlsoap.org/ws/2004/09/mex"
   xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
   xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-
1.0.xsd"
   xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"
   xmlns:wsap="http://schemas.xmlsoap.org/ws/2004/08/addressing/policy"
   xmlns:msc="http://schemas.microsoft.com/ws/2005/12/wsdl/contract"
   xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
   xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata"
   xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
   xmlns:tns="http://tempuri.org/"
   xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
   xmlns:i0="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server"
   xmlns:xsd="http://www.w3.org/2001/XMLSchema"
   xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">
 <wsp:Policy wsu:Id="WSHttpBinding_IStatServer_policy">
  <wsp:ExactlyOne>
   <wsp:All>
```

```
    <sp:SymmetricBinding xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
     <wsp:Policy>
      <sp:ProtectionToken>
       <wsp:Policy>
        <sp:SecureConversationToken
 sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRe
 cipient">
         <wsp:Policy>
          <sp:RequireDerivedKeys/>
          <sp:BootstrapPolicy>
           <wsp:Policy>
            <sp:SignedParts>
             <sp:Body/>
             <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing"/>
             <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing"/>
             <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing"/>
             <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing"/>
             <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing"/>
             <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing"/>
             <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing"/>
            </sp:SignedParts>
            <sp:EncryptedParts>
             <sp:Body/>
            </sp:EncryptedParts>
            <sp:SymmetricBinding>
             <wsp:Policy>
              <sp:ProtectionToken>
               <wsp:Policy>
                <sp:SpnegoContextToken
 sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRe
 cipient">
                 <wsp:Policy>
                  <sp:RequireDerivedKeys/>
                 </wsp:Policy>
                </sp:SpnegoContextToken>
               </wsp:Policy>
              </sp:ProtectionToken>
              <sp:AlgorithmSuite>
               <wsp:Policy>
                <sp:Basic256/>
               </wsp:Policy>
              </sp:AlgorithmSuite>
              <sp:Layout>
               <wsp:Policy>
                <sp:Strict/>
               </wsp:Policy>
              </sp:Layout>
              <sp:IncludeTimestamp/>
              <sp:EncryptSignature/>
              <sp:OnlySignEntireHeadersAndBody/>
             </wsp:Policy>
            </sp:SymmetricBinding>
            <sp:Wss11>
             <wsp:Policy>
              <sp:MustSupportRefKeyIdentifier/>
              <sp:MustSupportRefIssuerSerial/>
              <sp:MustSupportRefThumbprint/>
              <sp:MustSupportRefEncryptedKey/>
             </wsp:Policy>
```

```
        </sp:Wss11>
        <sp:Trust10>
         <wsp:Policy>
          <sp:MustSupportIssuedTokens/>
          <sp:RequireClientEntropy/>
          <sp:RequireServerEntropy/>
         </wsp:Policy>
        </sp:Trust10>
       </wsp:Policy>
      </sp:BootstrapPolicy>
     </wsp:Policy>
    </sp:SecureConversationToken>
   </wsp:Policy>
  </sp:ProtectionToken>
  <sp:AlgorithmSuite>
   <wsp:Policy>
    <sp:Basic256/>
   </wsp:Policy>
  </sp:AlgorithmSuite>
  <sp:Layout>
   <wsp:Policy>
    <sp:Strict/>
   </wsp:Policy>
  </sp:Layout>
  <sp:IncludeTimestamp/>
  <sp:EncryptSignature/>
  <sp:OnlySignEntireHeadersAndBody/>
 </wsp:Policy>
</sp:SymmetricBinding>
<sp:Wss11 xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
 <wsp:Policy>
  <sp:MustSupportRefKeyIdentifier/>
  <sp:MustSupportRefIssuerSerial/>
  <sp:MustSupportRefThumbprint/>
  <sp:MustSupportRefEncryptedKey/>
 </wsp:Policy>
</sp:Wss11>
<sp:Trust10 xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
 <wsp:Policy>
  <sp:MustSupportIssuedTokens/>
  <sp:RequireClientEntropy/>
  <sp:RequireServerEntropy/>
 </wsp:Policy>
</sp:Trust10>
<wsoma:OptimizedMimeSerialization

xmlns:wsoma="http://schemas.xmlsoap.org/ws/2004/09/policy/optimizedmimeserialization"/>

  <wsaw:UsingAddressing/>
 </wsp:All>
</wsp:ExactlyOne>
</wsp:Policy> <----------- correct to here
<wsp:Policy wsu:Id="WSHttpBinding_IStatServer_GetStatus_Input_policy">
 <wsp:ExactlyOne>
  <wsp:All>
   <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <sp:Body/>
    <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing"/>
```

```
     <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing"/>
    </sp:SignedParts>
    <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
     <sp:Body/>
    </sp:EncryptedParts>
   </wsp:All>
  </wsp:ExactlyOne>
 </wsp:Policy>
 <wsp:Policy wsu:Id="WSHttpBinding_IStatServer_GetStatus_output_policy">
  <wsp:ExactlyOne>
   <wsp:All>
    <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
     <sp:Body/>
     <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing"/>
    </sp:SignedParts>
    <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
     <sp:Body/>
    </sp:EncryptedParts>
   </wsp:All>
  </wsp:ExactlyOne>
 </wsp:Policy>
 <wsp:Policy wsu:Id="WSHttpBinding_IStatServer_GetStatistics_Input_policy">
  <wsp:ExactlyOne>
   <wsp:All>
    <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
     <sp:Body/>
     <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing"/>
    </sp:SignedParts>
    <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
     <sp:Body/>
    </sp:EncryptedParts>
   </wsp:All>
  </wsp:ExactlyOne>
 </wsp:Policy>
 <wsp:Policy wsu:Id="WSHttpBinding_IStatServer_GetStatistics_output_policy">
  <wsp:ExactlyOne>
   <wsp:All>
    <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
     <sp:Body/>
     <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing"/>
     <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing"/>
```

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```
    <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing"/>
   </sp:SignedParts>
   <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <sp:Body/>
   </sp:EncryptedParts>
  </wsp:All>
 </wsp:ExactlyOne>
</wsp:Policy>
<wsp:Policy wsu:Id="WSHttpBinding_IStatServer_Ping_Input_policy">
 <wsp:ExactlyOne>
  <wsp:All>
   <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <sp:Body/>
    <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing"/>
   </sp:SignedParts>
   <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <sp:Body/>
   </sp:EncryptedParts>
  </wsp:All>
 </wsp:ExactlyOne>
</wsp:Policy>
<wsp:Policy wsu:Id="WSHttpBinding_IStatServer_Ping_output_policy">
 <wsp:ExactlyOne>
  <wsp:All>
   <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <sp:Body/>
    <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing"/>
    <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing"/>
   </sp:SignedParts>
   <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <sp:Body/>
   </sp:EncryptedParts>
  </wsp:All>
 </wsp:ExactlyOne>
</wsp:Policy>
<wsp:Policy wsu:Id="NetTcpBinding_IStatServer_policy">
 <wsp:ExactlyOne>
  <wsp:All>
   <msb:BinaryEncoding
      xmlns:msb="http://schemas.microsoft.com/ws/06/2004/mspolicy/netbinary1"/>
   <sp:TransportBinding xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <wsp:Policy>
     <sp:TransportToken>
      <wsp:Policy>
       <msf:WindowsTransportSecurity
          xmlns:msf="http://schemas.microsoft.com/ws/2006/05/framing/policy">
```

```
        <msf:ProtectionLevel>EncryptAndSign</msf:ProtectionLevel>
       </msf:WindowsTransportSecurity>
      </wsp:Policy>
     </sp:TransportToken>
     <sp:AlgorithmSuite>
      <wsp:Policy>
       <sp:Basic256/>
      </wsp:Policy>
     </sp:AlgorithmSuite>
     <sp:Layout>
      <wsp:Policy>
       <sp:Strict/>
      </wsp:Policy>
     </sp:Layout>
    </wsp:Policy>
   </sp:TransportBinding>
   <wsaw:UsingAddressing/>
  </wsp:All>
 </wsp:ExactlyOne>
</wsp:Policy>
<wsdl:import namespace="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server"
    location="http://serverURI:statusPort/BrowserEngine/Stat?wsdl=wsdl0"/>
<wsdl:types/>
<wsdl:binding name="WSHttpBinding_IStatServer" type="i0:IStatServer">
 <wsp:PolicyReference URI="#WSHttpBinding_IStatServer_policy"/>
 <soap12:binding transport="http://schemas.xmlsoap.org/soap/http"/>
 <wsdl:operation name="GetStatus">
  <soap12:operation
soapAction="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/GetS
tatus" style="document"/>
   <wsdl:input>
    <wsp:PolicyReference URI="#WSHttpBinding_IStatServer_GetStatus_Input_policy"/>
    <soap12:body use="literal"/>
   </wsdl:input>
   <wsdl:output>
    <wsp:PolicyReference URI="#WSHttpBinding_IStatServer_GetStatus_output_policy"/>
    <soap12:body use="literal"/>
   </wsdl:output>
  </wsdl:operation>
  <wsdl:operation name="GetStatistics">
   <soap12:operation
soapAction="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/GetS
tatistics" style="document"/>
   <wsdl:input>
    <wsp:PolicyReference URI="#WSHttpBinding_IStatServer_GetStatistics_Input_policy"/>
    <soap12:body use="literal"/>
   </wsdl:input>
   <wsdl:output>
    <wsp:PolicyReference URI="#WSHttpBinding_IStatServer_GetStatistics_output_policy"/>
    <soap12:body use="literal"/>
   </wsdl:output>
  </wsdl:operation>
  <wsdl:operation name="Ping">
   <soap12:operation
soapAction="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Ping
" style="document"/>
   <wsdl:input>
    <wsp:PolicyReference URI="#WSHttpBinding_IStatServer_Ping_Input_policy"/>
    <soap12:body use="literal"/>
```

```
      </wsdl:input>
      <wsdl:output>
       <wsp:PolicyReference URI="#WSHttpBinding_IStatServer_Ping_output_policy"/>
       <soap12:body use="literal"/>
      </wsdl:output>
     </wsdl:operation>
    </wsdl:binding>
    <wsdl:binding name="NetTcpBinding_IStatServer" type="i0:IStatServer">
     <wsp:PolicyReference URI="#NetTcpBinding_IStatServer_policy"/>
     <soap12:binding transport="http://schemas.microsoft.com/soap/tcp"/>
     <wsdl:operation name="GetStatus">
      <soap12:operation
soapAction="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/GetS
tatus" style="document"/>
      <wsdl:input>
       <soap12:body use="literal"/>
      </wsdl:input>
      <wsdl:output>
       <soap12:body use="literal"/>
      </wsdl:output>
     </wsdl:operation>
     <wsdl:operation name="GetStatistics">
      <soap12:operation
soapAction="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/GetS
tatistics" style="document"/>
      <wsdl:input>
       <soap12:body use="literal"/>
      </wsdl:input>
      <wsdl:output>
       <soap12:body use="literal"/>
      </wsdl:output>
     </wsdl:operation>
     <wsdl:operation name="Ping">
      <soap12:operation
soapAction="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Ping
" style="document"/>
      <wsdl:input>
       <soap12:body use="literal"/>
      </wsdl:input>
      <wsdl:output>
       <soap12:body use="literal"/>
      </wsdl:output>
     </wsdl:operation>
    </wsdl:binding>
    <wsdl:service name="StatServer">
     <wsdl:port name="WSHttpBinding_IStatServer" binding="tns:WSHttpBinding_IStatServer">
      <soap12:address location="http://serverURI:statusPort/BrowserEngine/Stat/http"/>
      <wsa10:EndpointReference>
       <wsa10:Address>http://serverURI:statusPort/BrowserEngine/Stat/http</wsa10:Address>
       <Identity xmlns="http://schemas.xmlsoap.org/ws/2006/02/addressingidentity">
        <Upn>angeliqa@ad.fast.no</Upn>
       </Identity>
      </wsa10:EndpointReference>
     </wsdl:port>
     <wsdl:port name="NetTcpBinding_IStatServer" binding="tns:NetTcpBinding_IStatServer">
      <soap12:address location="net.tcp://serverURI:14198/BrowserEngine/Stat/net.tcp"/>
      <wsa10:EndpointReference>
       <wsa10:Address>net.tcp://serverURI:14198/BrowserEngine/Stat/net.tcp</wsa10:Address>
       <Identity xmlns="http://schemas.xmlsoap.org/ws/2006/02/addressingidentity">
```

```
   <Upn>angeliqa@ad.fast.no</Upn>
    </Identity>
  </wsa10:EndpointReference>
 </wsdl:port>
 </wsdl:service>
</wsdl:definitions>
```

6.2.1 http://serverURI:statusPort/BrowserEngine/Stat?wsdl=wsdl0

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions
targetNamespace="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:wsa10="http://www.w3.org/2005/08/addressing"
xmlns:wsx="http://schemas.xmlsoap.org/ws/2004/09/mex"
xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/" xmlns:wsu="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd"
xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"
xmlns:wsap="http://schemas.xmlsoap.org/ws/2004/08/addressing/policy"
xmlns:msc="http://schemas.microsoft.com/ws/2005/12/wsdl/contract"
xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
xmlns:tns="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">
 <wsdl:types>
  <xsd:schema
targetNamespace="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/Imports">
    <xsd:import schemaLocation="http://serverURI:statusPort/BrowserEngine/Stat?xsd=xsd0"
namespace="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server"/>
    <xsd:import schemaLocation="http://serverURI:statusPort/BrowserEngine/Stat?xsd=xsd1"
namespace="http://schemas.microsoft.com/2003/10/Serialization/"/>
    <xsd:import schemaLocation="http://serverURI:statusPort/BrowserEngine/Stat?xsd=xsd2"
namespace="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended.Brows
erEngine.Util"/>
  </xsd:schema>
 </wsdl:types>
 <wsdl:message name="IStatServer_GetStatus_InputMessage">
  <wsdl:part name="parameters" element="tns:GetStatus"/>
 </wsdl:message>
 <wsdl:message name="IStatServer_GetStatus_OutputMessage">
  <wsdl:part name="parameters" element="tns:GetStatusResponse"/>
 </wsdl:message>
 <wsdl:message name="IStatServer_GetStatistics_InputMessage">
  <wsdl:part name="parameters" element="tns:GetStatistics"/>
 </wsdl:message>
 <wsdl:message name="IStatServer_GetStatistics_OutputMessage">
  <wsdl:part name="parameters" element="tns:GetStatisticsResponse"/>
 </wsdl:message>
 <wsdl:message name="IStatServer_Ping_InputMessage">
  <wsdl:part name="parameters" element="tns:Ping"/>
 </wsdl:message>
 <wsdl:message name="IStatServer_Ping_OutputMessage">
  <wsdl:part name="parameters" element="tns:PingResponse"/>
 </wsdl:message>
 <wsdl:portType name="IStatServer">
  <wsdl:operation name="GetStatus">
```

```
    <wsdl:input
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Get
Status" message="tns:IStatServer_GetStatus_InputMessage"/>
    <wsdl:output
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Get
StatusResponse" message="tns:IStatServer_GetStatus_OutputMessage"/>
   </wsdl:operation>
   <wsdl:operation name="GetStatistics">
    <wsdl:input
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Get
Statistics" message="tns:IStatServer_GetStatistics_InputMessage"/>
    <wsdl:output
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Get
StatisticsResponse" message="tns:IStatServer_GetStatistics_OutputMessage"/>
   </wsdl:operation>
   <wsdl:operation name="Ping">
    <wsdl:input
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Pin
g" message="tns:IStatServer_Ping_InputMessage"/>
    <wsdl:output
wsaw:Action="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server/IStatServer/Pin
gResponse" message="tns:IStatServer_Ping_OutputMessage"/>
   </wsdl:operation>
  </wsdl:portType>
</wsdl:definitions>
```

6.2.2   http://serverURI:statusPort/BrowserEngine/Stat?xsd=xsd0

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema elementFormDefault="qualified"
targetNamespace="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:tns="http://Microsoft.SharePoint.Search.Extended.BrowserEngine.Server">
 <xs:import schemaLocation="http://serverURI:statusPort/BrowserEngine/Stat?xsd=xsd2"
namespace="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended.Brows
erEngine.Util"/>
 <xs:element name="GetStatus">
  <xs:complexType>
   <xs:sequence/>
  </xs:complexType>
 </xs:element>
 <xs:element name="GetStatusResponse">
  <xs:complexType>
   <xs:sequence>
    <xs:element minOccurs="0" name="GetStatusResult" nillable="true" type="q1:Status"
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended.Browse
rEngine.Util"/>
   </xs:sequence>
  </xs:complexType>
 </xs:element>
 <xs:element name="GetStatistics">
  <xs:complexType>
   <xs:sequence/>
  </xs:complexType>
 </xs:element>
 <xs:element name="GetStatisticsResponse">
  <xs:complexType>
   <xs:sequence>
```

```
        <xs:element minOccurs="0" name="GetStatisticsResult" nillable="true" type="q2:Statistics"
xmlns:q2="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended.Browse
rEngine.Util"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="Ping">
   <xs:complexType>
     <xs:sequence/>
   </xs:complexType>
  </xs:element>
  <xs:element name="PingResponse">
   <xs:complexType>
     <xs:sequence>
      <xs:element minOccurs="0" name="PingResult" nillable="true" type="xs:string"/>
     </xs:sequence>
   </xs:complexType>
  </xs:element>
</xs:schema>
```

6.2.3   http://serverURI:statusPort/BrowserEngine/Stat?xsd=xsd1

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema attributeFormDefault="qualified" elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:tns="http://schemas.microsoft.com/2003/10/Serialization/">
 <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>
```

6.2.4 http://serverURI:statusPort/BrowserEngine/Stat?xsd=xsd2

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema elementFormDefault="qualified"
targetNamespace="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended
.BrowserEngine.Util" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.SharePoint.Search.Extended.Brows
erEngine.Util">
 <xs:complexType name="Status">
  <xs:sequence>
   <xs:element minOccurs="0" name="threadStatusList" nillable="true"
type="tns:ArrayOfThreadData"/>
  </xs:sequence>
 </xs:complexType>
 <xs:element name="Status" nillable="true" type="tns:Status"/>
 <xs:complexType name="ArrayOfThreadData">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="ThreadData" nillable="true"
type="tns:ThreadData"/>
  </xs:sequence>
 </xs:complexType>
 <xs:element name="ArrayOfThreadData" nillable="true" type="tns:ArrayOfThreadData"/>
 <xs:complexType name="ThreadData">
  <xs:sequence>
   <xs:element minOccurs="0" name="Age" type="xs:dateTime"/>
   <xs:element minOccurs="0" name="ThreadId" type="xs:int"/>
   <xs:element minOccurs="0" name="Uri" nillable="true" type="xs:string"/>
  </xs:sequence>
 </xs:complexType>
 <xs:element name="ThreadData" nillable="true" type="tns:ThreadData"/>
 <xs:complexType name="Statistics">
  <xs:sequence>
   <xs:element minOccurs="0" name="BEStats" nillable="true" type="tns:BEStatistics"/>
   <xs:element minOccurs="0" name="PipelineStatList" nillable="true"
type="tns:ArrayOfPipelineStat"/>
  </xs:sequence>
 </xs:complexType>
 <xs:element name="Statistics" nillable="true" type="tns:Statistics"/>
 <xs:complexType name="BEStatistics">
  <xs:sequence>
   <xs:element minOccurs="0" name="CacheBytes" type="xs:long"/>
   <xs:element minOccurs="0" name="CacheHits" type="xs:long"/>
   <xs:element minOccurs="0" name="CacheInserts" type="xs:long"/>
   <xs:element minOccurs="0" name="CacheMisses" type="xs:long"/>
   <xs:element minOccurs="0" name="CacheSize" type="xs:long"/>
   <xs:element minOccurs="0" name="DownloadRequests" type="xs:long"/>
   <xs:element minOccurs="0" name="DownloadTimeAverage" type="xs:float"/>
```

```xml
    <xs:element minOccurs="0" name="DownloadTimeCount" type="xs:long"/>
    <xs:element minOccurs="0" name="DownloadTimeMax" type="xs:long"/>
    <xs:element minOccurs="0" name="DownloadTimeMin" type="xs:long"/>
    <xs:element minOccurs="0" name="DownloadTimeTotal" type="xs:long"/>
    <xs:element minOccurs="0" name="FailedRequests" type="xs:long"/>
    <xs:element minOccurs="0" name="ProcessTimeAverage" type="xs:float"/>
    <xs:element minOccurs="0" name="ProcessTimeCount" type="xs:long"/>
    <xs:element minOccurs="0" name="ProcessTimeMax" type="xs:long"/>
    <xs:element minOccurs="0" name="ProcessTimeMin" type="xs:long"/>
    <xs:element minOccurs="0" name="ProcessTimeTotal" type="xs:long"/>
    <xs:element minOccurs="0" name="ProcessedRequests" type="xs:long"/>
    <xs:element minOccurs="0" name="TimedOutRequests" type="xs:long"/>
   </xs:sequence>
 </xs:complexType>
 <xs:element name="BEStatistics" nillable="true" type="tns:BEStatistics"/>
 <xs:complexType name="ArrayOfPipelineStat">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="PipelineStat" nillable="true"
type="tns:PipelineStat"/>
  </xs:sequence>
 </xs:complexType>7
 <xs:element name="ArrayOfPipelineStat" nillable="true" type="tns:ArrayOfPipelineStat"/>
 <xs:complexType name="PipelineStat">
  <xs:sequence>
   <xs:element minOccurs="0" name="ExtractorStat" nillable="true"
type="tns:ArrayOfExtractorStat"/>
   <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
  </xs:sequence>
 </xs:complexType>
 <xs:element name="PipelineStat" nillable="true" type="tns:PipelineStat"/>
 <xs:complexType name="ArrayOfExtractorStat">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="ExtractorStat" nillable="true"
type="tns:ExtractorStat"/>
  </xs:sequence>
 </xs:complexType>
 <xs:element name="ArrayOfExtractorStat" nillable="true" type="tns:ArrayOfExtractorStat"/>
 <xs:complexType name="ExtractorStat">
  <xs:sequence>
   <xs:element minOccurs="0" name="LinkCount" type="xs:long"/>
   <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
   <xs:element minOccurs="0" name="Time" nillable="true" type="tns:ContinuousVariable"/>
  </xs:sequence>
 </xs:complexType>
 <xs:element name="ExtractorStat" nillable="true" type="tns:ExtractorStat"/>
 <xs:complexType name="ContinuousVariable">
  <xs:sequence>
   <xs:element minOccurs="0" name="Average" type="xs:float"/>
   <xs:element minOccurs="0" name="Count" type="xs:long"/>
   <xs:element minOccurs="0" name="Max" type="xs:long"/>
   <xs:element minOccurs="0" name="Min" type="xs:long"/>
   <xs:element minOccurs="0" name="Value" type="xs:long"/>
  </xs:sequence>
 </xs:complexType>
 <xs:element name="ContinuousVariable" nillable="true" type="tns:ContinuousVariable"/>
</xs:schema>
```

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

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.

8   Change Tracking

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

9 Index

Release: July 16, 2012