

KMIP Opaque Managed Object Store Profile Version 1.0

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Related work:

This specification is related to:

- *Key Management Interoperability Protocol Profiles Version 1.0*. Edited by Robert Griffin and Subhash Sankuratripati. 01 October 2010. OASIS Standard. <http://docs.oasis-open.org/kmip/profiles/v1.0/os/kmip-profiles-1.0-os.html>.
- *Key Management Interoperability Protocol Specification Version 1.1*. Edited by Robert Haas and Indra Fitzgerald. 24 January 2013. OASIS Standard. <http://docs.oasis-open.org/kmip/spec/v1.1/os/kmip-spec-v1.1-os.html>.

- *Key Management Interoperability Protocol Specification Version 1.2*. Edited by Kiran Thota and Kelley Burgin. Latest version: <http://docs.oasis-open.org/kmip/spec/v1.2/kmip-spec-v1.2.html>.

Abstract:

Describes a profile for a KMIP server performing opaque managed object storage operations based on requests received from a KMIP client.

Status:

This document was last revised or approved by the OASIS Key Management Interoperability Protocol (KMIP) TC on the above date. The level of approval is also listed above. Check the "Latest version" location noted above for possible later revisions of this document.

Technical Committee members should send comments on this specification to the Technical Committee's email list. Others should send comments to the Technical Committee by using the "Send A Comment" button on the Technical Committee's web page at <https://www.oasis-open.org/committees/kmip/>.

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Table of Contents

1	Introduction.....	5
1.1	Terminology.....	5
1.2	Normative References.....	5
2	Opaque Managed Object Store Profile.....	6
2.1	Authentication Suite.....	6
2.2	Opaque Managed Object Store – Client.....	6
2.3	Opaque Managed Object Store – Server.....	6
3	Opaque Managed Object Store Profile - Test Cases.....	8
3.1	Mandatory Test Cases KMIP 1.0.....	8
3.1.1	OMOS-M-1-10.....	8
3.2	Mandatory Test Cases KMIP 1.1.....	10
3.2.1	OMOS-M-1-11.....	10
3.3	Mandatory Test Cases KMIP 1.2.....	11
3.3.1	OMOS-M-1-12.....	11
3.4	Optional Test Cases KMIP 1.0.....	13
3.4.1	OMOS-O-1-10.....	13
3.5	Optional Test Cases KMIP 1.1.....	17
3.5.1	OMOS-O-1-11.....	17
3.6	Optional Test Cases KMIP 1.2.....	21
3.6.1	OMOS-O-1-12.....	21
4	Conformance.....	27
4.1	Opaque Managed Object Store Client KMIP v1.0 Profile.....	27
4.2	Opaque Managed Object Store Client KMIP v1.1 Profile.....	27
4.3	Opaque Managed Object Store Client KMIP v1.2 Profile.....	27
4.4	Opaque Managed Object Store Server KMIP v1.0 Profile.....	27
4.5	Opaque Managed Object Store Server KMIP v1.1 Profile.....	27
4.6	Opaque Managed Object Store Server KMIP v1.2 Profile.....	27
4.7	Permitted Test Case Variations.....	27
4.7.1	Variable Items.....	28
4.7.2	Variable behavior.....	29
Appendix A.	Acknowledgments.....	30
Appendix B.	KMIP Specification Cross Reference.....	33
Appendix C.	Revision History.....	38

1 Introduction

For normative definition of the elements of KMIP see the [KMIP Specification](#) [KMIP-SPEC] and the [KMIP Profiles](#) [KMIP-PROF].

This profile defines the necessary KMIP functionality that a KMIP implementation conforming to this profile SHALL support in order to interoperate in conformance with this profile.

1.1 Terminology

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

1.2 Normative References

- [RFC2119] Bradner, S., “Key words for use in RFCs to Indicate Requirement Levels”, BCP 14, RFC 2119, March 1997. <http://www.ietf.org/rfc/rfc2119.txt>.
- [KMIP-ENCODE] *KMIP Additional Message Encodings Version 1.0.*
[URL](#)
Candidate OASIS Standard 01. DD MMM YYYY.
- [KMIP-SPEC] One or more of [KMIP-SPEC-1_0], [KMIP-SPEC-1_1], [KMIP-SPEC-1_2]
- [KMIP-SPEC-1_0] *Key Management Interoperability Protocol Specification Version 1.0*
<http://docs.oasis-open.org/kmip/spec/v1.0/os/kmip-spec-1.0-os.doc>
OASIS Standard, October 2010.
- [KMIP-SPEC-1_1] *Key Management Interoperability Protocol Specification Version 1.1.*
<http://docs.oasis-open.org/kmip/spec/v1.1/os/kmip-spec-v1.1-os.doc>
OASIS Standard. 24 January 2013.
- [KMIP-SPEC-1_2] *Key Management Interoperability Protocol Specification Version 1.2.*
[URL](#)
Candidate OASIS Standard 01. DD MMM YYYY.
- [KMIP-PROF] One or more of [KMIP-PROF-1_0], [KMIP-PROF-1_1], [KMIP-PROF-1_2]
- [KMIP-PROF-1_0] *Key Management Interoperability Protocol Profiles Version 1.0.* <http://docs.oasis-open.org/kmip/profiles/v1.0/os/kmip-profiles-1.0-os.doc>
OASIS Standard. 1 October 2010.
- [KMIP-PROF-1_1] *Key Management Interoperability Protocol Profiles Version 1.1.*
<http://docs.oasis-open.org/kmip/profiles/v1.1/os/kmip-profiles-v1.1-os.doc>
OASIS Standard 01. 24 January 2013.
- [KMIP-PROF-1_2] *Key Management Interoperability Protocol Profiles Version 1.2.*
[URL](#)
Candidate OASIS Standard 01. DD MMM YYYY.

2 Opaque Managed Object Store Profile

36

37 The Opaque Managed Object Store Profile is a KMIP server performing storage related operations on
38 opaque objects based on requests received from a KMIP client.

2.1 Authentication Suite

39

40 Implementations conformant to this profile SHALL support at least one of the Authentication Suites
41 defined within section 3 of [KMIP-PROF]. The establishment of the trust relationship between the KMIP
42 client and the KMIP server is the same as the defined base profiles.

2.2 Opaque Managed Object Store – Client

43

44 KMIP clients conformant to this profile under [KMIP-SPEC-1_0]:

45 1. SHALL conform to the [KMIP-SPEC-1_0]

46 KMIP clients conformant to this profile under [KMIP-SPEC-1_1]:

47 2. SHALL conform to the *Baseline Client Clause* (section 5.12) of [KMIP-PROF-1_1]

48 KMIP clients conformant to this profile under [KMIP-SPEC-1_2]:

49 3. SHALL conform to the *Baseline Client* (section 5.2) of [KMIP-PROF-1_2]

50 KMIP clients conformant to this profile:

51 4. MAY support any clause within [KMIP-SPEC] provided it does not conflict with any other clause
52 within this section 2.2

53 5. MAY support extensions outside the scope of this standard (e.g., vendor extensions,
54 conformance clauses) that do not contradict any KMIP requirements.

2.3 Opaque Managed Object Store – Server

55

56 KMIP servers conformant to this profile under [KMIP-SPEC-1_0]:

57 1. SHALL conform to the [KMIP-SPEC-1_0]

58 KMIP servers conformant to this profile under [KMIP-SPEC-1_1]:

59 2. SHALL conform to the *Baseline Server* of [KMIP-PROF-1_1]

60 KMIP servers conformant to this profile under [KMIP-SPEC-1_2]:

61 3. SHALL conform to the *Baseline Server* of [KMIP-PROF-1_2]

62 KMIP servers conformant to this profile:

63 4. SHALL support the following *Objects* [KMIP-SPEC]

64 a. *Opaque Object* [KMIP-SPEC]

65 5. SHALL support the following *Attributes* [KMIP-SPEC]

66 a. *Object Type* [KMIP-SPEC]

67 6. SHALL support the following *Client-to-Server* [KMIP-SPEC] operations:

68 a. *Register* [KMIP-SPEC]

69 7. SHALL support the following *Message Encoding* [KMIP-SPEC]:

70 a. *Opaque Data Type* [KMIP-SPEC]

71 b. *Object Type* [KMIP-SPEC] with value:

72 i. Opaque Object

73 8. MAY support any clause within [KMIP-SPEC] provided it does not conflict with any other clause
74 within this section 2.3

- 75 9. MAY support extensions outside the scope of this standard (e.g., vendor extensions,
76 conformance clauses) that do not contradict any KMIP requirements.

77 3 Opaque Managed Object Store Profile - Test Cases

78 The test cases define a number of request-response pairs for KMIP operations. Each test case is
79 provided in the XML format specified in [KMIP-ENCODE] intended to be both human-readable and usable
80 by automated tools. The time sequence (starting from 0) for each request-response pair is noted and line
81 numbers are provided for ease of cross-reference for a given test sequence.

82 Each test case has a unique label (the section name) which includes indication of mandatory (-M-) or
83 optional (-O-) status and the protocol version major and minor numbers as part of the identifier.

84 The test cases may depend on a specific configuration of a KMIP client and server being configured in a
85 manner consistent with the test case assumptions.

86 Where possible the flow of unique identifiers between tests, the date-time values, and other dynamic
87 items are indicated using symbolic identifiers – in actual request and response messages these dynamic
88 values will be filled in with valid values.

89 Note: the values for the returned items and the custom attributes are illustrative. Actual values from a real
90 client system may vary as specified in section 4.7.

91 3.1 Mandatory Test Cases KMIP 1.0

92 3.1.1 OMOS-M-1-10

93 Register small opaque object

```
0001 # TIME 0
0002 <RequestMessage>
0003   <RequestHeader>
0004     <ProtocolVersion>
0005       <ProtocolVersionMajor type="Integer" value="1"/>
0006       <ProtocolVersionMinor type="Integer" value="0"/>
0007     </ProtocolVersion>
0008     <BatchCount type="Integer" value="1"/>
0009   </RequestHeader>
0010   <BatchItem>
0011     <Operation type="Enumeration" value="Register"/>
0012     <RequestPayload>
0013       <ObjectType type="Enumeration" value="OpaqueObject"/>
0014       <TemplateAttribute>
0015         <Attribute>
0016           <AttributeName type="TextString" value="Name"/>
0017           <AttributeValue>
0018             <NameValue type="TextString" value="OMOS-M-1-10"/>
0019             <NameType type="Enumeration"
0020               value="UninterpretedTextString"/>
0021           </AttributeValue>
0022         </Attribute>
0023       </TemplateAttribute>
0024       <OpaqueObject>
0025         <OpaqueDataType type="Enumeration" value="0x80000001"/>
0026         <OpaqueDataValue type="ByteString"
0027           value="53656372657450617373776f7264"/>
0028       </OpaqueObject>
0029     </RequestPayload>
0030   </BatchItem>
0031 </RequestMessage>
0032 <ResponseMessage>
```


0030	<ResponseHeader>
0031	<ProtocolVersion>
0032	<ProtocolVersionMajor type="Integer" value="1"/>
0033	<ProtocolVersionMinor type="Integer" value="0"/>
0034	</ProtocolVersion>
0035	<TimeStamp type="DateTime" value="2012-04-27T08:12:24+00:00"/>
0036	<BatchCount type="Integer" value="1"/>
0037	</ResponseHeader>
0038	<BatchItem>
0039	<Operation type="Enumeration" value="Register"/>
0040	<ResultStatus type="Enumeration" value="Success"/>
0041	<ResponsePayload>
0042	<UniqueIdentifier type="TextString"
	value="\$UNIQUE_IDENTIFIER_0"/>
0043	</ResponsePayload>
0044	</BatchItem>
0045	</ResponseMessage>
	# TIME 1
0046	<RequestMessage>
0047	<RequestHeader>
0048	<ProtocolVersion>
0049	<ProtocolVersionMajor type="Integer" value="1"/>
0050	<ProtocolVersionMinor type="Integer" value="0"/>
0051	</ProtocolVersion>
0052	<BatchCount type="Integer" value="1"/>
0053	</RequestHeader>
0054	<BatchItem>
0055	<Operation type="Enumeration" value="Destroy"/>
0056	<RequestPayload>
0057	<UniqueIdentifier type="TextString"
	value="\$UNIQUE_IDENTIFIER_0"/>
0058	</RequestPayload>
0059	</BatchItem>
0060	</RequestMessage>
0061	<ResponseMessage>
0062	<ResponseHeader>
0063	<ProtocolVersion>
0064	<ProtocolVersionMajor type="Integer" value="1"/>
0065	<ProtocolVersionMinor type="Integer" value="0"/>
0066	</ProtocolVersion>
0067	<TimeStamp type="DateTime" value="2012-04-27T08:12:24+00:00"/>
0068	<BatchCount type="Integer" value="1"/>
0069	</ResponseHeader>
0070	<BatchItem>
0071	<Operation type="Enumeration" value="Destroy"/>
0072	<ResultStatus type="Enumeration" value="Success"/>
0073	<ResponsePayload>
0074	<UniqueIdentifier type="TextString"
	value="\$UNIQUE_IDENTIFIER_0"/>
0075	</ResponsePayload>
0076	</BatchItem>
0077	</ResponseMessage>

94

95

96 3.2 Mandatory Test Cases KMIP 1.1

97 3.2.1 OMOS-M-1-11

98 Register small opaque object

0001	<code># TIME 0</code>
0002	<code><RequestMessage></code>
0003	<code><RequestHeader></code>
0004	<code><ProtocolVersion></code>
0005	<code><ProtocolVersionMajor type="Integer" value="1"/></code>
0006	<code><ProtocolVersionMinor type="Integer" value="1"/></code>
0007	<code></ProtocolVersion></code>
0008	<code><BatchCount type="Integer" value="1"/></code>
0009	<code></RequestHeader></code>
0010	<code><BatchItem></code>
0011	<code><Operation type="Enumeration" value="Register"/></code>
0012	<code><RequestPayload></code>
0013	<code><ObjectType type="Enumeration" value="OpaqueObject"/></code>
0014	<code><TemplateAttribute></code>
0015	<code><Attribute></code>
0016	<code><AttributeName type="TextString" value="Name"/></code>
0017	<code><AttributeValue></code>
0018	<code><NameValue type="TextString" value="OMOS-M-1-11"/></code>
0019	<code><NameType type="Enumeration"</code>
0020	<code>value="UninterpretedTextString"/></code>
0021	<code></AttributeValue></code>
0022	<code></Attribute></code>
0023	<code></TemplateAttribute></code>
0024	<code><OpaqueObject></code>
0025	<code><OpaqueDataType type="Enumeration" value="0x80000001"/></code>
0026	<code><OpaqueDataValue type="ByteString"</code>
0027	<code>value="53656372657450617373776f7264"/></code>
0028	<code></OpaqueObject></code>
0029	<code></RequestPayload></code>
0030	<code></BatchItem></code>
0031	<code></RequestMessage></code>
0032	<code><ResponseMessage></code>
0033	<code><ResponseHeader></code>
0034	<code><ProtocolVersion></code>
0035	<code><ProtocolVersionMajor type="Integer" value="1"/></code>
0036	<code><ProtocolVersionMinor type="Integer" value="1"/></code>
0037	<code></ProtocolVersion></code>
0038	<code><TimeStamp type="DateTime" value="2012-04-27T08:12:24+00:00"/></code>
0039	<code><BatchCount type="Integer" value="1"/></code>
0040	<code></ResponseHeader></code>
0041	<code><BatchItem></code>
0042	<code><Operation type="Enumeration" value="Register"/></code>
0043	<code><ResultStatus type="Enumeration" value="Success"/></code>
0044	<code><ResponsePayload></code>
0045	<code><UniqueIdentifier type="TextString"</code>
0046	<code>value="\$UNIQUE_IDENTIFIER_0"/></code>
0047	<code></ResponsePayload></code>
	<code></BatchItem></code>
	<code></ResponseMessage></code>
	<code># TIME 1</code>
	<code><RequestMessage></code>
	<code><RequestHeader></code>

0048	<ProtocolVersion>
0049	<ProtocolVersionMajor type="Integer" value="1"/>
0050	<ProtocolVersionMinor type="Integer" value="1"/>
0051	</ProtocolVersion>
0052	<BatchCount type="Integer" value="1"/>
0053	</RequestHeader>
0054	<BatchItem>
0055	<Operation type="Enumeration" value="Destroy"/>
0056	<RequestPayload>
0057	<UniqueIdentifier type="TextString"
	value="\$UNIQUE_IDENTIFIER_0"/>
0058	</RequestPayload>
0059	</BatchItem>
0060	</RequestMessage>
0061	<ResponseMessage>
0062	<ResponseHeader>
0063	<ProtocolVersion>
0064	<ProtocolVersionMajor type="Integer" value="1"/>
0065	<ProtocolVersionMinor type="Integer" value="1"/>
0066	</ProtocolVersion>
0067	<TimeStamp type="DateTime" value="2012-04-27T08:12:24+00:00"/>
0068	<BatchCount type="Integer" value="1"/>
0069	</ResponseHeader>
0070	<BatchItem>
0071	<Operation type="Enumeration" value="Destroy"/>
0072	<ResultStatus type="Enumeration" value="Success"/>
0073	<ResponsePayload>
0074	<UniqueIdentifier type="TextString"
	value="\$UNIQUE_IDENTIFIER_0"/>
0075	</ResponsePayload>
0076	</BatchItem>
0077	</ResponseMessage>

99

100

101 3.3 Mandatory Test Cases KMIP 1.2

102 3.3.1 OMOS-M-1-12

103 Register small opaque object

	# TIME 0
0001	<RequestMessage>
0002	<RequestHeader>
0003	<ProtocolVersion>
0004	<ProtocolVersionMajor type="Integer" value="1"/>
0005	<ProtocolVersionMinor type="Integer" value="2"/>
0006	</ProtocolVersion>
0007	<BatchCount type="Integer" value="1"/>
0008	</RequestHeader>
0009	<BatchItem>
0010	<Operation type="Enumeration" value="Register"/>
0011	<RequestPayload>
0012	<ObjectType type="Enumeration" value="OpaqueObject"/>
0013	<TemplateAttribute>
0014	<Attribute>
0015	<AttributeName type="TextString" value="Name"/>

0016	<AttributeValue>
0017	<NameValue type="TextString" value="OMOS-M-1-12"/>
0018	<NameType type="Enumeration"
	value="UninterpretedTextString"/>
0019	</AttributeValue>
0020	</Attribute>
0021	</TemplateAttribute>
0022	<OpaqueObject>
0023	<OpaqueDataType type="Enumeration" value="0x80000001"/>
0024	<OpaqueDataValue type="ByteString"
	value="53656372657450617373776f7264"/>
0025	</OpaqueObject>
0026	</RequestPayload>
0027	</BatchItem>
0028	</RequestMessage>
0029	<ResponseMessage>
0030	<ResponseHeader>
0031	<ProtocolVersion>
0032	<ProtocolVersionMajor type="Integer" value="1"/>
0033	<ProtocolVersionMinor type="Integer" value="2"/>
0034	</ProtocolVersion>
0035	<TimeStamp type="DateTime" value="2012-04-27T08:12:24+00:00"/>
0036	<BatchCount type="Integer" value="1"/>
0037	</ResponseHeader>
0038	<BatchItem>
0039	<Operation type="Enumeration" value="Register"/>
0040	<ResultStatus type="Enumeration" value="Success"/>
0041	<ResponsePayload>
0042	<UniqueIdentifier type="TextString"
	value="\$UNIQUE_IDENTIFIER_0"/>
0043	</ResponsePayload>
0044	</BatchItem>
0045	</ResponseMessage>
0046	# TIME 1
0047	<RequestMessage>
0048	<RequestHeader>
0049	<ProtocolVersion>
0050	<ProtocolVersionMajor type="Integer" value="1"/>
0051	<ProtocolVersionMinor type="Integer" value="2"/>
0052	</ProtocolVersion>
0053	<BatchCount type="Integer" value="1"/>
0054	</RequestHeader>
0055	<BatchItem>
0056	<Operation type="Enumeration" value="Destroy"/>
0057	<RequestPayload>
	<UniqueIdentifier type="TextString"
	value="\$UNIQUE_IDENTIFIER_0"/>
0058	</RequestPayload>
0059	</BatchItem>
0060	</RequestMessage>
0061	<ResponseMessage>
0062	<ResponseHeader>
0063	<ProtocolVersion>
0064	<ProtocolVersionMajor type="Integer" value="1"/>
0065	<ProtocolVersionMinor type="Integer" value="2"/>
0066	</ProtocolVersion>
0067	<TimeStamp type="DateTime" value="2012-04-27T08:12:24+00:00"/>
0068	<BatchCount type="Integer" value="1"/>

```

0069 </ResponseHeader>
0070 <BatchItem>
0071   <Operation type="Enumeration" value="Destroy"/>
0072   <ResultStatus type="Enumeration" value="Success"/>
0073   <ResponsePayload>
0074     <UniqueIdentifier type="TextString"
value="$UNIQUE_IDENTIFIER_0"/>
0075   </ResponsePayload>
0076 </BatchItem>
0077 </ResponseMessage>

```

104

105

106 3.4 Optional Test Cases KMIP 1.0

107 3.4.1 OMOS-O-1-10

108 Register larger (>10k) opaque object

```

# TIME 0
0001 <RequestMessage>
0002   <RequestHeader>
0003     <ProtocolVersion>
0004       <ProtocolVersionMajor type="Integer" value="1"/>
0005       <ProtocolVersionMinor type="Integer" value="0"/>
0006     </ProtocolVersion>
0007     <BatchCount type="Integer" value="1"/>
0008   </RequestHeader>
0009   <BatchItem>
0010     <Operation type="Enumeration" value="Register"/>
0011     <RequestPayload>
0012       <ObjectType type="Enumeration" value="OpaqueObject"/>
0013       <TemplateAttribute>
0014         <Attribute>
0015           <AttributeName type="TextString" value="Name"/>
0016           <AttributeValue>
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0068	<BatchCount type="Integer" value="1"/>
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0071	<Operation type="Enumeration" value="Destroy"/>
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0073	<ResponsePayload>
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	value="\$UNIQUE_IDENTIFIER_0"/>
0075	</ResponsePayload>
0076	</BatchItem>
0077	</ResponseMessage>

109

110

111 3.5 Optional Test Cases KMIP 1.1

112 This section documents the test cases that a client or server conformant to the Opaque Managed Object
 113 Store Profile SHALL support under KMIP Specification 1.1.

114 3.5.1 OMOS-O-1-11

115 Register larger (>10k) opaque object

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0005	<ProtocolVersionMinor type="Integer" value="1"/>
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0007	<BatchCount type="Integer" value="1"/>
0008	</RequestHeader>
0009	<BatchItem>
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0011	<RequestPayload>
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0013	<TemplateAttribute>
0014	<Attribute>
0015	<AttributeName type="TextString" value="Name"/>
0016	<AttributeValue>
0017	<NameValue type="TextString" value="OMOS-O-1-11"/>
0018	<NameType type="Enumeration"
	value="UninterpretedTextString"/>
0019	</AttributeValue>

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0020     </Attribute>
0021     </TemplateAttribute>
0022     <OpaqueObject>
0023         <OpaqueDataType type="Enumeration" value="0x80000001"/>
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0038	<BatchItem>
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0040	<ResultStatus type="Enumeration" value="Success"/>
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0075	</ResponsePayload>
0076	</BatchItem>
0077	</ResponseMessage>

116

117

118 3.6 Optional Test Cases KMIP 1.2

119 3.6.1 OMOS-O-1-12

120 Register larger (>10k) opaque object

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0002	<RequestHeader>
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0004	<ProtocolVersionMajor type="Integer" value="1"/>
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0006     </ProtocolVersion>
0007     <BatchCount type="Integer" value="1"/>
0008 </RequestHeader>
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0013         <TemplateAttribute>
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0017                     <NameValue type="TextString" value="OMOS-0-1-12"/>
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0053	</RequestHeader>
0054	<BatchItem>
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0056	<RequestPayload>
0057	<UniqueIdentifier type="TextString" value="\$UNIQUE_IDENTIFIER_0"/>
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0068	<BatchCount type="Integer" value="1"/>
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0072	<ResultStatus type="Enumeration" value="Success"/>
0073	<ResponsePayload>
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0075	</ResponsePayload>
0076	</BatchItem>
0077	</ResponseMessage>

122 4 Conformance

123 4.1 Opaque Managed Object Store Client KMIP v1.0 Profile

124 KMIP client implementations conformant to this profile:

- 125 1. SHALL support the Authentication Suite conditions (2.1) and;
- 126 2. SHALL support the Opaque Managed Object Store – Client conditions (2.2) and;
- 127 3. SHALL support all Mandatory Test Cases (3.1).

128 4.2 Opaque Managed Object Store Client KMIP v1.1 Profile

129 KMIP client implementations conformant to this profile:

- 130 1. SHALL support the Authentication Suite conditions (2.1) and;
- 131 2. SHALL support the Opaque Managed Object Store – Client conditions (2.2) and;
- 132 3. SHALL support all Mandatory Test Cases (3.2).

133 4.3 Opaque Managed Object Store Client KMIP v1.2 Profile

134 KMIP client implementations conformant to this profile:

- 135 1. SHALL support the Authentication Suite conditions (2.1) and;
- 136 2. SHALL support the Opaque Managed Object Store – Client conditions (2.2) and;
- 137 3. SHALL support all Mandatory Test Cases (3.3).

138 4.4 Opaque Managed Object Store Server KMIP v1.0 Profile

139 KMIP server implementations conformant to this profile:

- 140 1. SHALL support the Authentication Suite conditions (2.1) and;
- 141 2. SHALL support the Opaque Managed Object Store – Server conditions (2.3) and;
- 142 3. SHALL support all Mandatory Test Cases (3.1).

143 4.5 Opaque Managed Object Store Server KMIP v1.1 Profile

144 KMIP server implementations conformant to this profile:

- 145 1. SHALL support the Authentication Suite conditions (2.1) and;
- 146 2. SHALL support the Opaque Managed Object Store – Server conditions (2.3) and;
- 147 3. SHALL support all Mandatory Test Cases (3.2).

148 4.6 Opaque Managed Object Store Server KMIP v1.2 Profile

149 KMIP server implementations conformant to this profile:

- 150 1. SHALL support the Authentication Suite conditions (2.1) and;
- 151 2. SHALL support the Opaque Managed Object Store – Server conditions (2.3) and;
- 152 3. SHALL support all Mandatory Test Cases (3.3).

153 4.7 Permitted Test Case Variations

154 Whilst the test cases provided in this Profile define the allowed request and response content, some
155 inherent variations MAY occur and are permitted within a successfully completed test case.

156 Each test case MAY include allowed variations in the description of the test case in addition to the
157 variations noted in this section.
158 Other variations not explicitly noted in this Profile SHALL be deemed non-conformant.

159 **4.7.1 Variable Items**

160 An implementation conformant to this Profile MAY vary the following values:

- 161 1. UniqueIdentifier
- 162 2. PrivateKeyUniqueIdentifier
- 163 3. PublicKeyUniqueIdentifier
- 164 4. UniqueBatchItemIdentifier
- 165 5. AsynchronousCorrelationValue
- 166 6. TimeStamp
- 167 7. KeyValue / KeyMaterial including:
 - 168 a. key material content returned for managed cryptographic objects which are generated by
169 the server
 - 170 b. wrapped versions of keys where the wrapping key is dynamic or the wrapping contains
171 variable output for each wrap operation
- 172 8. For response containing the output of cryptographic operation in Data / SignatureData/ MACData
173 / IVCounterNonce where:
 - 174 a. the managed object is generated by the server; or
 - 175 b. the operation inherently contains variable output
- 176 9. For the following DateTime attributes where the value is not specified in the request as a fixed
177 DateTime value:
 - 178 a. ActivationDate
 - 179 b. ArchiveDate
 - 180 c. CompromiseDate
 - 181 d. CompromiseOccurrenceDate
 - 182 e. DeactivationDate
 - 183 f. DestroyDate
 - 184 g. InitialDate
 - 185 h. LastChangeDate
 - 186 i. ProtectStartDate
 - 187 j. ProcessStopDate
 - 188 k. ValidityDate
 - 189 l. OriginalCreationDate
- 190 10. LinkedObjectIdentifier
- 191 11. DigestValue
 - 192 a. For those managed cryptographic objects which are dynamically generated
- 193 12. KeyFormatType
 - 194 a. The key format type selected by the server when it creates managed objects
- 195 13. Digest
 - 196 a. The HashingAlgorithm selected by the server when it calculates the digest for a managed
197 object for which it has access to the key material
 - 198 b. The Digest Value

- 199 14. Extensions reported in Query for ExtensionList and ExtensionMap
200 15. Application Namespaces reported in Query
201 16. Object Types reported in Query other than those noted as required in this profile
202 17. Operation Types reported in Query other than those noted as required in this profile (or any
203 referenced profile documents)
204 18. For TextString attribute values containing test identifiers:
205 a. Additional vendor or application prefixes
206 19. Additional attributes beyond those noted in the response
207

208 An implementation conformant to this Profile MAY allow the following response variations:

- 209 20. Object Group values – May or may not return one or more Object Group values not included in
210 the requests
211 21. y-CustomAttributes – May or may not include additional server-specific associated attributes not
212 included in requests
213 22. Message Extensions – May or may not include additional (non-critical) vendor extensions
214 23. TemplateAttribute – May or may not be included in responses where the Template Attribute
215 response is noted as optional in [KMIP-SPEC]
216 24. AttributeIndex – May or may not include Attribute Index value where the Attribute Index value is 0
217 for Protocol Versions 1.1 and above.
218 25. ResultMessage – May or may not be included in responses and the value (if included) may vary
219 from the text contained within the test case.
220 26. The list of Protocol Versions returned in a DiscoverVersion response may include additional
221 protocol versions if the request has not specified a list of client supported Protocol Versions.
222 27. VendorIdentification - The value (if included) may vary from the text contained within the test
223 case.

224 4.7.2 Variable behavior

225 An implementation conformant to this Profile SHALL allow variation of the following behavior:

- 226 1. A test may omit the clean-up requests and responses (containing Revoke and/or Destroy) at the
227 end of the test provided there is a separate mechanism to remove the created objects during
228 testing.
229 2. A test may omit the test identifiers if the client is unable to include them in requests. This includes
230 the following attributes:
231 a. Name; and
232 b. x-ID
233 3. A test MAY perform requests with multiple batch items or as multiple requests with a single batch
234 item provided the sequence of operations are equivalent
235 4. A request MAY contain an optional *Authentication* [KMIP_SPEC] structure within each request
236

Appendix A. Acknowledgments

The following individuals have participated in the creation of this specification and are gratefully acknowledged:

Participants:

238	Hal Aldridge, Sypris Electronics
239	Mike Allen, Symantec
240	Gordon Arnold, IBM
241	Todd Arnold, IBM
242	Richard Austin, Hewlett-Packard
243	Lars Bagnert, PrimeKey
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245	Peter Bartok, Venafi, Inc.
246	Tom Benjamin, IBM
247	Anthony Berglas, Cryptsoft
248	Mathias Björkqvist, IBM
249	Kevin Bocket, Venafi
250	Anne Bolgert, IBM
251	Alan Brown, Thales e-Security
252	Tim Bruce, CA Technologies
253	Chris Burchett, Credant Technologies, Inc.
254	Kelley Burgin, National Security Agency
255	Robert Burns, Thales e-Security
256	Chuck Castleton, Venafi
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263	Graydon Dodson, Lexmark International Inc.
264	Vinod Duggirala, EMC Corporation
265	Chris Dunn, SafeNet, Inc.
266	Michael Duren, Sypris Electronics
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332 Somanchi Trinath, Freescale Semiconductor, Inc.
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335 Paul Turner, Venafi, Inc.
336 Rod Wideman, Quantum Corporation
337 Steven Wierenga, Hewlett-Packard
338 Jin Wong, QuintessenceLabs
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342 Catherine Ying, SafeNet, Inc.
343 Tatu Ylonen, SSH Communications Security (Tectia Corp)

344 Michael Yoder, Vormetric. Inc.
345 Magda Zdunkiewicz, Cryptsoft
346 Peter Zelechowski, Election Systems & Software

Appendix B. KMIP Specification Cross Reference

Reference Term	KMIP 1.0	KMIP 1.1	KMIP 1.2
1 Introduction			
<i>Non-Normative References</i>	1.3.	1.3.	1.3.
<i>Normative References</i>	1.2.	1.2.	1.2.
<i>Terminology</i>	1.1.	1.1.	1.1.
2 Objects			
<i>Attribute</i>	2.1.1.	2.1.1.	2.1.1.
<i>Base Objects</i>	2.1.	2.1.	2.1.
<i>Certificate</i>	2.2.1.	2.2.1.	2.2.1.
<i>Credential</i>	2.1.2.	2.1.2.	2.1.2.
<i>Data</i>	-	-	2.1.10.
<i>Data Length</i>	-	-	2.1.11.
<i>Extension Information</i>	-	2.1.9.	2.1.9.
<i>Key Block</i>	2.1.3.	2.1.3.	2.1.3.
<i>Key Value</i>	2.1.4.	2.1.4.	2.1.4.
<i>Key Wrapping Data</i>	2.1.5.	2.1.5.	2.1.5.
<i>Key Wrapping Specification</i>	2.1.6.	2.1.6.	2.1.6.
<i>MAC Data</i>	-	-	2.1.13.
<i>Managed Objects</i>	2.2.	2.2.	2.2.
<i>Nonce</i>	-	-	2.1.14.
<i>Opaque Object</i>	2.2.8.	2.2.8.	2.2.8.
<i>PGP Key</i>	-	-	2.2.9.
<i>Private Key</i>	2.2.4.	2.2.4.	2.2.4.
<i>Public Key</i>	2.2.3.	2.2.3.	2.2.3.
<i>Secret Data</i>	2.2.7.	2.2.7.	2.2.7.
<i>Signature Data</i>	-	-	2.1.12.
<i>Split Key</i>	2.2.5.	2.2.5.	2.2.5.
<i>Symmetric Key</i>	2.2.2.	2.2.2.	2.2.2.
<i>Template</i>	2.2.6.	2.2.6.	2.2.6.
<i>Template-Attribute Structures</i>	2.1.8.	2.1.8.	2.1.8.
<i>Transparent DH Private Key</i>	2.1.7.6.	2.1.7.6.	2.1.7.6.
<i>Transparent DH Public Key</i>	2.1.7.7.	2.1.7.7.	2.1.7.7.
<i>Transparent DSA Private Key</i>	2.1.7.2.	2.1.7.2.	2.1.7.2.
<i>Transparent DSA Public Key</i>	2.1.7.3.	2.1.7.3.	2.1.7.3.
<i>Transparent ECDH Private Key</i>	2.1.7.10.	2.1.7.10.	2.1.7.10.
<i>Transparent ECDH Public Key</i>	2.1.7.11.	2.1.7.11.	2.1.7.11.
<i>Transparent ECDSA Private Key</i>	2.1.7.8.	2.1.7.8.	2.1.7.8.
<i>Transparent ECDSA Public Key</i>	2.1.7.9.	2.1.7.9.	2.1.7.9.
<i>Transparent ECMQV Private Key</i>	2.1.7.12.	2.1.7.12.	2.1.7.12.
<i>Transparent ECMQV Public Key</i>	2.1.7.13.	2.1.7.13.	2.1.7.13.
<i>Transparent Key Structures</i>	2.1.7.	2.1.7.	2.1.7.
<i>Transparent RSA Private Key</i>	2.1.7.4.	2.1.7.4.	2.1.7.4.
<i>Transparent RSA Public Key</i>	2.1.7.5.	2.1.7.5.	2.1.7.5.
<i>Transparent Symmetric Key</i>	2.1.7.1.	2.1.7.1.	2.1.7.1.
3 Attributes			
<i>Activation Date</i>	3.19.	3.24.	3.24.
<i>Alternative Name</i>	-	-	3.40.
<i>Application Specific Information</i>	3.30.	3.36.	3.36.
<i>Archive Date</i>	3.27.	3.32.	3.32.

Reference Term	KMIP 1.0	KMIP 1.1	KMIP 1.2
<i>Attributes</i>	3	3	3
<i>Certificate Identifier</i>	3.9.	3.13.	3.13.
<i>Certificate Issuer</i>	3.11.	3.15.	3.15.
<i>Certificate Length</i>	-	3.9.	3.9.
<i>Certificate Subject</i>	3.10.	3.14.	3.14.
<i>Certificate Type</i>	3.8.	3.8.	3.8.
<i>Compromise Date</i>	3.25.	3.30.	3.30.
<i>Compromise Occurrence Date</i>	3.24.	3.29.	3.29.
<i>Contact Information</i>	3.31.	3.37.	3.37.
<i>Cryptographic Algorithm</i>	3.4.	3.4.	3.4.
<i>Cryptographic Domain Parameters</i>	3.7.	3.7.	3.7.
<i>Cryptographic Length</i>	3.5.	3.5.	3.5.
<i>Cryptographic Parameters</i>	3.6.	3.6.	3.6.
<i>Custom Attribute</i>	3.33.	3.39.	3.39.
<i>Deactivation Date</i>	3.22.	3.27.	3.27.
<i>Default Operation Policy</i>	3.13.2.	3.18.2.	3.18.2.
<i>Default Operation Policy for Certificates and Public Key Objects</i>	3.13.2.2.	3.18.2.2.	3.18.2.2.
<i>Default Operation Policy for Secret Objects</i>	3.13.2.1.	3.18.2.1.	3.18.2.1.
<i>Default Operation Policy for Template Objects</i>	3.13.2.3.	3.18.2.3.	3.18.2.3.
<i>Destroy Date</i>	3.23.	3.28.	3.28.
<i>Digest</i>	3.12.	3.17.	3.17.
<i>Digital Signature Algorithm</i>	-	3.16.	3.16.
<i>Fresh</i>	-	3.34.	3.34.
<i>Initial Date</i>	3.18.	3.23.	3.23.
<i>Key Value Location</i>	-	-	3.42.
<i>Key Value Present</i>	-	-	3.41.
<i>Last Change Date</i>	3.32.	3.38.	3.38.
<i>Lease Time</i>	3.15.	3.20.	3.20.
<i>Link</i>	3.29.	3.35.	3.35.
<i>Name</i>	3.2.	3.2.	3.2.
<i>Object Group</i>	3.28.	3.33.	3.33.
<i>Object Type</i>	3.3.	3.3.	3.3.
<i>Operation Policy Name</i>	3.13.	3.18.	3.18.
<i>Operations outside of operation policy control</i>	3.13.1.	3.18.1.	3.18.1.
<i>Original Creation Date</i>	-	-	3.43.
<i>Process Start Date</i>	3.20.	3.25.	3.25.
<i>Protect Stop Date</i>	3.21.	3.26.	3.26.
<i>Revocation Reason</i>	3.26.	3.31.	3.31.
<i>State</i>	3.17.	3.22.	3.22.
<i>Unique Identifier</i>	3.1.	3.1.	3.1.
<i>Usage Limits</i>	3.16.	3.21.	3.21.
<i>X.509 Certificate Identifier</i>	-	3.10.	3.10.
<i>X.509 Certificate Issuer</i>	-	3.12.	3.12.
<i>X.509 Certificate Subject</i>	-	3.11.	3.11.
4 Client-to-Server Operations			
<i>Activate</i>	4.18.	4.19.	4.19.
<i>Add Attribute</i>	4.13.	4.14.	4.14.
<i>Archive</i>	4.21.	4.22.	4.22.
<i>Cancel</i>	4.25.	4.27.	4.27.
<i>Certify</i>	4.6.	4.7.	4.7.
<i>Check</i>	4.9.	4.10.	4.10.
<i>Create</i>	4.1.	4.1.	4.1.
<i>Create Key Pair</i>	4.2.	4.2.	4.2.

Reference Term	KMIP 1.0	KMIP 1.1	KMIP 1.2
<i>Create Split Key</i>	-	-	4.38.
<i>Decrypt</i>	-	-	4.30.
<i>Delete Attribute</i>	4.15.	4.16.	4.16.
<i>Derive Key</i>	4.5.	4.6.	4.6.
<i>Destroy</i>	4.20.	4.21.	4.21.
<i>Discover Versions</i>	-	4.26.	4.26.
<i>Encrypt</i>	-	-	4.29.
<i>Get</i>	4.10.	4.11.	4.11.
<i>Get Attribute List</i>	4.12.	4.13.	4.13.
<i>Get Attributes</i>	4.11.	4.12.	4.12.
<i>Get Usage Allocation</i>	4.17.	4.18.	4.18.
<i>Hash</i>	-	-	4.37.
<i>Join Split Key</i>	-	-	4.39.
<i>Locate</i>	4.8.	4.9.	4.9.
<i>MAC</i>	-	-	4.33.
<i>MAC Verify</i>	-	-	4.34.
<i>Modify Attribute</i>	4.14.	4.15.	4.15.
<i>Obtain Lease</i>	4.16.	4.17.	4.17.
<i>Poll</i>	4.26.	4.28.	4.28.
<i>Query</i>	4.24.	4.25.	4.25.
<i>Re-certify</i>	4.7.	4.8.	4.8.
<i>Recover</i>	4.22.	4.23.	4.23.
<i>Register</i>	4.3.	4.3.	4.3.
<i>Re-key</i>	4.4.	4.4.	4.4.
<i>Re-key Key Pair</i>	-	4.5.	4.5.
<i>Revoke</i>	4.19.	4.20.	4.20.
<i>RNG Retrieve</i>	-	-	4.35.
<i>RNG Seed</i>	-	-	4.36.
<i>Sign</i>	-	-	4.31.
<i>Signature Verify</i>	-	-	4.32.
<i>Validate</i>	4.23.	4.24.	4.24.
5 Server-to-Client Operations			
<i>Notify</i>	5.1.	5.1.	5.1.
<i>Put</i>	5.2.	5.2.	5.2.
6 Message Contents			
<i>Asynchronous Correlation Value</i>	6.8.	6.8.	6.8.
<i>Asynchronous Indicator</i>	6.7.	6.7.	6.7.
<i>Attestation Capable Indicator</i>	-	-	6.17.
<i>Batch Count</i>	6.14.	6.14.	6.14.
<i>Batch Error Continuation Option</i>	6.13.	6.13.	6.13.
<i>Batch Item</i>	6.15.	6.15.	6.15.
<i>Batch Order Option</i>	6.12.	6.12.	6.12.
<i>Maximum Response Size</i>	6.3.	6.3.	6.3.
<i>Message Extension</i>	6.16.	6.16.	6.16.
<i>Operation</i>	6.2.	6.2.	6.2.
<i>Protocol Version</i>	6.1.	6.1.	6.1.
<i>Result Message</i>	6.11.	6.11.	6.11.
<i>Result Reason</i>	6.10.	6.10.	6.10.
<i>Result Status</i>	6.9.	6.9.	6.9.
<i>Time Stamp</i>	6.5.	6.5.	6.5.
<i>Unique Batch Item ID</i>	6.4.	6.4.	6.4.
7 Message Format			

Reference Term	KMIP 1.0	KMIP 1.1	KMIP 1.2
<i>Message Structure</i>	7.1.	7.1.	7.1.
<i>Operations</i>	7.2.	7.2.	7.2.
8 Authentication			
<i>Authentication</i>	8	8	8
9 Message Encoding			
<i>Alternative Name Type Enumeration</i>	-	-	9.1.3.2.34.
<i>Attestation Type Enumeration</i>	-	-	9.1.3.2.36.
<i>Batch Error Continuation Option Enumeration</i>	9.1.3.2.29.	9.1.3.2.30.	9.1.3.2.30.
<i>Bit Masks</i>	9.1.3.3.	9.1.3.3.	9.1.3.3.
<i>Block Cipher Mode Enumeration</i>	9.1.3.2.13.	9.1.3.2.14.	9.1.3.2.14.
<i>Cancellation Result Enumeration</i>	9.1.3.2.24.	9.1.3.2.25.	9.1.3.2.25.
<i>Certificate Request Type Enumeration</i>	9.1.3.2.21.	9.1.3.2.22.	9.1.3.2.22.
<i>Certificate Type Enumeration</i>	9.1.3.2.6.	9.1.3.2.6.	9.1.3.2.6.
<i>Credential Type Enumeration</i>	9.1.3.2.1.	9.1.3.2.1.	9.1.3.2.1.
<i>Cryptographic Algorithm Enumeration</i>	9.1.3.2.12.	9.1.3.2.13.	9.1.3.2.13.
<i>Cryptographic Usage Mask</i>	9.1.3.3.1.	9.1.3.3.1.	9.1.3.3.1.
<i>Defined Values</i>	9.1.3.	9.1.3.	9.1.3.
<i>Derivation Method Enumeration</i>	9.1.3.2.20.	9.1.3.2.21.	9.1.3.2.21.
<i>Digital Signature Algorithm Enumeration</i>	-	9.1.3.2.7.	9.1.3.2.7.
<i>Encoding Option Enumeration</i>	-	9.1.3.2.32.	9.1.3.2.32.
<i>Enumerations</i>	9.1.3.2.	9.1.3.2.	9.1.3.2.
<i>Examples</i>	9.1.2.	9.1.2.	9.1.2.
<i>Hashing Algorithm Enumeration</i>	9.1.3.2.15.	9.1.3.2.16.	9.1.3.2.16.
<i>Item Length</i>	9.1.1.3.	9.1.1.3.	9.1.1.3.
<i>Item Tag</i>	9.1.1.1.	9.1.1.1.	9.1.1.1.
<i>Item Type</i>	9.1.1.2.	9.1.1.2.	9.1.1.2.
<i>Item Value</i>	9.1.1.4.	9.1.1.4.	9.1.1.4.
<i>Key Compression Type Enumeration</i>	9.1.3.2.2.	9.1.3.2.2.	9.1.3.2.2.
<i>Key Format Type Enumeration</i>	9.1.3.2.3.	9.1.3.2.3.	9.1.3.2.3.
<i>Key Role Type Enumeration</i>	9.1.3.2.16.	9.1.3.2.17.	9.1.3.2.17.
<i>Key Value Location Type Enumeration</i>	-	-	9.1.3.2.35.
<i>Link Type Enumeration</i>	9.1.3.2.19.	9.1.3.2.20.	9.1.3.2.20.
<i>Name Type Enumeration</i>	9.1.3.2.10.	9.1.3.2.11.	9.1.3.2.11.
<i>Object Group Member Enumeration</i>	-	9.1.3.2.33.	9.1.3.2.33.
<i>Object Type Enumeration</i>	9.1.3.2.11.	9.1.3.2.12.	9.1.3.2.12.
<i>Opaque Data Type Enumeration</i>	9.1.3.2.9.	9.1.3.2.10.	9.1.3.2.10.
<i>Operation Enumeration</i>	9.1.3.2.26.	9.1.3.2.27.	9.1.3.2.27.
<i>Padding Method Enumeration</i>	9.1.3.2.14.	9.1.3.2.15.	9.1.3.2.15.
<i>Put Function Enumeration</i>	9.1.3.2.25.	9.1.3.2.26.	9.1.3.2.26.
<i>Query Function Enumeration</i>	9.1.3.2.23.	9.1.3.2.24.	9.1.3.2.24.
<i>Recommended Curve Enumeration for ECDSA, ECDH, and ECMQV</i>	9.1.3.2.5.	9.1.3.2.5.	9.1.3.2.5.
<i>Result Reason Enumeration</i>	9.1.3.2.28.	9.1.3.2.29.	9.1.3.2.29.
<i>Result Status Enumeration</i>	9.1.3.2.27.	9.1.3.2.28.	9.1.3.2.28.
<i>Revocation Reason Code Enumeration</i>	9.1.3.2.18.	9.1.3.2.19.	9.1.3.2.19.
<i>Secret Data Type Enumeration</i>	9.1.3.2.8.	9.1.3.2.9.	9.1.3.2.9.
<i>Split Key Method Enumeration</i>	9.1.3.2.7.	9.1.3.2.8.	9.1.3.2.8.
<i>State Enumeration</i>	9.1.3.2.17.	9.1.3.2.18.	9.1.3.2.18.
<i>Storage Status Mask</i>	9.1.3.3.2.	9.1.3.3.2.	9.1.3.3.2.
<i>Tags</i>	9.1.3.1.	9.1.3.1.	9.1.3.1.
<i>TTLV Encoding</i>	9.1.	9.1.	9.1.
<i>TTLV Encoding Fields</i>	9.1.1.	9.1.1.	9.1.1.
<i>Usage Limits Unit Enumeration</i>	9.1.3.2.30.	9.1.3.2.31.	9.1.3.2.31.

Reference Term	KMIP 1.0	KMIP 1.1	KMIP 1.2
<i>Validity Indicator Enumeration</i>	9.1.3.2.22.	9.1.3.2.23.	9.1.3.2.23.
<i>Wrapping Method Enumeration</i>	9.1.3.2.4.	9.1.3.2.4.	9.1.3.2.4.
<i>XML Encoding</i>	9.2.	-	-
10 Transport			
<i>Transport</i>	10	10	10
12 KMIP Server and Client Implementation Conformance			
<i>Conformance clauses for a KMIP Server</i>	12.1.	-	-
<i>KMIP Client Implementation Conformance</i>	-	12.2.	12.2.
<i>KMIP Server Implementation Conformance</i>	-	12.1.	12.1.

347

348

Appendix C. Revision History

349

Revision	Date	Editor	Changes Made
wd01	26-June-2013	Tim Hudson / Bob Lockhart	Updated conformance wording style. Updated test case style. Included test cases for 1.0, 1.1 and 1.2. Applied new OASIS template.
wd02	6-August-2013	Tim Hudson / Bob Lockhart	Updated to include Permitted Test Case Variations and updated Test Cases based on July 2013 Interop
wd03	10-August-2013	Tim Hudson	Updated Permitted Test Case Variations
wd03a	24-October- 2013	Tim Hudson	Editorial update to include VendorIdentification in the list of allowed variations as per TC motion.
pr01update	11-June-2014	Tim Hudson	Updated following Public Review

350