

KMIP Tape Library Profile Version 1.0

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Related work:

This specification is related to:

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- *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 Tape Libraries as KMIP clients interacting with KMIP servers.

Status:

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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 Tape Library operating as a KMIP client SHALL use and a KMIP server 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].

| | |
|--------------------------------|---|
| Key Associated Data (KAD) | Part of the tape format. May be segmented into authenticated and unauthenticated fields. KAD usage is detailed in the SCSI SSC-3 standard from the T10 organization available as ANSI INCITS 335-2000. |
| Hexadecimal Numeric Characters | Case-sensitive, printable, single byte ASCII characters representing the numbers 0 through 9 and uppercase alpha A through F. (US-ASCII characters 30h-39h and 41h-46h). Each byte (single 8-bit numeric value) is represented as two hexadecimal numeric characters with the high-nibble represented by the first (left-most) hexadecimal numeric character and the low-nibble represented by the second (right-most) hexadecimal numeric character. |
| N(a) | The maximum number of bytes in the tape authenticated KAD field. For LTO4, N(a) is 12 bytes. For LTO5, N(a) is 60 bytes. For LTO6, N(a) is 60 bytes. |
| N(u) | The maximum number of bytes in the tape unauthenticated KAD field. For LTO4, N(u) is 32 bytes. For LTO5, N(u) is 32 bytes. For LTO6, N(u) is 32 bytes. |
| N(k) | The maximum number of bytes in the tape format KAD fields – i.e. N(a) + N(u). For LTO4, N(k) is 44 bytes. For LTO5, N(k) is 92 bytes. For LTO6, N(k) is 92 bytes. |

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](#)

19 **[KMIP-SPEC]** One or more of [KMIP-SPEC-1_0], [KMIP-SPEC-1_1], [KMIP-SPEC-1_2]
20 **[KMIP-SPEC-1_0]** Key Management Interoperability Protocol Specification Version 1.0
21 <http://docs.oasis-open.org/kmip/spec/v1.0/os/kmip-spec-1.0-os.doc>
22 OASIS Standard, October 2010.
23 **[KMIP-SPEC-1_1]** *Key Management Interoperability Protocol Specification Version 1.1.*
24 <http://docs.oasis-open.org/kmip/spec/v1.1/os/kmip-spec-v1.1-os.doc>
25 OASIS Standard. 24 January 2013.
26 **[KMIP-SPEC-1_2]** *Key Management Interoperability Protocol Specification Version 1.2.*
27 **URL**
28 Candidate OASIS Standard 01. **DD MMM YYYY.**
29 **[KMIP-PROF]** One or more of [KMIP-PROF-1_0], [KMIP-PROF-1_1], [KMIP-PROF-1_2]
30 **[KMIP-PROF-1_0]** *Key Management Interoperability Protocol Profiles Version 1.0.* [http://docs.oasis-](http://docs.oasis-open.org/kmip/profiles/v1.0/os/kmip-profiles-1.0-os.doc)
31 [open.org/kmip/profiles/v1.0/os/kmip-profiles-1.0-os.doc](http://docs.oasis-open.org/kmip/profiles/v1.0/os/kmip-profiles-1.0-os.doc)
32 OASIS Standard. 1 October 2010.
33 **[KMIP-PROF-1_1]** *Key Management Interoperability Protocol Profiles Version 1.1.*
34 <http://docs.oasis-open.org/kmip/profiles/v1.1/os/kmip-profiles-v1.1-os.doc>
35 OASIS Standard 01. 24 January 2013.
36 **[KMIP-PROF-1_2]** *Key Management Interoperability Protocol Profiles Version 1.2.*
37 **URL**
38 Candidate OASIS Standard 01. **DD MMM YYYY.**

2 Tape Library Profile

The Tape Library Profile specifies the behavior of a tape library operating as a KMIP client interacting with a KMIP server.

2.1 Authentication Suite

Implementations conformant to this profile SHALL support at least one of the Authentication Suites defined within [KMIP-PROF].

2.2 Baseline Tape Library - Client

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

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

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

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

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

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

KMIP clients conformant to this profile

4. SHOULD support *Application Specific Information* [KMIP-SPEC] with Application Data provided by the client in accordance with section 2.4
5. SHOULD NOT use a *Custom Attribute* [KMIP-SPEC] that duplicates information that is already in standard *Attributes* [KMIP-SPEC]
6. MAY use x-Barcode as a *Custom Attribute* [KMIP-SPEC] of type Text String to store the barcode
7. MAY support any clause within [KMIP-SPEC] provided it does not conflict with any other clause within this section 2.2
8. MAY support extensions outside the scope of this standard (e.g., vendor extensions, conformance clauses) that do not conflict with any KMIP requirements

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

9. SHALL support the following *Attributes* [KMIP-SPEC]
 - a. *Alternative Name* [KMIP-SPEC-1_2]
10. SHALL support the following *Message Encoding* [KMIP-SPEC-1_2]:
 - a. *Alternative Name Type Enumeration* [KMIP-SPEC-1_2] value:
 - i. Uninterpreted Text String
11. SHALL store the media barcode information in an *Alternative Name* [KMIP-SPEC-1_2] *Attribute* [KMIP-SPEC-1_2] in accordance with section 2.5

2.3 Baseline Tape Library - Server

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

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

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

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

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

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

KMIP servers conformant to this profile:

4. SHALL support the following *Objects* [KMIP-SPEC]
 - a. *Symmetric Key* [KMIP-SPEC]
 5. SHALL support the following *Attributes* [KMIP-SPEC]:
 - a. *Name* [KMIP-SPEC]
 - b. *Cryptographic Algorithm* [KMIP-SPEC]
 - c. *Custom Attribute* [KMIP SPEC]
 - d. *Application Specific Information* [KMIP SPEC]
 6. SHALL support the following *Client-to-Server Operations* [KMIP-SPEC]:
 - a. *Create* [KMIP-SPEC]
 7. SHALL support the following *Message Contents* [KMIP-SPEC]:
 - a. *Batch Order Option* [KMIP-SPEC] value:
 - i. True
 - b. *Batch Count* [KMIP-SPEC] value:
 - i. 1 to 32
 8. SHALL support the following *Message Encoding* [KMIP-SPEC]:
 - a. *Cryptographic Algorithm Enumeration* [KMIP-SPEC] value:
 - i. AES
 - b. *Object Type Enumeration* [KMIP-SPEC] value:
 - i. Symmetric Key
 - c. *Key Format Type Enumeration* [KMIP-SPEC] value:
 - i. Raw
 - d. *Cryptographic Length* [KMIP-SPEC] value :
 - i. 256-bit
 - e. *Name Type Enumeration* [KMIP-SPEC] value:
 - i. Uninterpreted Text String
 9. SHALL support *Custom Attribute* [KMIP-SPEC] with the following data types and properties:
 - a. Text String
 - b. Integer
 - c. Date Time
 10. SHALL support a minimum length of 256 characters for *Custom Attribute* [KMIP-SPEC] and *Name* [KMIP-SPEC] values where the attribute type is of variable length
 11. SHALL support a minimum of 30 *Custom Attribute* [KMIP-SPEC] per managed object
 12. SHALL support a minimum of 64 characters in *Custom Attribute* [KMIP-SPEC] names
 13. MAY support any clause within [KMIP-SPEC] provided it does not conflict with any other clause within this section 2.2
 14. MAY support extensions outside the scope of this standard (e.g., vendor extensions, conformance clauses) that do not conflict with any KMIP requirements
- KMIP servers conformant to this profile under [KMIP-SPEC-1_2]:
15. SHALL support the following *Attributes* [KMIP-SPEC]
 - a. *Alternative Name* [KMIP-SPEC-1_2]
 16. SHALL support the following *Message Encoding* [KMIP-SPEC-1_2]:
 - a. *Alternative Name Type Enumeration* [KMIP-SPEC-1_2] value:

2.4 Using Application Specific Information for Key Identifiers

This information applies to Tape Libraries that use the *Application Specific Information* [KMIP-SPEC] attribute to store key identifiers. KMIP clients are not required to use *Application Specific Information* [KMIP-SPEC] however KMIP servers are required to support KMIP clients that use *Application Specific Information* [KMIP-SPEC] and KMIP clients that do not use *Application Specific Information* [KMIP-SPEC].

The *Application Specific Information* [KMIP-SPEC] MAY be used to store data that is specific to the application (Tape Library) using the object.

The following Application Namespaces SHOULD be used in the Application Namespace field of the *Application Specific Information* [KMIP-SPEC]:

- LIBRARY-LTO, LIBRARY-LTO4, LIBRARY-LTO5, and LIBRARY-LTO6

For backwards compatibility with deployed Tape Library implementations, servers MAY support VENDOR-LIBRARY-LTO as an Application Namespace, where VENDOR is an ASCII string that SHALL NOT be further interpreted and SHALL be handled by the server as if the Application Namespace was set to LIBRARY-LTO.

Application Specific Information [KMIP-SPEC] supports key identifiers being created either on the server or on the client (Tape Library), but not both. This profile specifies key identifiers created by the client.

The *Application Specific Information* [KMIP-SPEC] method of key identification relies on the ability to uniquely identify a key based only on its Application Data (preferably), or (alternatively) on some combination of Application Data and *Custom Attributes* [KMIP-SPEC], which the key creator guarantees to be unique within the Application Namespace.

Key identifiers stored in the KMIP server's *Application Specific Information* [KMIP-SPEC] are in ASCII format. Key identifiers stored in the KMIP client's tape format KAD fields are numeric format. The specific algorithm for converting between text and numeric formats is specified below.

All information contained in the tape format's KAD fields is converted to an ASCII string consisting of hexadecimal numeric character pairs as follows:

1. The unauthenticated KAD is converted to text;
2. The authenticated KAD is converted to text and;
3. The converted authenticated KAD text is concatenated to the end of the converted unauthenticated KAD text.

If the implementation uses client-created key identifiers, then the client generates a new identifier in ASCII format that SHALL be unique within the chosen namespace. The source material for generating the string is dependent on client policy. The numeric representation of this identifier SHALL be no larger than the N(k) bytes of the KAD for the tape media being used.

For KMIP clients and servers conforming to this profile, *Application Specific Information* [KMIP-SPEC] SHALL be created by the Tape Library KMIP client based on the tape format's KAD fields as follows:

1. Define an empty output buffer sufficient to contain a string with a maximum length of 2*N(k) bytes.
2. Copy the tape format's unauthenticated KAD (if present) to the output buffer, converting each byte value to exactly two Hexadecimal Numeric Characters. The first byte (i.e., byte 0) of the output buffer is the first byte of unauthenticated KAD.
3. Concatenate the tape format's authenticated KAD to the output buffer, converting each byte value to exactly two Hexadecimal Numeric Characters.

Note: the contents of the unauthenticated KAD and authenticated KAD fields may be less than the maximum permitted lengths; the implementation provides the correct length values to use in the algorithm rather than using fixed maximum length fields.

169 If *Application Specific Information* [KMIP-SPEC] is supported, then it SHALL be used by the client for
170 locating the object for the purpose of encrypting and decrypting data on tape. The *Application Specific*
171 *Information* [KMIP-SPEC] value SHALL solely be used for this purpose.

172 **2.5 Using Alternative Name for tape media barcode**

173 The Tape Library client SHALL assign a text (i.e., human-readable) representation of the media barcode
174 to the *Alternative Name* [KMIP-SPEC-1_2] of the object. This SHALL occur on first use of the object for
175 encryption, which normally is when the library requests the server to create the object.

176
177 The relationship between key identifiers in *Application Specific Information* [KMIP-SPEC] and *Alternative*
178 *Name* [KMIP-SPEC-1_2] is as follows:

- 179 a) The values for both are provided by the client
- 180 b) The identifier in *Alternative Name* [KMIP-SPEC-1_2] (i.e., the barcode) SHALL be used by the
181 server administrator for finding keys associated with specific tape media (e.g., a server
182 administrator may want to find the key(s) associated with a missing tape cartridge, where the
183 barcode of that tape cartridge is known).
- 184 c) The *Alternative Name* [KMIP-SPEC-1_2] SHALL NOT be used by a client for locating the object
185 to encrypt or decrypt data, since the value (barcode) is not required to be unique and therefore
186 does not ensure retrieval of the correct key.

3 Tape Library Profile Test Cases

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

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

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

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

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

3.1 Mandatory Test Cases KMIP v1.0

3.1.1 TL-M-1-10 - Configuration

Determine server configuration details including operations supported (only the mandatory operations are listed in the response example), objects supported (only the mandatory objects types are listed in the response example), optional server information, and optional list of application name spaces.

```
# 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="Query"/>
0011     <UniqueBatchItemID type="ByteString" value="01"/>
0012     <RequestPayload>
0013       <QueryFunction type="Enumeration" value="QueryOperations"/>
0014       <QueryFunction type="Enumeration" value="QueryObjects"/>
0015       <QueryFunction type="Enumeration"
0016       value="QueryServerInformation"/>
0017       <QueryFunction type="Enumeration"
0018       value="QueryApplicationNamespaces"/>
0019     </RequestPayload>
0020   </BatchItem>
0021 </RequestMessage>
0022 <ResponseMessage>
0023   <ResponseHeader>
0024     <ProtocolVersion>
0025       <ProtocolVersionMajor type="Integer" value="1"/>
0026       <ProtocolVersionMinor type="Integer" value="0"/>
0027     </ProtocolVersion>
0028     <TimeStamp type="DateTime" value="2012-10-05T21:35:17+00:00"/>
0029     <BatchCount type="Integer" value="1"/>
```

```

0028 </ResponseHeader>
0029 <BatchItem>
0030   <Operation type="Enumeration" value="Query"/>
0031   <UniqueBatchItemID type="ByteString" value="01"/>
0032   <ResultStatus type="Enumeration" value="Success"/>
0033   <ResponsePayload>
0034     <Operation type="Enumeration" value="Query"/>
0035     <Operation type="Enumeration" value="Locate"/>
0036     <Operation type="Enumeration" value="Destroy"/>
0037     <Operation type="Enumeration" value="Get"/>
0038     <Operation type="Enumeration" value="Create"/>
0039     <Operation type="Enumeration" value="Register"/>
0040     <Operation type="Enumeration" value="GetAttributes"/>
0041     <Operation type="Enumeration" value="GetAttributeList"/>
0042     <Operation type="Enumeration" value="AddAttribute"/>
0043     <Operation type="Enumeration" value="ModifyAttribute"/>
0044     <Operation type="Enumeration" value="DeleteAttribute"/>
0045     <Operation type="Enumeration" value="Activate"/>
0046     <Operation type="Enumeration" value="Revoke"/>
0047     <Operation type="Enumeration" value="Check"/>
0048     <ObjectType type="Enumeration" value="SymmetricKey"/>
0049     <ObjectType type="Enumeration" value="Template"/>
0050     <VendorIdentification type="TextString" value="server-
vendor.com"/>
0051   <ServerInformation>
0052 </ServerInformation>
0053 </ResponsePayload>
0054 </BatchItem>
0055 </ResponseMessage>

```

206

207 3.1.2 TL-M-2-10 - Write with new (created) key

208 This case may occur when the Write operation starts with the first block on a tape. The implementation
209 may choose which Write operations qualify for creation of a new key. Regardless of the initiating
210 circumstances, the Tape Library requests the server to create a new AES-256 symmetric key with
211 appropriate identifying information which is unique within the Application Namespace.

212 Additional custom attributes MAY be specified in order to:

- 213 - ensure uniqueness of the key identifier when later Locating the key via ASI
- 214 - provide human-readable information (such as the tape Barcode value)
- 215 - provide information to support client-specific purposes

```

# TIME 0
0001 <RequestMessage>
0002   <RequestHeader>
0003     <ProtocolVersion>
0004       <ProtocolVersionMajor type="Integer" value="1"/>
0005       <ProtocolVersionMinor type="Integer" value="0"/>
0006     </ProtocolVersion>
0007     <BatchOrderOption type="Boolean" value="true"/>
0008     <BatchCount type="Integer" value="2"/>
0009   </RequestHeader>
0010   <BatchItem>
0011     <Operation type="Enumeration" value="Create"/>
0012     <UniqueBatchItemID type="ByteString" value="01"/>
0013   <RequestPayload>
0014     <ObjectType type="Enumeration" value="SymmetricKey"/>

```

| | |
|------|--|
| 0015 | <TemplateAttribute> |
| 0016 | <Attribute> |
| 0017 | <AttributeName type="TextString" value="x-ID"/> |
| 0018 | <AttributeValue type="TextString" value="TL-M-2-10"/> |
| 0019 | </Attribute> |
| 0020 | <Attribute> |
| 0021 | <AttributeName type="TextString" value="Name"/> |
| 0022 | <AttributeValue> |
| 0023 | <NameValue type="TextString" |
| | value="AAAAAAA1A1AA12345678901234567"/> |
| 0024 | <NameType type="Enumeration" |
| | value="UninterpretedTextString"/> |
| 0025 | </AttributeValue> |
| 0026 | </Attribute> |
| 0027 | <Attribute> |
| 0028 | <AttributeName type="TextString" value="Cryptographic |
| | Algorithm"/> |
| 0029 | <AttributeValue type="Enumeration" value="AES"/> |
| 0030 | </Attribute> |
| 0031 | <Attribute> |
| 0032 | <AttributeName type="TextString" value="Cryptographic |
| | Length"/> |
| 0033 | <AttributeValue type="Integer" value="256"/> |
| 0034 | </Attribute> |
| 0035 | <Attribute> |
| 0036 | <AttributeName type="TextString" value="Cryptographic |
| | Usage Mask"/> |
| 0037 | <AttributeValue type="Integer" value="Decrypt Encrypt"/> |
| 0038 | </Attribute> |
| 0039 | <Attribute> |
| 0040 | <AttributeName type="TextString" value="Application |
| | Specific Information"/> |
| 0041 | <AttributeValue> |
| 0042 | <ApplicationNamespace type="TextString" value="LIBRARY- |
| | LTO"/> |
| 0043 | <ApplicationData type="TextString" |
| | value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000 |
| | 000"/> |
| 0044 | </AttributeValue> |
| 0045 | </Attribute> |
| 0046 | <Attribute> |
| 0047 | <AttributeName type="TextString" value="x-Barcode"/> |
| 0048 | <AttributeValue type="TextString" value="XXA012A1"/> |
| 0049 | </Attribute> |
| 0050 | <Attribute> |
| 0051 | <AttributeName type="TextString" value="x- |
| | VendorAttribute1"/> |
| 0052 | <AttributeValue type="TextString" value="XXA012A1"/> |
| 0053 | </Attribute> |
| 0054 | <Attribute> |
| 0055 | <AttributeName type="TextString" value="x- |
| | VendorAttribute2"/> |
| 0056 | <AttributeValue type="Integer" value="0"/> |
| 0057 | </Attribute> |
| 0058 | <Attribute> |
| 0059 | <AttributeName type="TextString" value="x- |
| | VendorAttribute3"/> |
| 0060 | <AttributeValue type="DateTime" value="2012-10- |

[illegible]

3.1.3 TL-M-3-10 - Read an encrypted tape

The Tape Library constructs an identifier string based on the method in 2.3, then requests the server to Locate that string via ASI. A Get is then requested based on the key's unique identifier. The Tape Library MAY update attributes associated with the Symmetric Key Managed Object. The following test case shows extensive use of custom attributes. Custom attributes are not required if the Application Name is unique within the Application Namespace. An implementation may also use custom attributes for vendor-unique purposes, or to improve usability.

The test case destroys the key created in the previous test case to clean up after the test. Tape Library implementations may elect to not perform this step.

```
# TIME 0
0001 <RequestMessage>
0002   <RequestHeader>
0003     <ProtocolVersion>
0004       <ProtocolVersionMajor type="Integer" value="1"/>
0005       <ProtocolVersionMinor type="Integer" value="0"/>
0006     </ProtocolVersion>
0007     <BatchOrderOption type="Boolean" value="true"/>
0008     <BatchCount type="Integer" value="2"/>
0009   </RequestHeader>
0010   <BatchItem>
0011     <Operation type="Enumeration" value="Locate"/>
0012     <UniqueBatchItemID type="ByteString" value="01"/>
0013     <RequestPayload>
0014       <Attribute>
0015         <AttributeName type="TextString" value="Object Type"/>
0016         <AttributeValue type="Enumeration" value="SymmetricKey"/>
0017       </Attribute>
0018       <Attribute>
0019         <AttributeName type="TextString" value="Application Specific
0020 Information"/>
0021         <AttributeValue>
0022           <ApplicationNamespace type="TextString" value="LIBRARY-
0023 LTO"/>
0024           <ApplicationData type="TextString"
0025 value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000
0026 000"/>
0027         </AttributeValue>
0028       </Attribute>
0029     </RequestPayload>
0030   </BatchItem>
0031   <BatchItem>
0032     <Operation type="Enumeration" value="Get"/>
0033     <UniqueBatchItemID type="ByteString" value="02"/>
0034     <RequestPayload>
0035     </RequestPayload>
0036   </BatchItem>
0037 </RequestMessage>
0038 <ResponseMessage>
0039   <ResponseHeader>
0040     <ProtocolVersion>
0041       <ProtocolVersionMajor type="Integer" value="1"/>
0042       <ProtocolVersionMinor type="Integer" value="0"/>
0043     </ProtocolVersion>
0044     <TimeStamp type="DateTime" value="2012-10-05T22:00:32+00:00"/>
0045     <BatchCount type="Integer" value="2"/>
```

[illegible]

```

0071 # TIME 1
0072 <RequestMessage>
0073   <RequestHeader>
0074     <ProtocolVersion>
0075       <ProtocolVersionMajor type="Integer" value="1"/>
0076       <ProtocolVersionMinor type="Integer" value="0"/>
0077     </ProtocolVersion>
0078     <BatchOrderOption type="Boolean" value="true"/>
0079     <BatchCount type="Integer" value="2"/>
0080   </RequestHeader>
0081   <BatchItem>
0082     <Operation type="Enumeration" value="Locate"/>
0083     <UniqueBatchItemID type="ByteString" value="01"/>
0084     <RequestPayload>
0085       <Attribute>
0086         <AttributeName type="TextString" value="Object Type"/>
0087         <AttributeValue type="Enumeration" value="SymmetricKey"/>
0088       </Attribute>
0089       <Attribute>
0090         <AttributeName type="TextString" value="Application Specific
0091 Information"/>
0092         <AttributeValue>
0093           <ApplicationNamespace type="TextString" value="LIBRARY-
0094 LTO"/>
0095           <ApplicationData type="TextString"

```


| | |
|------|--|
| | value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000000"/> |
| 0093 | </AttributeValue> |
| 0094 | </Attribute> |
| 0095 | </RequestPayload> |
| 0096 | </BatchItem> |
| 0097 | <BatchItem> |
| 0098 | <Operation type="Enumeration" value="GetAttributeList"/> |
| 0099 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0100 | <RequestPayload> |
| 0101 | </RequestPayload> |
| 0102 | </BatchItem> |
| 0103 | </RequestMessage> |
| 0104 | <ResponseMessage> |
| 0105 | <ResponseHeader> |
| 0106 | <ProtocolVersion> |
| 0107 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0108 | <ProtocolVersionMinor type="Integer" value="0"/> |
| 0109 | </ProtocolVersion> |
| 0110 | <TimeStamp type="DateTime" value="2012-10-05T22:00:33+00:00"/> |
| 0111 | <BatchCount type="Integer" value="2"/> |
| 0112 | </ResponseHeader> |
| 0113 | <BatchItem> |
| 0114 | <Operation type="Enumeration" value="Locate"/> |
| 0115 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0116 | <ResultStatus type="Enumeration" value="Success"/> |
| 0117 | <ResponsePayload> |
| 0118 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER 0"/> |
| 0119 | </ResponsePayload> |
| 0120 | </BatchItem> |
| 0121 | <BatchItem> |
| 0122 | <Operation type="Enumeration" value="GetAttributeList"/> |
| 0123 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0124 | <ResultStatus type="Enumeration" value="Success"/> |
| 0125 | <ResponsePayload> |
| 0126 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0127 | <AttributeName type="TextString" value="x-ID"/> |
| 0128 | <AttributeName type="TextString" value="x-Barcode"/> |
| 0129 | <AttributeName type="TextString" value="x-VendorAttribute1"/> |
| 0130 | <AttributeName type="TextString" value="x-VendorAttribute2"/> |
| 0131 | <AttributeName type="TextString" value="x-VendorAttribute3"/> |
| 0132 | <AttributeName type="TextString" value="Unique Identifier"/> |
| 0133 | <AttributeName type="TextString" value="Object Type"/> |
| 0134 | <AttributeName type="TextString" value="Cryptographic |
| | Algorithm"/> |
| 0135 | <AttributeName type="TextString" value="Cryptographic |
| | Length"/> |
| 0136 | <AttributeName type="TextString" value="Application Specific |
| | Information"/> |
| 0137 | <AttributeName type="TextString" value="Cryptographic Usage |
| | Mask"/> |
| 0138 | <AttributeName type="TextString" value="Digest"/> |
| 0139 | <AttributeName type="TextString" value="Initial Date"/> |
| 0140 | <AttributeName type="TextString" value="Last Change Date"/> |
| 0141 | <AttributeName type="TextString" value="Lease Time"/> |
| 0142 | <AttributeName type="TextString" value="Name"/> |

| | |
|----------|--|
| 0143 | <AttributeName type="TextString" value="State"/> |
| 0144 | </ResponsePayload> |
| 0145 | </BatchItem> |
| 0146 | </ResponseMessage> |
| # TIME 2 | |
| 0147 | <RequestMessage> |
| 0148 | <RequestHeader> |
| 0149 | <ProtocolVersion> |
| 0150 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0151 | <ProtocolVersionMinor type="Integer" value="0"/> |
| 0152 | </ProtocolVersion> |
| 0153 | <BatchOrderOption type="Boolean" value="true"/> |
| 0154 | <BatchCount type="Integer" value="2"/> |
| 0155 | </RequestHeader> |
| 0156 | <BatchItem> |
| 0157 | <Operation type="Enumeration" value="Locate"/> |
| 0158 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0159 | <RequestPayload> |
| 0160 | <Attribute> |
| 0161 | <AttributeName type="TextString" value="Object Type"/> |
| 0162 | <AttributeValue type="Enumeration" value="SymmetricKey"/> |
| 0163 | </Attribute> |
| 0164 | <Attribute> |
| 0165 | <AttributeName type="TextString" value="Application Specific Information"/> |
| 0166 | <AttributeValue> |
| 0167 | <ApplicationNamespace type="TextString" value="LIBRARY-LTO"/> |
| 0168 | <ApplicationData type="TextString" value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000"/> |
| 0169 | </AttributeValue> |
| 0170 | </Attribute> |
| 0171 | </RequestPayload> |
| 0172 | </BatchItem> |
| 0173 | <BatchItem> |
| 0174 | <Operation type="Enumeration" value="GetAttributes"/> |
| 0175 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0176 | <RequestPayload> |
| 0177 | </RequestPayload> |
| 0178 | </BatchItem> |
| 0179 | </RequestMessage> |
| 0180 | <ResponseMessage> |
| 0181 | <ResponseHeader> |
| 0182 | <ProtocolVersion> |
| 0183 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0184 | <ProtocolVersionMinor type="Integer" value="0"/> |
| 0185 | </ProtocolVersion> |
| 0186 | <TimeStamp type="DateTime" value="2012-10-05T22:00:32+00:00"/> |
| 0187 | <BatchCount type="Integer" value="2"/> |
| 0188 | </ResponseHeader> |
| 0189 | <BatchItem> |
| 0190 | <Operation type="Enumeration" value="Locate"/> |
| 0191 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0192 | <ResultStatus type="Enumeration" value="Success"/> |
| 0193 | <ResponsePayload> |
| 0194 | <UniqueIdentifier type="TextString" value="\$UNIQUE_IDENTIFIER 0"/> |

```

0195     </ResponsePayload>
0196 </BatchItem>
0197 <BatchItem>
0198     <Operation type="Enumeration" value="GetAttributes"/>
0199     <UniqueBatchItemID type="ByteString" value="02"/>
0200     <ResultStatus type="Enumeration" value="Success"/>
0201     <ResponsePayload>
0202         <UniqueIdentifier type="TextString"
value="$UNIQUE_IDENTIFIER_0"/>
0203         <Attribute>
0204             <AttributeName type="TextString" value="x-ID"/>
0205             <AttributeValue type="TextString" value="TL-M-2-10"/>
0206         </Attribute>
0207         <Attribute>
0208             <AttributeName type="TextString" value="x-Barcode"/>
0209             <AttributeValue type="TextString" value="XXA012A1"/>
0210         </Attribute>
0211         <Attribute>
0212             <AttributeName type="TextString" value="x-
VendorAttribute1"/>
0213             <AttributeValue type="TextString" value="XXA012A1"/>
0214         </Attribute>
0215         <Attribute>
0216             <AttributeName type="TextString" value="x-
VendorAttribute2"/>
0217             <AttributeValue type="Integer" value="0"/>
0218         </Attribute>
0219         <Attribute>
0220             <AttributeName type="TextString" value="x-
VendorAttribute3"/>
0221             <AttributeValue type="DateTime" value="2012-10-
05T22:08:19+00:00"/>
0222         </Attribute>
0223         <Attribute>
0224             <AttributeName type="TextString" value="Unique Identifier"/>
0225             <AttributeValue type="TextString"
value="$UNIQUE_IDENTIFIER_0"/>
0226         </Attribute>
0227         <Attribute>
0228             <AttributeName type="TextString" value="Object Type"/>
0229             <AttributeValue type="Enumeration" value="SymmetricKey"/>
0230         </Attribute>
0231         <Attribute>
0232             <AttributeName type="TextString" value="Cryptographic
Algorithm"/>
0233             <AttributeValue type="Enumeration" value="AES"/>
0234         </Attribute>
0235         <Attribute>
0236             <AttributeName type="TextString" value="Cryptographic
Length"/>
0237             <AttributeValue type="Integer" value="256"/>
0238         </Attribute>
0239         <Attribute>
0240             <AttributeName type="TextString" value="Application Specific
Information"/>
0241             <AttributeValue>
0242                 <ApplicationNamespace type="TextString" value="LIBRARY-
LTO"/>

```

| | |
|------|--|
| 0243 | <ApplicationData type="TextString" |
| | value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000000"/> |
| 0244 | </AttributeValue> |
| 0245 | </Attribute> |
| 0246 | <Attribute> |
| 0247 | <AttributeName type="TextString" value="Cryptographic Usage Mask"/> |
| 0248 | <AttributeValue type="Integer" value="Decrypt Encrypt"/> |
| 0249 | </Attribute> |
| 0250 | <Attribute> |
| 0251 | <AttributeName type="TextString" value="Digest"/> |
| 0252 | <AttributeValue> |
| 0253 | <HashingAlgorithm type="Enumeration" value="SHA_256"/> |
| 0254 | <DigestValue type="ByteString" |
| | value="0bd3d7ada745e4eb34cc9d26cc84d4852a15906b2f77f80d01fc31c28108c49b"/> |
| 0255 | </AttributeValue> |
| 0256 | </Attribute> |
| 0257 | <Attribute> |
| 0258 | <AttributeName type="TextString" value="Initial Date"/> |
| 0259 | <AttributeValue type="DateTime" value="2012-10-05T21:41:46+00:00"/> |
| 0260 | </Attribute> |
| 0261 | <Attribute> |
| 0262 | <AttributeName type="TextString" value="Last Change Date"/> |
| 0263 | <AttributeValue type="DateTime" value="2012-10-05T21:41:46+00:00"/> |
| 0264 | </Attribute> |
| 0265 | <Attribute> |
| 0266 | <AttributeName type="TextString" value="Lease Time"/> |
| 0267 | <AttributeValue type="Interval" value="3600"/> |
| 0268 | </Attribute> |
| 0269 | <Attribute> |
| 0270 | <AttributeName type="TextString" value="Name"/> |
| 0271 | <AttributeValue> |
| 0272 | <NameValue type="TextString" |
| | value="AAAAAA1A1AA12345678901234567"/> |
| 0273 | <NameType type="Enumeration" |
| | value="UninterpretedTextString"/> |
| 0274 | </AttributeValue> |
| 0275 | </Attribute> |
| 0276 | <Attribute> |
| 0277 | <AttributeName type="TextString" value="State"/> |
| 0278 | <AttributeValue type="Enumeration" value="PreActive"/> |
| 0279 | </Attribute> |
| 0280 | </ResponsePayload> |
| 0281 | </BatchItem> |
| 0282 | </ResponseMessage> |
| | # TIME 3 |
| 0283 | <RequestMessage> |
| 0284 | <RequestHeader> |
| 0285 | <ProtocolVersion> |
| 0286 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0287 | <ProtocolVersionMinor type="Integer" value="0"/> |
| 0288 | </ProtocolVersion> |
| 0289 | <BatchOrderOption type="Boolean" value="true"/> |
| 0290 | <BatchCount type="Integer" value="3"/> |

| | |
|------|---|
| 0291 | </RequestHeader> |
| 0292 | <BatchItem> |
| 0293 | <Operation type="Enumeration" value="Locate"/> |
| 0294 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0295 | <RequestPayload> |
| 0296 | <Attribute> |
| 0297 | <AttributeName type="TextString" value="Object Type"/> |
| 0298 | <AttributeValue type="Enumeration" value="SymmetricKey"/> |
| 0299 | </Attribute> |
| 0300 | <Attribute> |
| 0301 | <AttributeName type="TextString" value="Application Specific Information"/> |
| 0302 | <AttributeValue> |
| 0303 | <ApplicationNamespace type="TextString" value="LIBRARY-LTO"/> |
| 0304 | <ApplicationData type="TextString" value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000000"/> |
| 0305 | </AttributeValue> |
| 0306 | </Attribute> |
| 0307 | </RequestPayload> |
| 0308 | </BatchItem> |
| 0309 | <BatchItem> |
| 0310 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0311 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0312 | <RequestPayload> |
| 0313 | <Attribute> |
| 0314 | <AttributeName type="TextString" value="x-VendorAttribute2"/> |
| 0315 | <AttributeValue type="DateTime" value="2012-10-05T22:27:06+00:00"/> |
| 0316 | </Attribute> |
| 0317 | </RequestPayload> |
| 0318 | </BatchItem> |
| 0319 | <BatchItem> |
| 0320 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0321 | <UniqueBatchItemID type="ByteString" value="03"/> |
| 0322 | <RequestPayload> |
| 0323 | <Attribute> |
| 0324 | <AttributeName type="TextString" value="x-VendorAttribute3"/> |
| 0325 | <AttributeValue type="Integer" value="1"/> |
| 0326 | </Attribute> |
| 0327 | </RequestPayload> |
| 0328 | </BatchItem> |
| 0329 | </RequestMessage> |
| 0330 | <ResponseMessage> |
| 0331 | <ResponseHeader> |
| 0332 | <ProtocolVersion> |
| 0333 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0334 | <ProtocolVersionMinor type="Integer" value="0"/> |
| 0335 | </ProtocolVersion> |
| 0336 | <TimeStamp type="DateTime" value="2012-10-05T22:00:33+00:00"/> |
| 0337 | <BatchCount type="Integer" value="3"/> |
| 0338 | </ResponseHeader> |
| 0339 | <BatchItem> |
| 0340 | <Operation type="Enumeration" value="Locate"/> |
| 0341 | <UniqueBatchItemID type="ByteString" value="01"/> |

| | |
|----------|---|
| 0342 | <ResultStatus type="Enumeration" value="Success"/> |
| 0343 | <ResponsePayload> |
| 0344 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0345 | </ResponsePayload> |
| 0346 | </BatchItem> |
| 0347 | <BatchItem> |
| 0348 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0349 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0350 | <ResultStatus type="Enumeration" value="Success"/> |
| 0351 | <ResponsePayload> |
| 0352 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0353 | <Attribute> |
| 0354 | <AttributeName type="TextString" value="x- |
| | VendorAttribute2"/> |
| 0355 | <AttributeValue type="DateTime" value="2012-10- |
| | 05T22:27:06+00:00"/> |
| 0356 | </Attribute> |
| 0357 | </ResponsePayload> |
| 0358 | </BatchItem> |
| 0359 | <BatchItem> |
| 0360 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0361 | <UniqueBatchItemID type="ByteString" value="03"/> |
| 0362 | <ResultStatus type="Enumeration" value="Success"/> |
| 0363 | <ResponsePayload> |
| 0364 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0365 | <Attribute> |
| 0366 | <AttributeName type="TextString" value="x- |
| | VendorAttribute3"/> |
| 0367 | <AttributeValue type="Integer" value="1"/> |
| 0368 | </Attribute> |
| 0369 | </ResponsePayload> |
| 0370 | </BatchItem> |
| 0371 | </ResponseMessage> |
| # TIME 4 | |
| 0372 | <RequestMessage> |
| 0373 | <RequestHeader> |
| 0374 | <ProtocolVersion> |
| 0375 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0376 | <ProtocolVersionMinor type="Integer" value="0"/> |
| 0377 | </ProtocolVersion> |
| 0378 | <BatchCount type="Integer" value="1"/> |
| 0379 | </RequestHeader> |
| 0380 | <BatchItem> |
| 0381 | <Operation type="Enumeration" value="Destroy"/> |
| 0382 | <RequestPayload> |
| 0383 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0384 | </RequestPayload> |
| 0385 | </BatchItem> |
| 0386 | </RequestMessage> |
| 0387 | <ResponseMessage> |
| 0388 | <ResponseHeader> |
| 0389 | <ProtocolVersion> |
| 0390 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0391 | <ProtocolVersionMinor type="Integer" value="0"/> |

| | |
|------|--|
| 0392 | </ProtocolVersion> |
| 0393 | <TimeStamp type="DateTime" value="2012-10-05T22:00:33+00:00"/> |
| 0394 | <BatchCount type="Integer" value="1"/> |
| 0395 | </ResponseHeader> |
| 0396 | <BatchItem> |
| 0397 | <Operation type="Enumeration" value="Destroy"/> |
| 0398 | <ResultStatus type="Enumeration" value="Success"/> |
| 0399 | <ResponsePayload> |
| 0400 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0401 | </ResponsePayload> |
| 0402 | </BatchItem> |
| 0403 | </ResponseMessage> |

227

228 3.2 Mandatory Test Cases KMIP v1.1

229 3.2.1 TL-M-1-11 - Configuration

230 Determine server configuration details including operations supported (only the mandatory operations are
 231 listed in the response example), objects supported (only the mandatory objects types are listed in the
 232 response example), optional server information, and optional list of application name spaces.

| | |
|------|--|
| | # TIME 0 |
| 0001 | <RequestMessage> |
| 0002 | <RequestHeader> |
| 0003 | <ProtocolVersion> |
| 0004 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0005 | <ProtocolVersionMinor type="Integer" value="1"/> |
| 0006 | </ProtocolVersion> |
| 0007 | <BatchCount type="Integer" value="1"/> |
| 0008 | </RequestHeader> |
| 0009 | <BatchItem> |
| 0010 | <Operation type="Enumeration" value="Query"/> |
| 0011 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0012 | <RequestPayload> |
| 0013 | <QueryFunction type="Enumeration" value="QueryOperations"/> |
| 0014 | <QueryFunction type="Enumeration" value="QueryObjects"/> |
| 0015 | <QueryFunction type="Enumeration" |
| | value="QueryServerInformation"/> |
| 0016 | <QueryFunction type="Enumeration" |
| | value="QueryApplicationNamespaces"/> |
| 0017 | </RequestPayload> |
| 0018 | </BatchItem> |
| 0019 | </RequestMessage> |
| 0020 | <ResponseMessage> |
| 0021 | <ResponseHeader> |
| 0022 | <ProtocolVersion> |
| 0023 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0024 | <ProtocolVersionMinor type="Integer" value="1"/> |
| 0025 | </ProtocolVersion> |
| 0026 | <TimeStamp type="DateTime" value="2012-10-05T21:35:17+00:00"/> |
| 0027 | <BatchCount type="Integer" value="1"/> |
| 0028 | </ResponseHeader> |
| 0029 | <BatchItem> |
| 0030 | <Operation type="Enumeration" value="Query"/> |
| 0031 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0032 | <ResultStatus type="Enumeration" value="Success"/> |

```

0033     <ResponsePayload>
0034         <Operation type="Enumeration" value="Query"/>
0035         <Operation type="Enumeration" value="Locate"/>
0036         <Operation type="Enumeration" value="Destroy"/>
0037         <Operation type="Enumeration" value="Get"/>
0038         <Operation type="Enumeration" value="Create"/>
0039         <Operation type="Enumeration" value="Register"/>
0040         <Operation type="Enumeration" value="GetAttributes"/>
0041         <Operation type="Enumeration" value="GetAttributeList"/>
0042         <Operation type="Enumeration" value="AddAttribute"/>
0043         <Operation type="Enumeration" value="ModifyAttribute"/>
0044         <Operation type="Enumeration" value="DeleteAttribute"/>
0045         <Operation type="Enumeration" value="Activate"/>
0046         <Operation type="Enumeration" value="Revoke"/>
0047         <Operation type="Enumeration" value="Check"/>
0048         <ObjectType type="Enumeration" value="SymmetricKey"/>
0049         <ObjectType type="Enumeration" value="Template"/>
0050         <VendorIdentification type="TextString" value="server-
0051         vendor.com"/>
0052     </ServerInformation>
0053 </ResponsePayload>
0054 </BatchItem>
0055 </ResponseMessage>

```

233

234 3.2.2 TL-M-2-11 - Write with new (created) key

235 This case may occur when the Write operation starts with the first block on a tape. The implementation
236 may choose which Write operations qualify for creation of a new key. Regardless of the initiating
237 circumstances, the Tape Library requests the server to create a new AES-256 symmetric key with
238 appropriate identifying information which is unique within the Application Namespace.

239 Additional custom attributes MAY be specified in order to:

- 240 - ensure uniqueness of the key identifier when later Locating the key via ASI
- 241 - provide human-readable information (such as the tape Barcode value)
- 242 - provide information to support client-specific purposes

```

0001 # TIME 0
0002 <RequestMessage>
0003     <RequestHeader>
0004         <ProtocolVersion>
0005             <ProtocolVersionMajor type="Integer" value="1"/>
0006             <ProtocolVersionMinor type="Integer" value="1"/>
0007         </ProtocolVersion>
0008         <BatchOrderOption type="Boolean" value="true"/>
0009         <BatchCount type="Integer" value="2"/>
0010     </RequestHeader>
0011     <BatchItem>
0012         <Operation type="Enumeration" value="Create"/>
0013         <UniqueBatchItemID type="ByteString" value="01"/>
0014         <RequestPayload>
0015             <ObjectType type="Enumeration" value="SymmetricKey"/>
0016             <TemplateAttribute>
0017                 <Attribute>
0018                     <AttributeName type="TextString" value="x-ID"/>
0019                     <AttributeValue type="TextString" value="TL-M-2-11"/>

```


| | |
|------|--|
| 0020 | <Attribute> |
| 0021 | <AttributeName type="TextString" value="Name"/> |
| 0022 | <AttributeValue> |
| 0023 | <NameValue type="TextString" |
| | value="AAAAAAlA1AA12345678901234567"/> |
| 0024 | <NameType type="Enumeration" |
| | value="UninterpretedTextString"/> |
| 0025 | </AttributeValue> |
| 0026 | </Attribute> |
| 0027 | <Attribute> |
| 0028 | <AttributeName type="TextString" value="Cryptographic |
| | Algorithm"/> |
| 0029 | <AttributeValue type="Enumeration" value="AES"/> |
| 0030 | </Attribute> |
| 0031 | <Attribute> |
| 0032 | <AttributeName type="TextString" value="Cryptographic |
| | Length"/> |
| 0033 | <AttributeValue type="Integer" value="256"/> |
| 0034 | </Attribute> |
| 0035 | <Attribute> |
| 0036 | <AttributeName type="TextString" value="Cryptographic |
| | Usage Mask"/> |
| 0037 | <AttributeValue type="Integer" value="Decrypt Encrypt"/> |
| 0038 | </Attribute> |
| 0039 | <Attribute> |
| 0040 | <AttributeName type="TextString" value="Application |
| | Specific Information"/> |
| 0041 | <AttributeValue> |
| 0042 | <ApplicationNamespace type="TextString" value="LIBRARY- |
| | LTO"/> |
| 0043 | <ApplicationData type="TextString" |
| | value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000 |
| | 000"/> |
| 0044 | </AttributeValue> |
| 0045 | </Attribute> |
| 0046 | <Attribute> |
| 0047 | <AttributeName type="TextString" value="x-Barcode"/> |
| 0048 | <AttributeValue type="TextString" value="XXA012A1"/> |
| 0049 | </Attribute> |
| 0050 | <Attribute> |
| 0051 | <AttributeName type="TextString" value="x- |
| | VendorAttribute1"/> |
| 0052 | <AttributeValue type="TextString" value="XXA012A1"/> |
| 0053 | </Attribute> |
| 0054 | <Attribute> |
| 0055 | <AttributeName type="TextString" value="x- |
| | VendorAttribute2"/> |
| 0056 | <AttributeValue type="Integer" value="0"/> |
| 0057 | </Attribute> |
| 0058 | <Attribute> |
| 0059 | <AttributeName type="TextString" value="x- |
| | VendorAttribute3"/> |
| 0060 | <AttributeValue type="DateTime" value="2012-10- |
| | 05T22:08:19+00:00"/> |
| 0061 | </Attribute> |
| 0062 | </TemplateAttribute> |
| 0063 | </RequestPayload> |
| 0064 | </BatchItem> |

[illegible]

243

244 **3.2.3 TL-M-3-11 - Read an encrypted tape**

245 The Tape Library constructs an identifier string based on the method in 2.3, then requests the server to
246 Locate that string via ASI. A Get is then requested based on the key's unique identifier. The Tape Library
247 MAY update attributes associated with the Symmetric Key Managed Object. The following test case
248 shows extensive use of custom attributes. Custom attributes are not required if the Application Name is

249 unique within the Application Namespace. An implementation may also use custom attributes for vendor-
250 unique purposes, or to improve usability.

251 The test case destroys the key created in the previous test case to clean up after the test. Tape Library
252 implementations may elect to not perform this step.

253

```

# TIME 0
0001 <RequestMessage>
0002   <RequestHeader>
0003     <ProtocolVersion>
0004       <ProtocolVersionMajor type="Integer" value="1"/>
0005       <ProtocolVersionMinor type="Integer" value="1"/>
0006     </ProtocolVersion>
0007     <BatchOrderOption type="Boolean" value="true"/>
0008     <BatchCount type="Integer" value="2"/>
0009   </RequestHeader>
0010   <BatchItem>
0011     <Operation type="Enumeration" value="Locate"/>
0012     <UniqueBatchItemID type="ByteString" value="01"/>
0013     <RequestPayload>
0014       <Attribute>
0015         <AttributeName type="TextString" value="Object Type"/>
0016         <AttributeValue type="Enumeration" value="SymmetricKey"/>
0017       </Attribute>
0018       <Attribute>
0019         <AttributeName type="TextString" value="Application Specific
Information"/>
0020         <AttributeValue>
0021           <ApplicationNamespace type="TextString" value="LIBRARY-
LTO"/>
0022           <ApplicationData type="TextString"
value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000
000"/>
0023         </AttributeValue>
0024       </Attribute>
0025     </RequestPayload>
0026   </BatchItem>
0027   <BatchItem>
0028     <Operation type="Enumeration" value="Get"/>
0029     <UniqueBatchItemID type="ByteString" value="02"/>
0030     <RequestPayload>
0031   </RequestPayload>
0032   </BatchItem>
0033 </RequestMessage>
0034 <ResponseMessage>
0035   <ResponseHeader>
0036     <ProtocolVersion>
0037       <ProtocolVersionMajor type="Integer" value="1"/>
0038       <ProtocolVersionMinor type="Integer" value="1"/>
0039     </ProtocolVersion>
0040     <TimeStamp type="DateTime" value="2012-10-05T22:00:32+00:00"/>
0041     <BatchCount type="Integer" value="2"/>
0042   </ResponseHeader>
0043   <BatchItem>
0044     <Operation type="Enumeration" value="Locate"/>
0045     <UniqueBatchItemID type="ByteString" value="01"/>
0046     <ResultStatus type="Enumeration" value="Success"/>
0047   <ResponsePayload>

```

| | |
|--|--|
| | <pre>0048 <UniqueIdentifier type="TextString" value="\$UNIQUE_IDENTIFIER_0"/> 0049 </ResponsePayload> 0050 </BatchItem> 0051 <BatchItem> 0052 <Operation type="Enumeration" value="Get"/> 0053 <UniqueBatchItemID type="ByteString" value="02"/> 0054 <ResultStatus type="Enumeration" value="Success"/> 0055 <ResponsePayload> 0056 <ObjectType type="Enumeration" value="SymmetricKey"/> 0057 <UniqueIdentifier type="TextString" value="\$UNIQUE_IDENTIFIER_0"/> 0058 <SymmetricKey> 0059 <KeyBlock> 0060 <KeyFormatType type="Enumeration" value="Raw"/> 0061 <KeyValue> 0062 <KeyMaterial type="ByteString" value="2a2 a2a"/> 0063 </KeyValue> 0064 <CryptographicAlgorithm type="Enumeration" value="AES"/> 0065 <CryptographicLength type="Integer" value="256"/> 0066 </KeyBlock> 0067 </SymmetricKey> 0068 </ResponsePayload> 0069 </BatchItem> 0070 </ResponseMessage></pre> |
| | <pre># TIME 1 0071 <RequestMessage> 0072 <RequestHeader> 0073 <ProtocolVersion> 0074 <ProtocolVersionMajor type="Integer" value="1"/> 0075 <ProtocolVersionMinor type="Integer" value="1"/> 0076 </ProtocolVersion> 0077 <BatchOrderOption type="Boolean" value="true"/> 0078 <BatchCount type="Integer" value="2"/> 0079 </RequestHeader> 0080 <BatchItem> 0081 <Operation type="Enumeration" value="Locate"/> 0082 <UniqueBatchItemID type="ByteString" value="01"/> 0083 <RequestPayload> 0084 <Attribute> 0085 <AttributeName type="TextString" value="Object Type"/> 0086 <AttributeValue type="Enumeration" value="SymmetricKey"/> 0087 </Attribute> 0088 <Attribute> 0089 <AttributeName type="TextString" value="Application Specific Information"/> 0090 <AttributeValue> 0091 <ApplicationNamespace type="TextString" value="LIBRARY- LTO"/> 0092 <ApplicationData type="TextString" value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000 000"/> 0093 </AttributeValue> 0094 </Attribute> 0095 </RequestPayload> 0096 </BatchItem></pre> |

| | |
|------|--|
| 0097 | <BatchItem> |
| 0098 | <Operation type="Enumeration" value="GetAttributeList"/> |
| 0099 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0100 | <RequestPayload> |
| 0101 | </RequestPayload> |
| 0102 | </BatchItem> |
| 0103 | </RequestMessage> |
| 0104 | <ResponseMessage> |
| 0105 | <ResponseHeader> |
| 0106 | <ProtocolVersion> |
| 0107 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0108 | <ProtocolVersionMinor type="Integer" value="1"/> |
| 0109 | </ProtocolVersion> |
| 0110 | <TimeStamp type="DateTime" value="2012-10-05T22:00:33+00:00"/> |
| 0111 | <BatchCount type="Integer" value="2"/> |
| 0112 | </ResponseHeader> |
| 0113 | <BatchItem> |
| 0114 | <Operation type="Enumeration" value="Locate"/> |
| 0115 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0116 | <ResultStatus type="Enumeration" value="Success"/> |
| 0117 | <ResponsePayload> |
| 0118 | <UniqueIdentifier type="TextString" |
| 0119 | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0120 | </ResponsePayload> |
| 0121 | </BatchItem> |
| 0122 | <BatchItem> |
| 0123 | <Operation type="Enumeration" value="GetAttributeList"/> |
| 0124 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0125 | <ResultStatus type="Enumeration" value="Success"/> |
| 0126 | <ResponsePayload> |
| 0127 | <UniqueIdentifier type="TextString" |
| 0128 | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0129 | <AttributeName type="TextString" value="x-ID"/> |
| 0130 | <AttributeName type="TextString" value="x-Barcode"/> |
| 0131 | <AttributeName type="TextString" value="x-VendorAttribute1"/> |
| 0132 | <AttributeName type="TextString" value="x-VendorAttribute2"/> |
| 0133 | <AttributeName type="TextString" value="x-VendorAttribute3"/> |
| 0134 | <AttributeName type="TextString" value="Unique Identifier"/> |
| 0135 | <AttributeName type="TextString" value="Object Type"/> |
| 0136 | <AttributeName type="TextString" value="Cryptographic |
| 0137 | Algorithm"/> |
| 0138 | <AttributeName type="TextString" value="Cryptographic |
| 0139 | Length"/> |
| 0140 | <AttributeName type="TextString" value="Application Specific |
| 0141 | Information"/> |
| 0142 | <AttributeName type="TextString" value="Cryptographic Usage |
| 0143 | Mask"/> |
| 0144 | <AttributeName type="TextString" value="Digest"/> |
| 0145 | <AttributeName type="TextString" value="Initial Date"/> |
| 0146 | <AttributeName type="TextString" value="Last Change Date"/> |
| 0147 | <AttributeName type="TextString" value="Lease Time"/> |
| 0148 | <AttributeName type="TextString" value="Name"/> |
| 0149 | <AttributeName type="TextString" value="State"/> |
| 0150 | </ResponsePayload> |
| 0151 | </BatchItem> |
| 0152 | </ResponseMessage> |
| 0153 | # TIME 2 |
| 0154 | <RequestMessage> |

| | |
|------|---|
| 0148 | <RequestHeader> |
| 0149 | <ProtocolVersion> |
| 0150 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0151 | <ProtocolVersionMinor type="Integer" value="1"/> |
| 0152 | </ProtocolVersion> |
| 0153 | <BatchOrderOption type="Boolean" value="true"/> |
| 0154 | <BatchCount type="Integer" value="2"/> |
| 0155 | </RequestHeader> |
| 0156 | <BatchItem> |
| 0157 | <Operation type="Enumeration" value="Locate"/> |
| 0158 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0159 | <RequestPayload> |
| 0160 | <Attribute> |
| 0161 | <AttributeName type="TextString" value="Object Type"/> |
| 0162 | <AttributeValue type="Enumeration" value="SymmetricKey"/> |
| 0163 | </Attribute> |
| 0164 | <Attribute> |
| 0165 | <AttributeName type="TextString" value="Application Specific Information"/> |
| 0166 | <AttributeValue> |
| 0167 | <ApplicationNamespace type="TextString" value="LIBRARY-LTO"/> |
| 0168 | <ApplicationData type="TextString" value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000000"/> |
| 0169 | </AttributeValue> |
| 0170 | </Attribute> |
| 0171 | </RequestPayload> |
| 0172 | </BatchItem> |
| 0173 | <BatchItem> |
| 0174 | <Operation type="Enumeration" value="GetAttributes"/> |
| 0175 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0176 | <RequestPayload> |
| 0177 | </RequestPayload> |
| 0178 | </BatchItem> |
| 0179 | </RequestMessage> |
| 0180 | <ResponseMessage> |
| 0181 | <ResponseHeader> |
| 0182 | <ProtocolVersion> |
| 0183 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0184 | <ProtocolVersionMinor type="Integer" value="1"/> |
| 0185 | </ProtocolVersion> |
| 0186 | <TimeStamp type="DateTime" value="2012-10-05T22:00:32+00:00"/> |
| 0187 | <BatchCount type="Integer" value="2"/> |
| 0188 | </ResponseHeader> |
| 0189 | <BatchItem> |
| 0190 | <Operation type="Enumeration" value="Locate"/> |
| 0191 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0192 | <ResultStatus type="Enumeration" value="Success"/> |
| 0193 | <ResponsePayload> |
| 0194 | <UniqueIdentifier type="TextString" value="\$UNIQUE_IDENTIFIER_0"/> |
| 0195 | </ResponsePayload> |
| 0196 | </BatchItem> |
| 0197 | <BatchItem> |
| 0198 | <Operation type="Enumeration" value="GetAttributes"/> |
| 0199 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0200 | <ResultStatus type="Enumeration" value="Success"/> |

```

0201     <ResponsePayload>
0202     <UniqueIdentifier type="TextString"
value="$UNIQUE_IDENTIFIER_0"/>
0203     <Attribute>
0204         <AttributeName type="TextString" value="x-ID"/>
0205         <AttributeValue type="TextString" value="TL-M-2-11"/>
0206     </Attribute>
0207     <Attribute>
0208         <AttributeName type="TextString" value="x-
VendorAttribute1"/>
0209         <AttributeValue type="TextString" value="XXA012A1"/>
0210     </Attribute>
0211     <Attribute>
0212         <AttributeName type="TextString" value="x-
VendorAttribute2"/>
0213         <AttributeValue type="Integer" value="0"/>
0214     </Attribute>
0215     <Attribute>
0216         <AttributeName type="TextString" value="x-
VendorAttribute3"/>
0217         <AttributeValue type="DateTime" value="2012-10-
05T22:08:19+00:00"/>
0218     </Attribute>
0219     <Attribute>
0220         <AttributeName type="TextString" value="Unique Identifier"/>
0221         <AttributeValue type="TextString"
value="$UNIQUE_IDENTIFIER_0"/>
0222     </Attribute>
0223     <Attribute>
0224         <AttributeName type="TextString" value="Object Type"/>
0225         <AttributeValue type="Enumeration" value="SymmetricKey"/>
0226     </Attribute>
0227     <Attribute>
0228         <AttributeName type="TextString" value="Cryptographic
Algorithm"/>
0229         <AttributeValue type="Enumeration" value="AES"/>
0230     </Attribute>
0231     <Attribute>
0232         <AttributeName type="TextString" value="Cryptographic
Length"/>
0233         <AttributeValue type="Integer" value="256"/>
0234     </Attribute>
0235     <Attribute>
0236         <AttributeName type="TextString" value="Application Specific
Information"/>
0237         <AttributeValue>
0238             <ApplicationNamespace type="TextString" value="LIBRARY-
LTO"/>
0239             <ApplicationData type="TextString"
value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000
000"/>
0240         </AttributeValue>
0241     </Attribute>
0242     <Attribute>
0243         <AttributeName type="TextString" value="Cryptographic Usage
Mask"/>
0244         <AttributeValue type="Integer" value="Decrypt Encrypt"/>
0245     </Attribute>

```

| | |
|------|--|
| 0246 | <Attribute> |
| 0247 | <AttributeName type="TextString" value="Digest"/> |
| 0248 | <AttributeValue> |
| 0249 | <HashingAlgorithm type="Enumeration" value="SHA_256"/> |
| 0250 | <DigestValue type="ByteString" |
| | value="0bd3d7ada745e4eb34cc9d26cc84d4852a15906b2f77f80d01fc31c28108c49b"/> |
| 0251 | <KeyFormatType type="Enumeration" value="Raw"/> |
| 0252 | </AttributeValue> |
| 0253 | </Attribute> |
| 0254 | <Attribute> |
| 0255 | <AttributeName type="TextString" value="Fresh"/> |
| 0256 | <AttributeValue type="Boolean" value="false"/> |
| 0257 | </Attribute> |
| 0258 | <Attribute> |
| 0259 | <AttributeName type="TextString" value="Initial Date"/> |
| 0260 | <AttributeValue type="DateTime" value="2012-10- |
| | 05T21:41:46+00:00"/> |
| 0261 | </Attribute> |
| 0262 | <Attribute> |
| 0263 | <AttributeName type="TextString" value="Last Change Date"/> |
| 0264 | <AttributeValue type="DateTime" value="2012-10- |
| | 05T21:41:46+00:00"/> |
| 0265 | </Attribute> |
| 0266 | <Attribute> |
| 0267 | <AttributeName type="TextString" value="Lease Time"/> |
| 0268 | <AttributeValue type="Interval" value="3600"/> |
| 0269 | </Attribute> |
| 0270 | <Attribute> |
| 0271 | <AttributeName type="TextString" value="Name"/> |
| 0272 | <AttributeValue> |
| 0273 | <NameValue type="TextString" |
| | value="AAAAAAAlA1AA12345678901234567"/> |
| 0274 | <NameType type="Enumeration" |
| | value="UninterpretedTextString"/> |
| 0275 | </AttributeValue> |
| 0276 | </Attribute> |
| 0277 | <Attribute> |
| 0278 | <AttributeName type="TextString" value="State"/> |
| 0279 | <AttributeValue type="Enumeration" value="PreActive"/> |
| 0280 | </Attribute> |
| 0281 | </ResponsePayload> |
| 0282 | </BatchItem> |
| 0283 | </ResponseMessage> |
| | # TIME 3 |
| 0284 | <RequestMessage> |
| 0285 | <RequestHeader> |
| 0286 | <ProtocolVersion> |
| 0287 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0288 | <ProtocolVersionMinor type="Integer" value="1"/> |
| 0289 | </ProtocolVersion> |
| 0290 | <BatchOrderOption type="Boolean" value="true"/> |
| 0291 | <BatchCount type="Integer" value="3"/> |
| 0292 | </RequestHeader> |
| 0293 | <BatchItem> |
| 0294 | <Operation type="Enumeration" value="Locate"/> |
| 0295 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0296 | <RequestPayload> |

| | |
|------|--|
| 0297 | <Attribute> |
| 0298 | <AttributeName type="TextString" value="Object Type"/> |
| 0299 | <AttributeValue type="Enumeration" value="SymmetricKey"/> |
| 0300 | </Attribute> |
| 0301 | <Attribute> |
| 0302 | <AttributeName type="TextString" value="Application Specific Information"/> |
| 0303 | <AttributeValue> |
| 0304 | <ApplicationNamespace type="TextString" value="LIBRARY-LTO"/> |
| 0305 | <ApplicationData type="TextString" value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000"/> |
| 0306 | </AttributeValue> |
| 0307 | </Attribute> |
| 0308 | </RequestPayload> |
| 0309 | </BatchItem> |
| 0310 | <BatchItem> |
| 0311 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0312 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0313 | <RequestPayload> |
| 0314 | <Attribute> |
| 0315 | <AttributeName type="TextString" value="x-VendorAttribute2"/> |
| 0316 | <AttributeValue type="DateTime" value="2012-10-05T22:27:06+00:00"/> |
| 0317 | </Attribute> |
| 0318 | </RequestPayload> |
| 0319 | </BatchItem> |
| 0320 | <BatchItem> |
| 0321 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0322 | <UniqueBatchItemID type="ByteString" value="03"/> |
| 0323 | <RequestPayload> |
| 0324 | <Attribute> |
| 0325 | <AttributeName type="TextString" value="x-VendorAttribute3"/> |
| 0326 | <AttributeValue type="Integer" value="1"/> |
| 0327 | </Attribute> |
| 0328 | </RequestPayload> |
| 0329 | </BatchItem> |
| 0330 | </RequestMessage> |
| 0331 | <ResponseMessage> |
| 0332 | <ResponseHeader> |
| 0333 | <ProtocolVersion> |
| 0334 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0335 | <ProtocolVersionMinor type="Integer" value="1"/> |
| 0336 | </ProtocolVersion> |
| 0337 | <TimeStamp type="DateTime" value="2012-10-05T22:00:33+00:00"/> |
| 0338 | <BatchCount type="Integer" value="3"/> |
| 0339 | </ResponseHeader> |
| 0340 | <BatchItem> |
| 0341 | <Operation type="Enumeration" value="Locate"/> |
| 0342 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0343 | <ResultStatus type="Enumeration" value="Success"/> |
| 0344 | <ResponsePayload> |
| 0345 | <UniqueIdentifier type="TextString" value="\$UNIQUE_IDENTIFIER_0"/> |
| 0346 | </ResponsePayload> |

| | |
|----------|--|
| 0347 | </BatchItem> |
| 0348 | <BatchItem> |
| 0349 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0350 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0351 | <ResultStatus type="Enumeration" value="Success"/> |
| 0352 | <ResponsePayload> |
| 0353 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0354 | <Attribute> |
| 0355 | <AttributeName type="TextString" value="x- |
| | VendorAttribute2"/> |
| 0356 | <AttributeValue type="DateTime" value="2012-10- |
| | 05T22:27:06+00:00"/> |
| 0357 | </Attribute> |
| 0358 | </ResponsePayload> |
| 0359 | </BatchItem> |
| 0360 | <BatchItem> |
| 0361 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0362 | <UniqueBatchItemID type="ByteString" value="03"/> |
| 0363 | <ResultStatus type="Enumeration" value="Success"/> |
| 0364 | <ResponsePayload> |
| 0365 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0366 | <Attribute> |
| 0367 | <AttributeName type="TextString" value="x- |
| | VendorAttribute3"/> |
| 0368 | <AttributeValue type="Integer" value="1"/> |
| 0369 | </Attribute> |
| 0370 | </ResponsePayload> |
| 0371 | </BatchItem> |
| 0372 | </ResponseMessage> |
| # TIME 4 | |
| 0373 | <RequestMessage> |
| 0374 | <RequestHeader> |
| 0375 | <ProtocolVersion> |
| 0376 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0377 | <ProtocolVersionMinor type="Integer" value="1"/> |
| 0378 | </ProtocolVersion> |
| 0379 | <BatchCount type="Integer" value="1"/> |
| 0380 | </RequestHeader> |
| 0381 | <BatchItem> |
| 0382 | <Operation type="Enumeration" value="Destroy"/> |
| 0383 | <RequestPayload> |
| 0384 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0385 | </RequestPayload> |
| 0386 | </BatchItem> |
| 0387 | </RequestMessage> |
| 0388 | <ResponseMessage> |
| 0389 | <ResponseHeader> |
| 0390 | <ProtocolVersion> |
| 0391 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0392 | <ProtocolVersionMinor type="Integer" value="1"/> |
| 0393 | </ProtocolVersion> |
| 0394 | <TimeStamp type="DateTime" value="2012-10-05T22:00:33+00:00"/> |
| 0395 | <BatchCount type="Integer" value="1"/> |
| 0396 | </ResponseHeader> |
| 0397 | <BatchItem> |

| | |
|------|--|
| 0398 | <Operation type="Enumeration" value="Destroy"/> |
| 0399 | <ResultStatus type="Enumeration" value="Success"/> |
| 0400 | <ResponsePayload> |
| 0401 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0402 | </ResponsePayload> |
| 0403 | </BatchItem> |
| 0404 | </ResponseMessage> |

254

255 3.3 Mandatory Test Cases KMIP v1.2

256 3.3.1 TL-M-1-12 - Configuration

257 Determine server configuration details including operations supported (only the mandatory operations are
258 listed in the response example), objects supported (only the mandatory objects types are listed in the
259 response example), optional server information, and optional list of application name spaces.

| | |
|------|--|
| | # 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="Query"/> |
| 0011 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0012 | <RequestPayload> |
| 0013 | <QueryFunction type="Enumeration" value="QueryOperations"/> |
| 0014 | <QueryFunction type="Enumeration" value="QueryObjects"/> |
| 0015 | <QueryFunction type="Enumeration" |
| | value="QueryServerInformation"/> |
| 0016 | <QueryFunction type="Enumeration" |
| | value="QueryApplicationNamespaces"/> |
| 0017 | </RequestPayload> |
| 0018 | </BatchItem> |
| 0019 | </RequestMessage> |
| 0020 | <ResponseMessage> |
| 0021 | <ResponseHeader> |
| 0022 | <ProtocolVersion> |
| 0023 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0024 | <ProtocolVersionMinor type="Integer" value="2"/> |
| 0025 | </ProtocolVersion> |
| 0026 | <TimeStamp type="DateTime" value="2012-10-05T21:35:17+00:00"/> |
| 0027 | <BatchCount type="Integer" value="1"/> |
| 0028 | </ResponseHeader> |
| 0029 | <BatchItem> |
| 0030 | <Operation type="Enumeration" value="Query"/> |
| 0031 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0032 | <ResultStatus type="Enumeration" value="Success"/> |
| 0033 | <ResponsePayload> |
| 0034 | <Operation type="Enumeration" value="Query"/> |
| 0035 | <Operation type="Enumeration" value="Locate"/> |
| 0036 | <Operation type="Enumeration" value="Destroy"/> |
| 0037 | <Operation type="Enumeration" value="Get"/> |

| | |
|------|--|
| 0038 | <Operation type="Enumeration" value="Create"/> |
| 0039 | <Operation type="Enumeration" value="Register"/> |
| 0040 | <Operation type="Enumeration" value="GetAttributes"/> |
| 0041 | <Operation type="Enumeration" value="GetAttributeList"/> |
| 0042 | <Operation type="Enumeration" value="AddAttribute"/> |
| 0043 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0044 | <Operation type="Enumeration" value="DeleteAttribute"/> |
| 0045 | <Operation type="Enumeration" value="Activate"/> |
| 0046 | <Operation type="Enumeration" value="Revoke"/> |
| 0047 | <Operation type="Enumeration" value="Check"/> |
| 0048 | <ObjectType type="Enumeration" value="SymmetricKey"/> |
| 0049 | <ObjectType type="Enumeration" value="Template"/> |
| 0050 | <VendorIdentification type="TextString" value="server- |
| | vendor.com"/> |
| 0051 | <ServerInformation> |
| 0052 | </ServerInformation> |
| 0053 | </ResponsePayload> |
| 0054 | </BatchItem> |
| 0055 | </ResponseMessage> |

260

261 3.3.2 TL-M-2-12 - Write with new (created) key

262 This case may occur when the Write operation starts with the first block on a tape. The implementation
 263 may choose which Write operations qualify for creation of a new key. Regardless of the initiating
 264 circumstances, the Tape Library requests the server to create a new AES-256 symmetric key with
 265 appropriate identifying information which is unique within the Application Namespace.

266 Additional custom attributes MAY be specified in order to:

- 267 - ensure uniqueness of the key identifier when later Locating the key via ASI
- 268 - provide human-readable information (such as the tape Barcode value)
- 269 - provide information to support client-specific purposes

| | |
|------|---|
| | # TIME 0 |
| 0001 | <RequestMessage> |
| 0002 | <RequestHeader> |
| 0003 | <ProtocolVersion> |
| 0004 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0005 | <ProtocolVersionMinor type="Integer" value="2"/> |
| 0006 | </ProtocolVersion> |
| 0007 | <BatchOrderOption type="Boolean" value="true"/> |
| 0008 | <BatchCount type="Integer" value="2"/> |
| 0009 | </RequestHeader> |
| 0010 | <BatchItem> |
| 0011 | <Operation type="Enumeration" value="Create"/> |
| 0012 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0013 | <RequestPayload> |
| 0014 | <ObjectType type="Enumeration" value="SymmetricKey"/> |
| 0015 | <TemplateAttribute> |
| 0016 | <Attribute> |
| 0017 | <AttributeName type="TextString" value="x-ID"/> |
| 0018 | <AttributeValue type="TextString" value="TL-M-2-12"/> |
| 0019 | </Attribute> |
| 0020 | <Attribute> |
| 0021 | <AttributeName type="TextString" value="Alternative |
| | Name"/> |
| 0022 | <AttributeValue> |
| 0023 | <AlternativeNameValue type="TextString" |

| | |
|------|---|
| 0024 | value="XXA012A1"/> <AlternativeNameType type="Enumeration" |
| 0025 | value="UninterpretedTextString"/> </AttributeValue> |
| 0026 | </Attribute> |
| 0027 | <Attribute> |
| 0028 | <AttributeName type="TextString" value="Name"/> |
| 0029 | <AttributeValue> |
| 0030 | <NameValue type="TextString" |
| 0031 | value="AAAAAAlA1AA12345678901234567"/> <NameType type="Enumeration" |
| 0032 | value="UninterpretedTextString"/> </AttributeValue> |
| 0033 | </Attribute> |
| 0034 | <Attribute> |
| 0035 | <AttributeName type="TextString" value="Cryptographic Algorithm"/> |
| 0036 | <AttributeValue type="Enumeration" value="AES"/> |
| 0037 | </Attribute> |
| 0038 | <Attribute> |
| 0039 | <AttributeName type="TextString" value="Cryptographic Length"/> |
| 0040 | <AttributeValue type="Integer" value="256"/> |
| 0041 | </Attribute> |
| 0042 | <Attribute> |
| 0043 | <AttributeName type="TextString" value="Cryptographic Usage Mask"/> |
| 0044 | <AttributeValue type="Integer" value="Decrypt Encrypt"/> |
| 0045 | </Attribute> |
| 0046 | <Attribute> |
| 0047 | <AttributeName type="TextString" value="Application Specific Information"/> |
| 0048 | <AttributeValue> |
| 0049 | <ApplicationNamespace type="TextString" value="LIBRARY- LTO"/> |
| 0050 | <ApplicationData type="TextString" |
| 0051 | value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000 000"/> </AttributeValue> |
| 0052 | </Attribute> |
| 0053 | <Attribute> |
| 0054 | <AttributeName type="TextString" value="x-Barcode"/> |
| 0055 | <AttributeValue type="TextString" value="XXA012A1"/> |
| 0056 | </Attribute> |
| 0057 | <Attribute> |
| 0058 | <AttributeName type="TextString" value="x- VendorAttribute1"/> |
| 0059 | <AttributeValue type="TextString" value="XXA012A1"/> |
| 0060 | </Attribute> |
| 0061 | <Attribute> |
| 0062 | <AttributeName type="TextString" value="x- VendorAttribute2"/> |
| 0063 | <AttributeValue type="Integer" value="0"/> |
| 0064 | </Attribute> |
| 0065 | <Attribute> |
| 0066 | <AttributeName type="TextString" value="x- VendorAttribute3"/> |
| 0067 | <AttributeValue type="DateTime" value="2012-10- |

| | |
|------|--|
| | 05T22:08:19+00:00"/> |
| 0068 | </Attribute> |
| 0069 | </TemplateAttribute> |
| 0070 | </RequestPayload> |
| 0071 | </BatchItem> |
| 0072 | <BatchItem> |
| 0073 | <Operation type="Enumeration" value="Get"/> |
| 0074 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0075 | <RequestPayload> |
| 0076 | </RequestPayload> |
| 0077 | </BatchItem> |
| 0078 | </RequestMessage> |
| 0079 | <ResponseMessage> |
| 0080 | <ResponseHeader> |
| 0081 | <ProtocolVersion> |
| 0082 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0083 | <ProtocolVersionMinor type="Integer" value="2"/> |
| 0084 | </ProtocolVersion> |
| 0085 | <TimeStamp type="DateTime" value="2012-10-05T21:41:46+00:00"/> |
| 0086 | <BatchCount type="Integer" value="2"/> |
| 0087 | </ResponseHeader> |
| 0088 | <BatchItem> |
| 0089 | <Operation type="Enumeration" value="Create"/> |
| 0090 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0091 | <ResultStatus type="Enumeration" value="Success"/> |
| 0092 | <ResponsePayload> |
| 0093 | <ObjectType type="Enumeration" value="SymmetricKey"/> |
| 0094 | <UniqueIdentifier type="TextString" |
| 0095 | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0096 | </ResponsePayload> |
| 0097 | </BatchItem> |
| 0098 | <BatchItem> |
| 0099 | <Operation type="Enumeration" value="Get"/> |
| 0100 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0101 | <ResultStatus type="Enumeration" value="Success"/> |
| 0102 | <ResponsePayload> |
| 0103 | <ObjectType type="Enumeration" value="SymmetricKey"/> |
| 0104 | <UniqueIdentifier type="TextString" |
| 0105 | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0106 | <SymmetricKey> |
| 0107 | <KeyBlock> |
| 0108 | <KeyFormatType type="Enumeration" value="Raw"/> |
| 0109 | <KeyValue> |
| 0110 | <CryptographicAlgorithm type="Enumeration" value="AES"/> |
| 0111 | <CryptographicLength type="Integer" value="256"/> |
| 0112 | </KeyBlock> |
| 0113 | </SymmetricKey> |
| 0114 | </ResponsePayload> |
| 0115 | </BatchItem> |
| 0116 | </ResponseMessage> |

3.3.3 TL-M-3-12 - Read an encrypted tape

The Tape Library constructs an identifier string based on the method in 2.3, then requests the server to Locate that string via ASI. A Get is then requested based on the key's unique identifier. The Tape Library MAY update attributes associated with the Symmetric Key Managed Object. The following test case shows extensive use of custom attributes. Custom attributes are not required if the Application Name is unique within the Application Namespace. An implementation may also use custom attributes for vendor-unique purposes, or to improve usability.

The test case destroys the key created in the previous test case to clean up after the test. Tape Library implementations may elect to not perform this step.

```
# TIME 0
0001 <RequestMessage>
0002   <RequestHeader>
0003     <ProtocolVersion>
0004       <ProtocolVersionMajor type="Integer" value="1"/>
0005       <ProtocolVersionMinor type="Integer" value="2"/>
0006     </ProtocolVersion>
0007     <BatchOrderOption type="Boolean" value="true"/>
0008     <BatchCount type="Integer" value="2"/>
0009   </RequestHeader>
0010   <BatchItem>
0011     <Operation type="Enumeration" value="Locate"/>
0012     <UniqueBatchItemID type="ByteString" value="01"/>
0013     <RequestPayload>
0014       <Attribute>
0015         <AttributeName type="TextString" value="Object Type"/>
0016         <AttributeValue type="Enumeration" value="SymmetricKey"/>
0017       </Attribute>
0018       <Attribute>
0019         <AttributeName type="TextString" value="Application Specific
0020 Information"/>
0021         <AttributeValue>
0022           <ApplicationNamespace type="TextString" value="LIBRARY-
0023 LTO"/>
0024           <ApplicationData type="TextString"
0025 value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000
0026 000"/>
0027         </AttributeValue>
0028       </Attribute>
0029     </RequestPayload>
0030   </BatchItem>
0031   <BatchItem>
0032     <Operation type="Enumeration" value="Get"/>
0033     <UniqueBatchItemID type="ByteString" value="02"/>
0034     <RequestPayload>
0035     </RequestPayload>
0036   </BatchItem>
0037 </RequestMessage>
0038 <ResponseMessage>
0039   <ResponseHeader>
0040     <ProtocolVersion>
0041       <ProtocolVersionMajor type="Integer" value="1"/>
0042       <ProtocolVersionMinor type="Integer" value="2"/>
0043     </ProtocolVersion>
0044     <TimeStamp type="DateTime" value="2012-10-05T22:00:32+00:00"/>
0045     <BatchCount type="Integer" value="2"/>
```


| | |
|------|--|
| | value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000000"/> |
| 0093 | </AttributeValue> |
| 0094 | </Attribute> |
| 0095 | </RequestPayload> |
| 0096 | </BatchItem> |
| 0097 | <BatchItem> |
| 0098 | <Operation type="Enumeration" value="GetAttributeList"/> |
| 0099 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0100 | <RequestPayload> |
| 0101 | </RequestPayload> |
| 0102 | </BatchItem> |
| 0103 | </RequestMessage> |
| 0104 | <ResponseMessage> |
| 0105 | <ResponseHeader> |
| 0106 | <ProtocolVersion> |
| 0107 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0108 | <ProtocolVersionMinor type="Integer" value="2"/> |
| 0109 | </ProtocolVersion> |
| 0110 | <TimeStamp type="DateTime" value="2012-10-05T22:00:33+00:00"/> |
| 0111 | <BatchCount type="Integer" value="2"/> |
| 0112 | </ResponseHeader> |
| 0113 | <BatchItem> |
| 0114 | <Operation type="Enumeration" value="Locate"/> |
| 0115 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0116 | <ResultStatus type="Enumeration" value="Success"/> |
| 0117 | <ResponsePayload> |
| 0118 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER 0"/> |
| 0119 | </ResponsePayload> |
| 0120 | </BatchItem> |
| 0121 | <BatchItem> |
| 0122 | <Operation type="Enumeration" value="GetAttributeList"/> |
| 0123 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0124 | <ResultStatus type="Enumeration" value="Success"/> |
| 0125 | <ResponsePayload> |
| 0126 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0127 | <AttributeName type="TextString" value="x-ID"/> |
| 0128 | <AttributeName type="TextString" value="x-Barcode"/> |
| 0129 | <AttributeName type="TextString" value="x-VendorAttribute1"/> |
| 0130 | <AttributeName type="TextString" value="x-VendorAttribute2"/> |
| 0131 | <AttributeName type="TextString" value="x-VendorAttribute3"/> |
| 0132 | <AttributeName type="TextString" value="Unique Identifier"/> |
| 0133 | <AttributeName type="TextString" value="Object Type"/> |
| 0134 | <AttributeName type="TextString" value="Cryptographic |
| | Algorithm"/> |
| 0135 | <AttributeName type="TextString" value="Cryptographic |
| | Length"/> |
| 0136 | <AttributeName type="TextString" value="Application Specific |
| | Information"/> |
| 0137 | <AttributeName type="TextString" value="Cryptographic Usage |
| | Mask"/> |
| 0138 | <AttributeName type="TextString" value="Digest"/> |
| 0139 | <AttributeName type="TextString" value="Initial Date"/> |
| 0140 | <AttributeName type="TextString" value="Last Change Date"/> |
| 0141 | <AttributeName type="TextString" value="Lease Time"/> |
| 0142 | <AttributeName type="TextString" value="Name"/> |

| | |
|----------|---|
| 0143 | <AttributeName type="TextString" value="Original Creation Date"/> |
| 0144 | <AttributeName type="TextString" value="State"/> |
| 0145 | </ResponsePayload> |
| 0146 | </BatchItem> |
| 0147 | </ResponseMessage> |
| # TIME 2 | |
| 0148 | <RequestMessage> |
| 0149 | <RequestHeader> |
| 0150 | <ProtocolVersion> |
| 0151 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0152 | <ProtocolVersionMinor type="Integer" value="2"/> |
| 0153 | </ProtocolVersion> |
| 0154 | <BatchOrderOption type="Boolean" value="true"/> |
| 0155 | <BatchCount type="Integer" value="2"/> |
| 0156 | </RequestHeader> |
| 0157 | <BatchItem> |
| 0158 | <Operation type="Enumeration" value="Locate"/> |
| 0159 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0160 | <RequestPayload> |
| 0161 | <Attribute> |
| 0162 | <AttributeName type="TextString" value="Object Type"/> |
| 0163 | <AttributeValue type="Enumeration" value="SymmetricKey"/> |
| 0164 | </Attribute> |
| 0165 | <Attribute> |
| 0166 | <AttributeName type="TextString" value="Application Specific Information"/> |
| 0167 | <AttributeValue> |
| 0168 | <ApplicationNamespace type="TextString" value="LIBRARY-LTO"/> |
| 0169 | <ApplicationData type="TextString" value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000000"/> |
| 0170 | </AttributeValue> |
| 0171 | </Attribute> |
| 0172 | </RequestPayload> |
| 0173 | </BatchItem> |
| 0174 | <BatchItem> |
| 0175 | <Operation type="Enumeration" value="GetAttributes"/> |
| 0176 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0177 | <RequestPayload> |
| 0178 | </RequestPayload> |
| 0179 | </BatchItem> |
| 0180 | </RequestMessage> |
| 0181 | <ResponseMessage> |
| 0182 | <ResponseHeader> |
| 0183 | <ProtocolVersion> |
| 0184 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0185 | <ProtocolVersionMinor type="Integer" value="2"/> |
| 0186 | </ProtocolVersion> |
| 0187 | <TimeStamp type="DateTime" value="2012-10-05T22:00:32+00:00"/> |
| 0188 | <BatchCount type="Integer" value="2"/> |
| 0189 | </ResponseHeader> |
| 0190 | <BatchItem> |
| 0191 | <Operation type="Enumeration" value="Locate"/> |
| 0192 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0193 | <ResultStatus type="Enumeration" value="Success"/> |
| 0194 | <ResponsePayload> |

```

0195     <UniqueIdentifier type="TextString"
value="$UNIQUE_IDENTIFIER_0"/>
0196     </ResponsePayload>
0197     </BatchItem>
0198     <BatchItem>
0199         <Operation type="Enumeration" value="GetAttributes"/>
0200         <UniqueBatchItemID type="ByteString" value="02"/>
0201         <ResultStatus type="Enumeration" value="Success"/>
0202         <ResponsePayload>
0203             <UniqueIdentifier type="TextString"
value="$UNIQUE_IDENTIFIER_0"/>
0204             <Attribute>
0205                 <AttributeName type="TextString" value="x-ID"/>
0206                 <AttributeValue type="TextString" value="TL-M-2-12"/>
0207             </Attribute>
0208             <Attribute>
0209                 <AttributeName type="TextString" value="x-Barcode"/>
0210                 <AttributeValue type="TextString" value="XXA012A1"/>
0211             </Attribute>
0212             <Attribute>
0213                 <AttributeName type="TextString" value="x-
VendorAttribute1"/>
0214                 <AttributeValue type="TextString" value="XXA012A1"/>
0215             </Attribute>
0216             <Attribute>
0217                 <AttributeName type="TextString" value="x-
VendorAttribute2"/>
0218                 <AttributeValue type="Integer" value="0"/>
0219             </Attribute>
0220             <Attribute>
0221                 <AttributeName type="TextString" value="x-
VendorAttribute3"/>
0222                 <AttributeValue type="DateTime" value="2012-10-
05T22:08:19+00:00"/>
0223             </Attribute>
0224             <Attribute>
0225                 <AttributeName type="TextString" value="Unique Identifier"/>
0226                 <AttributeValue type="TextString"
value="$UNIQUE_IDENTIFIER_0"/>
0227             </Attribute>
0228             <Attribute>
0229                 <AttributeName type="TextString" value="Object Type"/>
0230                 <AttributeValue type="Enumeration" value="SymmetricKey"/>
0231             </Attribute>
0232             <Attribute>
0233                 <AttributeName type="TextString" value="Cryptographic
Algorithm"/>
0234                 <AttributeValue type="Enumeration" value="AES"/>
0235             </Attribute>
0236             <Attribute>
0237                 <AttributeName type="TextString" value="Cryptographic
Length"/>
0238                 <AttributeValue type="Integer" value="256"/>
0239             </Attribute>
0240             <Attribute>
0241                 <AttributeName type="TextString" value="Alternative Name"/>
0242                 <AttributeValue>
0243                     <AlternativeNameValue type="TextString" value="XXA012A1"/>

```

```

0244         <AlternativeNameType type="Enumeration"
value="UninterpretedTextString"/>
0245         </AttributeValue>
0246     </Attribute>
0247     <Attribute>
0248         <AttributeName type="TextString" value="Application Specific
Information"/>
0249         <AttributeValue>
0250             <ApplicationNamespace type="TextString" value="LIBRARY-
LTO"/>
0251             <ApplicationData type="TextString"
value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000
000"/>
0252         </AttributeValue>
0253     </Attribute>
0254     <Attribute>
0255         <AttributeName type="TextString" value="Cryptographic Usage
Mask"/>
0256         <AttributeValue type="Integer" value="Decrypt Encrypt"/>
0257     </Attribute>
0258     <Attribute>
0259         <AttributeName type="TextString" value="Digest"/>
0260         <AttributeValue>
0261             <HashingAlgorithm type="Enumeration" value="SHA_256"/>
0262             <DigestValue type="ByteString"
value="0bd3d7ada745e4eb34cc9d26cc84d4852a15906b2f77f80d01fc31c28108c
49b"/>
0263         <KeyFormatType type="Enumeration" value="Raw"/>
0264     </Attribute>
0265     <Attribute>
0266     <Attribute>
0267         <AttributeName type="TextString" value="Fresh"/>
0268         <AttributeValue type="Boolean" value="false"/>
0269     </Attribute>
0270     <Attribute>
0271         <AttributeName type="TextString" value="Initial Date"/>
0272         <AttributeValue type="DateTime" value="2012-10-
05T21:41:46+00:00"/>
0273     </Attribute>
0274     <Attribute>
0275         <AttributeName type="TextString" value="Last Change Date"/>
0276         <AttributeValue type="DateTime" value="2012-10-
05T21:41:46+00:00"/>
0277     </Attribute>
0278     <Attribute>
0279         <AttributeName type="TextString" value="Lease Time"/>
0280         <AttributeValue type="Interval" value="3600"/>
0281     </Attribute>
0282     <Attribute>
0283         <AttributeName type="TextString" value="Name"/>
0284         <AttributeValue>
0285             <NameValue type="TextString"
value="AAAAAAAlA1AA12345678901234567"/>
0286             <NameType type="Enumeration"
value="UninterpretedTextString"/>
0287         </AttributeValue>
0288     </Attribute>
0289     </Attribute>

```

| | |
|------|--|
| 0290 | <AttributeName type="TextString" value="Original Creation |
| 0291 | Date"/> |
| 0292 | <AttributeValue type="DateTime" value="2012-10- |
| 0293 | 05T21:41:46+00:00"/> |
| 0294 | </Attribute> |
| 0295 | <AttributeName type="TextString" value="State"/> |
| 0296 | <AttributeValue type="Enumeration" value="PreActive"/> |
| 0297 | </Attribute> |
| 0298 | </ResponsePayload> |
| 0299 | </BatchItem> |
| 0300 | </ResponseMessage> |
| 0301 | # TIME 3 |
| 0302 | <RequestMessage> |
| 0303 | <RequestHeader> |
| 0304 | <ProtocolVersion> |
| 0305 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0306 | <ProtocolVersionMinor type="Integer" value="2"/> |
| 0307 | </ProtocolVersion> |
| 0308 | <BatchOrderOption type="Boolean" value="true"/> |
| 0309 | <BatchCount type="Integer" value="3"/> |
| 0310 | </RequestHeader> |
| 0311 | <BatchItem> |
| 0312 | <Operation type="Enumeration" value="Locate"/> |
| 0313 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0314 | <RequestPayload> |
| 0315 | <Attribute> |
| 0316 | <AttributeName type="TextString" value="Object Type"/> |
| 0317 | <AttributeValue type="Enumeration" value="SymmetricKey"/> |
| 0318 | </Attribute> |
| 0319 | <AttributeName type="TextString" value="Application Specific |
| 0320 | Information"/> |
| 0321 | <AttributeValue> |
| 0322 | <ApplicationNamespace type="TextString" value="LIBRARY- |
| 0323 | LTO"/> |
| 0324 | <ApplicationData type="TextString" |
| 0325 | value="123456789ABCDEF123456789123456789ABCDEF123456789ABCDEF1234000 |
| 0326 | 000"/> |
| 0327 | </AttributeValue> |
| 0328 | </Attribute> |
| 0329 | </RequestPayload> |
| 0330 | </BatchItem> |
| 0331 | <BatchItem> |
| 0332 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0333 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0334 | <RequestPayload> |
| 0335 | <Attribute> |
| 0336 | <AttributeName type="TextString" value="x- |
| 0337 | VendorAttribute3"/> |
| 0338 | <AttributeValue type="DateTime" value="2012-10- |
| 0339 | 05T22:27:06+00:00"/> |
| 0340 | </Attribute> |
| 0341 | </RequestPayload> |
| 0342 | </BatchItem> |
| 0343 | <BatchItem> |
| 0344 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0345 | <UniqueBatchItemID type="ByteString" value="03"/> |

| | |
|------|---|
| 0339 | <RequestPayload> |
| 0340 | <Attribute> |
| 0341 | <AttributeName type="TextString" value="x- VendorAttribute2"/> |
| 0342 | <AttributeValue type="Integer" value="1"/> |
| 0343 | </Attribute> |
| 0344 | </RequestPayload> |
| 0345 | </BatchItem> |
| 0346 | </RequestMessage> |
| 0347 | <ResponseMessage> |
| 0348 | <ResponseHeader> |
| 0349 | <ProtocolVersion> |
| 0350 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0351 | <ProtocolVersionMinor type="Integer" value="2"/> |
| 0352 | </ProtocolVersion> |
| 0353 | <TimeStamp type="DateTime" value="2012-10-05T22:00:33+00:00"/> |
| 0354 | <BatchCount type="Integer" value="3"/> |
| 0355 | </ResponseHeader> |
| 0356 | <BatchItem> |
| 0357 | <Operation type="Enumeration" value="Locate"/> |
| 0358 | <UniqueBatchItemID type="ByteString" value="01"/> |
| 0359 | <ResultStatus type="Enumeration" value="Success"/> |
| 0360 | <ResponsePayload> |
| 0361 | <UniqueIdentifier type="TextString" value="\$UNIQUE_IDENTIFIER_0"/> |
| 0362 | </ResponsePayload> |
| 0363 | </BatchItem> |
| 0364 | <BatchItem> |
| 0365 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0366 | <UniqueBatchItemID type="ByteString" value="02"/> |
| 0367 | <ResultStatus type="Enumeration" value="Success"/> |
| 0368 | <ResponsePayload> |
| 0369 | <UniqueIdentifier type="TextString" value="\$UNIQUE_IDENTIFIER_0"/> |
| 0370 | <Attribute> |
| 0371 | <AttributeName type="TextString" value="x- VendorAttribute3"/> |
| 0372 | <AttributeValue type="DateTime" value="2012-10- 05T22:27:06+00:00"/> |
| 0373 | </Attribute> |
| 0374 | </ResponsePayload> |
| 0375 | </BatchItem> |
| 0376 | <BatchItem> |
| 0377 | <Operation type="Enumeration" value="ModifyAttribute"/> |
| 0378 | <UniqueBatchItemID type="ByteString" value="03"/> |
| 0379 | <ResultStatus type="Enumeration" value="Success"/> |
| 0380 | <ResponsePayload> |
| 0381 | <UniqueIdentifier type="TextString" value="\$UNIQUE_IDENTIFIER_0"/> |
| 0382 | <Attribute> |
| 0383 | <AttributeName type="TextString" value="x- VendorAttribute2"/> |
| 0384 | <AttributeValue type="Integer" value="1"/> |
| 0385 | </Attribute> |
| 0386 | </ResponsePayload> |
| 0387 | </BatchItem> |
| 0388 | </ResponseMessage> |
| | # TIME 4 |

| | |
|------|--|
| 0389 | <RequestMessage> |
| 0390 | <RequestHeader> |
| 0391 | <ProtocolVersion> |
| 0392 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0393 | <ProtocolVersionMinor type="Integer" value="2"/> |
| 0394 | </ProtocolVersion> |
| 0395 | <BatchCount type="Integer" value="1"/> |
| 0396 | </RequestHeader> |
| 0397 | <BatchItem> |
| 0398 | <Operation type="Enumeration" value="Destroy"/> |
| 0399 | <RequestPayload> |
| 0400 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0401 | </RequestPayload> |
| 0402 | </BatchItem> |
| 0403 | </RequestMessage> |
| 0404 | <ResponseMessage> |
| 0405 | <ResponseHeader> |
| 0406 | <ProtocolVersion> |
| 0407 | <ProtocolVersionMajor type="Integer" value="1"/> |
| 0408 | <ProtocolVersionMinor type="Integer" value="2"/> |
| 0409 | </ProtocolVersion> |
| 0410 | <TimeStamp type="DateTime" value="2012-10-05T22:00:33+00:00"/> |
| 0411 | <BatchCount type="Integer" value="1"/> |
| 0412 | </ResponseHeader> |
| 0413 | <BatchItem> |
| 0414 | <Operation type="Enumeration" value="Destroy"/> |
| 0415 | <ResultStatus type="Enumeration" value="Success"/> |
| 0416 | <ResponsePayload> |
| 0417 | <UniqueIdentifier type="TextString" |
| | value="\$UNIQUE_IDENTIFIER_0"/> |
| 0418 | </ResponsePayload> |
| 0419 | </BatchItem> |
| 0420 | </ResponseMessage> |

4 Conformance

4.1 Tape Library Client KMIP v1.0 Conformance

KMIP client implementations conformant to this profile:

1. SHALL support the Authentication Suite conditions (2.1);
2. SHALL support the Baseline Tape Library - Client conditions (2.2);
3. SHALL support the Using Application Specific Information for Key Identifiers conditions (2.4);
4. SHALL support the Using Alternative Name for tape media barcode conditions (2.5); and
5. SHALL support all the Mandatory Test Cases KMIP v1.0 (3.1).

4.2 Tape Library Client KMIP v1.1 Conformance

KMIP client implementations conformant to this profile:

1. SHALL support the Authentication Suite conditions (2.1);
2. SHALL support the Baseline Tape Library - Client conditions (2.2);
3. SHALL support the Using Application Specific Information for Key Identifiers conditions (2.4);
4. SHALL support the Using Alternative Name for tape media barcode conditions (2.5); and
5. SHALL support all the Mandatory Test Cases KMIP v1.1 (3.2).

4.3 Tape Library Client KMIP v1.2 Conformance

KMIP client implementations conformant to this profile:

1. SHALL support the Authentication Suite conditions (2.1);
2. SHALL support the Baseline Tape Library - Client conditions (2.2);
3. SHALL support the Using Application Specific Information for Key Identifiers conditions (2.4);
4. SHALL support the Using Alternative Name for tape media barcode conditions (2.5); and
5. SHALL support all the Mandatory Test Cases KMIP v1.2 (3.3).

4.4 Tape Library Server KMIP v1.0 Conformance

KMIP server implementations conformant to this profile:

1. SHALL support the Authentication Suite conditions (2.1);
2. SHALL support the Baseline Tape Library - Server conditions (2.3);
3. SHALL support the Using Application Specific Information for Key Identifiers conditions (2.4);
4. SHALL support the Using Alternative Name for tape media barcode conditions (2.5); and
5. SHALL support all the Mandatory Test Cases KMIP v1.0 (3.1).

4.5 Tape Library Server KMIP v1.1 Conformance

KMIP server implementations conformant to this profile:

1. SHALL support the Authentication Suite conditions (2.1);
2. SHALL support the Baseline Tape Library - Server conditions (2.3);
3. SHALL support the Using Application Specific Information for Key Identifiers conditions (2.4);
4. SHALL support the Using Alternative Name for tape media barcode conditions (2.5); and

5. SHALL support all the Mandatory Test Cases KMIP v1.1 (3.2).

4.6 Tape Library Server KMIP v1.2 Conformance

KMIP server implementations conformant to this profile:

1. SHALL support the Authentication Suite conditions (2.1);
2. SHALL support the Baseline Tape Library - Server conditions (2.3);
3. SHALL support the Using Application Specific Information for Key Identifiers conditions (2.4);
4. SHALL support the Using Alternative Name for tape media barcode conditions (2.5); and
5. SHALL support all the Mandatory Test Cases KMIP v1.2 (3.3).

4.7 Permitted Test Case Variations

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

Each test case MAY include allowed variations in the description of the test case in addition to the variations noted in this section.

Other variations not explicitly noted in this Profile SHALL be deemed non-conformant.

4.7.1 Variable Items

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

1. UniqueIdentifier
2. PrivateKeyUniqueIdentifier
3. PublicKeyUniqueIdentifier
4. UniqueBatchItemIdentifier
5. AsynchronousCorrelationValue
6. TimeStamp
7. KeyValue / KeyMaterial including:
 - a. key material content returned for managed cryptographic objects which are generated by the server
 - b. wrapped versions of keys where the wrapping key is dynamic or the wrapping contains variable output for each wrap operation
8. For response containing the output of cryptographic operation in Data / SignatureData/ MACData / IVCounterNonce where:
 - a. the managed object is generated by the server; or
 - b. the operation inherently contains variable output
9. For the following DateTime attributes where the value is not specified in the request as a fixed DateTime value:
 - a. ActivationDate
 - b. ArchiveDate
 - c. CompromiseDate
 - d. CompromiseOccurrenceDate
 - e. DeactivationDate
 - f. DestroyDate
 - g. InitialDate
 - h. LastChangeDate

- i. ProtectStartDate
- j. ProcessStopDate
- k. ValidityDate
- l. OriginalCreationDate
- 10. LinkedObjectIdentifier
- 11. DigestValue
 - a. For those managed cryptographic objects which are dynamically generated
- 12. KeyFormatType
 - a. The key format type selected by the server when it creates managed objects
- 13. Digest
 - a. The HashingAlgorithm selected by the server when it calculates the digest for a managed object for which it has access to the key material
 - b. The Digest Value
- 14. Extensions reported in Query for ExtensionList and ExtensionMap
- 15. Application Namespaces reported in Query
- 16. Object Types reported in Query other than those noted as required in this profile
- 17. Operation Types reported in Query other than those noted as required in this profile (or any referenced profile documents)
- 18. For TextString attribute values containing test identifiers:
 - a. Additional vendor or application prefixes
- 19. Additional attributes beyond those noted in the response

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

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

4.7.2 Variable behavior

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

- 1. A test may omit the clean-up requests and responses (containing Revoke and/or Destroy) at the end of the test provided there is a separate mechanism to remove the created objects during testing.
- 2. A test may omit the test identifiers if the client is unable to include them in requests. This includes the following attributes:

- 403 a. Name; and
- 404 b. x-ID
- 405 3. A test MAY perform requests with multiple batch items or as multiple requests with a single batch
- 406 item provided the sequence of operations are equivalent
- 407 4. A request MAY contain an optional *Authentication* [KMIP_SPEC] structure within each request
- 408

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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. |

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Appendix C. Revision History

| Revision | Date | Editor | Changes Made |
|------------|-----------------|---|--|
| wd01 | 27-Jun-2013 | Tim Hudson / Rod Wideman / Stan Feather | Converted from draft proposal to OASIS template incorporating updates from Stan Feather and inclusion of references to KMIP 1.2 documents. Editorial and formatting cleanup. |
| wd02 | 6-August-2013 | Tim Hudson | Updated to include Permitted Test Case Variations and updated Test Cases based on July 2013 Interop |
| wd03 | 8-August-2013 | Stan Feather / Rod Wideman | Editorial changes to section 3 |
| wd04 | 10-August-2013 | Tim Hudson | Updated Permitted Test Case Variations |
| wd04a | 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 |

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