SHALL always have a value	No
Initially set by	Server
Modifiable by server	No
Modifiable by client	No
Deletable by client	No
Multiple instances permitted	No
When implicitly set	Revoke
Applies to Object Types	All Objects

Table 7171: Compromise Occurrence Date Attribute Rules

4.12 Contact Information

The *Contact Information* attribute is used for descriptive purposes only. It is not used for policy enforcement. The attribute is set by the client or the server.

Item	Encoding
Contact Information	Text String

Table 7272: Contact Information Attribute

SHALL always have a value	No
Initially set by	Client or Server
Modifiable by server	Yes
Modifiable by client	Yes
Deletable by client	Yes
Multiple instances permitted	No
When implicitly set	Create, Create Key Pair, Register, Derive Key, Certify, Re-certify, Re-key, Re-key Key Pair
Applies to Object Types	All Objects

Table 7373: Contact Information Attribute Rules

4.13 Counters

There are object attributes with name suffixes that identify themselves as “Counter” attributes. These attributes serve to record an instance of usage of an object as the subject of a KMIP operation. The prefix of the attribute name states the nature of the counter (which opaeration). Modification of this attribute is performed by the server via incrementing the counter value on each instance of “use”.

“Counter” attributes SHALL be present for Certificates, Certificate Requests, Private keys, Public keys and Symmetric keys.

4.13.1 Certify Counter

The *Certify Counter* attribute is recorded against a given Certificate Request or Public Key and records each instance of a certify operation being performed on that Certificate Request or Public Key.

The Certify Counter SHALL be incremented upon completion of a Certify or Recertify operation.

Item	Encoding
Certify Counter	Long Integer

Table 74: Certify Counter Attribute

SHALL always have a value	Yes
Initially set by	Server
Modifiable by server	Yes – incremented on Certify & ReCertify
Modifiable by client	No
Deletable by client	No
Multiple instances permitted	No
When implicitly set	Create, Register, Import
Applies to Object Types	Certificate Request, Public Key

Table 75: Certify Counter Attribute Rules

4.13.2 Decrypt Counter

The *Decrypt Counter* attribute is recorded against a given object and records each incidence of a decrypt operation being performed using that object.

The Decrypt Counter SHALL be incremented upon completion of a Decrypt operation.

Item	Encoding
Decrypt Counter	Long Integer

Table 76: Decrypt Counter Attribute

SHALL always have a value	Yes
Initially set by	Server
Modifiable by server	Yes – incremented on Decrypt
Modifiable by client	No
Deletable by client	No
Multiple instances permitted	No
When implicitly set	Create, Register, Import
Applies to Object Types	Cryptographic Objects

Table 77: Decrypt Counter Attribute Rules

4.13.3 Encrypt Counter

The *Encrypt Counter* attribute is recorded against a given object and records each incidence of a encrypt operation being performed using that object.

The Encrypt Counter SHALL be incremented upon completion of an Encrypt operation.

Item	Encoding
Encrypt Counter	Long Integer

Table 78: Encrypt Counter Attribute

SHALL always have a value	Yes
Initially set by	Server
Modifiable by server	Yes – incremented on Encrypt
Modifiable by client	No
Deletable by client	No
Multiple instances permitted	No
When implicitly set	Create, Register, Import
Applies to Object Types	Cryptographic Objects

Table 79: Encrypt Counter Attribute Rules

4.13.4 Sign Counter

The *Sign Counter* attribute is recorded against a object and records each incidence of a sign operation being performed using that object.

The Sign Counter SHALL be incremented upon completion of a Sign operation.

Item	Encoding
Sign Counter	Long Integer

Table 80: Sign Counter Attribute

SHALL always have a value	Yes
Initially set by	Server
Modifiable by server	Yes – incremented on Sign
Modifiable by client	No
Deletable by client	No
Multiple instances permitted	No
When implicitly set	Create, Register, Import
Applies to Object Types	Cryptographic Objects

Table 81: Sign Counter Attribute Rules

4.13.5 Signature Verify Counter

The *Signature Verify Counter* attribute is recorded against an object and records each incidence of a sign operation being performed on that object.

The Signature Verify Counter SHALL be incremented upon completion of a Signature Verify operation.

Item	Encoding
Signature Verify Counter	Long Integer

Table 82: Signature Verify Counter Attribute

SHALL always have a value	Yes
Initially set by	Server
Modifiable by server	Yes – incremented on Signature Verify
Modifiable by client	No
Deletable by client	No
Multiple instances permitted	No
When implicitly set	Create, Register, Import
Applies to Object Types	Cryptographic Objects

Table 83: Signature Verify Counter Attribute Rules

~~4.13~~4.14 Credential Type

The *Credential Type* of a System Object SHALL be set by the server when the object is created and then SHALL NOT be changed or deleted before the object is destroyed.

Item	Encoding
Credential Type	Enumeration

Table ~~84~~74: Credential Type Attribute

SHALL always have a value	Yes
Initially set by	Server
Modifiable by server	No
Modifiable by client	No
Deletable by client	No
Multiple instances permitted	No
When implicitly set	Register
Applies to Object Types	Credential Objects

Table ~~85~~75: Credential Type Attribute Rules

~~4.14~~4.15 Cryptographic Algorithm

The *Cryptographic Algorithm* of an object. The Cryptographic Algorithm of a Certificate object identifies the algorithm for the public key contained within the Certificate. The digital signature algorithm used to sign the Certificate is identified in the Digital Signature Algorithm attribute. This attribute SHALL be set by the server when the object is created or registered and then SHALL NOT be changed or deleted before the object is destroyed.

Item	Encoding
Cryptographic Algorithm	Enumeration

Table ~~86~~76: Cryptographic Algorithm Attribute

Client Registration Method	
Name	**Value**
Unspecified	00000001
Server Pre-Generated	00000002
Server On-Demand	00000003
Client Generated	00000004
Client Registered	00000005
Extensions	8XXXXXXX

Table 533~~523~~: Client Registration Method Enumerations

11.11 Counter Type Enumeration

Possible values of *Counters* in accordance with the Object Type of the Managed Cryptographic Object are:

Value	Description
Certify Counter	For a Certificate Request object, incremented on a Certify or ReCertify operation
Decrypt Counter	For a Cryptographic Object, incremented on a Decrypt operation
Encrypt Counter	For a Cryptographic Object, incremented on an Encrypt operation
Sign Counter	For a Cryptographic Object, incremented on a Sign operation
Signature Verify Counter	For a Cryptographic Object, incremented on a Signature Verify operation

Table 534: Counter Type Enumeration Descriptions

Link Type	
Name	**Value**
Certify Counter	00000001
Decrypt Counter	00000002
Encrypt Counter	00000003
Sign Counter	00000004
Signature Verify Counter	00000005
Extensions	8XXXXXXX

Table 535: Counter Type Enumeration

~~11.11~~11.12 Credential Type Enumeration

Credential Type	
Name	**Value**
Username and Password	00000001
Device	00000002
Attestation	00000003
One Time Password	00000004

Tag	
Name	**Value**
Wrapping Key Link	0x42019D
Object Class	0x42019E
Object Class Mask	0x42019F
Credential Link	0x4201A0
Password Credential	0x4201A1
Password Salt	0x4201A2
Password Salt Algorithm	0x4201A3
Salted Password	0x4201A4
Password Link	0x4201A5
Device Credential	0x4201A6
OTP Credential	0x4201A7
OTP Algorithm	0x4201A8
OTP Digest	0x4201A9
OTP Serial	0x4201AA
OTP Seed	0x4201AB
OTP Interval	0x4201AC
OTP Digits	0x4201AD
OTP Counter	0x4201AE
Hashed Password Credential	0x4201AF
Hashed Username Password	0x4201B0
Hashed Password Username	0x4201B1
Credential Information	0x4201B2
Group Link	0x4201B3
Split Key Base Link	0x4201B4
Joined Split Key Parts Link	0x4201B5
Split Key Polynomial	0x4201B6
Deactivation Message	0x4201B7
Deactivation Reason	0x4201B8
Deactivation Reason Code	0x4201B9
Certificate Subject DN	0x4201BA
Certificate Issuer DN	0x4201BB
Certificate Request DN	0x4201BC
Certify Counter	0x4201BD
Decrypt Counter	0x4201BE
Encrypt Counter	0x4201BF
Sign Counter	0x4201C0

Tag	
Name	**Value**
Signature Verify Counter	0x4201C1
(Reserved)	420XXX – 42FFFF
(Unused)	430000 – 53FFFF
Extensions	540000 – 54FFFF
(Unused)	550000 – FFFFFF

Table 589577: Tag Enumeration

11.5811.59 Ticket Type Enumeration

State	
Name	**Value**
Login	00000001
Extensions	8XXXXXXX

Table 590578: Ticket Type Enumeration

11.5911.60 Unique Identifier Enumeration

The following values may be specified in an operation request for a Unique Identifier: If multiple unique identifiers would be referenced then the operation is repeated for each of them. If an operation appears multiple times in a request, it is the most recent that is referred to.