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**Verification Code Extension for the Extensible Provisioning Protocol
(EPP)
draft-gould-eppext-verificationcode-04**

Abstract

This document describes an Extensible Provisioning Protocol (EPP) extension for including a verification code for marking the data for a transform command as being verified by a 3rd party, which is referred to as the Verification Service Provider (VSP). The verification code is digitally signed by the VSP using XML Signature and is "base64" encoded. The XML Signature includes the VSP signer certificate, so the server can verify that the verification code originated from the VSP.

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[1.](#) Introduction

This document describes an extension mapping for version 1.0 of the Extensible Provisioning Protocol (EPP) [[RFC5730](#)]. This mapping, an extension to EPP object mappings like the EPP domain name mapping [[RFC5731](#)], EPP host mapping [[RFC5732](#)], and EPP contact mapping [[RFC5733](#)], can be used to pass a verification code to one of the EPP transform commands. The domain name object is used for examples in

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the document. The verification code is signed using XML Signature [[W3C.CR-xmlsig-core2-20120124](#)] and is "base64" encoded. The "base64" encoded text of the verification code MUST conform to [[RFC2045](#)]. The verification code demonstrates that verification was done by a Verification Service Provider (VSP).

The Verification Service Provider (VSP) is a certified party to verify that data is in compliance with the policies of a locality. A locality MAY require the client to have data verified in accordance with local regulations or laws utilizing data sources not available to the server. The VSP has access to the local data sources and is authorized to verify the data. Examples include verifying that the domain name is not prohibited and verifying that the domain name registrant is a valid individual, organization, or business in the locality. The data verified, and the objects and operations that require the verification code to be passed to the server is up to the policies of the locality. The verification code represents a marker that the verification was completed. The data verified by the VSP MUST be stored by the VSP along with the generated verification code to address any compliance issues. The signer certificate and the digital signature of the verification code MUST be verified by the server.

1.1. Conventions Used in This Document

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 [RFC 2119](#) [[RFC2119](#)].

XML is case sensitive. Unless stated otherwise, XML specifications and examples provided in this document MUST be interpreted in the character case presented in order to develop a conforming implementation.

In examples, "C:" represents lines sent by a protocol client and "S:" represents lines returned by a protocol server. Indentation and white space in examples are provided only to illustrate element relationships and are not a REQUIRED feature of this protocol.

"verificationCode-1.0" is used as an abbreviation for "urn:ietf:params:xml:ns:verificationCode-1.0". The XML namespace prefix "verificationCode" is used, but implementations MUST NOT depend on it and instead employ a proper namespace-aware XML parser and serializer to interpret and output the XML documents.

2. Object Attributes

This extension adds additional elements to EPP object mappings like the EPP domain name mapping [[RFC5731](#)], EPP host mapping [[RFC5732](#)], and EPP contact mapping [[RFC5733](#)]. Only those new elements are described here.

2.1. Verification Code

The Verification Code is a formatted token, referred to as the Verification Code Token, that is digitally signed by a Verification Service Provider (VSP) using XML Signature [[W3C.CR-xmlsig-core2-20120124](#)], using the process described in [Section 2.1.1](#), and is then "base64" encoded, as defined in [Section 2.1.2](#). The Verification Code Token syntax is specified using Augmented Backus-Naur Form (ABNF) grammar [[RFC5234](#)] as follows:

Verification Code Token ABNF

```
token      = vsp-id "-" verification-id ; Verification Code Token
vsp-id     = 1*DIGIT                    ; VSP Identifier
verification-id = 1*(DIGIT / ALPHA)    ; Verification Identifier
```

For a VSP given VSP Identifier "1" and with a Verification Identifier of "abc123", the resulting Verification Code Token is "1-abc123". The Verification Identifier MUST be unique within a VSP and the VSP Identifier MUST be unique across supporting VSP's, so the Verification Code Token MUST be unique to an individual verification. The VSP Identifiers MAY require registration within an IANA registry.

2.1.1. Signed Code

The <verificationCode:signedCode> is the fragment of XML that is digitally signed using XML Signature [[W3C.CR-xmlsig-core2-20120124](#)]. The <verificationCode:signedCode> element includes a required "id" attribute of type XSD ID for use with an IDREF URI from the Signature element. The certificate of the issuer MUST be included with the Signature so it can be chained with the issuer's certificate by the validating client.

The <verificationCode:signedCode> element includes a REQUIRED "type" attribute for use in defining the type of the signed code. It is up to the VSP and the server to define the valid values for the "type" attribute. Examples of possible "type" attribute values include "domain" for verification of the domain name, "registrant" for verification of the registrant contact, or "domain-registrant" for verification of both the domain name and the registrant. The typed signed code is used to indicate the verifications that are done by

the VSP. The "type" attribute values MAY require registration within an IANA registry.

A `<verificationCode:signedCode>` element substitutes for the `<verificationCode:abstractSignedCode>` abstract element to define a concrete definition of a signed code. The `<verificationCode:abstractSignedCode>` element can be replaced by other signed code definitions using the XML schema substitution groups feature.

The child elements of the `<verificationCode:signedCode>` element include:

`<verificationCode:code>` Contains the Verification Code Token as defined by the ABNF in [Section 2.1](#).
`<Signature>` XML Signature [[W3C.CR-xmlsig-core2-20120124](#)] for the `<verificationCode:signedCode>`. Use of a namespace prefix, like "dsig", is recommended for the XML Signature [[W3C.CR-xmlsig-core2-20120124](#)] elements.

Example of a "domain" typed signed code using the `<verificationCode:signedCode>` element and XML Signature [[W3C.CR-xmlsig-core2-20120124](#)]:

```
<verificationCode:signedCode
  xmlns:verificationCode=
    "urn:ietf:params:xml:ns:verificationCode-1.0"
  id="signedCode">
  <verificationCode:code type="domain">1-abc111
</verificationCode:code>
  <Signature xmlns="http://www.w3.org/2000/09/xmlsig#">
    <SignedInfo>
      <CanonicalizationMethod
Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod
Algorithm="http://www.w3.org/2001/04/xmlsig-more#rsa-sha256" />
      <Reference URI="#signedCode">
        <Transforms>
          <Transform
Algorithm="http://www.w3.org/2000/09/xmlsig#enveloped-signature" />
        </Transforms>
        <DigestMethod
Algorithm="http://www.w3.org/2001/04/xmenc#sha256" />
        <DigestValue>wgyW3nZPoEfpptlhRILKn0QnbdU6ArM7ShrAfHgDFg=
</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>
```

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1.2. Encoded Signed Code

The child elements of the `<verificationCode:encodedSignedCode>` element include:

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```
<verificationCode:encodedSignedCode=
  xmlns:verificationCode=
    "urn:ietf:params:xml:ns:verificationCode-1.0">
  <verificationCode:code>
ICAgICAgPHZlcmImawNhhdGlvbkNvZGU6c2lnbmVkQ29kZQogICAgICAgIHhtbG5z
OnZlcmImawNhhdGlvbkNvZGU9CiAgICAgICAgICAidXJuOmlldGY6cGFyYW1zOnht
bDpuczp2ZXJpZm1jYXRpb25Db2RlLTEuMCIKICAgICAgICAgICAgIGlkPSJzaWduZWRD
b2RlIj4KICAgCQk8dmVyaWZpY2F0aW9uQ29kZTpjb2RlPjEtYWJjMTIzPC92ZXJp
Zm1jYXRpb25Db2RlOmNvZGU+CiAgPFNpZ25hdHVyZSB4bWxucz0iaHR0cDovL3d3
dy53My5vcmcvMjAwMC8wOS94bWxkc2lnIyI+CiAgIDxTaWduZWRJbmZvPgogICAg
PENhbm9uawNhbgL6YXRpb25NZXRpb2QKIEFsZ29yaXRobT0iaHR0cDovL3d3dy53
My5vcmcvMjAwMS8xMC94bWwtZXhjLWwNG4jIi8+CiAgICA8U2lnbmF0dXJlTWV0
aG9kCiBBBgdvcm10aG09Imh0dHA6Ly93d3cudzMub3JnLzIwMDEvMDQveG1sZHNp
Zy1tb3JlIi3JzYS1zaGEyNTYiLz4KICAgIDxSZWZlcmVuY2UgVVJJPSIjc2lnbmVk
Q29kZSI+CiAgICAgPFryYW5zZm9ybXh0+CiAgICAgIDxUcmFuc2Zvcml0KIEFsZ29y
aXRobT0iaHR0cDovL3d3dy53My5vcmcvMjAwMC8wOS94bWxkc2lnI2VudmVsb3B1
ZC1zaWduYXR1cmUiLz4KICAgICA8L1RyYW5zZm9ybXh0+CiAgICAgPERpZ2VzdE1l
dGhvZAogQWxnb3JpdGhtPSJodHRwOi8vd3d3LnczLm9yZy8yMDAxLzA0L3htbGVu
YyNzaGEyNTYiLz4KIDxEaWdlc3RwYX1ZT53Z3lXM25aUG9FZnBwdGxoUk1MS25P
UW5iZHRVnKfyTTdTahJBZkhREZnPTwvRGlnZXN0VmFsdWU+CiAgICA8L1JlZmVy
ZW5jZT4KICAgPC9TaWduZWRJbmZvPgogICA8U2lnbmF0dXJlVmFsdWU+CiBqTXU0
UGZ5U0dpSkJGMEduXU0VQRkNKam15d0NFcviYaDRMRctnZTZYUStKbm1LRkZDdUna
Uy8zU0xLQXgwTDF3CiBRREZPMmUwWTY5azJHNY9MR0UzN1gzdk9mbG9iRk0xb0d3
amE4K0dNvNjhb3RvNXhBZDQvQUY3ZUhh1a2dBew1ECiBvOXRveG9hMmgweVY0QTRQ
bVh6c1U2Uzg2WHRDY1VFK1MvV003Mm55bjQ3em9VQ3p6UEtIwkJSewVXZWhwR1Er
CiBqWVJNSUFNek01N0hIUUErNmVhWGVmUnZ0UEVUZ1VPNGFWSVZTdWdjNE9VQVpa
d2JZY1pyQzZ3T2FRcXFXQVppCiAzMGFQT0JZYkF2SE1TbVdTUytoRmtic2hvbUpm
SHhiOTdURDJncmxZTnJRSXpxWGs3V2JIV3kyU1lkQStzSS9aCiBpcEpzWE5hNm9z
VfV3MUN6QTdqZndBPT0KICAgPC9TaWduYXR1cmVWYX1ZT4KICAgPETtleUluZm8+
CiAgICA8WDUwOURhdGE+CiAgICA8WDUwOUNlcnRpZm1jYXRlPgogTUlJRvNUQ0NB
ekdnQXdJQkFnSUJBakFOQmdrcwWhraUc5dzBCQVZzRkFEQm1NUXN3Q1FZRFZRUUdF
d0pWVXpFTAAogTUFrR0ExVUVDQk1DUTBFeEZEQVNCZ05WQkFjVEMweHZjeUJCYm1k
bGJHVnpNUK13RVFZRFZRUUtdF3BKUTBGTwogVGlCVVRVTklNUUnN3R1FZRFZRUURF
eEpKUTBGt1RpQ1VUVU5JSUZSR1UxUWdRMEV3SGhjTk1UTXdNake0TURBdwogTURB
d1doY05NVGd3TwpmBM01qTTFPVFU1V2pCc01Rc3dDUVlEVlFRR0V3SlZvekVMTUFR
R0ExVUVDQk1DUTBFeAogRkRBU0JnTlZCQWNUQzB4dmN5Qk1ibwRsYkdWek1SY3dG
```

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UV1EV1FRS0V3NVdZV3hwwkdGMGIzSwdWRTFEU0RFaAogTUI4R0ExVUVBeE1ZVm1G
c2FXUmhkRz15SUZSTlEwZ2dWRVZUVkNCRFJWS1VNSU1CSWpBTkJna3Foa2lHOXcw
QgogQVFFRkFBT0NBUTHBTU1JQkNnS0NBuUVBby9jd3ZYaGJWwwwUkRXV3ZveWVa
cEVUVlpwVmNNQ292VVZ0Zy9zdWogV2ludU1nRVdnVlFGcnoweEEwNHBFaFhDRlZ2
NGV2YlVwZwtKNWJ1cVUxZ21ReU9zQ0tRbGhPSFRkUGp2a0M1dQogcERxYTUxRmxr
MFRNYU1rSVFqcZdhVUtDbUE0Ukc0dFRUR0svRwpSMWl40C9EMGdIWVZSbGR5MVlQ
ck1QK291NwogNWJpVm5Jb3MrSGlmcKf0ckl2NHFFcXdMTDRGVFpBVXBhQ2EyQm1n
WGZ5MkNTU1FieEQ1T3IxZ2NTYTn2dXJoNQogc1BNQ054cWFYbUlybVFpcFMrRHVF
QnFNTTh0bGRhTjdSWW9qVUVLckdWc05rNwk5eTIvN3NqbJf6eXlVUGY3dgogTDRH
Z0RZCwHkVdWnJfEB1hneC9KZDZDV3h2c25ERjZzY3NjUXpVVEVsK2h5d0lEQVFB
Qm80SC9NSUG4TUF3RwogQTFVZEV3RUIvd1FDTUFBd0hRWURWUjBPQkJZRUZQWkvj
SVFjRC9CajJJRnovTEVSdW8yQURKdmlNSUdNQmd0VgogSFNNRwdZUXdnWUdBRk8w
LzdrRWgzRnVFS1MrUS9rWUhhRC9XNndpaG9XYWtaREJpTVFzd0NRWURWUWFHRXdk
VgogVXpFTE1Ba0dBmVVFQ0JNQ1EwRXhGREFTQmd0VkJBY1RDMHh2Y3lCQmJtZGxi
R1Z6TVJNd0VRWURWUWFLRXdwSgogUTBGT1RpQ1VUVU5JTVJzd0dRWURWUWFERXhK
SlEwRk9UaUJVVVFOSU1GUkZVMVFuUTBHQ0FRRXdEZ1lEVlIwUAogQVFIL0JBuURB
Z2VBTUM0R0ExVWRId1FuTUNvd0k2QWhvQitHSFdoMGRIQTZMeTlqY213dWFXtmhi
bTR1YjNkbgogTDNSdFkyZ3VZM0pzTUEwR0NTcUdTSWIZRFFFQkN3VUFBNElCQVFC
MnFTEtd1aSS0M2NlYktVS3dXUHJ6ejl5LwogSWtyTWVKR0tqbzQwbis5dWVrYXcz
REo1RXFpT2YvcVo0cGpCRCSrb1I2QkpDYjZ0UXVRS3dub0F6NWxFNFnzdQogeTur
aTkzb1QzSGZ5VmM0Z05NSW9IbTFQUzE5bDdEQktyYndiekFlYS8waktXVnpydm1W
N1RCZmp4RDNBuW8xUgogYlU1ZEJyNklqYmRMRmxuTzV4MEcwbXJHN3g1T1VQdXVy
aWh5aVVSceZEchdIOEtBSDF3TWNDcFhHWEZSdEdLawogd3lkZ3lWUUF0eTdvdGts
L3ozYlprQ1ZUMzRnUHZGNzBzUjYrUXhVeTh1MEx6RjVBL2JlWWFacHhTWUczMWft
TAogQWRYaXRUV0ZpcGFJR2VhOWxFR0ZNMew5K0JnN1h6Tm40blZMWG9reUVCm2Jn
UzRzY0c2UXpuWDIZRkdrCiAgIDwvWDUwOUNlcnRpZmljYXRlPgogICA8L1g1MDlE
YXRhPgogICA8L0tleUluZm8+CiAgPC9TaWduYXR1cmU+CgkJPc9ZXXJpZmljYXRp
b25Db2RlOnNpZ25lZENvZGU+Cg==

</verificationCode:code>

</verificationCode:encodedSignedCode>

Example <verificationCode:encodedSignedCode> element that contains
two <verificationCode:code> elements ;.

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <create>
      <domain:create
        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
        <domain:name>domain.example</domain:name>
        <domain:registrar>jd1234</domain:registrar>
        <domain:contact type="admin">sh8013</domain:contact>
        <domain:contact type="tech">sh8013</domain:contact>
        <domain:authInfo>
          <domain:pw>2fooBAR</domain:pw>
        </domain:authInfo>
      </domain:create>
```



```

</create>
<extension>
  <verificationCode:encodedSignedCode
    xmlns:verificationCode=
      "urn:ietf:params:xml:ns:verificationCode-1.0">
    <verificationCode:code>
ICAgICAgPHZlcm1mawNh dGlvbkNvZGU6c2lnbmV kQ29kZQogICAgICAgIHhtbG5z
OnZlcm1mawNh dGlvbkNvZGU9CiAgICAgICAgICAidXJu0mll dGY6cGFyYW1zOnht
bDpuczp2ZXJpZm1jYXRpb25Db2RlLTEuMCiKICAgICAgICAgICAgIGlkPSJzaWduZWR
b2RlIj4KICAgCQk8dmVyaWZpY2F0aW9uQ29kZT pjb2RlPjEtYWJjMTIzPC92ZXJp
Zm1jYXRpb25Db2RlOmNvZGU+CiAgPFNpZ25hdHVyZSB4bWxuc z0iaHR0cDovL3d3
dy53My5vcmcvMjAwMC8wOS94bWxkc2lnIyI+CiAgIDxTaWduZWRJbmZvPgogICAg
PENhbm9uawNhbgL6YXRpb25NZXRob2QKIEFsZ29yaXRobT0iaHR0cDovL3d3dy53
My5vcmcvMjAwMS8xMC94bWwtZXhjLWwXNG4jIi8+CiAgICA8U2lnbmF0dXJlTWV0
aG9kCiBBBgdvcm10aG09Imh0dHA6Ly93d3cudzMub3JnLzIwMDEvMDQveG1sZHNp
Zy1tb3JlI3JzYS1zaGEyNTYiLz4KICAgIDxSZWZlcmVuY2UgVGVJPSIjc2lnbmV k
Q29kZSI+CiAgICAgPFryYW5zZm9ybXhM+CiAgICAgIDxUcmFuc2Zvc m0KIEFsZ29y
aXRobT0iaHR0cDovL3d3dy53My5vcmcvMjAwMC8wOS94bWxkc2lnI2VudmVsb3B1
ZC1zaWduYXR1cmUiLz4KICAgICA8L1RyYW5zZm9ybXhM+CiAgICAgPERpZ2VzdE1l
dGhvZAogQWxnb3JpdGhtPSJodHRwOi8vd3d3LnczLm9yZy8yMDAxLzA0L3htbGVu
YyNzaGEyNTYiLz4KIDxEaWdlc3RwYX1ZT53Z3lXM25aUG9FZnBwdGxoUk1MS25P
UW5iZHRVnKfyTTdTahJBZkh nREZnPTwvRGlnZXN0VmFsdWU+CiAgICA8L1JlZmVy
ZW5jZT4KICAgPC9TaWduZWRJbmZvPgogICA8U2lnbmF0dXJlVmFsdWU+CiBqTXU0
UGZ5UUpSkJGMEdXU0VQRkNKam15d0NFcviYaDRMRctnZTZYUStKbm1LRkZDdUNa
Jy8zU0xLQXgwTDF3CiBRREZPMmUwWTY5azJH Ny9MR0UzN1gzdk9mbG9iRk0xb0d3
amE4K0dNvNjhb3RvNXhBZDQvQUY3ZU h1a2dBew1ECiBvOXRveG9hMmgweVY0QTRQ
bVh6c1U2Uzg2WHRDY1VFK1MvV003Mm55bjQ3em9VQ3p6UEtIwkJSewVXZWhwR1Er
CiBqWVJNSUFNek01N0hIUUErNmVhWGVmUnZ0UEVUZ1VPNGFWSVZTdWdjNE9VQVpa
d2JZY1pyQzZ3T2FRcXFXQVppCiAzMGFQT0JZYkF2SE1TbVdTUytoRmtic2hvbUpm
SHhi0TdURDJncmxZTnJRSXpxWGs3V2JIV3kyU1lkQStzSS9aCiBpcEpzWE5hNm9z
VfV3MUN6QTdqZndBPT0KICAgPC9TaWduYXR1cmVWYX1ZT4KICAgPEtleUluZm8+
CiAgICA8WDUwOURhdGE+CiAgICA8WDUwOUNlcnRpZm1jYXRlPgogTUlJRvNUQ0NB
ekdnQXdJQkFnSUJBakFOQmdrcw hraUc5dzBCQVFzRkFEQm1NUXN3Q1FZRFZRUUdF
d0pWVXpFTaogTUFrR0ExVUVDQk1DUTBF eEZEQVNCZ05WQkfjVEMweHZjeUJCYm1k
bGJHVnpNUK13RVFZRFZRUUtFd3BKUTBGTwogVGLCVVRVTk1NUnN3R1FZRFZRUURF
eEpKUTBGT1RpQ1VUVU5JSUZSR1UxUWdRMEV3SGhjTk1UTX dNakE0TURBdwogTURB
d1doY05NVGd3TwpBM01qTTFPVFU1V2pCc01Rc3dDUV1EV1FRR0V3S1ZVekVMTUFr
R0ExVUVDQk1DUTBF eAogRkRBU0JnTlZCQWNUQzB4dmN5Qk JibWRsYkdWek1SY3dG
UV1EV1FRS0V3NVdZV3hwwkdGMGIzSwdWRTFEU0RFAogTUI4R0ExVUVB eE1ZVm1G
c2FXUmhkRz15SUZSTlEwZ2dWRVZUVkNCRFJWSlVNSU lCSWpBTk Jna3Foa2lHOXcw
QgogQVFFRkFBT0NBUTHBTU lJQkNnS0NBUUVBby9jd3ZYaGJWwwwUkRXV3ZveWVa
cEVUV1pwVmNNQ292VZ0Zy9zdWogV2ludU1nRVdnVlFGcnoweEEwNHBFAfHdRlZ2
NGV2YlVwZwtKNWJ1cVUxZ21ReU9zQ0tRbGhPSFRkUGp2a0M1dQogcERxYTUxRmxr
MFRNYU1rSVFqczdhVUtDbUE0Ukc0dFRUR0svRw pSMwL40C9EMGdIWVZSbGR5MVlQ
ck1QK291NwogNWJPMv5Jb3MrSGl mckF0ck12NHFFcXdMTDRGVFPBVXBhQ2EyQm1n
WGZ5MkNTU lFieEQ1T3IxZ2NTYTN2dXJoN Qogc1BNQ054cWFYbU lYbVFcFMrRHVF
QnFNTTh0bGRhTjdSww9qVUVLckdWc05rNw k5eTivN3NqbjF6eXlVUGY3dgogTDRH
Z0RZCzwhKWvdwnjFEb1hneC9KZDZDV3h2c25ERjZzY3NjU XpvVEVsK2h5d0lEQVFB

```


Qm80SC9NSUg4TUF3RwogQTFVZEV3RUIvd1FDTUFBd0hRWURWUjBPQkJZRUZQWkvj
SVFjRC9CajJJRnovTEVSdW8yQURKdmlNSUdNQmdOVgogSFNNRwdZUXdnWudBRk8w
LzdrRWgzRnVFS1MrUS9rWUhhRC9XNndpaG9XYWtaREJpTVFzd0NRWURWUvFHRXdk
VgogVXpFTE1Ba0dBmVVFQ0JNQ1EwRXhGREFTQmdOVkjbY1RDMHh2Y3lCQmJtZGxi
R1Z6TVJNd0VRWURWUvFLRXdwSgogUTBGT1RpQ1VUVU5JTVJzd0dRWURWUvFERXhk
SlEwRk9UaUJVVVFOSU1GUKZVMVFuUTBHQ0FRRXdEZ1lEVlIwUAogQVFIL0JBUURB
Z2VBTUM0R0ExVWRId1FuTUNvd0k2QWhvQitHSFdoMGRIQTZMeTlqY213dWFXtmhi
bTR1YjNkgogTDNSdFkyZ3VZM0pzTUEwR0NTcUdTSWIZRFFFQkN3VUFBNElCQVFC
MnFTEtd1aSS0M2NlYktVS3dXUHJ6ejl5LwogSWtyTWVKR0tqbzQwbis5dWVrYXcz
REo1RXFpT2YvcVo0cGpCRCSrb1I2QkpDYjZ0UXVRS3dub0F6NwxFNFNzdQogeTur
aTkzb1QzSGZ5VmM0Z05NSW9IbTFQUzE5bDdEQktyYndiekFlYS8waktXVnpydm1W
N1RCZmp4RDNBW8xUgogYlU1ZEJyNklqYmRMRmxuTzV4MEcwbXJHN3g1T1VQdXVy
awh5aVVSceZEchdIOEtBSDF3TWNDcFhHWEZSdEdLawogd3lkZ3lWUUF0eTdvdGts
L3ozYlprQ1ZUMzRnUHZGNzBzUjYrUXhVeTh1MEx6RjVBL2JlWWFacHhTWUczMWFt
TAogQWRYaXRUV0ZpcGFJR2VhOWxFR0ZNMew5K0JnN1h6Tm40b1ZMWG9reUVCm2Jn
UzRzY0c2UXpuWDIZRkdrCiAgIDwvWUw0UNlcnRpZmljYXRlPgogICA8L1g1MD1E
YXRhPgogICA8L0tleUluZm8+CiAgPC9TaWduYXR1cmU+CgkJPC92ZXJpZmljYXRp
b25Db2Rl0nNpZ25lZENvZGU+Cg==

</verificationCode:code>

<verificationCode:code>

PD94bWwgdmVyc2lvcj0iMS4wIiBlbmNvZGluZz0iVVRGLTgiPz48dmVyawZpY2F0
aw9uQ29kZTpaWduZWRDb2RlIHhtbG5zOnZlcm1maWNhdGlvbkNvZGU9InVybjpp
ZXRmOnBhcmFtcz48bWw6bnM6dmVyawZpY2F0aw9uQ29kZS0xLjAiIGlkPSJzaWdu
ZWRDb2RlIiB0eXB1PSJyZWdpc3RyYW50Ij48dmVyawZpY2F0aw9uQ29kZTpb2Rl
PjEtYWJmJmJyPC92ZXJpZmljYXRpb25Db2Rl0mNvZGU+PGRzaWc6U2lnbmF0dXJl
IHhtbG5zOmRzaWc6Imh0dHA6Ly93d3cudzMub3JnLzIwMDAvMDkveG1sZHNpZyMi
Pjxkc2ln0lNpZ25lZEluZm8+PGRzaWc6Q2Fub25pY2FsaXphdGlvbk1ldGhvZCBB
bGdvcm10aG09Imh0dHA6Ly93d3cudzMub3JnL1RSLzIwMDEvUkVdLXhtbC1jMTRu
LTlIwMDEwMzE1I1dpdGhDb21tZW50cyIvPjxkc2ln0lNpZ25hdHVyZU1ldGhvZCBB
bGdvcm10aG09Imh0dHA6Ly93d3cudzMub3JnLzIwMDAvMDkveG1sZHNpZyNyc2Et
c2hhMSIvPjxkc2ln0lJlZmVyZW5jZSBVUkk9IiNzaWduZWRDb2RlIj48ZHNpZzpu
cmFuc2ZvcmlzPjxkc2ln0lRyYW5zZm9ybSBbbGdvcm10aG09Imh0dHA6Ly93d3cu
dzMub3JnLzIwMDAvMDkveG1sZHNpZyNlbnZlbG9wZWQtc2lnbmF0dXJlIi8+PC9k
c2ln0lRyYW5zZm9ybXM+PGRzaWc6RGlnZXN0TWV0aG9kIEFsZ29yaXRobT0iaHR0
cDovL3d3dy53My5vcmcvMjAwMS8wNC94bWw1bmMjc2hhMjU2Ii8+PGRzaWc6RGln
ZXN0VmFsdWU+SFg2TU1UWdnSStzNG9tT3haYjBGTW1VS1BRdk15WmUybDVEdeHh
QlZMND08L2RzaWc6RGlnZXN0VmFsdWU+PC9kc2ln0lJlZmVyZW5jZT48L2RzaWc6
U2lnbmVksW5mbz48ZHNpZzpaWduYXR1cmVWYX1ZT5V0UhpNVlYVWE0ZUusyYXRz
U1RuQk1DU3dXM0dWUzZnUETkaDBZTLZicERud1d4b1BtYlR2YkVsNDE4NF1KZ3Uw
WXB3RkR0MmZlY3JVck1YV0hncE56K0oYcTh6MWpTcVJMUEw0UmpnRww0eGhiOX15
cEx0ZC8xQXJXRv1hWWEduUc1S3FYV05MRG5YVzJoQkEzK0R5Wk82MFQKcTVPd0R5
ZVFSVlNPVWVXVE9FOTJSSlZ4M014Q1V6d1hoL0ZOSTlPbGtXK0ZPNVZNNZl1mZq
UEhkU1JvdjdzQzRmM0NnWmFaSWFXNQp2RmJnTmJodFJVa0hsSVhnYVNGWDgvcFdV
RXFIY0dLTUxnRU1nbHBnQ3RtOF1IcXVqb0tXUk0yUDNiK2h3ZTRsU0hSWVRjK0pB
eEluClU4Rdc1WnliWThnSWFuZUpR2dWVtk2T0tJTGQ5L0l0UVhaeHZnPT08L2Rz
aWc6U2lnbmF0dXJlVmFsdWU+PGRzaWc6S2V5SW5mbz48ZHNpZzpaYNTA5RGF0YT48
ZHNpZzpaYNTA5Q2VydGlmawNhdGU+TU1JRGlUQ0NBbkdnQXdJQkFnSUVMcXE2SFRB
TkJna3Foa2lHOXcwQkFRc0ZBREixTVJBd0RnWURWUvFHRXdkVmJtdHVIM2R1TVJB

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```

dwpEZ11EVlFRSUV3ZFZibXR1YjNkdU1SQXdEZ11EVlFRSEV3ZFZibXR1YjNkdU1S
QXdEZ11EVlFRS0V3ZFZibXR1YjNkdU1SQXdEZ11EC1ZRUUxFd2RWYm10dWiZZHVN
Umt3RndZRFZRURFeEiYw1hKcFptbGpZWfJwYjI1RGIyUmxNQjRYRFRFMU1EWXh0
VEl4TURBeU1sb1gKRFRNMU1EWXhNREl4TURBeU1sb3dkVEVRTUE0R0ExVUVCaE1I
Vlc1cmJt0TNIakVRTUE0R0ExVUVDQk1IVlc1cmJt0TNIakVRTUE0RwpBMVVFQnhN
SFZXNXJibTkzYmpFUU1BNEdBMVVFQ2hNSFZXNXJibTkzYmpFUU1BNEdBMVVFQ3hN
SFZXNXJibTkzYmpFWk1CY0dBMVVFCKf4TVFkbVZ5YVdacFkyRjBhVz11UTI5a1pU
Q0NBU013RFFZSkTvWklodmNOQVFFQkJRQURnZ0VQQURDQ0FRb0NnZ0VCQUpjY2pY
cmsKUWFJL2lHUEZ3WmVITjFnRFVhcTltVnJmQis2eWR5Qmdoc2FHVfZoaERIOFN0
TmtpamxIMkxCQ3J3TjhjVjhQZ1BP0XRwbG9rR2F5UwpXNktFaHtZtTk03b1dsZk5L
SkdSdGnidGMzTnJuYzhiUUJacU1xcFo0UlnRTmh5QWh6Ri85UmErd3Rfc0JWeGF3
Vdc1L2J0SDZ1YytmClJ0dE5FcmhJdVlJUmN0WTZIRmRaR3B1S3cxYn1YK0RsNkJP
L3ZLdnQ4ND11Y1R3aEZIcDUwWgh2NFVTL0Z5aWVLaGs3dDdHRnJGRlQKL2NCTGsy
WmxFa1lLcF1EU2dlc2lseFg2QkpTZVdCbXZLQz1TL2pBZDhNwmRHVUg2aHNHRXB1
U1BmZkZQV3FwcXl6V0p5bG910XF4ZQpnUTZj0Fo2SVpXZkUzakXSOUVySDhz0TFD
Mm1pTFZrQ0F3RUFBYU1oTUI4d0hRWURWUjBPQkJZRUZiY0JLdk03dmk3dUZNTUx5
ZE43CmVGvXF2YzVVTUEwR0NtcUdTswIZRFFfQkN3VUFBNElCQVFBVjB2cm1rSWRB
d2l4THZ0NUx5eXpTNFdTU1d0dVlWL2JQMvg3NzVMRmYKSWh3a2xoMENidk5rYXlK
Tms2Tnp0eDlSc1AwNWZndkxrZER1N0V5cnRzY3I1ZVdETG1WMGtKMWE1N1Z4bnJh
aEdLTnM2Wit1Ui9pSAPMaTJXb3liWEpFT2N0NwtJSjFzL05CeUUrkdGdjFoTmJz
dVVVUEVCYwVtaWpYUFR00WxxZE9uM1FIbktobXhsa1czYS9KbmhtT20vCkRWYTE0
NDJXTTVUSlUyVFlwVldtdUs2NFkwQXFrN2FldzkvVzIzZEcrT2xhOW9VYnBrSXJr
dDRDN3hRa0d5SXN2eUo3bi910FhBRDIKbno1T1cvek5GwnlrZDAzT2N3M240NkZx
c1IwVDlBbFBEBWHQxUjlmMjZmd1lxdjk3dWtVNEcrMVRJNHQrV0F2TctVRk9FVnNu
PC9kc2ln0lg1MDlDZXJ0aWZpY2F0ZT48L2RzaWc6WDUwOURhdGE+PC9kc2ln0ktl
eUluZm8+PC9kc2ln0lNpZ25hdHVyZT48L3Zlcm1maWNhdGlvbkNvZGU6c2lnbmVk
Q29kZT4=

```

```

    </verificationCode:code>
  </verificationCode:encodedSignedCode>
</extension>
<clTRID>ABC-12345</clTRID>
</command>
</epp>

```

2.2. Verification Profile

A Verification Profile defines the set of verification code types, the commands that the verification code types are required, supported, or not supported, and the grace period by which the verification code types MUST be set. A server MAY support many verification profiles, each with a unique name and a unique verification policy that is implemented by the server. Each client MAY have zero or more server assigned verification profiles that will enforce the required verification policies. Most likely a client will be assigned zero or one server assigned verification profile, but overlapping profiles is possible. Overlapping verification profiles MUST be treated as a logical "and" of the policies by the

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server. If no verification profile is assigned to the client, no additional verification is required by the client.

3. EPP Command Mapping

A detailed description of the EPP syntax and semantics can be found in the EPP core protocol specification [[RFC5730](#)].

3.1. EPP Query Commands

EPP provides three commands to retrieve object information: <check> to determine if an object is known to the server, <info> to retrieve detailed information associated with an object, and <transfer> to retrieve object transfer status information.

3.1.1. EPP <check> Command

This extension does not add any elements to the EPP <check> command or <check> response described in the [[RFC5730](#)].

3.1.2. EPP <info> Command

This extension defines additional elements to extend the EPP <info> command of an object mapping like the EPP domain name mapping [[RFC5731](#)], EPP host mapping [[RFC5732](#)], and EPP contact mapping [[RFC5733](#)].

The EPP <info> command is used to retrieve the verification information. The verification information is based on the verification profile, as defined in [Section 2.2](#), set in the server for the client. The <verificationCode:info> element is an empty element that indicates that the client requests the verification information. The OPTIONAL "profile" attribute can be used by the client to explicitly specify a verification profile, as defined in [Section 2.2](#), to base the verification information on. It is up to server policy on the set of verification profiles that the client is allowed to explicitly specify, and if the client is not allowed, the server MUST return the 2201 error response.

Example <info> domain command with the <verificationCode:info> extension to retrieve the verification information for the domain "domain.example", using the profiles associated with the client:

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:  <command>
C:    <info>
C:      <domain:info
C:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:          <domain:name>domain.example</domain:name>
C:        </domain:info>
C:      </info>
C:    <extension>
C:      <verificationCode:info
C:        xmlns:verificationCode=
C:          "urn:ietf:params:xml:ns:verificationCode-1.0"/>
C:      </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

Example <info> domain command with the <verificationCode:info> extension to retrieve the verification information for the domain "domain.example", using the profiles associated with the client and with the authorization information to retrieve the verification codes from the non-sponsoring client:

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:  <command>
C:    <info>
C:      <domain:info
C:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:          <domain:name>domain.example</domain:name>
C:          <domain:authInfo>
C:            <domain:pw>2fooBAR</domain:pw>
C:          </domain:authInfo>
C:        </domain:info>
C:      </info>
C:    <extension>
C:      <verificationCode:info
C:        xmlns:verificationCode=
C:          "urn:ietf:params:xml:ns:verificationCode-1.0"/>
C:      </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

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Example `<info>` domain command with the `<verificationCode:info>` extension to retrieve the verification information for the domain "domain.example", using the the "sample" profile:

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:  <command>
C:    <info>
C:      <domain:info
C:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:          <domain:name>domain.example</domain:name>
C:        </domain:info>
C:      </info>
C:    <extension>
C:      <verificationCode:info
C:        xmlns:verificationCode=
C:          "urn:ietf:params:xml:ns:verificationCode-1.0"
C:        profile="sample"/>
C:      </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

If the query was successful, the server replies with a `<verificationCode:infData>` element along with the regular EPP `<resData>`. The `<verificationCode:infData>` element contains the following child elements:

`<verificationCode:status>` The status of the verification for the object, using all of the verification profiles assigned to the client. There are four possible values for the status:

- `notApplicable` The status is not applicable to the client since there is no assigned verification profile.
- `nonCompliant` The object is non-compliant according to the verification profiles. If at least one of the profiles is "nonCompliant", the object is "nonCompliant".
- `pendingCompliance` The object is not in compliance with the verification profiles, but has a grace period to set the required set of verification codes, as reflected by the due date of the verification code type. If at least one of the profiles is "pendingCompliance" and none of the profiles is "nonCompliant", the object is "pendingCompliance".
- `compliant` The object is compliant with the verification profiles. If All of the profiles for the object are "compliant" or if the object has no assigned profiles, the object is "compliant".

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<verificationCode:profile> Zero or more OPTIONAL

<verificationCode:profile> elements that defines the verification status of the object based on the profile. The required "name" attribute defines the name of the profile. The <verificationCode:profile> element contains the following child elements:

<verificationCode:status> The status of the verification for the object and the profile. There are four possible values for the status:

notApplicable The profile status is not applicable to the client based on the assigned verification profiles or the profile specified.

nonCompliant The object is non-compliant according to the verification profile.

pendingCompliance The object is not in compliance with the verification profile, but has a grace period to set the required set of verification codes, as reflected by the due date of the verification code type.

compliant The object is compliant with the verification profile.

<verificationCode:missing> OPTIONAL list of missing verification code types. The <verificationCode:missing> element is returned only if there is at least one missing verification code type and based on server policy. The <verificationCode:missing> element contains the following child elements:

<verificationCode:code> One or more <verificationCode:code> elements that is empty with the REQUIRED "type" attribute that indicates the verification code type and the REQUIRED "due" attribute that indicates when the verification code type was or is due. Past due verification code types will result in the <verificationCode:status> element being set to "nonCompliant".

<verificationCode:set> OPTIONAL list of set verification codes. The <verificationCode:set> element is returned only if there is at least one set verification code. The <verificationCode:set> element contains the following child elements:

<verificationCode:code> One or more <verificationCode:code> elements containing the verification code with a REQUIRED "type" attribute that indicates the code type and a REQUIRED "date" attribute that indicates when the verification code was set. The inclusion of the code value is up server policy, so if the server determines that the code value cannot be exposed to a non-sponsoring client, the <verificationCode:code> element MUST be empty.

Example <info> domain response using the <verificationCode:infData> extension for a compliant domain using the "sample" profile, and with the two verification codes, from the sponsoring or authorized client:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <domain:infData
S:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>domain.example</domain:name>
S:        <domain:roid>DOMAIN-REP</domain:roid>
S:        <domain:status s="ok"/>
S:        <domain:clID>ClientX</domain:clID>
S:        <domain:crID>ClientY</domain:crID>
S:        <domain:crDate>2010-04-03T22:00:00.0Z
S:        </domain:crDate>
S:        <domain:exDate>2015-04-03T22:00:00.0Z
S:        </domain:exDate>
S:        <domain:authInfo>
S:          <domain:pw>2fooBAR</domain:pw>
S:        </domain:authInfo>
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <verificationCode:infData
S:        xmlns:verificationCode=
S:        "urn:ietf:params:xml:ns:verificationCode-1.0">
S:        <verificationCode:status>compliant
S:      </verificationCode:status>
S:      <verificationCode:profile name="sample">
S:        <verificationCode:status>compliant
S:      </verificationCode:status>
S:      <verificationCode:set>
S:        <verificationCode:code type="domain"
```

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```
S:         date="2010-04-03T22:00:00.0Z">1-abc333
S:         </verificationCode:code>
S:         <verificationCode:code type="registrant"
S:         date="2010-04-03T22:00:00.0Z">1-abc444
S:         </verificationCode:code>
S:         </verificationCode:set>
S:         </verificationCode:profile>
S:         </verificationCode:infData>
S:     </extension>
S:     <trID>
S:         <clTRID>ABC-12345</clTRID>
S:         <svTRID>54322-XYZ</svTRID>
S:     </trID>
S: </response>
S:</epp>
```

Example <info> domain response using the <verificationCode:infData> extension for a compliant domain using the "sample" profile, and with the two verification codes, from the sponsoring or authorized client that also includes codes set for the "sample2" profile:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <domain:infData
S:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>domain.example</domain:name>
S:        <domain:roid>DOMAIN-REP</domain:roid>
S:        <domain:status s="ok"/>
S:        <domain:clID>ClientX</domain:clID>
S:        <domain:crID>ClientY</domain:crID>
S:        <domain:crDate>2010-04-03T22:00:00.0Z
S:        </domain:crDate>
S:        <domain:exDate>2015-04-03T22:00:00.0Z
S:        </domain:exDate>
S:        <domain:authInfo>
S:          <domain:pw>2fooBAR</domain:pw>
S:        </domain:authInfo>
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <verificationCode:infData
S:        xmlns:verificationCode=
S:        "urn:ietf:params:xml:ns:verificationCode-1.0">
```

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```
S:      <verificationCode:status>compliant
S:      </verificationCode:status>
S:      <verificationCode:profile name="sample">
S:        <verificationCode:status>compliant
S:        </verificationCode:status>
S:        <verificationCode:set>
S:          <verificationCode:code type="domain"
S:            date="2010-04-03T22:00:00.0Z">1-abc333
S:          </verificationCode:code>
S:          <verificationCode:code type="registrant"
S:            date="2010-04-03T22:00:00.0Z">1-abc444
S:          </verificationCode:code>
S:        </verificationCode:set>
S:      </verificationCode:profile>
S:      <verificationCode:profile name="sample2">
S:        <verificationCode:status>notApplicable
S:        </verificationCode:status>
S:        <verificationCode:set>
S:          <verificationCode:code type="domain"
S:            date="2010-04-03T22:00:00.0Z">2-abc555
S:          </verificationCode:code>
S:        </verificationCode:set>
S:      </verificationCode:profile>
S:    </verificationCode:infData>
S:  </extension>
S:  <trID>
S:    <clTRID>ABC-12345</clTRID>
S:    <svTRID>54322-XYZ</svTRID>
S:  </trID>
S: </response>
S: </epp>
```


Example <info> domain response using the <verificationCode:infData> extension for a compliant domain using the "sample" profile, and with the two verification code types, from the non-sponsoring client:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <domain:infData
S:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>domain.example</domain:name>
S:        <domain:roid>DOMAIN-REP</domain:roid>
S:        <domain:status s="ok"/>
S:        <domain:clID>ClientX</domain:clID>
S:        <domain:crID>ClientY</domain:crID>
S:        <domain:crDate>2010-04-03T22:00:00.0Z
S:        </domain:crDate>
S:        <domain:exDate>2015-04-03T22:00:00.0Z
S:        </domain:exDate>
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <verificationCode:infData
S:        xmlns:verificationCode=
S:        "urn:ietf:params:xml:ns:verificationCode-1.0">
S:        <verificationCode:status>compliant
S:        </verificationCode:status>
S:        <verificationCode:profile name="sample">
S:          <verificationCode:status>compliant
S:          </verificationCode:status>
S:          <verificationCode:set>
S:            <verificationCode:code type="domain"
S:              date="2010-04-03T22:00:00.0Z"/>
S:            <verificationCode:code type="registrant"
S:              date="2010-04-03T22:00:00.0Z"/>
S:          </verificationCode:set>
S:        </verificationCode:profile>
S:      </verificationCode:infData>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```


Example <info> domain response using the <verificationCode:infData> extension for a non-compliant domain using the "sample" profile, and with the verification code types missing along with their due dates:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <domain:infData
S:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>domain.example</domain:name>
S:        <domain:roid>DOMAIN-REP</domain:roid>
S:        <domain:status s="serverHold"/>
S:        <domain:clID>ClientX</domain:clID>
S:        <domain:crID>ClientY</domain:crID>
S:        <domain:crDate>2010-04-03T22:00:00.0Z
S:        </domain:crDate>
S:        <domain:exDate>2015-04-03T22:00:00.0Z
S:        </domain:exDate>
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <verificationCode:infData
S:        xmlns:verificationCode=
S:        "urn:ietf:params:xml:ns:verificationCode-1.0">
S:        <verificationCode:status>nonCompliant
S:      </verificationCode:status>
S:      <verificationCode:profile name="sample">
S:        <verificationCode:status>nonCompliant
S:      </verificationCode:status>
S:        <verificationCode:missing>
S:          <verificationCode:code
S:            type="domain"
S:            due="2010-04-03T22:00:00.0Z"/>
S:          <verificationCode:code
S:            type="registrant"
S:            due="2010-04-08T22:00:00.0Z"/>
S:        </verificationCode:missing>
S:      </verificationCode:profile>
S:    </verificationCode:infData>
S:  </extension>
S:  <trID>
S:    <clTRID>ABC-12345</clTRID>
S:    <svTRID>54322-XYZ</svTRID>
S:  </trID>
S: </response>
S:</epp>
```

Example <info> domain response using the <verificationCode:infData>

extension for a pending compliance domain using the "sample" profile, with the verification code type missing along with the due date, and with set verification code:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <domain:infData
S:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>domain.example</domain:name>
S:        <domain:roid>DOMAIN-REP</domain:roid>
S:        <domain:status s="ok"/>
S:        <domain:clID>ClientX</domain:clID>
S:        <domain:crID>ClientY</domain:crID>
S:        <domain:crDate>2010-04-03T22:00:00.0Z
S:        </domain:crDate>
S:        <domain:exDate>2015-04-03T22:00:00.0Z
S:        </domain:exDate>
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <verificationCode:infData
S:        xmlns:verificationCode=
S:        "urn:ietf:params:xml:ns:verificationCode-1.0">
S:        <verificationCode:status>pendingCompliance
S:        </verificationCode:status>
S:        <verificationCode:profile name="sample">
S:          <verificationCode:status>pendingCompliance
S:          </verificationCode:status>
S:          <verificationCode:missing>
S:            <verificationCode:code
S:              type="registrant"
S:              due="2010-04-08T22:00:00.0Z"/>
S:          </verificationCode:missing>
S:          <verificationCode:set>
S:            <verificationCode:code type="domain"
S:              date="2010-04-03T22:00:00.0Z">1-abc333
S:            </verificationCode:code>
S:          </verificationCode:set>
S:        </verificationCode:profile>
S:      </verificationCode:infData>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```


Example <info> domain response using the <verificationCode:infData> extension for a client that does not have a verification profile assigned:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <domain:infData
S:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>domain.example</domain:name>
S:        <domain:roid>DOMAIN-REP</domain:roid>
S:        <domain:status s="ok"/>
S:        <domain:clID>ClientX</domain:clID>
S:        <domain:crID>ClientY</domain:crID>
S:        <domain:crDate>2010-04-03T22:00:00.0Z
S:        </domain:crDate>
S:        <domain:exDate>2015-04-03T22:00:00.0Z
S:        </domain:exDate>
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <verificationCode:infData
S:        xmlns:verificationCode=
S:        "urn:ietf:params:xml:ns:verificationCode-1.0">
S:        <verificationCode:status>notApplicable
S:        </verificationCode:status>
S:      </verificationCode:infData>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

3.1.3. EPP <transfer> Command

This extension does not add any elements to the EPP <transfer> query command or <transfer> response described in the [[RFC5730](#)].

3.2. EPP Transform Commands

EPP provides five commands to transform objects: <create> to create an instance of an object, <delete> to delete an instance of an object, <renew> to extend the validity period of an object, <transfer> to manage object sponsorship changes, and <update> to change information associated with an object.

3.2.1. EPP <create> Command

This extension defines additional elements to extend the EPP <create> command of an object mapping like the EPP domain name mapping [[RFC5731](#)], EPP host mapping [[RFC5732](#)], and EPP contact mapping [[RFC5733](#)].

The EPP <create> command provides a transform operation that allows a client to create an object. In addition to the EPP command elements described in an object mapping like [[RFC5731](#)], the command MAY contain a child <verificationCode:encodedSignedCode> element, as defined in [Section 2.1.2](#), that identifies the extension namespace for the client to provide proof of verification by a Verification Service Provider (VSP). The server MAY support multiple policies for the passing of the <verificationCode:encodedSignedCode> element based on the client profile, which include:

- required The client MUST pass a valid <verificationCode:encodedSignedCode> element containing the required set of verification codes. If a <verificationCode:encodedSignedCode> element is not passed or the required set of verification codes is not included, the server MUST return an EPP error result code of 2306. If an invalid <verificationCode:encodedSignedCode> element is passed, the server MUST return an EPP error result code of 2005.
- optional The client MAY pass a valid <verificationCode:encodedSignedCode> element. If an invalid <verificationCode:encodedSignedCode> element is passed, the server MUST return an EPP error result code of 2005.
- not supported The client MUST NOT pass a <verificationCode:encodedSignedCode> element. If a <verificationCode:encodedSignedCode> element is passed, the server MUST return an EPP error result code of 2102.

Example <create> command to create a domain object with a verification code:

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C: <command>
```



```
C: <create>
C:   <domain:create
C:     xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:       <domain:name>domain.example</domain:name>
C:       <domain:registrar>jd1234</domain:registrar>
C:       <domain:contact type="admin">sh8013</domain:contact>
C:       <domain:contact type="tech">sh8013</domain:contact>
C:       <domain:authInfo>
C:         <domain:pw>2fooBAR</domain:pw>
C:       </domain:authInfo>
C:     </domain:create>
C:   </create>
C:   <extension>
C:     <verificationCode:encodedSignedCode
C:       xmlns:verificationCode=
C:         "urn:ietf:params:xml:ns:verificationCode-1.0">
C:       <verificationCode:code>
C:ICAgICAgPHZlcmhmaWnhdGlvbkNvZGU6c2lnbmVkJ29kZQogICAgICAgIHhtbG5z
C:OnZlcmhmaWnhdGlvbkNvZGU9CiAgICAgICAgICAidXJuOmlldGY6cGFyYW1zOnht
C:bDpuczp2ZXJpZm1jYXRpb25Db2RlLTEuMCIKICAgICAgICAgICAgICAgICglkPSJzaWduZWRD
C:b2RlIj4KICAgCQk8dmVyaWZpY2F0aw9uQ29kZTpjb2RlPjEtYWJjMTIzPC92ZXJp
C:Zm1jYXRpb25Db2RlOmNvZGU+CiAgPFNpZ25hdHVyZSB4bWxuc20iaHR0cDovL3d3
C:dy53My5vcmcvMjAwMC8wOS94bWxkc2lnIyI+CiAgIDxTaWduZWRJbmZvPgogICAg
C:PENhbm9uawNhbGl6YXRpb25NZXR0b2QKIEFsZ29yaXRobT0iaHR0cDovL3d3dy53
C:My5vcmcvMjAwMS8xMC94bWwtZXhjLWwXNg4jIi8+CiAgICA8U2lnbmF0dXJlTWV0
C:ag9kCiBBBgdvcm10aG09Imh0dHA6Ly93d3cudzMub3JnLzIwMDEvMDQveG1sZHNp
C:Zy1tb3JlI3JzYS1zaGEyNTYiLz4KICAgIDxSZWZlcmVudY2UgVGVJPSIjc2lnbmVkJ29kZSI+CiAgICAgPFYyZW5kZm9yYXNpCiAgICAgIDxUcmFuc2Vzcm0KIEFsZ29y
C:axRobT0iaHR0cDovL3d3dy53My5vcmcvMjAwMC8wOS94bWxkc2lnI2VudmVsb3B1
C:ZC1zaWduYXR1cmUiLz4KICAgICA8L1RyYW5kZm9yYXNpCiAgICAgPERpZ2VzdE1l
C:dGhvZAogQWxnb3JpdGhtPSJodHRwOi8vd3d3LnczLm9yZy8yMDAxLzA0L3htbGVu
C:YyNzaGEyNTYiLz4KIDxEaWdlc3RyWYw1ZT53Z3lXM25aUG9FZnBwdGxoUk1MS25P
C:UW5iZHRVnKfYTTdTahJBZkhNREZnPTwvRGlNzXN0VmFsdWU+CiAgICA8L1JlZmVy
C:ZW5jZT4KICAgPC9TaWduZWRJbmZvPgogICA8U2lnbmF0dXJlVmFsdWU+CiBqTXU0
C:UGZ5UUDpSkJGMEDXU0VQRkNkKam15d0NFcVIyaDRMRCTnZTZYUSTKbm1LRkZDdUNa
C:Uy8zU0xLQXgwTDF3CiBRREZPMmUwWTY5azJHNY9MR0UzN1gzdk9mbG9iRk0xb0d3
C:amE4K0dNVNjHb3RvNXhBZDQvQUY3ZUh1a2dBW1ECiBvOXRveG9hMmgweVY0QTRQ
C:bVh6c1U2Uzg2WHRDY1VFK1MvV003Mm55bjQ3em9VQ3p6UEtIwkJSeWVXZWhwR1Er
C:CiBqVWJNSUFNek01N0hIUUErNmVhWGVmUnZ0UEVUZ1VPNGFWSVZTdWdjNE9VQVpa
C:d2JZY1pyQzZ3T2FRcXFXQVppCiAzMGFQT0JZYkF2SE1TbVdTUytoRmtic2hvbUpm
C:SHhi0TdURDJncmxtZnJRSXpXWGs3V2JIV3kyU1lkQStzSS9aCiBpcEpzWE5hNm9z
C:VFV3MUN6QTdqZndBPT0KICAgPC9TaWduYXR1cmVWYXNpZT4KICAgPETleUluZm8+
C:CiAgICA8WDUwOURhdGE+CiAgICA8WDUwOUNlcnRpZm1jYXRlPggogTUlJRvNUQ0NB
C:ekdnQXJkFmSUJBakFOQmdrcWhraUc5dzBCQVFzRkFEQm1NUXN3Q1FZRFZRUUdF
C:d0pwVXpFTaogTUFrR0ExVUVDQk1DUTBFeEZEQVNCZ05WQkFjJmEwHjEjUjYm1k
C:bGJHVnpNUK13RVFZRFZRUUFTd3BkUTBGTwogVGlCVVRVTKlNUN3R1FZRFZRUURF
C:eEpKUTBGt1RpQ1VUVU5JSUZSRlUxUWdRMEV3SGhjTk1UTXdNakE0TURBdwogTURB
C:d1doY05NVGd3TWpBM01gTTFPFVFU1V2pCc01Rc3dDUVlEVlFRR0V3SlZVekVMTUF
```

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```

C:R0ExVUVDQk1DUTBFaAogRkRBU0JnTlZCQWNUQzB4dmN5QkJibWRsYkdWek1SY3dG
C:UVlEVlFRS0V3NVdZV3hWkdGMGIzSwdWRTFEU0RFaAogTUI4R0ExVUVBeE1ZVm1G
C:c2FXUmhkRz15SUZSTlEwZ2dWRVZUVkNCRFJWSlVNSUlCSWpBTkJna3Foa2lHOXcw
C:QgogQVFFRkFBT0NBUThtBTU1JQkNnS0NBuUVBby9jd3ZYaGJWwwwUkRXV3ZveWVa
C:cEVUVlpwVmNNQ292VVZ0Zy9zdWogV2ludU1nRVdnVlFGcnoweEEwNHBFaFhDRlZ2
C:NGV2YlVwZwtKNWJ1cVUxZ21ReU9zQ0tRbGhPSFRkUGp2a0M1dQogcERxYTUxRmxr
C:MFRNYU1rSVFqcZdhVUtDbUE0Ukc0dFRUR0svRWpSMWl40C9EMGdIWVZSbGR5MVlQ
C:ck1QK291NwogNWJPVm5Jb3MrSGlmcKf0ckl2NHFFcXdmTDRGVFpBVXBhQ2EyQm1n
C:WGZ5MkNTUlFieEQ1T3IxZ2NTYTn2dXJONQogc1BNQ054cWFYbUlYbVFpcFMrRHVF
C:QnFNTTh0bGRhtjdSWW9qVUVLckdWc05rNwk5eTivN3NqbJf6eXlVUGY3dgogTDRH
C:Z0RZcWhKWdwnJfEB1hneC9KZDZDV3h2c25ERjZzY3NjUXpVVEVsK2h5d0lEQVFB
C:Qm80SC9NSUG4TUF3RWogQTFVZEV3RUIvd1FDTUFBd0hRWURWUjBPQkJZRUZQWkVj
C:SVFjRC9CajJJRnovTEVSdW8yQURKdmlNSUdNQmdOVgogSFNNRwdZUXdnWUDBRk8w
C:LzdrRWgzRnVFS1MrUS9rWUhhRC9XNndpaG9XYWtaREJpTVFzd0NRWURWUWFHRXdk
C:VgogVXpFTE1Ba0dBMVVFQ0JNQ1EwRXhGREFTQmdOVkJBY1RDMHh2Y3lCQmJtZGxi
C:R1Z6TVJNd0VRWURWUWFLRXdwSgogUTBGT1RpQlVUVU5JTUVJzd0dRWURWUWFERXhK
C:SlEwRk9UaUJVVVF0S0lGUkZVMVFuNTBHQ0FRRXdEZl1EVlIwUAogQVFIL0JBURB
C:Z2VBTUM0R0ExVWRId1FuTUNvd0k2QWhvQitHSFdoMGRIQTZMeTlqY213dWFXtmhi
C:bTR1YjNkbgogTDNSdFkyZ3VZM0pzTUeWR0NTcUdTSWIZRFFFQkN3VUFBNElCQVFC
C:MnFTEtd1aSs0M2NlYktVS3dXUHJ6ejl5LwogSWtyTWVKR0tqbzQwbis5dWVrYXcz
C:REo1RXFpT2YvcVo0cGpCRCSrb1I2QkpDYjZ0UXVRS3dub0F6NWxFNFnzdQogeTur
C:aTkzb1QzSGZ5VmM0Z05NSW9IbTFQUzE5bDdEQktyYndiekF1YS8waktXVnpydm1W
C:N1RCZmp4RDNBuW8xUgogYlU1ZEJyNk1qYmRMRmxuTzV4MEcwbXJHN3g1T1VQdXVy
C:aWh5aVVSceZEchdIOEtBSDF3TWNDcFhHWEZSdEdLawogd3lkZ3lWWUF0eTdvdGts
C:L3ozYlprQ1ZUMzRnUHZGNzBzUjYrUXhVeTh1MEx6RjVBL2JlWWFacHhTWUczMWft
C:TAogQWRYaXRUV0ZpcGFJR2VhOWxFR0ZNMew5K0JnN1h6Tm40blZMWG9reUVCm2Jn
C:UzRzY0c2UXpuWDIzRkdrCiAgIDwvWDUwOUNlcnRpZmljYXRlPgogICA8L1g1MDlE
C:YXRhPgogICA8L0tleUluZm8+CiAgPC9TaWduYXR1cmU+CgkJPc92ZXJpZmljYXRp
C:b25Db2RlOnNpZ25lZENvZGU+Cg==
C:      </verificationCode:code>
C:      </verificationCode:encodedSignedCode>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>

```

This extension does not add any elements to the EPP <create> response described in the [\[RFC5730\]](#).

3.2.2. EPP <delete> Command

This extension defines additional elements to extend the EPP <delete> command and response in the same fashion as defined for the EPP <create> Command ([Section 3.2.1](#)).

3.2.3. EPP <renew> Command

This extension defines additional elements to extend the EPP <renew> command and response in the same fashion as defined for the EPP <create> Command ([Section 3.2.1](#)).

3.2.4. EPP <transfer> Command

This extension defines additional elements to extend the EPP <transfer> command and response in the same fashion as defined for the EPP <create> Command ([Section 3.2.1](#)).

3.2.5. EPP <update> Command

This extension defines additional elements to extend the EPP <update> command and response in the same fashion as defined for the EPP <create> Command ([Section 3.2.1](#)).

4. Formal Syntax

One schema is presented here that is the EPP Verification Code Extension schema.

The formal syntax presented here is a complete schema representation of the object mapping suitable for automated validation of EPP XML instances. The BEGIN and END tags are not part of the schema; they are used to note the beginning and ending of the schema for URI registration purposes.

4.1. Verification Code Extension Schema

```
BEGIN
<?xml version="1.0" encoding="UTF-8"?>
<schema
  targetNamespace=
    "urn:ietf:params:xml:ns:verificationCode-1.0"
  xmlns:verificationCode=
    "urn:ietf:params:xml:ns:verificationCode-1.0"
  xmlns:dsig="http://www.w3.org/2000/09/xmldsig#"
  xmlns="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified">

  <annotation>
    <documentation>
      Extensible Provisioning Protocol v1.0
      Verification Code Extension.
    </documentation>
  </annotation>
```



```
<import namespace="http://www.w3.org/2000/09/xmldsig#"
  schemaLocation="xmldsig-core-schema.xsd"/>

<!-- Abstract signed code for substitution -->
<element name="abstractSignedCode"
  type="verificationCode:abstractSignedCodeType"
  abstract="true"/>

<!-- Empty type for use in extending for a signed code -->
<complexType name="abstractSignedCodeType"/>

<!-- Definition of concrete signed code -->
<element name="signedCode"
  type="verificationCode:signedCodeType"
  substitutionGroup="verificationCode:abstractSignedCode"/>

<complexType name="signedCodeType">
  <complexContent>
    <extension base="verificationCode:abstractSignedCodeType">
      <sequence>
        <element name="code"
          type="verificationCode:verificationCodeType"/>
        <element ref="dsig:Signature"/>
      </sequence>
      <attribute name="id" type="ID" use="required"/>
    </extension>
  </complexContent>
</complexType>

<simpleType name="verificationCodeValueType">
  <restriction base="token">
    <pattern value="\d+-[A-Za-z0-9]+"/>
  </restriction>
</simpleType>

<complexType name="verificationCodeType">
  <simpleContent>
    <extension base=
      "verificationCode:verificationCodeValueType">
      <attribute name="type" type="token"
        use="required"/>
    </extension>
  </simpleContent>
</complexType>

<!-- Definition of an encoded signed code -->
<element name="encodedSignedCode"
  type="verificationCode:encodedSignedCodeListType"/>
```



```
<complexType name="encodedSignedCodeListType">
  <sequence>
    <element name="code"
      type="verificationCode:encodedSignedCodeType"
      minOccurs="1" maxOccurs="unbounded"/>
  </sequence>
</complexType>

<complexType name="encodedSignedCodeType">
  <simpleContent>
    <extension base="token">
      <attribute name="encoding"
        type="token" default="base64"/>
    </extension>
  </simpleContent>
</complexType>

<!-- info command extension elements -->
<element name="info" type="verificationCode:infoType"/>

<complexType name="infoType">
  <simpleContent>
    <extension base="token">
      <attribute name="profile" type="token"/>
    </extension>
  </simpleContent>
</complexType>

<!-- info response extension elements -->
<element name="infData" type="verificationCode:infDataType"/>

<complexType name="infDataType">
  <sequence>
    <element name="status"
      type="verificationCode:statusEnum"/>
    <element name="profile"
      type="verificationCode:profileDataType"
      minOccurs="0" maxOccurs="unbounded"/>
  </sequence>
</complexType>

<complexType name="profileDataType">
  <sequence>
    <element name="status"
      type="verificationCode:statusEnum"/>
    <element name="missing"
      type="verificationCode:missingCodes">
```



```
        minOccurs="0"/>
      <element name="set"
        type="verificationCode:codesType"
        minOccurs="0"/>
    </sequence>
    <attribute name="name" type="token"/>
</complexType>

<simpleType name="statusEnum">
  <restriction base="token">
    <enumeration value="notApplicable"/>
    <enumeration value="nonCompliant"/>
    <enumeration value="pendingCompliance"/>
    <enumeration value="compliant"/>
  </restriction>
</simpleType>

<complexType name="missingVerificationCode">
  <simpleContent>
    <extension base="token">
      <attribute name="type" type="token"
        use="required"/>
      <attribute name="due" type="dateTime"
        use="required"/>
    </extension>
  </simpleContent>
</complexType>

<complexType name="missingCodes">
  <sequence>
    <element name="code"
      type="verificationCode:missingVerificationCode"
      minOccurs="1" maxOccurs="unbounded"/>
  </sequence>
</complexType>

<complexType name="infoVerificationCodeType">
  <simpleContent>
    <extension base="token">
      <attribute name="type" type="token"
        use="required"/>
      <attribute name="date" type="dateTime"
        use="required"/>
    </extension>
  </simpleContent>
</complexType>

<complexType name="codesType">
```



```
<sequence>
  <element name="code"
    type="verificationCode:infoVerificationCodeType"
    minOccurs="1" maxOccurs="unbounded"/>
</sequence>
</complexType>

</schema>
END
```

5. IANA Considerations

5.1. XML Namespace

This document uses URNs to describe XML namespaces and XML schemas conforming to a registry mechanism described in [[RFC3688](#)].

Registration request for the verificationCode namespace:

URI: ietf:params:xml:ns:verificationCode-1.0
Registrant Contact: See the "Author's Address" section of this document.
XML: None. Namespace URIs do not represent an XML specification.

Registration request for the verificationCode XML schema:

URI: ietf:params:xml:ns:verificationCode-1.0
Registrant Contact: See the "Author's Address" section of this document.
XML: See the "Formal Syntax" section of this document.

5.2. EPP Extension Registry

The EPP extension described in this document should be registered by the IANA in the EPP Extension Registry described in [[RFC7451](#)]. The details of the registration are as follows:

Name of Extension: "Verification Code Extension for the Extensible Provisioning Protocol (EPP)"

Document status: Standards Track

Reference: (insert reference to RFC version of this document)

Registrant Name and Email Address: IESG, <iesg@ietf.org>

TLDs: Any

IPR Disclosure: None

Status: Active

Notes: None

6. Security Considerations

The mapping extension described in this document is based on the security services described by EPP [[RFC5730](#)] and protocol layers used by EPP. The security considerations described in these other specifications apply to this specification as well.

XML Signature [[W3C.CR-xmlsig-core2-20120124](#)] is used in this extension to verify that the Verification Code originated from a trusted Verification Service Provider (VSP) and that it wasn't tampered with in transit from the VSP to the client to the server. To support multiple VSP keys, the VSP certificate chain MUST be included in the <X509Certificate> elements of the Signed Code ([Section 2.1.1](#)) and MUST chain up and be verified by the server against a set of trusted certificates.

It is RECOMMENDED that signed codes do not include white-spaces between the XML elements in order to mitigate risks of invalidating the digital signature when transferring of signed codes between applications takes place.

Use of XML canonicalization SHOULD be used when generating the signed code. SHA256/RSA-SHA256 SHOULD be used for digesting and signing. The size of the RSA key SHOULD be at least 2048 bits.

7. Normative References

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- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC3688] Mealling, M., "The IETF XML Registry", [BCP 81](#), [RFC 3688](#), January 2004.
- [RFC5234] Crocker, D. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", STD 68, [RFC 5234](#), January 2008.
- [RFC5730] Hollenbeck, S., "Extensible Provisioning Protocol (EPP)", STD 69, [RFC 5730](#), August 2009.

- [RFC5731] Hollenbeck, S., "Extensible Provisioning Protocol (EPP) Domain Name Mapping", STD 69, [RFC 5731](#), August 2009.
- [RFC5732] Hollenbeck, S., "Extensible Provisioning Protocol (EPP) Host Mapping", STD 69, [RFC 5732](#), August 2009.
- [RFC5733] Hollenbeck, S., "Extensible Provisioning Protocol (EPP) Contact Mapping", STD 69, [RFC 5733](#), August 2009.
- [RFC7451] Hollenbeck, S., "Extension Registry for the Extensible Provisioning Protocol", [RFC 7451](#), February 2015.
- [W3C.CR-xmlsig-core2-20120124]
Cantor, S., Roessler, T., Eastlake, D., Yiu, K., Reagle, J., Solo, D., Datta, P., and F. Hirsch, "XML Signature Syntax and Processing Version 2.0", World Wide Web Consortium CR CR-xmlsig-core2-20120124, January 2012, <<http://www.w3.org/TR/2012/CR-xmlsig-core2-20120124>>.

[Appendix A.](#) Acknowledgements

[Appendix B.](#) Change History

[B.1.](#) Change from 00 to 01

1. Fixed pendingComplaine and complaint to pendingCompliance and compliant in text.
2. Fixed verificaton to verification.

[B.2.](#) Change from 01 to 02

1. Added support for the notApplicable status value.

[B.3.](#) Change from 02 to 03

1. Added regular expression pattern for the format of the verification code token value in the XML schema.

[B.4.](#) Change from 03 to 04

1. Ping update.

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