

# Pre-Delegation Testing

## EPP Test Cases

Version I

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# Document control

## Document information and security

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## 1. Introduction

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### 1.1 Scope

The Pre-Delegation Testing Provider will execute an *Extensible Provisioning Protocol* (EPP) test case suite using registrar credentials supplied by the applicant. The tests include:

- IPv6 transport support (if supported by the applicant)
- IPv6 DNS glue record handling
- DNSSEC support

All tests are to be performed over IPv4 and IPv6 from various points on the Internet.

### 1.2 References

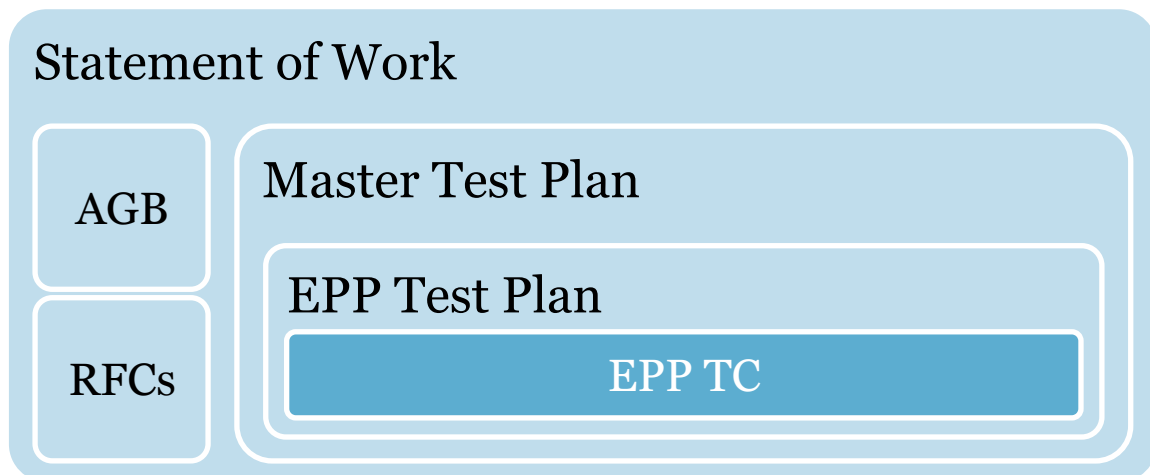
#### 1.2.1 External

- IEEE 829-2008
- ICANN gTLD Applicant Guidebook, Version 2012-06-04

#### 1.2.2 Internal

- Pre-Delegation Testing, Statement of Work
- Pre-Delegation Testing, Master Test Plan
- Pre-Delegation Testing, EPP Test Plan
- Pre-Delegation Testing, DNS Delegation Test Case
- Pre-Delegation Testing, Whois CLI Test Cases

#### 1.2.3 Document Hierarchy



### 1.3 Context

The first test (EPP Conn Test) is to be performed over IPv4 and IPv6 (if supported by the applicant) from at least five points on the Internet. At least one probe node should be located in every ICANN region. The rest of the tests will only be performed from one location.

## 1.4 Notation for description

Each test case for the EPP service is described in their own chapter. The test procedures are described directly in the test case.



## 2. EPP Conn Test

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### 2.1 Test case identifier

EPPConnTest

### 2.2 Objective

This test verifies the connectivity from different nodes to the EPP provisioning system by doing a login and then a logout. For information about nodes, see 1.3.

The test will be performed over IPv4, and also IPv6 if applicant supports it.

### 2.3 Inputs

The following information is needed as input for this test case:

Id	Description	Type
EppLoginId	Login ID for EPP test user	String
EppLoginPwd	Login password for EPP test user	String
EppNsDomainUri	Object URI for Domain Object	String
EppNsDomainSl	Schema location for Domain Object	String
EppNsContactUri	Object URI for Contact Object	String
EppNsContactSl	Schema location for Contact Object	String
EppNsHostUri	Object URI for Host Object. If the applicant is not supporting Host Objects, this field is not mandatory.	String
EppNsHostSl	Schema location for Host Object. If the applicant is not supporting Host Objects, this field is not mandatory.	String
EppExtSecDnsUri	Object URI for Sec Dns Object Extension	String
EppExtSecDnsSl	Schema location for Sec Dns Object Extension	String
EppExtUri-[1..n]	Object URI for extension 1..n	String
EppExtSl-[1..n]	Schema location for extensions 1..n	String
EppServerIPv4	IPv4 address to EPP server	String
EppServerIPv6	IPv6 address to EPP server if applicant supports IPv6	String
EppServerPort	Port number to EPP server	Number
EppClientCertificate	Yes if applicant requires client certificate	Boolean
EppClientKeyPairPem	PEM file with valid client certificate for test user (Public and private)	PEM file
EppClientKeyPairPwd	Password for client certificate for test user	String
EppServerCertificatePem	PEM file with server certificate (Public)	PEM file

### 2.4 Outcome(s)

The login command from each probe MUST complete with result code 1000  
The logout command from each probe MUST complete with result code 1500.

## 2.5 Environmental needs

- EPP test script
- IPv4 connectivity
- IPv6 connectivity

## 2.6 Special procedural requirements

Abort the test if any operation takes longer than 30 seconds.

## 2.7 Intercase dependencies

This test has no intercase dependencies.

## 2.8 Ordered description of steps to be taken to execute the test case

This test will be performed from all of the nodes.

1. Connect to EppServerIPv4.  
Create a login command with *EppLoginId* and password *EppLoginPwd*.  
Use the *EppNsDomainUri*, *EppNsDomainSl*, *EppNsContactUri*, *EppNsContactSl*, *EppNsHostUri* and *EppNsHostSl* to build the login message.  
Add the secDNS extension with *EppExtSecDnsUri* and *EppExtSecDnsSl*.  
Add zero or more extra extensions with *EppExtUri* and *EppExtSl*.  
If the server requires client certificate, connect with client certificate *EppClientKeyPairPem*.  
The login command MUST complete with result code 1000.
2. Create a logout command.  
The logout command MUST complete with result code 1500.

If applicant supports IPv6:

1. Connect to EppServerIPv6.  
Create a login command with *EppLoginId* and password *EppLoginPwd*.  
Use the *EppNsDomainUri*, *EppNsDomainSl*, *EppNsContactUri*, *EppNsContactSl*, *EppNsHostUri* and *EppNsHostSl* to build the login message.  
Add the secDNS extension with *EppExtSecDnsUri* and *EppExtSecDnsSl*.  
Add zero or more extra extensions with *EppExtUri* and *EppExtSl*.  
If the server requires client certificate, connect with client certificate *EppClientKeyPairPem*.  
The login command MUST complete with result code 1000.
2. Create a logout command.  
The logout command MUST complete with result code 1500.

### 3. EPP Domain Create 01

---

#### 3.1 Test case identifier

EPPDomCreate01

#### 3.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, creating a domain object, logging out, and verifying that the domain is visible in the zone within 24 hours. It also verifies that information is visible in Whois within 24 hours.

#### 3.3 Inputs

The following information is needed as input for this test case:

The IP address for the authoritative name server for the TLD zone is required as the test verifies DNS visibility. It is fetched from the XML data file provided by the applicant for the DNS tests.

The IP address of the Whois server is extracted from the DNS zone by the Whois test and is also used for this TC.

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
DnsGlueRecord1	IPv4 or IPv6 address of 1 <sup>st</sup> authoritative name server	String
WhoisIPv4Port43	The IPv4 address of the Whois service on port 43	String
EppDomCreate01Name	Domain name to create	String
EppDomCreate01Period	Domain period type	Y/M
EppDomCreate01PeriodValue	Domain period value	Number
EppDomCreate01RegistrantId	Domain registrant id	String
EppDomCreate01AdminId	Domain Admin id if required	String
EppDomCreate01TechId	Domain Tech id if required	String
EppDomCreate01BillingId	Domain Billing id if required	String
EppDomCreate01AuthPw	AuthPw if required	String
EppDomCreate01Ns01	Host Object or Host Attribute name for ns01	String
EppDomCreate01Ns02	Host Object or Host Attribute name for ns02	String
EppDomCreate01Ext01Uri	Extension 01 object URI	String
EppDomCreate01Ext01Sl	Extension 01 schema location	String
EppDomCreate01Ext01ExtName	Extension 01 name	String
EppDomCreate01Ext01ExtValue	Extension 01 value for direct text node	String
EppDomCreate01Ext01Field01	Extension 01 field name 01	String
EppDomCreate01Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields	
...	Repeat for max x extensions	

### 3.4 Outcome(s)

Initial DNS lookup MUST return NXDOMAIN for *EppDomCreate01Name*.  
 Initial Whois lookup MUST NOT return any information about *EppDomCreate01Name*.  
 Login step MUST complete with result code 1000.  
 Create step MUST complete with result code 1000 or 1001.  
 Logout step MUST complete with result code 1500.  
*EppDomCreate01Name* MUST be visible in zone within 24 hours.  
*EppDomCreate01Name* MUST be visible in Whois after within 24 hours.

### 3.5 Environmental needs

- DNS test script
- Whois client software
- EPP test script
- IPv4 connectivity
- *EppDomCreate01Name* MUST NOT exist in the DNS zone.
- *EppDomCreate01RegistrantId* MUST exist in applicant contact database
- *EppDomCreate01Ns01* MUST exist in applicant host database, and be configured to serve domain *EppDomCreate01Name*.
- *EppDomCreate01Ns02* MUST exist in applicant host database, and be configured to serve domain *EppDomCreate01Name*.

### 3.6 Special procedural requirements

Abort the test if any Whois query takes longer than 10 seconds.  
 Abort the test if any EPP operation takes longer than 30 seconds.

### 3.7 Intercase dependencies

This test has no intercase dependencies.

### 3.8 Ordered description of steps to be taken to execute the test case

1. Verify that the domain is not present in Whois:
  - a. Start a terminal.
  - b. Query the Whois service using the client software:  
`whois -h WhoisIPv4Port43 EppDomCreate01Name`
  - c. The domain name MUST NOT be present in the response.
2. Perform a DNS lookup for the domain name *EppDomCreate01Name*.  
 The result MUST be NXDOMAIN.
3. Perform the same login as the login step in 2.8.  
 The login command MUST complete with result code 1000.
4. Create a domain create command with *EppDomCreate01Name*.
  - a. Use period name from *EppDomCreate01Period* and period value from *EppDomCreate01PeriodValue*.
  - b. Use name server 1 from *EppDomCreate01Ns01* and name server 2 from *EppDomCreate01Ns02*.
  - c. If domain create requires extra extensions and values, create an extension part from *EppDomCreate01Ext01Uri* and fill in field name from *EppDomCreateExt01Field01* and values from *EppDomCreateExt01Value01*.

- The domain create command MUST complete with result code 1000 or 1001.
5. Create a logout command.  
The logout command MUST complete with result code 1500.
  6. Verify that the *EPPDomCreate01Name* domain is visible in the zone within 24 hours.
  7. Verify that the *EPPDomCreate01Name* is visible in Whois within 24 hours.

## 4. EPP Domain Create 02

### 4.1 Test case identifier

EPPDomCreate02

This test is changed from creating a domain to adding subordinate hosts to an existing domain. As a consequence, all fields required for creating the domain are now optional, and will be ignored if they are present in the input data. They will be removed in a future release.

### 4.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, creating subordinate Host Objects for a domain, updating the domain, logging out, and verifying the correct handling of glue records.

If the applicant does not support Host Objects, the test uses Host Attributes to insert the subordinate name servers for the domain.

### 4.3 Inputs

The following information is needed as input for this test case:

The IP address for the authoritative name server for the TLD zone is required as the test verifies DNS visibility. It is fetched from the XML data file provided by the applicant for the DNS tests.

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
DnsGlueRecord1	IPv4 or IPv6 address of 1 <sup>st</sup> authoritative name server	String
EppDomCreate02Name	Domain name to update	String
EppDomCreate02Ns01	Subordinate Host Object or Host Attribute name for name server 01	String
EppDomCreate02Ns01Ipv4	Subordinate name server 01 IPv4 address	String
EppDomCreate02Ns01Ipv6	Subordinate name server 01 IPv6 address	String
EppDomCreate02Ns02	Subordinate Host Object or Host Attribute name for name server 02	String
EppDomCreate02Ns02Ipv4	Subordinate name server 02 IPv4 address	String
EppDomCreate02Ns02Ipv6	Subordinate name server 02 IPv6 address	String
EppDomCreate02UpdExt01Uri	Extension 01 object URI	String
EppDomCreate02UpdExt01Sl	Extension 01 schema location	String
EppDomCreate02UpdExt01ExtName	Extension 01 name	String
EppDomCreate02UpdExt01ExtValue	Extension 01 value for direct text node	String
EppDomCreate02UpdExt01Field01	Extension 01 field name 01	String
EppDomCreate02UpdExt01Value01	Extension 01 field value 01	String
...	Repeat for max y fields for Update	
...	Repeat for max x extensions for Update	
EppDomCreate02Ns01Ext01Uri	Extension 01 object URI	String

Id	Description	Type
EppDomCreate02Ns01Ext01Sl	Extension 01 schema location	String
EppDomCreate02Ns01Ext01ExtName	Extension 01 name	String
EppDomCreate02Ns01Ext01ExtValue	Extension 01 value for direct text node	String
EppDomCreate02Ns01Ext01Field01	Extension 01 field name 01	String
EppDomCreate02Ns01Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields for name server 01	
...	Repeat for max x extensions for name server 01	
EppDomCreate02Ns02Ext01Uri	Extension 01 object URI	String
EppDomCreate02Ns02Ext01Sl	Extension 01 schema location	String
EppDomCreate02Ns02Ext01ExtName	Extension 01 name	String
EppDomCreate02Ns02Ext01ExtValue	Extension 01 value for direct text node	String
EppDomCreate02Ns02Ext01Field01	Extension 01 field name 01	String
EppDomCreate02Ns02Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields for name server 02	
...	Repeat for max x extensions for name server 02	

#### 4.4 Outcome(s)

Initial DNS lookup MUST NOT show neither *EppDomCreate02Ns01* nor *EppDomCreate02Ns02* as Nameservers for *EppDomCreate02Name*.

The login command MUST complete with result code 1000.

If the applicant is using Host Objects, the host create command MUST complete with result code 1000 or 1001.

The domain update command MUST complete with result code 1000 or 1001.

The logout command MUST complete with result code 1500.

*EppDomCreate02Name* MUST be visible in zone with correct glue records within 24 hours.

#### 4.5 Environmental needs

- DNS test script
- EPP test script
- IPv4 connectivity
- *EppDomCreate02Name* MUST exist in applicant EPP database.
- *EppDomCreate02RegistrantId* MUST exist in applicant contact database
- *EppDomCreate02Ns01* MUST be configured to serve domain *EppDomCreate02Name*.
- *EppDomCreate02Ns02* MUST be configured to serve domain *EppDomCreate02Name*.

#### 4.6 Special procedural requirements

Abort the test if any EPP operation takes longer than 30 seconds.

#### 4.7 Intercase dependencies

This test has no intercase dependencies.

#### 4.8 Ordered description of steps to be taken to execute the test case

1. Perform a DNS lookup for *EppDomCreate02Name* domain name.  
The result MUST NOT show neither *EppDomCreate02Ns01* nor *EppDomCreate02Ns02* as Nameservers for *EppDomCreate02Name*.
2. Perform the same login as the login step in 2.8.  
The login command MUST complete with result code 1000.
3. If the applicant does not support Host Objects, skip to step 6.
4. Create a host create command for subordinate host *EppDomCreate02Ns01* with IPv4 address *EppDomCreate02Ns01Ipv4* and/or IPv6 address *EppDomCreate02Ns01Ipv6*.  
The host create command MUST complete with result code 1000 or 1001.
5. Create a host create command for subordinate host *EppDomCreate02Ns02* with IPv4 address *EppDomCreate02Ns02Ipv4* and/or IPv6 address *EppDomCreate02Ns02Ipv6*.  
The host create command MUST complete with result code 1000 or 1001.
6. Create a domain update command with *EppDomCreate02Name* and hosts *EppDomCreate02Ns01* and *EppDomCreate02Ns02*.
  - If the applicant supports Host Objects, use Host Objects.
  - If the applicant does not support Host Objects, use Host Attributes.The domain update command MUST complete with result code 1000 or 1001.
7. Create a logout command.  
The logout command MUST complete with result code 1500.
8. Verify that the *EppDomCreate02Name* domain and the correct glue records are visible in the zone within 24 hours.



## 5. EPP Domain Create 03

### 5.1 Test case identifier

EPPDomCreate03

### 5.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, creating a domain object with DNSSEC records and logging out.

### 5.3 Inputs

The following information is needed as input for this test case:

The IP address for the authoritative name server for the TLD zone is required as the test verifies DNS visibility. It is fetched from the XML data file provided by the applicant for the DNS tests.

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
DnsGlueRecord1	IPv4 or IPv6 address of 1 <sup>st</sup> authoritative name server	String
EppDomCreate03Name	Domain name to create	String
EppDomCreate03Period	Domain period type	Y/M
EppDomCreate03PeriodValue	Domain period value	Number
EppDomCreate03RegistrantId	Domain registrant id	String
EppDomCreate03AdminId	Domain admin id if required	String
EppDomCreate03TechId	Domain tech id if required	String
EppDomCreate03BillingId	Domain billing id if required	String
EppDomCreate03AuthPw	Authentication password if required	String
EppDomCreate03Ns01	Host Object name for ns01	String
EppDomCreate03Ns02	Host Object name for ns02	String
EppDomCreate03Ext01Uri	Extension 01 object URI	String
EppDomCreate03Ext01Sl	Extension 01 schema location	String
EppDomCreate03Ext01ExtName	Extension 01 name	String
EppDomCreate03Ext01ExtValue	Extension 01 value for direct text node	String
EppDomCreate03Ext01Field01	Extension 01 field name 01	String
EppDomCreate03Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields	
...	Repeat for max x extensions	
EppDomCreate03KeyType	D for dsData specification K for keyData specification DK for dsData and keyData specification	String
EppDomCreate03DsKeyTag01	Value for dsData 01 keytag	String
EppDomCreate03DsAlg01	Value for dsData 01 alg	Number
EppDomCreate03DsDigestType01	Value for dsData 01 digest type	Number
EppDomCreate03DsDigest01	Value for dsData 01 digest	String
...	Repeat for max x dsData records	
EppDomCreate03KdFlags01	Value for keyData 01 flags	Number

Id	Description	Type
EppDomCreate03KdProtocol01	Value for keyData 01 protocol	Number
EppDomCreate03KdAlg01	Value for keyData 01 alg	Number
EppDomCreate03KdPubKey01	Value for keyData 01 pubKey	String
...	Repeat for max x keyData records	

## 5.4 Outcome(s)

Initial DNS lookup MUST return NXDOMAIN for *EppDomCreate03Name*.

The domain create command MUST complete with result code 1000 or 1001.

The logout command MUST complete with result code 1500.

*EppDomCreate03Name* MUST be visible in the zone with correct DNS records within 24 hours.

## 5.5 Environmental needs

- DNS test script
- EPP test script
- IPv4 connectivity
- *EppDomCreate03Name* MUST NOT exist in the DNS zone.
- *EppDomCreate03RegistrantId* MUST exist in applicant contact database
- *EppDomCreate03Ns01* MUST exist in applicant host database, and be configured to serve domain *EppDomCreate03Name* with correct DNSSEC records.
- *EppDomCreate03Ns02* MUST exist in applicant host database, and be configured to serve domain *EppDomCreate03Name* with correct DNSSEC records.

## 5.6 Special procedural requirements

Abort the test if any EPP operation takes longer than 30 seconds.

## 5.7 Intercase dependencies

This test has no intercase dependencies.

## 5.8 Ordered description of steps to be taken to execute the test case

1. Perform a DNS lookup for *EppDomCreate03Name* domain name.  
The result MUST be NXDOMAIN.
2. Perform the same login as the login step in 2.8.  
The login command MUST complete with result code 1000.
3. Create a domain create command with *EppDomCreate03Name*.
  - a. Use period name from *EppDomCreate03Period* and period value from *EppDomCreate03PeriodValue*.
  - b. Use name server 1 from *EppDomCreate03Ns01* and name server 2 from *EppDomCreate03Ns02*.
  - c. Add one or more secDNS records with dsData or keyData or both, depending on the value of *EppDomUpdate01KeyType*. Use appropriate values from *EppDomUpdate01DsKeyTag01*, *EppDomUpdate01DsAlg01*, *EppDomUpdate01DsDigestType01*, *EppDomUpdate01DsDigest01*, *EppDomUpdate01KdFlags01*, *EppDomUpdate01KdProtocol01*, *EppDomUpdate01KdAlg01*, *EppDomUpdate01kdPubKey01*.

- d. If domain create requires extra extension and values, create an extension part from *EppDomCreate03Ext01Uri* and fill in field name from *EppDomCreate03Ext01Field01* and values from *EppDomCreate03Ext01Value01*.  
The domain create command MUST complete with result code 1000 or 1001.
4. Create a logout command.  
The logout command MUST complete with result code 1500.
5. Verify that the *EppDomCreate03Name* domain is visible, with the correct DNSSEC records, in the zone within 24 hours.

## 6. EPP Domain Renew 01

---

### 6.1 Test case identifier

EPPDomRenew01

### 6.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, renewing a domain object and logging out.

### 6.3 Inputs

The following information is needed as input for this test case:

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
EppDomRenew01Name	Domain name to renew	String
EppDomRenew01Period	Domain period type	Y/M
EppDomRenew01PeriodValue	Domain period value	Number
EppDomRenew01ExpDate	Domain current expiry date	String
EppDomRenew01Ext01Uri	Object URI for extension 01	String
EppDomRenew01Ext01Sl	Extension 01 schema location	String
EppDomRenew01Ext01ExtName	Extension 01 name	String
EppDomRenew01Ext01ExtValue	Extension 01 value for direct text node	String
EppDomRenew01Ext01Field01	Extension 01 field name 01	String
EppDomRenew01Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields	
...	Repeat for max x extensions	

### 6.4 Outcome(s)

The login command MUST complete with result code 1000.

The renew command MUST complete with result code 1000 or 1001.

The logout command MUST complete with result code 1500.

### 6.5 Environmental needs

- EPP test script
- IPv4Connectivity
- *EppDomRenew01Name* domain MUST exist in the applicant domain database, and be ready for renewal

### 6.6 Special procedural requirements

Abort the test if any EPP operation takes longer than 30 seconds.

### 6.7 Intercase dependencies

This test has no intercase dependencies.

## 6.8 Ordered description of steps to be taken to execute the test case

1. Perform the same login as the login step in 2.8.  
The login command MUST complete with result code 1000.
2. Create a domain renew command with *EppDomRenew01Name*.
  - a. Use period name from *EppDomRenew01Period* and period value from *EppDomRenew01PeriodValue*.
  - b. If domain renew requires extra extension and values, create an extension part from *EppDomRenew01Ext01Uri* and fill in field name from *EppDomRenew01Ext01Field01* and values from *EppDomRenew01Ext01Value01*.  
The domain renew command MUST complete with result code 1000 or 1001.
3. Create a logout command.  
The logout command MUST complete with result code 1500.

## 7. EPP Domain Transfer 01

---

### 7.1 Test case identifier

EPPDomTransfer01

### 7.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, requesting a transfer of a domain object and logging out.

### 7.3 Inputs

The following information is needed as input for this test case:

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
EppDomTransfer01Name	Domain name to transfer	String
EppDomTransfer01AddPeriod	Yes if the applicant support adding a period to transfer	Boolean
EppDomTransfer01Period	Domain period type	Y/M
EppDomTransfer01PeriodValue	Domain period value	Number
EppDomTransfer01AuthInfo	Authorization info for domain, registrant or associated contacts	String
EppDomTransfer01AuthRoid	Roid for registrant or contact if EppDomTransfer01AuthInfo is associated with registrant or contact object	String
EppDomTransfer01Ext01Uri	Extension 01 object URI	String
EppDomTransfer01Ext01Sl	Extension 01 schema location	String
EppDomTransfer01Ext01ExtName	Extension 01 name	String
EppDomTransfer01Ext01ExtValue	Extension 01 value for direct text node	String
EppDomTransfer01Ext01Field01	Extension 01 field name 01	String
EppDomTransfer01Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields	
...	Repeat for max x extensions	

### 7.4 Outcome(s)

The login command MUST complete with result code 1000.

The domain transfer command MUST complete with result code 1000 or 1001.

The logout command MUST complete with result code 1500.

### 7.5 Environmental needs

- EPP test script
- IPv4 connectivity
- *EppDomTransfer01Name* domain MUST exist in the applicant domain database, and be available for transfer.

## 7.6 Special procedural requirements

Abort the test if any EPP operation takes longer than 30 seconds.

## 7.7 Intercase dependencies

This test has no intercase dependencies.

## 7.8 Ordered description of steps to be taken to execute the test case

1. Perform the same login as the login step in 2.8.  
The login command MUST complete with result code 1000.
2. Create a domain transfer command with *EppDomTransfer01Name*.
  - a. Add an Op attribute in transfer command with the value "request".
  - b. If *EppDomTransfer01AddPeriod* is true, add period part with Period name from *EppDomTransfer01Period* and period value from *EppDomTransfer01PeriodValue*.
  - c. Add authinfo part with *EppDomTransfer01AuthInfo*.
  - d. If *EppDomTransfer01AuthRoid* is defined, add a roid attribute to pw part with the value *EppDomTransfer01AuthRoid*.
  - e. If domain renew requires extra extension and values, create an extension part from *EppDomTransfer01Ext01Uri* and *EppDomTransfer01Ext01Sl* and fill in field name from *EppDomTransfer01Ext01Field01* and values from *EppDomTransfer01Ext01Value01*.

The domain transfer command MUST complete with result code 1000 or 1001.

3. Create a logout command.  
The logout command MUST complete with result code 1500.

## 8. EPP Domain Transfer 02

### 8.1 Test case identifier

EPPDomTransfer02

### 8.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, approving a transfer of a domain object if the applicant supports this operation via EPP, and logging out.

This test will only be run if the *EppDomTransfer02Approve* is set to yes.

### 8.3 Inputs

The following information is needed as input for this test case:

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
EppDomTransfer02Approve	Yes if the applicant supports the approve operation	Boolean
EppDomTransfer02Name	Domain name to transfer	String
EppDomTransfer02AddPeriod	Yes if the applicant support adding a period to transfer	Boolean
EppDomTransfer02Period	Domain period type	Y/M
EppDomTransfer02PeriodValue	Domain period value	Number
EppDomTransfer02AuthInfo	Authorization info for domain, registrant or associated contacts if required	String
EppDomTransfer02AuthRoid	Roid for registrant or contact if EppDomTransfer01AuthInfo is associated with registrant or contact object	String
EppDomTransfer02Ext01Uri	Extension 01 object URI	String
EppDomTransfer02Ext01Sl	Extension 01 schema location	String
EppDomTransfer02Ext01ExtName	Extension 01 name	String
EppDomTransfer02Ext01ExtValue	Extension 01 value for direct text node	String
EppDomTransfer02Ext01Field01	Extension 01 field name 01	String
EppDomTransfer02Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields	
...	Repeat for max x extensions	

### 8.4 Outcome(s)

The login command MUST complete with result code 1000.

The domain transfer command MUST complete with result code 1000 or 1001.

The logout MUST complete with result code 1500.

### 8.5 Environmental needs

- EPP test script



- IPv4 connectivity
- *EppDomTransfer02Name* domain MUST exist in the applicant domain database, and be available for transfer approve.

## 8.6 Special procedural requirements

Abort the test if any EPP operation takes longer than 30 seconds.

## 8.7 Intercase dependencies

This test has no intercase dependencies.

## 8.8 Ordered description of steps to be taken to execute the test case

1. Perform the same login as the login step in 2.8.  
The login command MUST complete with result code 1000.
2. Create a domain transfer command with *EppDomTransfer02Name*.
  - a. Add an Op attribute in transfer command with the value "approve".
  - b. If *EppDomTransfer02AddPeriod* is true, add period part with period name from *EppDomTransfer02Period* and period value from *EppDomTransfer02PeriodValue*.
  - c. Add authinfo part with *EppDomTransfer01AuthInfo*.
  - d. If *EppDomTransfer02AuthRoid* is defined add a roid attribute to pw part with the value *EppDomTransfer02AuthRoid*.
  - e. If domain transfer requires extra extension and values, create an extension part from *EppDomTransfer02Ext01Uri* and *EppDomTransfer02Ext01Sl* and fill in field name from *EppDomTransfer02Ext01Field01* and values from *EppDomTransfer02Ext01Value01*.

The domain transfer command MUST complete with result code 1000 or 1001.
3. Create a logout command.  
The logout command MUST complete with result code 1500.

## 9. EPP Domain Delete 01

---

### 9.1 Test case identifier

EPPDomDelete01

### 9.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, deleting a domain object and logging out.

### 9.3 Inputs

The following information is needed as input for this test case:

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
EppDomDelete01Name	Domain name to delete	String
EppDomDelete01Ext01Uri	Extension 01 object URI	String
EppDomDelete01Ext01Sl	Extension 01 schema location	String
EppDomDelete01Ext01ExtName	Extension 01 name	String
EppDomDelete01Ext01ExtValue	Extension 01 value for direct text node	String
EppDomDelete01Ext01Field01	Extension 01 field name 01	String
EppDomDelete01Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields	
...	Repeat for max x extensions	

### 9.4 Outcome(s)

The login command MUST complete with result code 1000.

The domain delete command MUST complete with result code 1000 or 1001.

The logout command MUST complete with result code 1500.

### 9.5 Environmental needs

- EPP test script
- IPv4 connectivity
- *EppDomDelete01Name* domain MUST exist in the applicant domain database, and be available for delete.

### 9.6 Special procedural requirements

Abort the test if any EPP operation takes longer than 30 seconds.

### 9.7 Intercase dependencies

This test has no intercase dependencies.

## 9.8 Ordered description of steps to be taken to execute the test case

1. Perform the same login as the login step in 2.8.  
The login command MUST complete with result code 1000.
2. Create a domain delete command with *EppDomDelete01Name*.
  - a. If domain delete requires extra extension and values, create an extension part from *EppDomDelete01Ext01Uri* and *EppDomDelete01Ext01Sl* and fill in field name from *EppDomDelete01Ext01Field01* and values from *EppDomDelete01Ext01Value01*.  
The domain delete command MUST complete with result code 1000 or 1001.
3. Create a logout command.  
The logout command MUST complete with result code 1500.

## 10. EPP Contact Create 01

---

### 10.1 Test case identifier

EppConCreate01

### 10.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, creating a contact object and logging out.

### 10.3 Inputs

The following information is needed as input for this test case:

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
EppConCreate01Id	Contact ID to create	String
EppConCreate01PIntMand	Yes if PostalInfo type INT is mandatory	Boolean
EppConCreate01PIntName	Contact PostalInfo Int Name	String
EppConCreate01PIntOrg	Contact PostalInfo Int Org	String
EppConCreate01PIntStreet1	Contact PostalInfo Int Street1	String
EppConCreate01PIntStreet2	Contact PostalInfo Int Street2, if mandatory	String
EppConCreate01PIntStreet3	Contact PostalInfo Int Street3, if mandatory	String
EppConCreate01PIntCity	Contact PostalInfo Int City	String
EppConCreate01PIntSp	Contact PostalInfo Int State or Province, if mandatory	String
EppConCreate01PIntPc	Contact PostalInfo Int Postcode, if mandatory	String
EppConCreate01PIntCc	Contact PostalInfo Int Country Code	String
EppConCreate01PLocMand	Yes if PostalInfo type LOC is mandatory	Boolean
EppConCreate01PLocName	Contact PostalInfo Loc Name	String
EppConCreate01PLocOrg	Contact PostalInfo Loc Org	String
EppConCreate01PLocStreet1	Contact PostalInfo Loc Street1	String
EppConCreate01PLocStreet2	Contact PostalInfo Loc Street2, if mandatory	String
EppConCreate01PLocStreet3	Contact PostalInfo Loc Street3, if mandatory	String
EppConCreate01PLocCity	Contact PostalInfo Loc City	String
EppConCreate01PLocSp	Contact PostalInfo Loc State or Province, if mandatory	String
EppConCreate01PLocPc	Contact PostalInfo Loc Postcode, if mandatory	String
EppConCreate01PLocCc	Contact PostalInfo Loc Country Code	String
EppConCreate01Voice	Contact Voice telephone number, if mandatory	String
EppConCreate01Fax	Contact Fax telephone number, if mandatory	String
EppConCreate01Email	Contact Email address	String
EppConCreate01Auth	Contact Auth Info, if mandatory	String
EppConCreate01Ext01Uri	Extension 01 object URI	String
EppConCreate01Ext01Sl	Extension 01 schema location	String
EppConCreate01Ext01ExtName	Extension 01 name	String
EppConCreate01Ext01ExtValue	Extension 01 value for direct text node	String
EppConCreate01Ext01Field01	Extension 01 field name 01	String

Id	Description	Type
EppConCreate01Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields	
...	Repeat for max x extensions	

#### 10.4 Outcome(s)

The login command MUST complete with result code 1000.

The contact create command MUST complete with result code 1000 or 1001.

The logout command MUST complete with result code 1500.

#### 10.5 Environmental needs

- EPP test script
- IPv4 connectivity
- *EppConCreate01Id* domain MUST NOT exist in the applicant domain database.

#### 10.6 Special procedural requirements

Abort the test if any EPP operation takes longer than 30 seconds.

#### 10.7 Intercase dependencies

This test has no intercase dependencies.

#### 10.8 Ordered description of steps to be taken to execute the test case

1. Perform the same login as the login step in 2.8.  
The login command MUST complete with result code 1000.
2. Create a contact create command with *EppConCreate01Id*.
  - a. If *EppConCreate01PIntMand* is yes, create a Postal Info type Int with appropriate fields from *EppConCreate01PIntName*, *EppConCreate01PIntOrg*, *EppConCreate01PIntStreet1*, *EppConCreate01PIntStreet2*, *EppConCreate01PIntStreet3*, *EppConCreate01PIntCity*, *EppConCreate01PIntSp*, *EppConCreate01PIntPc* and *EppConCreate01PIntCc*.
  - b. If *EppConCreate01PLocMand* is yes, create a Postal Info type Loc with appropriate fields from *EppConCreate01PLocName*, *EppConCreate01PLocOrg*, *EppConCreate01PLocStreet1*, *EppConCreate01PLocStreet2*, *EppConCreate01PLocStreet3*, *EppConCreate01PLocCity*, *EppConCreate01PLocSp*, *EppConCreate01PLocPc* and *EppConCreate01PLocCc*.
  - c. Add *EppConCreate01Voice*, *EppConCreate01Fax*, *EppConCreate01Email* and *EppConCreate01Auth* fields.
  - d. If contact create requires extra extension and values, create an extension part from *EppConCreate01Ext01Uri* and *EppConCreate01Ext01Sl* and fill in field name from *EppConCreate01Ext01Field01* and values from *EppConCreate01Ext01Value01*.

The contact create command MUST complete with result code 1000 or 1001.
3. Create a logout command.  
The logout command MUST complete with result code 1500.

## 11. EPP Contact Delete 01

---

### 11.1 Test case identifier

EPPConDelete01

### 11.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, deleting a contact object and logging out.

### 11.3 Inputs

The following information is needed as input for this test case:

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
EppConDelete01Id	ContactID to delete	String
EppConDelete01Ext01Uri	Extension 01 object URI	String
EppConDelete01Ext01SI	Extension 01 schema location	String
EppConDelete01Ext01ExtName	Extension 01 name	String
EppConDelete01Ext01ExtValue	Extension 01 value for direct text node	String
EppConDelete01Ext01Field01	Extension 01 field name 01	String
EppConDelete01Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields	
...	Repeat for max x extensions	

### 11.4 Outcome(s)

The login command MUST complete with result code 1000.

The contact delete command MUST complete with result code 1000 or 1001.

The logout command MUST complete with result code 1500.

### 11.5 Environmental needs

- EPP test script
- IPv4 connectivity
- *EppConDelete01Id* domain MUST exist in the applicant domain database, and be available for delete.

### 11.6 Special procedural requirements

Abort the test if any EPP operation takes longer than 30 seconds.

### 11.7 Intercase dependencies

This test has no intercase dependencies.

## 11.8 Ordered description of steps to be taken to execute the test case

1. Perform the same login as the login step in 2.8.  
The login command MUST complete with result code 1000.
2. Create a contact delete command with *EppConDelete01Id*.
  - a. If contact delete requires extra extension and values, create an extension part from *EppConDelete01Ext01Uri* and *EppConDelete01Ext01Sl* and fill in field name from *EppConDelete01Ext01Field01* and values from *EppConDelete01Ext01Value01*.  
The contact delete command MUST complete with result code 1000 or 1001.
3. Create a logout command.  
The logout command MUST complete with result code 1500.

## 12. EPP Host Delete 01

---

### 12.1 Test case identifier

EPPHostDelete01

### 12.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, deleting a Host Object and logging out.

If the applicant does not support Host Objects, this test will not be performed.

### 12.3 Inputs

The following information is needed as input for this test case:

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
EppHostDelete01Name	Host name to delete	String
EppHostDelete01Ext01Uri	Extension 01 object URI	String
EppHostDelete01Ext01Sl	Extension 01 schema location	String
EppHostDelete01Ext01ExtName	Extension 01 name	String
EppHostDelete01Ext01ExtValue	Extension 01 value for direct text node	String
EppHostDelete01Ext01Field01	Extension 01 field name 01	String
EppHostDelete01Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields	
...	Repeat for max x extensions	

### 12.4 Outcome(s)

The login command MUST complete with result code 1000.

The host delete command MUST complete with result code 1000 or 1001.

The logout command MUST complete with result code 1500.

### 12.5 Environmental needs

- EPP test script
- IPv4 connectivity
- *EppHostDelete01Name* host MUST exist in the applicant domain database, and be available for delete.

### 12.6 Special procedural requirements

Abort the test if any EPP operation takes longer than 30 seconds.

### 12.7 Intercase dependencies

This test has no intercase dependencies.



## 12.8 Ordered description of steps to be taken to execute the test case

1. Perform the same login as the login step in 2.8.  
The login command MUST complete with result code 1000.
2. Create a contact delete command with *EppHostDelete01Id*.
  - a. If contact delete requires extra extension and values, create an extension part from *EppHostDelete01Ext01Uri* and *EppHostDelete01Ext01Sl* and fill in field name from *EppHostDelete01Ext01Field01* and values from *EppHostDelete01Ext01Value01*.  
The contact delete command MUST complete with result code 1000 or 1001.
3. Create a logout command.  
The logout command MUST complete with result code 1500.

## 13. EPP Host Update 01

---

### 13.1 Test case identifier

EPPHostUpdate01

### 13.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, updating a Host Object and logging out.

If the applicant does not support Host Objects, this test will not be performed.

### 13.3 Inputs

The following information is needed as input for this test case:

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
EppHostUpdate01Name	Host name to update	String
EppHostUpdate01Ipv4	IPv4 address to add	String
EppHostUpdate01Ext01Uri	Extension 01 object URI	String
EppHostUpdate01Ext01Sl	Extension 01 schema location	String
EppHostUpdate01Ext01ExtName	Extension 01 name	String
EppHostUpdate01Ext01ExtValue	Extension 01 value for direct text node	String
EppHostUpdate01Ext01Field01	Extension 01 field name 01	String
EppHostUpdate01Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields	
...	Repeat for max x extensions	

### 13.4 Outcome(s)

The login command MUST complete with result code 1000.

The host update command MUST complete with result code 1000.

The logout command MUST complete with result code 1500.

### 13.5 Environmental needs

- EPP test script
- IPv4 connectivity
- *EppHostUpdate01Name* host MUST exist in the applicant domain database, and be available for update.

### 13.6 Special procedural requirements

Abort the test if any EPP operation takes longer than 30 seconds.

### 13.7 Intercase dependencies

This test has no intercase dependencies.

### 13.8 Ordered description of steps to be taken to execute the test case

1. Perform the same login as the login step in 2.8.  
The login command MUST complete with result code 1000.
2. Create a host update command with *EppHostUpdate01Name* and add IPv4 address *EppHostUpdate01Ipv4*
  - a. If host update requires extra extension and values, create an extension part from *EppHostUpdate01Ext01Uri* and *EppHostUpdate01Ext01Sl* and fill in field name from *EppHostUpdate01Ext01Field01* and values from *EppHostUpdate01Ext01Value01*.The host update command MUST complete with result code 1000.
3. Create a logout command.  
The logout command MUST complete with result code 1500.

## 14. EPP Contact Update 01

---

### 14.1 Test case identifier

EPPContactUpdate01

### 14.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, updating a contact object and logging out.

### 14.3 Inputs

The following information is needed as input for this test case:

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
EppContactUpdate01Id	Contact ID to update	String
EppContactUpdate01Email	Email address to set	String
EppContactUpdate01Ext01Uri	Extension 01 object URI	String
EppContactUpdate01Ext01Sl	Extension 01 schema location	String
EppContactUpdate01Ext01ExtName	Extension 01 name	String
EppContactUpdate01Ext01ExtValue	Extension 01 value for direct text node	String
EppContactUpdate01Ext01Field01	Extension 01 field name 01	String
EppContactUpdate01Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields	
...	Repeat for max x extensions	

### 14.4 Outcome(s)

The login command MUST complete with result code 1000.

The contact update command MUST complete with result code 1000.

The logout command MUST complete with result code 1500.

### 14.5 Environmental needs

- EPP test script
- IPv4 connectivity
- *EppContactUpdate01Id* contact MUST exist in the applicant domain database, and be available for update.

### 14.6 Special procedural requirements

Abort the test if any EPP operation takes longer than 30 seconds.

### 14.7 Intercase dependencies

This test has no intercase dependencies.

#### 14.8 Ordered description of steps to be taken to execute the test case

1. Perform the same login as the login step in 2.8.  
The login command MUST complete with result code 1000.
2. Create a contact update command with *EppContactUpdate01Id* and set *EppContactUpdate01Email*
  - a. If contact update requires extra extension and values, create an extension part from *EppContactUpdate01Ext01Uri* and *EppContactUpdate01Ext01Sl* and fill in field name from *EppContactUpdate01Ext01Field01* and values from *EppContactUpdate01Ext01Value01*.The contact update command MUST complete with result code 1000.
3. Create a logout command.  
The logout command MUST complete with result code 1500.

## 15. EPP Domain Update 01

### 15.1 Test case identifier

EPPDomUpdate01

### 15.2 Objective

This test verifies compliance of the EPP server with RFC's for logging in, update a domain object with DNSSEC records and logging out. The test then verifies that the changes are visible in the zone within 60 minutes, both for DNS and Whois.

### 15.3 Inputs

The following information is needed as input for this test case:

The IP address for the authoritative name server for the TLD zone is required as the test verifies DNS visibility. It is fetched from the XML data file provided by the applicant for the DNS tests.

As the test verifies Whois visibility, the IP address of a Whois server that responds on port 43 is needed. The IP address of the Whois server is extracted from the DNS zone by the Whois test and is also used for this TC.

The full information from the input table in 2.3 is also used for login.

Id	Description	Type
DnsGlueRecord1	IPv4 or IPv6 address of 1 <sup>st</sup> authoritative name server	String
WhoisIPv4Port43	The IPv4 address of the Whois service on port 43	String
EppDomUpdate01Name	Domain name to update	String
EppDomUpdate01Ext01Uri	Extension 01 object URI	String
EppDomUpdate01Ext01Sl	Extension 01 schema location	String
EppDomUpdate01Ext01ExtName	Extension 01 name	String
EppDomUpdate01Ext01ExtValue	Extension 01 value for direct text node	String
EppDomUpdate01Ext01Field01	Extension 01 field name 01	String
EppDomUpdate01Ext01Value01	Extension 01 field value 01	String
...	Repeat for max y fields	
...	Repeat for max x extensions	
EppDomUpdate01KeyType	D for dsData specification K for keyData specification DK for dsData and keyData specification	String
EppDomUpdate01DsKeyTag01	Value for dsData 01 keytag	String
EppDomUpdate01DsAlg01	Value for dsData 01 alg	Number
EppDomUpdate01DsDigestType01	Value for dsData 01 digest type	Number
EppDomUpdate01DsDigest01	Value for dsData 01 digest	String
...	Repeat for max x dsData records	
EppDomUpdate01KdFlags01	Value for keyData 01 flags	Number
EppDomUpdate01KdProtocol01	Value for keyData 01 protocol	Number
EppDomUpdate01KdAlg01	Value for keyData 01 alg	Number
EppDomUpdate01KdPubKey01	Value for keyData 01 pubKey	String

Id	Description	Type
...	Repeat for max x keyData records	

#### 15.4 Outcome(s)

The initial DNS lookup MUST NOT return NXDOMAIN for *EppDomUpdate01Name*.

The initial Whois lookup MUST NOT return any DNSSEC Signed information about *EppDomUpdate01Name*.

The domain update command MUST complete with result code 1000 or 1001.

The logout command MUST complete with result code 1500.

*EppDomUpdate01Name* MUST be visible in the zone with correct DNS records within 60 minutes.

*EppDomUpdate01Name* MUST be visible as a DNSSEC signed domain in Whois within 60 minutes.

#### 15.5 Environmental needs

- DNS test script
- EPP test script
- IPv4 connectivity
- *EppDomUpdate01Name* MUST exist in the DNS zone without DNSSEC records.
- *EppDomUpdate01RegistrantId* MUST exist in applicant contact database
- *EppDomUpdate01Ns01* MUST exist in applicant host database, and be configured to serve domain *EppDomUpdate01Name* with correct DNSSEC records.
- *EppDomUpdate01Ns02* MUST exist in applicant host database, and be configured to serve domain *EppDomUpdate01Name* with correct DNSSEC records.

#### 15.6 Special procedural requirements

Abort the test if any Whois query takes longer than 10 seconds.

Abort the test if any EPP operation takes longer than 30 seconds.

#### 15.7 Intercase dependencies

This test has no intercase dependencies.

#### 15.8 Ordered description of steps to be taken to execute the test case

1. Perform a DNS lookup for *EppDomUpdate01Name* domain name.  
The result MUST NOT be NXDOMAIN.
2. Perform the same login as the login step in 2.8.  
The login command MUST complete with result code 1000.
3. Create a domain update command with *EppDomUpdate01Name*.
  - a. Add one or more secDNS records with dsData or keyData or both, depending on the value of *EppDomUpdate01KeyType*. Use appropriate values from *EppDomUpdate01DsKeyTag01*, *EppDomUpdate01DsAlg01*, *EppDomUpdate01DsDigestType01*, *EppDomUpdate01DsDigest01*, *EppDomUpdate01KdFlags01*, *EppDomUpdate01KdProtocol01*, *EppDomUpdate01KdAlg01*, *EppDomUpdate01kdPubKey01*.
  - b. If domain update requires extra extension and values, create an extension part from *EppDomUpdate01Ext01Uri* and fill in field name from *EppDomUpdate01Ext01Field01* and values from *EppDomUpdate01Ext01Value01*.

- The domain update command MUST complete with result code 1000 or 1001.
4. Create a logout command.  
The logout command MUST complete with result code 1500.
  5. Verify that the *EppDomUpdate01Name* domain is updated, with the correct DNSSEC records in the zone within 60 minutes.
  6. Verify that the *EPPDomUpdate01Name* is visible in Whois as a DNSSEC signed domain within 60 minutes.



## 16. EPP Extensions

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### 16.1 Test case identifier

EPPExtensions

### 16.2 Objective

This test verifies compliance of the EPP server with extensions required by registry agreement.

### 16.3 Inputs

The following information is needed as input for this test case:

- The extensions required by the Registry Agreement.
- Logfiles from login in any of the previous tests.

### 16.4 Outcome(s)

Each extension in the Registry Agreement stated to be mandatory must be listed in the EPP greeting.

### 16.5 Environmental needs

N/A

### 16.6 Special procedural requirements

None.

### 16.7 Intercase dependencies

A result log from any of the previous tests MUST be available.

### 16.8 Ordered description of steps to be taken to execute the test case

1. Verify that each extension in the Registry Agreement that is stated to be mandatory is listed in the EPP greeting.

## 17. Global

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### 17.1 Glossary

The glossary is available in the Master Test Plan.

### 17.2 Document change procedures

Document change procedures are documented in the Master Test Plan.