VERISIGN BUNDLE EPP SDK PROGRAMMER'S GUIDE

Version 1.2.0

May 1, 2014

COPYRIGHT NOTIFICATION

Copyright © 2014, VeriSign, Inc. All rights reserved.

VERISIGN PROPRIETARY INFORMATION

This document is the property of VeriSign, Inc. Information contained herein may include trade secrets and confidential information belonging to VeriSign Inc.. Unauthorized disclosure without the express written consent of VeriSign, Inc. is prohibited. It may be used by recipient only for the purpose for which it was transmitted and will be returned upon request or when no longer needed by recipient. It may not be copied or communicated without the prior written consent of VeriSign, Inc.

DISCLAIMER AND LIMITATION OF LIABILITY

VeriSign, Inc. has made efforts to ensure the accuracy and completeness of the information in this document. However, VeriSign, Inc. makes no warranties of any kind (whether express, implied or statutory) with respect to the information contained herein. VeriSign, Inc. assumes no liability to any party for any loss or damage (whether direct or indirect) caused by any errors, omissions or statements of any kind contained in this document. Further, VeriSign, Inc. assumes no liability arising from the application or use of the product or service described herein and specifically disclaims any representation that the products or services described do not infringe upon any existing or future intellectual property rights. Nothing herein grants the reader any license to make, use, or sell equipment or products constructed in accordance with this document. Finally, all rights and privileges related to any intellectual property right described in this document are vested in the patent, trademark, or service mark owner, and no other person may exercise such rights without express permission, authority, or license secured from the patent, trademark, or service mark owner.

VeriSign Inc. reserves the right to make changes to any information herein without further notice.

NOTICE AND CAUTION

Concerning U.S. Patent or Trademark Rights

The inclusion in this document, the associated on-line file, or the associated software of any information covered by any patent, trademark, or service mark rights will not constitute nor imply a grant of, or authority to exercise, any right or privilege protected by such patent, trademark, or service mark. All such rights and privileges are vested in the patent, trademark, or service mark owner, and no other person may exercise such rights without express permission, authority, or license secured from the patent, trademark, or service mark owner.

Change Log

Author(s)	Date	Revision	Description
James F. Gould	05/30/2013	1.0.0	Initial Revision
James F. Gould	08/14/2013	1.1.0	Updated “Figure 24 – Domain Create in Sunrise Create Form Example” to the EPPEncodedSignedMark class and added description of changes in version 1.1.0.
James F. Gould	09/04/2013	1.1.1	Updated the changes for version 1.1.0, and Related Domain Extension section, to support the Domain Info Form and the Related Info Form of the Related Domain Extension. Also added support for the multiple related domain transform commands to the Related Domain Extension.
James F. Gould	05/01/2014	1.2.0	Updated the Changes from Previous Version section to include the information for the 1.2.0, 1.3.0, and 1.4.0 releases.

References

Author(s)	Title	Revision	Date
Scott Hollenbeck	Extensible Provisioning Protocol		8/2009
Scott Hollenbeck	Extensible Provisioning Protocol (EPP) Transport Over TCP		8/2009
Scott Hollenbeck	Extensible Provisioning Protocol (EPP) Domain Name Mapping		8/2009
Scott Hollenbeck	Extensible Provisioning Protocol (EPP) Host Mapping		8/2009
Scott Hollenbeck	Extensible Provisioning Protocol (EPP) Contact Mapping		8/2009
Scott Hollenbeck	Domain Registry Grace Period Mapping for the Extensible Provisioning Protocol		4/16/2004
Scott Hollenbeck	ConsoliDate Mapping for the Extensible Provisioning Protocol	01	3/22/2005
Scott Hollenbeck	Domain Name System (DNS) Security Extensions Mapping for the Extensible Provisioning Protocol (EPP)		11/2005
James F. Gould	EPP RGP Poll Mapping Guide	00	12/10/2013
James F. Gould and Mahendra Jain	EPP Low Balance Mapping Guide	00	12/10/2013
James F. Gould	Extensible Provisioning Protocol Extension Mapping: IDN Language Tag	00	12/10/2013
James F. Gould and Srikanth Veeramachaneni	Extensible Provisioning Protocol Extension Mapping: Whois Info	00	1/10/2014
John Colosi	Suggestion Mapping	1.1	5/23/2006
Rupert Fernando	Jobs Contact Extension Mapping	1.1	09/07/2007
James F. Gould and Mahendra Jain	Premium Domain Extension Mapping	00	1/10/2014
Scott Hollenbeck	RFC 4310 – Domain Name System (DNS) Security Extensions Mapping for the Extensible Provisioning Protocol		11/2005
James Gould and Scott Hollenbeck	RFC 5910 – Domain Name System (DNS) Security Extensions Mapping for the Extensible Provisioning		5/2010

	Protocol		
Deepak Deshpande	WhoWas Mapping	1.0	3/31/2010
James F. Gould and Jeff Faust	Client Object Attribute Extension Mapping	00	1/2/2014
James F. Gould	Balance Mapping	00	12/16/2013
James F. Gould	Defensive Registration Mapping	1.2	
James F. Gould	Email Forwarding Mapping	1.2	
James F. Gould Wil Tan Gavin Brown	Launch Phase Extension Mapping	01	3/17/2014
James F. Gould	Personal Registration Extension Mapping	1.2	
James F. Gould	Registry Mapping	00	1/10/2014
James F. Gould Nagesh Chigurupali Srikanth Veeramachaneni	Related Domain Extension Mapping	00	1/2/2014
James F. Gould	Namestore Extension Mapping	00	12/10/2013

Definitions, Acronyms, and Abbreviations

Term	Description
SSL	http://home.netscape.com/eng/ssl3/ssl-toc.html
TLS	http://www.ietf.org/rfc/rfc2246.txt?number=2246
EPP	Extensible Provisioning Protocol
IETF	http://www.ietf.org/
RFC	Request for Comments
SDK	Software Development Kit
XML	http://www.w3c.org/XML/
RGP	Registry Grace Period
CTLD	Consolidated Top-Level Domain
DS	Delegation Signer
DNS	Domain Name System

Contents

1. INTRODUCTION 1

2. CHANGES FROM PREVIOUS VERSION 3

2.1 VERSION 1.4.0 3
2.2 VERSION 1.3.0 3
2.3 VERSION 1.2.0 3
2.4 VERSION 1.1.0 3
2.5 VERSION 1.0.0 4

3. SUPPORTED TRANSPORTS 5

4. QUICK START INSTRUCTIONS 6

4.1 RUNNING SDK TESTS VIA STUB SERVER 7
4.2 CHANGES REQUIRED TO INTERFACE WITH VERISIGN SERVERS 7
4.3 SET THE CLASSPATH OF THE APPLICATION 9
4.4 EXAMPLE CODE TO INITIALIZE THE VERISIGN BUNDLE EPP SDK AND START SESSION 9
4.5 EXAMPLE CODE TO INITIALIZE THE VERISIGN BUNDLE EPP SDK AND USING SESSION POOL 10
4.6 EXAMPLE / TEST PROGRAMS 12

5. SDK OVERVIEW 16

5.1 SDK DIRECTORIES 17
5.2 SDK PACKAGES 17

6. SDK CONFIGURATION 19

6.1 CONFIGURATION FILE 19
6.2 LIBRARIES 28
6.3 DIAGNOSTIC AND ERROR LOGGING 29
6.3.1 Basic Configuration Mode (EPP.LogLevel and EPP.LogFile) 29
6.3.2 Log4J Configuration File Mode (EPP.LogCfgFile and EPP.LogCfgFileWatch) 30
6.3.3 Custom Mode 31
6.3.4 SDK Log Categories 31
6.4 ADDING AN EPP COMMAND MAPPING TO THE SDK 32

7. GENERIC EPP CLIENT INTERFACES 34

7.1 EPPAPPLICATION 34
7.2 EPPSESSION 35
7.2.1 Overview 35
7.2.2 Sample Code 37
7.2.3 initSession() Method 39
7.2.4 endSession() Method 40
7.2.5 hello() Method 41
7.2.6 sendPoll() Method 42
7.3 EPPENV 43

8. XML PARSER POOL 46

9. EXTENDING THE SDK 48
9.1 TRANSPORT 48
10. STUB SERVER 51
10.1 EVENT HANDLERS 51
10.2 POLL HANDLERS 51
11. CLIENT IMPLEMENTATION NOTES 52
11.1 POOLING 52
11.1.1 Multiple Session Pools 53
11.1.2 Separate SSL Configuration Per Session Pool 55
11.2 THREADING 56
11.3 PIPELINING 56
12. POLL MESSAGES 58
13. MAPPINGS AND EXTENSIONS 62
13.4 NAMESTORE CLIENT INTERFACES 72
13.5 MAPPINGS 73
13.5.1 Domain Mapping (NSDomain Interface) 73
13.5.2 Host Mapping (NSHost Interface) 99
13.5.3 Contact Mapping (NSContact Interface) 109
13.5.4 Registry Mapping 129
13.5.5 Suggestion Mapping 134
13.5.6 WhoWas Mapping 139
13.5.7 Balance Mapping 144
13.5.8 EmailFwd Mapping 149
13.5.9 DefReg Mapping 150
13.5.10 NameWatch Mapping 151
EXTENSIONS 152
13.5.11 NamestoreExt Extension 152
13.5.12 Whois Info Extension 153
13.5.13 SecDNS Extension 154
13.5.14 COA Extension 158
13.5.15 Premium Domain Extension 160
13.5.16 DotJobs Contact Extension 161
13.5.17 Launch Extension 170
13.5.18 PersReg Extension 181
13.5.19 Related Domain Extension 183

1. Introduction

This document provides instructions on how to use the Verisign Bundle Extensible Provisioning Protocol (EPP) Software Development Kit (SDK) includes all of the API's required to interface with the Verisign EPP servers that include:

1. COM/NET Shared Registry System (SRS), hereon referred to as SRS, supports the .COM, .NET, and IDN .COM / .NET TLDs. The SRS commands require the NameStore Extension for specifying the target locial registry. The Registry Mapping can be used to provide the list of available TLDs as well as the feature and policy information for the TLDs.
2. Namestore Platform hereon, referred to as Namestore, supports the following products:
    a. Consolidated Top-Level Domain (CTLD) - Is a platform of domain name registries like .JOBS, .TV, .CC, and a new set of Top Level Domains (TLDs). CTLD commands require the Namestore Extension for specifying the target logical registry. The Registry Mapping can be used to provide the list of available TLDs as well as the feature and policy information for the TLDs.
    b. Name Suggestion - Provides highly related domain Suggestion.
    c. WhoWas – Provides history records of entities.
3. Dotname Registry System, hereon referred to as Dotname, supports the .NAME TLD.

The SDK includes a full implementation of the EPP specifications independent of the services supported by the Registry services (i.e. Namestore and SRS). The `com.verisign.epp.interfaces.EPPDomain` and `com.verisign.epp.interfaces.EPPHost` fully support the IETF Domain and Host mappings, while `com.verisign.namestore.interfaces.NSDomain` and `com.verisign.namestore.interfaces.NSHost` provide convinence sub-classes for easily passing the Namestore Extension and for supporting extension API's like Sync and RGP Restore Request/Report. The SDK also provides a Stub Server that can run over TCP or SSL, and a set of test client code (`*Tst.java`) that validates the SDK API's and can be used as samples. For example, `com.verisign.epp.namestore.interfaces.NSPollTst` includes sample code for processing each of the supported poll messages produced by Namestore and the SRS.

The instructions provided include an overview of the Verisign Bundle EPP SDK, how to configure it, how to use it, and how to extend it. Please see http://www.verisigninc.com/en_US/products-and-services/domain-name-services/registry-products/epp-sdk for updates to the Programmer's Guide between Verisign Bundle EPP SDK releases.

The Verisign Bundle EPP SDK provide detailed interface information in HTML Javadoc. This document does not duplicate the detailed interface information contained in the

HTML Javadoc. Descriptions are provided of the main interface elements, the pre-conditions, the post-conditions, and example code.

It is assumed that the reader has reviewed the associated EPP specifications and has a general understanding of the EPP concepts. Much of the EPP details are encapsulated in the SDK, but having a solid understanding of the EPP concepts will help in effectively using the SDK.

2. Changes from Previous Version

This section describes changes between major and minor versions of the SDK. The version numbers reflect SDK version numbers and not version numbers of the Programmer's Guide.

2.1 Version 1.4.0

1. Switched to be dependent on Java 6 instead of Java 5. The launch extension already was dependent on Java 6 and with the new dependency on the use of JAXB, the entire SDK is being moved to be dependent on Java 6.
2. Fixed a bug with encoding the XSD dateTime type in EPPUtil by using 4 digit precision for the seconds. The fix was to use a default of 3 digit precision (milliseconds) on the encode and to use JAXB DatatypeConverter.parseDateTime for parsing the dataTime value. Access methods were added (getTimeInstantFormat(): String and setTimeInstantFormat(String)) to enable changing the encoding format if needed.

2.2 Version 1.3.0

3. Updated to the 25nov13 test SMD's (SMD's without whitespace) and test SMD Revocation List. The SMD Revocation List was converted from UTF-8 to ASCII.
4. Updated to support draft-tan-epp-launchphase-12 by updating the launch-1.0.xsd, updating the draft-tan-epp-launchphase.txt in the doc directory, and updating the code and tests to support the new validatorID optional attribute.

2.3 Version 1.2.0

5. Fixed the XML namespace handling in the com.verisign.epp.codec.registry.EPPRegistryRegEx class and some of the client classes to com.verisign.epp.codec.registry.EPPRegistryRegEx.
6. Changed com.verisign.epp.codec.signedMark.EPPSignedMark to handle XML parsing exception. This is specially required while parsing the XML obtained from the encoded SMD.

2.4 Version 1.1.0

7. Changed com.verisign.epp.namestore.interfaces.NSDomain to extend com.verisign.epp.namestore.interfaces.EPPRelatedDomain instead of com.verisign.epp.namestore.interfaces.EPPDomain.
8. Added Domain Info Form and the Related Info Form to the info command of the Related Domain Extension, version 1.2. Added support for the two forms to com.verisign.epp.codec.relateddomainext.EPPRelatedDomainExtInfo as well as com.verisign.epp.interfaces.EPPRelatedDomain.

9. Addressed issue with using the sample SMD's with the signedMark and the default XML parser setting of normalizing the XML.
10. Added the EPPSignedMark(EPPEncodedSignedMark) constructor to convert an encodedSignedMark to a signedMark.
11. Created constructor to directly decode the SMD InputStream in com.verisign.epp.codec.signedMark.EPPEncodedSignedMark.
12. Split com.verisign.epp.codec.signedMark.EPPSignedMark into com.verisign.epp.codec.signedMark.EPPSignedMark and com.verisign.epp.codec.signedMark.EPPEncodedSignedMark to isolate the base64 encoding and to address issues with retaining any extra whitespace contained in the signed mark to address the validation issue with the ICANN sample SMD's.
13. Updated the com.verisign.epp.codec.launch.EPPLaunchTst tests to include validation of all of the ICANN sample Signed Mark Data (SMD) files. Added the ICANN sample SMD files to the distribution to support the tests.
14. The certs.crl file was split into the eppsdk.crl and the tmch-pilot.crl. The eppsdk.crl includes the CRL for the signed marks signed by the EPP SDK and the tmch-pilot.crl includes the CRL provided by ICANN for testing.
15. Added the test ICANN CA certificate to signedMarkTrust.jks to support validating the ICANN sample Signed Mark Data (SMD).
16. Added SMD revocation list validation to the LaunchDomainHandler class.
17. Added the ICANN test SMD revocation list (smd-test-revocation.csv) to the distribution to support the testing of the ICANN sample Signed Mark Data (SMD).
18. Created the com.verisign.epp.codec.signedMark.SMDRevocationList and com.verisign.epp.codec.signedMark.RevokedSMD classes to decode the SMD revocation list and to include the SMDRevocationList.isRevoked(EPPSignedMark) : boolean method to determine if a signed mark is revoked.

2.5 Version 1.0.0

1. Merged the NameStore / SRS Bundle SDK 3.15.0.5, the Dotname SDK 1.5.0.1, the Launch SDK 2.1.0.0 into a single Verisign Bunde EPP SDK distribution.
2. Added the Registry Mapping
3. Added the Related Domain Extension

3. Supported Transports

The SDK supports TCP and SSL as transports. The default configuration of the SDK is to use the TCP transport for the ease of setup. The TCP and the SSL transports follow RFC 5734 “Extensible Provisioning Protocol (EPP) Transport Over TCP”.

4. Quick Start Instructions

The Verisign Bundle EPP SDK is distributed in two forms, a source code distribution and a binary distribution. Both distributions are preconfigured to run a TCP/IP Stub Server and include a suite of tests that run against the TCP/IP Stub Server. The Stub Server is described in section 10. The following steps are common to either transport:

1. Uncompress the Verisign Bundle EPP SDK. With the source distribution, the Unix filename is ***epp-launch-bundle--${BUILD_VER}-src.tar.gz*** and the Windows filename is ***epp-launch-bundle-${BUILD_VER}-src.zip***. With the binary distribution, the Unix filename is ***epp-launch-bundle-${BUILD_VER}-bin.tar.gz*** and the Windows filename is ***epp-launch-bundle-${BUILD_VER}-bin.zip***. ***${BUILD_VER}*** is the version number for the release (e.g 1.0.0).
2. Change to the Verisign Bundle EPP SDK directory: ***epp-verisign-${BUILD_VER}/bundles/verisign***
3. Edit any configuration changes in ***epp.config***. Build related changes could be made in ***build.properties.***
4. Execute one of the Ant build.xml targets defined in Table 1 – Verisign Bundle build.xml Targets.

Table 1 – Verisign Bundle build.xml Targets

Target	Distribution (src, bin, or both)	Description
clean	both	Cleans the built files and directories
compile	src	Compiles the source files
dist	src	Creates the distributions (-Dbuild.version required)
dist-bin	src	Creates the binary distribution (-Dbuild.version required)
dist-src	src	Creates the source distribution (-Dbuild.version required)
doc	src	Creates the HTML API documentation
format	src	Formats the source code
init	both	Initializes the build for rest of targets
jar	src	Creates the jar file (epp-verisign-bundle-{$BUILD_VER}.jar) Default for src distribution

start-server	both	Starts the TCP Stub Server
test	both	Runs all tests (codec and client-server). Default for bin distribution
test-client	both	Runs tests over TCP/SSL against TCP Stub Server
test-client-server	both	Runs full client server test over TCP/SSL.
test-codec	both	Runs CODEC unit tests

4.1 Running SDK Tests via Stub Server

The SDK works with JDK 1.5 and higher, but JDK 1.6 is needed when using the launch extension due to the dependency on XML-DSig. Follow the directions below to run the suite of tests against the TCP/IP Stub Server. Use `build.bat` on Windows and `build.sh` on Unix to execute the Ant targets. The directions only reference `build.sh`, so replace `build.sh` with `build.bat` when running in Windows.

- `build.sh test-client-server`

When running the `test-client-server` target, the following is a sample result of a successful execution.

```
BUILD SUCCESSFUL
Total time: 1 minute 11 seconds
```

4.2 Changes Required to Interface with Verisign Servers

The SDK configuration has to be changed to communicate with the real Verisign Servers, since the transport is SSL for the Production servers. The client mappings/extensions that are used might have to be changed. Set the properties in "Table 2 - Changes Required to Interface with Verisign Servers via SSL" in ***epp.config***.

Table 2 - Changes Required to Interface with Verisign Servers via SSL

Property	Update To	Default
EPP.MapFactories	MapFactories for products that will be provisioned. For example, if .tv and .cc domains are only provisioned, set `EPP.MapFactories` to: • `com.verisign.epp.codec.do`	All supported map factories.

	main.EPPDomainMapFactory • com.verisign.epp.codec.host.EPPHostMapFactory **Recommend use of the default map factories.**	
EPP.CmdRspExtensions	Dependent command/response extensions needed by the products that will be provisioned. For example, if .cc domains are only provisioned, set EPP.CmdRspExtensions to: • com.verisign.epp.codec.namestoreext.EPPNamestoreExtExtFactory **Recommend use of the default extension factories.**	All supported extension factories
EPP.SSLKeyFileName	JSSE keystore file name that contains the CA issued certificate chain and the associated private key.	../../lib/keystore/testkeys
EPP.SSLPassPhrase	Password needed to access EPP.SSLKeyFileName file.	passphrase
EPP.SSLKeyPassPhrase	Password needed to access the private key defined in the EPP.SSLKeyFileName file. If this property is not defined, EPP.SSLPassPhrase will be used for accessing both the keystore and the private key.	Not Defined
EPP.SSLProtocol	SSL protocol of the configured provider	TLS
EPP.SSLKeyStore	SSL keystore file type	JKS
EPP.SSLTrustStoreFileName	The trust store is a file that contains the certificate or chain of certificates that this client trusts. If this property is not defined, than the default JRE truststore ($JAVA_HOME/lib/security/cacerts) will be used. **Recommend commenting out this property.**	../../lib/keystore/testkeys
EPP.SSLTrustStorePassPhrase	Password for accessing the trust store defined by the EPP.SSLTrustStoreFileName property. This property is required if EPP.SSLTrustStoreFileName is defined. **Recommend commenting out this property.**	passphrase .

EPP.ClientSocketName	Class used to make client connections. **Set this to `com.verisign.epp.transport.client.EPPSSLClientSocket` for SSL.**	com.verisign.epp.transport.client.EPPPlainClientSocket
EPP.ServerName	Set to the Verisign server name or IP address. The following are possible values: 1. NameStore OTE - otessl.verisign-grs.com 2. NameStore Production – namestoressl.verisign-grs.com 3. SRS OTE – epp-ote.verisign-grs.com 4. SRS Production - epp.verisign-grs.net 5. NAME OTE - nameeppote.verisign-grs.com 6. NAME Production - nameepp.verisign-grs.net **Recommend configuring and using the session pooling feature defined in section 11.1 to interface with multiple Verisign servers with a single client.**	localhost
EPP.ServerPort	Set to the Versign server port number, which should be `700`.	1700

The SDK uses JSSE in the JDK. Use the EPP.SSL properties of the SDK to configure JSSE. Please consult the JSSE documentation for details of how to construct java keystores and truststores.

4.3 Set the classpath of the application

When including the SDK in a client program, the following dependent .jar files must be included in the CLASSPATH:

- epp-verisign-${BUILD_VER}/lib/epp/epp-verisign-bundle-${BUILD_VER}.jar
  This .jar file includes all of the Verisign EPP mappings and extensions supported by the Verisign servers.
- epp-verisign-${BUILD_VER}/lib/*.jar
  These are dependent third party .jar files including JUnit, Log4j, PoolMan, and XercesJ

4.4 Example Code to initialize the Verisign Bundle EPP SDK and Start Session

The following code can be used to initialize a session with an EPP Server.

```
   public static void main(String[] args) {

        try {
         EPPApplicationSingle.getInstance().initialize("epp.config");
}
        catch (EPPCommandException e){
         e.printStackTrace();
}

       try {

         EPPSession session = new EPPSession();
         session.setTransId("ABC-12345");
         session.setVersion("1.0");
         session.setLang("en");

         session.setClientID("myname");
         session.setPassword("mypass");

         session.initSession();

         // Invoke commands on Interface classes here…
} // try
catch (EPPCommandException e) {

         EPPResponse response = session.getResponse();

         // Is a server specified error?
         if ((response != null) && (!response.isSuccess()))    {
                 System.out.println("Server Error : " + response);
         }
                 else {
                 e.printStackTrace();
                 System.out.println("initSession Error : " + e);
         }

        }
   }
```

4.5 Example Code to initialize the Verisign Bundle EPP SDK and using Session Pool

The example provided in section 4.4 shows a simple method of creating a new EPP session. The recommended approach is to use a session pool to manage sessions and to borrow, return, and invalidate sessions in the pool as needed. The session pool manages idle timeouts, manages absolute timeouts, maintains the configured number of sessions, and provides for a configurable session create retry. There can be more then one session pool configured, each with a pool name, so that the client can manage pools with different settings (server info, protocol, transport, login name, login password, SSL settings, number of sessions, etc.) from a single client. Refer to section 11.1 for more information on the session pools. The example below shows initializing the SDK with initializing the session pools and borrowing / returning / invalidating a session in the pool using the "test" session pool.

```
try {
          EPPApplicationSingle.getInstance().initialize("epp.config");
  EPPSessionPool.getInstance().init();
}
catch (Exception e){
  e.printStackTrace();
  System.exit(1);
}

EPPSession theSession = null;
try {
      theSession = EPPSessionPool.getInstance().borrowObject("test");
      NSDomain theDomain = new NSDomain(theSession);
      theDomain.addDomainName("example.com");
      theDomain.setSubProductID(NSSubProduct.COM);
      EPPDomainCheckResp theResponse = theDomain.sendCheck();
      ….
}
catch (EPPCommandException ex) {
      if (ex.hasResponse()) {
            if (ex.getResponse().getResult().shouldCloseSession()) {
                  EPPSessionPool.getInstance().invalidateObject("test",
theSession);
                  theSession = null;
            }
      }
      else {
            EPPSessionPool.getInstance().invalidateObject("test",
theSession);
            theSession = null;
      }
}
finally {
      if (theSession !- null)
            EPPSessionPool.getInstance().returnObject(theSession);
}

// Cleanly close the session pools at the end of the program
EPPSessionPool.getInstance().close();
```

4.6 Example / Test Programs

The best examples are running programs. The Verisign Bundle EPP SDK includes a suite of client tests that are fully run against a Stub Server and that can be used as samples of using the SDK. Download the source distribution of the Verisign Bundle EPP SDK to review the source of the tests included in Table 3 - SDK Interface Test Classes.

Table 3 - SDK Interface Test Classes

Test Classes	Description
com.verisign.epp.interfaces.EPPBalanceTst	Test of sending a Balance Info Command.
com.verisign.epp.interfaces.EPPCoaDomainTst	Test of the Client Object Attribute (COA) extension. Tests include a domain create with COA, and adding, changing and removing COAs using domain updates. Also tests using the domain info command to retrieve a COA from an existing owned domain.
com.verisign.epp.interfaces.EPPContactTst	Test of using the EPPContact interface for all of the RFC 5733 contact commands. This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPDomainTst	Test of using the EPPDomain interface for all of the RFC 5731 domain commands. This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPHostTst	Test of using the EPPHost interface for all of the RFC 5732 host commands. This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPIdnDomainTst	Tests send a domain create command with the IDN language extension (EPPIdnLangTag). This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPJobsContactTst	Test of using the the RFC 5733 contact commands along with the

	Jobs Contact Extension. This test creates an individual EPP session without the SDK session pool .
com.verisign.epp.interfaces.EPPLaunchTst	Test of sending launch phase commands (check, create, info, update, and delete).
com.verisign.epp.interfaces.EPPLowBalanceDomainTst	Test of processing the Low Balance Poll Message by sending a domain create of "test.com" against the Stub Server that will then insert the Low Balance Poll Message. This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPNamestoreExtDomainTst	Test of using the RFC 5731 domain commands along with the NameStore Extension (EPPNamestoreExtNamestoreExt). This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPNamestoreExtHostTst	Test of using the RFC 5732 host commands along with the NameStore Extension (EPPNamestoreExtNamestoreExt). This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPPremiumDomainTst	Test of using the Premium Domain Extension to domain check command, domain check response and domain update command. This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPRegistryTst	Test of sending Registry Mapping commands.
com.verisign.epp.interfaces.EPPRelatedDomainTst	Test of sending Related Domain Extension command (domain info with extension).
com.verisign.epp.interfaces.EPPRgpDomainTst	Test of using the Domain Registry Grace Period (RGP) extension

	defined in RFC 3915 to restore a domain and to retrieve RGP statuses from the Stub Server. This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPSecDNSDomainTst	Test of using the DNSSEC Extension RFC 4310 (secDNS-1.0) and RFC 5910 (secDNS-1.1) to create, info, and update a domain with DS data. This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPSessionTst	Test of doing the RFC 5730 commands (login, hello, poll, and logout).
com.verisign.epp.interfaces.EPPSuggestionTst	Test of sending a set of randomized Name Suggestion commands. This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPSyncDomainTst	Test of using ConsoliDate extension (EPPSyncExtUpdate) to synchronize the experation date of a domain. This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPWhoisDomainTst	Test using the EPP Whois Info Extension with the RFC 5731 domain info command to retrieve the additional information sent by the Stub Server. This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.interfaces.EPPWhoWasTst	Test of sending a set of WhoWas commands. This test creates an individual EPP session without the SDK session pool.
com.verisign.epp.namestore.interfaces.NSContactTst	Test of using NSContact for all of the contact commands. This test also utilizes the SDK session pool.

com.verisign.epp.namestore.interfaces.NSDomainTst	Test of using NSDomain for all of the domain commands. This test also utilizes the SDK session pool.
com.verisign.epp.namestore.interfaces.NSHostTst	Test of using NSHost for all of the host commands. This test also utilizes the SDK session pool.
com.verisign.epp.namestore.interfaces.NSPollTst	Test of processing each of the poll messages produced by NameStore and the SRS by sending a domain create command for "NSPollTst.com" to the Stub Server, which will then insert all possible poll message types for consumption by NSPollTst. This test also utilizes the SDK session pool.
com.verisign.epp.pool.EPPSessionPoolTst	Test of using the EPPSessionPool for an individual session pool. It utializes the session pool to send a hello and poll command. It also tests the absolute and idle timeout features of the pool.
com.verisign.epp.pool.EPPSystemSessionPoolTst	Test using two session pools (default and "test").

5. SDK Overview

The Verisign Bundle EPP SDK provide an interface for users to easily implement client applications that use EPP as the underlying protocol. The primary goal of the SDK is the same as EPP itself, which is to be extensible. New EPP Command Mappings can be created and added to the SDK. The SDK provides the following features:

- Extensible EPP Client Interface
- EPP Session Management
- Pluggable Transport Package with TCP/IP and SSL/TLS transport implementations
- Encapsulation of XML Encoding and Decoding
- Diagnostic logging using a powerful, open logging facility
- Extensible EPP Stub Server
- Use of an XML Parser Pool with XML schema caching
- Session Pooling with support for a separate SSL configuration per Session Pool.
- Support for pipelining when using *com.verisign.epp.interfaces.EPPSession*. Pipelining Pipelining is sending multiple commands and processing the responses asynchronously.

The EPP Session Management includes the handling of the EPP Greeting, the EPP Login, the EPP Logout, the EPP Hello, and the EPP Poll commands. The default behavior is to derive the EPP Login services from the classes defined in the *EPP.MapFactories* and the optional *EPP.ProtocolExtensions* and *EPP.CmdRspExtensions* configuration parameters. These configuration parameters can be overridden by calling *EPPSession.setServices ()* and *EPPSession.addExtensions ()* in the *EPPSession* Interface. As described in Section 9.1 - **Transport**, the transport layer can be easily replaced. The XML encoding and decoding is completely encapsulated in the SDK, although the XML messages can be logged as described in Section 6.3 - **Diagnostic and Error Logging**.

5.1 SDK Directories

Once unpacked, the Verisign Bundle EPP SDK will have the following directories:

Table 4 - Verisign Bundle EPP SDK Directories

Directory	Description
epp-verisign-${BUILD_VER}/bundles/verisign	Main directory for the Verisign Bundle EPP SDK. A bundle is a packaging of multiple EPP SDK mappings and extensions. This directory contains the configuration files and a build script that includes the Ant targets defined in Table 1 – Verisign Bundle build.xml Targets.
epp-verisign-${BUILD_VER}/bundles/verisign/doc	This directory contains bundled documentation for the Verisign Bundle EPP SDK. There are EPP Mapping documents in PDF format (.pdf) or ASCII format (.txt). These documents describe the XML schema definitions for the bundled products.
epp-verisign-${BUILD_VER}/bundles/verisign/doc /html	This directory contains the bundled interface specification in Javadoc format.
epp-verisign-${BUILD_VER}/lib	This directory contains dependent JAR files including JUnit, Log4j, PoolMan, and XercesJ.
epp-verisign-${BUILD_VER}/lib/epp	This directory contains the bundled JAR file for the Verisign Bundle EPP SDK (epp-verisign-bundle-${BUILD_VER}.jar).

5.2 SDK Packages

The SDK consists of sub-packages under *com.verisign.epp*. Some packages are extended by sub-packages (i.e. *com.verisign.epp.codec*), and some packages are extended with new classes in the existing packages (i.e. *com.verisign.epp.interfaces*). Table 5 - Verisign Bundle EPP SDK Packages provides an overview of the SDK packages.

Table 5 - Verisign Bundle EPP SDK Packages

Package	Description
com.verisign.epp.codec	EPP Encoder/Decoder package. There is one sub-package per implemented EPP specification (i.e. gen for the EPP General Specification and domain for the EPP Domain Command Mapping Specification).
com.verisign.epp.exception	General EPP SDK exception classes
com.verisign.epp.interfaces	Client interface classes including EPPApplication and

	EPPSession
com.verisign.epp.framework	EPP Server Framework classes used by the Stub Server
com.verisign.epp.serverstub	Stub Server classes including handlers for each of the supported EPP Command Mappings.
com.verisign.epp.util	Set of SDK utility classes including EPPEnv.
com.verisign.epp.pool	Session Pool classes

6. SDK Configuration

6.1 Configuration File

The Verisign Bundle EPP SDK configuration file is a Java properties file that is passed to *EPPApplication.initialize(String)* to initialize the SDK. It contains configuration parameters that initialize the logging facility, that specify the EPP Command Mapping classes, that initialize the XML Parser Pools, and that initialize the transport layer. Each of the parameters has accessor methods in *EPPEnv*. The property file is searched in the following ways:

1. On the file system (i.e. new File(*String*))
2. In the system ClassLoader (i.e. ClassLoader.getSystemResourceAsStream(*String*))
3. In the ClassLoader of the *Environment* class (i.e. Environment.class.getClassLoader().getResourceAsStream(*String*)).

The parameters that include "Client" and "Server" indicate two separate parameters for the Client and the Server, respectively. For example, the parameter "PoolMan[Client/Server]" indicates that there are two parameters PoolManClient and PoolManServer, where the Client uses PoolManClient and the Server uses PoolManServer. The Process column with a value "Client/Server" indicates that the Client is the process for the Client form of the parameter (i.e. PoolManClient) and that the Server is the process for the Server form of the parameter (i.e. PoolManServer). The required column and the description apply to both forms of the parameter. You may optionally setup separate epp.config files for client and server, when running the stub server. The parameters containing "Server" are required in the server's epp.config; parameters containing "Client" are required in the client's epp.config.

Table 6 - SDK Configuration File Parameters shows the configuration parameters in the configuration file. The table includes each configuration parameter, a description, the process that uses the parameter (Client, Server, or Both), and whether the parameter is required. The JSSE parameters are only required if *EPP.ClientSocketName* or *EPP.ServerSocketName* use a JSSE class. **Bolded** parameters are new to this release of the SDK.

Parameter	Process	Required	Description
EPP.LogMode	Both	Yes	Log Configuration Mode. The mode controls the way by which the logging facility (Log4J) is initialized. There are three different modes: • BASIC - Initialize logging using EPP.LogLevel and EPP.LogFile • CFGFILE - Initialize logging using EPP.LogCfgFile and optionally EPP.LogCfgFileWatch

			• CUSTOM - SDK will not initialize the logging facility and it is left up to the client application. The Stub Server does not consult EPP.LogMode, and will initialize its logging facility based on the following: If EPP.LogCfgfile is defined Use EPP.LogCfgFile and Use EPP.LogCfgFileWatch Else if EPP.LogFile and EPP.LogLevel is defined Use EPP.LogFile and use EPP.LogLevel Else Print error and stop program.
EPP.LogLevel	Both	No	Log4J Log Level. The root category will be set to the specified priority. The possible values in order of severity from lowest to highest include: DEBUG – Recommended for debugging only INFO – Recommended for production mode WARN ERROR FATAL
EPP.LogFile	Both	No	Log4J Log File Name. Logs will be appended to the log file. The default file is "epp.log".
EPP.LogCfgFile	Both	No	Log4J XML Configuration File Name used to define the log levels and the appenders (file, syslog, etc.). The default file is "logconfig.xml".
EPP.LogCfgFileWatch	Both	No	Interval in milliseconds to monitor for changes to EPP.LogCfgFile. If EPP.LogCfgFile is updated, the log settings will be re-loaded. The default setting is 5000 milliseconds (5 seconds).
EPP.ConTimeOut	Both	Yes	Connection and read timeout in milliseconds. A setting of 0 indicates no timeout. The default setting is 500000 milliseconds (500 seconds).
EPP.ClientSocketName	Client	No	Concrete client socket class. The class must implement the EPPClientCon interface and is only required for TCP or SSL. The concrete EPPClientCon class is instantiated when an EPPSession is instantiated and is closed when EPPSession.endSession() is called. The classes provided in the SDK include: com.verisign.epp.transport.client.EPPPlainClientSocket - Plain TCP/IP socket connection(s) com.verisign.epp.transport.client.EPPSSLClientSocket - SSL TCP/IP socket connection(s) com.verisign.epp.transport.client.EPPPlainProxyClientSocket - Plain TCP/IP socket connection(s) that connects through an Apache Proxy Server (mod_proxy). The

			EPP.ProxyServersLocator property must be set and the EPP.ProxyServers and EPP.ProxyServersRandomize should be set. com.verisign.epp.transport.client.EPPSSLProxyClientSocket - SSL TCP/IP socket connection(s) that connects through an Apache Proxy Server. The EPP.ProxyServersLocator property must be set and the EPP.ProxyServers and EPP.ProxyServersRandomize should be set.
EPP.ProxyServersLocator	Client	No	Defines the concrete class of the com.verisign.epp.transport.client.EPPProxyServersLocator interface that returns the list of Apache Proxy Servers to connect through. This property is required if the EPP. ClientSocketName property is set to either com.verisign.epp.transport.client.EPPPlainProxyClientSocket or com.verisign.epp.transport.client.EPPSSLProxyClientSocket. The default value is com.verisign.epp.transport.client.EPPConfigProxyServersLocator to load the proxy servers from the EPP.ProxyServers property.
EPP.ProxyServers	Client	No	Defines the list of Apache Proxy Servers to connect through when the EPP.ProxyServersLocator property is set to com.verisign.epp.transport.client.EPPConfigProxyServersLocator. The format required for the property value is: (<proxy server>:<port number>)(,<proxy server>:<port number>)* <proxy server> ::= '['?<ip address> | <host name>']'? An example value of for connecting to the local Apache Server using the host name, IPv4 address, and IPv6 address is “localhost:80,127.0.0.1:80,[::1]:80”.
EPP.ProxyServersRandomize	Client	No	Defines whether or not the Apache Servers defined by the EPP.ProxyServers property or what the EPP.ProxyServersLocator class returns randomized per connection or attempted in order.
EPP.ClientHost	Client	No	Host name or IP Address that the client will connect from. If not defined the client host will default to the loopback address.
EPP.ServerName	Both	Yes	Host name or IP Address that the server will listen on and that the client will connect to. The default setting is “localhost”.
EPP.ServerPort	Both	Yes	Port that the server will listen on and that the client will connect to.
EPP.ServerSocketName	Server	Yes	Concrete server socket class used by the Stub Server. The classes provided in the SDK include: com.verisign.epp.transport.server.EPPPlainServer - Plain TCP/IP socket connection(s)

			com.verisign.epp.transport.server.EPPSSLServer - SSL TCP/IP socket connection(s)
EPP.MapFactories	Client	Yes	Space separated list of fully qualified EPP Command Mapping factory class names. There is one EPP Mapping Factory per EPP Command Mapping. See the Programmer Guide for the desired EPP Command Mapping for more details.
EPP.ServerAssembler	Server	No	Fully qualified class name of the class the Stub Server will use to assemble EPP packets. This class must implement the com.verisign.epp.framework.EPPAssembler interface. If nothing is specified then com.verisign.epp.framework.EPPXMLAssembler is used.
EPP.ProtocolExtensions	Client	No	Space separated list of fully qualified EPP Protocol Extension factory class names. There is one EPP Protocol Extension Factory Mapping per EPP Protocol Extensions. See the Programmer Guide for the desired EPP Command Mapping for more details.
EPP.CmdRspExtensions	Client	No	Space separated list of fully qualified EPP Command Extension factory class names. There is one EPP Command Response Extension Factory mapping per EPP Command Response Extensions. See the Programmer Guide for the desired EPP Command Mapping for more details
EPP.ServerEventHandlers	Server	Yes	Space separated list of fully qualified EPP Event Handler class names loaded in the Stub Server. There is one EPP Event Handler per EPP Command Mapping. There is one handler required for EPP general handling, which is com.verisign.epp.serverstub.GenHandler. See the Programmer Guide for the desired EPP Command Mapping for more details.
EPP.PollHandlers	Server	No	Space separated list of fully qualified EPP Poll Handler class names loaded in the Stub Server. Each EPP Command Mapping that supports EPP Poll will include an EPP Poll Handler. See the Programmer Guide for the desired EPP Command Mapping for more details.
EPP.SSLProtocol	Both	Yes	JSSE Protocol used. The possible values include: TLS - Supports some version of TLS SSL - Supports some version of SSL SSLv2 - Supports SSL version 2 or higher SSLv3 - Supports SSL version 3 TLSv1 - Supports TLS version 1
EPP.SSLKeyStore	Both	No	JSSE KeyStore format. The default setting is “JKS”.
EPP.SSLKeyFileName	Both	No	JSSE KeyStore file used for authentication. The SDK

			includes a self-signed certificate in the KeyStore “testkeys”.
EPP.SSLPassPhrase	Both	No	JSSE KeyStore pass-phrase. The SDK provided KeyStore has a pass-phrase of “passphrase”.
EPP.SSLKeyPassPhrase	Both	No	JSSE private key pass-phrase. If not set, EPP.SSLPassPhrase is used. The SDK does not use a different pass-phrase for the private key.
EPP.SSLEnabledProtocols	Both	No	Enabled Protocols. If not defined, the default for the provider will be used. If defined, the list of enabled protocols should be provided using spaces as delimeters. Examples of protocols include: • SSL - Supports some version of SSL • SSLv2 - Supports SSL version 2 or higher • SSLv3 - Supports SSL version 3 • TLS - Supports some version of TLS • TLSv1 - Supports TLS version 1
EPP.SSLEnabledCipherSuites	Both	No	Enabled Cipher Suites. Space delimeted list of cipher suites. Examples include: • SSL_RSA_WITH_RC4_128_MD5 • SSL_RSA_WITH_RC4_128_SHA
EPP.SSLTrustStoreFileName	Both	No	Set this to the keystore file that contains the list of Certificate Authorities that should be trusted. If not set then it defaults to the keystore that comes with the JDK which is: $JAVA_HOME/jre/lib/security/cacerts It is recommended to comment out or not define this property when connecting to the NameStore or SRS Servers.
EPP.SSLTrustStorePassPhrase	Both	No	JSSE TrustStore pass-phrase. This property is required if EPP.SSLTrustStoreFileName is defined.
javax.net.debug	Both	No	JSSE debug options. This is very useful for debugging SSL handshaking issues. The possible values include: • none – No debug • all – All debug This property will set the javax.net.debug System property.
PoolMan.[Client/Server].logFile	Client/Server	No	Log file to write debug messages, if PoolMan.Client.debugging is true. Default value is System.out.
PoolMan.[Client/Server].initialObjects	Client/Server	No	Initial number of objects to create in the pool. Default value is 1.
PoolMan.[Client/Server].	Client/Serv	No	Minimum number of objects that can be in the pool. Default

minimumSize	er		value is 0.
PoolMan.[Client/Server].maximumSize	Client/Server	No	Maximum number of objects that can be in the pool. Default value is Integer.MAX_VALUE
PoolMan.[Client/Server].maximumSoft	Client/Server	No	If the maximum size of a pool is reached but requests are still waiting on objects, PoolMan will create new emergency objects if this value is set to true. This will temporarily increase the size of the pool, but the pool will shrink back down to acceptable size automatically when the skimmer activates. If this value is set to false, the requests will sit and wait until an object is available. Default value is true.
PoolMan.[Client/Server].skimmerFrequency	Client/Server	No	The length of time the pool skimmer waits between reap cycles. Each reap cycle involves evaluating all objects (both checked in and checked out) to determine whether to automatically return them to the pool and whether to destroy them if they have timed out. Default is 420 seconds (7 minutes)
PoolMan.[Client/Server].shrinkBy	Client/Server	No	Each time the pool is sized down by the skimmer, this value determines the maximum number of objects that can be removed from it in any one reap cycle. It prevents backing off the pool too quickly at peak times. Default is 5.
PoolMan.[Client/Server].debugging	Client/Server	No	Write debug messages? Debug messages are written to the file specified by the PoolMan.Client.logFile parameter. Default is false.
PoolMan.[Client/Server].objectTimeout	Client/Server	No	The length of time, in seconds, that each object has to live before being destroyed and removed from the pool. Default value is 1200 seconds (20 minutes)
PoolMan.[Client/Server].userTimeout	Client/Server	No	The length of time in seconds that user has to keep an object before it is automatically returned to the pool. Default value is 1200 seconds (20 minutes).
EPP.Validating	Client/Server	No	Turns on/off XML schema validation. The default is false for clients for improved performance, but can be turned to true if response validation is important. Set to true to test against the Stub Server with XML schema validation. Default is true.
EPP.FullSchemaChecking	Client/Server	No	Turns on/off strict XML schema validation. Set to true to test against the Stub Server with full XML schema validation. EPP.Validating must be set to true for the EPP.FullSchemaChecking setting to have any impact. Default is true.
EPP.MaxPacketSize	Client/Server	No	Maximum packet size of bytes accepted to ensure that the client is not overrun with an invalid packet or a packet that exceeds the maximum size. The default is 10000 if property is not defined.
EPP.SessionPool.poolableClassName	Client	No	Fully qualified class name of object pooled by the EPPSessionPool. Set to

			com.verisign.epp.pool.EPPSessionPoolableFactory to TCP session pooling. Default is com.verisign.epp.pool.EPPSessionPoolableFactory
EPP.SessionPool.clientId	Client	No	Client id/name used to authenticate session in the session pool. Required if using the EPPSessionPool.
EPP.SessionPool.password	Client	No	Password used to authenticate session in the session pool. Required if using the EPPSessionPool.
EPP.SessionPool.absoluteTimeout	Client	No	Absolute timeout of session in milliseconds of a session in the session pool. Sessions past the absolute timeout will be refreshed in the pool. Default is 82800000 (23 hours)
EPP.SessionPool.idleTimeout	Client	No	Idle timeout of session in millisonds of a sessin in the session pool. Sessions past the idle timeout will send an EPP hello command to keep the session alive. Required if using the EPPSessionPool. Default is 480000 (8 minutes)
EPP.SessionPool.minIdle	Client	No	Minimum number of idle sessions in the session pool. Default is 5
EPP.SessionPool.maxIdle	Client	No	Maximum number of idle sessions in the session pool. Default is 10
EPP.SessionPool.maxActive	Client	No	Maximum number of active sessions borrowed from the session pool. Default is 10
EPP.SessionPool.initMaxActive	Client	No	Boolean value that will pre-initialize maxActive sessions in the pool. Default is false
EPP.SessionPool.borrowRetries	Client	No	Number of retries when there is a failure in borrowing a new session from the pool. This eliminiates the client having to implement its own retry loop on a call to EPPSessionPool.borrowObject() and also applies to pre-initalizing the sessions when EPP.SessionPool.initMaxActive is true. Default is 0
EPP.SessionPool.maxWait	Client	No	The maximum number of milliseconds a client will block waiting for a session from the session pool. Default is 60000 (1 minute)
EPP.SessionPool.timeBetweenEvictionRunsMillis	Client	No	Frequency in milliseconds to scan idle sessions in the session pool for timeouts. Default is 500 (1/2 second)
EPP.SessionPool.systemPools	Client	No	Default the set of system session pools in a comma separated list of names (i.e. srs,namestore). The system

			name “default” initializes a default pool that uses the EPP.SessioinPool.<param> property along with other properties like EPP.ServerName and EPP.ServerPort. The default pool uses the EPPSessionPool methods that don’t take a aSystem parameter.
EPP.SessionPool.<system>.poolableClassName	Client	No	System specific setting of EPP.SessionPool.poolableClassName, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.serverName	Client	No	System specific setting of EPP.ServerName, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.serverPort	Client	No	System specific setting of EPP.ServerPort, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.clientHost	Client	No	TCP client host name. If not defined, the loopback will be used.
EPP.SessionPool.<system>.clientId	Client	No	System specific setting of EPP.SessionPool.clientId, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.password	Client	No	System specific setting of EPP.SessionPool.password, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.absoluteTimeout	Client	No	System specific setting of EPP.SessionPool.absoluteTimeout, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.idleTimeout	Client	No	System specific setting of EPP.SessionPool.idleTimeout, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.minIdle	Client	No	System specific setting of EPP.SessionPool.minIdle, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.maxIdle	Client	No	System specific setting of EPP.SessionPool.maxIdle, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.maxActive	Client	No	System specific setting of EPP.SessionPool.maxActive, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.initMaxActive	Client	No	System specific setting of EPP.SessionPool.initMaxActive, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.borrowRetries	Client	No	System specific setting of EPP.SessionPool.borrowRetries, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.maxWait	Client	No	System specific setting of EPP.SessionPool.maxWait, where <system> is replaced with the system name (i.e. srs, namestore)

EPP.SessionPool.<system>.timeBetweenEvictionRunsMillis	Client	No	System specific setting of EPP.SessionPool.timeBetweenEvictionRunsMillis, where <system> is replaced with the system name (i.e. srs, namestore)
EPP.SessionPool.<system>.SSLProtocol	Client	No	Protocol to use for pool, where <system> is replaced with the system name (i.e. srs, namestore). If defined the pool will have its own SSL configuration. The required pool SSL properties include SSLKeyStore, SSLKeyFileName, and SSLKeyPassPhrase. Default is TLS
EPP.SessionPool.<system>.SSLKeyStore	Client	No	Type of identity KeyStore, where <system> is replaced with the system name (i.e. srs, namestore). Required if SSLProtocol is defined for pool. Default is JKS
EPP.SessionPool.<system>.SSLKeyFileName	Client	No	Name of the identity KeyStore file, where <system> is replaced with the system name (i.e. srs, namestore). Required if SSLProtocol is defined for pool. Default is ../../lib/keystore/testkeys
EPP.SessionPool.<system>.SSLPassPhrase	Client	No	Passphrase/password to access the identity KeyStore file defined by SSLKeyFileName pool property, where <system> is replaced with the system name (i.e. srs, namestore). Required if SSLProtocol is defined for pool. Default is passphrase
EPP.SessionPool.<system>.SSLEnabledProtocols	Client	No	Optional space delimited list of enabled SSL protocols, where <system> is replaced with the system name (i.e. srs, namestore).
EPP.SessionPool.<system>.SSLEnabledCipherSuites	Client	No	Optional space delimited list of SSL cipher suites, where <system> is replaced with the system name (i.e. srs, namestore). Examples include: • SSL_RSA_WITH_RC4_128_MD5 • SSL_RSA_WITH_RC4_128_SHA
EPP.SessionPool.<system>.SSLKeyPassPhrase	Client	No	Optional passphrase/password for the private key stored in the identity KeyStore, where <system> is replaced with the system name (i.e. srs, namestore). If undefined the pool SSLPassPhrase will be used.
EPP.SessionPool.<system>.SSLTrustStore	Client	No	Optional Type of the Trust Store, where <system> is replaced with the system name (i.e. srs, namestore). If not defined and the pool SSLTrustStoreFileName is defined, the pool SSLKeyStore will be used for the Trust Store. Default is JKS
EPP.SessionPool.<system>.SSLTrustStoreFileName	Client	No	Pool trust store file that contains the list of Certificate Authorities that should be trusted. If not set than the pool defaults to the keystore that comes with the JDK which is: $JAVA_HOME/jre/lib/security/cacerts. It is recommended to comment out or not define this

			property when connecting to the NameStore or SRS Servers.
EPP.SessionPool.<system>.SSLTrustStorePassPhrase	Client	No	Pool passphrase/password to access the Trust Store file defined by the pool SSLTrustStoreFileName property.
EPP.SessionPool.<system>.SSLDebug	Client	No	Defines the SSL debug Java system property javax.net.debug value. The possible values include: • none – No debug • all – All debug This property only needs to be defined once for all pools, since each pool property will result in resetting the javax.net.debug system property.
EPP.Test.clientId	Client	No	Optional setting for configuring the login clientId used by the tests. This will allow the tests to target servers other than the Stub Server like OT&E. Not all tests might have been updated to utilize this property. Default is "ClientX"
EPP.Test.password	Client	No	Optional setting for configuring the login password used by the tests. This will allow the tests to target servers other than the Stub Server like OT&E. Not all tests might have been updated to utilize this property. Default is "password"
EPP.Test.stubServer	Client	No	Optional Boolean setting to specify to the tests that the target server is the Stub Server. This allows the tests to be customized to run against the Stub Server or against a real server like OT&E. Default is true

Table 6 - SDK Configuration File Parameters

6.2 Libraries

The Verisign Bundle EPP SDK library, ***epp-verisign-bundle-{$BUILD_VER}.jar***, is a bundled distribution that includes all required classes from the core EPP SDK, packages and classes for each Namestore EPP Command Mapping, and a set of dependent libraries. The core EPP classes include all of the SDK base frameworks and an implementation of the general EPP specification. This includes session management and the building block classes for EPP. The dependent libraries included in the SDK are:

- Ant 1.7.1 – .jar files in epp-verisign-${BUILD_VER}/lib/ant
- junit-3.8.1.jar – Library used for SDK tests
- log4j-1.2.8.jar – Library used for SDK diagnostic and error logging
- XercesJ 2.11.0 – Library used for XML parsing. This includes xercesImpl-2.11.0.jar and xmlParserAPIs-2.11.0.jar

- poolman-2.1-b1.jar – Library used for pooling the XML Parsers and Transformers
- Jalopy 1.0b10 – Library used for code formatting. .jar files in epp-verisign-${BUILD_VER}/lib/jalopy
- Apache Commons Pool 1.1 – Library used for implementing the EPP session pool.
- Apache Commons Codec 1.6 – Library used for Base64 encoding and decoding within the launch extension.
- Apache Commons Collections 3.2.1 – Library used for the EPP session pool.
- dnsjava 2.5.1 – Library used in the secdns (DNSSEC) extension.

Each set of product specific EPP Command Mappings are included in the *epp-verisign-bundle-{$BUILD_VER}.jar* library. The library includes both client packages and classes and Stub Server classes, so that a single library contains all of the SDK classes required for all Namestore EPP Command Mappings.

6.3 Diagnostic and Error Logging

The Verisign Bundle EPP SDK uses Log4J(http://jakarta.apache.org/ant/index.html) for diagnostic and error logging. The *EPP.LogMode* configuration parameter has three possible modes:

1. **BASIC** - Sets the root log level with *EPP.LogLevel*, and sets the log file appender with *EPP.LogFile*
2. **CFGFILE** - Sets the Log4J configuration file with *EPP.LogCfgFile*, and optionally sets the Log4J configuration file monitor with *EPP.LogCfgFileWatch*.
3. **CUSTOM** – The SDK will not initialize Log4J and leaves the initialization up to the client application.

The EPP Stub Server included in the SDK does not use the *EPP.LogMode* configuration parameter, and first looks to the *EPP.LogCfgFile* parameter, and second looks to the *EPP.LogLevel* and the *EPP.LogFile* parameters. The EPP Stub Server uses *EPP.LogCfgFileWatch* only if *EPP.LogCfgFile* is defined.

6.3.1 Basic Configuration Mode (EPP.LogLevel and EPP.LogFile)

The basic configuration mode is meant to set the logging configuration without requiring the use of a Log4J XML configuration file. The *EPP.LogLevel* parameter will set the priority level of the root category. By default, it is set to DEBUG, so that all of the SDK messages will be logged. The *EPP.LogFile* parameter will set the log file name where the logs will be appended. The format of the messages is the Log4J format "="`%d{yyyyMMdd HHmmss} %c %-5p %m\n`", which will log the date in the

format "yyyyMMdd HHmmss", the category as the fully qualified class name, the priority (DEBUG, INFO, WARN, ERROR, or FATAL), and the log message.

6.3.2 Log4J Configuration File Mode (EPP.LogCfgFile and EPP.LogCfgFileWatch)

The Log4J Configuration File Mode allows for the use of a Log4J configuration file to configure the SDK logging. The *EPP.LogCfgFile* parameter gives the name of the Log4J configuration file. By using the Log4J configuration file, logs can be routed to different destinations (i.e. syslog, date rolling files), priority levels can be set by category, and the configuration file changes can be applied without restarting the application if *EPP.LogCfgFileWatch* is defined. A daemon thread will check for configuration file changes every *EPP.LogCfgFileWatch* milliseconds.

Figure 1 - Default SDK Log4J Configuration File shows the configuration supplied in the SDK, which includes two appenders, DATEFILE and ERROR, and a setting for the root category. All logs will be sent to the DATEFILE appender, which will result in the log files epp.log[yyyyMMdd]. "epp.log" is the current day log file, and yyyyMMdd will be appended for previous days. All logs with the priority of WARN, ERROR, or FATAL will be sent to the ERROR appender, which will result in the log files epp.err[yyyyMMdd]. "epp.err" is the current day log file, and yyyyMMdd will be appended for previous days. The default format of the logs includes the date in the format "yyyyMMdd HHmmss", the category as the fully qualified class name, the priority (DEBUG, INFO, WARN, ERROR, or FATAL), and the log message. The root category is set with a priority of "debug", so that all SDK messages will be logged.

```
<log4j:configuration>

 <!--
 Direct diagnostic logging to a rolling log file
 prefixed with epp.log.
 -->
       <appender name="DATEFILE"
        class="org.apache.log4j.DailyRollingFileAppender">
        <param  name="File" value="epp.log" />
        <param  name="DatePattern" value="yyyyMMdd" />
        <layout class="org.apache.log4j.PatternLayout">
               <param  name="ConversionPattern"
               value="%d{yyyyMMdd HHmmss}  %c %-5p %m\n"/>
               </layout>
       </appender>

 <!--
 Direct warning and errors to a rolling error log
 prefixed with epp.err.
 -->
       <appender name="ERROR"
        class="org.apache.log4j.DailyRollingFileAppender">
        <param  name="File" value="epp.err" />
        <param  name="DatePattern" value="yyyyMMdd" />
```

```
          <layout class="org.apache.log4j.PatternLayout">
                  <param  name="ConversionPattern"
                  value="%d{yyyyMMdd HHmmss}  %c %-5p %m\n"/>
                  </layout>
          <filter class="org.apache.log4j.varia.PriorityRangeFilter">
                  <param name="PriorityMin" value="WARN"/>
                  <param name="PriorityMax" value="FATAL"/>
                  <param name="AcceptOnMatch" value="true"/>
          </filter>
        </appender>

  <!--
  Default level (info) and appender:
         o debug - Is the default level
         o All logs will go to the dated log file (DATEFILE)
         o All warnings and errors will go to the
         dated log file (ERROR)
  -->
       <root>
           <priority value ="debug" />
           <appender-ref ref="DATEFILE" />
           <appender-ref ref="ERROR" />
        </root>

</log4j:configuration>
```

Figure 1 - Default SDK Log4J Configuration File

6.3.3 Custom Mode

To integrate the SDK into a Log4J application, setting the *EPP.LogMode* parameter to CUSTOM can turn off the initialization of Log4J by the SDK. See Section 4.3.4 - **SDK Log Categories** for more information on the SDK categories that can be set in the custom Log4J configuration.

6.3.4 SDK Log Categories

The SDK Log Categories are based on the SDK fully qualified class names. All of the SDK classes are contained in the package *com.verisign.epp*. In general, any SDK errors are logged at the ERROR priority level. **Table 7 - SDK Log Categories** lists the primary categories defined in the SDK.

Category	Description
com.verisign.epp.util.EPPXMLStream	Class that handles the reading and writing of the EPP XML messages. When the "debug" priority level is enabled, the packets that are read and written will be logged.
com.verisign.epp.util. EPPSchemaCachingEntityResolver	Class that handles the loading and caching of XML schemas. The loading is done from the CLASSPATH, where the schemas need to reside

Category	Description
	in the directory “schemas”.
com.verisign.epp.transport	Package that contains the SDK transport classes. When the “debug” priority level is enabled, the trace of the primary classes will be logged.
com.verisign.epp.interfaces	Package that contains the client interface classes. Currently, these classes don’t log messages, but it is likely that logs will be added in future releases.
com.verisign.epp.codec	Package that contains the EPP encoding/decoding classes. Currently, these classes don’t log messages, but it is likely that logs will be added in future releases.
com.verisign.epp.pool	Package that contains the EPP session pool classes. Logs include the number of active sessions, idle sessions, and identifies the session being borrowed or returned from/to the session pool.

Table 7 - SDK Log Categories

6.4 Adding an EPP Command Mapping to the SDK

The SDK can be easily extended to support new EPP Command Mappings. As described in section 6.2, an EPP Command Mapping is associated with a single library. This SDK distribution bundles EPP Command Mappings, so manually adding mappings might not be required. Do the following to add an EPP Command Mapping to the SDK:

1. Add the EPP Command Mapping library (i.e. *epp-domain.jar*) to the application and Stub Server CLASSPATH. When using the standard SDK build scripts, the .jar files can be added to epp-verisign-${BUILD_VER}/lib/epp for automatic inclusion in the CLASSPATH.
2. Add EPP Command Mapping factory to the *EPP.MapFactories* configuration parameter. See the EPP Command Mapping Programmer Guide for the name of the class.
3. Add EPP Command Mapping factory to the *EPP.ProtocolExtensions* configuration parameter. See the EPP Command Mapping Programmer Guide for the name of the class.
4. Add EPP Command Mapping factory to the *EPP.CmdRspExtensions* configuration parameter. See the EPP Command Mapping Programmer Guide for the name of the class.

5. Add EPP Command Mapping handler to the *EPP.ServerEventHandlers* configuration parameter. See the EPP Command Mapping Programmer Guide for the name of the class.
6. Add EPP Command Mapping poll handler to the *EPP.PollHandlers* configuration parameter. See the EPP Command Mapping Programmer Guide for the name of the class. Only EPP Command Mappings that support the EPP Poll command will include a poll handler.

By default, the services contained in the EPP <login> and the EPP <greeting> are controlled by the classes listed In *EPP.MapFactories,EPP.ProtocolExtensions, EPP.CmdRspExtensions* and *EPP.ServerEventHandler*. The client EPP <login> services by default will be determined by finding the intersection of the services included in the EPP <greeting> and the services defined by factories referenced by the *EPP.MapFactories,EPP.ProtocolExtensions, EPP.CmdRspExtensions* properties. The client can override the services with a call to *EPPSession.setServices(String [])* or the client can override the extensions with a call to *EPPSession.addExtensions(Vector ext,Vector ext)* before calling *EPPSession.initSession()*.

7. Generic EPP Client Interfaces

The generic EPP client interface classes are contained in the *com.verisign.epp.interfaces* package and are meant to be the primary classes that a client application will use.

7.1 EPPApplication

Figure 2 - EPPApplication Class Diagram shows the *EPPApplication* classes used to initialize the SDK subsystems. *EPPApplicationSingle* is a Singleton version of *EPPApplication.* The subsystems initialized by *EPPApplication*, include:

- The Environment Settings based on the contents of the configuration file. *EPPEnv* provides an interface to the configuration information.
- The Logging Facility based on the *EPP.Log* configuration parameters. If *EPP.LogMode* is set to *CUSTOM*, than the Logging Facility will not be initialized by *EPPApplication*.
- The EPP Encoder/Decoder (CODEC) based on the *EPP.MapFactories* configuration parameter

EPPApplication.initialize() must be the first SDK method called, and it reads the configuration file passed in as an argument.

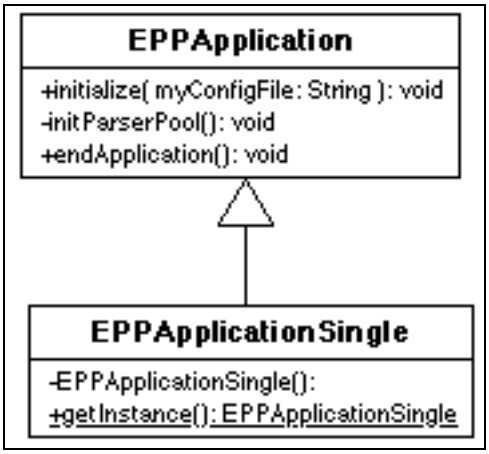


Figure 2 - EPPApplication Class Diagram

Figure 3 - EPPApplication Initialization Sample Code shows the code required to initialize *EPPApplication* with the epp.config configuration file. After *EPPApplication* is properly initialized, sessions can be created with the EPP Server as described in section 0.

```
try {
  EPPApplicationSingle.getInstance().initialize("epp.config");
}
catch (EPPCommandException e){
  System.err.println("Error initializing the EPP Application: " + e);
}
```

```
// Create one or more EPP Server sessions.
EPPSession session = new EPPSession();
```

Figure 3 - EPPApplication Initialization Sample Code

7.2 EPPSession

7.2.1 Overview

Figure 4 - EPPSession Class Diagram shows the class that is responsible for managing a session with an EPP Server. An *EPPSession* represents an authenticated connection with the EPP Server, and is passed in the constructor of the EPP Command Mapping Interface classes. For example, *EPPDomain* is created with an instance of *EPPSession*. Each *EPPSession* is associated with one *EPPClientCon*, which represents one EPP Server connection.

Figure 4 - EPPSession Class Diagram

The following is a description of the sequence in creation, usage, and closing of an *EPPSession*:

1. The client will create an instance of an *EPPSession*
2. *EPPSession* will create a connection to the EPPServer, using the concrete *EPPClientCon* defined by the *EPP.ClientSocketName* configuration parameter.

3. The client will set the authentication information (Client ID, Password) and authenticate with the EPP Server by calling *EPPSession.initSession()*. The *EPP.initSession()* will automatically intersect the configured services using the *EPP.MapFactories, EPP.ProtocolExtensions, EPP.CmdRspExtensions* configuration properties with the services included in the EPP <greeting> with setting the EPP <login> services. Optionally, the client can call *EPPSession.setServices()* with the list of client services, and also the client can optionally call *EPPSession.addExtensions()* with a vector of EPPProtocolExtensions or vector of CommandResponseExtensions or a combination of both, before calling *EPPSession.initSession()*.
4. The *EPPSession* will read the EPP <greeting> from the EPP Server, will create an EPP <login>, and will send the EPP <login> to the EPP Server.
5. The client will creates a Mapping Interface object (i.e. *EPPDomain*) with the *EPPSession* instance.
6. The client will execute zero or more commands through the Mapping Interface object.
7. The client will end the session by calling *EPPSession.endSession()*.
8. The *EPPSession* will send an EPP <logout> to the EPP Server and will call *EPPClientCon.close()* to close the connection with the EPP Server.

7.2.2 Sample Code

Figure 5 - EPPSession Life Cycle Sample Code shows the code associated with the *EPPSession* life cycle. One optional step is shown, which is setting the services to *EPPDomainMapFactory.NS* (urn:iana:xml:ns:domain-1.0) before initializing the session. The exception handlers look for an *EPPResponse* to print out the error information sent by the EPP Server. If no *EPPResponse* exists and *isSuccess()* returns *true*, than the exception is not associated with an EPP Server error.

```
// Create session and set session attributes.
EPPSession session = new EPPSession();

session.setTransId("ABC-12345-XYZ");
session.setVersion("1.0");
session.setLang("en-US");
session.setClientID("ClientX");
session.setPassword("foo-BAR2");
session.setNewPassword("bar-FOO2");

// Optional step: Override the services sent with an EPP Login, which
// by default are derived from the classes defined by
// the EPP.MapFactories configuration parameter.
// Optional step: Override the extensions sent with an EPP Login, which
// by default are derived from the classes defined by
// the EPP.ProtocolExtensions and EPP.CmdRspExtensions configuration
// Parameters.
Vector ProtocolExtensions=new Vector();
```

```
ProtocolExtensions.addElement(new String("protocolExtURI"));
Vector CommandResponseExtensions=new Vector();
CommandResponseExtensions.addElement(new String("commandExtURI"));

try {
  session.setServices(new String[]{EPPDomainMapFactory.NS});

session.addExtensions(protocolExtensions,CommandResponseExtensions);
}
catch (EPPCommandException ex) {
  System.err.println("Service " + EPPDomainMapFactory.NS + "not valid");
}

// Initialize the session
try
{
  session.initSession();
}
catch (EPPCommandException e)
{
  EPPResponse response = session.getResponse();

  // Is an EPP Server specified error?
  if ((response != null) && (!response.isSuccess()))    {
          System.err.println("initSession Server Error : " + response);

  }
  else { // Internal SDK error
          System.err.println("initSession Internal Error : " + e);
  }
}

// Create EPP Command Mapping Interface object
// See appropriate EPP Command Mapping Programmer Guide

// End the seesion
try {
  session.endSession()
}
catch (EPPCommandException e) {
  EPPResponse response = session.getResponse();

  // Is an EPP Server specified error?
  if ((response != null) && (!response.isSuccess()))    {
          System.err.println("endSession Server Error : " + response);

  }
  else { // Internal SDK error
          System.err.println("endSession Internal Error : " + e);
  }

}
```

Figure 5 - EPPSession Life Cycle Sample Code

7.2.3 initSession() Method

Initializes a session with the EPP Server.

Pre-Conditions

The following methods must be previously called:

- *setTransId(String)* – Sets the client transaction identifier
- *setClientID(String)* – Sets the client login identifier
- *setPassword(String)* – Sets the client password

The following methods can be previously called:

- *setVersion(String)* – Sets the EPP protocol version. Default is "1.0".
- setNewPassword(String) – Requests a change in password. The EPP Server might not support this. See the SDK release notes for more details.
- *setLang(String)* – Sets the desired response message language. Default is "en-US". The EPP Server might not support any language other than "en-US". See the SDK release notes for more details.
- *setServices(String [ ])* – Set the services to use with the session. The default services are derived from the classes defined by the *EPP.MapFactories* configuration parameter intersected with the EPP <greeting> services. This is useful if the client wants to explicitly define the services.
- *addExtensions(Vector,Vector)* – Set the Extensions to use with the session. The default extensions are derived from the classes defined by the *EPP.ProtocolExtensions* and the *EPP.CmdRspExtensions* configuration properties intersected with the EPP <greeting> extension services. This is useful if the client wants to explicitly define the extension services.
- *setMode(int)* – Sets the command/response processing mode to either *EPPSession.MODE_SYNC* (default) or *EPPSession.MODE_ASYNC*. *EPPSession.MODE_ASYNC* is used for pipelining where a call to a *send* method will immediately return after sending the command and the client is responsible for calling *EPPSession.readResponse() : EPPResponse* to get the response asynchronousnly.

Post-Conditions

The session with the EPP Server has been authenticated for the services set by *setServices* or derived from the classes defined in the *EPP.MapFactories* configuration parameter. The successful EPPResponse can be retrieved by calling *getResponse()*.

Exceptions

EPPCommandException that contains the *EPPResponse* returned from the EPP Server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the EPP Server response, than *getResponse()* will return *null*

.

EPP Status Codes

The following are expected EPP Status Codes when a response has been received from the EPP Server:

Constant Name	Constant Value	Description
EPPResult.SUCCESS	1000	Session has successfully been initialized. initSession will not throw an exception, and the successful response can be retrieved by calling.getResponse().
EPPResult.COMMAND_SYNTAX_ERROR	2001	Malformed EPP message.
EPPResult.COMMAND_USE_ERROR	2002	Session has already been established, which could be due to initSession being called more than once.
EPPResult.PARAM_OUT_OF_RANGE	2004	Input attribute (i.e. client identifier, password) not valid
EPPResult.COMMAND_FAILED	2500	Internal EPP Server error
EPPResult.AUTHENTICATION_ERROR	2200	Not a valid user
EPPResult.AUTHORIZATION_ERROR	2201	User is not authorized to login.
EPPResult.TIMEOUT_END	2501	Command timeout has occurred. The EPP Server closes the connection.

Table 8 - EPPSession.initSession EPP Status Code Matrix

7.2.4 endSession() Method

Ends a session initialized by *initSession()*.

Pre-Conditions

A session has been successfully initialized by *initSession()*.

The following methods must be previously called:

- *setTransId(String)* – Sets the client transaction identifier

Post-Conditions

The connection is closed with the EPP Server. The successful *EPPResponse* can be retrieved by calling *getResponse()*.

Exceptions
EPPCommandException that contains the *EPPResponse* returned from the EPP Server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the EPP Server response, than *getResponse()* will return *null*.

EPP Status Codes
The following are expected EPP Status Codes when a response has been received from the EPP Server:

Constant Name	Constant Value	Description
EPPResult. SUCCESS_END_SESSION	1500	Session has successfully been closed. endSession will not throw an exception, and the successful response can be retrieved by calling.getResponse().
EPPResult.COMMAND_SYNTAX_ERROR	2001	Malformed EPP message.
EPPResult.COMMAND_USE_ERROR	2002	Session has not been established.
EPPResult.PARAM_OUT_OF_RANGE	2004	Input attribute not valid
EPPResult.COMMAND_FAILED	2500	Internal EPP Server error
EPPResult.TIMEOUT_END	2501	Command or session timeout has occurred. The EPP Server closes the connection.

Table 9 - EPPSession.initSession EPP Status Code Matrix

7.2.5 hello() Method
Sends an EPP Hello message to get the EPP Greeting from the server. This can be done with an unauthenticated and with an authenticated session.

Pre-Conditions
None.

Post-Conditions
An *EPPGreeting* is returned.

Exceptions
EPPCommandException indicates that the *EPPGreeting* was not successfully received.

EPP Status Codes
None.

7.2.6 sendPoll() Method

Sends a poll command to either request a poll message or to send a poll message acknowledgement.

Pre-Conditions

A session has been successfully initialized by *initSession()*.

The following methods must be previously called:

- *setTransId(String)* – Sets the client transaction identifier
- *setPollOp(String)* – Sets the poll operation to either *EPPSession.OP_REQ* for requesting a poll message and *EPPSession.OP_ACK* to acknowledge a poll message.

The following methods can be previously called:

- *setMsgID(String)* – Sets the message identifier associated with a poll command where the poll operation is set to *EPPSession.OP_ACK*.

Post-Conditions
A poll message is contained in the *EPPResponse* when the poll operation is *EPPSession.OP_REQ* and the poll message is removed from the poll queue when the poll operation is *EPPSession.OP_ACK*.

Exceptions
EPPCommandException that contains the *EPPResponse* returned from the EPP Server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the EPP Server response, than *getResponse()* will return *null*.

EPP Status Codes
The following are expected EPP Status Codes when a response has been received from the EPP Server:

Constant Name	Constant Value	Description
EPPResult. SUCCESS	1000	Poll acknowledgement command was successful
EPPResult.SUCCESS_POLL_NO_MSGS	1300	Successful Poll request command. There are no

		messages in the queue.
EPPResult.SUCCESS_POLL_MSG	1301	Successful Poll request command. A poll and a queue size is returned.
EPPResult.COMMAND_SYNTAX_ERROR	2001	Malformed EPP message.
EPPResult.COMMAND_USE_ERROR	2002	Session has not been established.
EPPResult.PARAM_OUT_OF_RANGE	2004	Input attribute not valid
EPPResult.COMMAND_FAILED	2500	Internal EPP Server error
EPPResult.TIMEOUT_END	2501	Command or session timeout has occurred. The EPP Server closes the connection.

Table 10 - EPPSession.sendPoll EPP Status Code Matrix

7.3 EPPEnv

EPPEnv is a utility class initialized by *EPPApplication* that provides an interface for the SDK configuration parameters. *EPPEnvSingle* is the Singleton class for *EPPEnv*. **Figure 6 - EPPEnv Class Diagram** shows the class diagram for *EPPEnv* and *EPPEnvSingle*.

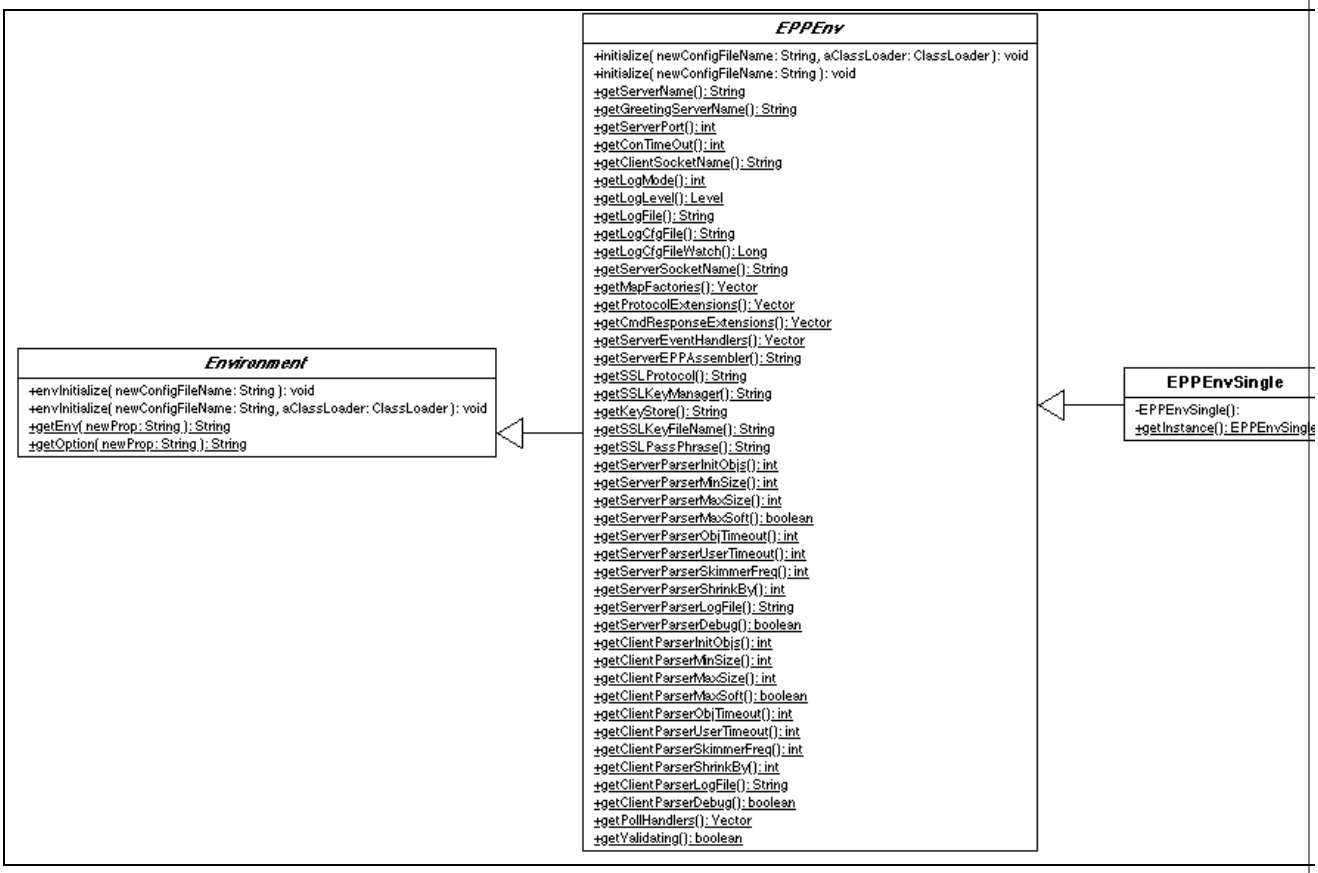


Figure 6 - EPPEnv Class Diagram

Each configuration parameter has an associated EPPEnv accessor method. Table 11 - EPPEnv Method Mappings shows the mapping of the *EPPEnv* assessor methods to the configuration parameters.

Method Name	Configuration Parameter
get[Client/Server]ParserDebug()	EPP.PoolMan.[Client/Server].debugging
get[Client/Server]ParserInitObjs()	EPP.PoolMan.[Client/Server].initialObjects
get[Client/Server]ParserLogFile()	EPP.PoolMan.[Client/Server].logFile
get[Client/Server]ParserMaxSize()	EPP.PoolMan.[Client/Server]..maximumSize
get[Client/Server]ParserMaxSoft()	EPP.PoolMan.[Client/Server].maximumSoft
get[Client/Server]ParserMinSize()	EPP.PoolMan.[Client/Server].minimumSize
get[Client/Server]ParserObjTimeout()	EPP.PoolMan.[Client/Server].objectTimeout

get[Client/Server]ParserShrinkBy	EPP.PoolMan.[Client/Server].shrinkBy
get[Client/Server]ParserSkimmerFreq()	EPP.PoolMan.[Client/Server].skimmerFrequency
get[Client/Server]ParserUserTimeout()	EPP.PoolMan.[Client/Server].userTimeout
getClientSocketName()	EPP.ClientSocketName
getCmdResponseExtensions()	EPP.CmdRspExtensions
getConTimeOut	EPP.ConTimeOut
getFullSchemaChecking()	EPP.FullSchemaChecking
getGreetingServerName()	EPP.GreetingServerName
getKeyStore()	EPP.SSLKeyStore
getLogCfgFile()	EPP.LogCfgFile
getLogCfgFileWatch()	EPP.LogCfgFileWatch
getLogFile()	EPP.LogFile
getLogLevel()	EPP.LogLevel
getLogMode()	EPP.LogMode
getMapFactories()	EPP.MapFactories
getPollHandlers()	EPP.PollHandlers
getProtocolExtensions()	EPP.ProtocolExtensions
getProxyServerLocator()	EPP.ProxyServersLocator
getProxyServers()	EPP. ProxyServers
getProxyServersRandomize()	EPP.ProxyServersRandomize
getServerEventHandlers()	EPP.ServerEventHandlers
getServerName()	EPP.ServerName
getServerPort()	EPP.ServerPort

getServerSocketName()	EPP.ServerSocketName
getSSLEnabledCipherSuites()	EPP.SSLEnabledCipherSuites
getSSLEnabledProtocol()	EPP.SSLEnabledProtocols
getSSLKeyFileName()	EPP.SSLKeyFileName
getSSLKeyManager()	EPP.SSLKeyManager
getSSLKeyPassPhrase()	EPP.SSLKeyPassPhrase
getSSLPassPhrase()	EPP.SSLPassPhrase
getSSLPassPhrase()	EPP.SSLPassPhrase
getSSLProtocol()	EPP.SSLProtocol
getSSLTrustStoreFileName()	EPP.SSLTrustStoreFileName
getSSLTrustStorePassPhrase()	EPP.SSLTrustStorePassPhrase
getValidating()	EPP.Validating

Table 11 - EPPEnv Method Mappings

8. XML Parser Pool

The XML Parser included in the SDK is XercesJ (http://xml.apache.org/xerces-j/index.html), which is not thread-safe. There are three approaches to overcoming this limitation, which include:

1. A parser per thread
2. A parser per operation
3. A parser pool

Having a parser per thread requires the SDK to have knowledge/control of the thread, which is not flexible. Instantiating a parser per operation represents a scalability issue because of the expense of instantiating and garbage collecting a parser for every operation. Utilizing a parser pool provides a more scalable solution and does not require the SDK to have knowledge/control of the thread.

PoolMan 2.1-b1 (http://sourceforge.net/projects/poolman/) was used to implement the XML Parser Pool. There is an XML Parser Pool in the SDK Client and the SDK Stub Server. The configuration parameters *EPP.Poolman.[Client/Server]* can be used to configure the client and Stub Server, respectively. Table 6 - SDK Configuration File

Parameters describes the XML Parser Pool configuration parameters. The *EPPEnv* class includes accessor methods for the configuration parameters as described in Table 11 - EPPEnv Method Mappings.

9. Extending the SDK

9.1 Transport

The SDK allows for the replacement of the transport layer with a combination of the *EPP.ServerName* and *EPP.ClientSocketName* configuration parameters. The pre-built transports in the SDK include:

- com.verisign.epp.transport.client.EPPPlainClientSocket – For TCP/IP connections
- com.verisign.epp.transport.client.EPPSSLClientSocket – For SSL/TLS connections

A transport class must implement *com.verisign.epp.transport.EPPClientCon* and have a default constructor. **Figure 7 - EPPClientCon Class Diagram** shows the class diagram for *EPPClientCon*.

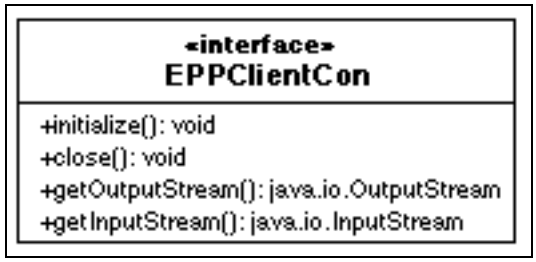


Figure 7 - EPPClientCon Class Diagram

When a new *EPPSession* is created, the *EPPSession* will create an instance of the class defined by the *EPP.ClientSocketName* configuration parameter, call the *EPPClientCon.initialize()* method, and retrieve the input/output stream by calling *EPPClientCon.getInputStream()* and *EPPClientCon getOutputStream()*. When the *EPPSession* is ended by a call to *EPPSession.endSession()*, the *EPPSession* will call *EPPClientCon.close()*.

Figure 8 - SDK TCP/IP Transport Sample Code shows the code required to implement a TCP/IP transport using the host name, port number, and connection timeout SDK configuration settings. A custom transport can be used by setting EPP.ClientSocketName with the fully qualified name of the `EPPClientCon` class and by using `EPPSession`.

```
import java.net.*;
import java.io.*;
import com.verisign.epp.transport.*;
import com.verisign.epp.util.*;

public class EPPClientConSample implements EPPClientCon {
```

```
public EPPClientConSample() throws EPPConException {
        try {
                _hostName = EPPEnv.getServerName();
                _portNum  = EPPEnv.getServerPort();
                _conTimeout = EPPEnv.getConTimeOut();
        }
        catch (EPPEnvException ex) {
                throw new EPPConException("Error initializing
                attributes: " + ex);
        }

        _socket = null;
        _input  = null;
        _output = null;
}

public void initialize() throws EPPConException {
        try {
                _socket = new Socket(_hostName, _portNum);
                _socket.setSoTimeout(_conTimeout);
        }
        catch (UnknownHostException ex) {
                throw new EPPConException("Creating socket: " + ex);
        }
        catch (IOException ex) {
                throw new EPPConException("Creating socket: " + ex);
        }
        catch (SecurityException ex) {
                throw new EPPConException("Creating socket: " + ex);
        }

        try {
                _input = _socket.getInputStream();
                _output = _socket.getOutputStream();
        }
        catch (IOException ex) {
                throw new EPPConException("Getting streams: " + ex);
        }
}

public InputStream getInputStream() throws EPPConException {
        if (_input == null) {
                throw new EPPConException("The input stream is null");
        }

        return _input;
}

public OutputStream getOutputStream() throws EPPConException {
        if (_output == null) {
                throw new EPPConException("The output stream is null");
        }

        return _output;
}

public void close() throws EPPConException {
```

```
        if (_socket != null) {

                try {
                        _socket.close();
                }
                catch (IOException ex) {
                        throw new EPPConException("Closing socket: "
                        + ex);
                }

                _socket = null;
                _input = null;
                _output = null;
        }
 }

 private InputStream    _input;
 private OutputStream   _output;
 private Socket         _socket;
 private String         _hostName;
 private int            _portNum;
 private int            _conTimeout;

} // End class EPPClientConSample
```

Figure 8 - SDK TCP/IP Transport Sample Code

10. Stub Server

The Verisign Bundle EPP SDK includes an extensible Stub Server that implements all of the installed EPP commands and returns back complete hard-coded successful EPP responses.

10.1 Event Handlers

The Stub Server uses event handlers to process and respond to the EPP commands it receives. The *EPP.ServerEventHandlers*, located in the *epp.config* file, controls what EPP commands will be supported by the Stub Server. The general EPP commands including EPP Login, EPP Logout, EPP Hello, EPP Poll, and the creation of the EPP Greeting is handled by *com.verisign.epp.serverstub.GenHandler*.

Each EPP Command Mapping will include a handler in the *com.verisign.epp.serverstub* package. For example, the EPP Domain Command Mapping has the handler *com.verisign.epp.serverstub.DomainHandler*. The handlers set in *EPP.ServerEventHandlers* will create the list of services in the EPP Greeting. For example, by adding *com.verisign.epp.serverstub.DomainHandler* to *EPP.ServerEventHandlers*, *urn:ietf:params:xml:ns:domain-1.0* will be added to the EPP Greeting service menu.

10.2 Poll Handlers

Each EPP Command Mapping that supports EPP Poll will include a handler in the *com.verisign.epp.serverstub* package. For example, the EPP Domain Command Mapping has the handler *com.verisign.epp.serverstub.DomainPollHandler*. The handlers loaded in the server are included with the *EPP.PollHandlers* configuration parameter. The Stub Server implements an in-memory poll queue, which can be used by server handlers to insert messages into the queue. See the product sections of this programmer's guide for more details about polling requirements and adding the product specific EPP Command Mappings. There is only one in-memory queue for the server, so different connections will pull messages from the same queue. See the *EPPSession.sendPoll()* for more information on sending an EPP Poll command.

11. Client Implementation Notes

11.1 Pooling

Connection pooling is a common pattern for scalable systems. *EPPSession* is associated with a single connection for its entire lifecycle. Since an *EPPSession* represents an authenticated connection with the EPP Server, it is recommended to pool *EPPSession* instances. The EPP Server does have a session timeout, so the *EPPSession* instances will have to be periodically refreshed. The *EPPSessionPool* can be used to manage a pool of sessions. Refer to the EPP.SessionPool parameters in Table 6 - SDK Configuration File Parameters for details on configuring the session pool. *EPPSessionPool.init()* will initialize the session pool assuming the SDK has already been initialized by calling *EPPApplicationSingle.initialize(config_file : String)*. *EPPSessionPool.close* will cleanly close the underlying *EPPSession* instances that should be called at the ending of the client program. Below is a sample of the block of code using the EPPSessionPool for sending a domain check:

```
EPPSession theSession = null;
try {
      theSession = EPPSessionPool.getInstance().borrowObject();
      NSDomain theDomain = new NSDomain(theSession);
      theDomain.addDomainName("example.com");
      theDomain.setSubProductID(NSSubProduct.COM);
      EPPDomainCheckResp theResponse = theDomain.sendCheck();
      ….
}
catch (EPPCommandException ex) {
      if (ex.hasResponse()) {
            if (ex.getResponse().getResult().shouldCloseSession()) {

      EPPSessionPool.getInstance().invalidateObject(theSession);
                  theSession = null;
            }
      }
      else if (theSession != null) {
            EPPSessionPool.getInstance().invalidateObject(theSession);
            theSession = null;
      }
}
finally {
```

```
      if (theSession !- null)
            EPPSessionPool.getInstance().returnObject(theSession);
}
```

11.1.1 Multiple Session Pools

Multiple session pools can be configured and used in the SDK by defining a list of system names in the EPP.SessionPool.systemPools property. The system name "default" is for backward compatible with the EPP.SessionPool.<prop>, EPP.ServerName, and EPP.ServerPort properties. The *EPPSessionPool.init()* method will attempt to initalize a pool for each system name specified in the comma separated list o system names. The *EPPSessionPool.close()* method will cleanly close the underlying *EPPSession* instances contained in the pools and should be called at the end of the client program. The properties for a system session pool follow the naming convention, EPP.SessionPool.<system>.<prop>, where <system> is the system name. The following epp.config properties define the use of the "default" system pool along with a new system pool called "test".

```
EPP.SessionPool.systemPools=default,test

EPP.SessionPool.test.poolableClassName=com.verisign.epp.pool.EPPSession
PoolableFactory

EPP.SessionPool.test.serverName=localhost
EPP.SessionPool.test.serverPort=1700
EPP.SessionPool.test.clientId=username
EPP.SessionPool.test.password=password
EPP.SessionPool.test.absoluteTimeout=82800000
EPP.SessionPool.test.idleTimeout=480000
EPP.SessionPool.test.minIdle=0
EPP.SessionPool.test.maxIdle=-1
EPP.SessionPool.test.maxActive=10
EPP.SessionPool.test.initMaxActive=true
EPP.SessionPool.test.borrowRetries=3
EPP.SessionPool.test.maxWait=60000
EPP.SessionPool.test.timeBetweenEvictionRunsMillis=500
```

The example below illustrates the same session pool sample using the "test" system instead of the default system.

```
EPPSession theSession = null;
try {
      theSession = EPPSessionPool.getInstance().borrowObject("test");
      NSDomain theDomain = new NSDomain(theSession);
      theDomain.addDomainName("example.com");
      theDomain.setSubProductID(NSSubProduct.COM);
      EPPDomainCheckResp theResponse = theDomain.sendCheck();
      ….
```

```
}
catch (EPPCommandException ex) {
      if (ex.hasResponse()) {
            if (ex.getResponse().getResult().shouldCloseSession()) {
                  EPPSessionPool.getInstance().invalidateObject("test",
theSession);
                  theSession = null;
            }
      }
      else if (theSession != null) {
            EPPSessionPool.getInstance().invalidateObject("test",
theSession);
            theSession = null;
      }
}
finally {
      if (theSession !- null)

      EPPSessionPool.getInstance().returnObject("test",theSession);
}
```

The example below illustrates the same session pool sample using the "default" system instead of using the equavalent default system methods of EPPSessionPool.

```
EPPSession theSession = null;
try {
      theSession =
EPPSessionPool.getInstance().borrowObject(EPPSessionPool.DEFAULT);
      NSDomain theDomain = new NSDomain(theSession);
      theDomain.addDomainName("example.com");
      theDomain.setSubProductID(NSSubProduct.COM);
      EPPDomainCheckResp theResponse = theDomain.sendCheck();
      ….
}
catch (EPPCommandException ex) {
      if (ex.hasResponse()) {
            if (ex.getResponse().getResult().shouldCloseSession()) {
```

```
      EPPSessionPool.getInstance().invalidateObject(EPPSesionPool.DEFAU
LT, theSession);
                  theSession = null;
            }
      }
      else if (theSession != null) {

      EPPSessionPool.getInstance().invalidateObject(EPPSesionPool.DEFAU
LT, theSession);
            theSession = null;
      }
}
finally {
      if (theSession !- null)

      EPPSessionPool.getInstance().returnObject(EPPSessionPool.DEFAULT,
theSession);
}
```

11.1.2 Separate SSL Configuration Per Session Pool

Section 11.1.1 defines how to use multiple session pools in the SDK. The SDK provides a set of SSL configuration properties that by default will be used across all session pools. Each session pool can define its own SSL configuration properties. All of the SSL configuration properties are available as session pool properties. Please refer to "Table 6 - SDK Configuration File Parameters" for more detail of the session pool SSL properties. The SDK includes the following files to test and demonstrate the use of separate SSL configurations per session pool:

1. `bundles/verisign/epp-client.config` – SDK configuration file containing a default SSL configuration that references "../lib/keystore/client1-identity.jks" for the identity keystore and "../lib/keystore/client-truststore.jks" for the truststore, and the "test" system session pool SSL configuration that references "../lib/keystore/client2-identity.jks" for the identity keystore and "../lib/keystore/client-truststore.jks" for the truststore. The "../lib/keystore /client-truststore.jks" truststore contains the self-signed server certificate contained in "../../lib/keystore/testkeys".
2. `bundles/verisign/epp-server.config` – SDK configuration to run the Stub Server using "../../lib/keystore/testkeys" as the identity keystore and "../../lib/keystore/server-truststore.jks" as the truststore. "../../lib/keystore/server-truststore.jks" contains the certificates for "../lib/keystore/client1-identity.jks" and

"../lib/keystore/client2-identity.jks" so that both client session pools can establish a two-way SSL connection.

3. `lib/keystore/client1-identity.jks` – Identity keystore used by the first session pool ("default").
4. `lib/keystore/client2-identity.jks` – Identity keystore used by the second session pool ("test").
5. `lib/keystore /client-truststore.jks` – Truststore used by clients containing the server certificate from "lib/keystore/testkeys".
6. `lib/keystore/server-truststore.jks` – Truststore used by server containing the certificates from "lib/keystore/client1-identity.jks" and "lib/keystore/client2-identity.jks".

To run a test of using two session pools with separate SSL configurations, follow the steps below (using UNIX conventions):

1. `cd epp-verisign-${BUILD_VER}/bundles/verisign`
2. `build.sh -DEPP.ConfigFile=epp-server.config start-server`
3. In a separate Window:
   a. `cd epp-verisign-${BUILD_VER}/bundles/verisign`
   b. `build.sh -DEPP.ConfigFile=epp-client.config test-client`

11.2 Threading

EPPSession and the SDK classes that use *EPPSession* (i.e. *EPPDomain*) are not thread safe. It is recommended that each thread use its own *EPPSession* or use a session pool.

11.3 Pipelining

The *EPPSession* class supports pipelining by changing the mode from the default of *EPPSession.MODE_SYNC* to *EPPSession.MODE_ASYNC*. When the mode is set to *EPPSession.MODE_ASYNC* calling any of the *send* methods (i.e. *EPPDomain.sendCreate() : EPPDomainCreateResp*) will return *null* and the *EPPSession.readResponse() : EPPResponse* method needs to be called to asynchronously read the responses.

If Session Pooling, as described in section 11.1, is being used along with Pipelining, the mode must be set to MODE_SYNC when returning sessions back to the pool. Commands like login, logout, and hello are synchronous, so sessions in the pool must be set to MODE_SYNC. The following code shows using a session pool and sending pipelining domain check commands:

```
EPPSession theSession = null;
try {
```

```
      theSession = EPPSessionPool.getInstance().borrowObject();


      if (!theSession.isModeSupported(EPPSession.MODE_ASYNC) {
            throw new Exception("EPPSession does NOT support
MODE_ASYNC");
      }

      theSession.setMode(EPPSession.MODE_ASYNC);
      NSDomain theDomain = new NSDomain(theSession);
      // Pipeline 10 domain check commands
      for (int i = 0; i < 10; i++) {
         theDomain.addDomainName("example" + i + ".com");
         // It's good to set the client trans id for mapping responses.
         theDomain.setTransId("ASYNC-DOMAIN-CHECK-" + i);
         theDomain.setSubProductID(NSSubProduct.COM);
         // The response is null with MODE_ASYNC
         theDomain.sendCheck();
      }
      // Get the domain check responses asynchronously
      EPPDomainCheckResp theResponse;
      for (int i = 0; i < 10; i++) {
         theResponse = (EPPDomainCheckResp) theSession.readResponse();
         System.out.println("Received async domain check " + i + ": " +
theResponse);
      }
}
catch (EPPCommandException ex) {
      if (ex.hasResponse()) {
            if (ex.getResponse().getResult().shouldCloseSession()) {
               theSession.setMode(EPPSession.MODE_SYNC);

EPPSessionPool.getInstance().invalidateObject(theSession);
               theSession = null;
            }
      }
      else if (theSession != null) {
            theSession.setMode(EPPSession.MODE_SYNC);
            EPPSessionPool.getInstance().invalidateObject(theSession);
```

```
            theSession = null;
      }
}
finally {
      if (theSession != null) {
            theSession.setMode(EPPSession.MODE_SYNC);
            EPPSessionPool.getInstance().returnObject(theSession);
      }
}
```

12. Poll Messages

The servers can send different kinds EPP poll messages. “Table 12 - Poll Message System Mapping” includes all of the possible EPP poll messages with a mapping of the systems that support them.

Table 12 - Poll Message System Mapping

Poll Message	Namestore		NAME	Description
com.verisign.epp.codec.domain.EPPDomainTransferResp	X		X	Used for transfer notifications for the domain transfer actions: request, cancelled, approved, rejected, and auto approved.
com.verisign.epp.codec.domain.EPPDomainPendActionMsg	X			Used for domain registration pending action notifications.
com.verisign.epp.codec.domain.EPPDomainPendActionMsg with com.verisign.epp.codec.launch.EPPLaunchInfData extension	X			Used to notify the result of a launch application.
com.verisign.epp.codec.contact.EPPContactTransferResp	X		X	Used for transfer notifications for the contact transfer actions: request, cancelled, approved, rejected, and auto

				approved.
com.verisign.epp.codec.emailFwd.EPPEmailFwdTransferResp			X	Used for transfer notifications for the email forwarding transfer actions: request, cancelled, approved, rejected, and auto approved.
com.verisign.epp.codec.defReg.EPPDefRegTransferResp			X	Used for transfer notifications for the defensive registration transfer actions: request, cancelled, approved, rejected, and auto approved.
com.verisign.epp.codec.nameWatch.EPPNameWatchTransferResp			X	Used for transfer notifications for the namewatch transfer actions: request, cancelled, approved, rejected, and auto approved.
com.verisign.epp.codec.lowbalancepoll.EPPLowBalancePollResponse	X			Used for account low balance notifications.
com.verisign.epp.codec.rgppoll.EPPRgpPollResponse	X		X	Used for Registry Grace Period (RGP) pending restore notifications.

The test *com.verisign.epp.namestore.interface.NSPollTst* provides a sample of processing the some of the poll messages. The following is a portion of the *com.verisign.epp.namestore.interfaces.NSPollTst*.

```
// Transfer notification
if (theResponse instanceof EPPDomainTransferResp) {
  System.out.println("testPoll: Got transfer notification");

  EPPDomainTransferResp theMsg = (EPPDomainTransferResp) theResponse;

  String theStatus = theMsg.getTransferStatus();

  // Transfer request?
  if (theStatus.equals(EPPDomainTransferResp.TRANSFER_PENDING)) {
          System.out.println("testPoll: Got transfer request
notification");
  } // Transfer approved?
  else if
(theStatus.equals(EPPDomainTransferResp.TRANSFER_CLIENT_APPROVED)) {
          System.out.println("testPoll: Got transfer approve
notification");
  } // Transfer cancelled?
  else if
(theStatus.equals(EPPDomainTransferResp.TRANSFER_CLIENT_CANCELLED)) {
          System.out.println("testPoll: Got transfer cancelled
notification");
  } // Transfer rejected?
  else if
(theStatus.equals(EPPDomainTransferResp.TRANSFER_CLIENT_REJECTED)) {
          System.out.println("testPoll: Got transfer rejected
notification");
  } // Tranfer auto approved?
  else if
(theStatus.equals(EPPDomainTransferResp.TRANSFER_SERVER_APPROVED)) {
          System.out.println("testPoll: Got transfer auto approve
notification");
  } // Tranfer auto cancelled?
  else if
(theStatus.equals(EPPDomainTransferResp.TRANSFER_SERVER_CANCELLED)) {
          System.out.println("testPoll: Got transfer auto cancelled
notification");
  }
  else {
          System.out.println("testPoll: Unknown transfer status [" +
theStatus + "]");               }

} // low balance notification
else if (theResponse instanceof EPPLowBalancePollResponse) {
  System.out.println("testPoll: Got low balance notification");
} // RGP notification
else if (theResponse instanceof EPPRgpPollResponse) {
  System.out.println("testPoll: Got RGP notification");
} // Pending action notification
else if (theResponse instanceof
com.verisign.epp.codec.domain.EPPDomainPendActionMsg) {
  System.out.println("testPoll: Got domain pending action
notification");
} // Unknown general message
else {
  System.out.println("testPoll: Got general notification");
```

```
}
```

13. Mappings and Extensions

This section provides a description of each of the Extensbible Provisioning Protocol (EPP) Mappings and Extensions supported by the Verisign Bundle EPP SDK that includes:

1. Definition of the files (i.e. library, schema)
2. Description of the interface classes, including the pre-conditions, the post-conditions, the exceptions, the EPP status codes, and sample code of each of the action methods.

Each of the Verisign systems support a different set of mappings and extensions included in the Verisign Bundle EPP SDK. "Table 13 - Mapping and Extension System Support" shows the mappings and extensions supported by the three Verisign EPP systems (Namestore Platform - Namestore, COM/NET Shared Registry System - SRS, and Dotname Registry System - NAME) along with a short description. The name of the Mapping and Extension corresponds to the directory name included in the source distribution.

Table 13 - Mapping and Extension System Support

Mapping / Extension	Namestore	SRS	NAME	Description
coa		X		Client Object Attribute Extension to allow the creation and maintenance of key/value pairs associated with Objects.
contact	X	X	X	Standard IETF Contact Mapping
defreg			X	Defensive Registration Mapping
domain	X	X	X	Standard IETF

				Domain Mapping
emailfwd			X	Email Forwarding Mapping
host	X	X	X	Standard IETF Host Mapping
idn	X	X	X	Extension for the Internationa l Domain Name Tag required for IDN domain creates.
jobsContact	X			Extension for .JOBS specific contact attributes
launch	X*	X*		Standard IETF Launch Phase EPP Extension
namestoreext	X	X		Namestore Extension needed to specify the target sub-product for a command.
namewatch			X	NameWatc h Mapping
nsfinance	X	X		Low Balance Poll Mapping and Balance Mapping
persreg			X	Personal Registration Extension

premiumdomain	X			Extensions to the domain check command, domain check response and domain update command to support premium features.
registry	X	X*	X*	Registry Mapping
relateddomain		X*		Related Domain Extension
rgp	X	X	X	Standard IETF Redemption Grace Period Extension and RGP poll message.
secdns	X	X	X	Domain Name System Security Extension to provide additional features required for the provisioning of DNS
suggestion	X			Name Suggestion Mapping
sync	X	X	X*	Extension to support

				the domain sync command defined in the ConsoliDate Mapping
whois	X	X		Extension to the domain info command and domain info response to specify if whois information is desired and the whois attributes, respectively. The whois attributes include the registrar name, the whois server name, the registrar referral URL, and the IRIS server name.
whowas	X			WhoWas Mapping

* = future

"Table 14 – Mapping and Extension Directory Standard Files" defines the standard set of files that reside in the mapping and extension directories defined in "Table 13 - Mapping and Extension System Support". The mappings and extensions can be worked on in isolation by using the files in the directories, but most of the time the Verisign bundle directory should be used, which is the bundles/verisign directory.

Table 14 – Mapping and Extension Directory Standard Files

Directory	Description
build.bat	This is a Windows batch file that executes Ant to compile and execute the test programs.
build.sh	This is a Bash shell script that executes Ant to compile and execute the test programs.
build.xml	This is the Ant XML configuration file.
epp.config	This is a sample EPP configuration file. See section 6.1 for information on configuring the SDK.
common-targets.xml	Common Ant targets used bye both the source and binary distributions.
logconfig.xml	Log4J XML configuration file.

"Table 15 - Mapping and Extension CODEC Packages" defines the CODEC Java packages associated with each of the mappings and extensions along with a description of how they CODEC packages are configured in the SDK.

Table 15 - Mapping and Extension CODEC Packages

Mapping / Extension	Package	Description
coa	com.verisign.epp.codec.coaext	The COA Extension Encoder/Decoder package. All of the detail of encoding and decoding the COA Extension is in this package. The EPPCoaExtFactory must be added to the EPP.CmdRspExtensions configuration parameter using the full package and class name.
contact	com.verisign.epp.codec.contact	The standard EPP Contact Encoder/Decoder package. All of the detail of encoding and decoding the EPP Contact messages are in this package. The EPPContactMapFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.

defreg	com.verisign.epp.codec.defreg	The EPP Defensive Registration Encoder/Decoder package. All the detail of encoding and decoding the EPP Defensive Registration message are in this package. The EPPDefRegMapFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.
domain	com.verisign.epp.codec.domain	The standard EPP Domain Encoder/Decoder package. All of the detail of encoding and decoding the EPP Domain messages are in this package. The EPPDomainMapFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.
emailfwd	com.verisign.epp.codec.emailfwd	The EPP Email Forwarding Encoder/Decoder package. All the detail of encoding and decoding the EPP Email Forwarding message are in this package. The EPPEmailFwdMapFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.
host	com.verisign.epp.codec.host	The standard EPP Host Encoder/Decoder package. All of the detail of encoding and decoding the EPP Host messages are in this package. The EPPHostMapFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.
idn	com.verisign.epp.codec.idnext	The IDN Tag Extension Encoder/Decoder package. All of the detail of encoding and decoding the IDN Tag Extension is in this package. The EPPIdnExtFactory must be added to the EPP.CmdRspExtensions configuration parameter using the full package and class name.
jobsContact	com.verisign.epp.codec.jobscontact	The .JOBS Contact Extension Encoder/Decoder package. All of the detail of encoding and decoding the .JOBS Contact Extension is in this package. The EPPJobsContactExtFactory must be added to the EPP.CmdRspExtensions configuration parameter using the full package and class name.
launch	com.verisign.epp.codec.laun	The standard Launch Phase Extension Encoder/Decoder

	ch	package. All of the detail of encoding and decoding the Launch Phase Extension is in this package. The EPPLaunchExtFactory must be added to the EPP.CmdRspExtensions configuration parameter using the full package and class name. The EPPLaunchMapFactory must be added to the EPP. MapFactories configuration parameter using the full package and class name.
namestoreext	com.verisign.epp.codec.namestoreext	NamestoreExt Extension Encoder/Decoder package. All of the detail of encoding and decoding the EPP NamestoreExt messages are in this package. The EPPNamestoreExtExtFactory must be added to the EPP.CmdRspExtensions configuration parameter using the full package and class name.
namewatch	com.verisign.epp.codec.namewatch	The EPP NameWatch Encoder/Decoder package. All the detail of encoding and decoding the EPP NameWatch message are in this package. The EPPNameWatchMapFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.
nsfinance	com.verisign.epp.codec.balance	The EPP Balance Encoder/Decoder package. All the detail of encoding and decoding the EPP Balance message are in this package. The EPPBalanceMapFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.
nsfinance	com.verisign.epp.codec.lowbalancepoll	The EPP Low Balance Poll Encoder/Decoder package. All the detail of encoding and decoding the EPP Low Balance Poll message are in this package. The EPPLowBalancePollMapFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.
persreg	com.verisign.epp.codec.persreg	The Personal Registration Encoder/Decoder package. All of the detail of encoding and decoding the Personal Registration Extension is in this package. The EPPPersRegExtFactory must be added to the

		EPP.CmdRspExtensions configuration parameter using the full package and class name.
premiumdomain	com.verisign.epp.codec.premiumdomain	The Premium Domain Extension Encoder/Decoder package. All of the detail of encoding and decoding the Premium Domain Extension is in this package. The EPPPremiumDomainExtFactory must be added to the EPP.CmdRspExtensions configuration parameter using the full package and class name.
registry	com.verisign.epp.codec.registry	The EPP Registry Encoder/Decoder package. All the detail of encoding and decoding the EPP Balance messages are in this package. The EPPRegistryMapFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.
relateddomain	com.verisign.epp.codec.relateddomainext	The EPP Related Domain Encoder/Decoder package. All the detail of encoding and deconding the EPP Related Domain Extension are in this package. The EPPRelatedDomainExtFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.
rgp	com.verisign.epp.codec.rgpext	The RGP Extension Encoder/Decoder package. All of the detail of encoding and decoding the RGP extension is in this package. The EPPRgpExtFactory must be added to the EPP.CmdRspExtensions configuration parameter using the full package and class name.
rgp	com.verisign.epp.codec.rgppoll	The RGP Poll Encoder/Decoder package. All of the detail of encoding and decoding the RGP poll message is in this package. The EPPRgpPollMapFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.
secdns	com.verisign.epp.codec.secdnsext	The SecDNS Extension Encoder/Decoder package. All of the detail of encoding and decoding the SecDNS Extension is in this package.

		The EPPSecDNSExtFactory must be added to the EPP.CmdRspExtensions configuration parameter using the full package and class name.
suggestion	com.verisign.epp.codec.suggestion	The EPP Name Suggestion Encoder/Decoder package. All the detail of encoding and decoding the EPP Name Suggestion message are in this package. The EPPSuggestionMapFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.
sync	com.verisign.epp.codec.syncext	The Sync Extension Encoder/Decoder package. All of the detail of encoding and decoding the Sync extension is in this package. The EPPSyncExtFactory must be added to the EPP.CmdRspExtensions configuration parameter using the full package and class name.
whois	com.verisign.epp.codec.whois	The Whois Extension Encoder/Decoder package. All of the detail of encoding and decoding the Whois Extension is in this package. The EPPWhoisExtFactory must be added to the EPP.CmdRspExtensions configuration parameter using the full package and class name.
whowas	com.verisign.epp.codec.whowas	The EPP WhoWas Encoder/Decoder package. All the detail of encoding and decoding the EPP WhoWas message are in this package. The EPPWhoWasMapFactory must be added to the EPP.MapFactories configuration parameter using the full package and class name.

The EPP Mappings and Extensions are defined using XML schema files. These files are located in the ***schemas*** directory of *epp-verisign-bundle-{$BUILD_VER}.jar*. Extract the *epp-verisign-bundle-{$BUILD_VER}.jar* in the binary distribution to view the schema files or look to the location column defined in "Table 16 – Mapping and Extension XML Schema Files" to view the schema files in the source distribution. The *EPPSchemaParsingEntityResolver* look for the schemas in the *schemas* folder of the classpath.

Table 16 – Mapping and Extension XML Schema Files

File Name	Location	Description
coa-1.0.xsd	coa/schemas	Client Object Attribute (COA) XML schema
contact-1.0.xsd	contact/schemas	Standard EPP Contact XML Schema.
defreg-1.0.xsd	defreg/schemas	Defensive Registration XML Schema.
domain-1.0.xsd	domain/schemas	Standard EPP Domain XML Schema.
emailfwd-1.0.xsd	emailfwd/schemas	Email Forwarding XML Schema.
host-1.0.xsd	host/schemas	Standard EPP Host XML Schema.
idnLang-1.0.xsd	idn/schemas	IDN Language Tag Extension XML Schema.
jobsContacts-1.0.xsd	jobsContact/schemas	.JOBS Contact Extension XML Schema.
namestoreExt-1.0.xsd	namestoreext/schemas	NamestoreExt XML Schema.
launch-1.0.xsd mark-1.0.xsd signedMark-1.0.xsd xmldsig-core-schema.xsd	launch/schemas	Launch Phase EPP Extension XML schemas.
namestoreExt-1.0.xsd	namestoreext/schemas	Namestore Extension XML Schema.
namewatch-1.0.xsd	namewatch/schemas	NameWatch XML Schema.
balance-1.0.xsd lowbalance-poll-1.0.xsd	nsfinance/schemas	Namestore Finance (Balance and Low Balance Poll) XML schemas.
persReg-1.0.xsd	persreg/schemas	Personal Registration Extension XML Schema.
relatedDomain-1.0.xsd	relateddomain/schemas	Related Domain Extension XML Schema.
rgp-1.0.xsd rgp-poll-1.0.xsd	rgp/schemas	Standard EPP Domain Registry Grace Period Mapping XML Schema and EPP Registry Grace Period Poll Mapping XML Schema.
sync-1.0.xsd	sync/schemas	Standard EPP ConsoliDate Mapping XML Schema.

secDNS-1.0.xsd secDNS-1.1.xsd	secdns/schemas	Domain Name System Security Extension XML Schemas (1.0 for RFC 4310 and 1.1 for RFC 5910).
suggestion-1.1.xsd	suggestion/schemas	Name Suggestion XML Schema.
sync-1.0.xsd	sync/schemas	ConsoliDate (Sync) XML Schema.
whoisInf-1.0.xsd	whois/schemas	Whois Info Extension XML Schema.
whowas-1.0.xsd	whowas/schemas	WhoWas XML Schema.

13.4 Namestore Client Interfaces

The Client Interfaces package *com.verisign.epp.namestore.interfaces* consists of a set of high-level client interface classes for setting the properties of commands and sending those commands to an EPP server using an established EPP Session. Generally, there is one Client Interface class per supported EPP mapping and a set of support classes for attaching extensions to the commands. A set of higher-level utility Client Interface classes and support classes have been defined to make setting of the extensions easier, which include:

- *com.verisign.epp.namestore.interfaces.NSDomain* – Extension of the *com.verisign.epp.namestore.interfaces.EPPDomain* Client Interface that adds methods for RGP (restore request and restore report), sync, DNSSEC, Namestore Extension, and the Whois Info Extension. This interface is defined in section 13.5.1.
- *com.verisign.epp.namestore.interfaces.NSHost* – Extension of the *com.verisign.epp.namestore.interfaces.EPPHost* Client Interface that adds a method for the Namestore Extension. This interface is defined in section 13.5.2.
- *com.verisign.epp.namestore.interfaces.NSContact* - Extension of the *com.verisign.epp.namestore.interfaces.EPPContact* Client Interface that adds a method for the Namestore Extension. This interface is defined in section 13.5.3.
- *com.verisign.epp.namestore.interfaces.NSSubProduct* – Set of constants that can be used for the SubProductID in the Namestore Extension. For new TLD's, the TLD name can be used for the SubProductID.

13.5 Mappings

13.5.1 Domain Mapping (NSDomain Interface)

The Domain Mapping is first handled by the *com.verisign.epp.interfaces.EPPDomain* interface class, which is extended by the *com.verisign.epp.namestore.interfaces.NSDomain* interface to add support for common extensions. Convenience methods are provided in *NSDomain* to make managing domains easier. For example, the method *setSubProductID* is provided instead of having to manually add the *EPPNamestoreExtNamestoreExt* with each action.

The *NSDomain* interface has the following relevant methods:

Return Value	Parameters
	`NSDomain(EPPSession aNewSession)` This is the constructor method and it requires an EPP session object to be passed that has been authenticated (e.g. logged in).
`void`	`addDomainName(java.lang.String)` This method adds a domain name to the object for use with the action methods.
`void`	`addExtension(EPPCodecComponent)` Adds a extension to be sent with the command.
`void`	`addHostName(java.lang.String)` Adds a host name to be associated with the domain.
`void`	`addContact(String, String)` Adds contact for call to sendCreate() or sendUpdate().
`EPPResponse`	`getResponse()` This method returns the EPP Response for the last executed command on the interface.
`Date`	`getExpirationDate()` Returns the expiration date of the domain.
`Vector`	`getExtensions()` Gets all set command extensions.
`Boolean`	`hasExtension(Class)` Does a command extension exist with the specified Class.
`EPPResponse`	`sendCheck()` This method sends the domain check command to the server.
`EPPResponse`	`sendCreate()` This method sends the domain create command to the server.
`EPPResponse`	`sendDelete()` This method sends the domain delete command to the server.
`EPPResponse`	`sendInfo()` This method sends the domain info command to the server.
`EPPResponse`	`sendUpdate()` This method sends the domain update command to the server.

EPPResponse	sendRenew() This method sends the domain renewal command to the server.
EPPResponse	sendTransfer() This method sends the domain transfer command to the server.
EPPResponse	sendRestoreRequest() This method sends the Registry Grace Period (RGP) restore request command.
EPPResponse	sendRestoreReport() This method sends the Registry Grace Period (RGP) restore report command.
EPPResponse	sendSync() This method sends the ConsoliDate sync command.
void	setTransferOpCode(java.lang.String) Sets the operation type for future transfer commands. Valid values are "TRANSFER_REQUEST", "TRANSFER_APPROVE" or "TRANSFER_REJECT"
void	setTransId(java.lang.String) This methods sets the client transaction identifier.
void	setDay(int) Sets the target day for a call to sendSync.
void	setMonth(int) Sets the target month using the Calendar month constants (Calendar.JANUARY to Calendar.DECEMBER) for a call to sendSync.
void	setIDNLangTag(String) Sets the IDN language tag for a call to sendCreate() of an IDN domain.
void	setSubProductID(String) Sets the NameStore sub-product id associated with the action method. The NSSubProduct class includes a set of constant that can be used as the setSubProductID argument value.
void	setPeriodLength(int) Sets the registration period for a create, renew, or transfer command. The default value is 1 year.
void	setPeriodUnit(String) Sets the unit of the registration period as defined by setPeriodLength(int) according to the EPP specification. The servers currently only support the default value of "y" for years.
void	setExpirationDate(Date) Sets the current expiration date for a call to sendRenew().
void	setUpdateAttrib(…) Sets attribute to update for a call to sendUpdate().
void	setAuthString(String) Sets authorization string for a call to sendCreate() , sendTransfer(), or sendInfo()
void	setRegistrant(String) Sets the domain registrant for a call to sendCreate() or sendUpdate().
void	setHosts(String)

	Sets the desired level of host information using one of the HOSTS_ constant values for a call to sendInfo(). The possible values include: HOSTS_ALL – Get information on all hosts (delegated and subordinate). This is the default value. HOSTS_DELEGATED – Get information on just the delegated hosts. HOSTS_SUBORDINATE – Get information on just the subordinate hosts.
void	`setWhoisInfo(boolean)` Sets the flag that determines if the whois info extension should be included in the response to sendInfo(). The target server needs to support the "Extensible Provisioning Protocol Extension Mapping: Whois Info" to set this flag.
void	`setSecDNSCreate(List<EPPSecDNSExtDsData>)` Sets the list of <`EPPSecDNSExtDsData` > instances in order to create delegation signer information.
void	`setSecDNSUpdateForAdd(List<EPPSecDNSExtDsData>, boolean)` Sets the list of <`EPPSecDNSExtDsData` > instances in order to add delegation signer information. It also supports setting of an urgent attribute in the SecDNS update extension which determines the priority of the request.
void	`setSecDNSUpdateForChg(List<EPPSecDNSExtDsData>, boolean)` Sets the list of <`EPPSecDNSExtDsData` > instances in order to change delegation signer information. It also supports setting of an urgent attribute in the SecDNS update extension which determines the priority of the request.
void	`setSecDNSUpdateForRem(List<Integer>, boolean)` Sets the list of <Integer> instances (i.e keytags of DS records) in order to remove delegation signer information. It also supports setting of an urgent attribute in the SecDNS update extension which determines the priority of the request.
void	`setCoaCreate(List<EPPCoaExtAttr>)` Sets the list of `<EPPCoaExtAttr>` instances (which in turn each specify a single key/value pair) to be associated with the object being created.
void	`setCoaUpdateForPut(List<EPPCoaExtAttr>)` Sets the list of `<EPPCoaExtAttr>` instances (which in turn each specify a single key/value pair) to be associated with the object being updated. If the object already has a value associated with the key, this value will be overwritten with the value specified.
void	`setCoaUpdateForRem(List<EPPCoaExtKey>)` Sets the list of `<EPPCoaExtKey>` instances specifying the key portions of existing key/value pairs to be removed from the object being updated.

Action methods are prefixed with *send* and are shown in bold in the previous table. Each action method has a different set of pre-conditions defining what attributes need to be set

with the setter methods. Each action method will return a response from the server and will throw an exception if any error occurs. If the exception is associated with an error response from the server, then the response can be retrieved from the exception with a call to *getResponse()*. The following sections describe and provide sample code for the action methods.

13.5.1.1 NSDomain() method

The *NSDomain* constructor requires that an authenticated *EPPSession* object be passed upon creation. Once created, the *NSDomain* object can perform multiple functions without re-initializing the *EPPSession* object. For example, you can use the same initialized *NSDomain* object to create and info a domain with the *sendCreate()* and *sendInfo()* commands.

13.5.1.1.1 Pre-Conditions

An authenticated session has been successfully established with an *EPPSession*.

13.5.1.1.2 Post-Conditions

The *NSDomain* instance is ready for the execution of one or more operations.

13.5.1.1.3 Exceptions

None

13.5.1.1.4 Sample Code

The following example shows the steps of initializing an *EPPSession*, then using the *EPPSession* to initialize the *NSDomain* interface.

```
EPPSession session = new EPPSession();

// optional
session.setTransId("ABC-12345-XYZ");
session.setVersion("1.0");
session.setLang("en");

// required
session.setClientID("ClientXID");
session.setPassword("ClientXPass");

try {
  session.initSession();
}
catch (EPPCommandException ex) {
  ex.printStackTrace();
  System.exit(1);
}

NSDomain domain = new NSDomain(session);
```

13.5.1.2 sendCheck() method

The *sendCheck()* method sends the EPP check domain command to check the allowable flag for one or more domains.

13.5.1.2.1 Pre-Conditions

The following list shows the accessor methods for the required attributes:

- addDomainName(String) – add a domain name to the object in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.

The following list shows the the accessor methods for the optional attributes:

- addExtension(EPPCodecComponent) - Sets the extension, if any (Ex. EPPPremiumDomainCheck for Premium Domain extension)

13.5.1.2.2 Post-Conditions

On success, an *EPPDomainCheckResp* is returned, with the following attributes:

- Results – the check results are returned in a vector containing one or more *EPPDomainCheckResult* objects.

On success, an EPPDomainCheckResp is returned, with the following optional attributes based on authorization level and command attributes set:

- com.verisign.epp.codec.premiumdomain.EPPPremiumDomainCheckResp extension containing premium information. This is available via the getExtension(Class) method.

13.5.1.2.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the server response, then *getResponse()* will return *null*.

13.5.1.2.4 Sample Code

The following example shows the steps of performing a check on domains through the use of the *NSDomain* client interface and the *sendCheck()* method:

```
try {
  // Check single domain name
  domain.setTransId("ABC-12345-XYZ");
  domain.addDomainName("mydomain.tv");
  domain.setSubProductID(NSSubProduct.TV);

  // optionally set the premium extension
  EPPPremiumDomainCheck extension = new EPPPremiumDomainCheck( true );
  domain.addExtension( extension );

  response = domain.sendCheck();

  // Correct number of results?
  Assert.assertEquals(1, response.getCheckResults().size());

  // For each result
  for (int i = 0; i < response.getCheckResults().size(); i++) {
         EPPDomainCheckResult currResult = (EPPDomainCheckResult)
                response.getCheckResults().elementAt(i);

         if (currResult.isAvailable()) {
                System.out.println("domainCheck: Domain " +
                       currResult.getName() + " is available");
         } else {
                System.out.println("domainCheck: Domain " +
                       currResult.getName() + " is not available");
         }
  }

  if (response.hasExtension(EPPPremiumDomainCheckResp.class)) {
         EPPPremiumDomainCheckResp resp =
                (EPPPremiumDomainCheckResp)
          response.getExtension(EPPPremiumDomainCheckResp.class);

     // For each result
     for (int i = 0; i < resp.getCheckResults().size(); i++) {
         EPPPremiumDomainCheckResult currResult =
          (EPPPremiumDomainCheckResult) resp
                       .getCheckResults().elementAt(i);

         if (currResult.isPremium()) {
                System.out.println("domainCheck: Domain "
                       + currResult.getName() + " is premium");
                if(currResult.getPrice() != null) {
                       System.out.println("domainCheck: Premium price
                                is $" + currResult.getPrice());
                       System.out.println("domainCheck: Premium
                                renewal price is $" +
                                       currResult.getRenewalPrice());
                }
         }
         else {
                System.out.println("domainCheck: Domain "
                       + currResult.getName() + " is not premium");
         }
     }
  }
```

```
} // end of try block
catch (EPPCommandException cmdException) {

  // do something to handle the exception
  handleException(cmdException);

} // end of catch block
```

13.5.1.3 sendCreate() method

The *sendCreate()* method sends the EPP create domain command to the server.

13.5.1.3.1 Pre-Conditions

This method requires that several attributes be set prior to execution. The following list shows the accessor methods for the required attributes:

- addDomainName(String) – add the domain name to the object in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.

The following list shows the the accessor methods for the optional attributes:

- setPeriodLength(int) – Registration period for the domain create command. The default value is 1 year. Valid values are from 1 to 10.
- setIDNLangTag(String) – Language tag associated with IDN domain create command. This is required if an IDN domain name is specified.
- setSecDNSCreate(List<*EPPSecDNSExtDsData*>) – Sets the list of <*EPPSecDNSExtDsData*> instances in order to create delegation signer (DS) information.
- setCoaCreate(List<*EPPCoaExtAttr*>) - Sets the list of <*EPPCoaExtAttr*> instances (which in turn each specify a single key/value pair) to be associated with the object being created.

13.5.1.3.2 Post-Conditions

On success, an *EPPDomainCreateResp* is returned, with the following attributes:

- Name – the name of the domain being created.
- CreationDate – the date that the domain was created.
- ExpirationDate – the date that the domain is due to be renewed.

13.5.1.3.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the server response, then *getResponse()* will return *null*.

13.5.1.3.4 Sample Code

The following example shows the steps of performing a create of a domain through the use of the *NSDomain* client interface and the *sendCreate()* method:

```
try {

  domain.setTransId("ABC-12345-XYZ");

  domain.addDomainName("example.tv");
  domain.setSubProductID(NSSubProduct.TV);
  domain.addHostName1("a.b.com");
  domain.addHostName2("c.d.com");
  domain.setPeriodUnit(2);

        // -- Add Delegation Signer Information
  // instantiate a secDNS:keyData object
  EPPSecDNSExtKeyData keyData = new EPPSecDNSExtKeyData();
  keyData.setFlags( EPPSecDNSExtKeyData.FLAGS_ZONE_KEY_SEP );
  keyData.setProtocol( EPPSecDNSExtKeyData.DEFAULT_PROTOCOL );
  keyData.setAlg( EPPSecDNSAlgorithm.RSASHA1 );
  keyData.setPubKey( "AQPmsXk3Q1ngNSzsH1lrX63mRIhtwkkK+5Zj"
                + "vxykBCV1NYne83+8RXkBElGb/YJ1n4TacMUs"
                + "poZap7caJj7MdOaADKmzB2ci0vwpubNyW0t2"
                + "AnaQqpy1ce+07Y8RkbTC6xCeEw1UQZ73PzIO"
                + "OvJDdjwPxWaO9F7zSxnGpGt0WtuItQ==" );

  // instantiate another secDNS:keyData object
  EPPSecDNSExtKeyData keyData2 = new EPPSecDNSExtKeyData(
                EPPSecDNSExtKeyData.FLAGS_ZONE_KEY_SEP,
                EPPSecDNSExtKeyData.DEFAULT_PROTOCOL,
                EPPSecDNSAlgorithm.RSASHA1,
                "AQOxXpFbRp7+zPBoTt6zL7Af0aEKzpS4JbVB"
                + "5ofk5E5HpXuUmU+Hnt9hm2kMph6LZdEEL142"
                + "nq0HrgiETFCsN/YM4Zn+meRkELLpCG93Cu/H"
                + "hwvxfaZenUAAA6Vb9FwXQ1EMYRW05K/gh2Ge"
                + "w5Sk/0o6Ev7DKG2YiDJYA17QsaZtFw==" );

  // instantiate a secDNS:dsData object
  EPPSecDNSExtDsData dsData = new EPPSecDNSExtDsData();
  dsData.setKeyTag( 34095 );
  dsData.setAlg( EPPSecDNSAlgorithm.RSASHA1 );
  dsData.setDigestType( EPPSecDNSExtDsData.SHA1_DIGEST_TYPE );
  dsData.setDigest( "6BD4FFFF11566D6E6A5BA44ED0018797564AA289" );
  dsData.setMaxSigLife( 604800 );
  dsData.setKeyData( keyData );

  // instantiate another secDNS:dsData object
  EPPSecDNSExtDsData dsData2 = new EPPSecDNSExtDsData( 10563,
                        EPPSecDNSAlgorithm.RSASHA1,
                        EPPSecDNSExtDsData.SHA1_DIGEST_TYPE,
                        "9C20674BFF957211D129B0DFE9410AF753559D4B",
                        604800, keyData2 );

  // dsData Records
  List dsDataRecords = new ArrayList();
  dsDataRecords.add( dsData );
  dsDataRecords.add( dsData2 );

        // Call only if server supports creating delegation signer
        // information
```

```
  theDomain.setSecDNSCreate( dsDataRecords );

  response = (EPPDomainCreateResp) domain.sendCreate();

  //-- Output response attributes using accessors
  System.out.println("domainCreate: name = " +
          response.getName());

  System.out.println("domainCreate: CreationDate = " +
          response.getCreationDate());

  System.out.println("domainCreate: ExpirationDate = " +
          response.getExpirationDate());


} // end of try block
catch (EPPCommandException cmdException) {

  // do something to handle the exception
  handleException(cmdException);

} // end of catch block
```

13.5.1.4 sendDelete() method

The *sendDelete()* method sends the EPP delete domain command to the server.

13.5.1.4.1 Pre-Conditions

This method expects that the domain object be populated with the unique identifier of the domain to be deleted. The following method must be called to populate the domain identifier:

- addDomainName(String) – call the add domain name method passing the unique domain name in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.

13.5.1.4.2 Post-Conditions

On success, an *EPPResponse* is returned, with no attributes.

13.5.1.4.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the

exception is thrown before reading the server response, then *getResponse()* will return *null*.

13.5.1.4.4 Sample Code

The following example shows the steps of performing a delete of an CTLD domain through the use of the *NSDomain* client interface and the *sendDelete()* method:

```
try {

  domain.setTransId("ABC-12345-XYZ");
  domain.addDomainName("abcdefdg.tv");
  domain.setSubProductID(NSSubProduct.TV);

  response = (EPPResponse) domain.sendDelete();

} // end of try block
catch (EPPCommandException cmdException) {

  // do something to handle the exception
  handleException(cmdException);

} // end of catch block
```

13.5.1.5 sendInfo() method

The *sendInfo()* method sends the EPP info domain command to the server.

13.5.1.5.1 Pre-Conditions

This method expects that the domain object be populated with the single domain name of the domain to be queried. The following method must be called to populate the domain identifier:

- addDomainName(String) – call the add domain name method passing the unique domain name in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.

The following list shows the the accessor methods for the optional attributes:

- setAuthString(String) – sets the authorization string for getting full domain information if not sponsoring Registrar.
- setHosts(String) – Sets the desired level of host information. Use one of the *HOSTS_* constant values:

HOSTS_ALL – Get information on all hosts (delegated and subordinate). This is the default value.
HOSTS_DELEGATED – Get information on just the delegated hosts.
HOSTS_SUBORDINATE – Get information on just the subordinate hosts.

- setWhoisInfo(boolean) – Sets the flag for the desire for the whois information defined in the *com.verisign.epp.codec.whois.EPPWhoisInfData* class.

13.5.1.5.2 Post-Conditions

On success, an *EPPDomainInfoResp* is returned, with the following required attributes:

- name – the fully qualified domain name
- roid – the domain roid
- clientId – identifier of sponsoring client

On success, an *EPPDomainInfoResp* is returned, with the following optional attributes based on authorization level and command attributes set:

- expirationDate - date and time identifying the end of the domain's registration period
- createdBy – identifier of the client that created the domain
- createdDate - date and time of domain creation
- lastUpdatedBy - identifier of the client that last updated the domain
- lastUpdatedDate - date and time of the most recent domain modification
- lastTransferDate - date and time of the most recent successful transfer
- authInfo - authorization information
- hosts - names of host objects
- nses - names of name server objects
- status - one or more current status descriptors
- *com.verisign.epp.codec.whois.EPPWhoisInfData* extension contains the additional whois information. This is available via the *getExtension(Class)* method and will only be set if the *EPPWhoisInf* command extension was included with a flag value of *true*, which is authomatically set using the *setWhoisInfo(boolean)* method.
- *com.verisign.epp.codec.secdnsext.EPPSecDNSExtInfData* extension contains the Delegation Signer (DS) information. This is available via the *getExtension(Class)* method.

- *com.verisign.epp.codec.coaext.EPPCoaExtInfData* extension contains the Client Object Attribute (COA) information. This is available via the *getExtension(Class)* method.

13.5.1.5.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the server response, then *getResponse()* will return *null*.

13.5.1.5.4 Sample Code

The following example shows the steps of querying an CTLD domain through the use of the *NSDomain* client interface and the *sendInfo()* method:

```
try {

  domain.setTransId("ABC-12345-XYZ");
  domain.addDomainName("abcdefg.tv");
  domain.setSubProductID(NSSubProduct.TV);
  domain.setHosts(EPPDomain.HOSTS_ALL);
  domain.setWhoisInfo(true); // Call only if server supports it

  response = (EPPDomainInfoResp) domain.sendInfo();

  //-- Output required response attributes using accessors
  System.out.println("domainInfo: name            = " +
         response.getName());
  System.out.println("domainInfo: created by      = " +
         response.getCreatedBy());
  System.out.println("domainInfo: expiration date = " +
         response.getExpirationDate());

  //-- Output additional whois information if returned
  if (response.hasExtension(EPPWhoisInfData.class) {
         EPPWhoisInfData whois = (EPPWhoisInfData)
                response.getExtension(EPPWhoisInfData.class);
         System.out.println("domainInfo: registrar = " +
                whois.getRegistrar());
         System.out.println("domainInfo: whois server = " +
                whois.getWhoisServer());
  }

       //-- Output the secDNS:infData extension if returned
       if (response.hasExtension(EPPSecDNSExtInfData.class)) {
          EPPSecDNSExtInfData infData =(EPPSecDNSExtInfData)
                response.getExtension(EPPSecDNSExtInfData.class);

          Collection dsDataVec = infData.getDsData();
          EPPSecDNSExtDsData dsData = null;
          if (dsDataVec == null) {
                 System.out.println("domainInfo: secDNS:infData
                               dsDataVec = " + dsDataVec);
          }
          else {
                 int i = 0;
                 Iterator iter = dsDataVec.iterator();
                 while (iter.hasNext()) {
                        dsData = (EPPSecDNSExtDsData)iter.next();

                        System.out.println("domainInfo:
                               secDNS:infData/dsData[" + i + "]/keyTag
                               = "  + dsData.getKeyTag());
                        System.out.println("domainInfo:
                               secDNS:infData/dsData[" + i + "]/alg =
                               " + dsData.getAlg());
                        System.out.println("domainInfo:
                               secDNS:infData/dsData[" + i +
                               "]/digestType = " +
                               dsData.getDigestType());
                        System.out.println("domainInfo:
                               secDNS:infData/dsData[" + i + "]/digest
```

```
                                = "  + dsData.getDigest());
                        System.out.println("domainInfo:
                                secDNS:infData/dsData[" + i +
                                "]/maxSigLife = "  +
                                dsData.getMaxSigLife());

                        EPPSecDNSExtKeyData keyData =
                                dsData.getKeyData();
                        if (keyData == null) {
                                System.out.println("domainInfo:
                                        secDNS:infData/dsData[" + i +
                                        "]/keyData = "  + keyData);
                        }
                        else {
                                System.out.println("domainInfo:
                                        secDNS:infData/dsData[" + i +
                                        "]/keyData/flags = "
                                        + keyData.getFlags());
                                System.out.println("domainInfo:
                                        secDNS:infData/dsData[" + i +
                                        "]/keyData/protocol = "
                                        + keyData.getProtocol());
                                System.out.println("domainInfo:
                                        secDNS:infData/dsData[" + i +
                                        "]/keyData/alg = "
                                        + keyData.getAlg());
                                System.out.println("domainInfo:
                                        secDNS:infData/dsData[" + i +
                                        "]/keyData/pubKey = "
                                        + keyData.getPubKey());
                        }

                        i++;

                } // end while
          }

        }
} // end of try block
catch (EPPCommandException cmdException) {

  // do something to handle the exception
  handleException(cmdException);

} // end of catch block
```

13.5.1.6 sendUpdate() method

The *sendUpdate()* method sends the EPP update domain command to the server.

13.5.1.6.1 Pre-Conditions

This method expects that the domain object be populated with the unique identifier of the domain to be updated and the attributes to change. The following methods must be called to populate the domain name:

- addDomainName(String) – call the add domain name method passing the unique domain name in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.

The following list shows the the accessor methods for the optional attributes:

- setSecDNSUpdateForAdd(List<*EPPSecDNSExtDsData*>, `boolean`) – Sets the list of <*EPPSecDNSExtDsData*> instances in order to add delegation signer information. It also supports setting of an *urgent* attribute in the SecDNS update extension which determines the priority of the request.
- setSecDNSUpdateForChg(List<*EPPSecDNSExtDsData*>, `boolean`) – Sets the list of <*EPPSecDNSExtDsData*> instances in order to change delegation signer information. It also supports setting of an *urgent* attribute in the SecDNS update extension which determines the priority of the request.
- setSecDNSUpdateForRem(List<*Integer*>, `boolean`) – Sets the list of <*Integer*> instances (i.e key tags of DS records) in order to remove delegation signer information. It also supports setting of an *urgent* attribute in the SecDNS update extension which determines the priority of the request.
- setCoaUpdateForPut(List<*EPPCoaExtAttr*>) - Sets the list of <*EPPCoaExtAttr*> instances (which in turn each specify a single key/value pair) to be associated with the object being updated. If the object already has a value for one or more of the specified keys, the existing value will be overwritten by the specified one.
- setCoaUpdateForRem(List<*EPPCoaExtKey*>) - Sets the list of <*EPPCoaExtKey*> instances specifying the key portions of existing key/value pairs to be removed from the object being updated.
- addExtension(EPPCodecComponent) – Sets the extension, if any (Ex. EPPPremiumDomainReAssignCmd for Premium Domain (ReAssign) extension.)

13.5.1.6.2 Post-Conditions

On success, an *EPPResponse* is returned, with no attributes.

13.5.1.6.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the server response, then *getResponse()* will return *null*.

13.5.1.6.4 Sample Code

The following example shows the steps of performing an update of an domain through the use of the *NSDomain* client interface and the *sendUpdate()* method:

```
try {
  domain.setTransId("ABC-12345-XYZ");
  domain.addDomainName("abcdefg.tv");
  domain.setSubProductID(NSSubProduct.TV);

  // Execute update
  domain.addHostName("a.b.com");
  domain.addHostName("a.c.com");

  // instantiate the rem DS Key Tag List
  List remKeyTags = new ArrayList();
  remKeyTags.add(new Integer( 34095 ) );
  remKeyTags.add new Integer( 10563 );

        // Call only if server supports updating delegation signer
        // information
        domain.setSecDNSUpdateForRmv(remKeyTags);

  // Call only when premium domain (reassign) extension need to be set
  EPPPremiumDomainReAssignCmd extension =
                new EPPPremiumDomainReAssignCmd();
  extension.setShortName("testregistrar");
  domain.addExtension(extension);


  response = domain.sendUpdate();

} // end of try block
catch (EPPCommandException cmdException) {
  // do something to handle the exception
  handleException(cmdException);
} // end of catch block
```

13.5.1.7 sendRenew() method

The sendRenew*()* method sends the EPP renew domain command to the server.

13.5.1.7.1 Pre-Conditions

This method expects that the domain object be populated with the unique identifier of the domain to be updated and the attributes to change. The following methods must be called to populate the domain name:

- addDomainName(String) – call the add domain name method passing the unique domain name in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.
- setExpirationDate(Date) – the current expiration date needs to be set to confirm the renewal.
- SetPeriodUnit(String) – the period for which the domain is to be renewed

13.5.1.7.2 Post-Conditions

On success, an *EPPDomainRenewResp* is returned, with the following attributes:

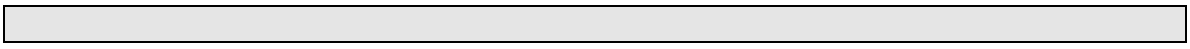
- Name – the name of the domain being created.
- ExpirationDate – the new date that the domain is due to be renewed.

13.5.1.7.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the server response, then *getResponse()* will return *null*.

13.5.1.7.4 Sample Code

The following example shows the steps of performing an renewal of an domain through the use of the *NSDomain* client interface and the *sendRenew()* method:



```
try {
  domain.setTransId("ABC-12345-XYZ");
  domain.addDomainName("abcdefg.tv");
  domain.setSubProductID(NSSubProduct.TV);

  // Execute update
  domain.setExpirationDate(theCurrentExpirationDate);
  domain.setPeriodUnit("1");

  // Set the price value
  vector someExtensions = new vector;
  someExtensions.addElement(new EPPNSDomBillRenew("50.00"));
  domain.getExtension().addExtensions(someExtensions);


  response = (EPPDomainRenewResp) domain.sendRenew();

  //-- Output response attributes using accessors
  System.out.println("domainRenew: name = " +
          response.getName());

  System.out.println("domainRenew: ExpirationDate = " +
          response.getExpirationDate());

} // end of try block
catch (EPPCommandException cmdException) {
  // do something to handle the exception
  handleException(cmdException);
} // end of catch block
```

13.5.1.8 sendTransfer() method

The sendTransfer*()* method sends the EPP transfer domain command to the server. There are three different operations that can be performed with a *sendTransfer()* command – request a transfer, approve a transfer or reject a transfer. A transfer is initiated by the new registrar sending a transfer request. Once a transfer has been requested, the current registrar of record will be notified by an external method. The current registrar is then required to either approve or reject the transfer.

13.5.1.8.1 Pre-Conditions

This method expects that the domain object be populated with the unique identifier of the domain to be updated and the attributes to change. The following methods must be called to populate the domain name:

- addDomainName(String) – call the add domain name method passing the unique domain name in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from

com.verisign.epp.namestore.interfaces.NSSubProduct or the TLD value going forward.

- SetTransferOpCode(String) – sets the operation code for this particular call. Valid values are "TRANSFER_REQUEST", "TRANSFER_APPROVE" or "TRANSFER_REJECT"

13.5.1.8.2 Post-Conditions

On success, an *EPPDomainTransferResp* is returned, with attributes depending on the operation code requested.

For "TRANSFER_REQUEST":

- ActionDate – The date at which the transfer must be approved or rejected by, otherwise it will be accepted by default.

For "TRANSFER_APPROVE" and "TRANSFER_REJECT" no additional attributres are set.

13.5.1.8.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the server response, then *getResponse()* will return *null*.

13.5.1.8.4 Sample Code

The following example shows the steps of performing a transfer request of a domain through the use of the *NSDomain* client interface and the *sendTransfer()* method:

```
try {
  domain.setTransId("ABC-12345-XYZ");
  domain.addDomainName("abcdefg.cc");
  domain.setSubProductID(NSSubProduct.CC);
  domain.setTransferOpCode("TRANSFER_REQUEST");

  // Execute update

  response = (EPPDomainTransferResp) domain.sendTransfer();

  System.out.println ("domainTransfer: Action Date: " +
         response.getActionDate());

} // end of try block
catch (EPPCommandException cmdException) {
  // do something to handle the exception
  handleException(cmdException);
} // end of catch block
```

The following example shows the steps of performing a transfer approve of a domain through the use of the *NSDomain* client interface and the *sendTransfer()* method:

```
try {
  domain.setTransId("ABC-12345-XYZ");
  domain.addDomainName("abcdefg.cc");
  domain.setTransferOpCode("TRANSFER_APPROVE");

  // Execute update

  response = (EPPDomainTransferResp) domain.sendTransfer();

} // end of try block
catch (EPPCommandException cmdException) {
  // do something to handle the exception
  handleException(cmdException);
} // end of catch block
```

The following example shows the steps of performing a transfer reject of a domain through the use of the *NSDomain* client interface and the *sendTransfer()* method:

```
```

```
try {
  domain.setTransId("ABC-12345-XYZ");
  domain.addDomainName("abcdefg.cc");
  domain.setTransferOpCode("TRANSFER_REJECT");

  // Execute update

  response = (EPPDomainTransferResp) domain.sendTransfer();

} // end of try block
catch (EPPCommandException cmdException) {
  // do something to handle the exception
  handleException(cmdException);
} // end of catch block
```

13.5.1.9 sendRestoreRequest() method

The *sendRestoreRequest()* method sends the EPP restore request, which is encoded as an EPP update command with an rgp:update command/response extension.

13.5.1.9.1 Pre-Conditions

The following list shows the accessor methods for the required attributes:

- addDomainName(String) – add the domain name to the object in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.

13.5.1.9.2 Post-Conditions

On success, an *EPPResponse* is returned, with no attributes.

13.5.1.9.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the server response, then *getResponse()* will return *null*.

13.5.1.9.4 Sample Code

The following example shows the steps of performing an update of an domain through the use of the *NSDomain* client interface and the *sendRestoreRequest()* method:

```
```

```
try {
  domain.setTransId("ABC-12345-XYZ");
  domain.addDomainName("abcdefg.tv");
  domain.setSubProductID(NSSubProduct.TV);

  response = domain.sendRestoreRequest();

} // end of try block
catch (EPPCommandException cmdException) {
  // do something to handle the exception
  handleException(cmdException);
} // end of catch block
```

13.5.1.10 sendRestoreReport() method

The *sendRestoreReport()* method sends the EPP restore report, which is encoded as an EPP update command with an rgp:update command/response extension. The EPP restore report follows a previous call to *sendRestoreRequest()*.

13.5.1.10.1 Pre-Conditions

The following list shows the accessor methods for the required attributes:

- addDomainName(String) – add the domain name to the object in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.
- setReport(EPPRgpExtReport) – Sets the details of the restore report.

13.5.1.10.2 Post-Conditions

On success, an *EPPResponse* is returned, with no attributes.

13.5.1.10.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the server response, then *getResponse()* will return *null*.

13.5.1.10.4 Sample Code

The following example shows the steps of performing an update of an domain through the use of the *NSDomain* client interface and the *sendRestoreReport()* method:

```
try {
  domain.setTransId("ABC-12345-XYZ");
  domain.addDomainName("abcdefg.tv");
  domain.setSubProductID(NSSubProduct.TV);

  EPPRgpExtReport theReport = new EPPRgpExtReport();
  theReport.setPreWhois("Pre-delete whois data goes here. Both XML and
free text are allowed");
  theReport.setPostWhois("Post-delete whois data goes here. Both XML and
free text are allowed");
  theReport.setDeleteTime(new Date());
  theReport.setRestoreTime(new Date());
  theReport.setRestoreReason(new EPPRgpExtReportText("Registrant
Error");
       theReport.setStatement1(new EPPRgpExtReportText(
             "This registrar has not"
             + " restored the Registered Domain in order to "
             + "assume the rights to use or sell the Registered"
             + " Name for itself or for any third party"));


        theReport.setStatement2(new EPPRgpExtReportText(
             "The information in this report "
             + " is true to best of this registrar's knowledge, and
this"
             + "registrar acknowledges that intentionally supplying
false"
             + " information in this report shall "
             + "constitute  an incurable material breach of the
Registry-Registrar"
             + " Agreement"));


         theReport.setOther("other stuff");


         // Execute restore report
         domain.setReport(theReport);
         theResponse = domain.sendRestoreReport();
```

```
} // end of try block
catch (EPPCommandException cmdException) {
  // do something to handle the exception
  handleException(cmdException);
} // end of catch block
```

13.5.1.11 sendSync() method

The *sendSync()* method sends the EPP restore request, which is encoded as an EPP update command with an sync:update command/response extension.

13.5.1.11.1 Pre-Conditions

The following list shows the accessor methods for the required attributes:

- addDomainName(String) – add the domain name to the object in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.
- setMonth(int) – Sets the month using a *Calendar* constant of the target expiration date.
- setDay(int) – Sets the day of the target expiration date.

13.5.1.11.2 Post-Conditions

On success, an *EPPResponse* is returned, with no attributes.

13.5.1.11.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the server response, then *getResponse()* will return *null*.

13.5.1.11.4 Sample Code

The following example shows the steps of performing an update of an domain through the use of the *NSDomain* client interface and the *sendSync()* method:

```
```

```
try {
  domain.setTransId("ABC-12345-XYZ");
  domain.addDomainName("abcdefg.tv");
  domain.setSubProductID(NSSubProduct.TV);
  domain.setMonth(Calendar.JUNE);
  domain.setDay(15);

  response = domain.sendSync();

} // end of try block
catch (EPPCommandException cmdException) {
  // do something to handle the exception
  handleException(cmdException);
} // end of catch block
```

13.5.2 Host Mapping (NSHost Interface)

The Host Mapping is first handled by the *com.verisign.epp.interfaces.EPPHost* interface class, which is extended by the *com.verisign.epp.namestore.interfaces.NSHost* interface to add support for common extensions. Convenience methods are provided in *NSHost* to make managing hosts easier. For example, the method *setSubProductID* is provided instead of having to manually add the *EPPNamestoreExtNamestoreExt* with each action.

The *NSHost* interface has the following relevant methods:

Return Value	Parameters
	`NSHost(EPPSession aNewSession)` This is the constructor method and it requires an EPP session object to be passed that has been authenticated (e.g. logged in).
`void`	`addHostName(java.lang.String)` This method adds a host name to the object for use with the action methods.
`EPPResponse`	`getResponse()` This method returns the EPP Response for the last executed command on the interface.
`EPPResponse`	**`sendCheck()`** This method sends the host check command to the server.
`EPPResponse`	**`sendCreate()`** This method sends the host create command to the server.
`EPPResponse`	**`sendDelete()`** This method sends the host delete command to the server.
`EPPResponse`	**`sendInfo()`** This method sends the host info command to the server.
`EPPResponse`	**`sendUpdate()`** This method sends the host update command to the server.
`void`	`addIPV4Address(java.lang.String)` This method adds an Ipv4 address to the host object.
`void`	`removeIPV4Address(java.lang.String)` This method removes an Ipv4 address from the host object.
`void`	`setNewName(java.lang.String)` This method sets a new value of the host name for use with the update method.
`void`	`addExtension(EPPCodecComponent)` This method sets the EPP extension for the host object.

Return Value	Parameters
Vector	getExtensions() This method gets the EPP extensions for the host object.
void	setTransId(java.lang.String) This methods sets the client transaction identifier.
void	setSubProductID(String) Sets the NameStore sub-product id associated with the action method. The *NSSubProduct* class includes a set of constant that can be used as the *setSubProductID* argument value.

Action methods are prefixed with *send* and are shown in bold in the previous table. Each action method has a different set of pre-conditions defining what attributes need to be set with the *NSHost* setter methods. Each action method will return a response from the server and will throw an exception if any error occurs. If the exception is associated with an error response from the server, then the response can be retrieved from the exception with a call to *getResponse()*. The following sections describe and provide sample code for the action methods, the *NSHost* constructor and methods requiring additional explanation.

13.5.2.1 NSHost() method

The NSHost constructor requires that an authenticated *EPPSession* object be passed upon creation. Once created, the *NSHost* object can perform multiple functions without reinitializing the *EPPSession* object. For example, you can use the same initialized *NSHost* object to create and info a host with the *sendCreate()* and *sendInfo()* commands.

13.5.2.1.1 Pre-Conditions

An authenticated session has been successfully established with an *EPPSession*.

13.5.2.1.2 Post-Conditions

The *NSHost* instance is ready for the execution of one or more operations.

13.5.2.1.3 Exceptions

None

13.5.2.1.4 Sample Code

The following example shows the steps of initializing an *EPPSession*, using the *EPPSession* to initialize the *NSHost* interface, then setting the extension.

```
EPPSession session = new EPPSession();

// optional
session.setTransId("ABC-12345-XYZ");
session.setVersion("1.0");
session.setLang("en");
```

```
// required
session.setClientID("ClientXID");
session.setPassword("ClientXPass");

try {
  session.initSession();
}
catch (EPPCommandException ex) {
  ex.printStackTrace();
  System.exit(1);
}

NSHost host = new NSHost(session);
```

13.5.2.2 sendCheck() method

The *sendCheck()* method sends the EPP check host command to check the allowable flag for one or more hosts.

13.5.2.2.1 Pre-Conditions

The following method must be called to populate the host names:

- addHostName(String) – add a host name to the object in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.

13.5.2.2.2 Post-Conditions

On success, an *EPPHostCheckResp* is returned, with the following attributes:

- Results – the check results are returned in a vector containing one or more *EPPHostCheckResult* objects.

13.5.2.2.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the Namestore server response, then *getResponse()* will return *null*.

13.5.2.2.4 Sample Code

The following example shows the steps of performing a check on hosts through the use of the *Host* client interface and the *sendCheck()* method:

```
try {
  // Check single host name
  host.setTransId("ABC-12345-XYZ");
  host.addHostName("ns.myhost.net");
  host.setSubProductID(NSSubProduct.CC);

  response = (EPPHostCheckResp) host.sendCheck();


  // Correct number of results?
  Assert.assertEquals(1, response.getCheckResults().size());

  // For each result
  for (int i = 0; i < response.getCheckResults().size(); i++) {
          EPPHostCheckResult currResult = (EPPHostCheckResult)
                  response.getCheckResults().elementAt(i);

          if (currResult.isAvailable()){
                  System.out.println("hostCheck: Host " +
                          currResult.getName() + " is available");
          } else {
                  System.out.println("hostCheck: Host " +
                          currResult.getName() + " is not available");
          }
  }
} // end of try block
catch (EPPCommandException cmdException) {

  // do something to handle the exception
  handleException(cmdException);

} // end of catch block
```

13.5.2.3 sendCreate() method

The *sendCreate()* method sends the EPP create host command to the server.

13.5.2.3.1 Pre-Conditions

This method expects that the host object be populated with the name and address of the host to be created. The following methods must be called to populate the host name and address:

- addHostName(String) – add a host name to the object in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.
- setIPV4Address(String) or setIPV6Address(String) – add an Ipv4 or Ipv6 address to the host object.

13.5.2.3.2 Post-Conditions

On success, an *EPPHostCreateResp* is returned, with the following attributes:

- Name – the host name that was successfully created is returned in the response.

13.5.2.3.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the Namestore server response, then *getResponse()* will return *null*.

13.5.2.3.4 Sample Code

The following example shows the steps of performing a create of a host through the use of the *NSHost* client interface and the *sendCreate()* method:

```
try {

  host.setTransId("ABC-12345-XYZ");
  host.addHostName("ns.myhost.net");
  host.setIPV4Address("123.34.34.2");
  host.setSubProductID(NSSubProduct.NET);

  response = (EPPHostCreateResp) host.sendCreate();

  System.out.println("Host created: " + response.getName());

} // end of try block
catch (EPPCommandException cmdException) {

  // do something to handle the exception
  handleException(cmdException);

} // end of catch block
```

13.5.2.4 sendDelete() method

The *sendDelete()* method sends the EPP delete host command to the server. This method requires that no domains are associated with the host prior to deletion. If there are domains associated with the host the delete will fail.

13.5.2.4.1 Pre-Conditions

This method expects that the host object be populated with the name of the host to be deleted. The following method must be called to populate the host name:

- addHostName(String) – add a host name to the object in preparation for an action method.

- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.

13.5.2.4.2 Post-Conditions

On success, a standard *EPPResponse* is returned.

13.5.2.4.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the Namestore server response, then *getResponse()* will return *null*.

13.5.2.4.4 Sample Code

The following example shows the steps of performing a delete of a host through the use of the *NSHost* client interface and the *sendDelete()* method:

```
try {

  host.setTransId("ABC-12345-XYZ");
  host.addHostName("ns.myhost.net");
  host.setSubProductID(NSSubProduct.NET);

  response = (EPPResponse) host.sendDelete();

  System.out.println("EPP Response: " + response);

} // end of try block
catch (EPPCommandException cmdException) {

  // do something to handle the exception
  handleException(cmdException);

} // end of catch block
```

13.5.2.5 sendInfo() method

The *sendInfo()* method sends the EPP info host command to the server.

13.5.2.5.1 Pre-Conditions

This method expects that the host object be populated with a single host name of the host to be queried. The following method must be called to populate the host name:

- addHostName(String) – add a host name to the object in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.

13.5.2.5.2 Post-Conditions

On success, an *EPPHostInfoResp* is returned, with the following attributes:

- name – the fully qualified host name.
- address – the Ipv4 or Ipv6 address of the host.
- RegistrarId – the identifier of the registrar the contact was created by.

13.5.2.5.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the Namestore server response, than *getResponse()* will return *null*.

13.5.2.5.4 Sample Code

The following example shows the steps of querying an host through the use of the *NSHost* client interface and the *sendInfo()* method:

```
try {

  host.setTransId("ABC-12345-XYZ");
  host.addHostName("ns.myhost.net");
  host.setSubProductID(NSSubProduct.NET);

  response = (EPPHostInfoResp) host.sendInfo();

  System.out.println("hostInfo: name = " + response.getName());

  EPPHostAddress currAddress = (EPPHostAddress) response.getAddress();
  System.out.println("hostInfo: ip = ");

  // IPV4 Address?
  if (currAddress.getType() == EPPHostAddress.IPV4) {
         System.out.println(", type = IPV4");
  } // IPV6 Address?
  else if (currAddress.getType() == EPPHostAddress.IPV4) {
         System.out.println(", type = IPV6");
  }

  System.out.println("hostInfo: registrar = " +
         response.getRegistrar());

} // end of try block
catch (EPPCommandException cmdException) {

  // do something to handle the exception
  handleException(cmdException);

} // end of catch block
```

13.5.2.6 sendUpdate() method

The *sendUpdate()* method sends the EPP update host command to the server.

13.5.2.6.1 Pre-Conditions

This method expects that the host object be populated with the name of the host to be updated and the Ipv4 or Ipv6 address to change. The following methods must be called to populate the host name with a new address:

- addHostName(String) – add a host name to the object in preparation for an action method.
- setSubProductID(String) – sub-product associated with operation. Use one of the constants from *com.verisign.epp.namestore.interfaces.NSSubProduct* or the TLD value going forward.
- addIPV4Address (String) or addIPV6Address (String) – add an Ipv4 or Ipv6 address to the host object.
- removeIPV4Address (String) or removeIPV4Address (String) – remove an Ipv4 or Ipv6 address from the host object.

13.5.2.6.2 Post-Conditions

On success, a standard *EPPResponse* is returned.

13.5.2.6.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the Namestore server response, then *getResponse()* will return *null*.

13.5.2.6.4 Sample Code

The following example shows the steps of performing an update of a host through the use of the *NSHost* client interface and the *sendUpdate()* method:

```
try {
  host.setTransId("ABC-12345-XYZ");
  host.addHostName("ns.myhost.net");
  host.setSubProductID(NSSubProduct.NET);

  // set new IP address
  host.addIPV4Address("123.34.34.12");
  // remove old IP address
  host.removeIPV4Address("123.34.34.66");

  response = (EPPResponse) host.sendUpdate();

  System.out.println("Host updated: " + response);
} // end of try block
catch (EPPCommandException cmdException) {
  // do something to handle the exception
  handleException(cmdException);
} // end of catch block
```

13.5.2.7 NSHost Support Classes

The Host package, *com.verisign.epp.codec.host*, contains additional classes required for host provisioning and maintenance. The package contains the following relevant classes:

Class	Description
EPPHostAddress	This class is used by the *sendInfo()* method for encapsulating Ipv4 and Ipv6 addresses.
EPPHostCheckResult	This class is used by the *sendCheck()* method for returning the allowable flag for multiple hosts being checked.

13.5.2.8 EPPHostAddress

The *EPPHostAddress* class is used by the *sendInfo()* method for encapsulating Ipv4 and Ipv6 addresses. The *getType()* method should be used for determining whether the address is an Ipv4 or Ipv6 address. The *getName()* and *getAddress()* methods return the host name and IP address, respectively, for the host queried. Please refer to the previous sections for sample code demonstrating the use of the *EPPHostAddress* class.

13.5.2.9 EPPHostCheckResult

The *EPPHostCheckResult* class is used by the *sendCheck()* method for returning the allowable flag for multiple hosts. The *isAvailable()* method of this class returns *true* if the host is available and *false* if the host is not available.

13.5.3 Contact Mapping (NSContact Interface)

This section is intended to provide users of the Extensible Provisioning Protocol (EPP) Software Development Kit (SDK) with an overview of the Contact, additions to the SDK. This document includes the following Contact information:

1. Definition of the Contact files (i.e. library, schema)
2. Description of the Contact interface class, including the pre-conditions, the post-conditions, the exceptions and sample code of each of the action methods.

The SDK provides detailed interface information in HTML Javadoc. This document does not duplicate the detailed interface information contained in the HTML Javadoc. Descriptions are provided for the Contact interface elements, the pre-conditions, the post-conditions, and example code.

It is assumed that the reader has reviewed the associated EPP Specifications and has a general understanding of the EPP concepts. Much of the EPP details are encapsulated in the SDK, but having a solid understanding of the EPP concepts will help in effectively using the SDK.

The Contact Mapping is first handled by the *com.verisign.epp.interfaces.EPPContact* interface class, which is extended by the *com.verisign.epp.namestore.interfaces.NSContact* interface to add support for common extensions. Convenience methods are provided in *NSContact* to make managing domains easier. For example, the method *setSubProductID* is provided instead of having to manually add the *EPPNamestoreExtNamestoreExt* with each action.

13.5.3.1 Contact Mappng Packages

Contact consists of sub-packages of the SDK packages and class additions to existing SDK packages. The following table provides an overview of the SDK packages.

Package	Description
com.verisign.epp.codec.contact	Contact EPP Encoder/Decoder package. All of the detail of encoding and decoding the Contact EPP messages are encapsulated in this package. The *EPPContactMapFactory* must be added to the *EPP.MapFactories* configuration parameter.
com.verisign.epp.interfaces	Addition of the *EPPContact* Client interface class, which is the primary class used by a Contact SDK client.
com.verisign.epp.serverstub	Addition of the *com.verisign.epp.serverstub.ContactHandler* class used to implement the EPP Contact Stub Server behavior. This class must be added to the *EPP.ServerEventHandlers* configuration parameter.

13.5.3.2 Contact Mapping XML Schema Files

The Contact EPP Mapping is defined using XML schema files. These files are located in the *epp-contact.jar* in the ***schemas*** directory. You must un-jar the jar file in order to explicitly view them.

File Name	Location	Description
contact-1.0.xsd	schemas	Contact XML Schema. This file must reside in the current directory of the client application and the EPP Stub Server.

13.5.3.3 Contact Client Interface

13.5.3.3.1 Overview

Figure 11 - EPPContact Class Diagram shows the class diagram for *EPPContact*, which is the primary interface used for managing Contact objects. Some classes out of the *com.verisign.epp.codec.gen* are used to support the interface. There is a reference from *EPPContact* to an *EPPSession*. The action methods are prefixed with *send*, and each action method has a different set of pre-conditions defining what attributes need to be set with the *EPPContact* setter methods. Each action method will return a response from the EPP Server and will throw an exception if any error occurs. If the exception is associated with an error response from the EPP Server, than the response can be retrieved from the exception with a call to *getResponse()*.

Figure 11 - EPPContact Class Diagram

13.5.3.3.2 Initialization

This section shows how an *EPPContact* is initialized. After each operation, *EPPContact* resets itself so that it can be used for more than one operation. For example, you can use the same initialized *EPPContact* to create a Contact with *sendCreate()*, than use it again to delete a Contact with *sendDelete()*. The attributes have to be set/reset before each call to an operation.

1.1.1.1.1.1 Pre-Conditions

An authenticated session has been successfully established with an *EPPSession*.

1.1.1.1.1.2 Post-Conditions

The *EPPContact* instance is ready for the execution of one or more operations.

1.1.1.1.1.3 Exceptions

None

1.1.1.1.1.4 Sample Code

Figure 12 - EPPContact Initialization Sample Code shows the steps of initializing an *EPPSession*, than using the *EPPSession* to initialize and *EPPContact.*

```
EPPSession session = new EPPSession();
session.setClientID("ClientX");
session.setPassword("ClientXPass");
session.setTransId("ABC-12345");

try {
        session.initSession();
}
catch (EPPCommandException ex) {
        ex.printStackTrace();
        System.exit(1);
}

EPPContact contact = EPPContact(session);
```

Figure 12 - EPPContact Initialization Sample Code

13.5.3.3.3 sendCreate() Method

Creates a Contact using this method. *sendCheck()* can be used to check the availability of a Contact before invoking *sendCreate()*.

1.1.1.1.1.5 Pre-Conditions

The following methods must be called:

- *addContactId(String)* – Contact ID.
- *addPostalInfo(EPPContactPostalDefinition)* – Sets the postal information of the contact.
- *setEmail(String)* – Sets the email address of the contact.
- *setAuthorizationId(String)* - Authorization string, which is provided by client.

The following methods can be called:

- *setVoicePhone(String)* – Sets the voice phone number for the contact.
- *setVoiceExt(String)* – Sets the extension for the voice phone number of the contact.
- *setFaxNumber(String)* – Sets the fax number for the contact
- *setFaxExt(String)* – Sets the extension for the fax number of the contact
- *setDisclose(EPPContactDisclose)* – Sets the disclose information about the contact.
- *addExtension(EPPCodecComponent)* – Sets the extension, if any
- *setTransId(String)* – Client transaction identifier, which is mirrored back in the response.

1.1.1.1.1.6 Post-Conditions

The Contact was successfully created. *EPPContactCreateResp* is returned, with the following attributes:

- <epp:extension> - *EPPResponse.getExtension() if response contains extension*
- <epp:trID> - *EPPResponse.getTransId()*
- <contact:id> – *EPPContactCreateResp.getId()*
- <contact:crDate> – *EPPContactCreateResp.getCreationDate()*

This response does not have Contact related information except for the creation date. The response may not even contain an extension.

1.1.1.1.1.7 Exceptions

EPPCommandException that contains the *EPPResponse* returned from the EPP Server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the EPP Server response, than *getResponse()* will return *null*.

1.1.1.1.1.8 Sample Code

Figure 13 - sendCreate() Sample Code shows the steps of creating a Contact. On success, *EPPContactCreateResp* is returned, which contains the contact Id and creation date. If an error occurs, *EPPCommandException* is thrown, and if the error was the result of an EPP Server response, than the response can be retrieved from the exception.

```
try {

        contact.setTransId("ABC-12345-XYZ");
        contact.setAuthorizationId("ClientXYZ");
        contact.addContactId("sh8013");
        contact.setVoicePhone("+1.7035555555");
        contact.setVoiceExt("123");
        contact.setFaxNumber("+1.7035555556");
        contact.setFaxExt("456");
        contact.setEmail("jdoe@example.com");

        // Streets
        Vector streets = new Vector();
        streets.addElement("123 Example Dr.");
        streets.addElement("Suite 100");
        streets.addElement("This is third line");

        EPPContactAddress address = new EPPContactAddress();
        address.setStreets(streets);
        address.setCity("Dulles");
        address.setStateProvince("VA");
        address.setPostalCode("20166-6503");
        address.setCountry("US");

        EPPContactPostalDefinition name = new EPPContactPostalDefinition(

        EPPContactPostalDefinition.ATTR_TYPE_LOC);

        name.setName("John Doe");
        name.setOrg("Example Inc.");
        name.setAddress(address);

        contact.addPostalInfo(name);

        // this is not a valid Example but it will do
        EPPContactAddress Intaddress = new EPPContactAddress();

        Intaddress.setStreets(streets);
        Intaddress.setCity("Dulles");
        Intaddress.setStateProvince("VA");
        Intaddress.setPostalCode("20166-6503");
        Intaddress.setCountry("US");

        EPPContactPostalDefinition Intname = new EPPContactPostalDefinition(

        EPPContactPostalDefinition.ATTR_TYPE_INT);

        Intname.setName("John Doe");
        Intname.setOrg("Example Inc.");
        Intname.setAddress(Intaddress);

        contact.addPostalInfo(Intname);

        // disclose names
        Vector names = new Vector();

        // names.addElement(new
```

```
        // EPPContactDiscloseName(EPPContactDiscloseName.ATTR_TYPE_LOC));
        names.addElement(new EPPContactDiscloseName(
        EPPContactDiscloseName.ATTR_TYPE_INT));

        // disclose orgs
        Vector orgs = new Vector();
        orgs.addElement(new EPPContactDiscloseOrg(
        EPPContactDiscloseOrg.ATTR_TYPE_LOC));
        orgs.addElement(new EPPContactDiscloseOrg(
        EPPContactDiscloseOrg.ATTR_TYPE_INT));

        // disclose addresses
        Vector addresses = new Vector();
        addresses.addElement(new EPPContactDiscloseAddress(

        EPPContactDiscloseAddress.ATTR_TYPE_LOC));
        addresses.addElement(new EPPContactDiscloseAddress(

        EPPContactDiscloseAddress.ATTR_TYPE_INT));

        // disclose
        EPPContactDisclose disclose = new EPPContactDisclose();
        disclose.setFlag("0");
        disclose.setNames(names);
        disclose.setOrgs(orgs);
        disclose.setAddresses(addresses);
        disclose.setVoice("");
        disclose.setFax("");
        disclose.setEmail("");

        contact.setDisclose(disclose);

        response = (EPPContactCreateResp) contact.sendCreate();

        // -- Output all of the response attributes
        System.out.println("contactCreate: Response = [" + response
                + "]\n\n");
        System.out.println("Contact ID : " + response.getId());
        System.out.println("Contact Created Date : " +
                response.getCreationDate());

}
```

Figure 13 - sendCreate() Sample Code

13.5.3.3.4 sendCheck() Method

Checks the availability of one or more Contact objects.

1.1.1.1.1.9 Pre-Conditions

The following methods must be previously called:

- *addContactId(String)* – Contact Id.

The following methods can be previously called:

- setTransId(String) – Client transaction identifier, which is mirrored back in the response.

1.1.1.1.1.10 Post-Conditions

The Contact was successfully checked. *EPPContactCheckResp* is returned with the following attributes:

- <epp:extension> - *EPPResponse.getExtension()* if response contains extension
- <epp:trID> - *EPPResponse.getTransId()*
- A Vector of *EPPContactCheckResult* objects – *EPPContactInfoResp.getCheckResults()*. Each *EPPContactCheckResult* object contains the following attributes:
  - <contact:id> - *EPPContactCheckResult.getId()*
  - <contact:reason> - *EPPContactCheckResult.getContactReason()*

1.1.1.1.1.11 Exceptions

EPPCommandException that contains the *EPPResponse* returned from the EPP Server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the EPP Server response, than *getResponse()* will return *null*.

1.1.1.1.1.12 Sample Code

Figure 9 - sendCheck() Sample Code shows the steps of creating EPPContactCheckResp. If an error occurs, *EPPCommandException* is thrown, and if the error was the result of an EPP Server response, than the response can be retrieved from the exception.

```
try {
   contact.setTransId("ABC-12345");
   contact.addContactId("sh8013");

   EPPContactCheckResp response = contact.sendCheck();

  // For each result
  for (int i = 0; i < response.getCheckResults().size(); i++) {
        EPPContactCheckResult currResult = (EPPContactCheckResult) response
                .getCheckResults().elementAt(i);

        if (currResult.isAvailable()) {
                System.out.println("contactCheck: Contact "
                        + currResult.getId() + " is available");
        }
        else {
                System.out.println("contactCheck: Contact "
                        + currResult.getId() + " is unavailable");
        }
```

```
   }
}
catch (EPPCommandException ex) {
   EPPResponse response = (EPPResponse) ex.getResponse();

   if (response != null)
      System.err.println("Contact Check response error: " + ex +
         ", response = " + response);
   else
      System.err.println("Contact Check exception: " + ex);
}
```

Figure 9 - sendCheck() Sample Code

13.5.3.3.5 sendInfo() Method

Retrieves the Contact information.

1.1.1.1.1.13 Pre-Conditions

The following methods must be previously called:

- *addContactId(String)* – Contact Id.

The following methods can be previously called:

- setTransId(String) – Client transaction identifier, which is mirrored back in the response.

The Contact must exist.

1.1.1.1.1.14 Post-Conditions

The Contact information was successfully retrieved. *EPPContactInfoResp* contains the Contact information with the following attributes:

- <epp:extension> - *EPPResponse.getExtension() if response contains extension*
- <epp:trID> - *EPPResponse.getTransId()*
- <contact:id> - *EPPContactInfoResp.getId()* Gets the Contact ID
- <contact:roid> – *EPPContactInfoResp.getRoid()* Gets the Contact ROID
- <contact:status> - *EPPContactInfoResp.getStatuses()* Gets the vector of statuses
- <contact:postalinfo> - *EPPContactInfoResp.getPostalInfo()* Gets the Contact Postal Info
- <contact:voice> - *EPPContactInfoResp.getVoice()* Gets the Contact Voice number

- <contact:fax> - *EPPContactInfoResp.getFax()* Gets the Contact Fax number
- <contact:email> - *EPPContactInfoResp.getEmail()* Gets the Contact Email address
- <contact:clId> - *EPPContactInfoResp.getClientId()* Gets the Contact Client ID
- <contact:crDate> - *EPPContactInfoResp.getCreatedDate ()* Gets the Contact Creation date
- <contact:trDate> - *EPPContactInfoResp.getLastTransferDate()* Gets the Contact last transfer date
- <contact:authInfo> - *EPPContactInfoResp.getAuthInfo()* Gets the Contact Authorization information
- <contact:disclose> - *EPPContactInfoResp.getDisclose()* Gets the Contact disclose information

1.1.1.1.1.15 Exceptions

EPPCommandException that contains the *EPPResponse* returned from the EPP Server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the EPP Server response, than *getResponse()* will return *null*.

1.1.1.1.1.16 Sample Code

Figure 14 - sendInfo() Sample Code shows the steps of creating EPPContactInfoResp. If an error occurs, *EPPCommandException* is thrown, and if the error was the result of an EPP Server response, than the response can be retrieved from the exception.

```
try {
        EPPContactInfoResp contactResponse;

        System.out.println("JobsContact: Contact Info");

        contact.setTransId("ABC-12345-XYZ");
        contact.addContactId("helloworld");

        contactResponse = contact.sendInfo();

        System.out.println("contactInfo: id = " + response.getId());

        Vector postalContacts = null;

        if (response.getPostalInfo().size() > 0) {
                postalContacts = response.getPostalInfo();

        for (int j = 0; j < postalContacts.size(); j++) {

                // Name
                System.out.println("contactInfo:\t\tname = "
```

```
                    + ((EPPContactPostalDefinition) postalContacts
                        .elementAt(j)).getName());

                // Organization
                System.out.println("contactInfo:\t\torganization = "
                + ((EPPContactPostalDefinition) postalContacts
                .elementAt(j)).getOrg());


                EPPContactAddress address =
                        ((EPPContactPostalDefinition)postalContacts
                                .elementAt(j)).getAddress();

                for (int i = 0; i < address.getStreets().size(); i++) {
                        System.out.println("contactInfo:\t\tstreet" + (i + 1)
                            + " = " + address.getStreets().elementAt(i));

                }

                // Address City
                System.out.println("contactInfo:\t\tcity = " +
                 address.getCity());


                // Address State/Province
                System.out.println("contactInfo:\t\tstate province = "
                  + address.getStateProvince());

                // Address Postal Code
                System.out.println("contactInfo:\t\tpostal code = "
                  + address.getPostalCode());

                // Address County
                System.out.println("contactInfo:\t\tcountry = "
                  + address.getCountry());
        }


        // Contact E-mail
        System.out.println("contactInfo:\temail = " + response.getEmail());

        // Contact Voice
        System.out.println("contactInfo:\tvoice = " + response.getVoice());

        // Contact Voice Extension
        System.out.println("contactInfo:\tvoice ext = "
                                    + response.getVoiceExt());

        // Contact Fax
        System.out.println("contactInfo:\tfax = " + response.getFax());

        // Contact Fax Extension
        System.out.println("contactInfo:\tfax ext = "
                                    + response.getFaxExt());

        // Client Id
        System.out.println("contactInfo: client id = "
```

```
                                    + response.getClientId());

        // Created By
        System.out.println("contactInfo: created by = "
                                    + response.getCreatedBy());

        // Created Date
        System.out.println("contactInfo: create date = "
                                    + response.getCreatedDate());

        // -- Output optional response attributes using accessors
        // Contact Fax
        if (response.getFax() != null) {
                System.out.println("contactInfo:\tfax = " +
                 response.getFax());
        }

        // Contact Voice
        if (response.getVoice() != null) {
                System.out.println("contactInfo:\tVoice = "
                + response.getVoice());
        }

        // Last Updated By
        if (response.getLastUpdatedBy() != null) {
                System.out.println("contactInfo: last updated by = "
                        + response.getLastUpdatedBy());
        }

        // Last Updated Date
        if (response.getLastUpdatedDate() != null) {
                System.out.println("contactInfo: last updated date = "
                + response.getLastUpdatedDate());
        }

        // Last Transfer Date
        if (response.getLastTransferDate() != null) {
                System.out.println("contactInfo: last updated date = "
                + response.getLastTransferDate());
        }

        // Authorization Id
        if (response.getAuthInfo() != null) {
                System.out.println("contactInfo: authorization info = "
                + response.getAuthInfo().getPassword());
        }

        // Disclose
        if (response.getDisclose() != null) {
                System.out.println("contactInfo: disclose info = "
                + response.getDisclose());
        }

}
```

Figure 14 - sendInfo() Sample Code

13.5.3.3.6 sendUpdate() Method

Updates the attributes of a Contact.

1.1.1.1.1.17 Pre-Conditions

The following methods must be previously called:

- *addContactId(String)* – Contact Id.

The following methods can be previously called:

- *setTransId(String)* – Client transaction identifier, which is mirrored back in the response.
- *addExtension(EPPCodecComponent)* – Command extension, if any.
- *addStatus(String)* – Contact status
- *addPostalInfo(EPPContactPostalDefinition)* – Adding postal information
- *setVoicePhone(String)* – Update voice number
- *setFaxNumber(String)* – Update fax number
- *setAuthorizationId(String)* – Update authorization information
- *setDisclose(EPPContactDisclose)* – Updates the contact disclose information

The Contact must exist.

1.1.1.1.1.18 Post-Conditions

The Contact was successfully updated. *EPPResponse* is returned, with the following attributes:

- <epp:extension> - *EPPResponse.getExtension() if response contains extension*
- <epp:trID> - *EPPResponse.getTransId()*

1.1.1.1.1.19 Exceptions

EPPCommandException that contains the *EPPResponse* returned from the EPP Server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the EPP Server response, than *getResponse()* will return *null*.

1.1.1.1.1.20 Sample Code

Figure 15 - sendUpdate() Sample Code shows the steps of creating EPPResponse. If an error occurs, *EPPCommandException* is thrown, and if the error was the result of an EPP Server response, than the response can be retrieved from the exception.

```
try {
        contact.setTransId("ABC-12345-XYZ");
        contact.addContactId("sh8013");

        // Streets
        Vector streets = new Vector();
        streets.addElement("123 Example Dr.");
        streets.addElement("Suite 100");
        streets.addElement("This is third line");

        // Address
        EPPContactAddress address = new EPPContactAddress(streets,
                                    "Dulles", "VA", "20166-6503", "US");

        EPPContactPostalDefinition postal = new EPPContactPostalDefinition(
                                    "Joe Brown", "Example Corp.",

        EPPContactPostalDefinition.ATTR_TYPE_LOC, address);

        // statuses
        contact.addStatus(EPPContact.STAT_PENDING_DELETE);
        contact.addPostalInfo(postal);
        contact.setVoicePhone("+1.7035555555");
        contact.setVoiceExt("456");
        contact.setFaxNumber("+1.7035555555");
        contact.setFaxExt("789");
        contact.setAuthorizationId("ClientXYZ");

        // disclose names
        Vector names = new Vector();

        // names.addElement(new
        // EPPContactDiscloseName(EPPContactDiscloseName.ATTR_TYPE_LOC));
        names.addElement(new EPPContactDiscloseName(
                                    EPPContactDiscloseName.ATTR_TYPE_INT));

        // disclose orgs
        Vector orgs = new Vector();
        orgs.addElement(new EPPContactDiscloseOrg(
                EPPContactDiscloseOrg.ATTR_TYPE_LOC));
        orgs.addElement(new EPPContactDiscloseOrg(
                EPPContactDiscloseOrg.ATTR_TYPE_INT));

        // disclose addresses
        Vector addresses = new Vector();
        addresses.addElement(new EPPContactDiscloseAddress(

        EPPContactDiscloseAddress.ATTR_TYPE_LOC));
                        addresses.addElement(new EPPContactDiscloseAddress(

        EPPContactDiscloseAddress.ATTR_TYPE_INT));

        // disclose
        EPPContactDisclose disclose = new EPPContactDisclose();
        disclose.setFlag("0");
        disclose.setNames(names);
        disclose.setOrgs(orgs);
```

```
        disclose.setAddresses(addresses);
        disclose.setVoice("");
        disclose.setFax("");
        disclose.setEmail("");

        contact.setDisclose(disclose);

        response = contact.sendUpdate();

        // -- Output all of the response attributes
        System.out.println("contactUpdate: Response = [" + response
                                        + "]\n\n");
} catch (EPPCommandException e) {
        handleException(e);
}
```

Figure 15 - sendUpdate() Sample Code

13.5.3.3.7 sendDelete() Method

Deletes a Contact.

1.1.1.1.1.21 Pre-Conditions

The following methods must be previously called:

- *addContactId(String)* – Contact Id.

The following methods can be previously called:

- setTransId(String) – Client transaction identifier, which is mirrored back in the response.
- setExtension(EPPCodecComponent) – Command extension to send with command.

The Contact must exist.

1.1.1.1.1.22 Post-Conditions

The Contact was successfully deleted. *EPPResponse* is returned, with the following attributes:

- <epp:extension> - *EPPResponse.getExtension() if response contains extension*
- <epp:trID> - *EPPResponse.getTransId()*

1.1.1.1.1.23 Exceptions

EPPCommandException that contains the *EPPResponse* returned from the EPP Server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the EPP Server response, than *getResponse()* will return *null*.

1.1.1.1.1.24 Sample Code

Figure 10 - sendDelete() Sample Code shows the steps of creating EPPResponse. If an error occurs, *EPPCommandException* is thrown, and if the error was the result of an EPP Server response, than the response can be retrieved from the exception.

```
try {
        contact.setTransId("ABC-12345");
        contact.addContactId("sh8013");

        EPPResponse response = contact.sendDelete();

        System.out.println("Contact Delete success response: " + response);
}
catch (EPPCommandException ex) {
        EPPResponse response = (EPPResponse) ex.getResponse();

        if (response != null)
                System.err.println("Contact Delete response error: " + ex +
                        ", response = " + response);
```

```
        else
                System.err.println("Contact Delete exception: " + ex);
}
```

Figure 10 - sendDelete() Sample Code

13.5.3.3.8 sendTransfer() Method

Transfer a Contact.

1.1.1.1.1.25 Pre-Conditions

The following methods must be previously called:

- *addContactId(String)* – Contact ID.
- *setAuthorizationId(String)* – Authorization Information. This is required when a transfer is requested.
- *setTransferOpCode(String)* – Transfer operation as defined by one of the *EPPContact.TRANSFER_* constants. For example, *EPPContact.TRANSFER_REQUEST*.

The following methods can be previously called:

- setTransId(String) – Client transaction identifier, which is mirrored back in the response.
- setExtension(EPPCodecComponent) – Command extension to send with command.

The Contact must exist.

1.1.1.1.1.26 Post-Conditions

The Contact transfer operation was successfully processed. *EPPContactTransferResp* is returned with the following attributes:

- <epp:extension> - *EPPResponse.getExtension() if response contains extension*
- <epp:trID> - *EPPResponse.getTransId()*
- <contact:id> – *EPPContactTransferResp.getId()*
- <contact:trStatus> – *EPPContactTransferResp.getTransferStatus()*
- <contact:reID> – *EPPContactTransferResp.getRequestClient()*
- <contact:reDate> – *EPPContactTransferResp.getRequestDate()*
- <contact:acID> – *EPPContactTransferResp.getActionClient()*
- <contact:acDate> – *EPPContactTransferResp.getActionDate()*

1.1.1.1.1.27 Exceptions

EPPCommandException that contains the *EPPResponse* returned from the EPP Server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the EPP Server response, than *getResponse()* will return *null*.

1.1.1.1.1.28 Sample Code

Figure 11 - sendTransfer() Sample Code shows the steps of creating EPPContactTransferResp. If an error occurs, *EPPCommandException* is thrown, and if the error was the result of an EPP Server response, than the response can be retrieved from the exception.

```
try {
        contact.setTransferOpCode(EPPContact.TRANSFER_REQUEST);
        contact.setTransId("ABC-12345-XYZ");
        contact.setAuthorizationId("ClientX");
        contact.addContactId("sh8013");

        // Execute the transfer request
        response = contact.sendTransfer();

        // -- Output all of the response attributes
        System.out.println("contactTransfer: Response = [" + response
                + "]\n\n");

        // -- Output required response attributes using accessors
        System.out.println("contactTransfer: id = " + response.getId());
        System.out.println("contactTransfer: request client = "
                + response.getRequestClient());
        System.out.println("contactTransfer: action client = "
                + response.getActionClient());
        System.out.println("contactTransfer: transfer status = "
                + response.getTransferStatus());
        System.out.println("contactTransfer: request date = "
                + response.getRequestDate());
        System.out.println("contactTransfer: action date = "
                + response.getActionDate());
}
catch (EPPCommandException ex) {
   EPPResponse response = (EPPResponse) ex.getResponse();

   if (response != null)
      System.err.println("Contact Transfer response error: " + ex +
         ", response = " + response);
   else
      System.err.println("Contact Transfer exception: " + ex);
}
```

Figure 11 - sendTransfer() Sample Code

13.5.4 Registry Mapping

This section is intended to provide users of the Extensible Provisioning Protocol (EPP) Software Development Kit (SDK) with an overview of the Registry Mapping additions to the SDK. This document includes the following Registry information:

1. Definition of the Registry SDK files (i.e. library, schema)
2. Description of the Registry interface classes, including the pre-conditions, the post-conditions, the exceptions, the EPP status codes, and sample code of each of the action methods.

The SDK provides detailed interface information in HTML Javadoc format. This document does not duplicate the detailed interface information contained in the HTML Javadoc. Descriptions are provided of the main Registry interface elements, the pre-conditions, the post-conditions, and example code.

It is assumed that the reader has reviewed the associated EPP specifications and has a general understanding of the EPP concepts. Much of the EPP details are encapsulated in the SDK, but having a solid understanding of the EPP concepts will help in effectively using the SDK.

13.5.4.1 Registry Tests

The Registry source distribution contains one test program for Registry EPP Mapping the product uses. The tests are located in the suggestion/java directory in *com.verisign.epp.interfaces* package. The following table describes the test files:

Directory	Description
EPPRegistryTst.java	This is a sample program demonstrating the use of the EPPRegistry class.

13.5.4.2 Suggestion Packages

The Registry portion of the Verisign Bundle EPP SDK consists of sub-packages and class additions to existing SDK packages. **Figure 14 - Suggestion Packages** provides an overview of the primary SDK packages.

Package	Description
com.verisign.epp.codec.registry	Registry Encoder/Decoder package. All of the detail of encoding and decoding the Registry EPP messages are in this package. The EPPRegistryMapFactory must be added to the EPP.MapFactories configuration parameter using

	the full package and class name.
com.verisign.epp.framework	Addition of Registry EPP Server Framework classes used by the Stub Server.
com.verisign.epp.serverstub	Addition of the RegistryHandler class used to implement the EPP Registry Stub Server behavior. This class must be added to the EPP.ServerEventHandlers configuration parameter using the full package and class names.
com.verisign.epp.interfaces	This package contains the Registry client interface classes. These classes provide the primary interfaces that map to the commands and objects of the Registry EPP Mapping.

Figure 12 - Registry Packages

13.5.4.3 Registry XML Schema files

The Registry EPP Mapping is defined using XML schema files. These files are located in the *epp-verisign-bundle-{$BUILD_VER}.jar* in the ***schemas*** directory. You must un-jar the jar file in order to explicitly view them. The following table gives a brief description of these schema files:

File Name	Location	Description
registry-1.0.xsd	schemas	Registry XML Schema. This file must reside in the current directory of the client application and the EPP Stub Server.

Figure 13 - Registry Schema Files

13.5.4.4 Registry Client Interfaces

The Registry portion of the Verisign Bundle EPP SDK contains client interface classes for the Registry EPP Mapping. The interfaces provide mechanisms for querying suggestions. The following sections describe the client interface classes, supporting classes and their respective purposes.

13.5.4.4.1 Registry Interface

The Registry interface, *EPPRegistry*, is located in the *com.verisign.epp.interfaces* package. This interface is used to query zone information for the system.

The *EPPRegistry* interface has the following relevant methods:

Return Value	Parameters
	`EPPRegistry(EPPSession aNewSession)` This is the constructor method and it requires an EPP session object to be passed that has been authenticated (e.g. logged in).
`EPPRegistryCheckResp`	`sendCheck()` This method checks on the availability / existence of a zone. **This method is for future use.**
`EPPRegistryInfoResp`	`sendInfo()` This method is used to get registry zone information.
`EPPRegistryCreateResp`	`sendCreate()` This method creates a new zone. **This method is for future use.**
`EPPResponse`	`sendUpdate()` This method updates a new zone. **This method is for future use.**
`EPPResponse`	`sendDelete()` This method deletes a zone. **This method is for future use.**

1.1.1.1.1.29 EPPRegistry *() Constructor*

The *EPPRegistry* constructor requires that an authenticated *EPPSession* object be passed upon creation. Once created, the *EPPRegistry* object can perform multiple functions without reinitializing the *EPPSession* object. For example, you can use the same initialized *EPPRegistry* object to call the *sendInfo()* method multiple times.

1.1.1.1.1.29.1 Pre-Conditions

An authenticated session has been successfully established with an *EPPSession*.

1.1.1.1.1.29.2 Post-Conditions

The *EPPRegistry* instance is ready for the execution of one or more operations.

1.1.1.1.1.29.3 Exceptions

None

1.1.1.1.1.29.4 Sample Code

The following example shows the steps of initializing an *EPPSession*, then using the *EPPSession* to initialize the *EPPRegistry* interface.

```
EPPSession session = new EPPSession();

// optional
session.setTransId("ABC-12345-XYZ");
session.setVersion("1.0");
session.setLang("en");

// required
session.setClientID("ClientXID");
session.setPassword("ClientXPass");

try {
  session.initSession();
}
catch (EPPCommandException ex) {
  ex.printStackTrace();
  System.exit(1);
}

EPPRegistry registry = new EPPRegistry(session);
```

1.1.1.1.1.30 sendInfo() method

The sendI*nfo()* method sends the Registry EPP info command to the server. It has the following signature:

```
public EPPRegistryInfoResp sendInfo() throws EPPCommandException
```

1.1.1.1.1.30.1 Pre-Conditions

Either *setAllTlds(boolean)* is called with a value of *true*, or *addTld(String)* is called. Both *setAllTlds(true)* and *addTld(String)* cannot be called prior to calling *sendInfo()*.

1.1.1.1.1.30.2 Post-Conditions

On success, an *EPPRegistryInfoResp* is returned.

1.1.1.1.1.30.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the server response, than *getResponse()* will return *null*.

1.1.1.1.1.30.4 Sample Code

The following example shows the steps of performing a Registry info using the *EPPRegistry* client interface and the *sendInfo()* method:

```
EPPRegistryInfoResp response;

try {
  // Get all TLD summary information?
  if (all) {
     registry.setAllTlds(true);
  }
  else { // Get information for ".tld"
     registry.addTld(".tld");
  }
  response = registry.sendInfo();
}
 catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
  Assert.fail(e.getMessage());
  e.printStackTrace();
}
```

13.5.5 Suggestion Mapping

This section is intended to provide users of the Extensible Provisioning Protocol (EPP) Software Development Kit (SDK) with an overview of the Suggestion Mapping additions to the SDK. This document includes the following Suggestion information:

3. Definition of the Suggestion SDK files (i.e. library, schema)
4. Description of the Suggestion interface classes, including the pre-conditions, the post-conditions, the exceptions, the EPP status codes, and sample code of each of the action methods.

The SDK provides detailed interface information in HTML Javadoc format. This document does not duplicate the detailed interface information contained in the HTML Javadoc. Descriptions are provided of the main Suggestion interface elements, the pre-conditions, the post-conditions, and example code.

It is assumed that the reader has reviewed the associated EPP specifications and has a general understanding of the EPP concepts. Much of the EPP details are encapsulated in the SDK, but having a solid understanding of the EPP concepts will help in effectively using the SDK.

13.5.5.1 Suggestion Tests

The Namestore source distribution contains one test program for Suggestion EPP Mapping the product uses. The tests are located in the suggestion/java directory in *com.verisign.epp.interfaces* package. The following table describes the test files:

Directory	Description
EPPSuggestionTst.java	This is a sample program demonstrating the use of the EPPSuggestion class.

13.5.5.2 Suggestion Packages

The Suggestion portion of the Verisign Bundle EPP SDK consists of sub-packages and class additions to existing SDK packages. **Figure 14 - Suggestion Packages** provides an overview of the primary SDK packages.

Package	Description
com.verisign.epp.codec.suggestion	Name Suggestion Encoder/Decoder package. All of the detail of encoding and decoding the Suggestion EPP messages are in this package. The EPPSuggestionMapFactory must be added to

	the EPP.MapFactories configuration parameter using the full package and class name.
com.verisign.epp.framework	Addition of Suggestion EPP Server Framework classes used by the Stub Server.
com.verisign.epp.serverstub	Addition of the SuggestionHandler class used to implement the EPP Suggestion Stub Server behavior. This class must be added to the EPP.ServerEventHandlers configuration parameter using the full package and class names.
com.verisign.epp.interfaces	This package contains the Suggestion client interface classes. These classes provide the primary interfaces that map to the commands and objects of the Suggestion EPP Mapping.

Figure 14 - Suggestion Packages

13.5.5.3 Suggestion XML Schema files

The Suggestion EPP Mapping is defined using XML schema files. These files are located in the *epp-verisign-bundle-{$BUILD_VER}.jar* in the ***schemas*** directory. You must un-jar the jar file in order to explicitly view them. The following table gives a brief description of these schema files:

File Name	Location	Description
suggestion-1.1.xsd	schemas	Suggestion XML Schema. This file must reside in the current directory of the client application and the EPP Stub Server.

Figure 15 - Suggestion Schema Files

13.5.5.4 Suggestion Client Interfaces

The Suggestion portion of the Verisign Bundle EPP SDK contains client interface classes for the Suggestion EPP Mapping. The interfaces provide mechanisms for querying suggestions. The following sections describe the client interface classes, supporting classes and their respective purposes.

13.5.5.4.1 Suggestion Interface

The Suggestion interface, *EPPSuggestion*, is located in the *com.verisign.epp.interfaces* package. This interface is used to query suggestions in the Suggestion system.

The *EPPSuggestion* interface has the following relevant methods:

Return Value	Parameters
	EPPSuggestion `(EPPSession aNewSession)` This is the constructor method and it requires an EPP session object to be passed that has been authenticated (e.g. logged in).
`EPPSuggestionInfoResp`	sendInfo `()` This method is used to retrieve suggestions.

The method on the *EPPSuggestion* takes request data that will be sent to the server. The only precondition that exists on the methods of this class is that a valid EPPSession is used to create the instance. There is no other state associated with this class so all data passed as arguments is sent to the server as is. The method will return a response from the Namestore server and will throw an exception if any error occurs. If the exception is associated with an error response from the Namestore server, then the response can be retrieved from the exception with a call to *getResponse()*. The following sections describe and provide sample code for the method and the *EPPSuggestion* constructor.

1.1.1.1.1.31 EPPSuggestion *() Constructor*

The *EPPSuggestion* constructor requires that an authenticated *EPPSession* object be passed upon creation. Once created, the *EPPSuggestion* object can perform multiple functions without reinitializing the *EPPSession* object. For example, you can use the same initialized *EPPSuggestion* object to info a suggestions with the *sendInfo()* command.

1.1.1.1.1.31.1 Pre-Conditions

An authenticated session has been successfully established with an *EPPSession*.

1.1.1.1.1.31.2 Post-Conditions

The *EPPSuggestion* instance is ready for the execution of one or more operations.

1.1.1.1.1.31.3 Exceptions

None

1.1.1.1.1.31.4 Sample Code

The following example shows the steps of initializing an *EPPSession*, then using the *EPPSession* to initialize the *EPPSuggestion* interface.

```
EPPSession session = new EPPSession();
```

```
// optional
session.setTransId("ABC-12345-XYZ");
session.setVersion("1.0");
session.setLang("en");

// required
session.setClientID("ClientXID");
session.setPassword("ClientXPass");

try {
  session.initSession();
}
catch (EPPCommandException ex) {
  ex.printStackTrace();
  System.exit(1);
}

EPPSuggestion suggestion = new EPPSuggestion(session);
```

1.1.1.1.1.32 sendInfo() method

The send*Info()* method sends the Suggestion EPP info command to the server. It has the following signature:

```
public EPPSuggestionInfoResp sendInfo() throws EPPCommandException
```

1.1.1.1.1.32.1 Pre-Conditions

The *setCommand(com.verisign.epp.codec.suggestion.EPPSuggestionInfoCmd)* is called with a *com.verisign.epp.codec.suggestion.EPPSuggestionInfoCmd* filled in with the suggestion input. See the Javadoc for more detail on the options for *com.verisign.epp.codec.suggestion.EPPSuggestionInfoCmd.* The *com.verisign.epp.codec.suggestion.EPPSuggestionInfoCmd* supports many options including:

1. Input suggestion key
2. Suggestion filter
3. Desired suggestion language

1.1.1.1.1.32.2 Post-Conditions

On success, an *EPPSuggestionInfoResp* is returned.

1.1.1.1.1.32.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the server response, than *getResponse()* will return *null*.

1.1.1.1.1.32.4 Sample Code

The following example shows the steps of performing a Suggestion info using the *EPPSuggestion* client interface and the *sendInfo()* method:

```
EPPSuggestionInfoResp response;

try {
  EPPSuggestionInfoCmd cmd = new EPPSuggestionInfoCmd("51364-CLI");
  cmd.setKey("soccerteam.com");

  EPPSuggestionFilter filter = new EPPSuggestionFilter();
  filter.setContentFilter(false);
  filter.setCustomFilter(false);
  filter.setMaxLength(63);
  filter.setMaxResults(20);
  filter.setUseHyphens(false);
  filter.setUseNumbers(true);
  filter.setTableView();

  cmd.setFilter(filter);

  // Set the desired language to Spanish "ESP"
  // English "ENG" is the default language.
  cmd.setLanguage(EPPSuggestionConstants.SPANISH_CODE);

  suggestion.setCommand(cmd);
  response = suggestion.sendInfo();
}
 catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
  Assert.fail(e.getMessage());
  e.printStackTrace();
}
```

13.5.6 WhoWas Mapping

This section is intended to provide users of the Extensible Provisioning Protocol (EPP) Software Development Kit (SDK) with an overview of the WhoWas Mapping additions to the SDK. This document includes the following WhoWas information:

1. Definition of the WhoWas SDK files (i.e. library, schema)
2. Description of the WhoWas interface classes, including the pre-conditions, the post-conditions, the exceptions, the EPP status codes, and sample code of each of the action methods.

The SDK provides detailed interface information in HTML Javadoc format. This document does not duplicate the detailed interface information contained in the HTML Javadoc. Descriptions are provided of the main WhoWas interface elements, the pre-conditions, the post-conditions, and example code.

It is assumed that the reader has reviewed the associated EPP specifications and has a general understanding of the EPP concepts. Much of the EPP details are encapsulated in the SDK, but having a solid understanding of the EPP concepts will help in effectively using the SDK.

13.5.6.1 WhoWas Tests

The Namestore source distribution contains one test program for WhoWas EPP Mapping the product uses. The tests are located in the whowas/java directory in *com.verisign.epp.interfaces* package. The following table describes the test files:

Directory	Description
EPPWhoWasTst.java	This is a sample program demonstrating the use of the EPPWhoWas class.

13.5.6.2 WhoWas Packages

The WhoWas portion of the Verisign Bundle EPP SDK consists of sub-packages and class additions to existing SDK packages. Figure 16 - WhoWas PackagesFigure 14 - Suggestion Packagesprovides an overview of the primary SDK packages.

Package	Description
com.verisign.epp.codec.whowas	WhoWas Encoder/Decoder package. All of the detail of encoding and decoding the WhoWas EPP messages are in this package. The *EPPWhoWasMapFactory* must be added to the EPP.MapFactories configuration parameter using the full

	package and class name.
com.verisign.epp.framework	Addition of WhoWas EPP Server Framework classes used by the Stub Server.
com.verisign.epp.serverstub	Addition of the *WhoWasHandler* class used to implement the EPP WhoWas Stub Server behavior. This class must be added to the EPP.ServerEventHandlers configuration parameter using the full package and class names.
com.verisign.epp.interfaces	This package contains the WhoWas client interface classes. These classes provide the primary interfaces that map to the commands and objects of the WhoWas EPP Mapping.

Figure 16 - WhoWas Packages

13.5.6.3 WhoWas XML Schema files

The WhoWas EPP Mapping is defined using XML schema files. These files are located in the *epp-verisign-bundle-{$BUILD_VER}.jar* in the ***schemas*** directory. You must un-jar the jar file in order to explicitly view them. The following table gives a brief description of these schema files:

File Name	Location	Description
whowas-1.0.xsd	schemas	WhoWas XML Schema. This file must reside in the current directory of the client application and the EPP Stub Server.

Figure 17 - WhoWas Schema Files

13.5.6.4 WhoWas Client Interfaces

The WhoWas portion of the Verisign Bundle EPP SDK contains client interface classes for the WhoWas EPP Mapping. The interfaces provide mechanisms for getting history records. The following sections describe the client interface classes, supporting classes and their respective purposes.

13.5.6.4.1 WhoWas Interface

The WhoWas interface, *EPPWhoWas*, is located in the *com.verisign.epp.interfaces* package. This interface is used to get history records from the WhoWas system.

The *EPPWhoWas* interface has the following relevant methods:

Return Value	Parameters
	`EPPWhoWas(EPPSession aSession)` This is the constructor method and it requires an EPP session object to be passed that has been authenticated (e.g. logged in).
`EPPWhoWasInfoResp`	`sendInfo()` This method is used to retrieve whowas history records.

The method on the *EPPWhoWas* takes request data that will be sent to the server. The only precondition that exists on the methods of this class is that a valid EPPSession is used to create the instance. There is no other state associated with this class so all data passed as arguments is sent to the server as is. The method will return a response from the Namestore server and will throw an exception if any error occurs. If the exception is associated with an error response from the Namestore server, then the response can be retrieved from the exception with a call to *getResponse()*. The following sections describe and provide sample code for the method and the *EPPWhoWas* constructor.

1.1.1.1.1.33 EPPWhoWas *() Constructor*

The *EPPWhoWas* constructor requires that an authenticated *EPPSession* object be passed upon creation. Once created, the *EPPWhoWas* object can perform multiple functions without reinitializing the *EPPSession* object. For example, you can use the same initialized *EPPWhoWas* object to info whowas history with the *sendInfo()* command.

1.1.1.1.1.33.1 Pre-Conditions

An authenticated session has been successfully established with an *EPPSession*.

1.1.1.1.1.33.2 Post-Conditions

The *EPPWhoWas* instance is ready for the execution of one or more operations.

1.1.1.1.1.33.3 Exceptions

None

1.1.1.1.1.33.4 Sample Code

The following example shows the steps of initializing an *EPPSession*, then using the *EPPSession* to initialize the *EPPWhoWas* interface.

```
EPPSession session = new EPPSession();
```

```
// optional
session.setTransId("ABC-12345-XYZ");
session.setVersion("1.0");
session.setLang("en");

// required
session.setClientID("ClientXID");
session.setPassword("ClientXPass");

try {
        session.initSession();
}
catch (EPPCommandException ex) {
        ex.printStackTrace();
        System.exit(1);
}

EPPWhoWas whowas = new EPPWhoWas(session);
```

1.1.1.1.1.34 sendInfo() method

The sendI*nfo()* method sends the WhoWas EPP info command to the Namestore server. It has the following signature:

```
public EPPWhoWasInfoResp sendInfo() throws EPPCommandException
```

1.1.1.1.1.34.1 Pre-Conditions

1. The client transaction id should be set by calling *setTransId(String aTransId)* method.
2. The type can be set by calling *setType(String aType)* method. If type is not set then by default *"domain"* type will be set. The constant `com.verisign.epp.codec.whowas.EPPWhoWasConstants.TYPE_DOMAIN` can be used in place of "domain".
3. Either name or roid should be set by calling *setName(String aName)* or *setRoid(String aRoid)* methods.

1.1.1.1.1.34.2 Post-Conditions

On success, an *EPPWhoWasInfoResp* is returned.

1.1.1.1.1.34.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the Namestore server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the Namestore server response, than *getResponse()* will return *null*.

1.1.1.1.1.34.4 Sample Code

The following example shows the steps of performing a WhoWas info using the *EPPWhoWas* client interface and the *sendInfo()* method:

```
EPPWhoWasInfoResp response;

try {
        EPPWhoWas whowas = new EPPWhoWas(session);


        whowas.setTransId("ABC-12345");
        whowas.setType(EPPWhoWasConstants.TYPE_DOMAIN); // optional
        whowas.setName("abc.com");

        response = whowas.sendInfo();


        EPPWhoWasHistory eppWhoWasHistory = response.getHistory()
        List historyRecords = aEPPWhoWasHistory.getRecords();

        for ( int i = 0; i < historyRecords.size(); i++ ) {
                System.out.println( "Record Name:[" + i + "]" +
                                historyRecord.getName() );

                System.out.println( "Record Roid:[" + i + "]" +
                                historyRecord.getRoid() );

                System.out.println( "Record Operation:[" + i + "]" +
                                historyRecord.getOperation() );

                System.out.println( "Record Transaction Date:[" + i + "]" +
                                historyRecord.getTransactionDate() );

                System.out.println( "Record Client ID:[" + i + "]" +
                                historyRecord.getClientID() );

                System.out.println( "Record Client Name:[" + i + "]" +
                                historyRecord.getClientName() );
        }

}
 catch (EPPCommandException e) {
         EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
        e.printStackTrace();
}
```

13.5.7 Balance Mapping

This section is intended to provide users of the Extensible Provisioning Protocol (EPP) Software Development Kit (SDK) with an overview of the Balance Mapping additions to the SDK. This document includes the following WhoWas information:

3. Definition of the Balance SDK files (i.e. library, schema)
4. Description of the Balance interface classes, including the pre-conditions, the post-conditions, the exceptions, the EPP status codes, and sample code of each of the action methods.

The SDK provides detailed interface information in HTML Javadoc format. This document does not duplicate the detailed interface information contained in the HTML Javadoc. Descriptions are provided of the main WhoWas interface elements, the pre-conditions, the post-conditions, and example code.

It is assumed that the reader has reviewed the associated EPP specifications and has a general understanding of the EPP concepts. Much of the EPP details are encapsulated in the SDK, but having a solid understanding of the EPP concepts will help in effectively using the SDK.

13.5.7.1 Balance Tests

The Namestore source distribution contains one test program for WhoWas EPP Mapping the product uses. The tests are located in the nsfinance/java directory in *com.verisign.epp.interfaces* package. The following table describes the test files:

Directory	Description
EPPBalanceTst.java	This is a sample program demonstrating the use of the EPPBalance class.

13.5.7.2 Balance Packages

The Balance portion of the Verisign Bundle EPP SDK consists of sub-packages and class additions to existing SDK packages. Figure 18 - Balance Packages provides an overview of the primary SDK packages.

Package	Description
com.verisign.epp.codec.balance	Balance Encoder/Decoder package. All of the detail of encoding and decoding the Balance EPP messages are in this package. The *EPPBalanceFactory* must be added to the EPP.MapFactories configuration parameter using the full package and class name.

com.verisign.epp.framework	Addition of Balance EPP Server Framework classes used by the Stub Server.
com.verisign.epp.serverstub	Addition of the *BalanceHandler* class used to implement the EPP Balance Stub Server behavior. This class must be added to the EPP.ServerEventHandlers configuration parameter using the full package and class names.
com.verisign.epp.interfaces	This package contains the Balance client interface classes. These classes provide the primary interfaces that map to the commands and objects of the Balance EPP Mapping.

Figure 18 - Balance Packages

13.5.7.3 Balance XML Schema files

The Balance EPP Mapping is defined using XML schema files. These files are located in the *epp-verisign-bundle-{$BUILD_VER}.jar* in the ***schemas*** directory. You must un-jar the jar file in order to explicitly view them. The following table gives a brief description of these schema files:

File Name	Location	Description
balance-1.0.xsd	schemas	Balance XML Schema. This file must reside in the current directory of the client application and the EPP Stub Server.

Figure 19 - Balance Schema Files

13.5.7.4 Balance Client Interfaces

The Balance portion of the Verisign Bundle EPP SDK contains client interface classes for the Balance EPP Mapping. The interfaces provide mechanisms for getting the account balance and other financial information. The following sections describe the client interface classes, supporting classes and their respective purposes.

13.5.7.4.1 Balance Interface

The Balance interface, *EPPBalance*, is located in the *com.verisign.epp.interfaces* package. This interface is used to get the account balance and other financial information.

The *EPPBalance* interface has the following relevant methods:

Return Value	Parameters
	`EPPBalance(EPPSession aSession)` This is the constructor method and it requires an EPP session object to be passed that has been authenticated (e.g. logged in).
`EPPBalanceInfpResp`	`sendInfo()` This method is used to retrieve the account balance and other financial information.

The method on the *EPPBalance* takes request data that will be sent to the server. The only precondition that exists on the methods of this class is that a valid EPPSession is used to create the instance. There is no other state associated with this class so all data passed as arguments is sent to the server as is. The method will return a response from the Namestore server and will throw an exception if any error occurs. If the exception is associated with an error response from the Namestore server, then the response can be retrieved from the exception with a call to *getResponse()*. The following sections describe and provide sample code for the method and the *EPPBalance* constructor.

1.1.1.1.1.35 EPPBalance *() Constructor*

The *EPPBalance* constructor requires that an authenticated *EPPSession* object be passed upon creation. Once created, the *EPPBalance* object can perform multiple functions without reinitializing the *EPPSession* object. For example, you can use the same initialized *EPPBalance* object to get the balance information with the *sendInfo()* command.

1.1.1.1.1.35.1 Pre-Conditions

An authenticated session has been successfully established with an *EPPSession*.

1.1.1.1.1.35.2 Post-Conditions

The *EPPBalance* instance is ready for the execution of one or more operations.

1.1.1.1.1.35.3 Exceptions

None

1.1.1.1.1.35.4 Sample Code

The following example shows the steps of initializing an *EPPSession*, then using the *EPPSession* to initialize the *EPPBalance* interface.

```
EPPSession session = new EPPSession();
```

```
// optional
session.setTransId("ABC-12345-XYZ");
session.setVersion("1.0");
session.setLang("en");

// required
session.setClientID("ClientXID");
session.setPassword("ClientXPass");

try {
        session.initSession();
}
catch (EPPCommandException ex) {
        ex.printStackTrace();
        System.exit(1);
}

EPPBalance balance = new EPPBalance(session);
```

1.1.1.1.1.36 sendInfo() method

The sendI*nfo()* method sends the Balance EPP info command to the Namestore server. It has the following signature:

```
public EPPBalanceInfoResp sendInfo() throws EPPCommandException
```

1.1.1.1.1.36.1 Pre-Conditions

1. The client transaction id should be set by calling *setTransId(String aTransId)* method.

1.1.1.1.1.36.2 Post-Conditions

On success, an *EPPBalanceInfoResp* is returned.

1.1.1.1.1.36.3 Exceptions

An *EPPCommandException* will be returned that contains the *EPPResponse* returned from the Namestore server. The *getResponse()* method returns the associated *EPPResponse*. If the exception is thrown before reading the Namestore server response, than *getResponse()* will return *null*.

1.1.1.1.1.36.4 Sample Code

The following example shows the steps of performing a Balance info using the *EPPBalance* client interface and the *sendInfo()* method:

```
EPPBalanceInfoResp response;

try {
        EPPBalance balance = new EPPBalance(session);


        balance.setTransId("ABC-12345");

        response = balance.sendInfo();

        System.out.println( "Credit Limit: " +
                response.getCreditLimit() );

        System.out.println( "Balance: " +
                response.getBalance() );

        System.out.println( "Available Credit: " +
                response.getAvailableCredit() );

        System.out.println( "Credit Threshold (type, value): " +
                response.getCreditThreshold().getType() + "," +
                response.getCreditThreshold().getValue());
}
catch (EPPCommandException e) {
         EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

13.5.8 EmailFwd Mapping

To be filled in. Please refer to the JavaDoc for detail on the EmailFwd Mapping support.

13.5.9 DefReg Mapping

To be filled in. Please refer to the JavaDoc for detail on the DefReg Mapping support.

13.5.10 NameWatch Mapping

To be filled in. Please refer to the JavaDoc for detail on the NameWatch Mapping support.

13.5.11 NamestoreExt Extension

The NamestoreExt is used for command routing to a logical service or registry using a sub-product property that is referred to as the SubProductID. Both Namestore and the SRS require the use of the NameStoreExt to uniquely identify the target registry or service. For example, when a host is created, the NamestoreExt element will specify the particular registry at which the host is created. Currently, the convention used for the SubProductID is to prefix the TLD with "dot", as in "dotCC" for the .CC TLD or "dotCOM" for the .COM TLD. Going forward the convention will be to use the TLD without the "dot" prefix for the SubProductID. For example, for .TLD, the SubProductID is "TLD" and for IDN TLDs the A-label will be the SubProductID. The existing TLDs, including .CC, .TV, .JOB, .COM, and .NET, with support both the old convention and the new convention for backward compatibility. New TLDs will only support the new convention. The class *com.verisign.epp.namestore.interfaces.NSSubProduct* includes a set of constants of SubProductID values based on the old convention. For example, *NSSubProduct.TV* can be used to specify the sub-product for .TV. The *com.verisign.epp.namestore.interfaces.*NSDomain, com.*verisign.epp.namestore.interfaces.NSHost*, and com.*verisign.epp.namestore.interfaces.NSContact* classes provide a *setSubProductID(String)* utility method in place of using the NamestoreExt directly.

13.5.11.1 EPPNamestoreExtNamestoreExt

The *EPPNamestoreExtNamestoreExt* class is used with the *addExtension()* method for specifying the subProduct. The constructor or the *setSubProductID(java.lang.String)* should be used for setting the SubProductID value.

Please refer to the following sections for sample code demonstrating the use of the *EPPNamestoreExtNamestoreExt* class.

13.5.12 Whois Info Extension

The Whois Info Extension defined in "Extensible Provisioning Protocol Extension Mapping: Whois Info" is used to get additional domain information that is provided in the Whois Server including the following attributes:

1. Registrar Name – Full name of the sponsoring Registrar
2. Whois Server – Whois Server of the sponsoring Registrar
3. Referral URL – Referral URL of the sponsoring Registrar
4. IRIS Server – IRIS Server of the sponsoring Registrar

To specify that the additional information is desired, either an *com.verisign.epp.codec.whois.EPPWhoisInf* instance needs to added to the *com.verisign.epp.interfaces.EPPDomain* via the *addExtension(EPPCodecComponent)* method or via the *com.verisign.epp.interfaces.NSDomain.setWhoisInf(boolean)* method. If the flag is set to *true*, than the *com.verisign.epp.codec.whois.EPPWhoisInfData* instance can be retrieved from the returned *com.verisign.epp.codec.domain.EPPDomainInfoResp* via the *getExtension(Class)* method.

13.5.13 SecDNS Extension

The SecDNS Extension is used for provisioning and management of DNS security extensions in a shared central repository. This extension defines additional elements for EPP **<create>, <update>** commands and also for the EPP **<info>** response. There are two versions of the SecDNS Extension supported that include:

1. secDNS-1.0 – This is the term that refers to "RFC 4310 – EPP DNS Security Extensions Mapping". The classes contained in the *com.verisign.epp.codec.secdnsext* package were moved to the *com.verisign.epp.codec.secdnsext.v10* package to support more than one version of the SecDNS Extension.
2. secDNS-1.1 – This is the term that refers to "RFC 5910 – EPP DNS Security Extensions Mapping" that deprecates "RFC 4310 – EPP DNS Security Extensions Mapping". It is recommended that secDNS-1.1 be used. The secDNS-1.1 classes are contained in the *com.verisign.epp.codec.secdnsext.v11* package. There are some fundamental changes included in secDNS-1.1 that should be reviewed if the client is migrating from secDNS-1.0.

There are two approaches to setting the SecDNS Extension with a domain create or update command. The first approach sets the *com.verisign.epp.codec.secdnsext.v10.EPPSecDNSExtCreate* or *com.verisign.epp.codec.secdnsext.v10.EPPSecDNSExtUpdate* instances for secDNS-1.0 or sets the *com.verisign.epp.codec.secdnsext.v11.EPPSecDNSExtCreate* or *com.verisign.epp.codec.secdnsext.v11.EPPSecDNSExtUpdate* instances for secDNS-1.1 with the *com.verisign.epp.interfaces.EPPDomain.addExtension(EPPCodecComponent)* method. The second approach is to use the SecDNS Extension convenience methods with the *com.verisign.epp.interfaces.NSDomain* interface described below.

Some of the *com.verisign.epp.namestore.interfaces.NSDomain* methods support both secDNS1.0 and secDNS-1.1 by using reflection of the first element contained in the passed in *List* parameter. The *List* parameter contains *com.verisign.epp.codec.secdnsext.v10.EPPSecDNSExtDsData* instances for secDNS-1.0 and *com.verisign.epp.codec.secdnsext.v11.EPPSecDNSExtDsData* instances for secDNS-1.1. The exception to this is the *setSecDNSUpdateForRem(List, Boolean*) method where the *List* parameter contains *Integer* instances for secDNS-1.0 and *com.verisign.epp.codec.secdnsext.v11.EPPSecDNSExtDsData* instances for secDNS-1.1. The methods include the following:

1. *setSecDNSCreate(List aDsData)* – Set the DS to include with the *sendCreate()*.
2. *setSecDNSUpdateForAdd(List aAddDsData, boolean aUrgent)* – Set the DS to add along with the urgent flag value. For secDNS-1.1 it is recommended to use

the *setSecDNSUpdate(List aAddDsData, List aRemDsData)* method instead. The *setSecDNSUpdateForAdd(List aAddDsData, boolean aUrgent)* method cannot be used in combination with any other *setSecDNSUpdate* methods.

3. *setSecDNSUpdateForRem(List aRemDsData, boolean aUrgent)* – Set the DS to remove along with the urgent flag value. For secDNS-1.1 it is recommended to use the *setSecDNSUpdate(List aAddDsData, List aRemDsData)* method instead. The *setSecDNSUpdateForRem(List aRemDsData, boolean aUrgent)* method cannot be used in combination with any other *setSecDNSUpdate* methods.

One method that only supports secDNS-1.1 is the following:

1. *setSecDNSUpdate(List aAddDsData, List aRemDsData)* –The method can be used to add, remove, remove all, and replace all DS. The constant *NSDomain.REM_ALL_DS* can be used for the *aRemDsData* parameter to remove all DS and to replace all DS by also including a non-null, non-empty *aAddDsData* parameter. *setSecDNSUpdate(List aAddDsData, List aRemDsData)* method cannot be used in combination with any other *setSecDNSUpdate* methods. The *aUrgent* parameter is not included with this method since the Verisign servers do not support setting the urgent flag to true.

One method that only supports secDNS-1.0 is the following:

1. *setSecDNSUpdateForChg(List aChgDsData, boolean aUrgent)* – This method replaces all of the DS according to secDNS-1.0. There is a different approach taken for secDNS-1.1 to replace all of the DS, so the use of the <secDNS:chg> with a list of DS is specific to secDNS-1.0.

13.5.13.1 Sample Code

The following is a sample of setting DS data on a domain create using secDNS-1.0.

```
NSDomain theDomain = new NSDomain(session);
theDomain.addDomainName("example.com");
theDomain.setSubProductID(NSSubProduct.COM);
theDomain.setAuthString("ClientX");

// Add DS
List dsDataList = new ArrayList();
dsDataList.add(new
com.verisign.epp.codec.secdnsext.v10.EPPSecDNSExtDsData(12345,
                  EPPSecDNSAlgorithm.DSA,
                  EPPSecDNSExtDsData.SHA1_DIGEST_TYPE,
                  "49FD46E6C4B45C55D4AC"));
theDomain.setSecDNSCreate(dsDataList);
```

```
EPPDomainCreateResp theResponse = theDomain.sendCreate();
```

The following is a sample of setting DS data on a domain create using secDNS-1.1.

```
NSDomain theDomain = new NSDomain(session);
theDomain.addDomainName("example.com");
theDomain.setSubProductID(NSSubProduct.COM);
theDomain.setAuthString("ClientX");

// Add DS
List dsDataList = new ArrayList();
dsDataList.add(new
com.verisign.epp.codec.secdnsext.v11.EPPSecDNSExtDsData(12345,
                  EPPSecDNSAlgorithm.DSA,
                  EPPSecDNSExtDsData.SHA1_DIGEST_TYPE,
                  "49FD46E6C4B45C55D4AC"));
theDomain.setSecDNSCreate(dsDataList);

EPPDomainCreateResp theResponse = theDomain.sendCreate();
```

The following is a sample of adding DS data on a domain update using secDNS-1.0.

```
NSDomain theDomain = new NSDomain(session);
theDomain.addDomainName("example.com");
theDomain.setSubProductID(NSSubProduct.COM);

// Add DS
List dsDataList = new ArrayList();
dsDataList.add(new
com.verisign.epp.codec.secdnsext.v10.EPPSecDNSExtDsData(12345,
                  EPPSecDNSAlgorithm.DSA,
                  EPPSecDNSExtDsData.SHA1_DIGEST_TYPE,
                  "49FD46E6C4B45C55D4AC"));
theDomain.setSecDNSUpdateForAdd(dsDataList);

EPPDomainCreateResp theResponse = theDomain.sendUpdate();
```

The following is a sample of adding and removing DS data on a domain update using secDNS-1.1.

```
NSDomain theDomain = new NSDomain(session);
theDomain.addDomainName("example.com");
theDomain.setSubProductID(NSSubProduct.COM);

// Add DS
List addDsDataList = new ArrayList();
addDsDataList.add(new
com.verisign.epp.codec.secdnsext.v11.EPPSecDNSExtDsData(12345,
                  EPPSecDNSAlgorithm.DSA,
                  EPPSecDNSExtDsData.SHA1_DIGEST_TYPE,
                  "49FD46E6C4B45C55D4AC"));
```

```
List remDsDataList = new ArrayList();
remDsDataList.add(new
com.verisign.epp.codec.secdnsext.v11.EPPSecDNSExtDsData(12345,
                  EPPSecDNSAlgorithm.DSA,
                  EPPSecDNSExtDsData.SHA1_DIGEST_TYPE,
                  "38EC35D5B3A34B44C39B "));
theDomain.setSecDNSUpdate(addDsDataList, remDsDataList);

EPPDomainCreateResp theResponse = theDomain.sendUpdate();
```

The following is a sample of replacing all DS data by removing all and then adding a list of new DS using secDNS-1.1.

```
NSDomain theDomain = new NSDomain(session);
theDomain.addDomainName("example.com");
theDomain.setSubProductID(NSSubProduct.COM);

// Add DS
List addDsDataList = new ArrayList();
addDsDataList.add(new
com.verisign.epp.codec.secdnsext.v11.EPPSecDNSExtDsData(12345,
                  EPPSecDNSAlgorithm.DSA,
                  EPPSecDNSExtDsData.SHA1_DIGEST_TYPE,
                  "49FD46E6C4B45C55D4AC"));
theDomain.setSecDNSUpdate(addDsDataList, NSDomain.REM_ALL_DS);

EPPDomainCreateResp theResponse = theDomain.sendUpdate();
```

13.5.14 COA Extension

The COA Extension is used for provisioning and management of Client Object Attribute extensions in a shared central repository. This extension defines additional elements for EPP <create>, <update> commands and also for the EPP <info> response.

There are two approaches to setting the COA Extension with a domain create or update command. The first approach sets the *com.verisign.epp.codec.coaext.EPPCoaExtCreate* or *com.verisign.epp.codec.coaext.EPPCoaExtUpdate* instances with the *com.verisign.epp.interfaces.EPPDomain.addExtension(EPPCodecComponent)* method. The second approach is to use the COA Extension convenience methods with the *com.verisign.epp.interfaces.NSDomain* interface described here.

1. *setCoaCreate(List aAttrs)* – Set the COAs to include with the *sendCreate()*.

Code sample:

```
NSDomain theDomain = new NSDomain(session);
theDomain.addDomainName("example.com");
theDomain.setSubProductID(NSSubProduct.COM);
theDomain.setAuthString("ClientX");

// Client Object Attributes to be added
EPPCoaExtAttr attr = new EPPCoaExtAttr( "KEY1", "value1"
);
List attrList = new ArrayList();
attrList.add(attr);
theDomain.setCoaCreate(attrList);


EPPDomainCreateResp theResponse = theDomain.sendCreate();
```

2. *setCoaUpdateForPut(List aAttrs)* – Set the list of key / value pairs specifying the COAs to add or update.

Code sample:

```
NSDomain theDomain = new NSDomain(session);
theDomain.addDomainName("example.com");
theDomain.setSubProductID(NSSubProduct.COM);
theDomain.setAuthString("ClientX");

// Client Object Attributes to be added
EPPCoaExtAttr attr = new EPPCoaExtAttr( "KEY1", "value1"
);
List attrList = new ArrayList();
attrList.add(attr);
theDomain.setCoaUpdateForPut(attrList);


EPPDomainCreateResp theResponse = theDomain.sendUpdate();
```

3. *setCoaUpdateForRem(List aKeys)* – Set the list of keys identifying which existing COAs to remove.

Code sample:

```
NSDomain theDomain = new NSDomain(session);
theDomain.addDomainName("example.com");
theDomain.setSubProductID(NSSubProduct.COM);
theDomain.setAuthString("ClientX");

// Client Object Attributes to be removed
EPPCoaExtKey key = new EPPCoaExtKey("KEY1");
List attrList = new ArrayList();
attrList.add(key);
theDomain.setCoaUpdateForRem(attrList);


EPPDomainCreateResp theResponse = theDomain.sendUpdate();
```

13.5.15 Premium Domain Extension

The Premium Domain Extension defined in "Extensible Provisioning Protocol Extension Mapping: Premium Domain extension" is used to support premium features. This extension defines additional elements for EPP <check>, <update> commands and for the EPP <check> response.

Adding Premium Domain Extension to the EPP <check> command allows a client to retrieve premium information for a domain.

For this, a *com.verisign.epp.codec.premiumdomain.EPPPremiumDomainCheck(boolean)* instance needs to added to the *com.verisign.epp.interfaces.EPPDomain* via the *addExtension(EPPCodecComponent)* method. If the flag is set to true, then the *com.verisign.epp.codec.premiumdomain.EPPPremiumDomainCheckResp* instance can be retrieved from the returned *com.verisign.epp.codec.domain.EPPDomainCheckResp* via the *getExtension(Class)* method. *EPPPremiumDomainCheckResp.getCheckResults* returns the list of *EPPPremiumDomainCheckResult* instances. *EPPPremiumDomainCheckResult* holds the premium information.

Also, adding reassign premium domain Extension to the EPP <update> command allows a client to reassign a domain name to another registrar. For this, set the shortName of a registrar to whom this domain name needs to be reassigned using *setShortName(String)* method of *com.verisign.epp.codec.premiumdomain.EPPPremiumDomainReAssignCmd* instance. Send Premium Domain extension by adding *com.verisign.epp.codec.premiumdomain.EPPPremiumDomainReAssignCmd* instance to the *com.verisign.epp.interfaces.EPPDomain* via the *addExtension(EPPCodecComponent)* method. The reassign premium domain extension of domain update command returns the standard domain update response.

13.5.16 DotJobs Contact Extension

13.5.16.1 DotJobs Contact Packages

DotJobs Contact consists of sub-packages of the SDK packages and class additions to existing SDK packages. The following table provides an overview of the SDK packages.

Package	Description
com.verisign.epp.codec.jobscontact	DotJobs Contact EPP Encoder/Decoder package. All of the detail of encoding and decoding the DotJobs Contact EPP extension messages are encapsulated in this package. The *EPPJobsContactExtFactory* must be added to the *EPP.CmdRspExtensions* configuration parameter.
com.verisign.epp.serverstub	Addition of the *com.verisign.epp.serverstub.JobsContactHandler* class used to implement the EPP Contact Stub Server behavior. This class must be added to the *EPP.ServerEventHandlers* configuration parameter.

13.5.16.2 DotJobs Contact XML Schema Files

The DotJobs Contact EPP Extension Mapping is defined using XML schema files. These files are located in the *epp-verisign-bundle-{$BUILD_VER}.jar* in the ***schemas*** directory. You must un-jar the jar file in order to explicitly view them.

File Name	Location	Description
jobsContact-1.0.xsd	schemas	DotJobs Contact XML Schema. This file must reside in the current directory of the client application and the EPP Stub Server.

13.5.16.3 DotJobs Contact Client Interface

13.5.16.3.1 Overview

DotJobs Contact is an extension to the Contact Object and hence EPPContact will be the client interface for DotJobs extension operations.

13.5.16.3.2 sendCreate() Method

Same as Contact sendCreate() method. However the extension part of create is explained using the sample listed below.

```
try {

        contact.setTransId("ABC-12345-XYZ");
        contact.setAuthorizationId("ClientXYZ");
        contact.addContactId("sh8013");
        contact.setVoicePhone("+1.7035555555");
        contact.setVoiceExt("123");
        contact.setFaxNumber("+1.7035555556");
        contact.setFaxExt("456");
        contact.setEmail("jdoe@example.com");

        // Streets
        Vector streets = new Vector();
        streets.addElement("123 Example Dr.");
        streets.addElement("Suite 100");
        streets.addElement("This is third line");

        EPPContactAddress address = new EPPContactAddress();
        address.setStreets(streets);
        address.setCity("Dulles");
        address.setStateProvince("VA");
        address.setPostalCode("20166-6503");
        address.setCountry("US");

        EPPContactPostalDefinition name = new EPPContactPostalDefinition(

        EPPContactPostalDefinition.ATTR_TYPE_LOC);

        name.setName("John Doe");
        name.setOrg("Example Inc.");
        name.setAddress(address);

        contact.addPostalInfo(name);

        // this is not a valid Example but it will do
        EPPContactAddress Intaddress = new EPPContactAddress();

        Intaddress.setStreets(streets);
        Intaddress.setCity("Dulles");
        Intaddress.setStateProvince("VA");
        Intaddress.setPostalCode("20166-6503");
        Intaddress.setCountry("US");

        EPPContactPostalDefinition Intname = new EPPContactPostalDefinition(

        EPPContactPostalDefinition.ATTR_TYPE_INT);

        Intname.setName("John Doe");
        Intname.setOrg("Example Inc.");
        Intname.setAddress(Intaddress);

        contact.addPostalInfo(Intname);

        // disclose names
        Vector names = new Vector();

        // names.addElement(new
```

```
        // EPPContactDiscloseName(EPPContactDiscloseName.ATTR_TYPE_LOC));
        names.addElement(new EPPContactDiscloseName(
        EPPContactDiscloseName.ATTR_TYPE_INT));

        // disclose orgs
        Vector orgs = new Vector();
        orgs.addElement(new EPPContactDiscloseOrg(
        EPPContactDiscloseOrg.ATTR_TYPE_LOC));
        orgs.addElement(new EPPContactDiscloseOrg(
        EPPContactDiscloseOrg.ATTR_TYPE_INT));

        // disclose addresses
        Vector addresses = new Vector();
        addresses.addElement(new EPPContactDiscloseAddress(

        EPPContactDiscloseAddress.ATTR_TYPE_LOC));
        addresses.addElement(new EPPContactDiscloseAddress(

        EPPContactDiscloseAddress.ATTR_TYPE_INT));

        // disclose
        EPPContactDisclose disclose = new EPPContactDisclose();
        disclose.setFlag("0");
        disclose.setNames(names);
        disclose.setOrgs(orgs);
        disclose.setAddresses(addresses);
        disclose.setVoice("");
        disclose.setFax("");
        disclose.setEmail("");

        contact.setDisclose(disclose);

        EPPJobsContactCreateCmd createExt =
                new EPPJobsContactCreateCmd("SE", "www.verisign.com",
                "IT", "Yes", "No");

        contact.addExtension(createExt);

        response = (EPPContactCreateResp) contact.sendCreate();

        // -- Output all of the response attributes
        System.out.println("contactCreate: Response = [" + response
                                        + "]\n\n");
        System.out.println("Contact ID : " + response.getId());
        System.out.println("Contact Created Date : " +
                response.getCreationDate());

}
```

13.5.16.3.3 sendCheck() Method

DotJobs Contact is an extension to Contact Object and this method is not applicable to the extension.

13.5.16.3.4 sendInfo() Method

Same as Contact sendInfo() method. However the extension part of info is explained using the sample listed below.

```
try {
        EPPContactInfoResp contactResponse;

        System.out.println("JobsContact: Contact Info");

        contact.setTransId("ABC-12345-XYZ");
        contact.addContactId("helloworld");

        contactResponse = contact.sendInfo();

        System.out.println("contactInfo: id = " + response.getId());

        Vector postalContacts = null;

        if (response.getPostalInfo().size() > 0) {
                postalContacts = response.getPostalInfo();

        for (int j = 0; j < postalContacts.size(); j++) {

                // Name
                System.out.println("contactInfo:\t\tname = "
                   + ((EPPContactPostalDefinition) postalContacts
                        .elementAt(j)).getName());

                // Organization
                System.out.println("contactInfo:\t\torganization = "
                + ((EPPContactPostalDefinition) postalContacts
                .elementAt(j)).getOrg());


                EPPContactAddress address =
                        ((EPPContactPostalDefinition)postalContacts
                                .elementAt(j)).getAddress();

                for (int i = 0; i < address.getStreets().size(); i++) {
                        System.out.println("contactInfo:\t\tstreet" + (i + 1)
                            + " = " + address.getStreets().elementAt(i));

                }

                // Address City
                System.out.println("contactInfo:\t\tcity = " +
                 address.getCity());


                // Address State/Province
                System.out.println("contactInfo:\t\tstate province = "
                  + address.getStateProvince());
```

```
            // Address Postal Code
            System.out.println("contactInfo:\t\tpostal code = "
              + address.getPostalCode());

            // Address County
            System.out.println("contactInfo:\t\tcountry = "
              + address.getCountry());
      }


      // Contact E-mail
      System.out.println("contactInfo:\temail = " + response.getEmail());

      // Contact Voice
      System.out.println("contactInfo:\tvoice = " + response.getVoice());

      // Contact Voice Extension
      System.out.println("contactInfo:\tvoice ext = "
                                  + response.getVoiceExt());

      // Contact Fax
      System.out.println("contactInfo:\tfax = " + response.getFax());

      // Contact Fax Extension
      System.out.println("contactInfo:\tfax ext = "
                                  + response.getFaxExt());

      // Client Id
      System.out.println("contactInfo: client id = "
                                  + response.getClientId());

      // Created By
      System.out.println("contactInfo: created by = "
                                  + response.getCreatedBy());

      // Created Date
      System.out.println("contactInfo: create date = "
                                  + response.getCreatedDate());

      // -- Output optional response attributes using accessors
      // Contact Fax
      if (response.getFax() != null) {
            System.out.println("contactInfo:\tfax = " +
             response.getFax());
      }

      // Contact Voice
      if (response.getVoice() != null) {
            System.out.println("contactInfo:\tVoice = "
            + response.getVoice());
      }

      // Last Updated By
      if (response.getLastUpdatedBy() != null) {
            System.out.println("contactInfo: last updated by = "
                  + response.getLastUpdatedBy());
```

```
        }

        // Last Updated Date
        if (response.getLastUpdatedDate() != null) {
                System.out.println("contactInfo: last updated date = "
                + response.getLastUpdatedDate());
        }

        // Last Transfer Date
        if (response.getLastTransferDate() != null) {
                System.out.println("contactInfo: last updated date = "
                + response.getLastTransferDate());
        }

        // Authorization Id
        if (response.getAuthInfo() != null) {
                System.out.println("contactInfo: authorization info = "
                + response.getAuthInfo().getPassword());
        }

        // Disclose
        if (response.getDisclose() != null) {
                System.out.println("contactInfo: disclose info = "
                + response.getDisclose());
        }

        // -- Output extension attribute(s)
        if (contactResponse.hasExtension(EPPJobsContactInfoResp.class)) {

           EPPJobsContactInfoResp ext = (EPPJobsContactInfoResp)
                contactResponse.getExtension(EPPJobsContactInfoResp.class);

           System.out.println("jobsContact: Title = " + ext.getTitle());

           System.out.println("jobsContact: Website = " + ext.getWebsite());

           System.out.println("jobsContact: industryType = " +
                ext.getIndustryType());

           System.out.println("jobsContact: industryType = " +
                ext.isAdminContact());

           System.out.println("jobsContact: associationMember = " +
                ext.isAssociationMember());
                        }
        else {
           System.out.println("JobsContact: EPPJobsContact extn. NOT found");
        }

}
```

13.5.16.4

13.5.16.4.1 sendUpdate() Method

Same as Contact sendUpdate() method. However the extension part of update is explained using the sample listed below.

```
try {
        contact.setTransId("ABC-12345-XYZ");
        contact.addContactId("sh8013");

        // Streets
        Vector streets = new Vector();
        streets.addElement("123 Example Dr.");
        streets.addElement("Suite 100");
        streets.addElement("This is third line");

        // Address
        EPPContactAddress address = new EPPContactAddress(streets,
                                    "Dulles", "VA", "20166-6503", "US");

        EPPContactPostalDefinition postal = new EPPContactPostalDefinition(
                                    "Joe Brown", "Example Corp.",

        EPPContactPostalDefinition.ATTR_TYPE_LOC, address);

        // statuses
        contact.addStatus(EPPContact.STAT_PENDING_DELETE);
        contact.addPostalInfo(postal);
        contact.setVoicePhone("+1.7035555555");
        contact.setVoiceExt("456");
        contact.setFaxNumber("+1.7035555555");
        contact.setFaxExt("789");
        contact.setAuthorizationId("ClientXYZ");

        // disclose names
        Vector names = new Vector();

        // names.addElement(new
        // EPPContactDiscloseName(EPPContactDiscloseName.ATTR_TYPE_LOC));
        names.addElement(new EPPContactDiscloseName(
                                    EPPContactDiscloseName.ATTR_TYPE_INT));

        // disclose orgs
        Vector orgs = new Vector();
        orgs.addElement(new EPPContactDiscloseOrg(
                EPPContactDiscloseOrg.ATTR_TYPE_LOC));
        orgs.addElement(new EPPContactDiscloseOrg(
                EPPContactDiscloseOrg.ATTR_TYPE_INT));

        // disclose addresses
        Vector addresses = new Vector();
        addresses.addElement(new EPPContactDiscloseAddress(

        EPPContactDiscloseAddress.ATTR_TYPE_LOC));
                        addresses.addElement(new EPPContactDiscloseAddress(
```

```
        EPPContactDiscloseAddress.ATTR_TYPE_INT));

        // disclose
        EPPContactDisclose disclose = new EPPContactDisclose();
        disclose.setFlag("0");
        disclose.setNames(names);
        disclose.setOrgs(orgs);
        disclose.setAddresses(addresses);
        disclose.setVoice("");
        disclose.setFax("");
        disclose.setEmail("");

        contact.setDisclose(disclose);

        EPPJobsContactUpdateCmd updateExt = new EPPJobsContactUpdateCmd();

        updateExt.setTitle("Customer Service");
        updateExt.setWebsite("www.verisign.com");
        updateExt.setIndustry("IT");
        updateExt.setAdminContact("No");
        updateExt.setAssociationMember("No");

        contact.addExtension(updateExt);


        response = contact.sendUpdate();

        // -- Output all of the response attributes
        System.out.println("contactUpdate: Response = [" + response
                                        + "]\n\n");
} catch (EPPCommandException e) {
        handleException(e);
}
```

13.5.16.4.2 sendDelete() Method

DotJobs Contact is an extension to Contact Object and this method is not applicable to the extension.

13.5.16.4.3 sendTransfer() Method

DotJobs Contact is an extension to Contact Object and this method is not applicable to the extension.

13.5.17 Launch Extension

The Launch Extension defined in "Launch Phase Mapping for the Extensible Provisioning Protocol (EPP)" is used during the launch phases of new TLD's. During the "sunrise" launch phase, trademark information is passed using the definitions in the "Mark and Signed Mark Objects Mapping". The Launch Extension includes extensions to the Domain Check Command, Domain Info Command, Domain Create Command, Domain Update Command, and Domain Delete Command. The majority of the SDK support for the Launch Extension is handled by using the Launch CODEC classes, in the *com.verisign.epp.codec.launch* package, with the *com.verisign.epp.interfaces.EPPDomain.addExtension(EPPCodecComponent)* method or the *com.verisign.epp.namestore.interfaces.NSDomain.addExtension(EPPCodecComponent)* method. The *com.verisign.epp.interfaces.EPPLaunch* interfaces class was created to simplify sending the Launch Check Command (Claims Check Form or Availability Check Form).

13.5.17.1 Launch Extension Packages

The Launch Extension consists of sub-packages of the SDK packages and class additions to existing SDK packages. The following table provides an overview of the Launch Extension packages.

Package	Description
com.verisign.epp.codec.launch	Launch Extension EPP Encoder/Decoder package. All of the detail of encoding and decoding the Launch Extension EPP messages are encapsulated in this package. The *com.verisign.epp.codec.launch.EPPLaunchExtFactory* must be added to the *EPP.CmdRspExtensions* configuration parameter.
com.verisign.epp.interfaces	Addition of the *EPPLaunch* Client Interface class, which provides a simplified interface for sending the Claims Check Command.
com.verisign.epp.serverstub	Addition of the *com.verisign.epp.serverstub.LaunchDomainHandler* class and the *com.verisign.epp.serverstub.LaunchPollHandler* used to implement the EPP Launch Stub Server behavior. The *com.verisign.epp.serverstub.LaunchDomainHandler* class must be added to the *EPP.ServerEventHandlers* configuration parameter and the *com.verisign.epp.serverstub.LaunchPollHandler* class must be added to the *EPP.PollHandlers* configuration parameter to simulate a server that supports the Launch Extension.

13.5.17.2 Launch XML Schema Files

The Launch Extension is defined using an XML schema file and is dependent on a set of XML schema files. These files are located in the *epp-verisign-bundle-{$BUILD_VER}.jar* in the ***schemas*** directory. You must un-jar the jar file in order to explicitly view them.

File Name	Location	Description
launch-1.0.xsd	schemas	Launch Extension XML Schema. This XML Schema is dependent on the mark-1.0.xsd and the signedMark-1.0.xsd.
mark-1.0.xsd	schemas	Trademark definition XML Schema.
signedMark-1.0.xsd	schemas	Signed Mark and Encoded Signed Mark XML Schema. This XML Schema is dependent on mark-1.0.xsd and xmldsig-core-schema.xsd.
xmldsig-core-schema.xsd	schemas	XML Signature (xmldsig) XML Schema.

13.5.17.3 Launch Client Interface

The Launch Extension is an extension to the Domain Object and so the Domain Client Interface classes that include *com.verisign.epp.interfaces.EPPDomain* and *com.verisign.epp.namestore.interfaces.NSDomain* are used along with the Launch Extension specific *com.verisign.epp.interfaces.EPPLaunch* class for the Claims Check Command. A set of examples is provided for various Launch Extension cases in the following sections.

13.5.17.3.1 sendCheck() Method

The Launch Extension includes two forms of the Check Command, which include the Claims Check Form and the Availability Check Form. Both forms may be handled using the *com.verisign.epp.interfaces.EPPLaunch.sendCheck()* method.

"Figure 20 - Launch Claims Check Example" shows an example of executing a Launch Extension Claims Check Command using the *com.verisign.epp.interfaces.EPPLaunch.sendCheck()* method.

Figure 20 - Launch Claims Check Example

```
EPPResponse response;

try {
        EPPLaunch launch = new EPPLaunch(session);
```

```
        launch.setTransId("ABC-12345");
        launch.addDomainName("example1.tld");
        launch.setPhase(EPPLaunch.PHASE_CLAIMS);

        response = launch.sendCheck();

        if (response.hasExtension(EPPLaunchChkData.class)) {
                EPPLaunchChkData ext = (EPPLaunchChkData)
response.getExtension(EPPLaunchChkData.class);

                List<EPPLaunchCheckResult> results = ext.getCheckResults();
                for (EPPLaunchCheckResult result : results) {
                        if (result.isExists()) {
                                System.out.println(result.getName() + ", mark
exists, claimsKey = [" + result.getClaimKey() + "]");
                }
                else {
                        System.out.println(result.getName() + ", mark DOES NOT
exist");
        }

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

"Figure 21 - Launch Availability Check Example" shows an example of executing a Launch Extension Availability Check Command using the *com.verisign.epp.interfaces.EPPLaunch.sendCheck()* method for the custom "idn-releases" phase.

Figure 21 - Launch Availability Check Example

```
EPPDomainCheckResp response;

try {
        EPPLaunch launch = new EPPLaunch(session);
```

```
        launch.setTransId("ABC-12345");
        launch.addDomainName("example1.tld");
        launch.setPhase(EPPLaunch.PHASE_CUSTOM);
        launch.setPhaseName("idn-release");
        launch.setType(EPPLaunch.TYPE_AVAILABILITY);

        response = (EPPDomainCheckResp) launch.sendCheck();

        System.out.println("Launch Availability Response = [" + response +
"]");

}
catch (EPPCommandException e) {
         EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

13.5.17.3.2 sendInfo() Method

The Launch Extension utilizes the *com.verisign.epp.interfaces.EPPDomain.sendInfo()* method, that is extended by the *com.verisign.epp.namestore.interfaces.NSDomain* class, to send a Domain Info Command with the Launch Extension.

"Figure 22 – Domain Info for Launch Application Example" shows an example of executing a Domain Info Command for a Sunrise Application with the Application Identifier of "abc123".

Figure 22 – Domain Info for Launch Application Example

```
EPPDomainInfoResp response;

try {
        NSDomain domain = new NSDomain(session);
```

```
        domain.setTransId("ABC-12345");
        domain.addDomainName("example1.tld");

        domain.addExtension(new EPPLaunchInfo(new
EPPLaunchPhase(EPPLaunchPhase.PHASE_SUNRISE), "abc123"));

        response = domain.sendInfo();

        if (response.hasExtension(EPPLaunchInfData.class)) {
                EPPLaunchInfData ext =
response.getExtension(EPPLaunchInfData.class);
                System.out.println("Phase = " + ext.getPhase().getPhase());
                System.out.println("Id = " + ext.getApplicationId());
                System.out.println("Status = " + ext.getStatus().getStatus());
                System.out.println("Mark = " + ext.getMark());
        }

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

"Figure 23 – Domain Info for Launch Registration Example" shows an example of executing a Domain Info Command for a Sunrise Registration.

Figure 23 – Domain Info for Launch Registration Example

```
EPPDomainInfoResp response;

try {
        NSDomain domain = new NSDomain(session);
```

```
        domain.setTransId("ABC-12345");
        domain.addDomainName("example1.tld");

        EPPLaunchInfo infExt = new EPPLaunchInfo(new
EPPLaunchPhase(EPPLaunchPhase.PHASE_SUNRISE));
        infExt.setIncludeMark(true);

        domain.addExtension(infExt);

        response = domain.sendInfo();

        if (response.hasExtension(EPPLaunchInfData.class)) {
                EPPLaunchInfData ext =
response.getExtension(EPPLaunchInfData.class);
                System.out.println("Phase = " + ext.getPhase().getPhase());
                System.out.println("Mark = " + ext.getMark());
        }

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

13.5.17.3.3 sendCreate() Method

The Launch Extension utilizes the *com.verisign.epp.interfaces.EPPDomain.sendCreate()* method, that is extended by the *com.verisign.epp.namestore.interfaces.NSDomain* class, to send a Domain Create Command with the Launch Extension. The Launch Extension supports all four forms (Sunrise Create Form, Claims Create Form, General Create Form, Mix Create Form).

"Figure 24 – Domain Create in Sunrise Create Form Example" shows an example of executing a Domain Create Command for a Sunrise Application with an Encoded Signed Mark.

Figure 24 – Domain Create in Sunrise Create Form Example

```
EPPResponse response;

try {
        NSDomain domain = new NSDomain(session);

        // Define Mark
        EPPMark mark = new EPPMark();
        …

        // Define Issuer
        EPPIssuer issuer = new EPPIssuer("1", "Example Inc.",
support@example.tld);
        …

        // Define Encoded Signed Mark and sign it
```

```
        EPPEncodedSignedMark signedMark =
          new EPPEncodedSignedMark("1-2", issuer,
                new GregorianCalendar(2013, 1, 1).getTime(),
                new GregorianCalendar(2014, 1, 1).getTime(),
                mark);
        signedMark.sign(privateKey, certChain);

        domain.addExtension(new EPPLaunchCreate(new
EPPLaunchPhase(EPPLaunchPhase.PHASE_SUNRISE), signedMark,
EPPLaunchCreate.TYPE_APPLICATION));

        domain.setTransId("ABC-12345");
        domain.addDomainName("example1.tld");
        domain.setAuthString("ClientX");

        response = domain.sendCreate();

        if (response.hasExtension(EPPLaunchCreData.class)) {
                EPPLaunchCreData ext =
response.getExtension(EPPLaunchCreData.class);
                System.out.println("Phase = " + ext.getPhase().getPhase());
                System.out.println("Id = " + ext.getApplicationId());
        }

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

"Figure 25 – Domain Create in Claims Create Form Example" shows an example of executing a Domain Create Command for a domain registration with the claims notice information.

Figure 25 – Domain Create in Claims Create Form Example

```
EPPResponse response;

try {
        NSDomain domain = new NSDomain(session);

        domain.setTransId("ABC-12345");
        domain.addDomainName("example1.tld");
        domain.setAuthString("ClientX");

        domain.addExtension(new EPPLaunchCreate(new
EPPLaunchPhase(EPPLaunchPhase.PHASE_CLAIMS), new
EPPLaunchNotice("49FD46E6C4B45C55D4AC", new Date(), new Date()),
EPPLaunchCreate.TYPE_REGISTRATION);
```

```
        response = domain.sendCreate();
}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

"Figure 26 – Domain Create in General Create Form Example" shows an example of executing a Domain Create Command in General Create Form to explicitly specify the phase and the type of object to create.

Figure 26 – Domain Create in General Create Form Example

```
EPPResponse response;

try {
        NSDomain domain = new NSDomain(session);

        domain.setTransId("ABC-12345");
        domain.addDomainName("example1.tld");
        domain.setAuthString("ClientX");

        domain.addExtension(new EPPLaunchCreate(new
EPPLaunchPhase(EPPLaunchPhase.PHASE_LANDRUSH),
EPPLaunchCreate.TYPE_APPLICATION);

        response = domain.sendCreate();

        if (response.hasExtension(EPPLaunchCreData.class)) {
                EPPLaunchCreData ext =
response.getExtension(EPPLaunchCreData.class);
                System.out.println("Phase = " + ext.getPhase().getPhase());
                System.out.println("Id = " + ext.getApplicationId());
        }

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

"Figure 27 – Domain Create in Mix Create Form Example" shows an example of executing a Domain Create Command in Mix Create Form to create a non-TMCH sunrise application with a mark.

Figure 27 – Domain Create in Mix Create Form Example

```
EPPResponse response;

try {
        NSDomain domain = new NSDomain(session);
```

```
        // Define Mark
        EPPMark mark = new EPPMark();
        …

        domain.setTransId("ABC-12345");
        domain.addDomainName("example1.tld");
        domain.setAuthString("ClientX");

        EPPLaunchCreate creExt = new EPPLaunchCreate(new
EPPLaunchPhase(EPPLaunchPhase.CUSTOM, "non-tmch-sunrise"),
EPPLaunchCreate.TYPE_APPLICATION);

        creExt.addCodeMark(EPPLaunchCodeMark(mark));
        creExt.setNotice(new EPPLaunchNotice("49FD46E6C4B45C55D4AC", new
Date(), new Date());
        domain.addExtension(creExt);

        response = domain.sendCreate();

        if (response.hasExtension(EPPLaunchCreData.class)) {
                EPPLaunchCreData ext =
response.getExtension(EPPLaunchCreData.class);
                System.out.println("Phase = " + ext.getPhase().getPhase());
                System.out.println("Id = " + ext.getApplicationId());
        }

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

13.5.17.3.4 sendUpdate() Method

The Launch Extension utilizes the *com.verisign.epp.interfaces.EPPDomain.sendUpdate()* method, that is extended by the *com.verisign.epp.namestore.interfaces.NSDomain* class, to send a Domain Update Command with the Launch Extension. The Launch Extension enables a client to update a launch application referenced by the Application Id returned in the Domain Create Response. "Figure 28 – Domain Update of Sunrise Application Example" shows an example of updating a sunrise application.

Figure 28 – Domain Update of Sunrise Application Example

```
EPPResponse response;

try {
        NSDomain domain = new NSDomain(session);

        domain.setTransId("ABC-12345");
        domain.addDomainName("example1.tld");

        domain.setUpdateAttrib(EPPDomain.HOST, "ns2.example.tld",
                               EPPDomain.ADD);
        domain.setUpdateAttrib(EPPDomain.HOST, "ns1.example.tld",
                               EPPDomain.REMOVE);

        // Add extension
        domain.addExtension(new EPPLaunchUpdate(new EPPLaunchPhase(
                EPPLaunchPhase.PHASE_SUNRISE), "abc123"));

        response = domain.sendUpdate();
}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

13.5.17.3.5 sendDelete() Method

The Launch Extension utilizes the *com.verisign.epp.interfaces.EPPDomain.sendDelete()* method, that is extended by the *com.verisign.epp.namestore.interfaces.NSDomain* class, to send a Domain Delete Command with the Launch Extension. The Launch Extension enables a client to delete a launch application referenced by the Application Id returned in the Domain Create Response. "Figure 28 – Domain Update of Sunrise Application Example" shows an example of updating a sunrise application.

Figure 29 – Domain Delete of Sunrise Application Example

```
EPPResponse response;

try {
        NSDomain domain = new NSDomain(session);

        domain.setTransId("ABC-12345");

        // Add extension
        domain.addExtension(new EPPLaunchDelete(new EPPLaunchPhase(
                EPPLaunchPhase.PHASE_SUNRISE), "abc123"));

        response = domain.sendDelete();
}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

13.5.18 PersReg Extension

The Personal Registration Extension defined in "Extensible Provisioning Protocol Extension Mapping: <Personal Registration>" includes extensions to the create (Domain, Email Forwarding, and Defensive Registration) response, an extension to the info (Domain, Email Forwarding) response, and an extension to the create (Domain, Email Forwarding) command to pass a consent identifier to authorize the create with a conflicting Defensive Registration.

13.5.18.1 PersReg Extension Packages

The Personal Registration Extension consists of sub-packages of the SDK packages and class additions to existing SDK packages. The following table provides an overview of the Personal Registration Extension packages.

Package	Description
com.verisign.epp.codec.persreg	Personal Registration Extension EPP Encoder/Decoder package. All of the detail of encoding and decoding the Personal Registration Extension EPP messages are encapsulated in this package. The *com.verisign.epp.codec.persreg.EPPPersRegExtFactory* must be added to the *EPP.CmdRspExtensions* configuration parameter.
com.verisign.epp.interfaces	Includes the *com.verisign.epp.interfaces.EPPPersRegTst* test class for sending the Personal Registration Extension on a Domain and Email Forwarding create and receiving responses with the Personal Registration Extension.
com.verisign.epp.serverstub	Addition of the *com.verisign.epp.serverstub.PersRegDomainHandler* class and the *com.verisign.epp.serverstub.PersRegEmailFwdHandler* used to implement the EPP Personal Registration Stub Server behavior. These classes must be added to the *EPP.ServerEventHandlers* configuration to simulate a server that supports the Personal Registration Extension.

13.5.18.2 PersReg XML Schema Files

The Personal Registration Extension is defined using an XML schema file and is dependent on a set of XML schema files. These files are located in the *epp-verisign-bundle-{$BUILD_VER}.jar* in the ***schemas*** directory. You must un-jar the jar file in order to explicitly view them.

File Name	Location	Description
persReg-1.0.xsd	schemas	Personal Registration Extension XML Schema

13.5.18.3 PersReg Client Interface

The Personal Registration Extension is an extension to the Domain and Email Forwarding objects, so the Domain (*com.verisign.epp.interfaces.EPPDomain)* and Email Forwarding (*com.verisign.epp.interfaces.EPPEmailFwd)* Client Interface classes are used with the Personal Registration Extension.

"Figure 30 – Personal Registration Create with Consent Example" shows an example of executing a Domain Create Command with consent using the Personal Registration Create Extension *com.verisign.epp.codec.persreg.EPPPersRegCreate* class.

Figure 30 – Personal Registration Create with Consent Example

```
EPPDomainCreateResp response;

try {
        EPPDomain domain = new EPPDomain(session);

        domain.setTransId("ABC-12345");
        domain.addDomainName("example1.tld");

        domain.addExtension(new EPPPersRegCreate("ID:12345"));

        response = domain.sendCreate();

        if (response.hasExtension(EPPPersRegCreateData.class)) {
                EPPPersRegCreateData ext = (EPPPersRegCreateData)
response.getExtension(EPPPersRegCreateData.class);
                Sytem.out.println("bundle rate = " + ext.isBundleRate());
        }

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        if (errorResponse.hasExtension(EPPPersRegCreateErrData.class)) {
                EPPPersRegCreateErrData ext = (EPPPersRegCreateErrData)
errorResponse.getExtension(EPPPersRegCreateErrData.class);
                System.out.println("PersReg error = " + ext);
        }
        Assert.fail(e.getMessage());
}
```

13.5.19 Related Domain Extension

The Related Domain Extension defined in "Extensible Provisioning Protocol Extension Mapping: <Related Domain>" includes an extension to the domain name mapping for managing client-side and server-side domain name relationships.

13.5.19.1 Related Domain Extension Packages

The Related Domain Extension consists of sub-packages of the SDK packages and class additions to existing SDK packages. The following table provides an overview of the Related Domain Extension packages.

Package	Description
com.verisign.epp.codec.relateddomainext	Related Domain Extension EPP Encoder/Decoder package. All of the detail of encoding and decoding the Related Domain Extension EPP messages are encapsulated in this package. The *com.verisign.epp.codec.relateddomainext.EPPRelatedDomainExtFactory* must be added to the *EPP.CmdRspExtensions* configuration parameter.
com.verisign.epp.interfaces	Includes the *com.verisign.epp.interfaces.EPPRelatedDomain* class to send both forms of the info command (Domain Info Form and Related Info Form) and the multiple related domain transform commands (Create, Update, Delete, Renew, and Transfer), and *com.verisign.epp.interfaces.EPPRelatedDomainTst* test class for testing the *com.verisign.epp.interfaces.EPPRelatedDomain* class.
com.verisign.epp.serverstub	Addition of the *com.verisign.epp.serverstub.RelatedDomainHandler* class used to implement the EPP Related Domain Stub Server behavior. These classes must be added to the *EPP.ServerEventHandlers* configuration to simulate a server that supports the Related Domain Extension.

13.5.19.2 Related Domain XML Schema Files

The Related Domain Extension is defined using an XML schema file and is dependent on a set of XML schema files. These files are located in the *epp-verisign-bundle-{$BUILD_VER}.jar* in the ***schemas*** directory. You must un-jar the jar file in order to explicitly view them.

File Name	Location	Description
relatedDomain-1.0.xsd	schemas	Related Domain Extension XML Schema

13.5.19.3 Related Domain Client Interface

The Related Domain Extension is an extension to the Domain object, so the *com.verisign.epp.interfaces.EPPRelatedDomain* class extends the *com.verisign.epp.interfaces.EPDomain*, and is a superclass of the *com.verisign.epp.namestore.interfaces.NSDomain* class. The *com.verisign.epp.interfaces.EPPRelatedDomain* Client Interface class methods can be used to send the info command with the two types / forms (*EPPRelatedDomain.TYPE_DOMAIN* for the Domain Info Form and *EPPRelatedDomain.TYPE_RELATED* for the Related Info Form) or the multiple related domain transform commands (create, update, delete, renew, and transfer). The *EPPRelatedDomain.sendRelatedInfo() : EPPResponse* is used to get the *com.verisign.epp.codec.domain.EPPDomainInfoResp,* for the Domain Info Form, and the *com.verisign.epp.codec.gen.EPPResponse,* for the Related Info Form, with the *com.verisign.epp.codec.relateddomainext.EPPRelatedDomainExtInfoData* extension.

"Figure 31 – Related Domain Info Command in Domain Info Form Example" shows an example of executing a Domain Info Command in the Domain Info Form to receive a response that includes the Related the domain information for "example1.tld" along with the related domain information in the *com.verisign.epp.codec.relateddomainext.EPPRelatedDomainExtInfData* class.

Figure 31 – Related Domain Info Command in Domain Info Form Example

```
EPPDomainInfoResp response;

try {
        EPPRelatedDomain relDomain = new EPPRelatedDomain(session);
```

```
        relDomain.setTransId("ABC-12345");
        relDomain.addDomainName("example1.tld");
        relDomain.setInfoForm(EPPRelatedDomain.DOMAIN_INFO_FORM);

        response = (EPPDomainInfoResp) relDomain.sendRelatedInfo();

        if (response.hasExtension(EPPRelatedDomainExtInfData.class)) {
                EPPRelatedDomainExtInfData ext = (EPPRelatedDomainExtInfData)
response.getExtension(EPPRelatedDomainExtInfData.class);
                Sytem.out.println("related domain info = " + ext);
        }

        // Get the domain info for example1.tld
        System.out.println("Domain ROID = " + response.getRoid());

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

"Figure 32 – Related Domain Info Command in Related Info Form Example" shows an example of executing a Domain Info Command in the Related Info Form to receive a response that includes the related domain information of "example1.tld" in the *com.verisign.epp.codec.relateddomainext.EPPRelatedDomainExtInfData* class.

Figure 32 – Related Domain Info Command in Related Info Form Example

```
EPPResponse response;

try {
        EPPRelatedDomain relDomain = new EPPRelatedDomain(session);

        relDomain.setTransId("ABC-12345");
        relDomain.addDomainName("example1.tld");

        relDomain.setInfoForm(EPPRelatedDomain.RELATED_INFO_FORM);

        response = relDomain.sendRelatedInfo();

        if (response.hasExtension(EPPRelatedDomainExtInfData.class)) {
                EPPRelatedDomainExtInfData ext = (EPPRelatedDomainExtInfData)
response.getExtension(EPPRelatedDomainExtInfData.class);
                Sytem.out.println("related domain info = " + ext);
        }

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

"Figure 33 – Related Domain Create Command Example" shows an example of executing a Related Domain Create Command to create all of the domains "example.com", "domain1.com", "domain2.com", and "xn—idn.com" at once.

Figure 33 – Related Domain Create Command Example

```
EPPDomainCreateResp response;

try {
        EPPRelatedDomain relDomain = new EPPRelatedDomain(session);

        relDomain.setTransId("ABC-12345");
        relDomain.addDomainName("example1.tld");
        relDomain.setAuthString("2fooBAR");

        EPPRelatedDomainExtAuthInfo authInfo = new
EPPRelatedDomainExtAuthInfo("relDom123!");
        EPPRelatedDomainExtPeriod period = new EPPRelatedDomainExtPeriod(5);

        relDomain.addRelatedDomain(new
EPPRelatedDomainExtDomain("domain1.com", authInfo, period));
        relDomain.addRelatedDomain(new
EPPRelatedDomainExtDomain("domain2.com", authInfo, period));
        relDomain.addRelatedDomain(new EPPRelatedDomainExtDomain("xn—idn.com",
authInfo, period, "CHI"));

        response = relDomain.sendRelatedCreate();

        if (response.hasExtension(EPPRelatedDomainExtCreateResp.class)) {
                EPPRelatedDomainExtCreateResp ext =
(EPPRelatedDomainExtCreateResp)
response.getExtension(EPPRelatedDomainExtCreateResp.class);
                Sytem.out.println("related domain create = " + ext);
        }

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

"Figure 34 – Related Domain Delete Command Example" shows an example of executing a Related Domain Delete Command to delete all of the domains "example.com", "domain1.com", "domain2.com", and "xn—idn.com" at once.

Figure 34 – Related Domain Delete Command Example

```
EPPResponse response;

try {
        EPPRelatedDomain relDomain = new EPPRelatedDomain(session);
```

```
        relDomain.setTransId("ABC-12345");
        relDomain.addDomainName("example1.tld");

        relDomain.addRelatedName("domain1.com");
        relDomain.addRelatedName("domain2.com");
        relDomain.addRelatedName("xn--idn.com");

        response = relDomain.sendRelatedDelete();

        if (response.hasExtension(EPPRelatedDomainExtDeleteResp.class)) {
                EPPRelatedDomainExtDeleteResp ext =
(EPPRelatedDomainExtDeleteResp)
response.getExtension(EPPRelatedDomainExtDeleteResp.class);
                Sytem.out.println("related domain delete = " + ext);
        }

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

"Figure 35 – Related Domain Update Command Example" shows an example of executing a Related Domain Update Command to update all of the domains "example.com", "domain1.com", "domain2.com", and "xn—idn.com" by adding the clientHold status.

Figure 35 – Related Domain Update Command Example

```
EPPResponse response;

try {
        EPPRelatedDomain relDomain = new EPPRelatedDomain(session);

        relDomain.setTransId("ABC-12345");
        relDomain.addDomainName("example1.tld");

        relDomain.addRelatedName("domain1.com");
        relDomain.addRelatedName("domain2.com");
        relDomain.addRelatedName("xn--idn.com");

        relDomain.setUpdateAttrib( EPPDomain.STATUS, new
EPPDomainStatus(EPPDomain.STATUS_CLIENT_HOLD, EPPDomain.ADD);

        response = relDomain.sendRelatedUpdate();


}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

"Figure 36 – Related Domain Renew Command Example" shows an example of executing a Related Domain Renew Command to renew all of the domains "example.com", "domain1.com", "domain2.com", and "xn—idn.com" for 5 years.

Figure 36 – Related Domain Renew Command Example

```
EPPDomainRenewResp response;

try {
        EPPRelatedDomain relDomain = new EPPRelatedDomain(session);

        Date  currExpDate = new GregorianCalendar(2013, 9, 10).getTime();

        relDomain.setTransId("ABC-12345");
        relDomain.addDomainName("example1.tld");

        relDomain.setPeriodLength(5);

        EPPRelatedDomainExtPeriod period = new EPPRelatedDomainExtPeriod(5);

        relDomain.addRelatedDomain(new
EPPRelatedDomainExtDomain("domain1.com", currExpDate, period));
        relDomain.addRelatedDomain(new
EPPRelatedDomainExtDomain("domain2.com", currExpDate, period));
        relDomain.addRelatedDomain(new
EPPRelatedDomainExtDomain("xn—idn.com", currExpDate, period));

        response = relDomain.sendRelatedRenew();

        if (response.hasExtension(EPPRelatedDomainExtRenewResp.class)) {
                EPPRelatedDomainExtRenewResp ext =
(EPPRelatedDomainExtRenewResp)
response.getExtension(EPPRelatedDomainExtRenewResp.class);
                Sytem.out.println("related domain renew = " + ext);
        }

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```

"Figure 37 – Related Domain Transfer Command Example" shows an example of executing a Related Domain Transfer Command to request transfer of all the domains "example.com", "domain1.com", "domain2.com", and "xn—idn.com".

Figure 37 – Related Domain Transfer Command Example

```
EPPResponse response;

try {
        EPPRelatedDomain relDomain = new EPPRelatedDomain(session);
```

```
        relDomain.setTransId("ABC-12345");
        relDomain.addDomainName("example1.tld");

        relDomain.setTransferOpCode(EPPDomain.TRANSFER_REQUEST);
        relDomain.setAuthString("2fooBAR");
        relDomain.setPeriodLength(1);

        EPPRelatedDomainExtPeriod period = new EPPRelatedDomainExtPeriod(1);
        EPPRelatedDomainExtAuthInfo authInfo = new
EPPRelatedDomainExtAuthInfo("relDom123!");

        relDomain.addRelatedDomain(new
EPPRelatedDomainExtDomain("domain1.com", authInfo, period));
        relDomain.addRelatedDomain(new
EPPRelatedDomainExtDomain("domain2.com", authInfo, period));
        relDomain.addRelatedDomain(new
EPPRelatedDomainExtDomain("xn—idn.com", authInfo, period));

        response = relDomain.sendRelatedTransfer();

        if (response.hasExtension(EPPRelatedDomainExtTransferResp.class)) {
                EPPRelatedDomainExtTransferResp ext =
(EPPRelatedDomainExtTransferResp)
response.getExtension(EPPRelatedDomainExtTransferResp.class);
                Sytem.out.println("related domain transfer = " + ext);
        }

}
catch (EPPCommandException e) {
        EPPResponse errorResponse = e.getResponse();
        Assert.fail(e.getMessage());
}
```