This document is a concise guide to install and use the HKIRC EPP API. The HKIRC EPP API is a set of Java Libraries intended for any operating systems. The API creates Extensible Provisioning Protocol (EPP) commands that can be used to communicate with the HKIRC Registry EPP Gateway Server.

All EPP commands generated from the API need to be sent to the EPP gateway server using SSL.
## Contents

HKIRC EPP API User Guide ........................................................................................................ 1
Contents ........................................................................................................................................ 2
Terms of Use ................................................................................................................................. 3
Company and Contact information ............................................................................................... 7
Change Log .................................................................................................................................... 7

### 1 Introduction .............................................................................................................................

1.1 Purpose .................................................................................................................................... 8
1.2 Contact and Name Server Policy Requirements ..................................................................... 8

### 2 Prerequisites ............................................................................................................................

### 3 The config.properties configuration file.................................................................................

#### 3.1 Session Management .......................................................................................................... 12

#### 3.2 Client Interfaces ................................................................................................................ 16

##### 3.2.1 Contact Interface .......................................................................................................... 16

- 3.2.1.1 Create Contact ................................................................................................................ 16
- 3.2.1.2 Update Contact ................................................................................................................. 24
- 3.2.1.3 Delete Contact .................................................................................................................. 30
- 3.2.1.4 Info Contact ..................................................................................................................... 32

- 3.2.2 Host Interface .................................................................................................................... 34

- 3.2.2.1 Check Host ...................................................................................................................... 34
- 3.2.2.2 Create Host ....................................................................................................................... 36
- 3.2.2.3 Update Host ...................................................................................................................... 38
- 3.2.2.4 Delete Host ...................................................................................................................... 40
- 3.2.2.5 Info Host .......................................................................................................................... 42

- 3.2.3 Domain Interface ................................................................................................................. 44

- 3.2.3.1 Check Domain .................................................................................................................. 44
- 3.2.3.2 Create Domain .................................................................................................................. 46
- 3.2.3.3 Renew Domain .................................................................................................................. 49
- 3.2.3.4 Delete Domain .................................................................................................................. 51
- 3.2.3.5 Update Domain ................................................................................................................. 53
- 3.2.3.6 Transfer of Holding Right / Modify Domain Name Contact ......................................... 56
- 3.2.3.7 Bundle Domain ............................................................................................................... 59
- 3.2.3.8 Info Domain ..................................................................................................................... 61
- 3.2.3.9 Transfer Domain .............................................................................................................. 63
- 3.2.3.10 Special Promotion for Cross Selling and Brand name protection ................................. 66
- 3.2.3.11 Update Domain DNSSEC .............................................................................................. 68

#### 3.2.4 Poll Interface .................................................................................................................... 70

- 3.2.4.1 Send Poll .......................................................................................................................... 70

- 3.2.5 Tracking Interface .............................................................................................................. 72

- 3.2.5.1 Query Tracking ............................................................................................................... 72
- 3.2.5.2 Create RAC Tracking ..................................................................................................... 75
- 3.2.5.3 Update Tracking Document Status ................................................................................ 77

### Appendix ....................................................................................................................................

#### 3.3 Country Code .......................................................................................................................

#### 3.4 Others ..................................................................................................................................
Important Notice
These Terms of Use will apply when you use HKIRC’s EPP API (defined in Clause 1 below). Before using HKIRC’s EPP API, we ask that you read these Terms of Use carefully. If you find yourself unable to agree to these Terms of Use, then you must not use HKIRC’s EPP API. By using HKIRC’s EPP API, you accept and agree to be bound by these Terms of Use unconditionally.

15. In these Terms of Use, unless the context otherwise requires, the definitions of the following expressions are as follows:-

“Confidential Information” means any information obtained from or through the Platform, including but not limited to, data relating to applicants and registrants of .hk domain names, whether in writing or otherwise that is not publicly known including any compilation of otherwise public information in a form not publicly known but not including information that, at the time of disclosure, is publicly known; information that, after disclosure, becomes publicly known other than as a result of a breach of this Terms of Use; information that the recipient can show was known to it prior to the disclosure; and information that the recipient can show was made known to it by a third party who was entitled to do so and who did not impose any obligation of confidentiality or restricted use;

“Domain Name Dispute Resolution Policy” means HKIRC’s Domain Name Dispute Resolution Policy;

“HKIRC” means Hong Kong Internet Registration Corporation Limited;

“HKIRC’s EPP API” means HKIRC’s Extensible Provisioning Protocol Application Programming Interface;

“Platform” means HKIRC’s API or SPAS II;

“Registration Agreement” means HKIRC’s Domain Name Registration Agreement for .hk Domain Names;

“Rules for .hk Domains and Sub-domains” means HKIRC’s Rules for .hk Domains and Sub-Domains; and

“SPAS II” means Service Partner Administration System II.

“EPP” means Extensible Provisioning Protocol

“IETF” means Internet Engineering Task Force

“SDK” means Software Development Kit

“SRS” means Shared Registry System

“XML” means Extensible Markup Language

“RGP” means Registry Grace Period

2. By sending requests to us for Domain Name Administration through the Platform, you warrant HKIRC that you are authorized to apply for all the services
detailed in your requests on behalf of your customers, to legally bind your customers to
the terms and conditions of the documents below and that you have notified your
customers that their .hk domain name registrations will be bound by such documents,
namely:
(i) the Registrar Agreement;
(ii) the Published Policies;
(iii) any other applicable agreements, rules, policies, Terms and Conditions and
Important Notices.

3. You shall not explicitly or implicitly represent and/or cause any misconception to
the public or to applicants or registrants of .hk domain names that you are the registrar
or registry responsible for .hk domain names.

4. You shall not, whether by yourself, your agent, employees or any person
authorized by you, do any of the following:

   a. use any data obtained from the Platform to send out unsolicited commercial
      advertising of any sort via any medium including but not limited to, the
      telephone, email or fax; or
   b. enable high volume, automated or electronic processes (except legitimate batch
      input processes for domain name registration and/or for maintenance purposes
      on the HKIRC’s EPP API) to access HKIRC’s computer systems including but not
      limited to, the Platform and WHOIS search enquiry service; or
   c. compile, repackage, disseminate, disclose to any third party or use the data
      obtained from the Platform for any purpose other than obtaining information
      about a domain name registration record; or
   d. use such data obtained from the Platform to derive an economic benefit for
      yourself or any third parties except by applying for or maintaining a .hk domain
      name for and on behalf of your customers.

5. You shall treat as confidential at all times all customer data and/or Confidential
Information obtained from the Platform and such data shall not be used in any way
detrimental to the customer and/or to HKIRC. You shall not divulge the customer data
or Confidential Information to any person except to your own employees on a need-to-
know basis. You shall prevent any use, dissemination or publication of Confidential
Information and you shall not do any act, or engage in any practice, that
contravenes the Hong Kong Personal Data (Privacy) Ordinance (Cap.486). In the event
of any disclosure of protected personal data and/or Confidential Information by you, whether willfully or not, you and/or your representatives who
 disclose the data shall be wholly and personally liable for any losses and/or damages,
whether monetary or not, which HKIRC may suffer directly and/or indirectly as a result
of such disclosure. HKIRC shall be entitled to damages which include but not limited to, all legal costs and expenses incurred on HKIRC in connection with the
enforcement of these Terms of Use.

6. HKIRC in its sole discretion may terminate or suspend your ability to access
and/or use of the Platform at any time without prior notice including but not limited to,
in the event of (i) a breach of these Terms of Use by you, (ii) non-performance of your
obligations under these Terms of Use, (iii) breach by you of any of the Registration
Agreement, HKIRC Service Partner Program Terms and Conditions.

7. DISCLAIMER. HKIRC ACCEPTS NO LIABILITY AND WILL NOT BE LIABLE
FOR ANY LOSS OR DAMAGE ARISING DIRECTLY OR INDIRECTLY (INCLUDING
SPECIAL, INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGE) FROM YOUR
ACCESS TO THE PLATFORM OR USE OF THE PLATFORM, NOT LIMITED TO BUT
INCLUDING ANY LOSS, DAMAGE OR EXPENSE ARISING FROM ANY DEFECT,
ERROR, IMPERFECTION OR INACCURACY WITH THE PLATFORM, ITS CONTENTS
OR ASSOCIATED SERVICES, OR DUE TO ANY UNAVAILABILITY OF ANY PART OF THE PLATFORM OR ASSOCIATED SERVICES OR TO ANY DELAY IN OPERATION OR TRANSMISSION, COMPUTER VIRUS, TROJAN HORSE, WORM, SOFTWARE BOMB, COMMUNICATION LINE FAILURE, SOFTWARE OR HARDWARE DATA (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR COMPATIBILITY PROBLEMS), OR INTERCEPTION OF ON-LINE COMMUNICATION.

HKIRC MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPlicit, IMPlIcIT OR STATUTORY, REGARDING THE PLATFORM OR THE MATERIALS AND INFORMATION CONTAINED OR REFERRED TO ON EACH PAGE ASSOCIATED WITH THE PLATFORM. NO CLAIMS OR ACTIONS OF LEGAL PROCEEDINGS IN CONNECTION WITH THE USE OF THIS PLATFORM BY YOU OR ANY THIRD PARTIES AUTHORIZED BY YOU TO USE THE PLATFORM WILL BE ENTERTAINED BY HKIRC.

8. You, your employees, agents and any person authorized by you shall not seek to recover and shall not be entitled to recover from HKIRC or to be indemnified by HKIRC against any direct, indirect or consequential loss or damage suffered by you arising out of or in connection with your use of the Platform.

9. You shall be held responsible for any losses and damages suffered by HKIRC arising either directly or indirectly from the use of the Platform by you, your employees, agents or any person authorized by you. HKIRC reserves the right to claim, take any actions or legal proceedings for recovery or compensation as a result.

10. You hereby agree to fully indemnify, defend and hold HKIRC, its affiliates or partners, agents, directors, employees harmless from and against any action, liability, costs claim, loss, damage, proceeding or expense of whatsoever nature (including reasonable legal fees, costs and expenses on a full indemnity basis) arising from or directly or indirectly related to:

   (15) your access to and/or use of the Platform and/or any other person or entity’s use of this service or the Platform where such person or entity was authorized by you to access and/or use the Platform; or

   (b) any negligent act or omission or breach or non-observance of any of these Terms of Use by you or by any other person or entity where such person or entity was authorized by you to use the Platform; or

© any materials you submit, post to, or transmit through the Platform.

11. All reasonable efforts are made by HKIRC to ensure the information provided on the Platform is accurate and/or up-to-date, HKIRC gives no warranty of any kind, explicitly or implicitly, with regard to the accuracy or completeness of any information on the Platform or that the Platform will be error free. Information obtained through the Platform may contain errors including but not limited to, inaccuracies or typographical errors. HKIRC shall not be liable to you for any loss arising out of and to the extent caused by any failure by HKIRC to keep the information on the Platform accurate and/or up-to-date. HKIRC reserves the right in its discretion but undertakes no duty to review, edit or otherwise change without prior warning or notice any information or material on the Platform.

12. HKIRC does not guarantee that any e-mails sent from the Platform will reach you or those you send to us will be received by HKIRC. HKIRC does not warrant the privacy and/or security of e-mails during Internet transmission.
13. HKIRC may use "session cookies" on the Platform. If you want to disallow such cookies you can do so on your Web browser. These cookies are stored on your computer temporarily, not permanently, namely for the duration of each of your visits to the Platform.

14. HKIRC reserves the right to amend these Terms of Use at any time without prior notice. You shall review the SPAS II regularly for update.

15. These Terms of Use shall be governed by and construed in accordance with the laws of the Hong Kong Special Administrative Region.

16. In the event of any discrepancy between the English and Chinese versions of this Agreement, the English version shall prevail.
Company and Contact information

Hong Kong Internet Registration Corporation Limited
Unit 501, Level 5, Core C,
Cyberport 3, 100 Cyberport Road,
Hong Kong.

Email: registrar@hkirc.hk
Hotline No.: +852 2319 1313
Fax No.: +852 2319 2626
Office Hour: Monday to Friday, 9 a.m.- 6 p.m.

Change Log

<table>
<thead>
<tr>
<th>Authors</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SY ANG</td>
<td>5 Jul 2008</td>
<td>Initial Revision</td>
</tr>
<tr>
<td>SY ANG</td>
<td>5 Sep 2008</td>
<td>Updated content</td>
</tr>
<tr>
<td>SY ANG</td>
<td>8 Sep 2008</td>
<td>Added Parameter Column</td>
</tr>
<tr>
<td>Brent Lee</td>
<td>2 Aug 2010</td>
<td>Added bundling</td>
</tr>
<tr>
<td>Danny Chan</td>
<td>29 Jul 2011</td>
<td>Remove Auth Info field from Contact Object</td>
</tr>
<tr>
<td>Boon</td>
<td>15 Aug 2011</td>
<td>Update Query Tracking function</td>
</tr>
<tr>
<td>Danny Chan</td>
<td>10 Nov 2011</td>
<td>Added Maximum Length column for tables in Section 3.2.1.1 Create Contact and Section 3.2.1.2 Update Contact, to indicate the largest input size for each field in a contact.</td>
</tr>
<tr>
<td>Dan Chan</td>
<td>03 Feb 2012</td>
<td>Added tracking create RAC function</td>
</tr>
<tr>
<td>Dan Chan</td>
<td>14 Mar 2012</td>
<td>Added update tracking document status function and amended Transfer of Holding Rights function</td>
</tr>
<tr>
<td>Khoi Peng</td>
<td>14 Mar 2013</td>
<td>Added Add, Modify, and Remove Domain’s Reseller Information function</td>
</tr>
<tr>
<td>Khoi Peng</td>
<td>17-Oct-2013</td>
<td>Amended NDN can add Domain’s Reseller Information.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Amended Domain Update XML can add exemption of Modify Domain (MDN) or Modify NS (MNS) or both for status update prohibited</td>
</tr>
<tr>
<td>Wing Wong</td>
<td>18-May-2016</td>
<td>Amended Domain Create to allow Promotion Code parameter passing</td>
</tr>
<tr>
<td>Andres Ip</td>
<td>03 July 2017</td>
<td>Add new method in Domain Update Object to support promotion for cross selling and brand protection.</td>
</tr>
<tr>
<td>Andres Ip</td>
<td>15 August 2017</td>
<td>1. Add new method in Domain Info Object to support DNSSEC (nothing updated in this document).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Add new method in Domain Update Object to support DNSSEC.</td>
</tr>
<tr>
<td>Benson Wong</td>
<td>17 January 2020</td>
<td>Updated the steps to create EPP Client keystore and truststore. New steps use SHA256</td>
</tr>
</tbody>
</table>
1 Introduction

1.1 Purpose

This document provides detailed guidelines on the usage of the Java SDK. Complete programming samples are provided to shorten integration and development time for registrars. Detail error codes and error messages are documented in the section below.

1.2 Contact and Name Server Policy Requirements

There are certain policies that are enforced in the HKIRC Registrar implementation of EPP:

A minimum of 4 contacts (including 1 Registrant/Owner, 1 of each Admin, Billing and Technical contacts) must be provided during the create domain transaction. All domains must be created with at least 2 name servers.
2 Prerequisites
Java SDK runtime 1.5 and above

The following packages are included in the HKIRC EPP API Startup Kit.

- eppsdk.jar
- junit-4.0.jar
- libidn-0.5.9.jar
- random.jar
- xercesImpl-2.6.0.jar
- xmlParserAPIs-2.6.0.jar

The HKIRC EPP API Startup Kit and all EPP related documents are available to download from HKIRC Secure FTP server. Please contact registrar@hkirc.hk for the information to access the Secure FTP server.

3 The config.properties configuration file

The standard location of the configuration file config.properties is /www/HKIRC-sdk/props. If the location of the file is changed, please update the corresponding file path in the sessionObj.java and recompile.

Each registrar should obtain a Registrar ID and password from HKIRC. Please update the ID and password values in the configuration file in order to communicate with the server. Without a valid ID, the EPP API client will not be able to communicate with the EPP server.

```
# For JSSE
#
ssl.client.authentication=true
ssl.keymanager.algorithm=SunX509
ssl.keystore.type=JKS
ssl.keystore.provider=SUN
ssl.keystore.format=file
ssl.keystore.name=/www/HKIRC-sdk/props/clientKeystore
ssl.keystore.storepass=xxxxxx
ssl.keystore.keypass=xxxxx
ssl.trustmanager.algorithm=SunX509
ssl.truststore.type=JKS
ssl.truststore.provider=SUN
ssl.truststore.format=file
ssl.truststore.name=/www/HKIRC-sdk/props/clientTruststore
ssl.truststore.storepass=xxxxxx

# Registrar EPP username & password
username=EPP-1234
password=xxxxxx
serverIP=10.0.0.1
serverPort=700
```
## Steps to Create EPP Client Keystore and Truststore:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Command</th>
<th>PIC</th>
<th>Output file</th>
<th>Setting in config.properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Create keystore with corresponding password</td>
<td><code>%JAVA_HOME%/bin/keytool -genkey -keyalg RSA -alias client -keystore clientKeystore -sigalg SHA256withRSA</code></td>
<td>Registrar</td>
<td>clientKeystore</td>
<td>ssl.keystore.name: path of clientKeystore&lt;br&gt;ssl.keystore.storepass: password of keystore&lt;br&gt;ssl.keystore.keypass: password of keystore</td>
</tr>
<tr>
<td>2</td>
<td>Create a cert request from keystore</td>
<td><code>%JAVA_HOME%/bin/keytool -certreq -v -alias client -keystore clientKeystore -file client_request.csr</code></td>
<td>Registrar</td>
<td>client_request.csr</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Send <code>client_request.csr</code> to HKIRC for signing</td>
<td>-</td>
<td>Registrar</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>[First time only] Create a private CA key (.key)</td>
<td><code>openssl genrsa -des3 -out ca.key 1024</code></td>
<td>Registry (HKIRC)</td>
<td>ca.key</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>[First time only] Create a public CA cert (.pem)</td>
<td><code>openssl req -new -x509 -key ca.key -out ca.pem -days 3600</code></td>
<td>Registry (HKIRC)</td>
<td>ca.pem</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Sign <code>client_request.csr</code> with CA key and cert</td>
<td><code>openssl x509 -req -in client_request.crt -CA ca.pem -CAkey ca.key -CAcreateserial -out client_response.crt -extfile /usr/local/openssl/ssl/openssl.cnf -extensions v3_ca -days 3650 -sha256</code></td>
<td>Registry (HKIRC)</td>
<td>client_response.crt</td>
<td>-&lt;br&gt;/etc/pki/tls/openssl.cnf&lt;br)view content of certificate&lt;br&gt;keytool -v -list -keystore clientKeyStore.dat</td>
</tr>
<tr>
<td>7</td>
<td>Send <code>client_response.crt</code> and <code>ca.pem</code> to registrar</td>
<td>-</td>
<td>Registry (HKIRC)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Import signed cert (client_response.crt and ca.pem) to keystore</td>
<td><code>%JAVA_HOME%/bin/keytool -import -trustcacerts -alias cacert -file ca.pem -keystore clientKeystore</code></td>
<td>Registrar</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Create dummy truststore with corresponding password</td>
<td><code>%JAVA_HOME%/bin/keytool -genkey -alias dummy -keyalg RSA -keystore clientTruststore</code></td>
<td>Registrar</td>
<td>clientTruststore</td>
<td>ssl.truststore.name: path of clientTruststore&lt;br&gt;ssl.truststore.storepass: password of truststore</td>
</tr>
<tr>
<td>10</td>
<td>Place the keystore and truststore into EPP client props folder (/www/HKIRC-sdk/props)</td>
<td>-</td>
<td>Registrar</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
1. Create keystore with corresponding password

2. Create a cert request from keystore

3. Send client_request.csr to HKIRC for signing

4. Create a private CA key (.key)

5. Create a public CA cert (.pem)

6. Sign client_request.csr with CA key and cert

7. Send client_request.csr and ca.pem to registrar

8. Import signed cert to keystore

9. Create dummy truststore with corresponding password

Illustration of steps to create keystore and truststore
EPP Communication

Registrator to Registry communications and responses utilise the Extensible Markup Language (XML) running over the Secure Sockets Layer (SSL) in a form called the Extensible Provisioning Protocol (EPP). It is the Registrar's responsibility to adhere to these protocols to successfully communicate with the Operations & Test Evaluation (OTE) environment for obtaining Accreditation from the Registry. OTE Test guideline will be provided once OTE username and password are distributed.

The Registrars' application client must utilise XML over SSL to send commands to the Registry and utilise an XML parser to interpret the server's responses.

This section is intended to provide users of the Extensible Provisioning Protocol (EPP) Software Development Kit (SDK) an overview of the HKIRC Top Level Domain Product. Below is the description of the TLD interface classes, including the pre-conditions, the post-conditions, the exceptions, the EPP status codes, and sample codes of each of the action methods.

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.

3.1 Session Management

These methods establish EPP connection with your SSL settings by sending the EPP hello command over and login with the credential provided. EPP server will reply with a Greeting response upon receiving a Hello command.

After 15 minutes of idle time, the Registry will disconnect a Registrar's client connection. It is preferable for Registrars to keep sessions open for extended periods rather than frequently opening and closing the sessions, as the latter can increase the transaction times.

Objects:

- EppSessionTcp session = new EppSessionTcp();
- EppCommandLogin login = new EppCommandLogin(greeting.getServiceMenu());

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>HKIRC EPP server host and port</td>
<td>EPP.HKIRC.HK (Port: 700)</td>
<td>EppGreeting greeting = session.connect(host, port);</td>
</tr>
<tr>
<td>Yes</td>
<td>EPP login username and password</td>
<td>&lt;as per given in the email&gt;</td>
<td>login.setCreds(new EppCreds(this.username, this.password))</td>
</tr>
</tbody>
</table>
Sample Code to Establish EppSession (Referring sessionObj.java)

```java
try {
    String host = "";
    String portStr = "";

    String localpath = "C:"; // Set the root directory. E.g. "C:\", "D:\", "E:" and etc. for Windows platform or empty string (""") for Linux platform
    String configFile = "/www/hknic-sdk/props/config.properties"; // Set the physical path of 'config.properties' file for HKNIC EPP client application to load the connection settings.

    configFile = localpath + configFile;
    int port = 0;
    this.session = new EppSessionTcp();

    Properties prop = new Properties();

    // If the application failed to load 'config.properties' file in the path defined above, it will try to load again without root directory.
    // In case Linux-platform user did not set empty string as the root directory above, the client application still able to startup.
    if (!new File(configFile).exists()){
        localpath = "";
        configFile = localpath + configFile;
    }

    // load EPP connection settings from file
    FileInputStream file = new FileInputStream(configFile);
    prop.load(file);

    // load EPP username from 'config.properties' file
    if(this.username == null || "".equals(this.username)){
        this.username = prop.getProperty("username");
    }

    // load EPP password from 'config.properties' file
    if(this.password == null || "".equals(this.password)){
        this.password = prop.getProperty("password");
    }

    // load EPP server IP from 'config.properties' file
    host = prop.getProperty("serverIP");

    // load EPP server port from 'config.properties' file
    portStr = prop.getProperty("serverPort");
    if (!"".equals(portStr) && portStr!=null){
        port = Integer.parseInt(portStr);
    }
}
```
// Initializes the run-time parameters related to an EPP Session.
// This method must be called before the EPP Session is started,
// session.connect(host, port), by passing in the configuration file as
// parameter.

    // Load client SSL keys into session
    if (OTE.equals("0")) {
        this.session.init(configFile);
    }

    /* EPP client start SSL keys (defined in
   "config.properties") setting, EPP greeting and SSL handshake with Server
   * Parameters:
   * - host : EPP server IP
   * - port : EPP server port
   */
    System.out.println("\n--------------------------------------
-----------------");
    System.out.println("Client start EppGreeting >>> ");
    EppGreeting greeting = this.session.connect(host, port);
    System.out.println("Client get EppGreeting response from
server >>> ");
    System.out.println(greeting);
    System.out.println("--------------------------------------
---------------");

    if ( greeting == null ) {
        System.out.println("Cannot connect");
        Exception e = this.session.getException();
        if( e != null ) {
            e.printStackTrace();
        }
        String s = this.session.getMessage();
        if( s != null ) {
            System.out.println("Message received:\n" +
            s);
        }
        return null;
    }

    this.channel = this.session.getChannel();

    /* EPP client start login to EPP Server
   * Parameters:
   * - login : EppCommandLogin object
   * Pre-requisites:
   * - setClientTransactionId(id) on EppCommandLogin object
   * where 'id' is a random generated code [refer to
   GenerateRandomID.randomstring()]
   * - setCreds(new EppCreds(username,password) on
   EppCommandLogin object where 'username' and 'password' are EPP login
details
   * - [ only applicable for changing EPP password ]
   setCreds(new EppCreds(username,password,new_password) on EppCommandLogin
   object where 'username' and 'password' are EPP login details, and
   'new_password' is the new EPP password going to be changed.
   */
System.out.println("-----------------------------
-----------------------------
Client start to login >>> ");

EppCommandLogin login = new EppCommandLogin(greeting.getServiceMenu());
String id = getClientId();
login.setClientTransactionId(id);
this.channel.setClientId(id);
if(!this.new_password.equals(null))
    login.setCreds(new EppCreds(this.username,
        this.password));
else
    login.setCreds(new EppCreds(this.username,
        this.password, this.new_password));

EppResponse res = this.channel.start(login);
System.out.println(login);
System.out.println("\nClient get EppResponse response from server >>> ");
System.out.println(res);
System.out.println("-----------------------------
-----------------------------
");

// Action to handle EPP login failure
if( res == null )
{
    System.out.println("LOGIN error");
    return null;
}
if( ! res.success() )
{
    System.out.println(res.getResult());
    return null;
}

} catch (Exception ex) {
    ex.printStackTrace();
    System.out.println(ex.getMessage());
}
return channel;
3.2 Client Interfaces

This portion of the SRS SDK contains client interface classes for each of the EPP Mappings. The interfaces provide mechanisms for creating and modifying hosts, contacts and domains. They also provide the ability to query the status of provisioning requests through the command interface. All of these classes are used for the purpose of provisioning and administering contacts, hosts and domain names in the HKIRC Top-Level Domains. The following sections describe the client interface classes, supporting classes and their respective purposes.

3.2.1 Contact Interface

This interface is used to query, create, update and delete contacts that are associated with domains.

3.2.1.1 Create Contact

This method sends the EPP create contact command.

Pre-Conditions

This method expects that the contact object be populated with the appropriate attributes for the type of contact that is being created (e.g. Organization, Individual). The following list shows fields that are optional and required for the different kinds of contacts

Objects:

```
EppAddress Addr = new EppAddress();
EppContactData ContactData = new EppContactData();
EppContact Contact = new EppContact();
hkExtension hk = new hkExtension();
EppCommandCreate cmd = EppCommand.create(Contact, EppChannel.getClientId());
```
## Organization Contact

<table>
<thead>
<tr>
<th>Fields</th>
<th>Registrant (1)</th>
<th>Administrative (2)</th>
<th>Technical (3)</th>
<th>Billing (4)</th>
<th>Parameter</th>
<th>Maximum Length</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Organization Name</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>ContactData.setOrganization(%value)</td>
<td>150</td>
<td>Hexagon Inc.</td>
</tr>
<tr>
<td>Contact Name</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>ContactData.setName(%value)</td>
<td>60</td>
<td>John</td>
</tr>
<tr>
<td>Contact Address</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Addr.setStreet(0, %value)</td>
<td>120</td>
<td>12/F, One Kowloon</td>
</tr>
<tr>
<td>Contact Address - Postal Code</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>Addr.setPostalCode(%value)</td>
<td>60</td>
<td>90000</td>
</tr>
<tr>
<td>Contact Address - Country Code</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Addr.setCountryCode(%value)</td>
<td>-</td>
<td>Refer to Appendix</td>
</tr>
<tr>
<td>Contact Telephone Number</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Contact.setVoice(%value)</td>
<td>32</td>
<td>+852-12312312</td>
</tr>
<tr>
<td>Contact Fax Number</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>Contact.setFax(%value)</td>
<td>32</td>
<td>+852-12312312</td>
</tr>
<tr>
<td>Contact Email Address</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Contact setEmail(%value)</td>
<td>60</td>
<td><a href="mailto:johndoe@email.com">johndoe@email.com</a></td>
</tr>
<tr>
<td>Contact Surname</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>hk.addExtension(%value, hkExtension.SURNAME)</td>
<td>60</td>
<td>Doe</td>
</tr>
<tr>
<td>Contact Category</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>hk.addExtension(%value, hkExtension.CATEGORY_TYPE)</td>
<td>-</td>
<td>O: For Organizational Domain Contact</td>
</tr>
<tr>
<td>Contact Type</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>hk.addExtension(%value, hkExtension.TYPE)</td>
<td>-</td>
<td>Refer to Appendix</td>
</tr>
<tr>
<td>(Cf1) Contact Chinese Company</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>hk.addExtension(%value, hkExtension.CHINESEORG)</td>
<td>60</td>
<td>香港域名注册有限公司 (UTF-8 encoding)</td>
</tr>
<tr>
<td>(Cf2) Contact Document Type</td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>hk.addExtension(%value, hkExtension.DOCTYPE)</td>
<td>-</td>
<td>Refer to Appendix</td>
</tr>
<tr>
<td>(Cf3) Contact Document Number</td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>hk.addExtension(%value, hkExtension.DOCNUM)</td>
<td>60</td>
<td>123456</td>
</tr>
<tr>
<td>(Cf4) Contact Document Origin Country</td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>hk.addExtension(%value, hkExtension.DOCORIGINCC)</td>
<td>-</td>
<td>Refer to Appendix</td>
</tr>
</tbody>
</table>
**HKIRC EPP API User Guide**

<table>
<thead>
<tr>
<th></th>
<th>✓</th>
<th>×</th>
<th>×</th>
<th>×</th>
<th>hk.addExtension(%value, hkExtension.INDUSTRYTYPE)</th>
<th>-</th>
<th>Refer to Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(Cf6) Contact Industry Type</strong></td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Other Document</strong></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>hk.addExtension(%value, hkExtension.OTHERDOC)</td>
<td>60</td>
<td>MASPASS</td>
</tr>
<tr>
<td><strong>Mobile Phone Number</strong></td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>hk.addExtension(%value, hkExtension.MBNUMBER)</td>
<td>32</td>
<td>+852-12312312</td>
</tr>
</tbody>
</table>

✓ | Mandatory   × | Optional
### Individual Contact

<table>
<thead>
<tr>
<th>Fields</th>
<th>Registrant (1)</th>
<th>Technical (3)</th>
<th>Billing (4)</th>
<th>Parameter</th>
<th>Maximum Length</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Organization Name</td>
<td>Name + Surname</td>
<td>Name + Surname</td>
<td>Name + Surname</td>
<td>ContactData.setOrganization(%value)</td>
<td>150</td>
<td>John Doe</td>
</tr>
<tr>
<td>Contact Name</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>ContactData.setName(%value)</td>
<td>60</td>
<td>John</td>
</tr>
<tr>
<td>Contact Address</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Addr.setStreet(0, %value)</td>
<td>120</td>
<td>123, Street X</td>
</tr>
<tr>
<td>Contact Address - Postal Code</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>Addr.setPostalCode(%value)</td>
<td>60</td>
<td>90000</td>
</tr>
<tr>
<td>Contact Address - Country Code</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Addr.setCountryCode(%value)</td>
<td>-</td>
<td>Refer to Appendix</td>
</tr>
<tr>
<td>Contact Telephone Number</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Contact.setVoice(%value)</td>
<td>32</td>
<td>+852-12312312</td>
</tr>
<tr>
<td>Contact Fax Number</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>Contact.setFax(%value)</td>
<td>32</td>
<td>+852-12312312</td>
</tr>
<tr>
<td>Contact Email Address</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Contact setEmail(%value)</td>
<td>60</td>
<td><a href="mailto:johndoe@email.com">johndoe@email.com</a></td>
</tr>
<tr>
<td>Contact Surname</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>hk.addExtension(%value, hkExtension.SURNAME)</td>
<td>60</td>
<td>Doe</td>
</tr>
<tr>
<td>Contact Category</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>hk.addExtension(%value, hkExtension.CATEGORY_TYPE)</td>
<td>-</td>
<td>I: For Individual Domain</td>
</tr>
<tr>
<td>Contact Type</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>hk.addExtension(%value, hkExtension.TYPE)</td>
<td>-</td>
<td>Refer to Appendix</td>
</tr>
<tr>
<td>(Cf1) Contact Chinese Company</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>hk.addExtension(%value, hkExtension.CHINESEORG)</td>
<td>60</td>
<td>香港域名註冊有限公司 (UTF-8 encoding)</td>
</tr>
<tr>
<td>(Cf2) Contact Document Type</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>hk.addExtension(%value, hkExtension.DOCTYPE)</td>
<td>-</td>
<td>Refer to Appendix</td>
</tr>
<tr>
<td>(Cf3) Contact Document Number</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>hk.addExtension(%value, hkExtension.DOCNUM)</td>
<td>60</td>
<td>123456</td>
</tr>
<tr>
<td>(Cf4) Contact Document Origin</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>hk.addExtension(%value,</td>
<td>-</td>
<td>Refer to Appendix</td>
</tr>
<tr>
<td>Country</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Cf5) Is Contact Under Age 18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>hk.addExtension(%value, hkExtension.UNDER18)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Document</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ if CF2 is OTHIDV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ if CF2 is OTHIDV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ if CF2 is OTHIDV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hk.addExtension(%value, hkExtension.OTHERDOC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile Phone Number</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>×</td>
<td>×</td>
<td>×</td>
<td>hk.addExtension(%value, hkExtension.MBNUMBER)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| ✓ | Mandatory | × | Optional |

<table>
<thead>
<tr>
<th>Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td>0: Under age of 18</td>
</tr>
<tr>
<td>1: 18 year old or older</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>MASPASS</td>
</tr>
<tr>
<td>32</td>
</tr>
<tr>
<td>+852-12312312</td>
</tr>
</tbody>
</table>
Post-Conditions

When completed successfully, an *EppResponseDataCreateContact* object is returned, with the following attributes:

- ID= contact handle ID.

Response Code

1000 ; Command completed successfully
2003 ; Required parameter missing
2004 ; Parameter value range error
2005 ; Parameter value syntax error
2305 ; Object association prohibits operation
2400 ; Command failed
Sample Code

The following example shows the steps of creating a contact through the use of the contact client interface and command send method. (E.g. to Create an Organisational contact handle)

```java
String orgName = "Hexagon Inc.";
String name = "John";
String address = "12/F, One Kowloon";
String postalCode = "";
String countryCode = "HK";
String telephone = "+852-12312312";
String fax = "+852-12312312";
String email = "johndoe@email.com";
String surname = "Doe";
String category = "O";
String contactType = "2";
//UTF-8 Encoding
String chineseOrg = "香港域名註冊有限公司";
String docType = "BR";
String docNumber = "123456";
String docOriginCC = "HK";
String industryType = "0";
String otherDoc = "";
String mobilePhone = "+852-12312312";

// create contact's address info
EppAddress Addr = new EppAddress();
    Addr.setStreet(0, address);  // Address
    Addr.setPostalCode(postalCode);  // postal code
    Addr.setCountryCode(countryCode);  // country code

// create contact's person info
EppContactData ContactData = new EppContactData();
    ContactData.setName(name);  // name
    ContactData.setOrganization(orgName);  // organization name
    ContactData.setAddress(Addr);  // address

EppContact Contact = new EppContact();
    Contact.setContactDataAscii(ContactData);
    Contact.setVoice(telephone);  // telephone
    Contact.setFax(fax);  // fax
    Contact.setEmail(email);  // email

EppCommandCreate cmd = EppCommand.create(Contact,
    EppChannel.getClientId());
```
// extensions, extra fields required by HKIRC
hkExtension hk = new hkExtension();
    hk.addExtension(surname, hkExtension.SURNAME);
    hk.addExtension(category, hkExtension.CATEGORY_TYPE);
    hk.addExtension(contactType, hkExtension.TYPE);
    hk.addExtension(chineseOrg, hkExtension.CHINESEORG);
    hk.addExtension(docType, hkExtension.DOCTYPE);
    hk.addExtension(docNumber, hkExtension.DOCNUM);
    hk.addExtension(docOriginCC, hkExtension.DOCORIGINCC);
    hk.addExtension(industryType, hkExtension.INDUSTRYTYPE);
    hk.addExtension(otherDoc, hkExtension.OTHERDOC);
    hk.addExtension(mobilePhone, hkExtension.MBNUMBER);

cmd.setEppExtension(hk);

// sends out epp command to server and get response
EppResponse res = EppChannel.send(cmd);
if( res != null ) {
    if( res.success() ) {
        EppResponseDataCreateContact res_data = (EppResponseDataCreateContact) res.getResponseData();
        if( res_data != null ) {
            System.out.println("Contact Created: Contact ID " + res_data.getId());
        } else {
            // throw handle exception
        }
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
3.2.1.2 Update Contact

This method sends the EPP update contact command to modify the contact information.

Pre-Conditions

This method expects that the contact object be populated with the appropriate attributes for single contact identifier of the contact that is being updated. In addition, all of the attributes originally set during the creation of contact must be populated. If an attribute is left null, it will be set to null in the registry as well. This also depends on what kind of contact is being updated (e.g. organization or individual). The following list shows fields that are optional and required for the different kinds of contacts.

Objects:

```java
EppAddress Addr = new EppAddress();
EppContactData ContactData = new EppContactData();
EppContact Contact = new EppContact();
hkExtension hk = new hkExtension();
EppCommandUpdateContact contact = (EppCommandUpdateContact) EppCommand.update(EppObject.CONTACT, contactid, EppChannel.getClientId());
```
### Fields

<table>
<thead>
<tr>
<th>Organization Contact</th>
<th>Registrant (1)</th>
<th>Administrative (2)</th>
<th>Technical (3)</th>
<th>Billing (4)</th>
<th>Parameter</th>
<th>Maximum Length</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Handler Identifier</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>(EppCommandUpdateContact)EppCommand.update(EppObject.CONTACT, %value, EppChannel.getClientId());</td>
<td>-</td>
<td>HK1713004T</td>
</tr>
<tr>
<td>Contact Name</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>ContactData.setName(%value)</td>
<td>60</td>
<td>John</td>
</tr>
<tr>
<td>Contact Address</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Addr.setStreet(0, %value)</td>
<td>120</td>
<td>12/F, One Kowloon</td>
</tr>
<tr>
<td>Contact Address - Postal Code</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>Addr.setPostalCode(%value)</td>
<td>60</td>
<td>90000</td>
</tr>
<tr>
<td>Contact Address - Country Code</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Addr.setCountryCode(%value)</td>
<td>-</td>
<td>Refer to Appendix</td>
</tr>
<tr>
<td>Contact Telephone Number</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Contact.setVoice(%value)</td>
<td>32</td>
<td>+852-12312312</td>
</tr>
<tr>
<td>Contact Fax Number</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>Contact.setFax(%value)</td>
<td>32</td>
<td>+852-12312312</td>
</tr>
<tr>
<td>Contact Email Address</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Contact.setEmail(%value)</td>
<td>60</td>
<td><a href="mailto:johndoe@email.com">johndoe@email.com</a></td>
</tr>
<tr>
<td>Contact Surname</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>hk.addExtension(%value, hkExtension.SURNAME)</td>
<td>60</td>
<td>Doe</td>
</tr>
<tr>
<td>(Cf5) Is Contact Under Age 18</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>hk.addExtension(%value, hkExtension.UNDER18)</td>
<td>-</td>
<td>0: Under age of 18</td>
</tr>
<tr>
<td>(Cf6) Contact Industry Type</td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>hk.addExtension(%value, hkExtension.INDUSTRYTYPE)</td>
<td>-</td>
<td>Refer to Appendix</td>
</tr>
<tr>
<td>Mobile Phone Number</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>hk.addExtension(%value, hkExtension.MBNUMBER)</td>
<td>32</td>
<td>+852-12312312</td>
</tr>
</tbody>
</table>

✓ Mandatory  × Optional
### Individual Contact

<table>
<thead>
<tr>
<th>Fields</th>
<th>Registrant (1)</th>
<th>Technical (3)</th>
<th>Billing (4)</th>
<th>Parameter</th>
<th>Maximum Length</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Handler Identifier</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>(EppCommandUpdateContact)EppCommand.update(EppObject.CONTACT, %value, EppChannel.getClientId())</td>
<td></td>
<td>HK1713004T</td>
</tr>
<tr>
<td>Contact Name</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>ContactData.setName(%value)</td>
<td>60</td>
<td>John</td>
</tr>
<tr>
<td>Contact Address</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Addr.setStreet(0, %value)</td>
<td>120</td>
<td>123, Street X</td>
</tr>
<tr>
<td>Contact Address - Postal Code</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>Addr.setPostalCode(%value)</td>
<td>60</td>
<td>90000</td>
</tr>
<tr>
<td>Contact Address - Country Code</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Addr.setCountryCode(%value)</td>
<td></td>
<td>HK</td>
</tr>
<tr>
<td>Contact Telephone Number</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Contact.setVoice(%value)</td>
<td>32</td>
<td>+852-12312312</td>
</tr>
<tr>
<td>Contact Fax Number</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>Contact.setFax(%value)</td>
<td>32</td>
<td>+852-12312312</td>
</tr>
<tr>
<td>Contact Email Address</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Contact setEmail(%value)</td>
<td>60</td>
<td><a href="mailto:johndoe@email.com">johndoe@email.com</a></td>
</tr>
<tr>
<td>Contact Surname</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>hk.addExtension(%value, hkExtension.SURNAME)</td>
<td>60</td>
<td>Doe</td>
</tr>
</tbody>
</table>
| (Cf5) Is Contact Under Age 18       | ✓             | ×            | ×           | hk.addExtension(%value, hkExtension.UNDER18)                               |                | 0: Under age of 18  
1: 18 year old or older  |
| (Cf6) Contact Industry Type         | ×             | ×            | ×           | hk.addExtension(%value, hkExtension.INDUSTRYTYPE)                          |                | Refer to Appendix     |
| Mobile Phone Number                 | ×             | ×            | ×           | hk.addExtension(%value, hkExtension.MBNUMBER)                              | 32             | +852-12312312         |

✓  Mandatory  ×  Optional
Post-Conditions

- When completed successfully, an *EppResponse* object is returned.

Response Code

1000 ; Command completed successfully
2003 ; Required parameter missing
2004 ; Parameter value range error
2005 ; Parameter value syntax error
2303 ; Object does not exists
2305 ; Object association prohibits operation
2201 ; Authorization error
2400 ; Command failed
Sample Code

The following example shows the steps of updating a contact through the use of the contact client interface and command send method. (E.g. to Update an Organizational contact handle)

```java
String id = "HK1713004T";
String name = "John";
String address = "12/F, One Kowloon";
String postalCode = "";
String countryCode = "HK";
String telephone = "+852-12312312";
String fax = "+852-12312312";
String email = "johndoe@email.com";
String surname = "Doe";
String isUnder18 = "0";
String industryType = "0";
String mobilePhone = "+852-12312312";

// create contact's address info
EppAddress Addr = new EppAddress();
    Addr.setStreet(0, address);  // address
    Addr.setPostalCode(postalCode); // postal code
    Addr.setCountryCode(countryCode); // country code

// create contact's person info
EppContactData ContactData = new EppContactData();
    ContactData.setAddress(Addr); // EppAddress Object
    ContactData.setName(name);  // Name

EppCommandUpdateContact contact =
    (EppCommandUpdateContact)EppCommand.update(EppObjectCONTACT, contactid,
    EppChannel.getClientId());
    contact.setNewAscii(ContactData);
    contact.setNewVoice(telephone); // telephone
    contact.setNewFax(fax); // fax
    contact.setNewEmail(email); // email

// extensions, extra fields required by HKIRC
hkExtension hk = new hkExtension();
    hk.addExtension(surname, hkExtension.SURNAME);
    hk.addExtension(isUnder18, hkExtension.UNDER18);
    hk.addExtension(industryType, hkExtension.INDUSTRYTYPE);
    hk.addExtension(mobilePhone, hkExtension.MNUMBER);

cmd.setEppExtension(hk);
```
// sends epp command to server and get response
EppResponse res = EppChannel.send(cmd);

if (res != null) {
    if (res.success()) {
        System.out.println("Contact Updated Successfully");
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
3.2.1.3 Delete Contact

This method sends the EPP delete contact command to delete a contact handle.

Pre-Conditions

This method expects that the contact object be populated with the appropriate attributes for single contact identifier of the contact that is being deleted. In addition, this method requires that no domains are associated with the contact prior to deletion. If there are domains associated with the contact the deletion will fail. The following list shows field that is required for the method call.

Objects:

\[
\text{EppCommandDelete} \quad \text{cmd} = \text{EppCommand.delete(EppObject.Contact, contactid, EppChannel.getClientId());}
\]

Organizational Contact

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Contact Handle Identifier</td>
<td>HKxxxxxT</td>
<td>EppCommandDelete cmd = EppCommand.delete(EppObject.Contact, %value, EppChannel.getClientId());</td>
</tr>
</tbody>
</table>

Individual Contact

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Contact Handle Identifier</td>
<td>HKxxxxxT</td>
<td>EppCommandDelete cmd = EppCommand.delete(EppObject.Contact, %value, EppChannel.getClientId());</td>
</tr>
</tbody>
</table>

Post-Conditions

- When completed successfully, an EppResponse object is returned.

Response Code

- 1000 ; Command completed successfully
- 2003 ; Required parameter missing
- 2303 ; Object does not exists
- 2305 ; Object association prohibits operation
- 2201 ; Authorization error
- 2308 ; Data management policy violation
- 2400 ; Command failed
Sample Code

The following example shows the steps of deleting a contact through the use of the contact client interface and command send method. (E.g. to delete an Organizational contact handle)

```java
String contactid="HK1000001T";
EppCommandDelete cmd = EppCommand.delete(EppObject.Contact, contactid, EppChannel.getClientId());
EppResponse res = EppChannel.send(cmd);

if( res != null ) {
    if( res.success() ) {
        System.out.println("Contact Deleted");
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
```
3.2.1.4 Info Contact

This method sends the EPP info contact command to retrieve contact handle information.

Pre-Conditions

This method expects that the contact object be populated with the appropriate attributes for single contact identifier of the contact that is being queried. The following list shows field that is required for the method called.

Objects:

```
EppCommandInfo cmd = EppCommand.info(EppObject.Contact, contactid, EppChannel.getClientId());
```

Organisational Contact

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Contact Identifier</td>
<td>HKxxxxxxXT</td>
<td>EppCommandInfo cmd = EppCommand.info(EppObject.Contact, %value, EppChannel.getClientId());</td>
</tr>
</tbody>
</table>

Individual Contact

```
EppCommandInfo cmd = EppCommand.info(EppObject.Contact, %value, EppChannel.getClientId());
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Contact Identifier</td>
<td>HKxxxxxxXT</td>
<td>EppCommandInfo cmd = EppCommand.info(EppObject.Contact, %value, EppChannel.getClientId());</td>
</tr>
</tbody>
</table>

Post-Conditions

- When completed successfully, `EppResponseDataInfo`, `EppContact` object is returned.

Response Code

- 1000 : Command completed successfully
- 2003 : Required parameter missing
- 2303 : Object does not exists
- 2201 : Authorization error
- 2400 : Command failed
Sample Code

The following example shows the steps of querying a contact through the use of the contact client interface and command send method. (E.g. to query an Organisational contact handle)

```java
String contactid="HKNIC-ORG1000001";
EppCommandInfo cmd = EppCommand.info(EppObject.Contact, contactid,
EppChannel.getClientId());
EppResponse res = EppChannel.send(cmd);
if( res != null ) {
  if( res.success() ) {
    EppResponseDataInfo res_data =
    (EppResponseDataInfo) res.getResponseData();
    if( res_data != null ) {
      EppContact Contact = (EppContact)
      res_data.getObject();
      //retrieve Contact attribute here
    } else {
      // throw handle exception
    }
  } else {
    // throw handle exception
  }
}
```
3.2.2 Host Interface

This interface is used to query, check, create, update and delete hosts that are associated with domains.

3.2.2.1 Check Host

This method sends the EPP check host command to check the allowable flag for one or more hosts.

Pre-Conditions

This method expects that the host object be populated with one or more host names. The following list shows field that is required for the method.

Objects

```
EppCommandCheck cmd = EppCommand.check(EppObject.HOST, EppChannel.getClientId());
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Host Name</td>
<td>ns1.myhost.com.hk</td>
<td>cmd.add(%value)</td>
</tr>
</tbody>
</table>

Post-Conditions

When completed successfully, an `EppResponseDataCheck` object is returned, with the following attributes:

- `isAvailable` = the check results are returned in a collection containing one or more hosts.

Response Code

1000: command completed successfully

2001: command syntax error
Sample Code

The following example shows the steps of checking one or more hosts through the use of the host client interface and command send method.

```java
String hostname="ns.myhost.com.hk";
EppCommandCheck cmd = EppCommand.check(EppObject.HOST, EppChannel.getClientId());
cmd.add(hostname);
EppResponse res = EppChannel.send(cmd);

if( res != null ) {
    if( res.success() ) {
        EppResponseDataCheck res_data = (EppResponseDataCheck) res.getResponseData();

        if( res_data != null ) {
            if (res_data.isAvailable(hostname))
            {
                System.out.println("HostCheck: Host " + hostname + " is available");
            } else {
                System.out.println("HostCheck: Host " + hostname + " is not available");
            }
        } else {
            // throw handle exception
        }
    } else {
        // throw handle exception
    }
} else {
    // throw handle exception
}
```
3.2.2.2 Create Host

This method sends the EPP create host command.

Pre-Conditions

This method expects that the host object be populated with one or more host names. The following list shows fields that are required for the method.

**Objects**

```java
EppHost Host = new EppHost();
EppCommandCreate cmd = EppCommand.create(Host, EppChannel.getClientId());
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Host Name</td>
<td>ns1.myhost.com.hk</td>
<td>Host.setName(%value);</td>
</tr>
<tr>
<td>Yes</td>
<td>Host IP</td>
<td>202.188.101.11</td>
<td>Host.addAddress(new EppIpAddress(%value, &quot;v4&quot;));</td>
</tr>
<tr>
<td>Yes</td>
<td>Host IP Type</td>
<td>v4 or v6</td>
<td>Host.addAddress(new EppIpAddress(&quot;202.166.12.18&quot;, %value));</td>
</tr>
</tbody>
</table>

Post-Conditions

When completed successfully, an `EppResponseDataCreateHost` object is returned, with the following attributes:

- Name = the host name that was successfully created.

**Response Code**

- 1000 : Command completed successfully
- 2003 : Required parameter missing
- 2005 : Parameter value syntax error
- 2201 : Authorization error
- 2302 : Object exists
- 2303 : Object does not exists
- 2305 : Object association prohibits operation
- 2306 : Parameter value policy error
- 2400 : Command failed
Sample Code

The following example shows the steps of performing create of hosts through the use of the host client interface and command send method.

```java
EppHost Host = new EppHost();

String hostname="ns.myhost.com.hk";
Host.setName(hostname);
Host.addAddress(new EppIpAddress("202.166.12.18", "v4"));
Host.addAddress(new EppIpAddress("202.166.12.19", "v4"));

EppCommandCreate cmd = EppCommand.create(Host, EppChannel.getClientId());

EppResponse res = EppChannel.send(cmd);

if( res != null ) {
    if( res.success() ) {
        EppResponseDataCreateHost res_data = (EppResponseDataCreateHost) res.getResponseData();

        if( res_data != null ) {
            System.out.println("Host created: "+ res_data.getName());
        } else {
            // throw handle exception
        }
    } else {
        // throw handle exception
    }
} else {
    printErrors(res.getResult());
}
```
3.2.2.3 Update Host

This method sends the EPP update host command to modify host name or host IP.

Pre-Conditions

This method expected that the host object be populated with the name of the host to be updated and the Ipv4 or Ipv6 address to change. In addition, this method allows change of the host name. The following list shows fields that are required for the method.

**Objects**

```java
EppCommandUpdateHost cmd = EppCommand.update(EppObject.HOST, hostname, EppChannel.getClientId());
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Host Name</td>
<td>ns1.myhost.com.hk</td>
<td>EppCommandUpdateHost cmd = EppCommand.update(EppObject.HOST, %value, EppChannel.getClientId());</td>
</tr>
<tr>
<td>Yes</td>
<td>Host IP (add or remove)</td>
<td>202.188.101.11</td>
<td>cmd.addAddress(new EppIpAddress(%value, &quot;v4&quot;)); or cmd.removeAddress(new EppIpAddress(%value, &quot;v4&quot;));</td>
</tr>
<tr>
<td>Yes</td>
<td>Host IP Type</td>
<td>v4 or v6</td>
<td>cmd.addAddress(new EppIpAddress(ip, %value)); or cmd.removeAddress(new EppIpAddress(ip, %value));</td>
</tr>
</tbody>
</table>

Post-Conditions

When completed successfully, a standard EppResponse object is returned.

Response Code

- 1000 ; Command completed successfully
- 2003 ; Required parameter missing
- 2005 ; Parameter value syntax error
- 2201 ; Authorization error
- 2302 ; Object exists
- 2303 ; Object does not exists
- 2305 ; Object association prohibits operation
- 2306 ; Parameter value policy error
Sample Code

The following example shows the steps of performing an update of hosts through the use of the host client interface and command send method.

```java
String hostname="ns.myhost.com.hk";

EppCommandUpdateHost cmd = EppCommand.update(EppObject.HOST, hostname, EppChannel.getClientId());

// change of host ip address
cmd.addAddress(new EppIpAddress("202.111.44.15", "v4"));
cmd.removeAddress(new EppIpAddress("202.111.44.14", "v4"));

// change of host name
cmd.setNewName("ns1.myhost.com.hk");

EppResponse res = EppChannel.send(cmd);

if( res != null ) {
    if( res.success() ) {
        System.out.println("Host Updated");
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
```
3.2.2.4 Delete Host

This method sends the EPP delete host command.

Pre-Conditions

This method expects that the host object is populated with the appropriate attributes for single host name of the host that is being deleted. In addition, this method requires that no domains are associated with the host prior to deletion. If there are domains associated with the host, the deletion will fail. The following list shows field that is required for the method called.

Objects

```
EppCommandDelete cmd = EppCommand.delete(EppObject.HOST, hostname, EppChannel.getClientId());
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Host Name</td>
<td>ns.myhost.com.hk</td>
<td>EppCommandDelete cmd = EppCommand.delete(EppObject.HOST, %value, EppChannel.getClientId());</td>
</tr>
</tbody>
</table>

Post-Conditions

- When completed successfully, an `EppResponse` object is returned.

Response Code

1000 ; Command completed successfully  
2003 ; Required parameter missing  
2303 ; Object does not exists  
2305 ; Object association prohibits operation  
2308 ; Data management policy violation  
2400 ; Command failed
Sample Code

The following example shows the steps of deleting a host through the use of the host client interface and command send method.

```java
String hostname="ns.myhost.com.hk";
EppCommandDelete cmd = EppCommand.delete(EppObject.HOST, hostname, EppChannel.getClientId());
EppResponse res = EppChannel.send(cmd);
if( res != null ) {
    if( res.success() ) {
        System.out.println("Host Deleted");
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
```
3.2.2.5 Info Host

This method sends the EPP info host command to retrieve host information.

Pre-Conditions

This method expects that the host object be populated with the appropriate attributes for single host name of the host that is being queried. The following list shows the field required for the method.

Objects

```java
EppCommandInfo cmd = EppCommand.info(EppObject.HOST, hostname, EppChannel.getClientId());
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Host Name</td>
<td>ns.myhost.com.hk</td>
<td>EppCommandInfo cmd = EppCommand.info(EppObject.HOST, %value, EppChannel.getClientId());</td>
</tr>
</tbody>
</table>

Post-Conditions

- On success, `EppResponseDataInfo`, `EppHost` object is returned.

Response Code

1000 ; Command completed successfully
2005 ; Parameter value syntax error
2303 ; Object does not exists
2400 ; Command failed
Sample Code

The following example shows the steps of querying a host through the use of the host client interface and command send method.

```java
String hostname="ns.myhost.com.hk";

EppCommandInfo cmd = EppCommand.info(EppObject.HOST, hostname, EppChannel.getClientId());

EppResponse res = EppChannel.send(cmd);

if (res != null) {
    if (res.success()) {
        EppResponseDataInfo res_data = (EppResponseDataInfo) res.getResponseData();

        if (res_data != null) {
            EppHost host = (EppHost) res_data.getObject();
            // retrieve Host attribute here
        } else {
            // throw handle exception
        }
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
```
3.2.3 Domain Interface

This interface is used to query, check, create, renew, transfer, update and delete domain names.

3.2.3.1 Check Domain

This method sends the EPP check domain command to check the allowable flag for one or more domains.

Pre-Conditions

This method expects that the domain object be populated with one or more domain names. The following list shows the required field for the method.

Objects

```java
EppCommandCheck cmd = EppCommand.check(EppObject.DOMAIN, EppChannel.getClientId());
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Domain Name</td>
<td>mydomain.com.hk</td>
<td>cmd.add(%value)</td>
</tr>
</tbody>
</table>

Post-Conditions

When completed successfully, an `EppResponseDataCheck` object is returned, with the following attributes:

- `isAvailable` = the check results are returned in a collection containing one or more hosts.

Response Code

- 1000; command completed successfully
- 2001; command syntax error
Sample Code

The following example shows the steps of checking one or more domains through the use of the domain client interface and command send method.

```java
String domain="mydomain.com.hk";
EppCommandCheck cmd = EppCommand.check(EppObject.DOMAIN, EppChannel.getClientId());

cmd.add(domain);

EppResponse res = EppChannel.send(cmd);

if( res != null ) {
    if( res.success() ) {
        EppResponseDataCheck res_data = (EppResponseDataCheck) res.getResponseData();

        if( res_data != null ) {
            if (res_data.isAvailable(domain)) {
                System.out.println("Domain Check: Domain Name " + domain + " is available");
            } else {
                System.out.println("Domain Check: Domain Name " + domain + " is not available");
            }
        } else {
            // throw handle exception
        }
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
```
3.2.3.2 Create Domain

This method sends the EPP create domain command.

Pre-Conditions

This method requires that several attributes be set prior to execution. The following list shows fields that are required for the method. (Important Note: please avoid reusing the contact Identifier when create a new domain)

Objects

```java
EppDomain domain = new EppDomain("mydomain.com.hk");
EppCommandCreate cmd = EppCommand.create(domain,
EppChannel.getClientId());
hkExtension hk = new hkExtension();
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Domain Name</td>
<td>mydomain.com.hk</td>
<td>EppDomain domain = new EppDomain(%value);</td>
</tr>
<tr>
<td>Yes</td>
<td>Registrant Contact Identifier</td>
<td>HKxxxxxxxT</td>
<td>domain.setRegistrant(%value)</td>
</tr>
<tr>
<td>Yes, no if Domain Category is 'I'</td>
<td>Administrative Contact Identifier</td>
<td>HKxxxxxxxT</td>
<td>domain.addContact(%value, EppDomain.CONTACT_TYPE_ADMIN);</td>
</tr>
<tr>
<td>Yes</td>
<td>Technical Contact Identifier</td>
<td>HKxxxxxxxT</td>
<td>domain.addContact(%value, EppDomain.CONTACT_TYPE_TECH);</td>
</tr>
<tr>
<td>Yes</td>
<td>Billing Contact Identifier</td>
<td>HKxxxxxxxT</td>
<td>domain.addContact(%value, EppDomain.CONTACT_TYPE_BILLING);</td>
</tr>
<tr>
<td>Yes</td>
<td>Domain Periods</td>
<td>1</td>
<td>domain.setPeriod(new EppPeriod(%value, EppPeriod.UNIT_YEAR));</td>
</tr>
<tr>
<td>Yes</td>
<td>Name Server (Max 13)</td>
<td>ns.myhost.com.hk</td>
<td>domain.addNameServer(%value)</td>
</tr>
<tr>
<td>Yes</td>
<td>Domain Category</td>
<td>I or O</td>
<td>hk.addExtension(%value, hkExtension.CATEGORY_TYPE);</td>
</tr>
<tr>
<td></td>
<td>I – Individual O - Organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Add Domain’s Reseller Information</td>
<td>Reseller Info</td>
<td>hk.addExtension(%value, hkExtension.RESELLER_INFO);</td>
</tr>
<tr>
<td>No</td>
<td>Promotion Code</td>
<td>xxxxxxxxxxxxxx</td>
<td>domain.setPromotion(%value)</td>
</tr>
</tbody>
</table>

Post-Conditions

When completed successfully, an `EppResponseDataCreateDomain` object is returned, with the following attributes:

- Domain Name = the domain name that was successfully created.
- Date Create = domain name creation timestamp.
- Date Expire = domain name expiration timestamp.

Response Code:
1001 ; command completed successfully; action pending
2001 ; command syntax error
2003 ; required parameter missing
2004 ; parameter value range error
2005 ; parameter value syntax error
2104 ; billing failure
2201 ; authorization error
2302 ; object exists
2303 ; object does not exists
2306 ; parameter value policy error
2400 ; command failed
Sample Code

The following example shows the steps of performing create of domain through the use of the domain client interface and command send method.

```java
// Set domain information
EppDomain domain = new EppDomain("mydomain.com.hk"); //Domain Name
    // Registrant Contact Handle ID
    domain.setRegistrant("HK1000001T");
    // Administrative Contact Handle ID
    domain.addContact("HK1000002T", EppDomain.CONTACT_TYPE_ADMIN);
    // Technical Contact Handle ID
    domain.addContact("HK1000003T", EppDomain.CONTACT_TYPE_TECH);
    // Billing Contact Handle ID
    domain.addContact("HK1000004T", EppDomain.CONTACT_TYPE_BILLING);
    // Domain Term
    domain.setPeriod(new EppPeriod(1, EppPeriod.UNIT_YEAR));

    // Domain Name Server
    domain.addNameServer("ns1.hknic.com.hk");
    // Domain Name Server
    domain.addNameServer("ns2.hknic.com.hk");
    domain.addPromotion("example-promotion-code");

    EppCommandCreate cmd = EppCommand.create(domain, EppChannel.getClientId());

    // Set Domain Language Tag
    hkExtension hk = new hkExtension();
    hk.addExtension("O", hkExtension.CATEGORY_TYPE);
    if(resellerInformation != null) {
        hk.addExtension("Reseller ABC Details", hkExtension.RESELLER_INFO);
    }
    cmd.setEppExtension(hk);

    EppResponse res = EppChannel.send(cmd);

    if( res != null ) {
        if( res.success() ) {
            EppResponseDataCreateDomain res_data =
            (EppResponseDataCreateDomain) res.getResponseData();
            if( res_data != null ) {
                String domainname = res_data.getName();
                if (res_data.getDateCreated() != null) {
                    Date crDate = res_data.getDateCreated().getTime();
                }
                if (res_data.getDateExpired() != null) {
                    Date exDate = res_data.getDateExpired().getTime();
                }
            } else {
                // throw handle exception
            }
        } else {
            printErrors(res.getResult());
        }
    } else {
        // throw handle exception
    }
```
3.2.3.3 Renew Domain

This method sends the EPP renew domain command.

Pre-Conditions

This method requires that several attributes be set prior to execution. The following list shows fields that are required for the method.

Objects

```java
EppCommandRenewDomain cmd = (EppCommandRenewDomain)
EppCommand.renew(EppObject.DOMAIN, domainname, EppChannel.getClientId());
hkExtension hk = new hkExtension();
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
</table>
| Yes       | Domain Name                  | mydomain.com.hk| EppCommandRenewDomain cmd = (EppCommandRenewDomain)
EppCommand.renew(EppObject.DOMAIN, %value, EppChannel.getClientId()); |
| Yes       | Term                         | 1              | cmd.setPeriod(new EppPeriod(1, EppPeriod.UNIT_YEAR));                      |
| Yes       | Domain current expiration date | Calendar Date (e.g. 2008-01-01) | cmd.setCurrentExpireDate(%value);                                        |
| Yes if bundled | Bundle Domain Name         | mybundledomain.com.hk | hk.domainExtension(%value, hkExtension.BUNDLE_DOMAIN_NAME) |
Sample Code

The following example shows the steps of performing renew of domain through the use of the domain client interface and command send method.

```java
String domainname="mydomain.com.hk";
Calendar cl = Calendar.getInstance();
cl.setTime(CurExpireDate); //current domain expiration date
EppCommandRenewDomain cmd =
(EppCommandRenewDomain)EppCommand.renew(EppObject.DOMAIN, domainname,
EppChannel.getClientId());
// Renew Term
cmd.setPeriod(new EppPeriod(1, EppPeriod.UNIT_YEAR));
// Domain’s Current Expiration Date
cmd.setCurrentExpireDate(cl);
EppResponse res = EppChannel.send(cmd);

if( res != null ) {
    if( res.success() ) {
        EppResponseDataRenewDomain res_data =
(EppResponseDataRenewDomain) res.getResponseData();
        if( res_data != null ) {
            System.out.println("Domain Name: " +
            res_data.getName());
            if (res_data.getDateExpired()!=null)
                System.out.println("Expiration Date : " +
                res_data.getDateExpired().getTime());
        }else{
            // throw handle exception
        }
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
```
3.2.3.4 Delete Domain

This method sends the EPP delete domain command.

Pre-Conditions

This method expects that the domain object be populated with the unique identifier of the domain to be deleted. The following list shows fields that are required for the method.

Objects

```
EppCommandDelete cmd = EppCommand.delete(EppObject.DOMAIN, domainname, EppChannel.getClientId());
hkExtension hk = new hkExtension();
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Domain Name</td>
<td>mydomain.com.hk</td>
<td>EppCommandDelete.cmd = EppCommand.delete(EppObject.DOMAIN, %value, EppChannel.getClientId());</td>
</tr>
<tr>
<td>Yes if bundled</td>
<td>Bundle Domain Name</td>
<td>mybundledomain.com.hk</td>
<td>hk.domainExtension(%value, hkExtension.BUNDLE_DOMAIN_NAME)</td>
</tr>
</tbody>
</table>

Post-Conditions

When completed successfully, an EppResponse object is returned, with the following attributes:

Response Code:

- 1001 ; command completed successfully
- 2001 ; command syntax error
- 2003 ; required parameter missing
- 2201 ; authorization error
- 2300 ; object pending transfer
- 2303 ; object does not exists
- 2304 ; object status prohibits operation
- 2306 ; parameter value policy error
- 2400 ; command failed
Sample Code

The following example shows the steps of performing delete of domain through the use of the domain client interface and command send method.

```java
String domainName = "mydomain.com.hk";
String bunDomainName = "mybundledomain.com.hk";

EppCommandDelete cmd = EppCommand.delete(EppObject.DOMAIN, domainName,
EppChannel.getClientId());

// extensions, extra fields required by HKIRC
hkExtension hk = new hkExtension();

hk.domainExtension(bunDomainName, hkExtension.BUNDLE_DOMAIN_NAME);

cmd.setEppExtension(hk);

EppResponse res = EppChannel.send(cmd);

if( res != null ) {
  if( res.success() ) {
    System.out.println("Domain Deleted");
  } else {
    printErrors(res.getResult());
  }
} else {
  // throw handle exception
}
```
3.2.3.5 Update Domain

This method sends the EPP update domain command.

Pre-Conditions

This method expects that the domain object be populated with the unique identifier of the domain to be updated and the attribute to be changed. In addition, this method does not allow the change of domain registrant contact identifier, as it would be considered an ownership transfer. The following list shows fields that are optional or required for the method.

Objects

```
EppCommandUpdateDomain cmd = (EppCommandUpdateDomain)
    EppCommand.update(EppObject.DOMAIN, domainname, channel.getClientId());
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
</table>
| Yes       | Domain Name                                      | mydomain.com.hk        | EppCommandUpdateDomain cmd = (EppCommandUpdateDomain)
potential EppCommand.update(EppObject.DOMAIN, %value, channel.getClientId()); |
| No        | Add Name Server                                  | ns3.myhost.com.hk      | cmd.addNameServer(%value);                                               |
| No        | Remove Name Server                               | ns2.myhost.com.hk      | cmd.removeNameServer(%value);                                           |
| No        | Add Status                                       | clientHold            | cmd.addStatus(%value);                                                  |
| No        | Remove Status                                    | clientUpdateProhibited | cmd.removeStatus(%value);                                               |
| No        | Add Update Prohibited Exemption of Modify Domain (MDN) and Modify NS (MNS) or both | MDN,MNS | hk.addExtension(%value, hkExtension.CLIENT_UPDATE_PROHIBITED EXEMPTION |

Domain Status

- clientHold = Hold / Suspend
- clientUpdateProhibited = Update Prohibited
- clientTransferProhibited = Transfer Prohibited
- clientRenewProhibited = Renew Prohibited
- clientDeleteProhibited = Delete Prohibited

Update Prohibited Exemption Value

MDN = Modify Domain (MDN)
MNS = Modify NS (MNS)

(Important Note: By default MDN and MNS are update prohibited if no Update Prohibited Exemption value given)
Post-Conditions

When completed successfully, a standard EppResponse object is returned.

Response Code

1000 ; command completed successfully
2001 ; command syntax error
2003 ; required parameter missing
2004 ; parameter value range error
2005 ; parameter value syntax error
2102 ; unimplemented option
2201 ; authorization error
2300 ; object pending transfer
2303 ; object does not exist
2304 ; object status prohibits operation
2306 ; parameter value policy error
2400 ; command failed
Sample Code

The following example shows the steps of performing an update of domain.

```java

// Update Name Server
    cmd.addNameServer("ns3.hknic.com.hk");
    cmd.removeNameServer("ns2.hknic.com.hk");

/// Update Domain's Client Key Status
// Client Key
// clientDeleteProhibited
// clientHold
// clientRenewProhibited
// clientTransferProhibited
// clientUpdateProhibited

// HoldKey (Required if client key set to "clienthold")
// 1 : Registrar Request
// 2 : Court order
// 3 : Registrant Request
// 4 : Breach of Contract

/// Update Prohibited Exemption Value
// MDN
// MNS
    cmd.addStatus("clientHold");
    cmd.removeStatus("clientUpdateProhibited");

    HKExtension hk = new HKExtension();
    hk.domainExtension("bundledomain.com.hk", HKExtension.BUNDLE_DOMAIN_NAME);
    hk.addExtension("MDN,MNS");
    hkExtension.CLIENT_UPDATE_PROHIBITED_EXEMPTION);
    cmd.setEppExtension(hk);

EppResponse res = EppChannel.send(cmd);
if(res != null) {
    if(res.success()) {
        System.out.println("Domain Updated Successfully");
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
```
3.2.3.6 Transfer of Holding Right / Modify Domain Name Contact

This method sends the EPP update domain command. Note that the followings are the same for both transfer of holding right and modify domain name contact but modify domain name contact does not contain registrant contact identifier.

Pre-Conditions

This method expects that the domain object be populated with the unique identifier of the domain to be updated and the registrant contact identifier. The following list shows fields that are required for the method.

Objects

```java
EppCommandUpdateDomain cmd = (EppCommandUpdateDomain)
    EppCommand.update(EppObject.DOMAIN, domainname, channel.getClientId());

hkExtension hk = new hkExtension();

EppCommandUpdateDomain cmd = (EppCommandUpdateDomain)
    EppCommand.update(EppObject.DOMAIN, domainname, channel.getClientId());

hkExtension hk = new hkExtension();
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Domain Name</td>
<td>mydomain.com.hk</td>
<td>cmd = (EppCommandUpdateDomain)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EppCommand.update(EppObject.DOMAIN, domainname, channel.getClientId());</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>hk = new hkExtension();</td>
</tr>
<tr>
<td>Yes</td>
<td>New Registrant Contact Identifier</td>
<td>HK1713634T</td>
<td>cmd.setNewRegistrant(%value);</td>
</tr>
<tr>
<td>No</td>
<td>Add Contact Identifier</td>
<td>HK1000009T</td>
<td>cmd.addContact(new EppContactType(%value, EppDomain.CONTACT_TYPE_ADMIN));</td>
</tr>
<tr>
<td>No</td>
<td>Remove Contact Identifier</td>
<td>HK1000003T</td>
<td>cmd.removeContact();</td>
</tr>
<tr>
<td>Yes (for bundled TNR)</td>
<td>Bundle Domain Name</td>
<td>mybundledomain.com.hk</td>
<td>hk.addExtension(%value, hkExtension.BUNDLE_DOMAIN_NAME);</td>
</tr>
<tr>
<td>No</td>
<td>Add, Modify, Removed Domain’s Reseller Information</td>
<td>Reseller Info</td>
<td>hk.addExtension(%value, hkExtension.RESELLER_INFO);</td>
</tr>
</tbody>
</table>

* Each Contact Identifier fields are not mandatory but must fill in at least one.

Post-Conditions

On success, a standard EppResponse object is returned.

Response Code

- 1001; command completed successfully; action pending
- 2001; command syntax error
- 2003; required parameter missing
- 2004; parameter value range error
- 2005; parameter value syntax error
- 2102; unimplemented option
2201 ; authorization error
2300 ; object pending transfer
2303 ; object does not exists
2304 ; object status prohibits operation
2306 ; parameter value policy error
2400 ; command failed
Sample Code

The following example shows the steps of performing a holding right transfer of domain through the use of the domain client interface and command send method.

```java
EppCommandUpdateDomain cmd = (EppCommandUpdateDomain)
channel.getClientId());

// update Registrant contact handle id
cmd.setNewRegistrant("HK1713634");

// Update administrative contact handle id
    cmd.addContact(new EppContactType("HK1000008T",
            EppDomain.CONTACT_TYPE_ADMIN));
    cmd.removeContact(new EppContactType("HK1000002T",
            EppDomain.CONTACT_TYPE_ADMIN));

// Update technical contact handle id
    cmd.addContact(new EppContactType("HK1000009T",
            EppDomain.CONTACT_TYPE_ADMIN));
    cmd.removeContact(new EppContactType("HK1000003T",
            EppDomain.CONTACT_TYPE_ADMIN));

// Update billing contact handle id
    cmd.addContact(new EppContactType("HK1000010T",
            EppDomain.CONTACT_TYPE_ADMIN));
    cmd.removeContact(new EppContactType("HK1000004T",
            EppDomain.CONTACT_TYPE_ADMIN));

hkExtension hk = new hkExtension();
hk.addExtension("bundledomain.com.hk",
hkExtension.BUNDLE_DOMAIN_NAME);
hk.addExtension("Reseller Info", hkExtension.RESELLER_INFO);
    cmd.setEppExtension(hk);

// sends epp command to server and get response
EppResponse res = EppChannel.send(cmd);

if( res != null ) {
    if( res.success() ) {
        System.out.println("Transfer Ownership Completed Successfully");
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
```
3.2.3.7 Bundle Domain

This method expected that the domain object be populated with the unique identifier of the domain to be updated and the unique identifier of the domain to be bundled. The following list shows fields that are required for the method called.

**Objects**

```java
EppCommandUpdateDomain cmd = (EppCommandUpdateDomain)
EppCommand.update(EppObject.DOMAIN, domainname, channel.getClientId());
hkExtension hk = new hkExtension();
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
</table>
| Yes       | Domain Name          | mydomain.com.hk                | EppCommandUpdateDomain cmd = (EppCommandUpdateDomain)
EppCommand.update(EppObject.DOMAIN, domainname, channel.getClientId()); |
| Yes       | Bundled Domain Name  | mybundledomain.com.hk          | hk.domainExtension(%value, hkExtension. NEW_BUNDLE_DOMAIN_NAME)            |

**Post-Conditions**

When completed successfully, a standard `EppResponse` object is returned.

**Response Code**

- 1001 ; command completed successfully; action pending
- 2001 ; command syntax error
- 2003 ; required parameter missing
- 2004 ; parameter value range error
- 2005 ; parameter value syntax error
- 2102 ; unimplemented option
- 2201 ; authorization error
- 2300 ; object pending transfer
- 2303 ; object does not exists
- 2304 ; object status prohibits operation
- 2306 ; parameter value policy error
- 2400 ; command failed
Sample Code

The following example shows the steps of performing domain bundling through the use of the domain client interface and command send method.

```java
EppCommandUpdateDomain cmd = (EppCommandUpdateDomain)
    channel.getClientId());

    // Domain name to be bundled
hkExtension hk = new hkExtension();
    NEW_BUNDLE_DOMAIN_NAME);
    cmd.setEppExtension(hk);

    // sends epp command to server and get response
EppResponse res = EppChannel.send(cmd);

    if( res != null ) {
        if( res.success() ) {
            System.out.println("Transfer Ownership Completed
Successfully");
        } else {
            printErrors(res.getResult());
        }
    } else {
```
3.2.3.8 Info Domain

This method sends the EPP info domain command to retrieve domain name information.

Pre-Conditions

This method expects that the domain object be populated with the single domain name of the domain to be queried.

Objects

\[
\text{EppCommandInfo cmd} = \text{EppCommand.info(EppObject.DOMAIN, domainname, EppChannel.getClientId());}
\]

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
</table>
| Yes       | Domain Name     | mydomain.com.hk| \text{EppCommandInfo cmd} = 
\text{EppCommand.info(EppObject.DOMAIN, \%value, EppChannel.getClientId());} |

Post-Conditions

- When completed successfully, \text{EppResponseDataInfo}, \text{EppDomain} object is returned.

Response Code

- 1000 ; command completed successfully
- 2001 ; command syntax error
- 2003 ; required parameter missing
- 2004 ; parameter value range error
- 2005 ; parameter value syntax error
- 2201 ; authorization error
- 2303 ; object does not exists
- 2306 ; parameter value policy error
- 2400 ; command failed
Sample Code

The following example shows the steps of querying a domain through the use of the domain client interface and command send method.

```java
String domainname="mydomain.com.hk";

EppCommandInfo cmd = EppCommand.info(EppObject.DOMAIN, domainname, EppChannel.getClientId());

EppResponse res = EppChannel.send(cmd);

if( res != null ) {
    if( res.success() ) {
        EppResponseDataInfo res_data = (EppResponseDataInfo) res.getResponseData();

        if( res_data != null ) {
            EppDomain Domain = (EppDomain) res_data.getObject();
            //retrieve Domain attribute here
        } else {
            // throw handle exception
        }
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
```
3.2.3.9 Transfer Domain

This method sends the EPP transfer domain command. There are 5 different operations that can be performed: query, request, approve, reject or cancel a transfer. A transfer is initiated by the registrar taking up the domain. Once a transfer has been requested, the current registrar on record will be notified by the system. The current registrar is then required to either approve or reject the transfer.

Pre-Conditions

This method requires that several attributes be set prior to execution. The following list shows fields that are required for the method.

**Objects**

```java
EppCommandTransferDomain cmd = (EppCommandTransferDomain)
    EppCommand.transfer(EppObject.DOMAIN, domainname, EppChannel.getClientId());
EppAuthInfo Authinfo = new EppAuthInfo(EppAuthInfo.TYPE_PW, "123456");
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
</table>
| Yes       | Domain Name               | mydomain.com.hk                | EppCommandTransferDomain cmd = (EppCommandTransferDomain)
                                    |                                            | EppCommand.transfer(EppObject.DOMAIN, %value, EppChannel.getClientId()); | |
| Yes       | Domain Authorisation Code | 123456                         | EppAuthInfo Authinfo = new EppAuthInfo(EppAuthInfo.TYPE_PW, %value);                        |
| Yes       | Operation                 | OPTYPE_REQUEST (refer operation legends below) | cmd.setOperation(%value);                                                                    |
| Yes if bundle | Bundle Domain Name      | Mybundledomain.com.hk            | hk.domainExtension(%value, hkExtension.BUNDLE_DOMAIN_NAME);                                 |

**Operation Legends**

- OPTYPE_REQUEST – Request for transfer
- OPTYPE_APPROVE – Approve a transfer
- OPTYPE_REJECT – Reject a Transfer
- OPTYPE_CANCEL – Cancel a Transfer
- OPTYPE_QUERY – Query a Transfer

Post-Conditions

- When completed successfully, an `EppResponseDataTransfer` object is returned.

**Response Code:**

1000 ; command completed successfully
2001 ; command syntax error
2003 ; required parameter missing
2004 ; parameter value range error
2005 ; parameter value syntax error
2102 ; unimplemented option
2104 ; billing failure
2106 ; object is not eligible for transfer
2201 ; authorization error
2202 ; invalid authorization information
2300 ; object pending transfer
2301 ; object not pending transfer
2303 ; object does not exists
2304 ; object status prohibits operation
2306 ; parameter value policy error
2400 ; command failed
Sample Code

The following example shows the steps of requesting domain transfer through the use of the domain client interface and command send method.

```java
String operation="";
if (action.equals("query")) {
   operation = EppCommandTransfer.OPTYPE_Query;
} else if (action.equals("request")) {
   operation = EppCommandTransfer.OPTYPE_REQUEST;
} else if (action.equals("approve")) {
   operation = EppCommandTransfer.OPTYPE_APPROVE;
} else if (action.equals("reject")) {
   operation = EppCommandTransfer.OPTYPE_REJECT;
} else if (action.equals("cancel")) {
   operation = EppCommandTransfer.OPTYPE_CANCEL;
}

EppCommandTransferDomain cmd = (EppCommandTransferDomain)
EppCommand.transfer(EppObject.DOMAIN, "mydomain.com.hk",
EppChannel.getClientId());

EppAuthInfo Authinfo = new EppAuthInfo(EppAuthInfo.TYPE_PW,
"z2daTiY0");
cmd.setAuthInfo(Authinfo);
cmd.setOperation(operation);

hkExtension hk = new hkExtension();
hk.domainExtension(mybundledomain.com.hk",
hkExtension.BUNDLE_DOMAIN_NAME);

cmd.setEppExtension(hk);

EppResponse res = EppChannel.send(cmd);
if( res != null ) {
   if( res.success() ) {
      EppResponseDataTransfer res_data =
(EppResponseDataTransfer) res.getResponseData();
      System.out.println("Transfer Request Completed
Successfully");
   } else {
```
### 3.2.3.10 Special Promotion for Cross Selling and Brand name protection

This method is used to register new domain at a discounted price based on the promotion requirement. The following list shows fields that are required for the method called.

**Objects**

```java
EppCommandUpdateDomain cmd = (EppCommandUpdateDomain) EppCommand.update(EppObject.DOMAIN, domainname, channel.getClientId());
hkExtension hk = new hkExtension();
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Domain Name</td>
<td>mydomain.com.hk</td>
<td>EppCommandUpdateDomain cmd = (EppCommandUpdateDomain)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EppCommand.update(EppObject.DOMAIN, %value, channel.getClientId());</td>
</tr>
<tr>
<td></td>
<td>Claimed Domain Name</td>
<td>Mydomain.hk</td>
<td>hk.domainExtension(%value, hkExtension.CROSS_SELLING_DOMAIN_NAME)</td>
</tr>
</tbody>
</table>

**Post-Conditions**

When completed successfully, a standard `EppResponse` object is returned.

**Response Code**

- 1000: command completed successfully
- 2001: command syntax error
- 2003: required parameter missing
- 2102: unimplemented option
- 2201: authorization error
- 2300: object pending transfer
- 2303: object does not exists
- 2304: object status prohibits operation
- 2306: parameter value policy error
- 2400: command failed
- 2850: System Error on Brand Protection Promotion
Sample Code

The following example shows the steps of registering the domain with the cross selling/brand name protection promotion through the use of the domain client interface and command send method.

```java

// Domain name to be registered
hkExtension hk = new hkExtension();
hk.domainExtension("mydomain.hk", hkExtension.CROSS_SELLING_DOMAIN_NAME);
cmd.setEppExtension(hk);

// sends epp command to server and get response
EppResponse res = EppChannel.send(cmd);

if( res != null ) {
    if( res.success() ) {
        System.out.println("Command completed successfully");
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
```
3.2.3.11 Update Domain DNSSEC
This method is used to add / remove DNSSEC record of a domain. The following list shows fields that are required for the method called.

Objects

```java
EppCommandUpdateDomain cmd = (EppCommandUpdateDomain) EppCommand.update(EppObject.DOMAIN, domainname, channel.getClientId());
DnssecExtension dnssec = new DnssecExtension();
dnssec.addDnssecDataToAdd(keyTag, alg, digestType, digest);
dnssec.addDnssecDataToRemove(keyTag, alg, digestType, digest);
cmd.setEppExtension(dnssec);
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Domain Name</td>
<td>mydomain.com.hk</td>
<td>EppCommandUpdateDomain cmd = (EppCommandUpdateDomain)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EppCommand.update(EppObject.DOMAIN, domainname, channel.getClientId());</td>
</tr>
<tr>
<td>Yes if no</td>
<td>DNSSEC Record to add</td>
<td>12345, 5, 1, 38EC35D5B3A34B44C39B38EC35D5B3A34B44C39C</td>
<td>dnssec.addDnssecDataToAdd(keyTag, alg, digestType, digest);</td>
</tr>
<tr>
<td>DNSSEC</td>
<td>Record to remove</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(keytag, algorithm, digest type, digest)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes if no</td>
<td>DNSSEC Record to remove</td>
<td>12345, 5, 1, 38EC35D5B3A34B44C39B38EC35D5B3A34B44C39C</td>
<td>dnssec.addDnssecDataToRemove(keyTag, alg, digestType, digest);</td>
</tr>
<tr>
<td>DNSSEC</td>
<td>Record to add</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(keytag, algorithm, digest type, digest)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Post-Conditions

When completed successfully, a standard `EppResponse` object is returned.

Response Code

- 1000: command completed successfully
- 1001: command completed successfully; action pending
- 2001: command syntax error
- 2003: required parameter missing
- 2004: parameter value range error
- 2005: parameter value syntax error
- 2102: unimplemented option
- 2201: authorization error
- 2300: object pending transfer
- 2303: object does not exists
- 2304: object status prohibits operation
- 2306: parameter value policy error
- 2400: command failed
Sample Code

The following example shows the steps of adding / removing DNSSEC record of a domain through the use of the domain client interface and command send method.

```java
EppCommandUpdateDomain cmd = (EppCommandUpdateDomain)
channel.getClientId());

// DNNSEC record to be added / removed
DnssecExtension dnssec = new DnssecExtension();
dnssec.addDnnsecDataToAdd(keyTag, alg, digestType, digest);
dnssec.addDnnsecDataToRemove(keyTag, alg, digestType, digest);
cmd.setEppExtension(dnssec);

// sends epp command to server and get response
EppResponse res = EppChannel.send(cmd);

if( res != null ) {
  if( res.success() ) {
    System.out.println("Command completed successfully");
  } else {
    printErrors(res.getResult());
  }
} else {
  // throw handle exception
```

2700: System Error on DNSSEC
3.2.4 Poll Interface

This interface is used to send a poll command to either request a poll message or send a poll message acknowledgement. Once the acknowledgement is sent, the current active record in the queue will be cleared and registrar will be able to retrieve the next active record in the queue. Without acknowledgement, the same record will be returned from the queue when the request command is sent.

3.2.4.1 Send Poll

This method sends the EPP send poll command to acquire domain transfer status.

Pre-Conditions

The following list shows fields that are required for the method.

Objects

```java
EppCommandPoll cmd = EppCommand.poll(EppCommandPoll.OPTYPE_REQ, "", EppChannel.getClientId());
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Poll Command</td>
<td>EppCommandPoll.OPTYPE_REQ or EppCommandPoll.OPTYPE_ACK</td>
<td>EppCommandPoll cmd = EppCommand.poll(&quot;&quot;, EppChannel.getClientId());</td>
</tr>
<tr>
<td>Yes</td>
<td>Message ID</td>
<td>Poll message id</td>
<td>EppCommandPoll cmd = EppCommand.poll(EppCommandPoll.OPTYPE_ACK, &quot;%value&quot;, EppChannel.getClientId());</td>
</tr>
</tbody>
</table>

Post-Conditions

A poll message is contained in the EPPResponse when the poll operation is EPPSession.OP_REQ and the poll message removed from operation is EPPSession.OP_ACK

Response Code:

- 1000 : command completed successfully
- 1300 : command completed successfully; no messages
- 1301 : command completed successfully; ack to dequeue
- 2001 : command syntax error
- 2003 : required parameter missing
- 2303 : object does not exists
- 2308 : data management policy violation
- 2400 : command failed
Sample Code

The following example shows the steps of poll request and poll acknowledge command send method.

```java
EppCommandPoll cmd = EppCommand.poll(EppCommandPoll.OPTYPE_REQ, "", EppChannel.getClientId());
EppResponse res = EppChannel.send(cmd);
if( res != null ) {
    if( res.success() ) {
        EppResponseDataTransferDomain res_data = (EppResponseDataTransferDomain) res.getResponseData();
        if(res_data!=null){
            this.domName=res_data.getName();
            this.trStatus=res_data.getTransferStatus();
            this.reID=res_data.getRequestClientId();
            this.reDate=res_data.getRequestDate();
            this.acID=res_data.getActionClientId();
            this.acDate=res_data.getActionDate();
        }
        this.qCount=res.getMessageQueued();
        this.qID=res.getMessageId();
        this.qDate=res.getMessageQueueUpdated();
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
```

```java
EppCommandPoll cmd = EppCommand.poll(EppCommandPoll.OPTYPE_ACK, messageId, EppChannel.getClientId());
EppResponse res = EppChannel.send(cmd);
if( res != null ) {
    if( res.success() ) {
        this.qCount=res.getMessageQueued();
        this.qID=res.getMessageId();
        this.qDate=res.getMessageQueueUpdated();
    } else {
        printErrors(res.getResult());
    }
} else {
    // throw handle exception
}
```
3.2.5 Tracking Interface

This interface is used to send an info command to retrieve the latest statuses and updated details of a transaction that pending for action.

3.2.5.1 Query Tracking

This method sends the EPP info tracking command to retrieve tracking information.

Pre-Conditions

This method expects that the tracking object be populated with the tracking details of the tracking to be queried.

Objects

\[
EppCommandInfo \; cmd = EppCommand.info(EppObject.TRACKING, \; trkNumber, \; EppChannel.getClientId());
\]

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Tracking</td>
<td>NDN435632</td>
<td>EppCommandInfo ; cmd = EppCommand.info(EppObject.TRACKING, %value, EppChannel.getClientId());</td>
</tr>
</tbody>
</table>

Post-Conditions

- On success, \textit{EppResponseDataInfo}, \textit{EppTracking} object is returned, with the following attributes:
  - Tracking Number
  - Domain Name
  - Bundle Domain Name
  - Tracking Status
  - Document Approval Status
  - Payment Status
  - Apply Date
  - Transaction Activation or Rejected Date
  - Is Warning\(^1\)
  - Is Conflicker\(^2\)

Response Code

\[
1000 \; ; \text{command completed successfully}
\]
\[
2001 \; ; \text{command syntax error}
\]
\[
2003 \; ; \text{required parameter missing}
\]

\(^1\) For more information about domain warning pattern, please refer to HKIRC Registration Policies (Section 7.4 to 7.8). URL: https://www.hkirc.hk/content.jsp?id=33

\(^2\) For more information about Conflicker, please refer to Hong Kong Computer Emergency Response Team ("HKCERT") web site. URL: https://www.hkcert.org/my_url/en/articles/09032501
2004 ; parameter value range error
2005 ; parameter value syntax error
2201 ; authorization error
2303 ; object does not exists
2306 ; parameter value policy error
2400 ; command failed
Sample Code

The following example shows the steps of querying a tracking through the use of the tracking client interface and command send method.

```java
String trkNumber = "NDN435632";

EppCommandInfo cmd = EppCommand.info(EppObject.TRACKING, trkNumber, EppChannel.getClientId());

EppResponse res = EppChannel.send(cmd);

if( res != null ) {
    if( res.success() ) {
        EppResponseDataInfo res_data = (EppResponseDataInfo) res.getResponseData();

        if( res_data != null ) {
            EppTracking obj = (EppTracking) res_data.getObject();
            //retrieve tracking attribute here
        } else {
            // throw handle exception
        }
    } else {
        // throw handle exception
    }
} else {
    printErrors(res.getResult());
}
```
3.2.5.2 Create RAC Tracking

This method sends the EPP create RAC tracking command to initiate an authorization code request of the specified domain name.

Pre-Conditions

The following list shows the required field for the method.

**Objects**

```java
EppCommandCreate cmd = EppCommand.createRAC(EppObject.DOMAINNAME, channel.getClientId());
```

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Domain Name</td>
<td>EXAMPLE.COM.HK</td>
<td>EppCommandCreate cmd = EppCommand.createRAC(</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EppObject.DOMAINNAME, channel.getClientId());</td>
</tr>
</tbody>
</table>

Post-Conditions

- On success, `EppResponseDataRAC`, `EppTracking` object is returned, with the following attribute:
  - Tracking Number

Response Code

- 1000 ; command completed successfully
- 2003 ; required parameter missing
- 2201 ; authorization error
- 2303 ; object does not exists
- 2400 ; command failed
Sample Code

The following example shows the steps of creating a RAC tracking through the use of the tracking client interface and command send method.

```java
String domainName = "EXAMPLE.COM.HK";

EppCommandCreate cmd = EppCommand.createRAC(domainName, EppChannel.getClientId());

EppResponse res = EppChannel.send(cmd);

if (res != null) {
    if (res.success()) {
        EppResponseDataRAC res_data = (EppResponseDataRAC) res.getResponseData();
        if (res_data != null) {
            EppTracking obj = (EppTracking) res_data.getObject();
            // retrieve tracking attribute here
        } else {
            // throw handle exception
        }
    } else {
        // throw handle exception
    }
} else {
    // throw handle exception
}
```
3.2.5.3 Update Tracking Document Status

This method sends the EPP update tracking document status command to initiate a tracking document status update request.

Pre-Conditions

The following list shows the required field for the method.

Objects

\[
\text{EppCommandUpdateDocstatus cmd} = \text{EppCommand.update(EppObject.TRACKING, trkNumber, channel.getClientId());}
\]

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Description</th>
<th>Value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Tracking Number</td>
<td>NDN123456</td>
<td>\text{EppCommandUpdateDocstatus cmd} = EppCommand.update(EppObject.TRACKING, %VALUE, channel.getClientId());</td>
</tr>
<tr>
<td>Yes</td>
<td>Document Status</td>
<td>A, R, P</td>
<td>\text{cmd.setDocStatus(%VALUE);}</td>
</tr>
</tbody>
</table>

Domain Status

A = Approve
R = Reject
P = Pending

Post-Conditions

When completed successfully, a standard \textit{EppResponse} object is returned.

Response Code

1000 ; command completed successfully
2001 ; command syntax error
2003 ; required parameter missing
2004 ; parameter value range error
2005 ; parameter value syntax error
2102 ; unimplemented option
2201 ; authorization error
2303 ; object does not exists
2304 ; object status prohibits operation
2400 ; command failed
Sample Code

The following example shows the steps of updating a tracking document status through the use of the tracking client interface and command send method.

```java
String trkNumber = "NDN123456";
String docStatus = "A";

EppCommandUpdateDocstatus cmd =
(EppCommandUpdateDocstatus)EppCommand.update(EppObject.TRACKING,
trkNumber, channel.getClientId());
cmd.setDocStatus(docStatus);

EppResponse res = EppChannel.send(cmd);
if( res != null ) {
    if( res.success() ) {
        this.resultdesc = "Command completed successfully";
        this.resultcode = "1000";
    } else {
        sessionObj.printErrors(res.getResult());
        this.resultdesc = sessionObj.getResultdesc();
        this.resultcode = sessionObj.getResultcode();
    }
} else {
    // throw handle exception
```
## 3.3 Country Code

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF</td>
<td>AFGHANISTAN</td>
</tr>
<tr>
<td>AL</td>
<td>ALBANIA</td>
</tr>
<tr>
<td>DZ</td>
<td>ALGERIA</td>
</tr>
<tr>
<td>AS</td>
<td>AMERICAN SAMOA</td>
</tr>
<tr>
<td>AD</td>
<td>ANDORRA</td>
</tr>
<tr>
<td>AO</td>
<td>ANGOLA</td>
</tr>
<tr>
<td>AI</td>
<td>ANGUILLA</td>
</tr>
<tr>
<td>AQ</td>
<td>ANTARCTICA</td>
</tr>
<tr>
<td>AG</td>
<td>ANTIGUA AND BARBUDA</td>
</tr>
<tr>
<td>AR</td>
<td>ARGENTINA</td>
</tr>
<tr>
<td>AM</td>
<td>ARMENIA</td>
</tr>
<tr>
<td>AW</td>
<td>ARUBA</td>
</tr>
<tr>
<td>AU</td>
<td>AUSTRALIA</td>
</tr>
<tr>
<td>AT</td>
<td>AUSTRIA</td>
</tr>
<tr>
<td>AZ</td>
<td>AZERBAIJIAN</td>
</tr>
<tr>
<td>BS</td>
<td>BAHAMAS</td>
</tr>
<tr>
<td>BH</td>
<td>BAHRAIN</td>
</tr>
<tr>
<td>BD</td>
<td>BANGLADESH</td>
</tr>
<tr>
<td>BB</td>
<td>BARBADOS</td>
</tr>
<tr>
<td>BY</td>
<td>BELARUS</td>
</tr>
<tr>
<td>BE</td>
<td>BELGIUM</td>
</tr>
<tr>
<td>BJ</td>
<td>BENIN</td>
</tr>
<tr>
<td>BM</td>
<td>BERMUDA</td>
</tr>
<tr>
<td>BT</td>
<td>BHUTAN</td>
</tr>
<tr>
<td>BO</td>
<td>BOLIVIA</td>
</tr>
<tr>
<td>BA</td>
<td>BOSNIA-HERZEGOVINA</td>
</tr>
<tr>
<td>BW</td>
<td>BOTSWANA</td>
</tr>
<tr>
<td>BV</td>
<td>BOUVET ISLAND</td>
</tr>
<tr>
<td>BR</td>
<td>BRAZIL</td>
</tr>
<tr>
<td>IO</td>
<td>BRITISH INDIAN OCEAN</td>
</tr>
<tr>
<td>BN</td>
<td>BRUNEI DARUSSALAM</td>
</tr>
<tr>
<td>BG</td>
<td>BULGARIA</td>
</tr>
<tr>
<td>BF</td>
<td>BURKINA FASO</td>
</tr>
<tr>
<td>BI</td>
<td>BURUNDI</td>
</tr>
<tr>
<td>KH</td>
<td>CAMBODIA</td>
</tr>
<tr>
<td>CM</td>
<td>CAMEROON</td>
</tr>
<tr>
<td>CA</td>
<td>CANADA</td>
</tr>
<tr>
<td>CV</td>
<td>CAPE VERDE</td>
</tr>
<tr>
<td>KY</td>
<td>CAYMAN ISLANDS</td>
</tr>
<tr>
<td>CF</td>
<td>CENTRAL AFRICAN REPUB</td>
</tr>
<tr>
<td>TD</td>
<td>CHAD</td>
</tr>
<tr>
<td>CL</td>
<td>CHILE</td>
</tr>
<tr>
<td>CN</td>
<td>CHINA</td>
</tr>
<tr>
<td>CX</td>
<td>CHRISTMAS ISLAND</td>
</tr>
<tr>
<td>CC</td>
<td>Cocos (Keeling) Islands</td>
</tr>
<tr>
<td>CO</td>
<td>COLOMBIA</td>
</tr>
<tr>
<td>KM</td>
<td>COMOROS</td>
</tr>
<tr>
<td>CG</td>
<td>CONGO</td>
</tr>
<tr>
<td>CK</td>
<td>COOK ISLANDS</td>
</tr>
<tr>
<td>CR</td>
<td>COSTA RICA</td>
</tr>
<tr>
<td>HR</td>
<td>CROATIA</td>
</tr>
<tr>
<td>CU</td>
<td>CUBA</td>
</tr>
<tr>
<td>CY</td>
<td>CYPRUS</td>
</tr>
<tr>
<td>CZ</td>
<td>CZECH REPUBLIC</td>
</tr>
<tr>
<td>DK</td>
<td>DENMARK</td>
</tr>
<tr>
<td>DJ</td>
<td>DJIBOUTI</td>
</tr>
<tr>
<td>DM</td>
<td>DOMINICA</td>
</tr>
<tr>
<td>DO</td>
<td>DOMINICAN REPUBLIC</td>
</tr>
<tr>
<td>TP</td>
<td>EAST TIMOR</td>
</tr>
<tr>
<td>EC</td>
<td>ECUADOR</td>
</tr>
<tr>
<td>EG</td>
<td>EGYPT</td>
</tr>
<tr>
<td>SV</td>
<td>EL SALVADOR</td>
</tr>
<tr>
<td>GQ</td>
<td>EQUATORIAL GUINEA</td>
</tr>
<tr>
<td>EE</td>
<td>ESTONIA</td>
</tr>
<tr>
<td>ET</td>
<td>ETHIOPIA</td>
</tr>
<tr>
<td>FK</td>
<td>FALKLAND ISLANDS</td>
</tr>
<tr>
<td>FO</td>
<td>FAROE ISLANDS</td>
</tr>
<tr>
<td>FJ</td>
<td>FIJI</td>
</tr>
<tr>
<td>FI</td>
<td>FINLAND</td>
</tr>
<tr>
<td>CS</td>
<td>FORMER CZECHOSLOVAKIA</td>
</tr>
<tr>
<td>SU</td>
<td>FORMER USSR</td>
</tr>
<tr>
<td>FR</td>
<td>FRANCE</td>
</tr>
<tr>
<td>FX</td>
<td>FRANCE (EUROPEAN TERRITORIES)</td>
</tr>
<tr>
<td>GF</td>
<td>FRENCH GUYANA</td>
</tr>
<tr>
<td>TF</td>
<td>FRENCH SOUTHERN TERRITORIES</td>
</tr>
<tr>
<td>GA</td>
<td>GABON</td>
</tr>
<tr>
<td>GM</td>
<td>GAMBIA</td>
</tr>
<tr>
<td>GE</td>
<td>GEORGIA</td>
</tr>
<tr>
<td>GH</td>
<td>GHANA</td>
</tr>
<tr>
<td>GI</td>
<td>GIBRALTAR</td>
</tr>
<tr>
<td>GB</td>
<td>GREAT BRITAIN</td>
</tr>
<tr>
<td>GR</td>
<td>GREECE</td>
</tr>
<tr>
<td>GL</td>
<td>GREENLAND</td>
</tr>
<tr>
<td>GD</td>
<td>GRENAADA</td>
</tr>
<tr>
<td>GP</td>
<td>GUADELOUPE (FRENCH)</td>
</tr>
<tr>
<td>GU</td>
<td>GUAM (USA)</td>
</tr>
<tr>
<td>GT</td>
<td>GUATEMALA</td>
</tr>
<tr>
<td>GW</td>
<td>GUINEA BISSAU</td>
</tr>
<tr>
<td>GY</td>
<td>GUYANA</td>
</tr>
<tr>
<td>HT</td>
<td>HAITI</td>
</tr>
<tr>
<td>HM</td>
<td>HEARD AND MCDONALD ISLANDS</td>
</tr>
<tr>
<td>HN</td>
<td>HONDURAS</td>
</tr>
<tr>
<td>HK</td>
<td>HONG KONG</td>
</tr>
<tr>
<td>HG</td>
<td>HUNGARY</td>
</tr>
<tr>
<td>IH</td>
<td>ICELAND</td>
</tr>
<tr>
<td>IN</td>
<td>INDIA</td>
</tr>
<tr>
<td>ID</td>
<td>INDONESIA</td>
</tr>
<tr>
<td>IR</td>
<td>IRAN</td>
</tr>
<tr>
<td>IQ</td>
<td>IRAQ</td>
</tr>
<tr>
<td>IE</td>
<td>IRELAND</td>
</tr>
<tr>
<td>IL</td>
<td>ISRAEL</td>
</tr>
<tr>
<td>IT</td>
<td>ITALY</td>
</tr>
<tr>
<td>CI</td>
<td>IVORY COAST (COTE D'I)</td>
</tr>
<tr>
<td>JM</td>
<td>JAMAICA</td>
</tr>
<tr>
<td>JP</td>
<td>JAPAN</td>
</tr>
<tr>
<td>JO</td>
<td>JORDAN</td>
</tr>
<tr>
<td>JF</td>
<td>JOHAN FRAKES ISLANDS</td>
</tr>
<tr>
<td>KZ</td>
<td>KAZAKHSTAN</td>
</tr>
<tr>
<td>KE</td>
<td>KENYA</td>
</tr>
<tr>
<td>KI</td>
<td>KIRIBATI</td>
</tr>
<tr>
<td>KW</td>
<td>KUWAIT</td>
</tr>
<tr>
<td>KG</td>
<td>KYRGYZSTAN</td>
</tr>
</tbody>
</table>
YU: YUGOSLAVIA
ZR: ZAIRE
ZM: ZAMBIA
ZW: ZIMBABWE
3.4 Others

1. Individual Registrant Document Type
HKID: Hong Kong Identity Number
OTHID: Other's Country Identity Number
PASSNO: Passport No.
BIRTHCERT: Birth Certificate
OTHIDV: Others Individual Document

2. Organization Registrant Document Type
BR: Business Registration Certificate
CI: Certificate of Incorporation
CRS: Certificate of Registration of a School
HKSARG: Hong Kong Special Administrative Region Government Department
HKORDINANCE: Ordinance of Hong Kong
OTHORG: Others Organization Document

3. Registrant Industry Type
0: None (Let the value of the parameter '0' if choosing 'None' for registrant industry type)
010100: Plastics, Petro-Chemicals, Chemicals - Plastics & Plastic Products
010200: Plastics, Petro-Chemicals, Chemicals - Rubber & Rubber Products
010300: Plastics, Petro-Chemicals, Chemicals - Fibre Materials & Products
010400: Plastics, Petro-Chemicals, Chemicals - Petroleum, Coal & Other Fuels
010500: Plastics, Petro-Chemicals, Chemicals - Chemicals & Chemical Products
020100: Metals, Machinery, Equipment - Metal Materials & Treatment
020200: Metals, Machinery, Equipment - Metal Products
020300: Metals, Machinery, Equipment - Industrial Machinery & Supplies
020400: Metals, Machinery, Equipment - Precision & Optical Equipment
020500: Metals, Machinery, Equipment - Moulds & Dies
030100: Printing, Paper, Publishing - Printing, Photocopying, Publishing
040100: Construction, Decoration, Environmental Engineering - Construction Contractors
040200: Construction, Decoration, Environmental Engineering - Construction Materials
040300: Construction, Decoration, Environmental Engineering - Decoration Materials
040400: Construction, Decoration, Environmental Engineering - Construction, Safety Equipment & Supplies
040500: Construction, Decoration, Environmental Engineering - Decoration, Locksmiths, Plumbing & Electrical Works
040600: Construction, Decoration, Environmental Engineering - Fire Protection Equipment & Services
040700: Construction, Decoration, Environmental Engineering - Environmental Engineering, Waste Reduction
050100: Textiles, Clothing & Accessories - Textiles, Fabric
050200: Textiles, Clothing & Accessories - Clothing
050300: Textiles, Clothing & Accessories - Uniforms, Special Clothing
050400: Textiles, Clothing & Accessories - Clothing Manufacturing Accessories
050500: Textiles, Clothing & Accessories - Clothing Processing & Equipment
050600: Textiles, Clothing & Accessories - Fur, Leather & Leather Goods
050700: Textiles, Clothing & Accessories - Handbags, Footwear, Optical Goods, Personal Accessories
060100: Electronics, Electrical Appliances - Electronic Equipment & Supplies
060200: Electronics, Electrical Appliances - Electronic Parts & Components
060300: Electronics, Electrical Appliances - Electrical Appliances, Audio-Visual Equipment
070100: Houseware, Watches, Clocks, Jewellery, Toys, Gifts - Kitchenware, Tableware
070200: Houseware, Watches, Clocks, Jewellery, Toys, Gifts - Bedding
070300: Houseware, Watches, Clocks, Jewellery, Toys, Gifts - Bathroom, Cleaning Accessories
070400: Houseware, Watches, Clocks, Jewellery, Toys, Gifts - Household Goods
070500: Houseware, Watches, Clocks, Jewellery, Toys, Gifts - Wooden, Bamboo & Rattan Goods
070600: Houseware, Watches, Clocks, Jewellery, Toys, Gifts - Home Furnishings, Arts & Crafts
070700: Houseware, Watches, Clocks, Jewellery, Toys, Gifts - Watches, Clocks
070800: Houseware, Watches, Clocks, Jewellery, Toys, Gifts - Jewellery Accessories
070900: Houseware, Watches, Clocks, Jewellery, Toys, Gifts - Toys, Games, Gifts
080100: Business & Professional Services, Finance - Accounting, Legal Services
080200: Business & Professional Services, Finance - Advertising, Promotion Services
080300: Business & Professional Services, Finance - Consultancy Services
080400: Business & Professional Services, Finance - Translation, Design Services
080500: Business & Professional Services, Finance - Cleaning, Pest Control Services
080600: Business & Professional Services, Finance - Security Services
080700: Business & Professional Services, Finance - Trading, Business Services
080800: Business & Professional Services, Finance - Employment Services
080900: Business & Professional Services, Finance - Banking, Finance, Investment
081000: Business & Professional Services, Finance - Insurance
081100: Business & Professional Services, Finance - Property, Real Estate
090100: Transportation, Logistics - Land Transport, Motorcars
090200: Transportation, Logistics - Sea Transport, Boats
090300: Transportation, Logistics - Air Transport
090400: Transportation, Logistics - Moving, Warehousing, Courier & Logistics Services
090500: Transportation, Logistics - Freight Forwarding
100100: Office Equipment, Furniture, Stationery, Information Technology - Office, Commercial Equipment & Supplies
100200: Office Equipment, Furniture, Stationery, Information Technology - Office & Home Furniture
100300: Office Equipment, Furniture, Stationery, Information Technology - Stationery & Educational Supplies
100400: Office Equipment, Furniture, Stationery, Information Technology - Telecommunication Equipment & Services
100500: Office Equipment, Furniture, Stationery, Information Technology - Computers, Information Technology
110100: Food, Flowers, Fishing & Agriculture - Food Products & Supplies
110200: Food, Flowers, Fishing & Agriculture - Beverages, Tobacco
110300: Food, Flowers, Fishing & Agriculture - Restaurant Equipment & Supplies
110400: Food, Flowers, Fishing & Agriculture - Flowers, Artificial Flowers, Plants
110500: Food, Flowers, Fishing & Agriculture - Fishing
110600: Food, Flowers, Fishing & Agriculture - Agriculture
120100: Medical Services, Beauty, Social Services - Medicine & Herbal Products
120200: Medical Services, Beauty, Social Services - Medical & Therapeutic Services
120300: Medical Services, Beauty, Social Services - Medical Equipment & Supplies
120400: Medical Services, Beauty, Social Services - Beauty, Health
120500: Medical Services, Beauty, Social Services - Personal Services
120600: Medical Services, Beauty, Social Services - Organizations, Associations
120700: Medical Services, Beauty, Social Services - Information, Media
120800: Medical Services, Beauty, Social Services - Public Utilities
120900: Medical Services, Beauty, Social Services - Religion, Astrology, Funeral Services
130100: Culture, Education - Music, Arts
130200: Culture, Education - Learning Instruction & Training
130300: Culture, Education - Elementary Education
130400: Culture, Education - Tertiary Education, Other Education Services
130500: Culture, Education - Sporting Goods
130600: Culture, Education - Sporting, Recreational Facilities & Venues
130700: Culture, Education - Hobbies, Recreational Activities
130800: Culture, Education - Pets, Pets Services & Supplies
140101: Dining, Entertainment, Shopping, Travel - Restaurant Guide - Chinese
140102: Dining, Entertainment, Shopping, Travel - Restaurant Guide - Asian
140103: Dining, Entertainment, Shopping, Travel - Restaurant Guide - Western
140200: Dining, Entertainment, Shopping, Travel - Catering Services, Eateries
140300: Dining, Entertainment, Shopping, Travel - Entertainment Venues
140400: Dining, Entertainment, Shopping, Travel - Entertainment Production & Services
140500: Dining, Entertainment, Shopping, Travel - Entertainment Equipment & Facilities
140600: Dining, Entertainment, Shopping, Travel - Shopping Venues
140700: Dining, Entertainment, Shopping, Travel - Travel, Hotels & Accommodation

4. Contact Type
1: Registrant
2: Administrative
3: Technical
4: Billing

5. Transfer Operation
request: Gaining Registrar requests for a domain transfer transaction
query: query for a domain whether in a queue of transfer
approve:Loosing Registrar approves the request of a domain transfer
reject:Loosing Registrar rejects the request of a domain transfer
cancel:Gaining Reseller cancels a domain transfer transaction