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Abstract

This document describes the interfaces provided by ICANN to Registrars and Data Escrow Agents to fulfill the data escrow requirements of the Registrar Accreditation Agreement and the Registrar Data Escrow Specifications.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on 17 October 2025.

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1. Introduction

This document describes the technical details of the interfaces provided by the Internet Corporation for Assigned Names and Numbers (ICANN) to Registrars and Data Escrow Agents to fulfill the data escrow requirements of the Registrar Accreditation Agreement [ICANN-RAA-2013] and the Registrar Data Escrow Specifications [ICANN-RDE-SPEC].

Extensible Markup Language (XML) 1.0 as described in [W3C.REC-xml-20081126] is used in this specification.

The provisioning of credentials and authentication methods used in the interfaces is outside of this document’s scope.

1.1. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

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

1.2. Date and Time

Numerous fields indicate "date and time", such as the creation and receipt dates for data escrow deposits. These fields SHALL contain timestamps indicating the date and time in UTC as specified in [RFC3339], with no offset from the zero meridian.

1.3. Common elements used in this specification

Common elements used in this specification are explained in this section.

* <base-url>: The base URL used in the reporting interfaces examples must be replaced with the URL indicated by ICANN.

* This document uses the term of "Differential" deposit as defined in the Registry Data Escrow Specification (see, [RFC8909]), while the Registrar Data Escrow Specifications [ICANN-RDE-SPEC] refers to the same concept as "Incremental" deposit.

* A-label and NR-LDH, as defined in [RFC5890].

2. Interfaces for Registrar Data Escrow Notifications

This section describes the interfaces provided by ICANN to the Registrars and Data Escrow Agents to fulfill their reporting requirements related to Registrar Data Escrow Specifications [ICANN-RDE-SPEC].

2.1. Registrar Reporting

To notify that a data escrow deposit has been submitted to a Data Escrow Agent, the ICANN-accredited Registrar sends a <rdeReport:report> object (see, [I-D.lozano-icann-registry-interfaces]) to ICANN.

The following considerations apply for a <rdeReport:report> object corresponding to a data escrow deposit for a Registrar repository:

* The <rdeHeader:registrar> element in the <rdeHeader:header> object (see, [RFC9022]) MUST be present and have a value corresponding to the IANA Registrar ID assigned by ICANN.

* A <rdeHeader:count> element MUST be included with the corresponding "rcdn" attribute in the <rdeHeader:header> object to indicate the total domains in the Registrar repository for each Registry Class Domain Name (e.g., example) with at least one domain name allocation at a specific point in time (watermark), regardless of the type of deposit: full or differential.

  - If the "https://www.icann.org/en/system/files/files/rde-specs-09nov07-en.pdf" specification is being used as the <rdeReport:rydeSpecEscrow>, then the "uri" attribute in the <rdeHeader:count> elements for domain names MUST have a value of "urn:ietf:params:xml:ns:rdeDomain-1.0".

* To indicate that a Registrar repository has no domain names, one <rdeHeader:count> element MUST be included with the "uri" attribute value of "urn:ietf:params:xml:ns:rdeDomain-1.0", no "rcdn" attribute, and a value of 0 (zero).

The <rdeReport:report> object for each deposit successfully sent to the Data Escrow Agent is sent using the PUT HTTP verb in the interface provided by ICANN at:

<base-url>/report/registrar-escrow-report/<iana-id>/<id>

Where:

- <iana-id> MUST be substituted with the IANA Registrar ID assigned by ICANN for which the report is being provided.

- <id> MUST be substituted with the identifier assigned to the report, which MUST be the same as the "id" attribute from the <deposit>.

Note: The interface supports overwriting the information of a particular report <id> to support asynchronous interfaces between Registrars and Data Escrow Agents.

Example of a <rdeReport:report> object for a data escrow deposit corresponding to a Registrar repository:

```
<?xml version="1.0" encoding="UTF-8"?>
<rdeReport:report
  xmlns:rdeReport="urn:ietf:params:xml:ns:rdeReport-1.0"
  xmlns:rdeHeader="urn:ietf:params:xml:ns:rdeHeader-1.0">
 <rdeReport:id>20170801001</rdeReport:id>
 <rdeReport:version>1</rdeReport:version>
 <rdeReport:rydeSpecEscrow>
 https://www.icann.org/en/system/files/files/rde-specs-09nov07-en.pdf
 </rdeReport:rydeSpecEscrow>
 <rdeReport:resend>0</rdeReport:resend>
 <rdeReport:crDate>2017-08-01T00:15:00.0Z</rdeReport:crDate>
 <rdeReport:kind>FULL</rdeReport:kind>
 <rdeReport:watermark>2017-08-01T00:00:00Z</rdeReport:watermark>
 <rdeHeader:header>
   <rdeHeader:registrar>9999</rdeHeader:registrar>
   <rdeHeader:count uri="urn:ietf:params:xml:ns:rdeDomain-1.0"
      rcdn="com.example">2</rdeHeader:count>
   <rdeHeader:count uri="urn:ietf:params:xml:ns:rdeDomain-1.0"
      rcdn="test">8</rdeHeader:count>
   <rdeHeader:count uri="urn:ietf:params:xml:ns:rdeDomain-1.0"
      rcdn="xn--nqvo76h">3</rdeHeader:count>
 </rdeHeader:header>
</rdeReport:report>
```

Example of a <rdeReport:report> object for an empty data escrow deposit corresponding to a Registrar repository:

```
<?xml version="1.0" encoding="UTF-8"?>
<rdeReport:report
  xmlns:rdeReport="urn:ietf:params:xml:ns:rdeReport-1.0"
  xmlns:rdeHeader="urn:ietf:params:xml:ns:rdeHeader-1.0">
 <rdeReport:id>20170801001</rdeReport:id>
 <rdeReport:version>1</rdeReport:version>
 <rdeReport:rydeSpecEscrow>
 https://www.icann.org/en/system/files/files/rde-specs-09nov07-en.pdf
 </rdeReport:rydeSpecEscrow>
 <rdeReport:resend>0</rdeReport:resend>
 <rdeReport:crDate>2017-08-01T00:15:00.0Z</rdeReport:crDate>
 <rdeReport:kind>FULL</rdeReport:kind>
 <rdeReport:watermark>2017-08-01T00:00:00Z</rdeReport:watermark>
 <rdeHeader:header>
   <rdeHeader:registrar>9999</rdeHeader:registrar>
   <rdeHeader:count uri="urn:ietf:params:xml:ns:rdeDomain-1.0">
      0</rdeHeader:count>
 </rdeHeader:header>
</rdeReport:report>
```

2.2. Data Escrow Agent Reporting

The Registrar Data Escrow Specification requires that Registrar Data Escrow Agents deliver to ICANN a notification every time a successfully processed deposit is received from the Registrar regardless of the final status of the verification process, in addition to a failure notification if a scheduled deposit is not received from a Registrar.

In order to satisfy this requirement, the Data Escrow Agent sends to ICANN a <rdeNotification:notification> object as defined in Section 2 of [I-D.lozano-icann-registry-interfaces], to ICANN using the POST HTTP verb in the interface provided by ICANN at:

<base-url>/report/registrar-escrow-agent-notification/<iana-id>

Where:

- <iana-id> MUST be substituted with the IANA Registrar ID assigned by ICANN for which the notification is being provided.

A <rdeNotification:notification> with DRFN (Deposit Receipt Failure Notice) status is used to notify that a data escrow deposit has not been processed for verification for a past date where a deposit was scheduled to be received from the Registrar.

In addition to the considerations listed in Section 2.1 for the <rdeReport:report> object of the notification, if the data escrow deposit does not include an <id>, a unique value MUST be generated by the Data Escrow Agent to reference the deposit and it MUST be provided in the <rdeReport:id> element.

In the case of a <rdeNotification:notification> with DVFN (Deposit Verification Failure Notice) status, the <rdeNotification:results> element MUST be present and include a <iirdea:result> object for each deposit verification error condition and specify in the corresponding "domainCount" attribute the number of domain names with such error conditions.

Note: an error condition may be present several times in the same domain escrow record (e.g., the administrative, technical and billing contact contains invalid email syntax). In this case only one domain name is affected by the error condition, therefore the "domainCount" attribute value must be increased by one in the corresponding <iirdea:result> object.

The following table defines the result codes and messages that a Data Escrow Agent could use to report verification issues found in a Registrar data escrow deposit. When using result codes 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, or 2110, the "domainCount" attribute MUST be present.

Result Code	Message
2001	No corresponding hash file found for deposit file.
2002	Hash does not match the corresponding deposit file.
2003	Invalid hash file format.
2004	Data escrow deposit PGP signature verification error.
2005	Archive includes unrecognized files.
2006	Invalid encoding for data escrow deposit file.
2007	Data escrow deposit file size exceeds the maximum allowed size.
2008	Data escrow deposit file exceeds the maximum allowed number of lines.

2101	Unrecognized data escrow deposit file CSV header.
2102	Escrow Record structure does not conform with CSV header definition.
2103	Escrow Record found missing data in required field(s).
2104	Invalid domain name syntax in Escrow Record.
2105	Invalid email syntax in Escrow Record.
2106	Invalid hostname syntax in Escrow Record.
2107	Invalid date syntax in Escrow Record.
2108	Invalid phone syntax in Escrow Record.
2109	Duplicate domain or handle Escrow Record found in deposit.
2110	Handle reference by Escrow Record not found.
2201	"Full" data escrow deposit expected but received "Differential" instead.
2202	Data Escrow deposit date is in the future.
2203	A data escrow deposit has been already successfully verified for that date.

Table 1: Registrar Data Escrow Deposit Verification Result Codes

Example of a <rdeNotification:notification> object of a Data Escrow Agent notification corresponding to a Registrar Data Escrow deposit that was not received or could not be processed for verification:

```
<?xml version="1.0" encoding="UTF-8"?>
<rdeNotification:notification
 xmlns:rdeNotification="urn:ietf:params:xml:ns:rdeNotification-1.0">
 <rdeNotification:deaName>Escrow Agent Inc.</rdeNotification:deaName>
 <rdeNotification:version>1</rdeNotification:version>
 <rdeNotification:repDate>2017-06-17</rdeNotification:repDate>
 <rdeNotification:status>DRFN</rdeNotification:status>
 <rdeNotification:lastFullDate>2017-06-10
   </rdeNotification:lastFullDate>
</rdeNotification:notification>
```

Example of a <rdeNotification:notification> object of a Data Escrow Agent notification corresponding to a Registrar repository Data Escrow deposit that has passed the verification process:

```
<?xml version="1.0" encoding="UTF-8"?>
<rdeNotification:notification
 xmlns:rdeNotification="urn:ietf:params:xml:ns:rdeNotification-1.0"
 xmlns:rdeReport="urn:ietf:params:xml:ns:rdeReport-1.0"
 xmlns:rdeHeader="urn:ietf:params:xml:ns:rdeHeader-1.0">
 <rdeNotification:deaName>Escrow Agent Inc.</rdeNotification:deaName>
 <rdeNotification:version>1</rdeNotification:version>
 <rdeNotification:repDate>
   2017-06-17</rdeNotification:repDate>
 <rdeNotification:status>DVPN</rdeNotification:status>
 <rdeNotification:reDate>
   2017-06-17T03:15:00.0Z</rdeNotification:reDate>
 <rdeNotification:vaDate>
   2017-06-17T05:15:00.0Z</rdeNotification:vaDate>
 <rdeNotification:lastFullDate>
   2017-06-17</rdeNotification:lastFullDate>
 <rdeReport:report>
  <rdeReport:id>20170617001</rdeReport:id>
  <rdeReport:version>1</rdeReport:version>
  <rdeReport:rydeSpecEscrow>
 https://www.icann.org/en/system/files/files/rde-specs-09nov07-en.pdf
  </rdeReport:rydeSpecEscrow>
  <rdeReport:resend>0</rdeReport:resend>
  <rdeReport:crDate>2017-06-17T00:15:00.0Z</rdeReport:crDate>
  <rdeReport:kind>FULL</rdeReport:kind>
  <rdeReport:watermark>2017-06-17T00:00:00Z</rdeReport:watermark>
   <rdeHeader:header>
     <rdeHeader:registrar>9999</rdeHeader:registrar>
     <rdeHeader:count uri="urn:ietf:params:xml:ns:rdeDomain-1.0"
        rcdn="example">2</rdeHeader:count>
     <rdeHeader:count uri="urn:ietf:params:xml:ns:rdeDomain-1.0"
        rcdn="test">6</rdeHeader:count>
     <rdeHeader:count uri="urn:ietf:params:xml:ns:rdeDomain-1.0"
        rcdn="xn--nqvo76h">1</rdeHeader:count>
   </rdeHeader:header>
 </rdeReport:report>
</rdeNotification:notification>
```

Example of a <rdeNotification:notification> object of a Data Escrow Agent notification corresponding to a Registrar repository Data Escrow deposit that has failed the verification process:

```
<?xml version="1.0" encoding="UTF-8"?>
<rdeNotification:notification
 xmlns:rdeNotification="urn:ietf:params:xml:ns:rdeNotification-1.0"
 xmlns:rdeReport="urn:ietf:params:xml:ns:rdeReport-1.0"
 xmlns:rdeHeader="urn:ietf:params:xml:ns:rdeHeader-1.0"
 xmlns:iirdea="urn:ietf:params:xml:ns:iirdea-1.0">
 <rdeNotification:deaName>Escrow Agent Inc.</rdeNotification:deaName>
 <rdeNotification:version>1</rdeNotification:version>
 <rdeNotification:repDate>2017-06-17</rdeNotification:repDate>
 <rdeNotification:status>DVFN</rdeNotification:status>
 <rdeNotification:results>
   <iirdea:result code="2104" domainCount="2">
     <iirdea:msg>
       Invalid domain name syntax in Escrow Record.
     </iirdea:msg>
   </iirdea:result>
   <iirdea:result code="2110" domainCount="1">
     <iirdea:msg>
       Handle reference by Escrow Record not found.
     </iirdea:msg>
   </iirdea:result>
 </rdeNotification:results>
 <rdeNotification:reDate>
   2017-06-17T03:15:00.0Z
 </rdeNotification:reDate>
 <rdeNotification:vaDate>
   2017-06-17T05:15:00.0Z
 </rdeNotification:vaDate>
 <rdeNotification:lastFullDate>
   2017-06-14
 </rdeNotification:lastFullDate>
 <rdeReport:report>
  <rdeReport:id>20170617001</rdeReport:id>
  <rdeReport:version>1</rdeReport:version>
  <rdeReport:rydeSpecEscrow>
 https://www.icann.org/en/system/files/files/rde-specs-09nov07-en.pdf
  </rdeReport:rydeSpecEscrow>
  <rdeReport:resend>0</rdeReport:resend>
  <rdeReport:crDate>2017-06-17T00:15:00.0Z</rdeReport:crDate>
  <rdeReport:kind>FULL</rdeReport:kind>
  <rdeReport:watermark>2017-06-17T00:00:00Z</rdeReport:watermark>
  <rdeHeader:header>
     <rdeHeader:registrar>9999</rdeHeader:registrar>
     <rdeHeader:count uri="urn:ietf:params:xml:ns:rdeDomain-1.0"
        rcdn="example">2</rdeHeader:count>
     <rdeHeader:count uri="urn:ietf:params:xml:ns:rdeDomain-1.0"
        rcdn="test">8</rdeHeader:count>
     <rdeHeader:count uri="urn:ietf:params:xml:ns:rdeDomain-1.0"
```

```
          rcdn="xn--nqvo76h">3</rdeHeader:count>
    </rdeHeader:header>
   </rdeReport:report>
  </rdeNotification:notification>
```

3. Technical details of the interfaces

Content-type value in the HTTP header:

* The client MUST set "text/xml" in the HTTP header Content-type when using the Data Escrow Agent Reporting and Registrar Reporting interfaces described in Section 2.

After successfully receiving and processing an input, the interfaces return any of the HTTP status codes described in Section 4 of [I-D.lozano-icann-registry-interfaces].

The following sections provide the IIRDEA Result Codes that can be expected in the <response> object from each interface:

3.1. Registrar Reporting

The following table lists the result codes of the interface:

Result Code	Message
1000	No ERRORs were found and the report has been accepted by ICANN.
2001	The request did not validate against the schema.
2004	Report for a date in the future. The <crDate> and <watermark> date should not be in the future.
2005	Version is not supported.
2006	The <id> in the <report> element and the <id> in the URL path do not match.
2301	Interface is disabled for this Registrar.
2302	The <crDate> and <watermark> date should not be before the creation date of the Registrar in the system.
2303	The <registrar> in the <header> and the <iana-id> in the URL path do not match.
2304	Report regarding an differential deposit received when a full deposit was expected (<watermark>).
2305	<rcdn> attribute missing in count element provided in the <header>.
2306	Multiple count elements with the same <uri> and <rcdn> attribute values provided in the <header>.
2307	Missing required <registrar> element in the <header>.
2312	An invalid NR-LDH label or A-label was found or the domain name syntax is invalid in the <rcdn> attribute.
2313	INCR <rdeReport:kind> is not supported.

Table 2: Registrar Data Escrow Reporting Result Codes

3.2. Data Escrow Agent Reporting

The following table lists the result codes of the interface:

Result Code	Message
1000	No ERRORs were found and the notification has been accepted by ICANN.
2001	The request did not validate against the schema.
2002	A DVPN notification exists for that date (<repDate>).
2004	Notification for a date in the future. The <crDate>, <watermark>, <lastFullDate> and <repDate> date should not be in the future.
2005	Version is not supported.
2201	The <repDate> and <watermark> in the notification do not match.
2203	A Deposit Verification Pass Notice (DVPN) notification was received, but the Domain Name count is missing in the <header>.
2204	The notification for the report "id" already exists.
2207	A DVPN or DVFN was received, but the <report> element is missing in the notification.
2208	A DRFN was received, but a <report> element exists in the notification.
2209	<reDate> and <vaDate> elements must not be present in a DRFN.
2301	Interface is disabled for this Registrar.
2302	The <crDate> and <watermark> and <repDate> date should not be before the creation date of the Registrar in the system.

2303	The <registrar> in the <header> and the <iana-id> in the URL path do not match.
2304	Notification regarding an differential deposit received when a full deposit was expected (<repDate>).
2305	<rcdn> attribute missing in count element provided in the <header>.
2306	Multiple count elements with the same <uri> and <rcdn> attribute values provided in the <header>.
2307	Missing required <registrar> element in the <header>.
2309	A DVFN was received, but the <results> element is missing in the notification.
2310	The specified result code in the <result> element requires the "domainCount" attribute to be present.
2311	Unrecognized value in the "code" attribute of the <result> element.
2312	An invalid NR-LDH label or A-label was found or the domain name syntax is invalid in the <rcdn> attribute.
2313	INCR <rdeReport:kind> is not supported.

Table 3: Data Escrow Agent Reporting Result Codes

4. Monitoring Registrar reporting

Registrars MAY monitor the status of the data escrow reporting notifications requirement using the following interfaces that support the GET HTTP verb.

4.1. Monitoring the reporting status of a Registrar

Registrars MAY monitor the general reporting status and obtain a list of any outstanding issues using the following interface:

<base-url>/info/status/registrar/<iana-id>

Where:

- <iana-id> MUST be substituted with the IANA ID assigned by ICANN to the Registrar being queried.

This interface provides a <rriReporting:summary> element as defined in Section 2 of [I-D.lozano-icann-registry-interfaces] that uses the <rdeHeader:registrar> element and includes the following <rriReporting:type> values:

* "Registrar_Escrow_Report" : For Registrar Data Escrow Reporting as defined in Section 2.1. The "date" attribute for any reporting issue is provided in "YYYY-MM-DD" format.

* "DEA_Notification" : For Data Escrow Agent Notifications as defined in Section 2.2. The "date" attribute for any reporting issue is provided in "YYYY-MM-DD" format.

Example of response for a Registrar status check with no reporting issues:

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: 1125

<?xml version="1.0" encoding="UTF-8"?>
<rriReporting:summary
  xmlns:rriReporting="urn:ietf:params:xml:ns:rriReporting-1.0"
  xmlns:rdeHeader="urn:ietf:params:xml:ns:rdeHeader-1.0">
  <rdeHeader:registrar>9999</rdeHeader:registrar>
  <rriReporting:creationDate>
    2017-06-10T12:00:30.101Z</rriReporting:creationDate>
  <rriReporting:depositSchedule>Daily</rriReporting:depositSchedule>
  <rriReporting:lastFullDate>2017-10-15</rriReporting:lastFullDate>
  <rriReporting:statusReports>
    <rriReporting:statusReport>
      <rriReporting:type>Registrar_Escrow_Report</rriReporting:type>
      <rriReporting:enabled>false</rriReporting:enabled>
      <rriReporting:status>ok</rriReporting:status>
    </rriReporting:statusReport>
    <rriReporting:statusReport>
      <rriReporting:type>DEA_Notification</rriReporting:type>
      <rriReporting:enabled>true</rriReporting:enabled>
      <rriReporting:status>ok</rriReporting:status>
    </rriReporting:statusReport>
  </rriReporting:statusReports>
  <rriReporting:timestamp>
    2017-10-20T02:22:14.148Z</rriReporting:timestamp>
</rriReporting:summary>
```

Example of response for a Registrar status check with reporting issues:

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: 1604

<?xml version="1.0" encoding="UTF-8"?>
<rriReporting:summary
  xmlns:rriReporting="urn:ietf:params:xml:ns:rriReporting-1.0"
  xmlns:rdeHeader="urn:ietf:params:xml:ns:rdeHeader-1.0">
  <rdeHeader:registrar>9999</rdeHeader:registrar>
  <rriReporting:creationDate>
        2017-06-10T12:00:30.101Z</rriReporting:creationDate>
  <rriReporting:depositSchedule>Daily</rriReporting:depositSchedule>
  <rriReporting:lastFullDate>2017-10-08</rriReporting:lastFullDate>
  <rriReporting:statusReports>
    <rriReporting:statusReport>
      <rriReporting:type>Registrar_Escrow_Report</rriReporting:type>
      <rriReporting:enabled>true</rriReporting:enabled>
      <rriReporting:status>ok</rriReporting:status>
    </rriReporting:statusReport>
    <rriReporting:statusReport>
      <rriReporting:type>DEA_Notification</rriReporting:type>
      <rriReporting:enabled>true</rriReporting:enabled>
      <rriReporting:status>unsatisfactory</rriReporting:status>
      <rriReporting:issues>
        <rriReporting:issue date="2017-10-14"
              description="Invalid_Deposit_Diff" />
        <rriReporting:issue date="2017-10-15"
              description="Missing_Deposit_Full" />
        <rriReporting:issue date="2017-10-16"
              description="Missing_Deposit_Diff" />
        <rriReporting:issue date="2017-10-17"
              description="No_Report_Received" />
      </rriReporting:issues>
    </rriReporting:statusReport>
  </rriReporting:statusReports>
  <rriReporting:timestamp>
        2017-10-20T02:22:14.148Z</rriReporting:timestamp>
</rriReporting:summary>
```

4.2. Monitoring Registrar Data Escrow Reports

Registrars MAY monitor the status of their Data Escrow reports using the following interface:

<base-url>/info/report/registrar-escrow-report/<iana-id>/<date>

Where:

- <iana-id> MUST be substituted with the IANA ID assigned by ICANN to the Registrar being queried.

- <date> MUST be substituted with the date being queried in "YYYY-MM-DD" format. For example: 2017-08-01.

Possible results are:

* The interface provides a HTTP/200 status code with a <rdeReports:reports> element in the response content as defined in Section 2 of [I-D.lozano-icann-registry-interfaces], listing each <rdeReport:report> successfully received with watermark value that matches the queried date.

Example of response for a Registrar Data Escrow Reporting status check:

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: 1194

<?xml version="1.0" encoding="UTF-8"?>
<rdeReports:reports
 xmlns:rdeReports="urn:ietf:params:xml:ns:rdeReports-1.0"
 xmlns:rdeReport="urn:ietf:params:xml:ns:rdeReport-1.0"
 xmlns:rdeHeader="urn:ietf:params:xml:ns:rdeHeader-1.0">
 <rdeReports:receivedReport>
  <rdeReports:received>2017-10-13T00:30:13.741Z</rdeReports:received>
  <rdeReport:report>
   <rdeReport:id>20171013001</rdeReport:id>
   <rdeReport:version>1</rdeReport:version>
   <rdeReport:rydeSpecEscrow>
 https://www.icann.org/en/system/files/files/rde-specs-09nov07-en.pdf
   </rdeReport:rydeSpecEscrow>
   <rdeReport:resend>0</rdeReport:resend>
   <rdeReport:crDate>2017-10-13T00:01:11.000Z</rdeReport:crDate>
   <rdeReport:kind>FULL</rdeReport:kind>
   <rdeReport:watermark>2017-10-13T00:00:00.00Z</rdeReport:watermark>
   <rdeHeader:header>
    <rdeHeader:registrar>9999</rdeHeader:registrar>
    <rdeHeader:count rcdn="example"
      uri="urn:ietf:params:xml:ns:rdeDomain-1.0">10</rdeHeader:count>
    <rdeHeader:count rcdn="test"
      uri="urn:ietf:params:xml:ns:rdeDomain-1.0">1</rdeHeader:count>
   </rdeHeader:header>
  </rdeReport:report>
 </rdeReports:receivedReport>
</rdeReports:reports>
```

4.3. Monitoring Registrar Data Escrow Agent Notifications

Registrars and Data Escrow Agents MAY monitor the status of Data Escrow Agent Notifications using the following interface:

<base-url>/info/report/registrar-escrow-agent-notification/<iana-id>/<date>

Where:

- <iana-id> MUST be substituted with the IANA ID assigned by ICANN to the Registrar being queried.
- <date> MUST be substituted with the date being queried in "YYYY-MM-DD" format. For example: 2017-08-01.

Possible results are:

* The interface provides a HTTP/200 status code with a <rdeNotifications:notifications> element in the response content as defined in Section 2 of [I-D.lozano-icann-registry-interfaces], listing each <rdeNotification:notification> successfully received with a watermark value that matches the queried date.

Example of a response of a Registrar Data Escrow Agent Notification status check for a date with two received notifications:

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: 2578

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<rdeNotifications:notifications
 xmlns:iirdea="urn:ietf:params:xml:ns:iirdea-1.0"
 xmlns:rdeNotifications="urn:ietf:params:xml:ns:rdeNotifications-1.0"
 xmlns:rdeNotification="urn:ietf:params:xml:ns:rdeNotification-1.0"
 xmlns:rdeReport="urn:ietf:params:xml:ns:rdeReport-1.0"
 xmlns:rdeHeader="urn:ietf:params:xml:ns:rdeHeader-1.0">
 <rdeNotifications:receivedNotification>
  <rdeNotifications:received>
    2017-10-17T23:59:59.0Z</rdeNotifications:received>
  <rdeNotification:notification>
   <rdeNotification:deaName>
     Escrow Agent Inc.</rdeNotification:deaName>
   <rdeNotification:version>1</rdeNotification:version>
   <rdeNotification:repDate>2017-10-17</rdeNotification:repDate>
   <rdeNotification:status>DRFN</rdeNotification:status>
   <rdeNotification:lastFullDate>
     2017-10-14</rdeNotification:lastFullDate>
  </rdeNotification:notification>
 </rdeNotifications:receivedNotification>
 <rdeNotifications:receivedNotification>
  <rdeNotifications:received>
    2017-10-18T06:00:00.0Z</rdeNotifications:received>
  <rdeNotification:notification>
   <rdeNotification:deaName>
     Escrow Agent Inc.</rdeNotification:deaName>
   <rdeNotification:version>1</rdeNotification:version>
   <rdeNotification:repDate>2017-10-17</rdeNotification:repDate>
   <rdeNotification:status>DVPN</rdeNotification:status>
   <rdeNotification:reDate>
     2017-10-18T03:15:00.0Z</rdeNotification:reDate>
   <rdeNotification:vaDate>
     2017-10-18T05:15:00.0Z</rdeNotification:vaDate>
```

```
      <rdeNotification:lastFullDate>
        2017-10-17</rdeNotification:lastFullDate>
      <rdeReport:report>
       <rdeReport:id>20171017001</rdeReport:id>
       <rdeReport:version>1</rdeReport:version>
       <rdeReport:rydeSpecEscrow>
    https://www.icann.org/en/system/files/files/rde-specs-09nov07-en.pdf
       </rdeReport:rydeSpecEscrow>
       <rdeReport:resend>0</rdeReport:resend>
       <rdeReport:crDate>2017-10-17T00:15:00.0Z</rdeReport:crDate>
       <rdeReport:kind>FULL</rdeReport:kind>
       <rdeReport:watermark>2017-10-17T00:00:00Z</rdeReport:watermark>
       <rdeHeader:header>
       <rdeHeader:registrar>9999</rdeHeader:registrar>
       <rdeHeader:count rcdn="example"
         uri="urn:ietf:params:xml:ns:rdeDomain-1.0">10</rdeHeader:count>
       <rdeHeader:count rcdn="test"
         uri="urn:ietf:params:xml:ns:rdeDomain-1.0">1</rdeHeader:count>
      </rdeHeader:header>
      </rdeReport:report>
     </rdeNotification:notification>
    </rdeNotifications:receivedNotification>
   </rdeNotifications:notifications>
```

5. Internationalization Considerations

The interfaces described in this document use XML, which provides native support for encoding information using the Unicode character set and its more compact representations including UTF-8. Conformant XML processors recognize both UTF-8 and UTF-16. Though XML includes provisions to identify and use other character encodings through use of an "encoding" attribute in an <?xml?> declaration, use of UTF-8 is RECOMMENDED.

6. IANA Considerations

No actions are required from IANA.

7. Implementation Status

Note to RFC Editor: Please remove this section and the reference to RFC 7942 [RFC7942] before publication.

This section records the status of known implementations of the protocol defined by this specification at the time of posting of this Internet-Draft, and is based on a proposal described in RFC 7942 [RFC7942]. The description of implementations in this section is

intended to assist the IETF in its decision processes in progressing drafts to RFCs. Please note that the listing of any individual implementation here does not imply endorsement by the IETF. Furthermore, no effort has been spent to verify the information presented here that was supplied by IETF contributors. This is not intended as, and must not be construed to be, a catalog of available implementations or their features. Readers are advised to note that other implementations may exist.

According to RFC 7942 [RFC7942], "this will allow reviewers and working groups to assign due consideration to documents that have the benefit of running code, which may serve as evidence of valuable experimentation and feedback that have made the implemented protocols more mature. It is up to the individual working groups to use this information as they see fit".

7.1. Implementation in the gTLD space

Organization: ICANN

Name: Registrar Data Escrow Specifications

Description: Data Escrow Agents, and ICANN implement this specification. ICANN receives daily notifications from Data Escrow Agents using this specification.

Level of maturity: production.

Coverage: all aspects of this specification are implemented.

Version compatibility: versions 00 - 04 are known to be implemented.

Contact: gustavo.lozano@icann.org

URL: https://www.icann.org/en/system/files/files/rde-specs-09nov07-en.pdf

8. Security Considerations

The interfaces described in this document MUST be provided using HTTPS. The recommendations in [RFC7525] MUST be implemented.

9. Change History

[[RFC Editor: Please remove this section.]]

9.1. Version 00

Initial version.

9.2. Version 01

* Added clarifications, list of result codes that require the "domainCount" attribute to be present, and additional examples of <rdeNotification> objects in Section 2.2.

* Removed HTTP/404 from the possible results of interfaces to monitor data escrow notifications and registrar reports.

9.3. Version 02

1. Ping update.

9.4. Version 03

1. Ping update.

9.5. Version 04

1. Ping update.

9.6. Version 05

1. IANA Considerations section added.

2. Implementation section added.

3. Internationalization Considerations status section added.

4. Security section added.

5. Editorial updates.

9.7. Version 06

1. Ping update.

9.8. Version 07

1. Citations for RFCs that were recently published.

9.9. Version 08

1. Ping update.

9.10. Version 09

1. Ping update.

9.11. Version 10

1. Ping update.

9.12. Version 11

1. Ping update.

9.13. Version 12

1. Ping update.

9.14. Version 13

1. Ping update.

9.15. Version 14

1. Ping update.

10. References

10.1. Normative References

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10.2. Informative References

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[RFC5890] Klensin, J., "Internationalized Domain Names for Applications (IDNA): Definitions and Document Framework", RFC 5890, DOI 10.17487/RFC5890, August 2010, <https://www.rfc-editor.org/info/rfc5890>.

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