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G. Lozano
E. Alvarez
ICANN
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Abstract

This document describes the technical details of the interfaces provided by the Internet Corporation for Assigned Names and Numbers (ICANN) to its contracted parties in order to fulfill reporting requirements. The interfaces provided by ICANN to Data Escrow Agents and Registry Operators to fulfill the requirements of Specifications 2 and 3 of the gTLD Base Registry Agreement are also described in this document.

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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 other contracted parties in order to fulfill reporting requirements. The interface provided by ICANN to Registry Operators and Data Escrow Agents in order to fulfill the requirements of Specifications 2 and 3 of the gTLD Base Registry Agreement [ICANN-GTLD-BASE-RA] are also described in this document.

1.1. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

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

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

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[RFC3339], with no offset from the zero meridian.

1.3. Object Description

This section describes the base objects supported by this specification.

1.3.1. <iirdea:result> object

The ICANN interfaces for registries and data escrow agents (IIRDEA) <iirdea:result> object is used to provide information on the result of a verification process when interacting with the interfaces.

The <iirdea:result> object contains the following attribute and child elements:

- o A "code" attribute whose value is a four-digit decimal number that identifies the result of a process. Available result code values MUST be defined for the corresponding process.

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- o An OPTIONAL "domainCount" attribute to indicate the number of domain names related to the reported result.
- o A <msg> element containing a human-readable description of the result code.
- o An OPTIONAL <description> element that includes additional details on the result conditions.

An example of a <iirdea:result> object is presented below:

```
<result code="2001">  
  <msg>The structure of the report is invalid.</msg>  
  <description>  
    'XX' could not be parsed as a number (line: 2 column:3)  
  </description>  
</result>
```

1.3.2. <rdeReport:report> object

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The contents of a data escrow deposit are described using a <rdeReport:report> object. The <rdeReport:report> object contains the following child elements:

- o An <id> element that contains the identifier assigned to this report. The report identifier MUST be the same as the "id" attribute from the <deposit>. If the data escrow deposit does not include a unique identifier, the Data Escrow Agent MUST generate a unique identifier to reference the data escrow deposit and use it in the <id> element.
- o A <version> element contains the version of the specification used. This value MUST be 1.
- o A <rydeSpecEscrow> element contains the version of the Data Escrow Specification (e.g. draft-arias-noguchi-registry-data-escrow-06) used to create the deposit. After the specification is published as an RFC, the value MUST be the RFC number assigned by IANA.
- o An OPTIONAL <rydeSpecMapping> element contains the version of the Domain Name Registration Data (DNRD) Objects Mapping (e.g. draft-arias-noguchi-dnrd-objects-mapping-05) used to create the deposit. After the specification is published as an RFC, the value MUST be the RFC number assigned by IANA. The <rydeSpecMapping> element MUST be included if the deposit was created using any version of the DNRD objects mapping specification (see, [I-D.arias-noguchi-dnrd-objects-mapping]).

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- o A <resend> element contains the value of the "resend" attribute of the <deposit>.
- o A <crDate> element contains the date and time that the deposit was created by the Registry Operator.
- o A <kind> element is used to identify the kind of deposit: FULL, INCR (Incremental) or DIFF (Differential).
- o A <watermark> element contains the date and time corresponding to the Timeline Watermark (<watermark> element) of the <deposit>.

- o A <rdeHeader:header> element contains the header of the <deposit> as defined in [I-D.arias-noguchi-dnrd-objects-mapping]

An example of a <rdeReport:report> object is available in Section 2.1.

1.3.3. <rdeNotification:notification> object

The <rdeNotification:notification> object is used by Data Escrow Agents to document the result of the data escrow deposit verification process. The <rdeNotification:notification> object contains the following child elements:

- o A <deaName> element contains the name of the Data Escrow Agent.
- o A <version> element contains the version of the specification used. This value MUST be 1.
- o A <repDate> element contains the reported date. In case of a DVPN or DVFN notification this value MUST be the date of the <watermark> element of the <deposit>. In case of a DRFN deposit notification, this value MUST be the date for which no deposit was received from the Registrar or Registry Operator.
- o A <status> element is used to specify the status of <repDate>. The possible values of status are: DVPN, DVFN and DRFN. The value for the <status> element is determined by the three types of notices:
 - * Deposit Receipt Failure Notice (DRFN): generated by the Data Escrow Agent when no deposit is received pursuant to the data escrow deposit schedule.
 - * Deposit Verification Failure Notice (DVFN): generated by the Data Escrow Agent when a deposit is received, but the final result of the verification process is failure.

- * Deposit Verification Pass Notice (DVPN): generated by the Data Escrow Agent when a deposit is received and the final result of the verification process is success.

- o An OPTIONAL <results> element contains the errors detected during the data escrow deposit verification process performed by the Data Escrow Agent. The <results> element includes one or more <iirdea:result> elements as defined in Section 1.3.1. In case of a DRFN or DVPN deposit notification the <results> element MUST NOT be present.
- o An OPTIONAL <reDate> element contains the date and time that the deposit was successful received by the Data Escrow Agent. In case of a DRFN deposit notification this element MUST NOT be present.
- o An OPTIONAL <vaDate> element contains the date and time that the deposit was successfully validated by the Data Escrow Agent. In case of a DRFN deposit notification this element MUST NOT be present.
- o An OPTIONAL <lastFullDate> element contains the date of the Timeline Watermark (<watermark> element) of the most recent FULL deposit that was successfully validated by the Data Escrow Agent. This element MUST NOT be present if a successfully validated full deposit has never been deposited.
- o An OPTIONAL <rdeReport:report> element is used by the Data Escrow Agent to provide extended information about the deposit. In case of a DRFN deposit notification this element MUST NOT be present. In case of a DVPN or DVFN deposit notification this element MUST be present. When this element is present, the <rdeHeader:header> element MUST be generated by the Data Escrow Agent for the Timeline Watermark (<watermark> element) of the deposit being processed. If the deposit being processed is a differential or incremental deposit, the Data Escrow Agent MUST process the last full plus all differentials or last full plus last incremental escrow deposits from the same repository (e.g. TLD) to generate the <rdeHeader:header> element.
- o Note: In case of a DPVN or DVFN deposit notification, the <id> is used as unique identifier.

An example of a <rdeNotification:notification> object is available in Section 2.2.



1.3.4. <rriReporting:summary> Object

Interfaces that support monitoring the reporting status for a specific repository, provide a <rriReporting:summary> object as defined by the schema in Section 6 in the HTTP Entity-body when a HTTP/200 code is sent by the interface.

The <rriReporting:summary> element includes the following child elements:

- o A choice of one of the elements as defined in the "rdeHeader:repositoryTypeGroup" (see [I-D.arias-noguchi-dnrd-objects-mapping]) that indicates the unique identifier for the repository being escrowed.
- o A <creationDate> element with the date and time in which the queried repository was created in the system.
- o A <depositSchedule> OPTIONAL element indicating the current Data Escrow Deposit schedule for the queried repository. Possible values are "None", "Weekly", and "Daily".
- o A <lastFullDate> element indicating the date of the Timeline Watermark (<watermark> element) of the most recent FULL deposit that was successfully validated for the queried repository as notified by the Data Escrow Agent.
- o A <statusReports> element with a <statusReport> element for each report type for the queried repository. Each <statusReport> element includes the following child elements:
 - * <type> : a string value indicating the report type to which the information provided pertains.
 - * <enabled> : a boolean value indicating if the report type is enabled for the repository.
 - * <status> : a string value indicating the reporting status. A value of "ok" indicates there are no reporting issues in the corresponding report type, otherwise the value of "unsatisfactory" is shown.
 - * An OPTIONAL <issues> element included only when the <status> element has a value of "unsatisfactory", and includes an empty

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<issue> element for each date with a reporting problem found in the corresponding report type. Each <issue> element includes a REQUIRED "date" attribute in "YYYY-MM-DD" format and a REQUIRED

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"description" attribute to describe the issue. The possible values to describe each reporting issue are:

- + "Missing_Deposit_Full": If the latest notification received from the Data Escrow Agent for the date indicates that a scheduled "Full" deposit was not submitted by the repository owner.
 - + "Missing_Deposit_Diff": If the latest notification received from the Data Escrow Agent for the date indicates that a scheduled "Differential" deposit was not submitted by the repository owner.
 - + "Invalid_Deposit_Full": If the latest notification received from the Data Escrow Agent for the date indicates that a "Full" deposit was received by the Data Escrow Agent, but failed the verification process.
 - + "Invalid_Deposit_Diff": If the latest notification received from the Data Escrow Agent for the date indicates that a "Differential" deposit was received by the Data Escrow Agent, but failed the verification process.
 - + "No_Report_Received" If no report has been received for the date.
- o A <timestamp> element to indicate the date and time in which the reporting status response was created.

1.3.5. <rdeReports:reports> Object

Interfaces that support monitoring and retrieving Data Escrow Reports received, provide a <rdeReports:reports> object as defined by the schema in Section 6 in the HTTP Entity-body when a HTTP/200 code is sent by the interface.

The `<rdeReports:reports>` element includes a list of `<rdeReports:receivedReport>` objects, one for each `<rdeReport:report>` successfully received by ICANN. Each `<rdeReports:receivedReport>` object includes the following child elements:

- o A `<received>` element to indicate the date and time in which the report was received by ICANN.
- o A `<rdeReport:report>` element as defined in Section 1.3.2 as received by ICANN.

1.3.6. `<rdeNotifications:notifications>` Object

Interfaces that support monitoring and retrieving Data Escrow Notifications received from Data Escrow Agents, provide a `<rdeNotifications:notifications>` object as defined by the schema in Section 6 in the HTTP Entity-body when a HTTP/200 code is sent by the interface.

The `<rdeNotifications:notifications>` element includes a list of `<rdeNotifications:receivedNotification>` objects, one for each `<rdeNotification:notification>` successfully received by ICANN. Each `<rdeNotifications:receivedNotification>` object includes the following child elements:

- o A `<received>` element to indicate the date and time in which the notification was received by ICANN.
- o A `<rdeNotification:notification>` element as defined in Section 1.3.3 as received by ICANN.

2. Interfaces for Specification 2 - Data Escrow Reporting

This section describes the interfaces provided by ICANN to Registry Operators and Data Escrow Agents in order to fulfill the reporting requirements detailed in Specification 2 of the gTLD Base Registry Agreement [ICANN-GTLD-BASE-RA].

2.1. Registry Operator Reporting

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The gTLD Base Registry Agreement [ICANN-GTLD-BASE-RA], Specification 2, Part A, Section 7 requires Registry Operators to provide ICANN with a written statement that includes a copy of the report generated upon creation of a deposit and a statement that the deposit has been inspected by the Registry Operator and is complete and accurate.

In order to satisfy this requirement, the Registry Operator sends to ICANN a <rdeReport:report> object as defined in Section 1.3.2 for each deposit successfully sent to the Data Escrow Agent, using the PUT HTTP verb in the interface provided by ICANN at:

`https://ry-api.icann.org/report/registry-escrow-report/<tld>/<id>`

Where:

- * <tld> MUST be substituted by the TLD for which the report is being provided. In case of an IDN TLD, the A-label (see [RFC5890]) MUST be used.

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- * <id> MUST be substituted by the identifier assigned to this 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 Registry Operators and Data Escrow Agents.

Example of a <rdeReport:report> object for a data escrow deposit corresponding to a TLD Registry 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>20101017001</rdeReport:id>
  <rdeReport:version>1</rdeReport:version>
  <rdeReport:rydeSpecEscrow>
    draft-arias-noguchi-registry-data-escrow-06
  </rdeReport:rydeSpecEscrow>
```

```

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<rdeReport:rydeSpecMapping>
  draft-arias-noguchi-dnrd-objects-mapping-05
</rdeReport:rydeSpecMapping>
<rdeReport:resend>0</rdeReport:resend>
<rdeReport:crDate>2010-10-17T00:15:00.0Z</rdeReport:crDate>
<rdeReport:kind>FULL</rdeReport:kind>
<rdeReport:watermark>2010-10-17T00:00:00Z</rdeReport:watermark>
<rdeHeader:header>
  <rdeHeader:tld>test</rdeHeader:tld>
  <rdeHeader:count
    uri="urn:ietf:params:xml:ns:rdeDomain-1.0">2</rdeHeader:count>
  <rdeHeader:count
    uri="urn:ietf:params:xml:ns:rdeHost-1.0">1</rdeHeader:count>
  <rdeHeader:count
    uri="urn:ietf:params:xml:ns:rdeContact-1.0">1</rdeHeader:count>
  <rdeHeader:count
    uri="urn:ietf:params:xml:ns:rdeRegistrar-1.0">1
  </rdeHeader:count>
  <rdeHeader:count
    uri="urn:ietf:params:xml:ns:rdeIDN-1.0">1</rdeHeader:count>
  <rdeHeader:count
    uri="urn:ietf:params:xml:ns:rdeNNDN-1.0">1</rdeHeader:count>
  <rdeHeader:count
    uri="urn:ietf:params:xml:ns:rdeEppParams-1.0">1
  </rdeHeader:count>
</rdeHeader:header>
</rdeReport:report>

```

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2.2. Data Escrow Agent Reporting

The gTLD Base Registry Agreement [ICANN-GTLD-BASE-RA], Specification 2, Part B, Section 7 requires Data Escrow Agents, to deliver ICANN with a notification object every time a successfully processed deposit is received from the Registry Operator regardless of the final status of the verification process.

In order to satisfy this requirement, the Data Escrow Agent sends to ICANN a <rdeNotification:notification> object as defined in Section 1.3.3, using the POST HTTP verb in the interface provided by ICANN at:

<https://ry-api.icann.org/report/escrow-agent-notification/<tld>>

Where:

- * <tld> MUST be substituted by the TLD for which the notification is being provided. In case of an IDN TLD, the A-label (see [RFC5890]) MUST be used.

If by 23:59:59 UTC, a deposit has not been successfully processed regardless of the final status of the verification process, a <rdeNotification:notification> object with DRFN status MUST be send to ICANN.

Example of a <rdeNotification:notification> object of a Data Escrow Agent notification corresponding to a Registry repository Data Escrow Deposit:

```
<?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>2010-10-17</rdeNotification:repDate>
  <rdeNotification:status>DVPN</rdeNotification:status>
  <rdeNotification:reDate>
    2010-10-17T03:15:00.0Z
  </rdeNotification:reDate>
  <rdeNotification:vaDate>
    2010-10-17T05:15:00.0Z
  </rdeNotification:vaDate>
  <rdeNotification:lastFullDate>
    2010-10-14
  </rdeNotification:lastFullDate>
```

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```
<rdeReport:report>
  <rdeReport:id>20101017001</rdeReport:id>
  <rdeReport:version>1</rdeReport:version>
  <rdeReport:rydeSpecEscrow>
```

```

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            draft-arias-noguchi-registry-data-escrow-06
        </rdeReport:rydeSpecEscrow>
    <rdeReport:rydeSpecMapping>
        draft-arias-noguchi-dnrd-objects-mapping-03
    </rdeReport:rydeSpecMapping>
    <rdeReport:resend>0</rdeReport:resend>
    <rdeReport:crDate>2010-10-17T00:15:00.0Z</rdeReport:crDate>
    <rdeReport:kind>FULL</rdeReport:kind>
    <rdeReport:watermark>2010-10-17T00:00:00Z</rdeReport:watermark>
    <rdeHeader:header>
        <rdeHeader:tld>test</rdeHeader:tld>
        <rdeHeader:count
            uri="urn:ietf:params:xml:ns:rdeDomain-1.0">1</rdeHeader:count>
        <rdeHeader:count
            uri="urn:ietf:params:xml:ns:rdeHost-1.0">3</rdeHeader:count>
        <rdeHeader:count
            uri="urn:ietf:params:xml:ns:rdeContact-1.0">1</rdeHeader:count>
        <rdeHeader:count
            uri="urn:ietf:params:xml:ns:rdeRegistrar-1.0">3</rdeHeader:count>
        <rdeHeader:count
            uri="urn:ietf:params:xml:ns:rdeIDN-1.0">1</rdeHeader:count>
        <rdeHeader:count
            uri="urn:ietf:params:xml:ns:rdeNNDN-1.0">10</rdeHeader:count>
        <rdeHeader:count
            uri="urn:ietf:params:xml:ns:rdeEppParams-1.0">0</rdeHeader:count>
    </rdeHeader:header>
</rdeReport:report>
</rdeNotification:notification>

```

3. Interfaces of Specification 3 - Registry Operator Monthly Reporting

Specification 3 of the gTLD Base Registry Agreement [ICANN-GTLD-BASE-RA] requires Registry Operators to provide a set of monthly reports per gTLD. Two type of reports are required to be sent by Registries: Per-Registrar Transactions Report and Registry Functions Activity Report. This section specifies the interfaces provided by ICANN to automate the upload of these reports by Registry Operators.

The cut-off date for the reception of the reports specified in specification 3 is defined in the gTLD Base Registry Agreement [ICANN-GTLD-BASE-RA]. Before the cut-off date the Registry Operator



could replace a successfully validated report as many times as it needs.

3.1. Per-Registrar Transactions Report

The Per-Registrar Transactions Report is a CSV report described in Section 1 of Specification 3.

In order to satisfy this requirement, the Registry Operator sends a CSV report on a monthly basis as described in the gTLD Base Registry Agreement [ICANN-GTLD-BASE-RA], using the PUT HTTP verb in the interface provided by ICANN at:

```
https://ry-api.icann.org/report/registrar-  
transactions/<tld>/<date>
```

Where:

- * <tld> MUST be substituted by the TLD for which the reports is being provided. In case of an IDN TLD, the A-label (see [RFC5890]) MUST be used.
- * <date> MUST be substituted by the month for which the reports is being provided in the form of YYYY-MM. Where 'YYYY' is the year and 'MM' is the two digit month number. For example:
2013-03

3.2. Registry Functions Activity Report

The Registry Functions Activity Report is a CSV report described in Section 2 of Specification 3 of the gTLD Base Registry Agreement [ICANN-GTLD-BASE-RA].

In order to satisfy this requirement, the Registry Operator sends a CSV report on a monthly basis as described in the gTLD Base Registry Agreement [ICANN-GTLD-BASE-RA], using the PUT HTTP verb in the interface provided by ICANN at:

```
https://ry-api.icann.org/report/registry-functions-  
activity/<tld>/<date>
```

Where:

- * <tld> MUST be substituted by the TLD for which the report is

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being provided. In case of an IDN TLD, the A-label (see
[RFC5890]) MUST be used.

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- * <date> MUST be substituted by the month for which the reports is being provided in the form of YYYY-MM. Where 'YYYY' is the year and 'MM' is the two digit month number. For example:
2013-03

4. Technical details of the interfaces

Content-type value in the HTTP header:

- o The client MUST set "text/xml" in the HTTP header Content-type when using the Data Escrow Agent Reporting and Registry Operator Reporting interfaces described in Section 2.
- o The client MUST set "text/csv" in the HTTP header Content-type when using the Per-Registrar Transactions Report Registry Functions Activity Report interfaces described in Section 3.

The interfaces support HTTP streams only (HTTP multi-part forms are not supported).

After successfully receiving an input in any of the interfaces, ICANN validates it and provides a <response> object with an result element in the same HTTP transaction.

The following HTTP status codes are standard across all interfaces:

- o The interface provides a HTTP/200 status code and sets the HTTP header Content-type: text/xml, if the interface was able to receive the input successfully, the client MUST review the response object to verify the result code after processing the input.
- o The interface provides a HTTP/400 status code and sets the HTTP header Content-type: text/xml, if the input is incorrect or the syntax of the input is invalid. A response object is included with the input validation failure details.

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- o The interface provides a HTTP/401 status code and sets the HTTP header Content-type: text/plain, if the credentials provided does not authorize the Registry Operator to upload a report for that <tld>.
- o The interface provides a HTTP/403 status code and sets the HTTP header Content-type: text/plain, if the credentials provided are valid but are being used to access a resource that permission is not granted for or the connecting IP address is not whitelisted for the <tld>.

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- o The interface provides a HTTP/405 status code if the interface does not support the request method.
- o The interface provides a HTTP/500 status code and sets the HTTP header Content-type: text/plain, if the system is experiencing a general failure. The sending party is responsible to send the input again.
- o The interface provides a HTTP/501 status code and sets the HTTP header Content-type: text/plain, if the functionality has not yet been implemented.

After sending the response, the interfaces closes the TCP connection.

4.1. Response Object

After processing the input provided in any of the interfaces, a response object as defined by the schema in Section 6 is provided in the HTTP Entity-body when an HTTP/200 or HTTP/400 status code is sent by the interface.

An example of a response object is presented below:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<response xmlns="urn:ietf:params:xml:ns:iirdea-1.0">
  <result code="2001">
    <msg>The structure of the report is invalid.</msg>
    <description>
```

```

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'XX' could not be parsed as a number (line: 2 column:3)
</description>
</result>
</response>

```

The following sections provide the IIRDEA Result Codes per interface:

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4.1.1. Registry Operator 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 report 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.
2007	Interface is disabled for this TLD.
2008	The <crDate> and <watermark> date should not be before the creation date of the TLD in the system.
2202	The <tld> in the <header> and the TLD in the URL path do

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	not match.
2205	Report regarding a differential deposit received for a Sunday (<watermark>).
2206	csvDomain and rdeDomain count provided in the <header>.
2209	Missing required <tld> element in the <header>.
2210	The value of the "rcdn" attribute in the <count> element does not match the same or lower level names in the <tld> in the URL path.
2211	Multiple count elements with the same "uri", "rcdn", and "registrarId" attribute values provided in the <header>.
2212	An invalid NR-LDH label or A-label was found or the domain name syntax is invalid in the "rcdn" attribute.
2213	Not supported "ppspId" attribute found in the <header>.

Data Escrow Reporting Result Codes

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4.1.2. 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 notification did not validate against the schema.
2002	A DVPN notification exists for that date (<repDate>).

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2004	Notification for a date in the future. The <crDate> and <watermark> and <repDate> date should not be in the future.
2005	Version is not supported.
2007	Interface is disabled for this TLD.
2008	The <crDate> and <watermark> and <repDate> date should not be before the creation date of the TLD in the system.
2201	The <repDate> and <watermark> in the notification do not match.
2202	The <tld> in the <header> and the TLD in the URL path 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.
2205	Notification regarding a differential deposit received for a Sunday (<repDate>).
2206	csvDomain and rdeDomain count provided in the <header>.
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	Missing required <tld> element in the <header>.
2210	The value of the "rcdn" attribute in the <count> element does not match the same or lower level names in the <tld> in the URL path.
2211	Multiple count elements with the same "uri", "rcdn", and "registrarId" attribute values provided in the <header>.
2212	An invalid NR-LDH label or A-label was found or the domain name syntax is invalid in the "rcdn" attribute.
2213	Not supported "ppspId" attribute found in the <header>.

Data Escrow Reporting Result Codes

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4.1.3. Per-Registrar Transactions Report

The following table lists the result codes of the interface:

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Result Code	Message
1000	No ERRORS were found and the report has been accepted by ICANN.
2001	The structure of the report is invalid.
2002	A report for that month already exists, the cut-off date already passed.
2003	Negative numeric value present in the report.
2004	Report for a month in the future.
2007	Interface is disabled for this TLD.
2008	Reported month before the creation date of the TLD in the system.
2101	Incorrect totals present in the report.
2102	A non ICANN-accredited registrar is present in the report.
2103	Values found in the second field of the totals line.
2105	The report is not encoded in UTF-8. Note: reports encoded in US-ASCII are accepted.

Per-Registrar Transactions Report Result Codes



4.1.4. Registry Functions Activity Report

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 structure of the report is invalid.
2002	A report for that month already exists, the cut-off date already passed.
2003	Negative numeric value present in the report.
2004	Report for a month in the future.
2007	Interface is disabled for this TLD.
2008	Reported month before the creation date of the TLD in the system.
2105	The report is not encoded in UTF-8. Note: reports encoded in US-ASCII are accepted.

Registry Functions Activity Report Result Codes

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5. Monitoring the reporting status

Registries MAY monitor the status of the reports described in Specification 2 and Specification 3 of the gTLD Base Registry Agreement [ICANN-GTLD-BASE-RA] using the following interfaces that supports the HEAD HTTP verb:

5.1. Monitoring the status of Data Escrow Reports

Registries MAY monitor the status of Data Escrow Reports using the following interface:

```
https://ry-api.icann.org/info/report/registry-escrow-report/<tld>/<date>
```

Where:

- * <tld> MUST be substituted by the TLD being queried. In case of an IDN TLD, the A-label (see [RFC5890]) MUST be used.
- * <date> MUST be substituted by the day being queried. For example: 2013-03-02

Possible results are:

- * The interface provides a HTTP/200 status code, if a syntactically valid data escrow report was received for the queried date.
- * The interface provides a HTTP/404 status code, if a syntactically valid data escrow report has not been received for the queried date.

5.2. Monitoring the status of Data Escrow Notifications

Registries and Data Escrow Agents MAY monitor the status of Data

Escrow Notifications using the following interface:

`https://ry-api.icann.org/info/report/escrow-agent-notification/<tld>/<date>`

Where:

- * <tld> MUST be substituted by the TLD being queried. In case of an IDN TLD, the A-label (see [RFC5890]) MUST be used.
- * <date> MUST be substituted by the day being queried. For example: 2013-03-02

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Possible results are:

- * The interface provides a HTTP/200 status code, if a syntactically valid data escrow notification was received for the queried date.
- * The interface provides a HTTP/404 status code, if a syntactically valid data escrow notification has not been received for the queried date.

5.3. Monitoring the status of Registry Functions Activity Report

Registries MAY monitor the status of Registry Functions Activity Report using the following interface:

`https://ry-api.icann.org/info/report/registry-functions-activity/<tld>/<date>`

Where:

- * <tld> MUST be substituted by the TLD being queried. In case of an IDN TLD, the A-label (see [RFC5890]) MUST be used.
- * <date> MUST be substituted by the month being queried. For example: 2013-03

Possible results are:

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- * The interface provides a HTTP/200 status code, if a syntactically valid registry functions activity report was received for the queried month.
- * The interface provides a HTTP/404 status code, if a syntactically valid registry functions activity report has not been received for the queried month.

5.4. Monitoring the status of the Per-Registrar Transactions Report

Registries MAY monitor the status of Per-Registrar Transactions Report using the following interface:

`https://ry-api.icann.org/info/report/registrar-transactions/<tld>/<date>`

Where:

- * <tld> MUST be substituted by the TLD being queried. In case of an IDN TLD, the A-label (see [RFC5890]) MUST be used.

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- * <date> MUST be substituted by the month being queried. For example: 2013-03

Possible results are:

- * The interface provides a HTTP/200 status code, if a syntactically valid per-registrar transactions report was received for the queried month.
- * The interface provides a HTTP/404 status code, if a syntactically valid per-registrar transactions report has not been received for the queried month.

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6. Formal Syntax

The schema of the IIRDEA Result, Report, Notification, RRI Reporting, Notifications, and Reports objects described in Section 1.3 are presented here.

The BEGIN and END tags are not part of the schema; they are used to note the beginning and ending of the schema for URI registration purposes.

6.1. IIRDEA Result Schema

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BEGIN

```
<?xml version="1.0" encoding="UTF-8"?>  
<schema targetNamespace="urn:ietf:params:xml:ns:iirdea-1.0"  
  xmlns:iirdea="urn:ietf:params:xml:ns:iirdea-1.0"
```

```

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xmlns="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">

<annotation>
  <documentation>
    ICANN interfaces for registries and data escrow agents
  </documentation>
</annotation>

<element name="response" type="iirdea:responseType"/>
<element name="result" type="iirdea:resultType"/>

<complexType name="responseType">
  <sequence>
    <element ref="iirdea:result" />
  </sequence>
</complexType>

<complexType name="resultType">
  <sequence>
    <element name="msg" type="token"/>
    <element name="description" type="string"
      minOccurs="0"/>
  </sequence>
  <attribute name="code" type="iirdea:codeType"
    use="required"/>
  <attribute name="domainCount" type="unsignedInt"/>
</complexType>

<simpleType name="codeType">
  <restriction base="unsignedShort">
    <minInclusive value="1000"/>
    <maxInclusive value="9999"/>
  </restriction>
</simpleType>

</schema>
END

```

6.2. Report Object

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BEGIN

```
<?xml version="1.0" encoding="UTF-8"?>
<schema targetNamespace="urn:ietf:params:xml:ns:rdeReport-1.0"
  xmlns:rdeReport="urn:ietf:params:xml:ns:rdeReport-1.0"
  xmlns:rdeHeader="urn:ietf:params:xml:ns:rdeHeader-1.0"
  xmlns:rde="urn:ietf:params:xml:ns:rde-1.0"
  xmlns="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified">

  <import namespace="urn:ietf:params:xml:ns:rde-1.0" />
  <import namespace="urn:ietf:params:xml:ns:rdeHeader-1.0" />

  <annotation>
    <documentation>
      Data Escrow Report schema
    </documentation>
  </annotation>

  <element name="report" type="rdeReport:reportType"/>

  <complexType name="reportType">
    <sequence>
      <element name="id" type="rde:depositIdType"/>
      <element name="version" type="unsignedShort"/>
      <element name="rydeSpecEscrow" type="token"/>
      <element name="rydeSpecMapping" type="token" minOccurs="0"/>
      <element name="resend" type="unsignedShort"/>
      <element name="crDate" type="dateTime"/>
      <element name="kind" type="rde:depositTypeType"/>
      <element name="watermark" type="dateTime"/>
      <element ref="rdeHeader:header"/>
    </sequence>
  </complexType>
</schema>
END
```

6.3. Notification Object

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BEGIN

```
<?xml version="1.0" encoding="UTF-8"?>
<schema targetNamespace="urn:ietf:params:xml:ns:rdeNotification-1.0"
  xmlns:rdeNotification="urn:ietf:params:xml:ns:rdeNotification-1.0"
  xmlns:rdeReport="urn:ietf:params:xml:ns:rdeReport-1.0"
  xmlns:iirdea="urn:ietf:params:xml:ns:iirdea-1.0"
  xmlns="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified">

  <import namespace="urn:ietf:params:xml:ns:rdeReport-1.0"/>
  <import namespace="urn:ietf:params:xml:ns:iirdea-1.0"/>

  <annotation>
    <documentation>
      Data Escrow Notification schema
    </documentation>
  </annotation>

  <element name="notification"
    type="rdeNotification:notificationType"/>

  <complexType name="notificationType">
    <sequence>
      <element name="deaName" type="rdeNotification:nameType"/>
      <element name="version" type="unsignedShort"/>
      <element name="repDate" type="date"/>
      <element name="status" type="rdeNotification:statusType"/>
      <element name="results" type="rdeNotification:resultsType"
        minOccurs="0" />
      <element name="reDate" type="dateTime" minOccurs="0"/>
    </sequence>
  </complexType>
</schema>
```

```

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        <element name="vaDate" type="dateTime" minOccurs="0"/>
        <element name="lastFullDate" type="date" minOccurs="0"/>
        <element ref="rdeReport:report" minOccurs="0"/>
    </sequence>
</complexType>

<simpleType name="nameType">
    <restriction base="normalizedString">
        <minLength value="1" />
        <maxLength value="255" />
    </restriction>
</simpleType>

```

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```

<complexType name="resultsType">
    <sequence>
        <element ref="iirdea:result" maxOccurs="unbounded" />
    </sequence>
</complexType>

<simpleType name="statusType">
    <restriction base="token">
        <enumeration value="DVPN"/>
        <enumeration value="DVFN"/>
        <enumeration value="DRFN"/>
    </restriction>
</simpleType>
</schema>
END

```

6.4. RRI Reporting Summary Object

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BEGIN

```

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<?xml version="1.0" encoding="UTF-8"?>
<schema targetNamespace="urn:ietf:params:xml:ns:rriReporting-1.0"
  xmlns:rriReporting="urn:ietf:params:xml:ns:rriReporting-1.0"
  xmlns:rdeHeader="urn:ietf:params:xml:ns:rdeHeader-1.0"
  xmlns="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified">

  <import namespace="urn:ietf:params:xml:ns:rdeHeader-1.0" />

  <element name="summary" type="rriReporting:summaryType"/>

  <complexType name="summaryType">
    <sequence>
      <group ref="rdeHeader:repositoryTypeGroup"/>
      <element name="creationDate" type="dateTime" />
      <element name="depositSchedule"
        type="rriReporting:depositScheduleType" />
      <element name="lastFullDate" type="date" />
      <element name="statusReports"
        type="rriReporting:statusReportsType" />

```

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```

  <element name="timestamp" type="dateTime" />
</sequence>
</complexType>

<simpleType name="depositScheduleType">
  <restriction base="token">
    <enumeration value="None" />
    <enumeration value="Weekly" />
    <enumeration value="Daily" />
  </restriction>
</simpleType>

<complexType name="statusReportsType">
  <sequence>
    <element name="statusReport"
      type="rriReporting:statusReportType" maxOccurs="unbounded" />
  </sequence>
</complexType>

<complexType name="statusReportType">

```

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```
<sequence>
  <element name="type" type="rriReporting:statusReportTypeType" />
  <element name="enabled" type="boolean" />
  <element name="status" type="rriReporting:statusType" />
  <element name="issues" type="rriReporting:issuesType"
    minOccurs="0" />
</sequence>
</complexType>
```

```
<simpleType name="statusReportTypeType">
  <restriction base="token">
    <enumeration value="DEA_Notification" />
    <enumeration value="Registrar_Escrow_Report" />
    <enumeration value="Registry_Escrow_Report" />
    <enumeration value="PPSP_Escrow_Report" />
    <enumeration value="Registry_Functions_Activity_Report" />
    <enumeration value="Registry_Per_Registrar_Transactions_Report" />
    <enumeration value="PPSP_Per_Registrar_Activity_Report" />
  </restriction>
</simpleType>
```

```
<simpleType name="statusType">
  <restriction base="token">
    <enumeration value="ok" />
    <enumeration value="unsatisfactory" />
  </restriction>
</simpleType>
```

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```
<complexType name="issuesType">
  <sequence>
    <element name="issue" type="rriReporting:issueType"
      maxOccurs="unbounded" />
  </sequence>
</complexType>
```

```
<complexType name="issueType">
  <attribute name="date" type="rriReporting:issueDateType"
    use="required" />
  <attribute name="description" type="rriReporting:descriptionType"
    use="required" />
```

```

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</complexType>

<simpleType name="issueDateType">
  <restriction base="token">
    <pattern
      value="\d{4}-(0[1-9]|1[012])(-(0[1-9]|1[12][0-9]|3[01]))?" />
    </restriction>
  </simpleType>

<simpleType name="descriptionType">
  <restriction base="token">
    <enumeration value="Missing_Deposit_Full" />
    <enumeration value="Missing_Deposit_Diff" />
    <enumeration value="Invalid_Deposit_Full" />
    <enumeration value="Invalid_Deposit_Diff" />
    <enumeration value="No_Report_Received" />
  </restriction>
</simpleType>
</schema>
END

```

6.5. Notifications Object

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```

BEGIN
<?xml version="1.0" encoding="UTF-8"?>
<schema targetNamespace="urn:ietf:params:xml:ns:rdeNotifications-1.0"
  xmlns:rdeNotifications="urn:ietf:params:xml:ns:rdeNotifications-1.0"

```

```

draft-lozano-icann-registry-interfaces-08
xmlns:rdeNotification="urn:ietf:params:xml:ns:rdeNotification-1.0"
xmlns="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">

<import namespace="urn:ietf:params:xml:ns:rdeNotification-1.0" />

<element name="notifications"
  type="rdeNotifications:notificationsType"/>

<complexType name="notificationsType">
  <sequence>
    <element name="receivedNotification" maxOccurs="unbounded">
      <complexType>
        <sequence>
          <element name="received" type="dateTime" />
          <element ref="rdeNotification:notification" />
        </sequence>
      </complexType>
    </element>
  </sequence>
</complexType>
</schema>
END

```

6.6. Reports Object

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BEGIN

```
<?xml version="1.0" encoding="UTF-8"?>
<schema targetNamespace="urn:ietf:params:xml:ns:rdeReports-1.0"
  xmlns:rdeReport="urn:ietf:params:xml:ns:rdeReport-1.0"
  xmlns:rdeReports="urn:ietf:params:xml:ns:rdeReports-1.0"
  xmlns="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified">

  <import namespace="urn:ietf:params:xml:ns:rdeReport-1.0" />

  <element name="reports" type="rdeReports:reportsType"/>

  <complexType name="reportsType">
    <sequence>
      <element name="receivedReport" maxOccurs="unbounded">
        <complexType>
          <sequence>
            <element name="received" type="dateTime" />
            <element ref="rdeReport:report" />
          </sequence>
        </complexType>
      </element>
    </sequence>
  </complexType>
</schema>
END
```

7. Acknowledgements

Special suggestions that have been incorporated into this document were provided by David Kipling, James Gould, Gregory Zaltsman, Brett Carr and Harel Efraim.

8. Change History

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

8.1. Version 00

Initial version.

8.2. Version 01

- o <rdeReport:report> and <rdeNotification:notification> moved from

draft-lozano-icann-registry-interfaces-08
escrow drafts to this draft

- o Added <crDate> to <rdeReport:report>

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- o <reDate> element of <rdeReport:report> is now OPTIONAL
- o Added <deaName> element to <rdeNotification:notification>
- o <rydeSpecEscrow> and <rydeSpecMapping> added to the draft
- o Several report elements are OPTIONAL to support async interfaces between Registry Operators and Data Escrow Agents
- o Added <TLD> and <id> to registry-escrow-report interface in order to make the interface idempotent and support async RyO-DEA interfaces
- o Added <TLD> to escrow-agent-notification interface
- o The escrow-agent-notification uses POST and not PUT, this has been fixed
- o Several clarifications

8.3. Version 02

- o Added and updated several result codes.
- o Added <version> element.
- o Added Content-type definition.

8.4. Version 03

- o Added several result codes.
- o unsignedShort is now used for result code in iirdea schema.
- o Enumeration was removed from the iirdea schema.

8.5. Version 04

- o Added result codes: 2207 and 2208.
- o Removed result codes: 2203.
- o Added clarification regarding the support of HTTP streams.

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8.6. Version 05

- o Added result codes: 2007 and 2008.

8.7. Version 06

- o Added clarification of error code HTTP/403 in Section 4.

8.8. Version 07

- o Added Section 5: "Monitoring compliance with the New gTLD Base Agreement".

8.9. Version 08

- o Reorganized specification structure to allow easier references from new specifications expanding functionality in the ICANN Registry Interfaces.
- o Added Section 1.3 to document object definitions, previously defined in other sections.
- o Added <rriReporting>, <notifications>, and <reports> object descriptions to Section 1.3, and schema definitions to Section 6.
- o Renamed Section 5 title as "Monitoring the reporting status".
- o Updated element <rydeSpecMapping> as OPTIONAL in the <rdeReport>

schema.

- o Added OPTIONAL attribute "domainCount" to the <iirdea:result> element.
- o Added OPTIONAL element <results> to the <rdeNotification> schema.
- o Added result codes: 2105, 2209, 2210 and 2211.
- o Added "gTLD Base Registry Agreement" references.
- o Added clarifications to Section 4.

9. IANA Considerations

TODO

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10. Security Considerations

TODO

11. References

11.1. Normative References

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draft-lozano-icann-registry-interfaces-08
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Authors' Addresses

Gustavo Lozano
ICANN
12025 Waterfront Drive, Suite 300
Los Angeles 90292
US

Phone: +1.3103015800
Email: gustavo.lozano@icann.org

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Eduardo Alvarez
ICANN
12025 Waterfront Drive, Suite 300
Los Angeles 90292
US

Phone: +1.3103015800
Email: eduardo.alvarez@icann.org