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Extensible Provisioning Protocol XRI Authority Mapping
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Abstract

This document describes an Extensible Provisioning Protocol (EPP) mapping for the provisioning and management of XRI Authority stored in a shared centralized repository (a.k.a. XRI Registry). Specified in XML, the mapping defines EPP command syntax and semantics as applied to XRI Authority objects.

Conventions Used In This Document

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].

In examples, "C:" represents lines sent by an EPP client and "S:" represents lines returned by an EPP server. Indentation and white space in examples is provided only to show element

relationships and is not a REQUIRED feature of the proposal. 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.

Namespace Naming Convention

For the purpose of illustration, the target namespace defined in this document is designated using the IETF convention, urn:ietf:params:xml:ns:xriAU-1.0. However, in the case that this document is not submitted to IETF as an Internet Draft, but used for NeuStar internal development only instead, the target namespace shall be denoted as a NeuStar specific character string, such as <http://www.neustar.biz/xrp/xriAU-1.0>. The exact syntax of the NeuStar specific namespace denotation will be defined in other documents.

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1 Introduction

The OASIS Extensible Resource Identifiers (XRI) [XRI] provide a standard means of abstractly identifying a resource independent of any particular concrete representation of that resource, or, in the case of a completely abstract resource, of any representation at all.

The OASIS XRI Data Interchange (XDI) specifications [XDI] define a standard for sharing, linking, and synchronizing data ("dataweb") over the Internet and other networks using XML documents and Extensible Resource Identifiers (XRI).

The OASIS XRI abstract identifier and XDI data interchange protocols create a new layer of infrastructure that enables individuals and organizations to establish persistent Internet identities and form long-term, trusted peer-to-peer data sharing relationships.

An i-name is a human-friendly XRI intended for everyday use in browsers, email clients, web pages - anyplace a web address (URI) would appear today, for representing a person or an organization in the real world.

An i-number is a special type of XRI that differs from an i-name in one critical way: once assigned to a resource, it MUST NOT be reassigned. For this reason i-numbers are typically numbers and punctuation characters (similar to an IP address) and are thus much harder for humans to use.

An XRI authority represents the real world entity, and can be one of three types: personal authority, organizational authority and network authority. While XRI personal and organizational authorities share the same properties, XRI network authorities are special entities that provide XRI related services.

The Extensible Provisioning Protocol (EPP) [RFC 3730] provides a complete description of EPP command and response structures for provisioning objects in a centralized repository.

This document describes an XRI authority object mapping for version 1.0 of the Extensible Provisioning Protocol (EPP). This mapping is specified using the Extensible Markup Language (XML) 1.0 as described in [XML] and XML Schema notation as described in [XML SCHEMA]. Notification or delivery methods for XRI authority objects are not covered by this document.

1.1 Relationship of XRI Authority and I-Number Objects

The EPP mapping for XRI i-number objects is described in [EPP INU]. This document assumes that XRI authority objects have a super-ordinate relationship to subordinate XRI i-number objects. For example, XRI authority object, "@!(!!1015!3333.4444)", has a super-ordinate relationship to an XRI i-number object, such as "@!1002.3333.4444.ABCD". EPP actions (such as object transfers) that do not preserve this relationship MUST be explicitly disallowed. The relationship can only be changed via EPP transfer operations on XRI authority objects indirectly.

An XRI i-number object cannot be created in a repository without a super-ordinate XRI authority object, which MUST be specified via an <xriINU:authId> element when the XRI i-number object is created.

Additionally, this document assumes that XRI i-numbers MAY be used to establish trustee relationship among XRI authority objects implicitly or indirectly. An XRI i-number, either stored in the local registry, or residing in another registry, MAY be specified as a trustee of an XRI authority object, subject to local server policies. While any XRI i-numbers can be referred as trustees via <xriINA:trustee> elements, a server MAY REQUIRE that only active (unexpired) XRI i-numbers can be referred as trustees to XRI authority objects. Methods for validating XRI i-number objects residing in different registries are outside the scope of this specification.

1.2 Relationship of XRI Authority and I-Name Objects

The EPP mapping for XRI i-name objects is described in [EPP INA]. This document assumes that XRI authority objects have a super-ordinate relationship to subordinate XRI i-name objects. For example, XRI authority object, "`=!(!!1030!5555.6666)`", has a super-ordinate relationship to an XRI i-name object, such as "`=John.Doe`". EPP actions (such as object transfers) that do not preserve this relationship **MUST** be explicitly disallowed. The relationship can only be changed via EPP transfer operations on XRI authority objects indirectly, or via EPP transfer operations on XRI i-name objects directly.

An XRI i-name object cannot be created in a repository without a superordinate XRI authority object, which **MUST** be specified via an `<xriINA:authId>` element when the XRI i-number object is created.

1.3 Relationship among XRI Authority Objects

This document assumes that XRI authority objects can be categorized into personal authorities, organizational authorities and network authorities, based on i-numbers associated with the XRI authority objects. XRI authority objects without associated i-numbers **MAY** exist in the depository for acting as trustees of other XRI authority objects, subject to local server policies.

This document assumes that XRI authority objects have a many-to-many relationship to XRI network authority objects, via the Ref attributes, i.e. `<xriINA:ref>` elements, associated with XRI authority objects. Ref attributes can be added or removed from an XRI authority object via EPP update operations. The prefix or base components of Refs associated with XRI authority objects establish the relationship between XRI authority and network authority objects.

This document assumes that XRI authority objects can be associated with other XRI authority objects via trustee relationship, in addition to the one established implicitly via XRI i-numbers, subject to local server policies. While any XRI authority objects, either stored in the local registry, or

residing in another registry, can be referred as trustees via <xriINA:trustee> elements, a server MAY REQUIRE that only those XRI authority objects with active (unexpired) XRI i-name or i-number object associations can have trustee relationship to others. Methods for validating XRI authority objects residing in different registries are outside the scope of this specification.

2 Object Attributes

An EPP XRI authority object has attributes and associated values that may be viewed and modified by the sponsoring client or the server. This section describes each attribute type in detail. The formal syntax for the attribute values described here can be found in the "Formal Syntax" section of this document and in the appropriate normative references.

2.1 XRI Authority and Trustee Identifiers

All EPP XRI authorities are identified by a server-unique identifier. XRI authority identifiers are character strings with a specified minimum length, a specified maximum length, and a specified format. Authority identifiers use the "authIdType" authority identifier syntax described in the "Formal Syntax" section of this document.

Trustees associated with XRI authority objects MAY also be referred by XRI authority identifiers. XRI authority identifiers MAY be XRIs, for referencing XRI authorities that reside in the same registry or in other registries. XRI authority identifiers MAY be relative to the current registry, or absolute XRIs for referring to XRI authority objects that resides in other registries. A server MAY specify policies on the formats required for XRI authorities identifiers.

Additionally, XRI authority identifiers MAY be changed after XRI authority objects are created, subject to local server policies.

2.2 Escrow Agent

All Authorities MUST be associated to an escrow agent subject to local server policies. The escrow agent associated with an XRI authority objects MAY also be referred by XRI authority identifiers. XRI authority identifiers MAY be XRIs, for referencing XRI authorities that reside in the same registry or in other registries. XRI authority identifiers MAY be relative to the current registry, or absolute XRIs for referring to XRI authority objects that resides in other registries. A server MAY specify policies on the formats required for XRI authorities identifiers.

2.3 Contact Agent

All Authorities MUST be associated to a contact agent subject to local server policies. The contact agent associated with an XRI authority objects MAY also be referred by XRI authority identifiers. XRI authority identifiers MAY be XRIs, for referencing XRI authorities that reside in the same registry or in other registries. XRI authority identifiers MAY be relative to the current registry, or absolute XRIs for referring to XRI authority objects that resides in other registries. A server MAY specify policies on the formats required for XRI authorities identifiers.

2.4 XRI Synonyms

All EPP XRI authorities can be associated with zero or more XRI synonyms, which can be classified into two categories: XRI i-numbers and XRI i-names. Synonyms are depicted in XRDS resolution documents as CanonicalIds, LocalIds, EquivID, and CanonicalEquivID. The LocalID and CanonicalID attributes are generated by the registry, while EquivID and CanonicalEquivID's may be provisioned.

2.4.1 XRI I-Numbers

All EPP XRI authority objects can be associated with zero or more XRI i-number objects. XRI i-number are character strings with a specified minimum length, a specified maximum length, and a specified format. XRI i-numbers MAY be relative to the current registry and the format of XRI i-numbers is subject to local server policies. At global or top level, they MAY start

with a "=", for personal i-numbers, a "@", for organizational i-numbers, or a "!", for network i-numbers. The syntax for XRI i-numbers described in this document MUST conform to the format specified in [XRI]. In EPP XML messages, XRI i-numbers use the "inumberType" syntax described in the "Formal Syntax" section of this document.

Additionally, XRI i-numbers MAY be used to establish trustee relationship among XRI authority objects implicitly or indirectly. An XRI i-number, either stored in the local registry, or residing in another registry, MAY be specified as a trustee of an XRI authority object, subject to local server policies.

2.4.2 XRI I-Names

All EPP XRI authority objects can be associated with zero or more XRI i-name objects. XRI i-name are character strings with a specified minimum length, a specified maximum length, and a specified format. XRI i-names MAY be relative to the current registry and start with a "*". Or, at global or top level, XRI i-names MAY start with a "=" for personal i-names, or a "@" for organizational i-names. The syntax for XRI i-numbers described in this document MUST conform to the format specified in [XRI]. In EPP XML messages, XRI i-names use the "inameType" syntax described in the "Formal Syntax" section of this document.

2.4.3 XRI EquivID

All EPP XRI authority objects can be associated with zero or more XRI EquivID's. XRI EquivID's are attributes that can be added to or removed from an XRI authority object. EquivID is used to assert an absolute identifier for the target resource that is not equivalent to the CanonicalID or CanonicalEquivID. The syntax for XRI EquivID described in this document MUST conform to the format specified in [XRI]. In EPP XML messages, XRI EquivID use the "synonymAddType and anyURI" syntax described in the "Formal Syntax" section of this document.

2.4.4 XRI CanonicalEquivID

All EPP XRI authority objects can be associated with a single CanonicalEquivID. CanonicalEquivID is an attribute that can be added to or removed from an XRI authority object.

CanonicalEquivID is used to assert the canonical identifier for the target resource. The syntax for XRI CanonicalEquivID described in this document MUST conform to the format specified in [XRI]. In EPP XML messages, XRI CanonicalEquivID use the "anyURI" syntax described in the "Formal Syntax" section of this document.

2.5 XRI References (Refs)

All EPP XRI authority objects can be associated with zero or more XRI references (refs). XRI refs are attributes that can be added to or removed from an XRI authority object. They MUST start with a "!", and are used to establish relationship to XRI network authorities. An XRI authority MUST not have both XRI ref(s) and XRI redirect(s). The syntax for XRI refs is described in this document MUST conform to the format specified in [XRI]. In EPP XML messages, XRI refs use the "refAddType and refInfType" syntax described in the "Formal Syntax" section of this document.

2.5.1 Priority

All EPP XRI refs MAY be associated with a priority value, which is defined as a 16-bit unsigned integer, specified in the XML schema via an "unsignedShort" data type, with lower values corresponding to higher priority.

For XRI provisioning purpose, this field is OPTIONAL. It is used to indicate the preference of XRI refs to be presented by XRI resolvers for XRI i-numbers associated with the XRI authority object.

2.6 XRI Redirect

All EPP XRI authority objects can be associated with zero or more XRI Redirect. XRI redirects are attributes that can be added to or removed from an XRI authority object to locate another XRDS document authorized to describe the target resource. An XRI authority MUST not have both XRI ref(s) and XRI redirect(s). The syntax for XRI redirect is described in this document MUST conform to the format specified in [XRI]. In EPP XML messages, XRI redirect use the "uriAddType, uriInfType and anyURI" syntax described in the "Formal Syntax" section of this document.

2.6.1 Priority

All EPP XRI redirect MAY be associated with a priority value, which is defined as a 16-bit unsigned integer, specified in the XML schema via an "unsignedShort" data type, with lower values corresponding to higher priority.

For XRI provisioning purpose, this field is OPTIONAL. It is used to indicate the preference of XRI redirects to be presented by XRI resolvers for XRI i-numbers associated with the XRI authority object.

2.6.2 Append

Each Redirect MAY be associated with an append value. The append value is used to construct a final redirect during service selection in resolution. It is represented by the "appendAttr" type in the schema. The append attribute has the following possible values:

Local:

Tells a resolver to append the Path and query (including the leading delimiter) component of a query XRI (QXRI). This is the default if the attribute is empty or omitted

Path:

Tells a resolver to append the path only (including the leading "/")

Query:

Tells a resolver to append the query only (including the leading "?")

Qxri:

Tells the resolver to append the entire QXRI (including the leading "xri://")

None:

This value tells a resolver to not modify the URI value.

Authority:

Tells the resolver to append the authority string only (not including the trailing "/")

2.7 Extension

All EPP XRI authority objects has an extension block, which is a string representation of the XML elements that will be appended to the end of the xrd:XRD element when the authority is resolved. The string should be escaped or otherwise enclosed in a CDATA section.

2.8 XRI Service Endpoints

All EPP XRI authority objects can be associated with zero or more XRI service endpoints, which are represented by concrete URIs for identifying access endpoints of local services to be provided. At global or top level, XRI concrete URIs MAY be applied to XRI network authority objects only and XRI personal or organizational authority objects MAY be restricted without any concrete URIs.

An XRI Service Endpoints (SEP) record MUST contain the following fields:

2.8.1 Identifier

A SEP MUST be associated with a service endpoint identifier, to uniquely identify the service endpoint record associated with the XRI authority object. SEP identifiers are character strings with a specified minimum length, a specified maximum length, and a specified format. SEP identifiers use the "idType" identifier syntax described in the "Formal Syntax" section of this document.

2.8.2 Provider Identifier

A SEP MAY be associated with a provider identifier, to uniquely identify the provider that manages the services associated with the SEP. SEP provider identifier MAY be OPTIONAL if the SEP is used for generic authority resolution, but MUST be REQUIRED for trusted authority resolution [XRI]. SEP provider identifiers are character strings with a specified minimum length, a specified maximum length, and a specified format. SEP provider identifiers use the "xriType" type syntax described in the "Formal Syntax" section of this document.

2.8.3 Priority

A SEP MUST be associated with a priority value, which is defined as a 16-bit unsigned integer, specified in the XML schema via an "unsignedShort" data type, with lower values corresponding to higher priority.

For XRI provisioning purpose, this field is OPTIONAL. It is used to indicate the preference of local service resolution to be performed by XRI resolvers.

2.8.4 Type

A SEP MAY be associated with one or more type values, which are XRI identifiers for specifying the types of the local services being provided. SEP type values are character strings with a specified minimum length, a specified maximum length, and a specified format. SEP types use the "xriType" type syntax described in the "Formal Syntax" section of this document. A set of pre-defined, well-known SEP types are specified in [XRI].

2.8.4.1 Match

Each Type may be associated with an optional match attribute. The match attribute is important for service selection in XRI resolution. It is represented by the "matchAttr" type in the schema. The match attribute has the following possible values.

Default:

Match only if there are no other matches in the XRD on this element type (except another default match). This is the default value if an instance of an element that accepts the @xrd:match attribute is entirely absent.

Any:

Match any value (null or non-null).

Non-null:

Match any value except null.

Null:

Match a null value.

2.8.4.2 Select

Each Type may be associated with an optional boolean select attribute. The select attribute is important for service selection in XRI resolution. The select attribute is a Boolean with a default value of false.

2.8.5 Path

A SEP MAY be associated with one or more path values. Path values allow authorities to use the local path portion of an XRI to select a SEP. SEP type values are character strings with a specified minimum length, a specified maximum length, and MUST conform to the "xri-path" ABNF production specified in Appendix A of [XRI SYNTAX]. The selection of SEP involving the Path field is defined in Section 5.6 (Path Matching) of [XRI RES].

2.8.5.1 Match

Each Path may be associated with an optional match attribute. It is represented by the "matchAttr" type in the schema. The match attribute is important for service selection in XRI resolution. The match attribute has the following possible values.

Default:

Match only if there are no other matches in the XRD on this element type (except another default match). This is the default value if an instance of an element that accepts the @xrd:match attribute is entirely absent.

Any:

Match any value (null or non-null).

Non-null:

Match any value except null.

Null:

Match a null value.

2.8.5.2 Select

Each Path may be associated with an optional boolean select attribute. The select attribute is important for service selection in XRI resolution. The select attribute is type Boolean and has a default value of false.

2.8.6 Media Types

A SEP MAY be associated with one or more media types, which describe the content types being serviced by the SEP. A media type value MUST be one of media types described in [RFC 2046].

If a SEP is not associated with a media type value, no assumption can be made about the type of data available at this local service access point.

2.8.6.1 Match

Each Media Type may be associated with an optional match attribute. It is represented by the "matchAttr" type in the schema. The match attribute is important for service selection in XRI resolution. The match attribute has the following possible values.

Default:

Match only if there are no other matches in the XRD on this element type (except another default match). This is the default value if an instance of an element that accepts the @xrd:match attribute is entirely absent.

Any:

Match any value (null or non-null).

Non-null:

Match any value except null.

Null:

Match a null value.

2.8.6.2 Select

Each Media Type may be associated with an optional boolean select attribute. The select attribute is important for service selection in XRI resolution. The select attribute is of type Boolean and has a default of false.

2.8.7 URIs

A SEP MAY be associated with one or more URIs, which MAY have "https://" or "http://" as transport, for identifying the local service access endpoints.

2.8.7.1 Append

Each URI MAY be associated with an append value. The append value is used to construct a final URI during service selection in resolution. It is represented by the “appendAttr” type in the schema. The append attribute has the following possible values:

Local:

Tells a resolver to append the Path and query (including the leading delimiter) component of a query XRI (QXRI). This is the default if the attribute is empty or omitted

Path:

Tells a resolver to append the path only (including the leading “/”)

Query:

Tells a resolver to append the query only (including the leading “?”)

Qxri:

Tells the resolver to append the entire QXRI (including the leading “xri://”)

None:

This value tells a resolver to not modify the URI value.

Authority:

Tells the resolver to append the authority string only (not including the trailing “/”)

2.8.7.2 Priority

Each URI MUST be associated with a priority value, which is defined as a 16-bit unsigned integer, specified in the XML schema via an “unsignedShort” data type, with lower values corresponding to higher priority.

For XRI provisioning purpose, this field is OPTIONAL. It is used to indicate the preference of URIs to be used for performing local service accesses by XRI resolvers. A URI with highest priority SHOULD be tried first, with the URIs with the next highest priority as the backup, if the first URI is not accessible. If two or more URIs are assigned with the same priority value, the URIs SHOULD have equal responsibility for the service endpoint record and XRI resolvers SHOULD try each of them before moving onto the URIs with next highest priority.

2.8.8 SEP Ref

A SEP MAY be associated with one or more SEP refs. This is identical to the XRI ref in the authority except processed only in the context of the service endpoint selection. An SEP has a choice between this or URIs or Redirect.

2.8.8.1 Priority

A SEP Ref MUST can be associated with a priority value, which is defined as a 16-bit unsigned integer, specified in the XML schema via an "unsignedShort" data type, with lower values corresponding to higher priority.

For XRI provisioning purpose, this field is OPTIONAL. It is used to indicate the preference of ref to be performed by XRI resolvers within an SEP.

2.8.9 SEP Redirect

A SEP MAY be associated with one or more SEP redirects. This is identical to the XRI redirect in the authority except processed only in the context of the service endpoint selection. An SEP has a choice between this or URIs or Refs.

2.8.9.1 Priority

A SEP Redirect can be associated with a priority value, which is defined as a 16-bit unsigned integer, specified in the XML schema via an "unsignedShort" data type, with lower values corresponding to higher priority.

For XRI provisioning purpose, this field is OPTIONAL. It is used to indicate the preference of redirect to be performed by XRI resolvers within an SEP.

2.8.9.2 Append

Each SEP Redirect MAY be associated with an append value. The append value is used to construct a final redirect during service selection in resolution. It is represented by the "appendAttr" type in the schema. The append attribute has the following possible values:

Local:

Tells a resolver to append the Path and query (including the leading delimiter) component of a query XRI (QXRI). This is the default if the attribute is empty or omitted

Path:

Tells a resolver to append the path only (including the leading "/")

Query:

Tells a resolver to append the query only (including the leading "?")

Qxri:

Tells the resolver to append the entire QXRI (including the leading "xri://")

None:

This value tells a resolver to not modify the URI value.

Authority:

Tells the resolver to append the authority string only (not including the trailing “/”)

2.8.10 Extension

Each sep has an extension block, which is a string representation of the XML elements that will be appended to the end of the xrd:Service element corresponding to this sep when the parent authority is resolved. The string should be escaped or otherwise enclosed in a CDATA section.

2.9 Client Identifiers

All EPP clients are identified by a server-unique identifier. Client identifiers are character strings with a specified minimum length, a specified maximum length, and a specified format. Client identifiers use the “clIDType” client identifier syntax described in [RFC 3730].

2.10 Social Information

All EPP XRI authority objects MAY contain social information representing the real world entity, either a person or an organization. Social information consist of personal/organizational names, addresses, telephone numbers and email addresses. The requirement of social information to be associated with XRI authority objects is subject to local server policies.

2.10.1 Personal and Organizational Names

Personal and organizational names associated with an XRI authority are represented using character strings. These strings have a specified minimum length and a specified maximum length. Personal and organizational names MUST be provided in UTF-8 [RFC 2279].

2.10.2 Address

Every XRI authority has associated postal address information. A postal address contains OPTIONAL street information, city information, OPTIONAL state/province information, an OPTIONAL postal code, and a country identifier. Address information MUST be provided in UTF-8 [RFC 2279].

2.10.2.1 Street, City, and State or Province

Street, city, and state or province information is represented using character strings. These strings have a specified minimum length and a specified maximum length.

2.10.2.2 Postal Code

Postal codes are represented using character strings. These strings have a specified minimum length and a specified maximum length.

2.10.2.3 Country

Country identifiers are represented using two-character identifiers specified in [ISO 3166].

2.10.3 Telephone Numbers

Telephone number structure is derived from structures defined in [E164A]. Telephone numbers described in this mapping are character strings that MUST begin with a plus sign ("+", ASCII value 0x002B), followed by a country code defined in [E164B], followed by a dot (".", ASCII value 0x002E), followed by a sequence of digits representing the telephone number. An OPTIONAL "x" attribute is provided to note telephone extension information. An XRI authority can be associated with zero, one or two telephone OPTIONAL numbers, one OPTIONAL fax number, and one OPTIONAL pager number.

2.10.4 Email Addresses

Email address syntax is defined in [RFC 2822]. This mapping does not prescribe minimum or maximum lengths for character strings used to represent email addresses. An XRI authority can be associated with zero, one or two OPTIONAL email addresses.

2.11 *Status Values*

An XRI authority object **MUST** always have at least one associated status value. Status values can be set only by the client that sponsors an XRI authority object and by the server on which the object resides. A client can change the status of an XRI authority object using the EPP <update> command. Each status value **MAY** be accompanied by a string of human-readable text that describes the rationale for the status applied to the object.

A client **MUST NOT** alter status values set by the server. A server **MAY** alter or override status values set by a client subject to local server policies. The status of an object **MAY** change as a result of either a client-initiated transform command or an action performed by a server operator.

Status values that can be added or removed by a client are prefixed with "client". Corresponding status values that can be added or removed by a server are prefixed with "server". Status values that do not begin with either "client" or "server" are server-managed.

Status Value Descriptions:

- clientAssociateProhibited, serverAssociateProhibited

Requests to associate or link XRI i-numbers, i-names and trustees to the object **MUST** be rejected. It does not prohibit the object itself from adding or removing other XRI authority objects as its trustees.

- clientDeleteProhibited, serverDeleteProhibited

Requests to delete the object **MUST** be rejected.

- clientHold, serverHold

XRI resolution information for the XRI i-numbers and i-names associated with the object **MUST NOT** be published for the object.

- clientTransferProhibited, serverTransferProhibited

Requests to transfer the object **MUST** be rejected.

- clientUpdateProhibited, serverUpdateProhibited

Requests to update the object (other than to remove this status) MUST be rejected.

- Ok

This is the normal status value for an object that has no pending operations or prohibitions. This value is set and removed by the server as other status values are added or removed.

- Linked -

The XRI authority object has at least one active association with another object, such as an XRI i-number, i-name or authority object. Servers SHOULD provide services to determine existing object associations.

- pendingAssociate, pendingCreate, pendingDelete, pendingINameTransfer, pendingTransfer, pendingUpdate -

A transform command has been processed for the object, either directly, in the case of pendingCreate, pendingDelete, pendingTransfer, pendingUpdate, or indirectly, in the case of pendingAssociate, pendingINameTransfer, but the action has not been completed by the server. Server operators can delay action completion for a variety of reasons, such as to allow for human review or third-party action. A transform command that is processed, but whose requested action is pending, is noted with response code 1001.

With two exceptions, transform commands MUST be rejected when a pendingAssociate, pendingCreate, pendingDelete, pendingINameTransfer, pendingTransfer, or pendingUpdate status is set. One exception is that a <transfer> command to approve, reject, or cancel a transfer MAY be processed while an object is in "pendingTransfer" status. The other exception is that a <transfer> command to request a transfer MUST be rejected while an object is in "pendingINameTransfer" status, at the same time, other transform commands MAY be processed, subject to local server policies.

When the requested action has been completed, the pendingCreate, pendingDelete, pendingTransfer, or pendingUpdate status value MUST be removed. All clients

involved in the transaction MUST be notified using a service message that the action has been completed and that the status of the object has changed.

"ok" status MAY only be combined with "linked" status.

"linked" status MAY be combined with any status.

"pendingDelete" status MUST NOT be combined with either "clientDeleteProhibited" or "serverDeleteProhibited" status.

"pendingTransfer" status MUST NOT be combined with either "clientTransferProhibited" or "serverTransferProhibited" status.

"pendingUpdate" status MUST NOT be combined with either "clientUpdateProhibited" or "serverUpdateProhibited" status.

The pendingAssociate, pendingCreate, pendingDelete, pendingINameTransfer, pendingTransfer, and pendingUpdate status values MUST NOT be combined with each other.

Other status combinations not expressly prohibited MAY be used.

2.12 *Dates and Times*

Date and time attribute values MUST be represented in Universal Coordinated Time (UTC) using the Gregorian calendar. The extended date-time form using upper case "T" and "Z" characters defined in [RFC 3339] MUST be used to represent date-time values as XML Schema does not support truncated date-time forms or lower case "t" and "z" characters.

2.13 *Authorization Information*

Authorization information is associated with XRI authority objects to facilitate transfer operations. Also, it MAY BE REQUIRED for processing <info>, <delete> and <update> commands, or for XRI i-names transfer operations and XRI i-names and i-numbers create operations. Authorization information is assigned when an XRI authority object is created, and it might be updated in the future. This specification describes password-based authorization information, though other mechanisms are possible.

Subject to local server policies, a server MAY REQUIRE transfer tokens, which can be one-time, single-use passwords, to be used for facilitating transfer operations among clients, in addition to authorization information associated with XRI authority objects. If REQUIRED, transfer tokens MUST be specified by clients when a transfer is requested, or generated by the server for a transfer request; they MUST be provided to approve transfer requests. Transfer tokens are character strings with a specified minimum length, a specified maximum length, and a specified format. Transfer tokens use the "trTokenType" transfer token syntax described in the "Formal Syntax" section of this document.

3 EPP Command Mapping

A detailed description of the EPP syntax and semantics can be found in [RFC 3730]. The command mappings described here are specifically for use in provisioning and managing XRI authority objects via EPP.

3.1 EPP Query Commands

EPP provides three commands to retrieve XRI authority information:

<check> to determine if an XRI authority object can be provisioned with a repository,

<info> to retrieve detailed information associated with an XRI authority object, and

<transfer> to retrieve XRI authority object transfer status information.

3.1.1 EPP <check> Command

The EPP <check> command is used to determine if an object may be provisioned within a repository. It provides a hint that allows a client to anticipate the success or failure of provisioning an object using the <create> command. Object availability and provisioning conditions are a matter of server policy.

In addition to the standard EPP command elements, the <check> command MUST contain an <xriAU:check> element that identifies the XRI authority namespace and the location of the XRI authority schema. The <xriAU:check> element contains the following child elements:

One or more <xriAU:authId> elements that contain the identifiers of the XRI authority objects to be queried.

Example <check> command:

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd">
C:  <command>
C:    <check>
C:      <xriAU:check
C:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
C:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
C:        xriAU-1.0.xsd">
C:        <xriAU:authId>FOO-BAR-ID</xriAU:authId>
C:        <xriAU:authId>JOHN-DOE-ID</xriAU:authId>
C:        <xriAU:authId>ANYONE-ANYWHERE-ID</xriAU:authId>
C:        <xriAU:authId>!!1234</xriAU:authId>
C:        <xriAU:authId>=!1001.2222.3333.4444</xriAU:authId>
C:        <xriAU:authId>@!1011.2222.3333.4444</xriAU:authId>
C:      </xriAU:check>
C:    </check>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

When a <check> command has been processed successfully, the EPP <resData> element MUST contain a child <xriAU:chkData> element that identifies the XRI authority namespace and the location of the XRI authority schema. The <xriAU:chkData> element contains one or more <xriAU:cd> elements that contain the following child elements:

- An <xriAU:authId> element that contains the identifier of the queried XRI authority object. This element MUST contain an "avail" attribute whose value indicates object availability (can it be provisioned or not) at the moment the <check> command was completed. A value of "1" or "true" means that the object can be provisioned. A value of "0" or "false" means that the object can not be provisioned.
- An OPTIONAL <xriAU:reason> element that MAY be provided when an object can not be provisioned. If present, this element contains server-specific text to help explain why the object can not be provisioned. This text MUST be represented in the

response language previously negotiated with the client; an OPTIONAL "lang" attribute MAY be present to identify the language if the negotiated value is something other than the default value of "en" (English).

Example <check> response:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
S:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
S:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <xriAU:chkData
S:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
S:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
S:        xriAU-1.0.xsd">
S:        <xriAU:cd>
S:          <xriAU:authId avail="0">FOO-BAR-ID</xriAU:authId>
S:          <xriAU:reason>Reserved</xriAU:reason>
S:        </xriAU:cd>
S:        <xriAU:cd>
S:          <xriAU:authId avail="1">JOHN-DOE-ID</xriAU:authId>
S:        </xriAU:cd>
S:        <xriAU:cd>
S:          <xriAU:authId avail="0">ANYONE-ANYWHERE-ID</xriAU:authId>
S:        </xriAU:cd>
S:        <xriAU:cd>
S:          <xriAU:authId avail="0">!!1234</xriAU:authId>
S:        </xriAU:cd>
S:        <xriAU:cd>
S:          <xriAU:authId avail="1">=!1001.2222.3333.4444</xriAU:authId>
S:        </xriAU:cd>
S:        <xriAU:cd>
S:          <xriAU:authId avail="0">@!1011.2222.3333.4444</xriAU:authId>
S:          <xriAU:reason>Not authorized</xriAU:reason>
S:        </xriAU:cd>
S:      </xriAU:chkData>
S:    </resData>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54321-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

An EPP error response MUST be returned if a <check> command can not be processed for any reason.

3.1.2 EPP <info> Command

The EPP <info> command is used to retrieve information associated with an XRI authority object. The response to this command MAY vary depending on the identity of the querying client, use of authorization information, and server policy towards unauthorized clients. If the querying client is the sponsoring client, all available information MUST be returned. If the querying client is not the sponsoring client, but the client provides valid authorization information, all available information MAY be returned. If the querying client is not the sponsoring client, and the client does not provide valid authorization information, server policy determines which OPTIONAL elements are returned.

In addition to the standard EPP command elements, the <info> command MUST contain an <xriAU:info> element that identifies the XRI authority namespace and the location of the XRI authority schema.

The <xriAU:info> element contains the following child elements:

- An <xriAU:authId> element that contains the identifier of the XRI authority object to be queried. An OPTIONAL "control" attribute is available to control return of information describing XRI i-names and i-numbers associated with the XRI authority object. A value of "all" returns information describing both XRI i-names, i-numbers and i-service objects associated with the XRI authority object. A value of "iname" returns information describing only for associated XRI i-names. A value of "inumber" returns information describing only for associated XRI i-numbers. A value of "iservice" returns information describing only for associated XRI i-service objects. A value of "none" (the default, which MAY be absent) returns no information describing associated XRI i-names, i-numbers and i-service objects.
- An OPTIONAL <xriAU:authInfo> element that contains authorization information associated with the XRI authority object. If this element is not provided or if the authorization information is invalid, server policy determines if the command is rejected or if response information will be returned to the client.

Example <info> command for querying an XRI personal authority object:

```

C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd">
C:  <command>
C:    <info>
C:      <xriAU:info
C:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
C:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
C:        xriAU-1.0.xsd">
C:        <xriAU:authId control="all">=!(!!1003!4567!8901)</xriAU:authId>
C:        <xriAU:authInfo>
C:          <xriAU:pw>2fooBAR</xriAU:pw>
C:        </xriAU:authInfo>
C:      </xriAU:info>
C:    </info>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>

```

Example <info> command for querying an XRI network authority object:

```

C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd">
C:  <command>
C:    <info>
C:      <xriAU:info
C:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
C:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
C:        xriAU-1.0.xsd">
C:        <xriAU:authId>!!1003</xriAU:authId>
C:        <xriAU:authInfo>
C:          <xriAU:pw>2fooBAR</xriAU:pw>
C:        </xriAU:authInfo>
C:      </xriAU:info>
C:    </info>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>

```

When an <info> command has been processed successfully, the EPP <resData> element MUST contain a child <xriAU:infData> element that identifies the XRI authority namespace and the location of the XRI authority schema. Elements that are not OPTIONAL MUST be returned; OPTIONAL elements are returned based on client authorization and server policy. The <xriAU:infData> element contains the following child elements:

- An <xriAU:authId> element that contains the identifier of the XRI authority object.

- Zero or one OPTIONAL <xriAU:escrowAgent> elements that contain other XRI authority identifiers or XRI i-numbers referred as the escrow agent of the XRI authority object. Each <xri:escrowAgent> element contains a REQUIRED "external" boolean attribute, with a "0" or "false" value for indicating that the referred trustee is stored in the local registry, or a "1" or "true" value for indicating that the referred trustee is residing in another registry. Each <xri:escrowAgent> element contains the following child elements, with exact one child element to be specified.
 - An OPTIONAL <xriAU:authId> element that contains the identifier of an XRI authority object to be referred as the escrow agent.
 - An OPTIONAL <xriAU:inumber> element that contains the i-number used as the identifier of an XRI i-number object to be referred as the escrow agent.
- Zero or one OPTIONAL <xriAU:contactAgent> elements that contain other XRI authority identifiers or XRI i-numbers referred as the contact agent of the XRI authority object. Each <xri:contactAgent> element contains a REQUIRED "external" boolean attribute, with a "0" or "false" value for indicating that the referred contact agent is stored in the local registry, or a "1" or "true" value for indicating that the referred contact agent is residing in another registry. Each <xri:contactAgent> element contains the following child elements, with exact one child element to be specified.
 - An OPTIONAL <xriAU:authId> element that contains the identifier of an XRI authority object to be referred as a contact agent.
 - An OPTIONAL <xriAU:inumber> element that contains the i-number used as the identifier of an XRI i-number object to be referred as a contact agent.
- An <xriAU:roid> element that contains the Repository Object Identifier assigned to the XRI authority object when the object was created.
- One or more <xriAU:status> elements that describe the status of the XRI authority object.
- An OPTIONAL <xriAU:socialData> element that contains social information associated with XRI authority object. An <xriAU:socialData> element contains the following elements:
 - An <xriAU:postalInfo> element that contains social/postal address information in UTF-8. The <xriAU:postalInfo> element contains the following child elements:
 - An <xriAU:name> element that contains the name of the individual or role represented by the XRI authority.

- An OPTIONAL `<xriAU:org>` element that contains the name of the organization with which the XRI authority is affiliated.
- An `<xriAU:addr>` element that contains address information associated with the XRI authority. An `<xriAU:addr>` element contains the following child elements:
 - One, two, or three OPTIONAL `<xriAU:street>` elements that contain the XRI authority's street address.
 - An `<xriAU:city>` element that contains the XRI authority's city.
 - An OPTIONAL `<xriAU:sp>` element that contains the XRI authority's state or province.
 - An OPTIONAL `<xriAU:pc>` element that contains the XRI authority's postal code.
 - An `<xriAU:cc>` element that contains the XRI authority's country code.
- Zero, one or two OPTIONAL `<xriAU:voice>` elements that contain the XRI authority's voice telephone numbers.
- An OPTIONAL `<xriAU:fax>` element that contains the XRI authority's facsimile telephone number.
- An OPTIONAL `<xriAU:pager>` element that contains the XRI authority's pager number.
- Zero, one or two OPTIONAL `<xriAU:email>` elements that contain the XRI authority's email addresses.
- Zero or more OPTIONAL `<xriAU:trustee>` elements that contain other XRI authority identifiers or XRI i-numbers referred as the trustees of the XRI authority object. Each `<xri:trustee>` element contains a REQUIRED "external" boolean attribute, with a "0" or "false" value for indicating that the referred trustee is stored in the local registry, or a "1" or "true" value for indicating that the referred trustee is residing in another registry. Each `<xri:trustee>` element contains the following child elements, with exact one child element to be specified.
 - An OPTIONAL `<xriAU:authId>` element that contains the identifier of an XRI authority object to be referred as a trustee.
 - An OPTIONAL `<xriAU:inumber>` element that contains the i-number used as the identifier of an XRI i-number object to be referred as a trustee.
- Zero or more OPTIONAL `<xriAU:ref>` elements that contain XRI refs associated with the XRI authority object. Each `<xriAU:ref>` element contains the following attributes:
 - A REQUIRED "priority" attribute that is an unsigned 16-bit integer, indicating the preference of XRI refs to be

presented by XRI resolvers for XRI i-numbers associated with the XRI authority object.

- Zero or more <xriAU:redirect> elements that contain XRI redirects associated with the XRI authority object. Each <xriAU:redirect> element contains the following attributes:
 - An OPTIONAL "priority" attribute that is an unsigned 16-bit integer, indicating the preference of XRI redirect to be presented by XRI resolvers for XRI i-numbers associated with the XRI authority object.
 - An OPTIONAL append attribute of type "appendAttr".
- Zero or more <xri:EquivID> associated with the XRI authority object.
- An OPTIONAL <xri:CanonicalEquivID> associated with the XRI authority object.
- Zero or more <xriAU:sep> elements that contain the XRI service endpoint records associated with the XRI authority object. An <xriAU:sep> element contains the following child elements:
 - A REQUIRED <xriAU:id> element that is used to uniquely identify the XRI service endpoint record within the XRI authority object.
 - A REQUIRED <xriAU:priority> element that contains a priority value associated with the XRI service endpoint record.
 - An OPTIONAL <xriAU:authority> element that is used to uniquely the authority that provides the services associated with the XRI service endpoint record.
 - Zero or more <xriAU:type> elements that specify all service types associated with the XRI service endpoint record. Each <xriAU:type> element contains an OPTIONAL match attribute and an OPTIONAL select attribute that controls service selection during resolution.
 - One or more <xriAU:uri> elements that specify the designated URIs associated with the XRI service endpoint record. Each <xriAU:uri> element contains a REQUIRED "priority" attribute, which is an unsigned 16-bit integer. Each <xriAU:uri> element also contains an OPTIONAL "append" attribute.
 - One or more <xriAU:mediaType> elements that specify the designated media types associated with the XRI service endpoint record. Each <xriAU:mediaType> element contains an OPTIONAL match attribute and an OPTIONAL select attribute that controls service selection during resolution.
 - One or more <xriAU:path> elements that specify the designated paths associated with the XRI service endpoint record. Each <xriAU:path> element contains an OPTIONAL

match attribute and an OPTIONAL select attribute that controls service selection during resolution.

- One or more <xriAU:ref> elements that specify the references associated with the XRI service endpoint record. Each <xriAU:ref> element contains an OPTIONAL priority attribute.
- One or more <xriAU:redirect> elements that specify the redirects associated with the XRI service endpoint record. Each <xriAU:redirect> element contains an OPTIONAL priority as well as an OPTIONAL append attribute.
- One or more <xriAU:localID> elements that specify the local IDs associated with the XRI service endpoint record. Each <xriAU:localID> element contains an OPTIONAL priority attribute.
- An OPTIONAL <xriAU:extension> element that contains the serialized string representing the extension elements associated with the XRI service endpoint record.
- Zero or more OPTIONAL <xriAU:iname> elements that contain the i-names that used as the identifiers of XRI i-name objects associated with the XRI authority object.
- Zero or more OPTIONAL <xriAU:inumber> elements that contain the i-numbers that used as the identifiers of XRI i-number objects associated with the XRI authority object. Each <xriAU:inumber> element contains a REQUIRED "priority" attribute that describes the priority value associated with the XRI i-number object.
- Zero or more OPTIONAL <xriAU:iservice> elements that contains the identifiers of XRI i-service objects associated with the XRI authority object.
- An OPTIONAL <xriAU:extension> element that contains the serialized XML extension elements associated with the XRI authority object.
- An <xriAU:clID> element that contains the identifier of the sponsoring client.
- An <xriAU:crID> element that contains the identifier of the client that created the XRI authority object.
- An <xriAU:crDate> element that contains the date and time of XRI authority object creation.
- An OPTIONAL <xriAU:upID> element that contains the identifier of the client that last updated the XRI authority object. This element MUST NOT be present if the XRI authority object has never been modified.
- An OPTIONAL <xriAU:upDate> element that contains the date and time of the most recent XRI authority object modification. This element MUST NOT be present if the XRI authority object has never been modified.

- An OPTIONAL <xriAU:trDate> elements that contains the date and time of the most recent successful XRI authority object transfer. This element MUST NOT be provided if the XRI authority object has never been transferred.
- An OPTIONAL <xriAU:authInfo> element that contains authorization information associated with the XRI authority object. This element MUST only be returned if the querying client is the current sponsoring client, or if the client supplied valid authorization information with the command.

Example <info> response for an authorized client for an XRI personal authority:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
S:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
S:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <xriAU:infData
S:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
S:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
S:        xriAU-1.0.xsd">
S:        <xriAU:authId>=!(!!1003!4567!8901)</xriAU:authId>
S:        <xriAU:escrowAgent>
S:          <xriAU:authId>FOO-BAR-BIZ</xriAU:authId>
S:        </xriAU:escrowAgent>
S:        <xriAU:contactAgent>
S:          <xriAU:inumber>=!1004.222.333.5555</xriAU:inumber>
S:        </xriAU:contactAgent>
S:        <xriAU:roid>AU_1002-NEUSTAR</xriAU:roid>
S:        <xriAU:status s="clientDeleteProhibited"/>
S:        <xriAU:status s="clientUpdateProhibited"/>
S:        <xriAU:socialData>
S:          <xriAU:postalInfo>
S:            <xriAU:name>John Doe</xriAU:name>
S:            <xriAU:org>Foo Bar, Inc.</xriAU:org>
S:            <xriAU:addr>
S:              <xriAU:street>123 Example Dr.</xriAU:street>
S:              <xriAU:street>Suite 100</xriAU:street>
S:              <xriAU:city>Dulles</xriAU:city>
S:              <xriAU:sp>VA</xriAU:sp>
S:              <xriAU:pc>20166-6503</xriAU:pc>
S:              <xriAU:cc>US</xriAU:cc>
S:            </xriAU:addr>
S:          </xriAU:postalInfo>
S:          <xriAU:voice x="1234">+1.7035555555</xriAU:voice>
S:          <xriAU:voice x="1235">+1.7035555555</xriAU:voice>
S:          <xriAU:fax>+1.7035555556</xriAU:fax>
S:          <xriAU:pager x="1234">+1.7035555557</xriAU:pager>
S:          <xriAU:email>jdoe@example.biz</xriAU:email>
```



```

S:      <xriAU:email>jdoe@example.com</xriAU:email>
S:      </xriAU:socialData>
S:      <xriAU:trustee external="0">
S:          <xriAU:authId>FOO-BAR-BIZ</xriAU:authId>
S:      </xriAU:trustee>
S:      <xriAU:trustee external="0">
S:          <xriAU:inumber>=!1004.222.333.5555</xriAU:inumber>
S:      </xriAU:trustee>
S:      <xriAU:trustee external="1">
S:          <xriAU:authId>@FOO-BAR-BIZ</xriAU:authId>
S:      </xriAU:trustee>
S:      <xriAU:trustee external="1">
S:          <xriAU:inumber>@!2004.222.333.5555</xriAU:inumber>
S:      </xriAU:trustee>
S:      <xriAU:ref priority="10">!!1002</xriAU:ref>
S:      <xriAU:ref priority="15">!!1003!1004</xriAU:ref>
S:      <xriAU:ref priority="20">!!1005!(!1111.2222.3333.4444)</xriAU:ref>
S:      <xriAU:equivID priority="10">http://www.example.biz</xriAU:equivID>
S:      <xriAU:canonicalEquivID>
S:          xri://=!4a76!c2f7!9033.78bd
S:      </xriAU:canonicalEquivID>
S:      <xriAU:iname>=Foo.Bar</xriAU:iname>
S:      <xriAU:iname>=Foo.Bar.2</xriAU:iname>
S:      <xriAU:inumber priority="10">
S:          =!1004.2222.3333.4444</xriAU:inumber>
S:      <xriAU:inumber priority="15">
S:          =!1005.2222.3333.4444</xriAU:inumber>
S:      <xriAU:iservice>Single-Sign-On-1</xriAU:iservice>
S:      <xriAU:iservice>Contact-Me-1</xriAU:iservice>
S:      <xriAU:clID>ClientY</xriAU:clID>
S:      <xriAU:crID>ClientX</xriAU:crID>
S:      <xriAU:crDate>2005-05-03T22:00:00.0Z</xriAU:crDate>
S:      <xriAU:upID>ClientX</xriAU:upID>
S:      <xriAU:upDate>2005-05-05T09:00:00.0Z</xriAU:upDate>
S:      <xriAU:trDate>2005-05-04T09:00:00.0Z</xriAU:trDate>
S:      <xriAU:authInfo>
S:          <xriAU:pw>2fooBAR</xriAU:pw>
S:      </xriAU:authInfo>
S:      </xriAU:infData>
S:      </resData>
S:      <trID>
S:          <clTRID>ABC-12346</clTRID>
S:          <svTRID>54321-XYZ</svTRID>
S:      </trID>
S:  </response>
S:</epp>

```

A server with a different information return policy MAY provide less information in a response.

Example <info> response for an unauthorized client for querying an XRI personal authority object:

```

S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"

```

```

S:      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
S:      xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd">
S:    <response>
S:      <result code="1000">
S:        <msg>Command completed successfully</msg>
S:      </result>
S:      <resData>
S:        <xriAU:infData
S:          xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
S:          xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
S:            xriAU-1.0.xsd">
S:          <xriAU:authId>=!(!!1003!4567!8901)</xriAU:authId>
S:          <xriAU:roid>AU_1002-NEUSTAR</xriAU:roid>
S:          <xriAU:status s="clientDeleteProhibited"/>
S:          <xriAU:status s="clientUpdateProhibited"/>
S:          <xriAU:clID>ClientY</xriAU:clID>
S:          <xriAU:crID>ClientX</xriAU:crID>
S:          <xriAU:crDate>2005-05-03T22:00:00.0Z</xriAU:crDate>
S:          <xriAU:upID>ClientX</xriAU:upID>
S:          <xriAU:upDate>2005-05-05T09:00:00.0Z</xriAU:upDate>
S:          <xriAU:trDate>2005-05-04T09:00:00.0Z</xriAU:trDate>
S:        </xriAU:infData>
S:      </resData>
S:      <trID>
S:        <clTRID>ABC-12346</clTRID>
S:        <svTRID>54321-XYZ</svTRID>
S:      </trID>
S:    </response>
S:</epp>

```

Example <info> response for querying an XRI network authority object:

```

S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
S:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
S:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <xriAU:infData
S:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
S:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
S:          xriAU-1.0.xsd">
S:        <xriAU:authId>!!1003</xriAU:authId>
S:        <xriAU:roid>AU_1003-NEUSTAR</xriAU:roid>
S:        <xriAU:status s="clientDeleteProhibited"/>
S:        <xriAU:status s="clientUpdateProhibited"/>
S:        <xriAU:socialData>
S:          <xriAU:postalInfo>
S:            <xriAU:name>Foo Bar Network, INC.</xriAU:name>
S:            <xriAU:addr>

```

```

S:         <xriAU:street>123 Example Dr.</xriAU:street>
S:         <xriAU:street>Suite 100</xriAU:street>
S:         <xriAU:city>Dulles</xriAU:city>
S:         <xriAU:sp>VA</xriAU:sp>
S:         <xriAU:pc>20166-6503</xriAU:pc>
S:         <xriAU:cc>US</xriAU:cc>
S:     </xriAU:addr>
S: </xriAU:postalInfo>
S: <xriAU:voice x="1234">+1.5715555555</xriAU:voice>
S: <xriAU:voice x="1235">+1.5715555555</xriAU:voice>
S: <xriAU:fax>+1.5715555556</xriAU:fax>
S: <xriAU:pager x="1234">+1.5715555557</xriAU:pager>
S: <xriAU:email>info@example.biz</xriAU:email>
S: </xriAU:socialData>
S: <xriAU:redirect append="qxri">
S:     http://www.example.biz/xri/
S: </xriAU:redirect>
S: <xriAU:sep>
S:     <xriAU:id>AUTHORITY</xriAU:id>
S:     <xriAU:priority>10</xriAU:priority>
S:     <xriAU:authority>
S:         urn:uuid:f0502a17-4503-4463-8516-f1225b330e4d</xriAU:authority>
S:     <xriAU:type match="content"
S:         select="false">xri://$resolution*authority</xriAU:type>
S:     <xriAU:uri priority="15" append=>http://xri.2idi.com/</xriAU:uri>
S:     <xriAU:uri priority="10"
S:         append="local">https://xri.2idi.com/</xriAU:uri>
S: </xriAU:sep>
S: <xriAU:sep>
S:     <xriAU:id>PIC-SERVICE</xriAU:id>
S:     <xriAU:priority>10</xriAU:priority>
S:     <xriAU:type
S:         match="default">xri://$resolution*local</xriAU:type>
S:     <xriAU:uri priority="10"
S:         append="path">http://2idi.pictures.com/</xriAU:uri>
S:     <xriAU:uri priority="20"
S:         append="path">https://2idi.pictures.com/</xriAU:uri>
S:     <xriAU:mediaType match="any">image/gif</xriAU:mediaType>
S:     <xriAU:mediaType match="any">image/jpeg</xriAU:mediaType>
S: </xriAU:sep>
S: <xriAU:sep>
S:     <xriAU:id>MAIL-SERVICE</xriAU:id>
S:     <xriAU:priority>20</xriAU:priority>
S:     <xriAU:authority>xri://!!1002!1234</xriAU:authority>
S:     <xriAU:type
S:         match="content">xri://$resolution*local</xriAU:type>
S:     <xriAU:type
S:         match="content">xri://$resolution*local*generic</xriAU:type>
S:     <xriAU:uri priority="30"
S:         append="qxri">http://2idi.mail.com/</xriAU:uri>
S:     <xriAU:uri priority="10"
S:         append="qxri">https://2idi.mail.com/</xriAU:uri>
S:     <xriAU:mediaType match="content">message/text</xriAU:mediaType>
S: </xriAU:sep>
S: <xriAU:inumber priority="10">!!1003</xriAU:inumber>
S: <xriAU:inumber priority="15">!!1004</xriAU:inumber>
S: <xriAU:clID>ClientY</xriAU:clID>

```

```

S:      <xriAU:crID>ClientX</xriAU:crID>
S:      <xriAU:crDate>2005-05-03T22:00:00.0Z</xriAU:crDate>
S:      <xriAU:upID>ClientX</xriAU:upID>
S:      <xriAU:upDate>2005-05-05T09:00:00.0Z</xriAU:upDate>
S:      <xriAU:authInfo>
S:          <xriAU:pw>2fooBAR</xriAU:pw>
S:      </xriAU:authInfo>
S:      </xriAU:infData>
S:  </resData>
S:  <trID>
S:      <clTRID>ABC-12346</clTRID>
S:      <svTRID>54321-XYZ</svTRID>
S:  </trID>
S: </response>
S:</epp>

```

An EPP error response MUST be returned if an <info> command can not be processed for any reason.

3.1.3 EPP <transfer> Query Command

The EPP <transfer> command provides a query operation that allows a client to determine real-time status of pending and completed transfer requests. In addition to the standard EPP command elements, the <transfer> command MUST contain an "op" attribute with value "query", and an <xriAU:transfer> element that identifies the XRI authority namespace and the location of the XRI authority schema.

The <xriAU:transfer> element contains the following child elements:

- An <xriAU:authId> element that contains the identifier of the XRI authority object to be queried.
- An OPTIONAL <xriAU:authInfo> element that contains authorization information of the XRI authority object associated with the XRI authority object. If this element is not provided or if the authorization information is invalid, server policy determines if the command is rejected or if response information will be returned to the client.

Example <transfer> query command:

```

C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
C:    epp-1.0.xsd">

```

```

C: <command>
C:   <transfer op="query">
C:     <xriAU:transfer
C:       xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
C:       xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
C:       xriAU-1.0.xsd">
C:       <xriAU:authId>=!(!!1003!4567!8901)</xriAU:authId>
C:       <xriAU:authInfo>
C:       <xriAU:pw>2fooBAR</xriAU:pw>
C:       </xriAU:authInfo>
C:     </xriAU:transfer>
C:   </transfer>
C:   <clTRID>ABC-12345</clTRID>
C: </command>
C:</epp>

```

When a <transfer> query command has been processed successfully, the EPP <resData> element MUST contain a child <xriAU:trnData> element that identifies the XRI authority namespace and the location of the XRI authority schema. The <xriAU:trnData> element contains the following child elements:

- An <xriAU:authId> element that contains the identifier of the XRI authority object.
- An OPTIONAL <xriAU:source> element that contains the identifier of the source XRI authority object involved in the transfer operation of merging XRI trustees, XRI refs, subordinate XRI i-names and i-numbers. This element MUST NOT be specified if the <transfer> request operation does not include an OPTIONAL <xriAU:target> element; otherwise, this element MUST be specified if the XRI authority object identified by the <xriAU:authId> element in the <transfer> query operation plays the "target" role in the transfer operation. This element MUST NOT be combined with an <xriAU:target> element.
- An OPTIONAL <xriAU:target> element that contains the identifier of the target XRI authority object involved in the transfer operation of merging XRI trustees, XRI refs, subordinate XRI i-names and i-numbers. This element MUST NOT be specified if the <transfer> request operation does not include an OPTIONAL <xriAU:target> element; otherwise, this element MUST be specified if the XRI authority object identified by the <xriAU:authId> element in the <transfer> query operation plays the "source" role in the transfer operation. This element MUST NOT be combined with an <xriAU:source> element.
- An OPTIONAL <xri:trToken> element that contains the transfer token associated with the transfer request, if an <xri:trToken> element is specified by the client when the transfer is requested, or generated by the server for the

transfer request. A server MAY return the <xri:trToken> element only to the client that requested the object transfer, subject to local server policies.

- An <xriAU:trStatus> element that contains the state of the most recent transfer request.
- An <xriAU:reID> element that contains the identifier of the client that requested the object transfer.
- An <xriAU:reDate> element that contains the date and time that the transfer was requested.
- An <xriAU:acID> element that contains the identifier of the client that SHOULD act upon the transfer request.
- An <xriAU:acDate> element that contains the date and time of a required or completed response. For a PENDING request, the value identifies the date and time by which a response is required before an automated response action will be taken by the server. For all other status types, the value identifies the date and time when the request was completed.

Example <transfer> query response:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
S:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
S:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
S:    epp-1.0.xsd">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <xriAU:trnData
S:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
S:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
S:          xriAU-1.0.xsd">
S:          <xriAU:authId>=!(!!1003!4567!8901)</xriAU:authId>
S:          <xriAU:source>=!(!!1021!7777!9999)</xriAU:source>
S:          <xriAU:trToken>OneTimePass</xriAU:trToken>
S:          <xriAU:trStatus>pending</xriAU:trStatus>
S:          <xriAU:reID>ClientX</xriAU:reID>
S:          <xriAU:reDate>2005-05-06T22:00:00.0Z</xriAU:reDate>
S:          <xriAU:acID>ClientY</xriAU:acID>
S:          <xriAU:acDate>2005-05-11T22:00:00.0Z</xriAU:acDate>
S:        </xriAU:trnData>
S:      </resData>
S:      <trID>
S:        <clTRID>ABC-12345</clTRID>
S:        <svTRID>54322-XYZ</svTRID>
S:      </trID>
S:    </response>
S:</epp>
```

3.2 EPP Transform Commands

EPP provides four commands to transform XRI authority objects:

<create> to create an instance of an XRI authority object,
<delete> to delete an instance of an XRI authority object,
<transfer> to manage XRI authority sponsorship changes as well as XRI authority relationship to XRI i-names and i-numbers, and
<update> to change information associated with an XRI authority object. This document does not define a mapping for the EPP
<renew> command.

Transform commands are typically processed and completed in real time. Server operators MAY receive and process transform commands, but defer completing the requested action if human or third-party review is required before the requested action can be completed. In such situations the server MUST return a 1001 response code to the client to note that the command has been received and processed, but the requested action is pending. The server MUST also manage the status of the object that is the subject of the command to reflect the initiation and completion of the requested action. Once the action has been completed, all clients involved in the transaction MUST be notified using a service message that the action has been completed and that the status of the object has changed.

3.2.1 EPP <create> Command

The EPP <create> command provides a transform operation that allows a client to create an XRI authority object. In addition to the standard EPP command elements, the <create> command MUST contain an <xriAU:create> element that identifies the XRI authority namespace and the location of the XRI authority schema. The <xriAU:create> element contains the following child elements:

- An <xriAU:authId> element that contains the desired server-unique identifier for the XRI authority object to be created.
- Zero or one <xriAU:escrowAgent> elements that contain other XRI authority identifiers or XRI i-numbers to be associated with the XRI authority object as its escrow agent. Each <xri:escrowAgent> element contains an OPTIONAL "external" boolean attribute, with a "0" or "false" as its default value for indicating that the referred escrow agent is stored in

the local registry, or a "1" or "true" value for indicating that the referred escrow agent is residing in another registry. Each <xri:escrowAgent> element contains the following child elements, with exact one child element to be specified.

- An OPTIONAL <xriAU:authId> element that contains the identifier of an XRI authority object to be referred as an escrow agent. The XRI authority identifier MUST be known to the server before it can be associated with the XRI authority object as an escrow agent.
- An OPTIONAL <xriAU:inumber> element that contains the i-number used as the identifier of an XRI i-number object to be referred as a escrow agent. The XRI i-number MUST be known to the server before it can be associated with the XRI authority object as an escrow agent.
- Zero or one <xriAU:contactAgent> elements that contain other XRI authority identifiers or XRI i-numbers to be associated with the XRI authority object as its contact agent. Each <xri:contactAgent> element contains an OPTIONAL "external" boolean attribute, with a "0" or "false" as its default value for indicating that the referred contact agent is stored in the local registry, or a "1" or "true" value for indicating that the referred contact agent is residing in another registry. Each <xri:trustee> element contains the following child elements, with exact one child element to be specified.
 - An OPTIONAL <xriAU:authId> element that contains the identifier of an XRI authority object to be referred as a contact agent. The XRI authority identifier MUST be known to the server before it can be associated with the XRI authority object as a contact agent.
 - An OPTIONAL <xriAU:inumber> element that contains the i-number used as the identifier of an XRI i-number object to be referred as a contact agent. The XRI i-number MUST be known to the server before it can be associated with the XRI authority object as a contact agent.
- An OPTIONAL <xriAU:socialData> element that contains social information associated with XRI authority object. An <xriAU:socialData> element contains the following elements:
 - An <xriAU:postalInfo> element that contains social/postal address information in UTF-8 for the XRI authority object to be created. The <xriAU:postalInfo> element contains the following child elements:
 - An <xriAU:name> element that contains the name of the individual or role represented by the XRI authority.
 - An OPTIONAL <xriAU:org> element that contains the name of the organization with which the XRI authority is affiliated.

- An <xriAU:addr> element that contains address information associated with the XRI authority. A <xriAU:addr> element contains the following child elements:
 - One, two, or three OPTIONAL <xriAU:street> elements that contain the XRI authority's street address.
 - An <xriAU:city> element that contains the XRI authority's city.
 - An OPTIONAL <xriAU:sp> element that contains the XRI authority's state or province.
 - An OPTIONAL <xriAU:pc> element that contains the XRI authority's postal code.
 - An <xriAU:cc> element that contains the XRI authority's country code.
- Zero, one or two OPTIONAL <xriAU:voice> elements that contain the XRI authority's voice telephone numbers.
- An OPTIONAL <xriAU:fax> element that contains the XRI authority's facsimile telephone number.
- An OPTIONAL <xriAU:pager> element that contains the XRI authority's pager telephone number.
- Zero, one or two OPTIONAL <xriAU:email> elements that contain the XRI authority's email addresses.
- An <xriAU:authInfo> element that contains authorization information to be associated with the XRI authority object. This mapping includes a password-based authentication mechanism, but the schema allows new mechanisms to be defined in new schemas.

Example <create> command with XRI authority social information:

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
C:    epp-1.0.xsd">
C:  <command>
C:    <create>
C:      <xriAU:create
C:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
C:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
C:          xriAU-1.0.xsd">
C:        <xriAU:authId>=!(!!1045!1111!2222)</xriAU:authId>
C:        <xriAU:escrowAgent>
C:          <xriAU:authId>@foo.bar</xriAU:authId>
C:        </xriAU:escrowAgent>
C:        <xriAU:contactAgent>
C:          <xriAU:inumber>=!1004.222.333.5555</xriAU:inumber>
C:        </xriAU:contactAgent>
C:        <xriAU:socialData>
C:          <xriAU:postalInfo>
C:            <xriAU:name>John Doe</xriAU:name>
```

```

C:          <xriAU:org>Foo Bar, Inc.</xriAU:org>
C:          <xriAU:addr>
C:            <xriAU:street>123 Example Dr.</xriAU:street>
C:            <xriAU:street>Suite 100</xriAU:street>
C:            <xriAU:city>Dulles</xriAU:city>
C:            <xriAU:sp>VA</xriAU:sp>
C:            <xriAU:pc>20166-6503</xriAU:pc>
C:            <xriAU:cc>US</xriAU:cc>
C:          </xriAU:addr>
C:        </xriAU:postalInfo>
C:      <xriAU:voice x="1234">+1.7035555555</xriAU:voice>
C:      <xriAU:voice x="1235">+1.7035555555</xriAU:voice>
C:      <xriAU:fax>+1.7035555556</xriAU:fax>
C:      <xriAU:pager x="1234">+1.7035555557</xriAU:pager>
C:      <xriAU:email>jdoe@example.biz</xriAU:email>
C:      <xriAU:email>jdoe@example.com</xriAU:email>
C:    </xriAU:socialData>
C:    <xriAU:authInfo>
C:      <xriAU:pw>2fooBAR</xriAU:pw>
C:    </xriAU:authInfo>
C:  </xriAU:create>
C: </create>
C: <clTRID>ABC-12345</clTRID>
C: </command>
C: </epp>

```

Example <create> command without XRI authority social information:

```

C: <?xml version="1.0" encoding="UTF-8" standalone="no"?>
C: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:   xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
C:     epp-1.0.xsd">
C:   <command>
C:     <create>
C:       <xriAU:create
C:         xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
C:         xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
C:           xriAU-1.0.xsd">
C:         <xriAU:authId>=!(!!1045!1111!2222)</xriAU:authId>
C:         <xriAU:escrowAgent>
C:           <xriAU:authId>@foo.bar</xriAU:authId>
C:         </xriAU:escrowAgent>
C:         <xriAU:contactAgent>
C:           <xriAU:inumber>=!1004.222.333.5555</xriAU:inumber>
C:         </xriAU:contactAgent>
C:         <xriAU:authInfo>
C:           <xriAU:pw>2fooBAR</xriAU:pw>
C:         </xriAU:authInfo>
C:       </xriAU:create>
C:     </create>
C:   <clTRID>ABC-12345</clTRID>
C: </command>
C: </epp>

```

When a <create> command has been processed successfully, the EPP <resData> element MUST contain a child <xriAU:creData> element that identifies the XRI authority namespace and the location of the XRI authority schema. The <xriAU:creData> element contains the following child elements:

- An <xriAU:authId> element that contains the identifier of the XRI authority object created.
- An <xriAU:crDate> element that contains the date and time of XRI authority object creation.

Example <create> response:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
S:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
S:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
S:    epp-1.0.xsd">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <xriAU:creData
S:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
S:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
S:          xriAU-1.0.xsd">
S:        <xriAU:authId>=(!1045!1111!2222)</xriAU:authId>
S:        <xriAU:crDate>2005-05-02T22:00:00.0Z</xriAU:crDate>
S:      </xriAU:creData>
S:    </resData>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54321-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

An EPP error response MUST be returned if a <create> command can not be processed for any reason.

3.2.2 EPP <delete> Command

The EPP <delete> command provides a transform operation that allows a client to delete an XRI authority object. In addition to the standard EPP command elements, the <delete> command MUST contain an <xriAU:delete> element that identifies the XRI

authority namespace and the location of the XRI authority schema. The <xriAU:delete> element contains the following child elements:

- An <xriAU:authId> element that contains the identifier of the XRI authority object to be deleted.

An XRI authority object SHOULD NOT be deleted if it is associated with other known objects. An associated XRI authority SHOULD NOT be deleted until associations with other known objects have been broken. A server SHOULD notify clients of object relationships when a <delete> command is attempted and fails due to existing object relationships.

Example <delete> command:

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
C:    epp-1.0.xsd">
C:  <command>
C:    <delete>
C:      <xriAU:delete
C:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
C:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
C:          xriAU-1.0.xsd">
C:          <xriAU:authId>=(!1045!1111!2222)</xriAU:authId>
C:        </xriAU:delete>
C:      </delete>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

When a <delete> command has been processed successfully, a server MUST respond with an EPP response with no <resData> element.

Example <delete> response:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
S:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
S:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
S:    epp-1.0.xsd">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
```

```
S:    </result>
S:    <trID>
S:        <clTRID>ABC-12345</clTRID>
S:        <svTRID>54321-XYZ</svTRID>
S:    </trID>
S: </response>
S:</epp>
```

An EPP error response MUST be returned if a <delete> command can not be processed for any reason.

3.2.3 EPP <renew> Command

Renewal semantics do not apply to XRI authority objects, so there is no mapping defined for the EPP <renew> command.

3.2.4 EPP <transfer> Command

The EPP <transfer> command provides a transform operation that allows a client to manage requests to transfer the sponsorship of an XRI authority object and/or all associated XRI trustees, i-numbers, i-names and i-numbers from one XRI authority to another. In addition to the standard EPP command elements, the <transfer> command MUST contain an <xriAU:transfer> element that identifies the XRI authority namespace and the location of the XRI authority schema. The <xriAU:transfer> element contains the following child elements:

- An <xriAU:authId> element that contains the identifier of the XRI authority object for which a transfer request is to be created, approved, rejected, or cancelled.
- An OPTIONAL <xriAU:target> element that specifies the identifier and authorization information of the new XRI authority object for all XRI trustees, refs, i-names and i-numbers to be associated with, after the transfer is completed successfully. This element can only be used when a transfer is requested, and it MUST be ignored if used otherwise. It contains the following child elements:
 - A REQUIRED <xriAU:authId> element that specifies the identifier of the XRI authority object.
 - An OPTIONAL <xriAU:authInfo> element that contains authorization information associated with the XRI authority object. If this element is not provided or if the authorization information is invalid, server policy

determines if the command is rejected or if response information will be returned to the client.

- An OPTIONAL <xri:trToken> element that contains the transfer token associated with the transfer request, subject to local server policies. If transfer tokens MUST be used to facilitate transfer operations among clients, this element is REQUIRED when a transfer is requested, if transfer tokens are not generated by the server; this element is also REQUIRED when a transfer is to be approved. This element MUST be ignored if used otherwise.
- An OPTIONAL <xriAU:authInfo> element that contains authorization information of the XRI authority object to be transferred. This element is REQUIRED when a transfer is requested. Otherwise, if this element is not provided or if the authorization information is invalid, server policy determines if the command is rejected or if response information will be returned to the client.

Every EPP <transfer> command MUST contain an "op" attribute that identifies the transfer operation to be performed. Valid values, definitions, and authorizations for all attribute values are defined in [RFC 3730].

Example <transfer> request command:

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
C:    epp-1.0.xsd">
C:  <command>
C:    <transfer op="request">
C:      <xriAU:transfer
C:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
C:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
C:          xriAU-1.0.xsd">
C:          <xriAU:authId>=(!1099!1111!2222)</xriAU:authId>
C:          <xriAU:target>
C:            <xriAU:authId>FOO-BAR-INC</xriAU:authId>
C:            <xriAU:authInfo>
C:              <xriAU:pw>F00Bar2</xriAU:pw>
C:            </xriAU:authInfo>
C:          </xriAU:target>
C:          <xriAU:trToken>OneTimePass</xriAU:trToken>
C:          <xriAU:authInfo>
C:            <xriAU:pw>2fooBAR</xriAU:pw>
C:          </xriAU:authInfo>
C:        </xriAU:transfer>
```

```
C:    </transfer>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

When a <transfer> command has been processed successfully, the EPP <resData> element MUST contain a child <xriAU:trnData> element that identifies the XRI authority namespace and the location of the XRI authority schema. The <xriAU:trnData> element contains the same child elements defined for a transfer query response.

Example <transfer> response:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
S:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
S:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
S:    epp-1.0.xsd">
S:  <response>
S:    <result code="1001">
S:      <msg>Command completed successfully; action
pending</msg>
S:    </result>
S:    <resData>
S:      <xriAU:trnData
S:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
S:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
S:          xriAU-1.0.xsd">
S:          <xriAU:authId>=(!1099!1111!2222)</xriAU:authId>
S:          <xriAU:target>FOO-BAR-INC</xriAU:target>
S:          <xriAU:trToken>OneTimePass</xriAU:trToken>
S:          <xriAU:trStatus>pending</xriAU:trStatus>
S:          <xriAU:reID>ClientX</xriAU:reID>
S:          <xriAU:reDate>2005-05-06T22:00:00.0Z</xriAU:reDate>
S:          <xriAU:acID>ClientY</xriAU:acID>
S:          <xriAU:acDate>2005-05-11T22:00:00.0Z</xriAU:acDate>
S:        </xriAU:trnData>
S:      </resData>
S:      <trID>
S:        <clTRID>ABC-12345</clTRID>
S:        <svTRID>54322-XYZ</svTRID>
S:      </trID>
S:    </response>
S:</epp>
```

An EPP error response MUST be returned if a <transfer> command can not be processed for any reason.

If an `<xriAU:target>` element is specified in an EPP `<transfer>` request command, all clients with XRI authority objects having trustee relationship with the XRI authority to be transferred MUST also be notified. A server MAY specify notification policies for transferred XRI network authority objects. After the transfer is completed successfully, the XRI authority object will be set with a "pendingDelete" status value.

3.2.5 EPP `<update>` Command

The EPP `<update>` command provides a transform operation that allows a client to modify the attributes of an XRI authority object. In addition to the standard EPP command elements, the `<update>` command MUST contain an `<xriAU:update>` element that identifies the XRI authority namespace and the location of the XRI authority schema.

The `<xriAU:update>` element contains the following child elements:

- An `<xriAU:authId>` element that contains the identifier of the XRI authority object to be updated.
- An OPTIONAL `<xriAU:add>` element that contains attribute values to be added to the object.
- An OPTIONAL `<xriAU:rem>` element that contains attribute values to be removed to the object.
- An OPTIONAL `<xriAU:chg>` element that contains attribute values be changed.
- An OPTIONAL `<xriAU:authInfo>` element that contains authorization information of the XRI authority object to be updated. If this element is not provided or if the authorization information is invalid, server policy determines if the command is rejected or if response information will be returned to the client.

At least one `<xriAU:add>`, `<xriAU:rem>`, or `<xriAU:chg>` element MUST be provided. A server MAY restrict allowable combinations of attribute modifications for simplifying server operations, in addition to that there MUST be at most one occurrence of the `<xriAU:socialData>` element anywhere inside an `<xriAU:update>` element.

**An `<xriAU:add>` element contains the following child elements.
At least one child element MUST be present:**

- An OPTIONAL `<xriAU:socialData>` element that contains social information to be associated with XRI authority object

without social information. An <xriAU:socialData> element contains the following elements:

- An <xriAU:postalInfo> element that contains social/postal address information in UTF-8 for the XRI authority object to be created. The <xriAU:postalInfo> element contains the following child elements:
 - An <xriAU:name> element that contains the name of the individual or role represented by the XRI authority.
 - An OPTIONAL <xriAU:org> element that contains the name of the organization with which the XRI authority is affiliated.
 - An <xriAU:addr> element that contains address information associated with the XRI authority. An <xriAU:addr> element contains the following child elements:
 - One, two, or three OPTIONAL <xriAU:street> elements that contain the XRI authority's street address.
 - An <xriAU:city> element that contains the XRI authority's city.
 - An OPTIONAL <xriAU:sp> element that contains the XRI authority's state or province.
 - An OPTIONAL <xriAU:pc> element that contains the XRI authority's postal code.
 - An <xriAU:cc> element that contains the XRI authority's country code.
- Zero, one or two OPTIONAL <xriAU:voice> elements that contain the XRI authority's voice telephone numbers.
- An OPTIONAL <xriAU:fax> element that contains the XRI authority's facsimile telephone number.
- An OPTIONAL <xriAU:pager> element that contains the XRI authority's pager telephone number.
- Zero, one or two OPTIONAL <xriAU:email> elements that contain the XRI authority's email addresses.
- Zero or more <xriAU:trustee> elements that contain other XRI authority identifiers or XRI i-numbers to be associated with the XRI authority object as its trustees. Each <xri:trustee> element contains an OPTIONAL "external" boolean attribute, with a "0" or "false" as its default value for indicating that the referred trustee is stored in the local registry, or a "1" or "true" value for indicating that the referred trustee is residing in another registry. Each <xri:trustee> element contains the following child elements, with exact one child element to be specified.
 - An OPTIONAL <xriAU:authId> element that contains the identifier of an XRI authority object to be referred as a trustee. The XRI authority identifier MUST be known

to the server before it can be associated with the XRI authority object as one of its trustees.

- An OPTIONAL `<xriAU:inumber>` element that contains the i-number used as the identifier of an XRI i-number object to be referred as a trustee. The XRI i-number MUST be known to the server before it can be associated with the XRI authority object as one of its trustees.
- Zero or more `<xriAU:ref>` elements that contain XRI refs to be added to the XRI authority object. An XRI authority object can have choice of `<xriAU:Ref>` or `<xriAU:Redirect>` elements but not both. An `<xriAU:ref>` element contains the following attribute:
 - An OPTIONAL "priority" attribute that is an unsigned 16-bit integer, indicating the preference of XRI refs to be presented by XRI resolvers for XRI i-numbers associated with the XRI authority object.
- Zero or more `<xriAU:redirect>` elements that contain XRI redirects to be added to XRI authority object. An XRI authority object can have choice of `<xriAU:ref>` or `<xriAU:redirect>` elements but not both. An `<xriAU:redirect>` element contains the following attributes:
 - An OPTIONAL "priority" attribute that is an unsigned 16-bit integer, indicating the preference of XRI redirect to be presented by XRI resolvers for XRI i-numbers associated with the XRI authority object.
 - An OPTIONAL append attribute of type "appendAttr".
- Zero or more `<xri:EquivID>` used to assert an absolute identifier for the target resource that is not equivalent to the `<xri:CanonicalID>` or `<xri:CanonicalEquivID>`.
- Zero or one `<xri:CanonicalEquivID>` used to assert the canonical identifier for the target resource.
- Zero or more `<xriAU:sep>` elements that specify the XRI service endpoint records to be associated with the XRI authority object. An `<xriAU:sep>` element contains the following child elements:
 - An `<xriAU:id>` element that is used to uniquely identify the XRI service endpoint record within the XRI authority object.
 - An OPTIONAL `<xriAU:authority>` element that is used to uniquely the authority that provides the services associated with the XRI service endpoint record.
 - An OPTIONAL `<xriAU:priority>` element that contains a priority value associated with the XRI service endpoint record.
 - Zero or more `<xriAU:type>` elements that specify all service types associated with the XRI service endpoint record. Each `<xriAU:type>` has an OPTIONAL match

attribute of type "matchAttr" and an OPTIONAL select attribute of type boolean.

- One or more <xriAU:uri> elements that specify the designated URIs associated with the XRI service endpoint record. An XRI service endpoint record can have choice of <xriAU:Ref>, <xriAU:Redirect>, or <xriAU:uri> elements but not any combination of the three. Each <xriAU:uri> element contains an OPTIONAL "priority" attribute value, which is an unsigned 16-bit integer. Each <xriAU:uri> element also contains an OPTIONAL append attribute of type "appendAttr".
- Zero or more <xriAU:mediaType> elements that specify the designated media types associated with the XRI service endpoint URI record. Each <xriAU:type> has an OPTIONAL match attribute of type <????> and an OPTIONAL select attribute of type boolean.
- Zero or more <xriAU:path> elements that specify the designated paths associated with the XRI service endpoint URI record. Each <xriAU:type> has an OPTIONAL match attribute of type "matchAttr" and an OPTIONAL select attribute of type boolean.
- Zero or more <xriAU:ref> elements that contain refs to be added to the XRI service endpoint record. An XRI service endpoint record can have choice of <xriAU:Ref>, <xriAU:Redirect>, or <xriAU:uri> elements but not any combination of the three. An <xriAU:ref> element contains the following attribute:
 - An OPTIONAL "priority" attribute that is an unsigned 16-bit integer, indicating the preference of refs to be presented by XRI resolvers for the specified XRI service endpoint.
- Zero or more <xriAU:redirect> elements that contain XRI redirects to be added to XRI service endpoint record. An XRI service endpoint record can have choice of <xriAU:Ref>, <xriAU:Redirect>, or <xriAU:uri> elements but not any combination of the three. An <xriAU:redirect> element contains the following attribute:
 - An OPTIONAL "priority" attribute that is an unsigned 16-bit integer, indicating the preference of XRI redirect to be presented by XRI resolvers for XRI i-numbers associated with the XRI authority object.
 - An OPTIONAL append attribute of type "appendAttr".
- One or more <xriAU:localID> elements that specify the local IDs to be associated with the XRI service endpoint record. Each <xriAU:localID> element contains an OPTIONAL priority attribute.

- An OPTIONAL `<xriAU:extension>` element that contains the serialized string representing the extension elements to be associated with the XRI service endpoint record.
- Zero or more `<xriAU:status>` elements that contain status values to be applied to or removed from the object.

**An `<xriAU:rem>` element contains the following child elements.
At least one child element MUST be present:**

- An OPTIONAL `<xriAU:socialData>` element for removing all social information associated with the XRI authority object.
- Zero or more `<xriAU:trustee>` elements that contain other XRI authority identifiers or XRI i-numbers to be removed from the XRI authority object as its trustees. Each `<xri:trustee>` element contains an OPTIONAL "external" boolean attribute, with a "0" or "false" as its default value for indicating that the referred trustee is stored in the local registry, or a "1" or "true" value for indicating that the referred trustee is residing in another registry. Each `<xri:trustee>` element contains the following child elements, with exact one child element to be specified:
 - An OPTIONAL `<xriAU:authId>` element that contains the identifier of an XRI authority object to be removed as a trustee.
 - An OPTIONAL `<xriAU:inumber>` element that contains the i-number used as the identifier of XRI i-number object to be removed as a trustee.
- Zero or more `<xriAU:ref>` elements that contain XRI refs to be removed from the XRI authority object.
- Zero or more `<xriAU:redirect>` elements that contain XRI redirects to be removed to XRI authority object
- Zero or more `<xri:EquivID>` elements to be removed from XRI authority object.
- Zero or one `<xri:CanonicalEquivID>` to be removed from XRI authority object.
- Zero or more `<xriAU:sep>` elements that specify the XRI service endpoint records to be removed from the XRI authority object. An `<xriAU:sep>` element contains the following child elements:
 - An `<xriAU:id>` element that is used to uniquely identify the XRI service endpoint record within the XRI authority object.
- Zero or more `<xriAU:status>` elements that contain status values to be removed from the object. When specifying a value to be removed, only the attribute value is significant; element text is not required to match a value for removal.

An <xriAU:chg> element contains the following OPTIONAL child elements. At least one child element MUST be present:

- An <xriAU:authId> element that contains a new XRI authority identifier by which the XRI authority object will be known, subject to local server policies.
- Zero or one <xriAU:escrowAgent> element that contains the new XRI authority identifier or XRI i-number to be used as the escrow agent of the XRI authority object. The <xri:escrowAgent> element contains an OPTIONAL "external" boolean attribute, with a "0" or "false" as its default value for indicating that the referred trustee is stored in the local registry, or a "1" or "true" value for indicating that the referred trustee is residing in another registry. The <xri:escrowAgent> element contains the following child elements, with exactly one child element to be specified:
 - An OPTIONAL <xriAU:authId> element that contains the identifier of an XRI authority object to be removed as the escrow agent.
 - An OPTIONAL <xriAU:inumber> element that contains the i-number used as the identifier of XRI i-number object to be removed as the escrow agent.
- Zero or one <xriAU:contactAgent> element that contains the new XRI authority identifier or XRI i-number to be used as the contact agent of the XRI authority object. The <xri:contactAgent> element contains an OPTIONAL "external" boolean attribute, with a "0" or "false" as its default value for indicating that the referred trustee is stored in the local registry, or a "1" or "true" value for indicating that the referred trustee is residing in another registry. The <xri:contactAgent> element contains the following child elements, with exactly one child element to be specified:
 - An OPTIONAL <xriAU:authId> element that contains the identifier of an XRI authority object to be removed as the contact agent.
 - An OPTIONAL <xriAU:inumber> element that contains the i-number used as the identifier of XRI i-number object to be removed as the contact agent.
- An <xriAU:socialData> element that contains new social information to be associated with the XRI authority object. An <xriAU:socialData> element contains the following OPTIONAL child elements. At least one child element MUST be present:
 - One <xriAU:postalInfo> element that contains social/postal address information in UTF-8. The <xriAU:postalInfo> element contains the following OPTIONAL child elements:

- An <xriAU:name> element that contains the name of the individual or role represented by the XRI authority.
- An <xriAU:org> element that contains the name of the organization with which the XRI authority is affiliated.
- An <xriAU:addr> element that contains address information associated with the XRI authority. An <xriAU:addr> element contains the following child elements:
 - One, two, or three OPTIONAL <xriAU:street> elements that contain the XRI authority's street address.
 - An <xriAU:city> element that contains the XRI authority's city.
 - An OPTIONAL <xriAU:sp> element that contains the XRI authority's state or province.
 - An OPTIONAL <xriAU:pc> element that contains the XRI authority's postal code.
 - An <xriAU:cc> element that contains the XRI authority's country code.
- One or two <xriAU:voice> elements that contain the XRI authority's voice telephone numbers, or is a null element for nullifying the existing voice telephone numbers.
- An <xriAU:fax> element that contains the XRI authority's facsimile telephone number, or is a null element for nullifying the existing facsimile telephone number.
- An <xriAU:pager> element that contains the XRI authority's pager number, or is a null element for nullifying the existing pager number.
- One or two <xriAU:email> elements that contain the XRI authority's email addresses, or is a null element for nullifying the existing email addresses.
- An <xriAU:authInfo> element that contains authorization information associated with the XRI authority object. This mapping includes a password-based authentication mechanism, but the schema allows new mechanisms to be defined in new schemas.
- An <xriAU:extension> element that contains the serialized string representing the extension elements. To remove all extension elements, use an empty <xriAU:extension> tag.

Example <update> command for updating an XRI personal authority object:

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:      xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
```

```

C:      epp-1.0.xsd">
C:    <command>
C:      <update>
C:        <xriAU:update
C:          xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
C:          xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
C:            xriAU-1.0.xsd">
C:            <xriAU:authId>=(!1099!1111!2222)</xriAU:authId>
C:            <xriAU:add>
C:              <xriAU:trustee>
C:                <xriAU:authId>FOO-BAR-CORP</xriAU:authId>
C:              </xriAU:trustee>
C:              <xriAU:trustee external="1">
C:                <xriAU:inumber>
C:                  @!2005.2222.3333.4444
C:                </xriAU:inumber>
C:              </xriAU:trustee>
C:              <xriAU:ref priority="5">!!1002</xriAU:ref>
C:              <xriAU:ref>
C:                !!1005!(!1111.2222.3333.4444)
C:              </xriAU:ref>
C:              <xriAU:equivID>
C:                xri://!!1007!(!5555.6666.7777.8888)
C:              </xriAU:equivID>
C:              <xriAU:canonicalEquivID>
C:                http://new.example.biz/
C:              </xriAU:canonicalEquivID>
C:              <xriAU:status s="clientUpdateProhibited" lang="en">
C:            </xriAU:status>
C:          </xriAU:add>
C:        <xriAU:rem>
C:          <xriAU:trustee external="0">
C:
C:        <xriAU:inumber>=!1005.2222.3333.4444</xriAU:inumber>
C:          </xriAU:trustee>
C:          <xriAU:trustee external="1">
C:            <xriAU:authId>@FOO-BAR-INC</xriAU:authId>
C:          </xriAU:trustee>
C:          <xriAU:ref>!!1003!1004</xriAU:ref>
C:          <xriAU:canonicalEquivID>
C:            http://old.example.biz/
C:          </xriAU:canonicalEquivID>
C:          <xriAU:status s="clientHold"/>
C:          <xriAU:status s="clientTransferProhibited"/>
C:        </xriAU:rem>
C:      <xriAU:chg>
C:        <xriAU:authId>FOO.BAR.ID</xriAU:authId>

```

```

C:      <xriAU:socialData>
C:      <xriAU:postalInfo>
C:      <xriAU:org>Foo Bar, Corp.</xriAU:org>
C:      <xriAU:addr>
C:      <xriAU:street>234 Example Dr.</xriAU:street>
C:      <xriAU:street>Suite 200</xriAU:street>
C:      <xriAU:city>Dulles</xriAU:city>
C:      <xriAU:sp>VA</xriAU:sp>
C:      <xriAU:pc>20166-6503</xriAU:pc>
C:      <xriAU:cc>US</xriAU:cc>
C:      </xriAU:addr>
C:      </xriAU:postalInfo>
C:      <xriAU:voice/>
C:      <xriAU:fax>+1.7035555558</xriAU:fax>
C:      <xriAU:pager/>
C:      <xriAU:email/>
C:      </xriAU:socialData>
C:      <xriAU:authInfo>
C:      <xriAU:pw>F00Bar2</xriAU:pw>
C:      </xriAU:authInfo>
C:      </xriAU:chg>
C:      <xriAU:authInfo>
C:      <xriAU:pw>2fooBAR</xriAU:pw>
C:      </xriAU:authInfo>
C:      <xriAU:extension>
C:      &lt;foaf:Person
C:      xmlns:foaf=&quot;http://xmlns.com/foaf/0.1/&quot;
C:      &gt;
C:      &lt;foaf:name&gt;Fred&lt;/foaf:name&gt;
C:      &lt;/foaf:Person&gt;
C:      </xriAU:extension>
C:      </xriAU:update>
C:      </update>
C:      <clTRID>ABC-12345</clTRID>
C:      </command>
C: </epp>

```

Example <update> command for updating an XRI network authority object:

```

C: <?xml version="1.0" encoding="UTF-8" standalone="no"?>
C: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:      xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
C:      epp-1.0.xsd">
C:   <command>
C:     <update>
C:       <xriAU:update

```



```

C:      xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
C:      xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
C:      xriAU-1.0.xsd">
C:      <xriAU:authId>!!1002</xriAU:authId>
C:      <xriAU:add>
C:          <xriAU:redirect>
C:              http://www.example.biz
C:          </xriAU:redirect>
C:          <xriAU:sep>
C:              <xriAU:id>NEW-AUTHORITY</xriAU:id>
C:              <xriAU:priority>10</xriAU:priority>
C:              <xriAU:authority>
C:                  urn:uuid:f0502a17-4503-4463-8516-f1225b330e4d
C:              </xriAU:authority>
C:              <xriAU:type>xri://$res*auth*($v*2.0)</xriAU:type>
C:              <xriAU:uri priority="10">
C:                  http://xri.2idi.com/
C:              </xriAU:uri>
C:              <xriAU:uri priority="20">
C:                  https://xri.2idi.com/
C:              </xriAU:uri>
C:          </xriAU:sep>
C:          <xriAU:sep>
C:              <xriAU:id>MAIL-SERVICE</xriAU:id>
C:              <xriAU:priority>20</xriAU:priority>
C:              <xriAU:authority>
C:                  xri://!!1002!1234
C:              </xriAU:authority>
C:              <xriAU:uri priority="30">
C:                  http://2idi.mail.com/
C:              </xriAU:uri>
C:              <xriAU:uri priority="10">
C:                  https://2idi.mail.com/
C:              </xriAU:uri>
C:              <xriAU:mediaType>message/text</xriAU:mediaType>
C:          </xriAU:sep>
C:          <xriAU:sep>
C:              <xriAU:id>NEW-PIC-SERVICE</xriAU:id>
C:              <xriAU:priority>10</xriAU:priority>
C:              <xriAU:type>xri://$resolution*local</xriAU:type>
C:
C:      <xriAU:type>xri://$resolution*local*generic</xriAU:type>
C:      <xriAU:uri
C:      priority="30">http://2idi.pictures.com/</xriAU:uri>
C:      <xriAU:uri>https://2idi.pictures.com/</xriAU:uri>
C:      <xriAU:mediaType>image/gif</xriAU:mediaType>
C:      <xriAU:mediaType>image/jpeg</xriAU:mediaType>

```

```

C:          </xriAU:sep>
C:          <xriAU:status s="clientUpdateProhibited" lang="en">
C:          </xriAU:status>
C:        </xriAU:add>
C:      <xriAU:rem>
C:        <xriAU:equivID>
C:          !!1234!1111.2222.3333.4444
C:        </xriAU:equivID>
C:      <xriAU:sep>
C:        <xriAU:id>OLD-AUTHORITY</xriAU:id>
C:      </xriAU:sep>
C:      <xriAU:sep>
C:        <xriAU:id>PIC-SERVICE</xriAU:id>
C:      </xriAU:sep>
C:      <xriAU:sep>
C:        <xriAU:id>MAIL-SERVICE</xriAU:id>
C:      </xriAU:sep>
C:      <xriAU:status s="clientHold"/>
C:    </xriAU:rem>
C:  <xriAU:chg>
C:    <xriAU:authId>!!1003</xriAU:authId>
C:    <xriAU:authInfo>
C:      <xriAU:pw>F00Bar2</xriAU:pw>
C:    </xriAU:authInfo>
C:  </xriAU:chg>
C:  <xriAU:authInfo>
C:    <xriAU:pw>2fooBAR</xriAU:pw>
C:  </xriAU:authInfo>
C: </xriAU:update>
C: </update>
C: <clTRID>ABC-12345</clTRID>
C: </command>
C:</epp>

```

Example <update> command for adding social information to an XRI authority object:

```

C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
C:    epp-1.0.xsd">
C:  <command>
C:    <update>
C:      <xriAU:update
C:        xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
C:        xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
C:          xriAU-1.0.xsd">

```

```

C:      <xriAU:authId>FOO-BAR-ID</xriAU:authId>
C:      <xriAU:add>
C:        <xriAU:socialData>
C:          <xriAU:postalInfo>
C:            <xriAU:name>Foo Bar, Corp.</xriAU:name>
C:            <xriAU:addr>
C:              <xriAU:street>234 Example Dr.</xriAU:street>
C:              <xriAU:street>Suite 200</xriAU:street>
C:              <xriAU:city>Dulles</xriAU:city>
C:              <xriAU:sp>VA</xriAU:sp>
C:              <xriAU:pc>20166-6503</xriAU:pc>
C:              <xriAU:cc>US</xriAU:cc>
C:            </xriAU:addr>
C:          </xriAU:postalInfo>
C:          <xriAU:voice x="1236">+1.7035555557</xriAU:voice>
C:          <xriAU:voice x="1236">+1.7035555558</xriAU:voice>
C:          <xriAU:fax>+1.7035555558</xriAU:fax>
C:          <xriAU:email>jdoe@example.biz</xriAU:email>
C:        </xriAU:socialData>
C:      </xriAU:add>
C:      <xriAU:authInfo>
C:        <xriAU:pw>2fooBAR</xriAU:pw>
C:      </xriAU:authInfo>
C:    </xriAU:update>
C:  </update>
C:  <clTRID>ABC-12345</clTRID>
C: </command>
C: </epp>

```

Example <update> command for removing social information from an XRI authority object:

```

C: <?xml version="1.0" encoding="UTF-8" standalone="no"?>
C: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:   xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
C:     epp-1.0.xsd">
C:   <command>
C:     <update>
C:       <xriAU:update
C:         xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
C:         xsi:schemaLocation="urn:ietf:params:xml:ns:xriAU-1.0
C:           xriAU-1.0.xsd">
C:         <xriAU:authId>FOO-BAR-ID</xriAU:authId>
C:         <xriAU:rem>
C:           <xriAU:socialData/>
C:         </xriAU:rem>
C:       <xriAU:authInfo>

```

```

C:      <xriAU:pw>2fooBAR</xriAU:pw>
C:      </xriAU:authInfo>
C:      </xriAU:update>
C:      </update>
C:      <clTRID>ABC-12345</clTRID>
C:      </command>
C:</epp>

```

When an `<update>` command has been processed successfully, a server MUST respond with an EPP response with no `<resData>` element.

Example `<update>` response:

```

S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
S:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
S:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0
S:    epp-1.0.xsd">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54321-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>

```

An EPP error response MUST be returned if an `<update>` command can not be processed for any reason.

4 Formal Syntax

An EPP object mapping is specified in XML Schema notation. The formal syntax presented here, in addition to the EPP base schemas [RFC 3730] and EPP contact schema [RFC 3733].

Two schemas are presented here. The first schema is the shared base EPP XRI schema. The second schema is a complete schema representation of the XRI authority object mapping suitable for automated validation of EPP XML instances. 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.

4.1 XRI Shared Schema

```
BEGIN
<?xml version="1.0" encoding="UTF-8"?>
<schema targetNamespace="urn:ietf:params:xml:ns:xriAU-1.0"
  xmlns:xriAU="urn:ietf:params:xml:ns:xriAU-1.0"
  xmlns:xriCommon="urn:ietf:params:xml:ns:xriCommon-1.0"
  xmlns:epp="urn:ietf:params:xml:ns:epp-1.0"
  xmlns:eppcom="urn:ietf:params:xml:ns:eppcom-1.0"
  xmlns:contact="urn:ietf:params:xml:ns:contact-1.0"
  xmlns="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified">

  <!--
  Import common element types.
  -->
  <import namespace="urn:ietf:params:xml:ns:epp-1.0"
    schemaLocation="epp-1.0.xsd"/>
  <import namespace="urn:ietf:params:xml:ns:eppcom-1.0"
    schemaLocation="eppcom-1.0.xsd"/>
  <import namespace="urn:ietf:params:xml:ns:contact-1.0"
    schemaLocation="contact-1.0.xsd"/>
  <import namespace="urn:ietf:params:xml:ns:xriCommon-1.0"
    schemaLocation="xriCommon-1.0.xsd"/>

  <annotation>
    <documentation>
      Extensible Provisioning Protocol v1.0
      XML schema for XRI Authority provisioning.
    </documentation>
  </annotation>

  <!--
  Child elements found in EPP commands.
  -->
  <element name="check" type="xriAU:mIdType"/>
  <element name="create" type="xriAU:createType"/>
  <element name="delete" type="xriAU:sIdType"/>
  <element name="info" type="xriAU:infoType"/>
  <element name="transfer" type="xriAU:transferType"/>
  <element name="update" type="xriAU:updateType"/>

  <!--
  Child element of commands that require a single i-name
  -->
  <complexType name="sIdType">
    <sequence>
      <element name="authId" type="xriCommon:authIdType"/>
      <element name="authInfo" type="xriAU:authInfoType" minOccurs="0"/>
    </sequence>
  </complexType>

  <!--
  Child element of commands that accept multiple i-names
  -->
  <complexType name="mIdType">
```

```

    <sequence>
      <element name="authId" type="xriCommon:authIdType"
        maxOccurs="unbounded"/>
    </sequence>
  </complexType>

<!--
Child elements of the <create> command.
-->
  <complexType name="createType">
    <sequence>
      <element name="authId" type="xriCommon:authIdType"/>
      <element name="isEscrow" type="boolean"
        minOccurs="0"/>
      <element name="isContact" type="boolean"
        minOccurs="0"/>
      <element name="escrowAgent" type="xriAU:trusteeType"
        minOccurs="0"/>
      <element name="contactAgent" type="xriAU:trusteeType"
        minOccurs="0"/>
      <element name="socialData" type="xriAU:socialDataType"
        minOccurs="0"/>
      <element name="authInfo" type="xriAU:authInfoType"/>
    </sequence>
  </complexType>

  <complexType name="socialDataType">
    <sequence>
      <element name="postalInfo" type="xriAU:postalInfoType"
        minOccurs="0"/>
      <element name="voice" type="contact:e164Type"
        minOccurs="0" maxOccurs="2"/>
      <element name="fax" type="contact:e164Type"
        minOccurs="0"/>
      <element name="pager" type="contact:e164Type"
        minOccurs="0"/>
      <element name="email" type="eppcom:minTokenType"
        minOccurs="0" maxOccurs="2"/>
    </sequence>
  </complexType>

  <complexType name="postalInfoType">
    <sequence>
      <element name="name" type="contact:postalLineType"
        minOccurs="0"/>
      <element name="org" type="contact:optPostalLineType"
        minOccurs="0"/>
      <element name="addr" type="xriAU:addrType"
        minOccurs="0"/>
    </sequence>
  </complexType>

<!--
Child elements of the <info> command.
-->
  <complexType name="infoType">
    <sequence>

```

```

        <element name="authId" type="xriAU:infoAuthIdType"/>
        <element name="authInfo" type="xriAU:authInfoType"
            minOccurs="0"/>
    </sequence>
</complexType>

<complexType name="infoAuthIdType">
    <simpleContent>
        <extension base="xriCommon:authIdType">
            <attribute name="control" type="xriAU:controlType"
                default="none"/>
        </extension>
    </simpleContent>
</complexType>

<simpleType name="controlType">
    <restriction base="token">
        <enumeration value="all"/>
        <enumeration value="iname"/>
        <enumeration value="inumber"/>
        <enumeration value="iservice"/>
        <enumeration value="none"/>
    </restriction>
</simpleType>

<!--
Child elements of the <transfer> command.
-->
<complexType name="transferType">
    <sequence>
        <element name="authId" type="xriCommon:authIdType"/>
        <element name="target" type="xriAU:authorityType"
            minOccurs="0"/>
        <element name="trToken" type="xriCommon:trTokenType"
            minOccurs="0"/>
        <element name="authInfo" type="xriAU:authInfoType"
            minOccurs="0"/>
    </sequence>
</complexType>

<complexType name="authorityType">
    <sequence>
        <element name="authId" type="xriCommon:authIdType"/>
        <element name="authInfo" type="xriAU:authInfoType"
            minOccurs="0"/>
    </sequence>
</complexType>

<!--
Child elements of the <update> command.
-->
<complexType name="updateType">
    <sequence>
        <element name="authId" type="xriCommon:authIdType"/>
        <element name="add" type="xriAU:addType" minOccurs="0"/>
        <element name="rem" type="xriAU:remType" minOccurs="0"/>
        <element name="chg" type="xriAU:chgType" minOccurs="0"/>
    </sequence>
</complexType>

```

```

        <element name="authInfo" type="xriAU:authInfoType"
            minOccurs="0"/>
    </sequence>
</complexType>

<!--
Data elements that can be added.
-->
<complexType name="addType">
    <sequence>
        <element name="socialData" type="xriAU:socialDataType"
            minOccurs="0"/>
        <element name="trustee" type="xriAU:trusteeType"
            minOccurs="0" maxOccurs="unbounded"/>
        <element name="ref" type="xriAU:refAddType"
            minOccurs="0" maxOccurs="unbounded"/>
        <element name="redirect" type="xriAU:uriAddType"
            minOccurs="0" maxOccurs="unbounded"/>
        <element name="equivID" type="xriAU:synonymAddType"
            minOccurs="0" maxOccurs="unbounded"/>
        <element name="canonicalEquivID" type="anyURI"
            minOccurs="0"/>
        <element name="sep" type="xriAU:sepAddType"
            minOccurs="0" maxOccurs="unbounded"/>
        <element name="status" type="xriAU:statusType"
            minOccurs="0" maxOccurs="14"/>
    </sequence>
</complexType>

<complexType name="trusteeType">
    <sequence>
        <choice>
            <element name="authId" type="xriCommon:authIdType"/>
            <element name="inumber" type="xriCommon:inumberType"/>
        </choice>
    </sequence>
    <attribute name="external" type="boolean"
        use="optional" default="0"/>
</complexType>

<complexType name="trusteeInfType">
    <sequence>
        <choice>
            <element name="authId" type="xriCommon:authIdType"/>
            <element name="inumber" type="xriCommon:inumberType"/>
        </choice>
    </sequence>
    <attribute name="external" type="boolean" use="required"/>
</complexType>

<!--
Data elements that can be removed.
-->
<complexType name="remType">
    <sequence>
        <element name="socialData" type="xriAU:remSocialDataType"
            minOccurs="0"/>
        <element name="trustee" type="xriAU:trusteeType"

```



```

        minOccurs="0" maxOccurs="unbounded"/>
<element name="ref" type="xriCommon:xriType"
  minOccurs="0" maxOccurs="unbounded"/>
<element name="redirect" type="anyURI"
  minOccurs="0" maxOccurs="unbounded"/>
<element name="equivID" type="anyURI"
  minOccurs="0" maxOccurs="unbounded"/>
<element name="canonicalEquivID" type="anyURI"
  minOccurs="0"/>
<element name="sep" type="xriAU:sepRemType"
  minOccurs="0" maxOccurs="unbounded"/>
<element name="status" type="xriAU:statusType"
  minOccurs="0" maxOccurs="10"/>
</sequence>
</complexType>

<complexType name="remSocialDataType" final="#all"/>

<!--
Reference Types
-->
<complexType name="refAddType">
  <simpleContent>
    <extension base="xriCommon:xriType">
      <attribute name="priority" type="unsignedShort"
        use="optional" default="10"/>
    </extension>
  </simpleContent>
</complexType>

<complexType name="refInfType">
  <simpleContent>
    <extension base="xriCommon:xriType">
      <attribute name="priority" type="unsignedShort"
        use="optional"/>
    </extension>
  </simpleContent>
</complexType>

<!--
Synonym Types
-->
<complexType name="synonymAddType">
  <simpleContent>
    <extension base="anyURI">
      <attribute name="priority" type="unsignedShort"
        use="optional" default="10"/>
    </extension>
  </simpleContent>
</complexType>

<!--
Data elements that can be changed.
-->
<complexType name="chgType">
  <sequence>
    <element name="authId" type="xriCommon:authIdType"

```

```

        minOccurs="0"/>
<element name="isEscrow" type="boolean"
  minOccurs="0"/>
<element name="isContact" type="boolean"
  minOccurs="0"/>
<element name="escrowAgent" type="xriAU:trusteeType"
  minOccurs="0"/>
<element name="contactAgent" type="xriAU:trusteeType"
  minOccurs="0"/>
<element name="socialData" type="xriAU:chgSocialDataType"
  minOccurs="0"/>
<element name="authInfo" type="xriAU:authInfoType"
  minOccurs="0"/>
<element name="extension" type="string"
  minOccurs="0"/>
</sequence>
</complexType>

<complexType name="chgSocialDataType">
  <sequence>
    <element name="postalInfo" type="xriAU:chgPostalInfoType"
      minOccurs="0"/>
    <element name="voice" type="xriAU:optE164Type"
      minOccurs="0" maxOccurs="2"/>
    <element name="fax" type="xriAU:optE164Type"
      minOccurs="0"/>
    <element name="pager" type="xriAU:optE164Type"
      minOccurs="0"/>
    <element name="email" type="xriAU:optTokenType"
      minOccurs="0" maxOccurs="2"/>
  </sequence>
</complexType>

<complexType name="optE164Type">
  <simpleContent>
    <restriction base="contact:e164Type">
      <pattern value=""/>
      <pattern value="(\+[0-9]{1,3}\.[0-9]{1,14})?" />
      <minLength value="0"/>
      <maxLength value="17"/>
    </restriction>
  </simpleContent>
</complexType>

<simpleType name="optTokenType">
  <restriction base="token">
    <minLength value="0"/>
  </restriction>
</simpleType>

<complexType name="chgPostalInfoType">
  <sequence>
    <element name="name" type="contact:postalLineType"
      minOccurs="0"/>
    <element name="org" type="contact:optPostalLineType"
      minOccurs="0"/>
    <element name="addr" type="xriAU:addrType"

```

```

        minOccurs="0"/>
    </sequence>
</complexType>

<!--
Child response elements.
-->
    <element name="chkData" type="xriAU:chkDataType"/>
    <element name="creData" type="xriAU:creDataType"/>
    <element name="infData" type="xriAU:infDataType"/>
    <element name="panData" type="xriAU:panDataType"/>
    <element name="trnData" type="xriAU:trnDataType"/>

<!--
<check> response elements.
-->
    <complexType name="chkDataType">
        <sequence>
            <element name="cd" type="xriAU:checkType"
                minOccurs="unbounded"/>
        </sequence>
    </complexType>

    <complexType name="checkType">
        <sequence>
            <element name="authId" type="xriAU:checkIdType"/>
            <element name="reason" type="eppcom:reasonType"
                minOccurs="0"/>
        </sequence>
    </complexType>

    <complexType name="checkIdType">
        <simpleContent>
            <extension base="xriCommon:authIdType">
                <attribute name="avail" type="boolean"
                    use="required"/>
            </extension>
        </simpleContent>
    </complexType>

<!--
<create> response elements.
-->
    <complexType name="creDataType">
        <sequence>
            <element name="authId" type="xriCommon:authIdType"/>
            <element name="crDate" type="dateTime"/>
        </sequence>
    </complexType>

<!--
<info> response elements.
-->
    <complexType name="infDataType">
        <sequence>
            <element name="authId" type="xriCommon:authIdType"/>
            <element name="isEscrow" type="boolean"/>

```

```

        minOccurs="0"/>
<element name="isContact"        type="boolean"
        minOccurs="0"/>
<element name="escrowAgent"      type="xriAU:trusteeType"
        minOccurs="0"/>
<element name="contactAgent"    type="xriAU:trusteeType"
        minOccurs="0"/>
<element name="roid"            type="eppcom:roidType"/>
<element name="status"          type="xriAU:statusType" maxOccurs="13"/>
<element name="socialData"      type="xriAU:socialDataType"
        minOccurs="0"/>
<element name="trustee"         type="xriAU:trusteeInfType"
        minOccurs="0" maxOccurs="unbounded"/>
<element name="ref"             type="xriAU:refInfType"
        minOccurs="0" maxOccurs="unbounded"/>
<element name="redirect"        type="xriAU:uriInfType"
        minOccurs="0" maxOccurs="unbounded"/>
<element name="equivID"         type="xriAU:synonymAddType"
        minOccurs="0" maxOccurs="unbounded"/>
<element name="canonicalEquivID" type="anyURI"
        minOccurs="0"/>
<element name="sep"             type="xriAU:sepInfType"
        minOccurs="0" maxOccurs="unbounded"/>
<element name="iname"           type="xriCommon:inameType"
        minOccurs="0" maxOccurs="unbounded"/>
<element name="inumber"         type="xriAU:inumberType"
        minOccurs="0" maxOccurs="unbounded"/>
<element name="iservice"        type="xriCommon:iServiceIdType"
        minOccurs="0" maxOccurs="unbounded"/>
<element name="extension"       type="string" minOccurs="0"/>
<element name="clID"            type="eppcom:clIDType"/>
<element name="crID"            type="eppcom:clIDType"/>
<element name="crDate"          type="dateTime"/>
<element name="upID"            type="eppcom:clIDType" minOccurs="0"/>
<element name="upDate"          type="dateTime" minOccurs="0"/>
<element name="trDate"          type="dateTime" minOccurs="0"/>
<element name="authInfo"        type="xriAU:authInfoType"
        minOccurs="0"/>
</sequence>
</complexType>

<complexType name="inumberType">
    <simpleContent>
        <extension base="xriCommon:inumberType">
            <attribute name="priority" type="unsignedShort"
                use="required"/>
        </extension>
    </simpleContent>
</complexType>

<!--
<transfer> response elements.
-->
<complexType name="trnDataType">
    <sequence>
        <element name="authId" minOccurs="0" type="xriCommon:authIdType"/>
        <choice minOccurs="0">

```

```

        <element name="source" type="xriCommon:authIdType"/>
        <element name="target" type="xriCommon:authIdType"/>
    </choice>
    <element name="trToken" type="xriCommon:trTokenType"
        minOccurs="0"/>
    <element name="trStatus" type="xriCommon:trStatusType"/>
    <element name="reID" type="eppcom:clIDType"/>
    <element name="reDate" type="dateTime"/>
    <element name="acID" type="eppcom:clIDType"/>
    <element name="acDate" type="dateTime"/>
</sequence>
</complexType>

<!--
Status is a combination of attributes and an optional
human-readable message that may be expressed in languages other
than English.
-->
<complexType name="statusType">
    <simpleContent>
        <extension base="normalizedString">
            <attribute name="s" type="xriAU:statusValueType"
                use="required"/>
            <attribute name="lang" type="language"
                default="en"/>
        </extension>
    </simpleContent>
</complexType>

<simpleType name="statusValueType">
    <restriction base="token">
        <enumeration value="clientAssociateProhibited"/>
        <enumeration value="clientDeleteProhibited"/>
        <enumeration value="clientHold"/>
        <enumeration value="clientTransferProhibited"/>
        <enumeration value="clientUpdateProhibited"/>
        <enumeration value="linked"/>
        <enumeration value="ok"/>
        <enumeration value="pendingCreate"/>
        <enumeration value="pendingDelete"/>
        <enumeration value="pendingINameTransfer"/>
        <enumeration value="pendingUpdate"/>
        <enumeration value="pendingTransfer"/>
        <enumeration value="serverAssociateProhibited"/>
        <enumeration value="serverDeleteProhibited"/>
        <enumeration value="serverHold"/>
        <enumeration value="serverTransferProhibited"/>
        <enumeration value="serverUpdateProhibited"/>
    </restriction>
</simpleType>

<!--
Pending action notification response elements.
-->
<complexType name="panDataType">
    <sequence>
        <element name="authId" type="xriAU:paIdType"/>

```

```

        <element name="paTRID" type="epp:trIDType"/>
        <element name="paDate" type="dateTime"/>
    </sequence>
</complexType>

<complexType name="paIdType">
    <simpleContent>
        <extension base="xriCommon:authIDType">
            <attribute name="paResult" type="boolean"
                use="required"/>
        </extension>
    </simpleContent>
</complexType>

<!--
Address type.
-->

<complexType name="addrType">
    <sequence>
        <element name="street" type="contact:optPostalLineType"
            minOccurs="0" maxOccurs="3"/>
        <element name="city" type="contact:postalLineType"
            minOccurs="0"/>
        <element name="sp" type="contact:optPostalLineType"
            minOccurs="0"/>
        <element name="pc" type="contact:pcType" minOccurs="0"/>
        <element name="cc" type="contact:ccType" minOccurs="0"/>
    </sequence>
</complexType>

<!--
Auth Info type.
-->

<complexType name="authInfoType">
    <choice>
        <element name="pw" type="eppcom:pwAuthInfoType"/>
        <element name="ext" type="eppcom:extAuthInfoType"/>
    </choice>
</complexType>

<!--
Authority/Service Endpoint (SEP) related types.
-->

<simpleType name="appendAttr">
    <restriction base="string">
        <enumeration value="none" />
        <enumeration value="local" />
        <enumeration value="authority" />
        <enumeration value="path" />
        <enumeration value="query" />
        <enumeration value="qxri" />
    </restriction>
</simpleType>

```

```

<complexType name="uriAddType">
  <simpleContent>
    <extension base="anyURI">
      <attribute name="priority" type="unsignedShort"
        use="optional" default="10"/>
      <attribute name="append" type="xriAU:appendAttr"
        use="optional" default="local"/>
    </extension>
  </simpleContent>
</complexType>

<complexType name="uriInfType">
  <simpleContent>
    <extension base="anyURI">
      <attribute name="priority" type="unsignedShort"
        use="optional"/>
      <attribute name="append" type="xriAU:appendAttr"
        use="optional" default="local"/>
    </extension>
  </simpleContent>
</complexType>

<complexType name="sepAddType">
  <sequence>
    <element name="id" type="xriAU:idType"/>
    <element name="priority" type="unsignedShort" minOccurs="0"/>
    <element name="authority" type="xriCommon:xriType" minOccurs="0"/>
    <element name="type" type="xriAU:sepTypeType"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="path" type="xriAU:sepPathType"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="uri" type="xriAU:uriAddType"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="mediaType" type="xriAU:sepMediaTypeType"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="ref" type="xriAU:refAddType"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="redirect" type="xriAU:uriAddType"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="localID" type="xriAU:synonymAddType"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="extension" type="string" minOccurs="0"/>
  </sequence>
</complexType>

<complexType name="sepInfType">
  <sequence>
    <element name="id" type="xriAU:idType"/>
    <element name="priority" type="unsignedShort"/>
    <element name="authority" type="xriCommon:xriType" minOccurs="0"/>
    <element name="type" type="xriAU:sepTypeType"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="path" type="xriAU:sepPathType"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="uri" type="xriAU:uriAddType"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="mediaType" type="xriAU:sepMediaTypeType"

```

```

        minOccurs="0" maxOccurs="unbounded"/>
<element name="ref" type="xriAU:refAddType"
  minOccurs="0" maxOccurs="unbounded"/>
<element name="redirect" type="xriAU:uriAddType"
  minOccurs="0" maxOccurs="unbounded"/>
<element name="localID" type="xriAU:synonymAddType"
  minOccurs="0" maxOccurs="unbounded"/>
<element name="extension" type="string" minOccurs="0"/>
</sequence>
</complexType>

<complexType name="sepRemType">
  <sequence>
    <element name="id" type="xriAU:idType"/>
  </sequence>
</complexType>

<simpleType name="idType">
  <restriction base="token">
    <minLength value="1"/>
    <maxLength value="32"/>
  </restriction>
</simpleType>

<simpleType name="matchAttr">
  <restriction base="string">
    <enumeration value="default" />
    <enumeration value="any" />
    <enumeration value="non-null" />
    <enumeration value="null" />
  </restriction>
</simpleType>

<complexType name="sepTypeType">
  <simpleContent>
    <extension base="string">
      <attribute name="match" type="xriAU:matchAttr"
        use="optional" />
      <attribute name="select" type="boolean"
        use="optional" default="false" />
    </extension>
  </simpleContent>
</complexType>

<complexType name="sepPathType">
  <simpleContent>
    <extension base="string">
      <attribute name="match" type="xriAU:matchAttr"
        use="optional" />
      <attribute name="select" type="boolean"
        use="optional" default="false" />
    </extension>
  </simpleContent>
</complexType>

<complexType name="sepMediaTypeType">
  <simpleContent>

```



```

    <extension base="string">
      <attribute name="match" type="xriAU:matchAttr"
        use="optional" />
      <attribute name="select" type="boolean"
        use="optional" default="false" />
    </extension>
  </simpleContent>
</complexType>

<!--
End of schema.
-->
</schema>
END

```

5 Internationalization Considerations

In addition to international considerations introduced in [RFC 3730], this memo requires social information representing humans, organizations, and other entities to be encoded in UTF-8.

6 IANA Considerations

This document uses URNs to describe XML namespaces and XML schemas conforming to a registry mechanism described in [RFC 3688]. If the ISEG approves this memo for publication, then two URI assignments will be requested.

Registration request for the EPP XRI authority namespace:

URI: urn:ietf:params:xml:ns:xriAU-1.0

Registrant Contact: See the "Authors' Addresses" section of this document.

XML: None. Namespace URIs do not represent an XML specification.

Registration request for the EPP XRI authority XML schema:

URI: urn:ietf:params:xml:schema:xriAU-1.0

Registrant Contact: See the "Authors' Addresses" section of this document.

XML: See the "Formal Syntax" section of this document.

7 Security Considerations

The mapping extensions described in this document do not provide any security services beyond those described by EPP [RFC 3730]. Security considerations related to XRI and XDI are described in [XRI] and [XDI].

As with other EPP object transforms, the EPP transform operations described in this document **MUST** be restricted to the sponsoring client as authenticated using the mechanisms described in sections 2.9.1.1 and 7 of [RFC 3730]. Any attempt to perform a transform operation on an XRI i-name by any client other than the sponsoring client **MUST** be rejected with an appropriate EPP authorization error. Please consult [RFC 3730] for a discussion of EPP-specific security issues.

Special consideration **SHOULD** be given to EPP transfer operations on XRI authority objects. Transfer tokens **MAY** be used for enhancing security of transfer operations, preventing passive or accidental approvals, and enabling clients involved to be cooperative in facilitating transfer operations.

8 Acknowledgements

TBD

9 References

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10 Appendix A - Authors' Addresses

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11 Appendix B - Full Copyright Statement

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