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Forwarding Service V1.0

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21 22 23 24	Abstract: This document contains the normative specifications for XRI forwarding service – a means of creating and managing XRIs that persistently identify a resource and forward to the current URI for the resource.
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1 Introduction

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- The purpose of this specification is to define a service for creating and managing XRIs, called Forwarding XRIs, that persistently identify a resource and forward to a specific URI, called a Target URI, that represents the current network location of the resource.
- 71 Forwarding XRIs serve several purposes:
 - Maintaining persistent links to resources whose semantic names or network locations
 may change over time. For example, the Forwarding XRI for a blog could always remain
 the same even if the blog was moved to different hosting companies or DNS domains
 over its lifetime.
 - Simplifying discovery of a resource by identifying it with a well-known i-name or i-number. For example, the well-known i-name +blog could be used by any personal or business i-name registrant to create a Forwarding XRI that identifies and forwards to their default blog, e.g., =person/(+blog) or @company/(+blog). The use of i-name dictionaries for standard resource names makes it trivial for people to remember and compose the XRI they need to reach a resource.
 - Simplifying online resource management. One set of Forwarding XRIs, managed via one
 i-name account at an i-broker, can be used to unify digital assets spread across any
 number of DNS domains and websites.

1.1 Related Specifications

- 86 This specification has a dependency on the following specifications.
 - The OASIS XRI Specifications specified by the OASIS XRI Technical Committee, including XRI Syntax 2.0 [XRISyntax], XRI Resolution 2.0 [XRIResolution], and XRI Metadata 2.0 [XRIMetadata]. These specifications govern the technical interoperability of XRI identifiers and resolution protocols.
 - The XDI.org OpenID Authentication Service Specification as defined on the XDI.org ISS website at [XDI.orgISS].
 - The XDI.org SAML Authentication Service Specification as defined on the XDI.org ISS website at [XDI.orgISS].

1.2 Terminology and Notation

1.2.1 Definitions

- All terms used in this specification as First Letter Uppercase or as an all-uppercase abbreviation are defined in Appendix A. This specification also includes by reference the XRI glossary as specified in Appendix C of [XRISyntax"] and the XDI.org Global Services Specifications Definitions as specified in Appendix A of [XDI.orgGSS].
- 101 **1.2.2 Keywords**
- 102 The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD
- 103 NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as
- 104 described in [RFC2119]. When these words are not capitalized in this document, they are meant
- in their natural language sense.

1.2.3 ABNF Notation 106 107 All ABNF (Augmented Backus-Naur Form) in the GSS uses the notation defined in [RFC22341. Note that a number of standard ABNF productions, including the HEXDIG production, are also 108 109 defined in RFC 2234. 110 ABNF productions are in indented green text as shown below. 111 = this is an example production 112 1.2.4 Examples 113 Example XRIs or XML documents in this specification are in indented grey text as shown below. 114 xri://example.xri.authority/(+example.path) 1.2.5 Variables 115 All items that appear inside squiggly brackets "{ }" are variables that do not include the squiggly 116 brackets. 117 1.2.6 XRIs and HXRIs 118 119 All XRIs used in this specification are shown in XRI-normal form as defined in [XRISyntax]. All such XRIs can be converted to the equivalent IRI-normal form or URI-normal form as defined in 120 [XRISyntax]. In addition, all such XRIs may be expressed in an HTTP URI format (called an 121 122 HXRI) by prefixing the the URI-normal form of the XRI string (called the query XRI or QXRI) with 123 the address of the XDI.org XRI proxy resolver http://xri.net or any other valid XRI proxy

http://xri.net/=example.person
http://xri.net/@example*xri*authority/(+example.path)

resolver address. Note that QXRIs SHOULD NOT use the prefix xri: //. Following are two

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example HXRIs.

2.1 Forwarding Service Endpoint Metadata

130 Table 1 defines the requirements for a Forwarding Service Endpoint conforming to this
 131 specification. This information is also published on

http://iss.xdi.org/moin.cgi/lserviceEndpointDefinitions, however Table 1 is authoritative.

Optional	Element Value	Attribute Value	
See note 1	I-Number of Forwarding Service Provider	N/A	
Required	xri://+i-service*(+forwarding)*(\$v*1.0)	select="true"	
See note 2	Empty element	match="null"	
See note 3	Empty element	match="default	- 11
Optional – see note 4	(+index)	select="true"	Deleted: Required
See note 4	Empty element	match="defaul	Deleted: Required
Required – see sec 2.2	URI to forwarding service (see notes 5 and 6)	append="qxri"	Deleted: 4 Deleted: 5
	See note 1 Required See note 2 See note 3 Optional – see note 4 See note 4 Required – see sec 2.2	See note 1 I-Number of Forwarding Service Provider Required xri://+i-service*(+forwarding)*(\$v*1.0) See note 2 Empty element See note 3 Empty element Optional (+index) see note 4 See note 4 Empty element Required — URI to forwarding service (see notes 5 and 6)	See note 1 I-Number of Forwarding Service Provider Required xri://+i-service*(+forwarding)*(\$v*1.0) select="true" See note 2 Empty element match="null" See note 3 Empty element match="default optional (+index) select="true" see note 4 Empty element match="default select="true" See note 4 Empty element match="default select="true" Required - URI to forwarding service (see notes 5 and 6) append="qxri"

Table 1: Requirements for a Forwarding Service Endpoint conforming to this specification.

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- 1. XDI.org-Accredited I-Brokers and their authorized resellers are REQUIRED to have a ProviderID in the form of a valid global or community i-number as defined in section 4.3.1 of [XDI.orgGSS]. This value SHOULD be used as the ProviderID for a Forwarding Service Endpoint for which the XDI.org-Accredited I-Broker or authorized reseller is the Forwarding Service Provider. (It is anticipated that in future versions of this specification, this ProviderID value will be REQUIRED for trust verification purposes.) Other trust networks may set their own requirements for this element.
- This setting is RECOMMENDED in order to make Forwarding Service the default service endpoint if no service type is specified in the resolution request. See the service endpoint selection rules in section 8 of [XRIResolution].
- 8. The Media Type element is only required if another Media Type element is also specified for this endpoint; otherwise it is optional because the implied value of the match attribute if no Media Type element is present is match="default".
- 4. The inclusion of a Path element with the contents (+index) is RECOMMENDED but not*

 required. If present, this path MUST forward to a Forwarding Index Page as defined in section 6. Also, if any non-emtpy Path element is included, at least one Path element must include the attribute match="default" in order for this service endpoint to be selected for other non-matching QXRI path values.

 Formatted: Bullets and Numbering Formatted: Datatype

 Formatted: Datatype
- Use of an HTTPS URI is OPTIONAL but RECOMMENDED.
- For Forwarding Service Providers, the RECOMMENDED third-level DNS hosting name for Contact Service is forwarding, e.g. forwarding.example.com.

156 2.2 Use of the URI Append Attribute

Forwarding Service depends on the value of the URI append attribute being set to

append="qxri" because this enables the Forwarding Service to receive the original QXRI

given to an XRI resolver (the Forwarding XRI) and do the mapping to the Target URI selected by
the Forwarding Service Subscriber.

Deleted: the QXRI has a path that is

not matched by another service

endpoint

```
161
       Note that because the entire QXRI is passed, a Forwarding Service can map Forwarding XRIs
162
       that contain the same path to different Target URIs if the Forwarding XRIs use different i-names,
163
       even if these i-names or i-numbers are registered to the same XRI authority. For example, the
164
       following two Forwarding XRIs could forward to different blogs even though
165
       =example.professional.name and =example.personal.nickname are i-name
166
       synonyms that represent the same person.
167
              http://xri.net/=example.professional.name/(+blog)
168
              http://xri.net/=example.personal.nickname/(+blog)
```

2.3 Examples

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Figure 1 is an example of a Forwarding Service Endpoint that offers both http and https URIs. It has a single Path element where match="default" so it will service any QXRI that has a path component (and which does not match another service endpoint).

```
173
             <Service>
174
                    <Type select="true">
175
                    xri://+i-service*(+forwarding)*($v*1.0)
176
177
                    <Type match="null"/>
178
                    <MediaType match="default">
                    <Path>(+index)</Path>
179
180
                    <Path match="default"/>
                    <URI append="qxri">http://forwarding.example.com/</URI>
181
182
                    <URI append="qxri">https://forwarding.example.com/</URI>
183
             </Service>
```

Figure 1: Example Forwarding Service Endpoint #1.

185 If Figure 1 were the Forwarding Service Endpoint for the XRI = example, then the following Forwarding XRI...

```
=example/(+blog)
```

...would be transformed by an XRI resolver into the following URI set:

```
http://forwarding.example.com/=example/(+blog)
https://forwarding.example.com/=example/(+blog)
```

Figure 2 is an example of a Forwarding Service Endpoint that includes two explicit Path elements. This approach allows a Forwarding Service Provider to create different Forwarding Service Endpoints to service specific "subtrees" of Forwarding XRIs that all begin with the same path—in this case, the plain text string seattle or the XRI cross-reference (+seattle).

```
195
              <Service>
                    <Type select="true">
196
197
                    xri://+i-service*(+forwarding)*($v*1.0)
198
                    </Type>
199
                    <Type match="null"/>
200
                    <MediaType match="default">
201
                    <Path>seattle</Path>
202
                    <Path>(+seattle)</Path>
203
                    <URI append="qxri">
204
                    http://forwarding.example.com/tours/
205
                    </URI>
206
             </Service>
```

Figure 2: Example Forwarding Service Endpoint #2.

3 Redirecting Forwarding XRIs to Target URIs

The primary function of Forwarding Service is to redirect Forwarding XRIs to Target URIs. The requirements for performing this service are:

- When a Forwarding Service receives an HTTP or HTTPS GET request for a Forwarding XRI (passed as the QXRI as described in section 2.2), it MUST determine if it has a mapping to a Target URI.
- 2. If the mapping exists, it MUST return an HTTP or HTTPS 3XX redirect to the Target URI.
- 3. If the mapping does not exist, it MAY return either:

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- An HTTP error message indicating that the resource was not found.
- A Forwarding Error Page (see section 0).

4 Forwarding Dictionaries

- 224 After persistent linking, the second key benefit of Forwarding XRIs is simplified resource
- 225 discovery and naming. This is provided via XRI dictionary services—collections of i-names and i-
- 226 numbers that use the XRI global context symbol "+" to indicate that they represent generic
- 227 dictionary concepts for the express purpose of establishing shared semantics.
- 228 Part of XDI.org's charter [XDI.org] is the establishment of internationalized XRI dictionary
- 229 services for the general public—see section 9. Until these + registry services are operational and
- 230 can be queried dynamically, however, it is RECOMMENDED that Forwarding Service Providers
- 231 enable Forwarding Service Subscribers to automatically construct Forwarding XRIs from the
- 232 +names on the following dictionary lists of English language terms. For example, a Forwarding
- 233 Service configuration interface could provide drop-down lists for each dictionary type to enable a
- 234 Manager to simply select a name from the dictionary in order to compose a Forwarding XRI.

4.1 Personal Dictionary

- 236 It is RECOMMENDED to use this dictionary list as the default English dictionary for personal inames (=names at all levels of delegation).
- 238 +blog

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- 239 +call
- 240 +chat
- 241 +email
- 242 +home
- 243 +links
- 244 +photos
- 245 +resume
- 246 +songs
- 247 +work

4.2 Business/Organizational Dictionary

- It is RECOMMENDED to use this dictionary list as the default English dictionary for
 business/organizational i-names (@names) or delegated i-names (*names) assigned in a
 community context.
- 252 +about
- 253 +account
- 254 +blog
- 255 +call
- 256 +chat
- +customer.service
- 258 +email
- 259 +home
- 260 +investor.relations
- 261 +links

262 +login 263 +management 264 +partners 265 +products 266 +services +technical.support 267 4.3 Specifying a Context 268 Some Forwarding XRIs may apply in multiple contexts. For example, a +call or +chat XRI may be 269 narrowed to the context of a specific community or network, such as Skype, Yahoo, Google, 270 271 MSN, etc. To specify this context, a Forwarding XRI MAY append the context as an @name 272 following the dictionary +name. Examples: 273 274 http://xri.net/=example/+call@skype https://xri.net/=example/+chat@yahoo 275 Note that the path components of the examples above do not use valid XRI cross-reference 276 syntax. XRI proxy resolvers MAY redirect these to syntactically valid XRIs as shown below. 277 http://xri.net/=example/(+call)*(@skype) 278 https://xri.net/=example/(+chat)*(@yahoo)

Forwarding Service Providers SHOULD be prepared to accept both these forms as synonyms for

xri://@xdi.org/(+specification)/(+forwarding)*(\$v*1.0)*(+draft)*(\$v*3) Copyright © XDI.org 2006. All Rights Reserved.

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the same Target URI.

5 Forwarding Error Pages

A Forwarding Service Provider MAY provide a Forwarding Error Page to be returned for any Forwarding XRI request that does not currently map to a Target URI. This page MAY:

• Suggest alternative Forwarding XRIs.

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- Include a link to the XRI registrant's contact page [ISS-Contact].
- Be a Forwarding Index Page (section 6) with a custom message explaining that the Forwarding XRI does not currently have a forwarding address and suggesting alternative Forwarding XRIs.
- Provide other contextual information about the XRI registrant that helps the party activating the Forwarding XRI reach the intended resource.

6 Forwarding Index Pages

A Forwarding Service Subscriber may wish for all or a portion of their Forwarding XRIs to be publicly accessible via an (X)HTML page called a Forwarding Index Page. In the context of Forwarding Service, the dictionary XRI (+index) is reserved for this purpose. To request a Forwarding Index Page (if available), the path segment (+index) can be appended as the path after an XRI authority segment. For example, following is an HXRI for the Forwarding Index Page for the XRI authority =example:

298 http://xri.net/=example/(+index)

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A Forwarding Index Page MAY present a collection of Forwarding XRIs in any manner desired, e.g., anything from a simple text list of HXRIs to a fully annotated graphical "My Links" page.

301	7	Configuration		
302 303		The Forwarding Service Provider SHOULD provide a configuration interface that enables a Subscriber to easily create Forwarding XRIs and map them to Target URIs.		
304 305 306	If a Web configuration interface is offered, the Forwarding Service Provider MUST allow the Subscriber to authenticate using one or more of the Subscriber's Authentication Service Endpoints as defined by [XDI.orgISS].			
307	The co	onfiguration interface SHOULD at a minimum enable a Subscriber to:		
308	•	Create, edit, and delete Forwarding XRIs and Target URIs.		
309	•	Map a Forwarding XRI to a Target URI.		
310	•	Manage a Forwarding Error Page.		
311	The co	onfiguration interface MAY enable a Subscriber to:		
312	•	Create and manage a Forwarding Error Page (see section 5).		
313	•	Create and manage a Forwarding Index Page (see section 6).		
314	•	Control the logging associated with processing forwarding requests.		
315	•	Control notifications associated with Forwarding Service activity.		
316	•	Display Forwarding XRIs within other i-services such as a Contact Page ([ISS-Contact].		

The configuration interface MAY include additional features and functions not specified here.

8 Activation and Confirmation

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Activation of a i-service may be independent of the provisioning of the service endpoint by an i-broker, so existence of a service endpoint in an XRDS document does not necessarily mean that the i-service is active. To enable other service providers and applications to confirm activation of an i-service, a Forwarding Service Provider MUST support the following self-description interface.

To indicate that a specified i-service is active on a service endpoint URI, an HTTP GET request to the fully-constructed service endpoint URI (see section 8.4 of [XRIResolution]) with a Accept header value of text/uri-list MUST return:

- 1. An HTTP status of 200 OK (or a 3xx redirect that ultimately results in a 200 OK).
- A valid, non-empty instance of a URI list [RFC2483] containing the URI identifying the service endpoint type as specified in <u>Table 1</u>. (Note that the URI list MAY also contain additional URIs identifying other service types that are also active on this same endpoint.)

Any other response, including a 404 Not Found, a 406 Not Acceptable, an empty URI list, or a URI list that does not include the URI identifying the specified service type, indicates the specified service type is not active on the endpoint.

9 Security and Privacy Considerations

9.1 Cross-Site Scripting (XSS)

- When creating or configuring a Forwarding XRI or a Target URI, or a Forwarding Error Page or Forwarding Index Page, a Forwarding Service Provider SHOULD take precautions to prevent
- 337 cross-site scripting attacks by filtering out the HTML metacharacters < and > and any other
- 338 characters that may cause XSS vulnerability. For more information see
- 339 http://en.wikipedia.org/wiki/Cross_site_scripting and http://www.cgisecurity.com/articles/xss-
- 340 faq.shtml.

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10 Future Work

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342 10.1 Dictionary Services

Part of XDI.org's charter [XDI.org] is the establishment of internationalized XRI dictionary services for the general public. When these services are available, Forwarding Service Providers will be able to provide Forwarding Service Subscribers with access and feedback mechanisms to dynamic global dictonary services that will simplify the process of developing shared semantics for resources of all types in all Unicode-supported languages.

348	11 Referen	nces
349	11.1 Normativ	7e
350		
351 352	[ISS-Auth-OpenID]	D. Reed, <i>OpenID Authentication Service V1.0</i> , XDI.org I-Services Specification, http://iss.xdi.org, Work-In-Progress.
353 354	[ISS-Auth-SAML]	P. Davis, <i>SAML Authentication Service V1.0</i> , XDI.org I-Services Specification, http://iss.xdi.org, Work-In-Progress.
355 356	[ISS-Contact]	D. Reed, <i>Contact Service V1.0</i> , XDI.org I-Services Specification, http://iss.xdi.org , Work-In-Progress.
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363 364	[XRIEPP]	NeuStar Registry Development Group, <i>EPP XRI Mapping</i> , http://epp-ver-04.sourceforge.net/XRI/, March 2006.
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368 369	[XRIResolution]	G. Wachob et al, <i>Extensible Resource Identifier (XRI) Resolution V2.0</i> , (Work-in-Progress), http://www.oasis-
370		open.org/committees/download.php/17293, March 2006.
371 372	[XRIMetadata]	D. Reed, Extensible Resource Identifier (XRI) Metadata V2.0, [http://www.oasis-open.org/committees/xri], March 2005.
373	11.2 Informat	ive

OASIS XRI Technical Committee, XRI 2.0 FAQ, http://www.oasis-open.org/committees/xri/faq.php, November 2005.

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375

[XRIFAQ]

376	12 Links	
377	[XDI.org]	http://www.xdi.org
378	[XDI.orgContact]	http://xri.net/@xdi.org/(+contact)
379	[XDI.orgGSS]	http://gss.xdi.org
380	[XDI.orgISS]	http://iss.xdi.org
381	[OASISXRITC]	http://www.oasis-open.org/committees/xri
382	[OASISXDITC]	http://www.oasis-open.org/committees/xdi
383		

384 Appendix A. Glossary

In addition to the definitons provided below, the GSS also incorporates by reference the glossary definitions in the XRI Specifications (Appendix C of [XRISyntax]) and the XDI.org Global Services Specifications (Appendix A of [XDI.orgGSS]).

Authentication Service Endpoint	A service endpoint defined by an authentication service specification published by XDI.org on the [XDI.orgISS] website.
Forwarding Service	The XRI identity service (i-service) defined in this specification—see section 1.
Forwarding Service Endpoint	An XRDS service endpoint containing the metadata defined in Table of this specification.
Forwarding Service Provider	Generally, the real-world provider of Forwarding Service to a Forwarding Service Subscriber. Legally, an authorized representative of the legal entity identified by the ProviderID for the Forwarding Service Endpoint.
Forwarding Service Subscriber	The authority for an XRI that subscribes to a Forwarding Service for that XRI and creates and manages Forwarding XRIs.
Forwarding XRI	An XRI that calls Forwarding Service to be mapped to a Target URI.
I-Link	A market term for an HXRI of any kind (see section 1.2.6), and in particular an HXRI that serves as a Forwarding XRI.
Subscriber	See Forwarding Service Subscriber.
Target URI	The URI to which a Forwarding XRI is mapped. The target URI typically represents the current network location of a resource, however in special circumstances it may itself be an XRI.