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I. Chen
Ericsson

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A Uniform Resource Name (URN) Namespace for Enterprise YANG Modules
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Internet Draft

rdns URN

February 3, 2016

Abstract

This document describes the Namespace Identifier (NID) for Uniform Resource Namespace (URN) resources to uniquely identify enterprise YANG modules. This document defines a single top level "rdns" NID, while the management of Uniform Resource Identifiers (URIs) utilizing the top level "rdns" NID rely on the existing domain name registries and the registrants of the individual domain names.

Internet Draft

rdns URN

February 3, 2016

Table of Contents

1. Introduction	3
2. URN Specification for the Enterprise YANG Module Namespace Identifier	3
3. Namespace Considerations	6
4. IANA Considerations	6
5. Security Considerations	6
6. References	6
6.1. Normative References	6
6.2. Informative References	7

[1. Introduction](#)

The use of a standard data modeling language YANG [[RFC6020](#)] together with Network Configuration Protocol (NETCONF) [[RFC6241](#)] allows for the creation of a standard network management interface. A networking device that supports such a standard network configuration interface supports NETCONF as well as a set of YANG modules, allowing administrators to manage data defined by the supported YANG modules in a single uniform manner, regardless of the make and model of the device.

To identify YANG modules, [[RFC6020](#)] requires that each YANG module, whether it is a standard YANG module or not, specifies an XML namespace [[XML-NAMES](#)], and that the XML namespace must be a globally unique Uniform Resource Identifier (URI) [[RFC3986](#)]. To date, IETF standard YANG modules registers their XML namespaces with the IETF XML namespaces [[RFC3688](#)] that fall under the "ietf" Namespace Identifier (NID). Various standards governing bodies such as IEEE are also in the process of registering NIDs for their respective standard YANG module XML namespaces.

As a shortcut, this document registers the "rdns" NID for organizations such as commercial companies or open source communities to create globally unique XML namespaces when they create and publish

YANG modules. An organization can use the "rdns" NID and append its registered domain name in reverse with a string that is unique within its organization to create a globally unique XML namespace for its enterprise YANG module without incurring extra effort to register a new NID.

[2.](#) URN Specification for Enterprise YANG Module Namespace Identifier

Namespace ID:

Request "rdns"

Chen

Expires in 6 months

[Page 3]

Internet Draft

rdns URN

February 3, 2016

Registration Information:

Version Number: 1

Date: <when submitted to IANA>

Declared registrant of the namespace:

Registering organization: IETF Netmod Working Group

Designated contact: ichen@kuatrotech.com

Declaration of syntactic structure:

URNs that use the "rdns" NID shall have the following structures:

urn:rdns:<revers-dns>:<dss>

The reverse registered domain name (revers-dns) is a mandatory string that is an organization's complete registered domain name in reverse. The structure of the string is an organization's domain name from the least specific label to the most specific label, using colons (":") to separate labels.

The domain specific string (dss) is a mandatory string defined by the organization. The structure of this string is opaque. It is a string identifying the name or hierarchies of names the organization uses to identify a YANG module.

Relevant ancillary documentation:

See [[RFC1034](#)] and [[RFC1035](#)] for definitions and conventions of registered domain names.

Identifier uniqueness considerations:

An organization that provides the domain specific string (dss) MUST guarantee the uniqueness of dss within its organization. Using a dss that is unique within an organization in conjunction with a globally unique registered domain name (albeit in reverse) and the new "rdns" top-level NID, a URN is guaranteed to be globally unique.

Identifier persistence considerations:

Persistence of an "rdns" URN is dependent upon the organization that owns the registered domain name encoded in the URN to continue to own the domain name and also not reassign the URN to a different

Chen

Expires in 6 months

[Page 4]

Internet Draft

rdns URN

February 3, 2016

YANG module.

Process of identifier assignment:

The assignment of an rdns URN is delegated to the organization that has registered the domain name encoded in the URN.

For example, Ericsson registers for the domain name ericsson.com and can assign URNs with the prefix "urn:rdns:com:ericsson", where the <reverse-dns> portion of the URN is "com:ericsson". As mentioned above, the <dss> portion of the URN is assigned by the registrant of the domain name ericsson.com.

Process for identifier resolution:

"rdns" URNs are not intended to be accessible for global resolutions. Rather, they are only intended to uniquely identify enterprise YANG modules (within a networking device). Resolution of an "rdns" URN is delegated to the organization owning a registered domain name encoded in the URN. If an organization that owns the registered domain name wishes for its "rdns" URNs to be resolvable, then the organization must register with the Resolution

Discovery System [[RFC2276](#)].

Rules for Lexical Equivalence:

Because domain names are case-insensitive, the <reverse-dns> portion of the URN is case-insensitive for matches. For the <dss> portion of the URN, the rules for lexical equivalence are specified in [[RFC2141](#)].

Conformance with URN Syntax:

No special considerations.

Validation mechanism:

Validation mechanism is controlled by the organization that owns the registered domain name. If an "rdns" URN contains an invalid domain name in the <reverse-dns> portion, then the URN is invalid.

In reality, an "rdns" URN is only meaningful in the context of YANG modules deliberately installed and supported in a device. Consequently, the "rdns" URNs in use should all be valid.

Scope:

The scope of an "rdns" URN is limited to enterprise YANG modules.

Chen

Expires in 6 months

[Page 5]

Internet Draft

rdns URN

February 3, 2016

[3.](#) Namespace Considerations

[RFC6020] suggests that for enterprise YANG modules to have globally unique XML namespaces, one possibility is to use Uniform Resource Locators (URLs) based on an organization's registered domain name. However, in addition to being a globally unique identifier, a URL is also a resource locator, providing information about the resource's primary access mechanism. Consequently, an enterprise YANG module using a URL as its XML namespace also identifies the location of the resource, which is not necessarily the desired outcome. For example, an enterprise forced to use a URL `http://www.example.com/yang/ospf` as its YANG module XML namespace might not wish to make the YANG module available via HTTP [[RFC2616](#)], even though that is what using a URL implies. Using "rdns" URNs defined in this document yields globally unique XML namespaces which do not have the side effect of URLs that

imply how to obtain resources.

4. Security Considerations

This document does not introduce new security considerations beyond those associated with the use and resolution of URNs in general.

5. IANA Considerations

This document defines a new URN NID registration for "rdns" in IANA's "Formal URN Namespace" registry. The completed registration template is in [Section 2](#).

6. References

6.1. Normative References

- [RFC6020] Bjorklund, M., Ed., "YANG - A Data Modeling Language for the Network Configuration Protocol (NETCONF)", [RFC 6020](#), DOI 10.17487/RFC6020, October 2010, <<http://www.rfc-editor.org/info/rfc6020>>.
- [XML-NAMES] Hollander, D., Tobin, R., Thompson, H., Bray, T., and A. Layman, "Namespaces in XML 1.0 (Third Edition)", World Wide Web Consortium Recommendation REC-xml-names-20091208, December 2009, <<http://www.w3.org/TR/2009/REC-xml-names-20091208>>.
- [RFC3986] Berners-Lee, T., Fielding, R., and L. Masinter, "Uniform Resource Identifier (URI): Generic Syntax", STD 66, [RFC 3986](#), DOI 10.17487/RFC3986, January 2005, <<http://www.rfc-editor.org/info/rfc3986>>.

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<http://www.rfc-editor.org/info/rfc2119>>.
- [RFC1034] Mockapetris, P., "Domain names - concepts and facilities", STD 13, [RFC 1034](#), DOI 10.17487/RFC1034, November 1987, <<http://www.rfc-editor.org/info/rfc1034>>.

- [RFC1035] Mockapetris, P., "Domain names - implementation and specification", STD 13, [RFC 1035](#), DOI 10.17487/RFC1035, November 1987, <<http://www.rfc-editor.org/info/rfc1035>>.
- [RFC2141] Moats, R., "URN Syntax", [RFC 2141](#), DOI 10.17487/RFC2141, May 1997, <<http://www.rfc-editor.org/info/rfc2141>>.

6.2. Informative References

- [RFC6241] Enns, R., Ed., Bjorklund, M., Ed., Schoenwaelder, J., Ed., and A. Bierman, Ed., "Network Configuration Protocol (NETCONF)", [RFC 6241](#), DOI 10.17487/RFC6241, June 2011, <<http://www.rfc-editor.org/info/rfc6241>>.
- [RFC3688] Mealling, M., "The IETF XML Registry", [BCP 81](#), [RFC 3688](#), DOI 10.17487/RFC3688, January 2004, <<http://www.rfc-editor.org/info/rfc3688>>.
- [RFC2276] Sollins, K., "Architectural Principles of Uniform Resource Name Resolution", [RFC 2276](#), DOI 10.17487/RFC2276, January 1998, <<http://www.rfc-editor.org/info/rfc2276>>.
- [RFC2616] Fielding, R., Gettys, J., Mogul, J., Frystyk, H., Masinter, L., Leach, P., and T. Berners-Lee, "Hypertext Transfer Protocol -- HTTP/1.1", [RFC 2616](#), DOI 10.17487/RFC2616, June 1999, <<http://www.rfc-editor.org/info/rfc2616>>.

Author's Address

I. Chen
ichen@kuatrotech.com