

MILE Working Group  
Internet-Draft  
Intended status: Informational  
Expires: September 6, 2018

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March 5, 2018

ROLIE Discovery Mechanism  
draft-banghart-mile-rolie-discovery-00

## Abstract

This document specifies a mechanism that allows consistent discovery of ROLIE repositories. This discovery is extremely important for automated tools that cannot use out-of-band Service Document discovery. Any human operators are also able to use this mechanism to avoid relying on inconsistent human to human communication. This document updates the ROLIE core specification.

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ROLIE Discovery

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## [1.](#) Introduction

Discovery of a top-level resource is an important part of any RESTful service. In order to begin navigating the web of information available in ROLIE [[RFC8322](#)], a client must first locate the Service Document. Without a well-defined discovery mechanism, clients must use out-of-band methods to locate the Service Document, such as crawling a web page or directly contacting website administrators.

The following goals are laid out for this mechanism:

Only requires domain name as input to locate an exact URL for Service Document retrieval.

Fully automatable, but usable by human operators.

Supports multi-tenancy, that is, multiple ROLIE services hosted on the same domain.

In order to meet these goals , this document updates ROLIE to require the implementation of DNS-Based Service Discovery (DNS-SD) [[RFC6763](#)].

DNS-SD provides a standardized mechanism built on top of existing DNS processes that would allow for ROLIE clients to automatically discover ROLIE services provided on a domain. DNS-SD is relatively

simple to understand and implement, and as it only uses existing fields in DNS Zone Files, does not require any additional implementation work by the DNS server.

The rest of the document assumes that the reader has a basic understanding of both DNS-SD, and traditional DNS configuration, including zone files.

## 2. Terminology

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

## 3. XML-related Conventions

Needed? Todo.

## 4. Requirements for Use of DNS Service Discovery

A ROLIE service MUST be registered to the relevant DNS Server using the conventions and requirements laid out in DNS-SD ([\[RFC6763\]](#)).

A ROLIE service MUST use the service name "rolie" as registered to the Service Names and Port Numbers registry.

TODO: Define a standardized composite service name (i.e. \_rolie\_https.\_tcp)

## 5. IANA Considerations

This document registers a new entry in the Service Name and Port Number Registry at <<https://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xhtml>>. The registration request is as follows:

+-----+-----+
Service Name   rolie

Transport Protocol	tcp
Assignee	Stephen Banghart <stephen.banghart@nist.gov>
Contact	Stephen Banghart <stephen.banghart@nist.gov>
Description	Resource-Oriented Lightweight Information Exchange (ROLIE)
Reference	This document, <a href="#">RFC8322</a>
Port Number	(Intentionally Blank)

## [6.](#) Security Considerations

Todo.

## [7.](#) Privacy Considerations

Todo.

## [8.](#) Acknowledgements

## [9.](#) Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.
- [RFC6763] Cheshire, S. and M. Krochmal, "DNS-Based Service Discovery", [RFC 6763](#), DOI 10.17487/RFC6763, February 2013, <<https://www.rfc-editor.org/info/rfc6763>>.
- [RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in [RFC 2119](#) Key Words", [BCP 14](#), [RFC 8174](#), DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/info/rfc8174>>.
- [RFC8322] Field, J., Banghart, S., and D. Waltermire, "Resource-Oriented Lightweight Information Exchange (ROLIE)", [RFC 8322](#), DOI 10.17487/RFC8322, February 2018, <<https://www.rfc-editor.org/info/rfc8322>>.

## [Appendix A.](#) Examples

### [A.1.](#) Zone File

In this section we will provide a nominal zone file that provides DNS-SD for ROLIE and explain the various important pieces.

```
$ORIGIN example.com.
```

```
@ IN SOA example.com. unused-email (
    2017030300 ; serial
    3600       ; refresh
    1800       ; retry
    604800     ; expire
    600 )      ; ttl
```

```
@ IN NS example.com.
```

```
_dns-update._udp IN SRV 0 0 53 example.com.
```

```
b._dns-sd._udp IN PTR @ ; "b" = browse domain
lb._dns-sd._udp IN PTR @ ; "lb" = legacy browse domain
                        (include domain in empty-string browses)
r._dns-sd._udp IN PTR @ ; "r" = registration domain
```

```
_rolie_https._tcp PTR MyRolieService._rolie_https._tcp
MyRolieService._rolie_https._tcp SRV 0 0 227 rolie.example.com.
                                TXT path=/rolie
```

TODO: Explain each section. Correct example zone file to match current implementation.

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