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DNS Attrleaf Changes: Fixing Specifications with _Underscored Node Name Use

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Abstract

Original uses of an _underscore character as a domain node name prefix, which creates a space for constrained interpretation of resource records, were specified without the benefit of an IANA registry. This produced an entirely uncoordinated set of name-creation activities, all drawing from the same namespace. A registry now has been defined. However the existing specifications that use _underscore naming need to be modified, to be in line with the new registry. This document specifies those changes. The changes preserve existing software and operational practice, while adapting the specifications for those practices to the newer _underscore registry model.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on November 4, 2018.

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1. Introduction

Original uses of an _underscore character as a domain node name [RFC1035] prefix, which creates a space for constrained interpretation of resource records, were specified without the benefit of an [IANA-reg] registry. This produced an entirely uncoordinated set of name-creation activities, all drawing from the same namespace. A registry has been now defined, and that document discusses the background for _underscore domain name use [Attrleaf].

The basic model for underscored name registration, as specified in [Attrleaf], is to have each registry entry be unique in terms of the combination of a resource record type and a 'global' (ie, right-most) underscore name.

The existing uses of _underscore naming have specifications that do not reflect the existence of this integrated registry. For the new reader or the new editor of one of those documents, there is currently nothing signaling that the underscore name(s) defined in the document are now processed through an IANA registry. This document remedies that, by marking such a published document with an update, indicating the nature of the change.

The documents that define the SRV [RFC2782] and URI [RFC7553] DNS resource records provide a meta-template for underscore assignments, partially based on separate registries [RFC6335]. For the portion that selects the global (right-most) underscore name, this perpetuates uncoordinated assignment activities by separate technical specifications, out of the same name space. This document remedies that by providing detail for revisions to the SRV and URI specifications, to bring their use in line with the single, integrated global underscore registry.

The result of these changes preserves existing software and operations practices, while adapting the technical specifications to the newer _underscore registry model.

2. RRset Use in Specifications

2.1. TXT RRset Use

This section provides a generic approach for changes to existing specifications that define straightforward use of _underscored node names, when scoping the use of a "TXT" RR. The approach provides the information needed for adapting such specifications to the use of the IANA DNS Underscore Global Scoped Entry Registry [Attrleaf]. Hence the approach is meant both as an update to these existing specifications, and as guidance for changes when those documents are revised.

For any document that specifies the use of a "TXT" RRset under an underscored name, that name is expected to be registered in the IANA DNS Underscore Global Scoped Entry Registry [Attrleaf]. An effort has been made to locate existing drafts that do this, register the global underscored name, and list them in this document.

If a specification that defines use of a "TXT" record within an underscore-scoped name is revised, it SHOULD add an entry to the global underscored name registry, if one does not already exist.

Here is a template of suggested text for this to appear in the IANA Considerations section of the specification:

"Per" [Attrleaf] "please add the following entry to the DNS Underscore Global Scoped Entry Registry:"

RR Type	_NODE NAME	REFERENCE
TXT	_{DNS node name}	{citation for the document making the addition.}

Table 1: Underscore Global Registry Entry

2.2. SRV RRset Use

Specification for the SRV [RFC2782] resource record provides a template for use of underscored node names. The global (right-most) name, is characterised as naming the 'protocol' that is associated with "SRV" RR usage.

This section provides a generic approach for changes to existing specifications that define the use of an "SRV" RR. The approach provides the information needed for adapting such specifications to the use of the IANA DNS Underscore Global Scoped Entry Registry [Attrleaf]. Hence the approach is meant both as an update to these existing specifications, and as guidance for changes when those documents are revised.

For any document that specifies the use of a "SRV" RRset, the global ('protocol', right-most) underscored name is expected to be registered in the IANA DNS Underscore Global Scoped Entry Registry [Attrleaf]. An effort has been made to locate existing drafts that do this, register the global underscored name, and list them in this document.

If a specification that defines use of an "SRV" record is revised, and the right-most underscored name above the record is not already registered, an entry for the name SHOULD be added to the global underscored name registry.

Here is a template of suggested text for this to appear in the IANA Considerations section of the specification:

"Per" [Attrleaf] "please add the following entry to the DNS Underscore Global Scoped Entry Registry:"

RR Type	_NODE NAME	REFERENCE
SRV	_{DNS 'protocol' node name}	{citation for the document making the addition.}

Table 2: Underscore Global Registry Entry

2.3. URI RRset Use

Specification for the URI [RFC7553] resource record provides a template for use of underscored node names. The global (right-most) name, is characterised as naming the 'protocol' that is associated with "URI" RR usage or by reversing an Enumservice sequence.

This section provides a generic approach for changes to existing specifications that define use of a "URI" RRset. The approach provides the information needed for adapting such specifications to the use of the IANA DNS Underscore Global Scoped Entry Registry [Attrleaf]. Hence the approach is meant both as an update to these existing specifications, and as guidance for changes when those documents are revised.

For any RFC that specifies the use of a "URI" RR, the global ('protocol' or right-most enumservice) underscored name is expected to be registered in the IANA DNS Underscore Global Scoped Entry Registry [Attrleaf]. An effort has been made to locate existing drafts that do this and register the associated 'protocol' name.

If a specification that defines use of a "URI" record is revised, when the right-most underscored name used by it is not already registered, an entry for the name SHOULD be added to the global underscored name registry.

Here is a template of suggested text for this to appear in the IANA Considerations section of the specification:

> "Per" [Attrleaf] "please add the following entry to the DNS Underscore Global Scoped Entry Registry:"

RR Type	_NODE NAME	REFERENCE
URI	_{DNS 'protocol' or Enumservice node name}	{citation for the document making the addition.}

Table 3: Underscore Global Registry Entry

3. Underscored Template Specifications

3.1. SRV Specification Changes

The specification for a domain name under which an SRV [RFC2782] resource record appears provides a template for use of underscored node names. The global (right-most) underscored name, is characterised as indicating the 'protocol' that is associated with "SRV" RR usage.

The text of that specification is hereby updated from:

The format of the SRV RR

Here is the format of the SRV RR, whose DNS type code is 33:
_Service._Proto.Name TTL Class SRV Priority Weight Port Target
...
Proto
The symbolic name of the desired protocol, with an underscore (_) prepended to prevent collisions with DNS labels that occur in nature. _TCP and _UDP are at present the most useful values for this field, though any name defined by Assigned Numbers or locally may be used (as for Service). The Proto is case insensitive.

The updated text is:

The format of the SRV RR

Here is the format of the SRV RR, whose DNS type code is 33:

"_Service._Proto.Name TTL Class SRV Priority Weight Port Target" _..._

Proto

> The symbolic name of the desired protocol, with an underscore (_) prepended to prevent collisions with DNS labels that occur in nature. _tcp and _udp are at present the most useful values for this field. The Proto is case insensitive.
>
> The SRV RRset protocol (global, right-most) underscored name SHOULD be registered in the IANA DNS Underscore Global Scoped Entry Registry [Attrleaf].

3.2. URI Specification Changes

Specification for the domain name under which a URI [RFC7553] resource record occurs is similar to that for the SRV [RFC2782] resource record, although the text refers only to 'service' name, rather than distinguishing 'service' from 'protocol'. Further, the URI RR specification permits alternative underscored naming schemes:

> One matches what is used for "SRV", with the global (right-most) underscored name calls "protocol'.
>
> The other is based on a reversing of an Enumservice [RFC6117] sequence.

The text to be updated is:

4.1. Owner Name, Class, and Type

The URI owner name is subject to special conventions.

Just like the SRV RR [RFC2782], the URI RR has service information encoded in its owner name. In order to encode the service for a specific owner name, one uses service parameters. Valid service parameters are those registered by IANA in the "Service Name and Transport Protocol Port Number Registry" [RFC6335] or as "Enumservice
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Registrations [RFC6117]. The Enumservice Registration parameters are reversed (i.e., subtype(s) before type), prepended with an underscore (_), and prepended to the owner name in separate labels. The underscore is prepended to the service parameters to avoid collisions with DNS labels that occur in nature, and the order is reversed to make it possible to do delegations, if needed, to different zones (and therefore providers of DNS).

For example, suppose we are looking for the URI for a service with ENUM Service Parameter "A:B:C" for host example.com. Then we would query for (QNAME,QTYPE)=("_C._B._A.example.com","URI").

As another example, suppose we are looking for the URI for a service with Service Name "A" and Transport Protocol "B" for host example.com. Then we would query for (QNAME,QTYPE)=("_A._B.example.com","URI").

The updated text is:

> 4.1. Owner Name, Class, and Type
>
> The URI owner name is subject to special conventions.
>
> As for the SRV RRset [RFC2782], the URI RRset global (right-most) underscored name SHOULD be registered in the IANA DNS Underscore Global Scoped Entry Registry [Attrleaf].
>
> Just like the SRV RRset, the URI RRset has service information encoded in its owner name. In order to encode the service for a specific owner name, one uses service parameters. Valid service parameters are:
>
> * Those registered by IANA in the "Service Name and Transport Protocol Port Number Registry [RFC6335]" The underscore is prepended to the service parameters to avoid collisions with DNS labels that occur in nature, and the order is reversed to make it possible to do delegations, if needed, to different zones (and therefore providers of DNS).

* Those listed in "Enumservice Registrations [RFC6117]. The Enumservice Registration parameters are reversed (i.e., subtype(s) before type), prepended with an underscore (_), and prepended to the owner name in separate labels. The right-most underscored Enumservice name becomes the global Attrleaf name to register.

For example, suppose we are looking for the URI for a service with ENUM Service Parameter "A:B:C" for host example.com. Then we would query for (QNAME,QTYPE)=("_C._B._A.example.com","URI").

As another example, suppose we are looking for the URI for a service with Service Name "A" and Transport Protocol "B" for host example.com. Then we would query for (QNAME,QTYPE)=("_A._B.example.com","URI").

4. IANA Considerations

Although this document makes reference to IANA registries, it introduces no new IANA registries or procedures.

5. Security Considerations

This memo raises no security issues.

6. References

6.1. Normative References

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