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DNS Scoped Data Through Attribute Leaves
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Abstract

Historically, any DNS RR may occur for any name. Recent additions have defined DNS leaf nodes that contain a reserved node name, beginning with an underscore. With the underscore construct, the choice of valid RRs is limited to a defined set. The underscore construct is a basic paradigm modification to the DNS, because it defines a scope-constrained attribute space for the containing domain name. This note defines the nature of this DNS usage and defines the procedures for registering new "underscore names" with IANA.

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1. Introduction

Historically, any DNS RR may occur for any name. Recent additions have defined DNS leaf nodes that contain a reserved node name, beginning with an underscore. With the underscore construct, the choice of valid RRs is limited to a defined set. The underscore construct is a basic paradigm modification to the DNS, because it defines a scope-constrained attribute space for the containing domain name.

The DNS technical specification defines no semantics to domain names and no constraints upon which resource records may be associated with a particular name. This freedom in the basic technology has permitted a wide range of administrative and semantic policies to be used -- in parallel -- with the DNS. In the DNS specifications, data semantics have been limited to the specifications for precise resource records, on the expectation that new ones would be added as needed. Although there remains an expectation that this method of enhancement is to be preferred, alternative approaches have been explored.

One uses a special class of DNS node name uses a leading underscore character to define special contexts for specific resource records. An established example is the SRV record, which generalizes concepts long-used for email routing, with the MX record.[3][2] The use of special DNS names has significant benefits and detriments. Some of these are explored in [1].

One that has perhaps not been noticed is that the use of the underscore construct substantially changes possible concerns for scaling effects, when there are different uses for the same RR, notably the free-form TXT record. Within the scope of a defined underscore leaf, the specific uses of specific resource records is formally constrained.

The purpose of this note is to attempt to provide an explicit definition of this type of DNS naming, and to establish an IANA registry for the reserved names beginning with underscore.

NOTE:

> Apologies for the incomplete state of this note. It will be revised, shortly, to provide more detail. Given the DNS-related activities in the DKIM working group, I thought it worth marking the established nature and the significant meaning of the underscore construct.

2. Security Considerations

This memo raises no security issues

3. IANA Considerations

Domain node names that begin with an underscore MUST be registered with IANA.

The procedures will be specified in a later version of this note.

4. Informative

[1] "IAB Discussion about alternative methods of adding information to the DNS".

[2] "Definition of MX record".

[3] "Definition of SRV record".

Appendix A. IANA Registration Procedures

TBD

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