

**Resource Records for EUI-48 and EUI-64 Addresses in the DNS
draft-jabley-dnsext-eui48-eui64-rrtypes-00**

Abstract

EUI-48 and EUI-64 are address formats specified by the IEEE for use in various layer-2 networks, e.g. ethernet.

This document defines two new DNS resource record types, EUI48 and EUI64, for encoding ethernet addresses in the DNS.

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1. Introduction

The Domain Name System (DNS) is described in [[RFC1034](#)] and [[RFC1035](#)]. This base specification defines many Resource Record Types (RRTypes), and subsequent specifications have defined others. Each defined RRType provides a means of encoding particular data in the DNS.

EUI-48 [[EUI48](#)] and EUI-64 [[EUI64](#)] are address formats specified by the IEEE for use in various layer-2 networks, e.g. ethernet.

This document defines two new Resource Record Types (RRTypes), EUI48 and EUI64 for encoding EUI-48 and EUI-64 addresses in the DNS.

2. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)].

3. Presentation Format Considerations

Various representations of EUI-48 and EUI-64 addresses are used in common implementations, depending on application and vendor preference. For example, the EUI-48 address 7cd1c3e8102f might reasonably be represented as any of the following:

- o 7cd1c3e8102f
- o 7c:d1:c3:e8:10:2f
- o 7c-d1-c3-e8-10-2f
- o 7cd1.c3e8.102f

There is no canonical representation defined by the IEEE.

The use of a single representation for use in the DNS promotes ease of implementation and information retrieval, and this document specifies (see [Section 4.2](#), [Section 5.2](#)) that the second representation on this list be used, that of two-digit hexadecimal numbers separated by colons. The digits A through F may be represented in either upper or lower case.

4. The EUI48 Resource Record

The EUI48 RR is used to store EUI-48 addresses in the DNS.

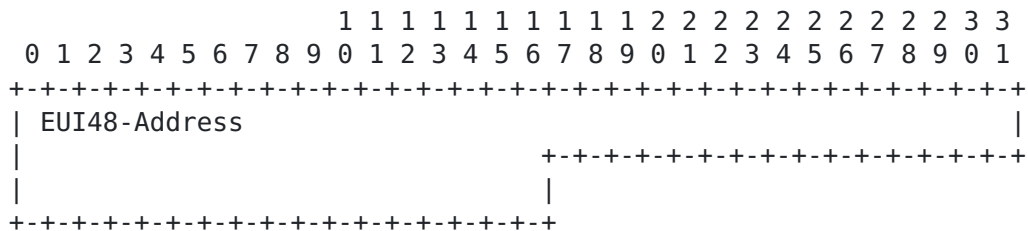
The Type value for the EUI48 RRTYPE is XXTBA1.

The EUI48 RR is class-independent.

The EUI48 RR has no special TTL requirements.

4.1. EUI48 RDATA Wire Format

The RDATA for an EUI48 RR consists of a single, 6-octet EUI48-Address field, encoded in network (big-endian) order.



4.2. EUI48 RR Presentation Format

The Address field MUST be represented as six two-digit hexadecimal numbers separated by colons. The hexadecimal digits "A" through "F" MAY be represented in either upper or lower case.

5. The EUI64 Resource Record

The EUI64 RR is used to store EUI-64 addresses in the DNS.

The Type value for the EUI64 RR is XXTBA2.

The EUI64 RR is class-independent.

The EUI64 RR has no special TTL requirements.

5.1. EUI64 RDATA Wire Format

The RDATA for an EUI48 RR consists of a single, 8-octet Address field, encoded in network (big-endian) order.

```

      1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 3 3
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| EUI-64 Address                                     |
|                                                     |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

5.2. EUI64 RR Presentation Format

The Address field **MUST** be represented as eight two-digit hexadecimal numbers separated by colons. The hexadecimal digits "A" through "F" may be represented in either upper or lower case.

6. Examples

The following EUI48 RR stores the EUI-48 address 7c:d1:c3:e8:10:2f.

```
host.example. 86400 IN EUI48 7c:d1:c3:e8:10:2f
```

The following EUI64 RR stores the EUI-64 address 7c:d1:c3:ff:fe:e8:10:2f.

```
host.example. 86400 IN EUI64 7c:d1:c3:ff:fe:e8:10:2f
```

7. IANA Considerations

This document directs the IANA to assign two entries in the "Resource Record (RR) TYPEs" subregistry as follows:

Type	Value	Meaning	Reference
EUI48	XXTBA1	an EUI-48 address	this document
EUI64	XXTBA2	an EUI-64 address	this document

8. Security Considerations

The specification presented in this document presents no additional threat to the Internet.

9. Acknowledgements

Your name here, etc.

10. Normative References

- [EUI48] IEEE, "Guidelines for use of a 48-bit Extended Unique Identifier (EUI-48)".
- [EUI64] IEEE, "Guidelines for use of a 64-bit Extended Unique Identifier (EUI-64)".
- [RFC1034] Mockapetris, P., "Domain names - concepts and facilities", STD 13, [RFC 1034](#), November 1987.
- [RFC1035] Mockapetris, P., "Domain names - implementation and specification", STD 13, [RFC 1035](#), November 1987.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

[Appendix A](#). Editorial Notes

This section (and sub-sections) to be removed prior to publication.

[A.1](#). RRTYPE Parameter Allocation Template

DNS RRTYPE PARAMETER ALLOCATION TEMPLATE

A. Submission Date: 2013-03-18

B.1 Submission Type: ☒ New RRTYPE ☐ Modification to RRTYPE

B.2 Kind of RR: ☒ Data RR ☐ Meta-RR

C. Contact Information for submitter (will be publicly posted):

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D. Motivation for the new RRTYPE application.

The purpose of this RRTYPE application is to allow EUI-48 and EUI-64 addresses to be stored in the DNS. EUI-48 addresses are those used, for example, in ethernet.

E. Description of the proposed RR type.

See [draft-jabley-dnsexst-eui48-eui64-rrtypes](#) for a full description.

F. What existing RRTYPE or RRTYPEs come closest to filling that need and why are they unsatisfactory?

The TXT record can be used to store arbitrary, unstructured data in the DNS and hence could be used to store EUI-48 and EUI-64 addresses. This approach is unsatisfactory for the usual reasons, i.e. there is no opportunity for validating data before it is stored, and typographical errors must consequently be detected after data retrieval.

G. What mnemonic is requested for the new RRTYPE (optional)?

EUI48 for EUI-48 addresses; EUI64 for EUI-64 addresses.

H. Does the requested RRTYPE make use of any existing IANA registry or require the creation of a new IANA sub-registry in DNS Parameters? If so, please indicate which registry is to be used or created. If a new sub-registry is needed, specify

the allocation policy for it and its initial contents. Also include what the modification procedures will be.

No.

- I. Does the proposal require/expect any changes in DNS servers/resolvers that prevent the new type from being processed as an unknown RRTYPE (see [[RFC3597](#)])?

No.

- J. Comments:

See [draft-jabley-dnsext-eui48-eui64-rrtypes](#) for a complete specification.

A.2. Change History

00 Initial idea, circulated for the purposes of entertainment.

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