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R. Atarius
Qualcomm Technologies, Inc.
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A Uniform Resource Name Namespace for the Device Identity and the Mobile
Equipment Identity (MEID)
[draft-atarius-dispatch-meid-urn-03](#)

Abstract

The specification fulfills the requirement from Third Generation Partnership Project 2 (3GPP2) by registering a Uniform Resource Name (URN) namespace for the device identity and a sub namespace for the Mobile Equipment Identity (MEID). The structure of the MEID is 15 hexadecimal encoded digits long and is defined in 3GPP2 to uniquely identify a mobile equipment.

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Table of Contents

| | | |
|-----------------------|---|--------------------|
| 1. | Introduction | 3 |
| 2. | Requirement Levels Key Words | 4 |
| 3. | Terminology | 5 |
| 4. | Namespace Registration Template for Device Identity | 6 |
| 5. | Specification for MEID Format | 9 |
| 5.1. | Manufacturer Code | 9 |
| 5.2. | Serial Number | 9 |
| 5.3. | Check Digit | 9 |
| 6. | Community considerations | 10 |
| 7. | Namespace considerations | 11 |
| 8. | IANA considerations | 12 |
| 9. | Security considerations | 13 |
| 10. | Acknowledgements | 14 |
| 11. | References | 15 |
| 11.1. | Normative References | 15 |
| 11.2. | Informative References | 15 |
| | Author's Address | 16 |

1. Introduction

This specification registers a URN namespace for the device identity and a sub namespace for the MEID. This namespace in combination with this sub namespace are only used by the 3GPP2 mobile equipment when attached to an Internet Protocol (IP) network. The MEID is managed by 3GPP2. While this specification registers only MEID sub namespace under the device identity URN namespace, other sub namespaces under device identity namespace may be registered in the future through publication of future RFCs.

The MEID is 15 hexadecimal digits long and includes a manufacturer code of 8 hexadecimal digits and the serial number of 6 hexadecimal digits plus a hexadecimal digit as a check digit.

The manufacturer code identifies the mobile equipment manufacturer, or regional administration body and mobile equipment manufacturer. The values of manufacturer code uniquely identify the mobile equipment manufacturer. The serial number uniquely identifies each mobile equipment within the manufacturer. The check digit is used as assurance of integrity in error-prone operations, e.g. when used with certain types of readers during inventory management operations. The check digit is not transmitted and the value is always set to 0 by the mobile equipment in deployed operations.

The information here is meant to be a concise guide for those wishing to use the MEID as a URN. Nothing in this document should be construed to override [[S.R0048-A](#)] that defines the MEID.

2. Requirement Levels Key Words

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. Terminology

Some terms used throughout this document are defined in the relevant 3GPP2 documents.

4. Namespace Registration Template for Device Identity

Namespace ID: "device-id" requested

Registration Information:

Registration version number: 1

Registration date: 2011-08-23

Sub namespace: "meid" requested

Registration Information:

Registration version number: 1

Registration date: 2011-08-23

Declared registrant of the namespace: 3GPP2, 2500 Wilson Boulevard,
Suite 300, Arlington, Virginia 22201 (USA)

Declaration of syntactic structure: The identifier is expressed in
ASCII (UTF-8) characters and has a hierarchical structure as follows:

```
urn:device-id:<device-id-specifier>  
                [:<device-id-specifier-defined-substring>]
```

where:

<device-id-specifier> = "meid" | <device-id-specifier-defined-string>

<device-id-specifier-defined-string> = other device equipment
 identifier

<device-id-specifier-defined-substring> = string satisfying the format
 of <device-id-specifier>

The device identity namespace includes a predefined namespace for
MEID. The device identity namespace may in the future be extended to
include other device identifiers.

An MEID is an identifier under the device identity namespace that
uniquely identifies mobile equipment used in 3GPP2 defined networks.

The internal representation of an MEID is a specific number of
hexadecimal digits, as described in [[S.R0048-A](#)]. To accurately
represent an MEID as a URN, it is necessary to convert the
hexadecimal digits to a string representation.

The following Augmented Backus-Naur Form (ABNF) includes the set of core rules in [[RFC5234](#)], which are not repeated here.

The formal definition of the MEID string representation for the device-id-specifier-defined-substring for the "meid" device-id-specifier is provided by the following [[RFC5234](#)]:

```
MEID = Manufacturer Code "-" Serial Number "-" Check digit
Manufacturer Code      = 8DIGIT
Serial Number          = 6DIGIT
Check Digit            = "0"
```

For example:

```
urn:device-id:meid:A04B0D56-02A7E3-0;
```

The <device-id-specifier>, <device-id-specifier-defined-string>, and <device-id-specifier-defined-substring> can comprise any ASCII characters compliant with URN syntax in [[RFC2141](#)].

The 3GPP2 is responsible for the <device-id-specifier> "meid" and for managing the sub-levels below "meid".

Identifier uniqueness considerations: Identifiers in the "device-id" namespace are defined and assigned in the requested namespace by the 3GPP2 or an agency appointed by 3GPP2, and within each manufacturer code space by each mobile equipment manufacturer, after ensuring that the URNs to be assigned are unique. Uniqueness is achieved by checking against the registry of previously assigned names.

Procedures are in place to ensure that each MEID is uniquely assigned by the mobile equipment manufacturer so that it is guaranteed to uniquely identify that particular mobile equipment.

Identifier persistence considerations: The 3GPP2 is committed to maintaining uniqueness and persistence of all resources identified by assigned URNs.

Process of identifier assignment: The 3GPP2 or its approved agency will manage the <device-id-specifier> and <device-id-specifier-defined-substring> identifier resources to maintain uniqueness when <device-id-specifier> is "meid".

Process for identifier resolution: Since the device identity namespace is not globally resolvable, this is not applicable.

Rules for Lexical Equivalence: Consider each field of the MEID <device-id-specifier-defined-substring> to be a sequence of

hexadecimal digits. Then, to compare a pair of MEIDs, compare the corresponding fields of the <device-id-specifier-defined-substring> from each MEID in order of significance and according to their data type. Two MEIDs are equal if and only if all the corresponding fields are equal.

The lexical equivalence of the device-id namespace-specific strings (NSSs) is defined as an exact, but not case-sensitive, string match.

Any identifier in device-id namespace can be compared using the normal mechanisms for percent-encoded UTF-8 strings.

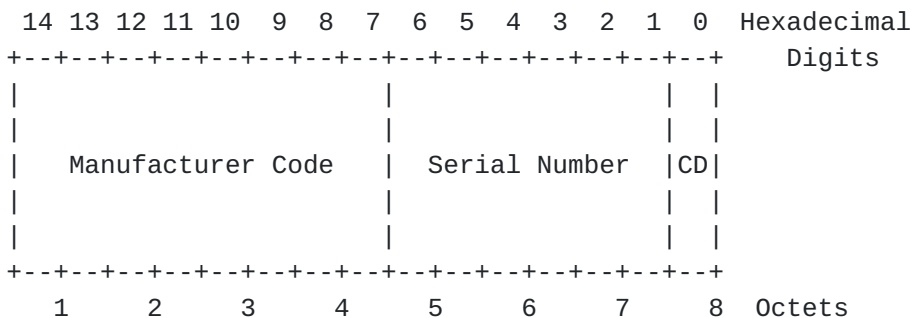
Conformance with URN Syntax: The string representation of the device identity URN and of the MEID sub namespace is fully compatible with the URN syntax.

Validation Mechanism: The MEID can be validated using the mechanism defined in [[S.R0048-A](#)].

Scope: device-id URN is global in scope.

5. Specification for MEID Format

The MEID format is 15 hexadecimal digits encoded in 8 octets as defined in [S.R0048-A]. The most significant digit is encoded in bits 4-1 of the octet 1. Bits 5-8 of octet 1 are set to zero. The least significant digit is encoded in bits 4-1 of the octet 8.



5.1. Manufacturer Code

The manufacturer code is an 8 hexadecimal digit value. The manufacturer code identifies the mobile equipment manufacturer, and regional administration body of the mobile equipment. The manufacturer code is chosen from a range of values allocated to the mobile equipment manufacturer in order to uniquely identify the mobile equipment.

5.2. Serial Number

The serial number is a 6 hexadecimal digit value. The serial number identifies equipment within the manufacturer code.

5.3. Check Digit

This is a single hexadecimal digit (bits 1-4 of octet 8) and is used as assurance of integrity in error-prone operations, e.g. when used with certain types of readers during inventory management operations. The check digit is always set to zero when transmitted by the Mobile Equipment.

6. Community considerations

3GPP2 defined mobile equipment will be interoperating with internet devices for a variety of voice and data communication services. To do this, they need to make use of internet protocols that will operate end to end between mobile equipments in 3GPP2 network and those in the general internet. Many of these protocols require the use of URN's as identifiers. Within the 3GPP2 defined networks, mobile equipment is identified by its MEID. Internet users will need to be able to receive and include the device identity URN in various internet protocol elements to facilitate communication between pure internet based devices and 3GPP2 defined mobile equipments. Thus, the existence and syntax of these namespaces needs to be available to the general internet community and the namespace needs to be registered with IANA in order to guarantee uniqueness and prevent potential namespace conflicts both within the internet and within 3GPP2 defined networks.

7. Namespace considerations

A URN was considered the most appropriate URI to represent the MEID as this identifier may be used and transported similarly to the Universally Unique Identifier (UUID) which is defined as a URN in [\[RFC4122\]](#). Since specifications for protocols that are used to transport device identifiers often require the device identifier to be globally unique and in the URN format, it is necessary that the URN formats are defined to represent the MEID.

8. IANA considerations

In accordance with [BCP 66](#) [[RFC3406](#)], IANA is asked to register the Formal URN namespace "device-id" and URN sub namespace "meid" in the Registry of URN namespaces and sub namespaces, using the registration template presented in [Section 3](#) of this document.

9. Security considerations

MEIDs (with the check digit) are displayable on most 3GPP2 mobile equipment; therefore, they must not be used as security capabilities such as identifiers whose mere possession grants access.

The MEID is to be incorporated in a module which is contained within the mobile equipment. The MEID SHALL not be changed after the mobile equipment's production process. It SHALL resist tampering, i.e. manipulation and change, by any means (e.g. physical, electrical and software).

10. Acknowledgements

This document draws on the 3GPP2 work on Numbering, Addressing and Identification in [[S.R0048-A](#)] and also on the style and structure used in [[I-D.montemurro-gsma-imei-urn](#)] and [[RFC4122](#)].

The author thanks for the detailed comments, provided by Ramachandran Subramanian, Alex Gogic, and Randall Gellens.

11. References

11.1. Normative References

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11.2. Informative References

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Author's Address

Roozbeh Atarius
Qualcomm Technologies, Inc.
5775 Morehouse Drive
San Diego, CA 92121
USA

Phone: +1 858 845 1341

Email: ratarius@qti.qualcomm.com