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MN Identifier Types for [RFC 4283](#) Mobile Node Identifier Option  
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## Abstract

Additional Identifier Types are proposed for use with the Mobile Node Identifier Option for MIPv6 ([RFC 4283](#)).

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## Table of Contents

<a href="#">1.</a>	Introduction . . . . .	<a href="#">2</a>
<a href="#">2.</a>	New Mobile Node Identifier Types . . . . .	<a href="#">2</a>
<a href="#">3.</a>	Security Considerations . . . . .	<a href="#">4</a>
<a href="#">4.</a>	IANA Considerations . . . . .	<a href="#">5</a>
<a href="#">5.</a>	References . . . . .	<a href="#">7</a>
<a href="#">5.1.</a>	Normative References . . . . .	<a href="#">7</a>
<a href="#">5.2.</a>	Informative References . . . . .	<a href="#">7</a>
	Authors' Addresses . . . . .	<a href="#">8</a>

[1.](#) Introduction

The Mobile Node Identifier Option for MIPv6 [[RFC4283](#)] has proved to be a popular design tool for providing identifiers for mobile nodes during authentication procedures with AAA protocols such as Diameter [[RFC3588](#)]. To date, only a single type of identifier has been specified, namely the MN NAI. Other types of identifiers are in common use, and even referenced in [RFC 4283](#). In this document, we propose adding some basic types that are defined in various telecommunications standards, including types for IMSI [[ThreeGPP-IDS](#)], P-TMSI [[ThreeGPP-IDS](#)], IMEI [[ThreeGPP-IDS](#)], and GUTI [[ThreeGPP-IDS](#)]. In addition, we include IEEE MAC-layer addresses the IPv6 address itself as a legitimate mobile node identifier. Defining identifiers that are tied to the physical elements of the device (RFID, MAC address etc.) help in deployment of Mobile IP because in many cases such identifiers are the most natural means for uniquely identifying the device, and will avoid additional look-up steps that might be needed if other identifiers were used.

[2.](#) New Mobile Node Identifier Types

The following types of identifiers are commonly used to identify mobile nodes. For each type, references are provided with full details on the format of the type of identifier.

The Tag Data standard promoted by Electronic Product Code(TM) (abbreviated EPC) supports several encoding systems or schemes including

- o RFID-GID (Global Identifier),
- o RFID-SGTIN (Serialized Global Trade Item Number),
- o RFID-SSCC (Serial Shipping Container),

- o RFID-GLN (Global Location Number),
- o RFID-GRAI (Global Returnable Asset Identifier),
- o RFID-DOD (Department of Defense ID), and
- o RFID-GIAI (Global Individual Asset Identifier).

For each RFID scheme except GID, there are two variations: a 64-bit scheme (for example, GLN-64) and a 96-bit scheme (GLN-96). GID has only a 96-bit scheme. Within each scheme, an EPC identifier can be represented in a binary form or other forms such as URI.

The following list includes the above RFID types as well as various other common identifiers and several different types of DUIDs.

#### Mobile Node Identifier Description

Identifier Type	Description	Reference
IPv6 Address		<a href="#">[RFC2373]</a>
IMSI	International Mobile Subscriber Identity	<a href="#">[ThreeGPP-IDS]</a>
P-TMSI	Packet-Temporary Mobile Subscriber Identity	<a href="#">[ThreeGPP-IDS]</a>
GUTI	Globally Unique Temporary ID	<a href="#">[ThreeGPP-IDS]</a>
EUI-48 address	48-bit Extended Unique Identifier	<a href="#">[IEEE802]</a>
EUI-64 address	64-bit Extended Unique Identifier-64 bit	<a href="#">[IEEE802]</a>
DUID-LLT	DHCPv6 Unique Identifier: Link-Layer address plus timestamp	<a href="#">[RFC3315]</a>
DUID-EN	DHCPv6 Unique Identifier: Enterprise Number plus add'l data	<a href="#">[RFC3315]</a>
DUID-LL	DHCPv6 Unique Identifier: Link-Layer address	<a href="#">[RFC3315]</a>
DUID-UUID	DHCPv6 Unique Identifier: other conformant format	<a href="#">[RFC6355]</a>
RFID-SGTIN-64	64-bit Serialized Global Trade Item Number	<a href="#">[EPC-Tag-Data]</a>
RFID-SSCC-64	64-bit Serial Shipping	<a href="#">[EPC-Tag-Data]</a>

	Container	
RFID-GLN-64	64-bit Global Location Number	[ <a href="#">EPC-Tag-Data</a> ]
RFID-GRAI-64	64-bit Global Returnable Asset Identifier	[ <a href="#">EPC-Tag-Data</a> ]
RFID-DOD-64	64-bit Department of Defense ID	[ <a href="#">RFID-DoD-96</a> ]
RFID-GIAI-64	64-bit Global Individual Asset Identifier	[ <a href="#">EPC-Tag-Data</a> ]
RFID-GID-96	96-bit Global Identifier	[ <a href="#">EPC-Tag-Data</a> ]
RFID-SGTIN-96	96-bit Serialized Global Trade Item Number	[ <a href="#">EPC-Tag-Data</a> ]
RFID-SSCC-96	96-bit Serial Shipping Container	[ <a href="#">EPC-Tag-Data</a> ]

RFID-GLN-96	96-bit Global Location Number	[ <a href="#">EPC-Tag-Data</a> ]
RFID-GRAI-96	96-bit Global Returnable Asset Identifier	[ <a href="#">EPC-Tag-Data</a> ]
RFID-DOD-96	96-bit Department of Defense ID	[ <a href="#">RFID-DoD-96</a> ]
RFID-GIAI-96	96-bit Global Individual Asset Identifier	[ <a href="#">EPC-Tag-Data</a> ]
RFID-GID-URI	Global Identifier represented as URI	[ <a href="#">EPC-Tag-Data</a> ]
RFID-SGTIN-URI	Serialized Global Trade Item Number represented as URI	[ <a href="#">EPC-Tag-Data</a> ]
RFID-SSCC-URI	Serial Shipping Container represented as URI	[ <a href="#">EPC-Tag-Data</a> ]
RFID-GLN-URI	Global Location Number represented as URI	[ <a href="#">EPC-Tag-Data</a> ]
RFID-GRAI-URI	Global Returnable Asset Identifier represented as URI	[ <a href="#">EPC-Tag-Data</a> ]
RFID-DOD-URI	Department of Defense ID represented as URI	[ <a href="#">RFID-DoD-96</a> ]
RFID-GIAI-URI	Global Individual Asset Identifier represented as URI	[ <a href="#">EPC-Tag-Data</a> ]

Table 1

### 3. Security Considerations

This document does not introduce any security mechanisms, and does not have any impact on existing security mechanisms. Insofar as the selection of a security association may be dependent on the exact

form of a mobile node identifier, additional specification may be necessary when the new identifier types are employed with the general AAA mechanisms for mobile node authorizations.

Some identifiers (e.g., IMSI) are considered to be private information. If used in the MNID extension as defined in this document, the packet including the MNID extension should be encrypted so that personal information or trackable identifiers would not be inadvertently disclosed to passive observers. Operators can potentially apply IPsec Encapsulating Security Payload (ESP) with confidentiality and integrity protection for protecting the location information.

Moreover, MNIDs containing sensitive identifiers might only be used for signaling during initial network entry. Subsequent binding update exchanges might then rely on a temporary identifier allocated during the initial network entry, perhaps using mechanisms not standardized within the IETF. Managing the association between long-

lived and temporary identifiers is outside the scope of this document.

#### 4. IANA Considerations

The new mobile node identifier types defined in the document should be assigned values from the "Mobile Node Identifier Option Subtypes" registry. The following values should be assigned.

## New Mobile Node Identifier Types

Identifier Type	Identifier Type Number
IPv6 Address	2
IMSI	3
P-TMSI	4
EUI-48 address	5
EUI-64 address	6
GUTI	7
DUID-LLT	8
DUID-EN	9
DUID-LL	10
DUID-UUID	11

	12-15 reserved
	16 reserved
RFID-SGTIN-64	17
RFID-SSCC-64	18
RFID-GLN-64	19
RFID-GRAI-64	20
RFID-DOD-64	21
RFID-GIAI-64	22
	23 reserved
RFID-GID-96	24
RFID-SGTIN-96	25
RFID-SSCC-96	26
RFID-GLN-96	27
RFID-GRAI-96	28
RFID-DOD-96	29
RFID-GIAI-96	30
	31 reserved
RFID-GID-URI	32
RFID-SGTIN-URI	33
RFID-SSCC-URI	34
RFID-GLN-URI	35
RFID-GRAI-URI	36
RFID-DOD-URI	37
RFID-GIAI-URI	38
	39-255 reserved

Table 2

See [Section 2](#) for additional information about the identifier types.

## [5.](#) References

### [5.1.](#) Normative References

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