

ALTO
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ALTO cellular addresses
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Abstract

This draft proposes to use the cellular address format composed of elements as specified by 3GPP and called ECGI. ECGI stands for E-UTRAN Cell Global Identifier and is used in Public Land Mobile Networks based on E-UTRAN.

Requirements Language

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 RFC 2119 [RFC2119].

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1. Introduction

Cellular networks are present in a number of use cases investigated in the ALTO WG and it is useful to specify a format for Cellular addresses. In these cases, Endpoints, PIDs and entities may be cells. In order to specify services such as Network Maps, Cost Maps, Endpoint property or Property Maps, it is necessary to order to specify an ALTO format for Cell addresses.

For the sake of efficiency, a preferred option is to use the cell identifier format as specified by 3GPP [TS 36.300] and called ECGI, as already proposed in [draft-rauschenbach-alto-wireless-access-00] and in other discussions. ECGI stands for E-UTRAN Cell Global Identifier and is used in Public Land Mobile Networks based on E-UTRAN, see [TS 36.331].

The purpose of this document is to be completed by the ALTO WG and in particular:

- Amend and finalize the specification for the ALTO Cell identifier format proposed in the present version,
- define a placeholder for this specification and identify impacted documents.

2. Relevant ALTO services and documents

Particular services and drafts where an ALTO address type for cellular networks is needed include:

- Endpoint property service: extended to allow endpoints to be cells on which properties can be requested,
- (Filtered) Cost Map Service: where PIDs can be cells within and among which cost values can be requested, see also[draft-randriamasy-alto-cost-context-01],
- "Mobility Network Models in ALTO" defined in [draft-bertz-alto-mobilitynets] propose to identify network points of attachment (PoA) such as cells to PIDs.
- "ALTO Performance Cost Metrics": being defined in [draft-ietf-alto-performance-metrics-01], they will be extended to performance costs in cellular networks,
- "Extensible Property Maps for the ALTO Protocol", being defined in [draft-roome-alto-unified-props-new-00] will cover entities that may be cells which are identified by their addresses. In this document a domain identifier for cells will need to be accordingly defined, and the entity domain identifier "ecgi" is proposed.

3. Proposed format for ALTO cell identifiers

The present draft proposed the following specification

3.1. ALTO address type for cellular networks

ECGI -- E-UTRAN Cell Global Identifier

3.2. Endpoint address canonical string format

```
'ecgi:' MCC '.' MNC ':' ECI
```

Where:

- o MCC: Mobile Country Code, as assigned by ITU. A 3 digits decimal number without leading zeros.
- o MNC: Mobile Network Code, as assigned by National Authority. A 2-3 digits decimal number without leading zeros.
- o ECI: E-UTRAN Cell Identifier. A 7 digits lower-case hex number.

Examples:

- o ecgi:311.481:1234abc
- o MNC value 20 stands for Network N1 in France and other networks in other countries
- o MNC value 020 stands for Network N2 in Argentina and other networks in other countries

3.3. ALTO Cell Id formats

Three formats are proposed:

- o 'ecgi:' MCC
- o 'ecgi': MCC '.' MNC
- o 'ecgi:' MCC '.' MNC ':' ECI-MASK '/' MASK-LEN

where:

MASK-LEN is a decimal number.

ECI-MASK is a string of lower-case hex digits, of which all but the first MASK-LEN bits are zero.

Prefix ecgi:P-MCC.P-MNC:P-ECI/N matches ecgi:MCC.MNC:ECI iff

MCC == P-MCC, and

MNC == P-MNC, and

ECI has the same number of hex digits as P-ECI, and

the first N bits of ECI match those of P-ECI.

3.4. Examples

- o ecgi:311
 - * Matches every cell address with MCC 311.
- o ecgi:311.481
 - * Matches every cell address with MCC 311 and MNC 481.
- o ecgi:311.481:1234800/18
 - * Matches every cell address with MCC 311 , MNC 481, and a 7-digit ECI that starts with the 18 bits 0x12348. Thus it matches ecgi:311.481:1234abc and ecgi:311.481:123480, but does not match ecgi:311.481:12348d.

4. IANA Considerations

This document currently makes no request of IANA.

Note to RFC Editor: this section may be removed on publication as an RFC.

5. Security Considerations

TBC

6. Acknowledgements

Great thanks to Wendy Roome who initiated this document.

7. References

7.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <<http://www.rfc-editor.org/info/rfc2119>>.

7.2. Informative References

[draft-roome-alto-unified-props-new-00]
Roome, W. and Y. Yang, "Extensible Property Maps for the ALTO Protocol", March 2017.

Appendix A. An Appendix

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