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Representing CoRE Groupcomm Formats in CBOR  
draft-bormann-core-groupcomm-cbor-00

## Abstract

Group Communication for the Constrained Application Protocol ([RFC7390](#)) defines a number of JSON formats for controlling communication between groups of nodes employing the Constrained Application Protocol (CoAP). This specification defines CBOR variants of these formats.

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## [1.](#) Introduction

(See abstract for now.)

### [1.1.](#) Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [\[RFC2119\]](#) when they appear in ALL CAPS. These words may also appear in this document in lower case as plain English words, absent their normative meanings.

The term "byte" is used in its now customary sense as a synonym for "octet".

CoAP: Constrained Application Protocol [\[RFC7252\]](#)

CBOR: Concise Binary Object Representation [\[RFC7049\]](#)

CoRE: Constrained RESTful Environments, the field of work underlying [\[RFC6690\]](#), [\[RFC7049\]](#), [\[RFC7252\]](#), and [\[RFC7641\]](#)

IoT: Internet of Things

JSON: JavaScript Object Notation [[RFC7159](#)]

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## [2.](#) Group Communication Management Objects in CBOR

### [2.1.](#) Background

The CoAP Group Communications specification [[RFC7390](#)] defines group management objects in JSON format. These objects are used to represent IP multicast group information for CoAP endpoints. See [[I-D.ietf-core-resource-directory](#)] for more examples of using these objects.

### [2.2.](#) Information Model

This section discusses the information model underlying the CoAP Group Communication management object payload.

A group membership JSON object contains one or more key/value pairs, and represents a single IP multicast group membership for the CoAP endpoint. Each key/value pair is encoded as a member of the JSON object, where the key is the member name and the value is the member's value.

The information model of the CoAP Group Communication management object can be summarized in CDDL [[I-D.greevenbosch-appsawg-cbor-cddl](#)] below:

```
collection = { * index => membership }
index = tstr .regexp "[A-Za-z0-9]{1,2}"
membership = {
  ? n: groupname,
  ? a: groupaddress,
}
groupname = tstr      ; host [ ":" port ]
groupaddress = tstr ; IPv4address [ ":" port ]
                ; / "[" IPv6address "]" [ ":" port ]
```

Figure 1: CoAP Group Communication Data Model

### [2.3.](#) Mapping

The objective of the mapping defined in this section is to map information from the JSON formats specified in [[RFC7390](#)] into CBOR format, using the rules of [Section 4.2 of \[RFC7049\]](#).

### [2.4.](#) Group Communication Example

```
{ "8" :{ "a": "[ff15::4200:f7fe:ed37:14ca]" },
  "11":{ "n": "sensors.floor1.west.bldg6.example.com",
         "a": "[ff15::4200:f7fe:ed37:25cb]" },
  "12":{ "n": "All-Devices.floor1.west.bldg6.example.com",
         "a": "[ff15::4200:f7fe:ed37:abcd]:4567" }
}
```

Figure 2: Example from [section 2.6.2.4 of \[RFC7390\]](#)

becomes:

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```
a3                                     # map(3)
  61                                 # text(1)
    38                             # "8"
    a1                             # map(1)
      61                           # text(1)
        61                        # "a"
        78 1b                     # text(27)
          5b666631353a3a343230
          303a663766653a656433
          373a313463615d          # "[ff15::4200:f7fe:ed37:14ca]"
        62                        # text(2)
          3131                    # "11"
        a2                         # map(2)
          61                      # text(1)
            6e                    # "n"
            78 25                 # text(37)
              73656e736f72732e666c
              6f6f72312e776573742e
              626c6467362e6578616d
              706c652e636f6d      # "sensors.floor1.west.bldg6.example.com"
            61                    # text(1)
              61                  # "a"
```

```

78 1b                                # text(27)
    5b666631353a3a343230
    303a663766653a656433
    373a323563625d                  # "[ff15::4200:f7fe:ed37:25cb]"
62                                  # text(2)
    3132                            # "12"
a2                                  # map(2)
    61                              # text(1)
    6e                              # "n"
78 29                              # text(41)
    416c6c2d446576696365
    732e666c6f6f72312e77
    6573742e626c6467362e
    6578616d706c652e636f
    6d                              # "All-Devices.floor1.west.bldg6.example.com"
61                                  # text(1)
    61                              # "a"
78 20                              # text(32)
    5b666631353a3a343230
    303a663766653a656433
    373a616263645d3a34353637 # "[ff15::4200:f7fe:ed37:abcd]:4567"

```

Figure 3: Group Communication Management Object Encoded in CBOR

### [3.](#) IANA Considerations

This specification registers the following additional Internet Media Types:

TBD

### [4.](#) Security Considerations

The security considerations relevant to the data models of [[RFC7390](#)], as well as those of [[RFC7049](#)] and [[RFC7159](#)] apply.

### [5.](#) Acknowledgements

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version of a contributing document as well as the original author on the CDDL notation.

Hannes Tschofenig made many helpful suggestions for improving this document, in particular splitting off the [[RFC7390](#)] parts from [[I-D.ietf-core-links-json](#)].

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