

Organizationally unique identifier (OUI) derivatives

Draft 0.10

October 18, 2003

Document number: MscRac2003Oct18

1. Background

The IEEE/RAC monitors the assignment of Organizationally Unique Identifier (OUI) assignments and their usage within IEEE Standards. This informal memo attempts to address their use as globally unique extended identifiers (EUI-48 and EUI-64) and context-dependent identifiers (whose name is TBD) in a uniform fashion.

1.1 MSC inputs (2003Oct13 meeting)

History: Peter Johansson noted that Bob Davis has been requested to discuss software identifiers with the IEEE/RAC, as the previous San Francisco meeting. Bob noted this had slipped his mind.

Future: David James noted the definition and use of software identifiers, as well as a review of EUI-48/64 identifiers, is on the agenda for November IEEE/RAC meeting (held in conjunction with the 802 Plenary).

Legacy: Bob Davis noted that the SCSI folks have the concept of a world wide name (WWN). A WWN is a 4-bit code (where the code value of 5 identifies the IEEE) concatenated with a 60-bit EUI-like value.

MSC minutes: The following was extracted from the MSC minutes.

- a) If a specification mandates a fixed-size context dependent identifier, this identifier would be unique only within that context. The identifier length would not be constrained. The standard would define this as an OUI followed by OUI-field dependent unique-within-this-context information.
- b) If a specification mandates an EUI-48 or EUI-64, the standard should conform to the tutorials and these values should be unique across all possible applications, so that uniqueness is not context-dependent. Thus, there would be only one assignment of that identifier regardless of application.
- c) The properties of exclusivity are determined by the standard. To use the EUI name, however, the property of uniqueness should not be context dependent.
- d) Advantages of fixed-size global-unique identifiers, that compensates for larger sizes, includes:
 - 1) You can recycle numbers from one domain (e.g., a retired Ethernet card) to another (e.g., a software ID), without worry of possible collision.
 - 2) Within organizations, the number assignment group is relieved from the maintenance of context classifications and per-context accounting.
 - 3) Only a few number of assignment sizes need be administered.
- e) The IEEE/RAC should not mandate usage of identifiers, with judgements of their allowable uses, provided that consumption concerns have been properly addressed.

2. Proposal

2.1 Complete identifiers

For the purpose of discussion, the name *completeID* is assigned to a globally unique 128-bit OUI-instance identifier. The *completeID* consists of a 64-bit *contextID* and a 64-bit *contextDependentId*, as illustrated in Figure 1. Depending on the *contextID* specified context, some of the *contextDependentID* bits may be unused.

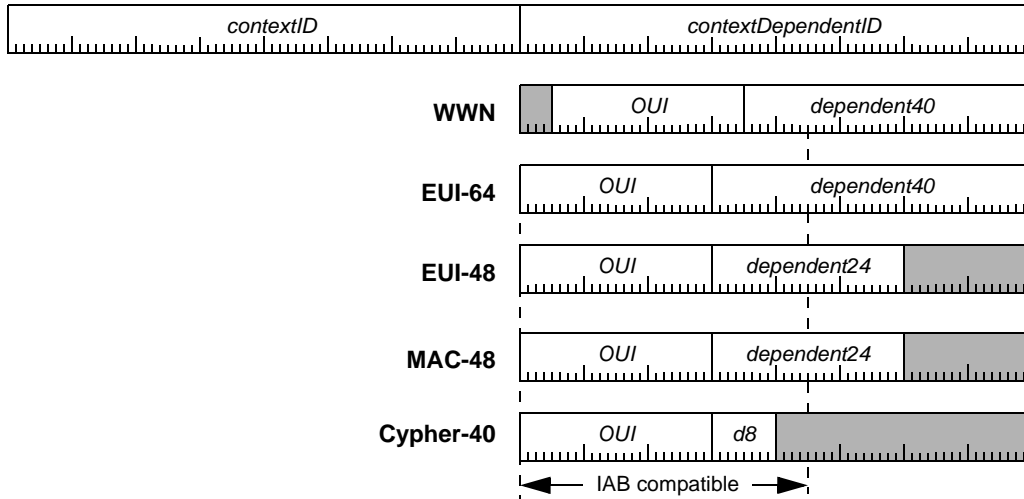


Figure 1—Complete identifier formats

The concept of the *completeID* helps clarify the context of uniqueness, as listed below.

- The *completeID* values are unique, in that the same number is never assigned for distinct uses.
- Each *contextID* value corresponds to one and only one context definition, illustrated as EUI-64, EUI-48, MAC-48, or Cypher-40. SDOs (not manufacturing companies) are responsible for defining formats associated with individual *contextID* values.
- Each *contextDependentID* values are managed by the OUI specified organization, subject to the uniqueness requirements implied by (a) and (b).

The owner of the *contextID* specifies allowed uses of the *contextDependentID* values. The IEEE/RAC “owns” the EUI-64 and EUI-48 values, in the sense that its usage policies are constrained by the IEEE/RAC. While the IEEE/RAC places some constraints on the uses of EUI-48/64 identifiers, there are advantages in using these specified identifiers.

- You can recycle numbers from one domain to another, without worry of possible collision. Thus, the graphics software division could recycle their software identifiers as model-number identifiers.
- The *contextID* specified organization can utilize existing EUI-48 and EUI-64 tutorials.
- The less expensive RA assigned individual address block (IAB) can always be used.
- The OUI-specified organization doesn’t have to identify contexts and per-context accounting.

The primary disadvantage of using the EUI-48 and EUI-64 identifiers is size: within a specific contexts, smaller identifier values may be sufficient.

2.2 Standard requirements

Any standard that defines new contexts is required to assign a *contextID* value to each of its defined contexts. Standards should provide sufficient expansion options, to avoid handicapping vendors by the consumption constraints of 2.3.

2.3 Consumption requirements

An organization will not be assigned another OUI unless that organization has consumed (in preponderance) the EUI-48/64 addresses corresponding to that OUI assignment.

2.4 Number registries

When sufficient demand is provided, independent companies are expected to provide number registry services. While not blessing or constraining such services, the formal *completeID* definition is expected to reduce the costs associated with such database registration/search services.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54