IEEE EUI-64 Unique Node Identifier

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Author:	Gilman Tolle, Jonathan Hui
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Note

This memo documents a part of TinyOS for the TinyOS Community, and requests discussion and suggestions for improvements. Distribution of this memo is unlimited. This memo is in full compliance with TEP 1.

Abstract

A TinyOS application developer may desire a globally-unique node identifier within the IEEE EUI-64 namespace. This document describes the TinyOS components used to access such an identifier.

1. Interfaces

A platform that can provide a valid IEEE EUI-64 globally-unique node identifier SHOULD provide it through a component with the signature defined here, enabling platform-independent access to the identifier:

```
configuration LocalIeeeEui64C {
  provides interface LocalIeeeEui64;
}
```

The identifier is accessed through the following interface:

```
interface LocalIeeeEui64 {
  command ieee_eui64_t getId();
}
```

The ieee_eui64_t type is defined in `tos/types/IeeeEui64.h` as:

```
enum { IEEE_EUI64_LENGTH = 8; }

typedef struct ieee_eui64 {
  uint8_t data[IEEE_EUI64_LENGTH];
} ieee_eui64_t;
```

If the platform can provide a valid IEEE EUI-64, the value returned from this call MUST follow the IEEE EUI-64 standard.

If a platform can provide a unique identifier that is not a valid IEEE EUI-64 identifier, it SHOULD provide its unique identifier through a component with a different name and a different interface. The definition of such an interface is outside the scope of this TEP.

2. IEEE EUI-64

The IEEE EUI-64 structure is copied here:

```
|        company_id       |            extension identifier           |
|addr+0 | addr+1 | addr+2 | addr+3 | addr+4 | addr+5 | addr+6 | addr+7|
|  AC   |   DE   |   48   |   23   |   45   |   67   |   AB   |   CD  |
10101100 11011110 01001000 00100011 01000101 01100111 10101011 11001101
|  |                                                                |  |
|  most significant byte                      least significant byte  |
most-significant bit                             least-significant bit

If provided in byte-addressable media, the original byte-address order
of the manufacturer is specified: the most through least significant
bytes of the EUI-64 value are contained within the lowest through
highest byte addresses, as illustrated above.
```

See: http://standards.ieee.org/regauth/oui/tutorials/EUI64.html

The author of the LocalIeeeEui64C component MUST ensure that the getId() call returns a valid EUI-64 identifier that follows the standard, with the bytes in the order described above.

3. Implementation Notes

Some TinyOS node platforms contain a unique hardware identifier that can be used to build the EUI-64 node identifier. That hardware identifier may be obtained from several places, e.g. a dedicated serial ID chip or a flash storage device. Users of the interface described in this document MUST NOT require knowledge of how the unique identifier is generated.

The EUI-64 node identifier MUST be available before the Boot.booted() event is signalled. If the EUI-64 is derived from a hardware device, the hardware device should be accessed during the Init portion of the boot sequence.

4. Author's Address

Gilman Tolle

Arch Rock Corporation
657 Mission St. Suite 600
San Francisco, CA 94105

phone - +1 415 692 0828
email - gtolle@archrock.com

Jonathan Hui
Arch Rock Corporation
657 Mission St. Suite 600
San Francisco, CA 94105

phone - +1 415 692 0828
email - jhui@archrock.com