

IEEE Registration Authority

OUI Registry Tiers proposal



Glenn Parsons, RAC Chair
November 2012

RAC Members

- Glenn Parsons, Chair
- Geoff Thompson, (LMSC prime) IEEE 802
- Clint Chaplin, (LMSC alternate) IEEE 802
- Bob Davis, (MSC prime)
- Leonard Tsai, (MSC alternate)
- Tom Kurihara, (VTS / ITS prime) IEEE 1609
- Geoffrey Garner , (I&M prime) IEEE 1588
- George Riley, ex-officio (CS SAB)

Staff

- Angela Thomas, RAC Secretary
- Karen Lambert, Registrar

Current OUI based identifiers

- Company_id is a 24-bit OUI value assigned by the IEEE-RA
- CDI-32™ is a concatenation of a 24-bit OUI value assigned by the IEEE-RA and an 8-bit extension identifier assigned by the organization with that OUI assignment.
- TCDI-40™ is a concatenation of a 24-bit OUI value assigned by the IEEE-RA and a 16-bit extension identifier assigned by the organization with that OUI assignment.
- MAC-48 (obsolete label) / EUI-48™ is a concatenation of a 24-bit OUI value assigned by the IEEE-RA and a 24-bit extension identifier assigned by the organization with that OUI assignment.
- EUI-60 (deprecated) is a concatenation of a 24-bit OUI assigned by the IEEE-RA and a 36-bit extension identifier assigned by the organization with that OUI assignment.
- EUI-64™ is a concatenation of the 24-bit or 36-bit OUI value assigned by the IEEE-RA and a 40-bit or 28-bit extension identifier assigned by the organization with that OUI assignment.
- IPv6 is a concatenation of a 64-bit EUI-64™ (derived from a MAC-48/EUI-48™) and a 64-bit extension identifier assigned by the device with the MAC-48/EUI-48™ assignment.

Current creation

<u>Identifier</u>	<u>registry</u>	<u>OUI:ID</u>
• Company_id	OUI	1:1
• CDI-32	OUI	
• TCDI-40	OUI, OUI36	
• MAC48/EUI48	OUI	1:16M
	IAB, OUI36	1:4K
• EUI60	OUI	
• EUI64	OUI, OUI36	1:1T
• IPv6	OUI, IAB, OUI36	

Some identifiers (e.g., Company_id) can only be created from one registry

Rationale for change

- RAC “Prime directive”
 - Do not run out of global MAC48 addresses for 100 years
 - ~250 billion EUI48 (of ~70 trillion possible) addresses have been assigned
- Volume
 - A few vendors are volume users
 - >32M MAC (EUI-48) addresses assigned per month
 - Most other vendors would prefer a more options as they use less
 - This would reduce “lost” or “unused” addresses
- Virtualization
 - Usage of global MAC (EUI-48) addresses by software
 - Traditionally RAC limited vendors to only a few per hardware device
 - Reuse of global MAC (EUI-48) addresses per rack / cluster / data center
 - Guidance needed, even though this is not permitted
 - Assignment of address blocks to data centers (instead of vendors)
- Future
 - Explore feasibility of “EUI-128” identifier for VMs

Proposal


- Maintain existing OUI & OUI-36 registries
- Create new registries for EUI-48 sizes
 - 16M, 1M, 4K, 1
- Disconnect addresses from Company identifier
 - Assign 24 & 36 bit Company identifiers without addresses
 - Assign these within the “local space”
- Suggest VMs create addresses based on new Company identifiers in the “local space”
 - Resulting in reusable local addresses, with some organization
- Rework pricing structure accordingly...

New Proposed OUI -based Registries

- OUI *existing*
- OUI-36 *existing*
- CompanyID-24
- CompanyID-36
- Addresses-A (48 bit)
- Addresses-B (36 bit)
- Addresses-C (28 bit)
- Addresses-D (24 bit)

Registry	EUI48	EUI64
Addresses-A	1	65536
Addresses-B OUI36	4096	268435456 ~270 million
Addresses-C	1048576 ~1 million	68719476736 ~69 billion
Addresses-D OUI	16777216 ~16 million	1099511627776 ~1 trillion

RAC Proposal – October 2012

- Key Identifiers
 1. 24 bit Company ID
 2. 36 bit Company ID
 3. 48 bit EUI-48 address
 4. 64 bit EUI-64 address
- Existing Registries
 - OUI : 1, 3, 4
 - OUI-36: 2, 3, 4
- New Registries:
 - Addresses Size A: 3, 4
 - Addresses Size B: 3, 4
 - Addresses Size C: 3, 4
 - Addresses Size D: 3, 4
 - Company ID 24 bit: 1
 - Company ID 36 bit: 2
- Alternative A
 - Addresses registries
 - Do not include company ID assignment, they are reserved for other use
 - Company ID registries
 - Do not include address assignments
 - Values taken from address registries
- Alternative B 
 - Addresses registries
 - Do not include company ID assignment, they are reserved for IEEE RA (and left unassigned for now)
 - Company ID registries
 - Do not include address assignments
 - Values taken from local space
 - Virtualization
 - Data centers are sold “CompanyIDs” and may use these to create addresses in the local space

Process

- RAC & RAP (sub-groups of the IEEE-SA BOG) working together to develop reorganization of the OUI set of registries
 - Awaiting recommendation from consultant
 - Registry structure proposal will be socialized with customers and WGs seeking feedback on impact
- Evaluate feedback and finalize proposal
 - Discussion during Nov 8th RAC meeting
- BOG would like to approve reorganization and pricing in Dec 2012, or Mar 2013 at the latest