update of LASG PAR proposal

(updated at January 2015 FtF)

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two choices

- **"recommended practice" vs "standard"**
- **Personal opinion:**
  - It's a standard, calling it a recommendation will reduce it's importance
  - I think everyone agrees that any proposed standard must be written with full awareness that existing practices must be supported in environments where it is currently deployed.

Title

- Standard for Local and Metropolitan Area Networks: Overview and Architecture Amendment Local MAC Address Usage

Scope of the project (5b)

Marks (and the group)

The amendment will provide ~~nonexclusive~~ an optional local address space structure to allow multiple administrations to coexist. ~~recommendations for using local addresses.~~ This structure ~~It~~ will designate a range of addresses for protocols using a Company ID assigned by the IEEE Registration Authority. Another range of local addresses will be designated for assignment by local administrators. The amendment will recommend a range of local addresses for use by IEEE 802 ~~switching~~ protocols.

Thaler (previously updated)

The amendment will provide recommendations and rules for using the local address space. This will allocate a portion of the address space for protocols using an IEEE Registration Authority assigned Company ID. Another portion of the local address space will be allocated for assignment by local administrators.

Need

- Currently, globally unique addresses are assigned to most IEEE 802 end stations and bridge ports. Increasing use of virtual machines and Internet of Things (IoT) devices could exhaust the global address space if global addresses are assigned. This project will provide conventions and enable protocols that will allow multiple stations or servers to automatically configure and use local addresses ~~from a portion of the local address space~~. Such protocols will allow virtual machines and IoT devices to obtain a local address without centralized local address administration.

Stakeholders

- Developers, providers, and users of networking services and equipment for IoT (including Industrial Automation, Transportation networking, Smart Grid) and of operating systems, hypervisors and orchestration systems for virtual machines. This includes software developers, networking IC developers, bridge and NIC vendors, and users

Possible registration activity (6.1b)

Marks (updated by group)

This will designate a portion of the address ~~space~~ structure for protocols using an IEEE Registration Authority assigned Company ID and one or more blocks of CID space to be agreed with the IEEE Registration Authority.

Thaler

This project is related to the Company IDs (CIDs) recently added to the Registration Authority.

Managed objects

- Describe the plan for developing a definition of managed objects. The plan shall specify one of the following:
  a) The definitions will be part of this project.
  b) The definitions will be part of a different project and provide the plan for that project or anticipated future project.
  c) The definitions will not be developed and explain why such definitions are not needed.

- **c) This is an architecture document so it has no managed objects**

Coexistence

- A WG proposing a wireless project shall demonstrate coexistence through the preparation of a Coexistence Assurance (CA) document unless it is not applicable.
  a) Will the WG create a CA document as part of the WG balloting process as described in Clause 13? (yes/no)
  b) If not, explain why the CA document is not applicable.

- **A CA document is not applicable because this project does not use wireless spectrum**

Broad market potential

- Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:
  a) Broad sets of applicability.
  b) Multiple vendors and numerous users.
- **Today, every physical bridgeable port (e.g. IEEE 802.3 and 802.11) shipped consumes a Globally Unique MAC address. MAC address usage increased dramatically with the emergence of network ports on phones, tablets, set top boxes, etc.**
- **Virtual ports need addresses assigned as they are created. Global addresses are not appropriate as consumption of global address space by such ephemeral devices could exhaust the address space. Proprietary protocols have been created to distribute addresses for virtual ports. Some protocols have used Global MAC address blocks for these assignments because there was no mechanism for obtaining a Local MAC address block. Some have used a fixed or default block in the local address space. Fibre Channel over Ethernet (FCoE) has standardized a protocol for distributing FCoE virtual port MAC addresses from blocks in the Local MAC address space.**
- **Emerging usage for the Internet of Things (IoT) ports on sensors, actuators, lights, appliances, etc. could vastly increase address usage by physical ports. Most such devices would not need Globally Unique MAC addresses if there were protocols available to obtain a Local MAC address.**
- **A first step in enabling non-interfering protocols for claiming or assignment of Local MAC addresses is to organize the MAC address space so that entities can be assigned a block of the Local Address space through the Company ID (CID) as a default. Another part of the space will be defined for local administration.**

Compatibility

- Each proposed IEEE 802 LMSC standard should be in conformance with IEEE Std 802, IEEE 802.1AC, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 WG prior to submitting a PAR to the Sponsor.
  a) Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?
  b) If the answer to a) is no, supply the response from the IEEE 802.1 WG.

- **The review and response is not required if the proposed standard is an amendment or revision to an existing standard for which it has been previously determined that compliance with the above IEEE 802 standards is not possible. In this case, the CSD statement shall state that this is the case.**
- **Yes, it will comply with IEEE Std 802.1AC and IEEE Std 802.1Q. It will modify IEEE Std 802 by providing a guideline for use of the existing Local Address space.**

Distinct Identity

- Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.
- **There is no other standard that defines a guideline for use of the Local Address space.**

Technical Feasibility

- Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the time frame of the project. At a minimum, address the following items to demonstrate technical feasibility:
  a) Demonstrated system feasibility.
  b) Proven similar technology via testing, modeling, simulation, etc.
- **Existing protocols including orchestration protocols for virtualization and the T11 FC-BB-6 standard on FCoE demonstrate that protocols to distribute or claim addresses in the Local Address space are feasible. This standard will better enable compatibility between such protocols and between the protocols and locally administrated addresses by defining a guideline for usage of the Local Address space.**
- ~~**The IEEE Registration Authority now provides Company IDs (CIDs), 24-bit identifiers with values in a portion of the Local Address space. Organizations will be able to use a CID address block as a default address space for their protocol without conflicting with other protocols following the guideline. Another part of the space will be defined as the preferred area for local address administration.**~~

Economic Feasibility

- Each proposed IEEE 802 LMSC standard shall provide evidence of economic feasibility. Demonstrate, as far as can reasonably be estimated, the economic feasibility of the proposed project for its intended applications. Among the areas that may be addressed in the cost for performance analysis are the following:
  a) Balanced costs (infrastructure versus attached stations).
  b) Known cost factors.
  c) Consideration of installation costs.
  d) Consideration of operational costs (e.g., energy consumption).
  e) Other areas, as appropriate.
- **Existing protocols demonstrate that protocols for local address distribution or claiming have economic feasibility and costs are known. CIDs are available from the RAC for a known cost.**
- **Such protocols reduce installation cost by eliminating the need to configure addresses for virtual ports. Not needing a unique Global Address may slightly reduce the cost of ports on IoT devices.**
- **There should be no significant impact on operation**