MAC Address Usage

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The Problem

- In 1998 it was estimated that the IEEE had a 300 year supply of 48-bit Ethernet MAC addresses
  - This estimate was based on the rate that MAC addresses were being consumed at that time.

- In 1998 the typical human used less than 5 MAC address (computer at work, computer at home, a laptop, …).

The Problem

- Move to 2010 and the rate of MAC address consumption has greatly increased due to new products and the proliferation of low cost Ethernet and WiFi and other products that require an Ethernet MAC Address.
- Think of how many MAC addresses you are using today (cell phone, IP phone, laptop (2 – Ethernet & WiFI), laser printer (2 – Ethernet & WiFi), set top box, TV, Blu-ray player, tablet, computer at home (2 – Ethernet & WiFi), wireless AP, inkjet printer, etc.).

The Problem

- Each of these device requires a Globally Unique MAC address when it is shipped regardless of whether that Ethernet port, or the WiFi device is connected to a network or not!
- The RAC has been aware of this issue and new address procedures have been put in place as of Jan 1, 2014.
- Move to 2020 and Ethernet is in many cars.
  - Each car has 50 to 150 MCU's
- And what about all those Internet of Things things.
  - Every sprinkler head and light fixture with an address?

The Problem

- At these ever increasing rates of availability of ever lower cost addressable devices, will the RAC's new address solution be enough?
- No
- A future lack of Globally Unique MAC address will effect us all. Therefore, we must all work to conserve this limited resource.
- New markets that want to use the Ethernet frame format need to question if they really need to use Globally Unique MAC addresses.

Possible Solution

- Use of Locally Administered MAC addresses should be encouraged where ever possible.
  - A car may only need 1 or 2 Globally Unique MAC addresses for those ‘ports’ that connect it to the ‘outside world’
  - An IoT controller needs a Globally Unique MAC address, not all the nodes it controls

- This is just one idea – there may be many others

Call to Action

- From personal experience, it is clear that most of these markets don't even know there is a limited resource.
  - "Doesn't IPv6 solve the problem?"
  - We have the responsibility to educate the users

- But education goes better if there is a defined & accepted solution.
- Is this solution our job to find? If not, whose?
- We don't need to panic, but we do need to work on this right away!