Thoughts on dynamically assigned MAC addresses

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Motivation

- **Virtualization increases MAC address consumption by orders of magnitude**

  Server virtualization vendors have developed proprietary mechanisms for assigning dynamically assigning MAC addresses

    Challenges exist in assuring uniqueness

    Exacerbated by multiple proprietary mechanisms

  Manufacturers are shipping bridge line cards consuming lot of MAC addresses out of the global space

    Needed to support various virtualization technologies

- **There is no "good" way to achieve this**

  i.e., obtaining enough unique MAC addresses within an enterprise without depleting the global space

A Possible Solution

- **Define a "DNS" or "DHCP" like service that allows a device to obtain an enterprise unique MAC address**

  Possibly reserve a portion of the Global MAC address space for this purpose

    Eliminates conflicts with existing proprietary schemes

  Or use the Local address space

- **Provide a higher level communication protocol to allow these servers to coordinate their MAC address pools**

    An IP based protocol seems reasonable

Some Potential Requirements (1)

- **Device requesting a MAC address provides a world wide unique "handle"**
  - **Something like a URL containing a WWN or a hierarchical name (a la DNS)**
  - **Also may provide a requested MAC address (i.e., the MAC address it got last time)**
- **MAC Provider Service (MPS) provides a MAC address from a pool**
  - **Provides same MAC address as last time it saw the handle**
  - **If handle not recognized, then provides requested address if not in use**
  - **Else provides an address from the pool**

Some Potential Requirements (2)

- **Device owns address until:**
  - **Explicitly given up by the device**
  - **Recovered through administrative action**
  - **Note: this is different than the lease mechanism provided by DHCP**
- **MPS's may coordinate through a protocol**
  - **Possibly IP based**
  - **Distributes available MAC addresses to individual MPS's**
  - **Recovers available MAC addresses from individual MPS's**
  - **Distributes MAC address assignments**

Thank You!