Thoughts on dynamically assigned MAC addresses

Joe Pelissier
new-pelissier-Dynamic-MACs-1108
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!