The promise of Federal Cloud Efforts cannot be fully met without IPv6.

ACQUISITION CONSIDERATIONS FOR IPV6

Caveat

- Acquisitions specifications can vary wildly from group to group, and sometimes even RFI/RFP to RFI/RFP
  - With that in mind, there are varying "levels" of response …
    - A brief, non-technical / high-level set of requirements
    - Moderate-length, with foundational technical requirements
    - A detailed set of technical requirements with specific functional and performance requirements

Importance of Addressing IPv6 in Cloud RFP/RFI

1. FAR Requirements; FAR Case 2005-041: *(excerpt)*

… **to require Internet Protocol Version 6 (IPv6) compliant products be included in all new information technology (IT) acquisitions using Internet Protocol (IP***).*** IP is one of the primary mechanisms that define how and where information moves across networks. The widely-used IP industry standard is IP Version 4 (IPv4). The Office of Management and Budget (OMB) Memorandum M–05–22, dated August 2, 2005, requires all new IT procurements, to the maximum extent practicable, to include IPv6 capable products and standards. DATES: Effective Date: December 10, 2009.

2. EXAMPLE:

   Specific VA Needs - three milestones in the *near* future:

… 30 Sept 2012 - OMB Mandate = IPv6 enabled customer-facing services
30 Sept 2014 - OMB Mandate = IPv6 enabled internal services
30 Sept 2015 - VA Deputy Assistant Secretary Directive = Deactivate IPv

(Waivers for non-conforming edge cases)

Sidenote on "The Cloud"

- "Cloud First" (FCCS) & "FedRAMP" are important & relevant
- **And while these do not explicitly require IPv6, neither do they supersede OMB/FAR**

The Minimalist Approach

- RFI/RFPs go out simply stating requirements for "IPv6 compliance" or "IPv6 capability"
  - **Generally speaking, this is inadequate as it provides no prompts for vendor action.**
- The phrasing *must*, at the very least, include functional and performance requirements.
- Another improvement would be to include language pointing to NIST's USGv6 profile process.
  - Every agency would have specific USGv6 compliant device profiles defined.
  - Do note however, that USGv6 doesn't cover everything. As a relevant example, there are no references to Cloud Service Providers …

The Short Version

- A basic acquisitions language framework, readily usable by Program Managers or in RFI/RFPs:
  (or included in some contexts to start the appropriate conversations)

  - All Products and Services that are to be network connected or attached are expected to support both IPv4 and IPv6. This *must* include the ability to operate in all of the following deployments without loss of (or impact to) functionality: IPv4-only, IPv6-only and Dual-Stack. To the extent the following are relevant to the deployment, this *must* include full feature parity and *should* include full performance parity across all management, reporting, maintenance, provisioning, connectivity and service-supporting functions.

The Moderate Version

- Be more specific. Develop an understanding of which products or services are being sought / acquired, and which IPv6 touch-points are relevant.
  - For example, a Cloud Service Provider offering an IaaS offering could be asked to ensure that all of the following areas are IPv6-capable:
    - Network Connectivity and Manageability for/between Hypervisor instances
    - Network Connectivity for/between the Host instances, including to external sources
    - Cloud Service Orchestration / API integration
    - SLA conformance and Monitoring must verify both IPv4 and IPv6 addresses, interfaces and inter-connectivity is properly functioning
    - Support for feature-parity security policy implementation – same level and scope of filtering, Deep packet Inspection, etc.

The Full Version

- This would be heavily augmented by an agency defining their USGv6-compliant Product Profiles …

	SaaS	PaaS	IaaS	ISP	RFC Desc:
2451					ESP CBC mode Algs
2451#section-2.6					ESP CBC mode Algs:3DES-CBC
2460	M	M	M	M	IPv6
2460#section-2	M	M	M	M	IPv6 Packets: send, receive
2460#section-2		*M*	M	M	IPv6 packet forwarding
2460#section#section-4	M	M	M	M	IPv6:Ext Hdr
2460#section-4.3	M	M	M	M	IPv6:Ext Hdr:HbH, Unrecognized
2460#section-4.3	M	M	M	M	IPv6:Ext Hdr:FragHdr
2460#section-4.3	M	M	M	M	IPv6:Ext Hdr:DestOpt
2464			*M*	*M*	IPv6 over Foo:Ethernet
2467			O	O	IPv6 over Foo:FDDI
2473			O	O	Generic Packet Tunneling
2474			M	M	DiffServ
2475			M	M	DiffServ Arch
2491			O	O	IPv6 over Foo:NBMA
2492			O	O	IPv6 over Foo:ATM
2497			O	O	IPv6 over Foo:ARCnet
2507			O	O	IP Hdr Comp

- Lacking an agency-wide, standardized effort today *(or complimenting that once available)* any agency/component could *(and SHOULD)* identify their IPv6 requirements in this format and place those requirements in all RFI/RFPs. By doing so, each agency would be clearly stating which RFCs and/or functionalities are required.

The promise of the Federal Cloud Efforts cannot be fully met without IPv6.

Please let us know if there are any questions, comments, etc.!

cloud@nephos6.com