DOE & ESCC IPv6 Activities / Directions

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JET Meeting

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DOE IPv6 Activities (I)

- DOE IPv6 Transition Manager appointed:
  - Samara Moore (Senior Cyber Security Policy Advisor)
  - Serves on Federal IPv6 Task Force
- DOE IPv6 task force formed
  - Consist of Program and Site IT managers and representatives from across the Department
  - Objectives:
    - Coordinate the DOE implementation of IPv6 goals
    - Determine DOE IPv6 implementation strategy
    - Develop DOE IPv6 implementation plan
    - Share approaches, successes, concerns, lessons learned, etc.

DOE IPv6 Activities (II)

- Concisely defined scope for OMB 2012 milestones
  - "Public-facing" = intended for general public
  - Explicitly identify what services are objectives for 2012 deadline
    - Public web servers, site email gateway, DNS
- Working sub-groups being established:
  - IPv6 IT Management
  - IPv6 Technology
  - IPv6 Cyber Security
  - IPv6 Outreach
- Plan to utilize an automated reporting environment and dashboard for status tracking
- Planning to participate in World IPv6 Day (6/8/2011)

ESnet IPv6 Support…

- Early deployment of IPv6 thru 6-Bone (2002)
- Native IPv6 service since 2006
- IPv6 support for www.es.net since 2008
  - Mail gateway & DNS server support IPv6 as well…

ESnet Site Coordinators Committee (ESCC)

- Standing committee of Labs network managers/staff:
  - Interacts with ESnet Manager & staff
  - Interacts with ER Programs & other users of ESnet facilities
  - Information exchange forum on LAB networking issues
  - Advisory body to the NLCIO on networking matters
- Twice-a-year ESCC meetings:
  - Collaboration with Internet2 community on JointTechs conferences
- Coordinated effort on significant common network tasks
  - DNS sec (produced deployment guidance white paper)
  - IPv6 implementation

Labs IPv6 Requirements / Demands

- Labs not pressed for IP address space
  - Modest-sized IPv4 address blocks (CIDR) still available from ESnet
- Labs open science requirements:
  - Global in scope, with large international collaborations
  - Currently, no collaboration demands for IPv6
  - But requirements for IPv6 support expected in “near” future
    - Individual IPv6-only collaborators
    - Distributing computing systems for new experiments
- Labs perceived to be on leading edge of technology
  - Creates incentive to support IPv6 early
- Resource limitations & priorities limit IPv6 effort

ESCC Site IPv6 Planning Directions

- Focus on 2012 milestones
  - Goal: develop basic IPv6 network & cyber security infrastructure
    - Knowledge base too…
  - But keep 2014 milestones in mind…
- Actively participate in DOE-level IPv6 Transition efforts
- Form ESCC IPv6 task force(s)
- Non-goal: common detailed implementation plan
  - Each Lab will have different requirements & priorities

ESCC IPv6 Task Forces (I)

- Task Force(s) characteristics (generic):
  - Specific objective; tied to 2012 milestone
  - Short term deliverable (3-4 months…)
  - Low/modest effort
  - 3-5 people
- Positive aspects:
  - Gets Labs out in front on DOE IPv6 transition planning
  - Engages wider spectrum of Lab community
  - Tangible deliverables (presumably…) useful for individual sites
- Negative aspects:
  - Effort needed
  - Obligation to produce

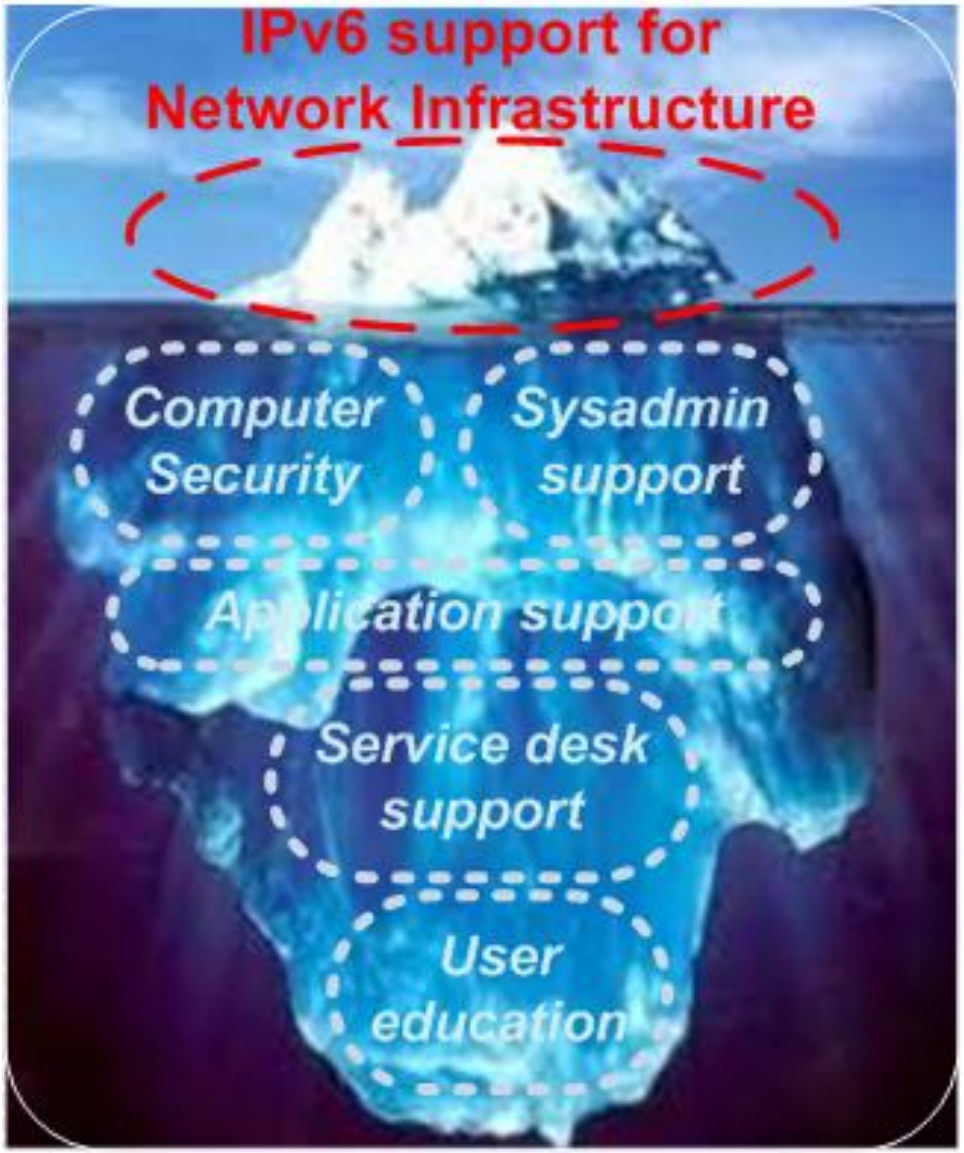
ESCC IPv6 Task Forces (II)

1. IPv6 Planning Process TF
   - Who needs to be engaged at sites
   - High-level roadmap to get there
2. IPv6 Technical Implementation Checklist TF
   - Identify basic network-level issues w/ recommendations
3. IPv6 Implications for Security Infrastructure TF
   - Identify spectrum of security tool issues & problems
   - Network Security Monitoring (NSM) group working on this…

IPv6 Planning: Strategic view

What you see shouldn't sink your ship

What you don't see might…


IPv6 support for
Network Infrastructure
Computer
Security
Sysadmin
support
Application support
Service desk
support
User
education

IPv6 Technical Implementation Checklist Task Force

- Strategy: organize IPv6 technical guidance into modules:
  - A structure for developing tutorials & checklists
  - Allows a tighter focus on specific target audiences
  - Nine modules identified (to date…):
    - Addressing
    - Address management
    - Routing
    - DNS
    - Cyber security
    - Public services guidance
    - Network Management
    - Test / Development Environment
    - Host configuration guidance

ESCC Task Force(s) Near Term Focus

- Produce IPv6 “guidance” document(s) by next meeting (July)
  - High-level
  - With references to existing documentation & deployment guidelines
  - Living document, with iterative revisions over time
- Capitalize on each other’s efforts:
  - Develop a common lessons-learned environment
  - Make use of each other’s IPv6 documentation
  - Share or even coordinate in IPv6 tools development

Other possible ESCC IPv6 actions

- ESCC IPv6 status dashboard:
  - (+) Good way to instigate “incentive”
  - (-) Higher-level USG & DOE dashboards emerging
  - Not clear level of effort needed, and by whom
    - ESnet is investigating providing this service
- World IPv6 Day – June 8, 2011:
  - (+) Opportunity for positive pub on IPv6
  - (-) Time frame is pretty short
  - Not a collective ESCC goal right now
    - But several sites are investigating feasibility of participating

Questions

Extra Slides…

IPv6 Site Planning TF Considerations (I)
(Very preliminary thinking…)

- Upper management involvement / buy-in
  - Develop effort and M&S cost estimates
    - Startup effort versus long term benefit
  - Possible implementation/disruption factors
  - Necessity of commitment
- Engagement of broad spectrum of IT staff
  - Identify who needs to be involved and when
- Establishment of a development/test environment
  - What needs to be in it

IPv6 Site Planning TF Considerations (II)
(Very preliminary thinking…)

- Identification of critical strategic decision pts
  - IPv6 address block type (provider dependent or independent?)
  - Stateful or stateless auto-configuration?
- Building local site IPv6 knowledge base
  - Training strategies
    - Who needs what training & when
    - Ways to capitalize on existing training info/tools/utilities

Site IPv6 Technical Task Force (I)

(Again, very preliminary thinking…)

- Objective: Organize IPv6 implementation guidance & recommendations into distinct modules:
  - A structure for developing tutorials & checklists
  - Allows a tighter focus on target audience
- Addressing module
  - Subnet allocation model
  - Stateful/stateless autoconfig issues
    - DHCPv6
- Address management module
  - IP Address Management (IPAM)

Site IPv6 Technical Task Force (II)

(Again, very preliminary thinking…)

- Name service management (DNS) module
- Routing module
  - Routing protocols
  - Load-balancing
  - Router advertisement guard
- Security infrastructure implications module
  - (place-holder for NSM investigations…)
- Public services IPv6 configuration guidance module
  - Explicit target: 2012 mandate

Site IPv6 technical modules (III)

- Test & development environment module
  - What belongs in an environment
  - Testing procedures
- IPv6 monitoring module
  - IPv6 network monitoring
  - IPv6-based service monitoring
- Host considerations module
  - Implications on dual stack operations