

# IPv6 on Radar (at Last)

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- Facts and consequences
- Basic design guidelines
- A phased approach

# Truth and Consequences

- There will come a time where there will be NO IPv4 addresses LEFT
  - You can't beat the math
- Both IPv4 and IPv6 worlds will have to coexist for several years because of:
  - Migration costs, technology constraints, *etc.*
- Therefore:
  - Networks MUST forward both IPv4 and IPv6 traffics in various combinations of host communication
  - Networks still have to cope with Address Translation designs and operation



# Basic Design Guidelines

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- Addressing
  - DHCPv6-based dynamic allocation schemes for customers, including gateway-embedded Prefix Delegation capabilities
  - NAT designs to include *a la* 6to4 approach
- Forwarding and Routing
  - Dual Stack design, smoothly migrating towards IPv6-only backbones
    - Expect technology- and environment-derived flavors (6(V)PE, routing policies)
- Management
  - Minimize impact on IS for gateway and other networking device management purposes
  - Develop RADIUSv6 architectures
  - Specify AAAA record procedures
  - Operate DHCPv6 servers, possibly co-hosted with DHCPv4 machinery

# A Phased Approach

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- Phase 1 (2008-2009): IPv6 Introduction
  - Publish a reference architectural framework
  - Conduct a scope-restricted experiment
    - Validate design guidelines with basic Internet service
    - Assumes DNF involvement from Day 1
- Phase 2 (2009-2010): IPv6 Migration
  - Refine reference architectural framework with advanced (VoIP, IPTV-inferred) design recommendations
    - Including IPv6-derived Multicast, VPN, SIP capabilities
  - Conduct service-wise pilot deployments accordingly
- Phase 3 (2010-): IPv6 Production
  - Publish consolidated IPv6-inferred service production procedures
  - Towards IPv6-only backbone and customer environmental infrastructures, gracefully coping with IPv4 address depletion