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# IPv6 Implementation Update DREN and SPAWAR

VA Inter Agency IPv6 Meeting

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# Sample Transition Plan

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- Example of the type of phased plan one would need to successfully meet the 2012 deadline.
- Includes early successes, necessary to gain operational experience needed to feed later phases.
- Milestones along the way.



# Phase 1 (pilot, just do something)

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- March 2011
  - internal tiger team established and authorized to make something happen (support from CIO on down)
  - agency has an IPv6 address assignment, and an initial addressing plan
    - addressing plan will be wrong the first time, so don't worry about it.
  - a public web site is identified for ipv6-enablement (e.g. [www.agency.gov](http://www.agency.gov))
  - IPv6 service requested of ISP
  - if agency uses Akamai, ask to participate in beta program
- June 2011
  - IPv6 path established to public web site, by whatever means possible, even if it can't be done natively
  - first public web site ipv6-enabled (even if a native clone of the real site)
  - at least one authoritative DNS server has AAAA record
  - start looking at agency MXs
  - participate in World IPv6-day
    - ... and leave it enabled if no problems identified
    - ... and enjoy a moment of publicity, which will energize the team for the next phase
- If the above is successful, that would be the first milestone
  - measure of success is an IPv6-only client able to reach agency's public web site



## Phase 2 - (bridge the gaps, infrastructure and support built up correctly)

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- Sept 2011
  - problems identified in phase 1 being worked aggressively (ISP, Akamai, load balancers, ipv4 literals, etc.)
    - including procurements for replacing critical components lacking ipv6 support
    - including vendor requests to fix bugs and provide feature parity (may take 6 to 18 months!!)
  - addressing plan revised (if this is rev2, you will probably still get it wrong, but that's OK)
  - transition plan flushed out in more detail based on phase 1 lessons learned
  - additional key public web servers identified, especially for large organizations with sub-agencies (DHS, DoD, etc.)
  - finalize plan for DNS (IPv6 transport, verify DNSSEC capability)
  - plan for upgrade of MXs, working with vendors if necessary
  - training of staff is underway
  - internal publicity program is underway, building an "ipv6 culture" across all IT components in the organization



# Phase 2, continued

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- Dec 2011
  - ISP, TIC, load balancer, and other major components now fully support IPv6
  - next few public web sites ipv6-enabled
  - authoritative DNS servers have IPv6 transport
  - initial solutions implemented to get IPv6 to the MXs
  - help desk staff trained, network operations support trained
  - continued pressure on vendors, suppliers, to provide IPv6 capabilities where previously missing
- Somewhere in here is milestone 2, when the infrastructure fully supports IPv6 transport (ISP, TIC, Akamai, agency border router(s), etc.) natively to where the key services (authoritative DNS, public web server, mail exchanger) are hosted, and some of the public services are using this natively.



# Phase 3 – final big push

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- March 2012
  - Akamai should be fully supporting IPv6 by now
  - continued progress on enabling public facing services (web, DNS, MX)
    - should be 10% complete by now
  - continued work on going through web content to expunge ipv4 literals
  - operations and management tools made IPv6-aware
- June 2012
  - vendor fixes and updates should be arriving by now, so earlier workarounds can be eliminated
  - participate in next IPv6-day event, if there is one (this has been discussed)
  - continued progress on enabling public facing services (web, DNS, MX)
    - should be 50% complete by now
- Sept 2012
  - public services (DNS, web, MX) 100% IPv6-enabled
- Milestone 3 is when an agency meets that 100% goal.
- Intermixed with all that should include some preparations for meeting the 2014 deadline.



# Along the way...

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- Go native
  - avoid tunneling
  - avoid translation techniques
  - native dual-stack is the goal
- Use a phased (or spiral) approach
  - start small, go for low hanging fruit
  - gain operational experience
  - don't waste time on massive comprehensive transition plans
    - usually wrong because not based on operational experience
- Develop an IPv6 corporate culture, permeating both technical and management parts of the organization.