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## Distilling the New IPv6-Only Directive in the DoD

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# AGENDA

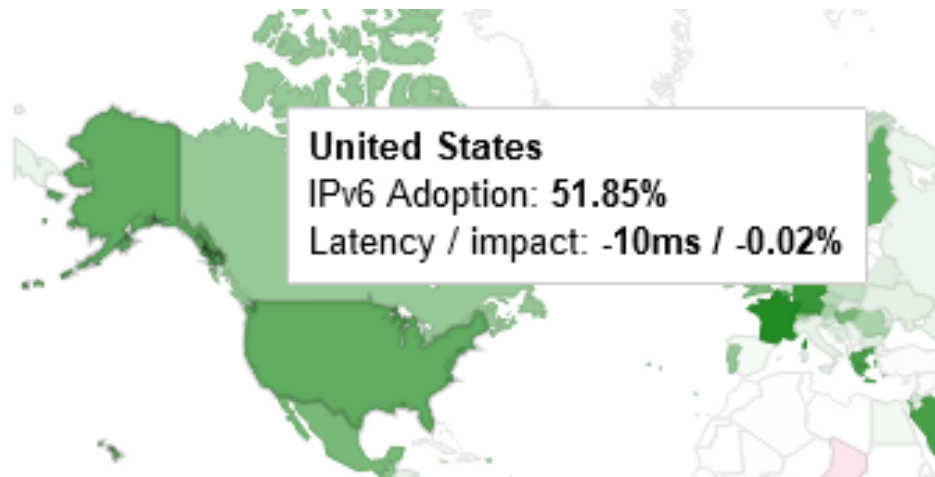
- What is IPv6?
- History of IPv6 in the Fed and DoD
- New mandates for IPv6-only
- IPv6 procurement advice on IT products
- Strategy on getting started on your IPv6 migration



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# WHAT IS IPV6?

- IPv4 ran out of public addresses in 2010/2012
- IPv6 successor protocol – not backwards compatible by itself
- World IPv6 Launch was 2012 – making it “production”
- IPv6 is now primary protocol for content providers like Google, Facebook, Microsoft, Cisco, etc.
- Virtually all ISPs and cell providers have support for business and residential networks (Comcast, Cox, Verizon, AT&T, T-Mobile)





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# SOME HISTORY...

- 2003 – DoD requirement to implement by 2008
- 2010 – OMB requirement for Fed migrate by 2012/2014
- 2021 – OMB and DoD require IPv6-only milestones from 2023 to 2026



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# NEW IPV6 MANDATES

- By end of FY 2023 (Oct 2024): 20% of your networks must be IPv6-only
- By end of FY 2024 (Oct 2025): 50% of your networks must be IPv6-only
- By end of FY 2025 (Oct 2026): 80% of your networks must be IPv6-only
- **An Agency IPv6 Pilot/LDE and Implementation Plan is required now**

Source: [DTM 21-004](#) and [OMB M-21-07](#)

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# IPV6-ONLY

- IPv6-only means there's no IPv4 in your network
- Percentages include cloud systems – not just on-prem
- How do you select what parts of your network should go IPv6-only first?
- In order to get to IPv6-only in some of your networks, you must have IPv6 dual-stack in all of it
- Public-facing services must be IPv6-enabled now
  - Commercial Public Unrestricted web services\*\*



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# PROCUREMENT ADVICE FOR IT PRODUCTS

- Vendors **always** say they are IPv6 Capable – you need to find out what they mean
  - IPv6 capable products are like onions – many layers
- DoD CIO is only granting IPv6 waivers on case-by-case
- Follow the US Government IPv6 product testing process (USGv6) – managed by NIST:  
<https://www.nist.gov/programs-projects/usgv6-program>
- Follow these steps for procurement to make sure you are buying IPv6 compliant equipment:





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# USGV6 PROCESS

1. Map the IPv6 requirements you need for your product with USGv6 Profile “capability strings”
  - Example: you want a basic server that does core IPv6 functions and works in an IPv6-only network:
    - **USGv6-r1:Host + IPv6-Only + Core + Addr-Arch + Link=Ethernet**
2. Give this capability string to your vendor as a requirement to support and require they provide a 3<sup>rd</sup> Party independent lab Suppliers Declaration of Conformity (SDoC)





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# USGV6 PROCESS, CONT

3. Your vendor gets their basic server tested at the test lab and they sign off on an SDoC stating the compliance to your IPv6 requirements
  4. If they meet all requirements with a “PASS” then you can purchase them knowing they are fully compliant with your IPv6 requirements
    - Having a USGv6 SDoC does not automatically equate to a product meeting all IPv6 requirements. It is important for the governments’ technical representative on a procurement effort evaluate the vendors SDoC to determine what requirements were met with a PASS in order to ascertain actual IPv6 capability
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# SDOC EXAMPLE

- Dell Disk Library:  
<https://www.iol.unh.edu/registry/usgv6/754/sdoc>
- Their capability string: USGv6-r1:Host+Core+SLAAC+Addr-Arch+Link=Ethernet
  - They included SLAAC as additional
  - They didn't include IPv6-only
- They passed all capability string requirements





# SDOC EXAMPLE, CONT

USGv6 Profile Supplier's Declaration of Conformity (SDoC) R1.1

NIST.SP.500-281Ar1s

[1] CONTACT INFORMATION				
SUPPLIER		SUPPLIER SIGNATURE		
SUPPLIER NAME	Dell Technologies	<i>George Dilger</i>		
SUPPLIER CONTACT EMAIL	George.Dilger@dell.com	<a href="#">George Dilger (Nov 29, 2022 10:10 EST)</a>		
ACCREDITED LABORATORY		ACCREDITED LABORATORY SIGNATURE		
LABORATORY NAME	UNH InterOperability Laboratory	<i>Michayla Newcombe</i>		
LABORATORY CONTACT EMAIL	usgv6-sdoc@iol.unh.edu	<a href="#">Michayla Newcombe (Nov 29, 2022 10:45 EST)</a>		
[2] PRODUCT VERSION TESTED		[3] PRODUCT ID		
5.5.0.0		Disk Library for mainframe - DLm		
[4] PRODUCT FAMILY				
APPLICABLE SERIES HARDWARE		APPLICABLE SERIES SOFTWARE		
2500, 8500		5.5.x.x		
[5] UNITARY OR COMPOSITE SDOC				
<input checked="" type="checkbox"/> <b>Unitary:</b> All of the declared capabilities of this product are addressed by original test results reported in this SDoC.		<input type="checkbox"/> <b>Composite:</b> Some or all of the capabilities of this product are provided by the use and/or integration of unmodified components that have their own unique SDoCs. All of the relevant referenced SDoCs are identified in section 6 and linked.		
[6] REF	SUPPLIER	PRODUCT ID/STACK ID	CAPABILITY SUMMARY	COMPOSITE SDOC LINK
i.	Dell Technologies	Disk Library for mainframe - DLm/5.5.0.0	USGv6-r1:Host+Core+SLAAC+Addr-Arch+Link=Ethernet	



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# USGV6, CONT

- This program is **not** an approved products list
- There are no minimum requirements that get “certified”
- You as the organization determine what your products and applications must be capable of supporting and have the vendor provide the validated proof
- The **current** DoDIN APL does not do this level of IPv6 evaluation and does not have a capability to assess IPv6-only
  - That may be changing soon





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# GETTING YOUR IPV6 MIGRATION STARTED

- Perform an inventory
  - Build your network design requirements and specifications
  - Create an IPv6 training plan
  - Build your IPv6 address plan
  - Implement your dual-stack back bone and IPv6-only pilot
  - Finish the IPv6 migration network-wide
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# WE CAN HELP!

- We have ~20 years of IPv6 experience across various parts of DoD
  - We have [IPv6 Hall of Fame consultants](#)
  - We have an IPv6 Essentials training course
  - We can assess IT products for their USGv6/IPv6 capabilities
  - We can provide consultants to help you start and finish strong – no sense white-knuckling it!
  - Come see me at our booth!
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ONE DOES NOT SIMPLY ENABLE IPV6







<https://www.tachyondynamics.com>

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