

The USGv6 Testing Program

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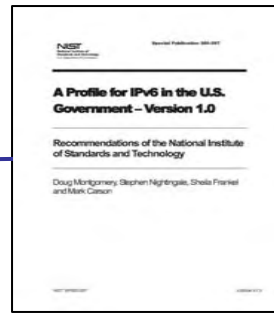
August 4, 2010.

What do Agencies Want?

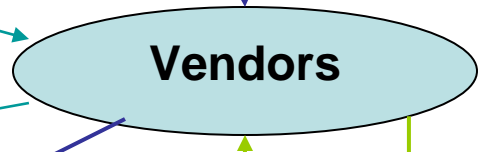
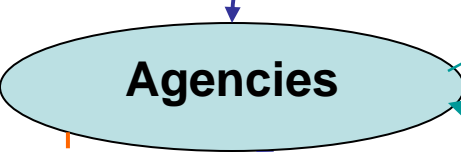
- (Besides relief from an endless spawn of regulations and requirements from other Agencies?)
- Possibly: Clarity on what they should be acquiring in IT equipment.

How Can USGv6 Help Provide it?

- By providing a profile that offers broad default categories of secure, interoperable products.
- By offering flexible specification tailoring capabilities that enable more network-knowledgeable Agencies to:
 - Finely tune their specific requirements, and
 - Corroborate claimed results.



USGv6 Profile



Spec. Reference	Requirement	Configuration	Device Type	Test	Pass	Fail	Not	None
USGv6-01	IPv6 Basic Requirements	support of IPv6 address auto-configuration	IPv6v4	M	M			
		support of IPv6v4 address auto-configuration	IPv6v4					
		support of IPv6v4 DHCPv6 address auto-configuration	DHCPv6v4					
		support of IPv6v4 Stateless Address Auto-Configuration	IPv6v4v4					
USGv6-02	IPv6 Advanced Requirements	support of IPv6v4 Stateless Address Auto-Configuration	IPv6v4	M	M			
		support of IPv6v4 Stateless Address Auto-Configuration	IPv6v4					
USGv6-03	IPv6 Security Requirements	support of IPv6v4 Stateless Address Auto-Configuration	IPv6v4	M	M			
		support of IPv6v4 Stateless Address Auto-Configuration	IPv6v4					
USGv6-04	IPv6 Application Requirements	support of IPv6v4 Stateless Address Auto-Configuration	IPv6v4	M	M			
		support of IPv6v4 Stateless Address Auto-Configuration	IPv6v4					

Capabilities Checklist/Product Specs

Spec. Reference	Additional Information	Configuration	Device Type	Test	Pass	Fail	Not	None
USGv6-01	support of IPv6 address auto-configuration	IPv6v4	IPv6v4	M	M			
	support of IPv6 address auto-configuration	IPv6v4	IPv6v4					
	support of IPv6 address auto-configuration	IPv6v4	IPv6v4					

Vendor's SDOC



Corroboration

Dialogues in the System

The Capabilities Checklist

Spec / Reference	Section	USGv6-V1 Capability Check List IPv6 Requirements	Configuration Option	Capability Type			Notes
				Host	Router	NPD	
SP500-267	6.1	IPv6 Basic Requirements					
		support of core IPv6 capabilities (IPv6, ICMP, ND, PMTU).					
		support of stateless address auto-configuration	SLAAC				Host:[O:1]
		support of SLAAC privacy extensions.	PrivAddr				
		support of stateful (DHCP) address auto-configuration	DHCP-Client				Host:[O:1]
		support of automated router prefix delegation	DHCP-Prefix				
		support of neighbor discovery security extensions	SEND				
SP500-267	6.6	Addressing Requirements					
		support of base IPv6 addressing requirements.					
		Addr: "Scoping, Deprecation, Defaults and Reserved"					
		support of cryptographically generated addresses	CGA				
SP500-267	6.7	IP Security Requirements					
		support of the IP security architecture	IPsec-V3				
		support for automated key management	IKEv2				
		support for encapsulating security payloads in IP	ESP				
SP500-267	6.11	Application Requirements					
		support of DNS client/resolver functions	DNS-Client				
		support of Socket application program interfaces	SOCK				
		support of IPv6 uniform resource identifiers	URI				
		support of a DNS server application	DNS-Sever				
		support of a DHCP server application	DHCP-Server				
SP500-267	6.2	Routing Protocol Requirements					
		support of the intra-domain (interior) routing protocols	IGW				
		support for inter-domain (exterior) routing protocols	EGW				
SP500-267	6.4	Transition Mechanism Requirements					
		support of interoperation with IPv4-only systems	IPv4				
		support of tunneling IPv6 over IPv4 MPLS services	6PE				
SP500-267	6.8	Network Management Requirements					
		SNMPv3: "Mgmt, Messages, Apps and Security"	SNMP				
SP500-267	6.9	Multicast Requirements					
		Mcast: "MLDv2, Unicast, Allocation"					
		full support of multicast communications	SSM				
SP500-267	6.10	Mobility Requirements					
		support of mobile IP capability.	MIP				
		support of mobile network capabilities	NEMO				
SP500-267	6.3	Quality of Service Requirements					
		support of Differentiated Services capabilities	DS				
		PHB Id					
SP500-267	6.12	Network Protection Device Requirements					
		NPD "6.12.3 general requirements"	N1 N2 N3 N4				
		support of basic firewall capabilities	FW				NPD:[O:1]
		support of application firewall capabilities	APFW				NPD:[O:1]
		support of intrusion detection capabilities	IDS				NPD:[O:1]
		support of intrusion protection capabilities	IPS				NPD:[O:1]
SP500-267	6.5	Link Specific Technologies					
		support of robust packet compression services	ROHC				
		support of link technology [O:1]	Link=				[O:1]
		(repeat as needed) support of link technology	Link=				

Items in parentheses are a compendium of capabilities more fully expressed in the Node Requirements Table.

Selection vs Development

- If you want to buy commodity items:
 - Desktops, laptops, routers, the default requirements are sufficient.
- If you want to add e.g. application requirements such as DNS server, DHCP server, Socket programming interfaces:
 - Specify these in the capabilities checklist.
- If you want to remove requirements, e.g. aspects of security:
 - Change the color coding in the capabilities checklist.

USGv6 Product Selection and Comparison

- Vendors develop a Suppliers Declaration of Conformity (SDOC) after testing in an accredited lab.
- SDOCs are submitted to support bids.
- Agencies can compare claimed capabilities against acquisition requirements and select the best match.
- SDOC is anatomized next ...

SDOC: Page 1

Suppliers Declaration of Conformity for USGv6 Products			USGv6-v1 SDOC-v1.1 Page 1		
1	The Document Requiring Conformity:			USGv6 Profile Version 1.0, July 2008. (NIST SP500-267)	
2	Product Identifier:				
3	Supplier's Name, Address and SDOC Contact Details				
4	Product as Tested/Declared: <i>Product Identifier, version/revision information, details of configuration tested.</i>				
5	Product Family (other products using same IPv6 stack(s) to which these results are declared to apply). Check Product Family attestation below.				
6	USGv6 Capability summary. (For each distinct IPv6 stack in the product provide a summary of its USGv6 capabilities below and include a detailed test result summary). <i>e.g. example-prod-id/stack-1: USGv6-v1-Host: IPv6-Base+Addr-Arch+IPsec-v3+IKEv2+SLAC+Link=Ethernet.</i>				
7	Self Contained or Composite SDOC? (Must indicate one).				
	All of the declared USGv6 capabilities of this product are addressed by original test results reported in this SDOC.		Some or all of the USGv6 capabilities of this product are provided by the use and/or integration of unmodified components that have their own unique USGv6 SDOCs. All of the relevant referenced SDOCs are identified in section 8 and attached. This product's page 2 will indicate which capabilities are provided by specific referenced components (product-id/stack-id).		
8	Additional Declarations / Attachments: (List supplier & product-id/stack-id for referenced and attached test results in the case of composite products).				
	Component Supplier	Product ID:	Stack ID:	Notes:	
[1]					
[2]					
[3]					
[4]					
9	Supplementary Attestations (Answer all).				
	This product is fully functional in IPv6 only environments. That is, no claimed capabilities are invalidated if this product is deployed in a network environment that does not support IPv4.	This SDOC contains a capabilities test report for each unique IPv6 stack in the product. If not, please document which stacks/ports are not covered, and how their IPv6 capabilities differ from those reported in this SDOC.		All of the products listed in the product family in section 5 are implemented such that their USGv6 capabilities are identical in form and function across the entire product family. The specific conformance and interoperability test results for the USGv6 capabilities of an identified member of this product family are provided in this SDOC. The SDOC attests to the fact that these tested USGv6 capabilities are identical and unmodified for all the products cited above.	
10	Signature		Date		
	Print Name / Title				

SDOC: Page 2

11 Suppliers Declaration of Conformity for USGv6 Products: Declared Capabilities and Test Results Summary											USGv6-v1 SDOC-v1.1 Page 2	
Product Id:			Stack Id:									
Spec / Reference	Section	USGv6-v1 Profile Requirements	Context / Configuration Option	Supported Capabilities			Test Suite Conformance/NPD	Test Lab / Result ID, Note #, or Component Ref	Test Suite Interoperability	Test Lab / Result ID, Note #, or Component Ref		
SP500-267	6.1	IPV6 Basic Requirements support of IPv6 base (IPv6,ICMPv6;PMTU;ND) support of stateless address auto-configuration support of SLAAC privacy extensions. support of stateful (DHCP) address auto-configuration support of automated router prefix delegation support of neighbor discovery security extensions	IPv6-Base SLAAC PrivAddr DHCP-Client DHCP-Prefix SEND				Basic_v1.*_C SLAAC-V1.*_C Self Test Self Test Self Test Self Test		Basic_V1.*_I SLAAC-V1.0_I Self Test Self Test Self Test Self Test			
SP500-267	6.6	Addressing Requirements support of addressing architecture reqts support of cryptographically generated addresses	Addr-Arch CGA				Addr_Arch_v1.*_C Self Test		Addr_Arch_v1.*_I Self Test			
SP500-267	6.7	IP Security Requirements support of the IP security architecture support for automated key management support for encapsulating security payloads in IP	IPsecv3 IKEV2 ESP				IPsecv3_v1.*_C IKEV2_v1.*_C ESPv3_v1.*_C		IPsecv3_v1.*_I IKEV2v1.0_I ESP_v1.*_I			
SP500-267	6.11	Application Requirements support of DNS client/resolver functions support of Socket application program interfaces support of IPv6 uniform resource identifiers support of a DNS server application support of a DHCP server application	DNS-Client SOCK URI DNS-Server DHCP-Server				Self Test Self Test Self Test Self Test Self Test		Self Test Self Test Self Test Self Test Self Test			
SP500-267	6.2	Routing Protocol Requirements support of the intra-domain (interior) routing support for inter-domain (exterior) routing	IGW EGW				Self Test Self Test		OSPFv3_v1.*_I BGP_v1.*_I			
SP500-267	6.4	Transition Mechanism Requirements support of interoperation with IPv4-only systems support of tunneling IPv6 over IPv4 MPLS services	IPv4 6PE				Self Test Self Test		Self Test Self Test			
SP500-267	6.8	Network Management Requirements support of network management services	SNMP				Self Test		Self Test Self Test			
SP500-267	6.9	Multicast Requirements support of basic multicast full support of multicast communications	Mcast SSM				Self Test Self Test		Self Test			
SP500-267	6.10	Mobility Requirements support of mobile IP capability. support of mobile network capabilities	MIP NEMO				Self Test Self Test		Self Test Self Test			
SP500-267	6.3	Quality of Service Requirements support of Differentiated Services capabilities PHB Id	DS				Self Test Self Test		Self Test			
SP500-267	6.12	Network Protection Device Requirements support of common NPD reqts support of basic firewall capabilities support of application firewall capabilities support of intrusion detection capabilities support of intrusion protection capabilities	NPD FW APFW IDS IPS				N1 N2 N3 N4 N1_FW N2_App_FW N3_IDS N4_IPS					
SP500-267	6.5	Link Specific Technologies support of robust packet compression services support of link technology [O:1]	ROHC Link=				Self Test Self Test		Self Test Self Test			
		(repeat as needed) support of link technology	Link=									
12		< Check HERE if this stack's DOC includes additional information about tested capabilities and options on an attached page 3 of notes.										

Level	Level of support for USGv6-v1 Requirements for capability.	Color	Indication of USGv6-v1 Recommended Level of Support for device type / stack role.
	Blank - SDOC makes no declaration for this capability.		Indicates capability that is recommended as mandatory (unconditional MUST) in the USGv6-v1 Profile.
P	Passed required tests of USGv6-V1 requirements for these capabilities.		Indicates capability that is unusual for a given device type / stack role. Do not select without careful analysis.
N	See notes page for details on the level of support of USGv6-v1 requirements for this capability.		Indicates capability that is left optional / conditional by the recommendations of the USGv6-v1 Profile.
X	USGv6 capability not supported in product.		

Test Suite - Specific USGv6 Test suite used for test. See: <http://www.nist.gov/usg6/test-specifications.html>
Test Lab / Result ID - Abbreviation of accredited laboratory and its local identifier for this test result.
Note # - reference to a detailed note about this capability or result on attached page.
Component Ref - Supplier / Product / Stack ID of distinctly tested component that provides this capability.

SDOC: Page 3

Note #	Product Id:		Stack Id:				Notes about USGv6-v1 Capabilities.				
	Spec / Reference	Section	USGv6-v1 Profile Requirements	Context / Configuration Option	Supported Capabilities			Test Suite			
					Host	Router	NPD	Conformance/NPD	Test Lab / Result ID, Note	Test Suite Interoperability	Test Lab / Result ID, Note
1											
Discussion:											
2											
Discussion:											
3											
Discussion:											
4											
Discussion:											
5											
Discussion:											
6											
Discussion:											
7											
Discussion:											
8											
Discussion:											
9											
Discussion:											
10											
Discussion:											

SDOC: Page 4

Suppliers Declaration of Conformity for USGv6 Description and Instructions Page 3

General: This document describes network product from the identified supplier that claims support of USGv6 capabilities. General product and supplier identification is given on Page 1. Overall results of testing USGv6 capabilities for conformance, interoperability and network protection are given on Page 2. Detailed instructions for completing and interpreting each numbered field are given below. Note USGv6 Testing website at: <http://www.antd.nist.gov/usgv6/testing.html>. Contact: usgv6-project@antd.nist.gov.

Field	Description and Instructions	Field	Description and Instructions
1	The Document Requiring Conformity: Identifies the profile version implemented. Not a user completeable field.		
2	Product Identifier: Supplier's concise name for the product declared.	11	Summary of Results: The format of this table mirrors the USGv6-v1.0 capabilities checklist (USGv6 Profile, Appendix A). The 12 categories of USGv6 capabilities are listed as subheadings, with subsidiary functions as line items. Configuration options related to conditional implementation of selected capabilities.
3	Suppliers Name, Address and Contact Details: Company name and point of contact for SDOC questions, street address, phone and email.		
4	Product as Tested/Declared: Product Identifier and detailed version information. If this SDOC reports original test results (page 2), include information about the specific product configuration(s) that was actually tested (e.g., hardware configuration, operating system, etc).		Product Id/Stack Id: The identification line of this page includes space for Product Id and Stack Id labels. Product Id is the same as given on Page 1. As there may be more than one unique IPv6 stack implemented in the product, the Stack Id field identifies the particular stack described. One Results Summary page per stack is required.
5	Product Family: A list of other products that use the same, unmodified IPv6 stacks such that their USGv6 capabilities are identical in form and function to the specific product configuration above. Test labs are only required to affirm the results for specific products tested. Test labs optionally may affirm recognized product families.		Host, Router and Network Protection (NPD) columns identify 'preferred' options: cells in green represent the NIST recommendations. Cells in grey denote atypical options, very unlikely to be implemented. The procuring Agency may additionally tailor these fields to indicate requirements for this acquisition.
6	USGv6 Capability Summary: The USGv6 stack implementation summary as identified by the '+' notation described in the USGv6 profile, Appendix A. For each IPv6 stack implementation in the product, a distinct Stack Id and reference to the attached Results Summary page (Page 2).		Test Suite Conformance and Interoperability columns identify capability sets for which a public test suite exists, and the versions applicable to USGv6-v1.0 test results. Major version v1 and all its minor versions are deemed acceptable. Over time, new versions will be added and older ones retired. There may be periods when more than one major version is acceptable concurrently.
7	Self Contained or Composite SDOC: If this SDOC relies on the test results of other distinct products, list the Supplier & Product ID/Stack IDs referenced and attach those original SDOCs to this one.		The supplier completes the adjacent Test Lab and Result Id column with the test lab acronym and unique result identifier (See Test Lab and Accreditor page on the Website). The buyer may opt to query results with the test laboratory using the specified Result Id(s). The supplier may opt to provide particular explanation of some results (partial results, additional options) in which case reference to note on an attached page 3. (e.g. "See Note# N"). See the USGv6 testing website to identify the test lab, and find contact details.
8	Additional Declarations / Attachments: List the supplier / product ID / Stack ID of any test results of composite components referenced by this SDOC.		Cells marked Self Test have no associated public test suite. If implemented by the supplier, the required adjacent annotation is " Self Declaration ". Note that vendors declaring support for such a capability are declaring support for the associated specific requirements in the USGv6 Profile.
9	Supplementary Attestations: Suppliers disclosure of IPv6 only capabilities; multiple stacks present; product family applicabilities. These are not included to qualify or disqualify a product from purchase considerations, but to inform network administrators of potential configuration options relevant to USGv6 interoperability. Check all that apply.	12	Additional Options Tested: Vendor checks if it is desired to record tested options not part of the 'Musts' in the profile. Explanations on the page following the results summary. Headings and Special Notations: as described.
10	Signature Block: Wet ink signature of the responsible product manager, dated. Printed name and position title on the line below.		Options for Test Lab and Result Id: Currently 3 cases: (1) the test lab acronym and alphanumeric Id of the result set as assigned by the test laboratory; (2) 'Self declaration' denoting the supplier attests to adequate QA testing of the capability; (3) See attachment or note 'N', where the supplier explains variations in greater detail.
Further Description: http://www.antd.nist.gov/usgv6/testing.html , and NIST SP 500-267 USGv6 Testing Program Users Guide available at the website.			

Illustrations

- USGv6-v1 Host capabilities.
- Composite products (including the OEM case).
- Product families.

Host capabilities on Hardware as Tested

- Check Attestation 7-1:
 - *All of the declared USGv6 capabilities of this product are addressed by original test results reported in this SDOC.*
- PP 1-3 as original.
- Variants
 - Capabilities can be tailored to Agency specified requirements.
 - For example DoD product categories.

Composite Product

- Check attestation 7-2:
 - *Some or all of the USGv6 capabilities of this product are provided by the use and/or integration of unmodified components that have their own unique USGv6 SDOCs. All of the relevant referenced SDOCs are identified in section 8 and attached. This product's page 2 will indicate which capabilities are provided by specific referenced components (product id/stack id).*
- Attach:
 - PP 1-3 for base stack.
 - PP 1-3 for security stack.
 - PP 1-3 for the composite stack.

Product Families

- Check attestation 9-3:

All of the products listed in the product family in section 5 are implemented such that their USGv6 capabilities are identical in form and function across the entire product family. The specific conformance and interoperability test results for the USGv6 capabilities of an identified member of this product family are provided in this SDOC. The SDOC attests to the fact that these tested USGv6 capabilities are identical and unmodified for all the products cited above.

- Can apply to original tested product, -OR- composite product.

Where to go for USGv6 Information

- The USGv6 testing website at:
 - <http://www.antd.nist.gov/usgv6/testing.html>.
- The USGv6 Test Program Users Guide:
 - <http://www.antd.nist.gov/usgv6/docs/NIST-SP-500-281-v1.3.pdf>.
- Or sign up to the usgv6-testing mailgroup:
 - Usgv6-testing@nist.gov (Email me to find out how).