



IPv6 in the US Federal Market

Tim LeMaster
Director, Systems Engineering
Juniper Federal

lemaster@juniper.net



OMB Mandate

**EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503**

M-05-22

August 2, 2005

MEMORANDUM FOR THE CHIEF INFORMATION OFFICERS

FROM: Karen S. Evans

SUBJECT: Transition Planning for Internet Protocol Version 6 (IPv6)

- June 30, 2008

All agency **infrastructures (network backbones)** must be using IPv6 and agency networks must interface with this infrastructure.

<http://www.whitehouse.gov/omb/memoranda/fy2005/m05-22.pdf>



IPV6 Register - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://jtc.fhu.disa.mil/adv_ip/register/register.html#router

myPay Web Site Juniper Networks: Product In... Loan Requests Juniper Networks: Product M... Document Library IPV6 Register

SEARCH

THE JOINT INTEROPERABILITY TEST COMMAND

Home Testing Organization Projects Contact Info. Visitor Info. Links



JITC/DISA Logo - Bottom

DoD IPv6 Capable Approved Products List (APL)

[CTT Team Lead, Advanced IP Technologies:](#) (520) 538-5362 or DSN 879-5362
[JITC Lead Action Officer:](#) (520) 533-0154 or DSN 821-0154
[JITC Action Officer:](#) (520) 538-5130 or DSN 879-5130

Products on this list have received IPv6 Special Interoperability Certification and IPv6 Information Assurance Certification from the Defense Information System Agency (DISA) in accordance with the Department of Defense IPv6 Master Test Plan. All inquiries made in regards to testing methodology and policy should be directed towards the JITC Consolidated Test Team (CTT) Lead above.

IPv6 APL Disclaimer
The certification of this product for the IPv6 Approved Products List is based upon the identified detailed configuration described in the IPv6 Interoperability Certification Letter and IA Certification Report. The configuration details of both of these documents should be reviewed prior to purchase as the specified configuration must be followed during actual implementation of this product in order to be covered by this certification.

REQUIREMENT, PROCESS AND TEST DOCUMENTS

[DoD IPv6 Standards Profiles for IPv6 Capable Products, Version 1](#)
[DoD IPv6 Generic Test Plan, Version 2](#)
[JITC IPv6 Interoperability Certification Process](#)
[IPv6 APL Test Schedule](#)

CATEGORY

The following categories are delineated in the [DISA](#) and DoD mandated IPv6 Standards Profiles for IPv6 Capable Products

WORKSTATIONS	NETWORK APPLIANCES	ROUTER
LAYER 3 SWITCH	SECURITY DEVICE	NETWORK SERVER

Done

start IPv6 Register - ... C:\Documents a... 3 Microsoft Of... 2 Microsoft Off... 2 Microsoft Off... Microsoft Word 4:57 PM Tuesday



Security Considerations

§ Policy

- Blocking v6 until you're ready
- Disabling/blocking v6 tunnels
- Addressing
- Autoconfiguration/DHCPv6
- NAT
- IPv6 uRPF

§ Training

§ Testing

§ IPS and Network management lagging

§ SeND

Entirely new uses

§ Smart buildings

- IPv6 based sensors (for temperature, humidity, smoke, light, water systems, etc)



§ RFID (Radio Frequency Identification)

- All over the place (every product at Walmart, all shipped boxes, cargo transportation, in dogs, cows, books, you name it)



§ Cars and planes will have moving embedded networks

§ Mobility and Adhoc Networking

§ Military groups all over the world are planning systems that can use the powerful new features of IPv6 in all kinds of clever ways (NCW). Leveraging IP to the war fighter.

§ And many other yet to be foreseen potential uses

§ Enabling the NGN of applications

June 2007

Jan 2008

Organizations		Database	WWW	MX	DNS
DoD Organizations					
5	HPCMO				
6	SPAWAR				
Network Equipment Vendors					
10	Cisco				
11	Extreme				
12	Force 10				
13	Foundry				
14	Juniper				
15	Eriesson				
16	Nortel				
17	3Com				
Computer and OS Companies					
21	Microsoft				
22	Apple				
23	Cray				
24	HP				
25	IBM				
26	Sun				
27	SGI				
Network Security Products					
31	Checkpoint				
32	ISS				
Networks					
36	DREN				
37	AARNET				
38	NTT				
39	ESNET				
40	NISN				
41	NLR				
42	NREN				
43	NYSERNET				
44	Internet2				
45	Abilene				
46	Qwest				

Organizations		Database	WWW	MX	DNS
DoD Organizations					
5	HPCMO				
6	SPAWAR				
Network Equipment Vendors					
10	Cisco				
11	Extreme				
12	Force 10				
13	Foundry				
14	Juniper				
15	Eriesson				
16	Nortel				
17	3Com				
Computer and OS Companies					
21	Microsoft				
22	Apple				
23	Cray				
24	HP				
25	IBM				
26	Sun				
27	SGI				
Network Security Products					
31	Checkpoint				
32	ISS				
Networks					
36	DREN				
37	AARNET				
38	NTT				
39	ESNET				
40	NISN				
41	NLR				
42	NREN				
43	NYSERNET				
44	Internet2				
45	Abilene				
46	Qwest				

DREN's Vendor scorecard

- § Looked in DNS to see if there were AAAA records for www, MX, and DNS.
- § Quick sampling of major computer and network companies showed no public facing IPv6.
- § 6 months ago, and then today.



History of IPv6 at Juniper

§ Hardware designed to support IPv6

- Enabled in JUNOS 5.1 software in Nov 2001
 - Mainline!

§ JUNOSe support since May 2003

§ ScreenOS support since June 2004

- Technology release
- Mainlined in ScreenOS 5.4 July 2006

§ CTP (EoIP) support since Feb 2007

§ OAC (wireless supplicant) support May 2007



IPv6 at Juniper

- § **Strong, feature rich, v6 solutions**
- § **Early implementer with lots of v6 customer examples**
- § **DREN, ESNNet, NASA, I2, GEANT, NTT, Japan GigaNet**
- § **Thought leader**
 - Federal focused transition documents
 - Active IETF v6 leader
 - Long time Moonv6 participant
 - UNH IOL IPv6 member
 - Command Information lab contributor
 - Lockheed Martin transition lab Pilot partner
- § **NIST Special Publication 500-267 (Draft)**
- § **Continue to participate and develop v6 solutions as Government expands meaning of "IPv6 Compliant"**

Juniper *your* Net™