

HP Imaging and Printing IPv6 FAQs—October 2005



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What is IPv6? What are the features of IPv6 and why is it important? How is IPv6 different from IPv4?

The IPv6 family supports a range of new functionality. IPv6 tackles critical areas of IP standards, such as address depletion, end-to-end authentication and security, packet handling efficiency, and improved scalability. All designs were optimized for use with 64-bit hardware and software.

IPv6 provides true IP mobility by enabling secure access from any place, at any time, all the time. It is simpler and easier to configure and offers better network management than IPv4. IPv6 is the standard for global information technology for decades to come.

- **Addressing:** IP address size increases from 32 bits with IPv4 to 128 bits with IPv6, which provides enough IP addresses so that for the foreseeable future, all nodes can have a globally unique address for true peer-to-peer communication. The IPv6 addressing scheme uses hierarchically assigned addresses with a logical separation of “who you are” (interface ID) from “where you are connected” (prefix) to allow more efficient routing.
- **Support for renumbering:** IPv6 brings link level support for renumbering (changing IP addresses across a network). IPv6 addresses have associated lifetimes: as the lifetime of the old address expires, a new address can be automatically configured.

You can easily renumber IPv6 hosts by adding a new prefix to the router, which reduces the lifetime of the old prefix. As nodes depreciate the old prefix, the new prefix is used for new connections. Renumbering happens automatically! This may provide many benefits, including the end of ISP “lock in,” improved competition, and reduced costs when renumbering due to the joining of two networks, as in the case of corporate mergers or acquisitions.

- **Management:** IPv6 makes getting on the network as simple as plugging a cable into your computer. IPv6 nodes automatically configure themselves using IPv6 stateless auto-configuration or a version of the Dynamic Host Configuration Protocol (DHCPv6)—all without human intervention. These features deliver true plug-and-play network access, placing the IT director in control and allowing network operation staff to focus on running the network, rather than manually configuring new users.
- **Efficient mobility support:** With built-in mobility support, every network is mobile-ready, requiring little pre-existing infrastructure. Each IPv6 node can act as a correspondent and redirect packets to the new mobile node’s care-of-address.
- **IPv6/IPv4 interoperability:** Given the millions of existing systems currently running IPv4, it is clear that successful adoption of the IPv6 technology suite will be largely based on its ability to integrate with the existing IPv4 infrastructure. To address this requirement, IPv6 is carefully designed to ensure that hosts or routers can be upgraded in an incremental manner and that IPv6 and IPv4 hosts and routers can interoperate in a variety of configurations.

What is IPsec?

The IPsec protocol is an IETF standard that provides a foundation for broadly securing IP-based networked services. IPsec provides host-to-host authentication, data integrity, and encryption of network communications. These features are an integral part of the IPv6 protocol: the IPv6 authentication header extension assures that a packet is truly from its source address, and end-to-end encryption at the network layer greatly reduces the requirement for application-level security and eliminates many vulnerabilities currently exploited by hackers.

Although IPsec has gained widespread operating system support, user deployments remain limited. Microsoft® operating systems have long supported IPsec. As Microsoft continues to develop security, IPsec deployments should increase. Government mandates for IPv6 (and consequently IPsec) also drive the need for IPsec support.

What is the U.S. Government's mandate for IPv6 adoption?

Initially, the U.S. Department of Defense (DoD) announced plans to move DoD networking to Internet Protocol version 6 (IPv6—the next generation of the Internet Protocol) by Fiscal year (FY) 2008.

As of October 1, 2003, all networked devices added to the DoD network must be IPv6-capable (and maintain interoperability with IPv4). For cases in which procuring, acquiring, or developing IPv6 capability is not currently possible (for example, due to lack of products or development timeline), acquisitions are considered compliant if a funded contractual commitment to upgrade to IPv6 by the beginning of FY 2007 is in place.

This year, the White House Office of Management and Budget (OMB) has announced that “all agency infrastructures (network backbones) must be using IPv6 and all agency network must interface with this infrastructure” by June 2008. As part of this effort, the OMB will release a “comprehensive transition planning guide” by the end of 2005.

The U.S. Government's mandate for IPv6 adoption impacts non-government entities, specifically those that do business with the government. Therefore, other sectors plan to adopt IPv6 as well.

How does HP's Imaging and Printing Group plan to support IPv6 and IPsec on HP high-end peripherals?

- HP departmental and workgroup printers and multi-function peripherals with an EIO slot will have a migration path to IPv6.
- In October 2005, HP introduced the HP Jetdirect 635n IPv6/IPsec internal print server, which features IPv6 and IPsec encryption support. The new print server must be installed in the EIO slot of HP printers and multi-function peripherals to migrate them to IPv6.
- Toward the end of 2005, HP will introduce IPv6-supported network peripheral installation software, and HP Web Jetadmin network printer management software.
- Peripherals released towards the end of 2006 will feature firmware that supports IPv6, which impacts the peripheral's embedded web server, scanning, and digital sending functionality, for example.

What are the capabilities of the new HP Jetdirect 635n IPv6/IPsec internal print server?

To enable IPv6/IPsec support, the new HP Jetdirect 635n print server supports secure printing in both IPv4 and IPv6 environments

- **Configuration:** The print server supports IPv6 address acquisition via DHCPv6, as well as via an IPv6 router (stateless). Additional operating parameters can be acquired via DHCPv6.
- **Printing:** The print server supports HP's deFacto standard printing and industry-standard print protocols like LPD and IPP.
- **Management:** The print server lets you access, view, and set operating parameters either remotely over IPv6 using the Web user-interface or locally using the printer's front panel.
- **Security:** The print server supports device authentication using certificates and pre-shared keys. In addition, the print server supports data encryption using DES, 3DES & AES. IPsec policies can be set via the Web user-interface.

Will the new HP Jetdirect 635n IPv6/IPsec internal print server be interoperable with other devices on my IPv6 network?

The HP Jetdirect 635n IPv6/IPsec internal print server has successfully completed independent testing and has received a phase 2, gold logo for interoperability. The IPv6 Forum Logo Committee (v6LC), which is affiliated with the North American v6 Task Force (NAv6TF) which is a sub-chapter of the IPv6 Forum, sponsors this industry-supported testing program.

What should I consider when deploying an IPv6 environment?

First, the HP Jetdirect 635n IPv6/IPsec internal print server supports both IPv4 and IPv6, so it is a vital component of any transition strategy that involves printing support. In addition, the following areas should be considered:

- **Infrastructure:** Any network infrastructure devices (i.e. routers, switches) that implement the IP must be upgraded to support IPv6. There are two distinct strategies involved with this transition: either keep the backbone IPv4 and add IPv6 "islands" or shift the backbone to IPv6 and employ IPv4 "islands."
- **IP support:** Hosts (clients/servers) must be upgraded with operating systems that support IPv6.
- **Application support:** In order to take advantage of the new environment, applications must be ported to support IPv6.
- **IP neutral support:** As organizations transition from IPv4 to IPv6, network environments will most likely have mixed environments employing both IPv4 and IPv6. All network devices and applications should support both IPv6 and IPv4.

For more information

- For more information on the HP Jetdirect 635n IPv6/IPsec internal print server, please visit:
<http://h10010.www1.hp.com/wwpc/us/en/sm/WF05a/18972-236253-236264-34213-236264-500078.html>
- For more information on IPv6, please visit:
 - www.hp.com/network/ipv6
 - www.ipv6forum.org
 - www.nav6tf.org
 - www.ipv6ready.org
- Please see the DoD CIO memorandums “Internet Protocol Version 6 (IPv6), June 9 2003 (<http://ipv6.disa.mil/docs/stenbit-memo-20030609.pdf>)
- ” and “Internet Protocol Version 6 (Ipv6) Interim Transition Guidance.” (<http://ipv6.disa.mil/docs/stenbit-ipv6-guidance-20030929.pdf>)
- Please see the OMB memorandum “Transition Planning for Internet Protocol Version 6 (IPv6), August 2, 2005.” (<http://www.whitehouse.gov/omb/memoranda/fy2005/m05-22.pdf>)

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XXXX-XXXXEN, 10/2005

