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## Pentagon gives high-tech world new marching orders

Vastly improved Net service is DOD goal

By Bruce V. Bigelow

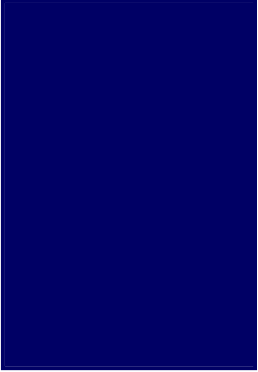
STAFF WRITER

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The Internet gurus who gathered at San Diego State University knew what to expect yesterday when the Pentagon's John Osterholz took the stage.

After playing catch-up during the Internet boom of the late 1990s, the Department of Defense has moved to reassert its enormous influence in the development of information technologies.

As the Pentagon's senior official responsible for IT architecture, Osterholz said he was "out on the hustings" to explain an unprecedented mandate the agency issued less than three weeks ago.



His forum was ideal: a three-day technical conference on the 21st Century Internet.

While the Pentagon's June 13 announcement drew scant notice, it represents billions of dollars in potential sales for telecommunications and networking companies whose business was decimated when the technology bubble popped.

So what did the Pentagon decree?

As of Oct. 1, all Internet-related equipment and software purchased by the Department of Defense must meet a comprehensive new technical standard known as IPv6, or Internet Protocol version 6.

By 2008, the Pentagon intends to switch all of its Internet operations to the new standard, which promises to erase a variety of limits on today's Internet service and to provide vastly improved security and flexibility.

"We are expending tens of billions of dollars," said Osterholz, explaining the Pentagon's outlay could run as high as \$30 billion over the next few years.

"We are re-establishing and re-energizing our role as an early adopter of commercial IT products," Osterholz told the audience. "These are audacious – and maybe bodacious plans."

The Pentagon-mandated upgrade from the Internet's longtime standard, IPv4, will require changes to all Internet-connected hardware, such as servers and routers, and to operating systems, Web browsers and other types of Internet software.

The announcement means any hardware the Pentagon buys for the Internet after Oct 1 must be "IPv6 compatible," although IPv4 will remain the prevalent operating standard for years.

"That's a real wake-up call for every U.S. vendor that sells to the DOD," said Larry Smarr, director of Cal-(IT)<sup>2</sup>, the California Institute for Telecommunications and Information Technology.

About half of the 360 people who registered for the North American IPv6 Global Summit came from industry, said conference organizer Alex Lightman, a Cal(IT)<sup>2</sup> scholar.

They include network architects, software development directors, experts in network security and other key executives from companies such as Microsoft, Qualcomm, Cisco Systems and Hewlett-Packard.

Although the predecessor to the Internet, the ARPANET, was funded by the Pentagon in the late 1960s, Lightman said the Department of Defense has never before mandated the development of information technologies in this way.

But Lightman and other Internet experts said the move is needed to drive broader acceptance of a much-needed Internet upgrade in the United States.

"They have decided to do it, and we have to help them," said Latif Ladid, a leading advocate for the change to IPv6. "We're not changing engines while flying. It's going to be an incremental approach."

Lightman said the current IPv4 standard is 30 years old, and the last change was made in 1981 – more than a decade before the Internet gained broad public acceptance.

For ordinary Internet users, the Internet upgrade promises to create a mobile Internet that will provide user access in much the same way that wireless networks serve their users.

The upgrade also is expected to provide far greater protection against outlaw hackers and other threats to network security.

Experts say the upgrade to IPv6 also is intended to resolve a variety of problems, including a rapidly diminishing number of IP addresses, which constitute the "real estate" in cyberspace.

In the early days of the Internet, for example, Stanford University was given more than 17 million IP addresses, which are used to identify individual devices. But India, with more than 1 billion people, has 2 million addresses.

With IPv6, Lightman said, the number of Internet IP addresses will soar to 2 to the 128th power – "a number that exceeds all the electrons in the universe. It's effectively infinite."

A more important improvement to the Pentagon is an upgrade of the space used to address data packets, from 32 bits to 128 bits. Experts contend this makes Internet security far greater because the security measures are incorporated within each data packet.

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