

# Military's RFID Alternative: IPv6

A white paper suggests the U.S. military could use the new Internet Protocol to track items.

Oct. 13, 2003 - ODIN Technologies, an auto-ID consulting and integration company in Reston, Va., has produced a white paper that suggests the military could use a new version of the Internet Protocol to track items with RFID tags. The authors say that if the Electronic Product Code created by the Auto-ID Center doesn't catch on, the military could use tags that would carry a unique Internet Protocol address, which points to a specific location where information on that product would be stored.

The new version of the Internet Protocol is called IP Version 6, or IPv6. It expands the length of Internet addresses to 128 bits, which means that there will be enough addresses to give one to every item on earth. The U.S. Department of Defense (DOD) has mandated that its battlefield network use IPv6 by the end of 2006.

"The fact that there will be a battlefield network that all of the DOD's suppliers will be compliant with is very relevant [to RFID]," says Patrick Sweeney, ODIN's CEO. "If EPC is too expensive, or the standards are not well-defined, there's not a whole lot stopping the DOD from using IPv6 [to track items]."

There are some in the DOD who see EPC as a system devised by the consumer packaged goods industry for its own use. They believe it may not be suitable for the DOD and major suppliers, such as Boeing, Lockheed Martin and Raytheon. They are also concerned that the EPC protocols are not sufficiently detailed to allow any vendor to develop products that are compliant with the EPC specifications.

"Since EPC usage will extend well beyond the requirements of its initial proponents in the consumer packaged goods industry, a registration and standards management system needs to be in place, which will address the needs of every industry," says the white paper, written by Sweeney and Nick Hilliard, ODIN's director of IT. "In addition to this, it is imperative that [EPCglobal] address the major governments and institutions, such as the European Community, at all design stages of this standard. The U.S. Government, for example, is the largest single user of the Internet and the largest single consumer of goods in the world, and the influence on the uptake and development of the RFID market cannot be underestimated."

EPCglobal is a joint venture created by the Uniform Code Council; The UCC licensed EPC technology from MIT, which owns the intellectual property because it set up the Auto-ID Center and conducted the research. EPCglobal has established an implementation task force to look at the issues surrounding the need for detailed specifications and eventually international standards.

"The [IPv6] address space is designed to use 128 bits, of which 60-bit chunks are routinely allocated to end-users," says the ODIN white paper. "This lends two possibilities for using IPv6 numbers as identifiers instead of orthodox EPC: either a 64-bit or 96-bit chunk could be allocated from the IPv6 address space specifically for use by EPC, or alternatively, companies could write tag IDs to RFID chips from their IPv6 assignments, which will be managed in a similar method to current IPv4 address assignments. Either way, these numbers can be guaranteed to be unique."

The military has developed its own numbering scheme called Unique Identification (UID). These could be

mapped to IP addresses, just as EPC can be. Sweeney says there is already a system in place for assigning IP addresses, and arranging blocks for tracking pallets and cases could be less expensive than subscribing to the EPC system. "If you are GlaxoSmithKline and you produce 25 million units per year, you could go to [ARIN](#) [the American Registry of Internet Numbers] and ask for an address space for 250 million items," he says. "You could have the address space you would need for the next 10 years assigned to you."

The exact format of the EPC numbering system is still being worked out. It was originally designed to have a header and three blocks of numbers to identify the item's manufacturer, product class or SKU, and a serial number to identify the specific item (whether it is a reusable container, pallet, case or individual product). Some consumer products manufacturers want the EPC to be based on Global Trade Item Numbers (GTIN), an established numbering system. Others would like to see other numbering schemes. This is one of the issues EPCglobal's implementation task force will have to sort out.

"They should have representatives on the task force that may not be members of the Auto-ID Center," says Sweeney. "DOD suppliers are bigger than Wal-Mart's. Folks from companies like Boeing and Lockheed should be consulted and brought into the process. If EPC isn't accepted outside of the consumer packaged goods industry, then its success will be incredibly diminished."

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