



Analysis

Space for internet of things

WITH IPV4 RAPIDLY RUNNING OUT OF ADDRESSES, THE EMERGENCE OF MACHINE-TO-MACHINE CONNECTIVITY HAS MADE MIGRATION TO IPV6 AN URGENT ISSUE, REPORTS GUY MATTHEWS

The communications industry is on the verge of a revolution which will see electronic devices of every imaginable kind able to talk with each other using the internet. The machine-to-machine (M2M) model uses standard IP-enabled networks to allow not just computers but devices like cameras, cars, air conditioning systems, lifts and vending machines, to all swap information without human agency.

By sitting on top of a common infrastructure like IP, M2M works over today's wired and wireless broadband networks, enabling the use of standardised components within all sorts of device. The so-called internet of things will lead to a world of automated management and monitoring of just about anything that can contain a microchip, and to a host of efficiencies arising from data shared between devices.

The core protocol behind today's internet traffic is, of course, still IP version 4 (IPv4), despite the emergence of its successor, IPv6, a decade ago. The scale and expense of transitioning all the world's networks to IPv6 has made migration slow, and there's a wide perception that it is a nice to have rather than an essential.

But now there's a compelling reason to speed things up. The number of IPv4 addresses available to be assigned to new devices is dwindling fast. In an M2M world, the number of devices requiring their own IP identity will soar, making migration towards IPv6, one of the key distinctions of which is the vast number of addresses it allows for, a must.

The issue is now urgent on a number of levels: "The side effects of the IPv4 shortage are starting to become keenly felt," says Paul Nicholson, director of product marketing at network vendor A10 Networks. "While IPv4 addresses have been carefully allocated for a while, we are now hearing stories of illegal black markets for IPv4 addresses, strict IPv4 address rationing and even some extraordinary reports of addresses being sold on Ebay. These appear to be symptomatic of the concerns being felt by internet service providers and enterprises alike."

It's not that the problem has been hard to foresee, says Nigel Hawthorn, VP of marketing for EMEA with WAN optimisation and data security vendor Blue Coat Systems: "We've been predicting IPv4 problems for a decade and in the meantime have been using sticking-plasters to fix the issues," he says. "But M2M, real end-point identity and the need for simplified service provider infrastructure are all driving us faster towards IPv6 deployments." Service providers, he says, are having to bear a lot of responsibility for effecting change on behalf of customers, and are in many cases implementing translation technologies between v4 and v6 in the core of their network as a way of straddling the two worlds, sidestepping the expensive option of chucking out legacy IPv4-only investments.

Hawthorn observes different patterns in IPv6 migration in different regions: "In some countries, IPv6 is a reality while in others trying to buy a



Paul Nicholson, director product marketing, A10 Networks

WAN link with an IPv6 address isn't possible." He believes that to hasten migration, providers may need to start offering an IPv6 WAN connection at a lower price to an IPv4 one: "Meanwhile it's a brave vendor who delivers an IPv6-only service or product."

Simon Barlow, product manager for internet services at Interoute, says he is seeing a slow dawning of the need to get networks ready for IPv6: "Lots of our customers are waking up to it," he says. "The IPv6 bullet must be bitten. A lot of operators of access or backbone networks have one foot in the camp already, using IPv6 in islands. They need now to go to their supply chain and ask them how ready they are to support them in the next stage. We're past the point of examining options now."

It's not only M2M provoking a re-evaluation, says Hal Steger, VP of worldwide marketing at Funambol, a developer of open source software for synchronising data between different mobile devices: "The average person in the US has six wireless devices at present," he says. "Within a few years this will be over 100, each needing an IP address. It's up to service providers to make sense of all this, as no one knows what happens when the IPv4 addresses run out."

The dividend of investing in migration will, at least, repay in multiple ways, says Daryl Miller, VP of engineering at secure communication technology vendor Lantronix: "IPv6 adds quality of service, integrated security, more efficient routing, improved packet processing through header simplification, and new configuration options," he says. "These are important upgrades to the current IPv4 infrastructure. IPv4 is bulging at the seams, and it's excellent to have a viable replacement ready to go." ■