Hello! IP Was Not Designed to Do This!

Brad Harrison

I watch the Internet stocks going crazy and just laugh, wondering how long before all those dudes buying Netscape and Spyglass take the big fall. I leaf through the new Information Highway publications yapping about awards for the greatest home page and I sigh. I watch our government not reacting to the decaying Internet infrastructure and worry about the future of humanity.

Confronted by truly revolutionary technology, all these guys can talk about in our great legislatures are the harmful effects of kids seeing pictures of naked people. Hello! There are more serious problems here!

I don't think the Internet and TCP/IP can handle much more opportunism. Every business has to take some percentage of its profits and feed it back into the business. All we see on the Internet is take, take, take.

Let's not forget that IPv6 is a hack. Before it was dubbed IPv6, it was generically referred to as IPng (next generation). Before that, everyone assumed that the next generation would be some form of OSI protocols.

I look back at my interview notes from the '80s and find quotes from Marshall Rose and Vint Cerf endorsing OSI — reluctantly, perhaps, but endorsing it just the same.

I remember when I first interviewed Cerf, chief designer of the TCP/IP protocols and, at the time, chairman of the Internet Activities Board. He was bold enough to map out the future of TCP/IP for me and it clearly led to OSI, he said. Maybe he had been brainwashed by the government by that time. But as the person most familiar with early TCP/IP design decisions, Cerf told me that TCP/IP was going to be a migration path to OSI.

Now OSI is dead in America and we have IPv6. Don't get me wrong: I am not criticizing the IETF, nor am I trivializing the wonderful work by thousands of Internet enthusiasts. I am simply pointing out that underneath all the Information Superhighway rhetoric there is a fundamental technical problem: IP was not designed to do what it is now being asked to do. (TCP wasn't either, but that's another story.)

Improvements are coming from many brilliant minds devoting their time to the IETF, but these people are paid by the organizations that employ them. These organizations don't usually directly benefit financially from the Internet. The companies that do are keeping their profits and letting the IETF do the work.

But the IETF cannot manage the deployment of IPv6. It will, once again, have to rely on the good will of the Internet community itself. The Internet now needs money and coordination. I can't see where these are coming from, so deployment will probably be a nightmare. Perhaps show-stopping.

IPv6 was designed to increase the size of the address space so that more IP addresses can be assigned. They're almost gone now. It was also designed to make routing tables smaller and easier to manage since the current design doesn't allow routing hierarchies to be effectively implemented (routing tables are becoming much too unwieldy). IPv6 also was intended to be backward-compatible with IPv4, mainly by building on the old address space rather than replacing it, and by implementing a facility under which IPv6 packets can be tunneled through IPv4 networks using encapsulation.

Lots of people think that the Internet is good old commerce at work but that isn't so. The fundamental design and implementation was done under government funding for government purposes.

Good will took over from there and good old capitalism is now running with the ball. The outcome is anyone's guess; but one thing I know for sure: we are in for some major growing pains. And soon. ₩

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