6sense Generating New Possibilities in the New Internet. Produced by: IPv6 SUMMIT INC.

The good, the bad and the ugly of IPv6 in America

By Alex Lightman
CEO, IPv6 Summit, Inc.

The Good, The Bad and The Ugly was a 1966 film made by Italian director Sergio Leone starring Clint Eastwood (the Good) and other guys who went on a three-hour treasure hunt for $200,000. Internet Protocol version 6 is a 1998 technology created by smart guys in the Internet Engineering Task Force that has gone on a seven-year treasure hunt that some think will lead to a trillion dollar industry. The Japanese government, for instance, believes that IPv6 products and services will be worth $1.55 trillion in 2010, and will grow from there. In that context, the $200 million investment that the Japanese government has made, which supports about 300 people working full time on Japan's IPv6 transition, can be seen as a very minimal price of admission to be the leading IPv6 power.

Over the past 18 months I've written over a dozen articles and published nearly 100 stories related to IPv6. Virtually all the articles by others have been objective. In this article, I'd like to provide a subjective viewpoint, and challenge other writers to elucidate their own visions of what they think is going well with respect to IPv6, what could be better, and what's seriously broken or wrong. These articles don't have to be limited to the US -- they can be about other countries, or even the global community. I'm sure that such lists will have many elements in common, and some elements of difference. You may find some of the opinions below to be objectionable (especially if you are in one of the "No Show" industries). I apologize in advance if your feelings are hurt, but ask that you try harder to get your company, agency, industry or country moving faster with respect to IPv6 adoption. Just as it's each citizen's "civic duty" to prepare for hurricanes and natural disasters, according to Dept. of Homeland Security Secretary Michael Chertoff, I think it's each American company's civic duty to start implementing IPv6. IPv6 is ready NOW, and if the US isn't equal to Japan, it's mostly because executives have not taken action to get their companies going on this. I think of Fred Wettling at Bechtel: he's taking action to move his company to IPv6 without asking for a big subsidy or hand-out to do so, because he's done his homework and knows IPv6 is inevitable. If you are reading 6Sense, you know the same thing, so unless Fred Wettling or someone like him is already handing out IPv6 baseball caps at your company, you need to take a deep breath, and take Wettling-sized steps toward making your company IPv6-capable. I hope that the following points can help you in crafting verbal carrots and sticks to prod your company, even if grudgingly, in the IPv6 direction.

The Good

1. The US is second only to Japan in IPv6 allocations for Regional Internet Registrars (RIRs). As of October 12, 2005, 1,279 organizations had received /32 allocations from their RIRs. The top eight nations in IPv6 address allocations were:

    a. Japan 190
    b. USA 184
    c. Germany 114
    d. Korea 75
    e. UK 68
    f. Netherlands 60
    g. Italy 40
    h. France 37

    Americans can be proud that their companies and government agencies are getting allocations (despite the lack of tax incentives and head-of-state focus) at relatively high rates. The US does have more than twice the population of Japan (295 million vs. 125 million). On a per capita basis the Dutch, with 4 allocations per million people, are the world leaders among the bigger countries.

2. US IPv6 Summits are the best-attended paid attendance events in the world. There were almost 700 attendees at the US IPv6 Summit 2004. There are IPv6 events with larger attendance in Tokyo and Beijing, but these are free events, and I saw a drop-off of over 50% in Beijing after the free lunch was over, as students went back to classes. For people who pay their own way, Americans are the tops.

3. US corporate support for IPv6, measured by sponsorships at IPv6 Summits, is the best in the world. 47 different companies have sponsored the IPv6 Summits in the last few years, advancing a down payment to build an IPv6 industry in the US, rather than leaving this to government alone. (The key is to have BOTH public AND private support for IPv6, not just one or the other, since IPv6 is as much a public good as many other funded projects, if not 1,000 times more).

4. US government support for IPv6, measured by the caliber of the government officials who speak at US IPv6 Summits, is the highest in the world. Consider Admiral Giambastiani, the Vice Chairman of the Joint Chiefs of Staff, and the two dozen other amazing public servants who have agreed to speak at the US IPv6 Summit 2005. There has never been such a lineup of speakers on a new and novel Internet standard of this caliber and power, ever, and I would not want to be the one in charge of coming up with the plan to beat the US with this sort of star quality behind IPv6.

5. The US has the Dept. of Defense IPv6 mandate to move the DoD to IPv6 by mid-2008, which is driving a great deal of activity.

6. The Office of Management and Budget guidance is methodically moving the US government to take action to become widely IPv6-capable by mid-2008, in concert with the DoD mandate.

7. Some of the largest IPv6 networks in the world are in or include the US, such as those developed by NTT, Microsoft, Global Crossing, and Internet2.

8. The US Congress has held hearings, unique for any elected legislature in the world, on IPv6, and indicated that it is in the best interest of the US to take a leadership role in IPv6.

9. IPv6 experts are amazingly generous with information: in three years of organizing IPv6 Summits, virtually every speaker has offered his or her PowerPoints, some of which have very personally developed information, to us to post for public view. As a result, over 6,200 slides are free to view and enable people to get up to speed.

10. Microsoft Vista is coming. Those in the IPv6 community who've seen it -- including my colleague Dale Geesey, who spent last week in Redmond witnessing Vista's IPv6 support -- say it will be the product that makes IPv6 a massive success. Microsoft is bringing a product pipeline five years in the making to market in 2006, and IPv6 is right at the heart of networking, which I think is very, very good for the IPv6 industry.

The Bad

1. There is no federal leader for the US on IPv6, to make decisions and represent us in Coalition Partner discussions about IPv6. When the Japanese ask at a US conference for help and say, "Take us to your IPv6 leader to discuss how we can join forces," there is an awkwardness on the American side as the DoD, State Dept., Commerce Dept. and others all shuffle around, vacillate, and in the end say they don't have the authority to represent the US on IPv6, making us look foolish and weak, year after year. It's embarrassing!

2. There is no new money for the federal government transition to IPv6, though an unpublished Dept. of Commerce report is rumored to say that the cost of the transition will be around $75 million. The US is the only government to say not only that it wants to transition to IPv6, but also that it wants to make the transition via technology refreshment (normal replacement of equipment) -- as if all the applications and R & D and testing have already been done, and it's just matter of going to the GSA schedule and ordering Commercial Off the Shelf (COTS) items. News flash: most applications are not IPv6-enabled, and companies need budgets for this, just as government workers need to get compensated for their work on this initiative.

3. There is excessive and even abusive use of "For Official Use Only" on IPv6 documents, including the DoD IPv6 Transition Plan, the Dept. of Commerce IPv6 Transition study, and related documentation, all of which should be made available to the public, but have only been seen by a handful of insiders. Going beyond the policy of "need to know," this limits discussions of topics that Congress has already determined to be in the public interest. So that mischief makers cannot twist my words: I am not advocating releasing classified information, now or ever. Period. If something isn't classified, though, and it's been paid for by the public, and could be obtained via the Freedom of Information Act, shouldn't such documents be released? Besides, is there REALLY anything in there that hasn't been said in 6Sense or those 6,200 slides that are posted online?

4. There is a dearth of DoD funding initiatives. Marketing managers who pursue corporate participation in an initiative generally need to have some kind of project to pursue, however small. Even symbolic amounts of seed money would get the interest of aerospace and IT companies, who could leverage such amounts with their own Internal Research and Development (IRAD) funds. The general lack of funded projects has led to an impression by many that the DoD is not really serious about seeking the participation and novel ideas of the aerospace and research communities.

5. The only IPv6-ready logo certificate program available to American companies is the creation of foreign entities and governments. Looking at the list of companies that have received the IPv6-Ready logo for ten minutes could easily lead you to notice a bias towards companies in one corner of the globe. Given that the first phase of getting these logos didn't even involve testing, the smell of local politics (with billion dollar implications) puts American companies at a disadvantage.

6. Conformance testing from commercial entities for IPv6 is miniscule in the US compared to that in Japan and Korea, which thus have greater visibility into what works and what doesn't. Partly this is a matter of one or more companies stepping up to the plate and investing funds, and partly a matter of what IPv6-capable means, and how it's defined.

The Ugly

1. There is no definition of "IPv6-capable," two years after the DoD mandate for transition. This is a potential DISASTER, as there is still no definite person who can even say what "IPv6-capable" really means, in a replicable and testable fashion – even just for the DoD. It's also debatable whether every other federal agency (all 150 CIOs) will or will not accept the DoD definition of IPv6-capable, given that IPv6-capable may have a different context when it's applied to an aircraft carrier, a warfighter crawling through the mud, a constellation of satellites, or a software radio.

2. There is no plan to coordinate the IPv6-capable definition with NATO, SEATO, the European Commission, the ITU, the European Defense Force, or the Coalition Partners now fighting with the US in Iraq. It could be a diplomatic blunder of long-lasting implications that the US has not rallied its friends, allies and coalition partners around to agree on: a common definition of IPv6-capable; a common schedule of IPv6 deployment and IPv4 extraction; common R & D; common testing and certification; and, common applications sharing. Thirty countries have expressed an interest in such coordination to me, personally, and I have no official capacity, so this level of demand for such coordination is probably only the tip of the iceberg. Many countries trust the US more than any other nation to support open standards – but the US needs to show the leadership to get this discussion into an open forum.

3. The US appears oblivious to China's attempt to set its own standards for IPv6.The leaders of that nation have been accused of aggressive moves such as supporting Huawei's cloning of everything Cisco, the thousands of Titan Rain hackers, the harassment of Intel over WiFi security, the refusal to pay royalties on Qualcomm's thousand CDMA patents, and cheerleading to strip ICANN of its role in managing the Internet root servers. These activities are probably not the actions of the whole government, but may be the equivalent of trial balloons from a few people angling for visibility and promotion. If the US pops these bubbles, and extracts penalties for these activities, their sponsors will lose face, and such costly and dangerous probes will be curbed. If the US does not pay attention and exact a toll, the result may well be that the most aggressively anti-American elements of China's nexus of business + government + technology policy + military aggression will continue to find common cause and rise through the ranks. IPv6 is a common interest element and test case to probe and prove US incompetence, a la Sun Tzu's Art of War admonition to "Crush with pre-emptive strength," where one has an advantage. Some Chinese leaders may believe that the country has a big advantage in IPv6 (although the RIR numbers indicate differently, at this time). If the US counters Chinese-led IPv6 standards (including the Chinese version of IPSec) in open and focused discussions, it may well save itself decades of bitter fighting over contradictory standards later on.

4. The US Telecom industry is missing in action on IPv6. Only NTT and Global Crossing, both headquartered in Asia, are IPv6-capable (both are repeat sponsors of the US IPv6 Summit). In contrast, ATT, Sprint, MCI, SBC, Nextel, and Cingular have all been missing in action for the past three years with respect to supporting or sponsoring or exhibiting anything to do with IPv6. Did the carriers, which missed the last Internet (and are now hemorrhaging landline customers in the millions annually), learn NOTHING from lagging in IPv4 adoption? Other than bear hugging each other in mergers (approved without controversy) and using lobbying and litigation to try to kill off ISPs (FCC vs. Brand X and its fallout), municipal WiFi, and VoIP, what are they doing to make a more secure, mobile, adaptable Internet? What are they doing to

support IPv6?

5.

The large US defense contractors are missing in action on IPv6. Carrier procrastination on IPv6 is one thing, but absence of the vast majority of DoD contractors from IPv6 involvement is shocking and, well, ugly. Among the majors only Northrop Grumman has ever bothered to support an IPv6 conference. SAIC, Booz Allen, SI International and Houston Associates have also offered sponsorship and support, but where are Boeing, General Dynamics, and all the others? Given that we are 2.5 years into a five-year DoD IPv6 mandate, and given the support of the Pentagon leadership for IPv6 (including OSD, DISA, and each of the services), what on Earth are the leaders of the big aerospace and defense contractors waiting for? Given that eventually hundreds of billions of dollars in revenue will be involved, does it not seem in the spirit of the mandate to start transitioning internal operations to IPv6, launching pilot projects, and having an IPv6 point of contact? I know of exactly one IPv6 point of contact at a major aerospace company – at Lockheed Martin. I look forward to him setting a standard for leadership that will motivate rivals to take action. In general, I don't get any sense of the "civic duty" to support the DoD IPv6 mandate from the very companies that have the most to benefit from it.

6. There are no new and novel applications of IPv6 in the US, no visionary and publicly engaging pilot projects for IPv6, and no major successes to point to.
The ugliest of all: media and analyst coverage of IPv6. A recent article has a typical whopper, "IPv6 has 340 trillion addresses." This is off by 23 orders of magnitude. We could argue mathematically that the low level of press coverage of IPv6 is more off target than with any other field. Many analysts have ignored the field or been super-cautious, espousing the cause of the wait-and-see IT managers. Those analysts who claim there are no security improvements with IPv6 and no need to switch to it for at least five years should recognize that they are like lawyers who are paid to make excuses for staid managers who could save time and money by simply moving ahead. If these totally risk-averse analysts had gotten their way, the commercial explosion of the IPv4 Internet would have taken thirty years instead of twenty. Japan is happily on its way to making money with IPv6. The question is not whether the US will move to IPv6 – it will – but whether it will someday import or export most of its IPv6 products, and whether it will allow other countries such as China to set all the standards (including IPSec and whatever comes after IPSec), and will thereby lose the first strategic battle of the world struggle for technical mastery of the 21st Century.

.