

10th Gigapop Geeks BOF

hosted by Dan Magorian & Brent Sweeny

- Welcome!! The forum where Gigapop/RON operators can rant, rave, and be politically incorrect about current hot technical topics.
- 10th anniversary! 1st meeting was in HI Jan 2004, on NLR fanout. Must be doing something right. Barely have to talk to Marie about food and logistics anymore, autoscheduled. Want to thank Internet2 for continued support and the food and beer, esp Marie and Angi for setup down the years.
- Tonight's discussion topics are on the conference theme of "The Coming Crisis in Routing and Networking":
 - SAP Storms (Caren)
 - ARIN Legacy Agreement (Dan)
 - Level 3 relationship deterioration (Dan: yes, it's colo not routing)
 - Balkanized R&E as participants drop NLR or I2 (Dan/Brent)
 - NLR Darkstrand capacity sale (Brent)
 - IPv6: Why haven't we accomplished this already? (Brent/Dan)
 - Why aren't people peering? Why aren't campuses enabled?
 - Security missing stuff, Fed v6 mandate wimpout
 - Ron Brosema's stages, Mark Prior's spreadsheet

The ARIN Legacy Agreement

- There's been a lot of discussion about this in various venues, which we don't need to repeat all of.
- Bottom line is, the principle of what ARIN is asking for seems fine, for legacy space holders to put a stake in to hold their title, and to join ARIN to defend their interests.
- But the reality of the agreement is that it has a lot of unacceptable indemnifications, and some people think that what they're trying to accomplish, since they already have everyone's assignments recorded, is to get people to agree to whatever they're going to do in the future.
- Either way, they're now playing hardball: "Want anything from them? Sign the agreement." (Not clear if this goes down as far as SWIPs) We had our first case where ARIN refused to give a MD institution an ASN, even though they qualified, until they signed the agreement, and their lawyer said, "We can't sign this!" ARIN reps have publicly stated that they'll modify offending language, we'll see.
- We're used to v4 address space being hard to get, but ASNs being easy. Now for political reasons, ASNs are becoming hard. Stormcloud?

Level3 Relationship Deterioration

- Years ago, when Abilene was built on Qwest, people used to get mad at Qwest a lot. Now when the community is in Level3's pocket, everyone's mad at them. To some extent, this is business as usual.
- But it's much worse than that. At MAX, we have a long sorry history of getting misrepresented to by Level3, starting with when we built our suite in 2003, and continuing to the present. Dozens of complaints, technical and billing, lots of meetings. Nothing ever comes of it but more happy talk. We've had *5* reps in the last year (talk about turnover).
- So the latest is, like everyone else (I presume) we just got hit with suite space costs going up 40%, power going up 35%, and cabinets doubling. They even managed to charge us three times for our suite, twice at the old rate and once at the new rate. All of which wasn't supposed to happen according to their notice letter until 8/1st, and power costs weren't mentioned at all. Naturally, we're pushing back on it, and I have hopes that people are finally annoyed enough that RONS will stop paying until it's resolved, and the Quilt will make a group investigation.
- What are you folks seeing and doing? What does this say for the future

Conference Theme:

“The Coming Crisis in Routing and Networking”

- “Several significant addressing and routing limitations in both hardware and software are converging into a "perfect storm" that could have a major impact on the stability of the Internet. These include:
 - 1. Exhaustion of IPv4 address space and its impact on the size of the forwarding table.
 - 2. Growth of the default-free FIB has moved beyond the capacity of many popular routers.
 - 3. "Churn" resulting from the acceleration of the growth in prefixes advertised in BGP is reaching the point where processors in popular routers can no longer converge forwarding tables between updates.
 - 4. The deployment of global network resources (storage and computing) has been forced into NAT and application gateways, even in North America.
 - 5. IPv6-enabled networks don't help until users can run IPv6-only stacks.
 - 6. Those deploying IPv6 for wide-area services have encountered problems involving both loss of ‘reach-ability’ in some cases, and even faster growth of the hardware resources need “

The Overall Question to keep in mind is...

- Do people believe that a real storm is approaching?
- Or is it just Chicken Little running around claiming that “The Sky is Falling!”, & nothing’s going to change with technical fixes in the works?
- Or a midway position would be that “Yes, our hassles are increasing, it ain’t like the Old Days, but ultimately it’ll be “Business as Usual”.
- Are we seeing more of this in our little R&E sub-universe, or less?
 - Eg, a True Believer in the future of DCN wouldn’t care about address depletion, if they believed the future is all private/temporary addresses.
- Or maybe we’re seeing something about the lifecycle of “R&E Networking”: if people are starting to drop I2 or NLR, is that still the “battle of the backbones” next stage, or does it mean *both*: it was fun, we learned a lot, but could it be time to move on? What really is R&E Networking still bringing to the table, given high political costs?
- Somehow I don’t think we’re going to answer this tonight.

IPv6-enablement milestones and scoring (proposed)

1. IPv6 address allocation and address/routing plan developed
2. LAN (wired and wireless) is fully v6-enabled (all routers do v6 on all interfaces) and is connected to the IPv6 Internet (WAN).
 - The implication is that any v6-enabled device can connect anywhere in the LAN and get IPv6 Internet connectivity.
 - (worry about routing implementation, make sure address plan is right, think about security and performance, play with multicast, make sure network staff is trained to support it, etc)
3. Internal infrastructure services (DNS, NTP, DHCP, SMTP, etc) are IPv6-enabled
4. Public facing services (public DNS, MXs, public web site) are IPv6-enabled
5. Network management infrastructure (management LAN, SNMP, SYSLOG, MIBs, management access to switches/routers/etc) is IPv6-enabled
6. Most workstations and servers are v6-enabled
 - (behind this is the support infrastructure, i.e. help desk and other IT support, and a message to sys admins to turn on IPv6 where possible, and servers have AAAA records in DNS, and your help desk tools/scripts for things like host registration and update are upgraded to handle IPv6 addresses)
7. Once critical mass is reached on the client side, remove "A" records for servers (resulting in final incentive and some pain for those that didn't dual-stack their workstations).
 - You don't need to do them all at once, just one at a time as their clients all become dual-stack
8. Migrate some network segments to IPv6-only, with no IPv4 addresses anywhere
 - (this forces one to figure out how to make hosts operate in a v6-only environment, helps the organization figure out what's missing, forces the implementation of some kind of transition mechanism to bridge to the IPv4-only world, plus adds continued incentive to get more stragglers upgraded since they can't even get there by typing the IP address)
9. Deploy advanced features (mobile-ip, v6 multicast, etc.), provide remote IPv6 access (travellers, telecommuters, home, etc) from v4-only environments, cleanup and reduce complexity (readdressing network if necessary),
10. Declare victory
 - you claim a perfect score in public, and are willing to stand up to scrutiny

Thanks!

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