

IPv4 Exhaustion – What Now For Hosting?



DH
CAPITAL

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Why Do I Care About Hosting

For Those of you from 1998...

- Hosting is no longer small potatoes web hosting
- \$30b annual business with managed hosting, dedicated, cloud, et al
- What's hosted?
 - Primarily SMB and enterprise applications – email, database, HR, Accounting – production systems



Different set of problems from carriers

Endpoints are servers

- What if you had 1/1000th the number of customers and they paid you 1000 times as much?
 - Average managed hosting revenue per customer is \$60k/year!
- Tolerance for disruption is lower due to server-centric nature of end-points
- Lack of enterprise understanding or urgency re: V6
 - “Its your problem”
 - “boy who cried wolf”

The Easy and the Hard

“The customer experience is not about the packet being shipped to them! Its about end-to-end experience – typing in URL to application delivery.”

- VP of Engineering, Major Hosting Provider

The Easy and the Hard

Servers and network are the “easy”

- Most new servers are being deployed dual-stack
- Networks have IPv6 enabled
- DNS has IPv6 turned on with IPv6 records for newer servers

The Easy and the Hard

Everything else is hard

- OSS and Billing systems are primarily IPv4
- “Support Equipment” is a massive concern – firewalls, IDPS, Load Balancing
- Need for real IPv4 <-> IPv6 NAT solution is real
 - Hosting providers not feeling the love
 - **“There is no carrier grade NAT”** – VP of Networks, Major Hosting Provider
 - **“We need hosting grade NAT”** – VP of Engineering, Major Hosting Provider

The Easy and the Hard

Looking for the magic box!

- Not necessarily a monolith device
 - One per customer is fine for some applications
 - Enables separate compliance and billing requirements
- Does not need to sit at the network edge – can exist at the server edge

Top Concerns

- Carriers not particularly useful
 - “I wouldn't assume my upstreams would be taking care of anything. And if anyone believes that (or that anyone else is taking care of it) - they are doomed.” – VP of Network Operations, Major Hosting Provider
 - Patchwork of IPv6 compliance at upstreams is a concern – suboptimal IPv6 traffic routing to end users
- Scaling concerns with IPv6 – software and hardware
 - Lots of new code rolling out rapidly to patch problems in first 6 to 12 months of IPv6 deployment leading to network instability
 - “stacking up multiple points of failure”

Top Concerns

- Troubleshooting

- Most significant concern
- DNS mentioned repeatedly
- How will technical staff distinguish and diagnose IPv4/IPv6 issues?
- Return of packet sniffing to a standard part of the network engineer toolbox?

- The Day After

- Addressing servers with IPv6 only?
- Many hosted servers already have RFC1918 addresses for v4
- Customers will hold hosting providers responsible, not access networks

- Legacy servers

- IPv4 only
- Transition strategy is refresh – but there are hundreds of thousands of them

Conclusion

- Reasonable preparation
 - False starts from “Internet Community” including RIRs and IETF were not helpful
 - Hosting sector growing rapidly – complicated factors
- Not yet ready
 - Hardware vendors and scaling concerns top issues
- Prepare for a prolonged period of instability
 - Reachability issues
 - Tough to troubleshoot problems
 - Lower customers satisfaction

Questions?

