Content over IPv6: No excuses!

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IPv6 content in Slovenia

ipv6.rtvslo.si

www.siel.si

www.go6.si

www6.nil.si

www.pragma.si

Top 50 domains in Slovenia based on Alexa rankings

Source: http://www.vyncke.org/ipv6status/detailed.php?country=si

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Facts

- IANA pool address exhaustion in March 2011 (potaroo.net)
- RIR pool address exhaustion in December 2011 (potaroo.net)
- IPv4 address allocation completed in 2012 (speculation)
- IPv6 is inevitable

Who is driving the growth?

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Path Forward (T-Mobile)

- NAT44 is a reality
- LSN/CGN is a risk to FMC (interesting roaming problems)
- Dual-stack is a problem
  - Two PDP contexts till 3GPP Release 8/9
  - Dual troubleshooting efforts

T-Mobile solution: NAT64

- NAT64 is no worse than NAT44
- NAT no longer in the forwarding path
- NAT needed only for IPv4 content
- 50% of user traffic served by IPv6 by end of 2011
- LTE is IPv6-based anyway

Source: IPv6 strategy and trials at T-Mobile USA (Google IPv6 Implementers Conference)
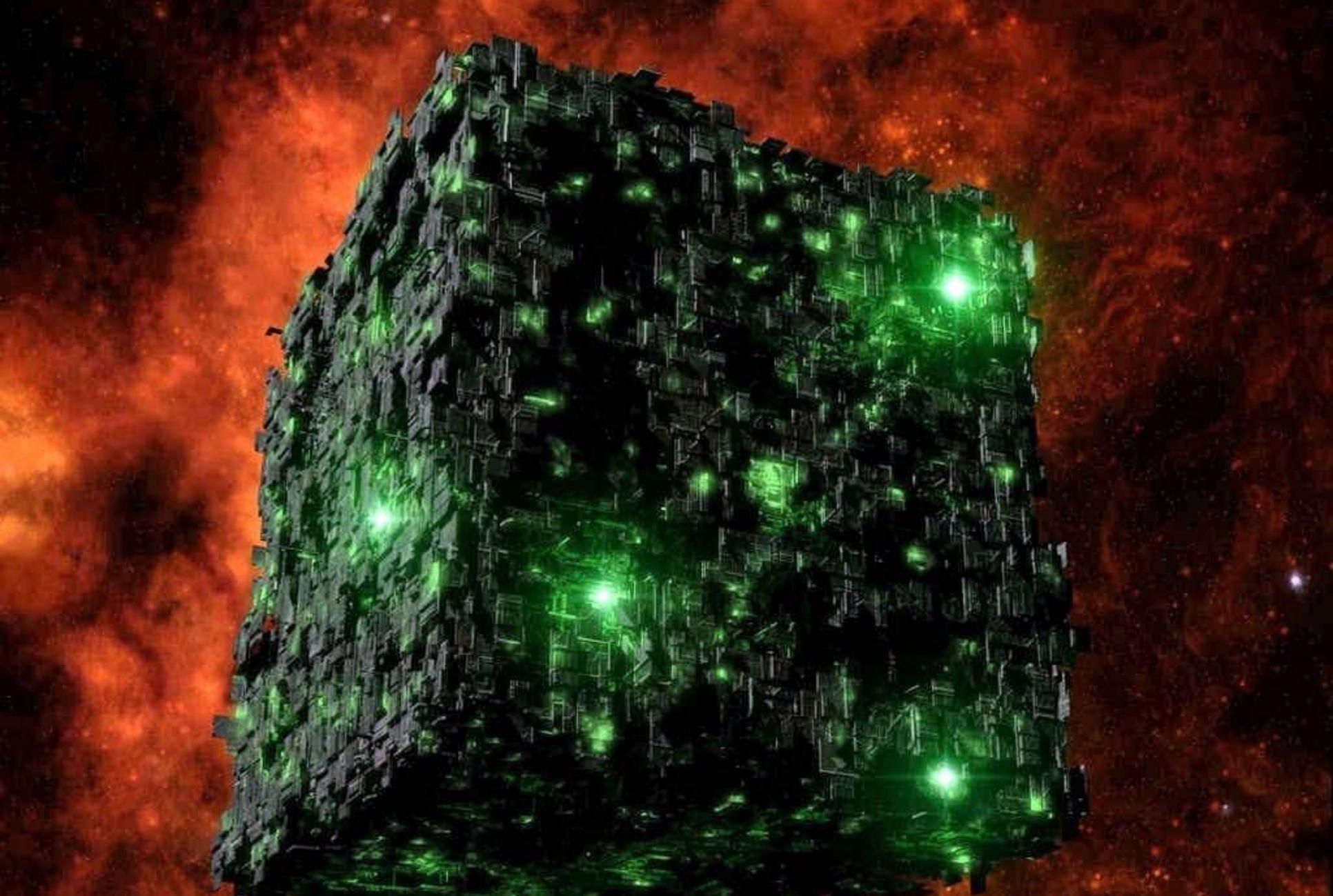
Resistance is futile

Who Has Seen the Writing on the Wall?

- Google (Search, Gmail, YouTube, Docs, Blogger ...)
- Facebook

NAT64 will break things

- Client-server applications (usually over HTTP) work
  IPv4 URL literals break even HTTP
- Peer-to-peer applications have to be changed

Customers will not tolerate broken content, they will move on to content that works.

T-mobile USA

Now What?

"You can either do a planned, careful migration, or you can do it in a panic. And you should know full well that panicking is more expensive."

Martin Levy, Hurricane Electric

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IPv6 Content: How to Get There?

Dinosaurs

- Some applications will never be IPv6-ready (ex: SNA applications in COBOL)

- Use NAT64 to make them reachable over IPv6

- You will control NAT64 better than a third party

- You don't need DNS64

IPv6-capable applications

- Most open-source solutions should be IPv6-capable

- Make sure you're not using IP addresses in your code

- Check IPv4 literals in your URLs

- Infrastructure applications probably need an upgrade

- Change your hosting provider if they don't support IPv6

Amazon EC2 does not support IPv6 STUPID STUPID STUPID

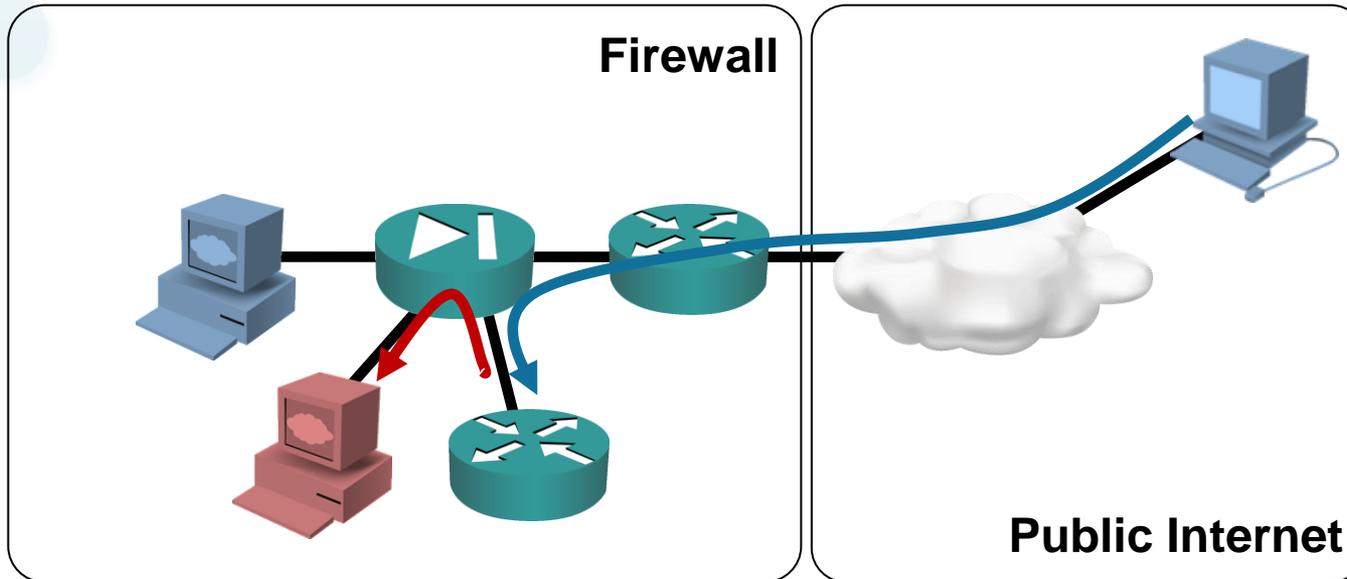Building IPv6 Service Provider Core

Infrastructure issues
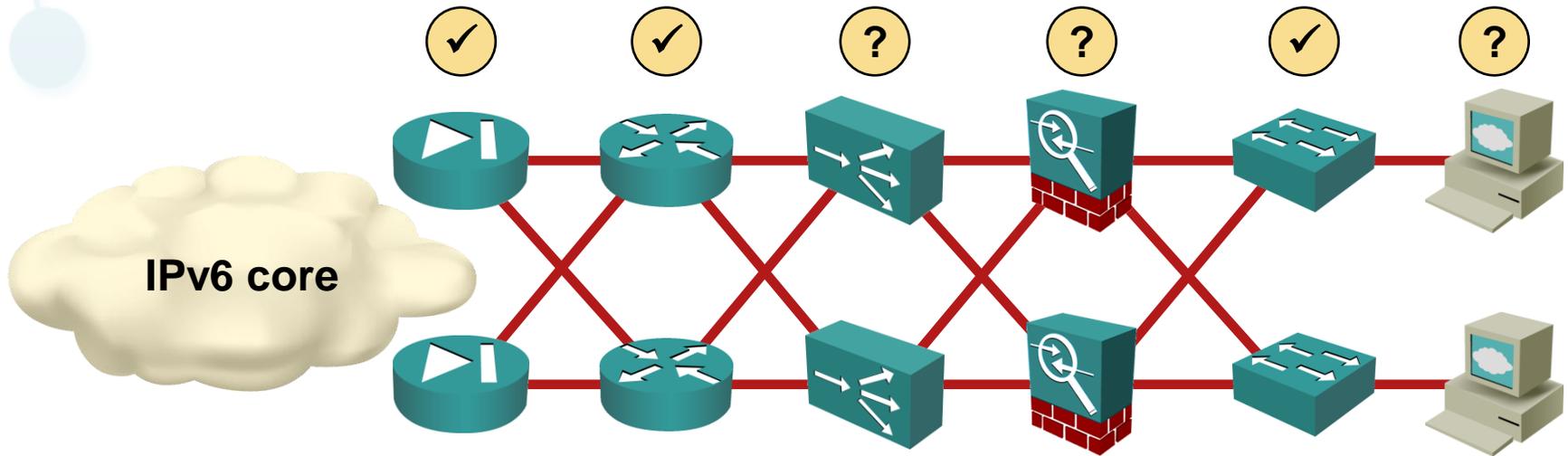
- Routers and switches usually not an issue
- Check firewalls status
- Load balancers and WAFs can be a showstopper

Don't let the vendors stop you

- F5 load balancer is used by Facebook BIG-IP LTM VE runs in VMware
- Imperva WAF supports IPv6
- Squid and modsecurity have no problems with IPv6

Poor Man's NAT64

- Run NAT-PT on a (dedicated) router or firewall
- Don't advertise AAAA records for your primary web site

This is NOT a production-grade solution

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First Steps

Start an IPv6 trial

- Make your DMZ IPv6-ready

- Get IPv6 address space

- Establish IPv6 connectivity in DMZ and IT network

- Deploy pilot applications over IPv6

Start the audit process

- Identify IPv6-capable applications and IPv4-only dinosaurs

- Prepare NAT64 for the dinosaurs

- Review and test the IPv6-capable applications

Make IPv6 readiness test part of your regular QA process

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Sources

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  http://ipv6ws.arkko.com/presentations/IP-Dual-Stack-PoC-Garneij.pdf

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