Rocky Mountain IPv6 Task Force

RMv6TF

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Lessons Learned from an Enterprise IPv6 Deployment
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Objectives for this Presentation

- Share lessons learned from Oracle's IPv6 deployment to date
- Add a practical angle to things you may have heard or read about when deploying IPv6, plus some new things

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The Obvious Lessons You've Heard

- Don't do it in a vacuum, more than a network effort

  Get early involvement from SysAdmins, applications programmers, security, desktop, management/monitoring/tools, helpdesk, etc.

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- Hardware and software readiness assessments
  * Hint – software processed platforms may not perform as well

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- Lab Testing
  Basic functionality
  Feature behavior parity
  Command Line Interface consistency

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- Take security seriously
  *Hint – mostly the same, but don't overlook rogue RA Guard
  What about priority settings as another measure?

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- Risk analysis
- Pilot for experience
- Training (more on this later)

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- Secure commitment and backing from top executives
  - Competing priorities and scarce resources
  - You can't push on a string!
  - Oracle's CIO Top 25 List
- Don't try to solve world hunger
  - Small incremental steps, achievable milestones
  - When you deployed IPv4 you weren't running multicast for example
- Dual stack is an admirable goal, but…
  - Other mechanisms may be more practical to start
  - Load balancer "tricks" may provide quickest path
  - Ultimate goal versus immediate payoff

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- Overcoming IPv4 thinking
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  - You need to help bridge people over to a new way of thinking about design
  - Opportunities will then be realized
- Training
  - Extremely important for this initiative!
  - People may be afraid of it, although they may not admit it
  - 128 bit addressing can be intimidating
  - Formal and very specific training for each job responsibility
  - Eliminate the excuses to hide or avoid involvement

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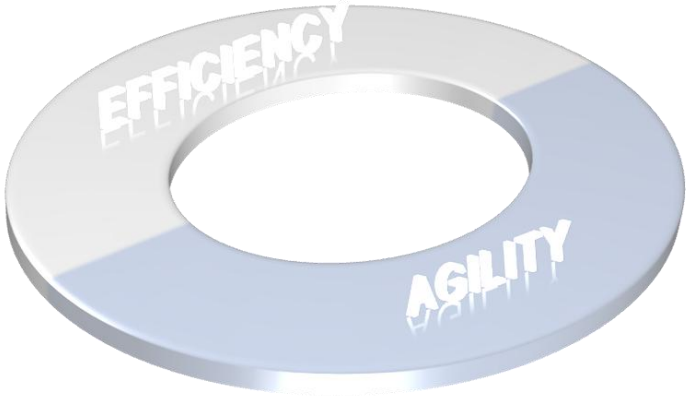
  How often in your career do you get a major “do over” like this
  Be honest with yourself, look at what has not worked, step outside the IPv4 thinking
  Might be one of the biggest opportunities of your career!



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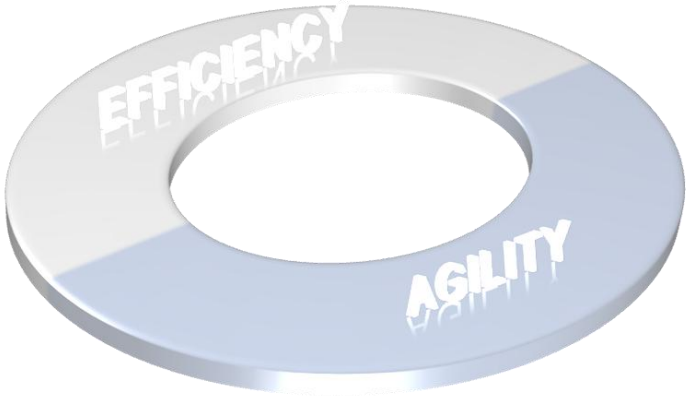
- Secure your address space now
  It’s easier than it used to be
  Will there be a land grab?
  It is a very timely opportunity now, think ***very*** big!
  * Hint – it’s a lot easier than it used to be



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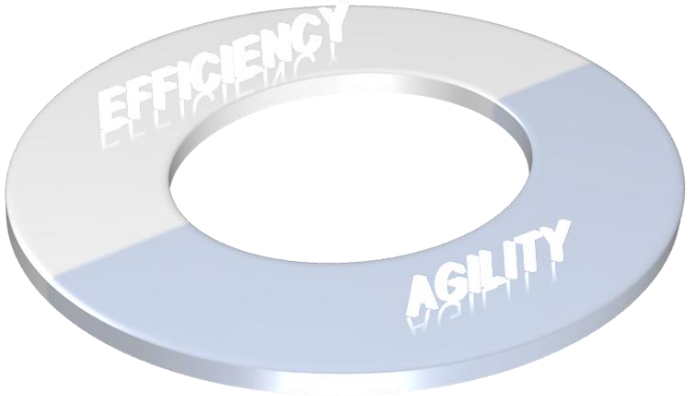

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  Service providers (circuits) are still lacking support in many areas
  Formalize your requirements and give them deadlines

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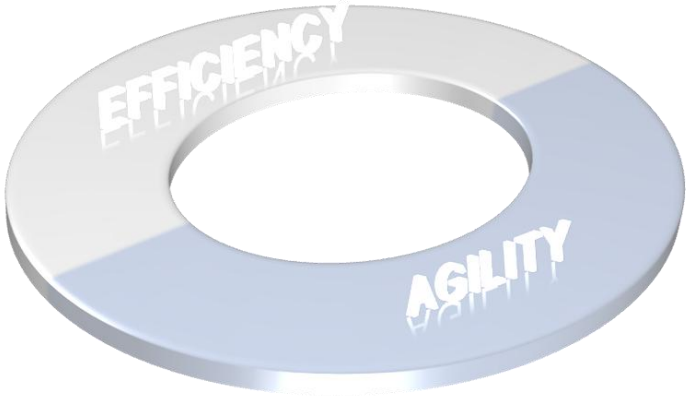

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  Service providers (circuits) are still lacking support in many areas
  Formalize your requirements and give them deadlines

- Get your best people on this, including PMs

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- Do not underestimate
  Time to build consensus
  Time to secure address space, internal legal approval of contracts
  Organizational challenges, resources, and priorities
- Consider the human factor in your designs
  Keep the math simple for success!
- Consider a candidate list of IPv6 only applications
  Where is the risk minimal?
  Machine to machine links without a user application interface

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  Can we use /126, /127 for PTP Links?

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To Cheat or Not on /64 Prefixes

- It appears to be very wasteful
  - Can we use /126, /127 for PTP Links?
  - What do you gain? Can you still aggregate routes?
- Is space conservation still the primary design objective?
- It is the standard*
  - May break some features
    - (ND/SEND, Privacy Ext, Multicast, SLAAC, etc.)
  - Cheating greatly complicates the math!

* Was until 2011, see next slide

Are There Exceptions?

- Lot of Conflicting Information!
- RFC 5375 (December 2008)
  "/127 addresses, ...is not valid and should
  be strongly discouraged as documented in RFC 3627"
- RFC 6164 (April 2011)
  Use /127s for point-to-point router links, for security and other reasons

Judge for yourself

Your mileage may vary

*Hint - some are allocating unique /64s but configuring /127s
*Hint - not all SPs support /127s (yet?)

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- We still need to migrate to IPv6, but another tool is available!

  See:
  http://datatracker.ietf.org/doc/draft-weil-shared-transition-space-request/?include_text=1

Summary

- Seek out the new opportunities
- Help people overcome IPv4 thinking
- Secure your address space now
  and think big!

- Get started!

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