Planning an IPv6 Rollout

A Few Lessons from the Trenches

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A Word from Captain Obvious

Any network change project imposes risks.

New technology

Comprehensive planning

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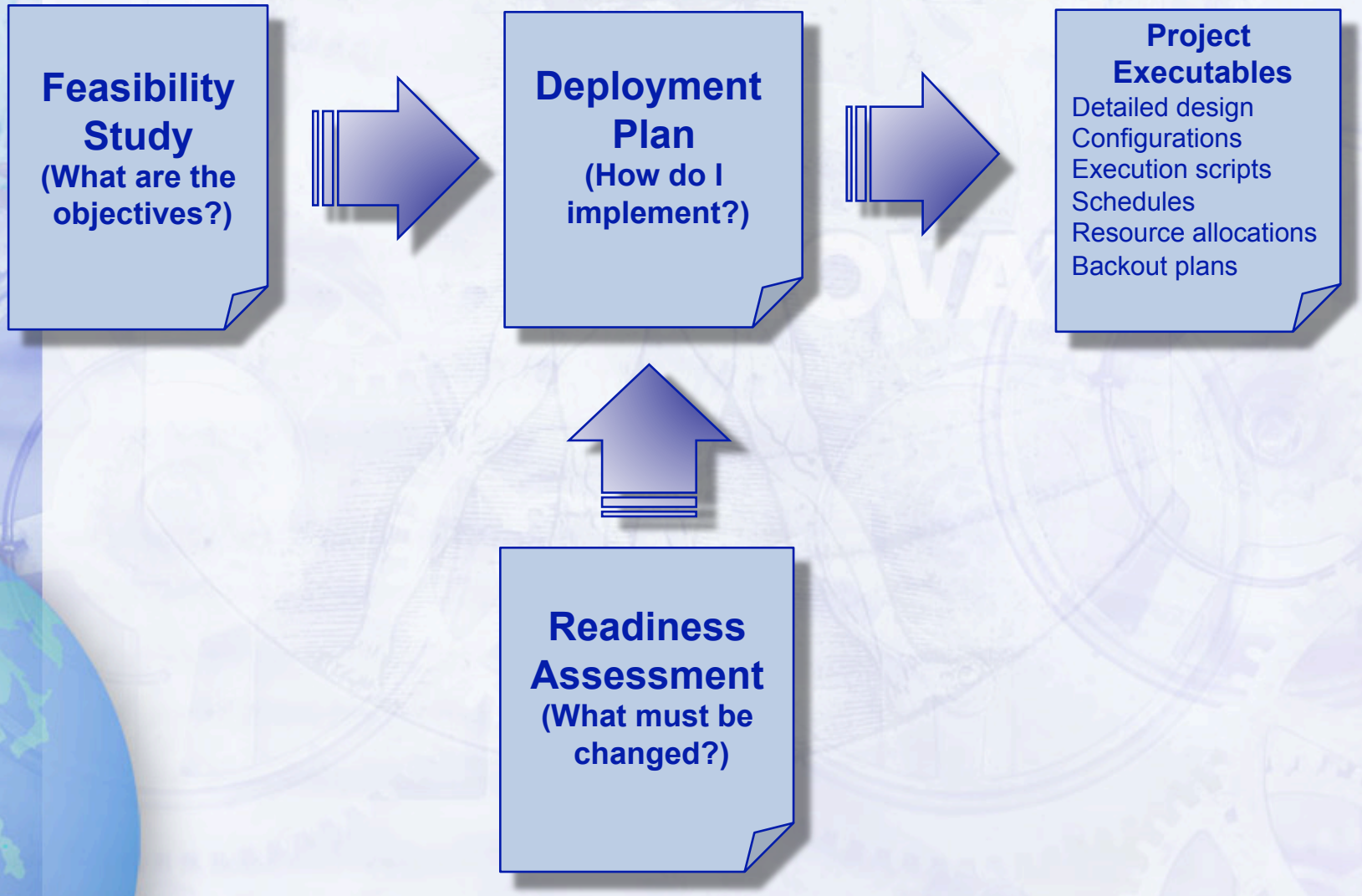
Best Laid Plans



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Remembrance of Plans Past

- It always takes longer than you expect
- Its always more complicated than you expect
- It makes no sense to deploy anything if you cannot manage it!
- It makes no sense to deploy anything if you cannot secure it!

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When You Go For Funding…

IPv6
is an infrastructure issue,
not a service issue

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Address Design

- Short Term: IPv6 addresses are new to people
  - Give them time
  - Design for your operations personnel
  - Have a plan to inform them
- The first address plan is seldom the last address plan
  - Keep address design flexible throughout planning stage
- Long Term: IPv6 addresses will be *easier*
  - If the design is done right
  - If the format makes sense

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It Sucks That We Can't Dual Stack Everything

- Good plan 10 years ago
  - Dual stack everything (plenty of IPv4 addresses)
  - Quietly decommission IPv4
- Not enough IPv4 addresses left to do this
- Tunneling, NAT-PT, ALGs are a necessary evil
- But, will accelerate full adoption of IPv6
  - Can't go back
  - Complicated transitional networks drive move to simplicity
  - How to simplify? Get rid of IPv4!

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DNS: Name That Tune

- Poor DNS planning is behind many IPv6 "failures"
- Issues are well documented
  - RFC 3596
  - RFC 3901
  - RFC 4074
  - RFC 4472
- Issues to consider:
  - Transport
  - Dedicated vs dual stack resolvers
  - Name space fragmentation
  - Placement (NAT-PT, DNS ALGs, load balancers)
  - Applications
  - Bad implementations

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Tunneling: You Can't Get There from Here

- Latency problems usually caused by tunnels
- Know where your tunnel endpoints are
- Distant 6to4 relays
- Broken Teredo servers

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Don’t Buy Vaporware

- A salesperson’s job is to sell
  - (Captain Obvious strikes again)
- “Supports IPv6” is meaningless
- Be specific about what a product / interface must support
  - Back to thorough planning
- Sometimes roadmaps must be accepted
  - But you *must* understand the risks

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Testing 1… 2… 3…

- Vendors depend on field experience to mature new code
- IPv4 assumptions cannot apply to IPv6!
- Production deployment is not the time to find:
  - Compliance problems
  - Interoperability problems
  - Functional, performance, or security bugs

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IPv6 Best Practices

- There ain't none
  - (Well, not very many)

If you're deploying IPv6 now, you're creating the best practices

(Don't be scared!)

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Train Thyself

- IPv6 books are okay, but…
- Network!
  - NANOG
  - Cisco Networkers
  - IETF
  - You're here, aren't you?

www.rmv6tf.org

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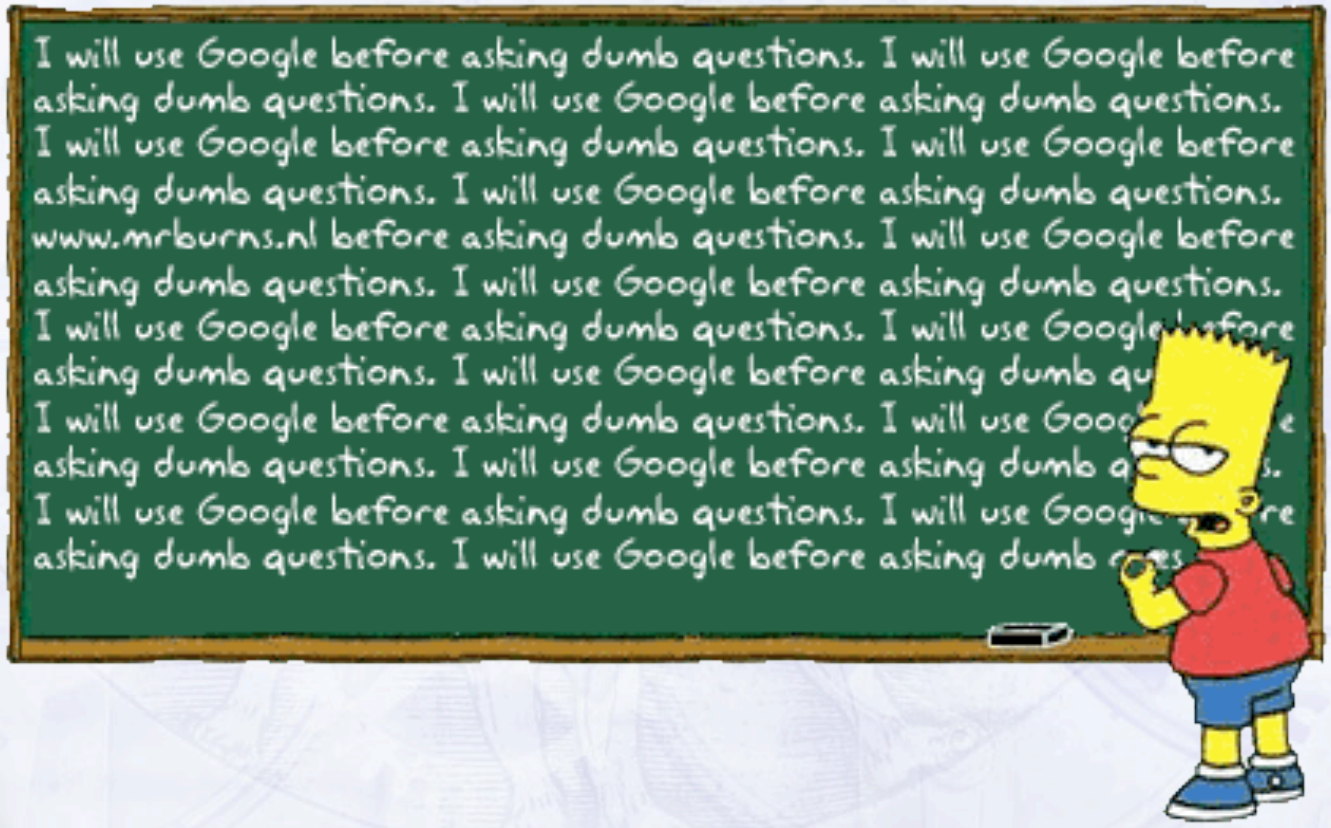
Questions?



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Thank You!

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