



industrial strength network & security solutions

# Network Design Considerations for IPv6

Dean Pemberton  
Senior Consultant  
Prophecy Networks Ltd

tomorrow's strategies, today's solutions

# What am I doing?



- Not trying to preach to Buddha
- You know your business better than I could hope to
- IPv4 Network Design is a well known and established practice
- How does IPv6 change this well established practice?
- What are the new questions to ask?

# Where are you in your current design cycle?



- Yet to start a new project?
- Already in progress?
- Time for a network refresh?
  
- It's never too late in the project cycle to start thinking about IPv6. From now on it's always too late to start thinking about it at all
- Well almost... If your network refresh cycle is 3-5 years, then you might find yourself in the middle of IPv4 depletion before your next refresh
- It may even provide added benefits.



- **Requirements Gathering**
- **Policy Development**
- **Architecture Development**
- **High Level Design**
- **Detailed Design**
- **Implementation**
- **Support and Maintenance**





- **Presented one at a time**
- **This is not a project plan.**
  - **You can't leave training until the end**
  - **You can't get a new support system after implementation.**
  - **These are just slides, not a Gantt chart.**



# Requirements

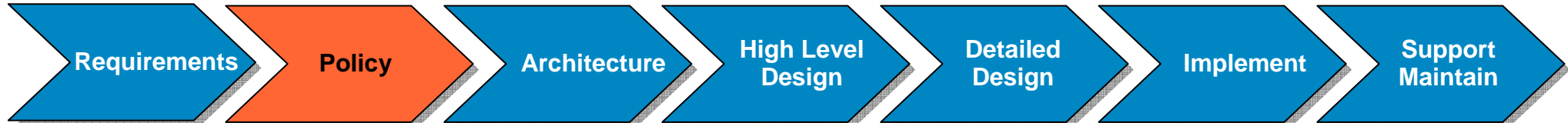


- Does your business have specific IPv6 requirements?
- Does IPv6 have features which enable your business to realise new potential?
- Is IPv6 at odds with your existing requirements?
- Are IPv6 adoption requirements placed upon you?
  - By stakeholders?
  - By clients?
  - If not now, are they about to be?



# Policies and Roadmaps prophecy

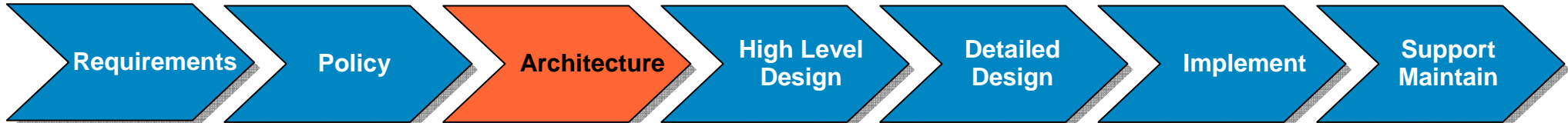
- All about statements and business positioning.
- “The Business will deploy IPv6 alongside IPv4 before F2 2011.”
- “The Business will not purchase equipment for which there is not an IPv6 roadmap.”
- “The Business will not engage in any contracts with Service Providers who do not supply an IPv6 service.”
- “The Business will have an IPv6 adoption plan before F3 2010.”



# Architecture



- How we deliver to meet the Policies and Requirements
- New IPv6 features need to be kept in mind.
  - You can see your clients directly, no NATs
  - They can see you directly, no private addressing
  - Does this change how you want to deliver or access business critical applications?
- You need to ensure that all areas are covered.
  - Billing, monitoring, provisioning etc.





# High Level Design



- You've probably now got two networks to build.
  - Well at least one and a half.
- Leverage as much as possible from each other and you'll only have one network to design.
- Design standards/decisions which work in IPv4 and IPv6.
- Work with people who have done this before to avoid their pitfalls



# Detailed Design



- Be IP Version agnostic.
- Everything you do with IPv4, you should allow for, or explicitly make out of scope with IPv6. Don't just ignore it.
- Dual Firewall rule sets
- Dual network addressing schemes
- Dual Routing Policies
- See how important leveraging was?



# Implementation



- Training, Training, Training
- Experience, Experience, Experience
- Testing, Testing, Testing
- Ensure that your engineering team have had plenty of time to get to grips with IPv6
- It's really just the same as IPv4 to administer, but your team will need to convince themselves of that.
- People fear what they don't know.



# Support and Maintenance



- All your support procedures now need to be dual IPv4/6 or version agnostic.
- Ensure that your support staff can troubleshoot IPv6 problems as efficiently as IPv4. They are just the same really.
- Ensure that your monitoring and troubleshooting tools support IPv6.



# Who can help me?



- Send your engineers to:

NZ IPv6 Steering Group Technical Special  
Interest Group (TechSIG)

<http://listserver.internetnz.net.nz/mailman/listinfo/ipv6-techsig>

# Who can help me?



- Plenty of organisations providing IPv6 design resources.
- [http://wiki.ipv6.org.nz/wiki/Design\\_Resources](http://wiki.ipv6.org.nz/wiki/Design_Resources)
- List in your hand-out pack.

# Who can help me?



Catalyst IT Ltd  
Cisco Systems  
eIntelligo Pty Ltd  
FX Networks  
Google, Inc  
Juniper Networks  
Prophecy Networks Ltd  
Treehouse Networks Ltd  
TelstraClear  
Voco  
WAND (UoWaikato, UoAuckland)

Andrew Ruthven  
Richard Wade  
Skeeve Stevens  
Neil Fenemor  
Lorenzo Colitti  
Truman Boyes  
Dean Pemberton  
Amos Jefferies  
Michael Newbery  
Peter Focas  
Richard Nelson

Alphabetical order. No warranty expressed or implied



industrial strength network & security solutions

# Thank You

dean@prophecy.net.nz

tomorrow's strategies, today's solutions