



# Peering Policies

- When to Peer, When not to Peer

Quilt Peering Workshop  
October 2006  
St Louis, Missouri

# Agenda

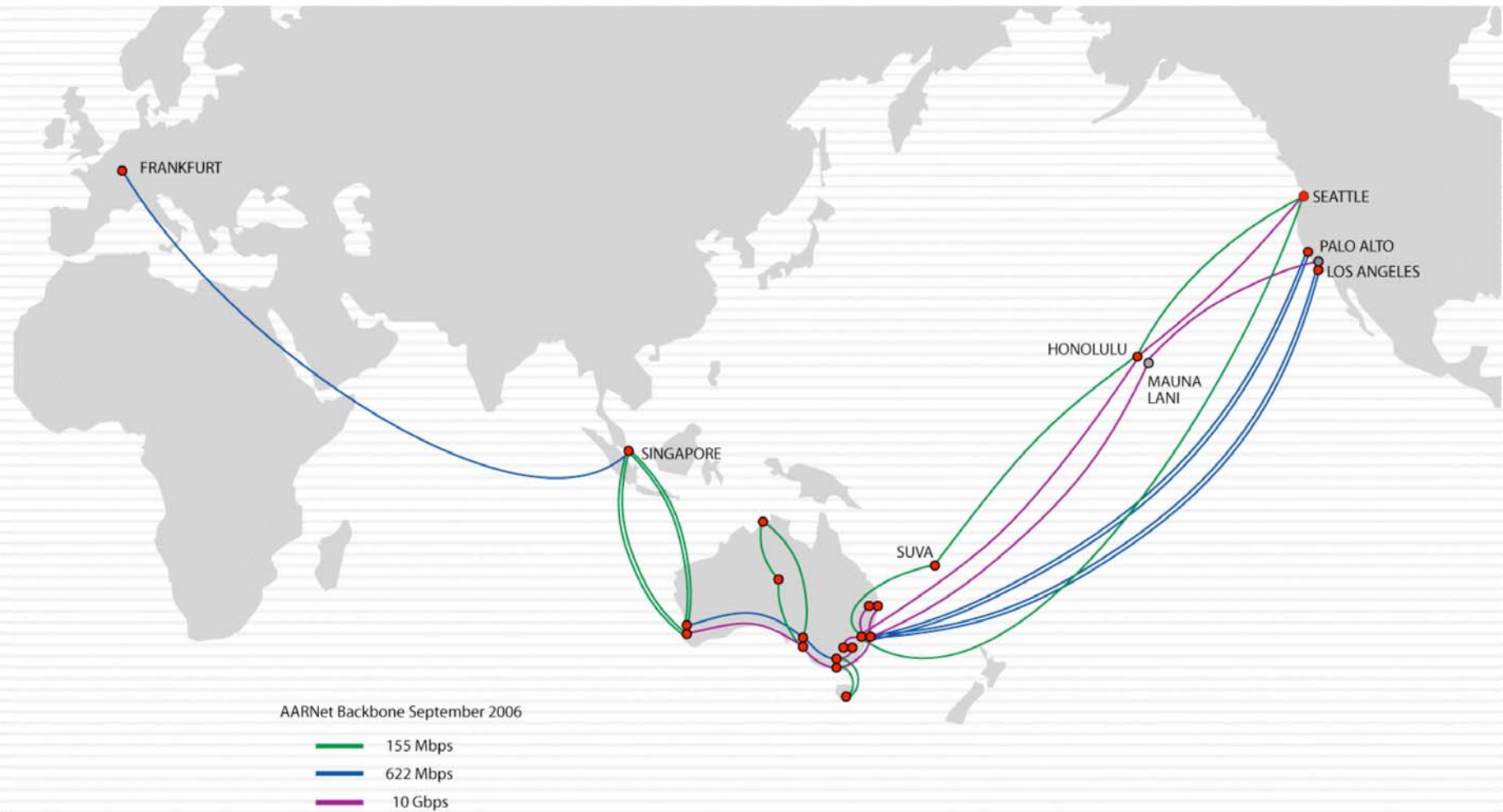
- Quick background on AARNet
- What is peering?
- Why peer?
- When not to peer?
- AARNet's experience



# Who is AARNet?

- Australian equivalent to Internet2 but we provide commodity Internet too
- We're a telecommunications carrier
- Trans Pacific links to US West Coast
  - 4 x OC12 for commodity only
  - 2 x OC3 shared with R&E
  - (2 x 10G only for R&E)
- Trans Asian link to Europe
- Own our own national fibre footprint
  - Some telco services to get to "hard" locations
- Provide Layer 1-3 services

# AARNet's International Footprint



# Internet Relationships

- Typical relationship is provider and customer
- Customer buys access to “the Internet” from the provider
- Peers provide access to each others network only
  - Usually without money exchange



# Types of peering

- Private links
- Peering fabric at IX
- Bilateral peering
  - Individual contracts with each peer
- Multi-lateral peering
  - Coordinated by the IX
  - Peer against a route reflector
  - All potential peers or none

# Rules, Rules, Rules, ...

- Ratios
  - Large (US) players like traffic ratios
  - 1.5:1 or 2:1
- Points of Interconnect
  - Three time zone rule
    - East & west coast plus mid-west
  - Hawai`i never seems to count :(
- Minimum volumes
  - Some ISPs might ask you to demonstrate this via a trial

# Why peer?

- Reduce (or fix) costs
  - Why finance people like it
- Enable “advanced” services
  - Why technology people do it
- Improve performance
  - Why network engineers do it



# Reduce (or fix) costs

- Peering typically has a fixed cost independent of traffic level
  - Purchase access to a peering fabric or purchase a dedicated circuit
  - Cost based on this access speed rather than 95th percentile (or byte charge)
- You can play this “game” with transit too, just commit to more than you need and that will fix your cost

# Enable "advanced" services

- Multicast
- IPv6 (Unicast and/or Multicast)
- Voice/Video over IP

# Improve performance

- Reduce RTT
- Localise traffic
  - Peer with local DSL providers
  - Peer directly with content
- Access priced circuits are typically less likely to be congested



# When not to peer?

- Remember why you might peer ...
- What's it cost?
- Do they have services not offered by your transit provider? IPv6 ...
- Is performance improved?
  - Avoiding congested links?
  - Be careful to avoid cross country traffic flows
  - But just because someone appears at the same IX as you doesn't mean that's a good path to them

# Be careful with the cost

- Remember that while the cost of the peering fabric is fixed this could mean the Mbps cost is high if traffic is low
- US commercial peering fabrics are generally expensive to use and there is no guarantee that anyone will peer with you

# Look at a Gigabit Ethernet link

	CAPEX	MRC
Metro Fibre	\$1,200	\$1,200
Equipment	\$10,000	\$200
Peering Fabric		\$7,000
TOTAL	\$11,200	\$8,400

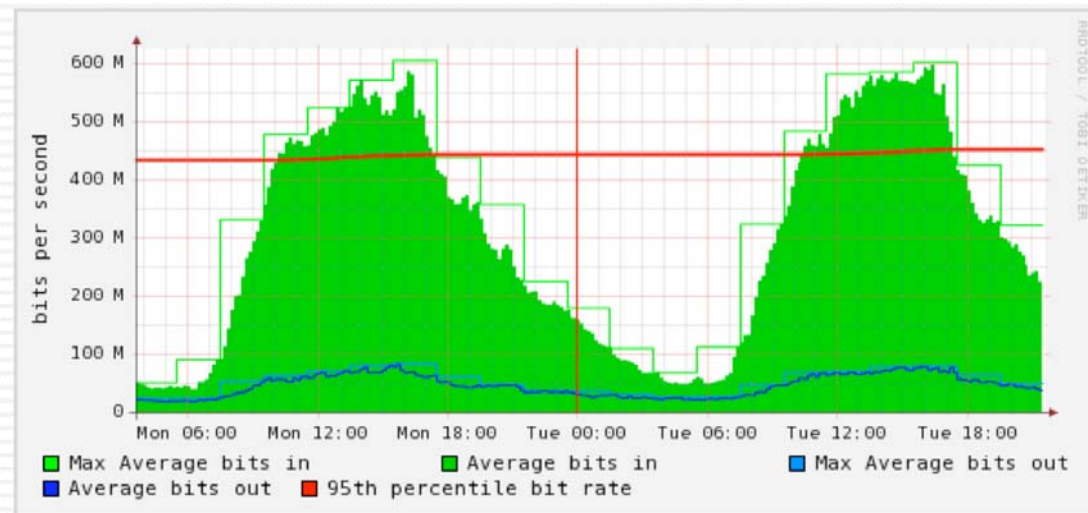


# So what's the effective cost?

- Write Off CAPEX over 3 years so effectively Gigabit Ethernet peering link is costing \$8,700 per month
- If 200Mbps => \$43.50 /Mbps
- If 300Mbps => \$29.00 /Mbps
- If 400Mbps => \$21.75 /Mbps
- If 500Mbps => \$17.40 /Mbps
- How much do you pay for transit?

# AARNet's Peering Status

- A leap of faith
- 3 years ago we did no peering
- Now over 60% of commodity via peering
- Chose international locations for peering opportunity although needed them for transit



# PeeringDB

Peering Networks Detailed View

[https://www.peeringdb.com/private/participant\\_view.php?id=393](https://www.peeringdb.com/private/participant_view.php?id=393)

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## Company Information

**Company Name** AARNet Pty Ltd  
**Also Known As**  
**Company Website** <http://www.aarnet.edu.au>

**Primary ASN** 7575  
**IRR Record** AS7575:AS-CUSTOMER  
**Network Type** Educational/Research  
**Approx Prefixes** 300  
**Traffic Levels** 1-5Gbps  
**Traffic Ratios** Mostly Inbound  
**Geographic Scope** Asia Pacific

**Looking Glass URL**

**Route Server URL**

**Notes** AARNet has a more restrictive policy for peering within Australia.

**Protocols Supported** Unicast IPv4  Multicast  IPv6

**Date Last Updated** 2006-08-17 02:32:23 UTC

## Peering Policy Information

**Peering Policy URL** <http://www.aarnet.edu.au/engineering/aarnet3/peering.html>

**General Policy** Selective

**Multiple Locations** Preferred

**Ratio Requirement** No

**Contract Requirement** Not Required

## Contact Information

Role	Contact Name	Telephone	E-Mail
Policy	Mark Prior		peering@aarnet.edu.au
NOC	NOC		noc@aarnet.edu.au

## Public Peering Exchange Points

Exchange Point Name	ASN	IP Address	Mbit/s
<a href="#">DE-CIX</a>	7575	80.81.192.242	1000
<a href="#">DE-CIX</a>	7575	2001:7f8::1d97:0:1	1000
<a href="#">LAIX</a>	7575	2001:504:A::A500:7575:1	1000
<a href="#">LAIX</a>	7575	198.32.146.43	1000
<a href="#">PacificWave</a>	7575	207.231.241.2	1000
<a href="#">PAIX Palo Alto</a>	7575	198.32.176.177	1000
<a href="#">PAIX Palo Alto</a>	7575	2001:504:D::B1	1000
<a href="#">SIX</a>	7575	2001:478:180::112	1000
<a href="#">SIX</a>	7575	198.32.180.112	1000
<a href="#">WADIX</a>	7575	198.32.212.7	100

## Private Peering Facilities

Facility Name	ASN	City	Country	SONET	Eth
<a href="#">Equinix Sydney</a>	7575	Mascot (Sydney) NSW	AU	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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# AARNet's Policy

- AARNet has an open policy outside of Australia
  - But we are careful to avoid “stupid” routing
- The policies are published but used as guidelines not hard and fast rules
  - <http://www.aarnet.edu.au/engineering/aarnet3/peering.html>
- Guidelines are mostly just common sense engineering

# Our Experience

- As we are foreigner we sometimes avoid the multi timezone requirement
- Other foreigners are usually happy to peer
  - we have each paid large sums for trans oceanic capacity
- Content providers are happy to peer
- We have had to use a trial peering once
  - Knowing that you will pass by analysing netflow data is a plus if you spend money to do this
- This peering also involved a written contract (and an NDA) but they are rare

# Our Experience (cont)

- We don't often say no but we are often the initiator of the peering so we are selective of who we ask
- We don't like multi-lateral peering
  - Lack of control
  - Wary of two national networks that only meet in a single remote point and so trombone traffic through it
  - If bad things happen your only choice is de-peer the exchange rather than the trouble maker





# Thank You

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