



AARNet3 Optical Network

ONT3 Workshop
Tokyo
September 2006



Constraints

- AARNet is funded largely by charges to customers
- So far we have concentrated on easily “price booked” products that will pay for the basic infrastructure
 - Dedicated permanent Gigabit Ethernets
- All existing services are production oriented

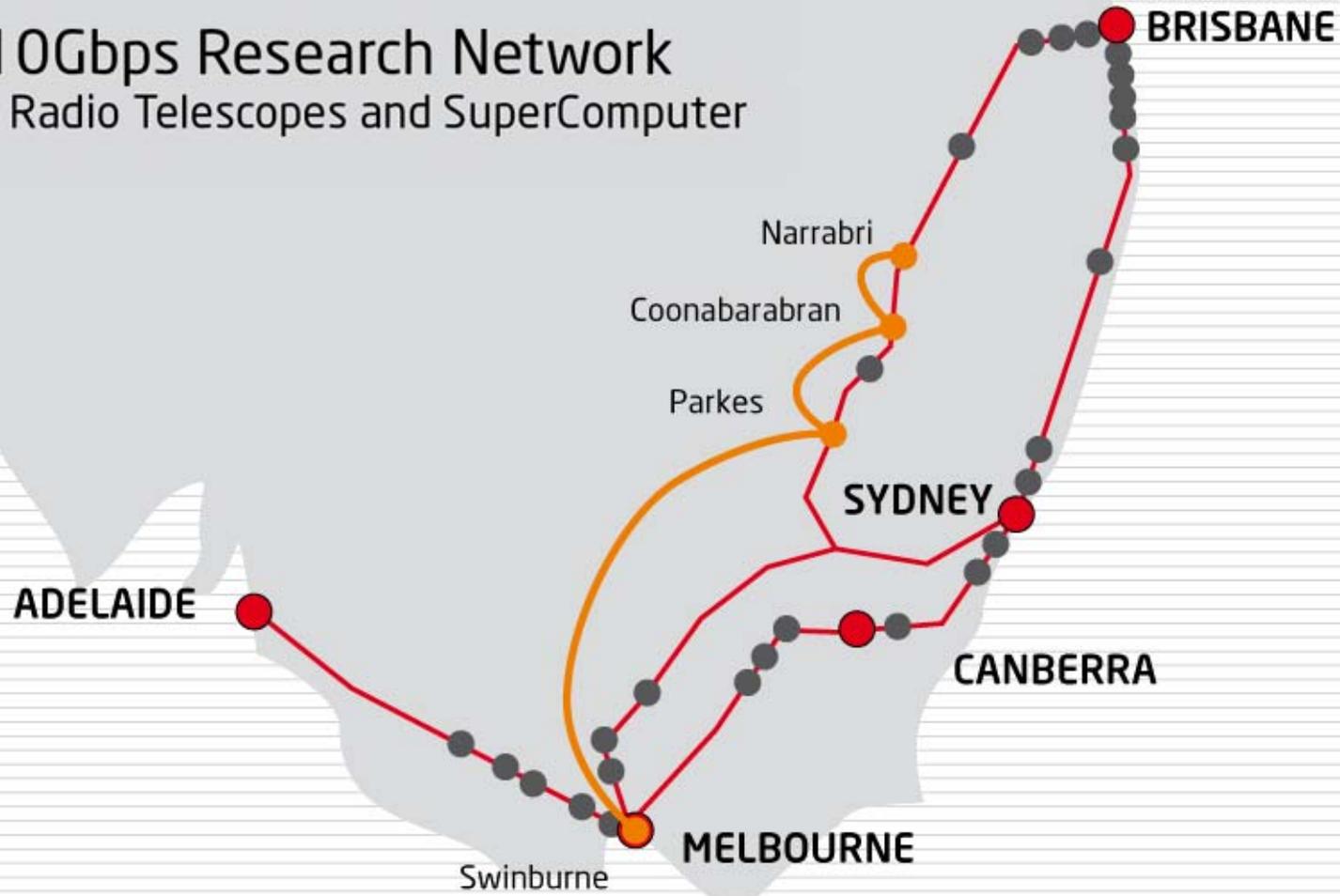
AARNet3 Optical Network



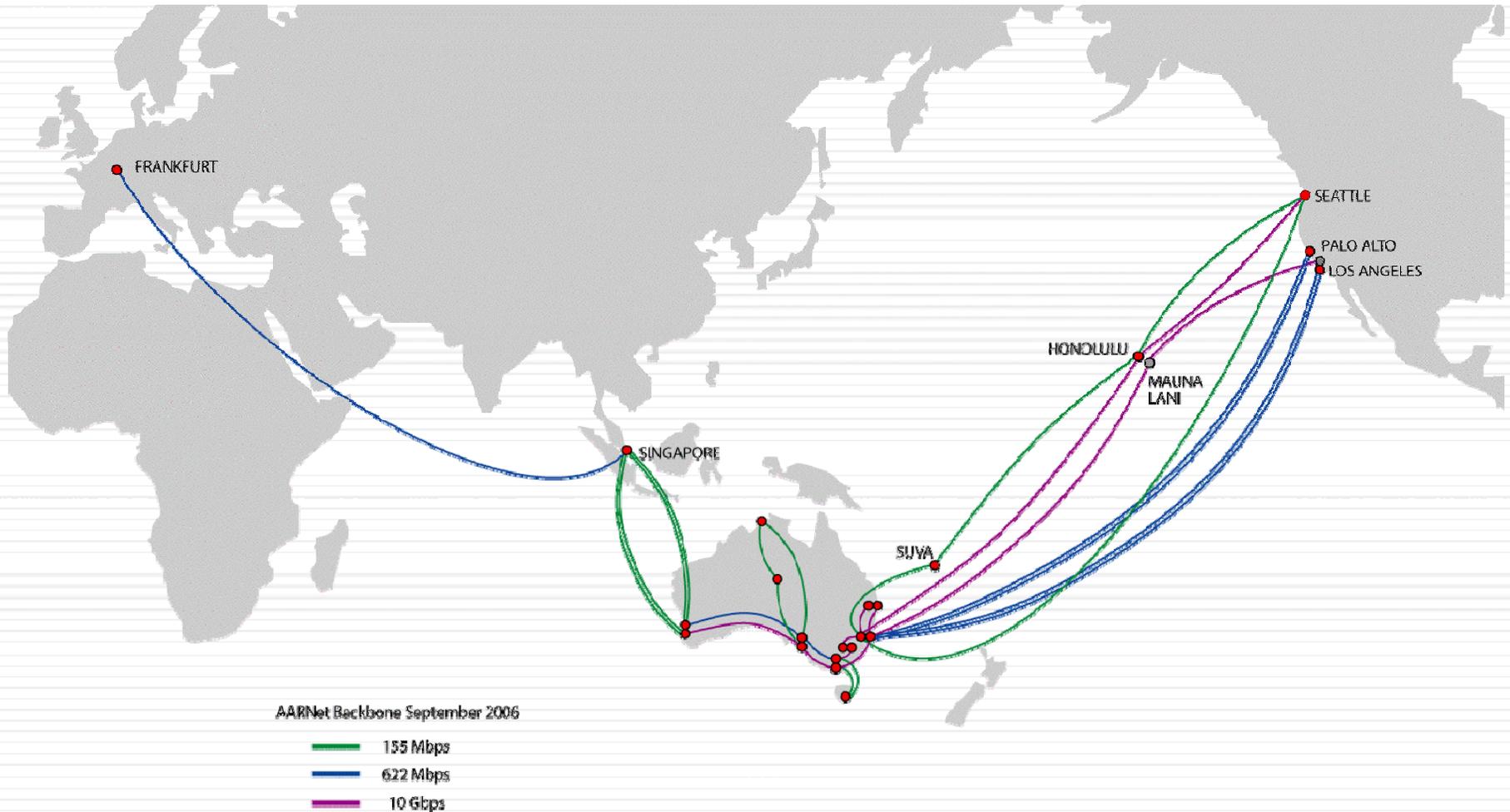
- Over 4700 route kilometres of dark fibre from Adelaide to Brisbane currently lit using Cisco ONS 15454 and providing service:
 - 10Gbps national IP backbone
 - Customer connection via Gigabit Ethernet to IP backbone
 - Private optical networks
- 2600 route kilometres from Adelaide to Perth available but still dark
 - Use STM-64c service for IP backbone

Private Optical Networks

10Gbps Research Network
- Radio Telescopes and SuperComputer



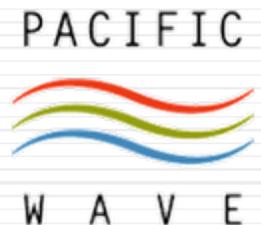
International Footprint



SXTransPORT South



- Only non layer 3 international path
- STM-64c from Sydney to LA via the Big Island of Hawai`i
- Will provide access to Mauna Kea
- Four "permanent" Gigabit Ethernets
- Four "GLIF" Gigabit Ethernets
- Need to share scarce resource



Network Development



- AARNet is a carrier
 - Allows us to build when necessary
- Carrier licence and dark fibre frees us from the constraints imposed by other carriers
 - Allows us to build the products and services our customers need rather than what the commercial suppliers want to sell
 - Products and services priced closer to cost (although there is still a cost)

Research Testbeds In Australia

- The CeNTIE and Grangenet programmes have nearly reached end of life
- The optical infrastructure could allow research to continue
- However AARNet is not 100% government funded
- Spare capacity can be leveraged but permanence requires funding

Permanent circuits are easy

- Interested in providing services that would enable the use of optical services “on-demand” by end users, especially in areas where resources are scarce
- Multiple technologies could provide a solution
 - UCLPv2
 - GMPLS
- Need to keep aware of work by our peers so we get interop solutions

Next Steps

- Build optical cross connect in Sydney
 - ONS based linking SXTransPORT South to AARNet3 Optical Network
- Expand footprint of the Optical Network into more regional areas
- Develop products
- Find customers :-)
- Work on “last mile” issues within the campus



Issues

- Cost recovery
 - While builds might receive external funding the ongoing services need to be self supporting
 - Clear if permanent circuit owned by someone but what of transient circuits?
- Trans Pacific (AU-US) capacity is expensive!
 - What happens if concurrent requests for service exceed available resource?