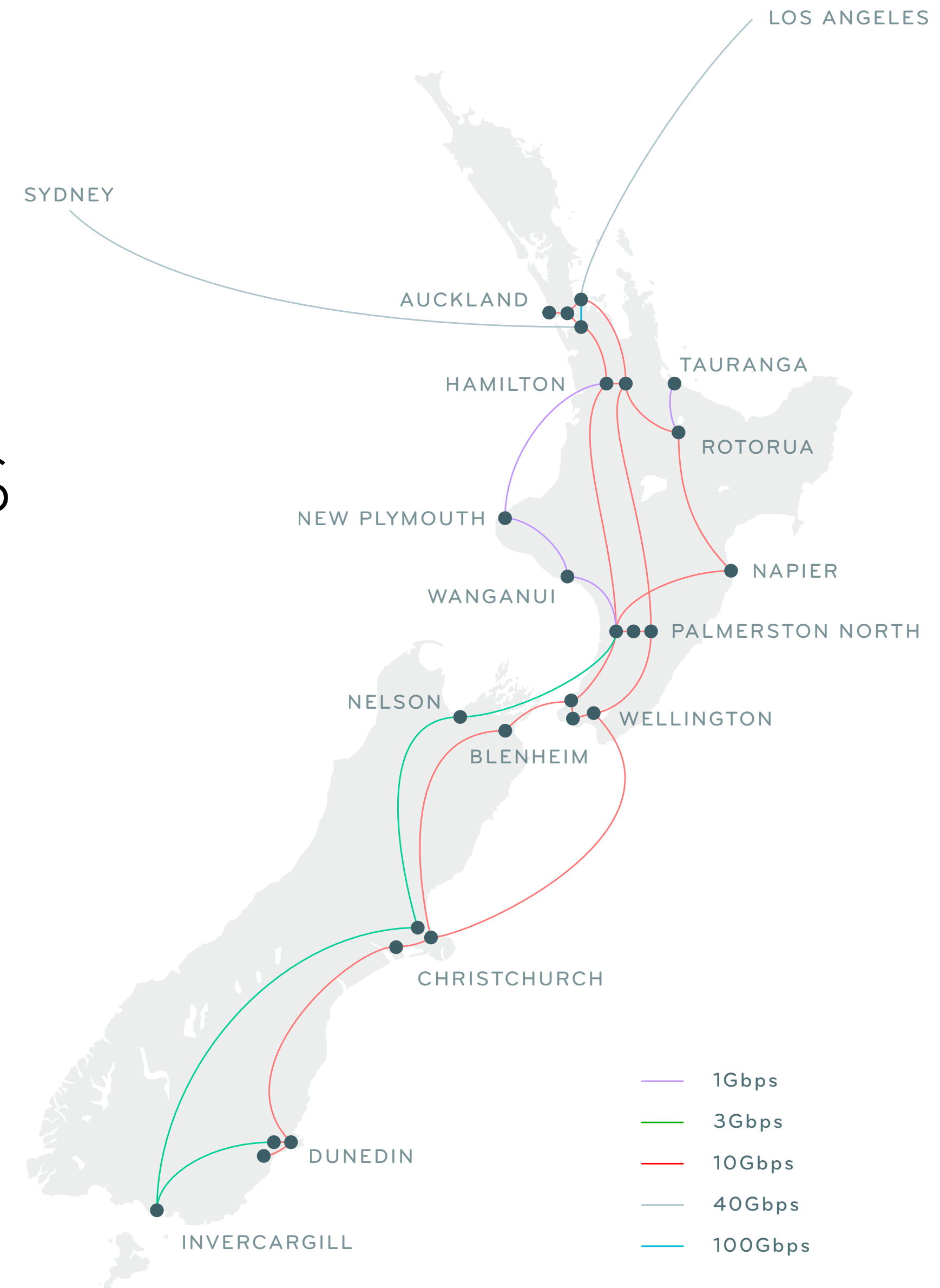


Lies, Damn Lies and Statistics...

REANNZ Network

- 10Gb/s ladder design
 - soon: upgrade to 100Gb/s
- International connections to AU and US
 - 40Gb/s R&E
 - ~8Gb/s commodity



Tools

100GB?!

- As a networking organisation, we are interested in **moving** data
 - It is about the network
 - And every problem is a nail
- ...you may want the data to sit still (storage)



<https://upload.wikimedia.org/wikipedia/commons/8/84/Claw-hammer.jpg>

Globus

- Last year Kyle Chard spoke here about the Globus tools
 - <https://www.globus.org/>
 - <https://www.globus.org/file-transfer>
- Ian Foster, founder of the Globus project, spoke in the previous session on “Building the Modern Research Data Portal”
- Web, CLI and programmatic interface into robust data sharing tools



Globus even works for New Zealand!

The image shows a screenshot of the Globus website homepage. The browser address bar shows 'https://www.globus.org'. The navigation menu includes 'Products', 'News', 'About', 'Support', and 'Log In'. The main content area features three columns of text and images, each with a 'LEARN MORE' button. Below this, there are sections for 'Fast, Reliable, Secure File Transfer' and 'File Sharing Made Simple', each with an illustration and a 'LEARN MORE ABOUT FILE TRANSFER WITH GLOBUS' button. On the right, there is an 'UPCOMING EVENTS' section listing several webinars and conferences. A large red circle is drawn around a world map in the background, with a smaller red circle highlighting the location of New Zealand. Two red arrows point from the text 'Globus even works for New Zealand!' to the highlighted location on the map.

CloudStor

- Today, you will here David Jericho talk about CloudStor (in about 15 minutes)
 - CloudStor: Getting Out of the Way of Researchers
 - <https://www.aarnet.edu.au/network-and-services/cloud-services-applications/cloudstor>
- Integrates with Tuakiri
- 10GB of free storage (100G if you are AU), unlimited File Sender (web based upload)
- Free, web-based tool



ScienceDMZ

- A “design pattern” from ESnet (xref Inder Monga’s talk yesterday)
- A tool to help separate research and corporate data by explicitly working with the participating parties (source, destination & {LMW}AN networks
- Several in place here in New Zealand today

Aspera

- Sean Curran spoke earlier today
- Used in Australia through a national site license
- Being tested by radio astronomers who are interested in spending money on **their** science, not file transfer protocols
- And yes, this is a big enough problem that you can even create a business around a solution



Getting back to the 100GB of data...

- We've spoken a bit about wanting to move 100GB
 - We are against mailing hard drives
 - We have shown you some tools as alternatives
- But how did we get here?
 - Why do you have 100GB all at once

E2E Testing

- What level of performance do you ***think*** you should be seeing?
- End-to-End Testing
 - iperf, perfSONAR
 - ...tested your disk array?
- did you happen to launch your transfer via a poorly written script?

Change Expectations

How long will it take?

Data set size				
10PB	1,333.33 Tbps	266.67 Tbps	66.67 Tbps	22.22 Tbps
1PB	133.33 Tbps	26.67 Tbps	6.67 Tbps	2.22 Tbps
100TB	13.33 Tbps	2.67 Tbps	666.67 Gbps	222.22 Gbps
10TB	1.33 Tbps	266.67 Gbps	66.67 Gbps	22.22 Gbps
1TB	133.33 Gbps	26.67 Gbps	6.67 Gbps	2.22 Gbps
100GB	13.33 Gbps	2.67 Gbps	666.67 Mbps	222.22 Mbps
10GB	1.33 Gbps	266.67 Mbps	66.67 Mbps	22.22 Mbps
1GB	133.33 Mbps	26.67 Mbps	6.67 Mbps	2.22 Mbps
100MB	13.33 Mbps	2.67 Mbps	0.67 Mbps	0.22 Mbps
	1 Minute	5 Minutes	20 Minutes	1 Hour
Time to transfer				

<http://fasterdata.es.net/home/requirements-and-expectations>

Change Expectations

Planning

- Pipeline
 - Can you change your pipeline to stream the data constantly?
 - Instead of bulk delivery of 100GB, constantly stream data
 - Spread the impact on the network over a longer period
- Where do you really need the data?
 - Why is it moving in the first place? Can it be analysed while it is moving so that you do not need to move it again?

Raising Expectations

- Not only should New Zealand researchers have access to the tools and infrastructure that their international colleagues have, but they should have the expectation that the tools and infrastructures will work well.

Implementing Tools

- REANNZ is running the backbone and increasingly assisting with building the on-ramps (xref Rob Elshire's plenary talk from earlier today)
- REANNZ must rely on the users to build the (fast) cars that travel on the road
 - eResearchNZ is one way to execute outreach
 - We work closely with IT Departments to improve on-campus network performance

Change Expectations

Tuned System



https://upload.wikimedia.org/wikipedia/commons/6/61/Silverstone_2011_starting_grid.jpg

Questions?

T. Charles Yun

tcyun@reannz.co.nz

<http://www.reannz.co.nz/>

@REANNZnews





—fin—