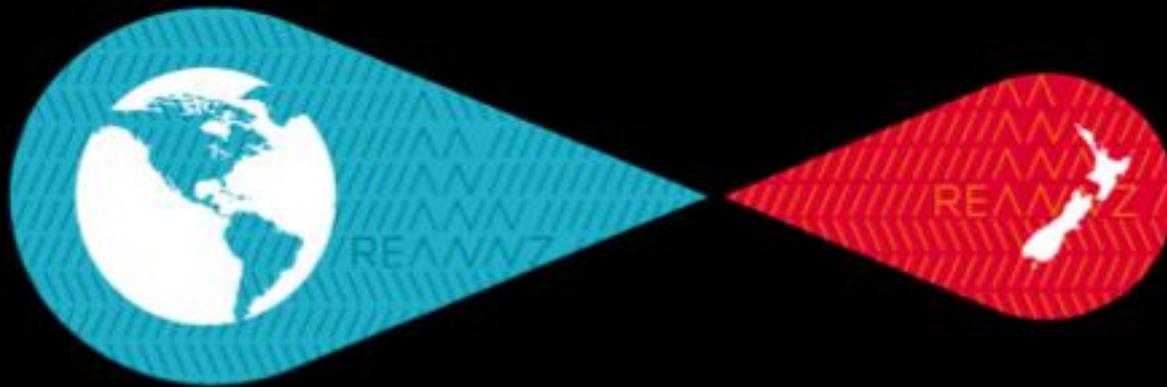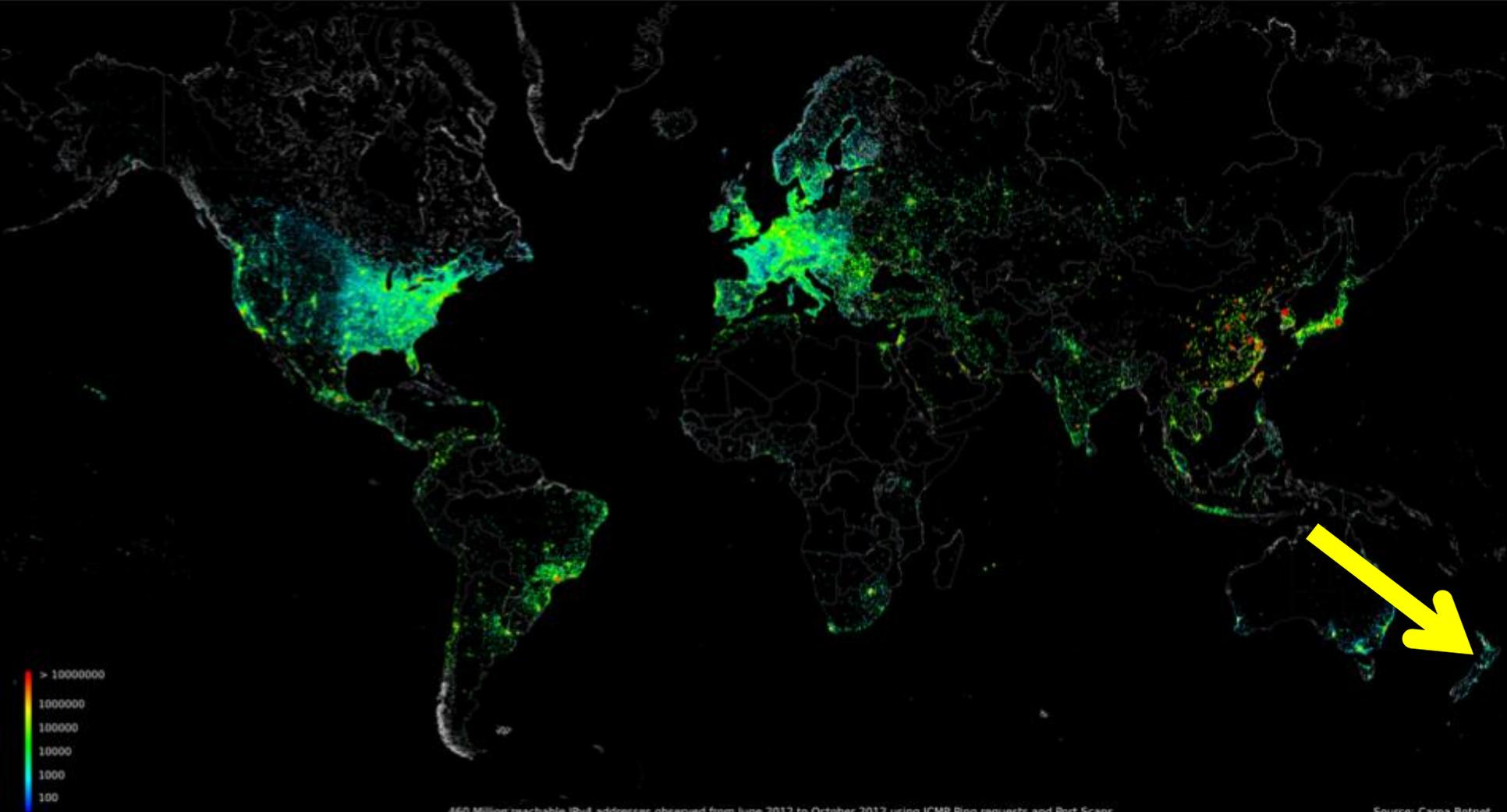REANNZ's Shared Network:

A Win-Win Public-Private Partnership

460 Million reachable IPv4 addresses observed from June 2012 to October 2012 using ICMP Ping requests and Port Scans.

Source: Carna Botnet

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Facts About New Zealand

- 1600km long x 250km wide, landmass equal to UK+Ireland combined
- One of the most urbanized countries in the world
  - Population 4.4M, 1.4M in Auckland
- Telecommunications Industry
  - Only 1 undersea cable, 50.01% owned by Spark (formerly TelecomNZ)
    - Bandwidth costs between NZ-Aus are 10X Europe-US
  - Spark and Vodafone have 78% of ISP market
    - Next largest ISP has 9% market share
  - Govt recently split Spark into 2 companies – separating out local access as part of NZ$1.3B national fibre build
  - Only 3 companies own their own long-haul fibre
    - Spark, Vodafone & FX Networks
- Broadband penetration slightly above OECD ave
  - Fibre penetration: 31st out of 34
  - 5th most expensive

Auckland

Wellington

Christchurch

REANNZ

- Crown-owned company with a mandate to support research, education <u>and</u> innovation
  - Founded in 2006
  - Revenues of NZ$14M/year
    - $4M funding from govt, rest from membership
  - Connect all universities, research institutes, most polytechnics, wananga, some schools / tech companies
- Accelerating year over year traffic growth
  - National: 28% in 2011 ➜ 45% in 2014
  - International: 30% in 2011 ➜ 95% in 2014
- Since founding, relied on leased wavelength model
  - Outsourced NOC, engineering, tier 1 call centre
  - Carrier imposed restrictions limiting commercial traffic

Preparations

- Changed our operational model
  - Brought capabilities back in house
  - Built up engineering capability
- Demand case formed basis for business case
  - Projected bandwidth requirements, data sources / sinks
  - New services (i.e. dedicated wavelengths)
  - Needed visibility into all network layers
  - Modeled architecture - $$
- Summary
  - Needed benefits of optical network, but only 25%
  - Needed a more competitive telecom marketplace
  - Only 1 of 3 fibre networks would sell

Strategy

- Made sure we knew exactly what we needed
  - Technically, operationally and business model
- Fully understood the commercial market
  - Business drivers, financial situation, corporate culture of the various players
  - Decided best approach was to find a 'hungry' upstart that a deal with us would strengthen their position in the market
- Issued RFI
  - Introduced concept of Shared Network to market
  - Requirement to purchase long-haul fibre for research purposes and future growth

The 'Pitch'

- Capital: we had it, they needed it
- Network: they were going to build one, we needed it
- Operations: by working together, we could improve network reliability / decrease costs
- Services: R&E networks are testing grounds, we offer an 'early adopter' marketplace
- Non-compete: we could 'divide up' the marketplace and drive business to one another
- Wrote a draft 'Joint Operating Agreement'
  - Laid out the concepts of how the network hardware would be shared (who held title, sparing, etc.)
  - Explained how network could be jointly operated
  - Highlighted benefits to country through innovation

Negotiations

- Joint Operating Agreement used as skeleton of contract
  - Trust was critical
  - Both sides agreed this would be a 'win-win' deal
    - Willingness to concede issues met with concessions elsewhere
    - Key clauses negotiated without lawyers
  - Commitment from operations and exec levels
    - Monthly / quarterly meetings detailed
    - Development of a 'Shared Network Playbook'
  - Protections in contract
    - In case relationship fell apart or they are bought
    - Clear on operational expectations
    - Ability to purchase fibre anywhere throughout entire life of contract
  - Agree to share costs 25% / 75% in exchange for 25% capacity
    - Except equipment solely dedicated to one party
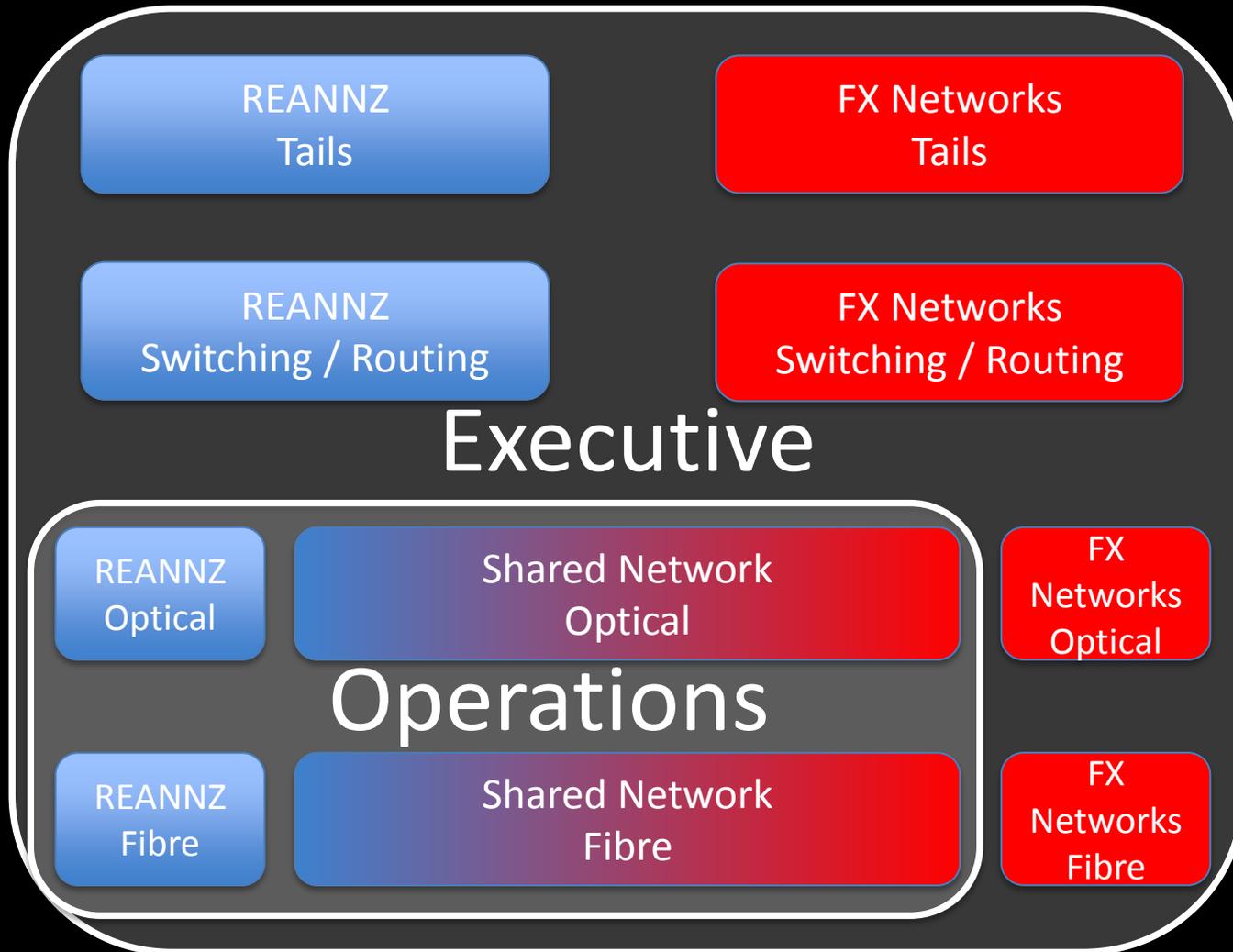
Post Negotiations

- Presentation to the board
  - Business case laid out the benefits and the risks
- Ministerial approval - most difficult part of whole process
  - Officials had trouble grasping the 'shared network' concept
  - Competitors voiced concerns
- Building the network
  - Slight adjustments to the original design handled by amendments to the contract
  - Begin co-writing the 'Shared Network Playbook'
- Financial and operational benefits have exceeded expectations
  - Paying REANNZ to be their SDN R&D arm
- Carrier's improved financial position makes them target of takeover
  - Executed option to purchase fibre footprint
  - Too early to tell, but so far good relationship continues

Questions?

REANNZ