

REANNZ AT A GLANCE

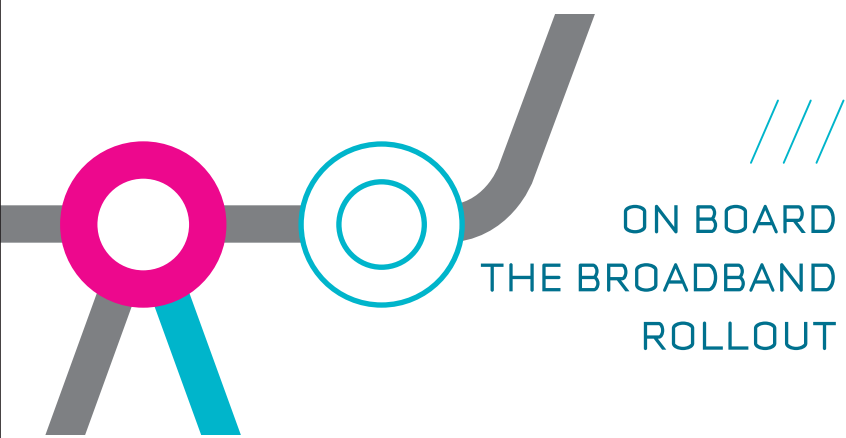
September 2010 marked the 5th anniversary of the establishment of REANNZ (Research and Education Advanced Network New Zealand Ltd). This is a significant milestone and we have much to celebrate. In 2005, the Crown formed REANNZ with the purpose of “establishing and operating an advanced network in order to promote education, research and innovation for the benefit of New Zealand”.

KAREN (Kiw i Advanced Research and Education Network) went live in December 2006 and now connects nearly every scientist in New Zealand and the significant majority of the tertiary education sector.

Over the last four years, REANNZ has witnessed steady growth in capability development and the use of KAREN across the Research & Education community. The Government's emphasis on science, innovation and infrastructure as key drivers of their Economic Growth Agenda, has cemented KAREN's role as essential national infrastructure — for the long-term.

REANNZ is now placed to plan and evolve KAREN for the innovative future that we are seeing develop globally, and for the future needs of our Members.

Our Members can now make long-term investments in related research infrastructure and services knowing that KAREN will be there for them.



ON BOARD THE BROADBAND ROLLOUT

The Government's Rural Broadband and Ultra-Fast Broadband initiatives represent this country's most significant investment in national telecommunications infrastructure since the establishment of KAREN in 2006. These initiatives are complementary to KAREN in two key aspects:



Firstly, KAREN is a core network providing ultra-fast broadband connectivity to a wide range of points of presence around New Zealand. The Rural Broadband and Ultra-Fast Broadband initiatives are about investment in regional and local access networks. [KAREN will benefit from this investment, as it will enable more Members to connect at higher speed and lower cost.](#)

Secondly, REANNZ has repeatedly shown that we are expert at demand aggregation and procurement. Smart alignment of our expertise and purchasing power with the Government's investments and subsidies in the supplier market, will ensure that the Rural Broadband and Ultra-Fast Broadband initiatives deliver more to New Zealand than could be achieved separately.



BEING MEMBER CENTRIC

REANNZ is community led and member focused. Indeed, the needs of our community were the genesis of REANNZ. [Everyone at REANNZ, from the Board down, recognises that the continued close and consistent involvement of our Members is absolutely fundamental to a successful future.](#)

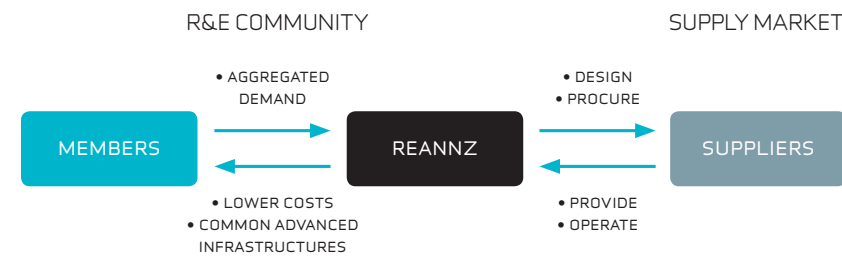
REANNZ has a Member engagement framework in place that ensures involvement at various levels across the breadth of our membership. KAREN Members lead and participate in policy, service and network development through:

- Member representation on the REANNZ Board
- KAREN Policy Advisory Council
- Working Groups — Service, Transition and Architecture
- KAREN Request for Comment Process
- Monthly KAREN Member Open Forums

We are continually working to ensure our Members consider KAREN 'their' network and feel fully engaged in its evolution.



OUR UNIQUE CAPABILITIES



MEETING SPECIALIST NEEDS

REANNZ exists to meet the specialist needs of the research, education and innovation communities to help them reach their economic and social goals. Our community is a collection of super users who have advanced networking requirements, often years ahead of what commercial networks offer technically. They demand a network that will support data intensive, complex research experiments and simulation. [KAREN provides a high standard of service at a price point not available to individual Members.](#)

PERFORMANCE THROUGH CAPACITY

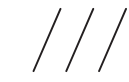
KAREN, like other research and education (R&E) networks worldwide, guarantees network reliability and performance by purposely over-provisioning capacity. This is contrary to standard commercial networks. KAREN's backbone runs at 10 Gigabits per second — that is thousands of times faster than a home broadband connection. This 10Gb/s capacity ensures there is always enough headroom in the network for large data spikes.

THE POWER OF THE COLLECTIVE

REANNZ is a neutral, expert purchaser of networks and services, not a telecommunications company. As a not-for-profit membership organisation, we work on behalf of our community, aggregating demand to procure the best and most cost effective networks and services from the market to meet their specialist needs. With over 100 Members behind us, REANNZ's collective buying power is a force to be reckoned with. Our mandated aggregation and purchasing role for the R&E sector also ensures that we are not viewed as a competitor in the telecommunications supply market, and can therefore extract R&E pricing from the market.

DOING WHAT WE DO, EFFICIENTLY

REANNZ regularly compares its network purchasing effectiveness and operating efficiency against other national R&E networks. Our operating costs are below average and our network purchasing results comparable to other countries, even where many of them have realised the economic benefits of dark fibre-based networks.



BIG SCIENCE, FUTURE EDUCATION

REANNZ is part of a global network of more than 100 R&E networks, many of which have been around for over 20 years, such as JANET in the UK. These networks have proven themselves to be invaluable infrastructure for research, education and innovation. We are following lots of leads with our own flavour of implementation to meet the needs of our unique community.

THE BEST OF NZ TO THE WORLD, AND THE WORLD TO NZ

New Zealand's participation in a first-world research community is absolutely dependent upon KAREN's ultra-fast, unrestricted broadband. KAREN provides the low-level connectivity to share data, assets and people, without constraints, across the country and across the world. [Given New Zealand's isolated location and dispersed population, advanced connectivity is essential to underpin continued scientific progress.](#)

SUPPORTING LEADING-EDGE SCIENCE

KAREN enables the science that fosters innovation and drives New Zealand's future economy. Science has entered a fourth paradigm, that of data exploration, where theory, experiment and simulation combine. [The ability to move, access, process and analyse large quantities of data on a global scale is a fundamental requisite for modern science and a building block of innovation.](#) Innovative businesses are able to access cutting-edge science through KAREN. An advanced network, like KAREN, is the most essential, basic and common of infrastructures.

RESEARCH INFRASTRUCTURE

[KAREN also enables the efficient concentration of high-cost research infrastructure into fewer locations across New Zealand.](#) For example, national scale investments in high performance computing, radio astronomy, climate science and genomics all have advanced connectivity as a critical requirement. KAREN provides the network performance necessary for reliable, real-time access, control and sharing of this national research equipment country-wide.

DRIVING COLLABORATION AND EFFICIENCIES

KAREN is providing the networked infrastructure to accelerate the reach, delivery and form of discovery and opportunities for learners. KAREN is being used to enhance collaboration between educational institutions, extend education outreach, and enrich students' learning experiences. Members are also taking advantage of KAREN to drive cost-efficiencies in IT operations through managed internet access, data storage, voice over IP, and access to shared services.

113
MEMBERSHIPS
Current KAREN Members

18
SUPPLIERS
Network and service partners supplying KAREN from Dec 2010

2
PETABYTES
Average monthly traffic on KAREN, Jun–Sep 2010

150
SITES
On-net KAREN Member locations

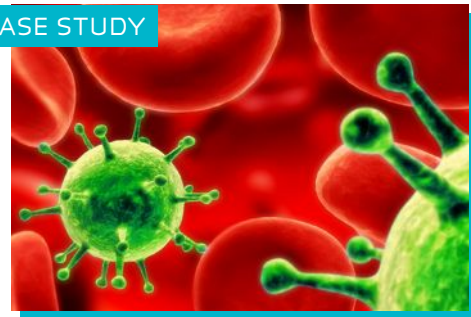
99.99
%
AVAILABILITY
Average availability of KAREN's national network for 2010

17
INTERNATIONAL PEERINGS
Peerings at Sydney and Los Angeles linking us to 100 R&E networks worldwide

23
POPS
KAREN points of presence around New Zealand

3,531
CALLS
Member meetings on the KAREN Video Conferencing Service

CASE STUDY



"KAREN delivers experts right into the school for a superior e-learning experience"

GROWING THE NEXT GENERATION OF SCIENTISTS

CASE STUDY



"Better health-care and healthier communities are possible with KAREN"

TAILOR-MADE HEALTHCARE

CASE STUDY



"Over KAREN we can quickly collect the global information we need to predict how tsunami will strike NZ's coastline"

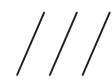
TSUNAMI: IMPROVING THE ODDS

CASE STUDY



"Lightning data is shared instantaneously over KAREN with the world's space and climate scientists"

LIGHTING OUR ATMOSPHERE



LIGHTING THE FUTURE

The future we envisage for REANNZ is a bright one.

We are planning a future where REANNZ is able to exploit the economic benefits of dark fibre, as other R&E networks have.

Network traffic on KAREN increased by 130% between June 2009 and September 2010 – from 1 Petabyte to over 2 Petabytes per month. R&E networks around the world are experiencing similar exponential traffic growth, with average traffic volume doubling every 18-24 months.

Looking forward, if we continue to buy bandwidth services from suppliers, the cost in 2020 will be up to four times higher than a scenario where KAREN secures access to dark fibre.

We anticipate that moving KAREN to a dark fibre-based infrastructure will ensure KAREN can continue to offer leading-edge and non-standard network services within a constrained cost base.

Having access to the lowest levels of a network, will also allow us to customise the design of the network to suit the specific needs of our community and deliver the services no one else can.

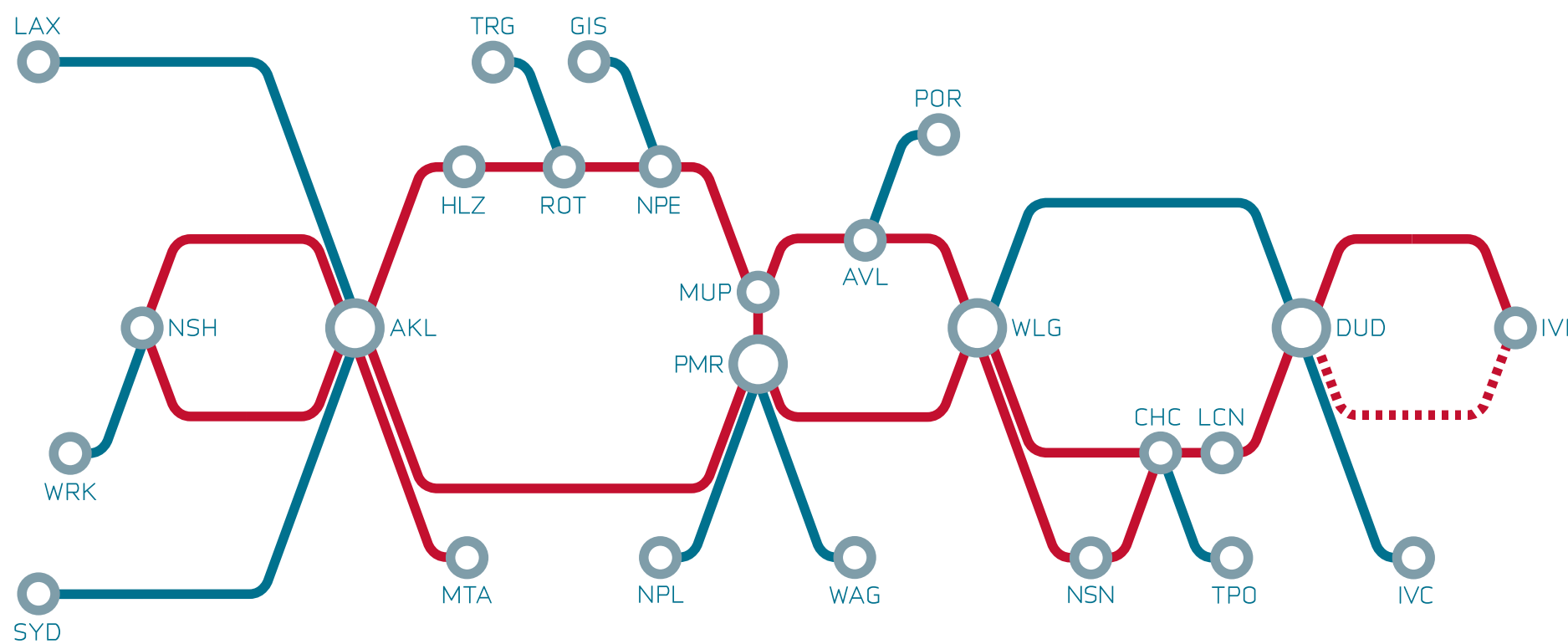
No small effort will be required from REANNZ to design and build this network revolution. That is why we are starting the planning process now. We look forward to exploring this opportunity soon.



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REANNZ

RESEARCH AND EDUCATION
ADVANCED NETWORK
NEW ZEALAND



2011

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