

Overview of the TransLight / Pacific Wave IRNC Project

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(with a lot of help from my friends)

TL/PW Primary Objectives

- Provide full domestic support for AARNET's two 10Gbps circuits from Australia to Hawaii (including Mauna Kea) to the West Coast
- Assist the Pacific Wave distributed exchange in supporting the numerous additional international R&E circuits that terminate at West Coast locations
- Coordinate with IRNC partners to ensure network availability and availability of new services as needed and funded, including standardized network monitoring infrastructure and dynamic circuit services
- Install and maintain new international links, including emerging links from Pacific Islands, and bandwidth upgrades to existing links as funding and feasibility permit

Partners

- PI : David Lassner, University of Hawaii
- Co-PIs : Ron Johnson & Ed Lazowska, PNWGP & UW
Jim Dolgonas, CENIC
- AARNet & many international network collaborators

Asia-Pacific Backbone Topology by funding source



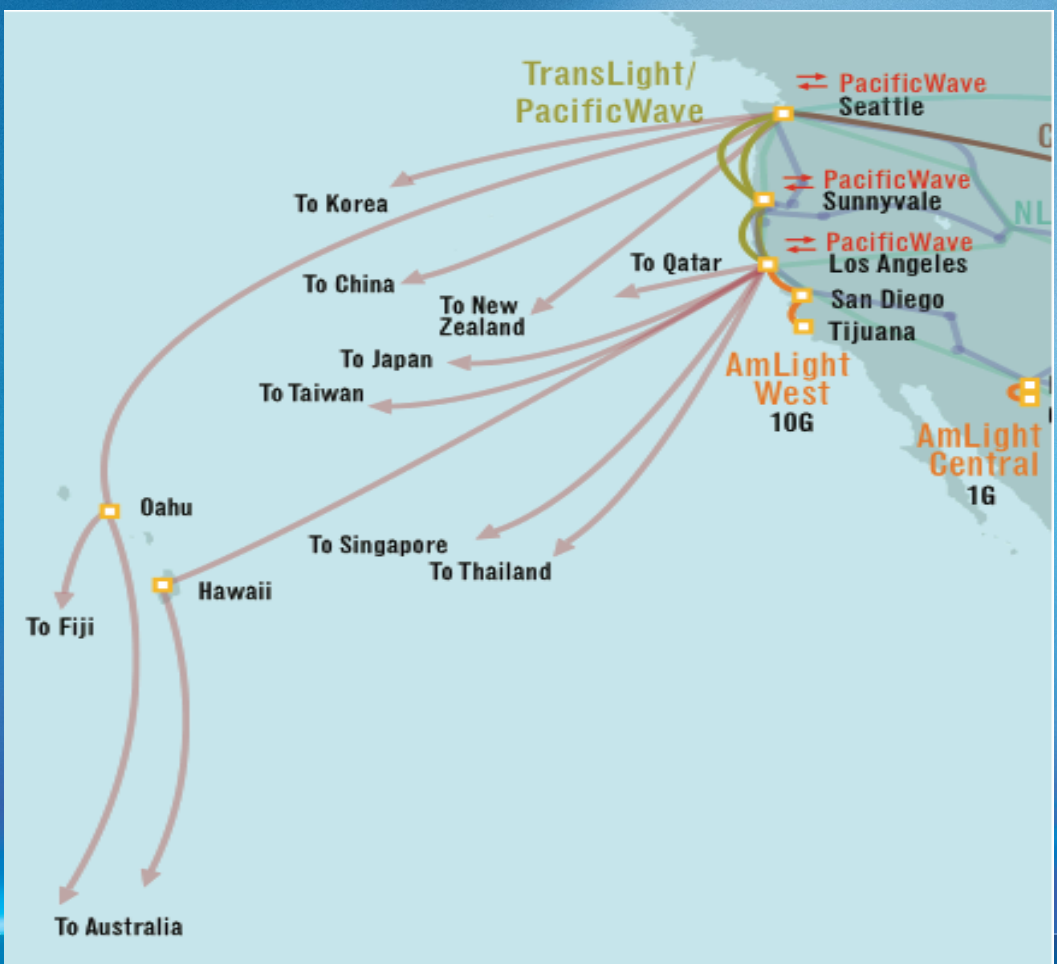
Asia Pacific
United States
Europe

As of September 4th 2009

TL/PW Connectivity

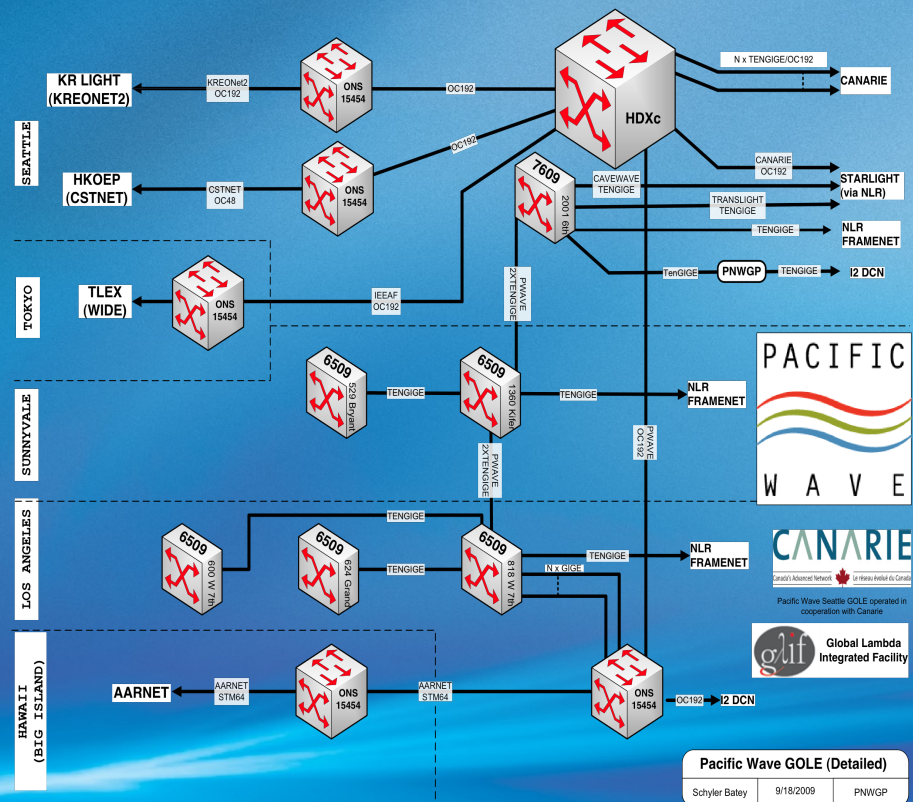
AARNet National Network

- KEY**
- Other RSE POPs
 - Other RSE Networks
 - AARNet POP
 - < 155Mbps
 - < 622Mbps
 - < 1Gbps
 - < 2.5Gbps
 - < 10Gbps

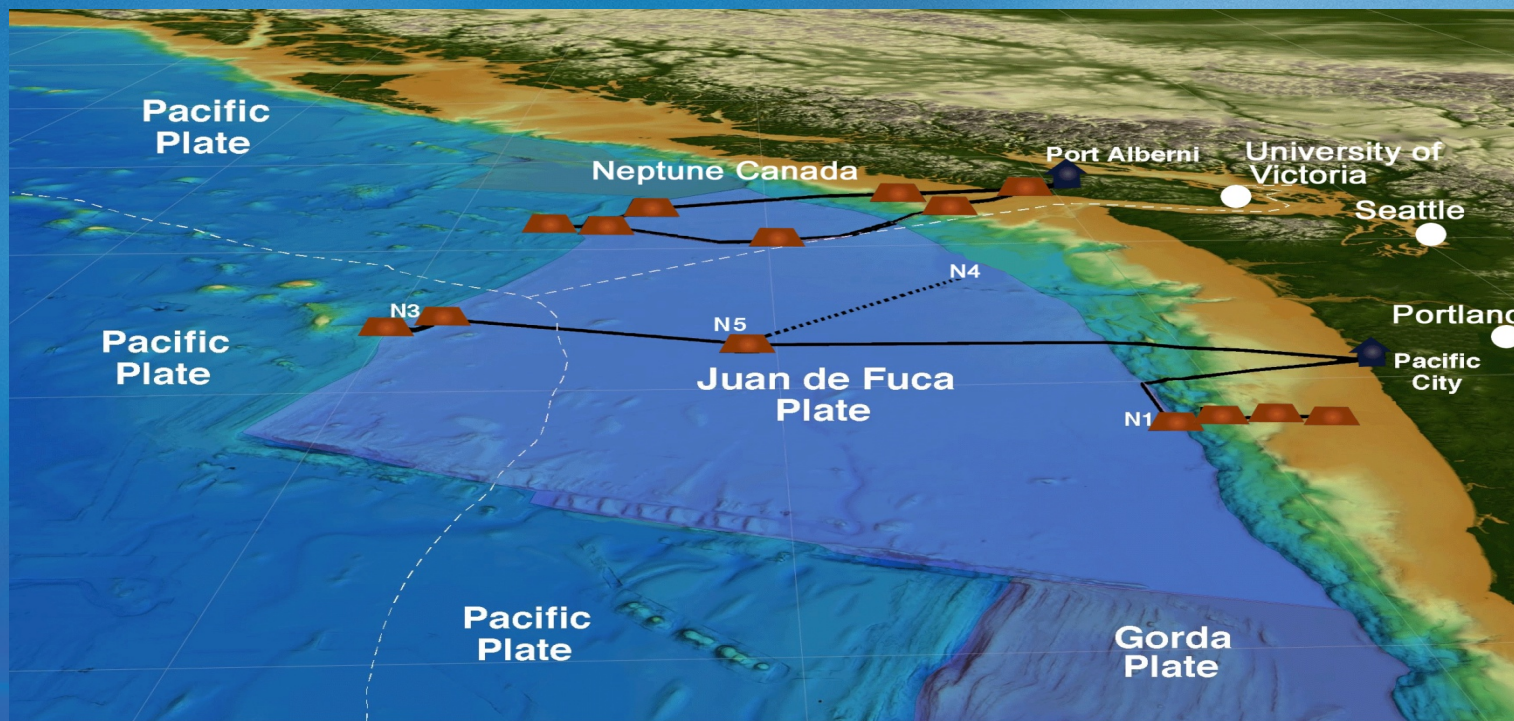


Pacific Wave: Flexible International Connectivity

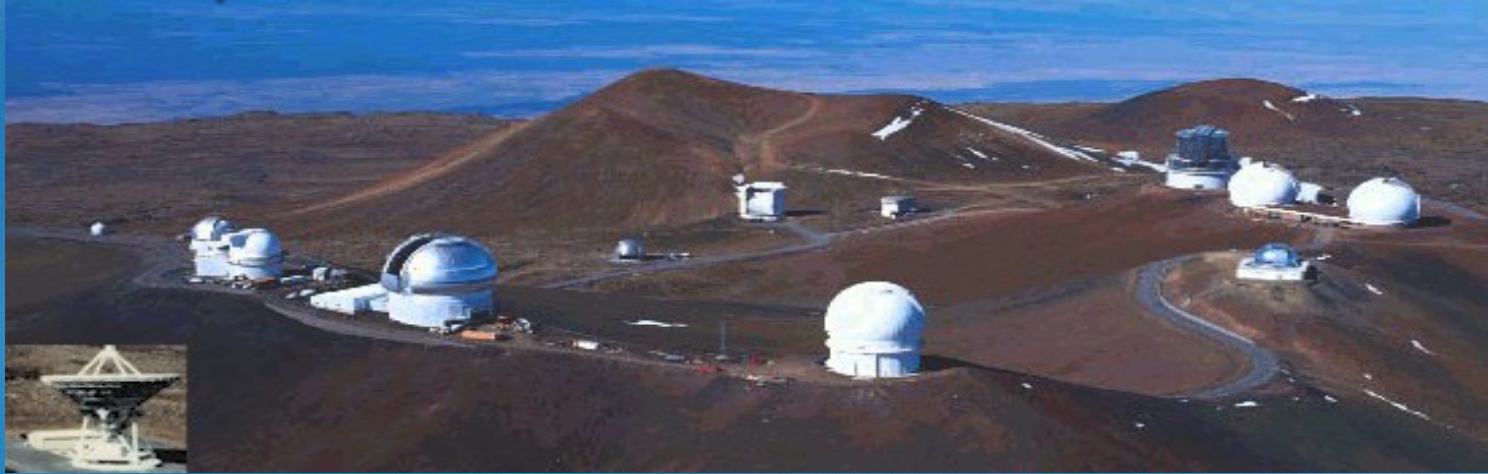
- Pacific Wave is a joint project between CENIC and the Pacific Northwest Gigapop (PNWGP)
- PWave pioneered a novel architecture, an open distributed exchange
- Participants at any PWave connection point (LA, Sunnyvale, Seattle) can interconnect in multiple transparent ways of their own choosing using
- PWave sites support: layer 2 interconnect (private VLANs); layer 3 peering over layer 2 infrastructure (VLANs); layer 2 peering over a layer 1.5 interconnect (SONET/SDH, Internet2/DCN)



Tectonic Plate Scale Ocean Observatories in N.E. Pacific: US OOI "RSN" + "NEPTUNE CANADA"



A Unique Hawaii Role in International Science & Data



Looking Ahead

- More 10-Gbps connections expected
- Dynamic provisioning of capacity
- Continuing focus on R&E applications, end-to-end performance, service to research communities
- Integration of 40- and 100-Gbps technologies as appropriate
- Connecting the Pacific Islands

Pacific Context

- The Pacific is one of the last regions of the world with no initiative to develop a regional Research & Education Network
- Historically, infrastructure limitations have made serious networking infeasible
- New network infrastructure being implemented over the next two years will provide the Pacific with the first real opportunity to join the global R&E Network community



Possibilities

Univ of Hawaii &
PWave
via Honotua

Berkeley, CENIC,
U.S. Stakeholders

AARNet via
Gondwana

Univ of
French Polynesia
(Tahiti)

Renater
(France)

Univ of
New Caledonia

Gump Station
(Moorea)



Benefits of R&E Networking in the Pacific

- Expand distance learning opportunities and improve educational capacity: Business, Health Care, Education, Science / Technology / Engineering / Math (STEM)...
- Develop workforce for local telecommunications and ICT industries
- Enable economic development through new information- and communications-based opportunities
- Build community demand for higher speed broadband and sponsorship for higher capacity infrastructure
- Support strategic research
 - environmental studies, climate change & sea level rise, island sustainability, cultural preservation, agriculture, public health, coral reef, disaster management, fisheries...

Questions? Suggestions? Ideas?

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