

IRNC: Backbone: SXTransPORT Pacific Islands
Research and Education Network (PIREN)
David Lassner, University of Hawai'i

GLIF Americas Community Meeting
Sept. 28, 2016



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Project Goals 2016

- Provide full domestic support for AARNET's current 2x40Gbps R&E circuits from Australia and New Zealand to the U.S., via Hawai'i (including Mauna Kea) with upgrade to 2x100Gbps in 2016
- Continue to foster research and education (R&E) network capacity to interconnect Pacific Islands with each other and the global R&E network fabric by building on previous projects and relationships.
- Opportunistically connect Mauna Kea and Haleakala, sites of major international astronomy observatories.
- Collaborate and cooperate with IRNC measurement, NOC, Engagement, and Open Exchange awardees



Key Partners

AARNet (Australia's NREN)

REANNZ (New Zealand's NREN)

Pacific Wave (U.S. West Coast Distributed Open Exchange)

NSRC (Engagement, Development, Training)



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As of August 2016, both paths of SX-TransPORT have been upgraded from 40Gbps to 100Gbps

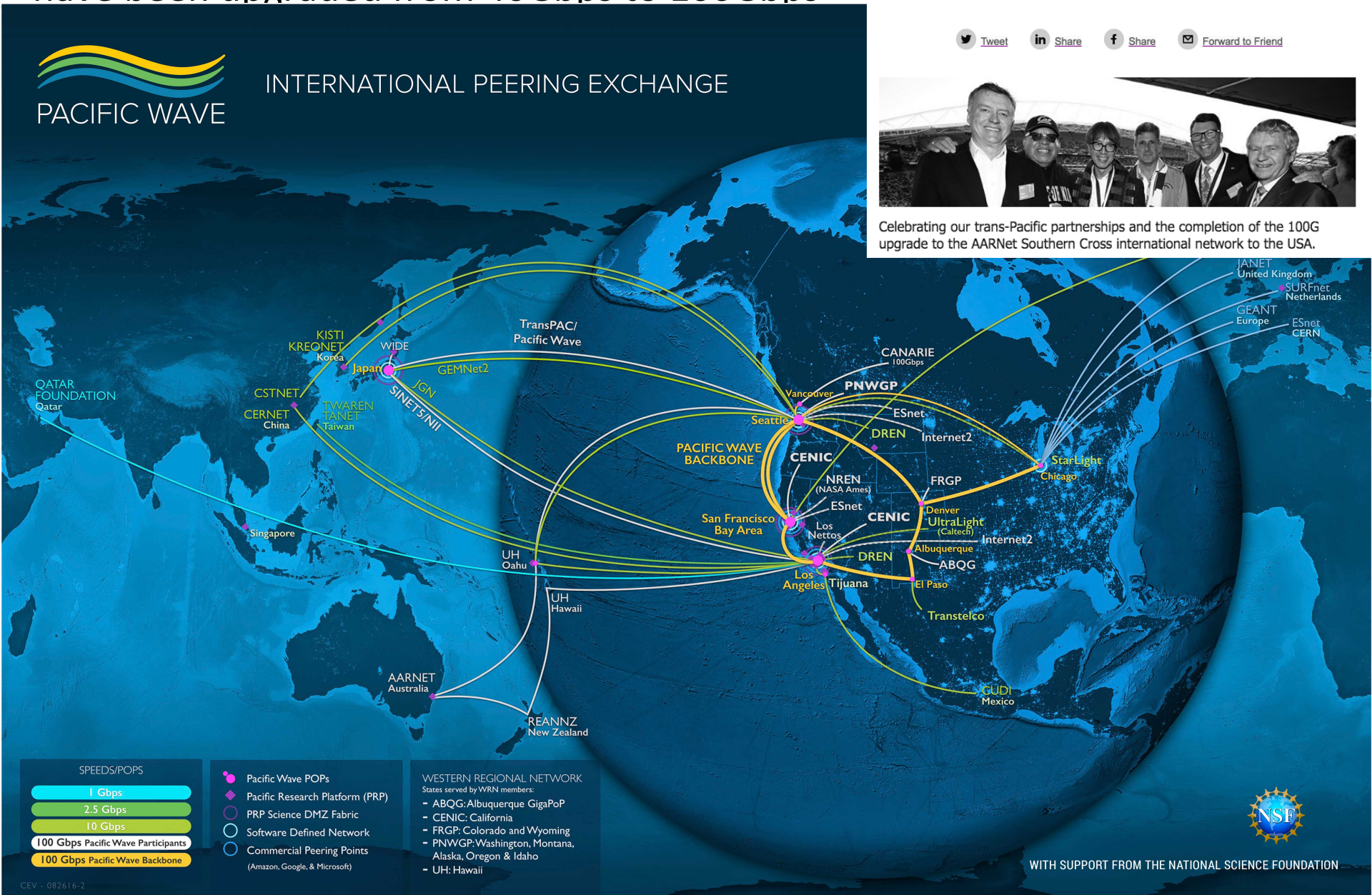


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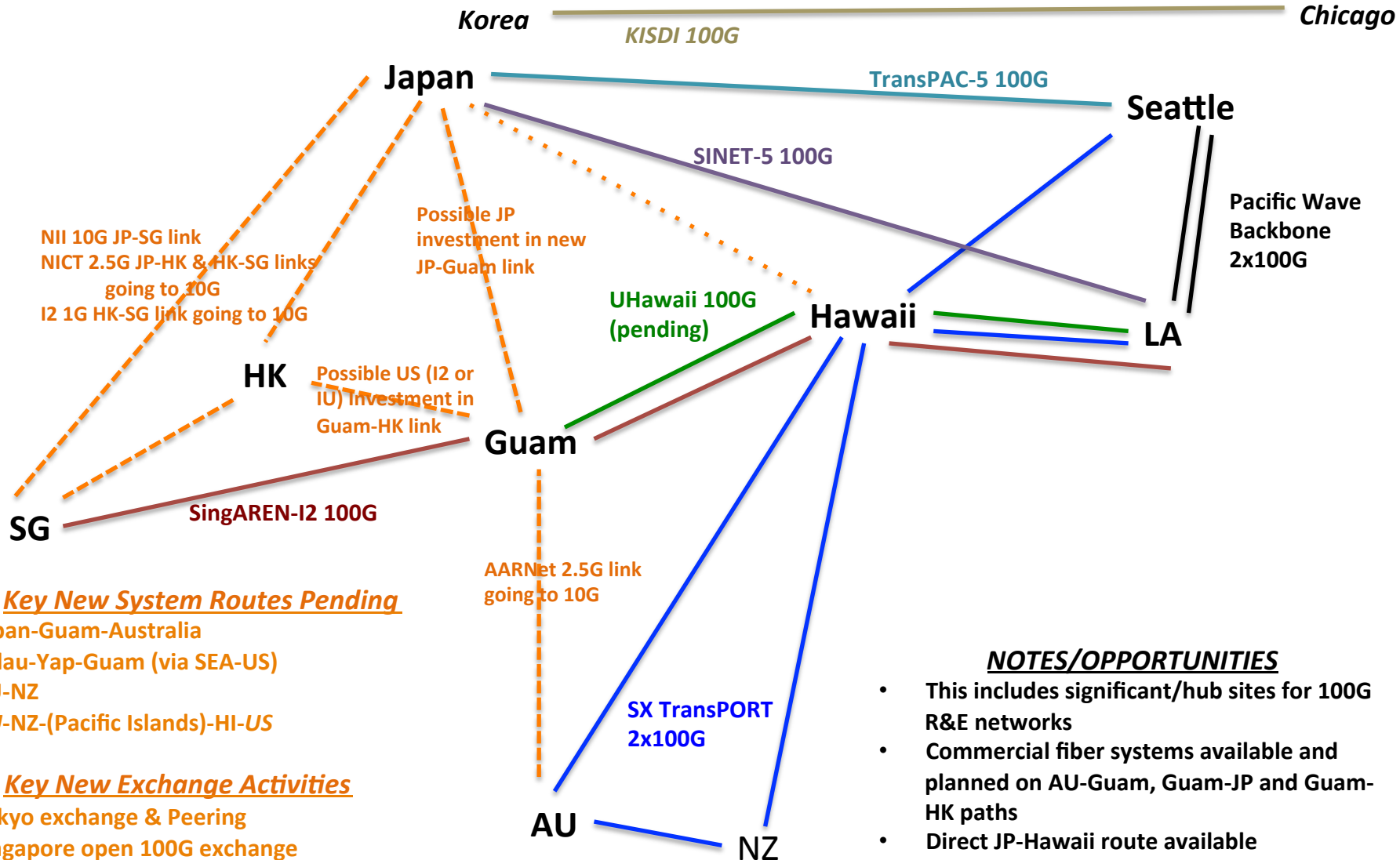
Celebrating our trans-Pacific partnerships and the completion of the 100G upgrade to the AARNet Southern Cross international network to the USA.



WITH SUPPORT FROM THE NATIONAL SCIENCE FOUNDATION

Work is underway on a Guam R&E Exchange with 100G links to Singapore, California, Hawaii, and Australia and possible extension to Hong Kong and Japan.

Notional High Speed Coherent Asia-Pacific R&E Architecture



Key New System Routes Pending

- Japan-Guam-Australia
- Palau-Yap-Guam (via SEA-US)
- AU-NZ
- AU-NZ-(Pacific Islands)-HI-US

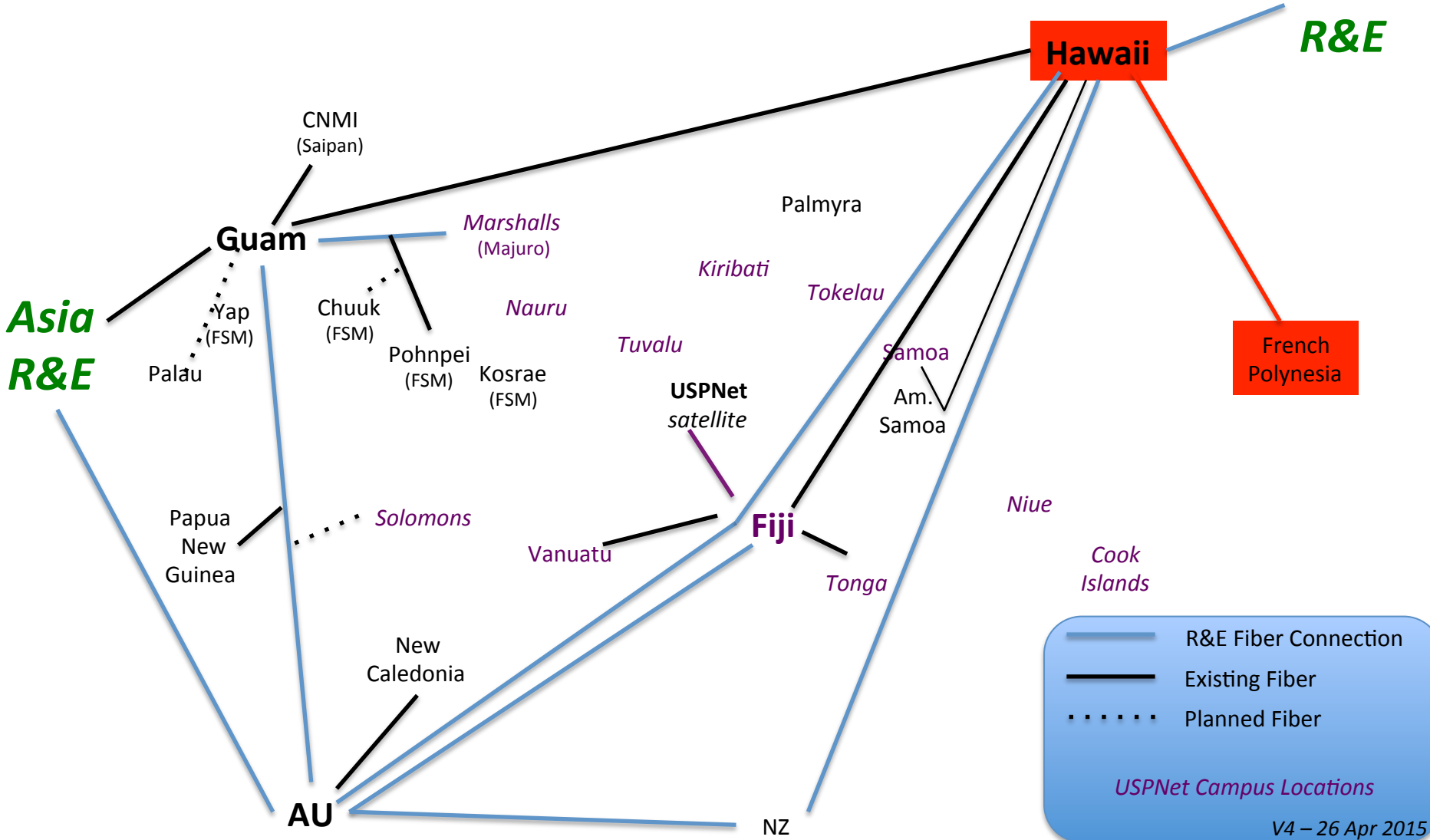
Key New Exchange Activities

- Tokyo exchange & Peering
- Singapore open 100G exchange
- Hong Kong exchange

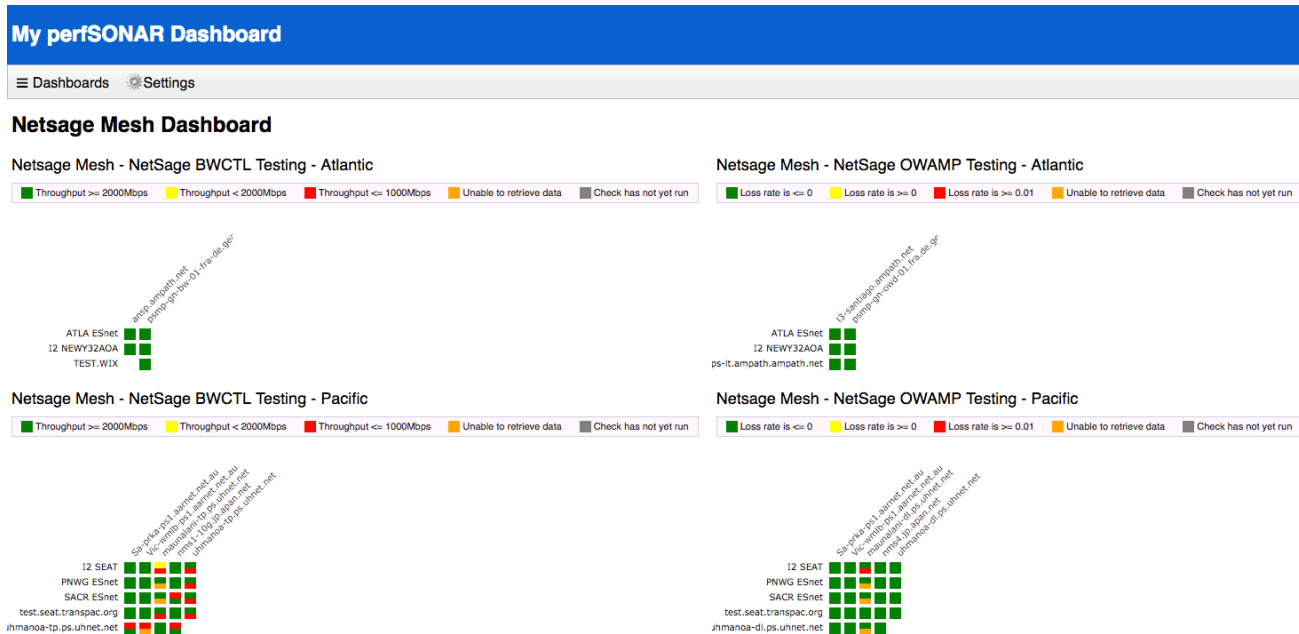
NOTES/OPPORTUNITIES

- This includes significant/hub sites for 100G R&E networks
- Commercial fiber systems available and planned on AU-Guam, Guam-JP and Guam-HK paths
- Direct JP-Hawaii route available

Other work in the Pacific proceeds slowly as infrastructure, funding governments and telcos permit. Stakeholders in French Polynesia, including U.S. and French participants, have signed an MOU to create PolyREN using the existing direct fiber connection to Hawaii.



IRNC – Measurement efforts



- NetSAGE
 - New NetSAGE MaDDash board deployed to improve monitoring. Improvements in both TransPAC and Hawai'i pathways resolved.
- perfSONAR
 - Number of perfSONAR nodes has proliferated to 1500 – 1600 public facing nodes. Many communities are using the MaDDash tool for monitoring. CENIC, Pacific WAVE, NetSAGE
- NOC collaborations
 - Data collection ongoing at the IRNC NOC site after initial demonstrations of the methods, tools and visualizations that are used. Discussion centered on anonymous netflow data. Data collected includes

Other activities

- Ongoing discussions with observatories on Hawai'i Island (Maunakea) and Maui (Haleakala) to understand future network requirements as new instruments come online. This will drive timing and intra-Hawai'i strategies for 100G upgrades that leverage 100G Trans-Pacific capacity.
- NSRC with UH assembled a July 2016 networking training workshop for Pacific Islanders and a campus network redesign engagement at the University of Guam.
- Meetings between UH and UoG researchers identified research efforts in need of network upgrades and collaboration opportunities



NRSC Workshop – Campus Network Design

University of Guam July 25- 29, 2016

- Participants/Trainers – NRSC and UH
 - Dale Smith, Hervey Allen, Philip Smith, David Teach, Alan Whinery
- Workshop participants:
- From Guam
 - Guam Department of Education – 2
 - Guam Community College – 2
 - University of Guam – 14
 - Docomo Pacific – 1
- Other islands
 - College of Micronesia-FSM – 1
 - College of the Marshall Islands – 2
 - Northern Marianas College – 3
 - Palau Community College – 2
 - Palau Ministry of Education – 3



NRSC Workshop UoG 2016



30 participants from Guam, Micronesia, Marshall Islands, Northern Marianas and Palau

President Robert Underwood welcomes the workshop participants.



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Ongoing UoG/UH collaborations

- Guam R&E Exchange
 - UH 100G IRU on SEA-US submarine cable LA-HNL-Guam RFS 2017
 - interconnect current and planned long haul links from AU, JP, SG and US
 - support Guam R&E networking
 - provide broad support for Pacific Island communities connectivity
- UH/NRSC/CENIC partnership with UoG on CC* Network Design Proposal – submitted Aug. 2016
- Mailing list created for Pacific Island R&E discussions:
 - pac-ren@lists.hawaii.edu

