



Technology and Innovation

PRESS RELEASE

Media Contact:

Heidi Alvarez, Director

Center for Internet Augmented Research and Assessment (CIARA)

Florida International University

305-348-2006

heidi@fiu.edu

100Gigabit Undersea Network Innovation Bridges Education and Science Opportunities between the United States and Latin America

OpenWave Made Possible by NSF, the Brazilian Ministry of Science, Technology and Innovation, the São Paulo State Research Foundation, and Florida International University

Miami, Florida, November 18, 2013 –Florida International University’s Center for Internet Augmented Research and Assessment (CIARA) is pleased to announce OpenWave, a breakthrough undertaking which connects the US to Brazil via an experimental (“alien”) 100 Gigabits/second wave (optical transmission channel) by means of optical hardware that has never before been field tested over the distances involved. OpenWave will use an already operating international undersea cable system to bridge the route between Miami, FL, and São Paulo, Brazil, including a 5600km submarine link between St. Croix, U.S. Virgin Islands, and Fortaleza, Brazil.

The 100G optical equipment has been tested with simulated distances of 5600km in a laboratory setting in Campinas, São Paulo state, Brazil, which has been in operation for over ten years. OpenWave will use this cable system to provide high-capacity, high-quality IP and circuit-oriented connections (hybrid network services) between research and education networks in the U.S. and the RNP and ANSP networks in Brazil, to support large-scale international e-Science (“Big Science”) applications.

By determining how to operate 100G effectively over a 5600km link, OpenWave will bring a new resource to science and education by transferring the understanding of this new technology to the commercial space, providing a never-before opportunity for U.S. computer science and engineering graduate students to be on the ground floor of international technology innovation. The end result will be to enable a future of submarine connectivity using the same capacities as used in current terrestrial, or land-based, data transport. OpenWave represents critical research to enable sustainable, investigator-led, intercontinental 100G linkages, potentially sparking a new approach to 100Gb/s undersea, intercontinental networking, and preparing for future science demands, such as the Large Synoptic Survey Telescope (LSST), which is expected to push to the limits of 100Gb/s network connections bridging the southern and northern hemispheres.

This upgrade in connectivity between the research and education networks in the U.S. and Brazil is a part of the Americas Lightpaths project, or AmLight. AmLight will experimentally deploy the OpenWave 100G of international connectivity with industry partners, and then develop the infrastructure to ensure this connectivity is effectively integrated into the fabric of AmLight - thereby extending the frontier of today’s cyberinfrastructure.

OpenWave proposes a coordinated investment and leveraging of AmLight resources from the Federal Government of Brazil, the São Paulo State Research Foundation and the U.S. National Science Foundation (NSF). This innovation throughout the Americas is made possible through the support of a NSF supplement to the AmLight project, led by Principal Investigator Dr. Julio E. Ibarra of Florida International University. NSF support covers six months of lease circuit time for experimentation and staff support for research during the twenty-month project, totaling \$1.7M USD.

Additionally, building on its long-term support of AmLight, the undersea cable operator, Latin American Nautilus, will specifically enable the project by making available the requisite optical spectrum and technical engineers for deployment and testing. Padtec, a Brazilian optical equipment manufacturer, is providing the novel 100G optical equipment and experimental tuning, along with deployment of the 100G "alien" optical wave, to enable this ground-breaking advance.

OpenWave is poised to succeed because of the consortium's expertise and long track record of international cooperation and previous project successes in deploying and operating advanced networks. This new network resource will foster a far-reaching enabling of multi-domain research and education throughout the Western Hemisphere. The results will further benefit the future needs for high-speed international connectivity by documenting both a technical process for insertion of an "alien" wave on a fully operational cable system. Moreover, it will underscore that research partnerships are possible between cable owners, operators, and the research community, pushing the boundaries of optical networking for research in harmony with commercial environments.

About CIARA: Florida International University's Center for Internet Augmented Research and Assessment (CIARA) within the Division of IT has developed an international, high-performance research connection point in Miami, Florida, called AMPATH (AMericasPATH; www.ampath.fiu.edu). AMPATH extends participation to underrepresented groups in Latin America and the Caribbean, in science and engineering research and education through the use of high-performance network connections.

About Amlight: AMPATH, the international research and education International Exchange Point in Miami, is home to the Americas Lightpaths (AmLight) high-performance network links connecting Latin America to the U.S., funded by the National Science Foundation (NSF), award #OCI-0963053; the Brazilian Education and Research Network - RNP (under a network management contract to the Brazilian Ministry of Science, Technology and Innovation - MCTI); and the Academic Network of Sao Paulo - ANSP (FAPESP award #2003/13708-0). AmLight aims to enhance science research and education in the Americas by interconnecting key points of aggregation, providing operation of production infrastructure, engaging U.S. and western hemisphere science and engineering research and education communities, creating an open instrument for collaboration, and maximizing benefits of all investors.