AMLIGHT Network Upgrade adds Software-Defined Networking capability between the U.S. and South America

The AMLIGHT collaboration includes: The Academic Network or Sao Paulo (ANSP), The National Network of Brazil (RNP), The National Network of Chile (REUNA), The Regional Network for Latin America (CLARA), the Association of Universities for Research in Astronomy (AURA), and The Center for Internet Augmented Research and Assessment (CIARA) at Florida International University (FIU).

Miami, Florida, December 5, 2014 – Florida International University's Center for Internet Augmented Research and Assessment (CIARA) is pleased to announce an upgrade to the AMLIGHT network that creates the first Software-Defined Network to interconnect South America to the U.S., for research and education.

The AMLIGHT collaboration has evolved to accommodate new capabilities to continually support research and collaboration requirements between South America and the U.S. But, due to technology and network protocols' limitations, researchers were not able use AMLIGHT as a real platform for innovation, only as a transit network. With the deployment of Openflow, in August 2014, AMLIGHT became a Software-Defined Network. As a result, U.S. - South American researchers and their global collaborators can now benefit from improved network operations and support for programmability. With the improvement of network operations, provisioning activities are taking seconds to be accomplished, instead of days using the old-fashioned legacy approach. With network programmability, researchers can develop network-aware applications with access to AMLIGHT's network devices and provision the network accordingly to their needs. Voice over IP, big data, and video streaming applications are now able to provision their circuits on top of AMLIGHT, following specific network requirements such as low delay, fewer hops, and fewer packet errors.

During 2014, AMLIGHT's Software-Defined Network was tested during two international workshops: Internet2 Technology Exchange in Indianapolis and SuperComputing (SC14) in New Orleans. At the Internet2 Technology Exchange, AMLIGHT participated in a multi-domain network virtualization demonstration jointly with Internet2, University of Utah, and MAX GIGAPOP. This network virtualization demonstration showed how researchers and network operators could benefit from multiple virtualized networks to have a single multi-domain platform for innovation and experimentation under the end user's administration to achieve specific research requirements.

At SuperComputing 2014, AMLIGHT links provided support for big data demonstrations, carrying up to 50Gbps of traffic between SPRACE laboratory at the State University of Sao Paulo, Brazil and the Caltech booth at the SC14 exhibit floor. All traffic for the demonstration was transported on top of the new AMLIGHT network. The figure below represents all network traffic carried by the AMLIGHT SDN on November 17th for the SC14 disk-to-disk demonstration.
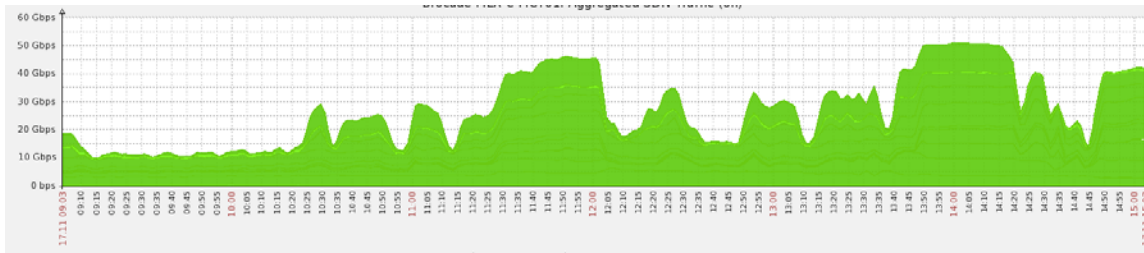
To better support collaboration, AMLIGHT has developed a web site (www.sdn.amlight.net) to share its experience with SDN/Openflow deployments and published documentation and instructions for everyone interested in using AMLIGHT as a real platform for innovation.

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 (Americas Pathway; 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: Americas Lightpaths (AMLIGHT) operates high-performance network links connecting Latin America to the U.S., funded by the National Science Foundation (NSF), awards #ACI-0963053, ACI-1341895, and ACI-1140833; 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. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.