TNC18 Single Presentation Submission

Title:
In and Out of Africa: Improving Routing for International R and E Traffic

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Presenter's Bio:
Edward Moynihan joined International Networks@IU in 2017 as Principal Network Engagement Analyst. In this role, Edward supports the NEAAR and TransPac projects by working directly with scientists and researchers to help achieve better international file-transfer performance and to increase utilization of IU's international research networking systems. He also works closely with IN@IU's international partners to promote the use of international research networking resources and to deliver enhanced functionality to research collaborators and other R and E networking stakeholders. Prior to joining the IN@IU team, Edward led Global Programs at Internet2 and served as Co-Secretary of the Global Research and Education Networking CEO Forum.
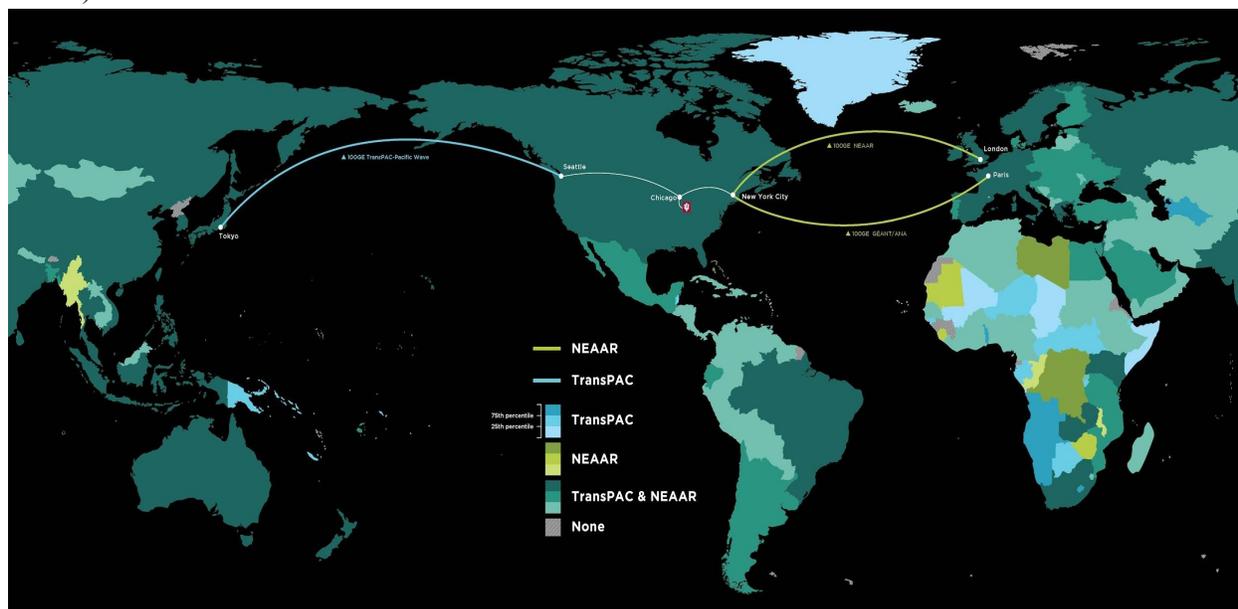
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International, Users, Routing, Collaboration, Performance

Abstract:
The Networks for European, American, and African Research (NEAAR) collaboration, led by Indiana University (IU) and GEANT in partnership with the UbuntuNet Alliance, WACREN, ASREN, SANReN, and TENET, is building a dynamic platform for connecting researchers in the US with their counterparts in Europe, Africa, and the Middle East. NEAAR, funded by the US National Science Foundation, is providing bandwidth, targeted education and training, and pro-active end-user engagement to help improve connectivity for existing science collaborations while also enabling new collaborations to take advantage of the growing global research and education networking infrastructure.

Since launching in late 2016, the NEAAR partners have made significant progress towards achieving the project's goals. A new 100G circuit between New York City and London has been installed, adding 100G of transatlantic connectivity and increased resiliency to the Advanced North Atlantic (ANA) collaboration. The NEAAR partners have also started working to deploy an Open Exchange Point in West Africa that will enable additional peering and resilience for connecting RENs.

With robust transatlantic connectivity now in place and increased regional connectivity for Africa, via the AfricaConnect2 project, planned for 2018, the NEAAR partners have begun an effort to better understand and improve performance for international collaborations working in Africa. As part of this effort, the International Networks@IU team analyzed flow data for both the NEAAR 100G transatlantic circuit and for the TransPAC 100G transpacific circuit (also owned and operated by IU) to determine which countries worldwide were sending or receiving data on IU's circuits. The results were surprising (see map) and raise many questions about current routing policies for research and education traffic in and out of Africa (and around the world):

Why do some countries in Africa show heavy use of the transpacific circuit and not the transatlantic circuit? Similarly, why do countries in Asia show more use of the transatlantic circuit and not the transpacific circuit? Why do certain countries show up at all and others do not? This talk will present the results of our research and start a discussion on current and future routing policies for African research and education traffic. Our goal is to create a sustainable dialogue between partners that will help our community address: What do current routing policies look like? Can we better understand why the current policies are in place? What, if anything, can we do as a community to potentially improve routing for research and education traffic in and out of Africa?