Applying NGI Technologies to Internet2's Global Exchange Points and International Links

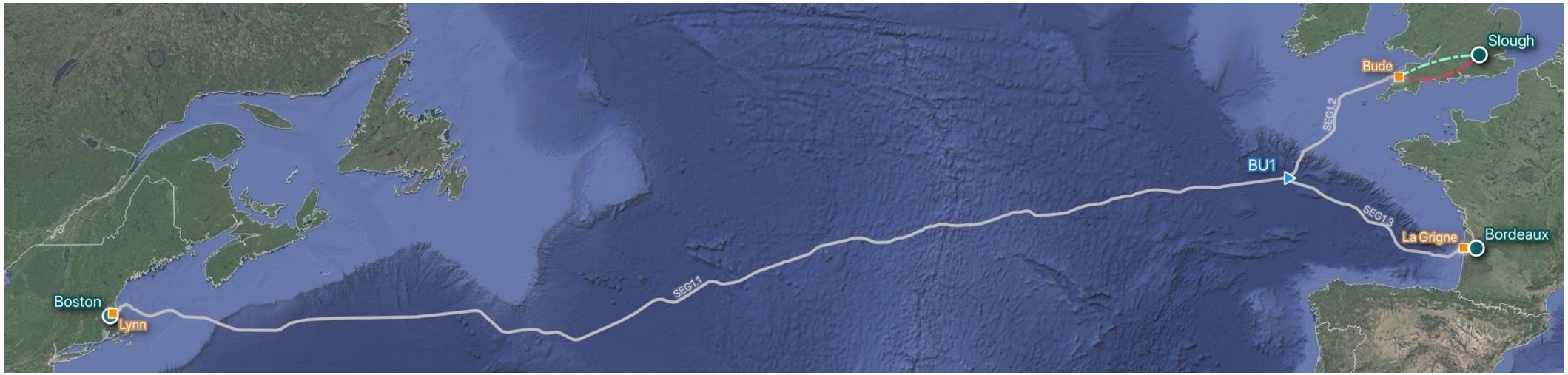
Christian Todorov
Director, Business Development & International Engagement

FIRST 400G TRANSOCEANIC LINKS

400G Transatlantic Capacity Additions/Upgrades on Amitié cable

- 1 x 400G for Internet2/CANARIE
- 2 x 400G for ESnet
- **Mid 2023** (due to construction of both wet-plant and terrestrial)
- Add Boston as open exchange point

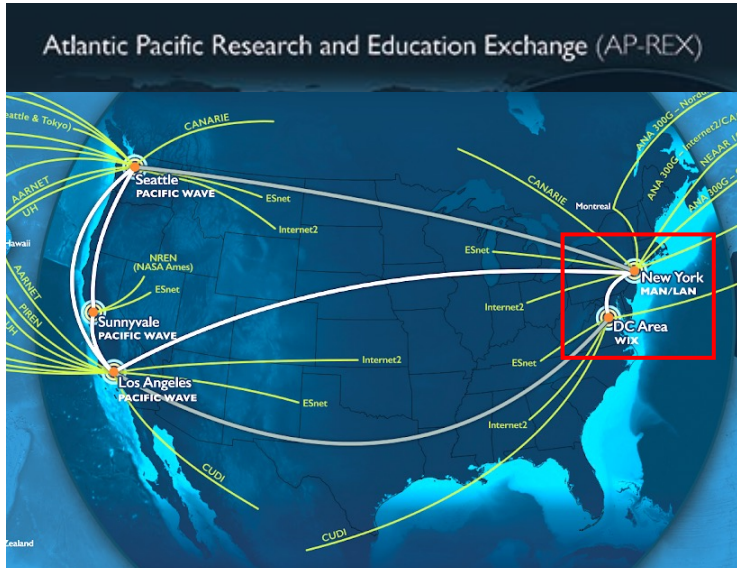
- Exploring second 400G link into New York, Washington or other east-coast city TBD

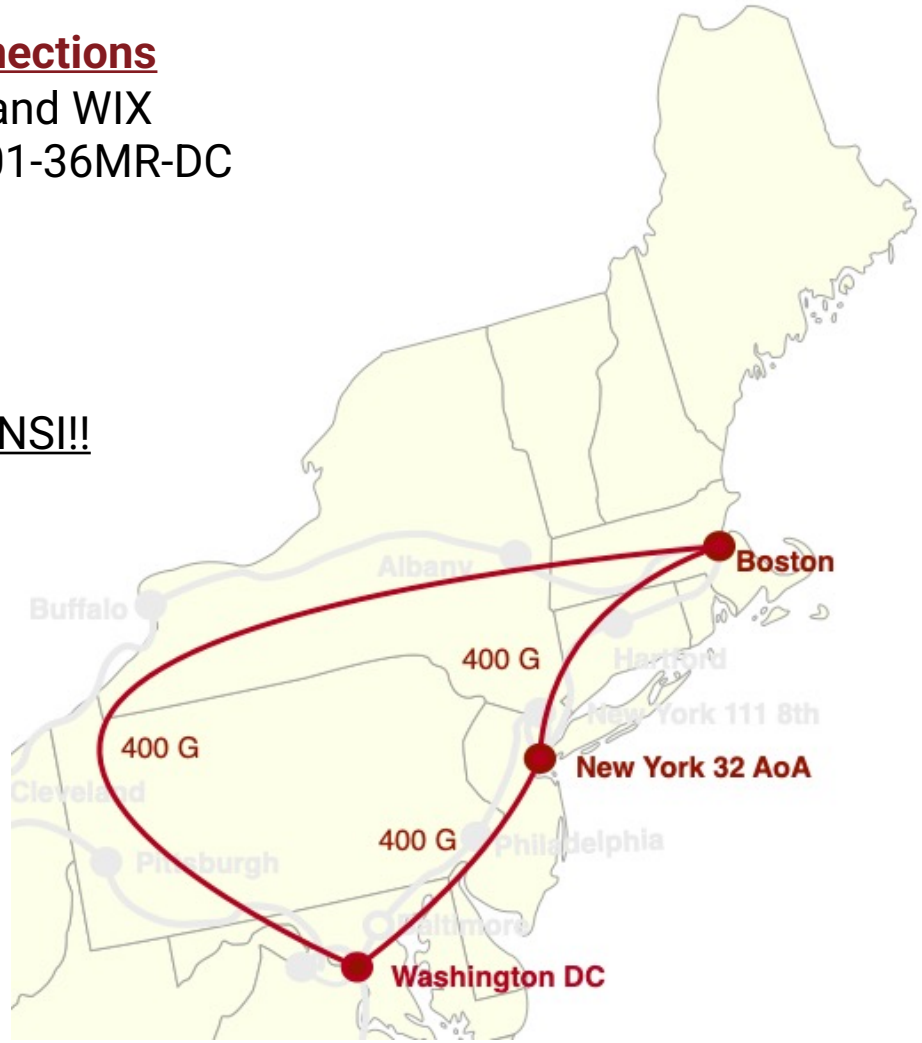


400G GXPs & INTERCONNECTIONS in 2023

Building 400G-enabled Exchange Points and Supporting Interconnections

- Hardware improvements to support 400G, including MAN/LAN and WIX
  - Evaluating Cisco 8201-24H8FH (gen 2) or Juniper PTX10001-36MR-DC
  - Equipment lead times are a major deciding factor
- Restore dedicated links between other I2 exchange points
- Restore dedicated links to other domestic exchange points
  (including Pacific Wave via AP-REX pilot program)
- Dedicated links are key to providing administrative domains for NSI!!

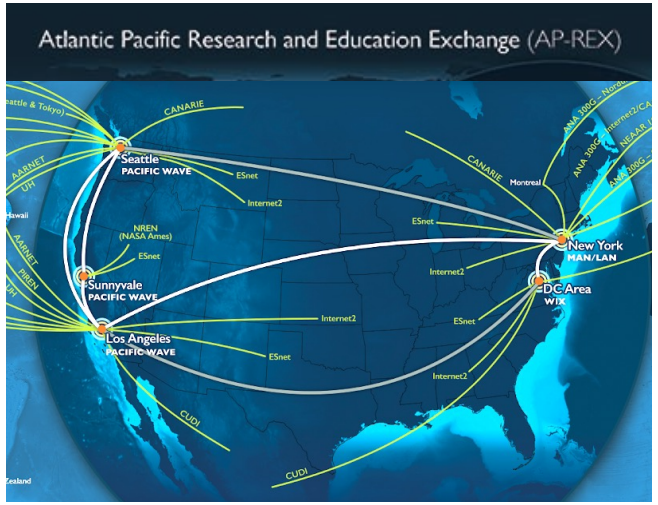




GXP AUTOMATION COMING SOON

Automating and Expanding Exchange Point Functionality

- Protocols – bring up to NGI standards, modernize
  - EVPN VXLAN for L2 services
  - SR MPLS for inter-node connectivity
- NSI support for FABRIC
  - potentially expand to full AutoGOLE/SENSE support on GXPs
- NSO Integration
  - Improved consistency
  - Improved manageability
  - Build service models supporting services on GXPs
  - Integrate NOS models with Internet2's core network models
- NS Console Integration
  - Dashboard and Health Monitoring
  - L2 and L3 service provisioning
  - End to end service monitoring within Console
  - Intend to expand support for pushing data to partners



OPEN SCIENCE GRID DTN

Open National Cyberinfrastructure that allows the federation of CI at all 3,900 accredited degree granting higher education institutions.

- Open Science,
- Open Data
- Open Source
- Open Infrastructure

Internet2 will be hosting 5 additional open science grid caches (domestically) in the network this year.

- Existing Internet2-hosted nodes have high utilization
- Our piece of the national research platform proposal award

Planning pilot node in Amsterdam GXP

- May look for other partners (Guam? Singapore?)

2022
TECHNOLOGY
exchange
DENVER
DECEMBER 5-9
INTERNET2