



AmLight_{EXP}

Americas Lightpaths Express & Protect

AmLight Express and Protect (AmLight-ExP),
AtlanticWave-SDX

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Committee Meeting (SAACC),
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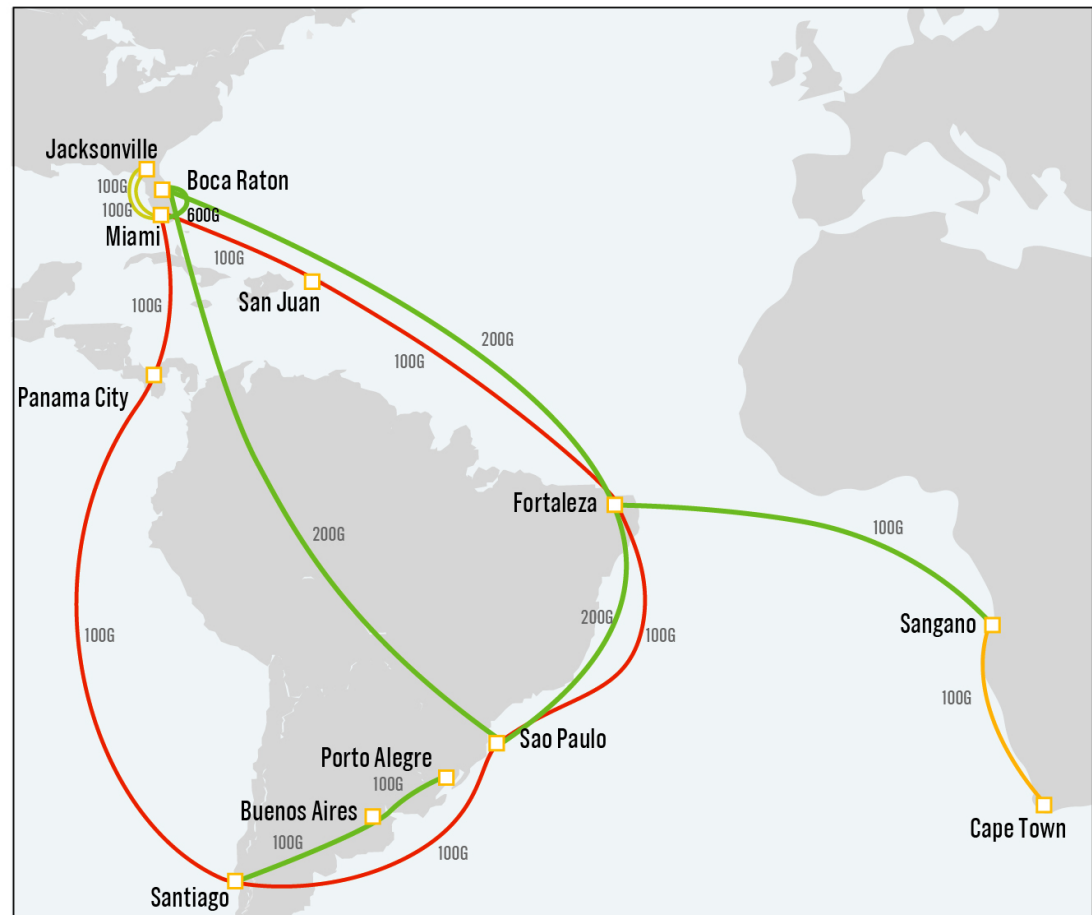
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Architect

Goals for the AmLight-ExP and AtlanticWave-SDX projects

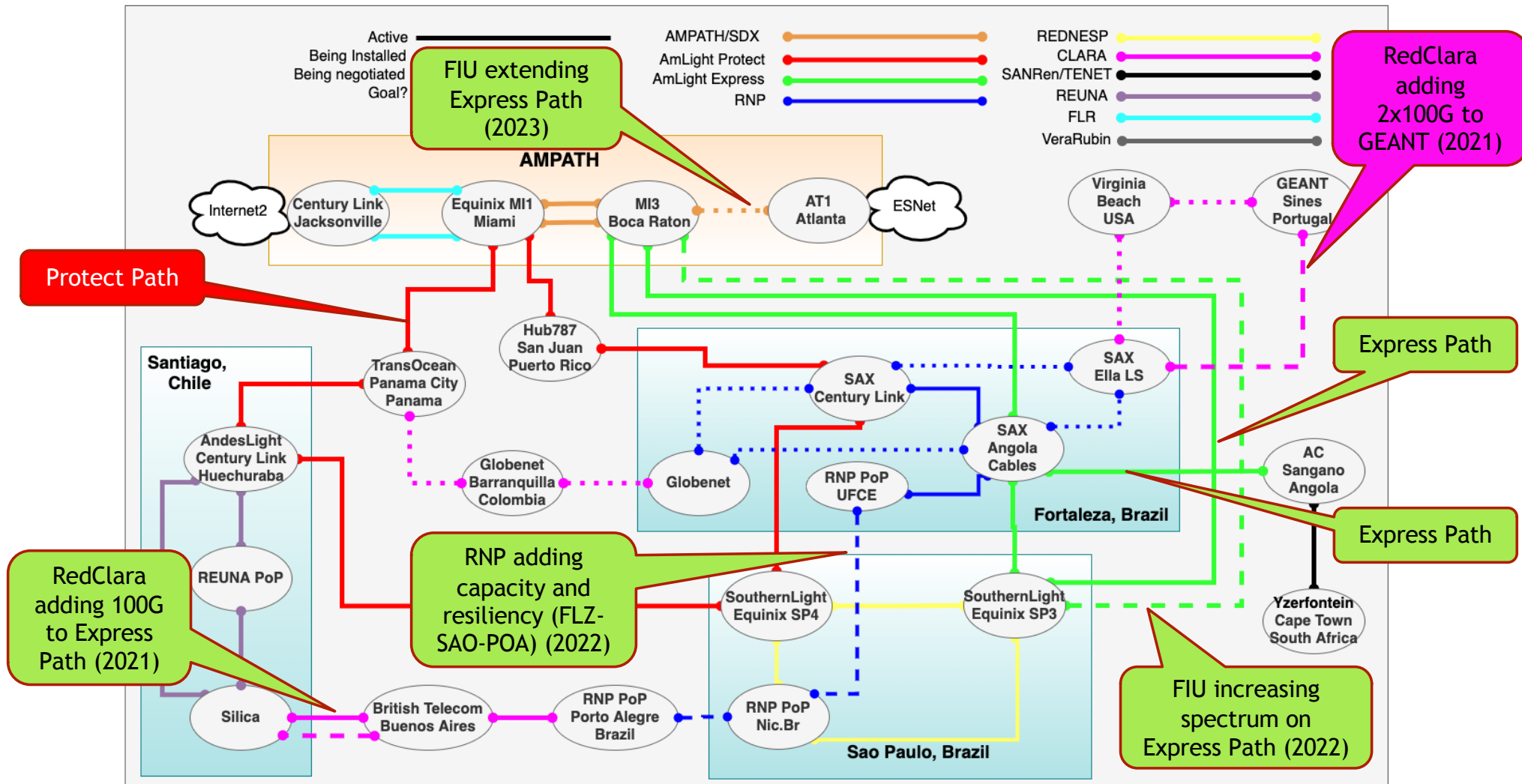
- Major Goal: Improving Resiliency and Increasing Self-Management
- Improving the AmLight-ExP physical network by
 - *Increasing capacity and adding network paths to increase resiliency*
 - *Replacing and refreshing legacy network devices*
- Improving the performance measurement environment by
 - *Adding 10G perfSonar nodes across the AmLight topology*
 - *Adding In-band Network Telemetry for fine-grained real-time network monitoring*
- Increasing self-management of the AmLight-ExP network by
 - *Improving the Software Defined Networking (SDN) infrastructure*
 - *Adding Autonomic Network capabilities at Open Exchange Points (OXP)*

AmLight-ExP 2021 Network Topology

- AmLight Express network (green), 600Gbps in service:
 - 200G Boca Raton to Sao Paulo
 - 200G Boca Raton to Fortaleza
 - 200G Sao Paulo to Fortaleza
 - 100G Boca Raton to Fortaleza to Cape Town
 - 100G Santiago to Porto Alegre (coming soon)
- 100G AmLight Protect ring (solid red): Miami-Fortaleza, Fortaleza-Sao Paulo, Sao Paulo-Santiago, Santiago-Panama, Panama-San Juan, and San Juan-Miami
- Open Exchange Points: Miami, Fortaleza, Sao Paulo, Santiago, Cape Town

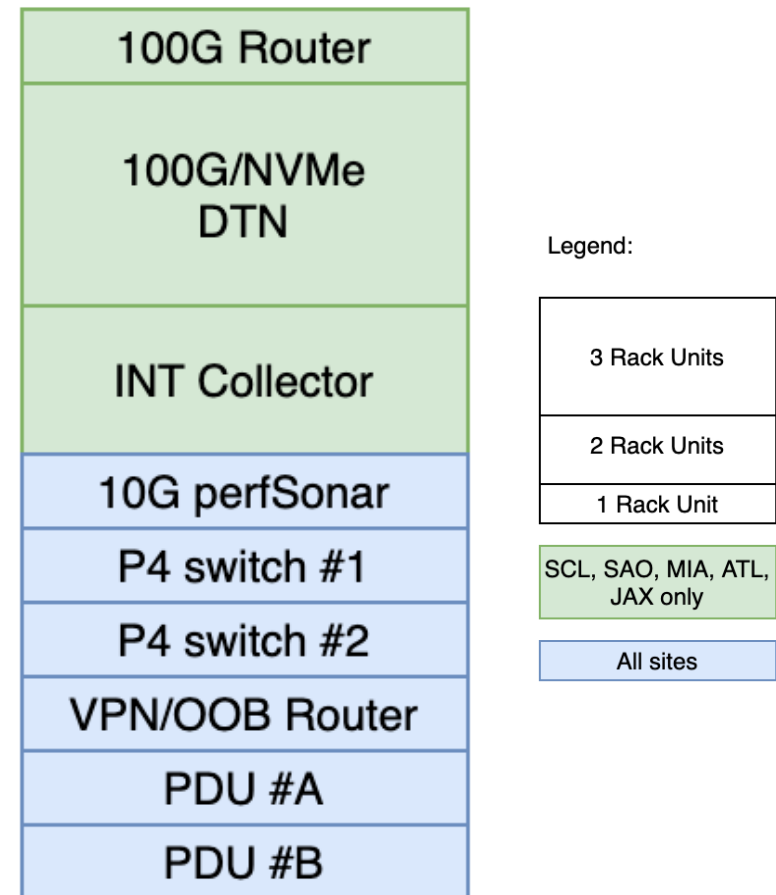


AmLight-ExP Network Topology 2021-26



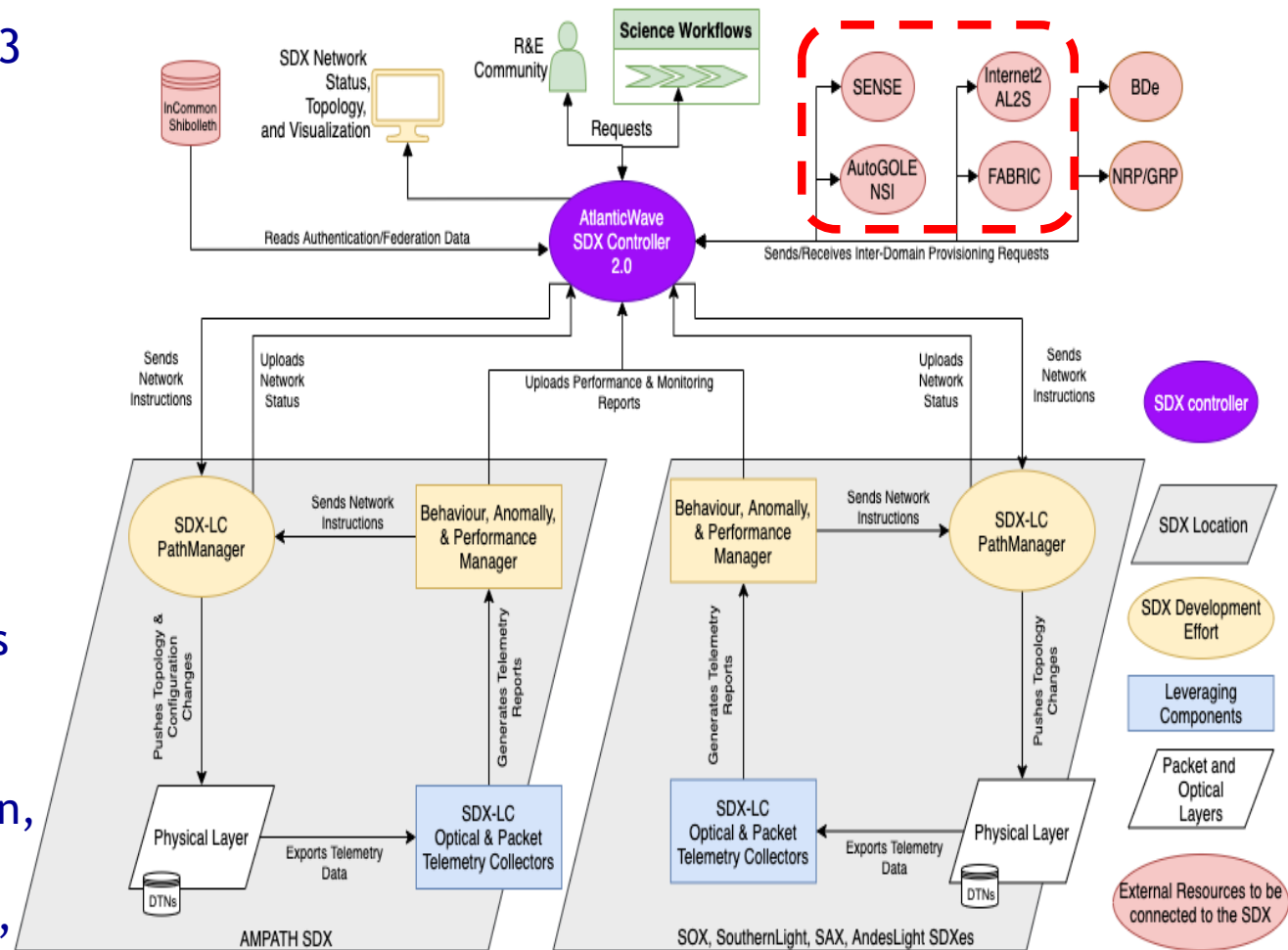
Upgrading the physical infrastructure

- Deploying P4 switches to connect AmLight links and sites
 - Santiago, San Juan, Panama, Boca Raton
 - Sao Paulo (Rednesp), Fortaleza (RNP)
- Juniper routers with 100G ports
- 100G processing and storage nodes (In-band network telemetry) for
 - processing and hosting telemetry data
- VPN/OOB routers with 1G interfaces
- 10G perfSonar nodes
- Power Distribution Units



Self-management (Autonomic) Open Exchange Point Architecture

- Closed-Loop Orchestration
- Dynamic provisioning of Layer3 services
- Integration with SENSE, AutoGOLE and FABRIC orchestrators
- Compute and Storage integration
- Integration with science applications by
 - Exporting topology information
 - Supporting SLA requirements
- Network Management tools
 - Inventory, Monitoring, Debugging, SDX configuration, Telemetry
- Deploying at OXP's in MIA, JAX, ATL, FLZ, SAO, SCL, CTN





THANK YOU

