LSST Networks

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South American Astronomy Coordination Committee
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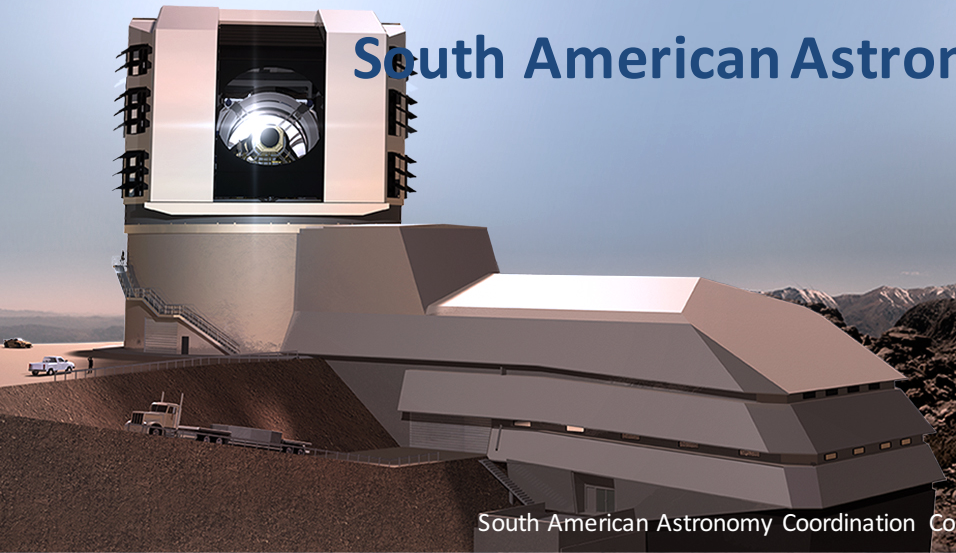
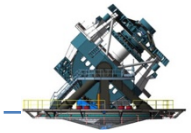
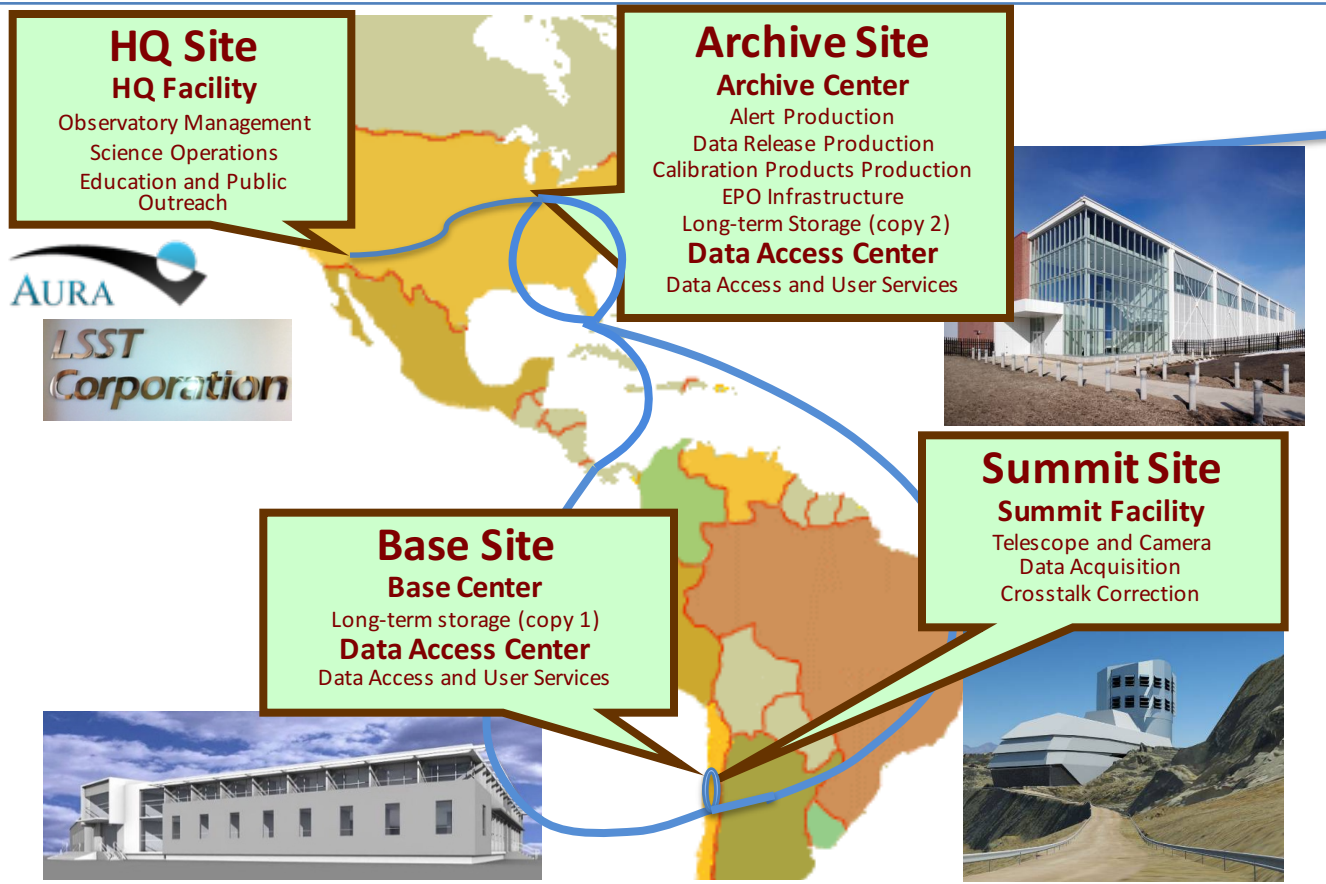




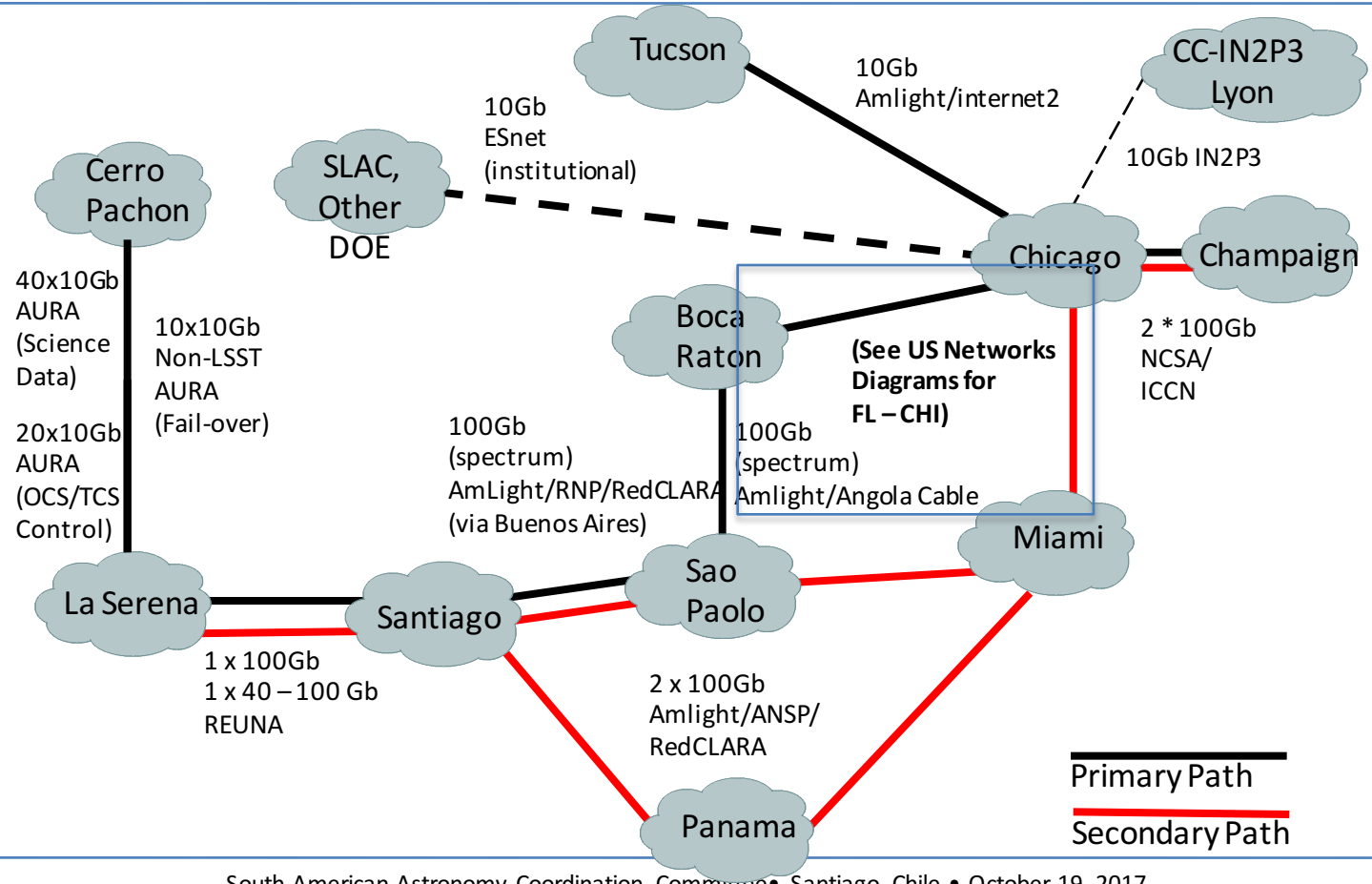
Work Breakdown Structure 02C.08 International Communications (and Base Site)

- International Communications
  - Includes these networks:
    - Summit – Base (Telefonica/Cobra install fiber, Raylex install DWDM equipment, AURA/REUNA operate)
    - Base LAN (AURA procure/install/operate)
    - Base – Santiago (Telefonica/Cobra install fiber, Raylex install DWDM equipment, REUNA operate)
    - Santiago– Chicago (FIU/AmLight provision, manage operations, ESNet participation)
  - Does not include:
    - Summit Network (T&S 04C.12.5 WBS with same TCAM and Technical Lead as 02C.08)
    - Chicago to Archive (DM 02.07.04 WBS under NCSA)
    - Chicago to Lyon (IN2P3 responsibility)
  - Integrated LSST Network Engineering Team (LSST:NET) provides engineering, test, management coordination, virtual Network Operations Center (NOC) across all networks and WBS
    - LSST Network Operations and Management Plan (document-11918)
    - LSST Long-Haul Networks End-to-End Test Plan (document-14789)

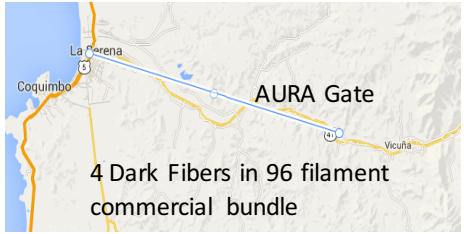
Networks Path Diversity between Sites and Centers



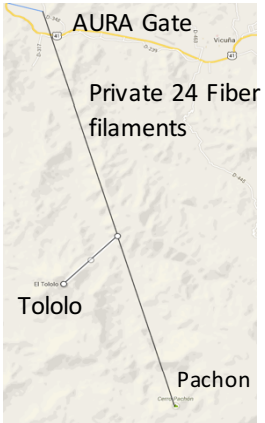
LSST Long Haul Network Links (Baseline)



New Fibers in Chile are Installed and Accepted



Three main Telecoms investing in a fiber bundle for an alternate route from La Serena to Vicuna and Santiago. AURA hasan 18 year IRU (2016-2034) with REUNA for 4dark fiber filaments in this bundle. Completion dated 2015.



Telefonica installed a private 12 fiber pair bundle for the sole use of LSST and AURA.

Blue line indicates the path in which REUNA has a dark fiber pair.

AURA/LSST and REUNA each utilize a 100G. LSSTsolely occupies one 100Gbs circuit. Other AURA traffic will flow over the REUNA 100G circuit.

AURA has an optional additional 9 x λs within this pair, each of which can be 10,40,100Gbs

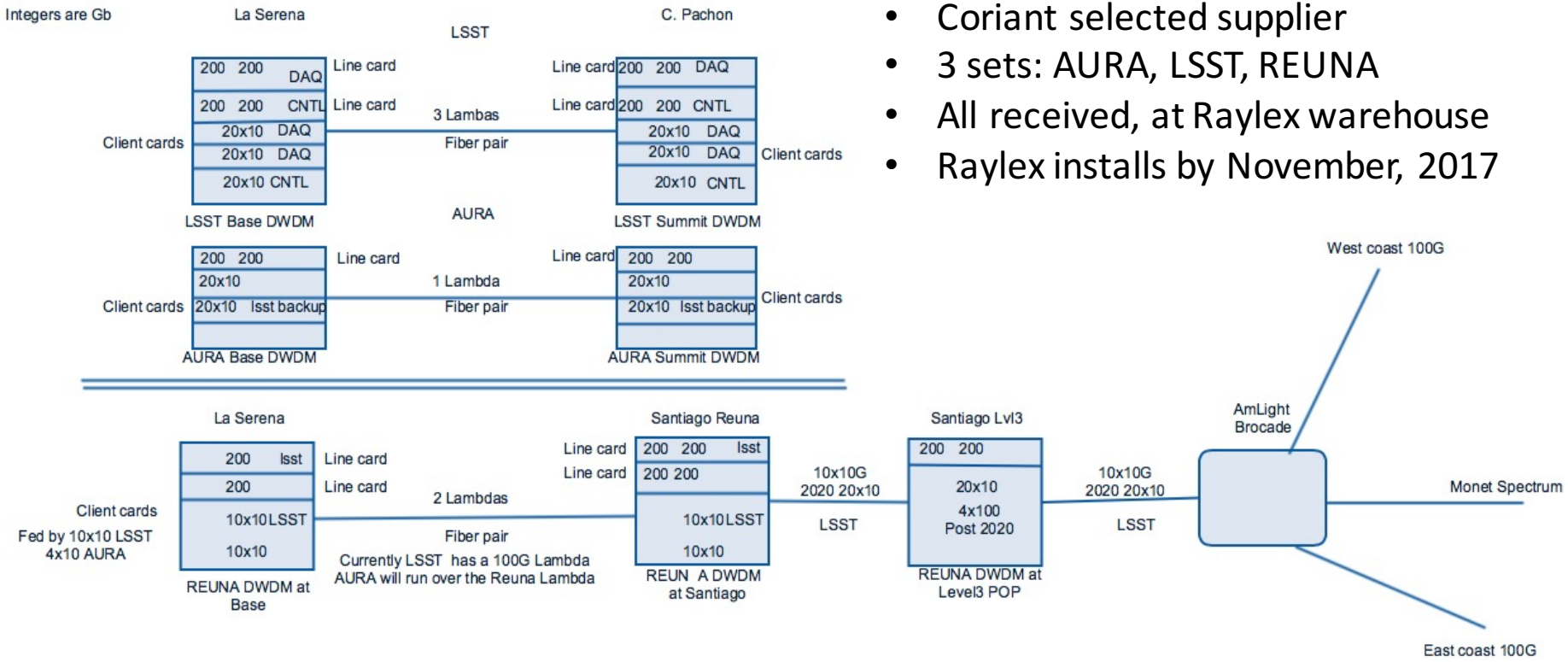
Red line indicates the legacy Pan American route where LSST currently has 4Gb and which will increase to a minimum of 40Gb as a diverse path in 2019. Stretch goal is 100 Gb.

International Chile – US WAN

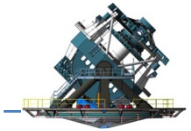
- 100G Ethernet ring is operational
- Need equipment/peering in Santiago for LSST to use it
- Demonstration in 2017

- Spectrum on new Monet Cable
- Combination of investors
- LSST/FIU partnered with Angola Cable, agreement executed
- First LSST use will be in 2020

DWDM Equipment is Purchased



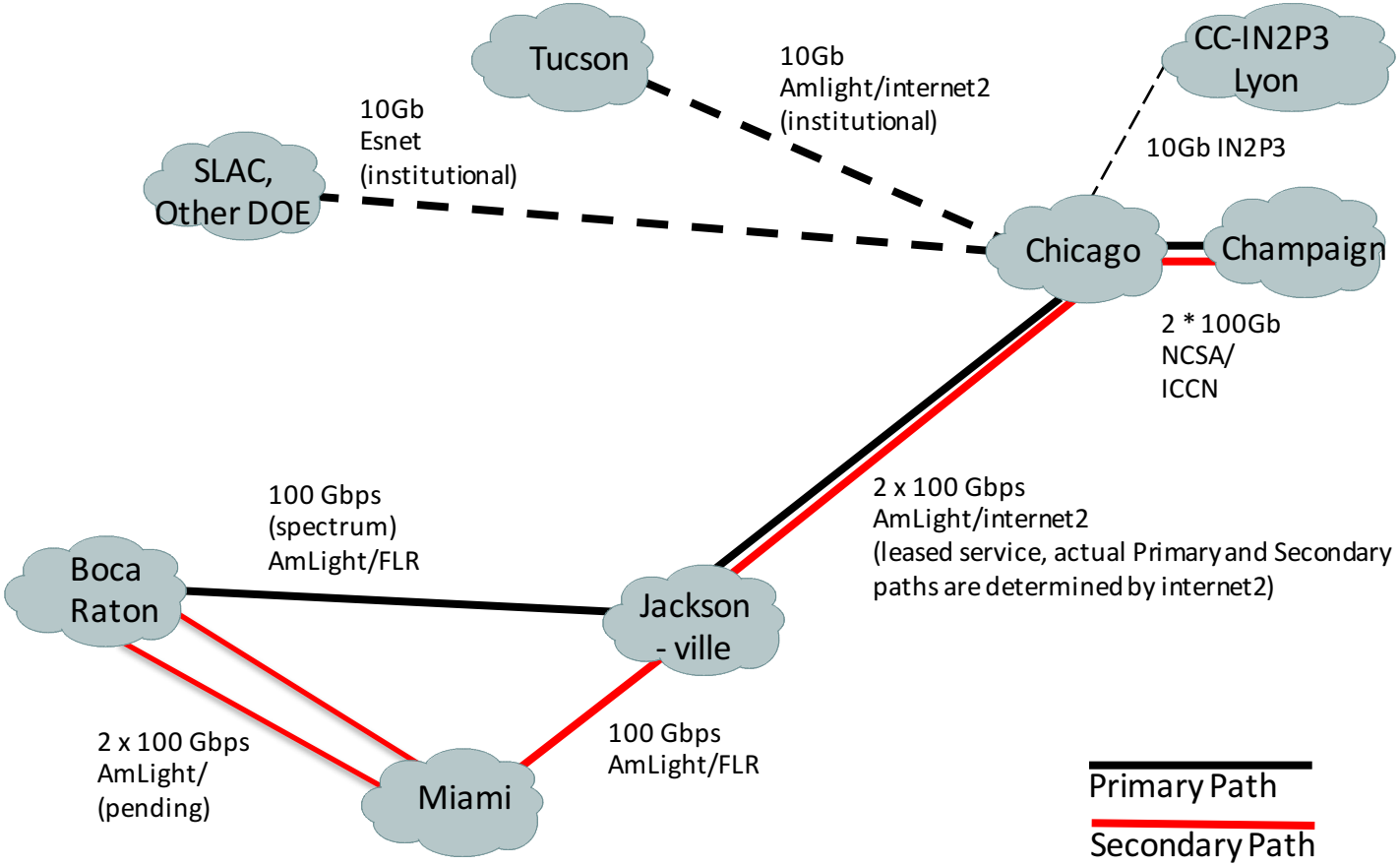
- Coriant selected supplier
- 3 sets: AURA, LSST, REUNA
- All received, at Raylex warehouse
- Raylex installs by November, 2017



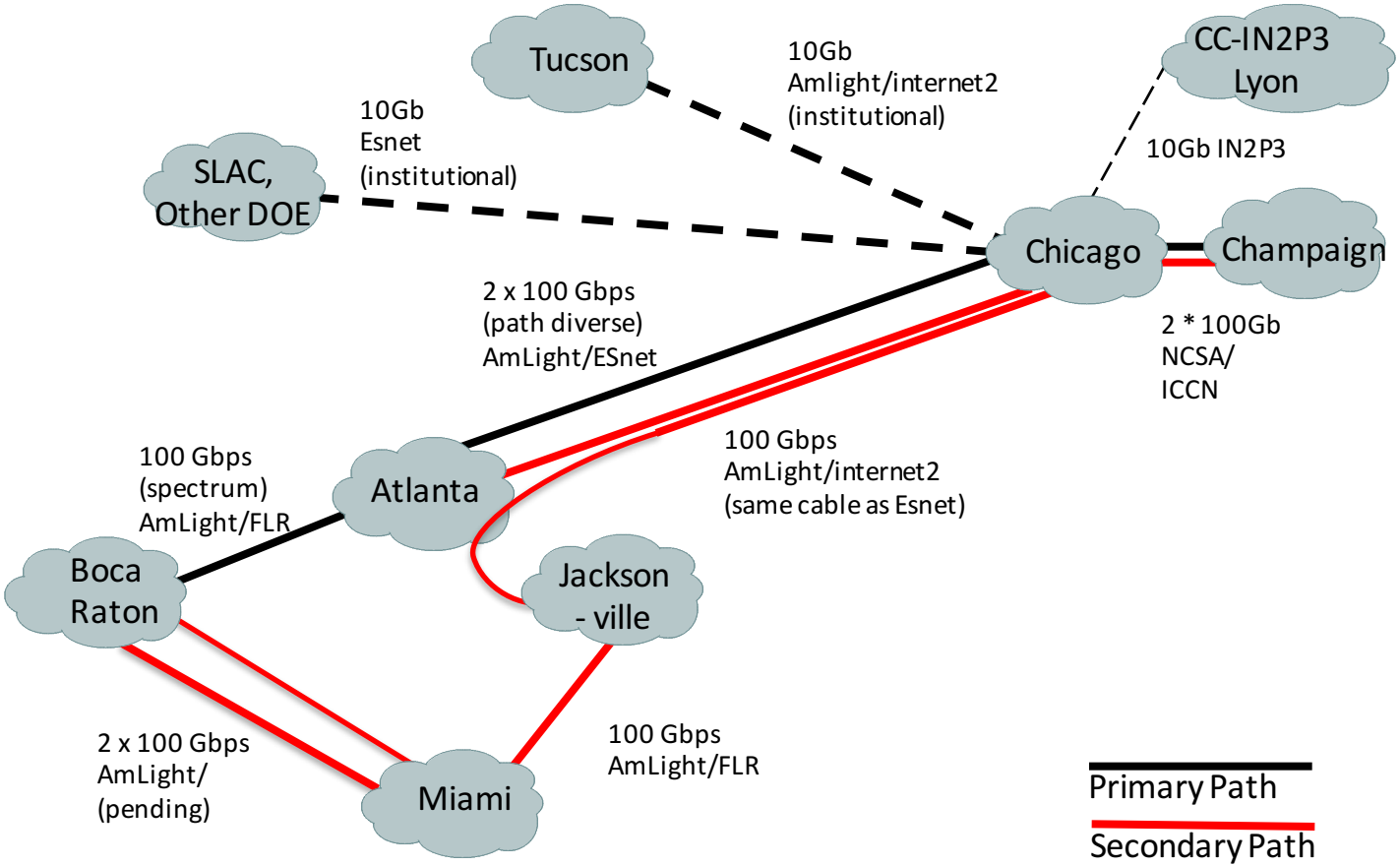
Summit and Base LANs

- Summit LAN (TS) competitive procurement conducted 9 rounds, selected Dimension Data with Cisco Equipment
- Order is being placed now
- Base LAN (DM) will be sole source procurement from same vendor in 2018

LSST US Long Haul Network Links (w/o ESnet)



LSST US Long Haul Network Links (w/ESnet)



Archive Center and French Site

- Archive Center LAN and external network (to Chicago) is NCSA responsibility in 02C.07
- NCSA Network Engineer is member of LSST Network Engineering Team (NET)
- Chicago to Lyon is IN2P3 responsibility, in coordination with NCSA