

AURA Networking

Mauricio Rojas Ron Lambert
AURA Observatory in Chile
CTIO/Gemini/SOAR/LSST

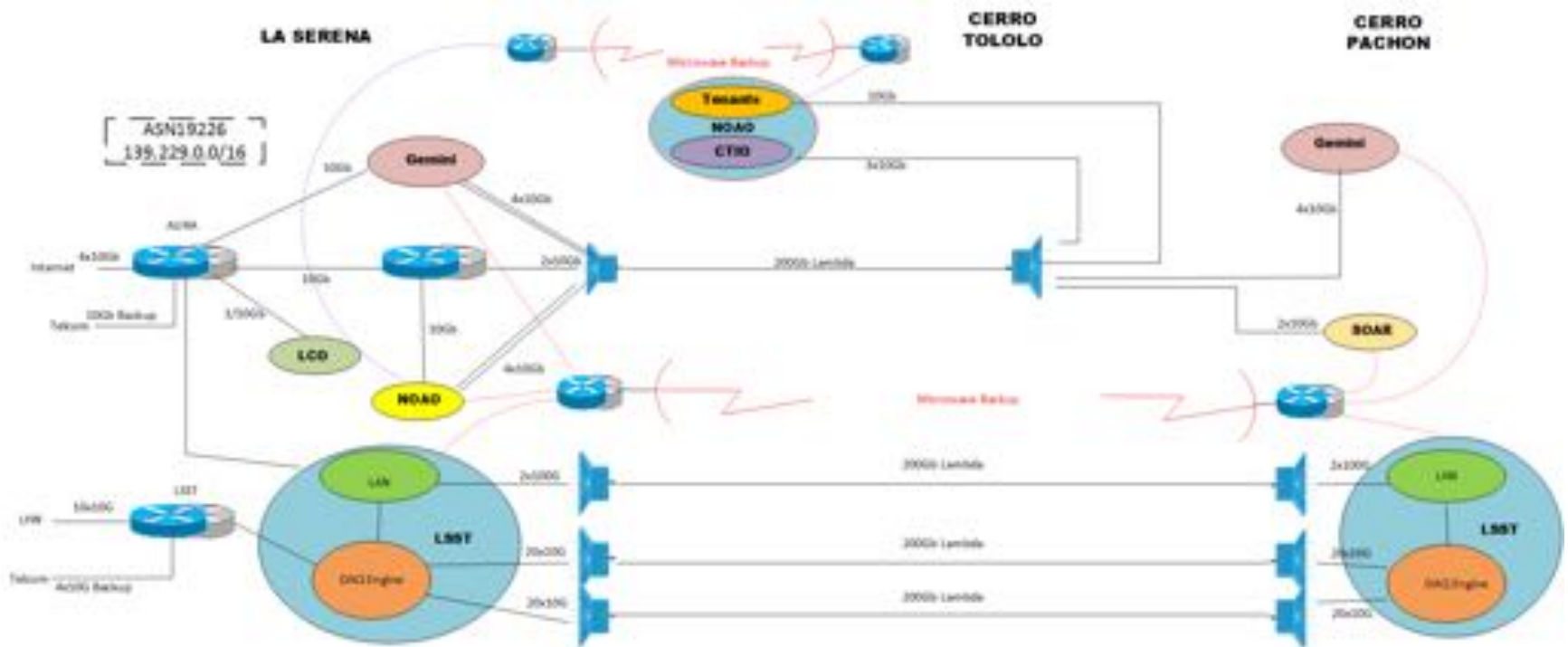
AURA Backbone Users & Use

- Large Tenants
 - NOAO/CTIO (DECam!)
 - Gemini (Remote ops!)
 - SOAR (Remote observing)
 - LSST (Operational 2022)
 - Carnegie (La Serena)
 - NRAO/ALMA (Santiago)
 - GMT (pending)
- Smaller Tenants
 - SMARTS
 - PROMPT (x8 now)
 - GONG
 - ALO
 - WHAM
 - LCOGTN
 - KASI/KMTnet
 - ASAS-SN
 - mEarth (Harvard)
 - “EvryScope”/Prompt
 - T80S (Brazil)

AURA Network Update

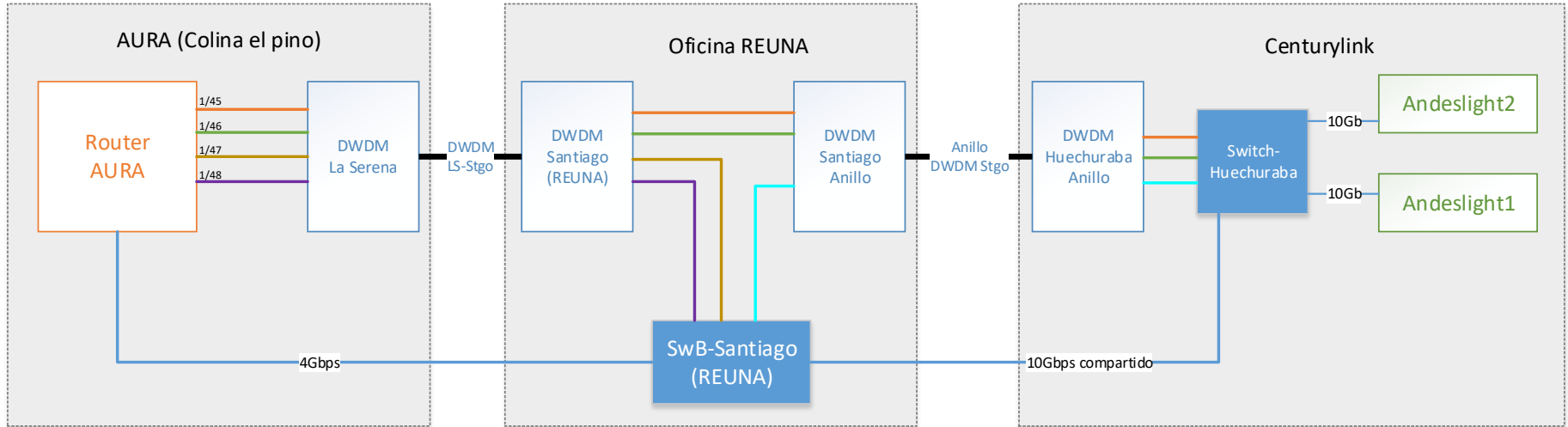
- Installation of private fiber pairs from Summits to Base
- 200Gbs Lambdas from Summits to Base to be shared amongst Tenants.
- 4x10Gbs to Santiago
- 10Gbs burstable to 40Gbs on International links.
- Contract with Entel to upgrade the backup Microwave system to 400Mb for each Summit
- I.T groups will be amalgamating into one Central group NCOA, from October 1, 2019

AURA and Tenants



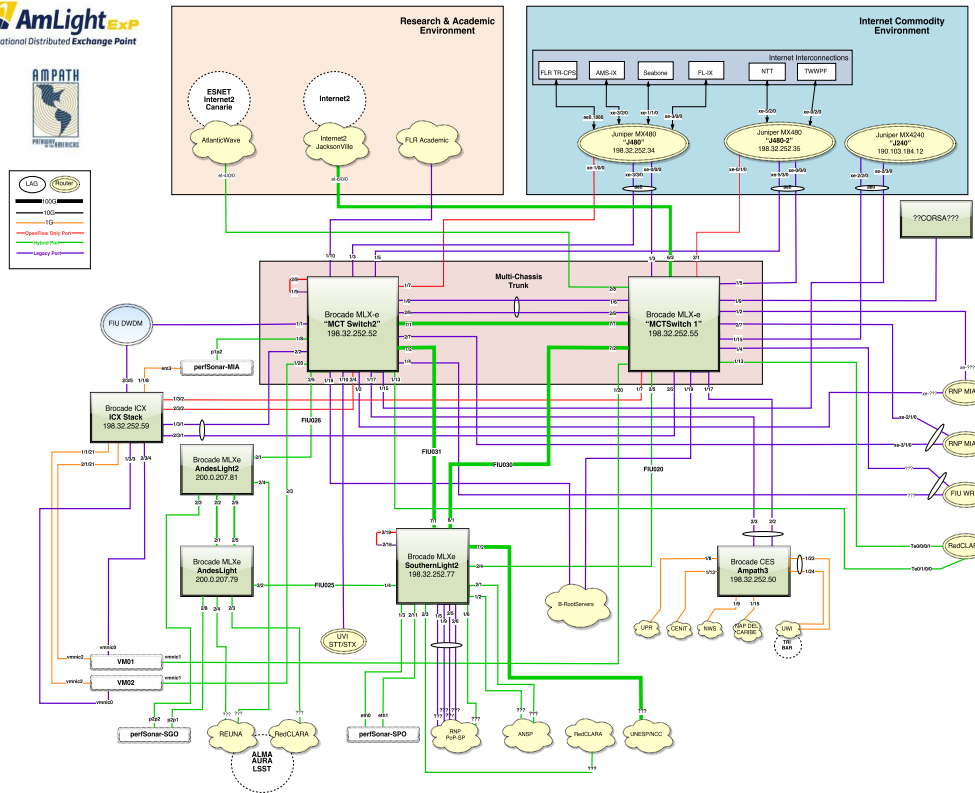
AURA WAN over REUNA NATIONAL NETWORK

4x10G Bandwidth



4Gb soon to be upgraded to 10Gb backup link

We have achieved 100% uptime due to a second path to Santiago.



International bandwidth from Santiago to Miami negotiated for steady 10Gb burstable to 40Gb.

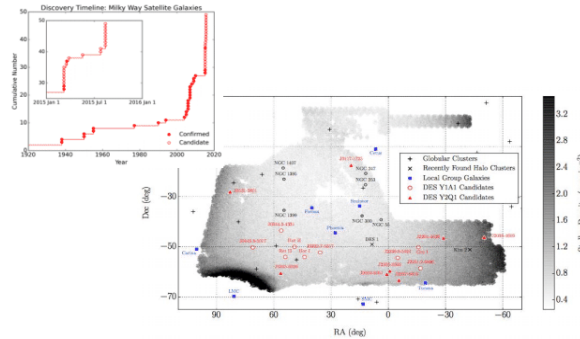
Access to Internet-2 and Commodity networks.

LYRA.

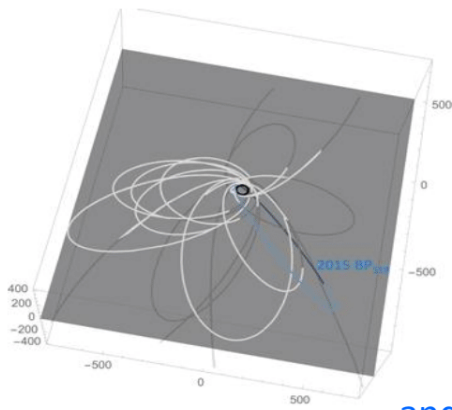
Important synergistic relationship between:
AURA, ESO, LCO and REUNA



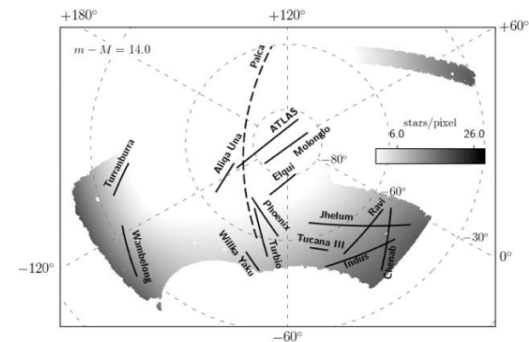
New Discoveries with Blanco + DECam



Almost double the number of Milky Way dwarf satellites known



..... and several new Trans-Neptunian and Kuiper Belt Objects



..... and added 11 new Milky Way stellar streams

There have been >300 Scientific and 50 Technical papers as a result of DES



Tenant Facilities on Tololo

- GONG – Global network monitoring solar oscillations for past 24 years
- Wisconsin H-alpha Mapper (WHAM) all sky H-alpha emission line survey
- South Western Association for Research in Astronomy SARA (0.6-m)
- Las Cumbres Observatory (LCOGTN) 3x 1-m + 2x 0.4-m telescopes + ASAS-SN part of dynamically scheduled global network
- PROMPT 5x 0.41-m, 1x 0.5-m, 1x 0.6-m – GRB and other transients, education
 - Evryscope 24x 6 cm lens whole sky Gpixel camera – whole sky transient detection
- MEarth 8x 0.4-m telescopes – transiting rocky exo-planet search
- Korea Astronomy & Space Science institute (KASI) KMTNet 1.6m global network - exoplanet search using microlensing
- T80 (USP) 0.8-m part of Javalambre Photometric Local Universe Survey (J-PAS)
- USNO CCD Astrograph – Survey (URAT) just completed
 - New 1.0-m installed in March to tie astrometric reference frame in optical to QSOs

Thank you!



Figure 8: Blanco Telescope Dome at Cerro Tololo Inter-American Observatory (CTIO), amidst star trails. Photo Credit: Reidar Hahn, Fermilab