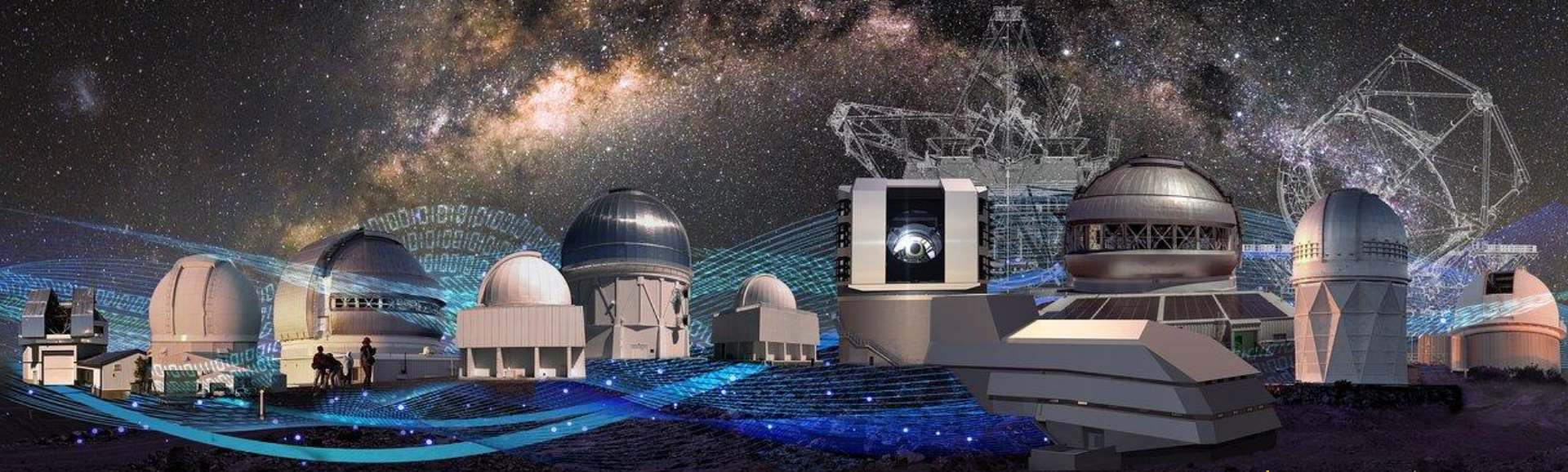


# NOIRLab - IT Ops



Eduardo Toro, Mauricio Rojas  
SA3CC Meeting 2026





# Agenda

- NOIRLab IT Operations, Year in review Completed:

*Core network upgrade for the **SBF MSO infrastructure***

- NOIRLab IT Operations, Currently Active In:

*Progress: Multiple strategic **projects running simultaneously across all centers***



# NOIRLab IT Operations

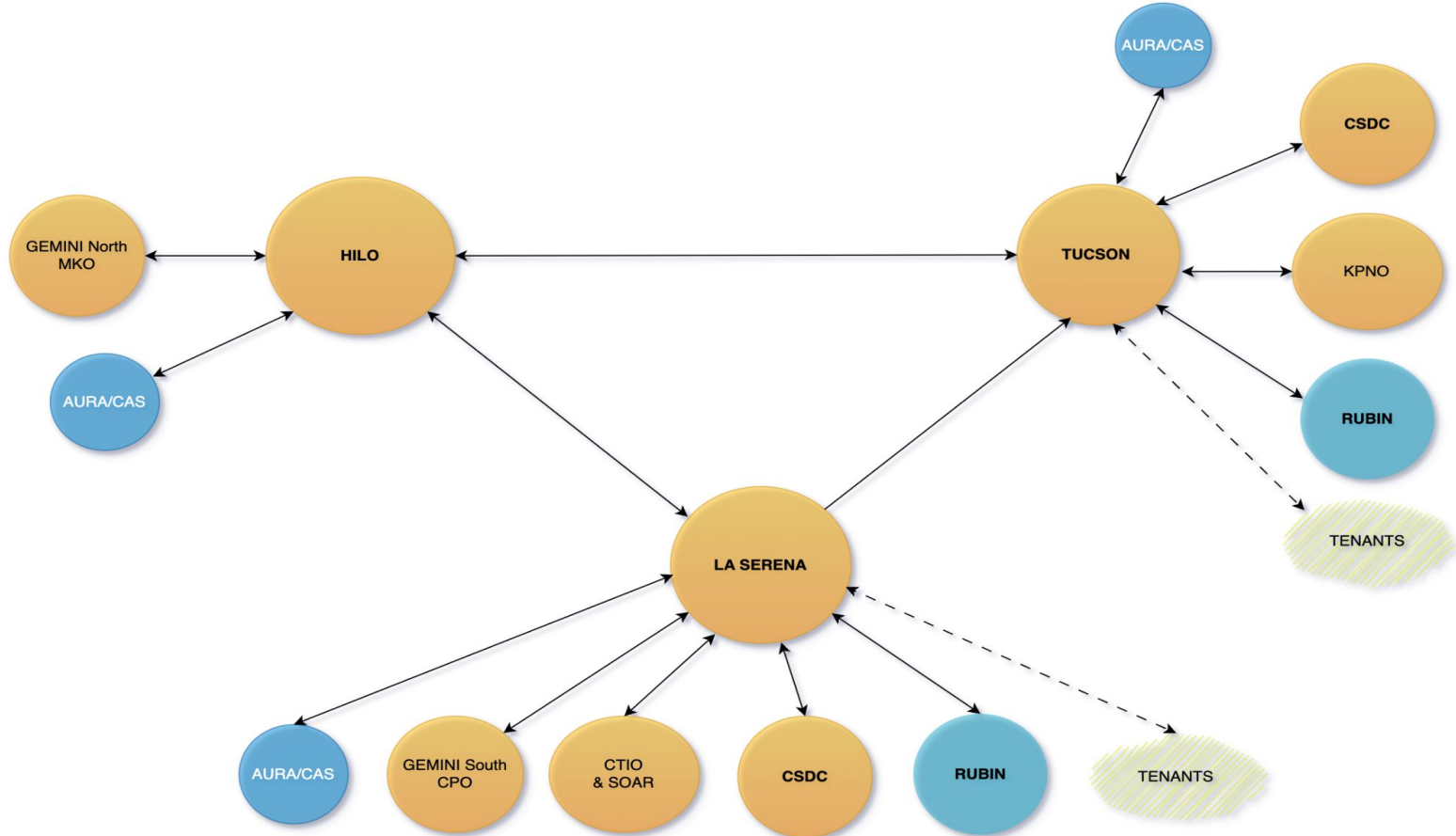
Recurring  
jobs

Infrastructure Enhancement - Security hardening

- Ongoing network **segmentation and isolation** to contain lateral movement and reduce attack surface
- Controlled **inbound/outbound traffic policies** enforced at all perimeter and internal boundaries
- Outward-facing services limited to the minimum necessary, following a **zero-trust architecture model**



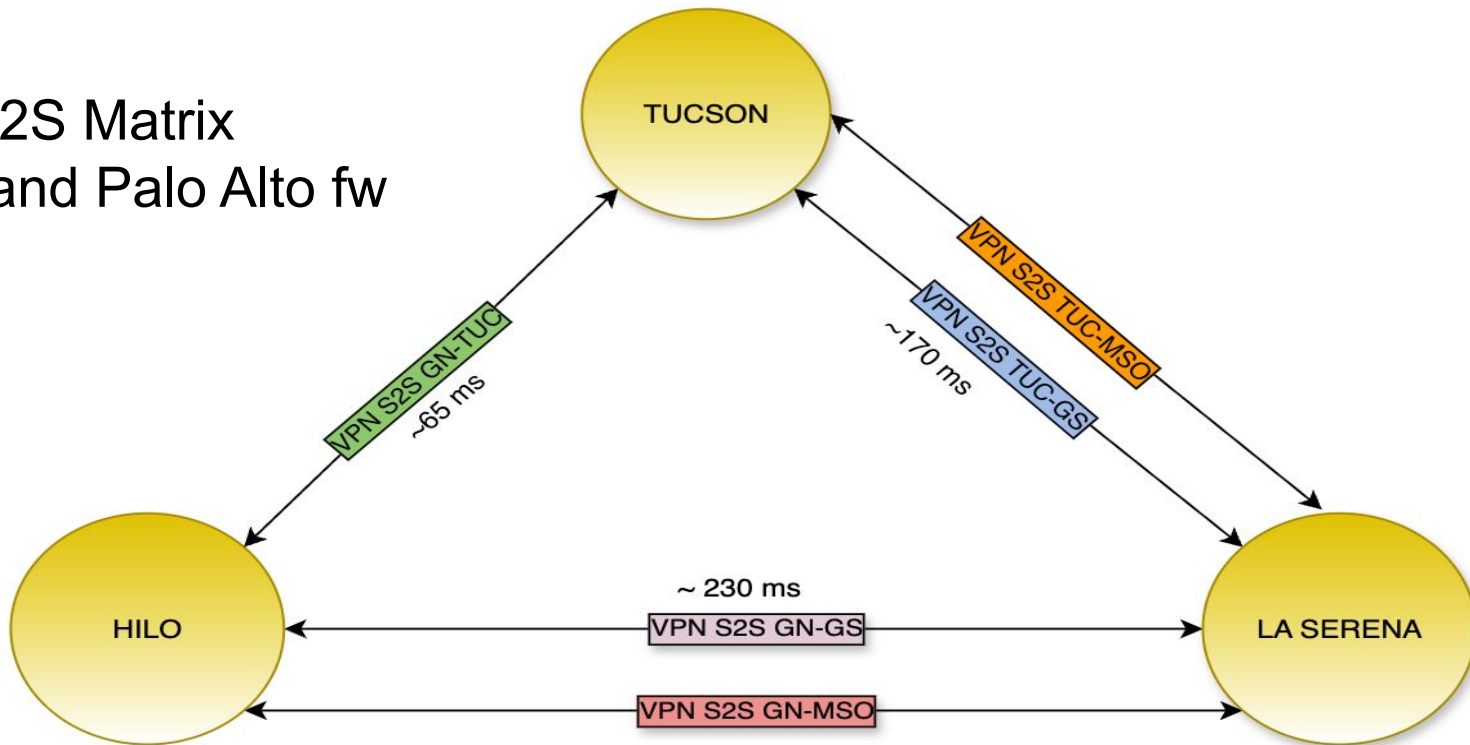
# NOIRLab Program Integration





# NOIRLab Program Integration

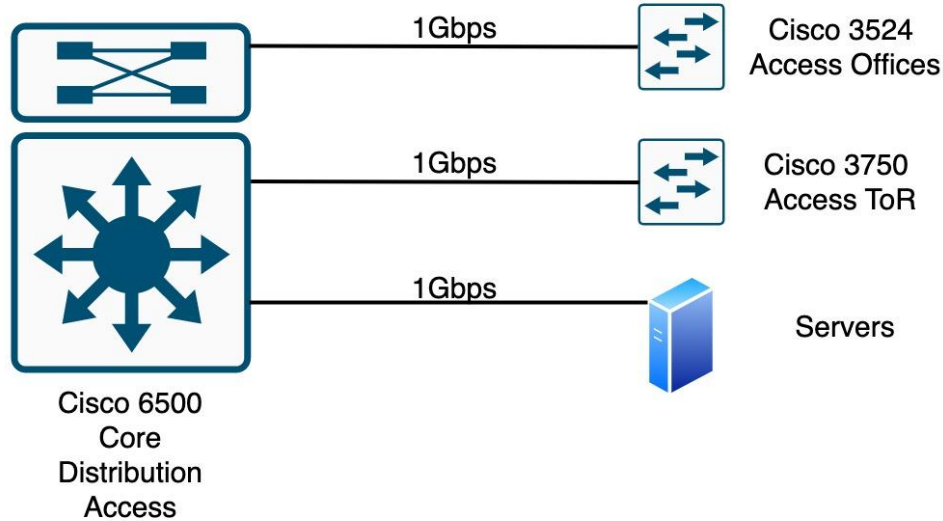
VPN S2S Matrix  
Cisco and Palo Alto fw



# NOIRLab Network Upgrade Project

**NOIRLab MSO Networking Upgrade Project - We used to have ...**

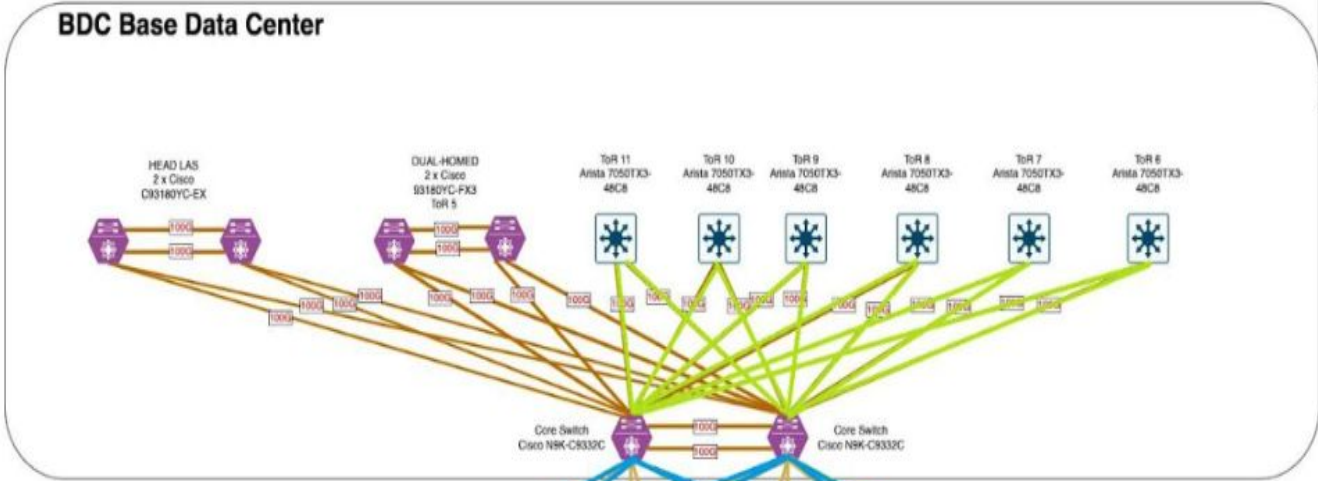
Old core configuration without redundancy



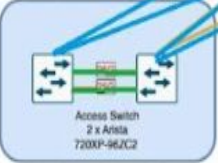
Access  
and AP at  
100Mbps

— #135557 --- #135559   
 — #65219 --- #65206   
 — #70299 --- #70299  
— #175837 --- #175837   
 — #65219 --- #65219

Main Data Center, all the racks mentioned are in the same ROW. Arista and Cisco devices should be connected between them 100Gbps. All the fibers used here are Multimode OM4

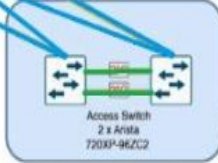


DR1 has 2 Arista access switches, these are connected to the Cisco core switches. The link is based on a single mode fiber. The distance is lower than 200 mts



**DR1 Distribution Room 1**

DR2 has 2 Arista access switches, these are connected to the Cisco core switches. The link is based on a single mode fiber. The distance is lower than 300 mts



**DR2 Distribution Room 2**

# Prototype

- Core  
Cisco 9332
- Distribution  
Cisco 93180
- Access : Arista  
720 and 7050,  
Cisco 3750,  
2960 & 3524.

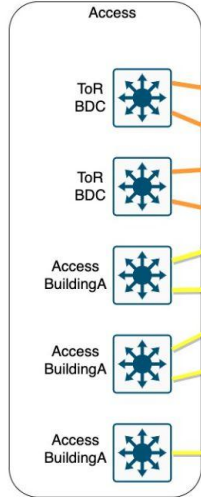
Access 1Gbps  
AP 2.5 Gbps



# How we did it ?



Vlans tag were previously created on all the new devices with Ansible



VPC

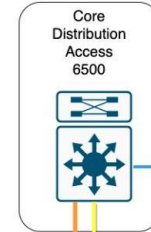


An ansible script shutdown the vlan on the old 6500 and created the same vlan on the the new core with HSRP



L2

L2



Vlans Interfaces were shutdown from here

Console

Console

WTI Management Console



Console

After moving the vlan interface from the old core to the new we just moved the user cables from the old 3524 to Arista switches

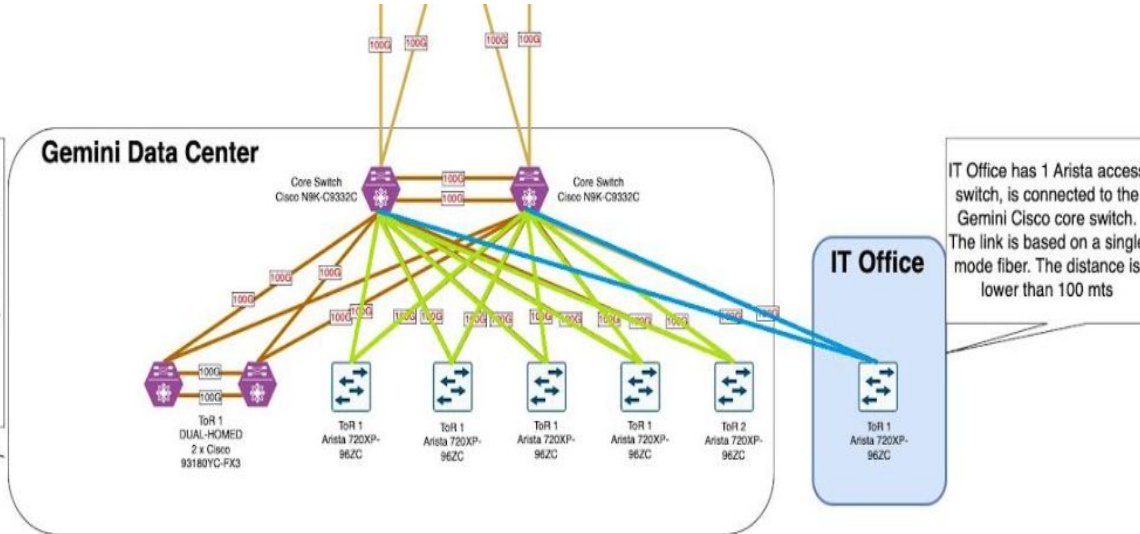
## Ansible creates vlans and moves vln Interfaces

# Network upgrade project, SBF GEM-S

To be  
Implemented

SOON using  
the MSO  
prototype

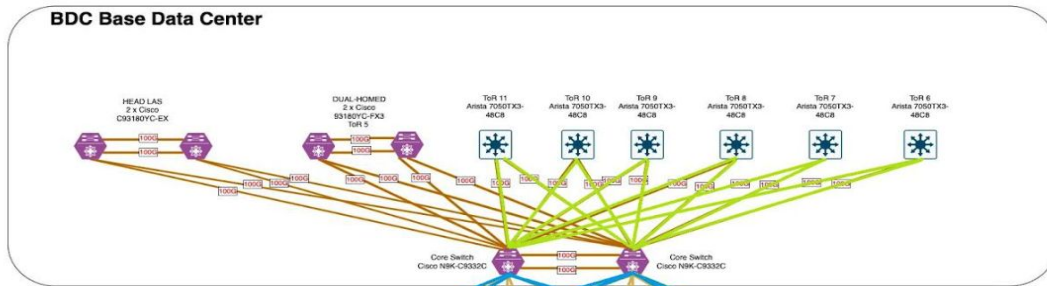
Gemini Data Center is connected to BDC using a single mode fiber, the distance between BDC and Gemini Data Center is lower than 500mts. The devices in both side (core switches) are Cisco. All the devices in the Gemini Data Center are located in the same row and should be connected using multimode fiber



IT Office has 1 Arista access switch, is connected to the Gemini Cisco core switch. The link is based on a single mode fiber. The distance is lower than 100 mts

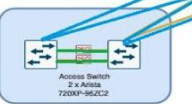


# The future, SBF the integration



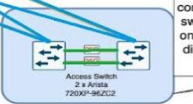
Main Data Center, all the racks mentioned are in the same ROW. Arista and Cisco devices should be connected between them 100Gbps. All the fibers used here are Multimode OM4

DR1 has 2 Arista access switches, these are connected to the Cisco core switches. The link is based on a single mode fiber. The distance is lower than 200 mts



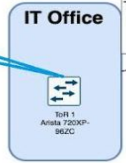
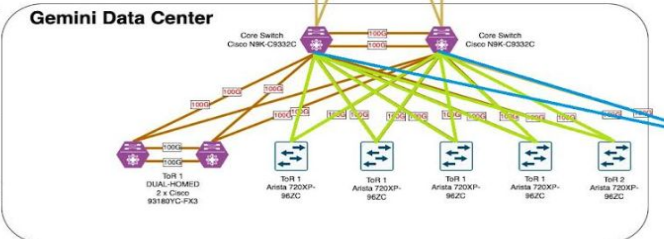
DR1 Distribution Room 1

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IT Office has 1 Arista access switch, is connected to the Gemini Cisco core switch. The link is based on a single mode fiber. The distance is lower than 100 mts

Between the programs

L2 for vlans

L3 for routes



# In the meantime, IT Operations

- NOIRLab multi-site program integration — all centers
- 802.1X Wi-Fi and wired authentication (ISE) — Phase 1: SBF GEM-S; Phase 2: CPO GEM; Phase 3: CTO MSO
- CPPVBESS connectivity — photovoltaic park, Cerro Pachón
- Radio communication upgrade — La Serena · CTO · CPO
- Network Core Upgrade — Gemini South, Tucson & Gemini North
- Automation — Ansible-based configuration and provisioning scripts
- AURA/NOIRLab HA border router & backbone project — Chile
- Planning Proposal Redundant backup link — TBF & KPNO sites

# NOIRLab - IT Ops

Thanks ...

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