NOIRLab
Backbone
Mauricio Rojas, Apr 2020

Introduction
Topics

- Users -> tenants

- Link La Serena - Cerro Tololo - Cerro Pachon.

- Link Chile - USA

- Old Computer Room has been moved to Base Data Center

- Lyra, cooperation project

- NOIRLab, now and the future

Backbone users

Large Tenants

Gemini
Victor Blanco
Soar
Vera Rubin
Las Campanas Observatory
NRAO(Alma Santiago)

Smaller Tenants

Smart group
Prompt
Gong
Alo
Wham
Lcogtn
Kasi
Asas-sn
mEarth
EvryScope
T80

Backbone

The beginning, Harris microwaves

2x155Mbps   2x155Mbps

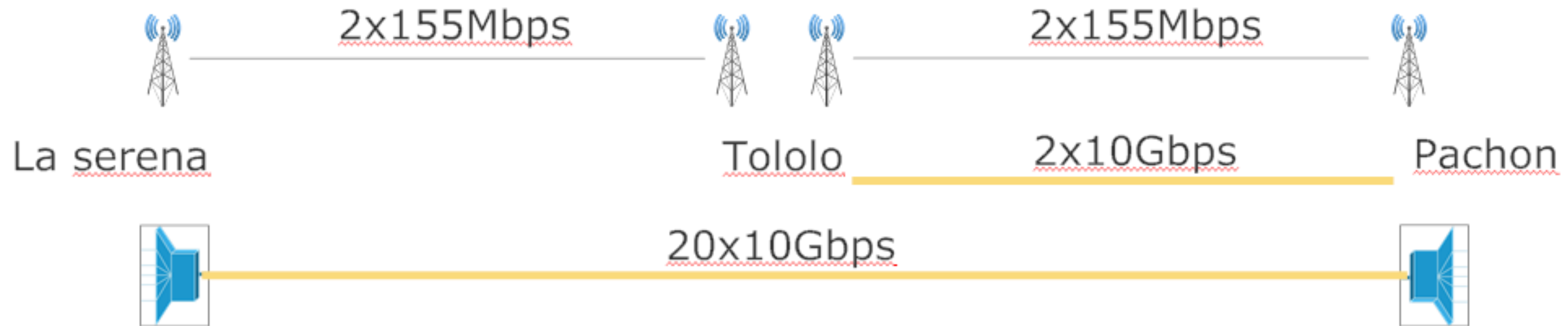La serena   Tololo   Pachon

—— Unique link Microwaves

On the last century ->1985-1992 NASA provide a 64Kbps link

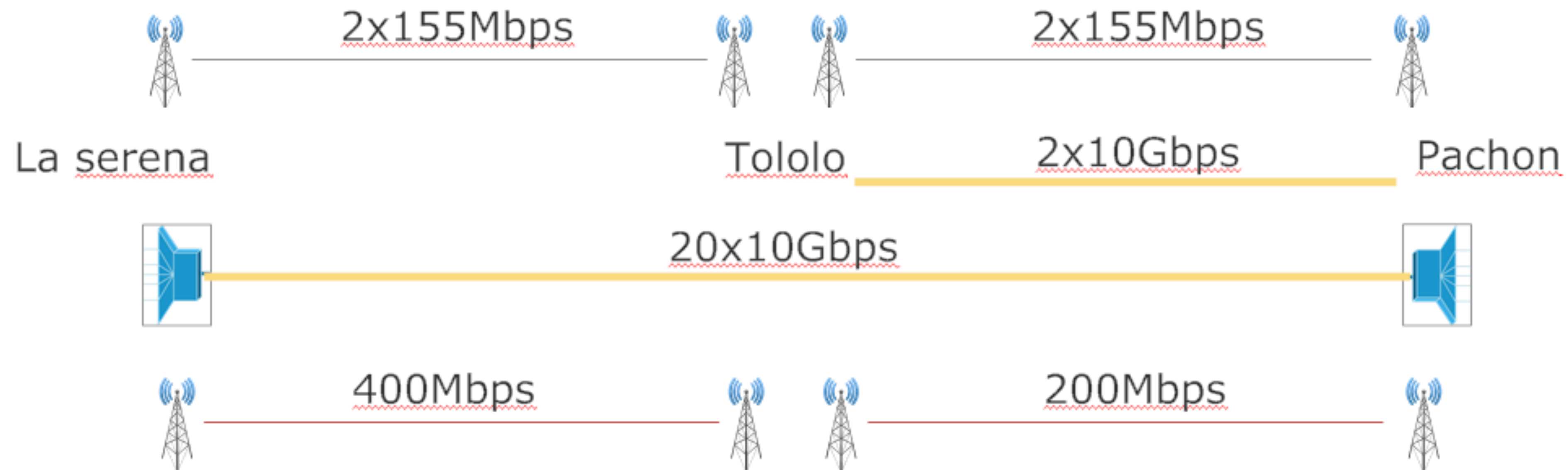On 2000 GEMINI joint us providing 2 x 155Mbps link - Harris microwaves

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2018

On 2018 new technology was install to give services to Vera Rubin and the rest of tenants, DWDM equipments.

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July 2019

2x155Mbps   2x155Mbps

La serena   Tololo   2x10Gbps   Pachon

20x10Gbps

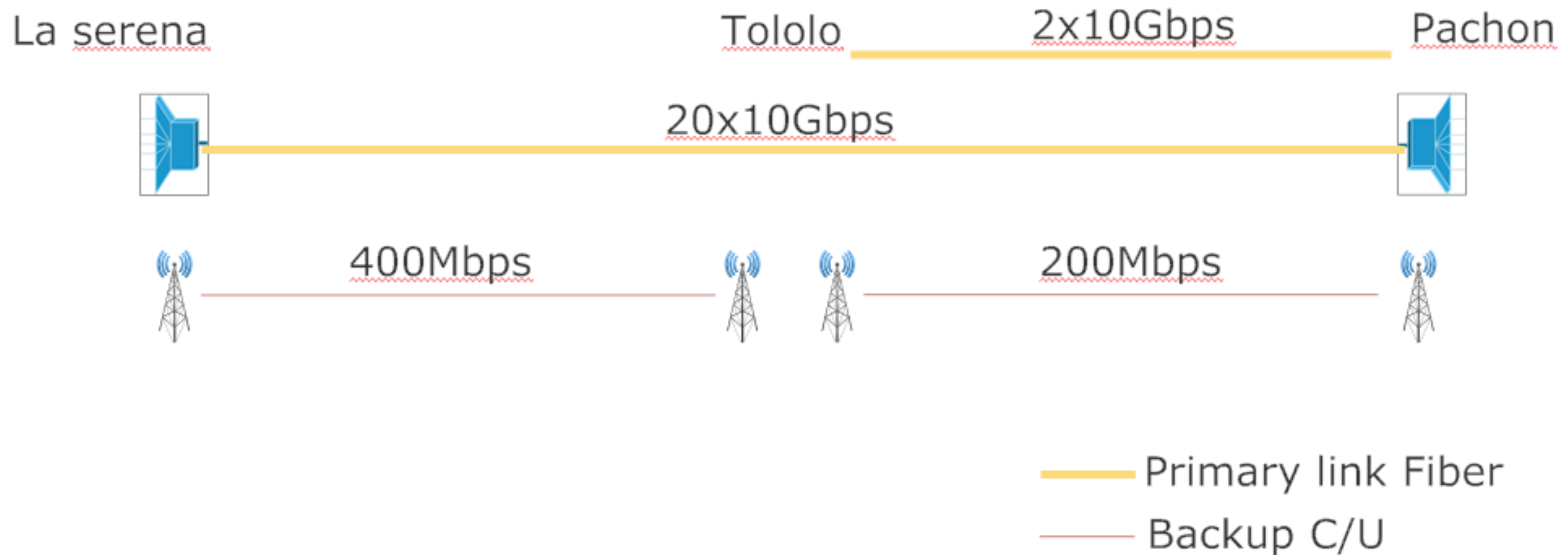400Mbps   200Mbps

—— Primary link Fiber

—— Backup Microwaves

—— Backup C/U

July 2019, new links was installed to serve as backup.
Cambium and Ubiquity. Primary link the fiber & 2 active
backup links

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August 2019 until now

La serena   Tololo   2x10Gbps   Pachon
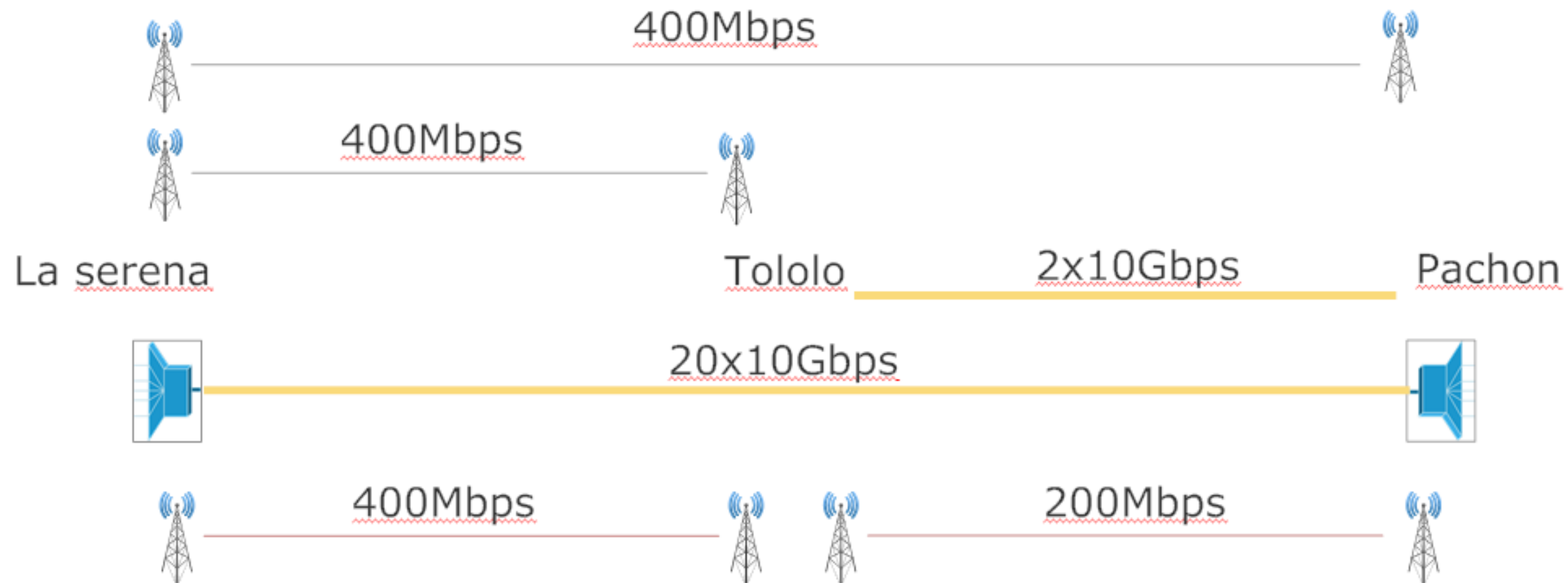
20x10Gbps

400Mbps   200Mbps

—— Primary link Fiber

—— Backup C/U

Both Harris microwaves link were removed. Primary link the fiber
and backup link the set of Cambium and Ubiquity

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2020 after COVID-19

400Mbps

400Mbps

La serena   Tololo   2x10Gbps   Pachon
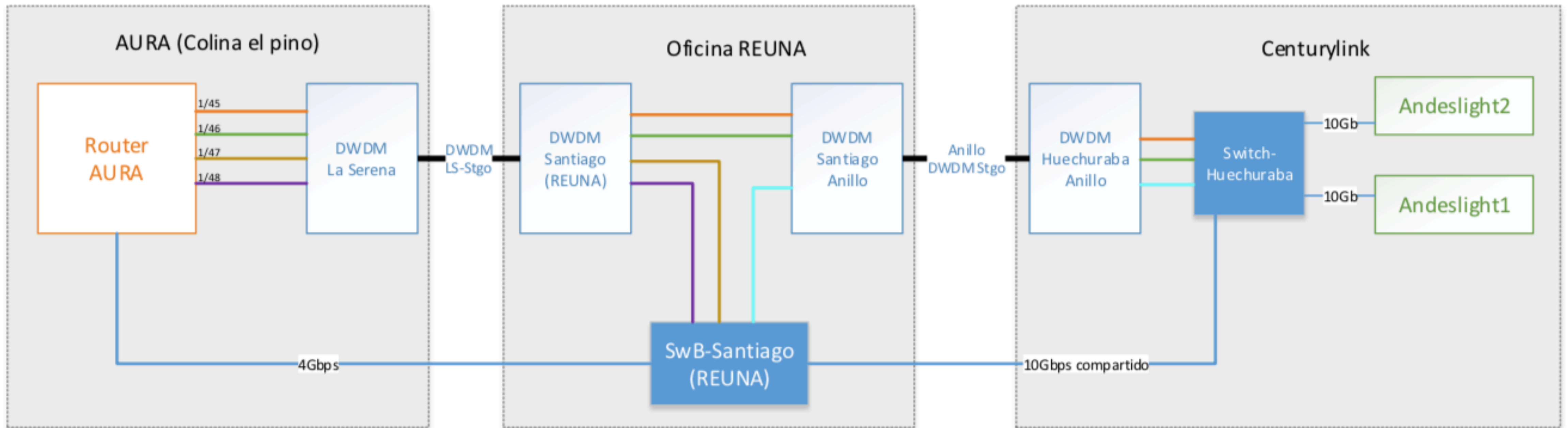
20x10Gbps

400Mbps   200Mbps

Cooperation project between Aura and Entel to provide a new backup link La Serena-Tololo and La serena-Pachon

Installation in progress. Second semestre of 2020 new backup link should be up and running from La Serena-Tololo and La Serena-Pachon

— Primary link Fiber
— Backup Entel
— Backup C/U

Backbone

Link La Serena - Santiago

2 links from La Serena to Santiago. Primary is a 4 x 10Gbps using a fiber through the interior valleys and the backup 4 Gbps using the cost.

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Link Santiago - Miami

Santiago ——————————————— Miami

10Gbps burstable 40Gbps

- From CenturyLink we have 2 path to US
    - Primary link is West (pacific)
    - Secondary link is the East (atlantic) backup
    - Tertiary link is Red Clara backup (thanks to Reuna)

- It doesn't include Vera Rubin Observatory 100Gbps link from Chile to US

Base Data Center

Big job moving all devices from OCR to BDC trying to keep the services UP

- More than 8 racks, full of devices, with connections to ISPs (data and voice), Border router, firewalls, middle routers, core switch, fibers, call managers, servers, patchpanels, etc.
- New data center is located at 100mts of distance from the old computer room
- Installing fibers from ISP in the new BDC
- Coordination between Reuna - ITOps - providers
- Installing a bundle of fibers from BDC to OCR
- Moving all the machines/services one by one
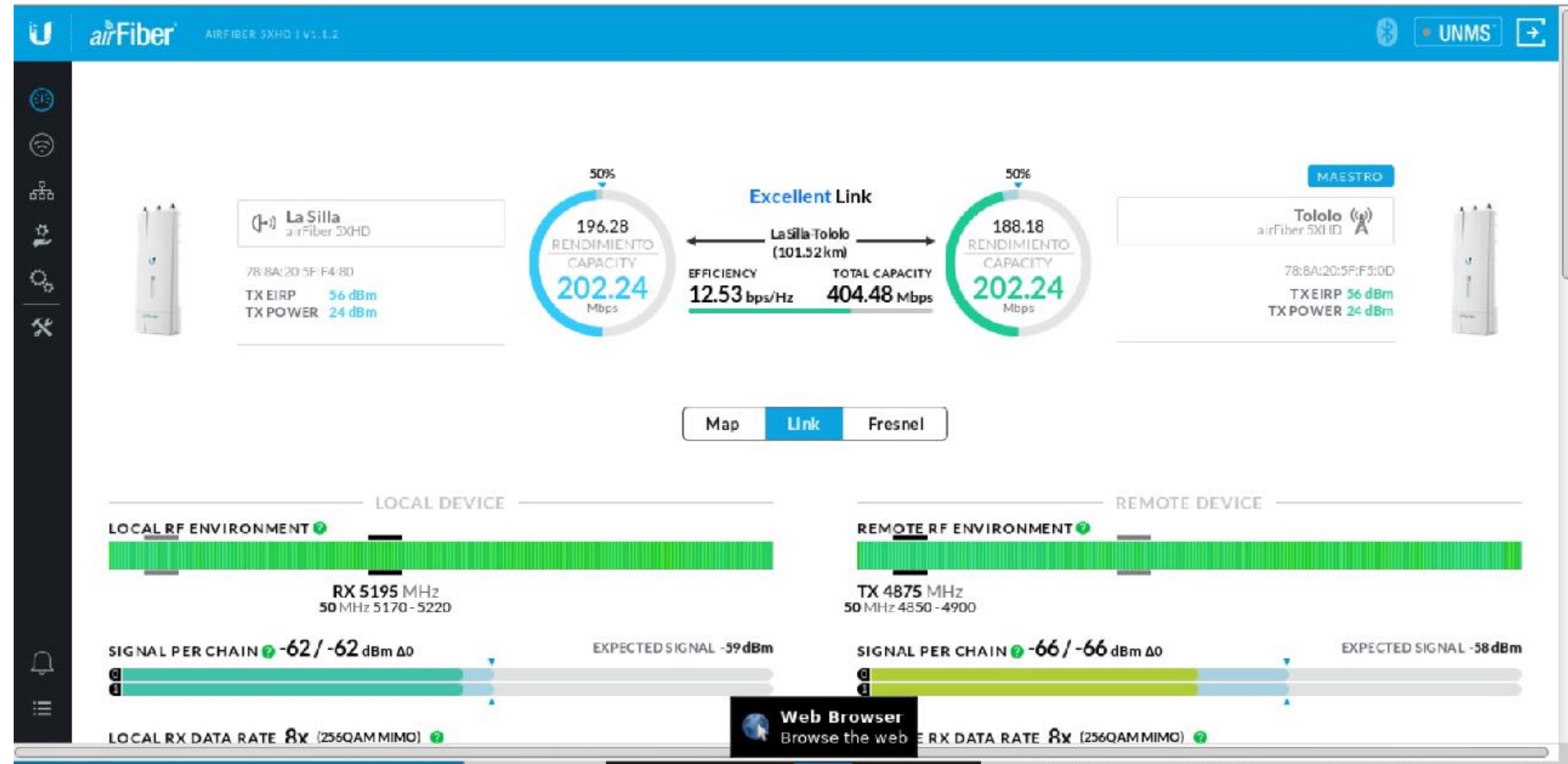- Finally, job done!! Everything up and running

Congratulations to ITOps crew !!

Lyra project

Link 200 Mbps technically operative & tested satisfactory on July 2019 - Eclipse

- Cooperation project between La Silla - Reuna - Aura
- More than 100 Kms of distance
- Backup link for La Silla, to move data between La Silla and Santiago; and it would be a backup link for Tololo & Pachon in case of disaster, Observatories ring
- Tested with real traffic during Eclipse 2019
- Technically is UP

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The future

- Technically no changes on the 10Gbps link CL-US
- ITOps will support to this 4 entities
- https://nationalastro.org/

ITOps {
MSO, Mid-scale Observatories
CSDC, Comunity Science & Data Science
Gemini Observatory
Vera Rubin Observatory

Thanks

Stay at home, stay safe & stay Healthy

Mauricio Rojas, Apr 2020

Picture Cerro Tololo Inter-American Observatory (CTIO
Credits PMarenfeld/NSF/NOIRLab/AURA