



ROUNA
Ciencia y Educación en Red

SAACC meeting

Oct 19th – 2017, Santiago

Outline

1. Network Strategic Plan
2. La Serena – Arica path
3. Santiago – La Serena path
4. Santiago – South path

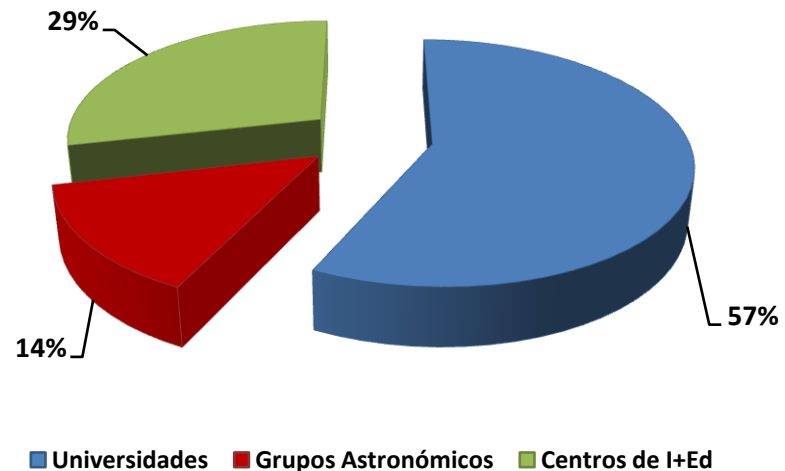
36 research and education institutions

REUNA es una corporación abierta

19 Universities

5 Astronomical centers

11 Research, culture and education centers





Network Strategic Plan

Network infrastructure Strategic Plan



Towards the national optical
advanced network

- Network model:
 - Dedicated fiber, spectrum or lambdas
- Time scale: 2017-2020



Project Plan

Toward an optical national network:

- **P1**: Arica - La Serena, in synergy with astronomy community and BELLA project
- **P2**: DWDM network La Serena – Santiago (in synergy with AURA/LSST)
- **P3**: Santiago – Concepcion. Short time: upgrade in capacity. Long term: fibre or lambdas.
- **P4**: Synergy with public projects



P1: La Serena to the north

P1: La Serena to the north in synergy with BELLA

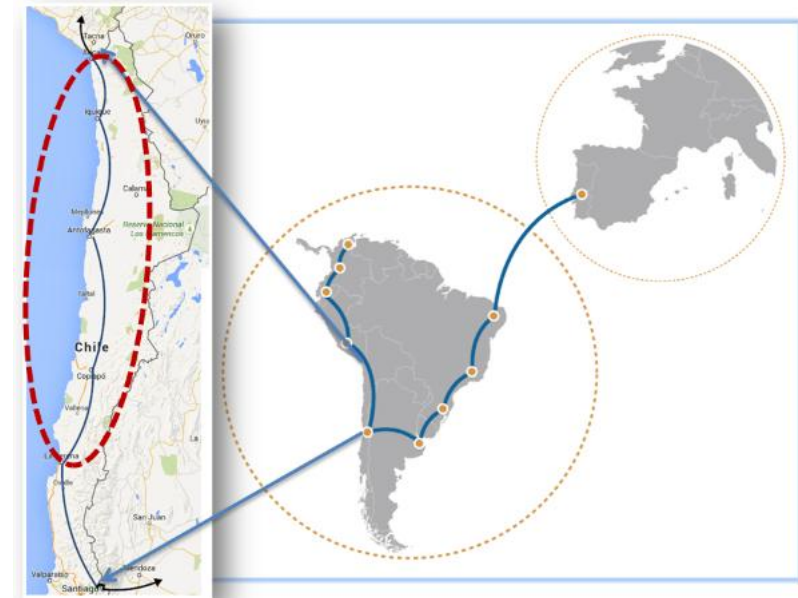


- Project starts: 31/March/2016
- Partners:
CEDIA, RedCLARA, DFN, FCT, GARR, GEANT, RED.ES, RENATA, RENATER, REUNA y RNP
- Divided in two subprojects:
 - BELLA-T: To complete the AL optical backbone for R&E.
 - BELLA-S: Capacity over a submarine cable to connect EU & AL for at least 25 years, for the R&E community

BELLAT

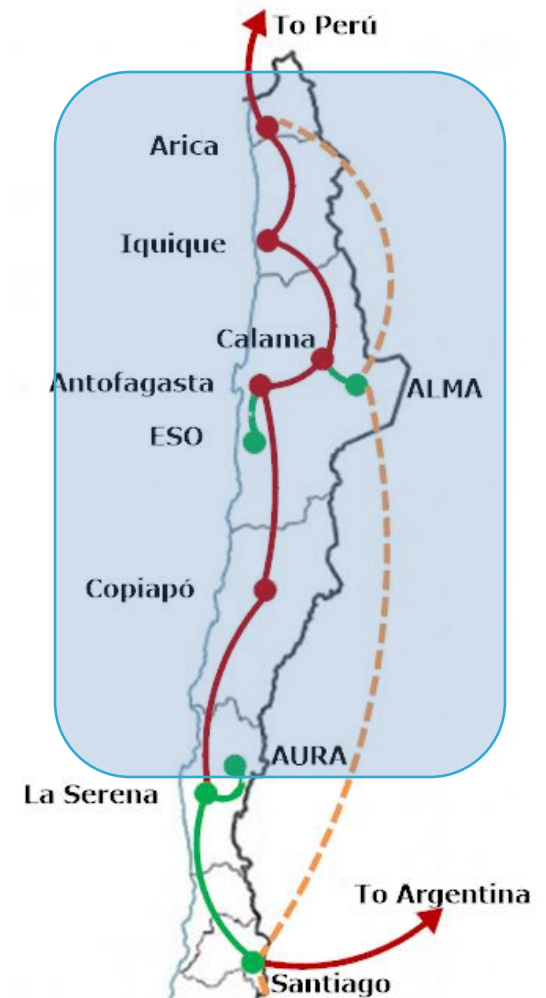


- Secure & resilient AL's backbone which allow equal access from AL to EU, support of 100Gbps wavelengths in south America.
- AL's Backbone -RedCLARA's terrestrial optical backbone - will be formed using in synergy the physical infrastructure of the NRENs, patching together this physicals backbones;



P1: La Serena to the north in synergy with BELLA

- Tender process in progress
 - On March '17 we started a tender process to seek for fiber or spectrum solutions from La Serena to the north.
 - The path was divided in 4 lots:
 - La Serena – Copiapó
 - Copiapó-Antofagasta
 - Antofagasta-Calama
 - Calama-Arica
 - The process is under development, we have received several proposals of fiber.



P2: Santiago - La Serena

P2: Santiago – La Serena in synergy with LSST/AURA



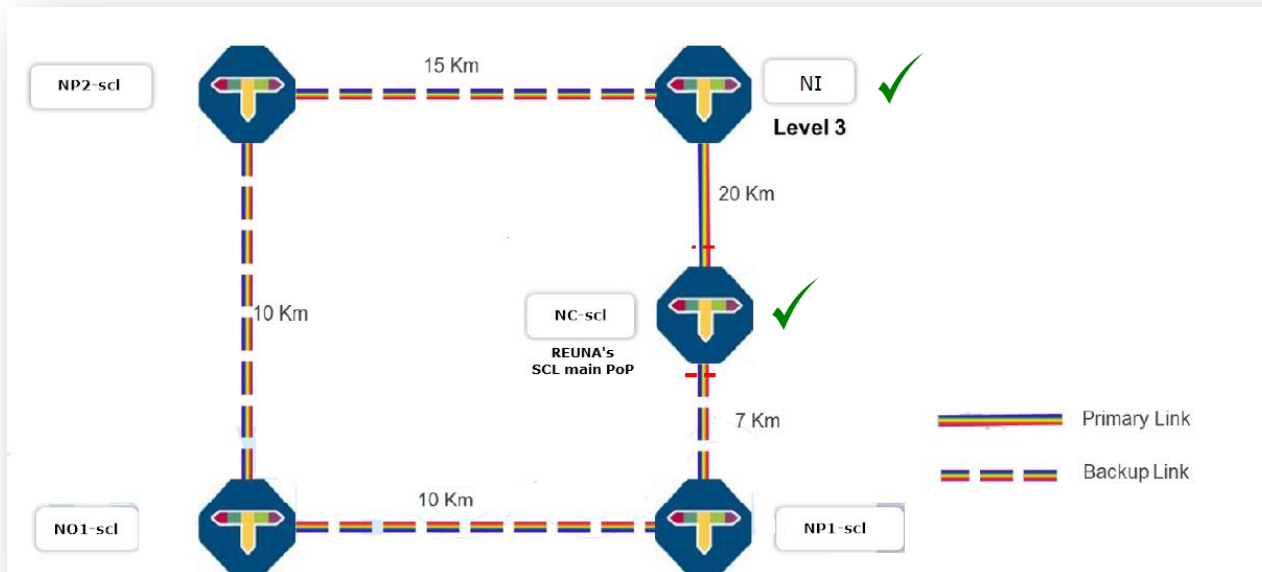
Path	#	Item	REUNA	AURA
Santiago La Serena	1	Fiber (1 pair) between La Serena & Santiago,700Kms Housing: 6 along the path plus AURA in LS	✓	
	2	DWDM equipment along La Serena to Stgo plus the Santiago ring	✓	
	3	Backup path: Currently 10G. 40G min to 2020		
La Serena Observatorio	4	Fiber (2 pair) entre LS y Portería AURA	✓	
	5	Fiber (12 pairs) in AURA land , connects Cerros Tololo & Cerro Pachón		✓
	2	DWDM equipment between La Serena and Pachón (LSST) & Tololo (AURA)		✓

2



- ✓
- Training activities: AURA and REUNA staff
- July:
- hiT 7300 System Architecture, Provisioning and Troubleshooting
- September
- TNMS Operation and Administration for hiT7300
 - Tailored TransNet training for hiT 7300

P2: Santiago – La Serena Network Topology



P2: Santiago – La Serena

Equipment details

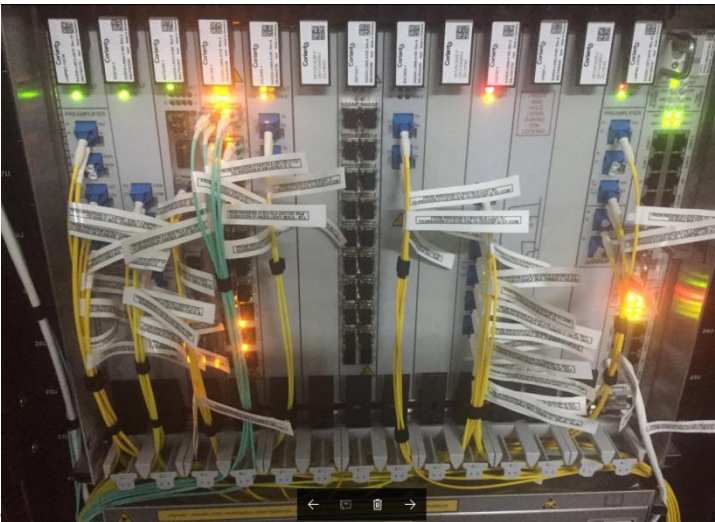
Amplifier node



- Line interface: Flexi-rate line card I02L200G-1:
 - 2x100G/150G/200G



Terminal node



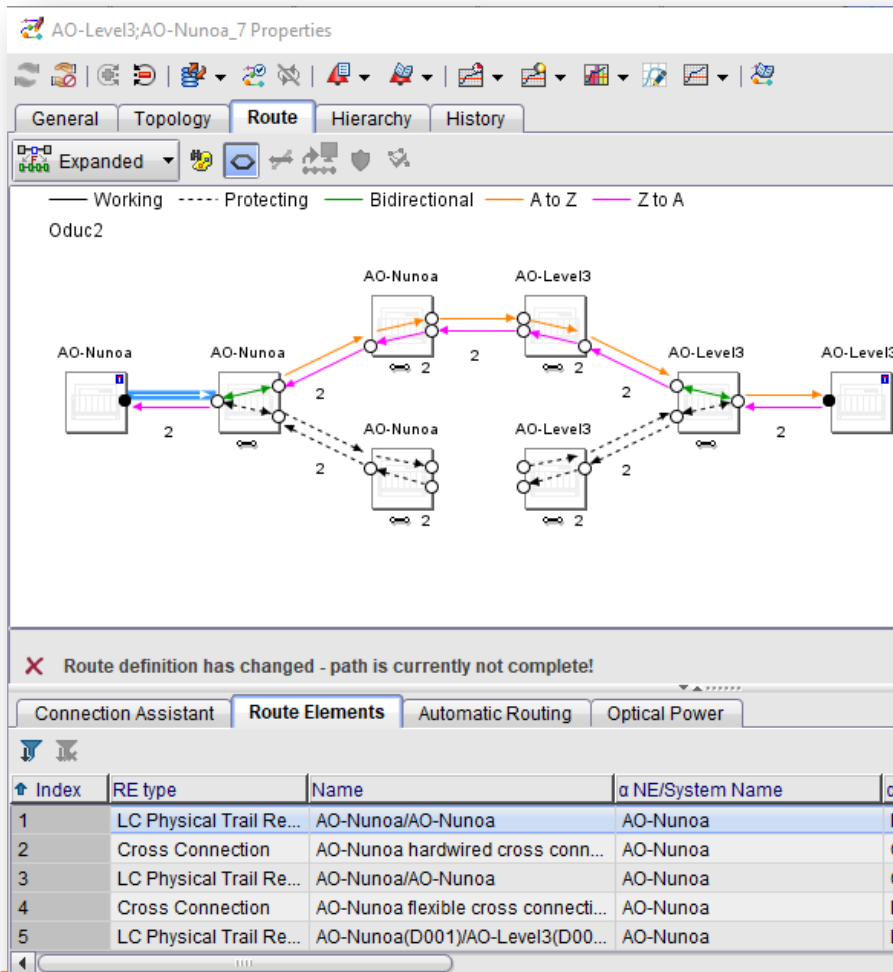
- Client interface: I20C10G-1 Flexi-rate client for 10G:
 - 20x10GEthernet



P2: Santiago – La Serena

REUNA-Level3: The 1st 100G working

- Activated just this week, 16th/October



Summary

Throughput	Completed	00d:00:03:44	Start Time	17/10/2017 01:06:11
Back-to-Back	Completed	00d:00:02:22		
Frame Loss	Completed	00d:00:04:28		
Latency	Completed	00d:00:02:21		

TX Frames: 138581 Trial #: 2

Frame Size	Throughput (Gbit/s)	Back-to-Back (Gbit/s)	Frame Loss (%)	Latency (ms)
64	10,00000	10,00000	0,000	0,35700
128	10,00000	10,00000	0,000	0,35698
256	10,00000	10,00000	0,000	0,35705
512	10,00000	10,00000	0,000	0,35705
1024	10,00000	10,00000	0,000	0,35705
1280	10,00000	10,00000	0,000	0,35703
9000	10,00000	10,00000	0,000	0,35703

Unit: Gbit/s Gbit/s % ms

Layer: All All Step: 100,0000 Mode: Cut Through

P1 10GE LAN LINK -2,3 dBm

P2: Next steps

- Middle of November:
 - Finish La Serena – Santiago
 - La Serena – Summit, AURA's equipment, installation
- December
 - Deployment of the Backup link in Santiago

P1: Santiago - South

P3: Santiago to the South



- 2017: Network desing and fiber agreements
- 2018 (2Q): Deployment
- One pair of fiber for a long term agreement
- 80 lambdas
- Lambdas 100/200Gbps y 10Gbps



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