



Consorti de  
Serveis Universitaris  
de Catalunya

## **SIG-NOC Flash Presentation**

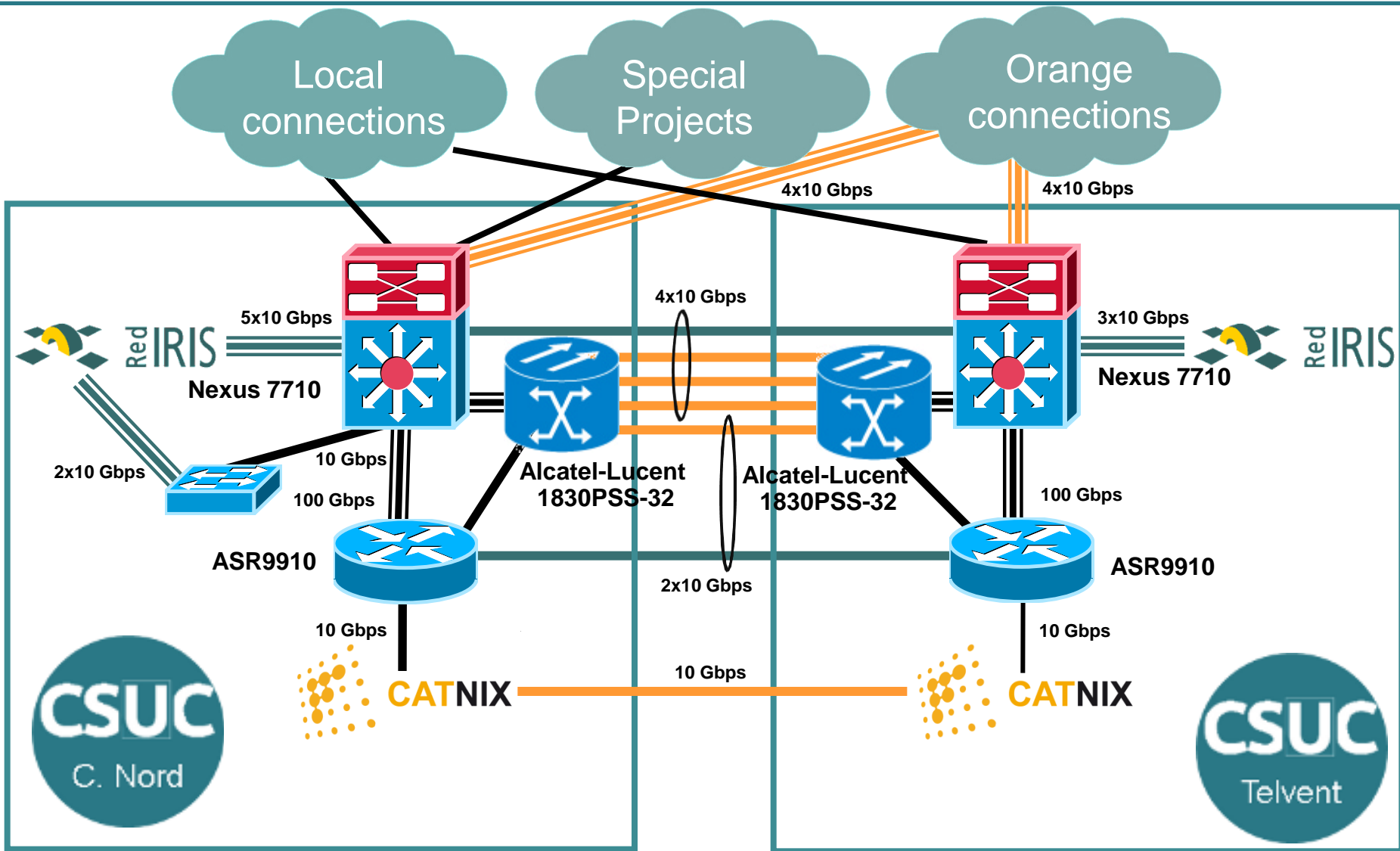
Maria Isabel Gandía Carriedo  
7th SIG-NOC meeting  
CSUC, Barcelona, 19-04-2018



## Network (I): Infrastructure

- ✓ Dark fiber for organizations near our main building (~ 30 km).
- ✓ Network of L2 circuits based on redundant rings leased to Orange.
- ✓ DWDM leased lines.
- ✓ 2 core nodes linked with a 100 Gbps ring:
  - Optical equipment (L1): Alcatel-Lucent 1830PSS-32
  - Switching (L2): Cisco Nexus 7700
  - Routing (L3): Cisco ASR9910 for routing
- ✓ Several routers & servers for services (ASR1001, Catalyst 6500, etc).
- ✓ 3 nodes for CATNIX (the exchange point) with Arista 7280SE.
- ✓ Out-of-band access routers using ADSL connections.

# Network (II): Infrastructure (core)



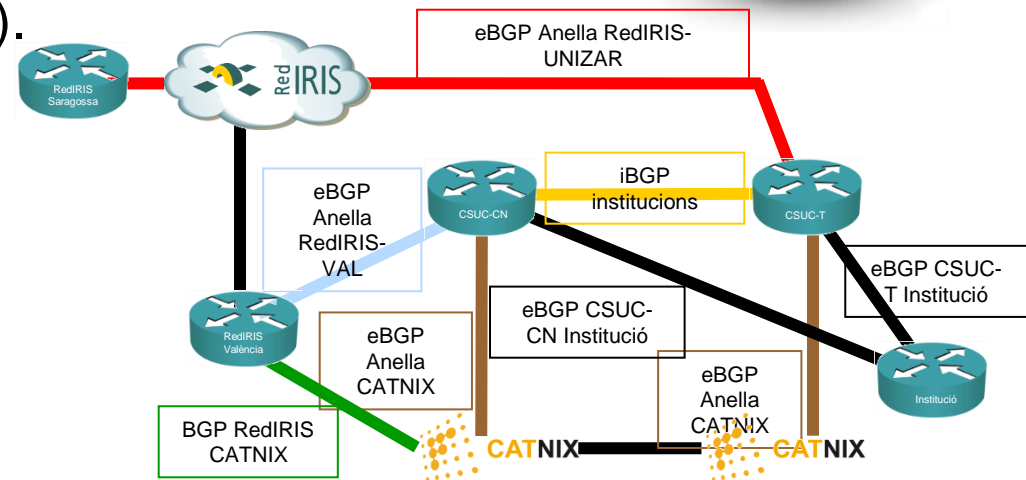
RedIRIS

Orange

Local connections

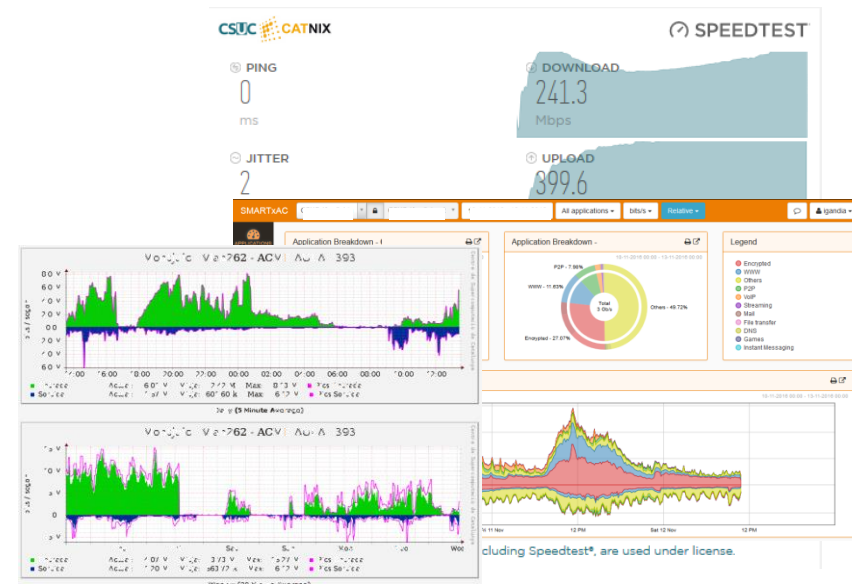
## Network (III): Services

- ✓ L2 circuits (between different points of access of the same or different institutions, including CSUC and RedIRIS-Géant-...).
- ✓ Redundancy using BGP to the 2 nodes (static is possible).
- ✓ Multicast & IPv6 & QoS.
- ✓ Temporary upgrades if necessary (and possible).
- ✓ DDoS mitigation solution with Arbor.
- ✓ DNS:
  - Secondary or replica of .es, .cat, .com, .net, root-F, J, K & L
  - Secondary of the domains and reverses of the institutions
- ✓ Two NTP servers (Stratum1).
- ✓ Eduroam.
- ✓ Proxy-cache & ftp-mirror.
- ✓ CSIRT



## Network (IV): Tools

- ✓ Cacti (+ Plugins: Reportit, Told, Superlinks, Boost, Link2BDCops) for SNMP statistics, accessible per institution.
- ✓ SMARTxAC (passive monitoring and analysis system) for Netflow statistics, accessible per institution with federated access (UNIFICAT).
- ✓ Speedtest, M-lab node (NDT...), Iperf, MGEN for network bandwidth measurement.
- ✓ Standard tools (ping, traceroute, mtr) for troubleshooting.
- ✓ RMON + tcpdump + wireshark for an ad-hoc sniffer.
- ✓ Splunk for logging analysis.
- ✓ Zabbix for servers monitoring.
- ✓ RIPE Atlas + RIPE Anchor probes
- ✓ RIPE RIS node to see BGP changes.



## ✓ Roles, coverage and responsibility:

- 1 manager, 4 network engineers & 1 student
- Daytime (from 8:00 to 18:30 approx)

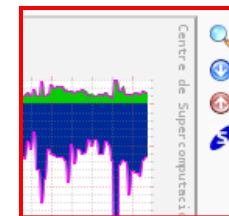
## ✓ Organization:

- Centralized during working hours at CSUC
- Out-sourced out of working hours
- Our staff monitors the outsourced NOC during the weekend



## ✓ Tool integration:

- UNIFICAT for SMARTxAC & Rocket, working on Cacti and Jira integration
- Gateway between CSUC DB and the NOC DB for contact information.
- Gateway between Cacti and the NOC DB to have all the information together, specially for the weekends.



## Front end (I): Types of Users

- ✓ Public and Private non-profit Universities
- ✓ Official Bodies of Research
- ✓ Research Centres and Institutes
- ✓ Hospital Research Departments
- ✓ Official bodies of R+D management
- ✓ Institutions with Relevant Digital Contents for the Scientific and Technical Community
- ✓ Entities Participating in R+D+i Projects
- ✓ Entities of Special Interest for R+D institutions
- ✓ Technological and Scientific Parks
- ✓ Other Hospital Departments
- ✓ Technological Centres participating in R+D projects

### ✓ SLA:

- There is a written agreement including SLA with every institution
- For customers using the leased lines from Orange, we apply the same SLA

### ✓ Tools to communicate with and keep track of users?

- Request tracker (RT)
- Jira
- Telephone
- E-mail (we redirect it to RT)
- Mailing lists
- Chat
- Meetings





## Inter-NOC communication (I)

- ✓ Internally and with other groups in CSUC:
  - Directly
  - Chat (Rocket)
  - E-mail
  - Scheduled or specific meetings
- ✓ Outside CSUC:
  - E-mail/RT
  - Telephone
  - Meeting
  - Chat (Pidgin, Slack, HipChat,...)
- ✓ Tools used to facilitate inter-NOC communication:
  - RT/e-mail/Telephone/Chat. With RedIRIS, we keep both ticket numbers on the header, as we both use RT
  - E-mail/Telephone. With our providers we have a single manager and/or a customer telephone.

- ✓ What we document:
  - Setting up and configuration of services (How-to)
  - Changes on services (e.g. routing)
  - Interfaces, VLAN numbers, IP addresses, changes in the RIPE database
  - We are beginning to automate configurations
- ✓ Tool to create and update documentation:
  - Confluence
- ✓ No Best Practice Documents available to share yet
  - Not yet



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**Thanks for you attention!**

**Questions?**

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