

T1 Center Information

- **In interpreting the T0/T1 document how do the T1s foresee to connect to the lambda?**

It is expected that ES-T1 will be connected via a level-2 circuit 10 GE. managed by RedIris.

- **Which networking equipment will be used?**

As RedIRIS is in a process of tendering its next-generation network infrastructure. This can not be specified at the time of writing this document. Nevertheless, it is clearly envisaged that the PIC-LHC level-2 link will be transported within the RedIRIS network transparently at the optical layer, either using RedIRIS optical infrastructure or via a leased lambda, until a GÉANT2 PoP. Likewise, PIC can not specify its infrastructure at this time, since it needs to coordinate with RedIris.

- **How is local network layout organised?**

See Figure1 attached.

- **How is the routing organised between the OPN and the general purpose internet?**

For all routes received via the LHC-BGP session, the traffic will follow the LHC-PIC 10GE dedicated link. For all other destination packets, the traffic will use the global research internet link.

- **What AS number and IP Prefixes will they use and are the IP prefixes dedicated to the connectivity to the T0?**

The AS to be used will be the RedIRIS AS 766. The address space which will be used belongs to the RedIRIS RIPE assigned address space. At this moment, the slash to be used is not fully determined. In any case, it will be a public address space in a contiguous block.

PIC-LHC planned connection

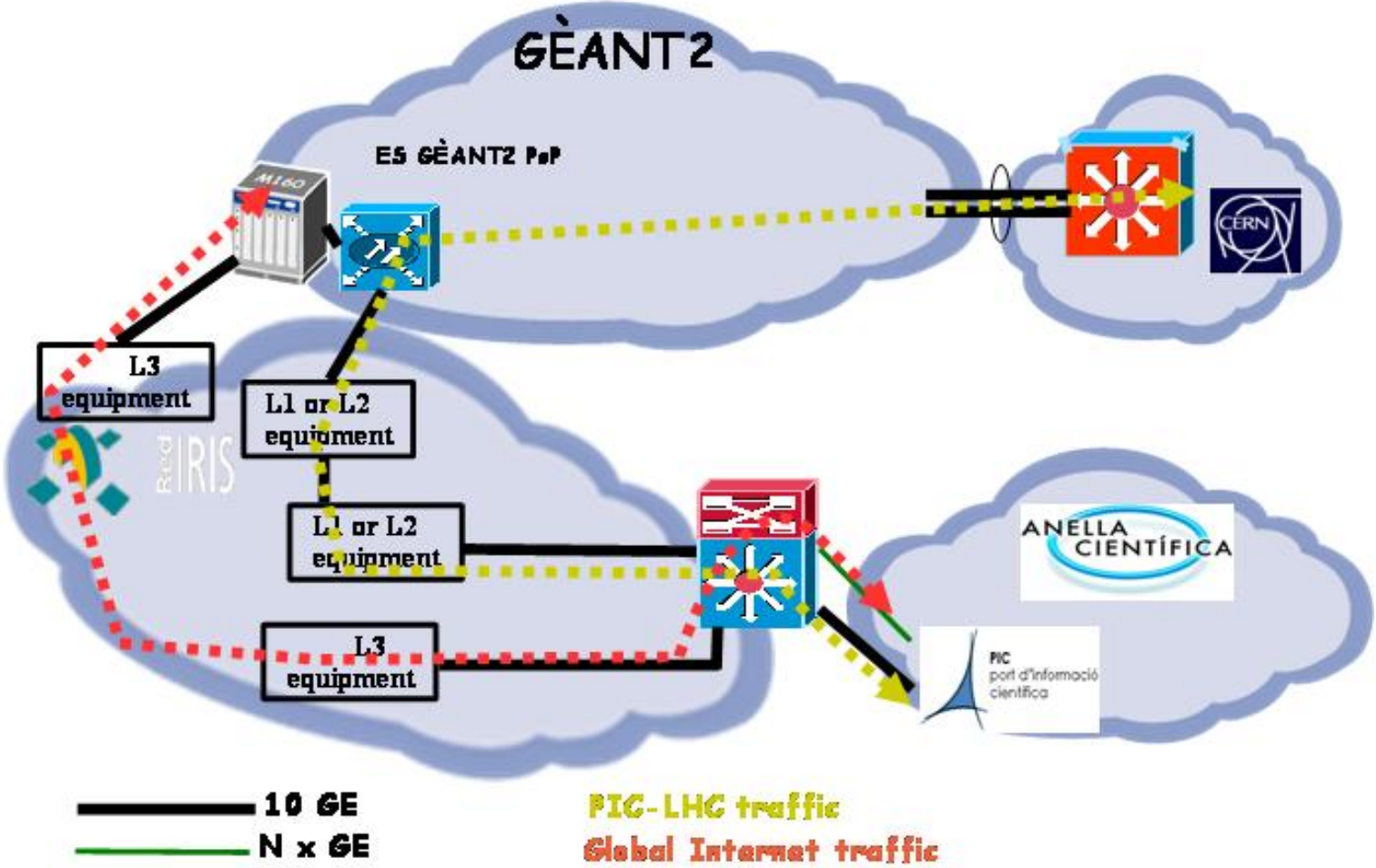


Figure 1

- **What backup connectivity is foreseen?**

The preferred solution will be another 10GE link following another physical route but as the GÉANT2 PoP in Spain is connected to the GÉANT2 dark fiber cloud only by one route (the other one is based on leased lambdas) this can not be implemented until a revision on these leased lambdas is done and replaced with an alternate dark fiber path. This solution is still under economical analysis.

At present, RedIris can configure an mpls tunnel (l2vpn) over the RedIRIS and GÉANT2 networks using the existing PIC global internet connection.

- **What is the monitoring technology used locally?**

RedIRIS used snmp. RedIRIS gets the equipment traps and these are processed. Snmp is also used to get information about traffic load on the links, CPU used, temperature, BGP prefixes.... and this information is represented using mrtg.

PIC uses the same scheme.

- **How is the operational support organised?**

RedIRIS has a Network Operation Center (NOC) that supervises, manages and configures the network. This RedIRIS NOC is operational in working days from 08:00-18:00 (CET). The rest of the time, RedIRIS has a "thin" NOC that supervises the network state (links and hardware). Hence, the network has a 24x365 supervision. For the hardware maintenance, RedIRIS has a 4 hours service contract, which means that in 4 hours, a spare hardware replacement is done if needed.

The Anella Cientifica regional provider has a 24x365 supervision of its network. For the hardware maintenance, there is a 4 hour service contract.

The operational supervision of PIC is from 8:00h. to 21:00h., Monday to Friday. An on-call service is planed starting mid-2006. For the hardware maintenance, PIC has a 4 hours service contract for the network elements.

- **What is the security model to be used with OPN?**

Firewalls will not be used. The security model will be based on level-3 filters within the level-3 equipment.

- **How will it be implemented?**

In and out filters to control the IP address both the destination and source IP address. Also, the open TCP and UDP ports will be controlled.

- **What is the policy for external monitoring of local network devices, e.g. the border router for the OPN.**

Within the national backbone, the external monitoring is not considered (to the national backbone). External monitoring of devices related to the PIC-LHC network can be considered on a case-by-case basis.