

PIC
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PIC Tier1 Report

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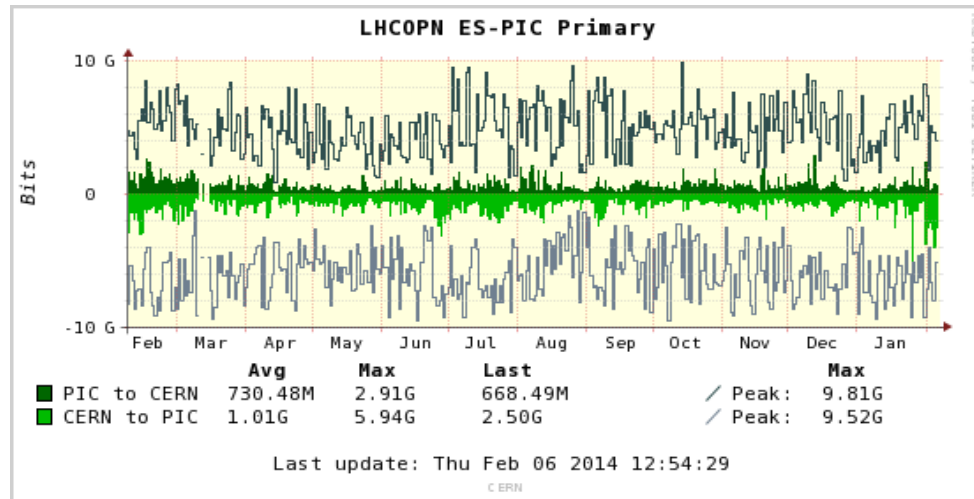
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Plans about networking upgrades

- LAN: **April 2014**. Replace old aggregation switches (8x 3Com 5500) with new ones (4x Nexus 2248)
 - 48x1Gbps Ethernet ports, up to 4x10Gbps fiber uplinks
- LAN: **During Run2** ramp-up of resources, a new module of 48x10Gbps ports will be needed in our core router (Nexus 7009). We foresee to install it before.
- LAN: The need of new firewall to fully adopt IPv6 (**mid-2015**)
 - Some implementations are being reviewed (HW vs. SW)
- WAN: upgrade to 40 Gbps or 100 Gbps links? (**mid-2015**)

Network connectivity to WLCG Sites (I)

- LHCOPN
 - Primary link **10 Gbps**
 - 56 PBytes of data moved on 2013 – Average of 12 hours of link saturation per month in Run1



- Backup link **1 Gbps**
 - 15 incidents with an average duration of ~3h (mostly fiber cuts)
 - This link is only for T0 \leftrightarrow T1 transfers
 - T1 \leftrightarrow T1 transfers redirected uses Internet

Network connectivity to WLCG Sites (II)

- **Internet**

- Actually T2 \leftrightarrow T1 transfers uses this connection of 10 Gbps

- **LHCONE**

- NREN to install the needed VRF router. Deployment expected before *end of February 2014* (we are working as of today in close contact with them)
 - 10 Gbps (link shared with LHCOPN)
- Connection from RedIRIS VRF to GEANT VRF expected at 10 Gbps
- Once this is in production in PIC, national Tier2s will connect at 10 Gbps (CIEMAT-LCG2,...)
- Then, the plan is to move our Internet connectivity to 1 Gbps (at low priority).

Concerns

- LHCOPN is a well-known network, robust and stable, and it offers good functionality
 - Although it might be improved, we are well satisfied with it – it works, don't change it!
- We're sure LHCONE will be successful at our site, but we don't have operational experience yet.
 - We hope to participate more actively in the P2P project soon
- WLCG is deploying perfSONAR-PS instances:
 - It measures the health of the links (bwd, lat)
 - How we handle the network monitoring? Are you interested in it? We are!
 - LHCOPN/ONE monitoring and alarming system? Are there network shifts expected?