LHCOPN Information

- https://twiki.cern.ch/twiki/bin/view/LHCOPN/WebHome
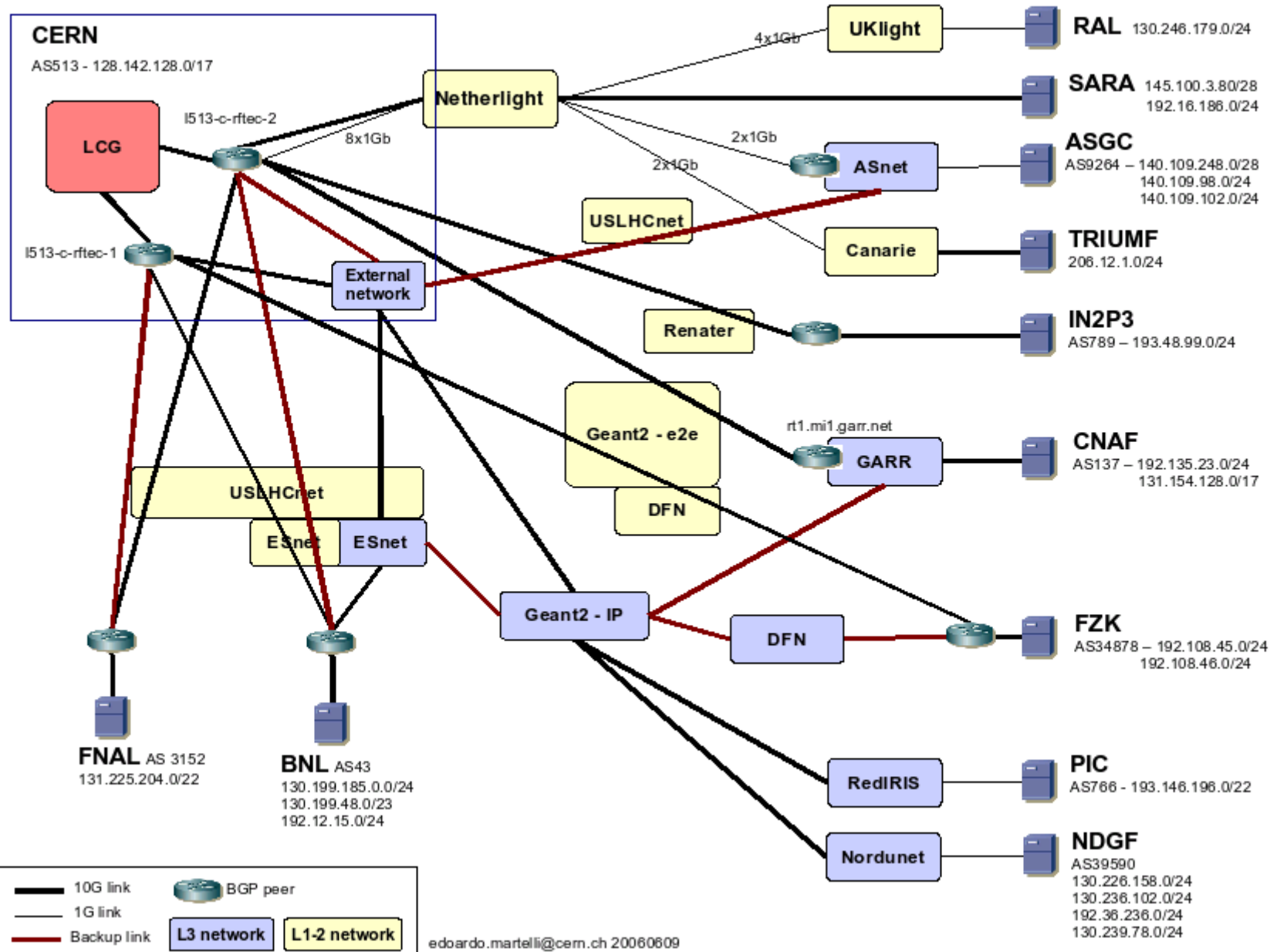
- OPN was started to address the "hard" requirements of T0-T1 connectivity
  - Important to get the data form CERN to the T1's consistently at well defined data rates.
  - 10Gb/sec link provisioning a sensible unit providing capacity also for "catch up"
  - T1-T1 data transport can be part of this model without perturbing the T0-T1 traffic

- T2 traffic was not part of the model
  - There were many uncertainties
    - Data Rates
    - Link Provisioning
  - Smaller T2's can use general R&E IP infrastructures to get access to all T1's
  - Larger T2's may need/have networking to certain T1's (CMS)
    - Interaction/Opportunities between the OPN and T2 networking needs to be studied.

LHCOPN – current status

CERN
AS513 - 128.142.128.0/17

LCG

l513-c-rftec-2
8x1Gb

l513-c-rftec-1

External network

UKlight — **RAL** 130.246.179.0/24

4x1Gb

Netherlight — **SARA** 145.100.3.80/28
192.16.186.0/24

2x1Gb

ASnet — **ASGC** AS9264 – 140.109.248.0/28
140.109.98.0/24
140.109.102.0/24

2x1Gb

USLHCnet

Canarie — **TRIUMF** 206.12.1.0/24

Renater — **IN2P3** AS789 – 193.48.99.0/24

Geant2 - e2e

rt1.mi1.garr.net

GARR — **CNAF** AS137 – 192.135.23.0/24
131.154.128.0/17

DFN

USLHCnet

ESnet ESnet

Geant2 - IP

DFN — **FZK** AS34878 – 192.108.45.0/24
192.108.46.0/24

FNAL AS 3152
131.225.204.0/22

BNL AS43
130.199.185.0.0/24
130.199.48.0/23
192.12.15.0/24

RedIRIS — **PIC** AS766 - 193.146.196.0/22

Nordunet — **NDGF** AS39590
130.226.158.0/24
130.236.102.0/24
192.36.236.0/24
130.239.78.0/24

10G link	BGP peer
1G link	
Backup link	L3 network L1-2 network

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LHC T0-T1 Status, CDB,
July 2006

David Foster, CERN

Working Groups Issues

- ## Routing (led by CERN)
  - Now working on L3 models for resiliance. New links being put in place between centers provide alternate paths.
    - Several Cross Border Fiber Links

- ## Security (led by UK)
  - Security document being circulated.

- ## Operations (led by DANTE)
  - Dante will establish a coordination unit (E2ECU). This will coordinate link state information.
  - EGEE (SA2) will create an ENOC to coordinate a service level view of the network.

- ## Monitoring (led by USA)
  - PerfSonar being deployed by the NREN's as a first step.
  - More advanced monitoring techniques being investigated by the working group.

Other Work Items

- Based on the computing models the actual impact of T1-T1 traffic is being analysed. (Don Petravik)

- Now considering the opportunities for large T2's with high bandwidth capability.
    - Initial survey of hard CMS requirements for the next meeting. (Don Petravik)

- Existing transtlantic bandwidth and its possible availability for LHC use will be studied. (David Foster)

- Create a PerfSonar readiness matrix on the Twiki. Objective is a complete E2ECU service with all providers and operations infrastructure 24x7 by 31/12/2006.