

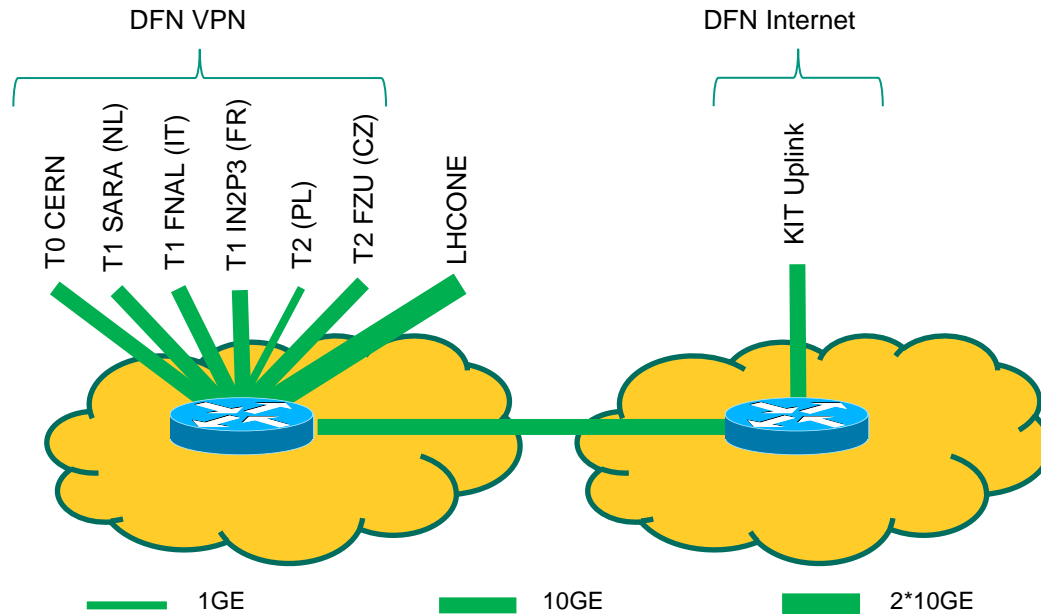
# Upgrade GridKa DFN-Uplink

**Bruno Hoeft**

STEINBUCH CENTRE FOR COMPUTING - SCC



# Status Quo GridKa connections



## ■ Contra:

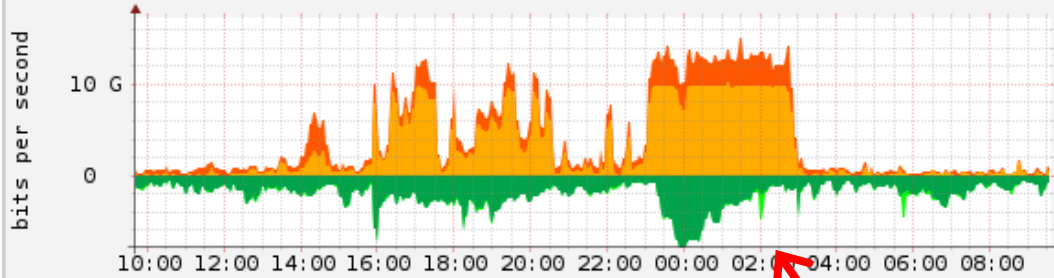
### ■ Dedicated links to Tier-x

#### ■ Clippings

#### ■ no synergy effect between dedicated segregated point-to-point links

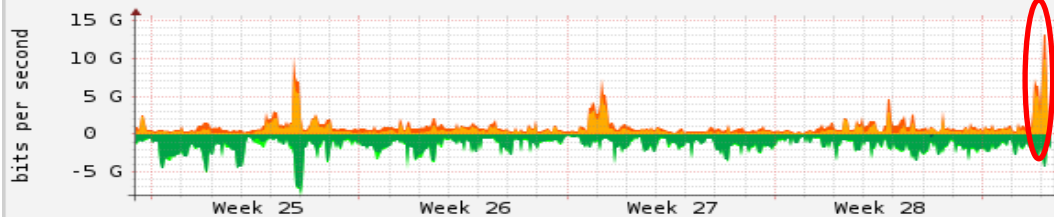
# throughput statistics

LHCONE 15./16. July 2014



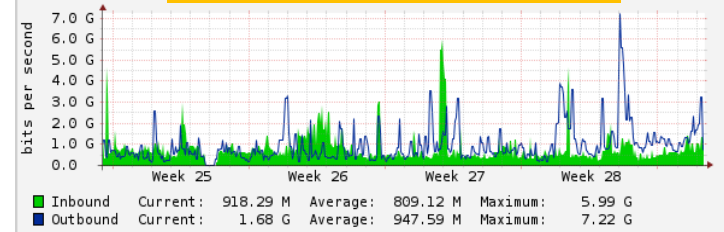
VL 705 IN	Maximum: 5.18 G	Current: 312.64 M	Average: 1.17 G
VL 704 IN	Maximum: 10.29 G	Current: 506.42 M	Average: 2.98 G
VL 703 In	Maximum: 96.61	Current: 23.67	Average: 26.98
<b>Total IN</b>	<b>Maximum: 14.99 G</b>	<b>Current: 819.06 M</b>	<b>Average: 4.15 G</b>
VL 705 OUT	Maximum: 2.82 G	Current: 12.58 M	Average: 67.40 M
VL 704 OUT	Maximum: 7.77 G	Current: 683.95 M	Average: 2.09 G
VL 703 OUT	Maximum: 0.00	Current: 0.00	Average: 104.98
<b>Total OUT</b>	<b>Maximum: 7.77 G</b>	<b>Current: 696.54 M</b>	<b>Average: 2.16 G</b>

LHCONE

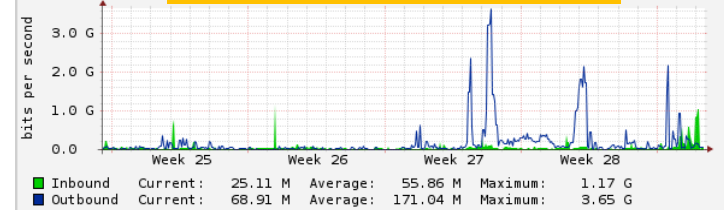


VL 705 IN	Maximum: 3.26 G	Current: 207.42 M	Average: 421.78 M
VL 704 IN	Maximum: 9.83 G	Current: 198.98 M	Average: 659.21 M
VL 703 In	Maximum: 6.06 M	Current: 25.79	Average: 30.09 k
<b>Total IN</b>	<b>Maximum: 13.09 G</b>	<b>Current: 406.41 M</b>	<b>Average: 1.08 G</b>
VL 705 OUT	Maximum: 885.46 M	Current: 65.70 M	Average: 98.36 M
VL 704 OUT	Maximum: 7.69 G	Current: 1.91 G	Average: 1.58 G
VL 703 OUT	Maximum: 0.00	Current: 0.00	Average: 1.08 M
<b>Total OUT</b>	<b>Maximum: 8.07 G</b>	<b>Current: 1.97 G</b>	<b>Average: 1.68 G</b>

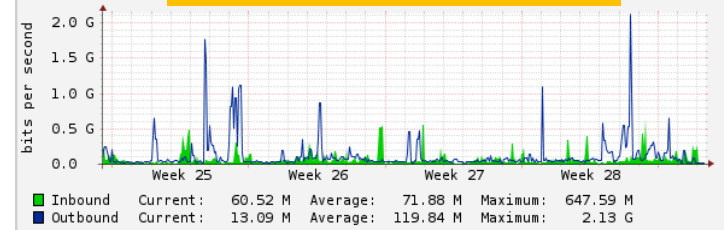
DE-KIT -- CERN



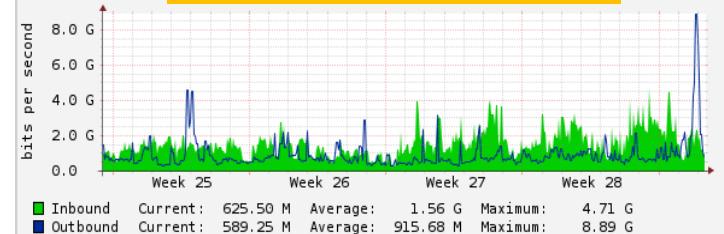
DE-KIT - NL-T1



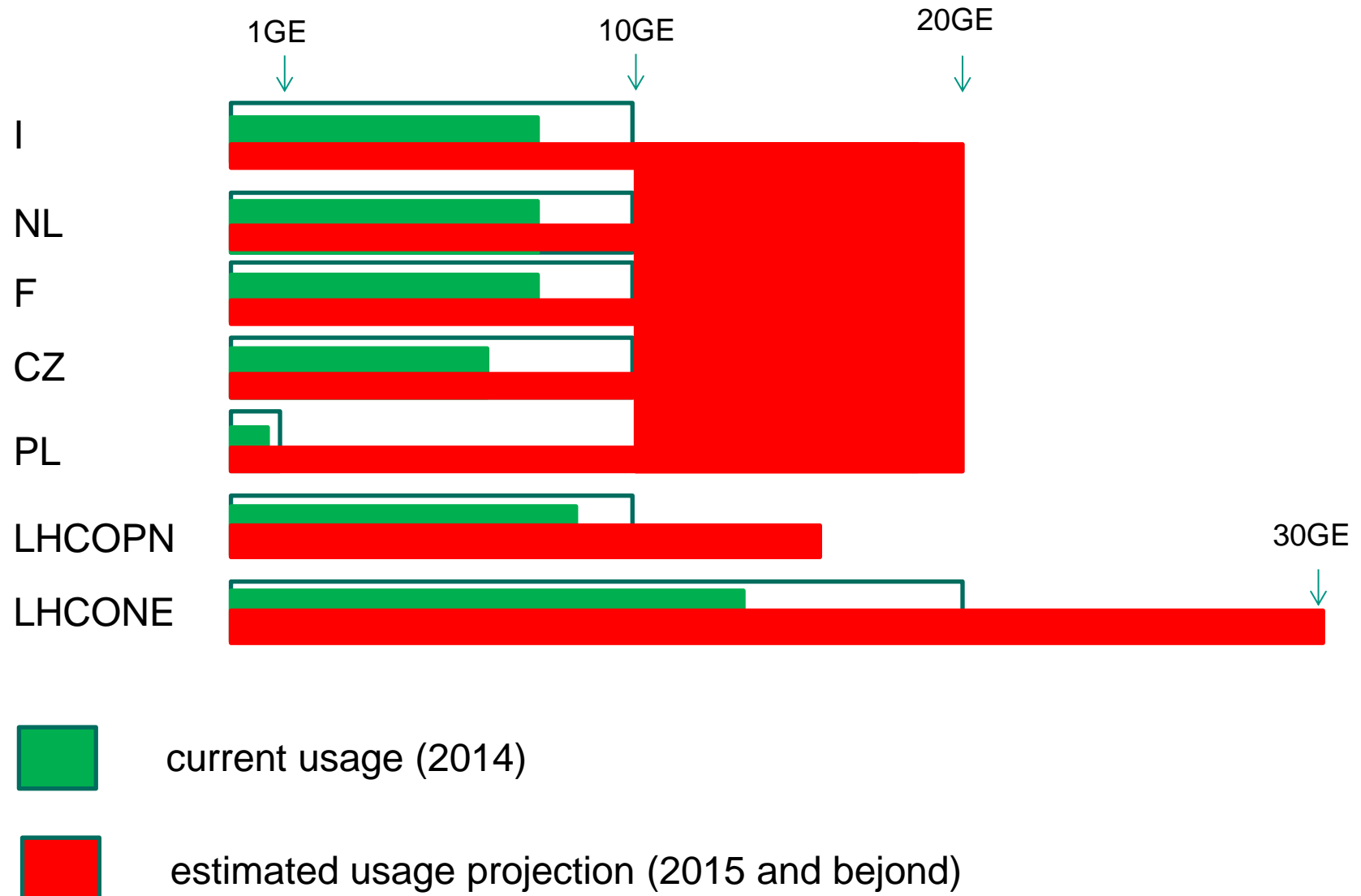
DE-KIT -- FZU



DE-KIT - Internet Service



# Usage and future projection

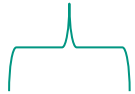


# Upgrade scheme

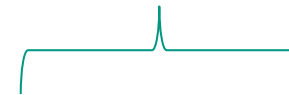
- Migration of dedicated connections to tier-1 and tier-2 sites to LHCONE
  - Tier-1: IT-INFN-CNAF(I), NL-T1 (NL), FR-CCIN2P3 (FR),
  - Tier-2: FZU (CZ), Polisch tier-2 centers (PL)
- Merge all dedicated links into the 100G link(s), except the LHCOPN link to CERN
  - LHCONE + KIT-Uplink
  - Total capacity of 100Gb/s
- synergy effect of utilizable bandwidth
- Cushioning of peak utilization

# Upgrade GridKa + KIT

DFN VPN



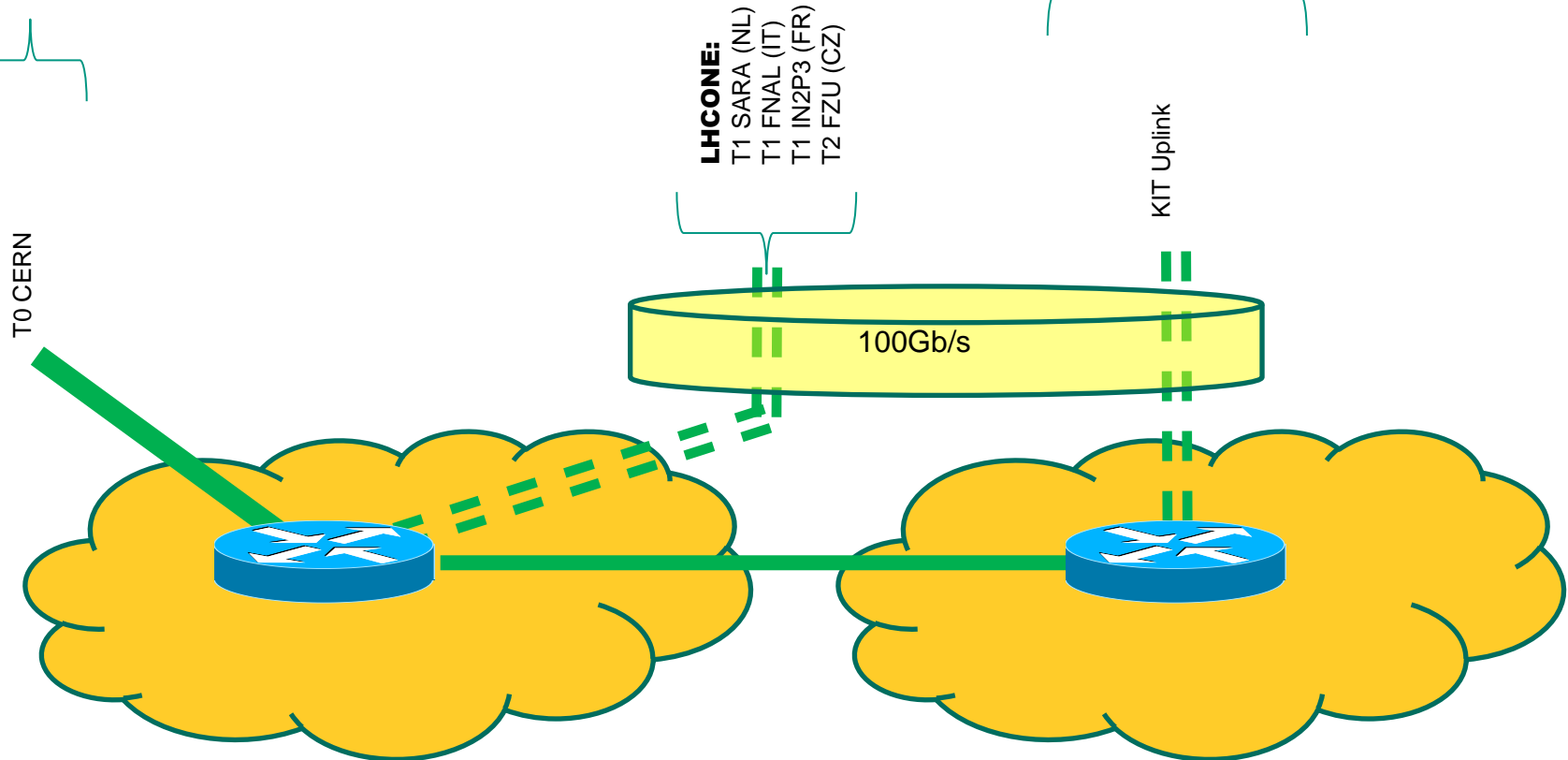
DFN Internet



**LHCONE:**  
T1 SARA (NL)  
T1 FNAL (IT)  
T1 IN2P3 (FR)  
T2 FZU (CZ)

KIT Uplink

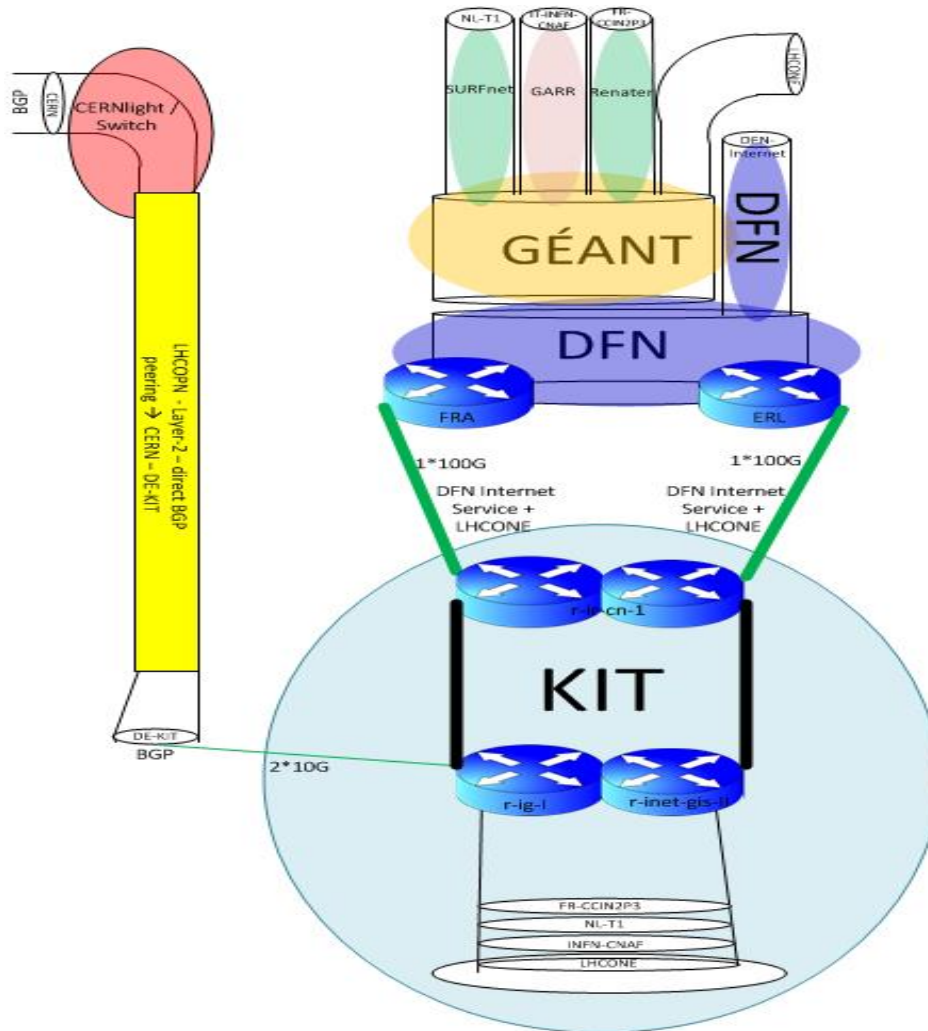
TO CERN



 2\*10GE

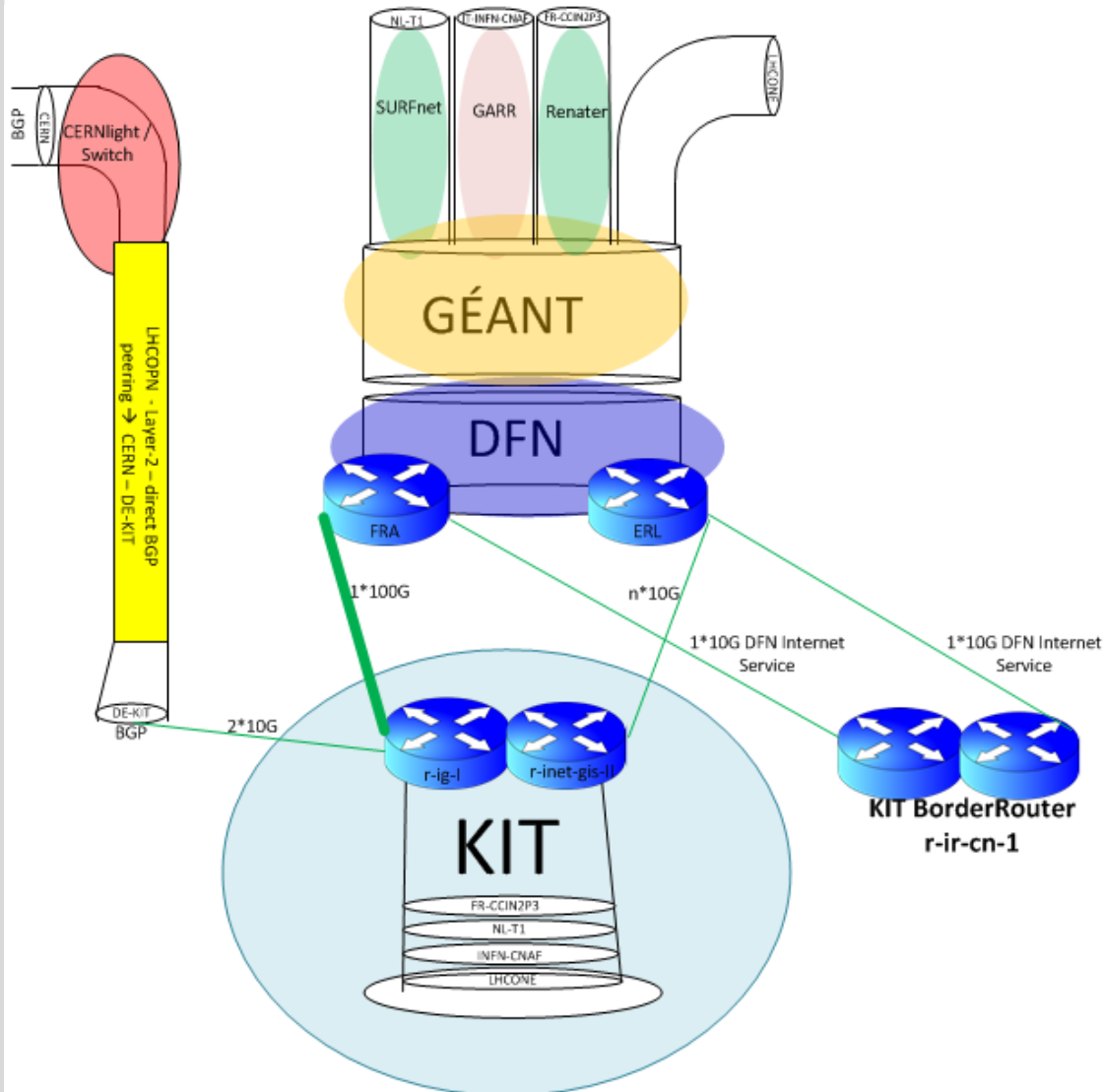
 Virt. BW <100GE

# Planning of Upgrade



- Merging of all links (except 2\*10G to CERN) in two 100G links
  - Redundant
  - Traffic shaping to total capacity of 100Gb/s
- Migration of dedicated T1 and T2 connection to LHCONE
  - T1 to T1 traffic and
  - T0 backup link via neighboring T1 center

# First 100G step towards production deployment



- (GridKa) DE-KIT:
  - 2 \* 10G to CERN (LHCOPN)
  - 1 \* 100G to DFN-FRA (LHCONE) traffic shaping symmetric to 10G links to DFN-ERL
  - n \* 10G to DFN-ERL
  - The cbf connections
    - DE-KIT – FR-CCIN2P3
    - DE-KIT – IT-INFN-CNAF
    - DE-KIT – NL-T1 (?)
 are migrating to LHCONE
  
- KIT:
  - 2 \* 10G Internet Service



## Merging of links @ DE-KIT to LHCONE

- T1-T1 CBF: DE-KIT – FR-CCIN2P3 to LHCONE ✓
- T1-T1 CBF: DE-KIT – IT-INFN-CNAF to LHCONE ✓
- T1-T1 CBF: DE-KIT – NL-T1 to LHCONE ?
- T0-T1 backup link via LHCONE ?
  
- T2-T1 CBF: DE-KIT – Poznan → dismantled end of 2014 ?
- T2-T1: DE-KIT – FZU (Prag) → dismantled end of 2014 ?

**thanks for your attention**



**Questions**