

## Loss of T0-T1 OPN Links

### Description

During motorway expansion work between Obergerfalingen and Giebenach a series of fibre ducts were damaged resulting in COLT dark fibre cuts affecting Géant circuits. As a result the following T0-T1 primary links were affected:

- ASGC
- CNAF
- KIT
- NDGF
- TRIUMF (primary and backup)

In addition, fibres used for USLHCNet were lost and hence FNAL and BNL were also affected.

### Timeline of the incident (times in UTC)

15:46 10<sup>th</sup> June 2009 – incident started with a fibre cuts as suspected cause

16:04 10<sup>th</sup> June 2009 – information received from DANTE confirming that there had been a fibre cut in the Géant backbone

06:11 11<sup>th</sup> June 2009 – COLT identifies the cut as being close to Zurich

10:03 11<sup>th</sup> June 2009 – fibre cut identified between Obergerfalingen and Giebenach due to motorway expansion work

14:54 11<sup>th</sup> June 2009 – estimate time to repair received from COLT (04:00 12<sup>th</sup> June 2009)

03:47 12<sup>th</sup> June 2009 – links restored

### Analysis

Following the lost of the abovementioned links, the LHCOPN traffic was automatically rerouted on other links as follows:

- ASGC – traffic rerouted via dedicated backup link
- CNAF – traffic rerouted via CCIN2P3/DE-KIT
- DE-KIT – traffic rerouted via CCIN2P3
- NDGF – traffic rerouted via NL-T1
- TRIUMF A+B – traffic rerouted via BNL

Due to the design of USLHCNet the links to BNL and FNAL were not lost. However, there was a reduction in bandwidth to FNL (7.6Gbps) and BNL (4.2Gbps) as well as the AGC backup (1.15Gbps) handled by USLHCNet.

The backup paths work successfully and no sites lost connectivity, although there was degradation in the bandwidth available.

### **Follow Up**

No immediate follow up foreseen required, although there will be some discussion at the next LHCOPN meeting regarding the potential use of more use of cross border fibres to provide further diversity in paths between T1 centres.