

## CERN GSM monitoring system

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As a result of the tremendous development of GSM services over the last years, the number of related services used by organizations has drastically increased. Therefore, monitoring GSM services is becoming a business critical issue in order to be able to react appropriately in case of incident.

In order to provide with GSM coverage all the CERN underground facilities, more than 50 km of leaky feeder cable have been deployed. This infrastructure is also used to propagate VHF radio signals for the CERN's fire brigade. Even though CERN's mobile operator monitors the network, it cannot guarantee the availability of GSM services, and for sure not VHF services, where signals are carried by the leaky feeder cable. So, a global monitoring system has become critical to CERN. In addition, monitoring this infrastructure will allow to characterize its behaviour over time, especially with LHC operation.

Given that commercial solutions were not yet mature, CERN developed a system based on GSM probes and an application server which collects data from them via the CERN GPRS network. By placing probes in strategic locations and comparing measurements between probes, it is possible now possible to determine if there is a GSM or VHF problem on one leaky feeder cable segment.

This system has been successfully working for several months in underground facilities, allowing CERN to inform GSM users and fire brigade in case of incidents.

**Primary author:** Mr GHABROUS, Carlos (CERN)

**Presenter:** Mr GHABROUS, Carlos (CERN)

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