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100G Deployment@(DE-KIT)

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The Steinbuch Center for Computing (SCC) at Karlsruhe Institute of Technology (KIT) was involved quite early in 100G network technology. In 2010 already a first 100G wide area network testbed over a distance of approx. 450 km was deployed between the national research organizations KIT and FZ-Jülich - initiated by DFN (the German NREN). Only three years later 2013, KIT joined the Caltech SC13 100G "show floor" initiative using the transatlantic ANA-100G link to transfer LHC data from a storage at DE-KIT (GridKa) in Europe to hard disks at the show floor of SC13 in Denver (USA).

The network infrastructure of KIT as well as of the German Tier-1 installation DE-KIT (GridKa) however, is still based on 10Gbps. As highlighted in the contribution "Status and Trends in Networking at LHC Tier1 Facilities" to CHEP 2012, proactive investment is required at the Tier-1 sites. Bandwidth requirements will grow beyond the capacities currently available and the required upgrades are expected to be performed in 2015.

In close cooperation with DFN KIT is driving the upgrade from 10G to 100G. The process is divided into several phases, due to upgrade costs and different requirements in varying parts of the network infrastructure. The first phase will add a 100G interface to combine the interface connecting DE-KIT to LHCONE, where the highest demand for increased bandwidth is currently predicted. LHCONE is a routed virtual private network, connecting several Tier-[123] centers of WLCG and Belle-2. In phase number two, a second 100G interface will provide 100G symmetric interfaces to LHCONE. In phase number three, several of the routing interlinks of the Tier-1 center (DE-KIT) will receive an upgrade to 100G. KIT itself is still based on 10G, yet this will be upgraded in the next phase with two symmetric 100G uplinks. In the last phase, the router interface at KIT will receive a 100G upgrade at the required locations.

The requirements of the different phases as well as the planned topology will be presented. Some of the obstacles we discovered during the deployment will be discussed and solutions or workarounds presented.

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