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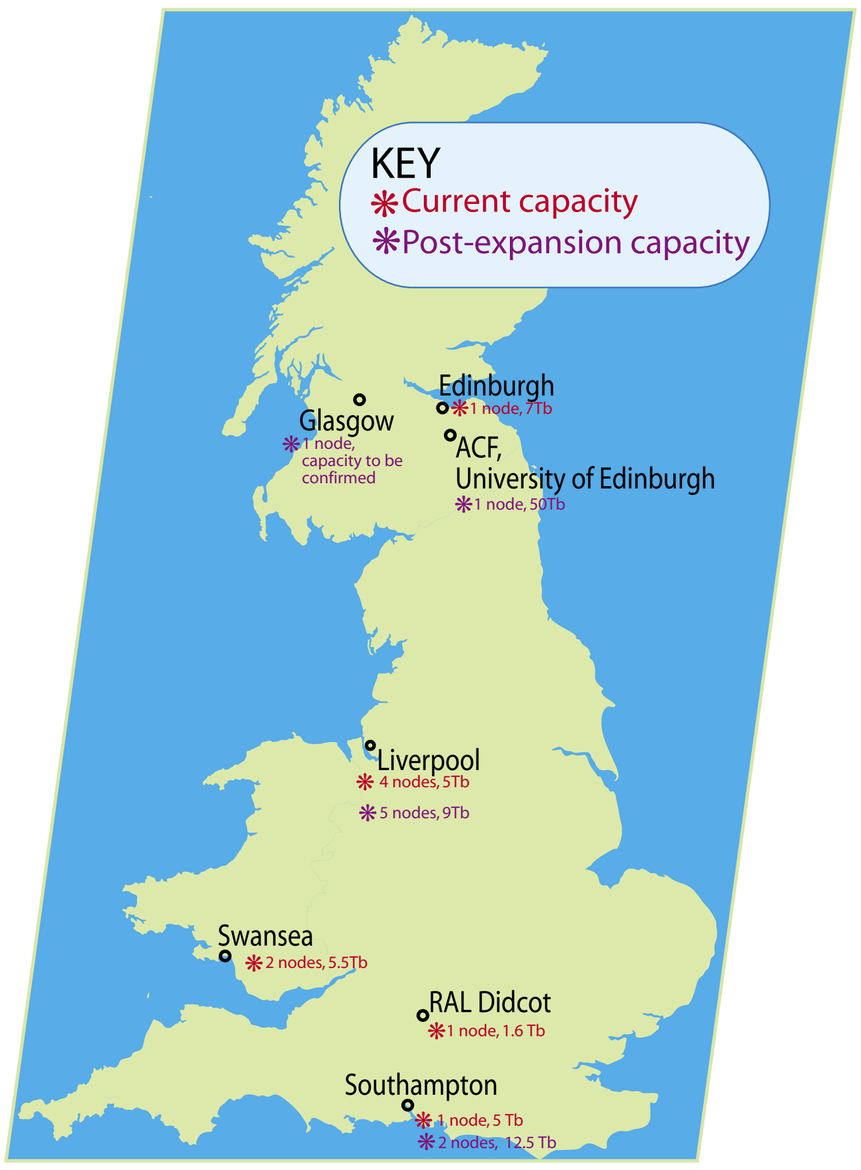
qcd GRID

UKQCD Grid: Probing the building blocks of matter with the power of the Grid

Quantum chromodynamics (QCD) is the study of the building blocks of our universe. Both in the UK and around the world, scientists are developing techniques to quantify the complex behaviour of fundamental particles called 'quarks' and 'gluons' – the constituents of all nuclear matter. Computationally intensive simulations of these particles generate terabytes of data that then has to be analysed to extract the key physical properties.

UKQCD is a collaboration of leading particle physicists from centres around the United Kingdom. In conjunction with this collaboration, EPCC is developing QCDgrid, a data management system that combines the distributed resources of the collaborators into a robust facility called the UKQCD Grid.

EPCC aim to integrate the UKQCD Grid with similar activities in the International Lattice Data Grid (ILDG), allowing like-minded scientists around the world to share their data and benefit from the scientific progress of other groups. The multi-national data grid will be built on web service technologies and EPCC is responsible for the definition of a specification that will allow national resources (such as the UKQCD Grid) to be seamlessly integrated into the ILDG.



Some facts and figures

The UKQCD Grid has been operational since autumn 2002. It consists of nine storage elements located at five sites: Didcot (R.A.L.), Edinburgh, Liverpool, Southampton, and Swansea. An expansion phase is planned for the near future that will add new nodes at Glasgow and the University of Edinburgh Advanced Computing Facility (in Midlothian).

The storage capacity of the UKQCD Grid is 24 terabytes (which will grow to 100 terabytes post-expansion). The service hosts approximately 30,000 simulation datasets occupying one third of the current capacity.

Acknowledgements

QCDgrid is part of the GridPP/GridPP2 project, a PPARC funded collaboration between particle physicists and computational scientists from the UK and CERN, who are building a grid for particle physics.

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|epcc| UKQCD collaboration GridPP UK Computing for Particle Physics PPARC Particle Physics and Astronomy Research Council