

University of Kent data centre

This Tier 2 data centre packed in 48 server racks and 10 communications racks, plus an entrance facility housing another five communications racks in just a 200 square metre footprint. The sheer density of cabling this produced meant that only a pre-terminated cabling solution could meet the needs of the Category 6 and optical fibre links specified.

Over 3000 Category 6 pre-terminated cabling links were installed that also featured a low flammability, zero halogen cable for higher fire protection. Several hundred OM3 and single-mode fibre links were also needed to connect the high speed data services and Storage Area Network requirements of the University.

According to the results of the 2007 National Student Survey, Kent is the number one university in London and the south-east for student satisfaction. The computer room was built at the same time as the rest of the University, in the mid 1960s, and was modified in a piecemeal manner from the 1970s onwards. The facility hosts all the computing requirements of the University for both internal administration and academic research. The location also acts as a central hub for an academic Wide Area Network where the University is the local East Kent hub for this national network.

In 2007 the University of Kent Computing Laboratory's UK Mirror Service has had its busiest month since the service started over a decade ago, transferring over 154 Terabytes (169.4 million million bytes) of outbound traffic during October. This amount of traffic is equivalent to over two hundred thousand CDs filled with data or five CDs per minute and was mainly due to users downloading new releases of the popular Linux operating systems: openSUSE and Ubuntu. At its busiest point, the service handled approximately seven and a half thousand concurrent downloads with a peak flow rate of 935 Mbits/s.

The 16,000 students are located at the University's main 300 acre campus overlooking Canterbury plus the outlying facilities at Medway and Tonbridge. The Medway School of Pharmacy was opened in 2004 and is a joint school with the University of Greenwich on the Pembroke campus in Chatham. In addition, The University of Kent at Tonbridge offers part-time provision in west Kent and The University of Kent at Brussels offers post-graduate law, politics and international relations degrees. The University has three associate colleges: Canterbury College, Mid-Kent College and South Kent College.

From this.....



To this.....



This modern Tier 2 data centre was designed by specialist M&E engineers Capitoline LLP. The new computer room is based on the hot aisle/cold aisle principal and can handle IT equipment generating up to 200 kW of heat by virtue of six large Stulz air conditioning systems, a battery backed UPS system and a 630 kVA standby generator. This level of power supply and cooling equates to over 500 average sized servers.

All the cabling was installed in the under-floor void where the præterminated cable bundles made light work of the tight installation timescales and requirements not to impede the cooling airflow needed by the dense computing environment. A full labelling and documentation scheme means that cabling will remain a useful asset for many years in the future and its high density and home run layout also means that few if any changes will be needed over the next ten years. To ensure that no messy patch cables end up festooned across the computer room floor each server rack was equipped with a 48-way Category 6 copper cable link going back to the main communications row and each server row had every third cabinet also connected back to the communications row via an OM3 and singlemode cable. To ensure multimode and singlemode connections were never confused the OM3 fibre was terminated with LC connectors whereas the OS1 fibre was terminated with SC connectors.



The communications row was in turn connected back to the telecommunications entrance room (TER) by hundreds more Cat 6 cables and more OM3 and singlemode optical fibre. The TER terminates cables from both BT and Verizon plus all the campus cabling owned by the University. This includes not only the cabling for the data and telephony system but also the 'campus-watch' security, CCTV and building management systems.

The data centre had an extra innovation of a separate BMS Cat 6 cabling system providing a 48-way Cat 6 cable link around the whole facility with quad outlets every two metres. This meant that there was dedicated cable system for all the IP cameras, security alarms and BMS links from air conditioning, UPS and power systems.

Capitoline found an innovative way of testing not only the power supply provision but also the air conditioning capacity used in the hot aisle/cold aisle format. It involved buying twenty-four 2 kW electric fan heaters and placing one in each of the, as yet, unpopulated racks. Thus in the hot aisle selected, consisting of twelve 600 mm 42 U racks facing each other, 44 kW of hot air was being expelled into the hot aisle. The 33 kW Stulz precision air conditioning units are placed at the end of each hot aisle and easily coped with the load especially as each are oversized to provide an N+1 configuration. Capitoline engineers measured the hot aisle temperature and the corresponding cold aisle return air flow. Everything met the design criteria. The 44 kW load also helped in testing the N+1 UPS arrangement and also the automatic switching onto a 630 kVA standby generator installed in the car park.

Capitoline

- Designed and sized the computer room and Telecoms entrance facility after analysing and understanding the ICT requirements of the University, their growth plans and also their resilience and redundancy ambitions for the design. This led to a Tier 2, N+1 design
- Assisted in the design of the decant project so the University's existing ICT infrastructure could carry on operating over the four month project window
- Produced the technical design and tender document
- Advised the University on the suitability of project management companies to undertake the work

