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### Intelligent Infrastructure Management at Belfast City Hospital

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Most network issues have an impact on the efficiency of an organisation, but occasionally they can directly affect human lives. This was a key consideration in the planning of Belfast City Hospital's new oncology building, a state of the art centre employing the latest equipment for cancer diagnosis and therapy.

Belfast City Hospital (BCH) is Northern Ireland's leading university teaching hospital, with a strategic focus on the development of regional cancer and renal services, working in partnership with the National Cancer Institute of the United States.



Computer simulation of Belfast City Hospital's new oncology building.

#### **Hospital Expansion: Impact on ICT Staff Roles and Responsibility**

The addition of a new six-floor building represented a major expansion in the responsibilities of the hospital's ICT team. However, it was anticipated that the existing team of two would also have to find time for the additional network development and day-to-day servicing of the new building. This would not only mean over 3,200 additional network outlets, but would also involve maintaining network connection to the medical equipment. Any downtime is usually inconvenient and expensive, but in this case the effect on patient care could be catastrophic.

#### **Public-Private Partnership**

Another key element in the project was a partnership between the public and private sectors, requiring clear measurement of each party's performance. The ICT team would therefore need highly visible, objective records to be readily available if any connectivity problems needed investigating. BCH identified a range of key needs:

- î Management of risk
- î Resilience to failures
- î Rapid recovery from faults
- î Future-proofing
- î Minimisation of data errors
- î Flexibility to support multiple operational technologies
- î VoIP capability

From an operational point of view it became clear that, to maintain service levels whilst meeting targets for commissioning the new building, the ICT team staffing levels would have to be increased from two to five. To save this cost whilst satisfying the key network needs of the enlarged hospital, technological improvements were investigated, and an Intelligent Infrastructure Management System (IIMS) was identified as the

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solution that could make the difference. A business case was written detailing the choices available and, after this was analysed by the finance department of the Department of Health, the AMPTRAC system from Tyco Electronics was selected as the preferred IIMS solution.

### **Intelligent Infrastructure Management System**

The AMPTRAC system manages nearly 4,000 outlets, including four outlets per workstation in the new building, in addition to the medical equipment required for cancer diagnosis and treatment. There are also a further 600 outlets in other areas, including a remote location. ICT Development Manager Darren Henderson commented: "The initial cost of the AMPTRAC system was about 25% more than that of a standard Category 6 system, but this is offset by considerable operational savings, even in the first year. The commissioning process involved constant changes, yet the two of us in ICT were able to manage. We simply could not have commissioned the system by the target date without AMPTRAC, and we would not have been able to manage the ongoing support process since then."

The efficiency gained from AMPTRAC is in particular a result of its ability to discover and monitor physical end-to-end connectivity in real-time, as well as the tracking of IP devices to their physical location on CAD floor plans – rather than having to send someone to verify them in person.

Asset utilisation is now much easier to determine: users have to check the AMPTRAC displays in either text or graphics. For example, a user can see a report showing the percentage utilisation in a particular cabinet, and then any moves, additions or changes can be planned from the user's desk with complete confidence. Operations teams and help desks can also access the system to answer questions on the functioning of the network.

The high degree of visibility has proved a key benefit. In the view of Keren Moleon, Systems Specialist at BCH, 'To maintain the network and telephony for 4,500 staff, as well as the changes required by the new cancer centre, we could not rely on paper-based documentation, which is usually out of date. AMPTRAC provides a trusted source of information that has freed us from enough donkeywork for us to do the rest of our work, which includes the development of other new projects.'

VLANs are run for each medical specialist division and system. In addition to the VLAN for email, file shares and access to hospital systems, there are separate VLANs for the machines delivering radiotherapy treatment to patients and also for cancer centre imaging; medical groups can also access remote systems elsewhere in the region.

Throughout the network all physical changes, both authorised and unauthorised, are monitored and are easily visible to the ICT team.

In conclusion, Darren Henderson comments: 'We would not consider any new development without including AMPTRAC in the specification.'

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