



## **Bell Canada – Background - Telerobotics Initiative**

Bell Canada has the largest national IP (Internet Protocol) network in Canada and is a world-leading expert in the design and management of sophisticated mission-critical networks. In a country the size of Canada, IP-based technologies have made distance irrelevant while adding convenient and rapid delivery of various services between multiple locations. The telerobotics assisted surgery initiative with St. Joseph's Healthcare leverages the power of Bell's networking expertise to provide healthcare services to remote parts of the country and effectively expand the accessibility of medical resources, regardless of geography.

### **Delivering the 'virtual nervous system' for telerobotics assisted surgery**

As part of its contribution to the St. Joseph's telerobotics assisted surgery initiative, Bell Canada is responsible for maintaining the high level of network performance and reliability necessary for conducting real-time manipulation of a robot in a remote location. Bell's contribution to this project leverages the company's expertise in IP networking and network management services. Combining the latest advances in laparoscopic surgical techniques, robotics, video compression and IP Internetworking, Bell designed, built and managed all aspects of the service delivery, including the integration of all connectivity software, cabling, end-to-end network management and engineering expertise.

Bell conducted extensive testing to ensure that the high levels of stability, reliability and quality of service demanded by a telerobotics assisted surgery application under various network conditions were met. With 7 -10 Mbps of bandwidth, it was Bell's responsibility to maintain a minimal level of application latency so that any manipulation of the remote robotic 'hand' corresponds with the virtually simultaneous movement of the surgeon's hand controlling the robot.

### **The Bell Virtual Private Network (VPN) service**

The commercial networking service used to facilitate the St. Joseph's telerobotics assisted surgery initiative is called VPNe, or Virtual Private Network Enterprise. VPNe allows private IP networks to be carved out of Bell's national IP backbone infrastructure. It is regarded as one of the most advanced networks of its kind in the world, providing a number of significant benefits over traditional solutions employed in most commercial networks. As a carrier-class network service with "turn the tap" functionality, this solution delivers bandwidth-on-demand and the ability to prioritize the delivery of voice, video and data traffic with end-to-end Quality of Service (QoS). For health networks, VPNe is a highly secure and flexible service that allows diverse communities of interest to effectively interconnect and communicate.

Bell has built a scalable network that delivers robust and predictable performance while managing growth. This network provides the capacity and the service protection capabilities required to ensure the greatest level of reliability currently possible. This infrastructure dependability is achieved with physically diverse fibre routes, backup points of presence, redundant transport and switching equipment, as well as optical and electrical protection switching capabilities, all maintained by sophisticated operational support systems. The transport network has been designed to protect against both fibre cuts and laser failures. As a result, the VPNe network self-heals against failure within 50 milliseconds, rendering such failures transparent to even the most demanding enterprise application.

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