

# Appendix I

## Bandwidth Management

With the high cost of bandwidth and the number of applications who share a single link, there becomes a need to manage the traffic going into and out of a network. Within the LearnCanada project, the required bandwidth each site requested from their local ISP was approximately 6 to 10 Mbps. This link however was shared between a number of applications like, the ISABEL application, FTP server, Web access, and video annotation server.

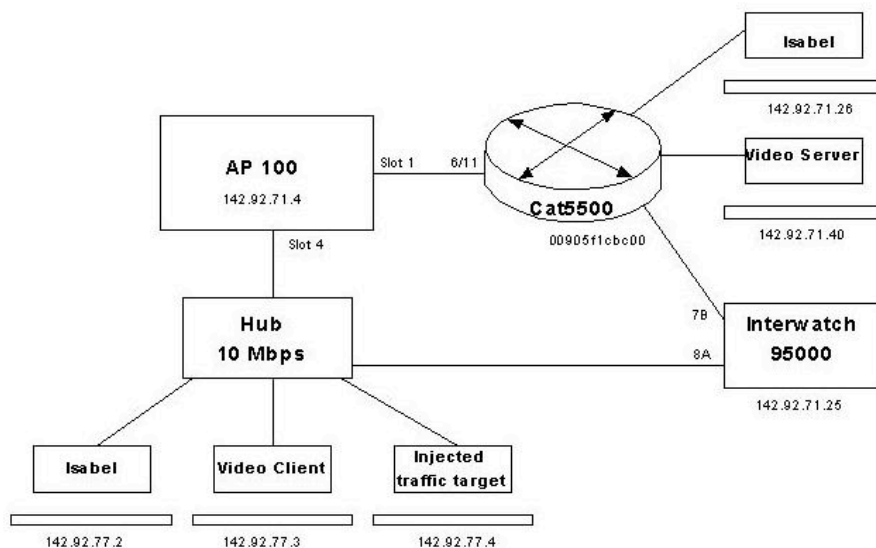
For the bandwidth management portion of the project, CRC looked at ways to control, divide and manage the traffic in a shared network link.

For this, CRC used a product from Xedia (now Lucent) called the AP100. The AP100 is a bandwidth management tool, which allows the user to control the amount of traffic depending on the packet type, originating source or destination source.

### **Test plan:**

The purpose of this test is to simulate a network environment where various users running various applications are sharing a network link to the Internet. When user applications compete for traffic, there is no guarantee that one application will get the necessary bandwidth it needs. When one application requires a guaranteed amount of bandwidth, the shared network link must be managed, giving priority to one application over another. Or by taking the link and divided the link up for various application. For this test we will be taking a 10 Mbps network connection and managing the traffic by subdividing the 10 Mbps link into 3 sections.

For the management of bandwidth, it will be accomplished using the AP100 by Xedia (now Lucent). The AP100 will be setup as a router. The following diagram depicts the network setup for this particular test.



**Results:**

Originally, without the AP100 in the network (i.e. the 10Mbps Hub connects directly to Cat 5500) an ISABEL session or a video streaming session, consuming 1.5Mbps, will be interrupted when the InterWATCH injects 7.6 Mbps of best effort traffic. With the AP100 in the network as shown in the above diagram, the ISABEL session or video streaming session will continue to run no matter how much best effort traffic is injected into the network.

During the test, a problem with the software release v2.1 was found. This release was unable to classify fragmented frames produced by the ISABEL and video streaming applications. Only 10% of the video streaming or ISABEL traffic was registered on the AP100 graphical equalizer. Upgrade to v2.5 at a cost \$1000US would fix the problem associated with fragmented frames. Another option for consideration is to replace the AP100 with a more recent product developed by Lucent, the AP300 at a cost of \$5000US.