

Some Preliminary Network Measurements with the H.323 VCON Cards

MAN HEP Note 99-1
PIPVIC Note
R. E. Hughes-Jones

Introduction

This note describes the preliminary measurements made with the VCON H.323 Escort 25 Pro videoconference cards, and forms part of the PPNCG and PIPVIC2 studies. The audio and video used H.323 software from VCON; no H.323 Gatekeeper was used. The data sharing was performed using Microsoft NetMeeting that provides an implementation of T.120.

The tests were made under the similar conditions to those made earlier with the Mbone vic and rat tools, see www.hep.man.ac.uk/~rich/sysman/mbone_test.pdf. The test system used two 350 MHz Pentium II CPUs with VCON Escort 25 Pro PCI cards connected on a private 10 Mbit twisted pair LAN to a LAN Analyser. The PCs ran Windows NT v 4.0 with service pack 3 and version 3.01 of VCON's MeetingPoint. One system sent both video and audio and the other was set to transmit a blank picture with no audio.

Please note these measurements are preliminary.

Measurements Made

The LAN Analyser measured the number of packets per second and the number of kilobytes of data per second for the total traffic on the LAN as well as for the traffic sent from the system with both video and audio. This information was recorded as a function of time for the following conditions:

- Camera pointing at a coloured poster on the wall with no movement of the subject.
- Camera observing subject sitting VERY still.
- Camera observing subject talking and moving slightly as if in a VC.
- Camera observing subject moving violently and clapping hands.
- NetMeeting only sharing whiteboard and a Word document.

The size of the standard video window was about 10x10 cm but large windows of about 18x18 cm gave very clear images.

The lighting conditions were held constant for the results presented. It was observed that changes in the ambient light levels resulted in transmission of more data, as if a new image had been presented to the camera.

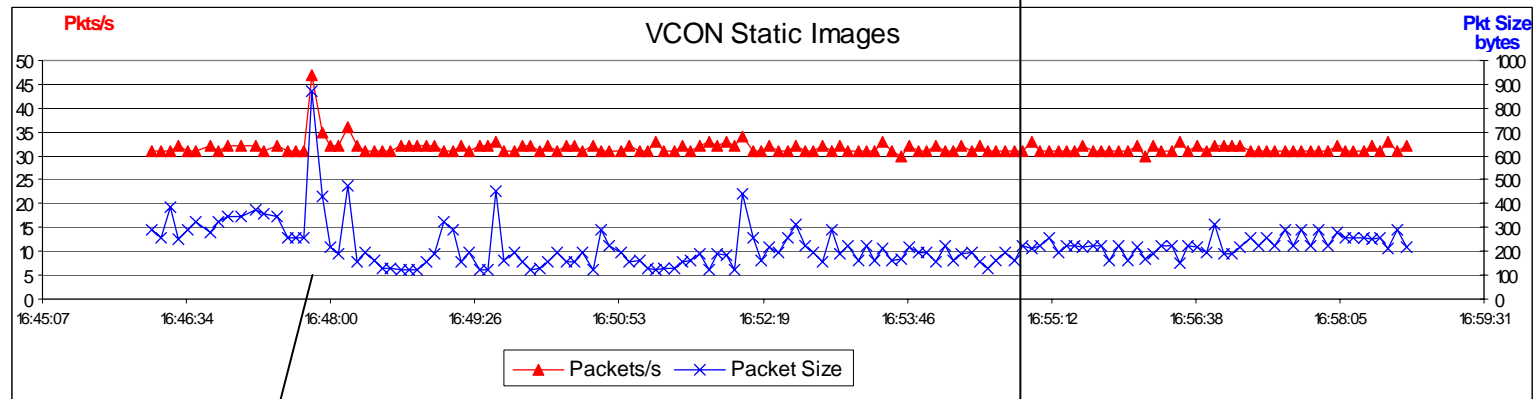
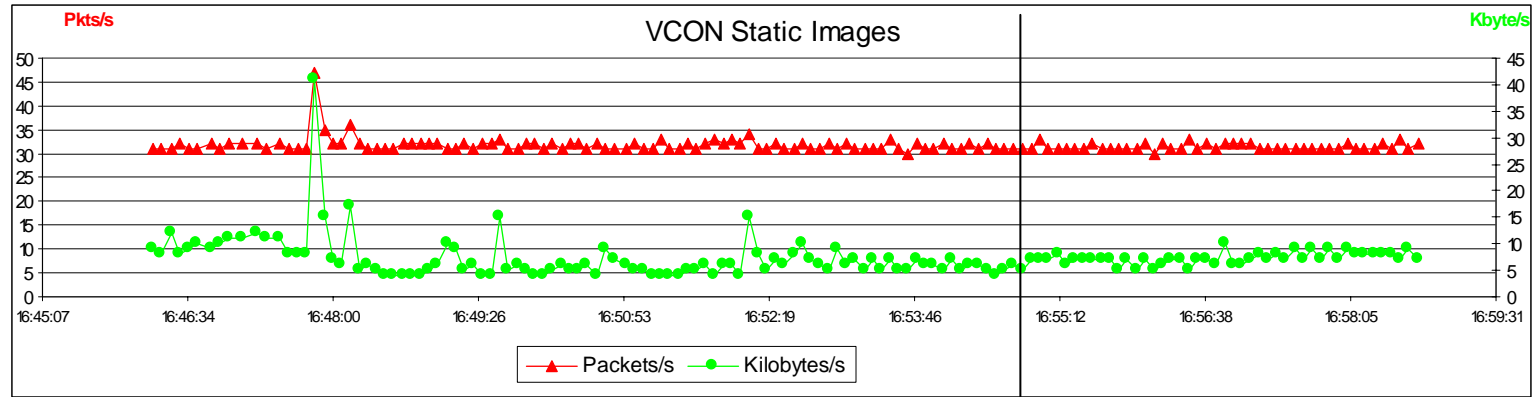
Results

Figure 1 shows the network load when the camera was pointed at a poster and there was no movement. To start with the microphone was muted, there is a small difference in packet size and the amount of data sent when the audio was turned on and there was continuous speech. Note the large transfers when the white level of the camera was set. At this point there was a complete and dramatic change of the image transmitted. Figure 2 shows the load when the subject is present and moving under different conditions.

Figure 3 shows the network load sent from one PC when NetMeeting was used to share data. The program transmits between 10 and 20 packets/s when there are changes to the shared documents. About 11 Kbytes/s of data are sent with an average packet size of 800 bytes when continuously scrolling through the document, at a rate too fast to read!

The results are summarised in Table 1.

Condition	Ave. Packets/s	Ave. Kbytes/s	Ave. Packet size bytes
Audio & Video			
Poster no movement no audio	31.6	6.0	189
Poster with continuous talking	31.4	7.6	214
Subject STILL	33	16.45	475
Video muted	93	5.0	210
Subject talking head	42.6	35.3	834
Subject violent movements	43	36.3	835
Data Sharing			
No changes to the document	0	0	0
Highlighting a paragraph	8.6	<1	~110
Continuous scrolling	14.8	11.8	798



Set White Level

Static Poster no Audio

Static Poster with Audio

Figure 1. The Network Load with Static Images and Audio

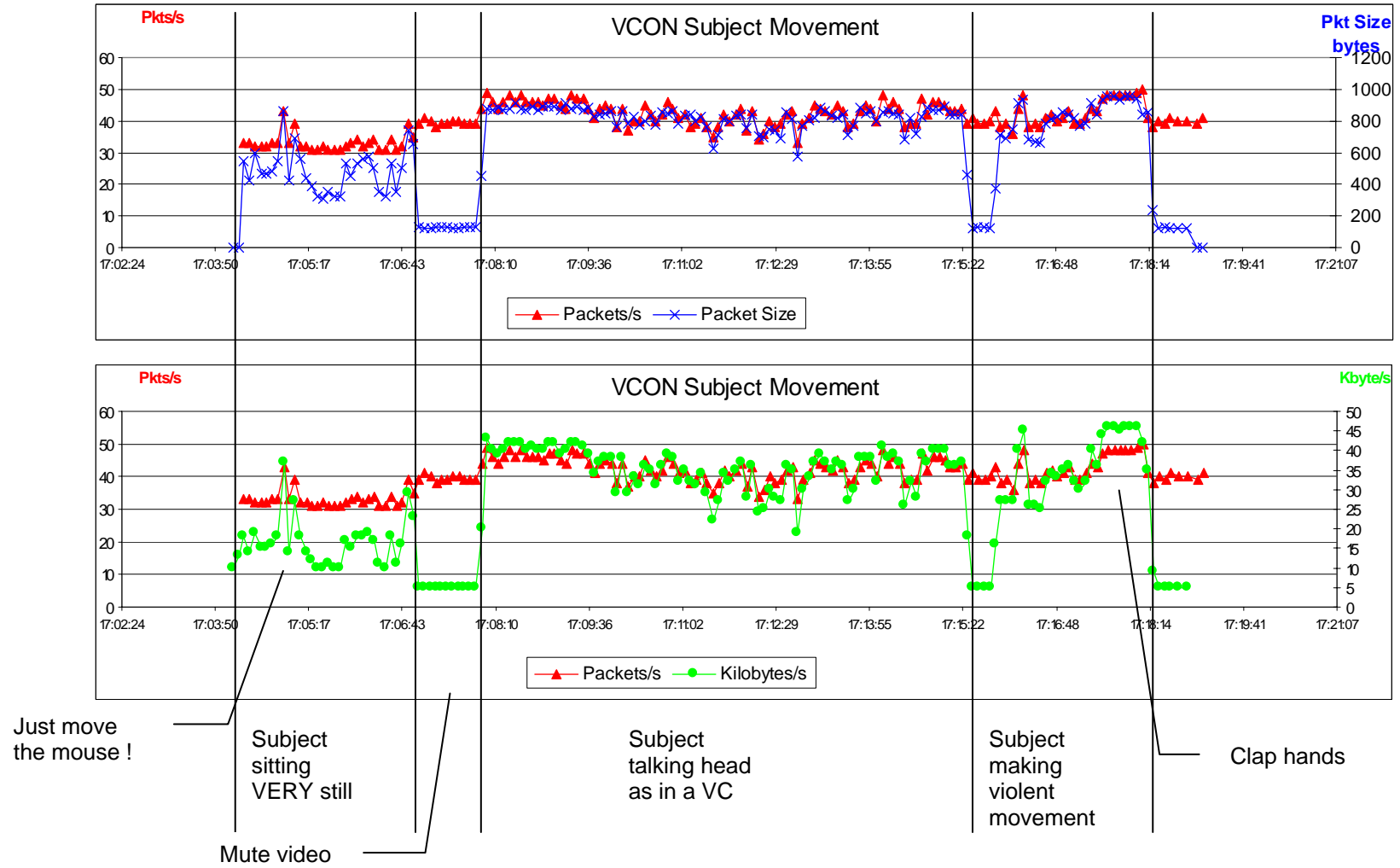
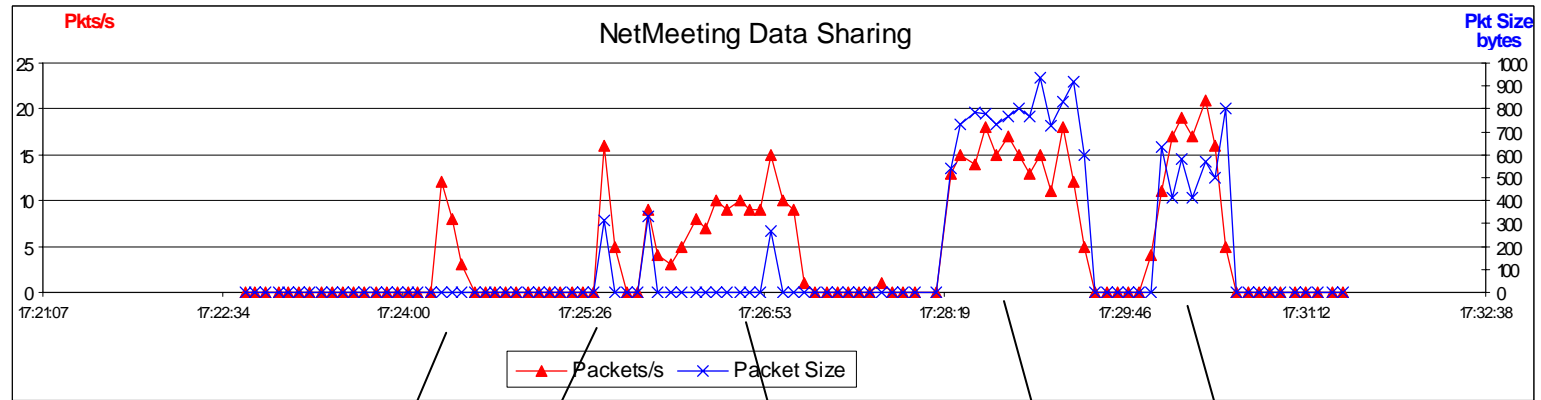
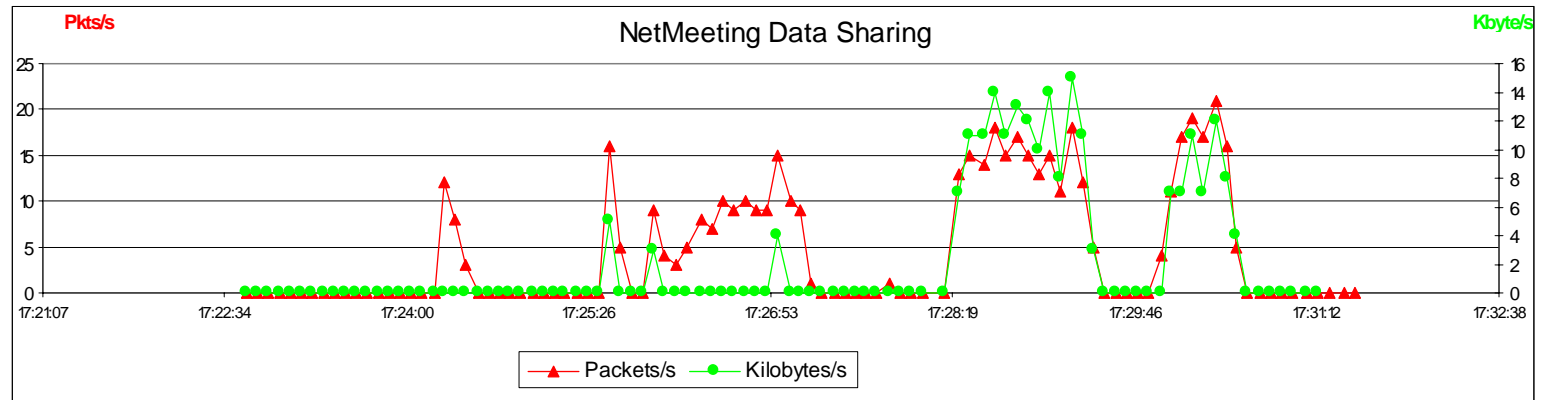


Figure 2. The Network Load with Subject Movement



Setup NetMeeting call

Share Word document

Click open-close Word window

Click scroll through document

Continuous highlight of paragraph

Figure 3. The Network Load with Data Sharing with NetMeeting