

Medway Grid for Learning

Policies and Guidance



Video Conferencing - Position Statement

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Introduction

This document is intended to provide general information and guidance related to connecting school LANs to the broadband Grid for Learning network, and running school systems and servers effectively to deliver a reliable, high performance service. It also provides specific policies adherence to which is necessary for the smooth and effective running of the whole network.

1 Overview of video conferencing

Video conferencing is generally defined as a discussion between two or more groups of people who are in different places but can see and hear each other using electronic communications. Pictures and sound are carried by a telecommunication network and such conferences can take place across the world. To overcome the bandwidth and latency limitations of current networks video compression and dedicated switched circuits are often used.

There are a number of potential implementation opportunities in schools, e.g. subject specialist teaching, professional development – sharing good practice, collaboration between pupils, transfer and transition projects, and citizenship projects.

2 Recent history of video conferencing availability

Prior to the introduction of broadband networking in Medway, some schools operated video conferencing, either locally within a school or using ISDN dial-up connections to other, suitably equipped schools, in the UK. Although possible, international connections using dial-up ISDN are fraught with technical difficulties due to the varying specification of ISDN lines in foreign countries.

Following the introduction of broadband network connections all schools now have the opportunity to engage in video conferencing with other schools in Medway, in addition to the existing possibilities of LAN or ISDN dial-up based conferencing. This service, unlike ISDN dial-up services, does not require dedicated lines and does not attract time-based charges whilst in use.

There has been some confusion reported regarding the effect of broadband connection on existing video conferencing facilities. Broadband facilities complement existing facilities which remain available¹

3 Future developments in video conferencing

The ongoing programme of bandwidth enhancement will improve the opportunities for multi-session or high bandwidth video conferencing between Medway schools. Advantage can be taken of this availability individually and schools are encouraged to seek partners with whom to conference, and to purchase and implement suitable technology.

A basic video conferencing station can be created with inexpensive cameras and free software included with modern versions of Microsoft Windows.™ Suggestions of suitable hardware and software are included at the end of this document.

As this technology becomes more widely used, more stable, and more accepted it seems natural that video conferencing will be desirable with parties outside the Medway broadband network. This will be enabled in the future through the use of gateway servers, although it must be stressed that at the moment the availability of external transit networks to support good quality video conferencing is very limited.

¹ The security policy that accompanies the broadband connection requires that in the case of ISDN based video conferencing either the local or the remote machine is not connected to a network other than the ISDN connection, however this does not affect the availability of the service.

4 Technical guidance

4.1 Types of videoconferencing

There are two main kinds of video conferencing, and two main protocol standards used in the UK:

Point-to-point – a conference with two groups and a single information path between the two ends of a connection.

Multipoint - a conference with three or more groups involved and a multiple information paths between those groups.

4.2 Videoconferencing protocols

H320 – an established standard using dedicated ISDN lines at both ends of a dial-up link to enable conferencing. It is generally point-to-point

H323 – a newer standard using the Internet Protocol to carry information. This is generally point-to-point, but multipoint implementation is more straightforward as IP networks are inherently able to allow many-to-many communication.

(There is also the H321 standard for video conferencing over ATM networks, which delivers excellent results albeit with the problems of complex management and large financial outlay.)

4.3 Points to note

There is a variety of videoconferencing solutions available, the following points highlight some key areas:

- Cameras are available with and without built in microphones. Bear in mind that most cameras are mounted on the monitor and therefore a separate microphone nearer to the speaker may be preferable, particularly in noisy environments.
- Desktop speakers can also cause problems with feedback and noise levels and so headphones may be preferable unless the videoconference is being carried out with a group of people at one end.
- The soundcard in the PC used must support full-duplex operation (where the card can support microphone input and sound output simultaneously).

Initiating a conference requires separate TCP/IP connection to be made in both directions between two machines in the conference. This is unusual for most network connections and causes problems where the connection made via some types of NAT/PAT² technology. The issue seen when making connections over this kind of network topology is that video is only available at one end only, although this is not the only cause of this issue.

² NAT, Network Address Translation, changes the apparent source or destination address of a TCP/IP connection. In conjunction with PAT (Port Address Translation) it can be used to allow a group of machines to make outgoing connections through one IP Address.

5 Hardware options

Logitech QuickCam

The Logitech QuickCam is optimised for video conferencing and easy-to-set-up via a USB connection. QuickCam VC lets you videoconference over the broadband network. Used as a web-cam it can create time-lapse movies, and photographic images for emailing, or to add to presentations. Further details are available at <http://www.logitech.com/cf/products/productoverview.cfm/37>

Creative Labs

6 Software Options

Microsoft NetMeeting

Microsoft NetMeeting™ is an integral part of modern Windows™ operating systems (Win2k, WinME and WinXP) and can be downloaded for old versions of Windows. NetMeeting provides videoconferencing and audio only features as well as desktop sharing, whiteboard facilities and other collaboration options.

7 Further reading

There is an excellent site covering all aspects of video conferencing at <http://www.vide.gatech.edu/cookbook2.0/>

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