# ISDN Dialup

ISDN Videoconferencing

ISDN is a service offered by telephone companies over the circuit switched network to support Voice, Telephone and Data Applications. This document will give an overview of H.320 protocols and outline the procedures for using JVCS-ISDN.

Understanding ISDN

There are two types of ISDN interface: Primary Rate ISDN (PRI) Interface and Basic

Rate ISDN (BRI) interface.

A BRI is an ISDN interface that provides two 64Kbps B-channels and one D-channel.

B-Channels carries the voice, video and data traffic over 64 Kbit/s bandwidth whilst DChannels control the call set-up and termination and control of Data through the B

Channels.

The B-Channels can be obtained at different rates of bandwidth: i.e. from the basic level consisting of two at 64 Kbit/s (128 Kbit/s in total) complete with a 16 Kbit/s D-Channel up to multiple known as the Basic Rate Interface (BRI); Up to multiple combinations which generally requires the use of an Inverse Multiplexer (IMUX). The bandwidth level required to experience the quality expected in industry would consist of three 128 Kbit/s BRI lines (384 Kbit/s). For an even greater quality experience 6 BRI lines (768 Kbit/s) can be used, however it should be noted the more lines used the greater the cost will be both in terms of line rental and call charges.

A PRI is an ISDN interface that provides either 23 B-channels also known as T1 (USA) or 30 B-channels also known as E1 (Europe) and one D-channel.

Most connections via JVCS are generally between a minimum of 2 lines and a

maximum 6 lines. Organisations with multiple videoconferencing suites can divide up

and allocate channels to each of the studios as appropriate.

Call Charges

JVCS-ISDN enables:

• Access to multipoint videoconferencing at ISDN 2, ISDN4 or ISDN 6.

• Dial-in to a core MCU

• A dial-in number, which looks like a phone number, will be issued by email to an organisation on a per conference basis. Users should ensure they have a copy of this number prior to the videoconference, so they can dial the number to join the conference.

• The core service is free of charge. However, ISDN charges will be payable

locally, by the user to their ISDN service provider. ISDN call charges vary,

depending on the service provider; users should check with their local

administration department or service provider to ascertain the exact tariff for2

ISDN call charges.

• JVCS can, in some circumstances, dial-out to ISDN endpoints and invoice an

organisation within the UK for the call charges.

• Institutions may use gateway services e.g. IP to ISDN dial-out or ISDN to ISDN dial-out to connect with organisations outside of the academic community.

Equipment Requirement

To gain access to JVCS-ISDN you will need:

• Connection to the public ISDN network at ISDN 2, ISDN 4 or ISDN 6;

• A compatible COder DECoder (CODEC) with ISDN connectivity at ISDN 2, ISDN 4 or ISDN 6. A CODEC is a piece of equipment which converts audio and video signals, from microphones and camera, into a signal which can be transmitted over the ISDN transmission lines. The CODEC also converts received H.320 ISDN signals into a recognised signal for distribution to the loudspeakers and monitor;

• Suitable video camera(s) to provide the video feed to the CODEC;

• Suitable microphone(s) to provide the audio feed to the CODEC;

• An echo canceller to stop distracting echo being heard during a videoconference.These are built into the latest generation of CODEC;

• Suitable display unit to view sent video;

• Suitable audio system to distribute sent audio.

In order to co-ordinate the JVCS facilities, the JVCS Management Centre runs a Booking Service, through which all videoconference bookings are made. Each venue has recognised local booking contacts who co-ordinate registration of the venues to use JVCS and request bookings. Only a local booking contact can make a booking via Booking Service.

ISDN Multipoint Videoconferencing

A videoconference which involves several CODECs is called a multipoint

videoconference. Multipoint videoconferencing is made possible by utilising a Multipoint Control Unit (MCU) which is, in its simplest form, a switch which distributes audio and video appropriately to all venues who participate in a single videoconference. The MCU switch between venues in two ways depending upon the mode it has been configured.3

Meeting Controls

To provide order in a meeting there are available two control mechanisms known as

Chair Control and Lecture Style. Chair Control is a mechanism for passing control from site to site and a variation of this is Lecture Style where a designated site takes control and can enable and disable control access.

A multipoint ISDN videoconference, with all the CODECs dialing into the MCU

A point-to-point conference between two ISDN CODECs can be established without the use of the MCU (as can a point-to-point conference between IP CODECS), all other configurations of conference will require the use of an MCU. The MCU can interconnect up to 68 CODECs participating in a single conference.

As well as videoconferencing with other venues using ISDN technology, it is also

possible to communicate with venues which use other videoconferencing technologies on other networks, such as IP. To do this requires a gateway, which is a link from one videoconferencing technology to another.

Gatewayed Conferences

The JVCS-ISDN provides multipoint videoconferencing over ISDN. This service also

allows users to participate in multipoint videoconferences with other users who are

making use of JVCS-IP and the H.323 protocol. Such videoconferences make use of a gateway, which provides a bridge between the two technologies. The gateways are

integrated into the MCUs and are also managed by the JVCS Management Centre.

Gateways are automatically booked when venues on different networks are booked in the same videoconference. No additional booking is required.

Multipoint videoconferences can involve participants using H.320 and H.323

videoconferencing technologies which are interconnected as shown on the technology topology diagram below.4

Registration Details

All venues must register to connect to this service. To ensure there is an acceptable standard

of conferencing on the JVCS all HE and FE venues have to pass a Quality Assurance (QA) test. For those in the schools sector there is a Quality Assurance Assessment (QAA). These are short tests carried out by JVCS which checks the audio and video quality of the venue's facilities. Once a quality test has been completed the venue will be able to take part in all JVCS booked conferences.

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