

Activity Report of Asia-Pacific Medical Network Project in Kyushu University Hospital

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4. Instruments / Technical tips

Here, we explain how to start a teleconference using “DVTs” environment.

(1) Basic & simple configuration

- A teleconference can be started with very simple system configuration.

Required items are shown in Table 4-1.

Table 4-1 Items required




<i>Item</i>	<i>Figure</i>	<i>Specifications</i>
Digital Video Cam-coder		<ul style="list-style-type: none">- IEEE1394 (or FireWire, i.Link) interface- Built-in or external microphones
Personal Computer		<ul style="list-style-type: none">- Desktop or notebook type, running Microsoft Windows XP®- High-speed CPU (ex. Pen-IV, III, M, Celeron over 2GHz)- 256-512MB RAM minimum- Higher class graphic cards or chips (ex. ATi, nVIDIA recent models)- Minimum display resolution of 800x600- Fast Ethernet interface or Gigabit Ethernet interface- IEEE1394 (or FireWire, i.Link) interface- Stereo audio output interface- RGB or DVI output interface
Projector & Screen (optional)		<ul style="list-style-type: none">- Minimum display resolution of 800x600- Brighter light source- RGB or DVI input interface

Table 4-1 Items required (Cont'd)









<i>Item</i>	<i>Figure</i>	<i>Specifications</i>
Speaker with amplifier		- Stereo RCA type pin-jack or mini-jack type inputs
Microphone		- Unidirectional sensitivity
Ethernet Cable		- UTP (Category 5 or 6) cable
IEEE1394 Cable		- 4pin-4pin or 4pin-6pin cable (depending on PC interface type) - At least 3m long
Audio Cable		- Stereo RCA type pin-plug or mini-plug (depending on PC and speaker interface type)
Display Cable		- D-sub 15pin type cable or DVI type cable (depending on PC and projector interface type)

Table 4-1 Items required (Cont'd)

<i>Item</i>	<i>Figure</i>	<i>Specifications</i>
DVTS software		<ul style="list-style-type: none"> - Freely downloadable at http://www.sfc.wide.ad.jp/DVTS/software/win2000/setup-0.0.1-1.exe (for WindowsXP® only) - English is supported
Network, connected to the Internet		<ul style="list-style-type: none"> - Ethernet - Over 35Mbps/s end-to-end available bandwidth is needed

- Technical tips relating to each of the above are shown in Table 4-2.

Table 4-2 Technical tips

<i>Item</i>	<i>Descriptions</i>
Digital Video Cam-coder	<ul style="list-style-type: none"> - A built-in microphone is too sensitive for teleconference use because it causes acoustic feedback (howling). That is why it is not recommendable to use a built-in microphone. - External microphones should be used.
Microphone	<ul style="list-style-type: none"> - It should have uni-directionality and low sensitivity to avoid acoustic feedback.
Personal Computer	<ul style="list-style-type: none"> - Global IP address must be assigned for each PC. - It should have advanced graphics ability, because the DVTS process demands large graphics resource. - It is not recommendable to use built-in graphics chip sets such as i815, i845G etc. - If there are no PCs that have sufficient processing power, two PCs may be used: one is for sending and the other for receiving separately.
Network	<ul style="list-style-type: none"> - DVTS software consumes about 35Mbps/sec bandwidth. - Traffic in excess of 35Mbps/sec must be transmitted throughout from a sending site to a receiving site. Any bottleneck on the way to the remote site prevents effective functioning of the DVTS software. - Transmission of such heavy traffic to the Internet requires network system configuration adjustment and international negotiation by network administrators.

- Connection of devices is shown as Figure 4-1 and Figure 4-2.

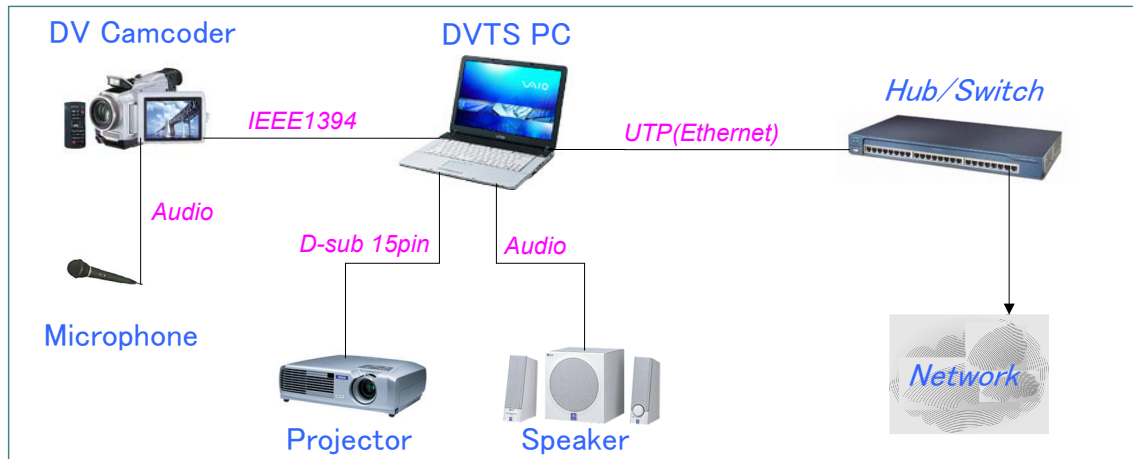


Figure 4-1 Basic system configuration

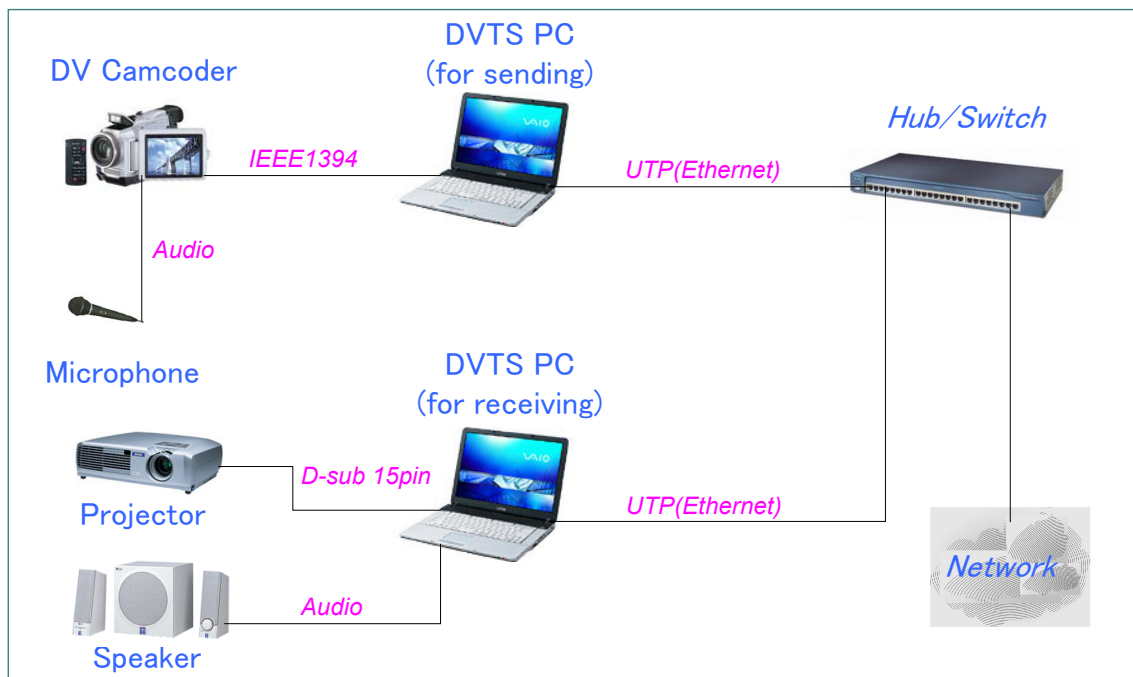









Figure 4-2 Basic system configuration (separated DVTS PC)

(2) Advanced configuration

- To make the teleconference more comfortable, an advanced configuration should be built. In addition to the basic configuration, the items shown as Table 4-3 below are required.

Table 4-3 Items required

<i>Item</i>	<i>Figure</i>	<i>Specifications</i>
D/A converter		- Converts S-Video (or Video) signal into DV signal, and vice versa
Scan converter (optional)		- Converts PC's RGB output into S-Video (or Video) or DV signal - Also supports D/A converter function
Audio mixer		- Multi input channels & multi output buses
Video mixer (optional)		- Multi input channels and multi output channels - Supports S-Video signal - Supports transition, picture-in-picture, multi-divided image
Echo canceller Feedback destroyer (optional)		- Detects and cancels acoustic feedback
Projector & Screen (optional)		- Displays sending image
VPN Gateway (optional)		- Manages IPsec based VPN - Running on RedHat Linux

- Technical tips relating to each of the above are shown in Table 4-4.

Table 4-4 Technical tips

<i>Item</i>	<i>Descriptions</i>
D/A converter Scan converter	<ul style="list-style-type: none"> - Capable of converting DV signal into S-Video or Video, S-Video or Video into DV, and also, S-Video into Video, Video into S-Video. This device is convenient for signal conversion. - The scan converter, like the D/A converter, can convert RGB signal into S-Video and Video signal and is convenient for presentation using a PC.
Audio mixer	<ul style="list-style-type: none"> - It should have multi-output buses to avoid acoustic feedback. - Although the audio mixer can mix all audio sources, each output channel must be composed independently so that it will not cause acoustic loop. - For example, the output channel for a remote site should be composed of audio sources only except from the remote site itself.
Video mixer	<ul style="list-style-type: none"> - The video mixer device can handle sending various images and is therefore very effective and appealing to the audience. - For example, transition of two images, picture-in-picture image, multi-divided image etc.
Echo canceller Feedback destroyer	<ul style="list-style-type: none"> - This will be used to ensure unfailing cancellation of acoustic feedback - It is not, however, so effective when using at a local site alone. - To make sure of cancellation of acoustic feedback, it should be used at both ends (local site and remote site) simultaneously.
Projector & screen	<ul style="list-style-type: none"> - This is used for displaying sent images. - Provides both the presenter and the audience with images of themselves during the conference.
VPN Gateway	<ul style="list-style-type: none"> - This is used to keep all traffics secure over the Internet. - When performing live surgery or other confidential demonstration, this device is mandatory.

- Connection of devices is shown as Figure 4-3.

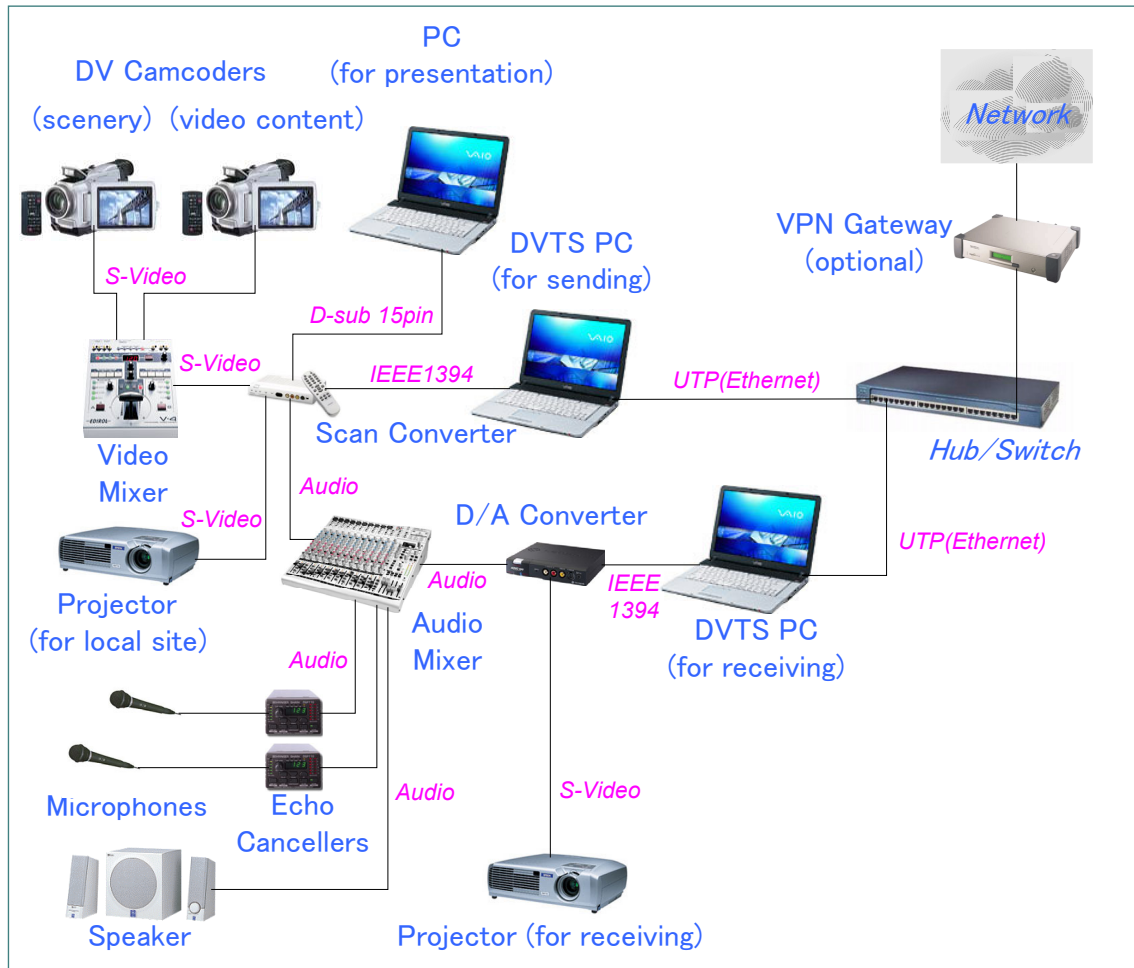


Figure 4-3 Advanced system configuration