

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

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権利関係：



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

Table 4-1 Items required (Cont'd)









<i>Item</i>	<i>Figure</i>	<i>Specifications</i>
Speaker with amplifier		<ul style="list-style-type: none"> <li>- Stereo RCA type pin-jack or mini-jack type inputs</li> </ul>
Microphone		<ul style="list-style-type: none"> <li>- Unidirectional sensitivity</li> </ul>
Ethernet Cable		<ul style="list-style-type: none"> <li>- UTP (Category 5 or 6) cable</li> </ul>
IEEE1394 Cable		<ul style="list-style-type: none"> <li>- 4pin-4pin or 4pin-6pin cable (depending on PC interface type)</li> <li>- At least 3m long</li> </ul>
Audio Cable		<ul style="list-style-type: none"> <li>- Stereo RCA type pin-plug or mini-plug (depending on PC and speaker interface type)</li> </ul>
Display Cable		<ul style="list-style-type: none"> <li>- D-sub 15pin type cable or DVI type cable (depending on PC and projector interface type)</li> </ul>

Table 4-1 Items required (Cont'd)

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

- 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"> <li>- 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.</li> <li>- External microphones should be used.</li> </ul>
Microphone	<ul style="list-style-type: none"> <li>- It should have uni-directionality and low sensitivity to avoid acoustic feedback.</li> </ul>
Personal Computer	<ul style="list-style-type: none"> <li>- Global IP address must be assigned for each PC.</li> <li>- It should have advanced graphics ability, because the DVTS process demands large graphics resource.</li> <li>- It is not recommendable to use built-in graphics chip sets such as i815, i845G etc.</li> <li>- 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.</li> </ul>
Network	<ul style="list-style-type: none"> <li>- DVTS software consumes about 35Mbps/sec bandwidth.</li> <li>- 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.</li> <li>- Transmission of such heavy traffic to the Internet requires network system configuration adjustment and international negotiation by network administrators.</li> </ul>

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

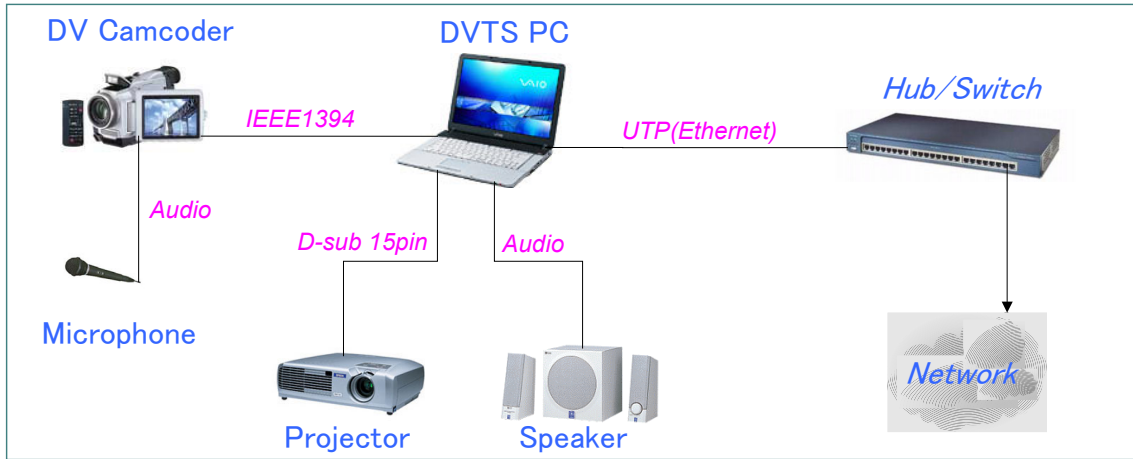


Figure 4-1 Basic system configuration

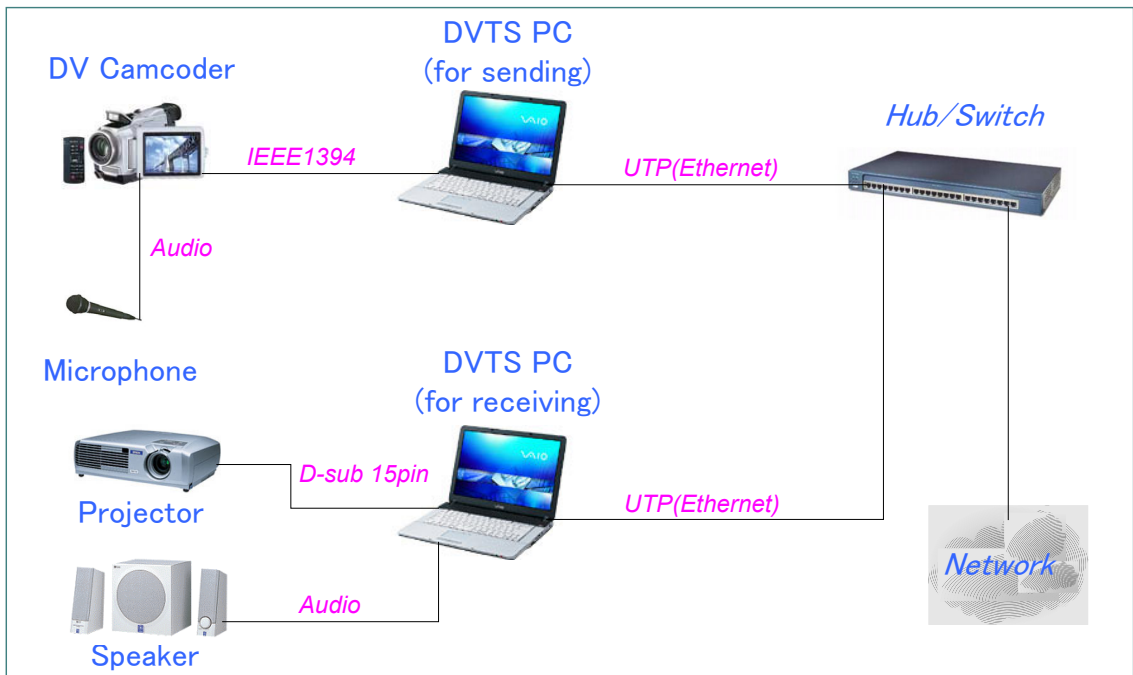









Figure 4-2 Basic system configuration (separated DVTS PC)

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

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

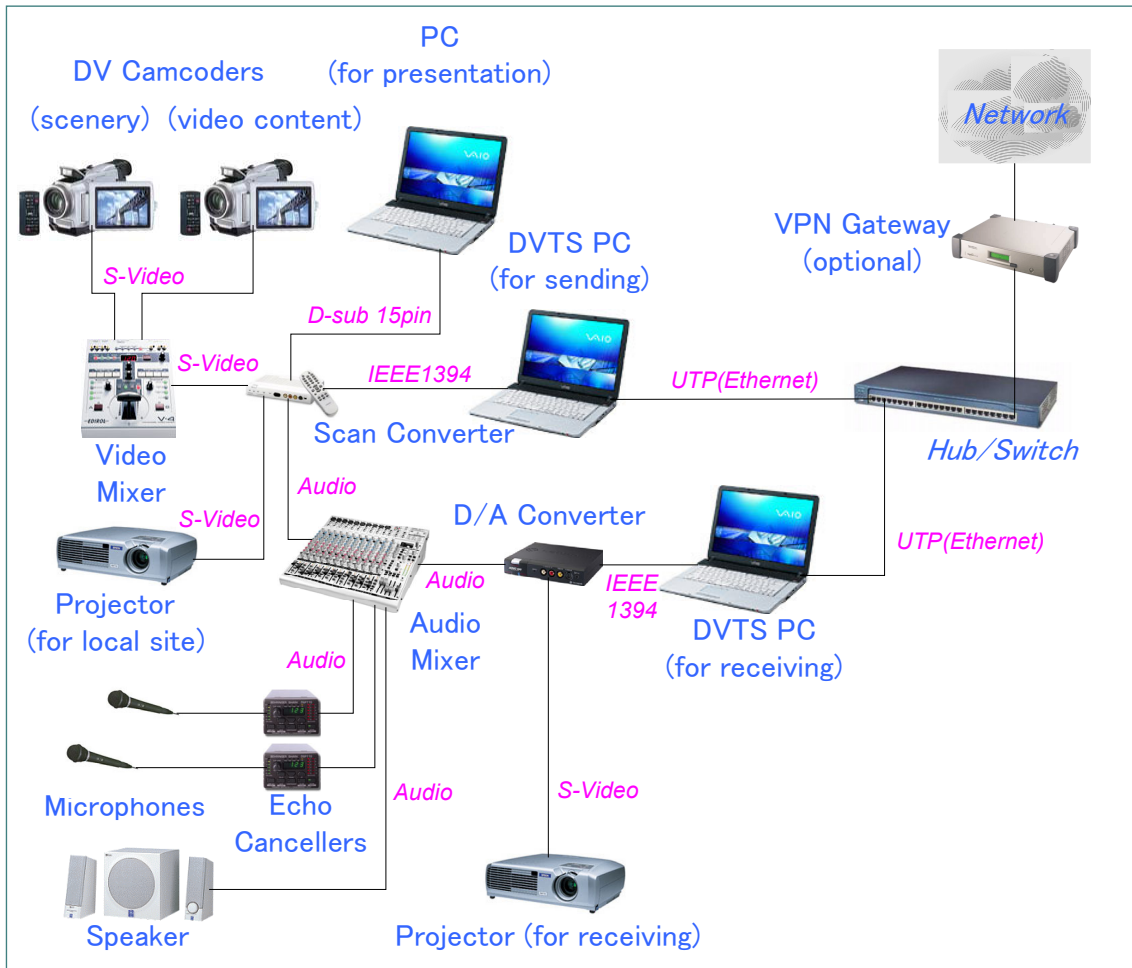


Figure 4-3 Advanced system configuration