

Significance of IPV6 in real time approach

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Abstract: Communication is a key learning skills. Students using Video conferencing gain opportunities for higher level of thinking via, live face to face interactions with peers, tutors or experts from around the world. It can allow face to face teaching and learning at colleges, universities, home or other locations. It reduces the disadvantage of distance for learning and offers great flexibility for arranging a common time. It allows additional educational services for rural and remote students. Video conferencing allows meetings without the time, cost and organization involved with travel. The interactive voice and image provides a great way establishing or maintaining relationships. For transmitting video/audio requires more bandwidth. Keeping in mind the bandwidth constraint in wireless networks, we are designing the model for many-many interactive video conferencing.

The following are the objectives of the proposed research.

- To provide collaboration top nation development between teachers or students through Video conferencing.
- To provide experience of collaborative working by interacting with university experts for knowledge sharing.
- To develop an environment for sharing of educational resources.
- To learn about remote environments, mentoring of individual students.
- To enhance distance learning. To design an environment for sharing experiences with students from different cultures.
- To enhance travel buddy projects. To enhance professional development of staff.

Key Words: IPV6, Nation Development, Distance Education, Virtual Learning.

I. INTRODUCTION

Video conferencing enabled learning is a new way of acquiring knowledge, which is highly adaptable to different kinds of student profiles, from people that do not have time to attend normal courses to a practical enhancement of ordinary courses with additional access to the knowledge. Exchange of knowledge and consultation process among students and available expert authority (professor/instructor), are very important aspects of learning, in addition to the static contents that are provided in books and different digital multimedia.

The goal of the usage of technology as a support to learning process is to make information instantly available to users. In order a learning process to be effective, a communication and exchange of the knowledge is required. Video conferencing based learning can provide the needed interaction. So it is a logical step to create learning tools that utilize the benefits of the video conferencing technology. Distance Education System are commonly used to increase effectiveness of educational process by offering solutions that address some of the shortcomings of the traditional classroom.

When the role of a technology within learning is assessed, there are two separate criteria to consider, those of effectiveness and efficiency. Effectiveness refers to the opportunity that technology offers to improve what is obtainable with traditional methods. Video conferencing is particularly aimed at supporting dialogue as a form of interaction. Efficiency refers to the opportunity that technology offers to improve the access to educational materials. Video conferencing service, used in combination with other educational services significantly

eases this access by lowering the cost of original production of educational material and increasing the possibility to update educational materials more frequently.

Interactive videoconferences are often transmitted on dedicated T-1 phone lines. These high speed lines are very effective for videoconferencing, but they are typically leased circuits with an expensive monthly cost. The fixed monthly charge is usually based on distance, not usage. Therefore, the cost effectiveness of Interactive videoconference systems increases with use. Interactive videoconferencing systems can operate at different data rates, at various fractions of T-1 capacity, enabling the transmission of multiple simultaneous videoconferences over the same T-1 circuit. An Interactive videoconference system can also share a T-1 circuit with other digital data uses such as Internet transmissions or file transfers.

IPV6 protocol plays an important role in the next generation of Internet (NGI). It is expected that the elegant coexistence of IPv4 and IPv6 is the key point of IPv6 transition. To solve the transition problem, we propose a mesh unicast framework and a multicast framework in this paper. We describe two reference models for the mesh unicast framework, and put forward two potential solutions for the multicast framework. A Linux-based prototype is implemented for IPv4 over IPv6 scenario and a test bed is deployed with 8 nodes on CERNET2. The deployment demonstrates the advantages of the framework.

IPV6 with its 128-bit addressing system combines security and authentication, quality of service (reserving

bandwidth), plug-and-play for network device configuration, a hierarchically structured routing system, and is thereby ideal for use in IP enabled videoconferencing. Using IPv6 protocol, it is possible to achieve enhanced frame and transmission rate and bandwidth usage.

II. IPV6 ARCHTECTURE

Video conferencing has become popular over the last decade. Video conferencing is when two or more parties communicate in real time in separate locations with both video and audio signals.

Technology Used in Video Conferencing

Video conferencing works by using a few different technologies. Some of these technologies are hardware, others technologies involved in the video conferencing process are software related. Here is a list of technologies that are common to a video conference set up.



Video Input

Video input usually consists of either a video camera or a web cam. Usually there are two video cameras, at least one camera at each location. For larger video conferences there can be many more cameras. Digital projectors are used frequently to show a presentation not only in one location but sending the presentation as well as part of the video conference. Besides a standard video camera, more and more people are using web cams to conduct their video conference.

Video Output

Video output can be in the form of any video output form such as a standard TV set, digital TV set, computer monitor, etc.

Audio Input

Audio input takes the form of microphone. Sometimes each person might be individually miked, some video conferences have one general microphone that is passed around or can consist of a microphone in a central location.

Audio Output

Audio output usually consists of speakers. These speakers can range from professional equipment, headphones or even tiny speakers on a laptop computer.

Data Transfer

Video conferencing can work in a number of ways depending on the technology being used. Video conferencing uses several technologies including Digital technologies, as well as analog technologies. ISDN lines, a normal broadband internet connection and radio frequencies which can include Satellite transmission and even Wifi.

Data Compression Software

Software is extremely important to the video conferencing process. In order for digital video conferencing to take place over ISDN lines, broad band internet and Wifi there must be software to compress both the video and audio data. Video and audio data can take up a tremendous amount of space and can take a long time to travel from one location to another, it is important for any data being sent back and forth to be compressed and sent quickly and effectively. Today there are lots of software available to compress video and audio signals and unpack them once at the other location for high quality audio and video signals.

Acoustic Echo Cancellation

Another important software component is acoustic echo cancellation. Echo cancellation makes it possible for parties to talk to one another in real time without any distractions or interference. For instance, if one party is talking to another party and there is no echo cancellation software, they might hear themselves speaking a few seconds out of synch due to audio delays. In a few seconds of talking, each party wouldn't be able to understand the other party because of the distractions. Echo cancellation software processes audio to remove any distractions caused by delays

Advantages of Video Conferencing

Video conferencing is used by many businesses usually to save both time and money. One of the great advantages of video conferencing is that two or more parties can have a virtual face to face meeting to conduct business, which is seen as more beneficial than just a conference call. Other parties such as educators and health professionals use video conferencing when giving lectures, teaching about topics that require visual cues or visual information. Health professionals can give a diagnosis by conducting an examination via a video conference. There are many advantages to this technology and this has a lot to do with its exponential growth in recent years.

III. RELATED WORKS

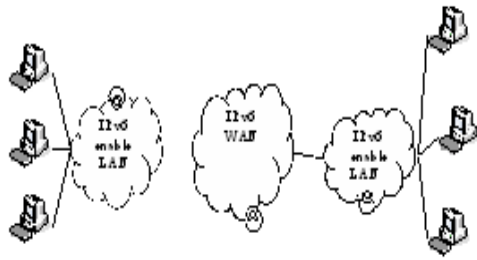
MCSV6-IPV6 BASED

There are many issue and challenges have to be addressed in order to get MCS working with IPv6.

First Phase:

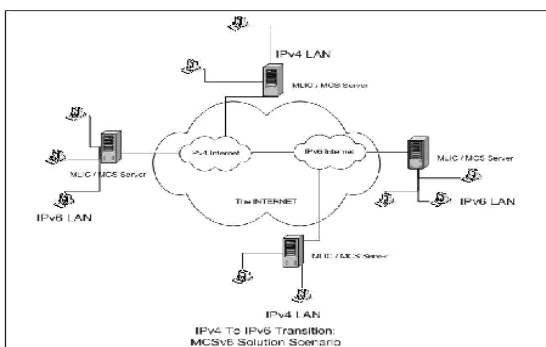
The MCS should be able to work on IPv6 islands which are interconnected over IPv4 network (mainly the Internet). As this scenario is the first phase of the IPv4 transition to IPv6 fully, the multicast tunneling software (MLIC) built in to the system will have to adapt v4 to v6 multicast and unicast transmission

Figure1 shows the MCS on IPV6 LAN



Second Phase

The IPv6 transition will result a mixture of IPv6 and IPv4 islands exist in the Internet itself. In order to allow transparency among the participants, MCSv6 will be able to interconnect all the participating LANs by tunneling the conference data over IPv6 Island and IPv4 islands.



IMPLEMENTATION OF RESEARCH PROPOSAL FOR NATION DEVELOPMENT

The Tools and Supplies Needed for Video conferencing

In order to take advantage of video conferencing you need the right ingredients or tools. There are some basic components that anyone, whether an organization, educational facility or individual needs before they can communicate with others using video conferencing technology.

Of course the most basic piece of equipment necessary is a camera. A camera will allow a user to capture video information at their site and transmit it to someone at another site. Parties using video conferencing will also need a video display to display the video at their site, a microphone to hear the video and speakers to play the audio material.

Video conferencing Equipment

Most video conferencing terminals also require what is called a codec or Compressor/Decompressor interface. This piece of equipment helps compress information being passed from audio to video to make transmission of materials feasible over the Net. Without this piece of equipment most files would be too large to send from one computer to another. The process of compression data using a codec machine is often referred to as decoding and encoding information.

Finally, a computer and reliable internet connection are also necessary to facilitate video conferencing. A high speed connection is recommended to make the video

conferencing experience not only enduring but also enjoyable. The actual computer you have is not as important as the size of your display. Remember that when using video conferencing equipment, the larger your display the better your picture and the more easily a time you will have 'conferencing' with other people on the Web.

Recommended Hardware

The following recommendations are based on our experience with active customer installations. If you have a favorite brand or spare camera not on our list, give it a try.

For PC & Laptop Users

Webcams & Cameras



Microsoft® HD Lifecam This is a USB 2.0 webcam that captures video in high definition at 720p.

Headsets with Boom Microphones

Headsets are strongly recommended for PC and laptop users. However, if you require external microphones and speakers, no problem. Please see the echo canceller microphone section below.



Plantronics Audio .610 single-ear USB

Audio Equipment

Standard Echo Canceller Microphones



Phoenix Audio Solo

The Solo is recommended for small conference rooms.

ClearOne Chat 150 Conference Room Microphone

The effective pickup range for this microphone is 10ft or less. Please remember to update your driver/firmware for this product. You can find those updates here.



Revolab Wireless Microphone

Recommended for trainers who need to move around a room or workstations where wiring is difficult.

Omni-Directional Microphones



Revolabs Fusion 4 Channel System (Wireless)

Designed for boardrooms and conference rooms.

Revolabs Fusion 8 Channel System (Wireless)

The Fusion 8 is shown at left, it is recommended for very large, or very long conference rooms. Each microphone provides good coverage for 4 to 6 feet.

Echo Cancellation Mixers



Headsets with earpieces and boom microphones are strongly recommended for desktop users, but in conference rooms, boardrooms and some training facilities, external speakers are required. In these cases, echo canceling audio inputs are required.

The Clear One product line is a mainstay in high-end video conferencing and telepresence installations, with multiple inputs, mixing, and standard audio out. It is suitable for medium and large boardrooms and applications where the highest quality is required. Almost every telepresence installation uses Clear One audio equipment.

For small conference rooms, tabletop units with speakers and built-in echo canceling mics are available from Phoenix Audio, Yamaha and others. The best choice depends on your budget, the size of your conference room and the application. The staff at Nefsis helps customers to configure A/V peripherals for boardrooms and conference rooms.



ClearOne Converge 560/590

The Converge 560 and 590 conferencing systems deliver optimum audio performance and configuration flexibility for medium-sized rooms requiring up to nine

microphones. They feature innovative microphone distribution boxes that deliver significant cost savings and flexibility for users.



3 x ClearOne Mic - Unidirectional Table Top Design



3.5 mm (M) - RCA (M) Y-Adapter



RCA (M) - RCA (F)

PC Video Capture Cards

Hauppauge 1250



This is a multipurpose, single-slot PCI Express x1 adapter for cable TV and ATSC high definition digital signals. In addition to standard and HD video capture, the built-in tuner can be used with cable TV inputs, which may be useful if you have TV in your conference room. In addition to Nefsis compatibility, this card supports Microsoft Media Center. This is a half-height card with a full-height bracket supplied.

Hauppauge 1850



Similar to the 1250 above, but full-height card with more hardware-based accelerators for better system performance. For details, please visit the Hauppauge Computer Works website.

Aja Kona LHi HD (Recommended) - For Sony EVI-HD1 or equivalent HD video input



The Aja Kona LHi is an excellent general purpose HD-capable capture card. It can manage analog SD composite and s-video inputs, and the latest digital 3Gb SDI and HDMI video streams. In particular the high definition Sony EVI-HD1 conference room camera (see above) was tested with this card. *Compatible with Windows Vista & Windows 7.

PCIe Video Capture Cards

Deck link SD for analog video only (PCI or PCIe)

- Available in PCI or PCIe slot format
- Uses BNC connections
- Must configure the Decklink card to use the NTSC/PAL (Y in)
- Compatible connectors

This adapter requires a BNC cable input. If you are using a video camera or other video device with s-video outputs, you must also purchase an s-video to BNC adapter

(female-to-female). Video inputs using RCA/Composite connectors must purchase an RCA/Composite to BNC adapter (female-to-female).

Recommended software's

- Codec or compressor/ decompression tools (mpeg)
- Web based application (free ware like java /php, mysql / postgresql)
- Linux Operating system (free ware of fedora)
- Microsoft windows operating systems

Budget proposal to implementation of ipv6 video conference.

S.No	Particulars	Qty	Approximate Cost in Rs.
1.	Video / Web Camera	03	25000.00
2.	Headset with microphone	01	2500.00
3.	Audio standard echo canceller microphone	01	25000.00
4.	Revolab wireless microphone	01	28000.00
5.	PC Video capture cards	01	10000.00
6.	HP xw8400 Workstation	01	320000.00
7.	Server (high configuration)	01	375000.00
8.	Codec tools	01	45000.00
9.	Operating systems	01	25000.00
10.	Network peripherals	01	800000.00
11.	High speed internet connection white bandwidth	01	1200000.00
			2855500.00

CONCLUSION

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IPv6 enabled Video Conferencing Program

True or near-reality human-size video rendering of participants with immersive environment. High-quality presentation and displays.

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FUTURE SCOPE

Aim and Scope of Video conferencing based learning can provide the needed interaction. So it is a logical step to create learning tools that utilize the benefits of the video conferencing technology. Distance Education System are commonly used to increase effectiveness of educational process by offering solutions that address some of the shortcomings of the traditional classroom.

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BIOGRAPHIES



Dr. B. V. Ramana Murthy has done his PhD from Osmania University, presently he working as Professor in Computer Science and Engineering, has 18 years of experience in Teaching and R&D. His primary area of interest is Software Engineering & Web Engineering.



Mr. V Padmakar is pursuing PhD in CSE and has done his M Tech (CSE) from JNTUH, presently working as Professor in Computer Science and Engineering has 17 years of experience in Teaching and Industry. His primary area of interests is Software Engineering, Network Security and Data mining



Mrs. A. Vasavi has done her M.Tech (CSE) from JNTUH, *presently She is* working as Associate Professor in Computer Science and Engineering department, has 10 years of experience in Teaching. Her area of interest is Network Security and Formal Languages.