

Videoconferencing in the New Millennium

News and Reviews



CONTENTS

- 1 Videoconferencing in the New Millennium
- 5 IP Videoconferencing at the U of Illinois
- 7 How Videoconferencing Works
- 8 U of I Policy on Software Piracy
- 9 Server Services: Lots of Legal Software, Cheap!
- 11 UIC-Starbright Project

IP videoconferencing has arrived at UIC. It will save you time, help you communicate better, and allow you to do things you never knew you wanted to do.

Overview

OK, let's face it: no matter how much we want to, we can't be in two places at the same time. Have you ever wished you could skip that three-hour drive for a 90-minute meeting? Would you like to bring that coveted guest speaker to your classroom? Wouldn't it be great if you could be out of town and still give your lecture? How about having your students meet and collaborate with a colleague's class at another institution? Could the Jetson's video phone be a reality?

These are just some of the things videoconferencing was supposed to deliver last decade. And it did, but for a hefty price with lots of arranging and some good luck.

In the old days, back in 1998, if you wanted to do videoconferencing, you had to reserve a special room that was equipped with a dedicated high-speed telephone circuit (usually an ISDN line or part of a T1 line), expensive equipment, and a skilled technician. You'd be charged by the minute, and the charge was substantial.

That was **H.320-based ISDN videoconferencing** (also known as **traditional** or **ISDN videoconferencing**). Getting an H.320 videoconference started isn't enough. Sometimes they just die, for no apparent reason, and there's no guarantee that even your skilled technician will be able to get them going again.

The next generation of videoconferencing is changing all of that. Today's H.323 videoconferencing travels over the Internet, using standard Internet TCP/IP transport protocols. (Thus it's also called **IP videoconferencing**). In

About These Articles — and About Videoconferencing at the ACCC

The articles in this issue about videoconferencing were written by Ed Garay, an assistant director of the ACCC and the director of the ACCC's Instructional Technology Lab, ITL.

Both the ITL and the ACCC-Telecom division support and provide equipment for videoconferencing, with the ITL mainly helping people with do-it-yourself conferencing and ACCC-Telecom providing resources and running videoconferences for you for a reasonable fee.

Contact the ITL by phone at (312) 996-9824 or by email at itl@uic.edu. Links to the ITL's videoconferencing pages are in the Videoconferencing section of the ITL home page: <http://www.accc.uic.edu/itl/>

To schedule an ACCC-Telecom videoconference, contact Peter Garcia of ACCC-Telecom at (312) 996-7144 or audio@uic.edu. There's a link to the ACCC-Telecom videoconference Web page on the ACCC-Telecom home page: <http://www.accc.uic.edu/telecom/>

System Icons:



The Internet and
the World Wide Web



MS Windows



Apple Macintosh
Readership Icons:

Everyone



Novice



Expert



As of spring 2001 personal computer-based videoconferencing is for MS Windows personal computers only; there are no viable H.232 or T.120 (applications sharing) standards-compliant conferencing systems for the Apple Macintosh.

fact, the H.323 IP videoconferencing revolution has already started at universities across America, including UIC. What has made H.323 videoconferencing technology possible is high network bandwidth, which is plentiful at Research I institutions such as ours.

Today, you can start an IP videoconference from anywhere, at anytime — from your desktop, from a room down the hall, or from any room on campus that has a decent network connection.

Personal H.323-compliant videoconferencing systems for MS Windows personal computers start at just a few hundred dollars. Business-quality room-based systems start at about two thousand dollars and are as easy to operate as mastering the use of simple remote control.

Network Requirements

A typical business-quality H.323 videoconference runs at 384 Kbps (kilobits per second) and can deliver TV-quality video at 30 frames per second. So, in theory, an ordinary hard-wired Ethernet connection would work, and often does, provided that the subnet that it's on is not busy.

However, to consistently get satisfactory results, you should use a full-duplex switched Ethernet connection (which are being installed throughout our campus) to give each networked device 10 Mbps (megabits per second) or even 100 Mbps of uncontested bandwidth. Full-duplex means that you can not use hubs to run multiple connections.

Cable modems and DSL connections also work, although there is no guarantee that the commodity Internet (the regular Internet that most people outside of academia and research institutions use) will be able to sustain the minimum bandwidth requirements for good videoconferencing. This is not a problem for Research I institutions or anyone connected to a high-speed network such as Internet2, Abilene, or STAR TAP.

Components of a Videoconferencing System

H.323 is an umbrella standard that specifies mandatory and optional requirements, as well as four major components: terminals, gateways, gatekeepers, and multipoint control units.

If you're thinking of setting up a videoconferencing system, it is most important that *you purchase a fully compliant H.323 videoconferencing system* (a.k.a. **terminal**), to guarantee that you can use it in a heterogeneous environment to videoconference with other systems of different make and model.

The main components of a basic videoconferencing system are:

1. *A video camera*, to capture and send video from your **local endpoint**.
 - Preferably a **pan, tilt, and zoom (PTZ) camera**.
 - Some applications may require multiple cameras or the addition of a **document camera** such as an Elmo.
2. *A video display*, to display video received from **remote endpoints** (the people you're talking to), and, usually, to display the video you're sending out also.
 - For personal-computer videoconferencing systems, this is just your monitor, or
 - Large monitors, or
 - For a room-based system, a computer projector. If **NTSC (TV) monitors** are used, opt for models with S-Video ports for best quality and picture-in-picture so you can see yourself and the remote site at the same time.
3. *Audio components*, a microphone to capture and send audio from your local endpoint and speakers to play audio received from remote endpoints.
 - A videoconference is useless without audio. You need simultaneous, two-way (full-duplex) audio, preferably with **echo cancellation**.
 - For PC videoconferencing, a headset, or
 - Microphones and speakers.



4. *The codec (compressor/decompressor)*, software or hardware that compresses or decompresses digital audio or video; the codec is the heart of a videoconferencing system. A **hardware codec** is preferred over a **software-only codec**; it's generally much faster. A hardware codec is essentially a board that you install in your personal computer, or it comes builtin with some videoconferencing products.
5. *The user interface.*
- The user interface is typically very intuitive.
 - It allows you to interoperate with other H.323 terminals,
 - Provides a "dial" menu, address books, and aliases, and
 - Can optionally provide inputs and outputs for additional cameras, VCRs, microphones, notebook computers, and so on.

Types of Videoconferencing Systems

There are several types of videoconferencing systems to choose from. In order of increasing cost, they are: software-only desktop clients, hardware-assisted PC clients, integrated USB desktop units, and stand-alone set-top units. For the very rich, which leaves us mere mortals out, there are also integrated room-based systems, which start at \$7,000.

H.323 videoconferencing systems are like telephones — so long as the system you choose is fully H.323 compliant, you can choose the type, make, and model that suits you the best and use it to connect to other people, regardless of the type, make, and model of the system they're using.

Software-only Desktop Units

These are very inexpensive solutions using software such as Microsoft NetMeeting

(free) or CuSeeMe Networks' CuSeeMe Pro (\$60), running on your MS Windows personal computer. (Macs don't figure into desktop videoconferencing yet.) Compression/decompression is done by the software, so the faster your personal computer, the better. You will also need a small video camera, a microphone, and loudspeakers.

Microsoft NetMeeting

Microsoft NetMeeting, figure 1, is the de facto entry-level H.323 terminal. It is a free download and comes pre-loaded with Windows 98/ME/2000 and recent versions of Microsoft Internet Explorer.

Pros: low price; good audio quality; can be deployed on almost any personal computer; OK for casual use.

Cons: low-quality, small video screen; maximum speed only 128 Kbps; typically banned from multipoint videoconferences.

Application Sharing

In addition to handling video and audio, Microsoft NetMeeting has another very useful capability: it allows you to share (view or control) applications (running programs) over the network. This is called **data conferencing**. NetMeeting's implementation of the **T.120 protocol standards** for data conferencing is now being used by many other companies.

For example, a NetMeeting user can run a Web browser on one PC and share its display over the the Internet. Other conference participants can then watch their screens as the original user surfs the Web. One could even grant control of a program to remote participants, who could operate the program, over the Internet, from a distant PC.

Application sharing offers a powerful means of demonstrating, tutoring, and mentoring over the Internet. Instructors can launch programs and let their students see what they are doing. Students can share their programs with TAs and TAs can show them what they are doing wrong.

Note: when using application sharing, be sure that everyone uses the same screen resolution on their personal computer screens.

Add NetMeeting's audio and its other T.120 data conferencing standards-compliant applications, such as keyboard chat and whiteboard sharing, to NetMeeting's H.323 videoconferencing, and you

Figure 1: MS NetMeeting, a software-only desktop unit.

This illustration is from the MS NetMeeting Web site: <http://www.microsoft.com/windows/NetMeeting/default.ASP>

This figure illustrates a major problem with NetMeeting: it has a very small picture. The larger frame in the figure displays the remote endpoint, the person you're talking to; the smaller picture-in-picture displays the local endpoint, the video that you're sending.



have something that's a lot better than the Jetson's video phone, for not a lot of money.

But, like the Jetson's video phone, NetMeeting is at its best for [point-to-point videoconferences](#), involving only two H.323 terminals. If you want to participate in [multipoint videoconferences](#), you'll probably need something better than NetMeeting; it is typically banned from multipoint conferences.

Hardware-assisted PC Clients

Also known as personal desktop videoconferencing systems, their setup generally includes an expansion card containing video capture and codec hardware, an analog video camera, some software, a microphone, and a headset. A 450 MHz Pentium II or better PC is typically required.

Hardware-assisted PC clients have a maximum speed of 384 Kbps and range in price from \$700 to \$2000. Leading products in this group include: VCON Escort 25, Zydacron OnWAN IP (Z340 codec), PictureTel Live 550, PictureTel LiveLAN, and VTEL Smart Station.

Pros: relatively inexpensive; good video quality; adequate for videoconferencing with a group of up to three people in front of the PC.

Cons: installation is not always straight forward.

Integrated USB Desktop Units

These are a new breed of easy-to-install and simple-to-use personal videoconferencing systems,

consisting of a single unit containing the video camera, microphone, and codec. This unit connects to the USB port of a desktop PC or notebook computer. USB desktop units provide good quality video, 30 frames per second at 384 Kbps; they are well-suited for a small group of people sitting in front of the camera.

The best units are the Polycom ViaVideo (\$400), pictured in

figure 2 below, and the VCON Vigo (\$600). We have the Polycom ViaVideo in the ITL and we like it very much.

Pros: affordable and extremely easy to use; great for notebook computers.

Cons: none.

For more information, visit the ITL or <http://www.polycom.com> or <http://www.vcon.com>.

Note: don't confuse these USB videoconferencing systems (appliances) with the small, inexpensive video cameras that connect to USB or parallel ports; those are just video cameras and have no builtin hardware codec or H.323 protocol support.

Stand-alone Set-top Units

Stand-alone videoconferencing systems provide the highest possible quality; they are the ideal solution for classrooms and conference rooms. These units are compact (the size of a set-top cable box), are extremely easy to use, and require no personal computer hookup. All that you need is a network connection and an NTSC (TV) monitor.

All stand-alone systems include high-quality pan, tilt, and zoom (PTZ) cameras, hardware codecs, and microphones. They have a variety of additional input and output ports to connect secondary cameras, document cameras, VCRs, computer video, projectors, and alternate microphones.

The operation of stand-alone units is straight forward, typically using a simple remote control interface.

The leading stand-alone system in the market is, without question, the Polycom ViewStation, which is available in several models. The Polycom ViewStation has a builtin Web server, which makes it easy to control and operate over the network.

Certain Polycom ViewStation models can be equipped with a VGA adapter to accommodate video directly from a computer. Other models, like the ViewStation 512 shown in figure 3 (page 6), are hybrid systems, supporting H.323-based videoconferencing running over the Internet and H.320-based videoconferencing running over ISDN telephone lines.

Figure 2: Polycom ViaVideo, an integrated USB desktop unit



IP Videoconferencing Applications at the U of Illinois

Campus Profiles



IP videoconferencing opens the door to a number of applications never before possible. For example, it is a lot easier and much more affordable to have guest speakers meet your class and engage your students over the network, or have more regular ERP (Enterprise Resource Planning) meetings than otherwise possible. A number of CIC committee meetings use IP videoconferencing. (CIC is the Big Ten-based Committee on Institutional Cooperation; UIC and UIUC are charter members.)

IP videoconferencing can allow classes to meet periodically in cyberspace, to get to know one another, to exchange experiences, and to collaborate. Students taking distance learning courses can get together one-on-one or in groups, with or without instructor participation.

Collaborative Art History

UIC professor Robert Bruegmann has been doing just that; he took one of his art history classes to several videoconference meetings with students from University of Southern California, to share what they were learning: at UIC, the art history of old Chicago, and at USC, the art history of old Los Angeles.

This term, one of Professor Bruegmann's classes is collaborating with a class in Washington University. Things don't always run perfectly, but the students get to see or hear each other in real time, via videoconferencing, and asynchronously, via Blackboard CourseInfo.

Another Web project that Professor Bruegmann contributes to is the Chicago Imagebase: <http://www.uic.edu/depts/ahaa/imagebase/> which is a fascinating searchable database of visual documents relating to the built environment of the Chicago area.

Interactive Pathology of the Eye

As another example, consider Dr. Robert Folberg's applications. Not new to videoconferencing, Dr.

Folberg feels right at home teaching Pathology of the Eye from his lab in the UIC College of Medicine to students at the University of Chicago, Cornell University, University of Iowa, Indiana University, West Virginia University, and the University of Missouri-Columbia. And he is planning on extending the program to the Philippines and India.

Most of the videoconferencing that Dr. Folberg does now is over IP, but sometimes when network bandwidth is not available at the other institution, he relies on ISDN-based videoconferencing to deliver his highly interactive lectures.

At the heart of Dr. Folberg's setup is a Polycom ViewStation 512 to which he connects a high-end microscope with an overlay pointer, a laptop computer, and an Elmo document camera. A small video switch enables him to quickly switch video sources between these peripherals and the Polycom's built-in PTZ camera.

Distributed Classrooms

Downstate at Urbana, communication professor Noshir Contractor has been using IP videoconferencing to teach distributed cooperative learning classes. One such class had a total of 42 students, physically located far away from each other, at UIUC, Purdue University, the University of Southern California, and the University of California, Santa Barbara. The class meets every week using one of the CIC MCUs housed at the Ohio State University.

What these examples show

These examples show that, when it comes to H.323 videoconferencing, the people and the hardware can be at distant locations. What happens behind the scenes is not important; what matters is the capability to have face-to-face communication, anytime, anywhere, and without huge telephone bills.

IP Videoconferencing at UIC

UIC has standardized its IP videoconferencing operations on the Polycom ViewStation (figure 3), which is supported by ACCC-Telecom and the ITL. A number of ViewStation systems are already installed at UIC, in the ACCC, the Provost's office, OVCR, OVCHA, the College of Medicine, Engineering, Human Resources, and others.

Choosing a Polycom ViewStation means not only getting a leading product, but having access to a lot of user experience on campus.

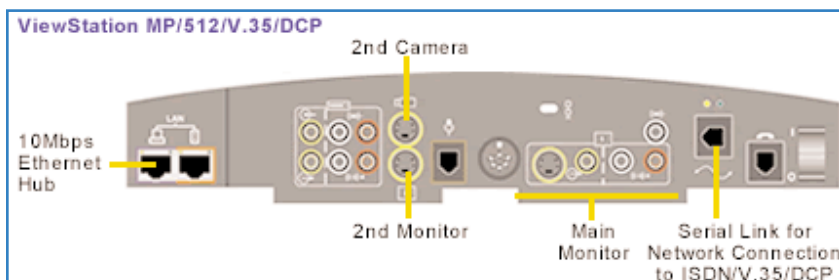
ViewStation prices range from \$2,000 to \$7,000.

Using Videoconferencing with Other Technologies

IP videoconferencing activities can be supplemented and seamlessly integrated with other digital video technologies, such as live Webcasts and video on demand.

For instance, an H.323 videoconference could be made available via a live RealVideo streaming Webcast, so that distance students without an H.323 videoconferencing terminal could at least watch and listen in. Similarly, H.323 videoconferences could be recorded and made available on demand, asynchronously, via a RealVideo streaming server, for those who couldn't make the live event.

Figure 3:
Polycom
ViewStation, an
integrated USB
desktop unit,
front and rear
views



For More Information

For more information, a demonstration, or to reserve any of the ACCC's videoconferencing equipment, contact Peter Garcia of ACCC-Telecom at (312) 996-7144 or audio@uic.edu.

Or stop by the ITL, either during its open hours, Mondays and Thursdays, 1:00–5:00 p.m., or make an appointment to visit at other times, Monday through Friday, from 9 a.m.–5:00 p.m.. You can contact the ITL by phone at (312) 996-9824 or by email at itl@uic.edu.

The ITL is on the west side of campus, room 181 of the Benjamin Goldberg Research Center (BGRC), 1940 West Taylor Street. The campus shuttle bus stops one block east at the corner of Taylor and Wolcott.

Related Links:

ITL on Videoconferencing:

<http://www.uic.edu/depts/accc/itl/videoconferencing/> and <http://www.uic.edu/depts/accc/itl/conf2001/video/videoapps.html>

ViDeNet Videoconferencing Cookbook:

<http://www.vide.gatech.edu/cookbook2.0/>

This is a practical, thorough, and easy-to-understand introduction to videoconferencing, with simple, step-by-step instructions on how to use a number of videoconferencing systems.

The Cavner model for network video services:

<http://www.cavner.org/model/> and other Cavner Web pages.

Polycom videoconferencing products: http://www.polycom.com/products/video_family.html

RADVision Web site: <http://www.radvision.com/>

In Summary

Videoconferencing over the Internet is a new enabling technology which has applications in education, research, collaboration, and day-to-day communication. Distance education and traditional classroom courses can benefit tremendously from this reliable and affordable means of interactive two-way communication.

We at the ITL and at ACCC-Telecom look forward to helping the university make use of this new opportunity.

Comments are welcome; please send them to Ed Garay, garay@uic.edu

How Videoconferencing Works

Tech Tips



By themselves, the videoconferencing systems described in the previous article allow you to hold a point-to-point — one-on-one — videoconference with any other H.323 videoconferencing user. To hold a multipoint videoconference — one involving three or more endpoints — over the Internet you also need an H.323 multipoint control unit (MCU) videoconference server and an H.323 Gatekeeper.

An MCU is a central multimedia server to which videoconferencing terminals connect. The MCU manages the audio and video for each participant, providing, in a sense, a virtual meeting room for the group. For larger conferences, several MCUs can be cascaded to increase capacity and for load balancing.

An H.323 Gatekeeper is another server; it controls and manages videoconferencing resources, including H.323 MCUs. It operates behind-the-scenes, confirming what the various terminals can do, assisting in call setup and take-downs, address translation, admission control, bandwidth management, zone and call management, and so forth.

In an H.323 environment, all compliant videoconferencing systems automatically register themselves with their local zone's Gatekeeper. To further simplify matters, Gatekeeper administrators often exchange Gatekeeper information, establishing so-called neighboring Gatekeepers, as has been done between UIC and Urbana.

The UIC H.323 Gatekeeper and MCUs are run by the ITL. The UIC MCUs can handle multipoint conferences at speeds from 128 Kbps to 1.5 Mbps and groups of three to nine terminals, or any combination thereof, and also [continuous presence multipoint conferences](#), ones where the video screen is split in four quadrants like the Brady Bunch. Contact Peter Garcia, (312) 996-7144 or audio@uic.edu, to reserve them. If needed, additional H.323 MCU capacity is available from the CIC.

Figure 5: Point-to-point videoconference

A gatekeeper or MCU is not needed; one participant can simply "call" the other, either by domain name or IP address.

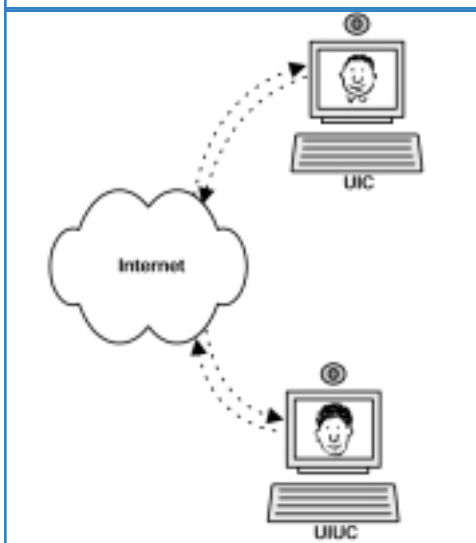
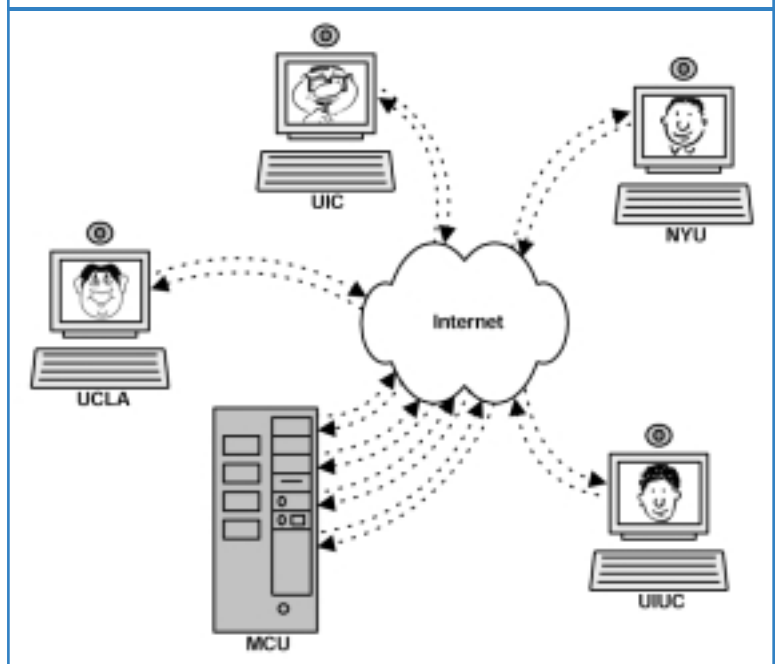


Figure 6: Multipoint videoconference

In a multipoint conference, each participant calls the designated MCU, with their local Gatekeeper acting behind the scenes (between each endpoint and the Internet and between the MCU and the endpoints) to aid and facilitate the conferencing. As shown in the illustration, the MCU (or MCUs) running a conference can be anywhere on the Internet.



U of I Policy on Software Piracy

The Campus Beat



There's big business in software piracy, the unauthorized copying and use of copyrighted software. It's rampant in business. Software that was legally purchased for one machine can end up installed on every machine in an office. It's also rampant in online auctions. Make a copy of a software CD for \$3, offer it for sale (without documentation, of course) on an online auction for \$30, sell a hundred copies; not a bad day's work.

You wouldn't do that of course, but the chances are pretty good that you *have* committed software piracy. Did you ever get a new computer and hand the old one down without removing the software you'd installed? Did you ever upgrade software and give your old copy a friend? Did you ever install a copy of a software package on four different machines? Then you're a software pirate too.

Software piracy is a major problem partly because people don't know what it is. And some people who do know better say they do it because the software is too expensive. Like it (or them) or not, software companies are entitled to be paid when people use their software.

And that's the problem. *In most cases when you "buy software," you're not actually buying the software, you're buying a license to use it.* The

license may be specific to one or two computers (a single user's desktop and notebook computers, for example) or for use by only one person at any time. Most software licenses allow you to make backup copies of the program (I don't think I'd buy any software that didn't allow that), but it is not legal to sell or give away those copies. And if you purchase an upgrade, your license to use the software transfers to the upgraded copy; your old copy ceases to be legal. So you can't give away or sell that either.

In the old days, software companies tried to stop software piracy by copy-protecting their software. Copy protection is not used much any more, both because users didn't like it and because it didn't

work. Most software now requires registration. That won't stop software piracy, but it makes it more obvious when you're doing it.

The Bottom Line

What do you, as a member of the UIC and University of Illinois community need to know about software piracy? The university's official policy follows; read on.

The University of Illinois Software Piracy Policy

The academic community thrives on respect for other's ideas and other's rights. Our privileges are balanced by responsibilities. This policy focuses on respect for intellectual property, especially computer software. As used in this policy, the term "software" includes traditional program software and other works published in electronic form.

Unauthorized copying of software has tangible negative results for our academic community, for the developer of the software, and for the community at large. The University of Illinois and software developers both benefit from mutual trust and shared responsibilities. Unauthorized copying of software damages this trust.

The University of Illinois and all of its campuses, the State of Illinois, the United States, and international law all prohibit the unauthorized copying of software. Members of the University of Illinois are prohibited from unauthorized copying of software. Members of the community who ignore this policy and copy software without proper authorization will be disciplined.

Each member of the community is responsible to make a good faith effort at assuring this policy is met. Unit administrators are responsible for insuring that their units make a good faith effort to comply with this policy. If you are using software on a University of Illinois machine and you are not sure it is properly authorized, contact your academic or administrative supervisor to make sure it is properly authorized.



About this article:

The bulk of this article is the "University of Illinois Policy on Software Piracy", http://www.uic.edu/depts/acc/policies/soft_piracy.html

The U of I policy is based on the University of Florida's policy: <http://www.ifas.ufl.edu/www/pirate/> and on the Adapso and Educom document "Using Software: A Guide to the Ethical and Legal Use of Software for Members of the Academic Community": <http://www.cni.org/docs/EDUCOM.html>

It is not only illegal to copy software without proper authorization, it is also not fair. The University of Illinois cannot tolerate physical theft or plagiarism; it also cannot tolerate unauthorized copying of software.

Software Piracy Q and A

1. What do I need to know about software and the U.S. Copyright Act?

Unless it has been placed in the public domain, software is protected by copyright law. The owner of a copyright holds exclusive right to the reproduction and distribution of his or her work. Therefore, it is illegal to duplicate or distribute software or its documentation without the permission of the copyright owner. If you have purchased your copy, however, you may make a back-up for your own use in case the original is destroyed or fails to work.

2. Can I loan software I have purchased myself?

It depends upon the terms of the license. Read it carefully. Copyright law does not permit you to run

your software on two or more computers simultaneously unless the license agreement specifically allows it. It may, however, be legal to loan your software to a friend temporarily as long as you do not keep a copy.

3. If software is not copy-protected, do I have the right to copy it?

Lack of copy-protection does not constitute permission to copy software in order to share or sell it. "Non-copy-protected" software enables you to protect your investment by making a back-up copy. In offering non-copy-protected software to you, the developer or publisher has demonstrated significant trust in your integrity.

4. May I copy software that is available through facilities on my campus, so that I can use it more conveniently in my own room?

Only if your campus advertises the fact that you may do so. Software acquired by colleges and universities is governed by licenses and contracts which define how and where the software may be legally used by members of the community. This applies to software installed on hard disks in microcomputer clusters, software distributed on disks by a campus lending library, and software available on a campus mainframe or network.

5. Isn't it legally "fair use" to copy software if the purpose in sharing it is purely educational?

No. It is illegal for a faculty member or student to copy software for distribution among the members of a class, without permission of the author or publisher.

6. I can't legally copy the software I need and I don't have a lot of money to spend on software. What can I do?

Your campus may have negotiated agreements that make certain software available at reduced prices or even at no cost to you. One of these packages might meet your needs and fall within your budget. Ask your campus Computing Center or Computer Store to help you identify such software.

Look for shareware that meets your needs. Shareware is often good and reasonably priced. Shareware, or "user-supported" software is copyrighted software that the developer encourages

Server Services: Lots of Legal Software, Cheap!

Is your computer on the UIC campus? Have we got a deal for you —ACCC Server Services. Server Services allows you to legally use any of 45 software packages, including all the usual suspects: Microsoft and Corel WordPerfect Office, Adobe Photoshop, Macromedia Dreamweaver, SAS, SPSS, Exceed, and Maple and Matlab. A complete listing is at: <http://notes1.cc.uic.edu/depts/adn/software.nsf/ServerServices>

In addition to being legal, Server Services is cheap.

Students in the residence halls can add Server Services to their Res-Net connection for only \$5 per month. That's \$15 per month for a great Internet connection and all the software you'll ever need, including all of the class-related software available in the ACCC public labs. For more information, see the Res-Net Web page: <http://www.uic.edu/depts/accc/lan/res-net/>

For on-campus machines used by faculty and staff, the charge for Server Services is \$7 for per month (plus a one-time installation fee if you decide not to install it on your own). For more information, see the Server Services Web page: http://www.uic.edu/depts/accc/lan/server_services/

If your computer isn't on the UIC campus, we can't do as much for you, but we do have site license for a number of software packages. Go to the ACCC home page, <http://www.accc.uic.edu>, click the purple Software button, then select **Software Sales**. And check out the Micro/Station: <http://www.microstation.uic.edu/>

They have good deals on "academic versions" of many software packages.

you to copy and to distribute to others. The permission is explicitly stated in the documentation or displayed on the computer screen. The developers of shareware generally ask for a small donation or registration fee if you continue to use the software after a short trial period. By registering, you may receive further documentation, updates, and enhancements. You also support future development of the product. Finally, look for public domain software that meets your needs. Sometimes authors place software in the public domain, which means the software is not subject to any copyright restrictions. It can be copied and shared freely. Software without a copyright notice is often, but not necessarily, in the public domain. Before you copy or distribute software that is not explicitly in the public domain, check with your campus Computing Center.

7. If my campus has negotiated a license for a software package can I freely copy that package or give copies to other members of the campus community?

Not unless your campus explicitly advertises that you may do so. Your campus entered into a legally binding agreement in order to obtain the right to distribute the software and the terms of distribution were spelled out in that agreement. For instance, the

contract might limit use of the software to particular groups or to use on a subset of the machines on campus. It might also require your campus to maintain extensive records of the copies distributed.

8. Can I share software, text, or data that I've downloaded from the Web or a gopher or FTP site?

Not necessarily. You may do so only if you are sure that the author's rights were respected by the person who made the material available to you and that there are no limitations on the use and distribution of the materials. Your ability to download the files doesn't guarantee either.

The person who made the materials available on the network might not have been aware of copyright restrictions or might have chosen to ignore them.

Your campus could have made the materials available to you in such a way that contractually obligated rules of access are automatically enforced. For instance, certain files may be accessible only to individuals on your campus, only to students on your campus, etc. Your campus might also be required to count copies distributed and may be doing so automatically through the download mechanism you used.

The GNU Project

The GNU's Not UNIX, better known as GNU, project's UNIX software library is the archetype for both freeware software: (<http://www.gnu.org/>) and for freeware and hardware licensing (<http://www.gnu.org/philosophy/license-list.html>)

Downloadable Software: The Cheap, the Free, and the Buyer Beware

Some software publishers make their software freely available, but ask everyone who uses it regularly to pay a registration fee for it. This type of software is called **shareware**.

Shareware often has a free trial period that allows you to use it for a short time or for a certain number of executions to decide whether you want to buy it. It is no more legal to use a shareware program beyond its initial trial period without paying for it than it is to use pirated software.

Freeware is shareware that you don't have to pay any money to use. But even freeware usually requires registration and comes with a license that limits its redistribution.

Other people make illegal copies of copyrighted software publicly available "for free." That's called **warez** — illegal publicly available copies of copyrighted commercial software. Warez sites pop up and are shut down on the Web on a daily basis.

Every Web portal and search engine has a page listing shareware and freeware Web sites; I like C|Net's <http://shareware.cnet.com/>

Before you download any software from the Web, be sure you research both the software you want to download and the site you're downloading from. Legit sites and legit software are closely monitored for viruses and unintentional side effects, but mistakes do happen. Mistakes happen more often — and sometimes on purpose — with warez.

Also, it's common for shareware and freeware to be written by individuals or small companies, and there's often less support available for them than for standard commercial software.

(Shrink-wrapped software can, of course, carry viruses, have unpleasant side effects, and have poor support too. The only computer virus I've ever gotten came on the install diskette I got with a new video card. And recently, a major antivirus distributed an online update for a day or two that caused certain machines not to boot. And just about everyone has a "big software company" support horror story. So I guess the buyer always has to beware, even when you pay money for the product.)

UIC-STARBRIGHT Project

Campus Profiles



Thanks to the efforts of three UIC departments, the Department of Pediatrics, the Academic Computing and Communications Center (ACCC), and UIC Medical Center Information Technology Services (ITS), the children's unit of the UIC Hospital will be able to take full advantage of its participation in a wonderful new program called STARBRIGHT World.

STARBRIGHT World, which has been developed by director Steven Spielberg to improve the quality of life of seriously and chronically ill children requiring extended hospital stays, allows children in one hospital to teleconference with children in other hospitals. The program encourages participation in creative arts and crafts activities, provides entertaining and educational Web sites and videos geared to a wide range of age levels, and gives access to information relating to the children regarding their health care. STARBRIGHT's goal is to present information in a way that is non-threatening and enhances a child's understanding of — and cooperation with — their care plan.

UIC will join almost one hundred hospitals across the U.S. and Canada that are participating in the program. Following generous donations from the Oppenheimer Family Foundation and the Cerner Corporation, three mobile computer stations will be set up for use by young patients. In addition, CDW Computer Centers, Inc. has offered an in-kind donation of supplementary electronic goods.

Principal personnel involved in developing the program include Diane Rudall, Assistant to the director of the Center for Molecular Biology of Oral Diseases, who initiated the project at UIC and spearheaded the fundraising effort; Eileen Robbins, director of development in the UIC Medical Center; and Bernice Woods, director of Child Life in the UIC Hospital Nursing Services.

Plans to bring STARBRIGHT World to UIC were implemented with the support and encouragement of John J. DeNardo, the executive director of the UIC Hospital, and his assistant Bernadette Biskup.

Now, through the good will and collaboration of ITS and the ACCC, access to STARBRIGHT computers has been expanded. At least fifteen patient rooms will be wired to permit a portable computer unit to be wheeled to the bedside of patients who cannot or do not wish to leave their rooms.

The ACCC and ITS personnel responsible for providing the wiring and lines necessary to bring STARBRIGHT World directly into the patient rooms include Dr. Ahmed S. Kassem, UIC CIO and director of the ACCC; Joy Keeler, CIO for Health Affairs; Gustavo Aldaba, ITS Telecommunications network specialist; Steven Tschantz, ACCC project manager; Calvin Wright, ITS director of Technology Solutions; Michael B. Smith, ITS research programmer; and Thomas Guetzlaff of ACCC Telecommunications Engineering and Design.

As an inner-city institution serving a diverse patient population, UIC is an ideal place for the STARBRIGHT program, particularly because of the major role UIC plays in meeting the needs of disadvantaged children. The benefits of the program include the following:

- ✦ Opportunities to “find a friend” through private computer-network teleconferencing with children in other hospitals across North America, allowing the children to share information and develop friendships.
- ✦ A chance to play wholesome games, participate in arts and crafts, and watch entertaining videos. The network offers more than 700 Web sites and games, all of which have been specially selected for their content and appropriateness.
- ✦ The opportunity to view interactive programs created by STARBRIGHT, which explain particular hospital procedures and illnesses, as well as the chance to “chat” with hospital personnel from other hospitals. Of special interest are animated videos about IVs and medical imaging procedures.

(The information in this article was contributed by Diane Rudall, UIC-STARBRIGHT Project Coordinator.)



“STARBRIGHT is dedicated to the creation of projects that empower seriously ill children and teens to address the challenges that accompany prolonged illness — and give them back their childhoods.”

— The Starbright Foundation Web site,
<http://www.starbright.org/>

The A3C Connection

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