



GUIDELINES FOR EFFECTIVE VIDEOCONFERENCES

November 2007



VIRGINIA DEPARTMENT OF EDUCATION
DIVISION OF
**TECHNOLOGY &
CAREER EDUCATION**
OFFICE OF EDUCATIONAL TECHNOLOGY

VNET

VIRGINIA EDUCATION NETWORK FOR VIRTUAL CONFERENCING

The Office of Educational Technology (OET) of the Virginia Department of Education has developed a virtual meeting network that supports state-of-the-art conferencing solutions. The Virginia Education Network for Virtual Conferencing (VNET) will improve the following elements of communication and collaboration among education administrators:

- Reduce costly travel and out-of-office time for division administrators attending meetings
- Increase division-level administrator participation in statewide discussions or collaborations
- Provide meeting support, professional development, and technical assistance to divisions and regional consortia

VNET supports two forms of virtual communications: two-way interactive videoconferencing and Web-based conferencing. This is one in a series of documents developed by OET in support of virtual conferencing.

WHAT IS A VIDEOCONFERENCE?

A **videoconference** uses audio and video telecommunications technology to bring people together from different locations for face-to-face interaction or collaboration. A videoconference can involve people in two offices (**point to point**) or several sites (**multipoint**). Videoconferencing has gained popularity because it employs key elements of face-to-face interactions while saving time and money.

A videoconference system requires a video input (camera), video output (monitor or screen), audio input (microphone), audio output (speakers), and digital network (Internet). The Virginia Department of Education recommends IP-based, H.323 compliant, Polycom and Tandberg videoconferencing systems. This ensures consistency throughout the network for OET-sponsored training and support, facilitates troubleshooting, and reduces technical support requirements. While it is possible to choose another system, it is recommended that OET be contacted for guidance in using the system within VNET.

Videoconferencing and virtual collaboration can increase productivity and improve communication among physically separate locations, while producing several other benefits:

- Groups can meet more frequently.
- Critical meetings can take place instantly.
- Travel costs are reduced.
- More staff may be included.

In addition, although the initial cost and setup of equipment can be challenging, virtual meetings ultimately can save time and money.

TYPES OF VIDEOCONFERENCING SYSTEMS

There are basically three kinds of systems.



Dedicated systems contain all required components packaged into a single piece of equipment, usually a viewing console with a video camera, microphone, and speakers.



Desktop systems are camera-and-software additions to normal PCs that offer videoconferencing capabilities (TKO, 2003).



Portable set-top units have a self-contained codec, camera, and microphone that is attached to a standard television or monitor.

These systems can support point-to-point, multipoint (through a multipoint control unit), or Web-based videoconferencing. In addition, these systems can facilitate virtual collaborations, which include file sharing and other applications.

VIDEOCONFERENCE ENVIRONMENTS

An understanding of the audience and purpose of the virtual meeting are essential when planning the environment for your videoconference. Ideally, a designated, secure virtual meeting room with a minimum of 20 amps of electricity and a high speed Internet connection should be maintained in permanent readiness. This will diminish preparation time and meet connectivity and electrical needs.

The amount of space necessary for a videoconference depends on the purpose of the meeting and the available space. The room must have appropriate connectivity, electricity, and acoustics, which include good sound absorption and insulation. Reducing the number of flat, reflective surfaces in the room (e.g., windows, polished floors) will reduce the amount of echo and improve the audio transmission. In addition, eliminating outside environmental noises will reduce distractions. Your technician should help select the room to meet these needs.

For videoconference group meetings, it is best to set up a U-shaped table with the videoconferencing unit and camera at the top of the U (TKO, 2003). This allows all participants to view the monitor or screen. With the camera located at the top of the display, participants naturally will look at the camera while viewing the image.

This setup facilitates eye contact among participants and allows the camera to focus easily on the group.

Lighting also can affect the equipment performance. For optimal video imagery, keep the lighting source in front of the participants at or slightly above eye level. Adding a diffuser to existing fixtures helps control excessive glare or the *whitewash* effect. Try to eliminate as much natural light as possible; sunlight creates sharp contrasts in the room and confuses the automatic adjustment mechanisms on most videoconferencing cameras.

Lastly, consider the interior design of the virtual meeting room. Color can make the video input work harder. Try to use soft, textured wall coverings or painted walls in muted earth tones. Keep decorations to a minimum; for instance, a potted plant in the background might appear to be growing from a participant's head! Pictures or other framed items should be tilted downward slightly to eliminate reflections. The use of nonglare glass on framed items may also reduce reflection. Choose furnishings with the comfort of the participants in mind, and remember that lighter woods and textured fabrics lessen glare.

VIDEOCONFERENCE PRESENTATIONS

Presentations made during a videoconference are as important as any made during face-to-face interactions—perhaps more so, since virtual meetings can be recorded, broadcast, or archived. Certain presentation skills will always be valuable during meetings and conferences, such as speaking in a strong, clear voice and demonstrating enthusiasm for the subject matter; however, additional skills are essential when videoconferencing:

Dress appropriately for the meeting. This means more than wearing a suit instead of pajamas; color plays an important role in videoconferences. Wear solid colors rather than complex patterns. Bright whites and flashy jewelry can add glare; strong reds and oranges can *bleed* and compromise video quality (Aposkitis, 2005). Neutral shades often are the best choice; take your cues from what your favorite newscaster wears.

Maintain eye contact. Remember where the videoconferencing unit is positioned, stay in frame, and look directly into the camera (AT&T, 2007). Facial expressions matter, so smile and gesture as if the meeting were face to face.

Keep movements to a minimum. Most videoconferencing

units are sensitive to movement, so rapid gestures can affect video quality. Make smooth movements and gestures.

Use effective audiovisual aids. For presentations, use large, bold fonts (more than 24 point) and avoid fancier scripts. Use background colors in the middle of the color spectrum; black on white is often hard to read (Macleod, 2006). When using document cameras to show detailed images, reduce glare by using black sans serif fonts or showing graphics on light blue paper; also, landscape formats are more compatible with video feeds (University of Alaska Fairbanks, 2007). Before beginning your presentation, make sure the materials are clear to all participants.

VIDEOCONFERENCE ETIQUETTE

The virtual meeting is a meeting like any other face-to-face interaction. General etiquette guidelines apply as they would in other social or business situations. However, because videoconferencing can be conducted in private settings, it is important to remember a few additional guidelines:

Assume the camera is always on you. Keep eye contact with the participants via the camera and be aware of what is being transmitted. Avoid side conversations, rustling papers, coughing, and gesturing; cameras and microphones are very sensitive and can be activated by sound or motion. Mute your system if you need to speak with someone not participating in the meeting.

Give the speaker your full attention. This is just as important in a virtual meeting as in any business situation.

Give the speaker time to finish talking. Some systems have a slight delay; wait for 3-5 seconds after each transmission to allow each person to ask questions or make comments.

Identify yourself before speaking when participating in a multipoint meeting. This can avoid confusion and ensure that comments and questions are addressed to the correct people.

A humorous but informative look at videoconferencing can be found at <http://www.uwtyproduction.org/resources/prodvideos.html>.

GETTING STARTED

Dedicated videoconferencing systems, desktop units, and portable set-top units vary. There is no substitute for proper training and practice when participating in a virtual meeting. Most units, however, have certain common features. Before attempting to use the system, you should be able to locate the power buttons on the viewing screen and the videoconferencing unit. Look for the volume, mute, and number keypad on the remote control. In addition, note the location of the camera and microphones. Advance preparation is crucial for first-time participants in videoconferencing or online collaboration; try to schedule a dry run a few days in advance with the division's videoconferencing specialist. If possible, first-time users should have a technician present.

These simple steps should get you started on your first videoconference.

Turn on the power. Turn on the viewing screen first; remember that the videoconferencing unit (the codec) and the screen are two separate pieces of equipment. Although all videoconferencing units are similar, they may be connected to a computer monitor, screen, whiteboard, or television. Both the viewing screen and the videoconferencing unit must be powered. The unit should show a solid light when the power is on. A flashing light usually indicates the unit is in sleep mode; push the menu button to activate the unit. If the lights on the unit are off, it may be necessary to turn on the power using the switch on the back of the codec. Once powered, most units take approximately 10 seconds to warm up.



Push the menu button on the remote control. The video-conference main menu should appear.

Make sure the microphone is on the table.

To make a call, use the remote control and **press the combination call/hangup button** on a Polycom unit or the **the call button** (usually green) on a Tandberg unit.

Using the number keypad on the remote control, **enter the IP address** for the call you wish to make. For controls without *dot* buttons, the *asterisk* should be used in place of the IP address dots or periods. On some models without the *dot* button, the right arrow will produce the required *dot*.

Press the combination call/hangup button or the call button again to **dial the call**.

The videoconference should be connected. To exit the call, **press the combination call/hangup button** (green button) on the Polycom unit or the **disconnect button** (usually the red button on the remote control) on the Tandberg unit. Be sure to turn the screen power off as well.

TROUBLESHOOTING

Before hosting virtual meetings, you should work with your technician to understand how the videoconferencing equipment functions and glean information specific to your unit. Proper training is important; most problems with videoconferencing units are due to user error. It is a good idea to attach key information to the back of the unit, including the technical manual, contact information for the technician, and the IP address or H.323 numbers for the unit.

These general troubleshooting strategies can guide novices through simple-to-fix issues that can occur before or during a virtual meeting:

Your screen is blank. Check the power. Both the viewing screen (television, monitor, or whiteboard) and videoconferencing codec must be receiving power. If the screen is blank, check the power switch on the back of the unit and then check the connections to the electrical source. If the power is on, the unit may be in sleep mode; click the menu button on the remote. If the screen is still blank, make sure the camera lens cap has been removed.

Your remote control does not seem to be working. Check the batteries; low batteries inhibit the remote's function. In addition, most remotes are based on infrared technology; make sure you have a clear line of sight between the remote and the codec.

You try to dial, but an error message appears. This can occur when the number is dialed incorrectly; check the number and dial again. This also occurs when the remote location is not receiving incoming calls; have the participant try to call your videoconferencing unit. The error message may also be related to your connectivity. If you are still unable to connect, call your technician.

You see yourself on the screen. This is normal; if you are the first to connect to a multipoint conference, you will see yourself until another participant connects.

You can see them but cannot hear them. First, check the volume on your videoconferencing unit and/or television audio settings; they may be turned down. Then, see if the participant's microphone is muted.

You can see and hear them, but the audio is terrible. Either their volume is too high or their microphone is too close to the speakers. Poor bandwidth also can cause this problem. If the problem continues, contact your technician.

You can see and hear them, but the picture is slow or jerky. There may be too much motion in the background of the image you are receiving. This should fix itself when the participants stop moving around. If it continues, contact your technician because the connectivity could be inadequate.

You are in the middle of a call, and the connection drops. One of the participants may have hung up or lost power. If you are using a bridge for a multipoint call, another possibility is that the time may have expired or the multipoint control unit lost power. Try to reconnect.

You have tried everything and still cannot connect. At this point, *call your technician.*

Videoconferencing units are important tools; they can help reduce the size of our global village and make communication and virtual meetings more personal. The primary advantage of virtual meetings is to save money and time. In addition, videoconferencing is becoming increasingly popular as virtual classrooms in academia and virtual collaborations in government and business around the world. With the recent technological advances in communications, the possibilities are endless.

Additional videoconferencing information may be obtained from the Office of Educational Technology at 804-225-2855.

GLOSSARY

Audio Communication: Signals that carry sounds

Codec: A device that encodes a stream or signal for transmission and then decodes it for viewing or editing; often used in videoconferencing and streaming media applications

Desktop Videoconferencing: Videoconferencing on a personal computer with a small camera connected to the computer

Document Camera: A device that allows users to see materials or documents closely via the monitor

H.323: Standard for intercommunication protocol

IP (Internet Protocol): The computer networking protocol used on the Internet

Multipoint Control Unit (MCU): A device that enables videoconferencing among three or more sites

Point-to-Point Videoconference: A videoconference between two sites

Real Time: Live audio/video transmission without any perceptible delay

Videoconferencing: The transmission of audio and video in real time among two or more physically separate locations

Whiteboard: A device that allows written information to be sent electronically

Whiteboarding: A feature of Web and video conferencing software that allows multiple users to view and annotate a document simultaneously; sometimes used for creating a blank document to capture brainstorming ideas

DIRECTORY OF VNET-SUPPORTED VIDEOCONFERENCING UNITS

Region	Location	Address	City	Zip	Contact	Phone	E-mail	IP Address
I	Hopewell Public Schools SBO	103 North 12th Avenue	Hopewell	23860	Scott Brubaker	804.540.6400	brubaker@hopewell.k12.va.us	63.171.141.34
I	WCVE	23 Sesame Street	Richmond	23235	Lynne McCarthy-Jones	804.560.8214	lmccarthy-jones@ideastations.org	not available
I	Dinwiddie Public Schools SBO	14016 Boydton Plank Road	Dinwiddie	23841	Gerald Williams	804.469.4284	gwilliams@dcpnsnet.org	63.160.254.93
I	Hanover County Public Schools SBO	200 Berkeley Street	Ashland	23005	Pete O'Brein	804.365.4600	pobrein@hanover.k12.va.us	67.98.155.22
I	Charles City County Public Schools SBO	10910 Courthouse Road	Charles City	23030	Varie F. Jordan	804.652.4612	vfordan@co.charles-city.va.us	208.31.123.38
II	WHRO	5200 Hampton Boulevard	Norfolk	23508	Annie Gilstrap	757.889.9400	Annie.Gilstrap@whro.org	64.5.155.193
II	Accomack County Public Schools SBO	23296 Courthouse Avenue	Accomack	23301	Jim Carey	757.787.5758	jcarey@sbo.accomack.k12.va.us	64.5.145.180
II	Northampton County Public Schools SBO	7207 Young Street	Machipongo	23405	Ron West	757.678.5151	rwest@sab.ncps.k12.va.us	not available
II	Southampton County Public Schools SBO	Post Office Box 96	Courtland	23837	William Hatch	757.653.2692	bhatch@southampton.k12.va.us	not available
III	Caroline County Public Schools SBO	16221 Richmond Turnpike	Bowling Green	22427	Melissa Ferrara	804.633.5088	mferrara@caroline.k12.va.us	166.61.227.93
IV	Warren County Public Schools SBO	210 North Commerce Avenue	Front Royal	22630	Melody Sheppard	540.631.9681	msheppard@wcps.k12.va.us	208.3.110.17
IV	Arlington County Public Schools SBO	1426 North Quincy Street	Arlington	22207	Pat Teske	703.228.5752	pteske@arlington.k12.va.us	158.59.225.200
V	WVPT Conference Room	298 Port Republic Road	Harrisonburg	22801	Scott Kessler	540.437.2447	scott@wvpt.net	10.1.1.60
V	Waynesboro City Public Schools SBO	301 Pine Avenue	Waynesboro	22980	Jody Lohr	540.946.4600	Jody_Lohr@waynesboro.k12.va.us	216.12.40.125
V	Louisa County Public Schools SBO	935 Davis Highway	Mineral	23117	Bruno Sestito	540.894.5115	sestito@lcpss.k12.va.us	not available
VI	WBRA	1215 McNeil Drive SW	Roanoke	24015	Linda Pharis	540.344.0991	lpharis@wbra.org	164.106.236.83
VI	Franklin County Public Schools SBO	25 Bernard Road	Rocky Mount	24151	George Washington	540.483.5128	george.washington@fcco.k12.va.us	208.215.200.20
VI	Craig County Public Schools SBO	321 Salem Avenue	New Castle	24127	Adele Morris	540.864.5191	amorris@craig.k12.va.us	69.130.63.101
VII	Smyth County Public Schools SBO	121 Bagley Circle, #300	Marion	24354	Terry Hawthorne	276.783.3791	terryh@mail.scsb.org	206.105.116.6
VIII	Longwood ITIP VUMAC Site	707 4th Street, Room 11B	Blackstone	23824	Bill Wilson	434.517.0717	bill@itip.us	166.61.229.116
VIII	Nottoway High School - Mini Auditorium	5267 Old Nottoway Road	Crewe	23930	Annah Bowen	434.292.5373	annahbowen@hotmail.com	not available
	DOE: 18th Floor, Taylor Meeting Room	101 North 14th Street	Richmond	23219	Richard Schley/Michael Fleshman	804.371.6882	richard.schley@doe.virginia.gov	141.104.220.118
	DOE: 20th Floor, Wilson Meeting Room	101 North 14th Street	Richmond	23219	Richard Schley/Michael Fleshman	804.371.6882	richard.schley@doe.virginia.gov	141.104.220.120
	DOE: 22nd Floor, Jefferson Meeting Room	101 North 14th Street	Richmond	23219	Richard Schley/Michael Fleshman	804.371.6882	richard.schley@doe.virginia.gov	141.104.220.111
	DOE: 22nd Floor, Jefferson Classroom	101 North 14th Street	Richmond	23219	Richard Schley/Michael Fleshman	804.371.6882	richard.schley@doe.virginia.gov	141.104.220.222
	DOE: 24th Floor, Harrison Meeting Room	101 North 14th Street	Richmond	23219	Richard Schley/Michael Fleshman	804.768.1806	michael.fleshman@doe.virginia.gov	141.104.220.124
	DOE: 25th Floor, Madison Meeting Room	101 North 14th Street	Richmond	23219	Richard Schley/Michael Fleshman	804.768.1806	michael.fleshman@doe.virginia.gov	141.104.220.125
	DOE: 25th Floor, Washington Meeting Room	101 North 14th Street	Richmond	23219	Richard Schley/Michael Fleshman	804.768.1806	michael.fleshman@doe.virginia.gov	141.104.220.125
Local	Giles County SBO	151 School Road	Pearisburg	24134	Jeff Young	540.921.1421	jyoung@gilesk12.org	not available
T/TAC	James Madison University	MSC 9002	Harrisonburg	22807	Cheryl Henderson	540.568.3774	hendercl@jmu.edu	134.126.96.115
T/TAC	Virginia Tech	MS0254, 112 Lane Hall	Blacksburg	24061	Patricia Bickley/Richard Snider	540.231.5167	bickley@vt.edu, rsnyder@vt.edu	128.173.104.111
T/TAC	College of William and Mary	Post Office Box 8795	Williamsburg	23187	Lori Korinek	757.221.5051	lokori@wm.edu	128.239.109.157
T/TAC	Old Dominion University	1401 West 49th Street	Norfolk	23529	Kerry Lambert	757.683.4333	klambert@tac.odu.edu	128.82.33.134
T/TAC	George Mason University	KHd Library, 108 Krug Hall	Fairfax	22030	Mike Behrman	703.993.3670	mbehrman@gmu.edu	129.174.36.102
T/TAC	Radford University	Post Office Box 7006	Radford	24142	Lynn Graves	540.831.5333	lgraves2@radford.edu	137.45.80.178
T/TAC	Virginia Commonwealth University	10 East Franklin Street, Suite 200	Richmond	23220	Sandy Wilberger/Linda Oggel	804.827.1405	swilber@vcu.edu, lsoggel@vcu.edu	128.172.19.50

RESOURCES

- Aposkitis, C. (2005, March). *ViDe Videoconferencing Cookbook*. <http://www.vide.net/cookbook/cookbook.en/> (July 21, 2007).
- AT&T. (2007). *Videoconferencing Communication Skills*. <http://www.kn.att.com/wired/vidconf/communication.html> (July 21, 2007).
- Communiqué Conferencing. (2003). *Choosing a Web Conferencing Solution*. <http://www.communiqueconferencing.com/choosingawebsolution.pdf> (July 21, 2007).
- Communiqué Conferencing. (2003). *Conducting a Webinar*. <http://www.communiqueconferencing.com/webseminarwhitepaper.pdf> (July 21, 2007).
- Educause. (2005). *7 things you should know about . . . Virtual Meetings*. <http://www.educause.edu/ir/library/pdf/ELI7011.pdf> (July 21, 2007).
- Ehrenberg, E., & Tempelman-Kluit, N. (2004). *Library Instruction and Online Tutorials: Developing Best Practices for Streaming Desktop Video Capture*. http://www.nyu.edu/its/pubs/connect/spring03/ehrenberg_streaming.html (July 21, 2007).
- Enbysk, M. (2007). *Virtual Meetings cut travel costs*. http://www.microsoft.com/smallbusiness/resources/finance/business_travel/virtual_meetings_cut_travel_costs.mspx (July 21, 2007).
- Harper, K. (2007). *Virtual Meetings That Work*. <http://www.kateharper.com/articles/v-meetings2.html> (July 21, 2007).
- Irbe, A. G. (2002). *E Learning 1.0: Something to Talk About: Tips for Communicating in an Electronic Environment*. <http://www.learningcircuits.org/2002/feb2002/elearn.html> (July 21, 2007).
- Lasica, M. S. (2005). *Videoconferencing: Troubleshooting Strategies*. http://www.kn.pacbell.com/wired/pubs/vidconf_troubleshooting.pdf (July 21, 2007).
- Macleod, D. (2006). *The BELLE Project: Video Conferencing Etiquette*. http://belle.netera.ca/infra_vid_con.htm (July 21, 2007).
- Marotta, L. (2005). *Get the most of your distance education online with these important tips*. <http://www.web-conferencing-zone.com/distance-education-online.htm> (July 21, 2007).
- MOREnet. (2002). *Tips for Successful Videoconferencing*. <http://www.more.net/technical/video/videoconferencing/successtips.html> (July 21, 2007).
- Polycom. (2007). *ViewStation H.323 QuickStart Guide*. www.polycom.com/apac/en/support/video/viewstation_series/other_viewstation/viewstation_h323.html (July 21, 2007).
- Robson, M., & Kestel, C. (2003). *Tips for Managing a Successful Virtual Meeting*. <http://www.circl.pitt.edu/home/docs/Ingenia'sTips.pdf> (July 21, 2007).
- Tandberg Video Systems. (2006). *Tandberg Video Systems User Manual*. www.tandberg.com/products/video_systems/tandberg_990_880_770_mxp.jsp (July 21, 2007).
- TKO. (2003). *Video Conferencing*. <http://www.video-conferencing.com/> (July 21, 2007).
- University of Alaska, Office of Information Technology. (2005). *Video Conferencing Services: Video Conferencing Etiquette*. <http://www.alaska.edu/oit/vcs/etiquette/etiquette.xml> (July 21, 2007).
- University of Alaska Fairbanks, Center for Distance Education and Independent Learning. (2007, January). *Document Camera Tips and Guidelines*. <http://distance.uaf.edu/archives/research/subresearch/vidconf-doc-camera.php> (July 21, 2007).
- University of Washington, UWTV Production. (2006). *Production "how-to" videos*. The videoconference zone. <http://www.uwtpvproduction.org/resources/prodvideos.html> (August 22, 2007).



www.doe.virginia.gov/VDOE/Technology

The Virginia Department of Education does not unlawfully discriminate on the basis of sex, race, color, religion, disabilities, or national origin in employment or in its educational programs and activities.