Satellite RFA Released

Charles Mawson
Telecommunications Analyst, CCCCO

On September 30, 1998, the California Community Colleges Chancellor's Office (CCCCO) released an RFA (#98-0211) for building the system-wide California Community Colleges Satellite Network. Applications are to be returned by March 1, 1999.

The California Community Colleges Satellite Network (CCCSAT) is a five-year $8.5 million effort that will integrate with other distance education initiatives that have been funded by the Chancellor's Office. It will also interface with similar services and resources in the other segments of public education in California, particularly the California State University system and the K-12 system, as well as with other related public and private resources.

The CCCCO is requesting applications for construction of a CCCSAT Broadcast Center to be operational by June of the year 2000. CCCSAT will serve as the satellite uplink and network control center for the video network serving the community colleges and their educational markets.

This project will fund construction of a satellite uplink facility giving

Video on the 4CNet Backbone

Catherine McKenzie
Instructional Resources and Technology, CCCCO

Videoconferencing, one of the four basic requirements for the Telecommunications Technology Infrastructure Program (TTIP), is designed to facilitate real time interaction among and between all sites in the California Community College System.

Stage One of the videoconferencing component of the TTIP was the interim use of ISDN for videoconferencing before initiating Stage Two, which involves the conversion and deployment of videoconferencing over the 4CNet network. Stage Two began with Requests Forms sent out in October 1998 to all campuses. This gave each campus and district the opportunity to select whether to be part of the 1998-99 conversion group or the 1999-2000 group. The California Community Colleges Chancellor's Office (CCCCO) was seeking 63 sites for 1998-99 and 60 for 1999-2000.

Based on a 70 percent response rate to the Request Forms, the CCCCO is currently finalizing an initial implementation schedule for the conversion. Many questions have emerged during this process and a

FAQ
4CNet Video Connection Questions and Answers
see page 3

Physical Inventory Survey

Catherine McKenzie
Instructional Resources and Technology, CCCCO

The California Community Colleges Chancellor's Office is developing a revised Telecommunications and Technology Physical Inventory Survey. The previous survey conducted last year was considered overly complicated, and efforts have been made to maintain simplicity while still gathering the required information.

This data will assist the California Community Colleges Chancellor's Office with long-range planning efforts, 4CNet-related projects, and on-going tracking of equipment. Final reviews of the draft survey are expected to be completed by January 15, 1999. The survey should be released to the campuses by March 1, 1999, and should be returned to the Chancellor's Office by May 28, 1999.

Any questions regarding the Telecommunications and Technology Physical Inventory Survey should be directed to Catherine McKenzie at 916/322-0833 or via e-mail at *cmckenzi@cc1.cccco.edu* .

C O R R E C T I O N

The 4CNet Backbone Installation Schedule printed in the December 1998 issue of *TIPS News* has been revised. Below is the current installation schedule.   -Editor

The timeline summary below reflects 4CNet's backbone upgrade plans as they affect the California Community Colleges. This schedule is subject to revision based on circuit availability and final installation dates from Qwest and PacBell. For greater detail, point your browser to *http://www.4c.net/backbone-upgrade.*

4CNet Backbone Installation Schedule

March1999	Equipment installation and preparation of Qwest co-location facilities
April1999	Completion of Los Angeles, San Diego, and San Francisco OC-48 SONET rings. Continue OC-3 build-out of backbone
June 1999	Collocated Qwest nodes in Anaheim, Salinas, San Diego, Stockton, and Sunnyvale expected to be ready for CCC video and data circuits
July to December 1999	Complete OC-3 build-out of backbone circuits
August 1999	Co-located Qwest nodes in Fresno and Stockton expected to be ready for CCC video circuits
September 1999	Co-located Qwest Chico node expected to be ready for CCC video circuits
December 1999	Complete installation of CCC video circuits
February 2000	Begin OC-12 build-out
April 2002	Complete OC-12 build-out of network

4CNET VIDEO CONNECTION FAQ

part one

4CNET VIDEO CONNECTION REQUIREMENTS

Q: What is required for connecting a community college videoconferencing system to the 4CNet videoconference network?

A: The only requirements for videoconferencing over the 4CNet network are an upgrade to the campus PictureTel unit to support a V.35 interface and the T-1 circuit to a 4CNet node. In the standard 4CNet video connection model, this upgrade will replace the current ISDN module in the campus PictureTel unit.

Q: Who will pay for the 4CNet Video Circuit and PictureTel upgrade?

A: Each campus will be provided TTIP (Telecommunications Technology Infrastructure Program) funding to pay for the video circuit to 4CNet and the PictureTel upgrade. The circuit cost will be included in the 4CNet Video Installation and Service fees as a part of an amended 4CNet contract for each campus. The PictureTel upgrade cost will be paid by the campus with TTIP funding through an agreement with PacBell in cooperation with PictureTel.

Q: Will a new campus 4CNet Video Agreement be required for this project?

A: No. The existing 4CNet Campus Agreements will be amended to reflect videoconferencing installation and service.

4CNET VIDEO CONNECTION MODELS

Q: How will community college campuses be connected to the 4CNet Video Network?

A: The base connection model is a single T-1 connection to each campus from a 4CNet node. The circuit will be installed to the campus MPOE (Minimum Point Of Entry) and an extended point of demarcation will be established to provide direct connection through a Larsecom CSU (customer service unit),

used to translate T-1 protocol, to the campus PictureTel Codec (coder/decoder). In this base model, there will be no interaction with the current 4CNet data connection on campus.

Q: What will be the operational bandwidth for video connections to 4CNet?

A: The current standard bandwidth for videoconferencing over 4CNet is 384Kbps. It is expected that this standard will increase to 768 Kbps over time.

Q: How will each campus in a multi-site district be connected to the 4CNet Video backbone; and will each campus be able to bridge into the 4CNet backbone for multi-point conferencing?

A: The base connection model calls for a direct connection to each community college campus for video. However, as in the data connection model, districts with funding for multiple sites may choose to implement other options. As indicated, the base connection model is a dedicated T-1 connection from the 4CNet hub directly to each authorized campus in a multi-site district and one dedicated T-1 connection to the district office if funded. Bridging will be done via 4CNet, and connections between the district's sites would be scheduled via 4CNet like any other CCC site. Multi-point conferencing will be available through the 4CNet bridges just as for any other individual campus.

One option may be for a multi-site district office to install a video bridge, and their own T-1 circuits to the district's campuses. The district would be responsible for the bridge and use of the bridge would be required for all videoconferences across 4CNet.

The bridge could have up to four 384K channels for each 4CNet T-1 video circuit based on the bridge's capacity. Those connections (ports) would provide for access anywhere within the 4CNet video network as well as to other 4CNet video connections outside the network. In this connection model, 4CNet would provide all equipment and circuits necessary to connect the selected central district site to the limit of the total

TIPS on *Videoconferencing*

Multi-point Videoconferencing

Mary Schrader Lasica
Education Advocate, Pacific Bell

This article will address the technology needed to accomplish a multi-point videoconference connection, the number of sites that can reasonably connect to a multi-point conference, communication strategies that can contribute to the success of the meeting or conference, and a few tips from experienced users.

What technology do I need to connect three or more sites?

Point-to-point videoconferences are made by one videoconference location directly dialing another, It is possible to videoconference (see and hear) with the other site because both sites are connected to the telephone network by way of a special digital phone line. After dialing and connecting to the other site, the far end (the location that has been called) will appear in the main frame of the monitor. The local site will appear in either the PIP (picture-in-picture) or on the second monitor.

To connect three or more videoconference units into a single call, it is necessary to use a multi-point video bridge. This bridge allows each participating videoconference location to dial into the bridge equipment using a number assigned by the bridge scheduler. What will appear when the site is connected will depend on the capabilities of the bridge itself.

A voice-activated bridge will allow the different sites to see and hear the site currently speaking or presenting. A question from another site will cause the picture to switch to that site. The local site can be viewed on the PIP or second monitor.

A continuous-presence bridge will arrange the video images of the locations in four boxes on the monitor (think of the opening credits of the Brady Bunch). These three or four sites will be viewed continuously throughout the videoconference. Generally, four sites in view are the limit for these conferences; however, more sites can join as viewers, rather than full participants who can be both seen and heard. A new option on certain bridges allows one of the quadrants (or squares) to be "voice-activated" so all sites can be seen and heard.

The California Community College Chancellor's Office (CCCCO) has a bridge provided by PictureTel. This bridge has continuous presence capabilities. To learn more about the bridge and the procedure for reserving the bridge, consult the Videoconferencing page on the CCCCO web site at *http://www.cccco.edu/ESED/irt/tnt/video/cccco.html*.

For videoconference planners at sites that are not in the California Community College system, bridge services are available from a variety of different vendors. To find out more, visit the multi-point page on Pacific Bell's Videoconferencing for Learning: *http://www.kn.pacbell.com/wired/vidconf/multipoint.html* . Costs include rental of the bridge (usually charged by the hour) and any long-distance charges incurred while dialing into the bridge.

How many sites can dial into the bridge for a multi-point conference?

The type of videoconferencing units purchased by California Community Colleges are designed for maximum communication and interaction between sites, so that different locations can clearly see and hear the other locations to whom they are connected. Every time another location is added to the videoconference, however, there is an increased layer of complexity both to the technology that allows all locations to see and hear each other, and to the quality of the communication itself. As more sites are added, it becomes more difficult for all sites to participate fully.

Connecting more than three or four locations will limit the interactive nature of videoconferencing. It is possible to connect more than four sites together on many types of bridges. For example, one location might wish to simply

broadcast information rather than interact from location to location. Keep in mind that the complexity of the technology increases with each location added.

What communication strategies work best in a multi-point videoconference?

Think of strategies that might be employed when planning a meeting for fifty people or more. These strategies are similar for multi-point conferences. Meetings for smaller numbers of participants can be much more informal. Larger meetings need more structure as well as a facilitator.

Appoint a facilitator who has previously used video-conferencing to manage an agenda and communication between locations. The facilitator can plan the agenda so that presentations will be from different locations; the "action" can move from site to site. The agenda should also leave time for questions and answers from different sites.

When questions are allowed, plan which location will ask the first questions, which location will go next. Keep this order consistent throughout the videoconference. The facilitator can explain the order at the start of the conference, then when questions are allowed, prompt each site with "Location A, are there any questions?"

When a speaker is presenting at a distant site, all other locations should mute their microphones. This is extremely important! The microphones used by the PictureTel videoconferencing units are very sensitive, and can transmit muffled comments, the sound of sneezing or rustling papers; when using a voice-activated bridge, the camera will then be viewing the interruption, rather than the main speaker.

Be sure the camera is pointed toward the person speaking before proceeding with the presentation, question, or comment. Especially for those asking questions, begin with "I'd like to ask a question" and pause until the camera is focused on the person asking the question. Then, proceed with the question or comment.

What else do I need to know?

When connecting to videoconferencing units at California Community Colleges manufactured by PictureTel, use H.320 standards at a connection rate of 384 kbps. This will give a clear sound and a clear video image that will be refreshed between 22-25 frames per second.

When connecting to locations outside of the community college network, be sure that each location can connect to the bridge using H.320 standards. Ascertain their ability to connect to a bridge at a particular rate, as some sites may only have the ability to connect at 128 kbps. Decide if all locations will connect at the lower rate (which will affect the quality of the video images all sites see) or if those participants should travel to a location with videoconferencing equipment that connects at a higher rate. (Some bridging services allow sites to participate at different rates, so this might be another option.)

Reserve the video bridge for one hour prior to the start of the meeting (to allow all sites to get connected before the meeting actually begins) and 30 minutes following the time set for the conclusion of the meeting (to make sure you are not cut off in mid-sentence).

Set up a test call the day before the actual meeting so

Satellite RFA

all California community colleges the ability to transmit their courses to every corner of the state and around the world. Additionally, CCCSAT will consist of digital downlinks to each community college.

Procedures and activities for the project:

1. Provide the physical plant and facility that will house the Broadcast Center.

2. Manage on-site construction of the satellite uplink and control center.

3. Provide on-going technical operations for the Broadcast Center.

4. Provide on-going marketing and business support for programming to ensure success of the network.

5. Provide a standard package of satellite telecommunications infrastructure support systems and services, including a connection to 4CNet, videoconferencing equipment, and satellite analog and digital dual-band (Ku/C) downlink equipment. This task includes the maintenance functions for the operation of these systems.

6. Establish an Advisory Committee and/or network to advise the Broadcast Center on operations and programming.

7. Subject to input from or concurrence by the Advisory Committee, additional members, subcommittees, functions, activities or experts, necessary to fulfill grant objectives may be funded out of this grant.

8. Develop a Maintenance and Self-Support Plan. Grantee must prepare a final report that can guide policy development and replication of program content, delivery, administration, etc. It must include a plan whereby the services provided to the colleges under the terms of the grant can continue to be available on a cost-recovery basis. The plan should provide:

   a) A detailed budget, based upon careful analysis of expenditures for the course of the grant, and an analysis of on-going administrative, equipment, and operational needs,

   b) analysis of revenue sources, proposed fee structure and estimate of revenues to be gained,

   c) marketing plan targeting the preferred revenue sources,

   d) recommendations regarding optimal management of such a distributed system, including possible policies or laws.

A copy of the RFA as well as a list of Frequently Asked Questions can be found at *http://www.cccco.edu/ESED/.*

Any questions regarding the CCC satellite program should be directed to Charles Mawson at 916-327-5902 or e-mail at *cmawson@cc1.cccco.edu.*

Video on the 4CNet Backbone

Frequently Asked Questions (FAQ) list (see Part One of *4CNet Video Connection FAQ* on page 6) was developed to address these concerns. This FAQ list can be found at *http://www.csu.net/ccvideo/ccc-videohome.html.* An installation schedule will be posted at that address in the near future.

Additionally, the 4CNet project management staff and the CCCCO will be working closely with technical staff at each campus to confirm circuit termination location and circuit installation dates, as well as any unique campus requirements.

Any questions regarding video bridging or video on the 4CNet Backbone should be directed to Catherine McKenzie at 916-322-0833 or *cmckenzi@cc1.cccco.edu.*

ON THE WEB
Technology

- *International Technology Education Association:*
  Many good technology resource links.
  -**http://www.iteawww.org**

- *PC Webopaedia:*
  A handy listing of Web and technology-related terms.
  -**http://www.pcwebopedia.com**

- *AcademicNet:*
  AcademicNet is dedicated to fostering the use of technology in teaching and learning.
  -**http://academic.com**

- *Technology Coordinator's Resource Center:*
  A variety of links to resources for technology in education and other areas.
  -**http://minot.com/~nansen**

4CNet Video Connection FAQ

video funding provided to the district by TTIP. Any unused TTIP video funds could be used by the district for other pieces of the installation such as the T-1 connections to each district campus. Any additional funding would be the responsibility of the district including connections to the other campuses, additional equipment, etc. It should also be noted, however, that when two campuses in separate districts using this bridge model need to connect, that two bridges would be utilized, making such a connection more problematic.

As indicated above, other connection models for a multi-site district may be considered through consultation with the requesting district and 4CNet, with final approval from the Community College Chancellor's Office in most instances. If such consultation is required to discuss a specific connection model for your district, please contact Ed Smith at (562) 985-9417 or via e-mail at *smithew@csu.net*.

Q: Can the excess bandwidth available on the video T-1 circuit be used to carry data traffic? Conversely, can the unused bandwidth on a campus existing T-1 data circuit be used to carry video traffic thus saving the cost of a second T-1 circuit?

A: Technically, yes, a single T-1 line could be multiplexed to carry both video and data traffic thereby providing additional data bandwidth or saving on the need for a second circuit for video traffic. Practically, no. The installation and operational cost of multiplexing a single T-1 line make it more practical to segregate the video and data traffic.

On the video side, segregation of the circuits will allow for variation (increase) in videoconference bandwidth either as needed or permanently with no negative effect on data bandwidth and very little operational overhead costs. On the data side this would provide for more consistent bandwidth availability. If additional data bandwidth is necessary at a campus, then additional T-1 circuits are available in most areas at rates that would be far less than the cost of installing and operating a multiplexed system.

The direct connection to a videoconference location will also eliminate the complications involved in providing connection between the current campus 4CNet data connection point and the planned 4CNet video connection point. In some situations, connection to the video location through the current data connection point could severely tax the existing campus infrastructure by requiring the use of existing campus circuits to carry video traffic across campus.

INSTALLATION SCHEDULE

Q: When will the video circuits be installed?

A: It is anticipated that all sites will have their T-1 circuit(s) installed between January and December 1999, with the installation month being dictated by readiness of the backbone upgrades in each geographical area. An Installation Schedule has been posted with installation dates for each campus and whether or not each date has or has not yet been confirmed. Estimated dates when the Qwest co-located backbone nodes are expected to be ready is also included. Qwest is the vendor selected by 4CNet for co-location of most of the network's backbone node equipment for increased reliability. Qwest will also be providing the necessary circuits for the backbone upgrade. More detailed information is available at http://www.4c.net/backbone-upgrade/.

Q: How will the community colleges be provided with updates and changes to the installation schedule?

A: An installation schedule will be posted at the address noted above. Additionally, 4CNet's project management staff will be working closely with campus technical staff, as was the case with data connections, to confirm circuit termination location(s) and circuit install dates.

Part Two of **4CNet Video Connection FAQ** will appear in next month's issue. Topics will include:

- Network v. ISDN Connections
- Non-4CNet Conference Connections
- 4CNet Resources and Demand
- 4CNet Videoconference Scheduling and Procedures

Multipoint Videoconferencing

(continued from page 5)

that all sites can test their ability to dial into the bridge and see and hear all participants. Allow at least a ninety-minute test call to resolve all technological issues one day prior to the meeting. If the correct information was not given to those programming the bridge, some locations may not be able to see or hear other locations. The bridge may need to be reset, and all locations will need to connect to the bridge again. During this test videoconference, audio and video can be checked, and equipment, such as fans for air conditioning units, can be adjusted.

Finally, on the day of the meeting, connect to the bridge at least 60 minutes prior to the start of the meeting. Allow time to resolve any new issues that might arise.

Multi-point videoconferencing is a wonderful tool to allow you to meet with colleagues across the state and the country. With the help of the videoconference support staff at each college, you can be part of a team that works constantly to improve the uses of the technology available for you and your community. To find out more about multi-point videoconferencing in classroom situations, visit Pacific Bell Videoconferencing for Learning at *www.kn.pacbell.com/wired/vidconf/multipoint.html*.

Contact:

Mary Schrader Lasica
Education Advocate
Pacific Bell
mxlasic@pacbell.com

Contribute to
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TIPS News focuses on projects funded by the California Community Colleges Chancellor's Office that involve technology in education. ***TIPS News*** also features other issues concerning distance education in California, including videoconferencing and online learning.

If you have an article suitable for publication in ***TIPS News*** or are interested in writing material for publication, contact:

Chris Palmarini
530-895-2988
video@4c.net

Butte Community College
3536 Butte Campus Drive
Oroville, CA 95965

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