

# Case Study

Universidade Eletrônica do Paraná (UEP)  
BRAZIL

Delivering Distance Education Programs  
in the State of Paraná



## Background

The Electronic University of Paraná (UEP) is an education logistics provider located in Curitiba, the capital of the state of Paraná in southern Brazil. The university focuses on implementing the technical capabilities to enable and deliver distance education programs within other institutions. The university does not generate content, but instead leaves that responsibility to existing universities and other education institutions and plays a more consultative role regarding the technical delivery of the content.

The Law of Education Basics of Brazil requires that by 2007 all teachers in Brazil complete “superior”, or advanced, courses. In the state of Paraná alone, there are over 35,000 primary and secondary education teachers in 399 cities who do not currently hold this certificate.

## The Need for a Videoconferencing Solution

The State of Paraná had to solve three major problems:

- (1) Compliance with federal education law. How could Paraná comply with the federal law that requires the state to certify over 35,000 teachers dispersed in 399 cities? The teachers could not be expected to leave their jobs and their families to travel to or live in a city where the course is offered. Nor could the state invest the resources required to build state universities in all 399 cities.
- (2) Continued economic development. The state of Paraná is quickly becoming a Brazilian “Silicon Valley” and needed new

technical courses and programs to retain its leadership position and continue its economic development efforts in this area.

- (3) Access to education and programs. Brazil is a very large country (larger than the continental United States) and has few good universities. Only a small portion of the population has access to these institutions. The state of Paraná needed to offer its citizens access to the best courses at the best universities in the country.

In June, 2000, after a visit to VCON higher education customer ITESM (Monterrey Tech) in Mexico, the state of Paraná determined that videoconferencing would resolve their issues. The State Secretary of Science and Technology, Ramiro Wahrhaftig, his advisor Ataíde Moacyr Ferrazza, and the project coordinator Reinaldo Borba made the decision to implement and fund the project. Jean Nerone, UEP’s Technological Support Manager, was responsible for designing the network and choosing the videoconferencing vendor.

## Why VCON?

According to Nerone, the decision to implement the videoconferencing project over IP was a simple one. “This is the trend. Everything can and should be based on IP,” Nerone stated. “Until recently, the cost of bandwidth [in Brazil] was a great obstacle for implementing video over IP. But costs are coming down and will decline even more in the medium-term and in the future.” Nerone also cites the use of Internet as a determining factor in choosing IP instead of ISDN for the project: “The way the courses were

structured foresees that the students will need to access specific web sites to complete their studies. Our ability to use one platform for videoconferencing and for Internet access reduces the cost of the systems and maintenance of the network.”

Embratel was the carrier chosen to implement the star-shaped network. IP links of 256 Kbps were installed (192 Kbps for video, 64 Kbps for Internet access), routers were multicast-enabled, and the network operations center was placed in Curitiba. Nerone evaluated

using VCON endpoints or software-only multicast viewers, while allowing any participant using a VCON endpoint to fully interact during the conference. In essence, the multicast source can be moved among the VCON participants, creating a "virtual podium" effect. Another benefit of Interactive Multicast is its bandwidth efficiency. Because it uses standard multicasting, only one stream is on the network, no matter how many users are participating. This was a deciding factor for Nerone, who only had 192 Kbps at his disposal yet needed to provide interactive

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videoconferencing solutions by VCON, Polycom, and PictureTel. VCON’s reseller in Brazil, TES, sponsored a trip to VCON, Inc.’s headquarters in Austin, Texas to see the technology first-hand. Nerone chose VCON due to the systems’ performance on the IP network and VCON’s Interactive Multicast application. TES’s experience in videoconferencing and strong service and support organization also assured Nerone that he would have full post-sales service and technical support. Two months after Nerone’s visit to Austin, UEP built the IP network and installed the first videoconferencing systems.

Interactive Multicast. Nerone chose VCON for its unique and exclusive Interactive Multicast capability. Interactive Multicast allows the students to enjoy streaming video with interaction. It gives instructors the ability to multicast audio and video to participants

video to the users.

PacketAssist. Because UEP would be required to host several simultaneous multicasts as well as interactive videoconferences on the same network that also supports Internet access, Nerone chose VCON for its high performance on IP. VCON’s PacketAssist architecture provides numerous QoS features including packet ordering, jitter correction and lip sync adjustment. These capabilities, along with IP Precedence enabled on UEP’s network, combine to deliver the highest possible conference quality and performance. Additionally, the adaptive bandwidth adjustment feature enables the VCON endpoint to automatically adjust the conference data rate based on the network’s capacity and performance.

### Installation and Operation

Nerone chose the MediaConnect 8000, VCON's high-performance workgroup conferencing system, as the instructor system. Each of the four MC8000s is located at

the center of the "star" in a studio-type room where the instructor sits. The instructor sends an Interactive Multicast from the MC8000 to three or four remote classrooms in other cities. The classrooms are equipped with VCON's compact, user-friendly MediaConnect 6000 systems. During the multicast, one of the students (teachers) may have questions or comments and may request

### Up and Running

On September 11, 2000, the Electronic University of Paraná began solving its primary concern of certifying its 35,000 primary and secondary educators and inaugurated the "Normal Superior" courses. The first "Normal Superior" course is being offered by the State University of Ponta Grossa to 900 teachers located in the cities of Curitiba, Iratí, Ponta Grossa, and Francisco Beltrão. There are 50 instructors teaching 40 different classes which run from 7:30 AM to 10:30 PM Monday through Friday. As of this writing, eleven additional cities were coming on-line.

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the floor using VCON's Interactive Multicast participant capability on the MC6000. The instructor can grant the floor to that classroom with a simple mouse click. That classroom then becomes the source of the multicast and the resulting benefit is that all the sites can see and hear that student. When done, the instructor can reclaim the floor and continue the lecture.

UEP manages and administers the IP videoconferencing network with VCON's Media Xchange Manager (MXM). The MXM is a suite of integrated client/server applications and services, which provide Nerone with the tools to manage, administer, configure, and monitor all the video over IP endpoints on the network from his central location in Curitiba.

### Lessons Learned

According to Nerone, because the project was implemented so quickly (two months), there were some challenges, but they were quickly resolved. Nerone commented, "Most of the problems had basically to do with the underlying infrastructure (data communications, switches, and router configurations). On the videoconferencing side, the main challenge was getting the instructors to learn how to use the systems."

### An Eye to the Future

The four instructor studios and fifteen classrooms deployed to deliver the "Normal Superior" courses in the State of Paraná are just the beginning. Nerone plans to add two additional instructor studios and fifteen more classrooms before the end of 2001. Now that

the technology has been implemented, the ideas are flowing and the following content will be deployed over the video network in 2001:

- The State University of Ponta Grossa will certify 8100 teachers before the end of 2001 through the “Normal Superior” course.
- The Federal University of Paraná will offer continuing education in healthcare.
- Courses in Information Technologies will be delivered to over 1200 students in 15 cities.

The following distance education programs are also in development:

- Masters in Statistics course in conjunction with the Federal University of Santa Catarina.
- Masters in Communications Networks with UNB
- Masters in Biomedical Engineering (3 courses)
- Masters in Healthcare Information Technologies (2 courses)
- Masters in Agricultural Sciences with UEM and UEL
- Professional degree for “Train the Trainers”
- Masters in Hospital Administration

Nerone plans to use the VCON Developer’s Kit, a complete set of 32-bit OCX custom controls, to easily integrate VCON’s visual communications into custom-made distance education applications. He also plans to implement a Gateway to link UEP’s network with other video networks in other states in order to develop distance education projects and programs with other institutions. A Multipoint Conference Unit will also be deployed at that time to enable interactive videoconferences with more than two remote institutions simultaneously.

### UEP: A Success Story

UEP is a clear case study of how videoconferencing can solve some major issues for governments charged with furthering the education of their citizens. “Videoconferencing has democratized education in the State of Paraná,” Nerone states. “Students in cities far from the larger Paraná cities would find it impossible to take and complete advanced courses. With videoconferencing technologies, the State of Paraná is taking a huge step to develop our community by providing access to quality education to all citizens of the state.”

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