CHALLENGE

Half of Macedonia's 360,000 public school students attend school in a morning session, and the other half in an afternoon session. The challenge is to deliver one computer per child to all of the nation's primary and secondary students for less than US $200 per seat.

TECHNOLOGY

160,000 NComputing X300 access devices, connected to 20,000 desktop PCs running NComputing virtualization software deliver 180,000 student seats.
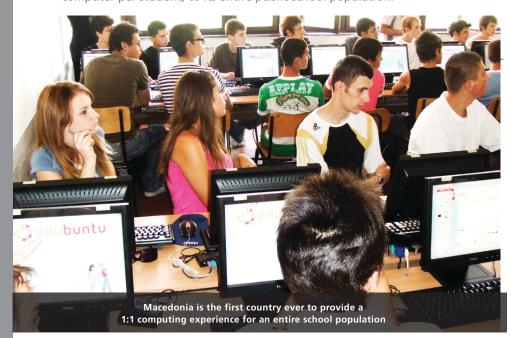
RESULTS

The government of Macedonia has begun a two year rollout across all 430 schools. The NComputing X300 enables seven users to access to a single computer simultaneously. Long term maintenance costs are a fraction of what they would be if the country had purchased individual laptops for every child.

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Republic of Macedonia First Nation to Provide a Computer for Every Student

Once considered the least developed of the former Yugoslavian republics, Macedonia is leaping into the 21st century. Thanks to low-cost virtual PC technology from NComputing, Macedonia is the first country ever to provide a 1:1 computing experience (one computer per student) to its entire public school population.

Macedonia is the first country ever to provide a 1:1 computing experience for an entire school population

The Challenge

Computers are taking a leading role in education. The Macedonian government wants to create a knowledge-based economy and is undertaking a series of bold steps to make that happen. A key step is to give every student in the nation (all 360,000 of them) access to a computer.

"The Computer for Every Student" initiative is the largest and the most important education undertaking in the 15-year history of the Republic of Macedonia," said Ivo Ivanovski, the country's Minister for the Information Society, who is driving the project.

The program will have a profound effect on how lessons are taught. All science, math, biology, and chemistry classes will include some online component, according to Ivanovski.

Due to limited funds and infrastructure, Macedonia chose the NComputing X300 for its value and efficiency

> "*The NComputing X300 offers significant cost advantages over individual PCs. It requires 95% less electricity to run and greatly reduces maintenance and replacement costs.*"
>
> IVO IVANOVSKI -
> MINISTER FOR THE INFORMATION SOCIETY

Macedonia plans to have 160,000 access devices and 20,000 NComputing-enabled PCs by mid-2008

Search for an Affordable Solution

But how to make it a reality? Like many developing nations, Macedonia has limited funds and infrastructure. If the cost of the program came in too high or required too complex an implementation, it wasn't going to happen.

The country began its search with low-cost educational laptops. But at $175 per laptops, the price came out to a whopping $63 million. And it didn't stop there. The school system would need an additional 20,000 laptops per year for newly enrolled students, not to mention replacing those computers that get damaged, lost, or stolen. Finally, the costs for providing ongoing maintenance and support for so many individual laptops drove Macedonia to look for a more affordable option.

So Macedonia chose the NComputing X300. The X300 uses regular PCs and inexpensive virtual PC devices, and are a fraction of the cost of providing a laptop to every child.

The Results

Two NComputing X300 kits enable seven students to use a single PC simultaneously. An X300 kit includes a PCI card and three small access devices (one per student) that connect to the PCI card via a standard CAT5 cable. Each device has ports for connecting a monitor, keyboard, mouse, and speakers. A seventh user works directly on the shared PC.

Macedonia is running Ubuntu Linux, a free operating system, on the host PCs. In addition, each computer is installed with OpenOffice, Mozilla Firefox and Thunderbird, Evolution, and Wine.

By mid-2008, Macedonia plans to complete its phased rollout of 160,000 access devices and 20,000 NComputing-enabled PCs. The logistics of the rollout are massive. Fortunately, virtual PCs, which make up a vast majority of the seats, install in minutes. And the solution itself requires little training. Typically, a staff teacher with some PC experience can learn the system in a few short hours.

The NComputing X300 offers significant cost advantages over individual PCs. It requires 95% less electricity to run and greatly reduces maintenance and replacement costs. And with NComputing, only 20,000 computers will need to be upgraded about 5 years down the road.

With the help of NComputing, computer access will be a part of everyday life for a growing generation of Macedonian children. And the country will meet its goal of having an entire workforce educated in using information and communication technology in the next five years.