



# MKS Toolkit Case Study

## PRIMESTAR by TCI

This digital satellite television service needed to upgrade a complex UNIX-based application and port it onto Microsoft® Windows NT® at the same time. Thanks to MKS Toolkit for Enterprise Developers (formerly NuTCRACKER), the powerful UNIX-to-Windows migration tool from MKS, Inc., PRIMESTAR® By TCI did both in just two and a half months, some six weeks less than it would have taken to do the job by hand.

Porting the complex UNIX-based software that makes that minor miracle possible onto the Microsoft Windows operating system was no easy matter. But as PRIMESTAR By TCI discovered, even the most challenging port can be conducted quickly and smoothly when you use NuTCRACKER, the powerful UNIX-to-Windows migration tool from MKS, Inc.

### MACSed Out

PRIMESTAR by TCI offers its subscribers the ability to call 24 hours a day, seven days a week, and make immediate real-time changes to their satellite service, from adding or deleting channels to requesting pay-per-view programs. This service is implemented through a program called MACS.

MACS is a UNIX-based real-time transaction processing application that PRIMESTAR By TCI began developing in 1991 and has been upgrading ever since, as its subscriber base and services have expanded. On a typical day, MACS handles as many as 30,000 individual subscriber requests for service changes. That translates into millions of messages.

By early 1995, it was becoming evident that MACS simply couldn't handle the increased traffic it was seeing. At the same time, PRIMESTAR By TCI had made a decision to move to a client/server network architecture based on the Microsoft Windows operating system.

MACS project manager Michael Lilley describes the decision to port MACS to Windows: "At that point, as the whole organization was moving to Windows, we could not justify the cost of maintaining one program on its own separate platform. At the same time, the cost of maintaining the UNIX hardware platform was quite high. With a Windows based strategy, we really would not need the same level of maintenance contract and it's also a lot less expensive to expand your system in small incremental steps when you're in a standard PC-oriented environment, versus a UNIX mainframe environment."

### A Message Queue Solution

As he searched for a way to migrate MACS to Windows, Lilley sought an approach that could deal with UNIX-specific components in MACS that might be difficult to port.

### Company Profile

PRIMESTAR By TCI provides digital satellite television service to subscribers across the United States. PRIMESTAR By TCI is a wholly owned subsidiary of TCI Communications, Inc., the largest cable television provider in the United States.

### Situation

PRIMESTAR By TCI's subscriber base was growing rapidly, but MACS - the UNIX-based system that processes service requests - wasn't keeping up. The company had earlier adopted a client/server networking strategy based on the Microsoft Windows operating system, so what PRIMESTAR By TCI needed was a way to upgrade MACS and port it onto Windows simultaneously.

### Business Solution

Rather than rewrite MACS line by line, PRIMESTAR By TCI used NuTCRACKER, the powerful UNIX-to-Windows migration tool from MKS, Inc. NuTCRACKER not only provided answers to some challenging migration problems, but also enabled PRIMESTAR By TCI to make improvements to MACS using direct Win32 calls. In addition, MKS provided extensive telephone support.



“Message queues are a UNIX mechanism for inter-process communications,” says Lilley. “Message queues were at the core of the existing MACS product. This mechanism is not particularly well-suited for heavy transaction-processing applications, and we were really stretching the limits of its capacity, so I thought we might have a problem. The NuTCRACKER promotional material said that it specifically dealt with message queues, so we were interested. MKS agreed to let us have a copy of the software on evaluation. Because the application is so critical, we would not have agreed to do it without some sort of trial agreement. MKS agreed, and then they made sure that we were satisfied. I spent a lot of time on the phone with them the first couple of weeks, and they were extremely helpful.”

### **Not Just a Port, an Improvement**

Lilley describes porting MACS to Windows: “We installed NuTCRACKER and started porting the code, re-compiling and checking out errors, fixing the errors, and testing the fixes. Windows was all new to me, so the help I got from MKS was really valuable. I’d get on the telephone and describe what I was seeing and ask what could be causing that, and they could usually very quickly identify where the problem area was and say why it was happening.”

When the port was completed, PRIMESTAR by TCI ran a 24-hour trial. “The software worked the way it was designed to,” says Lilley.

In fact, the Windows based version of MACS actually ran better than the UNIX version, primarily because the developers were able to improve the software during the port. Enabling developers to make upgrades during a port using direct Win32 calls is an invaluable feature of NuTCRACKER. The Windows version of MACS went online permanently in August, 1995.

### **A Real Time-Saver**

The critical benefit of using NuTCRACKER was the time it saved. The existing application was no longer adequate for the job, and PRIMESTAR by TCI wanted to replace it as quickly as possible. Without NuTCRACKER, Lilley probably would have had to rewrite MACS line-by-line himself. But with NuTCRACKER, the entire port, from start to finish, took about two and a half months. “I believe NuTCRACKER saved us a month to six weeks,” says Lilley. “The big savings were at the front end, from getting started to getting the first test version up and running. If I had done it myself, that part would have been much slower.”

NuTCRACKER achieved the results that PRIMESTAR by TCI wanted: the MACS application was successfully and quickly ported to the Microsoft Windows NT operating system. Lilley says “NuTCRACKER did what they advertised it would do, including handling the message queue problems we were concerned about.”

### **More Enhancements Coming**

The NuTCRACKER port has also positioned PRIMESTAR by TCI to make needed improvements in MACS. “There are some problems with MACS that we still need to address,” says Lilley. “We chose not to deal with the problems before the port to Windows, because it didn’t make sense to fix things on a platform we were moving

#### **Benefits**

Using NuTCRACKER, PRIMESTAR by TCI was able to port MACS onto Microsoft Windows in just two and a half months, nearly a month and a half less than the company estimates it would otherwise have needed. That, in turn, enabled PRIMESTAR by TCI to replace the inadequate UNIX version of MACS quickly, before it had a chance to seriously impair customer service.

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#### **Michael Lilley**

MACS Project Manager  
PRIMESTAR By TCI



away from. Right after the 24-hour online test, we bought another copy of NuTCRACKER. MACS is a mission-critical, high-availability application, so we can't take it offline for development. So we are leaving one NuTCRACKER system running the production MACS platform, and we set up another computer with the second copy of NuTCRACKER as a MACS development system, so we can make the improvements we want to make."

In addition, PRIMESTAR by TCI is exploring other applications it may want to port to Windows using NuTCRACKER, as part of its ongoing migration to a client/server environment.

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**Corporate Headquarters**

410 Albert Street  
Waterloo, ON N2L 3V3  
Canada  
tel: 519 884 2251  
fax: 519 884 8861  
sales: 800 265 2797

**Worldwide Offices**

Fairfax, VA  
tel: 703 803 3343  
fax: 703 803 3344  
sales: 800 637 8034

Burlington, MA  
tel: 781 359 3300  
fax: 781 359 3399  
sales: 888 934 7268

Lombard, IL  
tel: 630 495 2108  
fax: 630 495 3591  
sales: 800 633 1235

Germany  
tel: +49 711 351775 7522  
fax: +49 711 351775 7555

United Kingdom  
tel: +44 1483 733900  
fax: +44 1483 733901  
sales: +44 1483 733919

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