



MKS Toolkit Case Study

ABB Power T&D Company

ABB Systems Control provides software and systems products and services that address power utility Transmission, Generation, and Distribution Automation requirements, from production planning and control to optimizing power distribution and consumption. The power industry is in a period of rapid and dramatic change, and software products from ABB Systems Control are key tools for creating enhanced profitability and competitive positioning for ABB's customers and business partners through more economical use of generation, transmission, and distribution infrastructures.

In recent years, the Information Technology model in the power industry has evolved from a mainframe oriented model to a more distributed, client-server model. Many mission critical applications have evolved from being mainframe-based to being UNIX-based. Today, there is an emerging requirement to make applications available in a Windows environment, thus making them more readily accessible to a broader base of Windows-based users. Until the port to Windows, the Automated Distribution group in North Carolina offered its products for distribution system operations and planning on a range of UNIX platforms, including HP UX, Sun Solaris, IBM AIX, Digital UNIX, and Intergraph's CLIX. "We recognized that Windows will be a player in the future," said Doug Wall, Manager of Systems Integration at ABB. "We see Windows as an emerging platform."

Another important factor in ABB's decision to port to Windows is the fact that one of their business partners, Intergraph (now SSC), has made a commitment to porting to Windows. As an Intergraph "preferred partner," ABB determined that it would be beneficial to follow Intergraph's Windows initiatives.

The Solution

The first two products ABB chose to port to Windows were CADOPS™ and CADPAD®. CADOPS is a system that helps utility dispatchers maximize service quality, maintain system operations safety, and minimize operating costs through trouble call management and distribution operations management. CADPAD is a tool for solving a wide range of power delivery planning and engineering analysis problems. It also provides a complete set of geographically-based load forecasting and area analysis tools.

ABB chose MKS Toolkit for Enterprise Developers (formerly NuTCRACKER) from MKS Inc. to help them port from UNIX to Windows. "When we selected NuTCRACKER, we made a pretty straightforward cost/time tradeoff," said Wall. "Our software uses a lot of the services in UNIX. We knew that if we wanted to do a native-mode rewrite, we'd have to go into the code and work around a lot of the UNIX internals. We also had a pretty tight schedule. We had to have a production version of the product ready to go in six months. Based on our experience with other ports, we knew that would be difficult to meet. When we looked at NuTCRACKER, it looked like a good solution for us. We called some of the references they gave us, and we got positive feedback that NuTCRACKER was a stable, reliable product."

Technical Description of the New Solution

The port to Windows, which involved a total of over 300,000 lines of code, was handled just like any other port that ABB has done. They first identified areas that they thought might be problems and did some preliminary work on them. "There were some ANSI C code reference calls in our software that were not written in a standard way," said Wall, "so we cleaned them up first, before we did the port." As they got further into the porting process, the developers came across some areas where they saw that NuTCRACKER's standard way of dealing with certain UNIX functions was not optimized for the specific requirements of their applications. "The support people at MKS were very responsive in getting these issues addressed and solved quickly. We thought that was very positive," said Wall. "The number of NuTCRACKER-specific source code changes was small," said Project Applications Software Engineer Bill Boswell. "In all there were about five NuTCRACKER-specific changes, and they averaged a couple of lines of code each."



Once the problem areas were resolved and the port completed, the new Windows versions of the two applications went through a standard certification test program to verify that they performed the functions they were designed to. "As you work through the test plan, you always find problems. We just identify the problems, and solve them, and keep on testing," explained Wall.

Advantages and benefits of the new solution

Using NuTCRACKER allows ABB to extend their product offering into the emerging Windows environment, to support their business partner's move into the Windows space, and to become familiar with the environment. At the same time, it allows them to maintain the consistency of their applications from one platform to another, while protecting their investment in their UNIX-based development organization.

A basic marketing strategy at ABB Systems Control is to make its software products available on a range of operating system environments. Said Doug Wall, "We believe there is an important competitive advantage in maintaining our products in identical form across multiple platforms. It is important to us to maintain that multi-platform flexibility, and the NuTCRACKER port helps us do that."

"The NuTCRACKER software did the job it was supposed to," said Wall. Using NuTCRACKER allowed ABB to port the CADOPS and CADPAD software packages to Windows in much less time than it would have taken to do a native mode rewrite. "The initial port took only about six weeks," said Wall. "That's comparable to the time it usually takes us to do a port to another UNIX platform."

"ABB plans to continue to do product development in the UNIX environment," said Wall, "and we certainly would use NuTCRACKER to port other software from UNIX to Windows in the future. The technical support they gave us was excellent. We would talk about problems over the phone, the MKS technical people would usually be able to identify the problem promptly, and they would send us a patch and we'd be ready to go again."

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