

Sun™ and Entrust Help Secure KPN Web Site

One of The Most Successful Web Sites in the Netherlands



Sun™ ONE
Open Net Environment



Key highlights

Companies

- Sun Microsystems, Inc. and Entrust, Inc., at KPN Royal Dutch Telecom

Industry/Market

- Security and Infrastructure

KPN's Business Challenge

Dutch telecommunications company

KPN needed a solution to help:

- Converge over 60 company Web sites into one centralized site
- Increase site security
- Provide secured single sign-on functionality for their customers
- Add new services not previously available online to lower operational costs and increase revenue opportunities
- Improve customer experience and loyalty

Solution

- Sun™ ONE Web Server software
- Solaris™ Operating Environment
- Sun Enterprise™ 450 servers
- Entrust GetAccess™ Portfolio
- BroadVision Portal Solution

Results

- KPN Web site is now ranked as one of the top-ten visited sites in the Netherlands with close to 100,000 unique visitors per day
- Site security has been greatly improved
- KPN's transaction costs have been dramatically reduced
- Data entry for new orders through the Web has reached nearly 100% clean order status, saving time and lowering the costs of error handling
- Web site infrastructure costs have been decreased with Web site consolidation
- Customer loyalty has increased through single sign-on and improved user experience and self service capability

The Leading Telecommunications Company

KPN Royal Dutch Telecom is the leading telecommunications company in the Netherlands. It supplies a whole range of telecommunications, information and communication technology services in its home country, as well as Western and Central Europe. It focuses on growth in the following core activities: mobile, fixed services, IP/data services and Internet, call center, and media services. Currently, KPN has over nine million connections on the fixed network and is the local market leader in mobile telephony and Internet services.

KPN's Challenge

Two years ago, KPN was faced with the challenges of managing over 60 separate company Web sites. KPN's customers found it frustrating to have to log in multiple times to conduct business with the company. And, with such a large number of sites, information was not always consistent from one site to the next.

These sites were used to provide a wide array of business functions and were deployed on different software and hardware platforms. Managing this heterogeneous environment was not cost effective for KPN. Having 60 different Web sites required 60 Web masters, as well as duplicate hardware and software licenses for each site. KPN's Web infrastructure costs were getting out of hand.

Site security was a major issue for KPN. The telecommunications industry in general has a very low tolerance for risk, and KPN is no exception. The company was concerned about unauthorized access to their legacy data, which could cause data corruption, a breach of customer confidentiality, or complete interruption of service to their clients. With 60 separate Web sites to manage, effective security functionality across all sites was extremely difficult to manage.

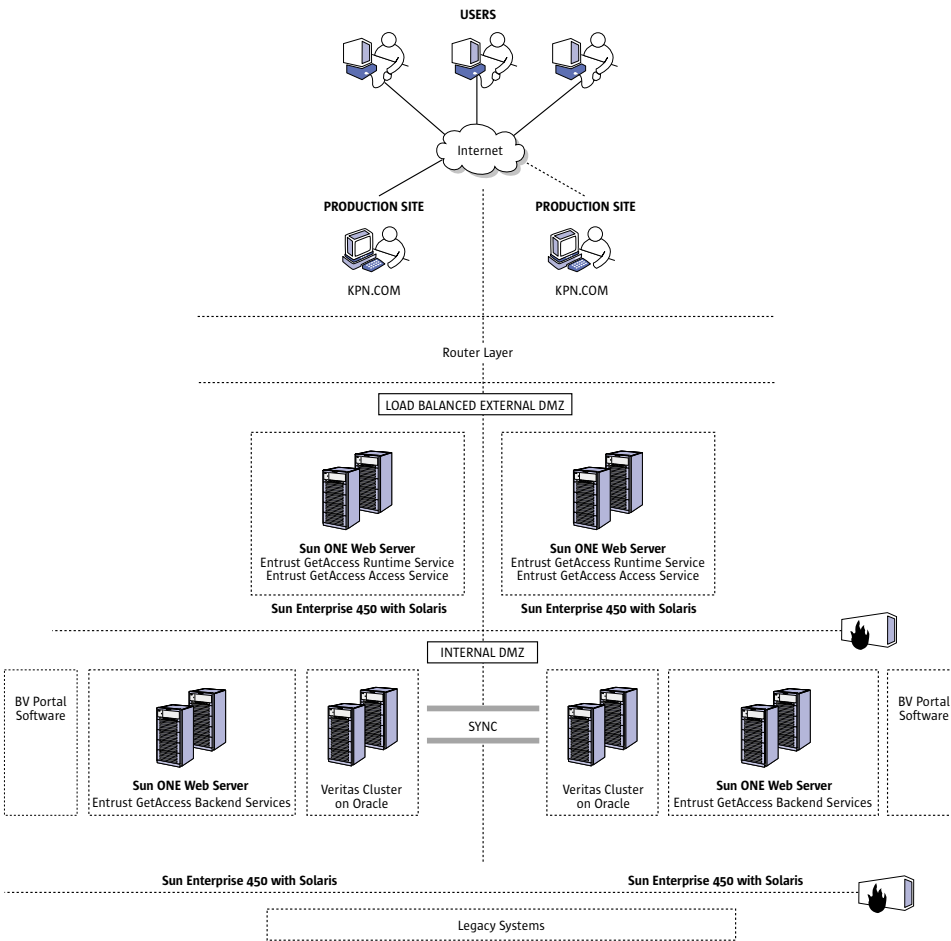
In order to improve service to their customers and reign in their IT costs, KPN needed to consolidate all 60 Web sites into a single, centralized site, with increased security and enhanced functionality for their end users, as well as for their business to business activities.

Goals of the KPN Web Site

KPN's new integrated site—www.kpn.com—had to be extremely stable. The platform needed to be able to deliver the scalability necessary to expand as they rapidly added users to their online community. Every hardware and software component chosen had to be able to scale up to meet their aggressive growth projections, without the need for changes to the underlying architecture.

KPN insisted on best-of-breed hardware and software for their new solution.

Figure 1: KPN.com Architecture Diagram



KPN needed solution components that could readily be customized and integrated into one complete solution. They wanted to build and deploy the solution on an open computing platform with a high performance operating system environment for Internet-based computing.

The site's security had to be robust, since many legacy systems would need to be connected to the Web site to provide the functionality that was requested by KPN's various business units. KPN needed a robust

set of end-to-end security mechanisms that could be implemented, managed, and maintained separately from business logic functions.

Another key objective was to provide their users with single sign-on capabilities for purposes of security and consistent access to all applications. And finally, KPN wanted a platform that could easily accommodate the addition of new services not previously available online to customers and B2B users.

Selecting the Best Solution

KPN insisted on best-of-breed hardware and software for their new solution. They investigated the various options that were available on the market and examined what other large telecoms were using. They consistently came up with the same combination of the Sun Microsystems hardware platform, Sun ONE software infrastructure, the Entrust GetAccess™ software portfolio, and the BroadVision application server to create the perfect environment. They observed that this combination was working very well at many customer reference sites.

“We looked at all of the options available and discovered that a number of players in the telecom market were having success with Sun and Entrust. We knew that the Solaris Operating Environment was not only reliable, but also had the high availability we needed. In conjunction with Entrust's Secure Web Portal Solutions, it showed us the security functions, usability, and scalability that we required. We wanted the best solution for our new Web infrastructure, so our decision was easy,” stated Arnold Hoogerwerf, IO of KPN's web site.

Leveraging the Sun Platform

Sun Microsystems Inc. hardware and software was selected for the new KPN.com site, based on Sun's position as the global leader in providing open, scalable computing platforms for Internet-based e-commerce solutions.

Sun ONE Web server is a key component of Sun Open Net Environment (Sun ONE), Sun's platform for Services on Demand.

All of KPN.com's production machines are Sun servers. They currently have 15 Sun Enterprise 450 fully loaded servers running the Solaris 8 Operating Environment. The Solaris Operating Environment is used on all Sun servers.

KPN chose the Sun servers running the Solaris Operating Environment to make the most of the multi-threaded, multi-process architecture built into the Sun ONE Web Server. By providing in-tandem support for multiple processors, this software allows servers to simultaneously process queries for many users. As a result, viewers get pages quickly with less lag time. KPN also optimized on caching to further improve response time by keeping the most frequently accessed objects up front for immediate retrieval. Most of the web site's pages, however, are dynamically build upon request of the enduser.

Providing a Single Entry and Access Point for User Identification

Entrust GetAccess software on the Sun ONE Web Server can be used to provide single sign-on functionality across applications and domains and to improve security for information stored on the application servers.

The software also enables a highly scalable architecture. It is capable of supporting millions of diverse users and has the flexibility to integrate easily with new or existing applications. The Entrust GetAccess Single Sign-On feature offers very high performance, avoiding throughput bottlenecks for users signing on during peak traffic periods.

The Complete Solution

It was important to KPN that Entrust and Sun had close technical alliances with each other, as well as with the additional key suppliers being considered for KPN.com, including Oracle Corporation and BroadVision. KPN's web site uses a BroadVision application server and Oracle software for the database server.

KPN has installed firewalls behind both the Web servers and application servers. Their infrastructure makes use of internal and external de-militarized zones and intrusion detection systems for additional site security. The Web site is a highly available environment, with equipment located at two different physical locations and load balancing in between sites at all levels of the application. They also have Web server, application server, and database fail-over capabilities.

"The Sun and Entrust solution has provided us with a powerful and secure portal infrastructure, allowing us to quickly consolidate our 60 separate KPN Web sites. The solution has exceeded our expectations and has helped us reach our current success and prepare for our anticipated 50% growth rate of users of our web site," stated Hoogerwerf.

The Initial Implementation

A systems integrator managed the web site's initial implementation, but KPN made the decision to manage the ongoing maintenance, further development, and all upgrades on their own. KPN's IT staff has found the system to be easy to manage and have not needed the services of third parties to keep it functioning at peak performance.

New Functionality for KPN.com Customers

KPN's customers now have the ability to use single sign-on to access all of the services they have permissions for at one time. Their customers have access to a wide variety of services online, including:

- Viewing their billing information and payment history
- Obtaining information on rates inside and outside the Netherlands
- Buying mobile phones and other products
- Ordering ISDN and other services
- Moving telephone lines from one location to another
- And much more

Sun ONE Web Server is a software product for developers engaged in building dynamic Web applications for e-commerce sites. The Sun ONE Web Server multiplatform support makes it possible for developers to work in the operating system environment of their choice. The product works with Java™ Servlet and JavaServer Pages™ technologies to generate personalized content and speed development. Its centralized server management, content management, and rapid application development features combine to deliver a powerful means for enterprises to move their businesses to the Internet.

The Sun ONE Web server runs the Web sites of over 50% of the Fortune 100, and powers four of top five news sites on the Internet (CNN, Time, ABC, NY Times).

Sun ONE is based on open standards. This allows products from multiple, best-of-breed vendors to interoperate seamlessly with the Sun ONE products. Therefore, while the Sun ONE Web Server is tightly integrated with the entire stack of Sun ONE products, it is also integratable with products, such as the Entrust GetAccess portfolio, providing customers additional choice.

Sun ONE Web Server enables companies to react quickly to market demands by providing a high-performance, highly scalable, and flexible Web server that delivers dynamic content. Providing a solution that adheres to industry standards allows enterprises to improve ROI by offering new services at lower cost while delivering greater customer satisfaction.

The Entrust GetAccess™ Portfolio provides organizations with improved security, flexibility, and performance to personalize the user experience of a Web portal. As the foundation of the Entrust Secure Web Portal solution, Entrust GetAccess makes it possible for companies to identify whom they are doing business with through their online Enterprise portals.

Entrust GetAccess delivers a single entry and access point to achieve user identification and entitlements across Web portal applications. It supports a broad range of authentication methods and user devices, including passwords, tokens, digital certificates, smart cards, and various biometrics devices. Entrust GetAccess software makes it possible for organizations to personalize services, content and data for the diverse needs of a varied user community.

Working with industry-leading portal management platforms, content management tools, and leading Web application servers (including the Sun ONE Web Server), the Entrust GetAccess™ software portfolio centralizes security management to provide a common infrastructure to manage user identities and entitlements across online applications. Entrust GetAccess software delivers the performance to secure the large enterprise Web portals, without sacrificing security.

The Entrust GetAccess portfolio works seamlessly with the award-winning **Entrust TruePass™** security solution. This integration extends the capabilities of Entrust GetAccess portfolio to enable digital IDs for enhanced identification and digital signature for transaction verification.

In addition, a lot of calls previously handled by their call center are now handled by the site. This gives their customers easier access to information and lowers call center volume.

The Most Successful Web Site in the Netherlands

KPN's web site has proven to be extremely successful in its first two years of operation. With over one million registered users and close to 100,000 unique visitors accessing the site every day, it ranks as one of the top-ten visited sites in the Netherlands.

KPN.com has achieved all of KPN's security goals. Entrust GetAccess delivers a single entry and access point to achieve user identification and entitlements. This has allowed KPN to offer a wider range of online services to their customers without sacrificing the security of their legacy information or the privacy of their clients.

Customer loyalty has been greatly improved with the addition of single sign-on for access to all KPN services. Customers can now log in once and access all information that they have permissions for at one time, from one consistent, user-friendly system.

The site has rewarded KPN with an extremely positive ROI. KPN's traditional distribution costs normally range from 3 Euro (\$2.82 US) per transaction to much more. The web site's transaction costs average below 0.50 Euro (\$.47 US) and their goal is to reduce this number even more this year!

Before, customers placed orders over the phone with the call center representatives. The call center employees would manually key orders in at their terminals, a very error-prone process. With the ability to place orders online, KPN has reached a nearly 100% clean-order status. This has saved them a great deal of time and money in error handling.

Having one centralized Web presence has allowed them to consolidate servers, reduce software-licensing fees, and eliminate the operating costs of their additional sites. KPN now has much greater control over their Web presence, both in quality and quantity of services and information delivered.

KPN's Web site Operating as a Profit Center

KPN's various business units fund the Web site. It is by far KPN's lowest cost distribution center. If a business unit makes money or decreases costs by using KPN.com, they pay for the service. General information posted on the Web site is provided to the business units for free, but revenue-generating or cost-reducing activities are charged back to the business units.

For example, if KPN's mobile business unit advertises on the site with a banner ad promoting the sale of mobile units, they pay KPN.com for this service. When the call center routes customers to the Web site for information, manuals, or FAQs, they save time and money for their operations. All of these activities make the business units more profitable, and they pay KPN.com for this service.

Future Expansion

KPN is extremely happy with the success of the site. They hope to grow their user base from 1 million to 1.5 million registered users by the end of next year. This will result in approximately 150,000 unique visitors per day, an aggressive 50% increase in site volume, covering approximately 20% of the total internet community in the Netherlands.

Summary

The SunONE Web Server software infrastructure, Sun hardware, and Entrust GetAccess software portfolio are providing KPN with a cost-effective and very secure Web platform, enabling KPN to capitalize on the value and benefits of a consolidated Web site. By transferring traffic from their expensive distribution channels to the Web, KPN is enjoying increased security, a very positive ROI, as well as improving customer loyalty from an enhanced end-user experience.

For more information on Sun ONE Web Server, Sun servers, or other Sun products, contact Sun at www.sun.com. For more information on Entrust or their family of enhanced Internet security services, visit www.entrust.com.

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