

Keen

## Top Live-Advice Web Site Maintains Leadership Position with Robust Application Based on the Microsoft® Web Solution Platform



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*Technical executives at a leading Web site that provides live advice over the phone have built and deployed their application using the Microsoft Web solution platform. In so doing, they've created a robust and reliable solution supporting an extraordinary growth rate, providing powerful data-analysis capabilities, and ensuring a highly cost-effective approach to development, maintenance, and upgrades.*

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### Solution Overview

#### Customer Profile

Leading Web site connecting advice seekers with advice providers by telephone.

#### Business Situation

Needed a robust and reliable solution to support explosive growth and an application that would integrate successfully with a remote telephony subsystem.

#### Solution

##### Benefits

Powerful data-analysis capabilities, easier maintenance and upgrades, cost advantages in hardware and development productivity, and an outstanding level of reliability and availability.

##### Software

Microsoft® Active Server Pages  
Microsoft SQL Server 7.0 Enterprise Edition  
Microsoft Visual Studio developer tools including Visual Basic 6.0, Visual C++ 6.0, Visual SourceSafe, and Visual InterDev  
Microsoft COM and COM+  
Microsoft Internet Information Services 5.0  
Microsoft Windows® 2000 Server including Microsoft Message Queue Services  
Microsoft XML utilities

#### Scenario

Business-to-consumer and consumer-to-consumer Web site

### Situation

If you need advice on almost any subject in the world, you can find it somewhere on the Web—if you have the luck to locate the right site, the patience to sift through dozens of pages of text that may or may not turn out to have the information you're seeking, or the luxury of waiting until somebody gets back to you by e-mail.

Or you can point your browser to [www.Keen.com](http://www.Keen.com). Once there, you can pick your subject and then, for a listed fee, pick up your telephone to speak directly with someone who can provide advice on that subject immediately. Because Keen makes the calls, neither party's phone number or other personal information is ever revealed. Advice providers on Keen can sell what they know on topics ranging from personal advice to computers to health by creating listings and personal greetings that describe their knowledge at a per-minute fee that they set. High-quality answers are ensured through Keen's consumer-based feedback and rating system and credential verification service. If all this sounds like a good idea to you, it does to a lot of other people, too. Within the company's first 14 months of operation, more than 1.25 million members signed up for the service, which is available worldwide.

To maintain service to such a rapidly expanding customer base, Keen relies on the Microsoft® Web solution platform, especially Microsoft Windows® 2000, Microsoft SQL Server™ 7.0, and the Microsoft Visual Studio® toolkit. With these technologies Keen developers have created a highly data-driven multitier Web application including a back end that is fully integrated with a remote telephony subsystem. Because of the challenge posed by the telephony subsystem and the critical need for availability, Keen's decision to use these Microsoft development and server technologies was elemental. It's a decision that also has turned out to be very smart. As Chief

Technology Officer Mark Halstead puts it, "It would have been very tough to do this without the Microsoft Web solution platform."

## Solution

On the front end, the Keen Web application consists of Active Server Pages that run in Windows 2000 and Internet Information Services (IIS) 5.0 and communicate with a middle layer of COM objects that, in turn, communicate with a SQL Server 7.0 database. COM is used to implement all the business logic, including a transaction-processing layer supporting the telephony subsystem that is activated whenever Keen connects a "KeenSeeker" (someone seeking advice) with a "KeenSpeaker" (someone providing it). Within this layer, COM objects submit requests to the subsystem via Microsoft Message Queue Services (also part of Windows 2000) and receive transaction results (the fee to be charged to the member's account) from it, also via Microsoft Message Queue Services.

COM+ also has a place in the Keen Web application. To manage the COM objects the application uses COM+ running in a separate process space, and to manage security it uses COM+ package identities. For its part, Microsoft Message Queue Services, in addition to supporting communications between the Web application and the telephony subsystem, helps to even out peak request loads and to retain important data in case of server disconnections. And another Microsoft Web solution platform technology, Microsoft XML utilities, encapsulates data to support Keen services on a growing roster of partner sites including eBay, MSN, CNET, women.com, and AT&T Wireless.

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Ebbe Altberg  
Vice President of Program Management  
Keen

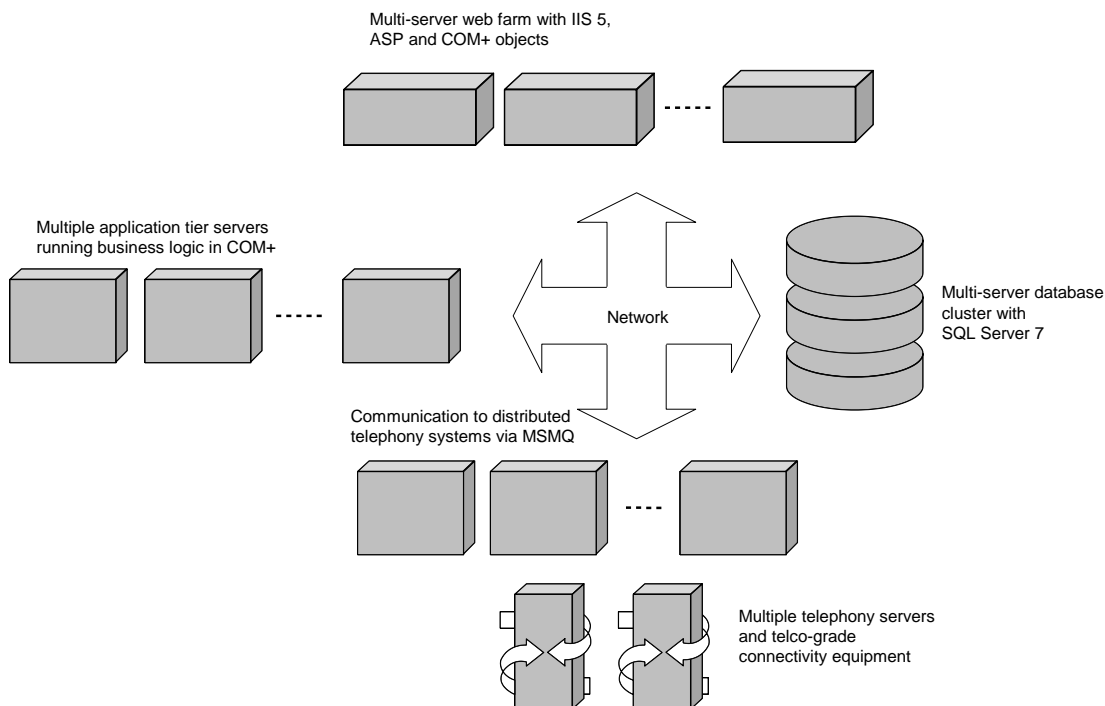


Figure 1 Architecture of the Keen Web application.

## **Benefits**

### **“[A] Powerful Approach to Data Analysis”**

Halstead says it's tough to pinpoint which Microsoft Web solution platform technologies—and within them, which features—are most responsible for helping to make Keen a success. But Microsoft SQL Server 7.0 would have to rank right up there. For example, developers made considerable use of SQL Server 7.0 stored procedures, to access the database; tables, to store data; and views, to simplify understanding of the data. “Those SQL Server 7.0 capabilities were fundamental in helping us to build the site the way we wanted,” Halstead reports.

Other SQL Server 7.0 capabilities are supporting availability and providing a powerful approach to data analysis in the Keen Web application. According to Keen Vice President of Program Management Ebbe Altberg, replication and failover clustering are helping the company to maintain an enviable 99.9 percent Web-site availability record even in the middle of rapid growth. SQL Server Data Transformation Services and log shipping support the efficient movement of data from one server to another for backups and data mining. Moreover, with the help of OLAP Services, developers are accurately measuring site traffic, spending, and member profile patterns and analyzing them for internal reporting. “On a site like Keen, being able to analyze user activity and satisfaction is absolutely crucial,” Altberg remarks. “Without these SQL Server 7.0 capabilities we wouldn't have anywhere near the powerful approach to data analysis that we now enjoy.”

### **Easier Maintenance and Updating**

In addition to SQL Server 7.0, Keen developers made extensive use of another set of technologies in the Microsoft Web solution platform: the Microsoft Visual Studio toolkit, especially Visual C++ 6.0 and Visual Basic 6.0 to create the application's all-important COM objects. C++ COM objects, for example, support the telephony subsystem, and Visual Basic COM objects encapsulate the business logic and hide access to the database from the Active Server Pages script. “This makes both maintenance and upgrading easier,” Halstead points out.

Halstead also appreciates that with Visual Basic, developers can explore type libraries as well as COM methods and data types from directly within the integrated development environment. “This supports rapid development and deployment of robust COM objects,” he says. “Moreover, because Visual Basic is so good at managing memory and pointers, it lets us focus on the business logic instead of having to chase down coding errors. Consequently, we can produce higher-quality code in less time and with less effort—that is to say, at a lower cost.”

### **Cost Savings in Hardware, Development Productivity**

Another cost advantage for Keen developers comes with the fact that the Microsoft Web solution platform technologies enable the company to use duplicate environments for deployment and development, even down to the software installed on developers' individual machines. As Halstead explains, in a non-Microsoft environment developers often create their application in one environment and deploy it on another, but at Keen these environments can closely mirror each other. He considers this a major cost advantage on three fronts.

“First, we can duplicate the environment for deployment and development, so there are no surprises when updates are moved to the deployment system. Second, both environments are

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Mark Halstead  
Chief Technology Officer  
Keen

based on the Intel architecture, so it comes at a lower cost in the up-front purchase, in maintenance, and in support than competing hardware platforms. This means we can easily afford to have developers writing code on machines similar to those used in production. Third, developers can run all their familiar desktop-productivity tools on that same development platform, so they can naturally work a lot more efficiently.”

### ***Supporting a Staggering Rate of Growth***

Next up for Halstead, Altberg, and their colleagues at Keen is an upgrade of the Web application database to SQL Server 2000, largely to support expansion of the company’s server base. “We’re looking forward to using the enhanced replication features of SQL Server 2000 to build multimachine clusters,” Halstead reports. “This means we’ll be able to distribute the load across multiple machines even more transparently than we are doing now.”

Following the database migration, Keen will implement a number of other technologies in the Microsoft .NET Enterprise Server environment, including Microsoft Exchange 2000 and Visual Basic .NET. Developers also are investigating using Microsoft Message Queue Services Distributed COM calls and the other forthcoming features of COM+, as well as SOAP (Simple Object Access Protocol). “SOAP will come in handy as our partnerships with other sites become more numerous and complex,” Halstead explains. “With the standard definition for data transfer it provides, we can spend less time figuring out transfer details and more time on enhancing our shared functionality.”

Of course, even as Keen developers draw up plans to support an expanded partner base they are trying to remain prepared for a staggering amount of growth on the user side: one new member every 10 seconds, if trends of late 2000 continue. “The explosive growth we experienced during our first year might have raised concerns about reliability,” Halstead says. “So the fact that we’ve managed that growth without any reliability problems is a testament to the strength of the Microsoft Web solution platform.”

### ***For More Information***

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