Michal Bláha, Chief Technology Officer, Atlas

When one million users rely on you, you rely on your mail server

How Czech web portal Atlas implemented a scalable email server using software from Kerio Technologies

Maintaining the position of second largest web portal is not an easy task. In addition to keeping an up-to-date web directory, providing exact full-text search results, and offering a reasonable selection of news, entertainment and online shopping, the portal must also provide reliable mail services to its users.

Atlas.cz has managed to do just that, and as the second largest web portal in the Czech Republic, it provides services to more than 3 million Internet users in the country. The Prague-based company was formed in 1997 and soon became a popular Internet destination. Atlas.cz was first to introduce full-text search and was the first portal to offer free mail for Czech web surfers now available at mujmail.atlas.cz. In 1999, the Atlas homepage migrated to msn.atlas.cz as part of Microsoft's MSN project, and resided there for the following two years.

With its user base growing rapidly, along with its free mail service, Atlas was at a crossroads. How would they support up to 1 million mail boxes with 99% reliability? Could they get a highly scalable mail server that supported server clustering and fail-over, and performed multiple anti-spam measures while scanning thousands of emails per minute for viruses?

One million account mail server

Atlas was looking for an email solution that could handle 750,000 mail boxes in multiple domains with 500,000 active users. The mail server would be required to handle several hundred concurrent IMAP connec-

tions, several thousand concurrent Web mail users and several hundred concurrent POP3 connections. More importantly, as a provider of free mail services, Atlas was troubled by the increasing number of spam messages and the ensuing overload of outgoing messages that the existing system was not able to handle properly.

Since its inception in 1997, Atlas.cz had been using Microsoft Commercial Internet Server for hosting email, and the aging product was not able to keep up with the needs of a growing web mail solution.

At the beginning of 2002, Atlas started looking for a replacement. The requirements were tough – reliability, scalability, security, a reasonable price, and most importantly, technical support. Atlas.cz was looking for a mail server that could handle up to 1 million mail accounts and only a few products made it to the final stage – Vircom VOPmail, Stalker CommuniGate Pro, NetWin DMail, Rockliffe MailSite and Kerio MailServer.

Pavel Sodomka, President, Atlas

Price/performance criteria

Despite the favorable reputation, Stalker demanded a much higher price than what Atlas was able to pay. VOPmail performed well in initial testing but proved to not be scalable enough handle the Atlas user base; it had also performed poorly in database lookup and had very limited antivirus support.

"When we first came across Kerio MailServer 5, it was a relatively new product," says Michal Bláha, chief technology officer for Atlas. "We gave it a shot and tested its SMTP server. The results were surprisingly good. In summer 2002, we redirected all SMTP traffic to one Apple Power Mac G4 running Kerio MailServer and we experienced no delays in mail delivery or any problems with mail overload."

Kerio's winning solution

Eventually, Atlas chose Kerio MailServer over the competing mail servers and started designing the final architecture. It soon became apparent that to maintain the mail system's high availability, the mail server needed to run in a cluster. The mail server system was divided into separate front-end and back-end parts. The front-end is responsible for receiving and routing incoming SMTP messages, performing anti-spam control, antivirus checking (using the NOD32 antivirus from Eset) and acting as a proxy for POP3 and IMAP connections.

Two (placed in cascade) front-end servers using Kerio's built-in load balancing handle 25,000 messages or about 1 GB of data sent and received per hour. The average CPU utilization is about 25%.

One of the front-end servers at Atlas is also configured for redundant backup. Each received mail is stored on a backup disk and can be re-sent if needed. This fills the gap between regular backup of the main back-end servers and ensures that none of the millions of emails is lost even in a total disaster situation. Because each mail is basically delivered twice, once on backup disk and once to the back-end server, this adds a load to the Kerio MailServer engine. Kerio MailServer handles it without any problems.

Three back-end servers (each maintaining 33% of mailboxes) perform the actual message storage, handling all POP3 and IMAP connections from the front-end. Each of these back-end servers provide nearly 1TB of fully redundant storage space.

A few customizations to the product were needed. Because the native user directory in Kerio MailServer could not support the number accounts required, it instead connects to an LDAP directory, which accesses and stores user data in a SQL database. Since Kerio MailServer features IMAP, it was very easy for Atlas to integrate it with their already developed web mail, allowing them to maintain their custom design and portal functions. Atlas' web mail directly accesses message storage using IMAP.

All told, Atlas uses five Kerio MailServers all running on Windows 2000 Server with up to1GB RAM and Dual Pentium III 1GHz processors.

Importance of technical support

"Kerio provided us with excellent technical support," says Michal Bláha. "We had a few specific requests such as hooking up our existing user database that we did not want to migrate anywhere else. We also needed to migrate from our previous mail server to the current one without any interruption in service. Finally, Kerio MailServer helped us implement our anti-spam and anti-bombing rules that we'd developed over the years."

The migration took place over one night, pretty much unnoticed by Atlas users.

"What we liked most was the fact that Kerio MailServer did not require the purchase of any additional hardware. Apart from mail storage, we are running the whole system on four fairly standard servers that are equipped with extra memory. The system is stable and fast, with no mail queue buildup under heavy load," adds Pavel Sodomka, president at ATLAS.CZ

What's more, after the testing and implementation phases were done, Atlas was able assign the bulk of its IT staff working on the project to other tasks. Atlas continues to improve its own anti-spam filters in line with its primary mission: to offer easy to use email free of spam and viruses.

Staying focused

Atlas had started as a small company several years ago and emerged as multinational company with offices in the Czech Republic and Slovakia. It answers several million Internet search queries a day and provides secure mail services to over half million users. Kerio MailServer provides Atlas with scalable messaging to help the number two web portal focus on the ultimate goal – becoming number one.

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