S2 Security Corporation Develops Breakthrough Security Appliance with Embedded *MySQL*

S2 Security Corporation, headquartered in Wellesley, Mass., is an innovator in the development of network-based integrated physical security solutions. These systems provide key security functionality including access control, alarm monitoring, temperature monitoring, video and intercom. S2's first product, S2 NetBox™ is a network appliance that is literally a "security management system in a box" allowing facilities of all sizes to manage their physical security needs from anywhere over IP networks using a simple browser interface.

Security systems users typically have had to suffer the lows and highs of security systems: inflexible low-end systems or over-featured, expensive high-end systems. S2 NetBox changes that paradigm. Designed from the ground up to be a cost-effective, complete solution, NetBox scales down to fit in a single small office and scales up to handle a large facility with complex security needs.

At the heart of the solution is the S2's embedded, Linux-based Network Controller and its associated application-specific network modules. The Network Controller requires no installed software other than a web browser. It auto-discovers attached application modules making the system truly plug-and-play. By employing network appliance architecture, S2's product line is cost-effective enough for use at a single location yet scalable enough to accommodate the largest wide-area security networks.

"MySQL allowed us to create a breakthrough product by combining a full-featured database with our physical security management network appliance at an affordable price."

John L. Moss
President and CEO
S2 Security Corporation

Embedded Database

The S2 solution is much more cost-effective than any competitive product because S2 has been able to embed full database functionality into its product at a significantly lower cost.

According to John Moss, CEO of S2, "We had three primary considerations in selecting a database to embed in our system: cost, footprint, and functionality. The main reason we chose open source and MySQL was cost. We're delivering an embedded product and needed a well-featured and reliable, yet low-cost database to be competitive.

"The database needed to have a small footprint since it has to run from memory only – there is no moving storage in our Network Controller. In addition to footprint, we required that the database be full-featured and ODBC compliant. We considered Oracle and Microsoft SQL Server but neither of them would meet the small footprint demands."

MySQL was the only choice to meet all three criteria. However, S2 did not have much prior experience with open source software. Nevertheless, the development team liked the idea of using Linux and MySQL.
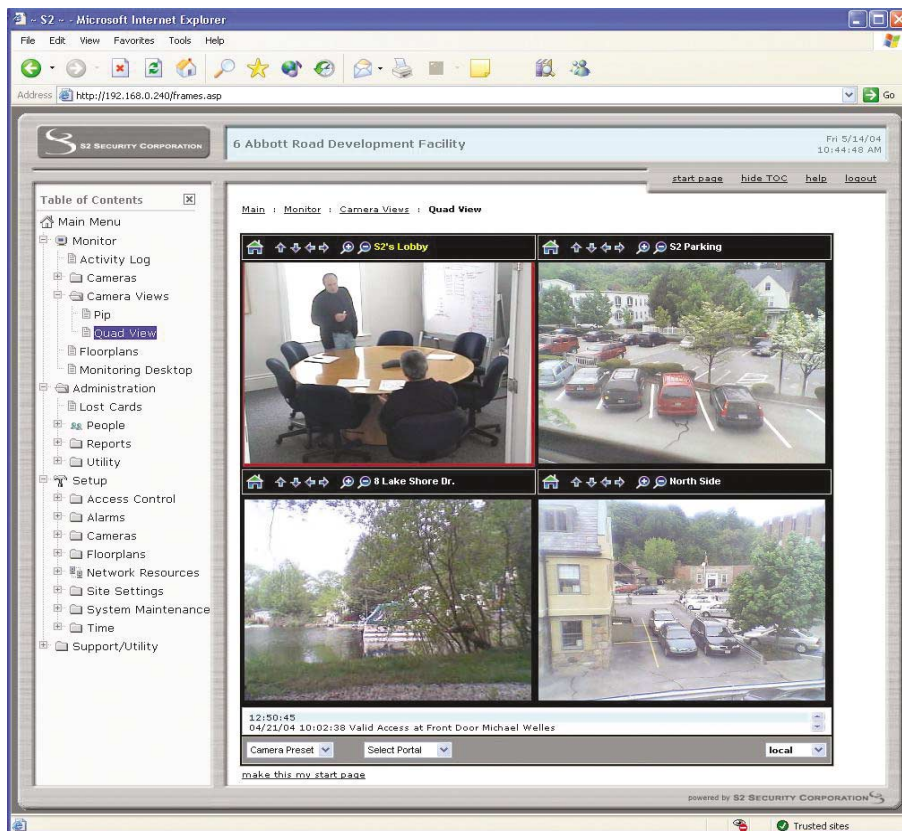
An open source approach gave S2 access to high performance tools while providing greater platform flexibility without hardware or software lock-in.

The development of the S2 NetBox took only 15 months from initial design to first customer ship. This is a very compressed timeframe for the design and delivery of a complete hardware and software solution with full reporting and data retrieval capabilities.

"Had we chosen a proprietary database, we would have been limited to the platform on which the product is available. Here we have complete freedom to support the platform of our choice."

John Moss
CEO
S2 Security Corporation

MySQL Meets Stringent Requirements

S2 NetBox's powerful predefined and ad-hoc reporting is one differentiator for the product. Its proprietary English-based free-form report language makes the otherwise complex retrieval of specific historical information easy even for inexperienced users. Other reports are easy to specify and run with an easy-to-use graphical browser interface. NetBox can even forward a report automatically by email, keeping the user informed about events at the facility regardless of where the user is.

Using the MySQL ODBC driver, S2 Security can interface with other third-party tools such as Crystal Reports to create even more customized reports. Although this type of functionality is typically not data intensive, tables can grow to hundreds of thousands of records for activity logs. With SQL compliance, it is easy to develop reports and fit into the increasingly converging world of security systems in the Enterprise.

Moss says, "In the largest systems, we achieve true scalability by connecting multiple S2 NetBox units to a centralized management system. MySQL is essential for doing this."

The key database features that NetBox with MySQL provides are:

◆ Online database of personnel, contractors, and visitors, their security credentials, and vehicle information

◆ Historical audit record of all security transactions

◆ Real time database recall by name, card, or vehicle tag

◆ Periodic database backup to internal flash ROM and optional network attached storage

Technical Environment Designed for High Performance

The S2 development team ported MySQL to Lineo, which is a real-time embedded Linux operating system. The application was written in C for fast performance, calling directly into the MySQL C API. Samba, also open source, is used by S2 to access network attached storage.

MySQL is running on an ARM Core IXP 425 chip (533 MHz), with SSL encryption on the chip. Because security data are sensitive data, the SSL security protects browser communications. Having the encryption performed on the chip significantly improves performance.

Since footprint is so critical, the MySQL multiple storage engine architecture allows S2 to use the MyISAM storage engine which required very little space.
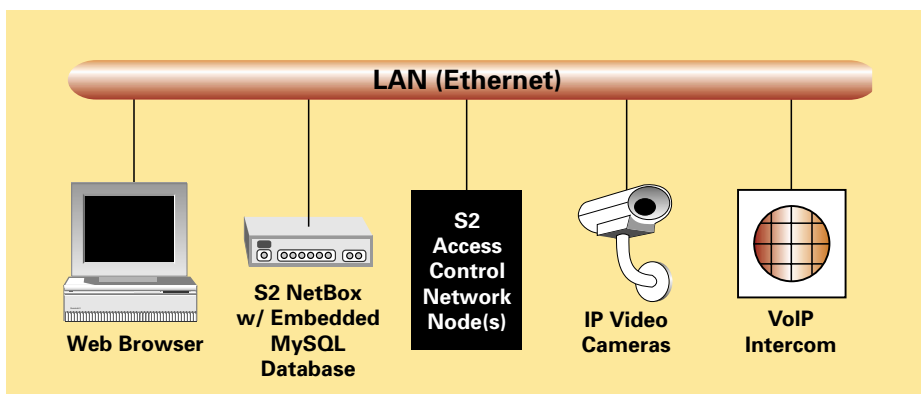
"MySQL allowed us to create an embedded application based on solid, three-tier architecture."

John Moss
CEO
S2 Security Corporation

LAN (Ethernet)

Web Browser

S2 NetBox w/ Embedded MySQL Database

S2 Access Control Network Node(s)

IP Video Cameras

VoIP Intercom

Why Industry Leaders Depend on MySQL

The S2 NetBox runs as a zero footprint application, requiring no installed client side software other than a common web browser – a major competitive advantage. This capability is an important part of the network appliance strategy: any user can use the product from anywhere on any computer.

Another key competitive advantage of NetBox is the depth of the implementation of the MySQL database in the product. MySQL is used to store everything from reports, user information, customized features, facility diagrams, and more.

In the future, S2 plans to use MySQL's replication to help consolidate multiple S2 NetBoxes running in a campus environment and aggregate the information to a central server. The full relational capabilities of MySQL are essential for getting the job done.

About MySQL

MySQL AB develops, markets, and supports the MySQL database server, the world's most popular open source database. With over five million active installations, MySQL has quickly become the core of many high-volume, business-critical applications.

Companies embedding MySQL into their hardware and software systems include Adobe Systems, Blue World Communications, CoreSense, Motorola, NetIQ, Novell, NEC, S2 Security Corporation, SAS, SS8 Networks, Sterling Commerce, and Virage. MySQL is available under the free software/Open Source GNU general public license (GPL) or a non-GPL commercial license.

The World's Most Popular Open Source Database

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