Case Study

Infineer Cashes In on Cashless Smartcards with IP-Enabled POS and Card Reader Terminals

The new TCP/IP solutions incorporated into ChipNet3 open many new opportunities for Infineer and its resellers. Systems can now be implemented on existing LANs rather than on a proprietary network. This makes system implementation easier and reduces the complexity of ongoing support. Customers also benefit from easier access to system enhancements, increased functionality, and the faster response time of a TCP/IP solution.

INFINEER

For more than 25 years, Infineer Ltd (Bangor, Northern Ireland) has been at the forefront in the use of cashless payment cards in the education and corporate worlds. Best known for smartcard-based meal plan solutions in schools and colleges throughout the United Kingdom, Infineer has extended its product line and presence in over 40 countries. Card platforms range from simple "throw-away" prepaid cards to sophisticated, multi-functional smartcards. Since the early 1990s, over 60 million cards have been issued, generating additional income for their customers, which also include catering companies, hospitals, banks, large corporations, and government organizations.

Infineer's ChipNet3 cashless payment system is a networked integrated system that facilitates access to a wide range of services in a campus environment. A card provides students with access to a range of services, such as cafeteria meal plans; vending machines; on-campus stores, restaurants and bars; PCs and networked printers in Internet cafes, laboratories and libraries; and photocopying machines. Each user of the ChipNet3 system has a personalized smartcard, which may feature photo identification, a barcode, magnetic stripe or signature panel.

The chip on the smartcard carries a cash value and when purchases are made the cost is deducted from the value on the card. The card also carries the cardholder's personal permissions profile. Each time a transaction takes place, all the details of the transaction are recorded (e.g. date, time, user, item purchased, etc.) and transmitted to Infineer's powerful back-office server, which defines card user rights, permits the allocation of subsidies and discounts to individual users, and tracks, records and processes each transaction in real-time.

ChipNet3 ID 87 Series POS terminal

The Challenge

Infineer needed to add LAN connectivity to several different products. They needed high functionality: multiple simultaneous TCP sockets to access their ChipNet3 server for real-time transaction processing and reporting; a UDP socket for terminal identification; a TCP listening socket to act as a server; and a Web server for remote configuration updates of their terminal's parameters for Internet access, updating the TCP/IP firmware, and to graphically monitor the status

of deployed terminals. They also needed an operating mode to retrofit Internet-enabling capability into deployed terminals.

If Infineer had gone the conventional route of adding a TCP/IP software stack to each application, their engineers would have needed to master each of the Internet protocols. They would have needed to rewrite the application and to do a major hardware redesign for each product. The entire process would have taken many man-months. However, Infineer lacked manpower and expertise in Internet programming.

To avoid this huge design process, they considered using TCP/IP hardware solutions available from several vendors. However, the other solutions required a lot of Internet programming, offered limited functionality, and did not include a user-friendly facility for remote parameter updates.

The iChip Advantage

Connect One's iChip™ Internet Controller™ enabled Infineer to make only minor hardware and software changes in their products. According to Andrew Bailie, Infineer's hardware team leader, adding iChip to each product was straightforward. "We wanted to buy a complete TCP/IP solution that we could just plug in and go. Connect One delivered the goods. They gave us exactly what we needed: a highly reliable and flexible solution that did everything that we wanted. Nobody else came close for the money."

In October 2001, Andrew designed Connect One's first-generation iChip CO561AD into his first product, the 6650 copy vending terminal that connects to the Internet via 10/100BaseT LANs. The prototype was ready in one month. Several months later, Andrew used the same hardware design in a retrofit box to Internet-enable installed legacy terminals, so that they could use iChip's SerialNET™ operating mode to convert serial data into TCP/IP packets on-the-fly from the host terminal.

ChipNet3 6650 Copy Vending Terminal

iChip modules are installed inside Infineer's 67 Series copy vending terminal; 86, 87 and 88 Series POS terminals; 97 Series Card Centres; and PCounter 6055 and 6056 resource management terminals. iChip is currently being designed into updates of these terminals, which will run Infineer's new ChipNet3 ID software.

According to Jimmy Roberts, Infineer's General Sales Manager, "The new iChip TCP/IP solution incorporated into ChipNet3 opens many new opportunities for Infineer and its resellers. Systems can now be implemented on existing LANs rather than on a proprietary network. This makes system implementation easier and reduces the complexity of ongoing support. Customers also benefit from easier access to system enhancements, increased functionality, and the faster response time of a TCP/IP solution."

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