ARCNET Provides Panasonic With Effective Network for Quick Service Restaurants

When operating a quick-service restaurant, the manager focuses on many objectives, but one in particular is maximizing productivity. He does so by retrieving point of sale (POS) information daily, giving him the data he needs to make the right decisions for a successful business. That means purpose-built, reliable systems are a must so the manager can run his restaurant, instead of his computer system.

That was the essence of the challenge facing Panasonic. As one of the world's largest electronics companies, Panasonic has never lost sight of the digital future driven by the wishes of their customers worldwide. In keeping with the tradition of developing solutions to complex technical issues, Panasonic has provided quick-service restaurants the means to increase their operating efficiency. Ever since the early 1980s Panasonic has furnished the hospitality industry with total systems because managers and crews required better data and faster communications. No wonder Panasonic has become a leader in the creation of restaurant transaction, information management and communication systems.

Nearly two decades ago Panasonic established a separate entity, Panasonic Information Systems Group (PISC) in Elgin, Illinois, to manufacture and service POS systems for restaurants like McDonald's or Burger King and regional chains like Culver's. The POS systems (specifically the 5000 series, the 7500 series and the 7700 series) are workstations designed with comprehensive reporting in mind to help managers monitor productivity and bottom line performance. As the business increases, hardware and software can be readily added and enhanced without any loss of the initial equipment investment thanks to ARCNET as the communication platform. Most of the Hospitality industry has gravitated toward Panasonic and by default; they are users of ARCNET.

The Story

Managers and crews in quick-service restaurants exchange information to produce much like a factory-within an atmosphere controlled by a communication platform. Ed Rivas, PISC's National Marketing and Business Planning Manager, compares this to what Alexander Graham Bell accomplished with the telephone line system: connect all the devices in an environment in order to communicate. Rivas said the technology of choice facilitates the communication of the POS terminals on the front counter and the POS transaction terminals of the drive-thru amongst each other as well as sending and downloading information from the kitchen preparation monitors and printers to the PC in the manager's office.

For years Panasonic's technology of choice had not surpassed their expectations. The company was using a proprietary LAN in information processing in the transaction of hospitality products. The proprietary LAN had performed fine except it had limitations on interface capabilities to standards that were out of Application Stories Panasonic's control. "If we wanted to add a PC to the configuration," explained Rivas, "it required a massive investment in development on our part to convert our proprietary LAN application to something more standard." That had fueled concern among the company's management, engineers and technicians. Now it called upon its decision- makers to adopt another method, one that was recognized as a standard in the industry. Panasonic needed a control system with built-in interoperability and one that would provide real-time access to the information it collected and used. ARCNET was the easy choice.

The search for an ARCNET supplier did not take long. Five years ago Contemporary Controls won the project because of their networking prowess. Panasonic understood the benefits of a Contemporary Controls product— the reliability and the consistent quality that was necessary to place ARCNET into a restaurant communication system that did not pose an issue. "What was important," emphasized Rivas, "was selecting a company to provide us with the components to complete a solution similar to Panasonic's in its mission." "We looked for a company that would offer us the same level of assurance of product quality, the same level of dedication and commitment as we display and Contemporary Controls met those requirements."

From day one, the application had called for components that were compatible with Panasonic's PCI bus computer. The PCI bus computers were popular in the marketplace and Contemporary Controls led the way in manufacturing the required network interface modules (NIMs) to provide ARCNET connectivity to them. For this application Panasonic used Contemporary Controls' PCI20-TB5 NIMs. The PCI20-TB5 allowed for jumperless configuration and plug and play operation. It supported twisted-pair bus cabling using RJ-connectors. The PCI20-TB5 incorporated the COM20020 ARCNET controller chip with enhanced features over the earlier generation ARCNET chips. The ARCNET controller handled the complete communication process such as token passing and error handling. It didn't need expensive development platforms, only standard embedded design tools were required.

Jeff Spinabella, Panasonic's POS Hardware and Software Support Specialist, said a single PCI20-TB5 was equipped in the PC in the back office and Panasonic uses their own embedded ARCNET controller in the five POS terminals. The function of the NIM was to control the binary data that was passed back and forth from the Panasonic Manager Workstation back office software and the POS terminals. The hardware was connected via standard twisted-pair cables.

The back office became the central location for information, like an information superhighway. The manager consolidated reports and input data such as new menu items so his crew had up-to-the minute information.

Spinabella explained that the Panasonic Manager Workstation (MWS) back office software accumulated data from the POS terminals via binary ARCNET communication and displayed programmable custom reports. "A manager was able to retrieve timely sales, labor and inventory reports from the PC without affecting counter operations. Typical management functions such as time and attendance edits and deposit entries were handled on the PC instead of on a workstation where the initial purpose was to serve customers and take orders." Spinabella also added that this software had the ability to make programmable changes to the POS terminals through binary ARCNET communication.

In Panasonic's language, the POS systems combined the best of "purpose-built" hardware with a no single point-of-failure approach to open systems, resulting in a fast and cost-effective network based upon ARCNET's inherent features-free from proprietary constraints.

For Panasonic's application ARCNET was more efficient. Although the data rate was the standard 2.5 Mbps, the controller chip handled the communications independently, allowing the control system to operate more efficiently and to send more data per transmission. With its built-in flow control and error detection, ARCNET insured that messages can automatically be resent if there are receiver errors. This was of importance in a restaurant for improving speed of service and accuracy in various management functions.

When questioned about protocol overhead, Panasonic was satisfied. The application overhead was very modest for ARCNET when compared to other industrial networking technologies.

Since ARCNET was scalable, Panasonic could add a POS terminal or PC to enlarge a system in order to meet the restaurant's needs.

Knowing that ARCNET has high noise immunity to electrical equipment, there was little risk of the kitchen equipment interfering to the network.

And finally, ARCNET's deterministic behavior was well suited in this application, especially during heavy volume activity. There is a set order for communications and only the controller that has the token can place messages on the network. Even with a large network, it will not take more than a few milliseconds for any one controller to access the network. Why was this a prime consideration for Panasonic?

For example, let's say the manager sent programming changes to the POS terminals at the front counter. No matter how busy the network was; it guaranteed the delivery of these data packets within a set time period. Basically, ARCNET allowed the sending and receiving of data packets more reliably. The result? It allowed the manager to run his restaurant as smoothly as possible during heavy periods of traffic.

Panasonic was pleased with ARCNET. "The familiarity with ARCNET allowed for easier training and smoother installations in restaurants," said Rivas. "It wasn't a matter of having to convert our users to learning a proprietary network. In this instance, there were reduced costs to distributors that eventually resulted in reduced costs to end users. Its consistent performance helped reinforce the tradition of reliability that many users expect from a well-recognized technology giant such as Panasonic. With ARCNET, it allowed our users to think outside the box knowing that they can feel secure with their communications and address other areas of concern. It has continued to support our Legacy Panasonic hardware with great success."

Rivas further stated that if ARCNET wasn't around, there was no secondary option. "We looked toward ARCNET as the winning standard. If there was no ARCNET, we would have remained with the proprietary platform and dealt with the limitations we had already recognized." Panasonic expected a lot from Contemporary Controls. But Contemporary Controls had the reputation of being the leader in ARCNET so they could address all of Panasonic's issues with their tools and techniques. And they did. Successfully. Panasonic has always valued the continued relationship with Contemporary Controls. It's taking the skill and teamwork of both companies to help keep pace with the demanding restaurant environment and keep all quick-service restaurants in a position to operate today and in the future.