ARCNET Connects Point-of-Sale Terminals to Manager Work Stations

ERC Incorporated is recognized as the largest distributor of Panasonic's Point-of-Sale (POS) systems in North America. The company has more than 4,000 installation sites with clients, including Kentucky Fried Chicken, Wendy's, Arby's and Popeye's. These quick-service restaurants process thousands of transactions daily. To fulfill transactions, restaurant managers require point-of-sale equipment that works efficiently and provides managers with control over their operations and budgets.

"The Panasonic 7500 Series is the most deployed POS system and it depends on ARCNET," said Kyle Bischoff, ERC Training and Staging Manager. "ARCNET is easy to deploy in a restaurant application because the wiring isn't complex."

Panasonic 7500

When the first Panasonic 7500 rolled off the assembly line in the mid-1980s, it could only communicate with other cash registers with one acting as the "host" or "Master Register." As the computer industry progressed, Panasonic released the "Manager Workstation" (MWS) software which allowed access to the POS system from a computer. Initially, this was accomplished over a modem and and phone wire. However, ERC's a more reliable networking solution.

ERC contacted Contemporary Controls, located in Downers Grove, Illinois, for the company's achievements in ARCNET technology. ERC selected one of Contemporary Controls' ARCNET Network Interface Modules (NIMs) to be inserted into the computer which enabled a connection to the other 7500 terminals. "Basically, the PCI20U NIM is another node on the ARCNET network," said Bischoff. "The PCI20U made it possible to place the computer in the restaurant and have both this device and the cash registers communicate directly on the same network."

According to Contemporary Controls, universal voltage PCI NIMs are required such as the PCI20U since most PC motherboards have migrated from the +5 PCI Bus to the +3.3 V PCI Bus. The PCI20U links PCI and PCI-X bus compatible computers with the ARCNET LAN. This PCI card can be used in either a PCI-X slot or a conventional PCI slot. PCI-X is an enhancement to the original PCI Local Bus Specification allowing devices to function at speeds up to 133 MHz. If a PCI20U is installed into a bus capable of PCI-X operation, the clock remains at the 33 MHz frequency restricting all other devices on that bus to using the conventional PCI protocol. The PCI20U exploits the new features of its COM20022 ARCNET controller chip including command chaining, sequential access to internal RAM, duplicate node ID detection and variable data rates up to 10 Mbps. Bus contention problems are minimized since the module's interrupt level and I/O base address are assigned through Plug-and-Play (PnP). There is no requirement for wait-state arbitration.

One PCI20U NIM is equipped in the computer which is located in the restaurant's back office. The function of the NIM is to control the binary data that passes back and forth from the Manager Workstation software and the POS terminals. A typical restaurant is designed with up to five 7500 terminals. Bischoff said the computer is connected via the NIM to a hub interfacing the entire POS system. "The network is standard 'star' topology," he explained. "Each device in the system has its own dedicated cable run to the hub. We do not daisy chain our devices." The cabling is standard twisted-pair ARCNET cable or specially modified CAT-5E. The length depends on the store location, but it can be anywhere from 10 to 300 feet.

Bischoff said there was a significant advantage to employing the PCI20U. "With its connection to the MWS software, restaurant managers can receive reports once generated only at the registers including sales reports, cashier reports, time keeping reports, inventory reports, menu item reports for the day, week or period," he explained. "Managers are no longer tying up a POS terminal that could be serving customers and generating sales. Additionally, we were able to save managers several hours a week in time normally spent on paperwork."