adequate ventilation, that their cable connections are protected and that other items cannot be stacked on top of them. Cables must also be run tidily and protected appropriately from what can often be a hazardous environment for electronics. Always place work stations away from heat sources.

Every vendor has horror stories of PC workstation CPUs being stuffed sideways into cabinets under bar sinks, of damp dish cloths being stored in a heap on top of an uninterruptible power supply, of cables being draped across (or through) the ice tray under a bar, and so on, all with the expected devastating impact on reliability. Systems are absolutely critical to the operation of any F&B outlet. While vendors are constantly working to make them more rugged and reliable, it's essential to do everything possible to protect them and maximize their reliability. Downtime costs money.

WIRELESS NETWORKS

Wireless networks are becoming much more common in F&B outlets, both for the staff using handheld terminals for order-taking in spread-out operations and, in appropriate environments, for guests' Internet access. Although they seem to offer much more freedom of installation, in reality the transmitter/receiver base stations/access points must be carefully positioned to ensure complete signal coverage, especially in larger outlets. A signal strength survey must be done prior to installation to identify the best locations for the access points, and cabling must be run from those positions back to the system server or network hub.

INTERNET

We have already discussed a number of ways in which Web-based applications can be used to help in the profitable operation of restaurants. A few more points bear mentioning. Installing Internet access for an F&B outlet is a necessity these days. The internet is the primary way in which the public searches for dining and entertainment options. All restaurants and bars will benefit from at least a point-of-presence Web site with contact details, and managers and chefs will need Internet access for e-mail and for research. It's also both important and valuable to make full use of search engine optimization to drive business via your Web site. Restaurants have to fight for visibility along with every other guest destination.

Installing broadband service at an outlet with appropriate firewall security can also provide public high-speed Internet access (HSIA) for all kinds of guest services as well as for other use such as credit card settlements. For example, wireless terminals at the Kentucky Derby allow patrons to place F&B orders, but also to bet, check handicapping data and watch videos from other tracks.

Multi-unit operations, of course, often use the Internet as the two-way link back to the corporate office, usually for access to the local systems data and to download new menu items and pricing. Corporate Intranets are also invaluable for quick and flexible access to operations manuals, discussion forums, company news items, a corporate documents library, e-mail between sites and many other purposes.

Given enough bandwidth, chains can also use on-site video cameras to check on operations remotely and to help train staff by monitoring their actions. Careful use is obviously required with this! It's great to keep an eye on how busy a restaurant is, or to pinpoint a new server who's having trouble with some basic functions and provide specific training, but if the staff feel that they are being spied on all kinds of issues can arise. Owners should absolutely be able to monitor cash registers and managers' offices (with their safes) from a remote site. Surveillance system recorders should definitely be located away from the restaurant. Many a restaurant has been robbed and intelligent thieves have walked out with the video systems that recorded the theft because they were located in the very spot that was being robbed.

Wireless Internet access in casual dining environments is nearly ubiquitous; so much so that its presence may not draw customers in, but its absence will certainly keep them away. Providing customers with free internet access can be disadvantageous as it greatly increases the incidence of "camping," so think carefully before offering such a service.

SECURITY

No mention of information systems would be complete without a discussion of security. Security has been left for last, but it is one of the most important considerations in any information system management plan. Protecting the security of a restaurant's information is of paramount importance. A recent study at the University of Nevada Las Vegas found that hoteliers consistently overestimated the adequacy of their IS security systems. One of the reasons for the lack of appreciation of security may be that there is little apparent ROI for investments in information systems security. Systems security measures mitigate risk and there is no real way to quantify risk, but the cost of a systems security breach can be catastrophic.

The risk associated with a breach of information systems security is very high. No sector of the business community is exempt from attacks on their information systems. Many thousands of these attacks occur on a routine daily basis and result in extreme financial losses. These attacks have taken on a myriad of forms, including computer-assisted fraud, spying, vandalism, and hacking. Many of these attacks involve attempts by thieves to gain access to customer credit card data, and these attempts constitute a major portion of the risk inherent in IS security.