by Jon Inge

Managing Today's Demand, Building for Tomorrow – and Turning a Profit At The Same Time

The Electronic Guestroom

There's no question that guestroom technology has become a key issue for most hotels. Many actively promote their commitment to it to attract guests who are increasingly looking for a more up-market experience in their hotel rooms. This commitment often seems focused mainly on providing a flat-panel TV and an Internet link, but there are many, many other ways that technology can contribute to a memorable guest stay.

But what makes sense for a hotel to implement? With the pace of development producing new entertainment options and new priorities every year, how can you predict what will be in demand (or useful) three years from now? How do you plan for it and how can it possibly be affordable?

Two key answers: Internet Protocol-based standards and central systems management.

For years individual guestroom systems such as electronic locks, high-speed Internet access (HSIA), pay-per-view movies, minibars and intelligent thermostats have each helped provide a better guest experience and more efficient hotel operation. Several have been linked into more effective groupings using a variety of proprietary protocols, but the widespread adoption of Internet Protocol (IP) communications has made integration both more flexible and more powerful. Increased vendor cooperation is resolving the several feature overlaps and producing more cohesive system sets.

Not only do these integrated technologies work better with each other, they can also share a single IP network. This allows centralized management of each to be implemented at lower cost and with better integration with hotel management systems, providing significantly greater operational efficiency. The result is a higher level of guest service using fewer but more effective staff, a secure foundation for what will surely be a very IP-focused future, and greater returns on the investment.

How Much Is Enough?

Part of the problem with guestroom technology has always been providing enough of it to meet the guest's expectations without letting it become obtrusive, either visually or operationally through being too difficult to use. This has become more acute as guests' expectations have risen with the increasingly sophisticated technology they have at home and carry with them.

It's not realistic to duplicate that home environment in a guestroom, since home installations are often customized and require some familiarity to operate. However, providing quality fundamental items that are easy to use and connect with the guests' portable devices will result in a satisfying and fully acceptable guest experience.

While there's a growing overlap between the various types of guestroom systems, it's worthwhile to review them in the following general categories:

>> Audio-visual entertainment (TV, radio, movies)

>> Guest services (minibar, safe)

>> Communications (telephones, Internet)

>> Security/environmental control (locks, thermostats)

>> Infrastructure (hotel networks)

A/V ENTERTAINMENT

We live in an increasingly entertainment-driven world, and guestrooms are not immune to the demand for greater variety of choice and more flexibility in delivery. Hotels are expected to provide both a higher quality of equipment (high-definition [HD] TV and movies, more realistic sound) and a wider range of options (more program channels, the ability to accept input from guests' personal audio/video players).

Flat-Panel Displays

Flat-panel displays are the immediately visible, high-profile items and it seems that hotels everywhere are installing them. This is not just for their startlingly clear images but also for the design flexibility they allow by eliminating the bulky and costly TV armoire. These displays can also blend into the overall decorating scheme when not in use by displaying works of art; some can even become a mirror.

Most hotel flat-panel digital displays use either plasma or LCD (liquid crystal display) technology. The display quality between the two is now very comparable, and purchase decisions are usually driven solely by screen size and price rather than display type. But simply buying a flat-panel display isn't enough to deliver digital movies to the guestroom; you need a high-quality digital signal as well.

Pay-per-view digital movies are an obvious source, but standard analog TV programs simply don't look good on an HD display; stretching them out to fill the screen just enlarges every defect in the original image. Fortunately, this is a temporary problem. Most free-to-guest TV channels are now broadcast in digital format as well as analog, and the U.S. government intends, from February 2009, to require all U.S. broadcasters to send only digital transmissions. After that date, analog sets won't receive off-air programs without a converter box, another good reason to switch to HD units as soon as practical.

You also need to deal with signal encryption to prevent piracy. Since a copy of an HD movie is indistinguishable from the original, all digital movie providers require the signals to be encrypted all the way into the display unit. As one approach, LG Electronics (in conjunction with LodgeNet) has developed a digital rights management approach called Pro:Idiom for its displays. This is now being adopted by other vendors such as On Command and Philips, and may become an industry standard. Either way, it's essential to ensure that the displays you buy work with your TV and movie provider's equipment, and between them include all necessary digital tuners and decryption technology.

Still in development is the ability of the display to recognize what type of device has been hooked up, and to display its appropriate control menu and program library on-screen. Plugging in an iPod, for example, would automatically bring up iTunes and show the iPod's own library of music and videos. Connecting a camera might display a wizard to let you review your photos or video and store them online.

Wiring and physical location are clearly important. If the displays are going to fit sleekly on the wall their wiring (power and signal) and tuner/control box must be hidden, which can be a challenge when retrofitting a room. Positioning is critical for a clear view, especially if the display connects to the guest's laptop or personal audio/video players. Where will the guest be sitting when viewing or working?

Guests can then use them to make dining reservations, order room service, enter wakeup calls, access concierge services, check their group's conference/meeting agenda and room location, view diagrams of the resort layout and focus on specific attractions, view folio information and check out, and so on. Some also provide access to typical productivity software such as Microsoft Office, sending documents over Internet-based services such as PrinterOn and PrintMe to a hotel printer. There are many solutions; GBCblue and Thinix make typical units, and Gaylord's Opryland hotels have had their own custom-developed units (iConnect) for some time.

With the pace of development producing new entertainment options and new priorities every year, how can you predict what will be in demand (or useful) three years from now?

Can You Hear Me Now?

A good image deserves good sound, of course. Many displays come with good quality built-in speakers, or can be connected to a 5.1 theater-style surround-sound set-up for a much richer experience. In either case, maximum sound levels should be pre-set to acceptable volumes to avoid too intrusive penetration to adjacent guestrooms. Maybe one day sound-canceling technology will help guests in the rooms next to someone enjoying a rock concert video remain blissfully unaware of his enthusiasm for "realistic" sound levels.

Connections

Newer displays often have connectors to hook in guests' personal music and video players. Multiconnector jack-packs or desktop units (such as those from TeleAdapt and others) often provide the physical connections, and sometimes include power outlets and docking stations to recharge the units.

One Unit or Two?

In addition to laptop connections, flat-panel displays are often provided with high-speed Internet access (HSIA) and a wireless keyboard to extend their usefulness from entertainment to information source. This isn't always the best solution for guest convenience, though. A wall-mounted unit is typically too far away and at an awkward angle for someone using a laptop at the desk to see easily, or too big if it's right over the desk. And if two people are sharing the room, it's often inconvenient to interrupt a movie to check the Internet for local restaurants, for example.

For such productivity and informational use, therefore, several properties provide stand-alone guest workstations. These can be used both as a larger desktop display for a laptop and for stand-alone access both to the Internet and to hotel-specific information. The latter can include promotional/informational data similar to that provided on PPV movie channels, of course, but they become far more useful when integrated with other hotel systems.

Do I Hear Three?

Phones can also include guest-focused visual displays, either inherently as a VoIP unit (as from Cisco and Teledex) or as part of a guestroom multipurpose control unit, such as the InnCom GDA-700. For cost reasons their screens are much smaller, usually around 5.5 inches, and are touch-screen only, without keyboards. Nevertheless, they can provide one-touch access to concierge information in pre-set categories such as weather, travel, sports, local events or local restaurants, with one-touch direct-dialing. Similarly, icons can be used to display information for the guest's group, such as the conference agenda, directions to meeting rooms, or a list of other members already in-house who the guest can dial with a single touch.

Most people find it more natural and convenient to keep their information and entertainment devices separate; given any reason-

able alternative, few want to watch TV on their laptops or check e-mail on a TV. In a smaller room one flat panel display will probably have to do for all; perhaps split-screen functionality will help in the future. But in larger guestrooms do you need both a VoIP phone and a concierge/productivity workstation if they both use the same network? There's sure to be some convergence between these devices; it will be interesting to see how this plays out, especially as telephone technology itself is in a major transition right now.

Multiple Benefits and Uses

Once you have all these devices using common Internet-based communications, of course, the extra services you can offer become potentially unlimited. Links to the telephone system allow for TV-based unified messaging (e-mail, voice mail and faxes all displayed/replayed on screen); streaming music from the Internet is a great alternative to a bedside radio, and some chains already offer Sirius or XP. Interactive gaming with a central service or even between rooms becomes possible, as does video access to the guest's group conference proceedings. Exercise bikes and treadmills offered by some properties for in-room exercise can use the display to show the roads, hills and scenery the guest is "moving" through on a simulated exercise route. And how long will it be before the door peep-hole viewer is replaced with a small camera that can display who is at the door by popping up their image on the TV display?

As a result of this convergence, many vendors now offer what has become the "triple play" of guestroom technology, supplying voice (VoIP phones), video (HD movies, TV channels and other programming) and data (high-speed Internet access) as a single service. Traditional movie providers (LodgeNet, On Command) have added HSIA to compete with newer vendors such as NXTV, KoolConnect, InSystcom; traditional HSIA vendors (Guest-Tek, others) have added movie and VoIP offerings.

Combining flat-panel displays with HSIA does raise other issues. How will demand for traditional PPV movies be affected now that guests can stream programming from inexpensive online movie libraries, or from their Slingbox-equipped home televisions or TiVo recorders? Will video-conferencing take off when cameras are added to guestroom flat-panel displays or the VoIP phone? Sony already builds them into several of its laptops, and Skype and other instant-messaging services have video links built in. If demand for all of these services rises, what's the impact on the bandwidth available for the remaining guests?

One answer may lie in bandwidth metering: providing HSIA free to guests up to a usable bandwidth for e-mail and general surfing but charging for continuous heavy usage for streaming video. In any event, monitoring guests' bandwidth usage and having a flexible service contract with your Internet service provider would be wise precautions.

One sign of future directions may be Sony's LocationFree TV, a lightweight headset-equipped wireless unit that guests can carry around, to the poolside for instance, to watch TV or movies, access the Internet or receive digital photos. While at the moment relatively short range and battery life impose restrictions on their real-world appeal, wireless flexibility is as attractive for this kind of usage as it is for laptops and cell phones.

On the Ball at On The Ave

With a high percentage of TV and entertainment industry guests, City Life's On The Ave property in Manhattan sees a particularly strong demand for high-quality audio-visual guestroom equipment, which can be difficult to keep up with since the technology changes so quickly.

"You can't really provide an at-home experience for our many guests who have quite complex home entertainment set-ups," said Derek Donnelly, City Life's CTO. "Those often take a lot of learning, whereas ours must be intuitive for any overnight guest to use. But you can provide the same equipment quality, help them plug in the items they bring with them and give them high-quality Internet access and HD TV/movie content.

"The key is to provide the right infrastructure. If you stay with good-quality industry standards for communications and display equipment, later add-ons are easy to make and help justify the initial cost."

On The Ave rewired some years ago with a single multipair Cat 5 cable to each room, and Cat 3 for the two-line phones; coaxial cable initially installed for the pay-per-view movies is no longer necessary now that digital movies (from **Guest-Tek**) are distributed over the Cat 5 cable. Free-to-guest HD channels are captured by a satellite dish and use the same cable.

A mix of 32-inch LCD and 42-inch plasma flat-panel displays (from **LG Electronics**) is used, with some 17-inch LCDs on swing arms in suite bathrooms. Other tech-oriented features include wireless-networked minibars (**KoolTech**), and both wired and wireless HSIA (**Guest-Tek**).

A key guest service aspect is the "jack pack", a desktop unit that connects laptop video output, digital cameras and personal video players to the flat panel displays as well as providing an Internet connection and power outlets. "We're already getting requests to hook in iPods for audio and video playback with on-screen navigation," said Donnelly. "That'll come in the future. We've already been through three different designs of our own for the jack-pack, and there'll certainly be more. But as evidence of the demand, about a third of our service calls for the rooms come from guests who've taken the plasma TV surrounds apart to try to hook up their portable devices to the connectors on the back!"

GUEST SERVICES

Minibars

Minibars have shown steady development in themselves, with management software enhancements, more efficient cooling systems and self-monitoring of their maintenance status. However, the more effective centrally managed systems have become more common as shared guestroom networks have made them more affordable (see Infrastructure section). In addition to allowing accurate, real-time posting of charges to the guest folio, central management provides significant labor savings. Re-stocking staff need to visit only those rooms where the bar was opened and load their carts only with items that have been consumed.

Software improvements include expiry date control, drink-mix discounts (e.g., charging a lower price if both a gin and a tonic water are removed), happy hour/promotional discounts and minibar maintenance tracking. For cruise lines, multitax functionality can apply the tax applicable at the moment the item is taken from the bar, which can be different from port to port or when in open water.

But greater integration, both within the guestroom and with hotel management systems, also produces greater efficiencies. In the guestroom itself, a minibar communications controller such as Bartech's can control six other devices, including the safe, lights, thermostat, TV, phone and drapes, or even an outlying minibar unit such as a tray of dry goods. Links can be either through direct cables or over newer wireless protocols (such as Zigbee) which are designed to use very little power and thus prolong battery life.

A PMS interface can be much more than just a charge-posting link, too. A guest's checkout can trigger the minibar to lock the fridge and shut off other in-room devices. It can monitor whether the in-room safe has been used, charge the guest's folio if appropriate, and alert the cashier at checkout if the safe is still locked and might contain the guest's valuables. Housekeeping room status updates and maintenance work orders can also be entered through the minibar control unit as an alternative to using the guestroom phone.

In-Room Safes

In-room safes are now available in a wider variety of sizes and types. Some have pullout drawers instead of hinged doors, and several include power outlets inside for recharging laptops, cell phones, cameras and the like. In addition to the traditional PIN-code entry or credit card swipe for locking, alternatives now include swiping the guestroom keycard and fingerprint recognition.

The latter is certainly convenient and secure but as with door locks it remains to be seen whether guests are willing to leave their fingerprint records with the hotel, or the hotels to store them.

Do Not Disturb

Electronic do-not-disturb (DND)/maid service indicators, such as those from InnCom and Axxess, are becoming more widespread, both as a more convenient and reliable indicator for hotel staff, and to provide a higher level of guest service. For example, when a motion detector is used to control thermostat set-backs, the DND indicator panels outside the door can be fitted with a hidden lamp that, when interrogated by a housekeeper's or minibar restocker's key-fob device, indicates whether the room is actually occupied.

The panel can also be wirelessly linked to flash the room lights when the built-in doorbell is pushed or the phone is ringing, for ADA requirements. Integration can even extend to the PMS, to have the DND panel switch on the maid service lamp when the guest checks out.

COMMUNICATIONS

Phone Options Get Complicated

Telephone and Internet communications seem to be the most dynamic area of technology today, and new services seem to be announced almost monthly. Interest in voice over Internet Protocol (VoIP) phones continues to grow, and they're becoming more common as hotels take advantage of their ability to integrate with other management and guestroom systems.

However, guests are also using Internet connections to bypass the phone system altogether, using Skype, Vonage and other services that allow them to make free or very low cost calls worldwide. While the quality of these calls is now high and the price is extremely attractive, they haven't been convenient while traveling. Vonage, for example, requires the guest to carry a small connection box, and using Skype on a laptop requires a headset.

But it's no surprise that this is changing. Combined Wi-Fi/GSM phones have been available for a while, mostly as PDA-style units which use whichever connection method works best in any one location for browsing the Internet or checking e-mail. Now the first phones with built-in Skype software (which allow travelers to use their Skype accounts over a wireless Internet connection) were announced at the January Consumer Electronics Show. Guestroom phone revenue looks more precarious than ever.

High-Speed Internet Access (HSIA)

A significant majority of hotels now offer wired, wireless or both high-speed 802.11 Internet access in their guestrooms, and it's become a standard amenity in most chains. The long term need for it came into question when the newer 802.16 Wi-Max protocol was announced a couple of years ago. With its higher speed and much larger range (30 miles instead of 300 feet) Wi-Max offers the prospect of city-wide coverage. Its ability to penetrate building structures hasn't been determined, however, and it may work best in conjunction with current 802.11 in-building Wi-Fi networks, which are likely to remain a useful standard for many years.

Some cities are beginning to provide city-wide free wireless access using mesh networks. These offer similar coverage advantages to Wi-Max but with greater complexity since many more access points are needed, each providing end-user connections to the Internet and linking wirelessly to the next access point. If these signals penetrate a hotel building effectively enough for a guest to get a reliable connection, the property will have a hard time charging for access to its own network unless it's of a significantly higher quality – and then it must make very sure that guests know which of the wireless networks their laptops and phones identify is the hotel one.

Wi-Max equipment testing has started and mesh networks are beginning to be installed. The cell phone service providers have countered this by releasing their long-

Counting on Technology at Hotel 1000

Seattle may be a center of modern technology, but few properties are so focused on leveraging its advantages as the new Hotel 1000, opening this June in the heart of town. The management team from MTM Luxury Lodging has always used hotel technology well but is taking it to new heights here, especially in the guestroom.

"This isn't just for technology's sake," said James Simkins, MTM's executive vice president. "Everything we install has a clear focus on our three customer groups - the guests, the staff and the owners. Each system has its own benefits, but the true advantages come from proper integration between them."

And that's not a trivial task with more than 15 technology vendors involved in Hotel 1000's guestrooms alone. Each has a 40-inch LCD display (**Sony**) with simulated 5.1 surround sound (from Soundmatters), showing digital movies (**Guest-Tek**) and high-definition TV programs (world-wide satellite channels, from **Tangerine Global**). A desktop adapter (**TeleAdapt**) allows guests to connect their iPods, laptops and personal video players to the display and speaker, and to a wired high-speed Internet connection (Guest-Tek, which also provides wireless access). Internet printing (**PrintMe**) sends guest documents to a front desk printer. VoIP telephones (**Percipia**, using Cisco 7970 color touch-screen handsets) are linked to the **PAR Springer-Miller** Host PMS and to the Sony display, for unified messaging, ease of dialing other in-house members of the guest's business group, and for access to concierge-type information.

Centrally monitored minibars (**Bartech**) provide cost control, real-time folio charging and intelligent re-stocking. **InnCom**, linked to door sensors and the PMS, provides centralized energy management with two levels of thermostat set-back (unrented and rented but vacant), as well as an occupancy indicator for hotel staff use. The guestroom locks (**Miwa**) use proximity key cards, a choice made with future CRM applications in mind. MTM also plans to link Hotel 1000 to its other hotels in the Seattle area, so that an arriving guest's room can be brought up to her preferred temperature (as noted in her SMS|Host preferences) as she checks out of her previous hotel.

And it all works over a single Cat 6 cable to each room in a fully converged IP network (installed by Valcros Communications, using Cisco routers and 3Com switches), plus a coax cable for the direct-feed HD off-air TV channels.

How do you get so many vendors working together productively? "We've focused on them being a team from the start," said Simkins, "with regular meetings and a project extranet to help mutual problem-solving and to keep the focus on intuitive usability. They also know that by demonstrating a proven ability to integrate their products, they'll all benefit from future sales to us and to other hoteliers."

But the drive to emphasize a guest-friendly nature of the technology extends even to the lobby. "All of MTM's hotels have a lobby dog to make guests feel at home. At Hotel 1000, it's a Sony AIBO, " Simkins said.

awaited 3G networks (such as Verizon's EV-DO and Cingular's EDGE), which offer Wi-Fi-speed Internet connections wherever cell phone signals can be received in major cities. Cell phones aren't known for their ability to pick up a signal reliably inside many hotel buildings and these 3G data services aren't inexpensive. Nevertheless, a traveler visiting major cities and able to get a "good-enough" connection will only take a few visits to show significant savings over the $12 to $15 per day Internet connection fee some hotels still insist on charging.

Another telecom avenue being explored is the use of wireless IP phones that use the hotel Wi-Fi network (sometimes referred to as VoWLAN – voice over wireless LAN), allowing guests to take their room phone with them to receive calls throughout the property. This flexibility does have drawbacks, though; because voice traffic cannot tolerate or recover from interruptions as well as data streams, it requires higher priority and can dominate the available channels at an access point. More access points are usually required to ensure coverage, and heavy usage may block the lower-priority data traffic.

Do We Still Need Room Phones?

Does all this mean that the need for guestroom phones is disappearing as more guests carry their own mobile phones and Wi-Fi is becoming so common? Not yet. Even a GPS-equipped cell phone won't identify which floor of a hotel the caller is on, and as long as a guest needs to call the front desk if they have a medical emergency during a power outage, the need for a reliable, location-indicating phone will exist. And today that still means a wired guestroom phone. Standard analog phone lines are the archetype of reliability, but VoIP phones can be made just as reliable if powered over the IP network, and if that network is fitted with UPS units backed by the property's emergency generator.

The need for phones to have two lines may well go away, however. It's still a four-star rating requirement, but in this age of cell phones and HSIA lines for e-mail it's becoming less necessary. Hotels that don't offer HSIA will still find it helpful to provide one line for dial-up access and one for voice, and two lines are also handy for ad hoc conference calls, but in general their advantage is slim these days.

SECURITY & ENVIRONMENT

Electronic Locks

It's an odd comparison, but door locks have shown many of the same trends as minibars and safes. These include an increased awareness of the advantages of centralized systems, tighter integration with other guestroom technology and an interest in exploring biometric controls, usually through fingerprint or iris recognition.

Biometric controls are convenient and simple to use, but guestroom locks using

them must also incorporate a second approach since not all guests will want to register their physical characteristics. (Maybe too many have seen "Minority Report".) Many hotels also worry about the responsibility of storing guests' biometric information securely, even as an encoded mathematical representation.

Some hotels are experimenting with biometrics for guestrooms. Boston's Nine Zero, for example, uses an LG Electronics iris reader coupled to a TESA lock for its Cloud Nine penthouse, and finds that celebrity guests like the extra security. However, these properties usually find greater value in using them to manage employee access.

Proximity locks have different advantages. These use keycards embedded with a tiny radio-frequency ID (RFID) transmitter that is recognized by the lock just by being near it, without needing to be inserted. This is not only a worthwhile convenience, it also allows the lock mechanism to be sealed for increased reliability, an advantage in harsh conditions such as ski cabins or beach cottages.

RFID keycards are more expensive than mag stripe cards, but some properties justify the cost by making them multipurpose, such as for guestroom access, as a ski lift pass and for restaurant charging. If you can use the same card to track the guest's activities and provide the guest with useful information such as the vertical distance they've skied each day, the additional CRM data can also add value.

Smart cards, which have a small chip and memory built into the card itself, are generally used where more control is sought over user access. In many cases the lock can write back to the card to provide a record of which locks the card has been used in, clearly a significant security advantage. Some can also record the state of the lock's batteries, to alert maintenance of the need to change them.

A Universal Key?

As with mag stripe cards, there have been discussions about using smart cards as a guest's primary room key throughout a hotel chain, especially for members of a frequent guest program. Until every property in the chain has compatible lock systems, though, or until there's a far higher degree of commonality between lock brands on the cards they can read, it's unlikely that guests will carry such a universal access keycard.

The chip-and-PIN smart credit cards now used widely in Europe have revived the issue since so many people carry them. It's certainly possible to set up the lock to recognize these, especially with central systems which can preset the lock when a guest checks in, whether at the front desk or via the Internet. However, few guests are comfortable with having to carry their credit card to the pool or gym, for example, instead of an anonymous door keycard, and the idea has not yet found wide acceptance.

For now mag stripe cards rule for general access, and hotels wishing to use the extra staff security features of smart cards or biometrics need to install dual technology locks.

Centrally Managed Systems

The advantages of centrally managed lock systems have been recognized for a long time, in providing greater security, better guest service and noticeable labor savings. For example, hotel security can be notified immediately of access attempts with the wrong key, or of doors left ajar. A room key can easily be reassigned if a room move is requested, without the guest having to visit the front desk. If a master keycard is lost, all locks can be updated without having to visit each lock individually, and all lock batteries can be monitored remotely. They also allow the use of biometric locks, which need to be centrally managed to verify the user's characteristics against the central database.

Ground Rules for The Ginn Company

Hard as it is to equip a hotel guestroom to a satisfactory level, when you're developing a mixed residential/rental community and have to meet homeowners' levels of expectations as well as install an appropriate degree of technology for transient guests, the problems are at a higher level.

"The focus has to be on community infrastructure, on building bandwidth for the future," said Bob Bennett, CIO for The Ginn Company, a Florida-based developer of resort communities that faces just this challenge. "To provide the right foundation for the guestroom technology and to protect the value of each residential unit and the whole development, we mandate a minimum infrastructure standard for all units."

This includes quite specific details on wiring layout and quality. Ginn's standards call for the distribution of the triple play of voice/data/video over a fiber network to each unit, and all units must incorporate structured wiring (Cat 5 and coax). This must be run not just to each room but to specific locations in each room, to provide for current or future automation of lights, drapes, energy control, video, PBX, et cetera. "With HSIA in all rooms and four to five flat panel displays per unit (each unit has two to five bedrooms), we can easily see having four to seven IP-connection requirements per room," said Bennett.

Of the three connectivity components, the in-room systems interaction is being worked out between the vendors using industry-standard protocols, and each unit's structured wiring also follows standard practice.

"The big unknown is the overall community infrastructure," said Bennett. "With so much developing in the number of ways guests and residents can access audio and video entertainment, it's hard to know how much bandwidth we'll need. Is it 10MB per unit? 100MB? If you have 500 units with five TVs each, and each TV uses 20MB, you're looking at some big numbers. We'll obviously be monitoring real-world usage over time, but we believe we've installed the right infrastructure to stay ahead of demand."

These advantages used to come at a significant price in implementation costs and unreliability, with signal wires often breaking at the door hinges. However, the introduction of wireless and infrared technologies has brought major improvements in both aspects, and so their adoption is becoming more widespread.

InnCom helped this along by sharing its centrally managed guestroom energy management network with various door lock vendors (Timelox, Vingcard, Saflok and Sargent), using infrared links to its in-room controller. Saflok's Messenger locks use a proprietary wireless network to achieve the same ends, and it and many other vendors are exploring ways to share other communications channels and thus lower costs. Another benefit of system integration is shown by Saflok and InnCom's development of an "HVAC key", a specially-programmed keycard that can be inserted into any guestroom lock in the property in case of emergency to shut down all the HVAC units, including duct fans, to prevent the spread of fire.

Guestroom Energy Management

Intelligent thermostats have been around for many years, and demonstrably save energy by setting the thermostat back to a preset level when the room is unoccupied. Occupancy is monitored by combining infrared motion detectors with door sensors; if no occupancy is detected after the door has been opened and closed, the temperature is set back. Wireless devices, from companies like Energy Eye, Onity and others, allow for faster and simpler installations with greater flexibility in sensor placement.

Once again, integration with the PMS provides greater efficiency. Guests' preferred room temperature (as recorded in their PMS profiles) can be used to set the thermostat at check in, and extra cost savings come from using two different set-back levels for an unrented room and for a rented room that is currently unoccupied.

INFRASTRUCTURE

One Network for All

A major factor in encouraging the wider use of centrally managed systems has been the development of unified networks. As more systems migrate to IP communications it becomes feasible for them to share a common cable instead of each requiring an independent network. A single Cat 5 or Cat 6 cable to each guestroom can supply all of the systems discussed here, although for now a coaxial cable is still sometimes needed for free-to-guest TV signal distribution. Clearly the cost benefits of this are most easily realized in new construction, but running multiple systems over existing network wiring still yields great benefits.

Examples include InnCom's sharing of its network with lock systems, Onity's innPULSE system using the TV coax wiring, and Bartech's minibars' ability to communicate over the TV cable, telephone Cat 3 or HSIA Cat 5 cable, or over a wireless network.

Wireless networks still have many attractions arising from their flexibility, but the channel congestion issue mentioned above illustrates that they may need more access points for adequate coverage if many systems share them. Mesh networks can mitigate the cost of wiring all these to some extent, since each access point passes the signal from one to another. Their major drawback continues to be that they're just not as secure as a wired network, preventing their use by government and other security-conscious groups.

Network Management Is Critical

A single cable distribution to the guestroom makes the availability of that link critical, of course, since one failure will kill all systems using it. With traffic volume rising as more guests use online services, and especially as they use more of the network-intensive video and voice services, effective network management becomes essential to avoid overspending on bandwidth.

As important as this is, few properties have the resources to provide it

Don't Forget THE BASICS

This new technology is attractive and promises a significantly improved guest experience, but it also raises guests' expectations. Not only does it all have to work – and work in ways that are intuitively obvious – but it also makes it even more important to take proper care of the fundamental, everyday technology needs. If the guest has to crawl on the floor to find somewhere to plug in her laptop, or is woken at 4:00 a.m. by the previous guest's alarm setting, those bad impressions can't be countered by even the glitziest new flat panel TV in the bathroom.

The following should all be considered absolutely basic:

>> Enough power points to plug in everything (laptop, cell phone, digital camera, iPod), accessible without moving furniture or crawling under a desk.

>> A desk and chair at the right heights for ergonomic typing and reading. Yes, this does mean an adjustable chair. Making your guests sit on stacked phone books to avoid carpal tunnel syndrome is not good.

>> Alarm clock radios that are easy to set and to cancel, and which actually can receive a good variety of stations. Two heartfelt requests: could it be a standard task for the housekeeper to ensure that all alarms are reset when a guest checks out? And can hotels provide a simple card listing the frequencies of major radio stations for different types of programming – modern/classic rock, jazz, classical, talk, news – so guests don't have to tediously scan the whole spectrum trying to find something they like? Thank you, Hilton, for making a move toward this.

>> Enough light to actually work, read, shave or apply makeup without eye strain, and to read the controls on the high-end entertainment equipment you installed.

>> A nightlight (even a simple dimmer switch) so you can find the bathroom without blinding yourself.

>> Working irons/ironing boards. Having an iron leak dirty water onto your only white shirt at 1:00 a.m. as you're trying to prepare for an 8:00 a.m. meeting isn't likely to endear you to the hotel.

THE PACE OF CHANGE IN CONSUMER TECHNOLOGY MEANS THAT IT'S HARD TO KEEP UP WITH NEW GUEST PRIORITIES. YOU CAN'T ESCAPE THE INEXORABLE DEMAND FOR MORE, BUT INVESTING IN IP NETWORKS AND GREATER SYSTEM INTEGRATION WILL GIVE YOU MAXIMUM FLEXIBILITY WHICHEVER WAY THE ALTERNATIVES PAN OUT.

in house even for existing traffic levels. The increased reliance on and usage of these networks provides a greater justification for outsourcing network management, either to a corporate resource or to a third party provider. These providers ensure high availability through constant monitoring for bottlenecks and potential equipment failures, proper security against intruders, and effective quality of service (QoS) management to give priority to video and voice traffic over the more interruption-tolerant data streams.

HTNG

There's clearly a great deal of overlap between these systems, and it's hard for a property to decide which combination of functions is best served by one set of systems versus another, and which one should have control. As a result, there's a flurry of activity right now to find ways to simplify the system interactions and management, both among ad hoc groups working on common projects (see Hotel 1000 sidebar, page 16) and under the auspices of HTNG (Hotel Technology Next Generation, www.htng.org).

The latter's In-Room Technology workgroup has generated considerable interest and activity. One potential outcome is the development of a separate all-in-one guestroom control unit that hotels could buy independent of a specific vendor and which would coordinate all other systems in the room, ideally with a single remote control. An alternative could be a software architecture that results in one vendor's system box designated as the master for the others. A sub-group is also focused on monitoring future developments, aiming to keep the architecture agreed upon flexible and forward-looking enough to handle new devices and needs as they arise.

The pace of change in consumer technology means that it's hard to keep up with new guest priorities. You can't escape the inexorable demand for more, but investing in IP networks and greater system integration will give you maximum flexibility whichever way the alternatives pan out. And the greater the efficiency, labor savings and higher level of guest service they provide can quickly cover the investment.

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"Hello? Front desk? This is Robert Bennett in room 342. I need a technology timeout."