An Introduction to Hotel Systems

Fundamentals & Glossary

Developed by
American Hotel & Lodging Association’s Technology Committee
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This guide was written by Jon Inge and produced by the Technology Committee of the American Hotel & Lodging Association with a grant from the American Hotel & Lodging Foundation.

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V2
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Design
Drew Banks, Senior Graphic Designer, AH&LA

Disclaimer

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An Introduction to Hotel Systems
INTRODUCTION TO HOTEL SYSTEMS

This primer provides newcomers to the hospitality industry—from owners buying or renovating their first hotel property to new hires on the front desk—an overview of the main types of computer-based systems available in the hospitality marketplace. It describes the various operational areas each system covers, their main functions, and how they interact with each other.

Please keep in mind that this is intended as a general overview only. Many vendors’ products perform more functions and manage greater levels of detail than are described below, but all should cover the operational areas listed at a minimum. Other systems are available that cover more specialized functions than the general-purpose areas addressed here. Selection of any system or set of systems will be heavily dependent on each property’s particular market position, operational characteristics, and preferences.

Overview

Despite the increasing number of functions being built into modern hospitality applications, no one system is likely to cover all areas you need to manage. At a minimum, you will need a Property Management System (PMS) and an accounting system; if you have a bar or restaurant you’ll also need a Point of Sale (POS) system. For operations with several function rooms and strong group meeting or wedding/banquet business, a Sales and Catering (S&C) system is essential. Those with extensive food and beverage operations will also gain much from the cost controls provided by an Inventory/Purchasing system.

Apart from these, there are a host of sub-systems that manage such functions as telephone call accounting and charging, voice mail, electronic door locks for the guestrooms, energy management, pay-per-view movies, minibars, bookings for spa/tennis/golf, and so on. These systems are produced primarily by specialists (not the main PMS vendor) and interact with the PMS through interfaces of varying degrees of complexity and capability.

Getting the best out of these multiple systems at one location depends, to a large degree, on the ease and extent of data exchanges between them.
The telephone switch (PBX) and all issues surrounding call routing and communications in general fall outside the scope of this document.

**Acquiring Systems**

The hospitality market offers systems from an amazing variety of vendors, some specializing in a particular operational area and others covering a broader range. The familiar argument applies here, as anywhere else, between:

- buying all your systems from a single source because they’re likely to work better together, reducing the challenges of dealing with multiple vendors; and

- buying individual systems from specialist vendors to get those with the best level of functionality for each area of your own specific operation, and accepting any resultant interface limitations.

As always, any systems decision must start with a definition of your own property’s characteristics and needs, followed by a review of potential systems to understand how well they can fulfill those specific needs. Some level of compromise is inevitable, and you must know your priorities before looking for solutions so that you can identify the trade-offs. A summary of your requirements sent to the vendors in the form of a Request for Quotation (RFQ) will produce responses in varying levels of detail, which, along with initial price quotations, will let you select a short list of systems for demonstration.

Make sure you go into any demonstration with a checklist of key functions you need to see presented. If possible, give it to the vendors far enough ahead of time for them to be able to incorporate the functions into their presentations. Vendors are skilled at showing their systems in the best possible light and glossing over their weak points, and a checklist will help make sure that you actually see your own priority functions.
General Issues

Two areas to note in any system demonstration are ease of use and user security.

Ease of Use

All systems you select should appear to you to be easy to use; that is, they should be straightforward and obvious in their operation. This is clearly a subjective area, but different vendors take different approaches to meet the same end. It’s important that the system you choose matches your operating style. It must also be fast and simple to use in an objective sense, of course, requiring the minimum of keystrokes and responding rapidly to inputs.

User Security

This is usually set by defining groups of user types—front desk agent, housekeeper, manager, and so on—with a specified list of system functions they are allowed to perform. Individuals allowed to use the system will be assigned to one group, but sometimes may be able to have that group’s profile modified to suit their specific needs. Passwords are used to control access to the system in general and all important user actions are tagged with the date and time of the action and the user’s ID for audit purposes. It’s important to check the security setup to ensure that it can set allowable functions at a fine enough level to suit your needs.

Reports

Another issue common to all hospitality systems is reporting. Most systems offer a wide variety of standard reports, but somehow they never seem to include just the right combination of data for every hotel. It’s important, therefore, to think about the key operational, analysis, and marketing reports that you need to run your property and to see how closely the vendor’s standard offerings match your needs.

If some changes are required, check to see if the vendor includes an ad-hoc report generator that allows you to produce your own reports (especially if you need to combine data from multiple systems into one report) or if the vendor recommends that all custom reporting be done using a third-party
product such as Crystal Reports. The latter has become something of an industry standard, the advantage being that many vendors are accustomed to defining their data dictionaries in a way that end users can use with it.

However, this is never as trivial a task as some vendors like to suggest. Crystal is a powerful tool, but one that requires a good deal of training before a user can be considered proficient with it. If you anticipate using Crystal frequently to generate a range of custom reports, it will be beneficial to identify at least one individual on your staff to specialize in the tool and to invest in professional training in its use.
Overview

The Property Management System, or PMS, has been the central system at the property level for many years. PMS is a misnomer, because it doesn’t actually manage the property in the commercial real estate sense. What it does do is manage every aspect of your guests’ visits while they’re at your property and, more important, everything that affects their folio.

Functionally, therefore, a PMS must:

- allow for the creation of a wide range of room rates, covering different rooms, dates, and company/association discounts;
- track the availability of all guestrooms and rates for at least the next 12 months;
- track the details of each guest’s advance reservation, whether as an individual or as part of a group;
- help select an appropriate room for the guest either on or before arrival;
- check guests in;
- keep an up-to-the-minute record of all the expenses guests charge to their room during their stay, either directly or through an interface to one of the many sub-systems managing other aspects of the property, such as bar/restaurant POS charges;
- accept full or partial payment when guests check out; and
- follow through on any resulting accounts receivable if part of the payment is charged to an outside account, such as the guests’ company.

In support of these functions, a PMS must clearly track the status of each guest room in the property, whether vacant or occupied (and by whom), its housekeeping status (dirty, cleaned, inspected/ready, off-market for
maintenance, etc.) and its physical attributes (number and type of beds, view, balcony, fireplace, etc.). This capability allows the system or front desk agent to select the room that most closely matches the guest's preferences at check-in.

The main data record used in a PMS is the guest profile, which contains their name, address(es), phone number(s), and basic categorization codes such as their VIP status. Associated with that profile are any number of separate stay records containing all the details of each individual visit they've made to the property; these are sometimes referred to as “reservation” records, even though the guest may have arrived without a prior booking. Each stay record will contain the dates of the visit, the rate paid, the room occupied, stay-specific categorization codes (source of business, group code if appropriate, travel agency, etc.), and either a total or the full detail of all folio charges during the stay (date, time, department, amount, reference, posting clerk, etc.).

Grouping records this way allows you to see the total range of a guest’s interaction with your property quickly, including past visits and future reservations. These records may also include notes of the guest’s individual preferences, both personal (“prefers Wall Street Journal each morning”) and property-dependent (“prefers ocean view”).

Clearly, this guest history information can be valuable in preparing for important guests’ future visits, but it’s practically impossible to track full details for every guest. Maintaining its accuracy can be labor-intensive, another reason for being selective. Maintaining accuracy includes regular checking to identify and merge duplicate records (despite the best intentions of software designers and users, the same guest will inevitably end up in the database under slightly different names or addresses from time to time).

In a multi-property chain environment, it is more common for this information to be transferred to a central database containing all guest history records. This provides a more complete view of the guest’s interaction with the chain overall and lets each property check whether an arriving guest has stayed at other properties in the group. However, it does add to the complexity of maintaining the accuracy of the information.
Main Functions Covered

Reservations

1. Establish and display the availability of different room rates for different room types, dates, and guest types, including specific rates negotiated for individual groups and companies.

2. Allow manual setting of length-of-stay restrictions as required during peak occupancy periods.

3. Take bookings for individuals and groups, preferably checking guest history records automatically to see whether they've stayed at the property before and allowing a hotel-set level of overbooking.

4. Block specific room numbers for guests, when appropriate (VIP, specific request from the guest, etc.).

5. Accommodate requests to share rooms. Guests should be able to be from different market segments, on different package plans, and have different arrival and departure dates. The only thing they need to have in common is at least one overlapping night of their stay. The system should also prompt the user to adjust the room rate among the guests on overlapping days.

6. Create group bookings with differing numbers of different room types blocked on each night, with the rapid entry of names (including shares) from a rooming list.

7. Send confirmations as required, preferably by fax or e-mail, as well as printed for regular mail.

8. Set up multiple folios for any guest, with the system posting charges automatically to the appropriate folio (this capability is usually used to handle cases where a guest's company will reimburse only room and tax, with all other charges being paid by the guest).

9. Create package plans consisting of various combinations of room rates, meal charges, and fees for other services (parking, spa, etc.)
bundled into a single charge, with full flexibility as to whether the charge is posted to the guest's folio on the first, last, or each night, and to allocate the revenue appropriately to each department.

10. Allow for service charges and various federal, state, and city taxes to be applied automatically to appropriate charges, tracking all guests and groups that are tax-exempt.

11. Track at least one travel agent for each reservation, and report on the commission payable after check-out.

12. Record the payment of advance deposits, apply them to the correct guest records, or track their return/forfeiture in the event of cancellation, in accordance with hotel policy.

Check-In

1. Retrieve the guest's reservation, preferably by swiping his/her credit card through a magnetic-card reader on the workstation.

2. Present a list of available rooms that match the guest's requirements from which the front desk agent can select (or automatically select the first one) and check in the guest, overriding a room's housekeeping status manually if necessary.

3. Provide for the one-step check-in of groups after verifying guest names, room types, and sharing arrangements.

Charge Posting

1. Allow cashiers to post charges for multiple departments directly to guest folios.

2. Allow for the automatic posting of charges to guest folios from sub-systems such as POS, call accounting, and so on.

3. Transfer charges from one folio to another.

4. Allow corrections to the current day's postings and adjustments to those from previous days. Corrections may be kept on the folio record for display on the workstation, but are not printed on the folio.
5. Keep an audit of all postings and changes to them.

6. Track credit limits for each guest and report when a limit is exceeded. If a credit card authorization interface is used, it should automatically dial out for increased authorization amounts as necessary.

Check-Out

1. Post credits to the guests’ folio(s) in the form of cash, checks, credit card payments, or transfers to other folios, both for in-house guests and for authorized direct-billing accounts.

2. Provide for a simple, one-step check-out process for groups, after appropriate action on any outstanding folio balances.

End-of-Day

1. Run a series of reports to help the night audit staff close out the day’s operations, including cashiers’ shift balances, room rate discrepancies from rack rate, over-credit guests, and so on.

2. Run a full data back-up for the day’s operations.

3. Change the accounting date in the system.

   1. Set all occupied rooms to a housekeeping status of “dirty.”

   2. Run various sets of standard operations reports for distribution to the managers.

Accounts Receivable

1. Track and age all outstanding City Ledger charges. (Note on terminology: PMSs track all guest charges on folios, most of which will be settled by the guest while at the property. However, some will be settled after check-out by someone outside, that is “in the city” as opposed to “in house.” Hence, “City Ledger” is commonly used to describe accounts receivable.)

2. Generate statements as required, including various levels of reminder/dunning notices.
3. Post partial, complete, and unallocated payments received against the accounts.

4. Post finance charges as required by hotel policy.

Housekeeping

1. Automatically set the status of all occupied rooms to “dirty” each night.

2. Allow the grouping of dirty rooms into housekeeping sections and assign them to specific attendants and supervisors, using different levels of cleaning difficulty for different room types.

3. Update each room’s status as cleaning progresses, either manually on a PMS workstation or automatically through the attendants’ dialing into the system from the guestroom phone.

4. Track discrepancies between each room’s occupancy status as recorded by the front desk and as reported by housekeeping, to identify possible “skips” (i.e., should be occupied, housekeeping reports it as vacant) or “sleeps” (i.e., should be vacant, reported as occupied).

5. Change any room’s status to “out of order” to allow for correction of engineering or maintenance issues, preferably also issuing engineering work orders.

PBX Operators

1. Provide instant access to the guest list for the current day, including arrivals and guests already checked out.

2. Provide on-demand access to the guest list for any other future or past date.

3. Take messages for guests and track their delivery.
**Interfaces With Other Systems**

Whether to automate the room-charge posting from the many other systems at the property or to increase the effectiveness of the staff using different systems, every PMS needs a range of interfaces. The following list includes most of the common interfaces and a brief summary of their purpose. As more PMSs begin to include some of the major functions traditionally handled by specialist systems (such as S&C and POS), the number of interfaces will be reduced but, as you will gather from the size of this list, will probably never be eliminated.

**Central Reservations System (CRS)**

One-way: Receives guest bookings made through the airlines/travel agencies or through the hotel chains’ own centralized booking office. Bookings are merged automatically into the PMS reservations module, with certain exceptions (e.g., requests for suites) held for manual review.

Two-way: In addition to receiving bookings, automatically adjusts the room and rate inventory held in the CRS for the property to reflect changes in the PMS. For chains that collect centralized guest history data from each property, this interface also transmits stay details for the guest to the central system upon check-out.

**Internet**

Increasingly common, this interface allows visitors to the property's own Web site to book reservations directly in the PMS. The PMS should allow the property to restrict the room and rate types made available to this channel. More sophisticated versions allow group coordinators to access the PMS through the Web site to manage their own group bookings, enter rooming lists, and so on, and allow individuals to enter a group or corporate code to book at the negotiated rates.

**Sales and Catering**

Passes PMS guestroom availability to the S&C system to give the sales managers a complete picture of property availability, including function rooms and guestrooms. Receives details of group blocks made in the S&C system to establish a group master and folio in the PMS.
Point of Sale
Receives and responds to requests from the POS system to display the guest names registered in a specific guestroom, then accepts the POS charge against the selected guest’s folio. The trend is to pass increasing levels of POS check data to the PMS (originally four sub-totals—food, beverage, tax, and tip— but now often as many as sixteen) to reduce the number of POS charges disputed at check-out. A few high-level PMS/POS interfaces have been developed, which allow the PMS to

- retrieve full details of the POS check from the guest’s PMS folio;
- recognize when a POS check has been opened for a particular guest in a food and beverage (F&B) outlet and set a corresponding location flag on the PBX operator’s guest list;
- alert the POS cashier that the guest settling his or her check has a message entered in the PMS; and even
- let the guest check out of the PMS from a POS terminal, for example, after breakfast.

Some interfaces also pass revenue sub-totals for all POS settlement types (not just room charges) to the PMS at end of day, which can make it easier to prepare the nightly operational “flash” report.

Credit Card
At check-in, automatically dials out to verify the validity of the card and authorize appropriate funds for the guest’s stay, usually calculated as the total room charge for the number of days plus a hotel-set level of incidental expenditure per day. During the guest’s stay, if the guest’s PMS credit limit is exceeded, automatically dials out during the end-of-day procedures to increase the authorized amount. At check-out, dials out to collect the funds due and, at end of day, processes the transaction batch. Originally it was necessary to have one credit card interface for each system needing to handle this payment type (e.g., PMS, POS, spa bookings, etc.), but increasingly vendors are combining all requests through a single connection.
Revenue Management
Constantly passes current levels of reservations booking activity in the PMS to a separate revenue management system. This system then analyzes it against pre-set goals and historical trends, and suggests changes in the PMS rates and length-of-stay restrictions that could be made to meet goals more effectively.

Back Office Accounting
Because accounts receivable (City Ledger) is almost invariably part of the PMS, this interface typically transfers a journal reflecting end-of-day operational totals to the general ledger.

PBX (telephone switch)
Unblocks the guestroom phone for long-distance calls upon check-in and blocks it again at check-out. Sends signals to the PBX to turn on a lamp on the guestroom phone when a message is left for a guest and to turn it off again when the message has been delivered. Receives codes dialed into the PBX by housekeeping staff from the guestroom to update the room’s cleaning status.

Call Accounting
Receives phone call charges from a call accounting system attached to the PBX and posts them to the guest’s folio, with details of the phone number called. Because there is no way of knowing which guest registered in the room made the call, the charge is posted to the prime folio of the first guest in the room.

Voice Mail
Sometimes combined with the PBX interface, creates a new voice mail box when a guest checks in and clears it at check-out. Receives a signal when a message is left in the voice mail box to turn on the message-waiting flag in the PMS, and clears it when the guest retrieves the message. This alerts the front desk cashier to the presence of any messages still in the guest’s mailbox at check-out.
Pay-per-View Movies

One-way: Receives charges from the pay-per-view (PPV) movie management system to post to the guests folio.

Two-way: Receives and responds to requests from the PPV system to display the guest’s folio on the guestroom TV, and processes folio settlement and guest check-out actions entered into the PPV system by the guest.

Mini-Bar

Receives charges from the mini-bar control system and posts them to the guest’s folio. As with the call accounting interface, the charge will be posted to the prime folio of the first guest registered in the room.

Energy Management Systems (EMS)

Sends a message to the EMS at check-in to change the guestroom thermostat to its pre-defined “occupied” setting and at check-out to set it back to the “vacant” setting.

Electronic Door Locks

At check-in, sends the room number and number of keys required to the lock key generator. If more than one generator is in use, receives a message from the lock system to tell the agent which unit to use.
Overview
To control the number of rooms sold at discounted rates, properties usually allocate a certain number of guestrooms for sale to groups (usually defined as any booking for 10 or more guestrooms) and corporations, leaving the remainder to be sold through the reservations office. The Sales and Catering (S&C) system handles the property's group sales efforts, as well as the booking of function rooms for meetings, banquets, weddings, conferences, and other events.

S&C systems have traditionally been stand-alone, relying on the front office staff to enter changes in guestroom availability either manually or through a PMS interface. Often, the final invoice for a banquet function is generated in the PMS as part of the group folio. Recently, the capabilities of these interfaces have been increasing, as more PMS vendors incorporate S&C functions into their base product. Both approaches aim to provide a more complete picture of group bookings than the separate systems do.

Main Functions Covered

Group Sales

1. Create group/company master records, similar to guest profile records but also including links between companies (to allow simple consolidation of booking information across a parent company’s multiple divisions) and multiple contacts per group/company.

2. Contact management, including assignment of contacts to sales managers, tracking all interactions with each contact with follow-up “tickler” reminders. Ticklers should preferably be both free-form and available in pre-defined sequences of actions, depending on the type of business being booked.

3. Display availability of function rooms and guestrooms, showing for the latter both the number set aside for group business and the total available in the hotel for each day.
4. Create and track group bookings on both a tentative and definite basis, each booking set at a specified group rate, and for specified function rooms and blocks of guestrooms, all of which can vary by day.

5. Allow the entry of a “wash” percentage, which will adjust the contracted number of rooms/guests to an “expected” level based on prior experience with this group/company or type of business.

Function Rooms

1. Create function room records defining their size, capacity in various configurations (ballroom, conference, schoolroom, rounds of 8/10, etc.), and ability to be sub-divided through movable walls. Preferably incorporate photos (either still or panoramic) of each room in typical configurations.

2. Display availability of function rooms graphically, showing the period each is booked and for which client.

3. Create and track room bookings, allowing for the unavailability of sub-dividable spaces if one such division is booked, and including flags to indicate noisy events and “do not move” requests if a specific room is needed.

4. Allow for the simple relocation of an event from one room to another. Create pick-lists of standard-priced menus that can be used as the basis for any event’s F&B needs.

5. Manage lists of audio-visual and other equipment and furniture available for rent.

6. Create event contracts for client signature, and banquet event orders (BEOs) that list all details of each event on each day. The latter should include the room(s) booked by date and time, set-up configurations required, all menus, audio-visual equipment, and any other special items, with prices.
Interfaces

The S&C system commonly uses one of the following three interfaces.

**Property Management System**

Receives guestroom availability from the PMS system to give the sales managers a complete picture of property availability, including both function rooms and guestrooms. Sends details of group blocks made in the S&C system to establish a group master and folio in the PMS.

**Room Layout Drawing System**

Sends details of an individual event (number of guests, set-up configuration, furniture required, etc.) to a separate software package, which then generates a drawing of the room with all appropriate furniture and equipment in place.

**Event/Meeting Announcement Boards**

Sends details of all events taking place on the current day to display systems (TV-based or custom display panels) in appropriate locations in the public areas and/or outside the meeting rooms.
POINT OF SALE SYSTEMS

Overview
The POS system is as much the core system for F&B operations as the PMS is for lodging operations, managing the ordering and delivery of all menu items in one or more restaurants and/or bars. As such, it must be capable of handling different menus and different pricing at different times of day.

Orders are entered on the system's workstations in the main seating area and are automatically routed to printers in the hot or cold preparation areas or in the service bar, as appropriate. Several systems allow all items on an order to be entered at once, with some, usually the main course, held back to be printed and prepared at a later time to suit the pace of the guests' meal. Guest checks are printed on demand.

Most systems can track the hours employees work through simple sign-on/sign-off routines; several also offer inventory/purchasing functions and recipe analysis. However, more specialized time and attendance and inventory/purchasing systems are commonly used in these areas.

Main Functions Covered
Order Entry
1. Create menu items that can be sold at different prices at different times in different outlets (restaurant, cafeteria, bar, room service, etc.).

2. Create modifiers that can or must be applied to individual menu items.

3. Allow menu items to be grouped together into combinations with a single price.

4. Define a default kitchen/bar printer where orders for each menu item will be routed, plus a secondary printer in case the first is unavailable.
4. Allow some ordered items to be held back for printing in the kitchen at a later time, either automatically after a pre-determined interval or manually when the server judges that the timing is right.

5. Maintain and display to all servers a current total of significant menu items in short supply, such as daily specials, counting down the number available as they are ordered.

6. Provide for the simple, rapid entry of quick-service items such as coffee or bar drinks.

7. Provide a simple way of re-ordering a round of drinks.

8. Allow for the ordering of off-menu items, with preparation instructions.

Settlement

1. Allow for the straightforward splitting of charges on a check among the guests at a table, including dividing the cost of individual items or the whole check between two or more guests, in varying proportions.

2. Allow checks to be transferred from one server to another.

3. Combine checks for different tables and/or servers.

4. Automatically add a pre-set gratuity percentage and/or service fee for parties exceeding a certain size or for deliveries such as room service.

5. Provide full reporting of tips.

6. Record the settlement of checks to cash, check, charge card, and to a guest's room folio.

7. Track all check item voids, corrections, and adjustments.

8. Provide a full set of operating reports, including cashiers’ shift balances, menu item popularity/profitability, server productivity, and so on.
Interface

POS systems, especially those with reasonably full-featured time-keeping and inventory/purchasing functions, are quite often operated in a stand-alone environment. The more common interfaces are as follows.

Property Management System

Sends requests to the PMS to display the guest names registered in a specific guestroom, displays the returned list, allows selection of the correct guest, and sends the POS charge for posting against the guest’s folio. Increasing levels of POS check data are now being sent with the charge to the PMS (originally four sub-totals—food, beverage, tax, and tip—but now often sixteen) to reduce the number of POS charges disputed at check-out. A few high-level PMS/POS interfaces have been developed, which allow the PMS to

- retrieve full details of the POS check from the guest’s PMS folio;
- recognize when a POS check has been opened for a particular guest in an F&B outlet and set a corresponding location flag on the PBX operator’s guest list;
- alert the POS cashier that the guest settling his or her check has a message entered in the PMS; and even
- let the guest check out of the PMS from a POS terminal, for example, after breakfast.

Some interfaces also pass revenue sub-totals for all POS settlement types (not just room charges) to the PMS at end of day, which can make it easier to prepare the nightly operational “flash” report.

Inventory/Purchasing (IP) System

Sends details of menu items sold to the IP system, which breaks down the items into their standard ingredient quantities and notes, in decrements, the theoretical inventory levels on hand. Sometimes also receives current ingredient costs from the purchasing system to allow for checks against the POS menu prices.
ACCOUNTING SYSTEMS

Overview
At the property level, this is usually restricted to general ledger and accounts payable functions. Because accounts receivable is almost always incorporated into the PMS, Payroll is most often contracted out to a service company, although some properties do include it within their accounting functions. Fixed asset accounting is rarely implemented at the property level.

These are among the most mainstream systems used in the hospitality world, with few, if any, specific changes from standard accounting products. Many properties use general packages (ranging from QuickBooks to AccPac and Great Plains to SAP) either in house or, more commonly, in multi-property groups on a central server accessed remotely by users at the properties.

Main Functions Covered

General Ledger
1. Create a chart of accounts according to standard hospitality accounting practices and guidelines.
2. Handle 12 or 13-period accounting years, according to the property’s preference.
3. Permit full individual and batch posting transactions and adjustments, with audit trail.
4. Maintain transaction details, including audit trails, for at least a full fiscal year.
5. Facilitate the creation and tracking of budgets and forecasts.

Accounts Payable
1. Create and maintain full vendor records.
2. Schedule recurring payables such as leases.
3. Permit partial or full payment of individual invoices, with manual or batch production of checks.

4. Reconcile checks against bank statements, preferably automatically through an on-line connection to the bank.

5. Produce cash flow projections and monthly purchaser journals.

6. Allow for the simple creation of “one-time” vendors.

7. Produce 1099 forms, as appropriate.

**Interfaces**

Apart from data exchange between the general ledger and accounts payable modules, which is usually an inherent part of the system, accounting interfaces are usually limited to the following.

**Property Management System**

Receives a flat file transfer of daily revenue and receivables data as a journal entry for review before posting.

**Inventory/Purchasing Systems**

Receives and responds to requests for vendor information as purchase orders and invoices are handled within the IP system. Receives individual and batch invoice data for posting.
INVENTORY/PURCHASING SYSTEMS

Overview

Although useful to many different types of properties, these systems are most often implemented at properties with a substantial F&B operation. The ordering of non-F&B ("general") items is infrequent and, therefore, harder to justify for automation.

Many F&B vendors offer properties access to their own centralized ordering systems. While this option has system cost and convenience advantages where a single-vendor purchasing policy is in use, more complex operations will find it too restrictive.

Inventory systems maintain a perpetual count of all items in all storerooms, automatically reduced as items are requisitioned and issued for use, and automatically increased as shipments are received and recorded against purchase orders. Some systems include menu analysis modules that will adjust the cost of prepared menu items based on the latest (or averaged) cost of ingredients.

Purchasing systems aggregate requisitions from various departments for supplies from different vendors and consolidate them into purchase orders for review and action as needed. These systems also draft purchase orders automatically when individual item stock inventory falls below pre-determined re-order levels.

While these systems are labor-saving in terms of creating orders, receiving shipments, and managing inventory, care is needed to avoid trying to manage too much inventory and cost detail, especially in the area of menu analysis. It’s usually more cost-effective to run all purchase orders through the system to keep an overall eye on F&B costs and ratios, and to focus on tracking specific costs and inventory levels only for the more expensive items (steaks, salmon, rare cognac, etc.).
Main Functions Covered

Inventory
1. Create records for all stock items, including vendor(s), most recent costs, bids for future shipments, storeroom location(s), units of measure and conversion ratios (shipping, storeroom, issuing, and recipe units are often different), and re-order stock levels.

2. Create recipe items based on various combinations of stock items and other recipes.

3. Maintain item and recipe costs based on LIFO, FIFO, and average-cost calculations.

4. Create requisitions to transfer items from the storeroom(s) to the kitchen(s) or end-user departments, holding for consolidation and manager’s approval as appropriate, and record the issue of items against these requisitions.

5. Produce count sheets to aid in periodic physical inventory checks, which preferably are aided by bar-code scanners recording the actual shelf counts.

Purchasing
1. Maintain vendor master records either in stand-alone mode or in conjunction with an accounts payable system.

2. Create draft purchase orders based on direct user input and on automatic generation from stock items quantities falling below re-order levels.

3. Consolidate purchase orders from different departments for items from different vendors, and issue to vendors, if necessary, after manager-level approval.

4. Receive full and partial shipments against purchase orders, preferably using bar-code scanners to record deliveries, and taking into account price, quantity, and prompt-payment discounts.
5. Assign received items to storerooms or direct-issue them to departments, as appropriate.

6. Pass invoice details to accounts payable for action.

**Interfaces**
The I/P system commonly uses the following two interfaces.

**Point of Sale Systems**
Receives details of menu items sold in the POS system to adjust theoretical stock levels of the various ingredient items sold. Sometimes also sends current ingredient costs to allow for checks against the POS menu prices.

**Accounting Systems**
Requests and receives vendor information as purchase orders and invoices are handled. Sends individual and batch invoice data for posting.
VOICE MAIL/CALL ACCOUNTING

Overview
Telephone systems and telecommunications, in general, fall outside the scope of this document. However, two related sub-systems are often considered part of the property management configuration: voice mail and call accounting.

Voice mail systems, often offered as part of a PBX package, open a mailbox to receive messages for guests during their stay at a property. Call accounting systems price telephone calls by taking the number called and the duration of the call, applying a pricing algorithm to it per hotel-set parameters, and sending it to the PMS for posting to the guest's folio.

Main Functions Covered

Voice Mail
1. Open a mailbox as each new guest checks in, and close it when they check out. Note that in a shared room the mailbox is open from the time the first guest checks in to a room until the last one checks out; there will only be one mailbox per guestroom unless (as for suites) there are multiple phone extensions applied to that room. Since the systems have no way of identifying which guest in a shared room made a particular call, charges are posted to the first folio of the first guest listed for the room.

2. Allow the guest to record a personalized greeting for the mailbox.

3. Interact with the PBX and PMS to ensure that message-waiting indicators are illuminated both on the guestroom phone and in the PMS guest record when either a voice mail or a written message in the PMS remain undelivered.

Call Accounting
1. Allow for the creation of hotel-defined pricing algorithms for all calls, and default charges to be applied to calls made to unrecognized area codes. Accept call log details from the PBX.
2. Apply pricing algorithms to each call record and transmit to the PMS for posting.

3. Print all such call charge postings on a printer directly attached to the system, as back-up should the interface fail.

4. Allow for the regular updating of its area-code database as new codes are issued for use.

5. Provide detailed call logs for administration phone extensions for general management review.

**Interfaces**

As described above, voice mail packages often communicate with the PMS over the same interface as the PBX, especially if they come from the same vendor. Call accounting systems usually have their own interface.
GUESTROOM-FOCUSED SYSTEMS

A range of products and systems are offered for guestroom environments, with varying degrees of interaction with each other and with the PMS. Because of their more limited application, they are each described more informally below.

Energy Management

Modern thermostats combined with occupancy sensors (infrared or movement-detecting) and sensor switches on the guestroom doors can change the heating and air conditioning settings for a guestroom between “occupied” and more energy-saving “vacant” levels. Some systems also use an intermediate level for a room that has been rented but is currently unoccupied, to avoid too large a temperature difference when the guest returns to the room.

The change in settings is triggered by the PMS sending a message that a guest has just checked in to the room or that the last guest registered in the room has just checked out. Some systems also use the same occupancy-sensing logic to set “do-not-disturb” indicators for service staff, such as housekeeping attendants and mini-bar restockers. They can also pass that information to a guest-in-room panel at the front desk, which can be useful in emergencies (such as a fire) when it is vital to know the guests’ locations.

Electronic Guestroom Door Locks

Almost universal now, these systems generate keys for the guestroom door locks, usually programmed to open the door between specified times on the day of arrival through the expected day of departure. If the guest extends his/her stay, the card can be re-programmed to extend its validity, or a new card can be issued. The cards can also be programmed to let the guest in to limited-access areas of the hotel, such as executive floors, spas, and garages.
Pay-per-View Movies/Digital Entertainment

Originally providing only movies from racks of VCRs, programmed to play at scheduled times, these systems are moving to more flexible service, both with on-demand playing of currently-available movies in the rack and, with digital servers instead of VCRs, of any movie at the property. They are also extending services to include pay-per-view of archived episodes of premium-channel TV programs, music from a CD library, and paid access to the Internet through the TV. Charging for movies is usually on a per-movie basis, but it is moving to a more flexible 24-hour service model.

Because these systems are provided free to the hotel on a revenue-sharing basis, the vendors reserve the right not to provide them to properties that are unlikely to generate enough traffic to cover costs. This usually excludes them from properties with less than 120 rooms.

Most systems offer interfaces to PMSs to let guests display their folios on the TV, review charges, authorize payment, and check out. Because the ability to detect which TV requested a folio is available only through a pay-per-view movie system, properties that do not qualify for the movie service do not currently have a viable way to offer in-room folio review and check-out.

Mini-Bars

Most guestroom mini-bar systems are provided in a stand-alone mode, operated on the honor system and with guest usage monitored daily by restocking staff. Some systems are available in a connected mode, where items removed from the bar are automatically and immediately charged to the guest folio through a PMS interface. The latter are more costly but can be managed more effectively, because the restocking staff know in advance which mini-bars have been opened by the guests and what items have been taken.
Guestroom Safes
Most in-room safes are stand-alone units, relying on guests to enter a numeric password or swipe a credit card through the lock to control access. A few systems provide a connected mode, where it is possible for the front desk staff to check whether the safe is still locked (and therefore may still contain valuables) when the guest is checking out.

High-Speed Internet Access (HSIA)
In addition to the service provided through the pay-per-view movie system vendors, many properties offer HSIA wired directly into the guestroom. Sometimes this is provided at no charge as an amenity; in other installations, a charge is made for each 24 hours of use. The choice is largely based on the property's guest mix and local demand for access; a city-center business-oriented property might well attract more guests by offering free Internet access, whereas a resort wouldn't see the same benefit. Both HSIA types require an access server to issue temporary Internet addresses to the users' PCs. The charged systems also require detection facilities to identify which room is using the service and to post a charge to the guest folio.

Note: There is increasing interaction among these various guestroom-focused systems, and it is advisable to consider all services likely to be offered at one time (including the telephone system) to take advantage of possible synergies. For example, energy management systems and door locks sometimes communicate over the same infrared links, and mini-bar systems can share the same wiring as pay-per-view movie services, as can connected guestroom safes.
HARDWARE CONFIGURATIONS

The most common hardware configuration for property-based systems is the client-server model. This model uses a powerful file server PC in the computer room to hold the software application and all the data, and communicate with the PC workstations at each user's location over a local area network (LAN). It sometimes seems as if every systems vendor requires a separate server for its products, which can lead to a large number of PCs filling the computer room.

There is some justification for this setup, in that keeping the software applications separate does reduce the chance of one application interfering with another and makes troubleshooting easier. However, sometimes the vendors err on the side of caution, requiring the hotel to spend more money on hardware than is really necessary. Going too far in the other direction and putting as many applications as possible on one server may save hardware costs, but it increases the property's vulnerability to server failure, as all systems would be lost at once.

This is less of a problem than it used to be given today's increasingly failure-resistant server PCs, which often feature redundant disk drives and power supplies. But unless fully-redundant servers are installed, failure will always remain a possibility. It is always worth discussing your own property's actual combination of systems with the vendors before ordering hardware and settling on a reasonable compromise. Typically, at least two servers are required: one for the hotel-specific applications and one for general-purpose software (such as Microsoft Office, anti-virus programs, etc.) and network management.

The other systems configuration which has received a lot of publicity lately is the application service provider (ASP) model, more properly called a remote-server model. In this scenario, the application software is physically located somewhere other than at the property, such as at the vendor's or hotel chain's headquarters or even at a third party's site. The users' workstations at the property are connected to the server over a wide area network (WAN), and the system is paid for on a monthly rental or a per-transaction fee basis.
Much of the recent publicity ASPs have received comes from the emergence of the public Internet as an inexpensive way to implement this configuration, but ASPs can also be used (and with greater guarantees of security and performance) over dedicated private networks.

The benefit to the property (apart from the attraction of transaction-based pricing) is the removal of worries about server reliability, data back-ups, and software upgrades, since the ASP vendor takes care of them. The trade-offs are the long-range cost of using the system (transaction-based costs work out about the same as lease payments, but they don’t stop), and the vulnerability of the operation to the loss of the network connection. It’s an analysis all potential ASP users have to work out for themselves.

Interface Connections

One other systems hardware issue worth mentioning is the equipment used to implement the interfaces that link the sub-systems with the PMS and with each other. The basic need is for connecting cables to be run from each application’s file server PC to its interface partner.

Sometimes, in the simplest configuration, the server PCs are fitted with communications boards that can take the interface connections directly. More commonly, a separate device sits between the two servers to handle the interface traffic. To some extent, this configuration off-loads communications traffic from the application servers, helping their performance, but it does mean that more room must be found for the extra hardware.

Some vendors use standard PCs for these interface servers, with various restrictions as to the number of sub-system interfaces (usually from two to eight) that each can handle to preserve good performance. A widely-used alternative is Comtrol’s Lodging Link, a specialized interface communications unit that handles up to eight interfaces. While having the advantages of small size and quick implementation, the Comtrol unit provides interfaces among only the most widely-used system combinations, and potential users must verify that it covers their situation.
Systems Interactions

This is a generic diagram of possible system interactions and various means of passing information between them. Each property should prepare a similar diagram reflecting the actual systems, interactions and data transfer methods in use.

For a larger view of the diagram, please refer to the insert located in the back of this primer.
SUMMARY

Clearly, there are myriad possible ways you can use technology in the management of your property, and the functions described here are only the basics. As mentioned earlier, most systems on the market will offer more capability in either breadth or depth.

The key to successful selection and implementation is self-knowledge; take the time to define your property’s market position and operational characteristics and your own budget. Also, think carefully about your own tolerance for managing technology (are you comfortable managing several vendors and the interfaces among their systems to get best-of-breed systems, or is the simpler single-vendor solution more appealing?) and your interest in using it to maximize operational efficiency. Just because systems are available to automate just about every part of the operation doesn’t mean that you have to install them. Only you can identify the goals you’re trying to achieve and their relative importance.

Focus on the key areas of your own particular operation, and define just where automation would make the most productive sense. Then go about selecting a short list of systems and vendors in a methodical and organized way, not ignoring any new ideas that may emerge during the process but staying focused on just what it is you’re trying to achieve. The right solution is out there.