

HP Digital Hospital Infrastructure

Integrate hospital systems and information on a unified platform







Improve caregiver responsiveness and quality of care

In today's competitive healthcare climate, hospital executives constantly grapple with how to improve service delivery while meeting their budget targets. Among their most successful strategies is finding innovative ways to make hospital processes more efficient, such as integrating hospital systems. When hospital systems are not integrated, exchanging information between systems or between people requires time-consuming manual processes that delay information delivery, increase the risk of errors and raise costs. For example, whether hospitals use paper records or electronic patient records (EPRs), hospital staff need to update them manually every time a patient undergoes a diagnostic test such as an x-ray or MRI. The result: patients move through the hospital faster than the patient-related information that hospital systems generate. As a result, medication history and lab results may not be available to all caregivers, and caregivers risk making decisions based on inaccurate or out-of-date information.



Other inefficiencies in traditional hospitals include:

- Responding to a patient's nurse call request generally takes three trips: one to find out what the patient needs, another to retrieve the item, and a third to bring it to the patient—all while other patients wait.
- Requesting a lab test or a hospital orderly for transport are manual processes that require more walking and result in more delays.
- Submitting dictation to a secretary requires physically transporting the tapes, postponing the time when the information is available for clinical decision-making.
- Even trying to find mobile assets such as wheelchairs or dialysis machines drains staff productivity and can compromise the quality of patient care.

To improve the quality of care and increase productivity without increasing costs, hospitals need a way to integrate their patient information systems, monitoring devices and communications systems. The goal: to create an accurate EPR that reflects the most current information available.

HP Digital Hospital Infrastructure: solution overview

In a digital hospital, systems and people can communicate with each other to make the hospital more responsive, agile and flexible. For example, healthcare professionals can receive messages and alerts on their wireless devices about new lab results, outcomes of radiology exams, patient monitoring information, and more. Up-to-date information improves responsiveness and eases the information bottlenecks that block hospital throughput. In addition, two-way communication between nurse and patient reduces unnecessary walking by nurses, giving them more time to focus on patient care.

HP's Digital Hospital Infrastructure (DHI) integrates hardware, software and services from HP with healthcare solutions from Cisco Systems and CARDIAC. Typically implemented during the design state of new construction or during major building renovations, the HP DHI lays the IT foundation for current and future hospital integration and applications such as EPR, nurse call, patient and asset tracking, and others. Hospitals with an HP DHI create a health service environment characterized by superior quality of care, improved patient safety, and greater productivity for healthcare professionals.

The HP DHI Improves Quality of Care and Staff Productivity

Hospital process	Traditional hospital	Digital hospital
Patient monitoring	Information from different devices is stored separately.	All patient monitoring information is available in the EPR. Monitoring data from a patient on the move can be viewed remotely, from the nursing station.
Nurse call	Nurse must walk to patient room to find out what the patient needs.	Patient can press a button to indicate need (water, pain medication), and the request appears on nurse's PDA or IP phone. System locates and sends a message to the nearest qualified staff, according to hospital rules. Nurse can call back patient if more information is needed. Reduced walking time frees up time for patient care.
Asset location and tracking	Pinpointing the location of moveable assets such as wheelchairs, IV pumps and laptops requires searching hallways and rooms. In many hospitals, at least half of the time spent repairing medical devices is devoted to simply locating the device.	Hospital can instantly locate any asset with a built-in 802.11 transmitter, such as a laptop or PDA, or any asset with an active RFID tag. Staff spends less time locating assets. Quality of patient care improves when patients do not need to wait until equipment can be located.
Hospital orderly	Caregiver submits a request for laboratory tests or transport through internal mail; the lab sends an orderly to pick up the patient after processing the request.	Caregiver can order clinical tests, equipment and transport from any location, using a PC or wireless device. Service staff can view pending service orders from a PC or wireless device and automatically generate invoices.
Trauma or crisis team assembly	A member of the medical staff issues an alarm using an analog system or, in Europe, Digital Enhanced Cordless Telecommunications (DECT). Team members need to find a telephone to confirm they received the call.	Hospital can rapidly assemble a specialist team based on the type of alarm. Hospital can locate and inform nearest qualified staff, and automatically escalate if alerts are not acknowledged. System logs and monitors all alarm activity.
Patient terminal	Patient has limited or outdated bedside entertainment, information and communication.	Patients can enjoy secure, role-based access to entertainment and educational content, including TV, radio and Internet. Hospital can offer limited access to the intranet—for example, to provide treatment information.
Electronic dictation	Tape must be physically delivered to a transcriptionist, delaying information availability.	Physician dictates into personal digital assistant, PC, telephone, cell phone, or IP phone. Recording is delivered over the network to the transcriptionist, who can begin work immediately.



Major business and IT benefits

Reduces operating costs

A digital hospital saves the costs of manually entering information from various devices into the EPR. Replacing manual forms with electronic requests improves the efficiency, effectiveness and productivity of administrators as well as ancillary services such as porter, supplies and hotel services. The HP DHI also enables hospitals to simplify their IT environments by consolidating previously separate voice, data and video networks, and vendor devices. Consolidation reduces IT staffing requirements as well as maintenance and service costs.

Improves responsiveness and quality of care

In a digital hospital, nurses and clinicians can use PCs, patient terminals or wireless communications devices to view medical orders, lab results, radiology exams, real-time monitoring information, and up-to-date EPRs. More complete information helps improve clinical decision-making. During an emergency, the HP DHI can locate and inform the nearest qualified caregiver.

Increases patient satisfaction

Hospitals gain a competitive edge in attracting patients when they provide bedside terminals that patients can use to browse the Web, play games and make phone calls. The hospital can provide different information and entertainment services for different patients—for example, offering games for children—and optionally monetize the services.

Simplifies compliance with documentation requirements

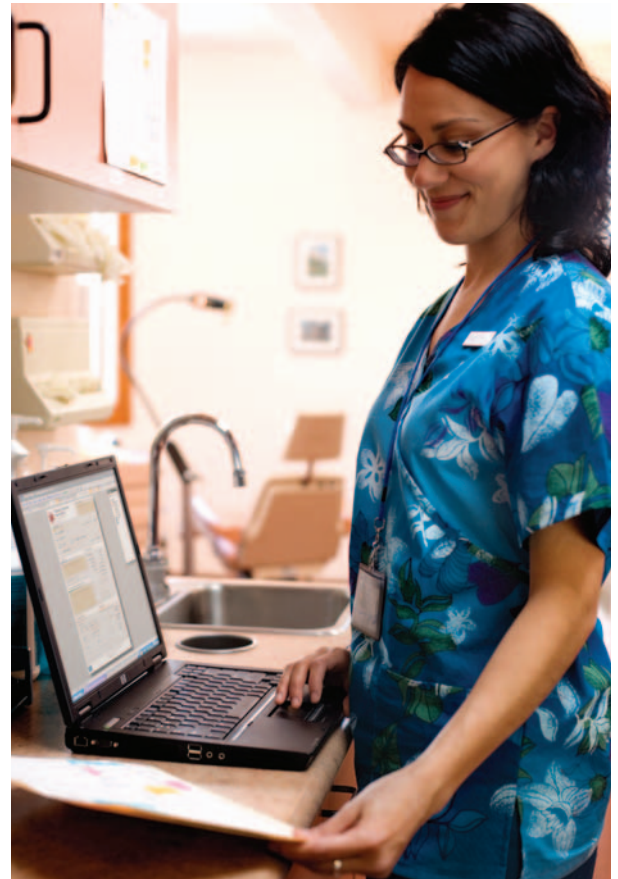
Regulatory agencies require comprehensive documentation of all clinical protocols used during a patient's hospital stay. Manual documentation strains already overburdened staff and introduces the risk of error. The HP DHI automatically inserts patient treatment information from every system into the EPR, creating an accurate, comprehensive record.



Increases staff productivity

The HP DHI improves asset tracking and control, optimizes information flow, supports staff mobility and enables new, more efficient work processes. For example, hospitals can instantly locate moveable assets such as wheelchairs, improving staff productivity and avoiding the costs of replacing lost assets. Two-way communication between nurse and patient reduces the number of times that nurses must walk to patients' rooms, freeing up time to spend on patient care. (According to conservative estimates, nurses typically walk six kilometers during an eight-hour shift.) The ability to submit dictation over the network makes it unnecessary to physically transport tapes to transcriptionists and enables the hospital to hire remote workers. Nurses can request a hospital orderly from a wireless device or bedside terminal, eliminating the time it takes to fill out and submit paper forms and wait for processing.

Hospitals can further increase the potential return on investment on the HP DHI by implementing IP standards-based third-party solutions, such as automatic guided vehicles used to deliver meals and supplies.



Improves the working environment

With qualified healthcare professionals in short supply, employee retention ranks as a top priority for hospital management. The HP DHI helps create a more attractive workplace by making it easier for caregivers to access information and request services. In addition, rather than carrying multiple devices—mobile phone, pager and voice badge—doctors and nurses can use one device, the hand-held Medical Data Assistant (MDA), which acts as both a phone and an end-point for lab results and requests. Consolidating devices simplifies caregivers' jobs, reduces equipment costs and can improve responsiveness.

Helps ensure confidentiality

Hospitals need to comply with regulations governing patient confidentiality, such as the Healthcare Insurance Portability and Accountability Act (HIPAA). HP Services offers the experience and knowledge to design security solutions that protect patient information and limit access to authorized care givers. As implemented by HP, the Cisco Medical-Grade Network provides Self-Defending Network technologies for access control, infection prevention, and protection against theft of information.



Solution components

- *HP Consulting Services:* HP provides all project management expertise necessary to successfully execute the digital hospital strategy on time and on budget. Services include assessment services, solution design, HP OpenView Management Services, HP Network Management Services, HP Mission-Critical Services, HP Application Integration Services and HP Security Services.
- *Cisco Medical-Grade Network:* Implemented by HP, the Cisco Medical-Grade Network is the digital nervous system of a hospital. It is designed to be an exceptionally secure and resilient infrastructure that self-monitors, self-defends, and self-repairs so that critical applications and data remain safe and accessible at all times. It supports Cisco Unified Communications and multiple services for medical applications, including PACS, electronic patient records, and computerized physician order entry. Hospitals around the world are using the Medical-Grade Network to support a range of complex, integrated and mission-critical information flows.
- *HP computing Infrastructure:* HP provides all computing devices needed in a digital hospital, including storage, application servers, and the handheld Medical Data Assistant used by nurses, doctors and patients. Other client devices include PCs, PDAs and tablet PCs.
- *CARDIAC Imatis Integration Platform:* A real-time integration engine and database, the CARDIAC Imatis Integration Platform also provides asset-location tracking, messaging, an enhanced nurse call application and a patient terminal.
- *HP StorageWorks Medical Archive Solution:* The hospital can consolidate all static data and associated information lifecycle management (ILM) services on this tiered, grid-based storage solution.
- *Data acquisition technologies:* The HP DHI collects and consolidates data from various hospital systems by integrating medical devices with the network and enabling staff to enter information electronically using an HP Digital Pen or HP Tablet PC.
- *Messaging and alerts:* The HP DHI can push critical information to staff members who carry wireless devices, including messages and alerts from building systems, information systems, and communication systems.
- *Location-based services and asset tracking:* The HP DHI can track the location of any medical device with a WiFi tag, as well as laptops, PDAs, and wireless IP phones. Asset location is superimposed on a map of the building, saving nurses and biomedical equipment engineers the time they previously spent trying to find items.

Why HP

HP brings together all the products and services needed to build a Digital Hospital, including the Cisco Medical-Grade Network, industry-leading applications for integrating hospital systems and systems integration. HP has proven experience with managing complex IT infrastructures, both in new hospital construction and major renovations. The first Cisco Global Gold Certified Partner, HP provides full lifecycle services for Cisco infrastructure and Cisco Unified Communications.

Working with a single vendor greatly eases the transition to becoming a digital hospital. Hospital managers enjoy a single point of accountability for every aspect of the solution, throughout the entire IT lifecycle. Hospitals also gain the confidence that comes from working with strategic partners, HP and Cisco, that have collaborated successfully in multiple joint healthcare solutions—from R&D through technology integration and services and support.

For more information, contact your Cisco or HP account managers or reseller or visit us at www.hp.com or www.cisco.com.

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