



# THE COMPUTERWORLD HONORS PROGRAM

---

## CASE STUDY

LOCATION:  
*Oklahoma City, Oklahoma,  
United States*

YEAR:  
*2006*

STATUS:  
*Laureate*

CATEGORY:  
*Medicine*

NOMINATING COMPANY:  
*BMC Software Inc.*

### ORGANIZATION:

Oklahoma Heart Hospital

### PROJECT NAME:

Oklahoma Heart Hospital Goes All-Digital

### Summary

With the overarching goal of providing superior medical care and customer satisfaction, the founders of Oklahoma Heart Hospital (OHH) designed the first all-digital hospital in the country. With the implementation of a real-time analysis solution to aid in the monitoring of system performance, OHH has been able to keep the hospital running at peak performance.

### Introductory Overview

When it opened in August 2002, OHH was the first all-digital hospital in the country. Each room in the hospital was equipped with a bedside computer, allowing doctors and nurses access to patient information throughout the hospital, from nurse's stations to medical labs to the emergency rooms. Caregivers have access to information as well, all in the digital form including prescriptions, medical images, allergy records, past procedures, and consultations with doctors.

At OHH, IT is truly the difference between life and death. The mission is to have systems that are always on, always available.

To keep this paperless, all-digital hospital running at peak performance, the IT team needed real-time analysis of system performance. With so many users continually accessing the electronic patient records, there are unlimited opportunities to inadvertently crash the system. Taking the paper out eliminated problems and mistakes. The systems are almost 100% available and everything is quicker and more reliable. They support @220 production servers as well as @750 end device nodes. There are seven to eight systems per room and staff also supports wireless devices, wireless IP phones and computers in the patient's rooms. They also support tunnel nodes and @400 users which includes doctors, nurses and non-clinical staff.

### Benefits

The benefits the system has provided OHH are immeasurable. Patients receive the best, most thorough medical care available because of the system and technology that supports it. Doctors have been relieved of IT challenges, which has led to greater patient satisfaction.



# THE COMPUTERWORLD HONORS PROGRAM

## CASE STUDY

**ORGANIZATION:**

*Oklahoma Heart Hospital*

**PROJECT NAME:**

*Oklahoma Heart Hospital Goes All-Digital*

**LOCATION:**

*Oklahoma City, Oklahoma,  
United States*

**YEAR:**

*2006*

**STATUS:**

*Laureate*

**CATEGORY:**

*Medicine*

**NOMINATING COMPANY:**

*BMC Software Inc.*

For the IT staff, the system consistently shows where resources are underutilized, allowing numerous servers to be consolidated. The solutions have helped to troubleshoot long-standing performance issues in the infrastructure. Overall, the IT staff efficiency has been enhanced, making them more available to help end users.

### The Importance of Technology

Advanced technology, combined with skill and experience, helps OHH provide faster and more accurate diagnosis, treatment and recovery to each patient. Technology is a large part of the hospital's commitment to the prevention, treatment and cure of heart disease.

Without IT, OHH would not have been able to reach the goals it had set out when it opened its doors in 2002. Although the investment in IT was significantly more than what it would have been had they designed the hospital on traditional standards, the technology has allowed them to provide their patients with the medical care and customer satisfaction that is among the country's best.

High-resolution monitors are stationed in patient rooms and physician offices, providing doctors with instant access to diagnostic results from anywhere in the hospital. Doctors can clearly show test results and explain the diagnosis to patients. Nurses can instantly retrieve current patient information, instructions and images from the patient's room. The technology allows nurses immediate access to information and gives them the ability to provide continuous patient care without leaving the patient's room.

In their offices, doctors can review test results and patient status with the remote capabilities, which expedites consultations and ensures the integrity of the data at all times.

However, the team of doctors at OHH, and the patients they care for, do not have the luxury of downtime. With computers and servers handling valuable data on a constant basis, the systems management strategy that OHH has implemented is critical to the hospital's wellbeing.

As part of their strategy, OHH uses PATROL Analytics from BMC Software to prevent system failures and ultimately avoid downtime. PATROL Analytics is self-learning behavioral analysis software that generates real-time thresholds, allowing IT to resolve problems faster, increase system availability, and maximize employee productivity. PATROL Analytics works in conjunction with BMC Software's PATROL Central management console to watch and learn the behavior of systems and then automatically generate thresholds.

A significant piece to OHH's IT puzzle is the Cerner Millennium Health Information System suite. PATROL (now called BMC Performance Manager) and PATROL Analytics have allowed the IT staff to monitor and forecast the behavior of this suite

The software has also helped OHH identify and highlight trends to forecast potential outages and allowed the IT staff to head off issues before they occur. PATROL Analytics sifts through OHH's performance data, looking for hidden trends, relationships, and other items of interest. Over time, it collects performance information about OHH's environment, compiling a "profile" of system and application performance over the course of an average business cycle. This enables OHH to learn the behavior profiles of not only the system, but also the correlated data or the parameters that impact the service.



# THE COMPUTERWORLD HONORS PROGRAM

## CASE STUDY

**ORGANIZATION:**  
*Oklahoma Heart Hospital*

**PROJECT NAME:**  
*Oklahoma Heart Hospital Goes All-Digital*

**LOCATION:**  
*Oklahoma City, Oklahoma,  
United States*

**YEAR:**  
*2006*

**STATUS:**  
*Laureate*

**CATEGORY:**  
*Medicine*

**NOMINATING COMPANY:**  
*BMC Software Inc.*

Without the combination of the two solutions, the IT staff at OHH would be limited to maintaining the system, rather than focusing on the medical staff and most importantly, the patients.

### Originality

The hospital defines originality, having a team dedicated exclusively to preventing and treating cardiovascular disease in the state with the second highest death rate in the nation for heart disease, stroke, and other cardiovascular diseases. It was the first all-digital hospital in the country, and the first dedicated heart hospital in Oklahoma.

The concept was so original that OHH had a work in progress as they went along. Spending more on the IT infrastructure than any hospital had prior, OHH's implementation required consultants who had yet to develop programs for several of the medical devices in the hospital at that time. Many of the protocols they have come up with are now standards in the industry.

### Success

Although each day at OHH brings new successes, the overall patient satisfaction numbers OHH has received since opening in 2002 are most likely the biggest indicators of success. The hospital is in the top 1 percent in the nation for overall patient satisfaction. In August of 2005, they participated in the Hospital Compare program with more than 3,500 other hospitals. OHH was in the top five busiest hospitals that delivered appropriate care 100 percent of the time, performing more than 1,100 heart surgeries this past year.

IT has played a key role in these satisfaction numbers. The systems management solutions, which locates where resources were underutilized, allowed IT to consolidate several SQL and Citrix servers, saving OHH significant equipment and time investment. PATROL Analytics alone has significantly decreased the number of false alarms, while highlighting trends so the IT staff can dissolve issues before they happen. It blocks alarms that are not critical and highlights "out of normal" situations – even if they do not look critical. This allows us the IT staff to focus on proactive issues instead of just reacting to situations.

PATROL Analytics has allowed them to accurately define the resources needed for these systems; they've built their VM environment based on these statistics. This saves them money on maintenance new servers, hardware, electricity, etc. This decreases the alarm numbers because you have fewer systems, making it easier to manage your environment.

### Difficulty

One challenge is that they were putting "all their eggs in one basket", so they had to architect and deliver on redundancy especially adequate failover. Redundancy is key to a paperless environment. Systems have to be extremely reliable since they don't have paper to fall back on.

Another huge hurdle was that being all digital meant every component of their infrastructure needed to communicate. That wasn't available when they were first developing their data center. Some systems couldn't talk to other systems so they needed programmers to develop custom code. These communications protocols are now standards in the industry for paperless environments. They set the standards as they were breaking new ground. Their customers are the



# THE COMPUTERWORLD HONORS PROGRAM

## CASE STUDY

**ORGANIZATION:**

*Oklahoma Heart Hospital*

**PROJECT NAME:**

*Oklahoma Heart Hospital Goes All-Digital*

**LOCATION:**

*Oklahoma City, Oklahoma,  
United States*

**YEAR:**

*2006*

**STATUS:**

*Laureate*

**CATEGORY:**

*Medicine*

**NOMINATING COMPANY:**

*BMC Software Inc.*

patients and revenue is based on people and their satisfaction. Hiccups can be life threatening so availability is a lot more important than in most environments.

Patients fill out customer surveys – IT's marks and gauges are right from the patients. IT looked at the hospital as a hospital whereas patients looked at it more of a hotel or place to live. Based on patient feedback, they tried to make the patients feel as if they were at home. Patients get care baskets for issues that they have – they want them to feel at home and that their issues are of the highest priority. A current project is setting up wireless internet access for all customers, which is difficult as they need a separate system, patients access can not be on the same systems as the hospital data.