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Flaws Wrack Kaiser E-health System

Internal report details hundreds of technical problems

BY LINDA ROSECRANCE

There are major problems with an electronic health system being rolled out by Kaiser Foundation Health Plan Inc. and Kaiser Foundation Hospitals, according to an internal report and IT sources at Kaiser.

The panning of the HealthConnect project reached new heights earlier this month when Kaiser employee

Justen Deal sent a memo companywide that strongly criticized the \$4 billion electronic health system, which is based

on technology from Epic Systems Corp.

Just three days after the Nov. 3 memo was distributed, Kaiser CIO Cliff Dodd resigned. The company declined to say whether the resignation was related to the memo.

Meanwhile, a 722-page report compiled by Kaiser's IT department details hundreds of technical problems

with the system — some affecting patient care — that appear to bear out some of the concerns that Deal and others

have about HealthConnect's reliability and scalability. The report was compiled for senior managers at Kaiser, a spokesman said.

The criticism from Deal and an IT worker at the company who asked not to be named includes a claim that the Health-
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INSIDE
Federal official says national e-health network prototype is due in January.
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OU Provost OKs Firings of IT Managers

Says the two were to blame for series of data breaches

BY TODD R. WEISS

Ohio University's provost last week upheld the August firings of two IT managers in connection with a series of data security breaches, rejecting a recommendation by the school's grievance committee that the workers be rehired and given public apologies.

In letters sent last Wednesday to the two former IT employees, OU Provost Kathy Krendl said she reviewed their terminations and the grievance committee's recommendation and concluded that the firings were justified.

Krendl wrote in the letters to Thomas Reid, who had been director of communi-
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Cultures Clash as IT Takes Control of Research Systems

HPC moving into tech mainstream

BY PATRICK THIBODEAU
TAMPA, FLA.

The rapid expansion of high-performance computing installations within government agencies, universities and the private sector is bringing more of the systems under the con-

trol of IT departments in an effort to improve how they're managed and reduce costs.

But the mainstreaming of HPC technology is causing a culture clash between IT staffers and the researchers who
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FISHING IN THE GLOBAL TALENT POOL



JAY CROTTS, a CIO at Royal Dutch Shell, says his goal is to hire the best IT worker for each job, no matter where in the world that person resides.

Amid cost crunches and skills shortages, some CIOs are testing new ways of hiring IT talent that's located overseas.
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BRIEFS

Opti Charges AMD Infringed on Patents

Chip design company Opti Inc. has filed a lawsuit against Advanced Micro Devices Inc. claiming that AMD has infringed on three of its technology patents. Opti settled out of court in a similar case against Nvidia Corp. earlier this year. The complaint alleges that AMD made and sold processors and core logic products using Opti's predictive snooping technology. AMD could not be reached for comment.

NetApp Buys Topio For \$160M in Cash

Network Appliance Inc. has acquired Topio Inc. for \$160 million in cash. Topio makes the Data Protection Suite of tools, which are used for tasks such as data migration, backup consolidation and data recovery. Topio will be added to the Network Appliance line to help users migrate data from primary non-NetApp storage devices to NetApp devices.

Qualcomm Acquires Management Tools

Qualcomm Inc. has acquired nPhase LLC, a provider of machine-to-machine technology designed to help large businesses manage and monitor dispersed computing devices. Terms of the deal were not disclosed. Qualcomm will continue to offer products and services under the nPhase brand. NPhase was spun off of Professional Consulting Services Inc., an IT consulting firm, in 2003.

Motorola Buys DSL Equipment Maker

Motorola Inc. has agreed to acquire Netopia Inc., a maker of DSL equipment, for \$208 million. Netopia develops wired and wireless modems, routers and gateways that deliver voice, video and data to residential and business customers. Netopia will become part of Motorola's Connected Home Solutions business when the deal is closed early next year.

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IT and HPC

use supercomputing systems and typically have run them on an independent basis.

For instance, Matthew LeGendre, who develops performance measurement tools on a high-performance server cluster for academic research use at the University of Wisconsin, said at last week's SC06 supercomputing conference here that management of HPC systems by IT is an issue of "convenience vs. control."

LeGendre said some of the HPC systems at the Madison-based university are being supported by its IT department, but the help comes with strings attached. For instance, if IT managed the cluster that LeGendre uses, he wouldn't be able to install new operating systems as he sees fit. "It's one reason why we haven't used our IT department to help us [with] support," he said.

Learning to Adapt

But Sharan Kalwani, HPC infrastructure manager at General Motors Corp., said that supercomputing users and IT staffers will have to learn to work together. "HPC, now that it has become mainstream, [should] also start acting like it's mainstream," Kalwani said. He added that the benefits of adopting IT processes in

HPC environments include improved quality, lower costs "and actually more wide acceptance" of the technology within companies.

Goran Pocina, a technical adviser at a large pharmaceuticals maker that he asked not be named, said his company has installed supercomputers at operations worldwide. The systems are managed locally by groups of researchers that don't share applications or processes with one another.

"The cost of maintaining this is tremendous," Pocina said, adding that he thinks the company could improve researcher productivity and cut costs if IT played a role in managing the supercomputers.

But the problem with putting IT managers in charge of HPC systems is figuring out how to apply IT disciplines and measurements "to a research community of users

Global Outlook

2010 spending forecast for high-performance computing systems, by region



SOURCE: IDC, FRAMINGHAM, MASS.

Vendors Hope Turnkey Systems Fit HPC Users

TAMPA, FLA.

FOR MANY USERS, building high-performance computing systems has been largely a do-it-yourself operation. But now HPC vendors are paying more attention to delivering out-of-the-box clusters in an effort to encourage wider adoption, especially among new users.

Longtime HPC users said at the SC06 conference here last week that turnkey systems have always been available but that the increasing use of blade servers and other systems that can be easily integrated by vendors is facilitating the out-of-the-box trend.

Sun Microsystems Inc., Silicon

Graphics Inc. and Linux Network Inc. are among the vendors offering turnkey systems. SGI last week said it will ship an integrated system with four quad-core Xeon processors in a single chassis in next year's first quarter. Linux Network introduced a series of ready-to-run HPC systems tuned for applications such as computational fluid dynamics and crash and impact analysis.

"From a cutting-edge perspective, it's unclear whether or not any in-the-box solutions will maintain speed with the innovations," said Terry McLaren, a program manager for the cyber environments group at the National Center for Supercomputing

HPC, now that it has become mainstream, [should] also start acting like it's mainstream.

SHARAN KALWANI, HPC INFRASTRUCTURE MANAGER, GM

where quality isn't measured by how stable the environment is but on how quickly it can adapt and change," Pocina said.

Many of the people who build and use supercomputers and HPC clusters live in a different world than mainstream IT does, according to Pocina and other SC06 attendees.

Micah Nerren, a consultant at Mach1 Computing LLC in Irvine, Calif., said he often works as a go-between to bring together IT managers and HPC groups that lack the management skills needed to run IT operations and that may not know how best to integrate their machines with business systems. "You have to educate them a bit about how to coexist peacefully . . . and educate IT [about] why this is a unique user," Nerren said.

At SC06, Kalwani conducted a four-hour tutorial intended to give HPC users an idea of what to expect when working with their IT departments. He reviewed IT management basics, such as

return on investment, service-level agreements and portfolio management. Kalwani also tried to prepare users in the audience for the cultural changes that can result from working with IT.

IT managers typically "want the lowest-cost solution, and that's a battle you find starting from Day One," he said. IT officials may also have trouble understanding some of the goals of researchers who use HPC systems, he noted. Many IT managers, "despite the 'T' in IT, surprisingly are not technical," Kalwani warned. "They're almost bureaucratic."

Irving Wladawsky-Berger, vice president of technical strategy and innovation at IBM, said that as HPC installations expand further and supercomputing technologies are increasingly used for commercial applications, corporate CIOs will have to learn more about the systems.

"Traditional CIOs need more of the kinds of skills that before were only found in the HPC world," such as an understanding of the mathematical approaches used in high-performance systems, Wladawsky-Berger said. He added that he thinks visualization capabilities and other functionality used in research settings will increasingly migrate into e-commerce systems and other mainstream applications. ▀

weeks ago in a single day, Smith said. All that had to be added was some networking hookups that weren't ready when it was delivered. Smith's major concern was whether Sun would configure the system exactly as the school wanted it, but he said he visited a Sun facility in Oregon "to assure ourselves that they were going to do a good job."

Hassan Assiri, director of high-performance computing at Seneca College in Toronto, said he expects that turnkey cluster users will have to pay extra for the systems. But, he added, that might make economic sense compared with having to deal with multiple vendors or hire new staffers to do an installation.

- PATRICK THIBODEAU

The system was set up three

E-health Chief Says Prototype of National Network Due in January

BY HEATHER HAVENSTEIN

Robert Kolodner was named interim national coordinator for health information technology at the U.S. Department of Health and Human Services in September. He replaced David Brailer, the first person to hold the post. Kolodner was previously chief health informatics officer at the U.S. Department of Veterans Affairs. In an interview with Computerworld last week, he talked about the state of the federal government's effort to encourage widespread adoption of electronic medical records technology and the development of a Nationwide Health



Q&A

Information Network (NHIN) for sharing health data.

What is the status of the NHIN effort today?

David Brailer and the team laid out a very aggressive agenda. We are nearing the end of the contracts [to develop NHIN prototypes]. We already have collaboration going with the National Committee on Vital and Health Statistics, and they have been looking at some of the [NHIN] functional requirements.

We will be having the demonstrations of prototypes in January. From the prototypes, we will draw a necessary set

of requirements . . . to move us forward to a functioning NHIN in the future.

What do the prototypes look like?

We are still in the process of reviewing those. We're in the process of finalizing the next steps and hope within the next month we'll be able to let everyone know what we're planning on doing.

What are the biggest challenges to President Bush's mandate that all citizens have an electronic medical record by 2014 and that a national network be created for sharing those EMRs?

There are a couple of barriers that form the basis of our activities within the office. A key part has

been the lack of standards for data and technical support for the network. We're in the process of developing and growing those. We also have the process [for adopting] those standards. The [Certification Commission for Healthcare Information Technology] is the means by which we encourage [EMR] vendors to build those standards into their products. Thirty-five products have been certified, and we expect another round before going to next year's criteria.

Does your experience in the VA mean that you won't depend on the private sector to take the lead in the NHIN effort? If you look at all the initiatives we have in

place, they are public-private collaborations and activities. We have very active participation in the effort with the public and private sectors, with the majority being the private sector. The NHIN work is done by contract; it is all done in the private sector.

You were appointed as "interim" coordinator in September. What is your status now? I was detailed at the HHS secretary's request from the VA. The detail is for a few months. I am in the middle of the detail now.

How will regional health information organizations fit into the NHIN plan? That is an emerging model that we see. We expect the activity needs to occur at a local, regional and state level. The NHIN is then an enabler that links across those regional activities and makes sure they are fully interoperable. ▸

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OU Firings

cation network services at OU, and Todd Acheson, the school's former Unix systems manager, that she supported the decision by CIO William Sams to fire the two men on grounds of "nonfeasance" of their duties.

"I must conclude that responsibility for designing and maintaining a secure network resided in your office," Krendl wrote. The finding of nonfeasance "does not indicate any intentional or purposeful wrongdoing," she added. "It does not indicate that you intended to put our data at risk, but in fact, that was the result of failing to take the necessary proactive steps to protect confidential information."

Krendl, who has final authority on worker firings under OU's policies, couldn't be reached for further comment last week. Both Sams and a spokesman for the Athens, Ohio-based school declined to comment on the decision.

Reid said Krendl's decision was "pretty much what I ex-

pected," despite the grievance committee's recommendation that he and Acheson be rehired. "I'm disappointed that Provost Krendl didn't take the time to do the right thing," he said. "But I'm not surprised. [Her] action is consistent with the unethical and unfair treatment by the university of me and Todd Acheson."

Asked if Krendl's decision would end the matter, Reid said he is still evaluating his options, including the possibility of further legal action.

A 'Shameful' Decision

Frederick Gittes, a Columbus, Ohio, attorney representing Acheson, called the decision to uphold the firings both "shameful" and "predictable." "The provost and the other members of the OU administration are prepared to destroy lives in order to cover up their own failures," he said. "This is a kangaroo review. It demeans the process on the [grievance] committee because it doesn't really address their findings."

Krendl's letter to Acheson "provides no information" about how he was responsible

DISMISSALS DISPUTED

“ I must conclude that responsibility for designing and maintaining a secure network resided in your office. ”

OHIO UNIVERSITY PROVOST KATHY KRENDL, IN THE LETTERS SHE SENT TO FORMER IT MANAGERS TODD ACHESON AND THOMAS REID UPHOLDING THEIR FIRINGS

“ I'm disappointed that Provost Krendl didn't take the time to do the right thing. But I'm not surprised. ”

REID, IN REACTION TO KRENDL'S DECISION

for the technical shortcomings in the university's systems, Gittes said. He contended that as CIO, Sams was ultimately responsible for the school's IT security weaknesses.

A total of five security breaches came to light at OU in April, May and June, including a break-in on a server that supported alumni relations. Personal data on about 137,000 people was exposed by the break-in, which went undiscovered for more than a year.

A similar incident on a system at the school's health center may have exposed the Social Security numbers, dates of birth, patient IDs and clinical information of nearly 60,000 people.

Acheson and Reid were suspended from their jobs in June

and then fired. In addition to their internal grievances, a lawsuit has been filed against the university on their behalf in a county court, claiming that a consultant who investigated the breaches didn't save his notes as required by law.

The grievance committee at OU said in a letter dated Oct. 1 that the claims of nonfeasance against Acheson and Reid were unfounded based on the information it had seen. There was "ample evidence," the committee wrote, that both men were fulfilling the security roles listed in their job descriptions and that the university's security problems didn't result from their work.

The grievance panel recommended that Acheson and Reid be given back pay and

benefits and that OU "should make a good-faith effort to find suitable employment" for them. It also criticized Sams — who in July said that he plans to resign from OU once a new CIO is found — for not recognizing and addressing serious problems within the school's IT organization before the security breaches were discovered.

However, Krendl wrote in her letters to Acheson and Reid that responsibility for developing a secure network and protecting sensitive data lies "within the purview of those who oversee and maintain the network. Based on the repeated data breaches, it is clear that we had not designed or implemented the necessary protections." ▸

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Kaiser

Connect system overloads the company's Citrix Application Delivery software and costs far more to run than necessary as a result of various inefficiencies and scalability problems.

In a letter to Deal, Mark Zemelman, a Kaiser attorney, said that rollouts of complex systems like HealthConnect are likely to face various technical problems, "but none that you mention are unknown to [the company's IT unit] nor were as insurmountable as you imply."

Deal, a publication project supervisor in the health education and training department at Kaiser Permanente's Los Angeles facility, was placed on paid administrative leave after sending the memo. Deal is not an IT employee, according to Kaiser.

A Lot to Handle

The Oakland, Calif.-based Kaiser Foundation health maintenance organization claims 8 million members in nine states and the District of Columbia and operates more than 400 hospitals and health care facilities.

When fully implemented, which is expected by 2009, the HealthConnect system is supposed to give more than 100,000 Kaiser physicians and employees instant access to the medical records of some 8.6 million patients. The system now offers e-messaging, computerized order entry and electronic prescribing capabilities. It can also integrate appointment scheduling, registration and billing functions, the health care provider said.

For an implementation the size of the HealthConnect system, Deal contended, "Epic simply cannot scale to meet the needs of Kaiser Permanente. We're wasting billions of dollars trying to make it. The

big issues for me are the financial repercussions of trying to launch such an ineffective and inefficient and unreliable system across the organization."

Deal claimed that Kaiser is wasting more than \$1.5 billion annually running inefficient and ineffective IT projects and that much of that is due to the HealthConnect system.

Kaiser declined to disclose the cost of running HealthConnect, which it started rolling out in 2003. The company said the outpatient portion of the project is expected to be fully implemented in 2008 and the in-patient piece by 2009.

Henry Neidermeier, vice president and quality leader at Kaiser Permanente, acknowledged that "the complexity of the challenge here, with the links in the availability chain, is significant." However, "the dedication of this organization is to quality outputs and sys-

Incident	Priority	Start Date/Time	Resolved Date/Time	Duration	User Impacted Hours	Deployment Impacted	Facility Impacted	Incident Summary
HD0000001529270	Critical	5/10/2006 6:11:02 AM	5/11/2006 7:20:00 PM	37 Hrs 9 Mins	3,714.94	Inland Empire - 25 Metro LA - 23 San Diego - 20 The Valleys - 12 Tri-Central - 20	ZIO- Zion Medical Center	KPHC- CS Multiple facilities - Patients not crossing incorrectly from KPDS to KPHC Pharmacy IP Module.

A 722-page internal report compiled by Kaiser's IT department details hundreds of problems with HealthConnect - some of which affect patient care.

tem availability," he added.

"I do executive reporting, which recounts problems in summary form, and then I do drill-down incident reporting every Monday so that we can actually look at these reports [and] gauge the regional impact of the system," Neidermeier said.

Deal also said that the Citrix scalability issue is significant. "We're the largest Citrix

deployment in the world," he said. "We're using it in a way that's quite different from the way most organizations are using it."

Many companies use the Citrix software to link remote users to applications running on corporate networks, according to Deal. "We use it from inside the network," he said. "For every user who connects to HealthConnect, they connect via Citrix, and we're running into monumental problems scaling the servers."

Bruce Turksta, interim CIO and vice president and program director of HealthConnect at Kaiser, said, "The average Citrix server is managing about 65 sessions per server. They can peak up to 80. It's been designed around the capacity requirements we have."

He also noted that the Citrix software "provides a front end and allows us to run a thin-client environment, so you don't have to load Epic software on the PCs in the hospitals or medical offices."

'Defies Common Sense'

Nonetheless, Deal argued that "using Citrix is something that defies common sense. It would be like trying to use a dial-up modem for thousands of users. It's just not going to work. I don't think that Citrix really appreciates what we're trying to do with their software."

Scott Herren, group vice president and general manager for Citrix Systems Inc.'s virtu-

alization systems group, said any scalability problems in the HealthConnect system do not stem from his company's product.

"In fact, we have many very large, successful Epic deployments around the world. However, in order to support large deployments, the Citrix implementation must be architected accordingly," he said.

"Kaiser has expanded its user base very quickly over the last year, and Citrix is working with them as well as other IT vendors to make sure that their IT infrastructure is 100% ready for that expansion," Herren said.

Deal and the unnamed Kaiser IT employee also noted that the Epic software is written in the aging MUMPS programming language, which was created in the late 1960s for developing software for the health care industry.

In a statement, Epic noted that "every product that Kaiser Permanente originally purchased from Epic is live and is being aggressively rolled out. At peak times, Kaiser Permanente's system is handling 26,500 users, [creating] the largest nongovernmental, patient-centric database in the world."

However, Kaiser workers remain concerned about the future of the HealthConnect system, according to the IT employee. "People in the field are frustrated, and the people in IT are just as frustrated because this was a solution forced upon us and was not an IT solution," the IT employee said. ▀

Selected Problems

According to the internal Kaiser report, problems with the HealthConnect system this year included the following:

- **On March 26**, users in multiple locations were "intermittently unable to access [HealthConnect for three hours and 51 minutes] - receiving Citrix error messages and therefore unable to access any patient info or update patient info in a timely manner," the report said.
- **On April 10**, users in Kaiser's Baldwin Park, Calif., medical office were unable to place new orders for in-patients for one hour and 51 minutes. "Drug Database information is not populating for pharmacist and technicians," the report said. "New orders will have to be manually done. In the manual process, the nurses cannot see patient updates for new orders for new medications or changes in meds, such as stopping orders. The manual process will create significant delays in patient care."
- **On May 23**, users in Kaiser's Glendale, Calif., medical office could not dispense medication because the billing application was down for one hour and 57 minutes.

- **On June 7**, the company's laboratories were unable to collect data, run tests and provide test results for six hours and 34 minutes.
- **On Sept. 15**, users in multiple locations were unable to check in patients for appointments for 48 minutes. "As a result," the report said, "this causes delays at the front desk for the members to be checked in and seen by their providers. In addition, the departments are not made aware that the member has arrived for their appointment, which can cause delays in the workflow of the department."
- **On Sept. 28**, users in one facility were unable to release lab orders through HealthConnect for two hours and 35 minutes. "This issue is a hindrance to the diagnosis," said the report.
- **On Oct. 10**, doctors and nurses in several facilities were unable to retrieve critical medical information to treat patients for three hours and 24 minutes.
- **On Oct. 11**, multiple users in one facility were unable to access the network for one hour and 47 minutes.