

# Overlake Hospital Medical Center



*“Many of the users experienced a big increase in performance because their desktop workstations were so old—so a lot of administrative users are really happy with the virtual desktops. The other big satisfier is that the desktop is now available to them just like in the office wherever they are.”*

— Joseph Wolfram  
IT Director and Information  
Security Officer, Overlake  
Hospital Medical Center

## KEY HIGHLIGHTS

### Challenge

- Introduce a major upgrade of a hospital Electronic Medical Record (EMR) system
- Upgrade and migrate an aging and inadequate data center
- Upgrade desktops to handle EMR system requirements, and improve:
  - Information security
  - Manageability and support
  - Performance
  - User functionality, including work-from-anywhere capabilities

### Solution

- Data Center migration and upgrade with:
  - Dell server chassis and blades
  - NetApp storage fabric
  - Cisco Nexus 7000-series core and 5000-series switches
  - VMware View 4 servers connected directly to 10G core links
  - Data center now 45% virtualized, with “virtual first” policy
- Virtualize administrative and clinical desktops, with:
  - “Stealth” installation of VMware View Client on 1,000 current clients
  - Addition of 350 new Wyse V10L thin clients.

## Overlake hospital is undergoing a comprehensive IT upgrade and virtualizing the hospital’s data center, desktops, and Tier 1 applications—without disrupting operations

In little more than a year, the hospital moved from a crowded data center with 350 underutilized standalone physical servers to a new facility

### More than an Upgrade

Overlake Hospital Medical Center is a 337-bed nonprofit regional medical center in Bellevue, Washington, with 10 outpatient clinics, a staff of more than 1,000 active and courtesy physicians, and nearly 2,400 other employees. Overlake offers a full range of advanced medical services throughout the Puget Sound Region, including cardiac services ranked among the nation’s 100 best, award-winning surgical services, and the only Level III Trauma Center in eastern Puget Sound.

In March, 2009, the Hospital launched a program to upgrade its Electronic Medical Record (EMR) application to Meditech Client-Server version 6.0. For a hospital, EMR is much more than just patient files. Joseph Wolfram, IT Director and Information Security Officer for Overlake, compares it to Enterprise Resource Planning, integrating billing, payroll, bed-tracking, pharmacy, and virtually every other major hospital system. And this was no routine upgrade. Wolfram explains, “...it seems like a brand-new package. I don’t think there’s anything in common between our current system and 6.0—it’s a different database, different server model, you wouldn’t recognize it from our old Meditech.” It was clear that a successful upgrade would require dramatic changes throughout IT—and create opportunities for many more.

### A New, Virtual-First Data Center

Overlake’s data center was old and in rough shape, with significant air-conditioning issues and even water leaks. Wolfram used the data-center migration and upgrade as an opportunity to accelerate the hospital’s transition to virtualization, with policies to:

- Virtualize-on-move—“We’ve got a virtualize-first rule in effect, and the only time we will not virtualize a server that’s being moved is if it’s technically not feasible—which is a rare case—or if it’s an OEM-provided server with an FDA certification that doesn’t allow for it.”
- Virtualize Tier-1 Applications—the new data center includes 30 physical servers dedicated to running VMware ESX clusters for the new Meditech EMR system
- Set the stage for desktop virtualization—“We replaced 7- or 8-year-old technology from the core to the edge with the latest Cisco Nexus 7000 cores and 5000 switches, and connected our Virtual Desktop Infrastructure (VDI) servers to those 10G links.”

## KEY HIGHLIGHTS (CONT'D)

**Results**

- Enhanced user experience:
  - Quick login, log over, logout using existing machine-readable credentials
  - Secure high-performance work-from-anywhere capability for all clinical staff
  - “Follow-me” printing, in-context sign-on to multiple applications, and more
- Electronic Medical Record system upgrade on track and on budget
- Expanded opportunities for IT staff

*“We tried to implement something that would save us money and be easier to manage instead of putting a bunch of point products on the existing architecture—encrypting all local hard drives, putting software on there to catch data in the wild—those are very expensive and hard to manage solutions that we’re trying to avoid by keeping all the data in the data center.”*

— Joseph Wolfgram  
IT Director and Information Security Officer, Overlake Hospital Medical Center

The change has been dramatic. In little more than a year, the hospital moved from a crowded data center with 350 underutilized standalone physical servers to a new facility with room to expand from its current 170 physical servers on Dell chassis and blades, 45—50 of them configured in VMware ESX clusters and backed by NetApp storage infrastructure.

### “Stealth” Desktop Virtualization

The decision to virtualize Overlake’s desktops came late in the upgrade process—the original plan had been to simply upgrade or replace 1200 old PCs to work with the new EMR system. Director Wolfgram proposed converting the planned PC refresh project to a virtual desktop initiative, to improve:

- Management and support through the use of standardized configurations, central patching and provisioning, and remote assistance technologies
- Security by eliminating local data storage, controlling local ports for USB devices, SmartCards, etc., and keeping profiles, preferences, and configurations under management on data-center servers
- Performance with user-by-user CPU and RAM allocations for “instant upgrades”, accelerated OS patching, and “true local desktop” work-from-anywhere access

He recalls his pitch: “We compared the cost of hardware replacement and average lifecycle of a plain old PC, added the cost of desktop support, and compared it with the investment in back-end architecture needed for a virtual desktop. And we showed savings in things like time and desktop support, administration, and in not having to spend dollars on security point solutions.”

Short-term costs were about equal, but virtualization bested the PC refresh program on long-term benefits and savings. Virtualization also held some unexpected benefits. First, it let the hospital postpone upgrades of 800—850 PCs that were incapable of running Meditech 6.0, yet perfectly capable of running VMware View client. Second, it allowed a “stealth” virtualization of those machines, minimizing the amount of change hospital staff would need to absorb all at once: “We’re going to take the current shared workstations and move them into the VMware View environment—so that when people log into them they’re not even going to be aware in many cases that they’re on a virtual desktop.”

In the end, the hospital will replace only 200 of the 1200 PCs they had initially planned, and add about 350 Wyse V10L thin clients. Wolfgram estimates that the approach will extend the life of 1000 computers in all: “... maybe only for a year or two, but long enough for me to get a new fiscal year budget to buy more thin clients.” He points out that the labor savings were especially significant: “... that was a huge benefit, because a large portion of the PC replacement project is the labor. And I basically paid for our disk drive with what I saved in labor.”

### Managing Change from a User Perspective

Wolfgram has some tips for other hospitals planning major virtualization initiatives: “Our guiding principle was that if we couldn’t create an experience where the user couldn’t tell the difference, then we weren’t going to do it.” An area hospital using a different virtualization platform found that their physicians needed 1 ½ to 2 minutes—an eternity in clinical medicine—every time they reconnected to Meditech. Overlake clocks its own Meditech logins at just 25 seconds once a day, and plans to use its Applied Wireless ID badges for authentication, so doctors can instantly tap in, tap over, and tap out of their virtual sessions using the ID badge they already have.

Wolfgram's team went even further to enhance the user experience with:

- In-context sign-on, so users can log into a suite of related clinical applications using a single set of credentials
- Work-from-anywhere for everybody—so physicians, for example, can access hospital records from their offices to offer their patients continuous, quality care without compromising data security
- “Follow-me” printing, so printer options change as their virtual machines follow clinical staff through the hospital, with the nearest printer as the default

### Extending the Team

Overlake has a large IT organization—40 full-time equivalents in all, with another 30 to 35 added for the duration of the project. But they didn't try to go it alone. A full 10% of their project budget was spent on professional services, both directly from VMware and from VMware Premier Solution Provider Ivoxy Consulting. Wolfgram highly recommends working with an experienced team: “... a consultant really helps because even if they haven't seen that exact software issue before, they know where to look for it—and help us solve the problem before it becomes an issue for our users.”

Overlake's virtualization transformation has been a hit with IT staff, too, allowing many of them to move into expanded roles: “... Some of our staff who were doing desktop support are now vSphere administrators. When you move from a traditional desktop to a virtualized desktop infrastructure, you have to realign your staffing, and roles change. We don't need as many people working in the desktop support role, and were able to promote people from more entry-level IT positions into more administrative roles for desktop.”

