

# Beth Israel Deaconess Physician Organization (BIDPO)

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PHYSICIAN ORGANIZATION, LLC

*“By delivering secure, electronic health record applications via a private cloud to physicians, we’ve helped deliver on the vision of a healthcare system that puts the needs and values of the patient first, and gives patients and medical professionals the information they need to make clinical and economic decisions. VMware gives us the flexibility, scalability, and cost savings needed to make this a reality.”*

— Bill Gillis, eHealth Technical Director, Beth Israel Deaconess Medical Center

## KEY HIGHLIGHTS

### Challenge

Provide a secure electronic health record (EHR) application to 200-300 geographically dispersed physician practices, minimize costs, and streamline management of the new solution.

### Solutions

BIDMC/BIDPO deployed a multi-vendor solution:

- VMware ESX as the virtualization platform provided the scalability and flexibility to deploy the new service as an internal cloud;
- A VMware approved electronic health record (EHR) software solution;
- Trend Micro Enterprise Security, including protection for endpoints and virtual server environments, to increase security and reduce risk to confidential patient data; and
- Concordant (a healthcare IT services provider) developed the scalable IT infrastructure to securely connect the diverse healthcare community.

## The Beth Israel Deaconess Physician Organization (BIDPO) provides medical management services in support of its 1,500 member physician practices throughout eastern Massachusetts.

BIDPO’s members include clinics and practices owned by Beth Israel Deaconess, as well as non-owned physician groups (private organizations) that refer patients to the Beth Israel Deaconess Medical Center (BIDMC). The organization’s primary goal is to promote and improve the quality of care for all patients.

### The Challenges

By becoming a member of BIDPO, physician practices benefit by receiving increased contractual rates with the medical insurance companies. But to obtain these reimbursement increases, practices must have the ability to accurately measure the quality of patient care and electronically report performance metrics back to the insurance providers. To meet these requirements, BIDMC and BIDPO initiated a joint IT project to provide a secure, robust, and cost-effective electronic health records (EHR) infrastructure for its 200-300 independent physicians.

“The challenge was that all of these practices are distributed across 173 locations in eastern Massachusetts,” stated Bill Gillis, eHealth technical director for the BIDMC /BIDPO joint venture project. “We didn’t want to implement a client/server environment and then have to support 300 individual servers. We wanted to deploy a software-as-a-service (SaaS) model with a centralized database and application services in one location, and then provide the EHR service to the physicians using the Internet—without having any hardware in the practices or needing to provide constant on-site technical support.”

Scalability was a very important aspect of the project. “We knew we needed to build something that was modular, so we could grow into it gradually,” explained Gillis. “We wanted the flexibility to buy components and migrate the applications in as needed when more physician practices came online. And for that kind of easy scalability, we knew we would have to use virtualization.”

### The Solution

BIDMC/BIDPO selected VMware as the virtualization platform for its new EHR project. VMware Infrastructure 3 Enterprise serves as the foundation for the new EHR environment, including VMware ESX Server, VMotion, VMware DRS, VMware HA, and VMware VirtualCenter.

“This project would not have been possible without virtualization,” stated Gillis. “We ran into an issue very early in the deployment when there was a specification change. Had

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#### VMWARE AT WORK

##### VMware Infrastructure 3 Enterprise, featuring:

- VMware ESX® Server 3
- VMware vMotion™
- VMware Distributed Resource Scheduler (DRS)
- VMware High Availability (HA)
- VMware VirtualCenter

##### Trend Micro Enterprise Security

Enterprise Security for Endpoints, protecting 1,500 to 2,000 PCs and servers

Deep Security, protecting 200 virtual machines

we been in a typical clustered environment, it would have cost us about \$300,000 to adjust for that change. Because we chose to implement VMware, it only cost us \$20,000 for the additional VM licenses; we didn’t have to buy any additional hardware.”

“We made the decision to deploy EHR as an on-premise solution,” explained Gillis. “We wanted to retain our confidential data and build our own security model around the patient information—not have our patient information managed by a third party.”

## Increasing Security with Trend Micro

BIDMC/BIDPO made the decision to further mitigate risk with Trend Micro Enterprise Security, including protection for endpoints as well as virtualized servers. Powered by Trend Micro Smart Protection Network infrastructure, the tightly integrated security products deliver immediate protection from emerging threats while greatly reducing the cost and complexity of security management.

“We created a best practices defense-in-depth security architecture, knowing that we were going to be putting patient data on the Internet,” explained Gillis. “We created a multilayer security protocol, including various perimeter devices, from firewalls to network-based intrusion detection systems. Our most important security layer is the Trend Micro Deep Security software, which efficiently blocks the things we need to block, without blocking the things we don’t need to block.”

“EHR applications, like operating systems, commercial off-the-shelf software and any other custom web applications, are complex pieces of software with inherent vulnerabilities,” noted Bill McGee, senior director of product development, Trend Micro. “Our software shields those vulnerabilities until patches can be developed and deployed and applies additional security mechanism to deliver comprehensive protection, enabling organizations like BIDMC to remain confident that their sensitive data and applications are safe.”

“As organizations modernize their datacenters, taking advantage of things like vMotion and other powerful capabilities that come with virtualization, security solutions must now address two different aspects: first, providing the necessary protection to detect and prevent against attacks on virtual machines; and second, the ability to prove what security measures are in place at these unique resources, at any location or given point in time,” explained McGee. “That’s what we provide with Deep Security. Our customers gain peace of mind knowing that the virtual machine – no matter where it is within the datacenter, private or public cloud, is protected and has a consistent set of auditable security policies applied to it.”

“We engaged the Deep Security team from day one because this project manages medical records and other personal health information,” said Gillis. “We needed this project to be as secure as possible, so we did whatever we could do to get this locked down. We had to make sure we had no “Globe-able Events”, meaning that we’re not going to have a security breach that will appear on the front page of the Boston Globe. We needed a partner that could help us mitigate any risk. Deep Security was crucial for us and Trend Micro has been an amazing partner.”

BIDPO members are also protected by Trend Micro Enterprise Security for Endpoints. “Our Trend Micro solution does what we wanted it to,” said Gillis. “Enterprise Security for Endpoints allows us to centrally manage EHR security, create summary reports for the entire initiative, and provide world-class support to the participating members. The interesting thing we have also found is that Trend Micro software is discovering infected machines that went undetected with the previous endpoint security solution. We’ve eliminated a significant amount of viruses and spyware.”

## Relying on Concordant for Exceptional IT Services

Concordant, a leading provider of healthcare IT services, was chosen by BIDMC/BIDPO to develop the scalable IT infrastructure to securely connect its diverse healthcare community. “We selected Concordant based on its rich expertise in IT design, implementation, and management of EHR ambulatory environments,” explained Gillis.

The new central EHR site is housed at an independent data center in the suburban area of Boston. BIDMC/BIDPO leases the space, and Concordant provides the day-to-day operational management of the environment. “We played multiple roles in this project,” explained Bob Dupuis, practice director for Infrastructure and Security at Concordant. “We worked in conjunction with Bill at BIDMC, the EHR software provider, and the Deep Security team to develop the architecture for the solution.”

Concordant also provides a help desk for the physicians. The Concordant tech support professionals are the first to respond to the practices when they have a question about their localized LAN environments. “We recommend VMware to our clients to provide all of the benefits that virtualization delivers, including high availability, making disaster recovery more affordable, and for cost savings,” concluded Dupuis.

## Establishing DR

“We use on-site backup for fast data recovery, but for disaster recovery, we are still using tapes with off-site storage,” explained Gillis. “We didn’t have the budget to build a replicated data center in another geographical location. We were looking for fast restore for data recovery—for a malfunctioning database, a missing file, or something that needs to be restored quickly—but that’s all in our SAN and is backed up that way. That SAN is backed up to another SAN, and then to tape. The tapes are stored off-site for disaster recovery.”

“We wouldn’t be able to consider that type of disaster recovery where we are backing up off-site and going to tape if we didn’t have VMware. Because without VMware, you’re talking about having to rebuild specific server types and so forth. Being virtualized gives us tremendous flexibility. Obviously recovery is not going to be a day-long thing if the building burned down and we lost all of our equipment. But it wouldn’t be a matter of needing the specific pieces of hardware that match the operating system that were installed on the tape. VMware is what gives us that flexibility.”

## A Successful Partnership

“Our relationship with VMware is central to our virtualization security business,” stated McGee. “Most of our virtualized customers use VMware. We’ve seen the strength of the product and the ease of integration. We are part of the VMware VMsafe API sharing program for security vendors and were among the first to join the vCloud initiative.”

“We knew that VMware was going to be necessary platform for the deployment because of the flexibility, scalability, and cost savings that come from virtualization,” explained Gillis. “We have been able to leverage the great relationships and powerful solutions from three different providers to effectively deploy EHR in a SaaS model to our physician practices.”

## Results

- **Increased Security.**

Reduced risk of security breaches with Trend Micro security software and services.

- **Increased Flexibility Reduced Costs.**

A recent change in the virtualized environment cost just \$20K. Without VMware, the change would have cost \$300K.

- **Streamlined Administration.**

The virtualized environment eliminates the need to support 300 distributed servers.

- **Provided Easy Scalability.**

BIDMC/BIDPO can now easily and cost-effectively grow the environment in a modular way as new providers are added to the service.

