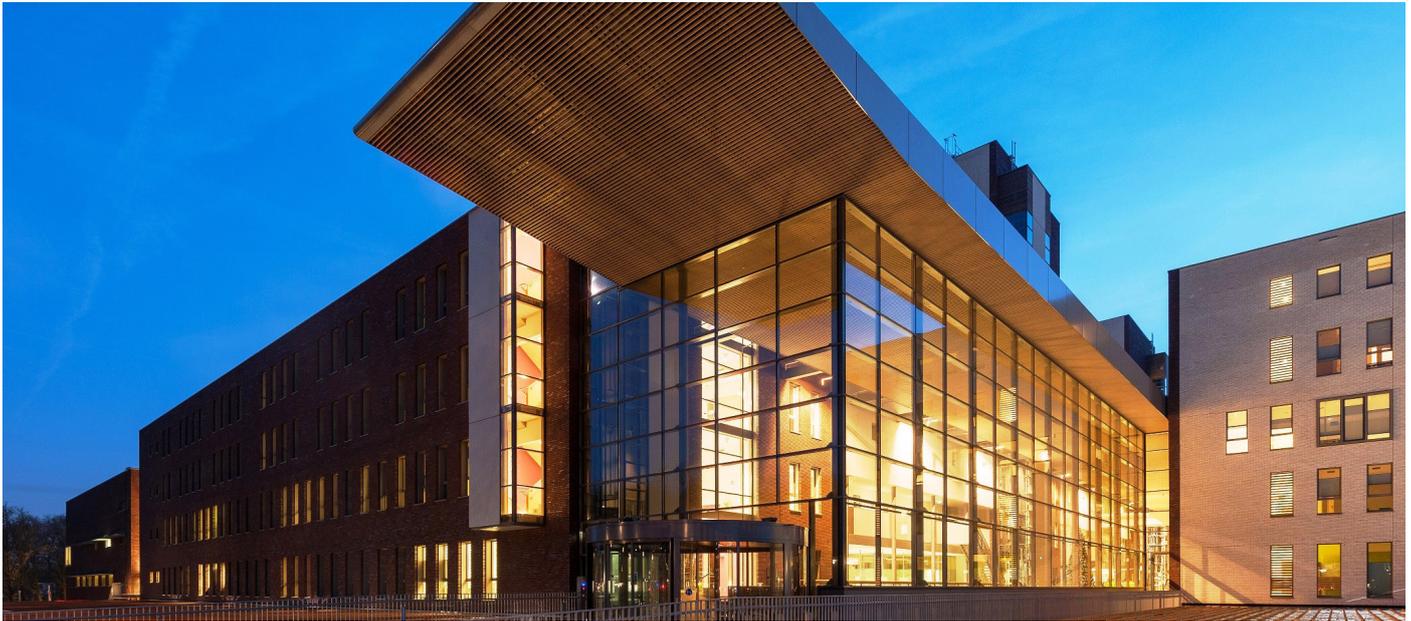# Hospital Sees 200 Percent Uplift[1] in Application Performance

Customer Case Study

Meander Medisch Centrum improves access to information and healthcare services while lowering costs

EXECUTIVE SUMMARY

Customer Name: Meander Medisch Centrum

Industry: Healthcare

Location: Netherlands

Number of Employees: 3300

Challenge
· Enhance efficiency of healthcare while reducing costs
· Boost employee satisfaction and patient experience

Solution
· Desktop virtualization based on Cisco Validated Design with Citrix XenDesktop, providing 1500 concurrent users with improved access to information and healthcare services

Results
· Faster, more secure access to information and healthcare services
· Deployment of new services accelerated by 400 percent[2]
· Application performance up 200 percent, server utilization risen by 40 percent[3]

Challenge

Meander Medisch Centrum (MeanderMC) is one of the larger regional hospital groups in the Netherlands, with more than 580 beds spread across three main sites, plus a number of daycare facilities in regional community centers. Formed from the merger of several smaller hospitals, MeanderMC undertook the building of a new hospital in Amersfoort, Utrecht, to consolidate two older sites in the town into a more efficient single location.

Prior to the project, MeanderMC had put a hold on technology investments and, by the time construction work started, the hospital had an urgent need to upgrade its IT infrastructure. This need extended to the hospital's application virtualization, which supported approximately 1500 desktops through Citrix XenApp, alongside a traditional Windows PC estate of about 500 machines.

The system was delivered from two data centers equipped with more than 200 physical servers and a similar number of virtual machines, using VMware hypervisors with vCenter 4 management. "The Citrix XenApp 32-bit platform was nearing end-of-life, and the XenApp support for medical applications was limited," says Paul Bauwens, information and communications technology architect at MeanderMC.

"The challenge was to build a new desktop infrastructure that provided a better basis for centralized application provisioning and support for medical apps, and to reduce the number of locally-installed specialized PCs."

With the move to a new virtual desktop infrastructure (VDI) system, the hospital hoped to meet a number of business aims, including improved diagnostics, enhanced efficiency, higher employee satisfaction, better patient experience, secure patient information, and reduced healthcare costs. At the same time, MeanderMC had a number of data center modernization objectives including lowering the total cost of ownership (TCO) of the facility, reducing maintenance, and supporting mobility while improving performance, service levels, and business continuity.

[1, 2, 3] Source: MeanderMC

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> "We mapped the I/O load of the VDI onto the large memory of the Cisco UCS blades, so we have very good scalability and CPU performance for the virtual desktops."

Paul Bauwens
Information and Communications
Technology Architect
Meander Medisch Centrum

Solution

MeanderMC carried out a TCO study that showed upgrading from XenApp to Citrix XenDesktop would be marginally more expensive but would provide greater benefits in terms of supporting a full VDI.

Following a six-month evaluation, MeanderMC chose to implement XenDesktop on Cisco® Unified Computing System™ (UCS®) B200 M3 Series Blade Server technology within a FlexPod, which is a converged compute, networking, and storage solution developed by Cisco and NetApp.

MeanderMC selected Cisco UCS because of its synergy with the network, its ease of deployment and configuration, its proven technology, and its fit with VMware and NetApp technologies. The data center equipment was installed in the new MeanderMC hospital, replacing the group's old infrastructure, which included 60TB of data on HP EVA storage arrays.

"This is effectively a full data center refresh since our existing information and communications technology equipment is economically end-of-life," says Bauwens. "We're phasing out our obsolescent server blades in favor of UCS." The new data center spans two geographically separated locations that offer full redundancy for software services and partial redundancy for VDI, giving MeanderMC the ability to run its operations from a single site if the other one has shut down.

Besides VDI, the UCS platform supports all critical applications including a Philips patient monitoring system and electronic patient records. This arrangement only leaves the hospital's picture archiving and communication system (PACS) running on a separate dedicated storage solution.

Within the new data center, Cisco UCS capabilities have enabled MeanderMC to scale VDI without having to add much storage capacity. "We mapped the I/O load of the VDI onto the large memory of the Cisco UCS blades, so we have very good scalability and CPU performance for the virtual desktops," says Bauwens. "We aim for vertical scalability, in terms of CPU and I/O resources per virtual machine, and horizontal scalability by increasing or load-balancing parallel server virtual machines."

As an example of the newfound flexibility that MeanderMC enjoys, the hospital has purchased specially-configured blades with fewer cores but higher-performing CPUs, an approach that helped overcome Oracle database product licensing restrictions. The hospital group is also able to use UCS service profile templates to easily and quickly ready blades for either application service support or VDI support.

The hospital chose the Cisco UCS B200 M3 Series Blade Server, which uses Intel® Xeon® E5-2600 processors and offers up to 768GB of RAM per blade. The organization uses Intel Advanced Encryption Standard New Instructions to host an SSL-enabled website and virtual network appliances. Meanwhile the Intel Intelligent Performance Node Manager delivers energy and performance efficiency, while Intel Virtualization Technology cuts hypervisor overheads.

MeanderMC uses Fabric Extender Technology based on Nexus 2000 Series Switches to take advantage of integrated top-of-rack switch functionality. The routing core is based on Cisco Catalyst® 6500 Series Switches. The hospital also relies on Cisco for IT security infrastructure, which includes a partially-collapsed demilitarized zone supporting virtual security appliances. Specifically, wireless access security is based on a Cisco Identity Services Engine.

Outside the data center, MeanderMC is using Cisco technology for unified communications, Wi-Fi, and wired and wireless telephony.
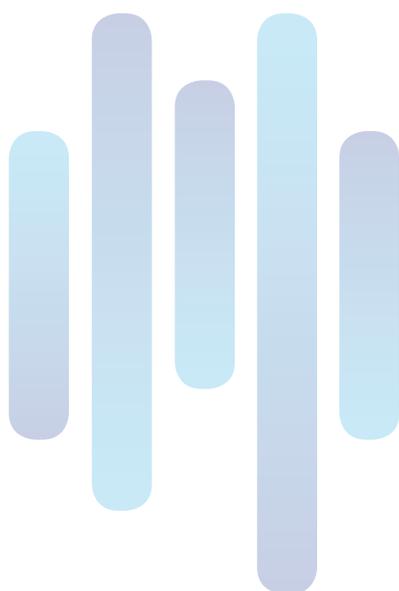
> "We aimed for a best-in-class integrated solution and that is what we have. We've been able to deploy a VDI solution that everyone is happy with, without any loss in performance."

Paul Bauwens
Information and Communications Technology Architect
Meander Medisch Centrum

Results

The hospital's medical and support teams have faster access to information and healthcare services. Overall application performance has improved by 200 percent[4]. Cisco UCS currently supports 1500 concurrent VDI sessions using basic Windows 7 32-bit PC endpoints with Citrix Receiver and Imprivata single sign-on software. Also with data no longer residing on local PC hard drives, MeanderMC is able to manage information security more easily.

Server utilization has increased by 40 percent while data space, power, and cooling have been reduced by the same amount[5]. Using UCS as the foundation for VDI has helped MeanderMC accelerate the deployment of new services by 400 percent[6].

Day-to-day IT management has been greatly simplified, leading to a 75 percent time saving[7], while business continuity and time-to-recovery have also been improved by a similar level. The main benefit is centralized software management. A major use case is flexibility in seating and the ability to disconnect desktop sessions and instantly reconnect them elsewhere or even at home, providing much-needed flexibility for MeanderMC employees.

Bauwens concludes: "We aimed for a best-in-class integrated solution, and that is what we have. We've been able to deploy a VDI solution that everyone is happy with, without any loss in performance."

Next Steps

MeanderMC is planning to extend its VDI deployment to cover 1800 concurrent sessions, as well as integrating Cisco Jabber™. Further ahead, the hospital is looking to collaborate with Cisco on the integration of technologies to support social media, video communication, mobile computing, bring-your-own-device, and choose-your-own-device trends.

For More Information

To learn more about Cisco Desktop Virtualization Solutions, please visit: www.cisco.com/go/vdi

To learn more about the Cisco architectures and solutions featured in this case study go to: www.cisco.com/go/ucs

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4, 5, 6, 7 Source: MeanderMC

Product List

Data Center
- Cisco Unified Computing System (UCS)
  - Cisco UCS B200 M3 Series Blade Servers with Intel Xeon E5-2650
- Citrix XenDesktop 5.6
- VMware vSphere 5

Routing and Switching
- Cisco Catalyst 6500 Series Switches
- Cisco Wireless Services Module 2
- Cisco Catalyst 4500 Series Switches
- Cisco Nexus 5000 Series Switches
- Cisco Nexus 2000 Series Switches

Security and VPN
- Cisco Identity Services Engine (ISE)
- Cisco ASA 5500-X Series

Applications
- Windows 7
- Philips patient monitoring system
- Electronic Patient Records [MCS Easycare]
- Oracle database [McKesson xCare, Oracle Business Suite]

Storage
- NetApp FAS 6200 Series MetroCluster

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