



**Universitätsmedizin Essen**

## Universitätsmedizin Essen increases agility with infrastructure from VMware

UME is today the largest hub-centric hospital in Germany's Ruhr region. Employing over 10,000 people and treating more than 300,000 patients a year, it underscores its reputation as an innovative hospital day after day.

### Industry

Healthcare

### Headquarters

Essen, Germany

### VMware Footprint

VMware Workspace ONE®  
VMware Cloud Foundation™  
with Tanzu  
VMware NSX®  
VMware vRealize® Network Insight  
VMware Professional Services

### Related Content

Customer Case Study  
Customer Story Video

Universitätsmedizin Essen (UME) is one of the most respected hospitals in Germany. Like many hospitals today, it found itself struggling with challenges that are symptomatic in healthcare: the need to implement smart services and protect highly sensitive patient data from cyber-attacks. Using VMware Cloud Foundation™ with Tanzu and VMware NSX®, UME's data center management is now more efficient, and security and failsafe features are guaranteed, and both flexibility and scalability have been enhanced. UME has also been able to move forward with the development of innovative apps – underpinning its reputation as a digital pioneer.

### A digital visionary in healthcare

Founded in 1909 as a municipal hospital, UME became a university hospital in 1963. A leader in the German healthcare space, it has over 10,000 staff treating over 300,000 plus patients a year across three major sites and 27 smaller ones. UME's ambition is to become a true smart hospital of the future, pioneering medical care and practices and making them part of daily clinical practice. The adoption of innovative, digital solutions is key to UME's journey to realize this vision. The federal state North Rhine-Westphalia is honoring this vision by supporting UME through its 'SmartHospital.NRW' initiative, which uses technology from VMware.

### Leading the way with artificial intelligence

The Institute for Artificial Intelligence (AI) was founded to support medical institutions in the analysis of thousands of gigabytes of data. An early adopter of AI, UME is now a leader in the use of artificial intelligence in medicine. AI enables doctors to diagnose and create treatment plans through cognitive computer systems. However, the hospital's infrastructure had become unable to cope with increasing data volumes and couldn't support communication across the multiple hospital sites and practices.



From 2021, doctor's letters and laboratory results have had to be transferred to electronic patient records (ePa's). UME alone works with over 500 different applications and just as many licensing models, many of which process personal data. With cybercrime an ever more ubiquitous threat, these applications effectively secure patient data in compliance with the EU's General Data Protection Regulation (GDPR). On several occasions over the past 18 months, UME IT managers have had to spring into action to fend off cyberattacks. Fortunately, the consequences were not severe. "We have not been the victim of extortion attempts to date," says Armin de Greiff, Technical Director at UME's Central IT Department. Yet every incident naturally sets pulses racing. "We realized that we needed a robust and secure way to safeguard our pioneering role as a trusted smart hospital in the event of further attacks."

## Leading the way with modernization

Collaboration between UME and virtualization specialist VMware initially started in 2007. At the time, the two primary objectives were to set up VMware Workspace ONE® as an integrated platform for digital workplaces and the virtualization of servers based on VMware vSphere®.

So, when UME faced the challenge of managing the exponential growth in data volumes and apps, in addition to the associated administrative overheads, it turned to VMware. In January 2021, UME implemented VMware Cloud Foundation™ with Tanzu. The aim was to establish a scalable, high-performance platform to process vast quantities of data and to support the hospital in its advanced use of AI. "Our experience of VMware had always been positive, so we decided to approach VMware to modernize our data center," de Greiff recalls.

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"VMware Professional Services helped us quickly transition from our on-premises environment to software as a service. We are now able to securely manage mobile devices and applications, provide remote access, deploy new devices, and operate the solution."

Armin de Greiff, Technical Director, Universitätsmedizin Essen, Central IT Department

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Even before the Hospital Future Act (KHZG) came into force, UME decided to introduce network virtualization based on VMware NSX® as a pivotal piece of its security strategy: This gives UME a guaranteed high standard of digital security and provides even better protection of sensitive patient data throughout the network and across different devices. "We have transitioned from a denylist premise to an allowlist premise," de Greiff explains. "Access is only granted if it is authorized and absolutely safe." But that's not all: "VMware gives us efficient services from a single source. VMware Professional Services in particular give us a point of contact and support 24/7, so we now have the assurance of a highly available and reliable infrastructure around the clock."

## Serving patients' interests with digitalization and security

UME's critical clinical information systems now run on VMware Cloud Foundation™ with Tanzu. This means that UME's IT infrastructure can now better manage the increases in data and apps, and play a design role in the use of innovative solutions, including AI work that previously had to be done manually by IT and medical staff - this has now been automated. As a result, huge volumes of data, apps, and highly sensitive patient data can all be managed, processed and protected with the utmost efficiency.

"All patient records are now digital," says radiologist Dr. Felix Nensa, head of the UME AI task force, and a well-known leader in AI. "This provides a foundation for the development and deployment of clinical decision support systems (CDSS) which will revolutionize clinical diagnostics." Doctors and nursing staff now have access to all relevant information from any system via virtual patient dashboards. Internal processes such as application forms, patient surveys and even capacity planning for the hospital's beds have also been digitalized,



which makes running a hospital so much easier and more efficient. VMware's modern IT infrastructure also provides UME with flexible scalability, greater resilience and a failsafe infrastructure. Fully functional IT is of vital importance to operating theatres and emergency admissions, so a high-availability infrastructure can literally save lives.

UME will particularly benefit from container technology based on VMware Tanzu and Kubernetes, which enables the hospital's software engineers to develop more than 30 innovative services quickly. This makes it possible for the software developers at UME to run and professionally operate all of these services on the Smart Hospital Information Platform (SHIP), which helps doctors and nurses diagnose conditions and draw up treatment schedules faster and more accurately. VMware Professional Services designed and implemented University Hospital Essen's new SaaS environment including: Secure browsing, mobile email management, device profiles (restrictions, passcode, WiFi, VPN, encryption, certificates, etc.), device compliance rules and profile-based email. The hospital's team is now able to securely manage mobile devices and applications, provide remote access, deploy new devices, and operate the solution.

This agility also means that research results should find their way into practice even faster. Increasingly, containerized solutions are being used, from AI-supported image recognition in radiology to chat and video conferencing tools. Orchestration via VMware is an indispensable component for hosting such systems.

As de Greiff puts it: "Everything to do with Kubernetes, dockerization solutions and VMware Cloud Foundation brings a smile to students' faces."

With network virtualization via VMware NSX, UME manages the balancing act between innovation pressure from researchers and doctors, and the high security requirements that make network views clearer and allow firewalls to be controlled more efficiently. This leaves the hospital protected against data theft or cyber-attacks that could otherwise paralyze the entire IT system. "Patients can trust us, because their sensitive data is safe here," de Greiff stresses. "Digitalized and personalized medical IT would not be possible without a partner like VMware. Advanced applications that use AI help us to substantially improve the quality of patient care," notes Nensa. "Patients receive personalized treatment and can recover more quickly, while doctors make more accurate diagnoses that can save lives." The UME is now positioned to achieve its ambition: to become a true smart hospital of the future. It has adopted innovative, digital solutions and has pioneered medical care and practices and made them a part of daily clinical practice.

## Shaping the future with digital healthcare

VMware solutions are addressing the hospital's needs today, as well as laying the foundations for future requirements. VMware is able to support UME's mission to get smarter as it continues to embrace AI and lead the way with digital healthcare. "Technologies such as AI will not only help in the evaluation of findings, but they will also enable us to process the ever-increasing flood of information and to apply knowledge in the future. Only then will we be able to make faster and more accurate diagnoses and ensure more informed, qualified treatments for patients in the long term," says de Greiff. "We are pleased to have VMware as our partner today and in the future." The healthcare provider is committed to continuing its progress to further cement its position as Germany's leading smart hospital. "VMware Cloud Foundation is the basis on which we deliver perfect care to our patients," de Greiff sums up.