



СБАЛО „Проф. Бойчо Бойчев“ -  
ЕАД

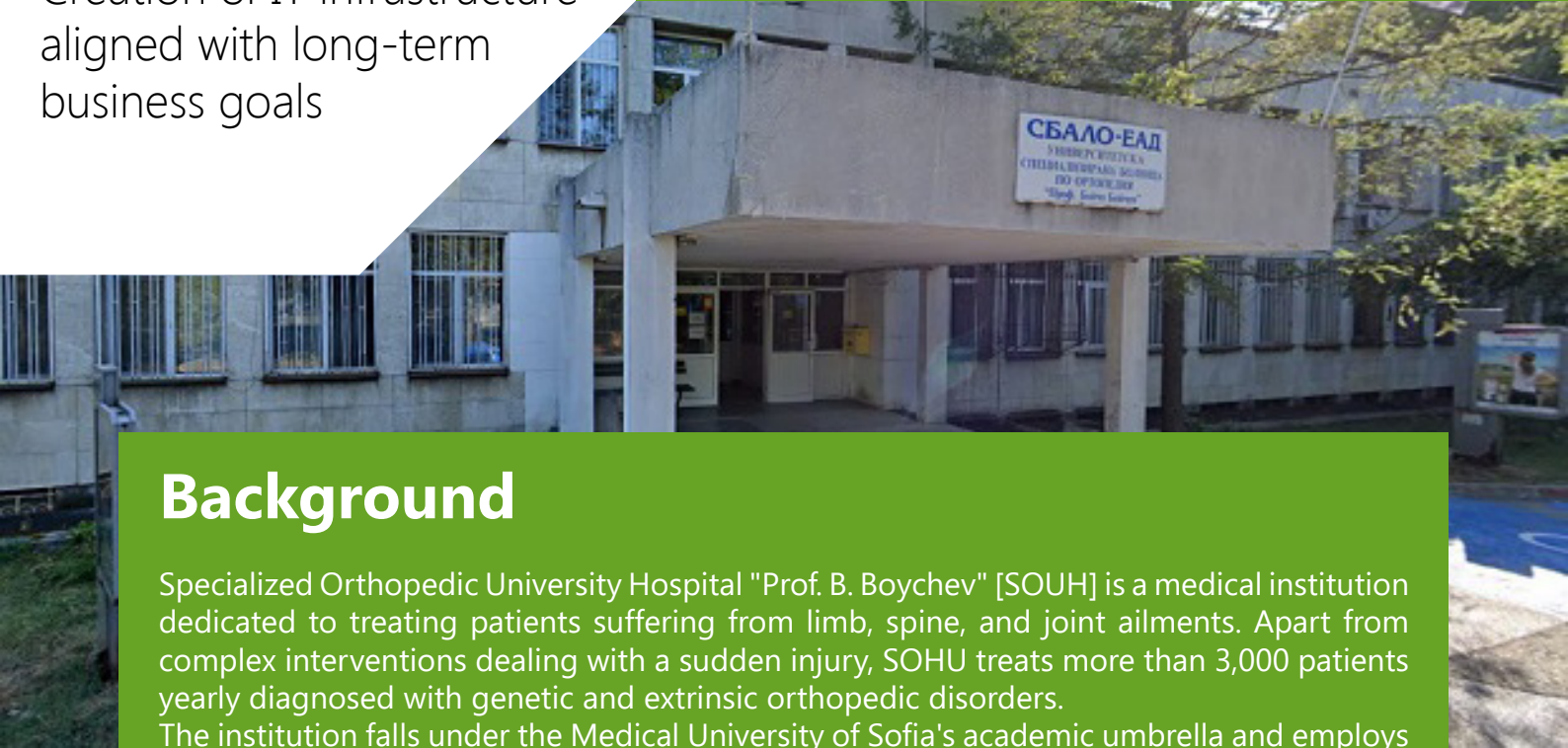
## Case study:

Paving the way for business improvement through the creation of an IT infrastructure

### Part I

Fall 2019 - Winter 2019

Creation of IT infrastructure aligned with long-term business goals



## Background

Specialized Orthopedic University Hospital "Prof. B. Boychev" [SOUH] is a medical institution dedicated to treating patients suffering from limb, spine, and joint ailments. Apart from complex interventions dealing with a sudden injury, SOHU treats more than 3,000 patients yearly diagnosed with genetic and extrinsic orthopedic disorders.

The institution falls under the Medical University of Sofia's academic umbrella and employs more than one hundred specialized medical staff. To maintain and improve the level of organization needed to support such a complex operation, the hospital requires a solid technical base. The newly-established IT infrastructure would allow the hospital to improve its organization and achieve its business goals.

## Case

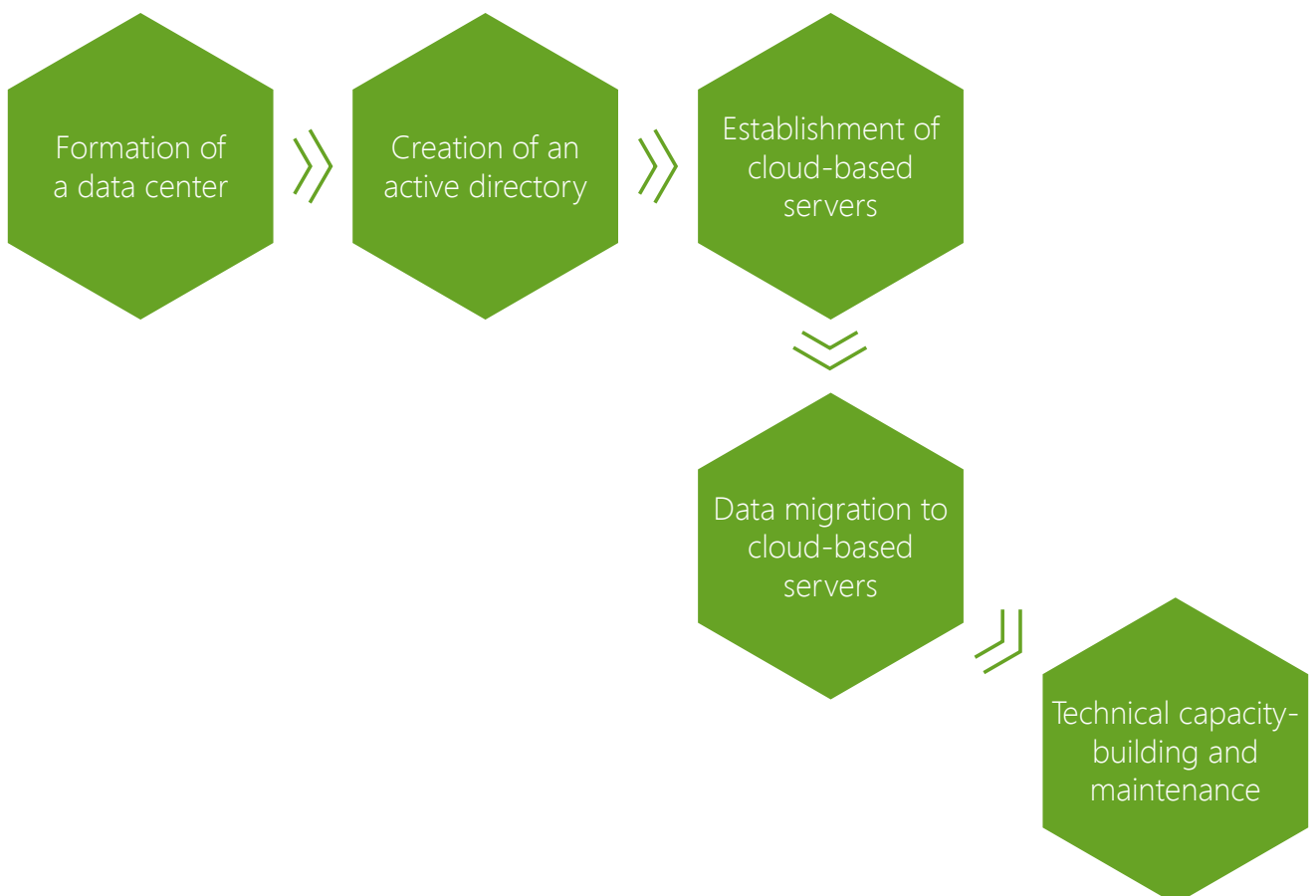
As a prestigious university hospital operating nationally, SOUH must perform flawlessly in administration and organization. With this goal in mind, the institution's management has decided to embark on a comprehensive digital transformation journey to establish new technical capabilities and achieve a higher level of IT preparedness. By doing so, SOUH's leadership hopes to meet legal and security regulations and emerging protocols regarding data management, patient care, and academic research.



## Solution

As with any organization of such scale and importance, we began work on the project with a GAP analysis. Talking to decision-makers is always the first thing to do. We learned from them that the administrative side of things is a priority. With this in mind, we focused on the hardware systems and the software applications managing the flow and organization of labor. We then moved on to more specific branches, such as accounting, expenses, scheduling, and clerical work. Once we analyzed the administration side of things, we moved to operations. These included the examination of apps used by the medical staff for laboratory management, patient management, radiology, and more. Third on our list was finances. Essential questions were about where the hospital has invested its resources and how management spends money on operational activities. As we found the answers, we were able to establish a reference architecture, which determined our starting as well as our finish point. The final product was a roadmap for an extensive overhaul of the organization through IT capabilities.

## Stepping stones





## Formation of a data center

Our 1<sup>st</sup> order of business was forming a data center, which would serve as a foundation upon which to build all other applications. We established an applied architecture, which considered all the various elements of the hospital's existing IT infrastructure. This approach allowed us to plan for any potential side systems involved. That is, we could not only figure out the capacity needed to maintain the core IT infrastructure but also forecast the necessary computational volume in the future. By introducing monitoring systems, we managed to set up the data center in such a way as to observe, plan and react promptly to any potential threats concerning data overload.

## Creation of an active directory

Since we've already established the infrastructure layer, the next natural step was the creation of an active directory. The active directory's core element was forming a single identity. A single identity would allow the hospital's employees - medical and administrative staff - to log into the various apps using universal credentials. That means equal access to Hospital Information Systems, emails, Wi-Fi, HR, accounting, and other productivity apps using the secured login details. Introducing a single identity can be the transitional step between pure infrastructure-building and productivity improvement. Along with the single identity, we also incorporated various other essentials, such as groups of users, rules for access, security protocols, and dual-capacity [locally and in the cloud] archiving capability. Interesting to note here is that we configured parallel active controllers covering different parts of the infrastructure. These ensure that access to the cloud authentication process remains uninterrupted regardless of the circumstances.





## Establishment of cloud-based servers

Next on the agenda was the establishment of cloud-based servers. This solution aims to ensure business continuity and improve data security. We implemented various layers - an application server group, database servers, and web servers for external services. We also incorporated the fourth layer; however, its purpose was to manage the previous threats. This multilayer approach to the cloud capability of an organization enables it to sustain a more significant workload amid better security. Crucially, it allows SOUH to maintain operations in case of emergencies impacting the physical server base. Regarding the cloud server's security, we put systems in place to monitor traffic between the layers, ensuring that the data flow stays neatly organized and protected.

## Data migration to cloud-based servers

When we set out to migrate data from the local to the cloud-based server, we took a reengineering approach instead of simply copying and pasting information. The multiple cloud-based layers described above allowed us to do it this way. This smart migration is best exemplified by how we cloudified SOUH's accounting software. Instead of simply copying the app, we migrated the database to the database layer, the application to the server group, and the like. These enable the system to be much better integrated and scalable, too. All critical administration apps were migrated to the cloud using this method. That includes the hospital's information system, HR software, and accounting application.

## Technical capacity-building & maintenance

Last on our list was the provision of new workstations for the hospital's staff. We analyzed the needs of the various types of employees. We procured just the proper configuration and number of new computers for medical and administrative workers. We then created central policies for software installation and staff training. Thus, we completed the project.



## Statistics & Impact

**100%**

improvement of IT security due to implementation of Azure infrastructure, including Defender & Sentinel

**100%**

accessibility of data security and interoperability

Single identity incorporation saves

**5-15** seconds per login



## Conclusion

The project is a classic IT foundation laying. Our integrated approach ensured that all future projects had a solid base to improve. Our next undertaking with SOUH began almost immediately after and focused on productivity improvement.



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