Case Study

Cloud Computing in Industry 4.0

Keywords: *cloud computing, industrial 4.0, hybrid cloud industry*

Background to Case Study

Technological revolutions are currently taking place in many markets. Companies outdo each other in creating modern solutions, which will make the life and work of their clients as pleasant and easy as possible, and bring even more benefits than before. It is similar to the hosting industry, which for some time began to offer a service called cloud hosting. A simple virtual server can be incalculable. Even if it is powerful enough for our needs, it is important to bear in mind that you are guaranteed the capacity of its storage, not the time you have access to it. It may also happen that if the server runs out of resources, the process of transferring all the data and software to the computer may take from hours to days! There are therefore significant disadvantages of this solution.

Cloud hosting does not carry this type of risk. The cloud does not impose any restrictions on the server user. If memory or processor power starts to run out, the cloud server is moved to another machine with free resources, which is completely unnoticeable to users. The centralised storage, on the other hand, ensures that the activity of the rest of the machines does not affect the speed of data access in any way. Cloud computing is one of the main components of the concept of the fourth industrial revolution. The further popularisation of its use in more industries has the potential to completely change the way traditional manufacturing companies operate in the face of the key challenges they face. It is not only about increasing operational agility, optimising production and minimising losses, but also about reducing the negative impact on the environment.

This case study presents the development of processing technologies of cloud computing by "Nazwa.pl" the leader of polish cloud hosting and the most popular provider of domain registration and cloud hosting services in Poland.

Introduction to the Case Study and it's growth within Industry 4.0

Looking at the manufacturing industry, especially at mid-sized companies, one can see that the core IT infrastructure usually has the characteristics of a distributed environment composed of legacy systems, much of which is maintained locally within the company. A centralised IT infrastructure is a major obstacle to the successful transformation and success of an Industry 4.0 project. Because the "factory of the future" no longer operates as a stand-alone facility in a single location, but rather as a distributed, networked manufacturing business with the possibility of integrating additional legal entities, e.g. through mergers and acquisitions.

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As a result, more and more cloud products are being developed for manufacturing processes that were originally handled within the four walls of a production facility. Furthermore, intelligent cloud solutions are the optimal way to process and evaluate data, the volume of which is increasing as automation increases. Therefore, I completely agree with the statement that without cloud computing there is simply no basis for talking about Industry 4.0.

To meet the challenges companies face, a partner is needed to support organisations in managing their systems infrastructure. It is also important to provide a cloud environment to integrate applications from outside the SAP offering and manage them efficiently. Production companies often have many dedicated requirements. They must then also be able to use proprietary software without having to worry about maintaining the basic infrastructure with its interconnections and security aspects. In my experience, the hybrid cloud is a computing model that offers a company the agility needed to improve performance and the ability to innovate without sacrificing quality and security.

In the case of the hybrid cloud model, some of the systems are maintained in a private cloud environment, while others operate based on the public cloud model. The concept of a hybrid cloud depends on the requirements of the company, but one of its most important features is the seamless integration of applications and services.

A properly prepared infrastructure will contribute to competitive advantage and save costs. For many companies, a hybrid cloud is an ideal solution on the way to implementing a full cloud computing strategy. A hybrid cloud architecture combines an existing private cloud in the data centre, one or more public clouds, and one or more cloud solutions hosted in a third-party Managed Services Provider's data centre. Maximum seamless integration between different cloud solutions in this model ensures seamless migration, interoperability and unified administration.

Many of us are proud that such an innovative project was invented in Poland and today radiates to many other countries. This service is not possible without a digital foundation, including cloud services. This example shows in an excellent way that without what once did not exist we cannot live today, that without the cloud such an innovative idea would be much more difficult to implement. A higher level of cloud adoption will undoubtedly translate into more such innovative projects.

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The Case Study and Industry 4.0 Elements: A Pictorial Overview

Cloud-based solutions enable full control of an extensive network of suppliers, partners and customers. The use of the Internet of Things also allows for intelligent data streaming straight from the shop floor. The ability to carry out fast and effective data analysis, in turn, has the greatest impact on further competitive business efficiency due to the opportunities to optimise production and process management.

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The Element Explored within Industry 4.0 Application.

https://www.bosch.ro/

In many areas, the use of the cloud brings streamlining, increased security and tangible economic benefits. But that is not all. Some services that have emerged in the global economy in the last decade simply could not exist without the cloud. Today, such services are in widespread use and we cannot imagine functioning without them. Examples include social media, but also the way we book hotels, travel services, taxis today. Just a decade ago it was completely different. If we want to launch such innovative services in Poland, they simply will not happen without the cloud. We already have good examples on our domestic market. Let us look at how the landscape of Polish cities and towns has changed.

"Nazwa.pl" is one of the largest business Internet service providers in Poland, with over 20 years of experience. They serve several hundred thousand companies and individual clients. When deciding on this company, you can choose from domain registration, hosting services, business cards, professional mail, e-shops, SSL and VPS.

Cloud hosting by "Nazwa.pl" is: website hosting on several hundred servers, which guarantees maximum speed; Intel Xeon server processors with high clocking of 5 GHz, which ensure fast and reliable operation; Intel Optane drives ensuring that neither the time of day nor the load generated by services have any influence on the speed of operation; Highly scalable resources. They offerd rapid response to failures and 24/7 support.

For each domain configured on nazwa.pl CloudHosting servers, the content distribution service, provided by nazwa.pl CDN, is automatically activated. Copies of the components of websites are maintained in many locations around the world, which shortens the route of information transfer to users. Direct access to many traffic exchange points in the Internet ensures instant transfer of information, and the distributed DDoS protection system in each node of CDN nazwa.pl protects websites from attacks. The correctness of operation of the whole system from the beginning to the end is supervised by nazwa.pl, and full integration of nazwa.pl CDN with hosting ensures faster loading of websites, regardless of the location of people using them.

Websites using static file caching within nazwa.pl CDN work much faster than websites not using this technology. The caching servers are located in key places in the world, ensuring access to the elements of a website from the geographically closest place. Shortening the physical distance between the server and the user improves efficiency, removes delays in content delivery and shortens website loading time. The use of nazwa.pl CDN nodes

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	directly translates into better results in website positioning, as search engine algorithms pay attention to how fast a website works. CDN nazwa.pl provides an effective protection against Distributed Denial of Service attacks, because the direct exchange of traffic between Internet operators in many nodes effectively limits the effects of a potential attack originating from a given network only to the contact with that network. *This industry giant is getting quite positive reviews on the Internet. Fast servers, effective technical support. As a minus we encountered an accusation related to the fact that after a free hosting test they do not allow to use a discount code for the second time, but require server renewal according to the standard offer. The technical support also does not necessarily help to solve the problem the first time. Sometimes it takes several approaches from the customer's side.* *The company is also a leader in implementing innovative technological solutions, which make it easier for entrepreneurs to develop a professional business on the Internet. It provides its services in accordance with the information security standard ISO 27001 in modern Data Centres located in Cracow, Warsaw, Amsterdam, Madrid, Washington and Seattle.* *The "Nazwa.pl" company sets standards in the Polish Internet, providing technically advanced solutions, using the latest global technology. The company's significant market position is also confirmed by the fact that in 2019 it was recognised by the Ministry of Digitalisation as a key service operator for the cyber security of Poland.*
Application Target Audience	*The results of the case-study are intended for use by SMEs, entrepreneurs, managers*
Resources Used:	*https://www.nazwa.pl/*
Further Reading:	https://przemysl-40.pl/index.php/2021/08/30/raport-2021-oprogramowanie-przemyslowe/

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