With "ONCITE powered by IBM," an all-in-one hybrid cloud solution already in use at Rittal's digitally integrated Haiger plant, both German Edge Cloud and IBM are addressing the digitisation needs of manufacturing industry through relevant shop floor functions.

German Edge Cloud and IBM take a hybrid cloud solution for industrial edge computing directly onto the shop floor

The rapid and straightforward implementation of data-driven shop floor applications with simultaneous data sovereignty is currently one of the most significant challenges facing manufacturing industry. ONCITE industrial edge appliance from German Edge Cloud (GEC) has been expanded to include components from the [IBM Cloud Paks](), which is built on Red Hat's "OpenShift" Kubernetes platform for enterprises. Even if they have few resources and little expertise, production companies, OEM manufacturers and the supply industry can quickly benefit from digitalisation in manufacturing through hybrid cloud deployment with this package that consists of hardware, software and application management services.

Ehningen/Eschborn, 3 February 2021 – The manufacturing industry, in particular, demands fast and secure opportunities for the value-added use of data as the level of digitisation increases. During the manufacturing process, machines and systems accumulate massive amounts of data on the machine's status and condition, on the product and on the respective process step. This data must be collected, analysed and further processed directly on site without losing any time. There are many reasons for this: short latency times for real-time applications, the rapid decay in the data's relevance, and legal regulations or specifications for data security. Moreover, companies have an essential desire for data sovereignty to protect their business-critical expertise.

For example, in modern AI-supported visual inspection in manufacturing, high-resolution images are analysed automatically, and preferably in real time. If every single image first

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has to be sent to the public cloud for analysis via the local factory network, the benefits of modern AI technologies will be lost due to the high latency and the often-insufficient availability of the wide-area network (WAN) for the large stream of data. Moreover, many companies do not yet have a display of the relevant parameters on the production process and system status. It is often impossible to bring together the necessary data from every heterogeneous source at the point of action in production to carry out valid analyses.

A preconfigured and integrated solution democratises edge cloud applications

GEC, a company of the Friedhelm Loh Group, developed ONCITE together with partners in October 2019. It was the first data-sovereign industrial edge appliance for real-time capable industrial use cases. IBM has now extended the appliance to include the IBM Cloud Pak solution, based on Red Hat's OpenShift. This means faster commissioning and the more flexible integration of the appliance into all management levels of production for industrial users.

GEC provides a sophisticated and secure local network connection. Added to this is the high-performance and industrially robust technology of the IT infrastructure specialist Rittal, the largest of the Friedhelm Loh Group of companies. Furthermore, GEC enables the visualisation and "near real-time" analysis of production data from all sources with its "Smart Manufacturing Operations Management" (smart MOM) and the GEC Analytics platform integrated into it.

What may at first sound simple is still one of the biggest challenges in modern manufacturing environments: making the relevant product and process data visible during ongoing transport – seamlessly from station to station through to the quality control and delivery of the serialised products to the customer. This is where IBM comes into play.

OT-IT integration with IBM

For this visualisation to succeed, all the relevant data must be brought together in near real time, along the entire "automation pyramid" of production: From the factory's local IT systems with ERP at the forefront to PLM, MES and SCADA, and to the sensors and actuators of the processing machines at the base.

The first modules from the IBM Cloud Paks deployed address OT IT integration through IBM's "Plant Service Bus" solution. This is based, in turn, on the IBM "Connect for Manufacturing" app and it offers universal integration into the shop floor based on MQTT, OPC UA and many other protocols. The IBM Operational Decision Manager is also used. This enables non-IT staff to control the behaviour and the data flows on the shop floor using business rules. In this process, all the data from the operational area (OT) is collected and unified with the IT system data so that it can be made available to the Smart MOM.

The solution runs on Red Hat OpenShift, which means that not only components from GEC and IBM but also other third-party solutions run in a modern container, automation or virtualised environment as the new manufacturing IT. With Red Hat OpenShift, customers are given the flexibility to run their applications locally or in the cloud environment – the great advantage of a hybrid cloud environment.

"The benefit of the solution expanded with IBM is obvious," says German Edge Cloud's Managing Director Dr Sebastian Ritz: "Manufacturing companies quickly benefit from a high level of digitisation in production by using Hyperscaler technology, and without having to acquire the extensive know-how needed. While factory operators can concentrate on their core business, GEC and IBM provide an IT infrastructure that suits their manufacturing requirements, investment plans and data sovereignty."

The pilot project at Rittal's digitally integrated production plant in Haiger region shows the prospects of ONCITE. Two hundred and fifty networked machines generate as much as 18 terabytes of data there every day, data which is analysed, processed in near real time and used to optimise production – with the necessary data security and sovereignty. When the plant was being planned in 2015, no customised, data-sovereign solution was available. This provided the impetus for developing ONCITE. With the IBM solution's help, the possibilities grew: Product information from the SAP system was merged with real-time station data. This made it possible to visualise the processing status of the respective products and the overall production process quickly and easily.

"The setting up and digital integration of our production processes in Haiger was pioneering work. Now, with ONCITE powered by IBM, we want our customers to benefit from our experience too," says Professor Friedhelm Loh, Owner and CEO of the Friedhelm Loh Group: IBM is a partner who increases the benefits and implementation speed for customers – with full data sovereignty."

GEC also relies on the GAIA-X compliant International Data Spaces (IDS) architecture to protect the data's expertise. The company is one of only a few cloud providers on the market that is "ready" for IDS and consequently GAIA-X. This way, the Friedhelm Loh Group is also supporting the new GAIA-X organisation's mission to establish a secure and sovereign European data infrastructure. With its subsidiary GEC, it is one of the co-founders of GAIA-X. Professor Friedhelm Loh helped start up the major European project, which Peter Altmaier, Germany's Federal Minister for Economic Affairs and Energy, launched in autumn 2019.

"We are delighted to be contributing – with ONCITE – to an efficient realignment of IT-based on cloud principles at the factory," says Gregor Pillen, General Manager for Germany, Austria and Switzerland at IBM. "ONCITE powered by IBM

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corresponds to our understanding of 'cloudifying' factories: With our hybrid cloud approach, companies retain complete data sovereignty because they can determine which data is processed how and where, whether it be locally, centrally or in the public cloud."

GEC offers a three-month test phase of the solution for all interested companies.

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Caption(s)

Image 1 (ONCITE powered by IBM): With "ONCITE powered by IBM", an all-in-one hybrid cloud solution, both German Edge Cloud and IBM are addressing the digitisation needs of manufacturing industry through relevant shop floor functions.

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About German Edge Cloud

German Edge Cloud (GEC), a company of the Friedhelm Loh Group, specialises in innovative edge and cloud solutions. GEC's solutions make data available in networked environments quickly, easily and securely, support process optimisation in manufacturing industry through data analytics, for example. It also guarantees the customer full data sovereignty when connected to the public or private cloud. GEC is a developer and service integrator for turnkey solutions, offering both its own and industry-specific systems. The company is already applying its solutions in the Industry 4.0 factory of its sister company Rittal in Haiger. German Edge Cloud integrates and operates hybrid private edge cloud infrastructures from Infrastructure as a Service (IaaS) to Platform as a Service (PaaS) and industry-specific applications in the Software as a Service (SaaS) model. As a founding member of the "GAIA-X" project, German Edge Cloud pursues the goal of interoperable platform solutions without Platform – from the customer's perspective.

Press release

German Edge Cloud GmbH & Co. KG

German Edge Cloud belongs to the owner-managed Friedhelm Loh Group. The Group maintains a global presence, with 12 manufacturing sites and 96 subsidiaries across the world. It has 12,100 employees and posted revenues of €2.6 billion in fiscal 2019.

More information:
www.gec.io and www.friedhelm-loh-group.com

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