



## INDUSTRIAL EDGE

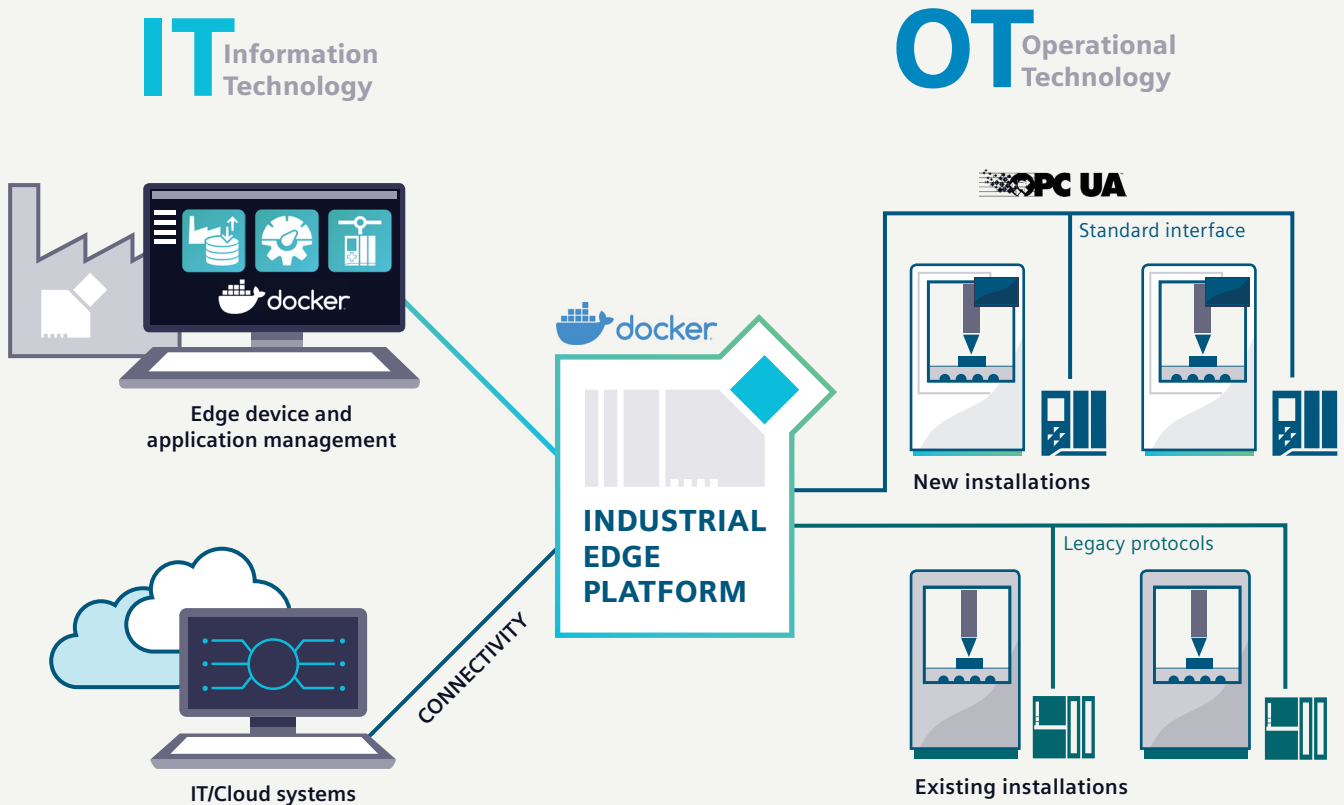
# Connectivity and company-wide integration

Heterogeneous system environments developed over time are typical of production plants in the food and beverage industry. In order to take company-wide advantage of all existing process and device data, more and more companies are pursuing a cloud-oriented strategy using standardized data structures.

Achieving a comprehensive picture of ongoing production processes across different production plants and locations requires a consistently standardized infrastructure based on open standards. It also means using clearly defined interfaces between OT and IT systems that are precisely tailored to your company's needs and the requirements of IT and production.

Standardizing of all the interfaces that connect field devices and industrial automation systems in machines and plants is an essential step in the OT environment. For example, standardized data retrieval via components from different vendors can be facilitated by using standards via OPC and appropriate companion specifications. Another requirement is an automation system with robust communication via open standards and industrial protocols like PROFINET, Ethernet/IP, Modbus TCP, and OPC UA.

These communication solutions deployed on the shop-floor level need to be compatible with the popular IT systems that are commonly used for processing and analyzing data. At the IT end, compatible protocols like REST APIs, MQTT, and streaming solutions are usually utilized to enable stateless data retrieval and on-demand analyses.

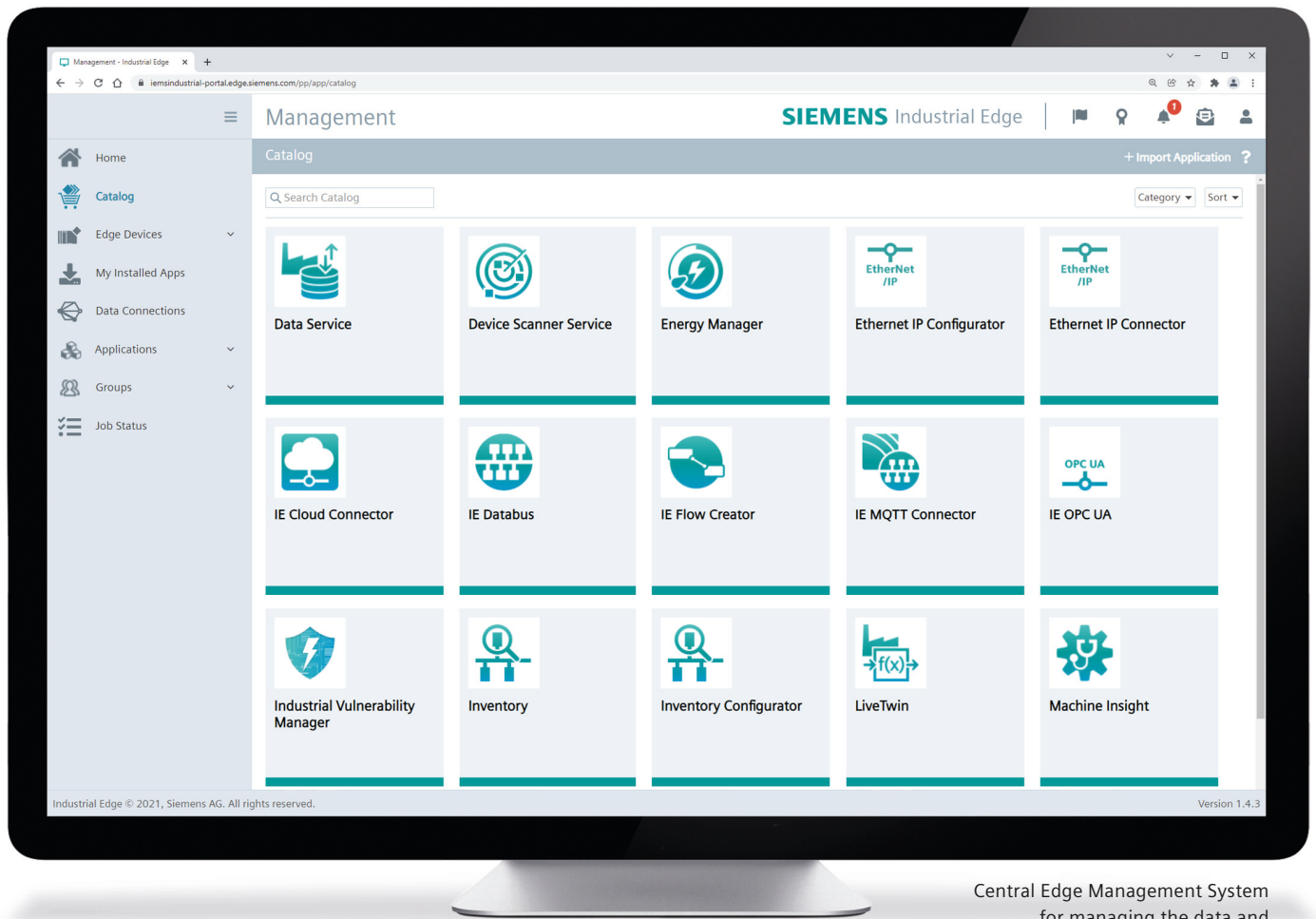


Basic structure for a consistently transparent data flow between OT and IT

### Edge computing as a flexible solution path

With Industrial Edge, Siemens provides a solution path that permits a standardized data flow between OT and IT systems and breaks through the traditionally strict separation between OT and IT environments. The standardized connection of new plants to IT systems is possible using OPC UA. In the case of existing plants, data points and order data are frequently still being exchanged via TCP/IP, involving a lot

of configuration effort on both sides. But apart from order data, there's often no exchange for plant analysis, because the underlying data can't be transmitted in an appropriate format. Industrial Edge offers comprehensive connectivity solutions for connecting sensors, PLCs, and other OT systems, regardless of manufacturer, and linking them to higher-level systems using IT protocols like MQTT.



Central Edge Management System  
for managing the data and  
components of all edge devices

Data analyses and preparatory tasks that serve, for example, to reduce the volume of the data to be transferred can also be easily implemented and scalably performed based on open standards like Docker.

In addition to simple data acquisition and analysis, a standardized and secure solution for one or more production sites also has to have a central control instance that ensures clearly defined authorizations for accessing all systems and data. This requirement is especially important for IT managers. Siemens' Edge Management System centrally manages all real and virtual edge instances and the associated applications and connectivity.

This system approach not only reduces expenditures for operating IT systems in the production area, it also creates the conditions that allow companies to respond quickly to changing market requirements by significantly reducing the time needed between the development of new software and its implementation.

### **Better information for informed decision-making**

The primary goal of an unobstructed data flow between a company's OT and IT environments is to provide a company-wide, standardized, and transparent information base. This is the only way that operational data from all the field devices can be utilized in a proactive, status-based maintenance concept. For instance, an analysis of this data using self-learning systems can reveal critical changes signaling a pending failure. Maintenance personnel can then intervene in time to prevent a plant shutdown.

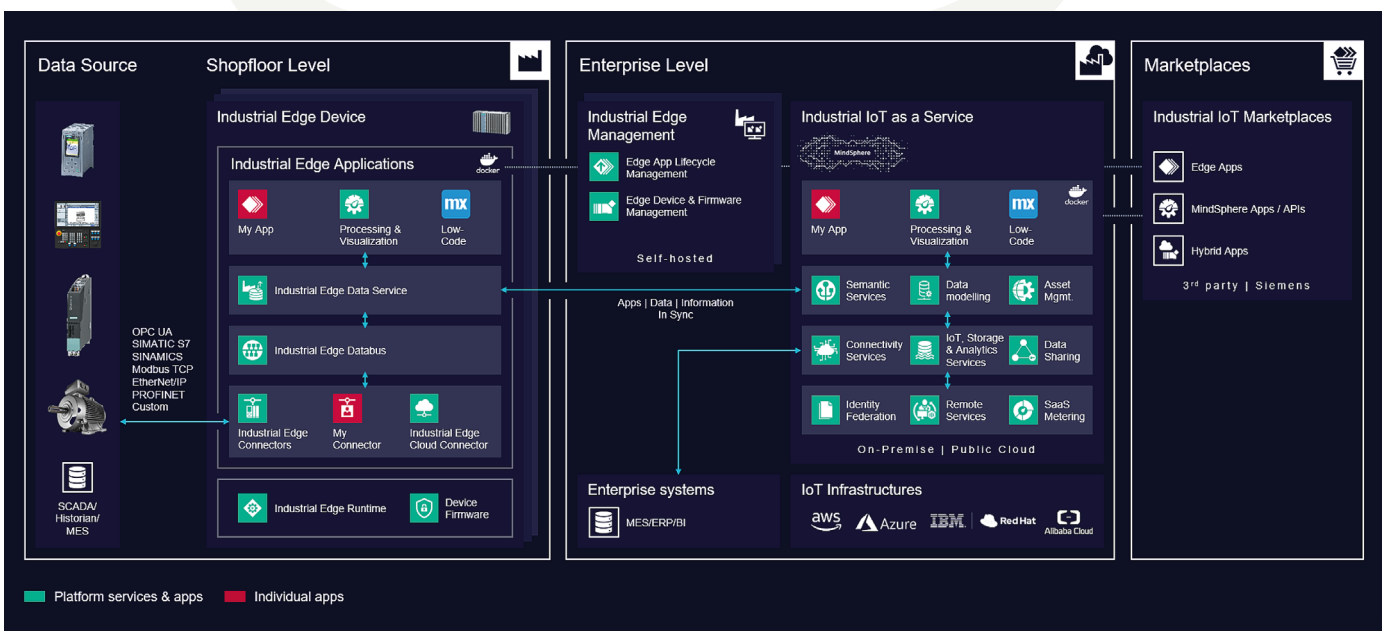
The acquisition and analysis of the latest process and plant data is also an essential tool for the company-wide management of production systems. For example, targeted efficiency analyses can be performed to identify the frequently obscure reasons behind changes in clock cycles and other influences on the production process.

### Communication via open standards

The open edge platform from Siemens allows IT managers to remotely load data from field instrumentation and other devices in a production plant's automation system. It then makes it available in a standardized format using popular industrial protocols and connectors. If necessary, individual data points can be added during runtime and downloaded to connected IT systems.

Alternatively, data acquired from the field can be processed and consolidated using a local or central edge device. This standardized data can then be sent to higher-level IT systems or the cloud using apps from Siemens or partners, or even in-house Docker applications. Targeted actions can also be triggered, and commands can be received from external systems using low-code tools.

Industrial Edge allows users to create a company-wide remote device and application management system that exceeds traditional system limits and enables a consistently transparent data flow that extends from the individual field device in the OT environment to the company's IT environment.

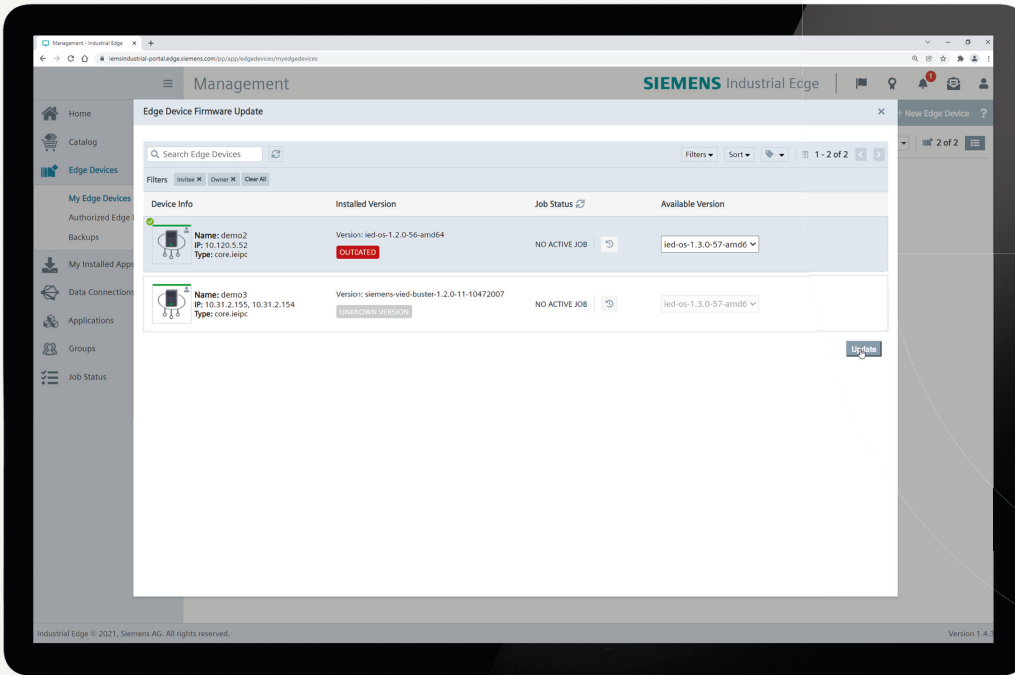


Siemens Industrial IoT: Open system architecture between edge systems, IT systems, and the cloud

### Integrated security and patch management

Bridging the divide between a company's IT and OT systems and integrating a cloud infrastructure intensifies the need to protect data and systems from external attacks. Detecting and eliminating security vulnerabilities is a top priority for a company's existing hardware and software applications.

Industrial Edge solutions from Siemens include the ongoing provision of firmware updates and security patches for all connected edge applications and edge devices. For many existing OT systems, the firmware versions of controllers, drives, power supplies, and much more can also be updated via an inventory management system. If necessary, firmware versions with known security vulnerabilities can be automatically aligned. The latest firmware updates are made available via the Siemens Industry Support Website.



Integrated security and patch management for all essential components in the edge system environment

An integrated backup function also makes it easy to back up data from the edge devices. In the event of a device failure, this guarantees rapid disaster recovery, because the existing configuration data and applications can be transferred to a replacement device in a very short time.

All of these solutions can be controlled either via the user interface or automatically by in-house applications that can be integrated in the system via APIs. They also go a long way toward minimizing the manual effort required to guarantee a secure system environment – which in turn frees up resources that can be better used for creating added value for the company with the aid of edge computing.



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