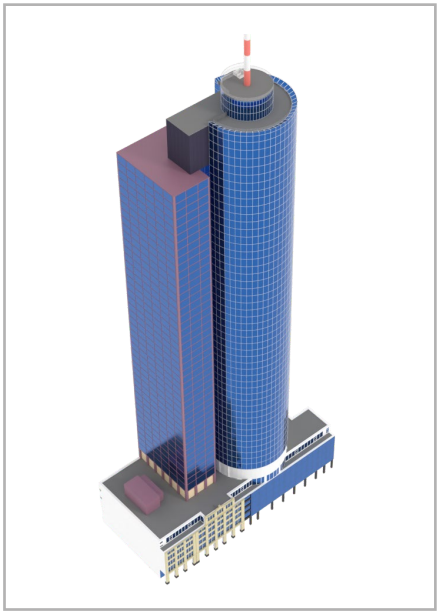
Building Operation System for MAIN TOWER Frankfurt

The MAIN TOWER is part of the Frankfurt am Main skyline. In 2022, a comprehensive modernization of the building control system as well as the building and room automation was started.



3D-Visualization of MAIN TOWER. © OAS

With BACnet and the Niagara Framework®, OAS Open Automation Systems, Tridium-authorized distributor and BIG-EU member since 2021, lay the foundation for the planning of a building operation system in the 55 story MAIN TOWER in Frankfurt. Suitable automation components are already in use on a sample floor. The OAS partner for the system integration is PGA Automation.

The MAIN TOWER is part of the Frankfurt am Main skyline. Opened in 1999, with a height of 200 meters and 55 floors it is one of the four tallest high-rise buildings in Germany. With an outstanding environmental performance, it was certified to LEED Gold Standard in 2011 and to LEED Platinum Standard in 2016. To further improve energy efficiency, a comprehensive modernization of the building control technology as well as the building and room automation began in 2022. As an integration platform for the new and existing systems, the BACnet®-compliant Niagara controller, JACE 8N4 from the OAS Smart Building Solutions series is being tested.

Service-neutral GA Ethernet

One of the central requirements of the modernization project is system openness. For future tasks of the Internet of Things (IoT) and Artificial Intelligence (AI), all components of the technical building equipment must interact in a technology-open manner. All trades and functions, including IoT sensors and software tools, are to be integrated. To this end, a move of all heterogeneous communication systems and interfaces to an overarching and service-neutral Building Automation Ethernet was first planned. A migration concept for over 60 information focal points and 750 electrical distributors is to be developed, covering communication via BACnet, DALI, EnOcean, Honeywell C-Bus, KNX, LCN, LonWorks, Modbus, Niagara FOXs, OPC-DA, OPC-UA and Profinet in the main and subnetworks.

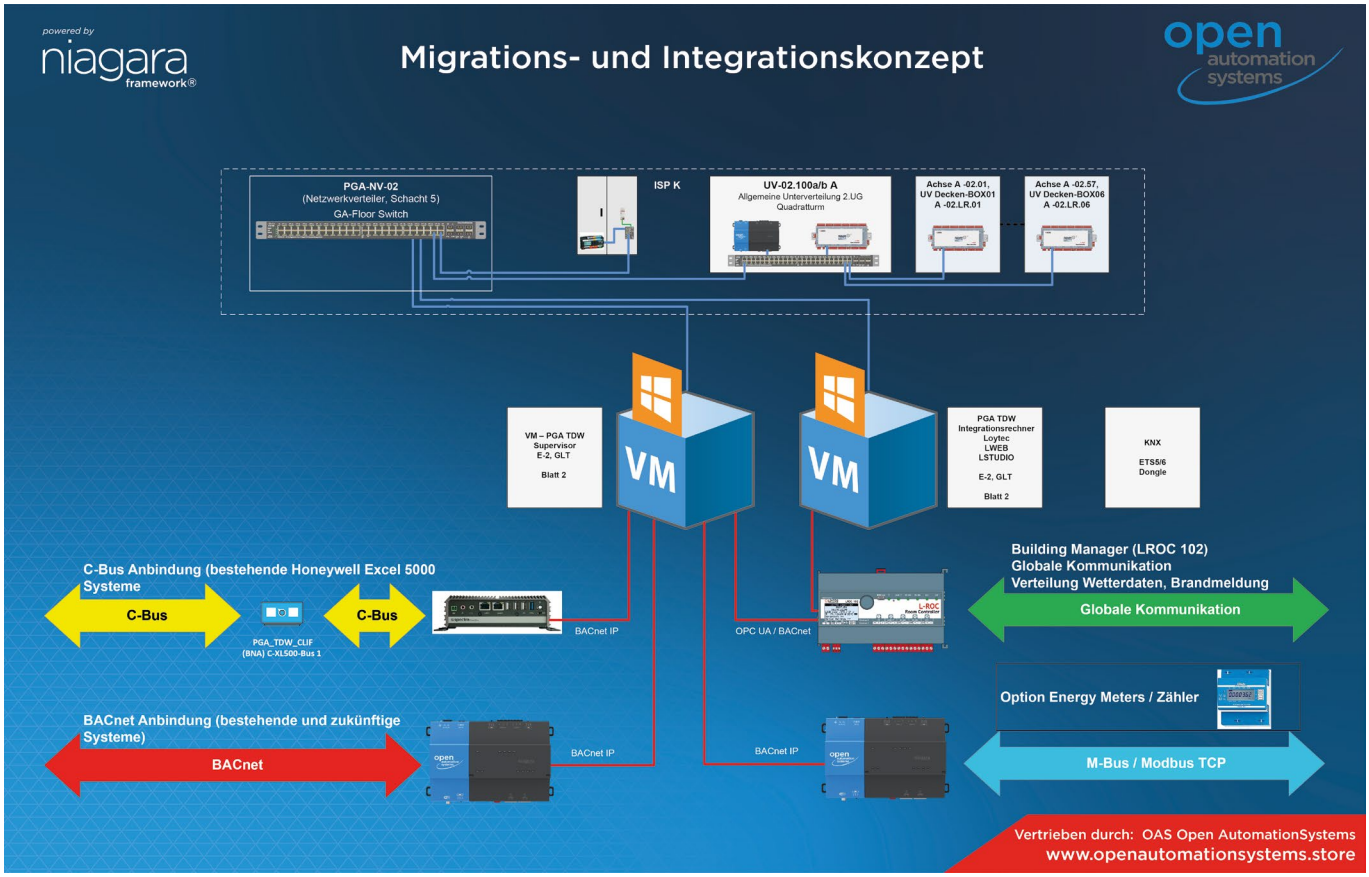
BACnet-capable overall concept

An optimal solution for the integration of these different systems, but also of future tasks, is a BACnet-capable building operation system (BOS). This ensures interaction with existing systems at the field and automation level and enables connection to future BACnet automation and control technology. The investor lays the foundation for the development of the BOS with the model solution for the digitization of OAS, which is based on the Niagara Framework®. This enables the building operating system in the MAIN TOWER to become the BOS framework, the digital heart of building technology, the central software platform that connects all the different technologies. The migration is to take place step by step. During operation, heterogeneous existing systems can be integrated, while at the same time, old subsystems are replaced by new building automation and room automation systems. In parallel to the existing BMS, the operator can already use the new “MAIN TOWER BMS Supervisor” from OAS with this planning, so that the interfaces to the fire alarm system, energy management and other trades can be migrated without interruption.Even before the start of the project, OAS developed a fully equipped sample floor with end-to-end digitalization of the room automation. The integration of the room automation with Loytec components into the Niagara Framework was also carried out here via BACnet/IP. For efficient migration in the MAIN TOWER, OAS also offers further services from a single source: For programming and development of all user interfaces and integration levels, the potential of the “OAS Supervisor Utilities Application” can be used. Embedded in the BACnet®-certified Niagara Supervisor, the OAS Supervisor Utilities Application enables the rational, structured, and semi-automated creation of an open BMS, energy management or SCADA solution. The use of the web visualization platform “OAS BMS-Supervisor” is possible to quickly find and safely operate all floors, trades, plants, and functions.

“Sustainable management of the MAIN TOWER is the goal. OAS and PGA demonstrate how the digital future works on a sample surface.”

Michael Wellenberg, Senior Project Manager, GGM Gesellschaft für Gebäude-Management

OAS BMS Supervisor MAIN TOWER – Floor View. © OAS



Migration and integration concept. © OAS

open automation systems

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