zaphire

Architecture in Zaphire

Zaphire BMS is a modern platform for efficient monitoring and management of buildings and technical installations, available as both a cloud-based service and an on-premise deployment. It is built on key principles of security, scalability, and resilience, with each building operating as an independent and isolated unit.

The Story of Zaphire

Zaphire - A New Generation of Building Automation

Zaphire represents a new generation of building automation, created to address the limitations of traditional building and energy management systems. For many years, existing solutions were characterized by high complexity, limited flexibility, and poor usability. They often relied on outdated technology, were difficult to integrate with other systems, and required significant resources to operate and maintain.

In 2018, Zaphire was founded with a clear ambition: to build a modern, top-level system for building automation based on current IT principles and open standards. The goal was not only to replace legacy systems, but to fundamentally improve how buildings are monitored, controlled, and optimized.

From the beginning, the focus has been on simplicity, reliability, and performance. By designing the platform from the ground up, Zaphire enables seamless integration with third-party systems, efficient handling of large data volumes, and a user experience tailored to both technical operators and decision-makers. This approach allows organizations to reduce operational complexity while gaining better insight into their buildings.

Today, Zaphire is an established provider of building and energy management solutions, serving both large municipalities - such as Lillestrøm and Bærum - and major property owners. The platform supports everything from single buildings to large portfolios, providing a scalable foundation that adapts to different needs and use cases.
By combining robust engineering with intuitive design, Zaphire helps building owners and operators reduce energy consumption, streamline daily operations, and make data-driven decisions. At the same time, the platform ensures high operational reliability, full mobile accessibility, and significantly lower lifecycle costs compared to traditional systems.

With its cloud-based architecture and continuous development model, Zaphire delivers a future-ready platform that evolves alongside changing requirements, without vendor lock-in, complex upgrades, or disruption to ongoing operations.

Architecture and Security Foundation

Zaphire is designed around a distributed and secure architecture where each building operates as an independent environment. This approach ensures high resilience, simplifies system design, and limits the potential impact of failures or security incidents.

Building-Level Isolation

Each building is deployed with its own local technical network, where all automation devices and IoT components operate behind a firewall. These networks are fully separated from one another, preventing any direct communication between buildings.

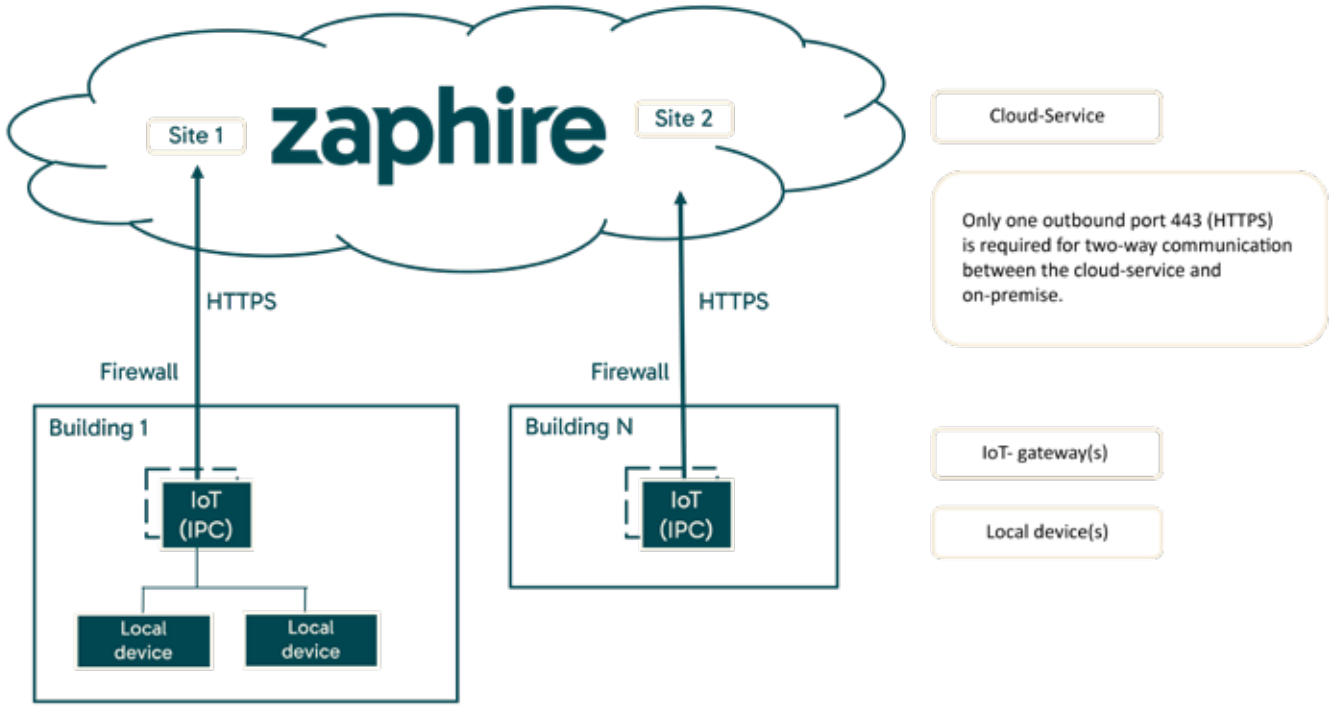
This strict segmentation ensures that any issue, whether technical or security-related, is contained within a single site. As a result, the overall system becomes more robust, and the risk of large-scale disruptions is significantly reduced. Additional segmentation within a building can also be applied to further improve fault tolerance and system stability.

Secure Gateway via IoT Coupler

The IoT coupler functions as the connection point between the local building infrastructure and the Zaphire platform. It collects data from local systems such as BACnet and Modbus devices, while executing drivers directly within the building environment.

All communication to the platform is initiated from inside the building network through a secure, outbound connection. This eliminates the need for inbound access and ensures that internal systems remain protected behind existing security controls.

Data is transmitted using encrypted HTTPS (TLS) over standard port 443, providing secure and reliable communication without requiring complex firewall configurations. This design reduces the system's attack surface while maintaining compatibility with standard IT policies.



Communication, Integration and Platform Capabilities

Zaphire is built to ensure reliable operation at the building level while enabling secure and flexible interaction with external systems and services.

Local Communication and Operational Continuity

All time-critical communication with technical systems takes place locally within the building network. Protocols such as BACnet and Modbus operate entirely within this environment, and control logic is executed on the IoT coupler.

This ensures that core building functions remain operational even if external connectivity is temporarily unavailable. At the same time, local execution provides low latency and predictable performance for all critical processes.

Secure External Communication

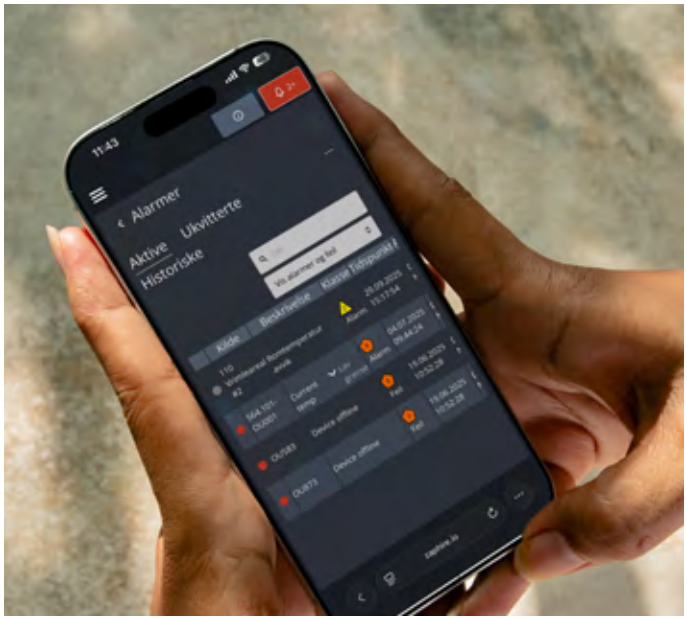
Communication between the building and the Zaphire platform is handled through encrypted outbound connections. Only HTTPS (TLS) traffic over port 443 is required, and no inbound connectivity is allowed.

This approach simplifies network configuration while ensuring that building systems are not directly exposed to external networks. All data exchange is securely managed without compromising the integrity of the local infrastructure.

Centralized Access Without Direct Interconnection

Buildings do not communicate directly with each other. Instead, all cross-site interaction is managed through the centralized Zaphire platform.

This design prevents lateral movement between sites and ensures that access is controlled and auditable. Users can monitor and manage multiple buildings through a unified interface, without introducing dependencies between local systems.



Platform and Integration Capabilities

Zaphire provides a fully web-based interface accessible from any modern device, eliminating the need for dedicated software installations. The platform also offers a REST API, enabling integration with external systems and data sources.

Typical integrations include energy providers, weather services, and renewable energy systems. By aggregating and processing data from multiple sources, Zaphire enables more advanced analysis and smarter operational decisions.

Continuous Development and Future Readiness

The platform is continuously updated through automated deployments, ensuring that new features, improvements, and security updates are delivered without manual intervention.

This model keeps the system aligned with evolving requirements and technological advancements, while minimizing operational overhead for users.