Navigator cybersecurity

Protecting connected buildings

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Digitalization with cloud computing

Today, the world pursues the next wave in digitalization. Not only that industry leading products, solutions, and services of Siemens are accessible via the internet, the interconnectivity of operational technology (OT), facility assets and human operators are increasing with an enormous speed.

An ever-growing number of companies benefit from substantial financial savings, lower organizational hindrance and enablement to focus on core business activities, when using Software-as-a-Service (SaaS) applications to process and store the operational data in the cloud. However, many organizations still have concerns to migrate and use cloud services because of cybersecurity risks. Cybercrime appears to be widespread and possess a real-life threat. Breaches of law related to cyber-crime costs the global economy almost $600 billion, according to estimates by the Center for Strategic and International Studies (CSIS).

"Security now means taking a holistic approach to all aspects of security," said Earl Perkins, Research Vice President at Gartner, during a presentation at Gartner Security & Risk Summit.

Therefore, to drive business success in the digital age, cybersecurity is a mandatory prerequisite.

Security of Siemens cloud services

Siemens values the core pillars of information security: confidentiality, integrity, and availability. Meaning, only authorized entities shall have access to accurate non-tampered data, whenever access is needed.
In other words: "Highly available and protected data processing within trust boundaries!"

All cloud-based services of Siemens follow a comprehensive and holistic cybersecurity approach, where security activities are embedded throughout the entire product and solution lifecycle.

As early as in the planning phase, all products and solutions in the Siemens portfolio are labeled with security objectives after passing a business impact analysis. The derived protection goals form the basis for the architectural concept that is later evaluated with an in-deep threat and risk modelling. At Siemens, the realization is always accompanied by secure coding activities, which are supplemented with unit and integration tests. Applying cybersecurity hardening measure plans is required to pass a Siemens quality gate. Finally, the cloud solution is verified with code reviews and third party security assessments to assure built-in cloud security.

The product development and support teams ensure together with Siemens CERT secure operations. The mission: reliability, vulnerability management, threat intelligence and incident response – all over the world and around the clock on 365 days per year.

Navigator – the cloud-based energy and asset management platform

Navigator security concept

Navigator – the cloud-based energy and asset management platform, is hosted with the market leading and trusted cloud provider Amazon Web Services (AWS), for which Siemens is strongly committed to the shared responsibility model. Here, the cloud provider is responsible for security of the cloud (IT infrastructure and physical environment) and Siemens is responsible for the security in the cloud (network, application and service setup). The cloud network is fully owned and managed by Siemens and is located in one of the state-of-the-art data centers within the European Union. With the application of security by design principles, Navigator is a highly available cloud solution that is automatically deployed and updated within minutes. Throughout the whole system, data in rest and data in transit is protected by the most recent cryptographic technology. Security monitoring services are raising alerts to quickly react upon. Automated backup and restore capabilities ensure the availability and accessibility of data.

> *"Siemens ID, your key to securely access Siemens applications and services with one digital identity."*

Navigator uses Siemens ID, which is the main identity provider (IdP) for our digital offerings. The authentication service provides secured access with multi factor authentication (MFA) and integrates completely with the user and authorization concept of Navigator.

Privacy by design and default

Siemens follows a holistic privacy approach that allows individual requirements to be met, while also ensuring that customers are provided with GDPR-compliant systems. Siemens applies privacy by design and default during the development and operations of all products, solutions, and services to ensure that strict measures affecting data protection are implemented as early as in the planning phase and are continuously followed during the operations stage.
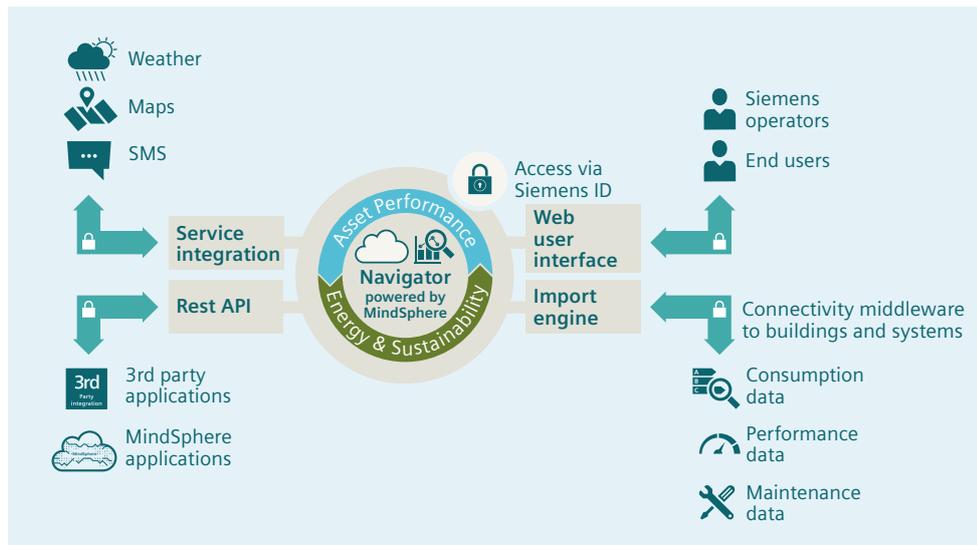
Highlights

- **Siemens ID –** enforced password policy and multi factor authentication (MFA)
- **Network traffic –** all connections encrypted by policy (HTTPS/TLSv1.x)
- **Data & backup –** all data, incl. backup encrypted (AES-GCM w/256-bit key)
- **Certificate management –** trusted certificates w/key strength of 2048 bit
- **Role-based access control –** secure and role based authentication
- **High availability –** redundant and scalable layout w/backup and restore
- **MindSphere and custom apps –** secure APIs for advanced data analytics
- **Security assessments –** independent penetration tests for security verification

Connectivity everywhere

The powerful connectivity middleware is connecting south to north bound data traffic and enables customers to push building data only via encrypted connections to Navigator's web service, ensuring tamper resistance and client-to-server security.

Meet industry cutting edge connectivity and analytics, with the brand-new MindSphere API Gateway to bridge Navigator's data to the world of the Industrial Internet of Things.

> *"MindSphere is the cloud-based, open IoT operating system from Siemens to harness the wealth of data with advanced analytics."*

The data can be securely transferred to MindSphere and reused in customer-specific apps.

Creating Perfect Places

Siemens is the expert in turning big data into smart data. Cloud technology and services help us to collect the type of building data that is used to improve performance, energy, and sustainability.

> *"Optimize equipment and asset maintenance with Navigator's Asset Performance Services."*

Remote connections allow for digital services such as fault detection and diagnostics as well as energy efficiency programs. Our experts, including those at the digital service centers, use our digitally enhanced technology like Navigator to turn data into results.

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