IoT Cloud Platform Enhances Medical Device Management

Success Story

To predict device failure by scaling data collection and storage, a Fortune 500 science & technology company developed an IoT cloud platform for transforming its medical device management processes by remotely monitoring 2500+ devices in real-time.

CitiusTech

Business Impact

The client, a leading global science and technology innovator, leveraged CitiusTech's engineering capabilities in the cloud and IoT expertise to manage the various types of devices in its group of companies across different geographies.

2500+ microscopy devices connected	**180+** data parameters generated per device	**400 GB** of telemetry data processed everyday	**200 M** data points ingested and stored everyday

Client Requirement

The client's printing & labelling solutions enable MedTech organizations to maintain their medical devices. It needed a IoT platform to remotely check devices for reducing downtime & minimize operating losses. The solution needed to:

- Store telemetry & event data
- Configure rules & notifications on event data
- Query telemetry data in real time
- Provide remote connectivity for devices
- Ensure secure & safe user management

The CitiusTech Advantage

CitiusTech setup a dedicated team to design the scalable and multi-tenant IoT cloud platform. The goal was to ensure **seamless data flow** and **real-time visibility** to prevent bottlenecks and enhance performance across processes.

Initiated with POC approach and built a scalable data ingestion solution with right open-source tech stack. Developed a CI/CD infrastructure to automate the entire delivery process.

A performance testing framework was established to ensure regular tests on data ingestion and platform APIs. It provided the client with insights on response time, scalability and module upgradation.

Technology Overview

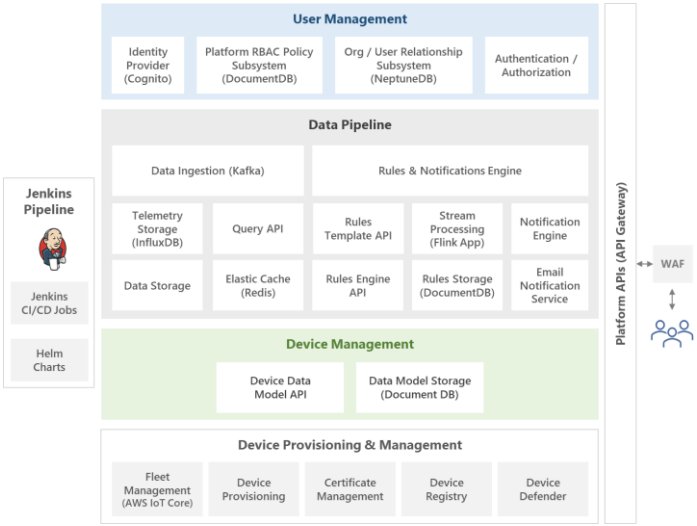
CitiusTech built the IoT cloud platform with close collaboration with the client's engineering team. The solution includes:

Data Pipeline Management

- Ingest **high volume telemetry and event data** using Kafka to various destinations such as Influx, Redis and S3
- Create **re-usable templates** for rules with conditional expression
- Workflow enablers such as **Notifications & Rule Engine** for execution of rules on device / group / device model

IoT Platform Services

- **IAM** for onboarding (users, groups, site)
- **Infrastructure management** with authentication and authorization service
- New **device identification and device provisioning** on the IoT platform
- **RBAC policy** for limiting access to platform APIs at group / user level
- **Asset management** API to manage groups (associating / removing assets)
- **Query Management** API for querying the groups and assets



Solution Schematic – Medical Device Management

About CitiusTech

CitiusTech is a specialist provider of healthcare technology services and solutions to healthcare technology companies, providers, payers and life sciences organizations. With over 4,000 professionals worldwide, CitiusTech enables healthcare organizations to drive clinical value chain excellence - across integration & interoperability, data management (EDW, Big Data), performance management (BI / analytics), predictive analytics & data science and digital engagement (mobile, IoT). CitiusTech helps customers accelerate innovation in healthcare through specialized solutions, platforms, proficiencies and accelerators. With cutting-edge technology, world-class service quality and a global resource base, CitiusTech consistently delivers best-in-class solutions and an unmatched cost advantage to healthcare organizations worldwide.

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