DSH-PREDMNT

Data brief

Cloud based web application for condition monitoring and predictive maintenance

Product summary	
Cloud-based condition monitoring and predictive maintenance web app	DSH-PREDMNT
Cloud environment	Amazon web services
Application scenario	Condition Monitoring / Predictive Maintenance

Features

- Device and edge registration and configuration:
  - provisioning
  - association with assets
  - streaming time
- Data visualization:
  - device live monitoring
  - historical trends
- Asset health monitoring:
  - event statistics
  - data collection and download
  - historical trend analysis
  - settable failure thresholds for alerts and warnings
- Position and status overview map of tracking system
- Anomaly detection with NanoEdge™ AI Studio generated libraries:
  - launches learning and inference
  - receives and shows anomalies detected
- Events notification from devices
- Available applications:
  - vibration monitoring
  - ultrasound monitoring
  - environmental monitoring
  - condition monitoring
  - event tracking
- Application framework based on Amazon Web Services
- Data volume limits:
  - automatic user notification
  - trial basis duration: 6 months
  - maximum number of devices: 5
- User data segregation

Description

The Predictive Maintenance Dashboard is a cloud application based on AWS services. It provides a highly functional and intuitive interface that is tailored for the logging, visualization, and analysis of condition monitoring data from motion and acoustic vibration sensing elements, as well as temperature and other environmental data.

You can use the dashboard to plot and graph real-time and historical data, monitor critical operating conditions such as running temperature, and set thresholds for automatic warnings when key parameters exceed acceptable limits. Once you collect and download the data, you can develop your own algorithms for edge processing and event visualization and collect anomalies generated from the Edge devices by using NanoEdge™ AI Studio generated libraries.

The cloud package can receive and process data streamed directly from compatible ST sensor nodes with real-time data preprocessing capabilities, such as Fast Fourier Transforms (FFT). It also provides SDKs for the AWS Greengrass service to interface with edge gateways that manages compatible ST devices, which preprocess and store bulk data.

As the dashboard runs on a third-party cloud storage service provider, the number of ST IoT sensor nodes you can connect on a free trial basis is limited to five, for a maximum duration of 6 months. Additional monitoring based on resource consumption can be applied to keep account consumption under control.

1 Predictive maintenance on cloud application overview

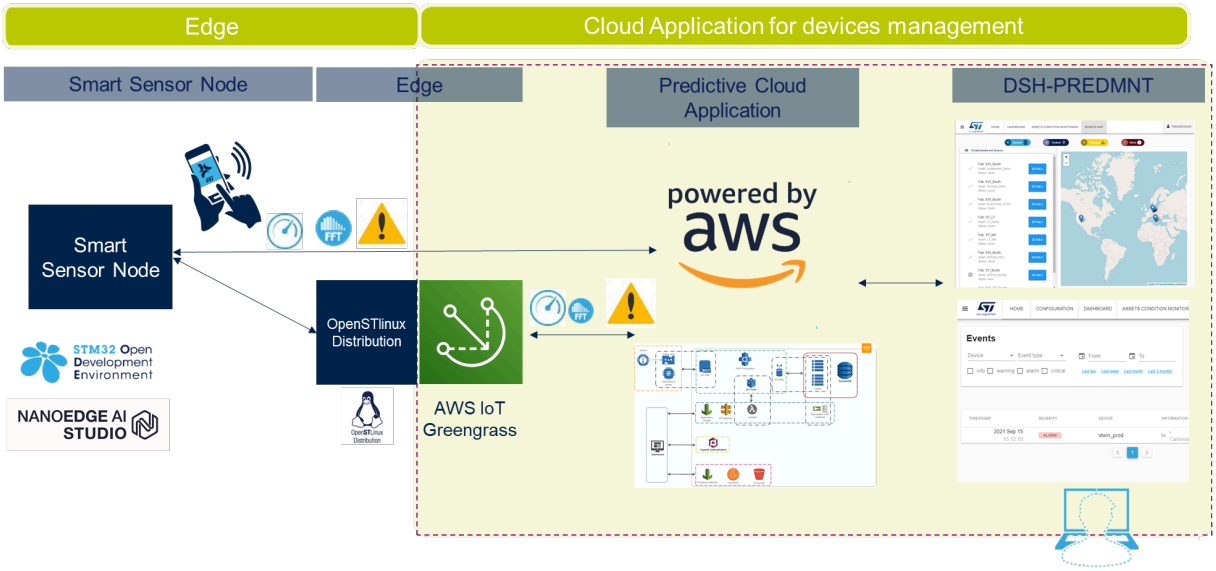
The Predictive Maintenance Dashboard is the interface for the complete IoT Cloud application designed for:

- condition monitoring and anomaly detection based on AWS web services;
- storage, data, and device management for smart sensor nodes and gateways in condition monitoring;
- anomaly detection from the Edge based on NanoEdge™ AI Studio generated libraries or for custom processing libraries integrated in the ST devices.

The application is tailored for networking, development tools, monitoring, security, notification of events representing anomalies, towards a predictive maintenance application.

The User Dashboard is the graphical browser interface through which you can set up or provision condition monitoring nodes in a virtual network, monitor and control the status and activity of the nodes, analyze incoming data, and set trigger alerts for predictive maintenance purposes.

Figure 1. Cloud predictive maintenance solution block diagram



The other side of the solution consists of the actual smart sensor nodes and gateways nodes that you can set up using any of ST's highly functional kits for different use case scenarios and data processing strategies.

The package allows you to set up a centrally managed network, where the nodes stream data directly into the IoT Cloud Application for further processing and analysis, or a more sophisticated edge network where some of the processing is managed by the nodes themselves as well as the case of NanoEdge™ AI Studio generated libraries or as well in the case of user custom libraries.

RELATED LINKS

Visit the ST Condition Monitoring / Predictive Maintenance application page for more information on relevant ST applications and solutions

Glossary

edge computing Relates to the computational processing of data by edge devices near or at the collection point in order to reduce networking and processing burdens on data centers or cloud servers.

edge device Any device or combination of devices associated with the collection, processing, storage or management of data in a specific location or area, not directly connected with a centralized corporate or cloud monitoring and analysis facility.

edge gateway A local network server through which data centers and cloud applications can access stored or real-time data collected by individual or grouped edge devices.

Revision history

Table 1. Document revision history

Date	Version	Changes
09-Jul-2019	1	Initial release.
21-Oct-2019	2	Updated Cloud predictive maintenance solution block diagram.
04-Apr-2020	3	Updated Cover page, Features, Description, Predictive maintenance on cloud application overview and Cloud predictive maintenance solution block diagram.
19-Oct-2021	4	Updated Cover page, Features, Description, Section 1 Predictive maintenance on cloud application overview and Figure 1. Cloud predictive maintenance solution block diagram.