# [Predictive Maintenance (with a Thermal Imaging Camera, vibration sensors, etc.)](https://wiki.akraino.org/pages/viewpage.action?pageId=28972467)

Consider a single equipment like a boiler or robotic conveyor or set of machines in a mechanical lab that should be monitored by different independent sensors for the parameters. Upon this monitoring the actions can be made, for example the maintenance of these machines once a temperature is higher than a threshold.

This blueprint focuses on the case of many different machines handling disregarding the sensor data, actual storage type, actual HW.

Traditional approach is a focused solutions that incorporate some specific hardware and software that are dedicated to solve a specific task.

We present the unified solution that uses the means of virtualization and easy deployment at scale using LFEdge EVE project and generic concept of north bridge (data storage) - south bridge (sensors) from LFEdge Fledge project. We aggregate and process data on the edge devices allowing a fault tolerant system that may work even without the internet. We provide a fully open-source stack solution that is extendable and that already supports various data protocols: Modbus, OPC-UA, MQQT, CoAP, HTTPs and various data repositories including Kafka, Splunk, Google Cloud.

The Edge node may be any device with min 2 ARM or X86 cores and 2GB of RAM (e.g. X86 NUC or Raspberry PI) and is connected to one or more sensors. Edge node is running EVE as an OS on a bare HW. Eve is running Fledge service as a Docker container. Eve ensures passthrough of the sensor data that goes through the Telco Network to the Fledge. Eve is centrally managed from EVE controller (which is Eden) that is installed in the Cloud. It allows to manage new versions of Fledge containers and itself. Fledge container may hold any apps as an example in this Bluprint we show how to setup Alerts to email once the temperature is above the critical level

