



Reference Architectures for Edge-to-Enterprise IoT Using SAS[®]: Overview

What Are Reference Architectures for Edge-to-Enterprise IoT Using SAS?

Reference Architectures for Edge-to-Enterprise IoT Using SAS are a set of use cases that show you how to capture, analyze, and respond to data in motion.

Physical devices, vehicles, sensors, and actuators produce real-time streams of data. You can mine and analyze this data using edge devices, data centers, and the cloud. You can transform and analyze the data as it flows through its connected ecosystem. You can then collect it at a data center on-premises and subsequently run big data analytics on data at rest.

At the heart of these reference architectures is SAS Event Stream Processing, which enables programmers to build applications that can quickly process and analyze large numbers of continuously flowing events. You can write applications in XML or C++. Event streams are published in applications that use the C, JAVA, or Python publish/subscribe APIs, connector classes, adapter executables, Streamviewer, or SAS Event Stream Processing Studio.

Reference Architectures for Edge-to-Enterprise IoT Using SAS depends on SAS Viya, which provides a unified third-generation high-performance analytics engine. SAS Viya provides SAS Cloud Analytic Services, which is suitable for both on-premises and cloud deployments.

You can use a separately purchased product, SAS Event Stream Manager, to manage your SAS Event Stream Processing environment. You can use it to deploy updated SAS Event Stream Processing projects to ESP edge servers and monitor existing deployments.

Common Architecture

The common architecture for these use cases consists of the following components:

- Devices (such as sensors) that record data in real time.
- An ESP server that runs on the edge.

- A message bus (for example, one that runs Apache Kafka) to facilitate publish/subscribe operations between running ESP servers.
- An ESP server that runs at the data center to receive event streams from ESP servers on the edge through the message bus.
- Other applications running destination services for further post-processing and storage of data, and for model creation and revision.

Figure 1 Common Architecture

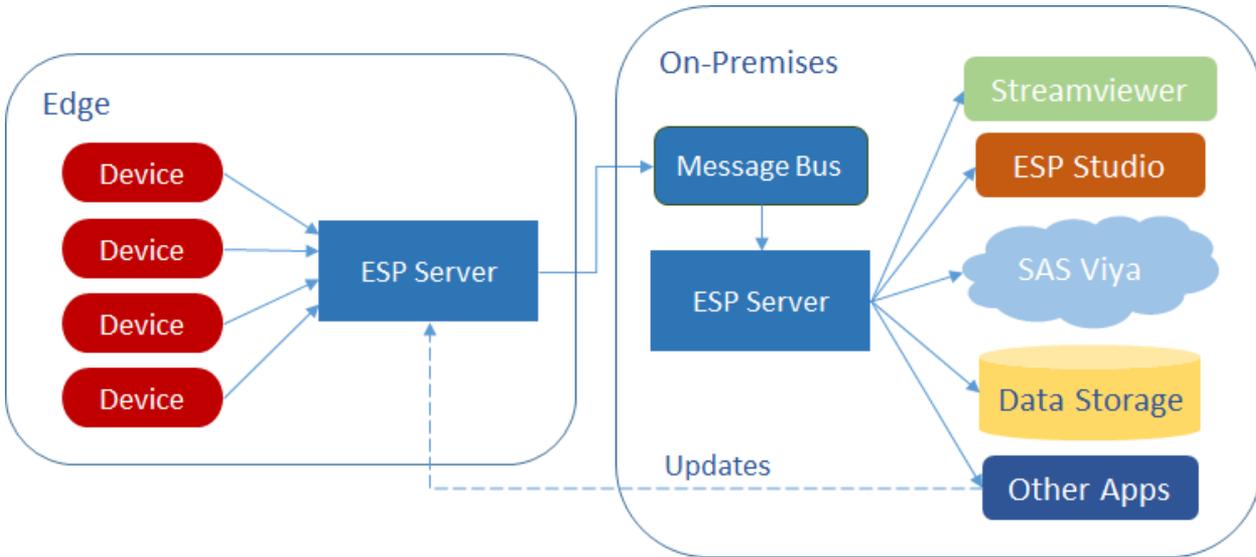


Table 1 Components of the Common Architecture

Edge	On-Premises
<p>Receives input data from devices that record data in real time.</p> <p>Runs SAS Event Stream Processing Edge, which includes SAS Event Stream Processing Analytics.</p>	<p>Receives data from the edge through a message bus.</p> <p>Provides full functionality for publish/subscribe operations, analytical processing, and data visualization.</p> <ul style="list-style-type: none"> ■ An appropriate adapter for the communications bus. ■ SAS Event Stream Processing Full, which includes SAS Event Stream Processing Analytics and Streamviewer, and SAS Event Stream Processing Studio. ■ SAS Viya, including SAS Visual Analytics and SAS Visual Statistics. ■ Appropriate data storage. <p>Software and model updates could flow from other applications running the destination services to the ESP server running on the edge.</p>