

SAS® Analytics for IoT (Government) on G-Cloud

Service Definition



Drive innovation, efficiencies and results by putting IoT analytics in users' hands.

SAS® Analytics for IoT (Government) on G-Cloud

SAS Analytics for IoT for Government is an advanced analytics solution tailored to public sector use cases that enables government agencies to harness data from Internet of Things (IoT) devices at scale across edge, cloud, and central systems. Built on the SAS Viya platform, it integrates real-time data ingestion, AI-embedded analytics, machine learning, and high-performance streaming processing to transform high-frequency sensor data into actionable insights. The solution supports the full IoT analytics life cycle; data acquisition, transformation, visualisation, predictive modelling, and decisioning, so departments can improve service delivery, optimise infrastructure performance, enhance public safety, and make evidence-based decisions with greater speed and accuracy. By mining IoT data where it resides, it helps governments manage assets and transportation systems, improve citizen engagement, and increase operational efficiency while supporting resilience and responsiveness in complex public environments.

Why is SAS Analytics for IoT Important?

Government agencies and public infrastructure providers need to drive service reliability and asset resilience while operational costs and resource waste.

Public sector organisations face several challenges in improving service quality and asset availability. Here are key barriers:

- **Predicting equipment failures.** Unplanned downtime due to unforeseen utility or transit failures disrupts citizen services.
- **Ensuring consistent product quality.** Variations in production processes lead to inconsistent public outcomes.
- **Energy consumption optimisation.** High operational costs reduce budgetary efficiency.
- **Regulatory compliance.** Adhering to stringent public safety regulations requires meticulous monitoring.

By addressing these challenges, SAS enhances operational efficiency and mission readiness in government and public works.

What does SAS Analytics for IoT do?

SAS Analytics for IoT is deployed within a cloud environment that seamlessly integrates with edge devices, delivering comprehensive solutions to enhance government operations.

We approach the problem by providing software and services to help you:

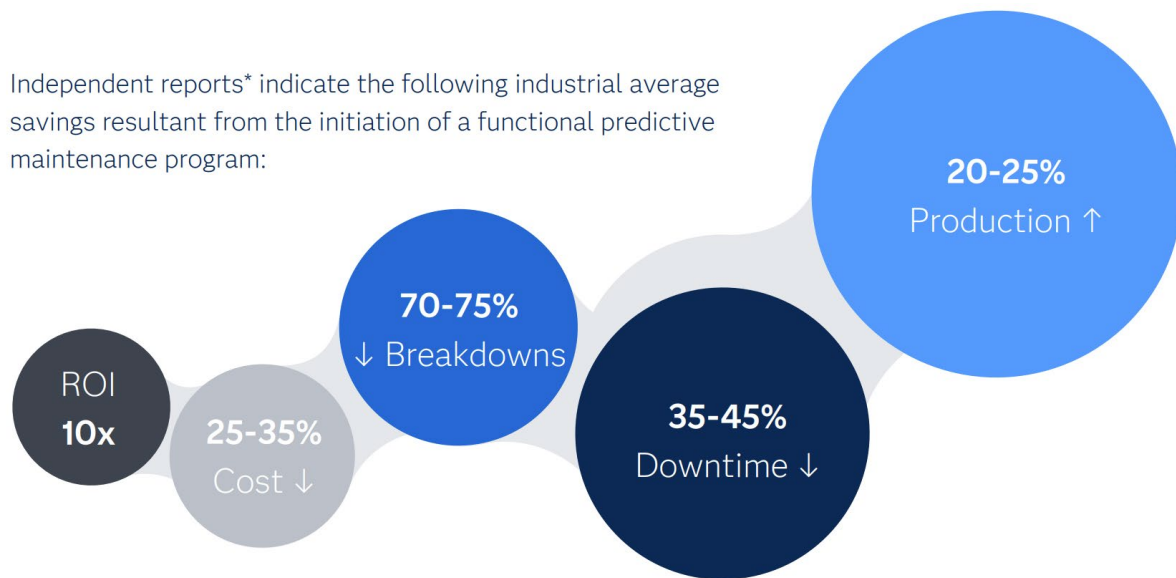
- **Improve service quality.** By analysing IoT data in real time from edge to cloud, SAS' predictive IoT analytics help improve responsiveness, citizens' safety, operational efficiency, and public accountability.
- **Increase infrastructure up-time.** SAS Asset Performance Analytics harness telemetry and sensor data to boost uptime and public safety while lowering maintenance costs and reducing the risk of service interruptions.
- **Increase Mission Effectiveness.** SAS Production Quality Analytics uses powerful analytics to enable you to see performance in a new light, across the environment and throughout the entire asset life cycle.
- **Reduce operational and energy costs.** SAS IoT analytics solutions help optimise utility cost by providing insights that lead to more efficient resource usage across public facilities.

The SAS Difference

SAS Analytics for IoT empowers government agencies to enhance infrastructure quality and asset availability by leveraging predictive analytics. By consolidating structured and unstructured data from diverse sources, SAS provides a governance-centric view of agency performance, enabling superior root-cause analysis and early detection of potential issues. This proactive approach allows agencies to address problems before they escalate, resulting in higher service reliability at reduced costs.

Business Impact

Independent reports* indicate the following industrial average savings resultant from the initiation of a functional predictive maintenance program:



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*Source: Operations and Maintenance Best Practices Guide. US Department of Energy



Benefits

- Provides a visual interface to easily create/test specialised techniques while also exposing full programmatic control for expert users working with complex IoT and enterprise data.
- Procedures take advantage of the distributed, cloud-based computational environment, ensuring scalable performance for large, multi-source analytical workloads.
- Create pipelines to prepare data and build advanced text/econometrics/optimisation/forecasting models, then operationalise them on streaming and batch IoT data.
- Econometrics offers diagnostics, variable/model selection and visualisation for optimal analysis of macroeconomic and community impact effects combined with sensor-level drivers.
- Optimisation enables effective analysis of complex public sector problems, such as logistics routing, maintenance scheduling, and resource allocation, achieving better outcomes.
- Streamlines IT management, providing a collaborative end-to-end analytics environment that spans data ingestion, model development, deployment and monitoring.
- In-memory and optimised processing reduces consumption costs and development time, even when processing continuous streams and large historical sensor archives.
- Integrated governance displays relationships between data, models, and decisions, including lineage from IoT sources through to actions taken in governmental systems.
- Improved productivity by reducing manual experimentation and improving collaboration between data scientists, engineers, domain experts and operations teams.
- Develop/share reports and dashboards to highlight service gaps, asset health issues, and public safety anomalies, supporting continuous monitoring and closed-loop improvement in IoT environments.
- Develop/share reports to highlight process gaps and provide continuous monitoring.

Overview

SAS Analytics For IoT (SAS Viya included):

- Enhanced features over SAS Viya Advanced, including anomaly detection, predictive maintenance capabilities, stability monitoring and condition-based monitoring of public assets, industrial optimisation and forecasting techniques.
- A visual environment for self-service analytics and specialised data-science capabilities, including low-code experiences for building, comparing and monitoring advanced models.
- Enhanced features over SAS Viya, including text/econometrics/optimisation/forecasting techniques that can be applied to both business and IoT time-series data.
- SAS Optimisation, including general and network optimisation procedures to support complex urban planning, transit routing, and emergency resource allocation.
- SAS Econometrics, procedures that can incorporate exogenous drivers from IoT sensors to model community and economic resilience.
- Visual interface for automatically creating/comparing forecasts from historical data, with support for large-scale hierarchical and intermittent-demand series.
- Citizen Sentiment & Logs: Visual interface for text analysis applied to citizen feedback, maintenance logs, alerts, and technician notes.
- SAS IML provides the ability to carry out complex matrix manipulations and statistical analysis, including custom algorithms that consume sensor or streaming data.
- Point-and-click and coding capabilities to create/compare advanced predictive models, using SAS and open-source languages in a unified environment.
- Distributed in-memory processing enables concurrent access to data from various sources, including high-volume event, telemetry and time-series stores.
- Mission Monitoring: Build advanced models to monitor operational activity, such as predicting infrastructure failures, safety deviations, and anomalous behaviour.
- Sensor-based data modelling to organise real-time and historical IoT data, hierarchies and relationships, providing a consistent analytical layer for Viya users.
- Integrated event stream processing (when used with SAS Event Stream Processing) to score, filter and enrich streaming IoT data in real time using Viya-developed models.
- Out-of-the-box and extensible ETL patterns for rapidly ingesting, transforming and aggregating IoT data, reducing latency from data capture to insight.
- Data profiling and exploration capabilities tailored to high-frequency IoT data, enabling users to summarise, slice and visualise millions of sensor records at scale.
- Unified Pipeline: Open APIs and support for SAS, Python, and R so agency data scientists can embed IoT analytics into broader governance and MLOps pipelines.

Service Model

SAS is provided as Managed Cloud Software and includes software, hardware, and hosting services for a contracted period. This is an advantageous way to help Public Sector organisations get started with analytics and alleviate implementation problems. You load your data onto the SAS cloud environment or through the option of a SAS/ACCESS engine. SAS/ACCESS engines provide an automated way to seamlessly read, write and update access to data before building your analytics.

SAS runs a secure, cloud-based service on your behalf, giving you the benefits of our most advanced software and scalable platform architecture – managed and supported by our own experts.

- Each dedicated cloud software instance running SAS uses a predefined storage allowance to manage your data requirements and keep them secure and backed up. This solution is supported with ongoing management and administration. All these elements are backed by a 99 percent uptime warranty.
- SAS services are regularly reviewed and audited to ensure your data is secure and maintained according to national and international privacy legislation.
- Our teams know how to get the most from the SAS Platform. With experience acquired across public, financial, health care and commercial sectors, they are familiar with common regulatory compliance requirements.

Deployment options

This is primarily delivered as a SAS Managed Cloud service. In addition to the commercial bundles listed, non-standard offers are an option to meet specific customer requirements and to align to customer Cloud deployment strategies not met through SAS Managed Cloud. All non-standard options will be priced on application based on an equivalent pricing methodology. Further delivery options include:

- **On-site deployments** – Including distributed servers to meet growing data, increasing workloads and scalability requirements.
- **Alternative Cloud deployments** – Enterprise hosting; private or public cloud (e.g., BYOL in Amazon, Azure, or Google Cloud) or Platform as a Service such as Red Hat OpenShift.

In addition, our REST API provides customers an option to build or integrate external applications around SAS Viya.

Service Deliverables

The managed offerings include the following service deliverables:

- Commissioning and provisioning of the predefined hosted infrastructure, including compute, network, and storage.
- Preconfigured security and connectivity for users and data (based on the limits per tier).
- Pre-installed software.
- Ongoing support of any up-front service customisation that is implemented by SAS.
- Ongoing support with software administration and management.
- 99 percent uptime SLA.
- 30-minute incident response time for software availability issues.
- Data protection warranties and a documented data classification and handling process.
- Regularly scheduled backups.
- Patching and updates applied as part of the agreed SAS software release cadence.

Open to other programming languages

While SAS Viya is designed primarily for business users who prefer a visual interface, it does include a programming interface for those who want to write their own SAS code.

And if your programmers prefer to work in other languages, like Python, R, Lua, or Java, that is OK too. They can call SAS Viya capabilities from their preferred programming environment. In addition, public REST APIs enable developers to easily add content created with SAS Viya to other applications.

SAS Workload Management

SAS Workload Management Provides a web-based tool for monitoring and managing resources, users, and jobs and serves as an interface for configuring and managing high-availability services and defining alerts when thresholds are exceeded.

SAS Job Flow Scheduler

The Job Flow Scheduling Service enables you to monitor and schedule jobs from a variety of sources in SAS Viya and to create and schedule job flows, which can contain multiple jobs and conditions.

SAS Cloud Data Exchange

SAS Cloud Data Exchange allows SAS Viya users to connect a database which could be either co-located at SAS Viya platform, other cloud environment or located at an on-premises data centre. SAS Cloud Data Exchange enables user to securely exchange on-premises data from behind a firewall to the SAS Viya platform in the cloud. All data transfer/exchange occurs on secured standard-based communications along with sophisticated authentication and authorisation.

Pricing

SAS Analytics for IOT is priced on an event basis and as an annual hosted license fee payable in advance. Fees include a one-time implementation and on-boarding charge. Each environment includes 1TB of cloud storage. The pricing provided within the pricing section of the listing is for representational purposes and is based on the processing of 1 Billion events per annum. The Cloud infrastructure is sized based on the volume of data loaded into the system, the number of concurrent users accessing the system and the type of analytical workload that is running. During initial discussion, SAS system sizing's will be made available for review and validation against requirements. Should requirements sit outside of these parameters, SAS and the customer will participate in a discovery exercise to identify and undertake the appropriate activity to re-size and recalculate costs based on the output of the exercise.

Additional analytics service such as model development, analysis, data engineering or reporting services are available via the SAS Cloud Support Service which is also available on G-Cloud.

Learn More

Learn more at https://www.sas.com/en_gb/solutions/iot.html