SAS and Microsoft:
Shaping the future of AI and analytics in the cloud

Microsoft Azure

§sas

Contents

Authors
Marty Tomasi, Senior Director (Cloud Programs), SAS
Tapan Patel, Senior Manager (Product Marketing – Cloud), SAS

Creating a digital nervous system for the enterprise

With customer expectations evolving at an unprecedented rate, the potential costs of not evolving enterprise IT to keep pace – and be an enabler of change – are enormous. Fast-moving digital players are using cloud and artificial intelligence to bring new offerings to market more quickly, innovate more easily and scale more efficiently – while also reducing technology risk. They are adopting a cloud-smart mindset to pursue broader digital business opportunities, now and well into the future.

Today's revolutionary cloud and analytics technologies enable organizations to move faster and smarter than ever. Because data-driven decisions, not data alone, are what drive businesses forward. Embedded analytics and in-context insights help people see what's important and take the best action; automate decision flows; focus on exceptions; and enable businesses to sense, respond and run, quite literally, at the speed of thought.

But it remains incredibly difficult to build and deploy analytics – even for organizations with extensive cloud infrastructure. Additionally, the "last mile" of getting insights embedded into productivity applications and business software used to run your organization remains the biggest challenge in the analytics journey.

But with SAS building integrations across Microsoft's cloud portfolio, it doesn't have to be. SAS and Microsoft's strategic partnership brings analytics, artificial intelligence and the cloud together to deliver value for our customers' digital business initiatives. Our approach leverages an open ecosystem designed to eliminate the complexity and last-mile barriers to deploying analytics across the enterprise. It is adaptable so that the analytics built today can be quickly and easily delivered tomorrow – anywhere across your organization. It enables people of all skill levels to deploy and use analytics in their daily work quickly and make data-driven decisions – decisions that achieve tangible outcomes across all lines of business.

This paper explains how SAS is working with Microsoft to provide more choices for customers so that they can unlock critical value by:

- **Establishing an integrated, cloud-native analytics and AI platform.** This platform lays the foundation for our broader vision. The latest release of SAS® Viya® runs natively on Microsoft Azure, making it vastly easier to design, run and manage analytics and data processing workloads in the cloud. This landmark release takes advantage of key Azure services like Azure Kubernetes Service (AKS) and Azure PostgreSQL to provide the foundation for future SAS integration in other areas.

- **Accelerating analytics life cycle activities to get tangible results.** Whether you need to manage data, develop models or deploy insights, SAS and Microsoft are providing integration for customers as they go through the DataOps and ModelOps stages of the life cycle. By integrating with Azure Synapse Analytics, Microsoft's unified, cloud-native analytics platform, SAS Viya can securely access data to train transparent and repeatable machine learning models, which can be subsequently deployed and monitored to help people make valuable decisions.

- **Embedding analytics into Microsoft Excel and Power Platform.** Now different types of users, from data scientists to business users, can easily add prebuilt SAS Analytics into Power App, Power Automate and Microsoft Excel for Mac, Windows and web; these analytics solutions can be centrally deployed and managed by your IT department. Imagine enabling the pervasive use of analytics dashboards that reveal hidden insights in data or delivering real-time, in-context alerts so people can work smarter and make faster, more informed decisions.

SAS® Viya®: Redesigned to run natively on Microsoft Azure

Laying the solid foundation for our joint vision

As shown in Figure 1, SAS redesigned the SAS Viya platform to run natively on Azure. For IT departments, this means SAS customers can implement a complete analytics platform and reap the benefits of Azure infrastructure and services like Active Directory, PostgreSQL, Azure Kubernetes Service and many others.
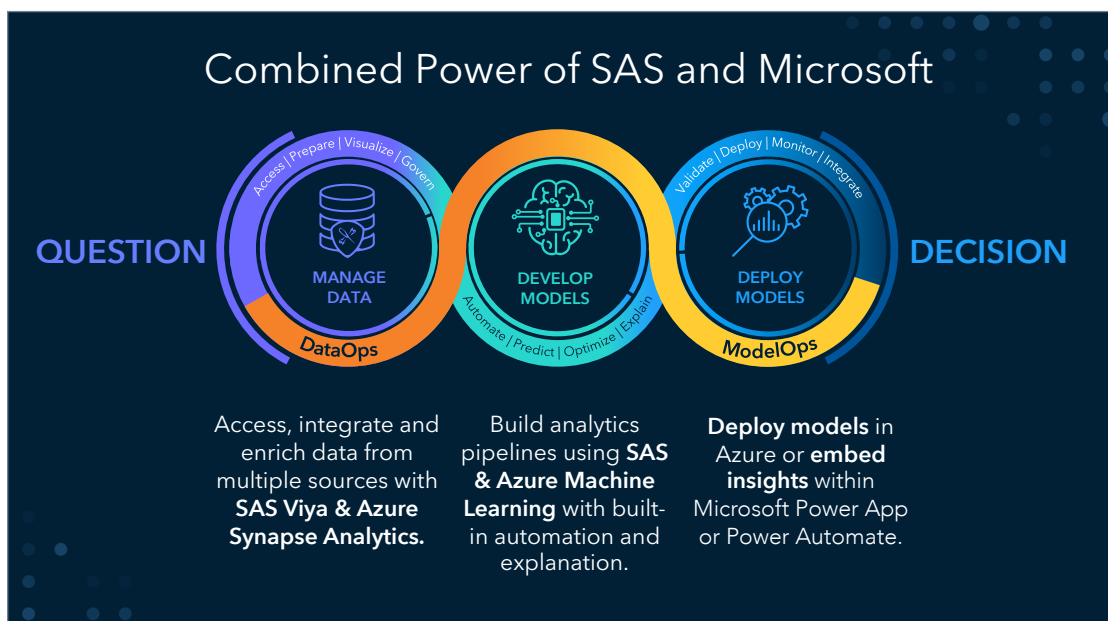

Figure 1: By redesigning the SAS Viya platform to run natively on Azure, we have unlocked the combined power of SAS and Microsoft.

More strategically, redesigning SAS Viya to run natively on the cloud and specifically on Azure creates an operating system for digital transformation – one that powers integration opportunities across the other Microsoft cloud ecosystems. With this foundation in place, SAS speeds up initial software delivery and deployment, and it delivers continuous updates more frequently and with less interruption.

Highlighted integrations

Let's take a closer look at five benefits to your organization available today.

1. **Container orchestration managed by Azure Kubernetes Service.**

   SAS Viya is deployed and managed as a microservices-based containerized application using Azure Kubernetes Service (AKS). Updates are delivered through a continuous integration and continuous delivery (CI/CD) process. AKS can deploy, spin up, spin down, replace, update and orchestrate all SAS Viya containers. It also can be used to scale compute resources up or down to meet demand, regardless of how big or how many jobs there are. As a result, development and operations teams can use SAS Viya on Azure as a stable platform to build, deliver and scale analytics applications with minimal interruption.

2. **Effortless IT administration with Microsoft tools.**

   SAS Viya plugs into other useful Azure managed services. For example, it supports seamless authentication – also referred to as single sign-on – by integrating with Azure Active Directory. There's no need to maintain separate users or groups or authentication systems. Integration with Azure Active Directory allows IT to embrace and seamlessly apply Azure security to SAS users and analytics workloads. Integration with Azure Active Directory will allow the passing of tokens from a SAS application to a Microsoft application, which will eliminate having users constantly re-entering credentials.

   SAS Viya also requires a database storage technology to keep track of stateful services and metadata with high availability and performance. Azure Database for PostgreSQL is perfect for the latter, and SAS software's connectivity to this same database will accommodate growing storage needs. To maintain the health and compliance of cloud applications, SAS Viya can be managed with the same tools you already use for other cloud-native applications, including:

   - Key Vault to centrally and securely manage keys, passwords and certificates.
   - Azure Monitor for telemetry monitoring and capturing logs to diagnose unexpected behavior and optimize resource utilization.
   - Azure Policy for total governance of the environment.

3. **Gain seamless access to the Azure data estate.**

   SAS is continually working to provide more efficient and high-performance data connectivity and transport across public, private and hybrid clouds. This includes the development of data connectors, data replication tools, access engines and in-database processes for several database or storage variants within the Microsoft Azure ecosystem. SAS provides connectivity to Azure Synapse Analytics, Microsoft SQL Server, MySQL, MariaDB, Azure Data Lake Storage and Azure Database for PostgreSQL, enabling you to quickly access, discover and organize data assets. In-database processing using Azure Synapse Analytics and Azure Databricks avoids unnecessary movement and replication of data and supports faster processing.

4. **Scale analytics workloads using SAS Viya and Azure Synapse Analytics.**

   Data professionals can use Azure Synapse Analytics to quickly access, prepare and query data for downstream BI and analytics needs. Once the data is curated, SAS Viya can seamlessly and securely access it from Azure Synapse Analytics using Azure Active Directory authentication to build and generate automatic, transparent and repeatable machine learning pipelines. The prebuilt integration with Azure Synapse Analytics tightens the flow of data and parameters across both environments.

5. **Manage and govern all models across SAS and Azure Machine Learning.**

Having data scientists build machine learning models is great, but to ensure their success, they must deploy, monitor and continuously manage the models. Data scientists and IT/DevOps teams use SAS Model Manager to register and collaborate on a common model repository containing SAS, Azure Machine Learning and open source models. You can then deploy a champion model into an operational system using code standards (such as PMML) and native languages (such as Python and Java) or as a standalone container managed by AKS. By embedding score code into target systems or making them available with APIs, organizations will be free to focus on managing models – not recoding them for target systems. Once you deploy the models, SAS Model Manager continuously monitors them – and, if needed, retrains them – so you are getting results as expected.

With SAS Model Manager, you can now also register and publish Python or SAS models directly into Azure Machine Learning (AML) as a container. With the latter integration, users with an AML tenant and SAS Model Manager license can use the Azure Active Directory single sign-on to simplify connectivity and provide an easy way to register Python models created in SAS Viya directly into AML. When it comes time to validate models, SAS Model Manager can pass the test data directly into the selected AML compute cluster to run the validation step and pass the results back to SAS Model Manager for review.

What this means for your organization

By taking advantage of all the native services and integration points on Azure, you can:

- Run SAS Viya solutions on Microsoft Azure and take advantage of all of Azure's cloud-native resources.

- Easily access all data stored on Microsoft Azure.

- Develop analytics models using different languages and quickly deploy them in any environment without recoding.

- Accelerate AI model development, deployment and management.

- Manage, retrain and govern all models across your entire cloud platform.

This integration affords significant benefits to IT departments, data scientists and developers alike. For example, IT can deploy SAS Analytics in its Azure environment with ease, run it reliably with little oversight or intervention, effortlessly ensure users can access the latest innovations and enhancements, and centrally manage everything with familiar tools. And perhaps most importantly, IT has more time to focus on helping business leaders make strategic decisions – all while keeping an eye on cost containment and resource management and supporting dynamic business needs. For example, when the business needs more analytic processing power capabilities, IT can instantly scale and extend SAS to meet the demand.

Similarly, data scientists can build analytic models that are infinitely portable and accessible to the entire organization. They can build models in any language without having to worry about recoding, regardless of where the model runs.

Maximize the value with SAS® Cloud powered by Azure

As you move to the cloud, trust SAS to handle all aspects of your managed cloud environment running on Azure, including installation, maintenance and infrastructure management. SAS Managed Application Services powered by Azure are an excellent choice to get the most from your analytics investments and stay focused on solving your most important business challenges. SAS Cloud users can log in and get to work. We tune the analytics solutions to your requirements, including hosting them on the SAS Azure tenant or yours, depending on your needs.

SAS® integration with Microsoft Power Platform and Microsoft 365

Embedding analytics for insight-led decisions

There are now native integrations between SAS technologies and the Microsoft Power Platform. These integrations will empower all users – from data scientists and citizen developers to business users – to quickly and easily incorporate analytics into everything they do, from making sense of data and building custom applications to creating reports and dashboards and more. With pervasive, user-friendly analytics at their fingertips, everyone will be able to maximize productivity, focus on what's most important, and make better, data-driven decisions all the time.
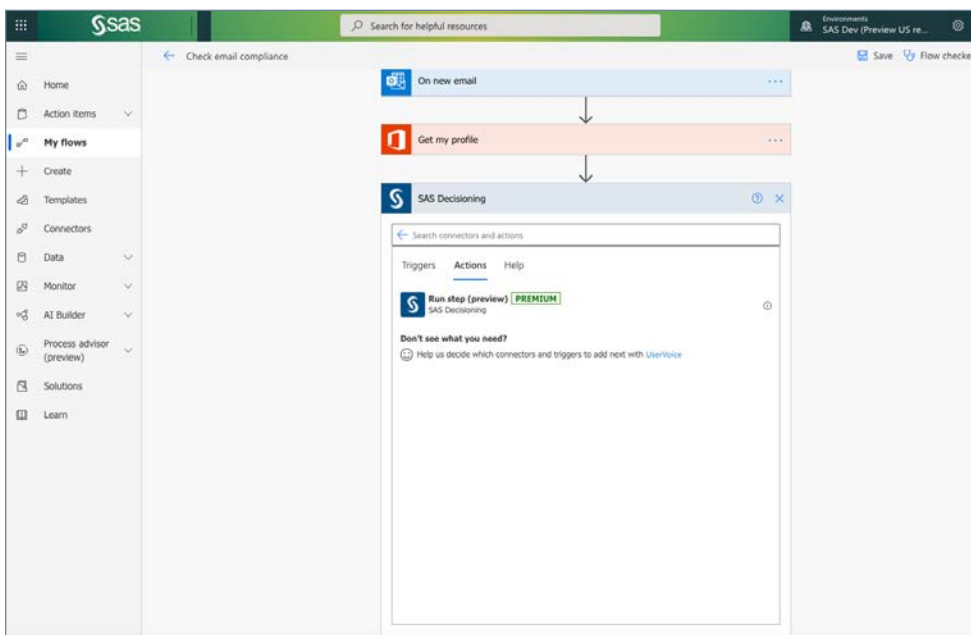

Figure 2: Using the SAS Decisioning Power Connector, you can link to your SAS Viya environment and run selected decision modules and analytical models within a Microsoft Power App or Power Automate.

Highlighted integrations

Let's take a closer look at key areas of integration and how companies will benefit.

SAS Intelligent Decisioning is integrated with Microsoft's Power Automate workflow tool.

SAS Intelligent Decisioning combines analytic models with business rules to automate decisions. This is achieved by using decision flows that combine analytic models (from SAS or open source) and business rules for task- and role-specific scenarios such as prospect-to-cash processes, integrated marketing views and field sales enablement. Using the SAS Decisioning Power Connector, you can link SAS Intelligent Decisioning to your SAS Viya environment and run selected decision modules and analytical models within a Microsoft Power App or Power Automate. This integration will add further value to the no-code/low-code approach to building and embedding analytics for citizen developers or business users.

SAS add-in for Microsoft Excel can improve worker productivity.

SAS customers have historically executed SAS tasks and viewed results from inside their Microsoft Office suite. To streamline how people work, SAS and Microsoft have built a SAS for Microsoft 365 add-in for Excel for Mac, Windows and web, which can be centrally deployed and managed by IT. By developing integrations such as this one across our respective technologies, we are improving the data interchange between SAS servers and Microsoft 365 products. Users can seamlessly incorporate data enrichment and analytic outputs generated by SAS solutions to increase efficiency in their workflows. For example, using the Excel add-in, they can query data, view reports and embed rich visualizations.
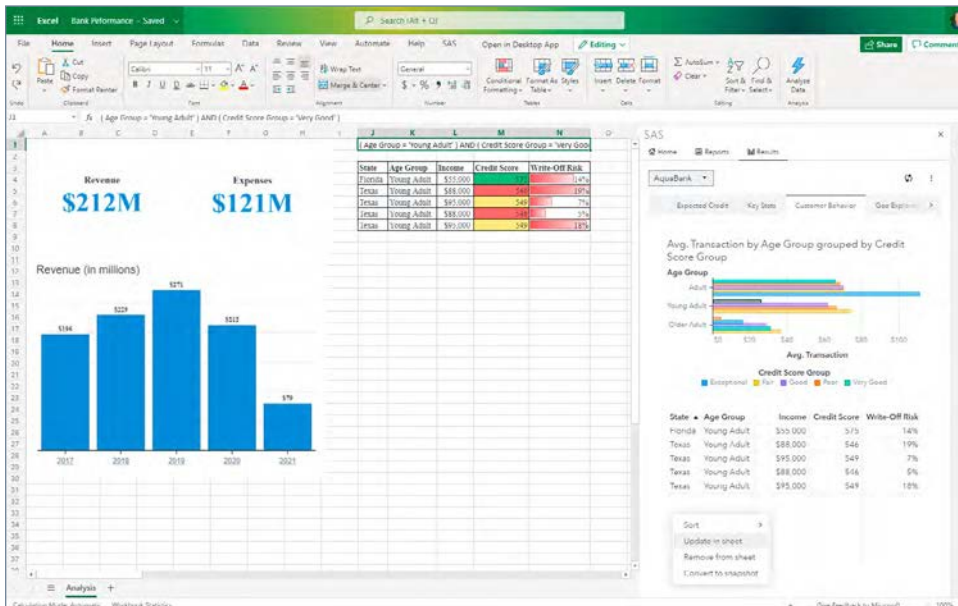

Figure 3: The SAS Excel add-in allows you to leverage the power of SAS Analytics and access data directly from Microsoft Excel via interactive reports or visualizations.

What this means for your organization

This integration will democratize analytics and make Excel and Power Platform users more productive. Anyone, regardless of their level of experience, will be able to take advantage of SAS capabilities and models when and where they need them – for example, to:

• Embed SAS models into Microsoft Power Apps for analytics behind the scenes.

• Apply rules and embed analytics-powered intelligent decisions into business workflows.

As these examples illustrate, this integration will enable people using Microsoft Office applications (for example, Microsoft Excel) to better understand what they are seeing in a report and answer questions such as: What am I supposed to do with this information? What's important and what's not? What's useful?

At the same time, organizations will realize productivity benefits from the no-code/ low-code application development approach this integration supports. Organizations can deploy predefined templates to meet their specific needs, when and where they need them, and developers can drag and drop prebuilt, validated SAS Analytics and workflows. For instance, they can add a SAS forecast to a budget workflow to enhance a trend with a look into the future or embed a customer risk score into a field agent's mobile application. As a result, they will be able to take advantage of embedded analytics running behind the scenes to generate insights that drive better decisions – both in an automated manner and by people.

Learn more

Organizations need easier ways for employees to reveal hidden insights about their business so they can run better, faster and smarter. They also want to remain resilient amid uncertainty, make trusted decisions and empower workforces to do more with less.

Unfortunately, rigid, on-premises systems and manual process are expensive and produce inconsistent results. In addition, complex and fragmented processes spread across these different systems limit the power of good decisions to only a few. SAS is working with Microsoft to change this by delivering a more empowered cloud. Together, we will democratize data and analytics so that everyone can make faster, better decisions and unify disparate technologies, skill sets and processes.

SAS and Microsoft have taken the first step by forging an important strategic partnership that goes beyond a handshake. The latest release of SAS Viya is proof of that, and it establishes a cloud-native foundation on Azure that will accelerate mission-critical projects for your organization.

By harnessing the combined power of SAS and Microsoft, you will be able to:

- Quickly take analytics from the sandbox to production.
- Use proven AI to operationalize insights.
- Find hidden opportunities before the competition.
- Build confidence with data and analytics governance that will make your decisions repeatable, explainable, transparent and trustworthy.

To learn more about how SAS and Microsoft are partnering to further shape the future of AI and analytics in the cloud, visit **sas.com/microsoft**.

Learn more about the SAS and Microsoft partnership.

§sas