SAS® for Containers: Bringing speed, agility and scale to cloud deployments

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THE POWER TO KNOW®

Business Impact

Challenges

- **Infrastructure costs.** Supporting complex data and analytics is expensive. Is there a way to provide these capabilities more economically?

- **Deployment flexibility.** The variety of usage patterns requires a variety of deployment patterns. IT wants to avoid a lockdown on cloud providers.

- **Large variety of tools, skills and data** means creative access is the new normal.

- **Need for analytics to drive value** across the organization and not just be science projects.

The Issue

At the forefront of digital transformation is the need for IT to support data science teams, while taking advantage of cost-efficient cloud infrastructures. There is also an insatiable need for flexibility and agility in architectures for machine learning and artificial intelligence. As a compact and efficient virtualization layer, containers have become the go-to approach to deploying software in today's cloud platforms.

Our Approach

SAS customers can now create container deployments of the SAS Platform execution engines. This includes support for Docker containers and Kubernetes for orchestration. By facilitating the execution of SAS workloads in a more compact and elastic way, IT allows the organization to turn data into decisions, scale to any challenge, and attain agility in both public and private clouds. With SAS for Containers, you get:

- **Rapid adoption.** As business and IT roles work more closely together, organizations are quickly adopting cloud technologies. It is becoming a widespread and common practice to place various computing layers into containers rather than into virtual environments.

- **Data locality.** Many data sources are being migrated or accumulated in cloud platforms. It is becoming a best practice to locate data and analytics processing as close to the data as possible.

- **Flexibility.** Both IT and business organizations are looking at more ways to instantiate methods and tools to solve analytical challenges. This includes embracing both open source and commercial container solutions.

- **Scalability.** Containers start and stop significantly faster than traditional virtual machines and use fewer OS resources. This allows IT or data scientists to instantiate multiple instances of SAS, either the SAS 9.4 engine or SAS® Viya®, to meet the wide variety and scale of computing demand.

- **Agility.** Data scientists can use containers to gain access to preconfigured environments, upgrade to new releases, promote through dev/test/prod standards, and easily manage code and application versioning.

SAS for Containers is a way to deploy a variety of select SAS technologies, including SAS 9.4, SAS Viya and SAS/ACCESS® engines. As the industry leader in analytics, SAS supports the entire analytics life cycle – from data access to model design to model deployment. SAS for Containers allows you to easily run critical SAS workloads in the cloud.

SAS provides a "recipe" to customers through an open source repository like GitHub where they can construct a container image. We also provide a preconfigured container with specific products that can be deployed right away. Customers have the flexibility to start with a container image of core SAS products and layer in additional software and system requirements specific to their organization (OS, security, etc.).

Partners

SAS has a number of partners in the cloud space that are used by our customers to create and manage container deployments, including:

- Domino Data Lab. SAS for Containers on Domino Data Lab streamlines SAS users' ability to run data science workloads in the AWS cloud.
- BlueData. BlueData and SAS are working on container deployments of SAS Viya to deliver big-data-as-a-service options to our joint customers.
- CoreCompete. CoreCompete has partnered with SAS customers in the US, United Kingdom, Europe, Middle East, Asia Pacific and Canada to successfully deliver the value of SAS in an agile manner.

- **Easy deployment of SAS.** Customers can package SAS 9.4 or the SAS Viya execution engine (CAS) into containers to run in any platform that supports the use of Docker. IT can build a single image and deploy as needed on their cloud of choice, supporting the "build once, deploy many" paradigm.
- **A unifying environment for your users community.** SAS advanced analytics algorithms can be called from Python, R, Lua or SAS, making SAS easily accessible to the entire data science community.
- **Efficient use of cloud computing resources.** Container deployments are lightweight and don't carry as much overhead as traditional virtual machines. This allows IT to efficiently provision resources to the wide variety and volume of analytics workloads – from one container for a single data scientist to thousands of containers for a massive job.
- **Access to data sources and the ability to push computing into a database.** Adding access engines or in-database code accelerators to your container provides SAS users with access to a wide variety of data sources (co-located cloud or on-site) and push computing into a database to take full advantage of distributed computing environments.
- **Support for customized configurations.** Customers will be provided either a fixed container with specific SAS products that can be deployed immediately or with a base recipe that they can use to create custom containers with specific products or configurations (e.g., access to data sources, in-database code and scoring accelerators, or specific analytical capabilities). This allows our customers to ensure each container is fit to the task at hand and meets their IT container guidelines.

- Containers are a virtualization method that packages only a software application and its dependencies, without having to worry about managing operating system dependencies. Containers are designed to be lightweight, as the operating system is managed centrally by the container platform.
- Docker is an organization whose technology SAS works with to provide tools to create and manage containers.
- Kubernetes is a portable and extensible open source platform for managing containerized workloads and services.
- How and by whom are containers used? IT organizations build and manage containers for all kinds of applications, not just analytics. Containers rapidly became very popular because of how efficiently IT groups can manage and deploy applications on their internal clouds, as well as public cloud platforms.

Learn more about SAS, cloud computing and containers at sas.com/cloud.