SAS Viya 2020 Architecture on Azure

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SAS Service Models

Software as a Service

CI 360

SAS Machine Learning

Managed Application Services

Microsoft Azure

Hosted Managed Services

Remote Managed Services

Consulting Services

SAS Results

Advisory Services

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SAS Cloud x Microsoft Azure

Today

- SAS efficiencies through Azure asset migration
- Improved scalability with access to Microsoft resources
- Jointly designed architecture for SAS Cloud for network, memory, processor and storage optimization
- Faster implementations with standardized Microsoft IaaS deliveries

Future

- SAS Viya available on SAS Cloud (running on Microsoft Azure)
- Deeper product integrations available first on SAS Cloud
- SAS Cloud further optimized for Microsoft Azure

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Viya 2020

Key changes

- Designed to work natively on Azure AKS, AD, Azure DB for PostgreSQL
- Deeper integration in Azure Services (Synapse, PowerBI, AzureML, ..)
- Better performance through further decomposition
- Improved APIs and support for GitOps/DevOps processes
- SAS solutions will be presented in Azure Marketplace
- Available as SaaS from SAS Cloud on Azure
- No upgrades or hotfixes, monthly or LTS updates
- Continous updates of Viya platform with semantic versioning

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Semantic Versioning

LONG-TERM SUPPORT RELEASE

2020.1

STABLE RELEASE

2020.1.1

- LTS: all 6 months
- Stable releases: once a month
- New features and bug fixes are updated monthly
- Aligned versions. Instead of Visual Analytics 8.4 and Model Manager 15.3, now Visual Analytics 2020.2 and Model Manager 2020.2.

Month	Stable	LTS
July 2020	2020.0.3	
Aug 2020	2020.0.4	
Sept 2020	2020.0.5	
Oct 2020	2020.0.6	
Nov 2020	2020.0.7	2020.1
Dec 2020	2020.1.1	
Jan 2021	2020.1.2	
Feb 2021	2020.1.3	
Mar 2021	2020.1.4	
April 2021	2020.1.5	
May 2021	2021.1.1	2021.1
June 2021	2021.1.2	
July 2021	2021.1.3	
Aug 2021	2021.1.4	
Sept 2021	2021.1.5	
Oct 2021	2021.1.6	
Nov 2021	2021.2.1	2021.2

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SAS Viya 2020

STATELESS SERVICES

- Web Apps
- Microservices

STATEFUL SERVICES

- Infrastructure Data Server
- Configuration Server
- Message Broker

COMPUTE SERVICES

- Compute Server

CAS CLUSTER

- CAS Controller
- CAS Backup Controller
- CAS Worker

UTILITY SERVICES

- Monitoring
- Metrics
- Logging

FRONTEND SERVICES

- Ingress Controller

OTHER SERVICES

- Database

Pods with the same color are in one namespace

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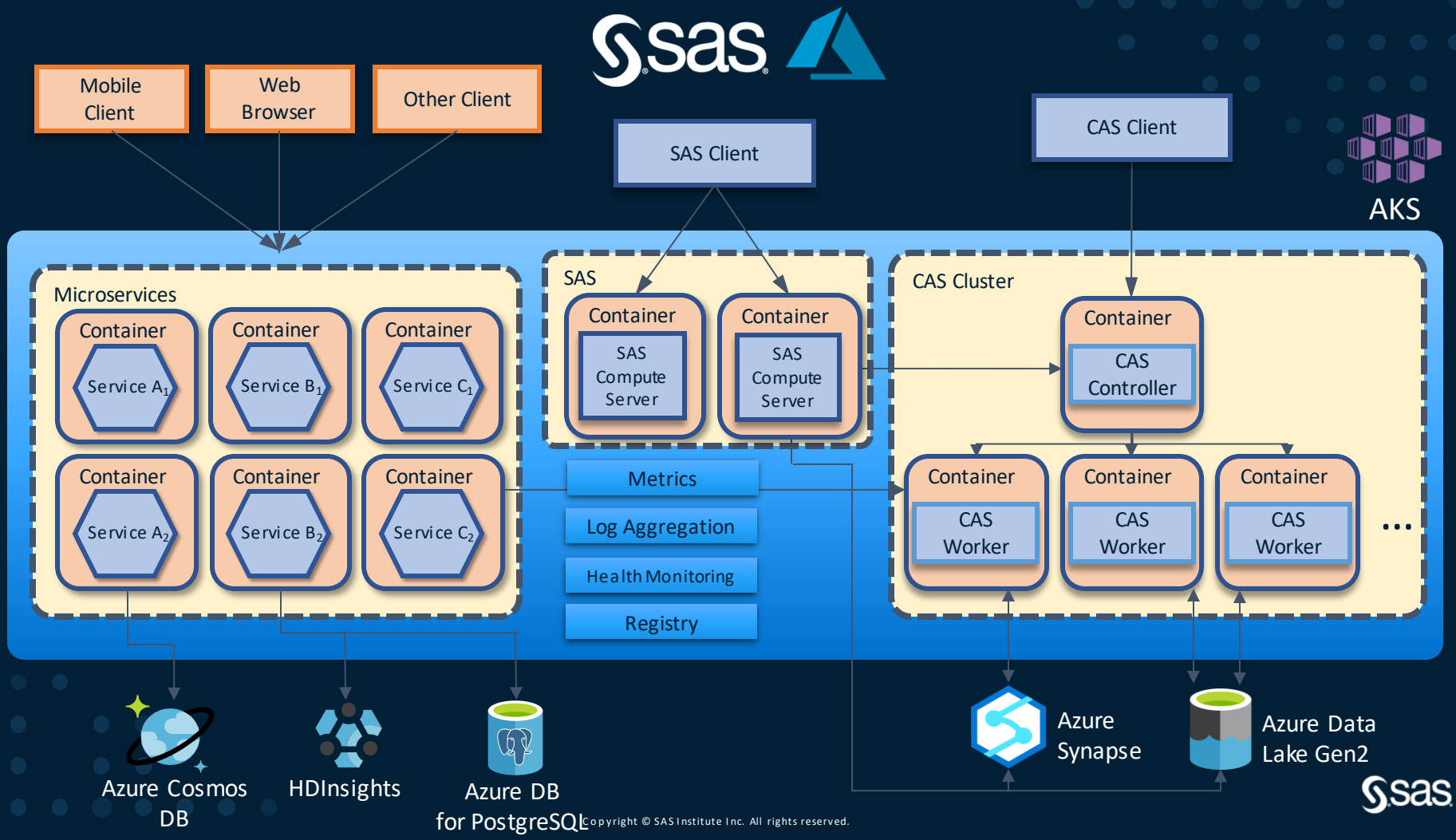

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SAS Viya 2020 - Surrounding Components

Data Sources	Azure DB PostgreSQL / MySQL / MariaDB, Azure SQL, Azure Cosmos DB, Azure HDInsights, Azure Synapse, Azure Data Lake Gen2, ...
CI / CD Tools	Kustomize, Kubectl, Helm, Jenkins, Git
Authentication	Azure Active Directory Service, Oauth / OpenID Connect, SAML
Viya Clients	Python / R / Java / Lua libraries and REST APIs
Container Registry	Azure Container Registry, Dockerhub, SAS Mirror

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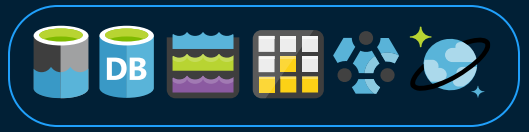

AZURE DATA SOURCES

saves / loads data

SAS VIYA PODS

saves / loads code

AZURE REPOS (FOR SAS CODE)

deploys

USER

authenticates

AZURE AD

authorizes

AZURE APP GATEWAY

triggers

AZURE KUBERNETES SERVICE

pulls image

ADMIN

modifies K8s files

AZURE REPOS (FOR INFRASTATUCURE)

triggers pipelines

AZURE DEVOPS

saves image

AZURE CONTAINER REGISTRY

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SAS Viya 2020 – How to prepare?

- Get experience with Kubernetes and storage classes
  - Think about migrating your data to cloud services as Azure DB / SQL / Data Lake
  - Guidance to performance implications due to the choice of storage classes (data gravity)
  - Other applications can run in separate namespaces without affecting SAS
- Think about your ingress (f.e. istio, nginx, traefik) to allow external access to the application
- Define a security concept for Cluster admin privileges
- Choose your future identity provider (e.g. Azure Active Directory)
- Get familiar with kubectl and kustomize as administration tools
- Think about logging and metrics tools like Prometheus and Graphana

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SAS Viya 2020 – Who is involved?

- Maintain the Kubernetes cluster, operate with K8s API
- Perform the (k/c)ustomizations and run the deployment
- Monitor environment, scale and bounce services as needed

- Maintain the SAS environment
- Manage users, metadata, permissions, data

- Use the environment and different tools and programming languages
- Profit from dynamic environments in the cloud

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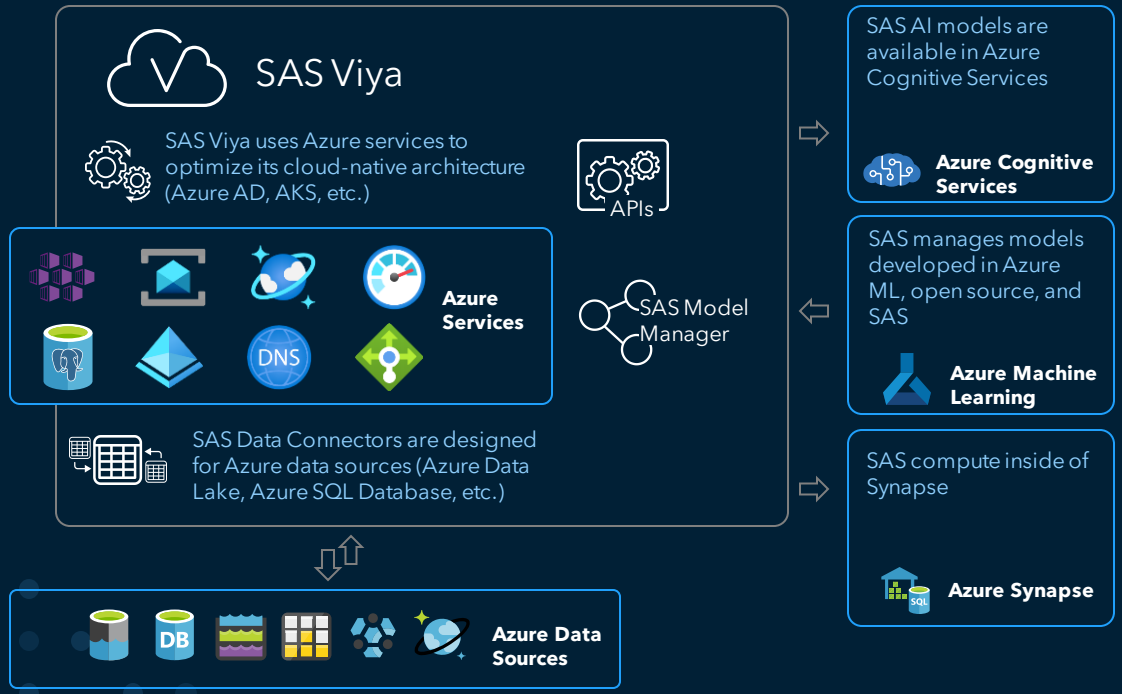
SAS' interoperability with Microsoft Azure



Benefits

- **Cloud-native** integration optimized resources
- Easily **access all data**
- **Develop advanced models** with any language
- **Manage and govern** all models across all clouds
- **Accelerate** AI model development and management

* consult the co-development roadmap for integration timelines

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The Experience of SAS Cloud on Azure

	HW providers	Cloud providers	SAS Cloud on Azure
Hardware server, storage, network	✓	✓	✓
Productivity configuration, provisioning	✓	✓	✓
Resilience improved SLAs		✓	✓
Agility launch applications faster		✓	✓
Full-stack experts best SAS talent around			✓
Administration all components			✓
One SLA singularly guaranteed			✓

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Compliance Certifications/Frameworks

TODAY WITH sas

TOMORROW WITH Microsoft Azure

Global

TODAY WITH sas	TOMORROW WITH Microsoft Azure			
SOC 1	ISO 27001	ISO 27018	ISO 27017	ISO 22301	SOC 1 Type 2
SOC 2	SOC 2 Type 2	SOC 3	CSA STAR self-assessment	CSA STAR certification	CSA STAR attestation
SOC 3					
ISO 27001					
ISO 27017					
ISO 27018					

Industry

TODAY WITH sas	TOMORROW WITH Microsoft Azure						
CJIS	PCI DSS level 1	CDSA	MPAA	FACT UK	Shared assessments	FISC Japan	HIPAA / HITECH Act
HIPAA / HITECH Act	HITRUST	GxP 21 CFR Part 11	MARS-E	IG Toolkit UK	FERPA	GLBA	FFIEC
FDA Part 11							
IRS 1075							
MARS-E							

Regional

TODAY WITH sas	TOMORROW WITH Microsoft Azure								
NIST 800-53 Moderate	Argentina PDPA	EU model clauses	UK G-Cloud	China DJCP	China GB 18030	China TRUCS	Singapore MTCS	Australia IRAP/CCSL	New Zealand GCIO
FedRAMP (In Progress)	Japan my number act	ENISA IAF	Japan CS mark gold	Spain ENS	Spain DPA	India MeitY	Canada privacy laws	Privacy shield	Germany IT Grundschutz workbook
Privacy Shield Framework									

* Subject to change, discuss with SAS or SAS Authorized Business Partner for details

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SAS Viya 2020 – Overall Benefits

- Shared responsibility with Microsoft / SAS
- Auto-scaling compute power with Kubernetes
- Removes need of OS-specific tools and RPMs
- Rolling updates, no major releases
- No core-based license possible
- Installations without Ansible but with kustomize
  (to create Kubernetes manifest file, execution with kubectl)
- SAS and Microsoft are certified partners for your cloud strategy

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Thank you

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