

SAS Batch-Verarbeitung in der Welt von Kubernetes & Co.

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Agenda

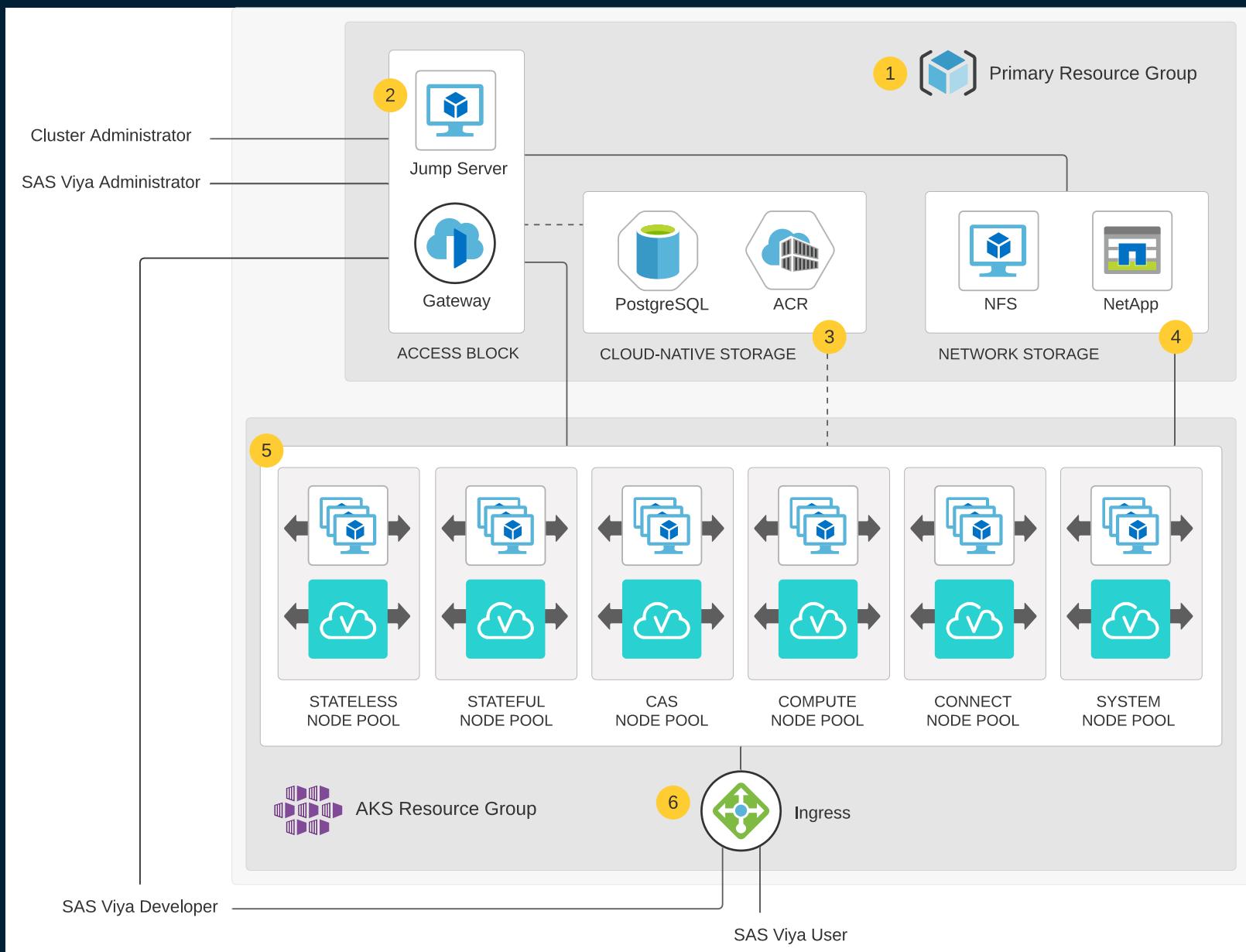
- SAS Viya Workload Management (on Kubernetes)
 - Infrastructure considerations
 - Choosing the best instance type (CPU, memory, local storage)
 - Benefits of enabling autoscaling for Compute nodepool
- SAS Viya Batch CLI
 - Live demo



SAS Viya 202x.x

Deployment overview for Azure (taken from Viya Operations Guide)

- Focus on the COMPUTE nodepool today
- Kubernetes scheduler assigns all SAS jobs to run on COMPUTE (if available)
- User/warehouse data lives on (shared) network storage or in databases
- Nodes have local storage attached as well (SASWORK?)



SAS Workload Management

(bringing SAS Grid to Viya)

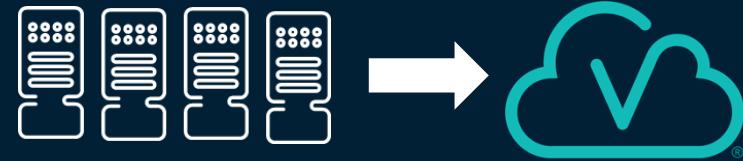
- November 2020 – Kubernetes
 - High availability
 - Scalability
 - Batch submission of jobs
 - Job flow definition/scheduling
- 2021 – SAS Grid parity
 - Option sets for users/groups/roles
 - Queues
 - Prioritization
 - Preempt/resume
 - SAS program checkpoint/restart
- 2022+ – Workload Optimization
 - Optimization of cloud resources
 - Profiling



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kubernetes



Infrastructure considerations

Kubernetes storage concepts

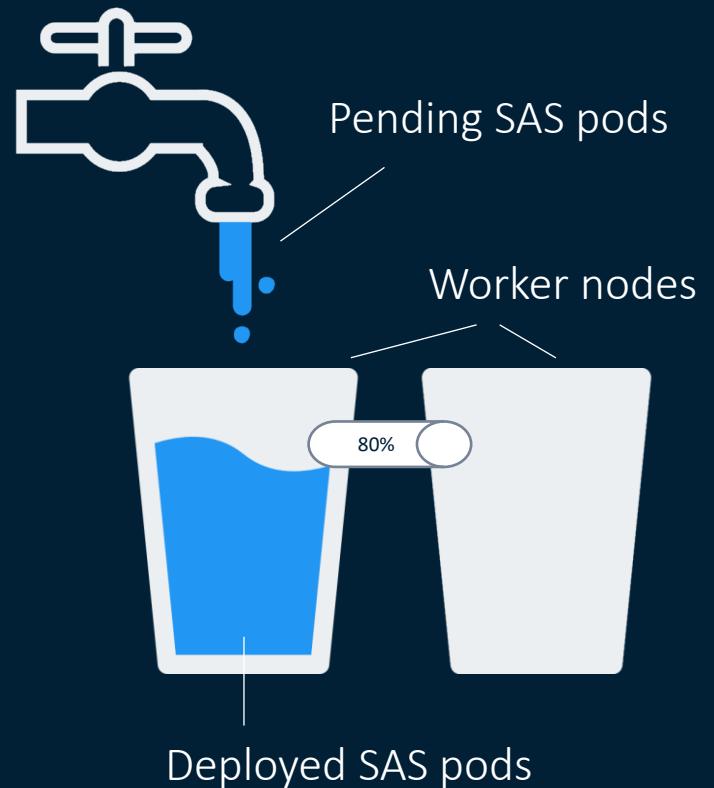
- Pods have access to ephemeral storage which is directly attached to their host (i.e. worker node)
 - Not a good choice for SASWORK and CAS Disk Cache
 - Better attach additional fast disks to Kubernetes nodes (e.g. select the right instance type in public clouds)
- User / warehouse data needs to be made available on shared storage („RWX storage“) mapped to Kubernetes
 - Cloud providers offer managed services for this, e.g. EFS, Lustre, Azure Files, NetApp etc.
 - NFS is a popular and simple choice for on-premise clusters
 - Keep in mind that SAS processing is still heavily I/O-bound (even with SAS Viya)



Infrastructure considerations

Enabling autoscaling for Compute nodepool

- Allows Kubernetes to grow (and shrink) the number of worker nodes in the Compute nodepool in response to the requested workload (number of SPRE sessions)
- Great for adding compute power „just in time“ without wasting resources (and money)
- The Kubernetes Cluster Autoscaler component instructs the underlying infrastructure (AWS, Azure, GCE, OpenStack etc.) to add or remove machines
- Decisions based on node utilization and declared resource usage of pending pod



SAS Viya Batch CLI

Setup

- Download CLI and configure

```
export SSL_CERT_FILE=/path/to/server.crt
```

```
sas-viya plugins install --repo sas authorization  
sas-viya plugins install --repo sas batch  
sas-viya plugins install --repo sas compute  
...
```

```
sas-viya profile init  
sas-viya auth login
```

- Run interactively or integrate with your enterprise scheduler

```
sas-viya batch jobs submit-pgm \  
  --pgm-path /myuser/sas/mypgm.sas \  
  --context default
```

This package provides the Viya 4 sas-viya binary which is intended to be used with the Viya 4 sas-viya CLI plug-ins.

The SAS Viya Command Line Interface (CLI) allows you to perform tasks like changing the configuration or updating security command line. It can only be used with SAS Viya 4. The SAS Viya CLI can run on Linux, Windows or OSX.

Requirements

- The CLI requires access to your SAS Viya system.
- The CLI requires that the machine running the tool has access to the internet.

SAS Viya CLI				
Description	Request Download	Size	Release Date	ReadME
sas-viya for Linux	sas-viya-cli-1.17.11-linux-amd64.tgz	3.6 MB	2021-01	.txt
sas-viya for OSX	sas-viya-cli-1.17.11-osx.zip	3.7 MB	2021-01	.txt
sas-viya for Windows	sas-viya-cli-1.17.11-windows.zip	3.5 MB	2021-01	.txt

<https://support.sas.com/downloads/package.htm?pid=2512>

Using the batch Plug-In for the SAS Viya CLI

Using the batch Plug-In for the SAS Viya CLI

Submit SAS Programs in Batch

Syntax for Commands to Submit a SAS Program in Batch

Example: Submit a Program

Example: Add Input Data to the File Set

Example: Specify an Autoexec File

Example: Return Results and Discard the Log

Syntax for Commands to Submit a SAS Program in Batch

Here is the syntax to submit a SAS program to run in batch:

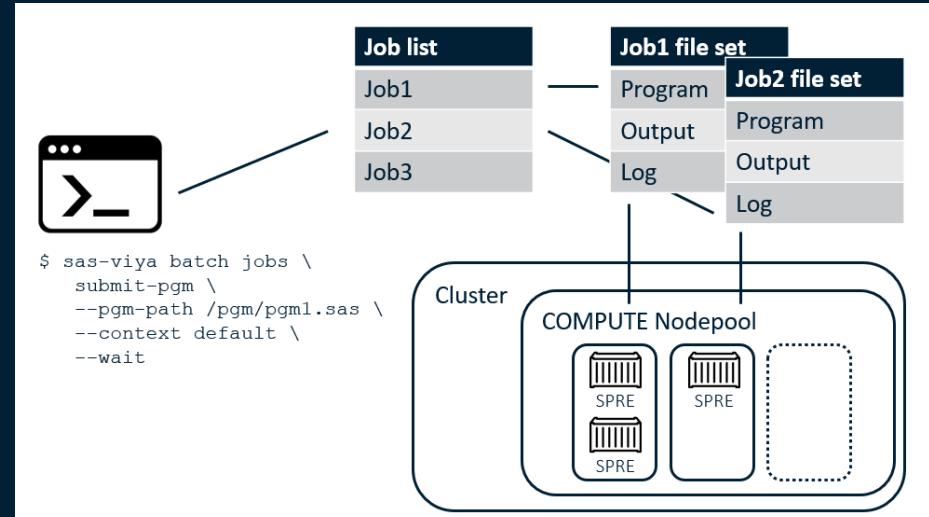
```
sas-viya [--verbose] batch jobs submit-pgm  
--context context  
--job-file-name
```

https://go.documentation.sas.com/?cdId=pgmsascdc&cdcVersion=v_010&docsetId=gsub&docsetTarget=p10gm7sg1m9k8dn1lvh0an2cic08.htm&locale=en

SAS Viya Batch CLI

Usage

- The Viya Batch CLI allows you to submit SAS programs and commands to a SPRE environment
 - Every SPRE session is a separate Kubernetes pod of type „job“
 - Kubernetes „job“ objects always run to completion (unlike services they stop)
- You can submit SAS programs interactively or in batch
- You can define execution contexts (user identity, SAS options ...)
- Results, code, logs, (data) is kept in a SAS managed file set
- Usage of Batch CLI is restricted via permissions (set in EV)



Zzz zzz...

Zzz zzz...

Zzz zzz...

Zzz zzz...

Darling, bring the popcorn!

Have you seen
my glasses?

Demo
Time!



Thank you for your time!

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