



Singularity, SLURM, and Kubernetes - 5 min

Michael Bauer - HPC Container Workshop ISC19

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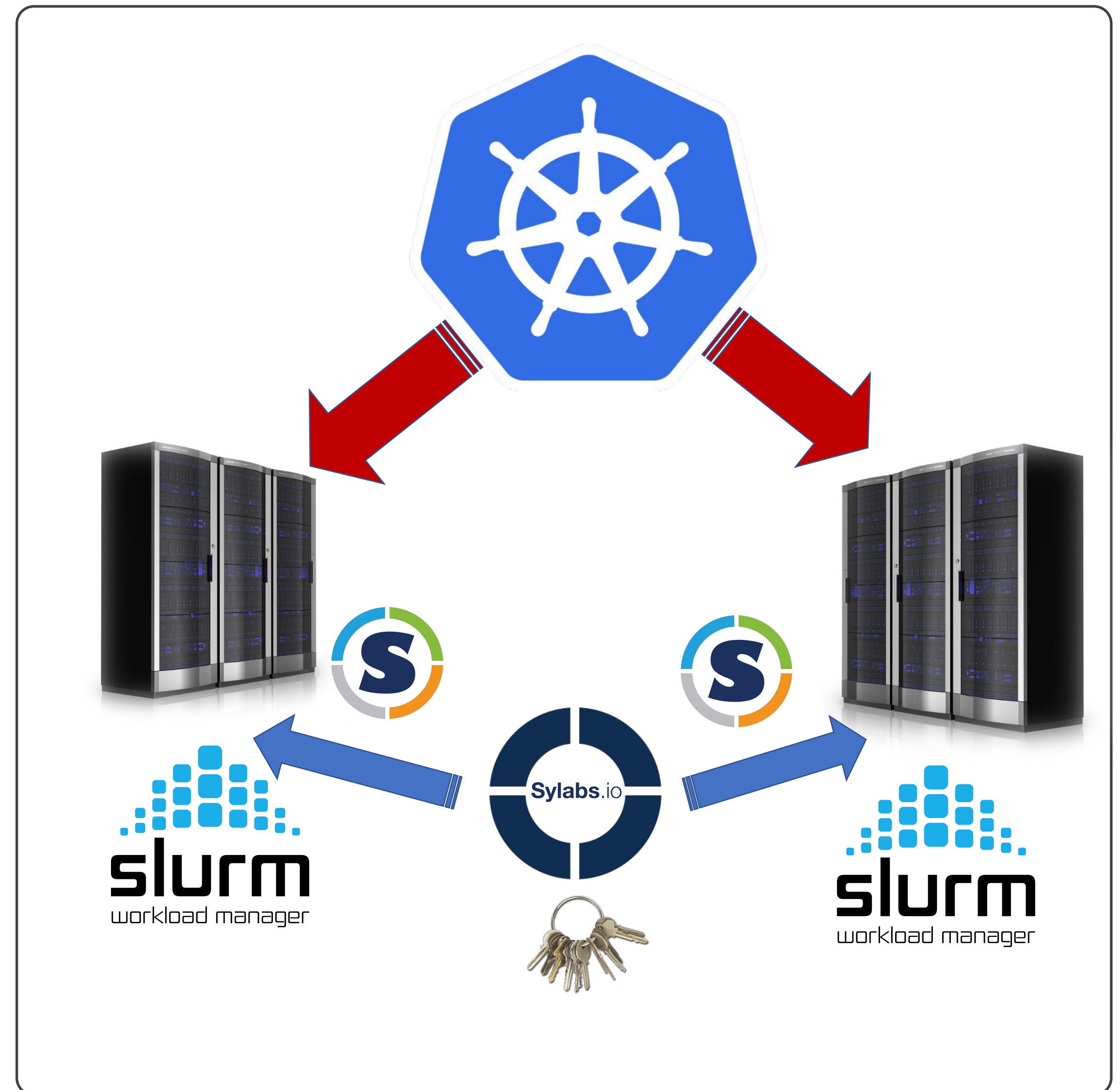
Running Singularity with K8s

- Singularity-CRI now in **v1.0.0-alpha.3** release
 - *Please try and provide feedback!*
- Run all workloads (K8s microservices, HPC, EPC, etc...) with one unifying runtime
- Native support for **GPUs, Infiniband/RDMA** (*coming soon*), other HPC-oriented hardware via **Container Device Plugin**

Multi-Cluster Scheduling

Kubernetes - scheduling to multiple HPC clusters - using Singularity containers to distribute the workloads.

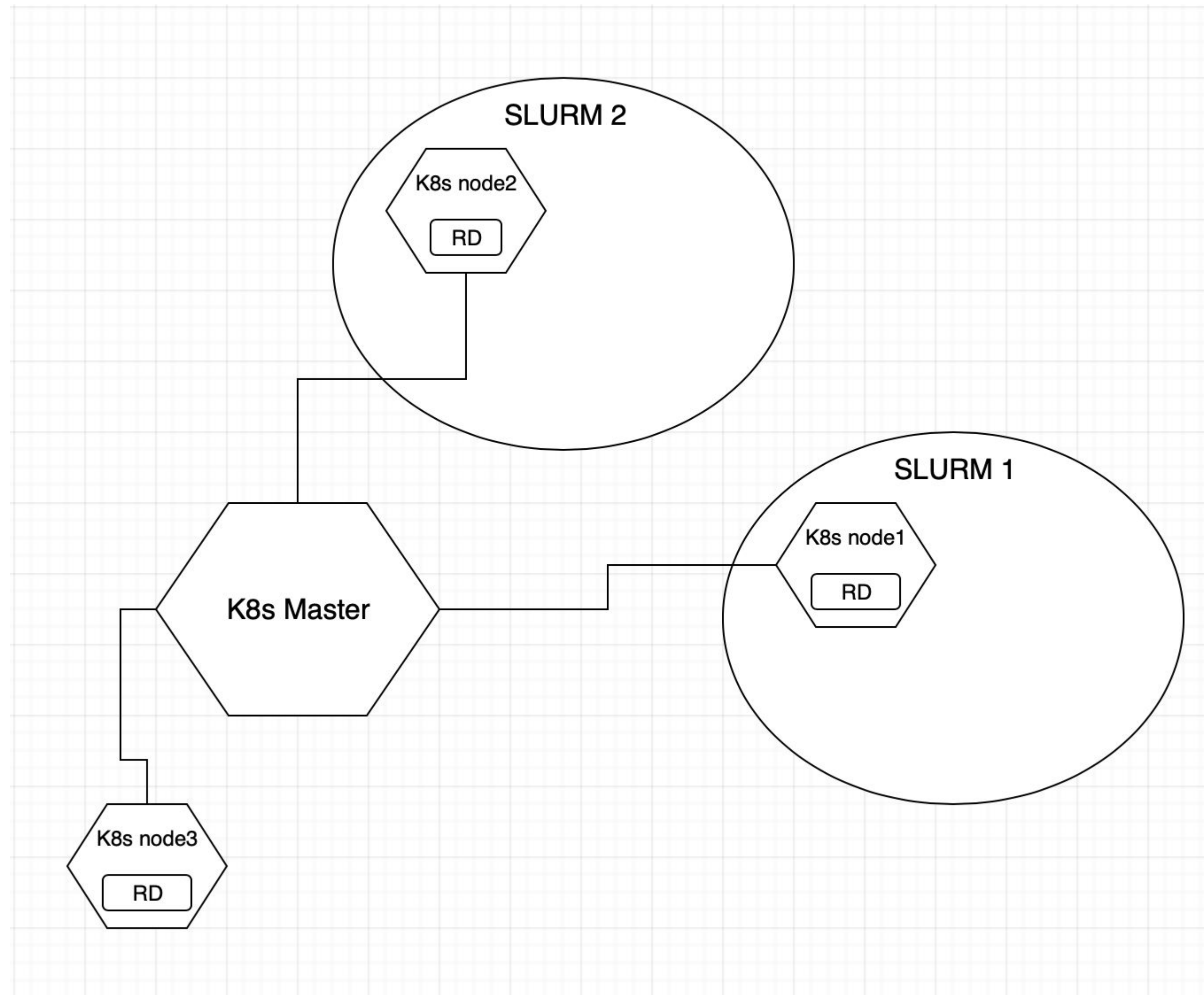
All as unprivileged user.



Multi-Cluster Scheduling to SLURM via K8s

- Submit SLURM job request to Kubernetes server using new job kind "SlurmJob"
- Custom K8s Resource Daemon lives on each SLURM master node, lets K8s understand what resources exist
- Use default or custom K8s scheduling algorithm to dispatch jobs to different clusters

Singularity, SLURM, K8s



K8s SlurmJob API

apiVersion: slurm.sylabs.io/v1alpha1

kind: SlurmJob

metadata:

name: cow

spec:

batch: |

#!/bin/sh

##SBATCH --nodes=1 --cpus-per-task=1

srun singularity pull library://sylabsed/examples/lolcow

srun singularity run lolcow_latest.sif

srun rm lolcow_latest.sif

nodeSelector:

containers: singularity