Containers Update – Spectrum Scale CNSA

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Spectrum Scale CNSA and CSI 2022 Update

CNSA/CSI Update	**Support for multiple Filesystems and Remote Cluster** • Limit of 128 nodes, 4 remote clusters and 16 filesystems (Tested, theoretical limit would be higher) **CSI Snapshot**
Cloud Pak Support	**IBM Spectrum Scale Container Native is now supported with/for the following six IBM Cloud Paks:** • Cloud Pak for Data: https://www.ibm.com/docs/en/cloud-paks/cp-data/4.0?topic=planning-storage-considerations • Cloud Pak for Security: https://www.ibm.com/docs/en/cloud-paks/cp-security/1.9?topic=planning-storage-requirements • Cloud Pak for Network Automation: https://www.ibm.com/docs/en/cloud-paks/cp-network-auto/2.2.x?topic=planning-storage-requirements • Cloud Pak for Business Automation: https://www.ibm.com/docs/en/cloud-paks/cp-biz-automation/21.0.3?topic=ppd-storage-considerations • Cloud Pak for Integration: https://www.ibm.com/docs/en/cloud-paks/cp-integration/2021.3?topic=requirements-storage • Cloud Pak for Watson AIOPs: https://www.ibm.com/docs/en/cloud-paks/cloud-pak-watson-aiops/3.2.1?topic=considerations-ai-manager
OADP Usage	**CSI Backups with snapshot fully supported (5.1.4.1)** • Ease of use backup and restore • Older versions like 5.1.2.1 might work but will need relabel on PVC upon restore: • oc patch pvc <PVCNAME> -n <NAMESPACE> --type=merge --patch '{"metadata":{"annotations":{"volume.beta.kubernetes.io/storage-provisioner":"spectrumscale.csi.ibm.com"}}}'

Analyzing a container Storage

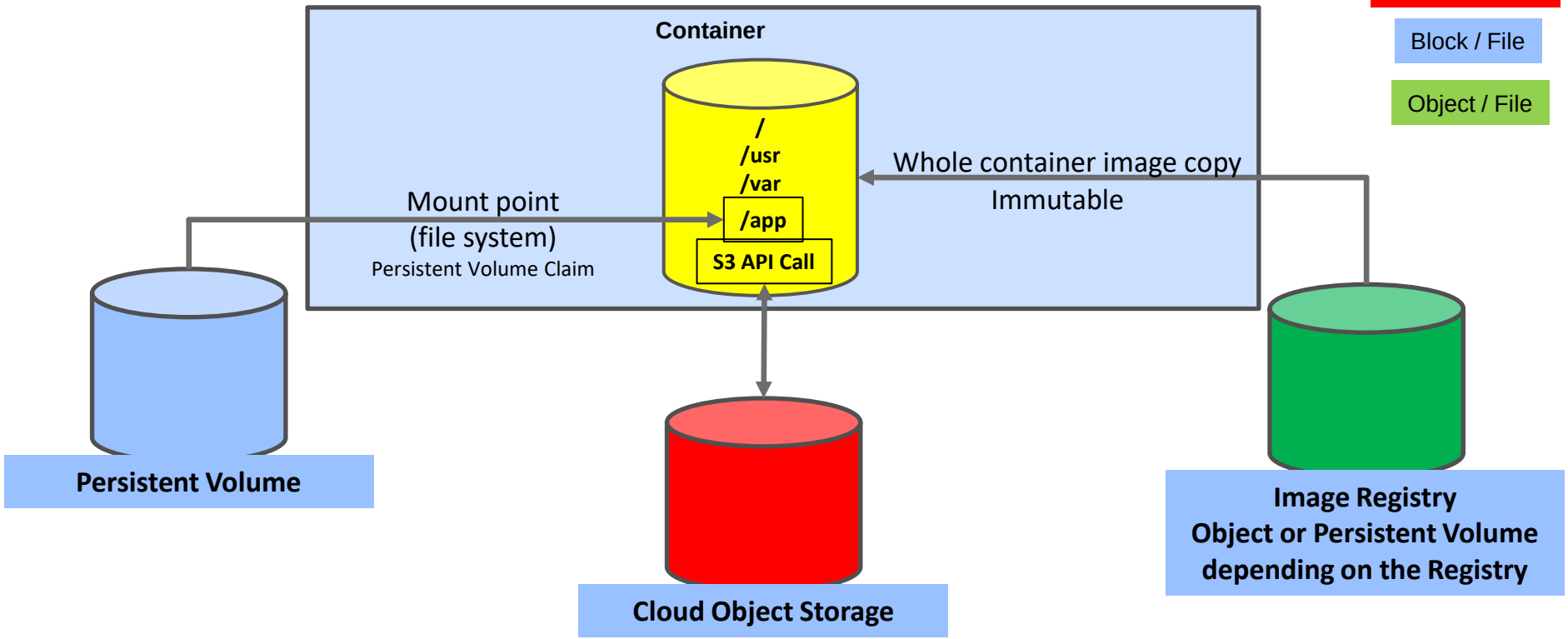
Spectrum Scale

Block Storage

Object Storage

Block / File

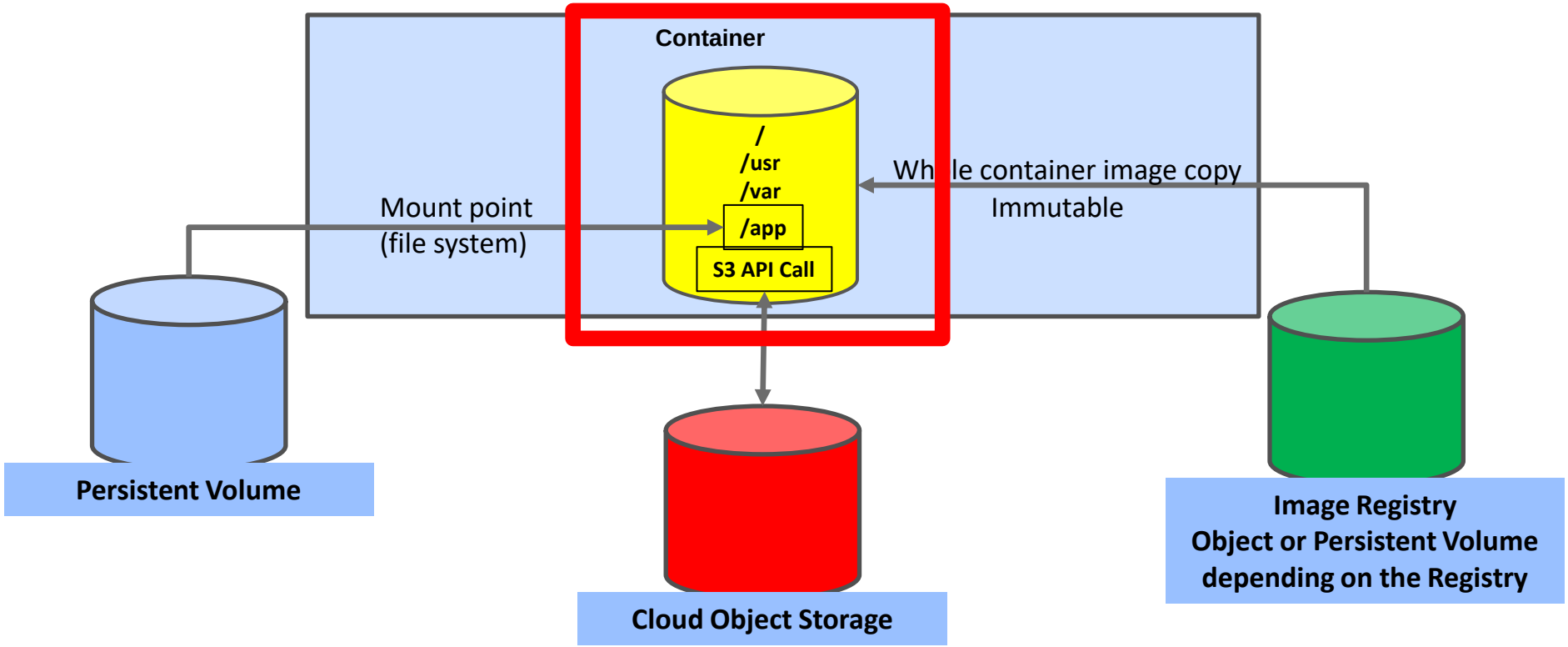
Object / File



Analyzing a container Storage

Spectrum Scale

Block Storage



Analyzing a container Storage

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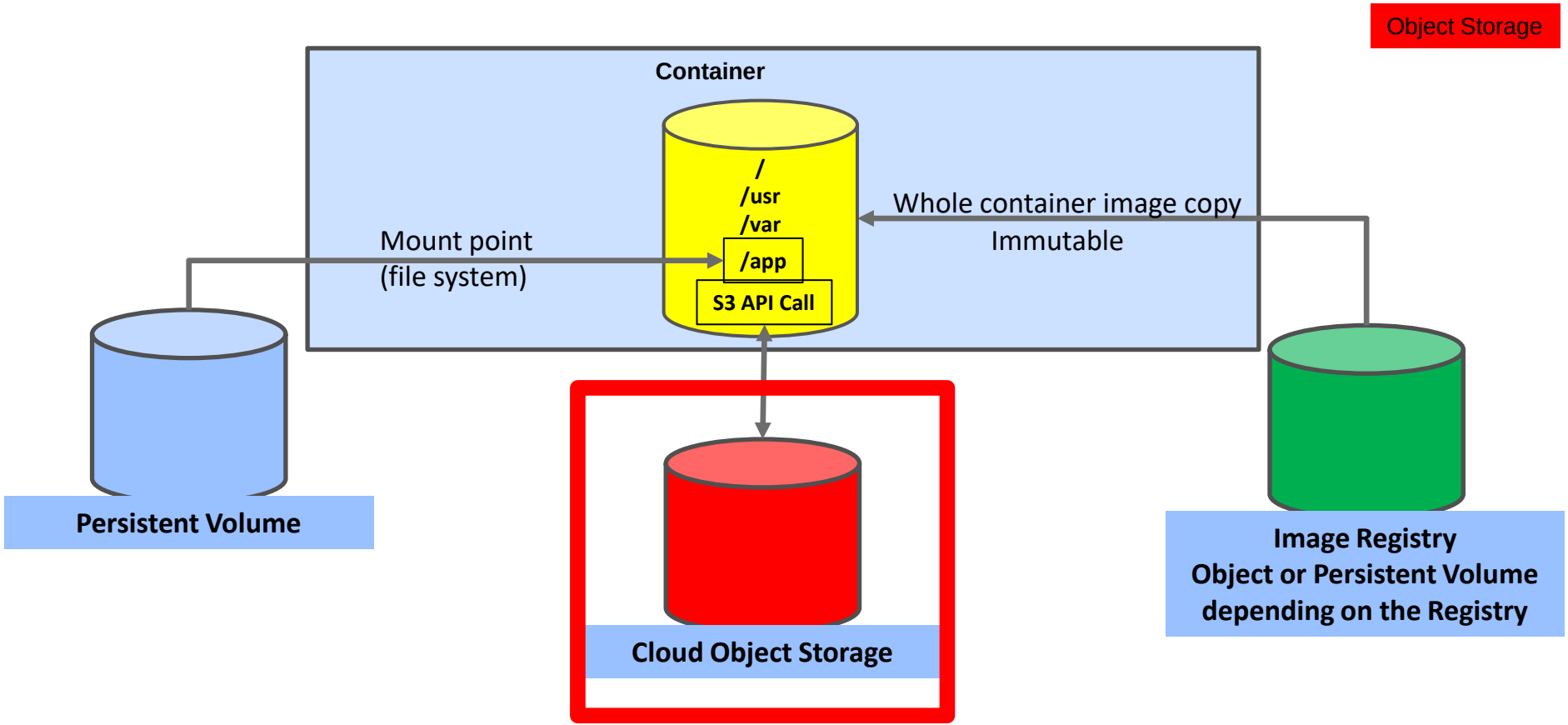

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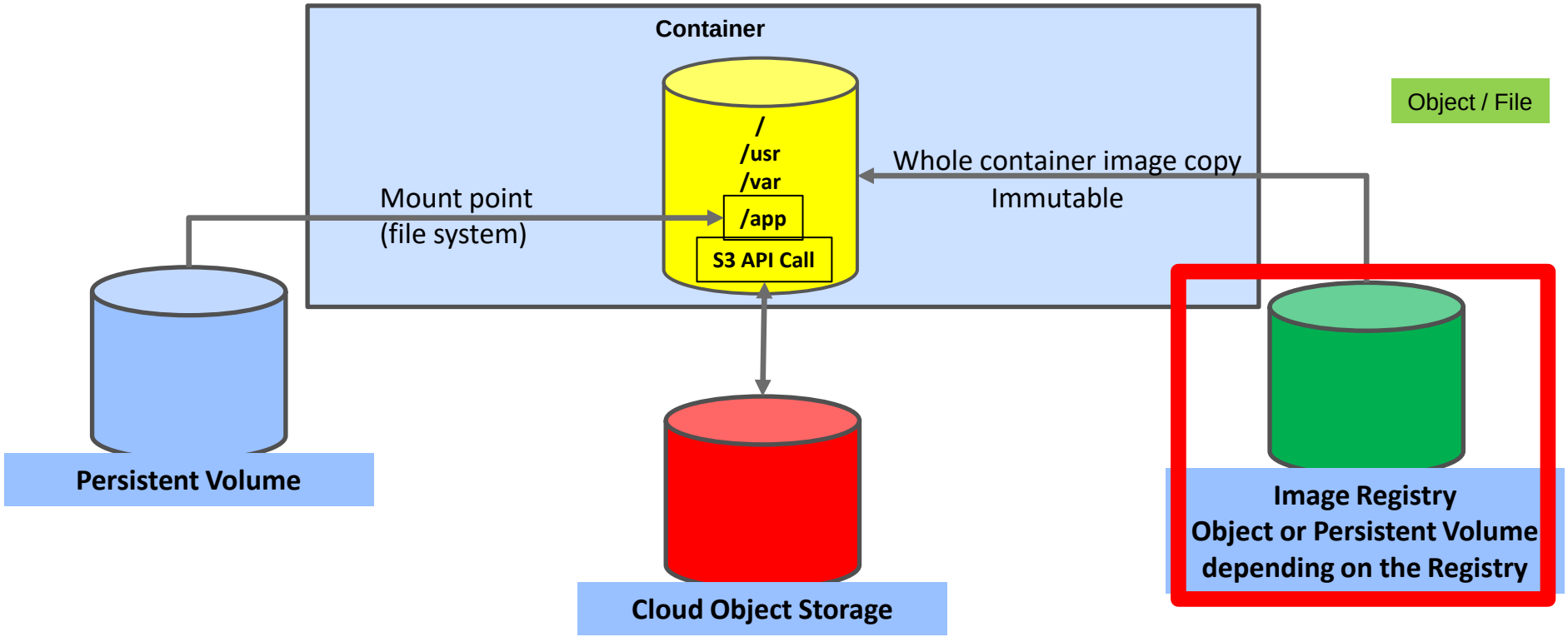

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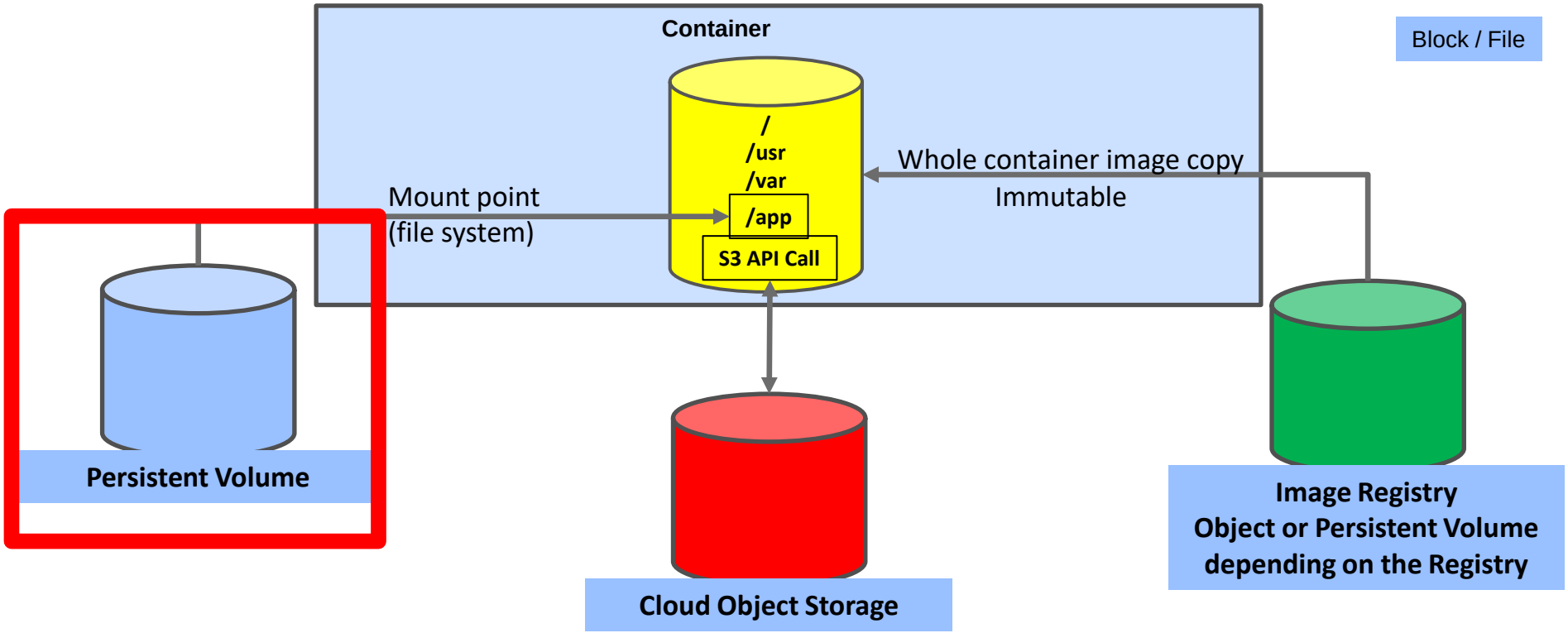
Spectrum Scale



Other types of storage inside OpenShift

Spectrum Scale

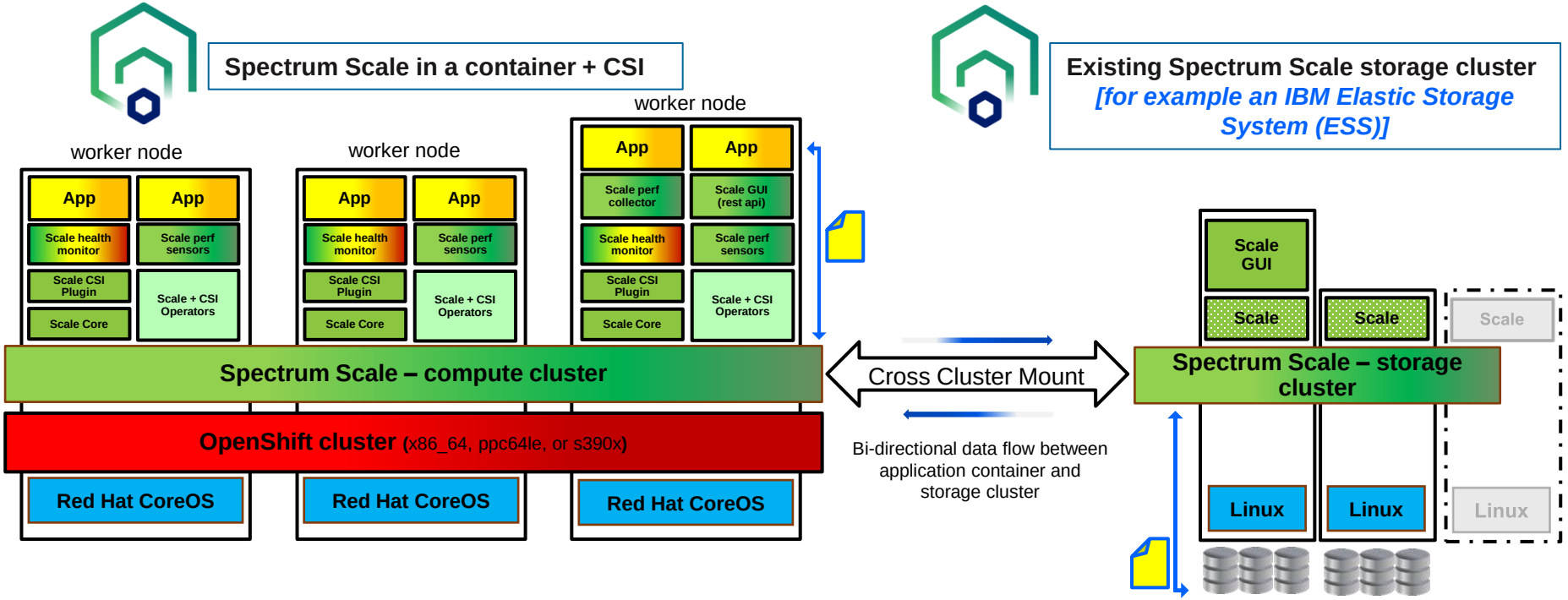
Secrets
- Passwords
- Certificates
- Pull Secrets for Registries

ConfigMaps
- Application parameters
- Configuration Files
- Binary files used by pods

EmptyDir
- Ephemeral Storage shared between two containers on a pod

IBM Spectrum Scale Container Native Storage Access (CNSA)

Cluster Overview



Container Native Storage Access

Improvements introduced in CNSA 5.1.4
https://www.ibm.com/docs/en/scalecontainernative?topic=overview-supported-features

Wider support to use the latest CNSA functionality.

- Support for upgrading IBM Spectrum Scale Container Native Storage Access (CNSA) from v5.1.4 to 5.1.4.1
- Planned support for RedHat OpenShift Container Platform 4.11
- CNSA images now hosted on the entitled IBM Cloud Container Registry.
- Automated deployment of the CSI driver
- Support for storage cluster encryption
- Rolling upgrade of IBM Spectrum Scale is supported
- Support for a limited set of IBM Spectrum Scale configuration settings to be set directly
- Grafana support
- Support for X86, Power and Z.
- Direct storage attachment on x88, power and Z
- Automatic quorum selection is Kubernetes topology aware.

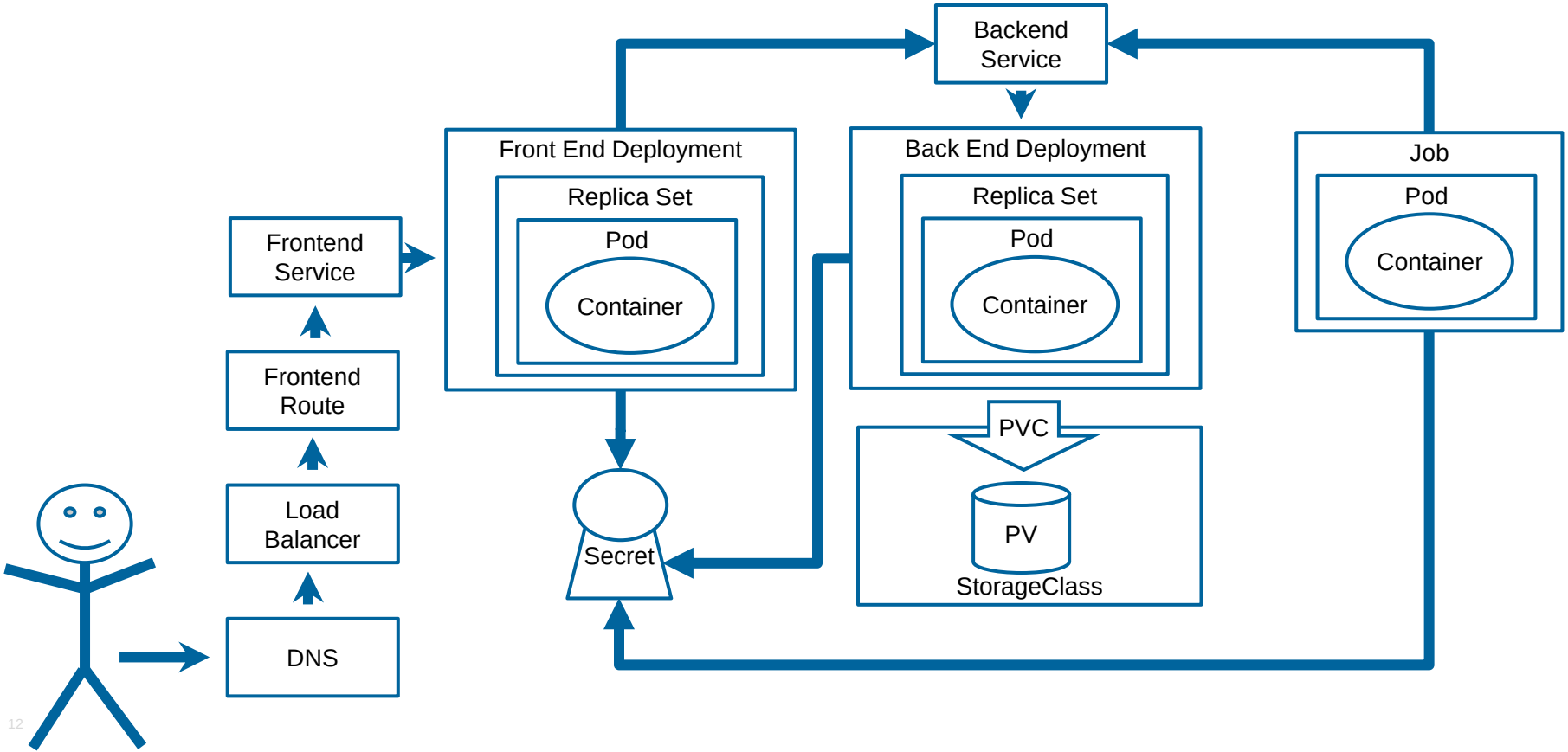
Container Storage Interface

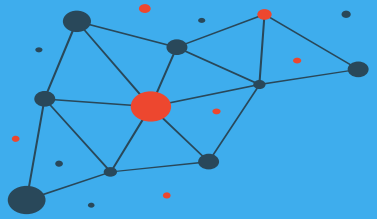
Improvements introduced in CSI 2.5

Upgrades for OpenShift, Kubernetes and Ansible as well as improved functionality that support simpler administration and configuration.

- Planned support for Red Hat OpenShift 4.11 and Kubernetes 1.23.
- Upgraded CSI specification from 1.3.0 to 1.5.0
- Added support for Consistency Group (**version**=*2*)
- Support to enable the compression for persistent volumes
- Support to enable the tiering for persistent volumes
- Increased attacher statefulset's replica count to two for high availability of attached volumes
- Upgraded Kubernetes CSI sidecar containers
- Migrated from CSI Ansible® operator to CSI Go operator

Simple persistent Application Two tier Architecture





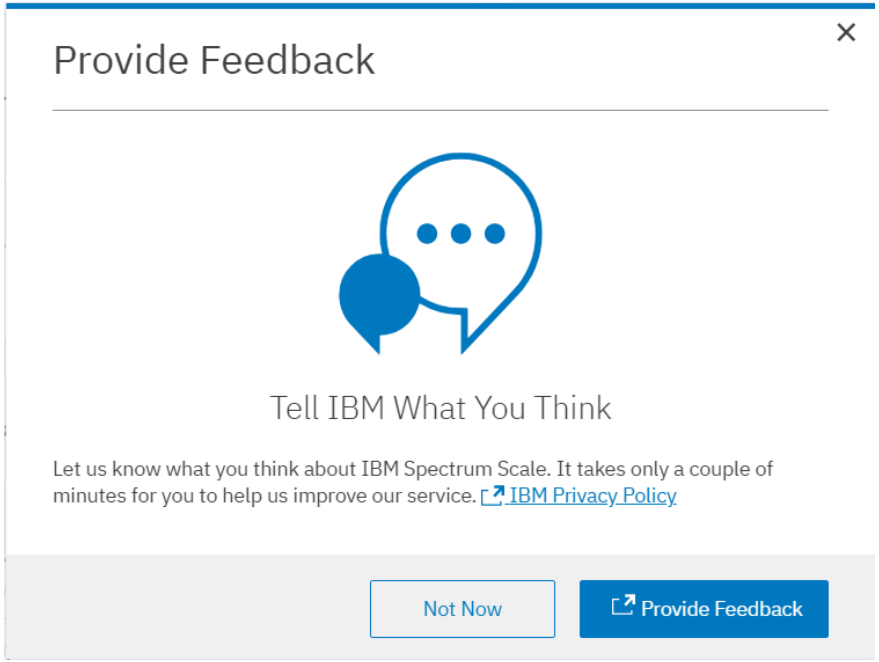
Check https://www.spectrumscaleug.org/experttalks for charts, notes and upcoming talks

- Past talks:
  - 001: What is new in Spectrum Scale 5.0.5?
  - 002: Best practices for building a stretched cluster
  - 003: Strategy update
  - 004: Update on performance enhancements in Spectrum Scale (file create, MMAP, direct IO, ESS 5000)
  - 005: Update on functional enhancements in Spectrum Scale (inode management, vCPU scaling, NUMA considerations)
  - 006: Persistent Storage for Kubernetes and OpenShift environments
  - 007: Manage the lifecycle of your files using the policy engine
  - 008: Multi-node scaling of AI workloads using Nvidia DGX, OpenShift and Spectrum Scale
  - 009: Continental: Deep Thought – An AI Project for Autonomous Driving Development
  - 010: Data Accelerator for Analytics and AI (DAAA)
  - 011: What is new in Spectrum Scale 5.1.0?
  - 012: Lenovo - Spectrum Scale and NVMe Storage
  - 013:Event driven data management and security using Spectrum Scale Clustered Watch Folder and File Audit Logging
  - 014: What is new in Spectrum Scale 5.1.1?
  - 015: IBM Spectrum Scale Container Native Storage Access

Thank you!

Please help us to improve Spectrum Scale with your feedback

- If you get a survey in email or a popup from the GUI, please respond
- We read every single reply



Spectrum Scale User Group

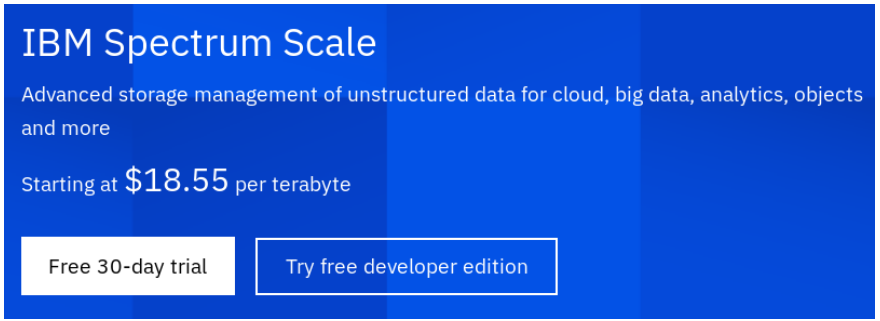
The Spectrum Scale (GPFS) User Group is free to join and open to all using, interested in using or integrating IBM Spectrum Scale.

The format of the group is as a web community with events held during the year, hosted by our members or by IBM.

See our web page for upcoming events and presentations of past events. Join our conversation via mail and Slack.

www.spectrumscaleug.org

Spectrum Scale Developer Edition!



Fully functional!

- Based on first PTF of a release
- Derived from **Data Management Edition (DME)**
- Limited to 12 TBs:
  enough for a small test cluster
- Available from the Scale ”try and buy” page on ibm.com

Free for non-production use, e.g. test, learning, upgrade prep…

- If you have to ask, it’s probably not permitted

Not formally supported

Spectrum Scale on GitHub!
https://github.com/IBM/SpectrumScaleTools

- IBM Spectrum Scale Bridge for Grafana
- IBM Spectrum Scale cloud install
- IBM Spectrum Scale Container Storage Interface driver
- IBM Spectrum Scale install infra
- IBM Spectrum Scale Security Posture
- Oracle Cloud Infrastructure IBM Spectrum Scale terraform template
- SpectrumScale_ECE_CAPACITY_ESTIMATOR
- SpectrumScale_ECE_OS_OVERVIEW
- SpectrumScale_ECE_OS_READINESS
- SpectrumScale_ECE_STORAGE_READINESS
- SpectrumScale_ECE_tuned_profile
- SpectrumScale_NETWORK_READINESS

Find open source tools that are related with IBM Spectrum Scale.

Unless stated otherwise, the tools compiled in this list come with no warranty of any kind from IBM.

Check out the FAQ!

https://www.ibm.com/support/knowledgecenter/en/STXKQY/gpfsclustersfaq.html
https://www.ibm.com/support/knowledgecenter/STXKQY/gpfsclustersfaq.pdf?view=kc
https://www.ibm.com/support/knowledgecenter/SSYSP8/gnrfaq.html

HTML or PDF

Spectrum Scale version compatibility with OS or kernels

Updated regularly!