Spectrum Scale Cloud Native / Containers

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Goal: Deliver High Performance File Services to Containerized Application Workloads

Support Workloads that Require High Performance File Services

- Analytics & Cognitive

- High Performance Computing

- AI Data Pipeline

Support the Workload Ecosystem in the Cloud

- Containerized Applications, Storage

- Ephemeral and Persistent Storage Volumes

Flexible Deployment

- Dynamic Provisioning, Configuration, Upgrade

Support for Multiple Clouds

- Public, Private, Hybrid

Support Hybrid Use Cases

- Cloud Burst – Single Name Space

- Multi Cloud Data Sharing

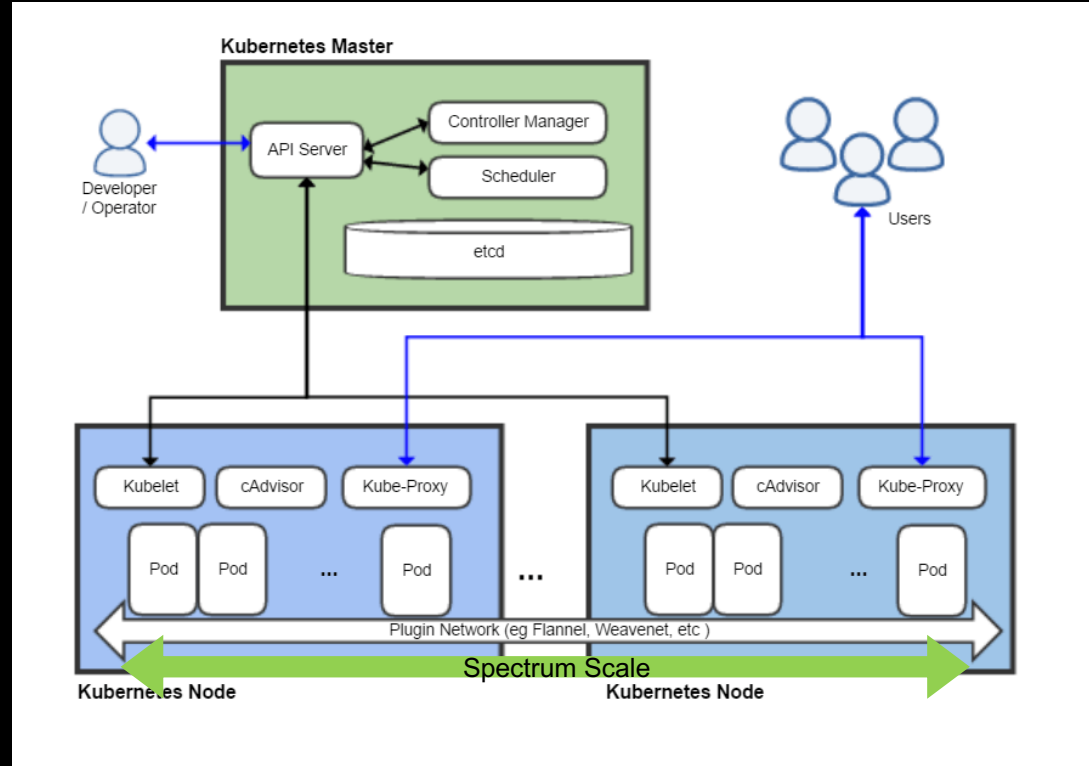- Archive

- High Performance Tiering

Solution Integration (Partners)
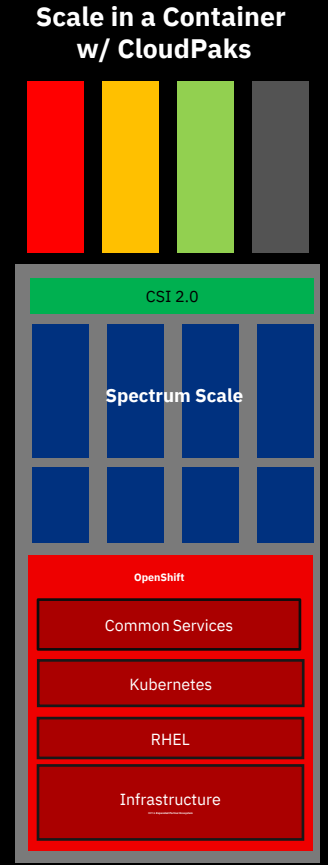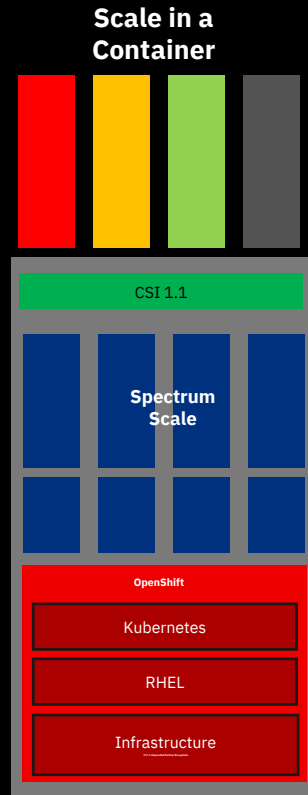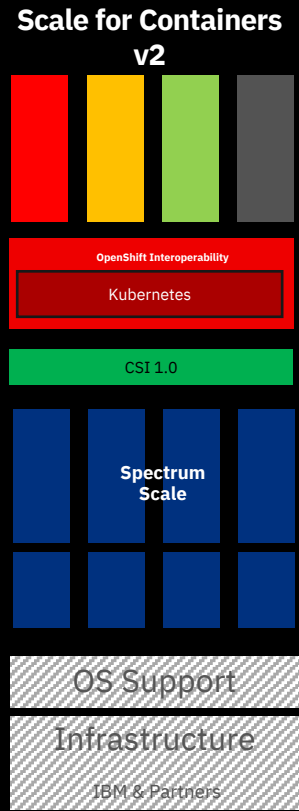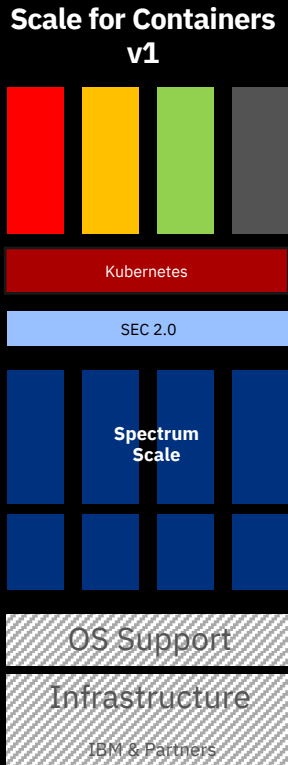
Why Containerized Spectrum Scale?
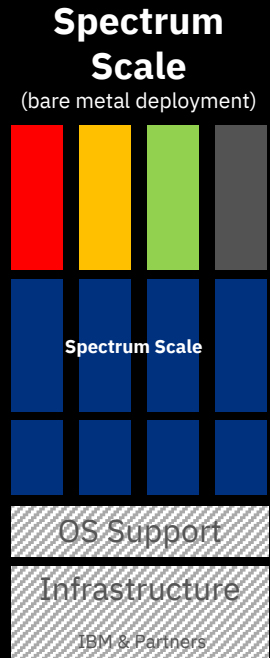
Kubernetes provides a scale-out platform for running application containers.

Spectrum Scale is an ideal fit for this scenario, because it provides all data to all worker nodes directly. Containers can be freely moved between nodes without having to remap/remount volumes on the worker node.

Spectrum Scale scales far beyond the limits of a Kubernetes cluster and offers unmatched performance.

Evolution of IBM Spectrum Scale Containers

Spectrum Scale
(bare metal deployment)

Spectrum Scale

OS Support

Infrastructure

IBM & Partners

Scale for Containers v1

Kubernetes

SEC 2.0

Spectrum Scale

OS Support

Infrastructure

IBM & Partners

Scale for Containers v2

OpenShift Interoperability

Kubernetes

CSI 1.0

Spectrum Scale

OS Support

Infrastructure

IBM & Partners

Scale in a Container

CSI 1.1

Spectrum Scale

OpenShift

Kubernetes

RHEL

Infrastructure

Scale in a Container w/ CloudPaks

CSI 2.0

Spectrum Scale

OpenShift

Common Services

Kubernetes

RHEL
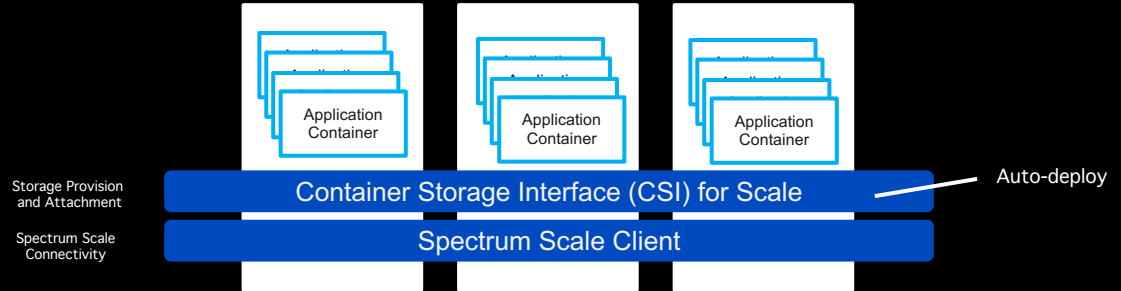
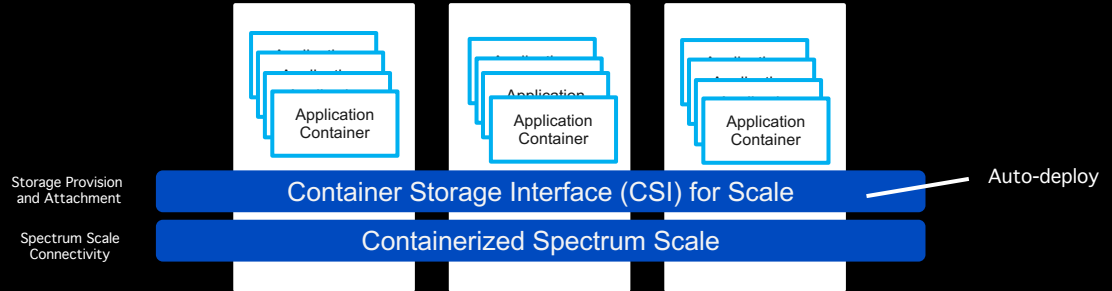Infrastructure

Spectrum Scale Containers Models

Storage for Containers

- Container Ready Storage

- No support for RHCOS

- Traditional deployment & management

Storage in Containers

- Containerized Storage

- Supports RHCOS

- Deployment & management via operators

Application Container

Application Container

Application Container

Storage Provision and Attachment

Container Storage Interface (CSI) for Scale

Spectrum Scale Connectivity

Spectrum Scale Client

Auto-deploy

Application Container

Application Container

Application Container

Storage Provision and Attachment

Container Storage Interface (CSI) for Scale

Spectrum Scale Connectivity
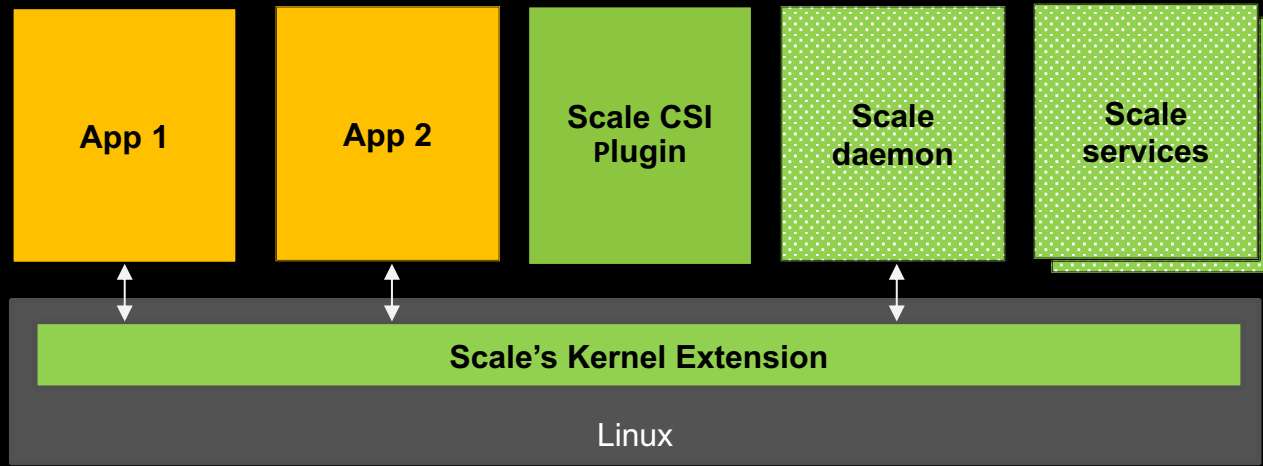
Containerized Spectrum Scale

Auto-deploy

Containerized Spectrum Scale

The core of containerized Scale is a daemonset of containers that run on every worker node, load the kernel extension and start the filesystem daemon. This set of containers needs special privileges to load kernel modules, mount file systems, access block devices and access the host network.

Other Scale services like ReST API, GUI, performance data collection, etc. run in separate containers.

Deployment and operation is implemented via operators.

Demo