

# Container & Cloud Update

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Harald Seipp

STSM, CoE for Cloud Storage

IBM Systems EMEA Storage Competence Center

Credits: pixitmedia, Ted Hoover/Jeff Ceason (IBM)

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## **Advanced Technical Skills** (ATS)

Skill Transfer, New Product Intro., Solution Enablement, Architectural Guidance

## **Lab Services** (LS)

Skill Enablement, Hands-On-Training, Implementation Assistance, Data Migration & Performance Tuning

## **Development & Product Test Systems Lab**

Proof of Concept (PoC), Hands-on Product Training ...

## **Product Field Engineering** (PFE)

Last level defect support

## **Client Care**

Pro-active Customer Care Management



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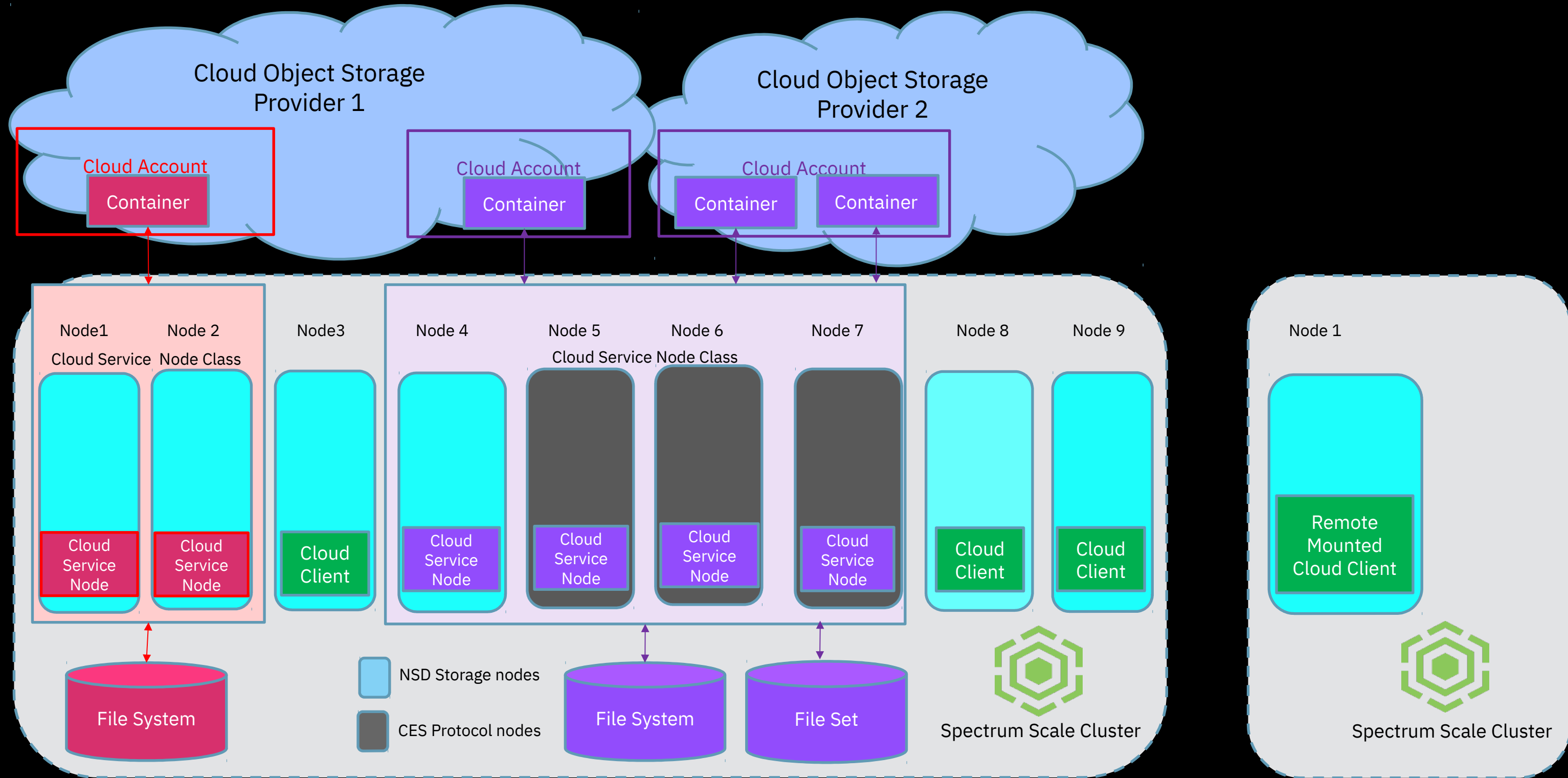


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[https://www.ibm.com/partnerworld/page/pw\\_com\\_bp\\_ecampus](https://www.ibm.com/partnerworld/page/pw_com_bp_ecampus)

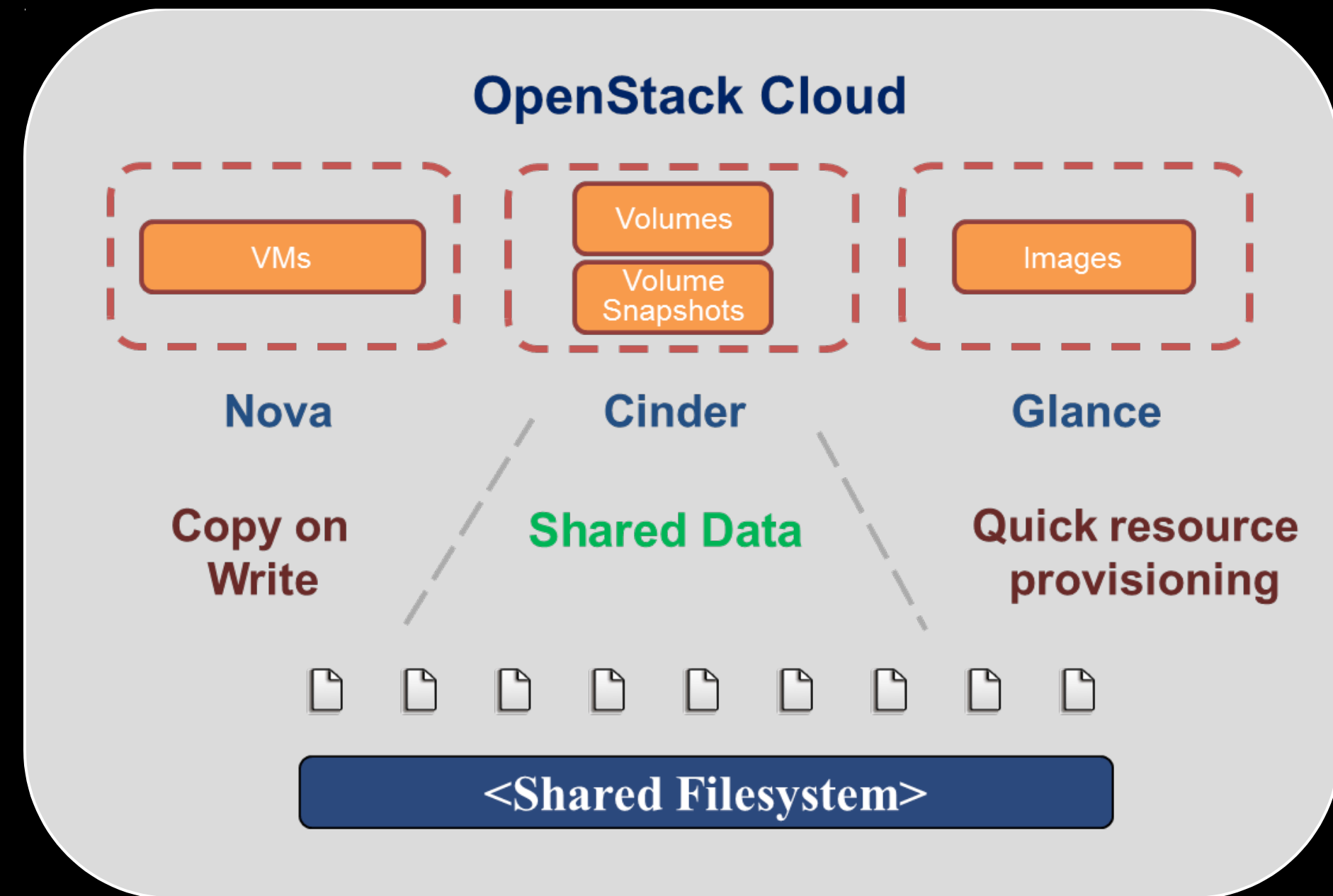
# Cloud-ready

# Multicloud Spectrum Scale Transparent Cloud Tiering



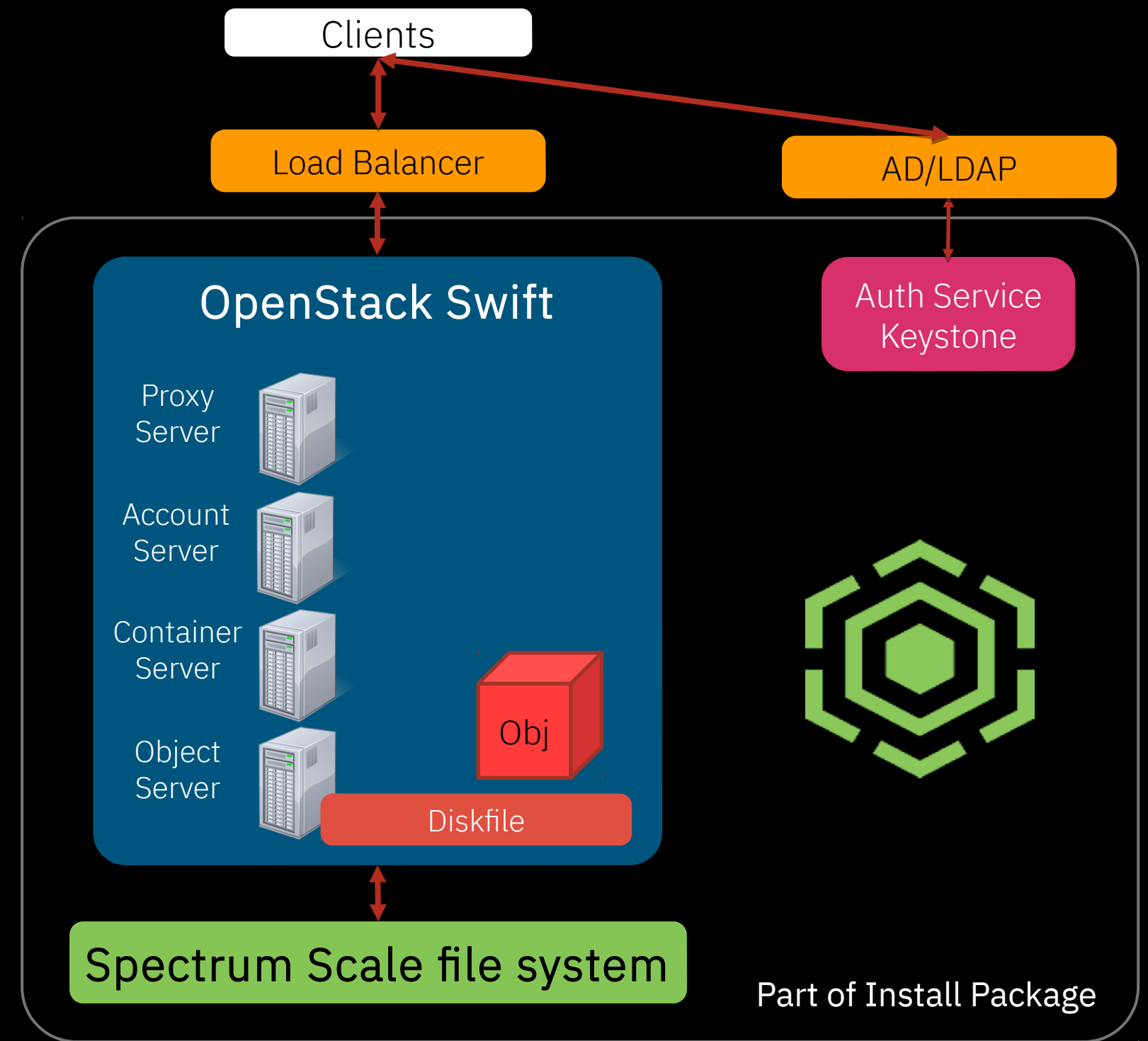
# OpenStack Compute integration

- Nova: Ephemeral storage for VM instances
- Glance: VM image storage
- Cinder: Volume storage
  - Bootable volumes that nova uses or
  - Persistent data volumes for Nova VM instances
- Manila: File Shares as a service
- Tested up to Rocky Release



# Spectrum Scale Object

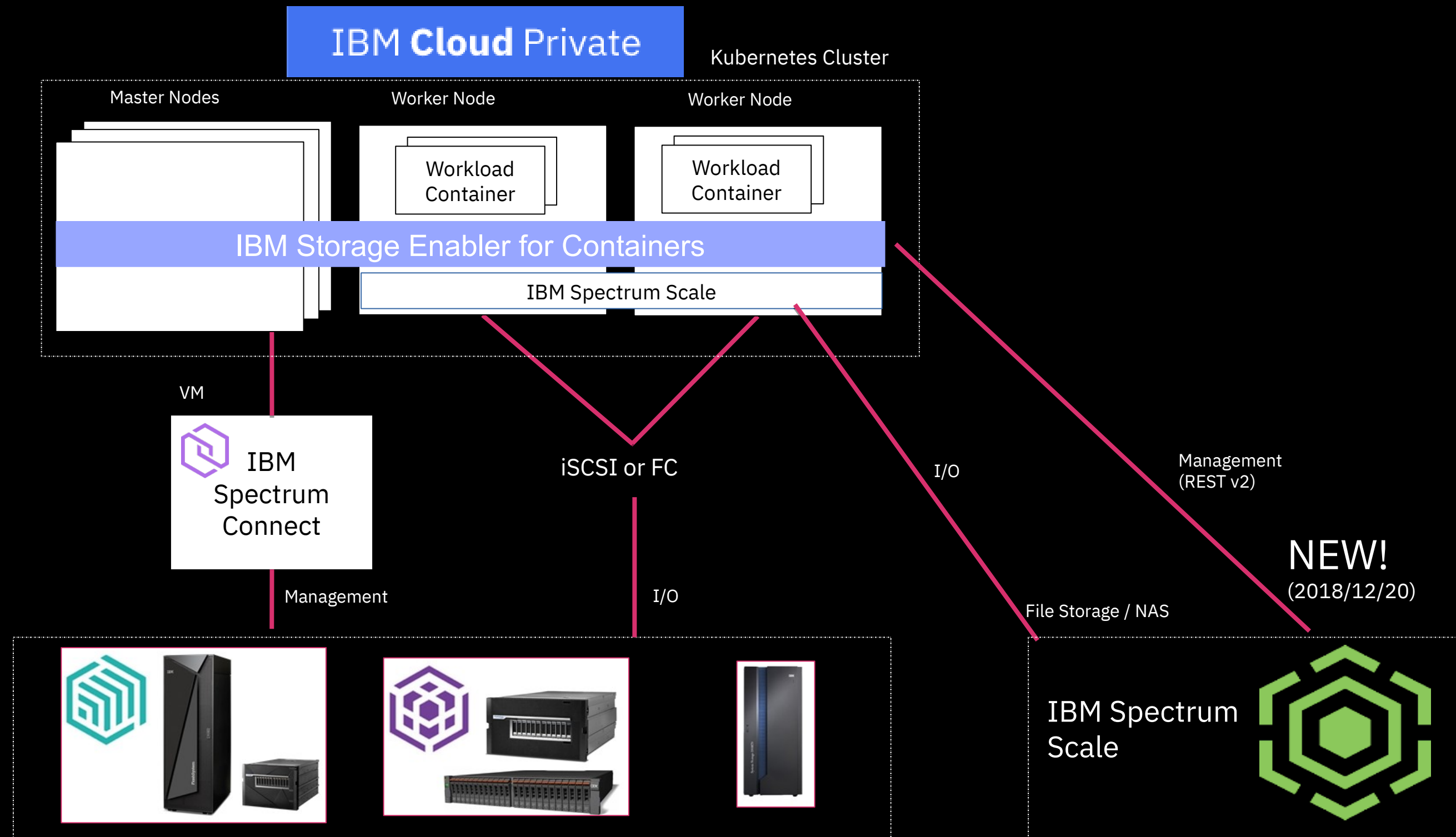
- Based on OpenStack Swift (Pike release)
- Supports RESTful APIs (Swift and **S3**)
- OpenStack Keystone authentication
- **Automated** Swift & Keystone **install**
- **Health & Performance** Monitoring
- **Unified File & Object**



# In the Cloud



# IBM Storage Enabler for Containers





# IBM Storage Enabler for Containers

Unified solution across IBM

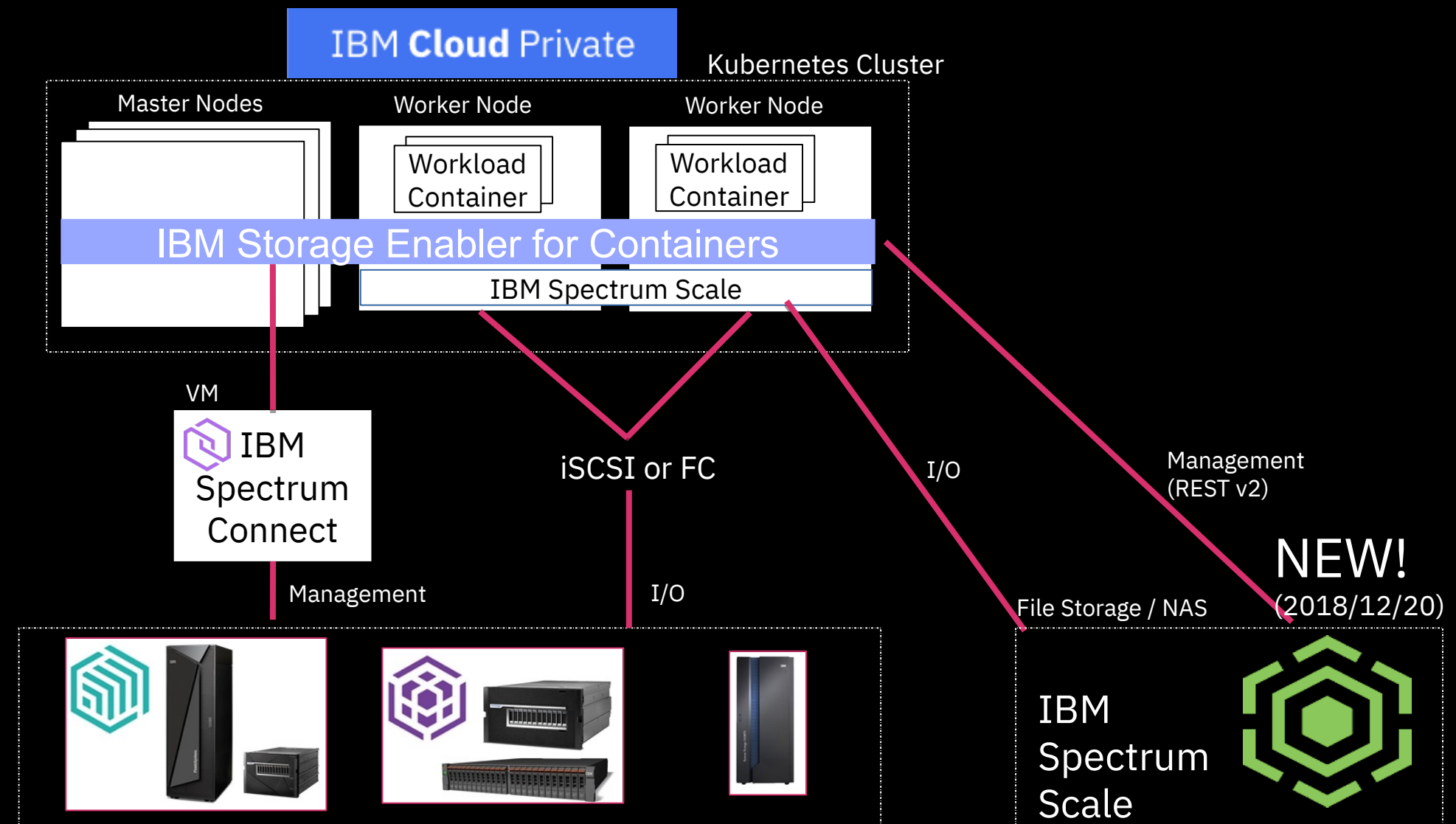
Supports Kubernetes Dynamic Provisioning feature

Highly available and secure through REST API V2 and secure connections

Initial GA supports native Spectrum Scale filesets

Plug-in source code is available via (Ubiquity) Open Source Project

Available as free download on FixCentral



IBM Cloud Private

Fast. Flexible. Intelligent.  
Open. Enterprise-grade.

Log in to your account

Username

Password

Log in

Demo: Helm chart  
deployment on  
IBM Cloud Private



# On the Cloud

# Spectrum Scale on Cloud Background

Workloads are moving to the cloud.

Private, Public, Hybrid, Multi-Cloud.

We want to offer support for Scale in **cloud environments** that **our customers are moving to**.

This is part of our hybrid strategy.

There is need to have a **cloud offering** in order to participate in new customer opportunities which are **not starting on-premises**.

Key goal is to deliver **Spectrum Scale's value proposition** on existing Cloud Environments and **expand the flexibility** of our offerings to **better support hybrid environments**.

# Spectrum Scale on AWS value proposition

**Easily use a HA scalable filesystem on AWS with POSIX semantics.**

Deployment is available through **Amazon Marketplace**

**Targeted for HPC use on AWS** to move workloads to public clouds.  
**Global namespace** across AWS instances.

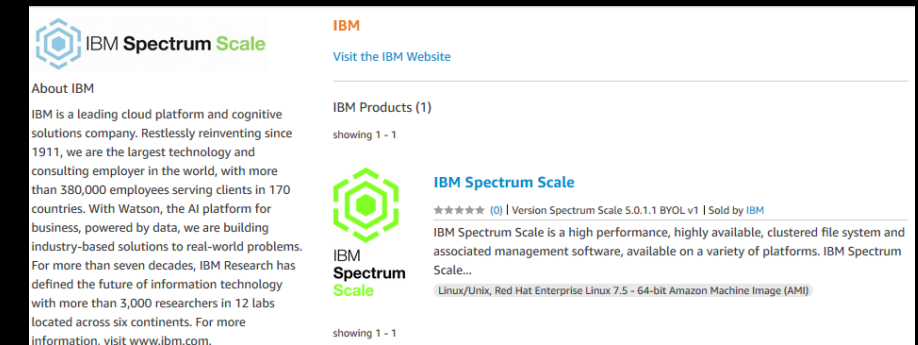
Create cluster → ingest data → use by application → export data → destroy cluster

**Try things without infrastructure investments** (POCs, code evaluation, etc.)

Provides operational expense model focus (over capital expense model)

Lower costs for some (e.g. 'bursty') workloads

**Agile deployment configuration adoption** for transient or temporary use cases



# Spectrum Scale Journey on AWS



[Spectrum Scale Trial link](#)

- 3 months trial license
- Released Sept. 13 2017
- Data Management Edition



[Spectrum Scale Marketplace link](#)

- Bring your own license
- Released Sept. 28 2018
- Data Management Edition

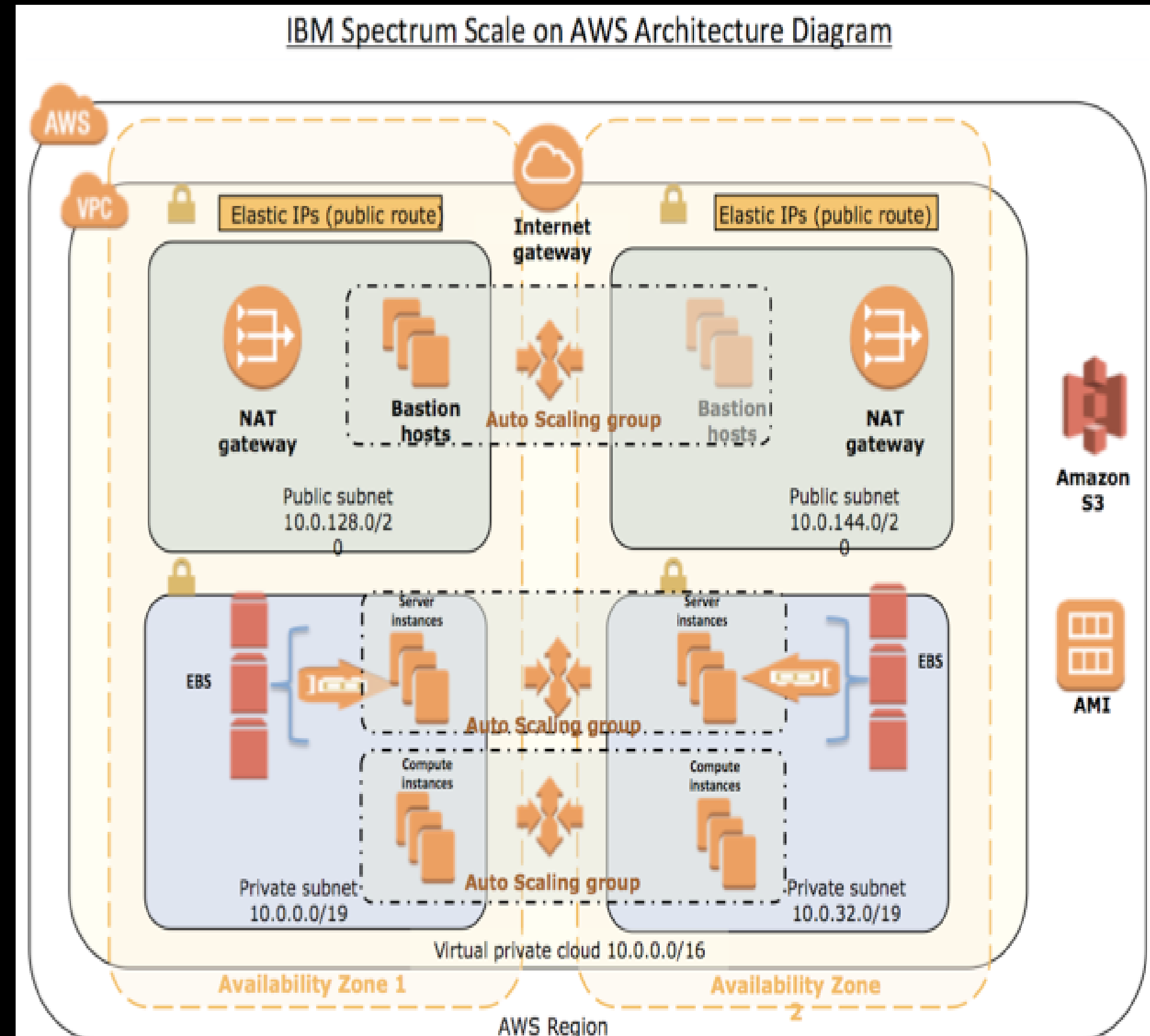
A cluster of **16** AWS EC2  
**instances** can be **launched and**  
**configured** with a **shared**  
**filesystem** mounted on all  
**nodes in less than an hour**

**(& does not require any Spectrum Scale Admin Skills)**



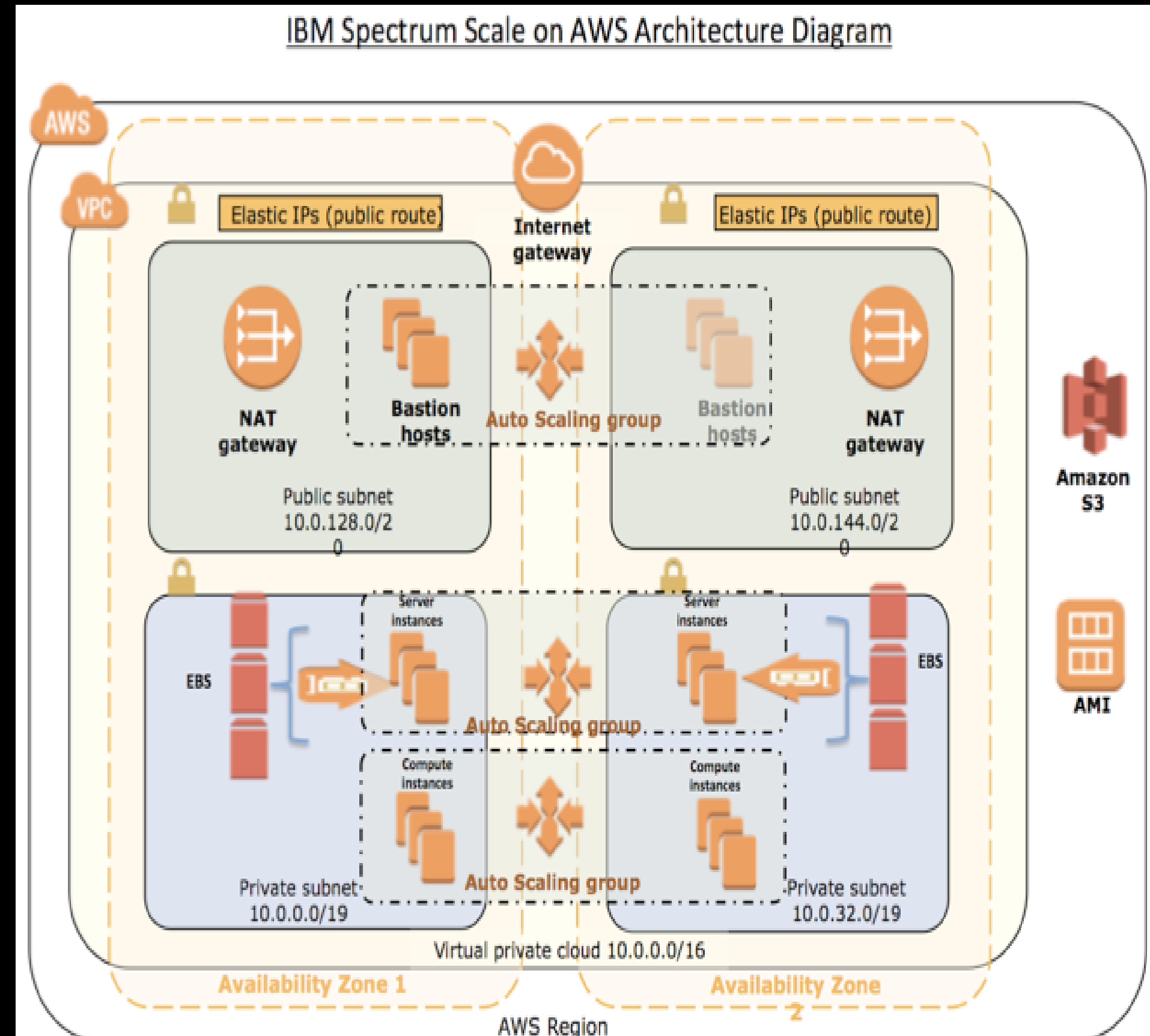
# Spectrum Scale on AWS – Architecture

- Solution based on **EC2 instances** and **EBS volumes**
- **NSD servers** using AWS EBS storage are **separate** from “**Compute**” nodes that mount the shared filesystem
- Data is replicated across **multiple availability zones**



# Spectrum Scale on AWS – Architecture (cont.)

- Support for creation of **new VPCs** or launching instances into **existing VPCs**.
- Connection to these instances only **via a Bastion Host** (as per AWS best practices)
- Focuses on simplicity/usability of deployment (e.g. reduced config. options) and leverages Amazon features such as **Cloud Formation templates** and **AMIs** (Amazon Machine Image)



EC2 Management Console - Mozilla Firefox

EC2 Management ConsoleCloudFormation Manager

https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#Instances:sort=instanceId

Search

haraldseipp @ 7442-5078-7275N. VirginiaSupport

EC2 DashboardEventsTagsReportsLimitsINSTANCES**Instances**Launch TemplatesSpot RequestsReserved InstancesDedicated HostsScheduled InstancesCapacity ReservationsIMAGESAMIsBundle TasksELASTIC BLOCK STOREVolumesSnapshotsLifecycle ManagerNETWORK & SECURITYSecurity GroupsElastic IPsPlacement GroupsKey PairsNetwork InterfacesLOAD BALANCINGLoad BalancersTarget Groups

Launch InstanceConnectActions

Filter by tags and attributes or search by keyword

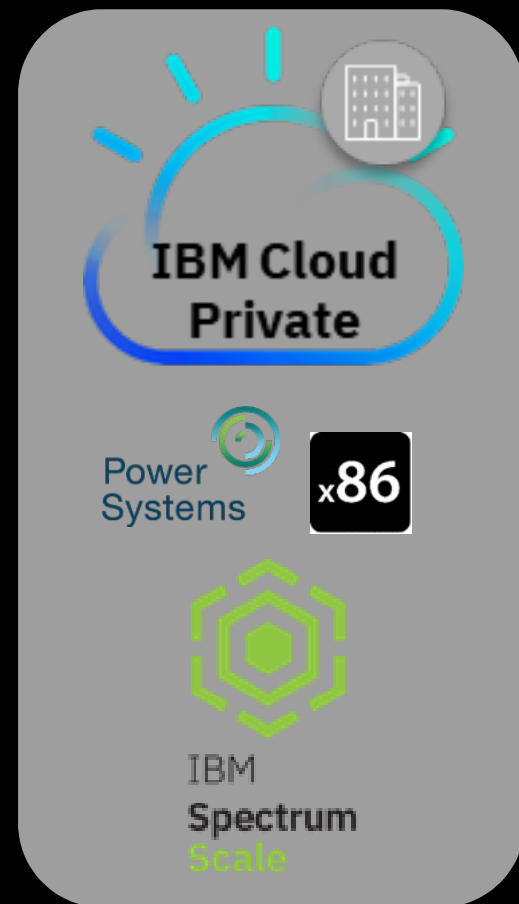
	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)	IPv4 Public IP	IPv6 IPs
<input type="checkbox"/>	haraldscale-...	i-006ce8f434ac4b70d	t2.micro	us-east-1a	running	2/2 checks ...	None		-	-
<input type="checkbox"/>	haraldscale-...	i-01ca61207929d8e7c	t2.micro	us-east-1a	running	2/2 checks ...	None		-	-
<input type="checkbox"/>	haraldscale-...	i-0a1bf5ad47128a64a	t2.micro	us-east-1a	running	2/2 checks ...	No Data		-	-
<input type="checkbox"/>	LinuxBastion	i-0cf4af847c6e42033	t2.micro	us-east-1a	running	2/2 checks ...	None	ec2-34-237-100-70.com...	34.237.100.70	-
<input type="checkbox"/>	haraldscale-...	i-0fe15bab08d4d5901	t2.micro	us-east-1a	running	2/2 checks ...	None		-	-

Select an instance above

FeedbackEnglish (US)

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# Hybrid Multicloud Data Agility and Collaboration with IBM Spectrum Scale



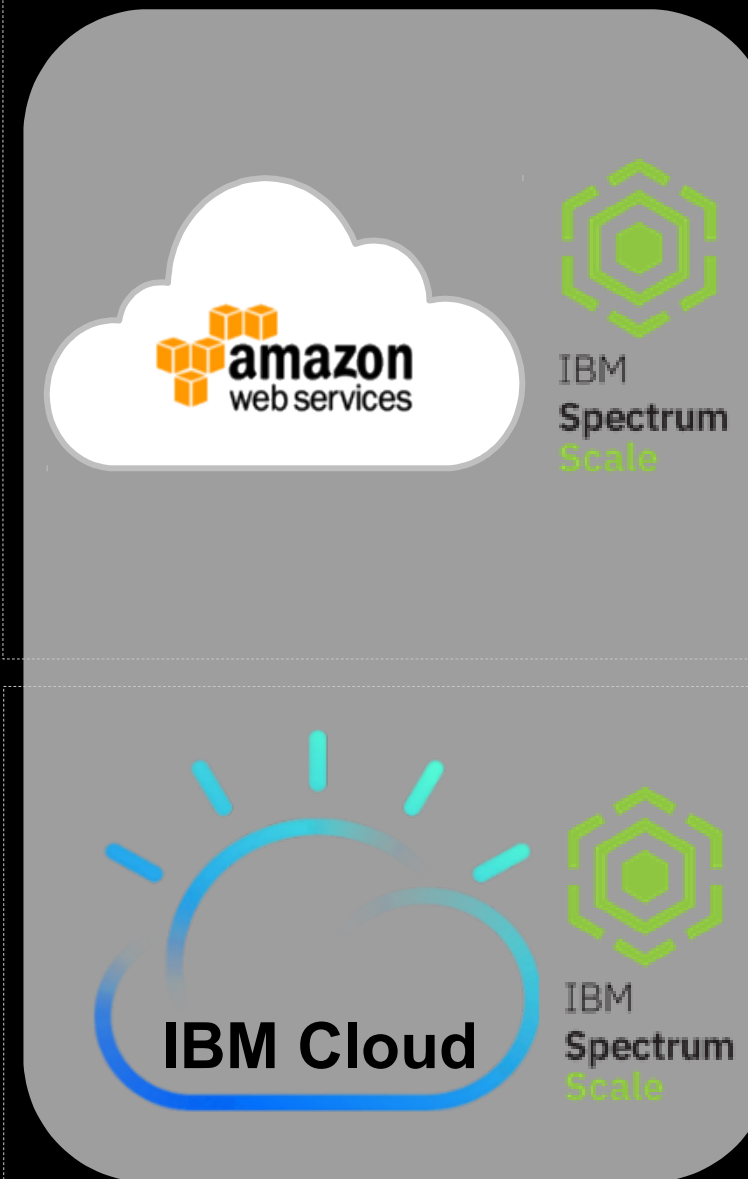
## 1. On-Premises Private Cloud Using:

- IBM Cloud Private
- IBM Cloud Automation Manager for self-service multicloud
- IBM Spectrum Scale

Connect via VPN over WAN



## 2. Data Mobility via **IBM Spectrum Scale Advanced File Management** (tech preview)



3. Automated deployment using **IBM Cloud Automation Manager** leveraging EC2 instances and EBS volumes. Deployed in 3-node cluster.

4. **Archive to S3** within AWS

5. Deployed leveraging BareMetal servers and block storage. Deployed in 2-node cluster.

6. Archive to **IBM COS**

# PixCloud

- Simple-to-deploy **PixStor** in the Cloud
- API-friendly for automated deployment/configuration
- Pixit's Ngenea, Python API & REST services for workflow integration



← New PixCloud deployment Google Cloud

Deployment name  
devpixcloud001-1

Zone ?  
europe-west2-c

Capacity  
Capacity (TB)  
10

Networking  
Network ?  
default

☒ Assign external IP to management node  
☐ Assign external IP to storage nodes  
☐ Assign external IP to gateway nodes

Advanced Settings  
☐ Data replication  
Enable data replication by default, for HA deployments

Deploy

## Use Cases

- Burst render – seamless flexing of on-prem to cloud for compute workloads
- Cloud native media studio
- Global collaboration
- Test/dev

## One-click PixStor Cluster

- Ngenea for data migration
- Python & REST APIs for data management
- Pixit's media optimised NAS stack
- Nexus easy-to-use UI for configuration & monitoring

## Performance & Capacity

- Deployment simplicity – only one variable (capacity)
- Fixed performance to capacity ratios
- e.g. 480MB/sec per TB, 120MB/sec per TB, 60MB/sec per TB
- Consistent performance



Cloud Automation Manager

← → ↺ 🏠

https://10.0.240.50:30000/cam/templates/#!/templates

80% ... 📌 ⭐ 🔍 Search

📄 📖 ⚙

IBM Cloud Automation Manager

Docs Support

All Templates (9) >

My Templates (9)

Middleware (0)

Integration (0)

Starterpacks (0)

Amazon EC2 (3)

IBM (3)

VMware vSphere (3)

Search Templates

Create Template +

▼ My Templates(9)

IBM Cloud Private - AWS

Kubernetes Worker Node

100%

IBM Spectrum Scale - AWS

Cluster File Storage

100%

IBM Spectrum LSF - AWS

Workload Scheduler

100%

IBM Cloud Private - IBM Cloud

Kubernetes Worker Node

100%

IBM Spectrum Scale - IBM Cloud

Cluster File Storage

100%

IBM Spectrum LSF - IBM Cloud

Workload Scheduler

100%

IBM Cloud Private - Private Cloud

Kubernetes Worker Node

100%

IBM Spectrum Scale - Private Cloud

Cluster File Storage

100%

IBM Spectrum LSF - Private Cloud

Workload Scheduler

100%

# Demo: IBM Cloud Automation Manager Spectrum Scale deployment to AWS

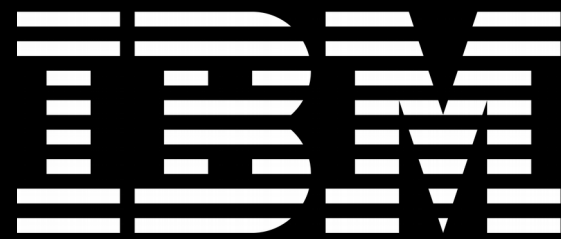
## IBM Cloud Automation Manager for multicloud self service deployment

# Thank you!



Harald Seipp  
Senior Technical Staff Member, Center of Excellence for Cloud Storage  
IBM Systems EMEA Storage Competence Center  
[seipp@de.ibm.com](mailto:seipp@de.ibm.com)





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