

An abstract graphic on the left side of the image, composed of numerous thin, wavy green lines that swirl and overlap to form a complex, organic shape. The lines are a vibrant green color against the dark blue background.

Open. Together.

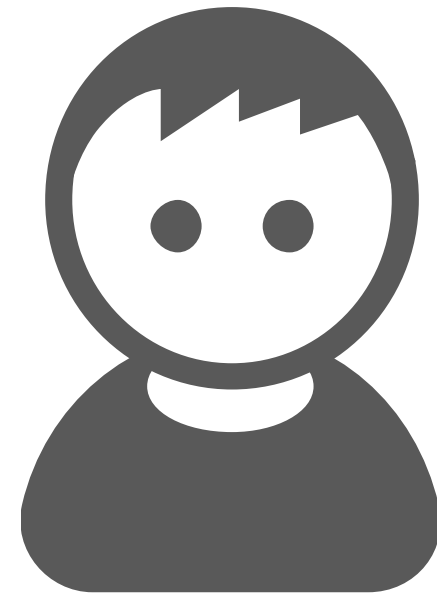


OCP
SUMMIT

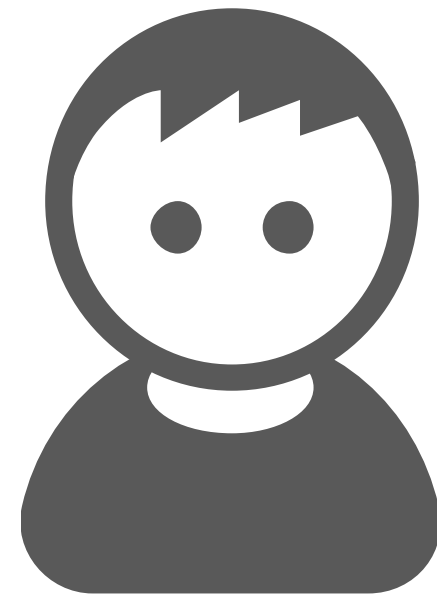
OCP Use Case: Using a Software Defined Storage on OCP Lightning (NVMe JBOD)

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Yahoo Japan Corporation





Yusuke Sato
Private Cloud,
Compute/Storage Architect



Akira Kamio
OpenStack,
Hypervisor(KVM/QEMU)

Introduction of Yahoo! JAPAN

- Yahoo! JAPAN is one of the largest internet company in Japan
- Our 100+ services earn 68billion PV per month

The screenshot displays the Yahoo! JAPAN homepage with a top navigation bar including links to home, travel, shopping, and premium services. A central search bar is prominent. The main content area features a news section with headlines about Japanese politics and a featured article about curry. A sidebar on the left lists various services like shopping, travel, and entertainment. The right sidebar includes a login section, a weather forecast for Tokyo, and a sports section.

Home Page Settings | Help

Yahoo! BB | Travel | Yahoo! | Shopping | YAHOO! JAPAN | Premium | Card | Mail

Web | Image | Video | Dictionary | Knowledge | Map | Real-time | Overview

Search: 検索

News: 9時49分更新
• 数金やツケ 民法どう変わる? NEW
• 野良猫に餌やり禁止 賛否続々 NEW
• トルコ最大級の地下都市発見 NEW
• 皆既月食 夜桜と競演珍しく
• 奇策に選手も驚き 日本代表
• ママタレ 割れる子供の顔出し
• 運転見合わせの路線、再開へ
• 優先席付近 電源オフは必要か
もっと見る トピックス一覧

Today's Topic: 新スイーツが | 猫密度 国で違い?

Now, Topic: 「男前インテリア」
まず押さえない定番インテリア | 深みがまずヴィンテージ | 多肉植物でカフェっぽく | 失敗しない間接照明のコツ

Recommendations:
あなたにおすすめ | Yahoo!ショッピング
思わず欲しくなっちゃう、おもしろ文房具 | 一番売れているラーメンは果たしてどれ?
おしゃれなティーポットで優雅なティータイム | 見て楽しい、大人女子向け文房具セレクション

Net News: ネットで話題の無料動画
ガラスに映る自分を見た猫の優しい行動

Login: IDでもっと便利に[新規取得] | ログイン履歴 | 登録情報
メールアドレス取得 | ポイント確認 | カード新規入会

2018年9月7日 (金)
Today's Weather (Tokyo): 10% | 19°C / 10°C | Tomorrow's Weather (Tokyo): 10% | 21°C / 10°C
Rain Cloud Radar: 新宿区
Traffic Information: 事故・遅延情報はありません (16時05分)
Calendar: 今日の運勢 牡羊座 95点

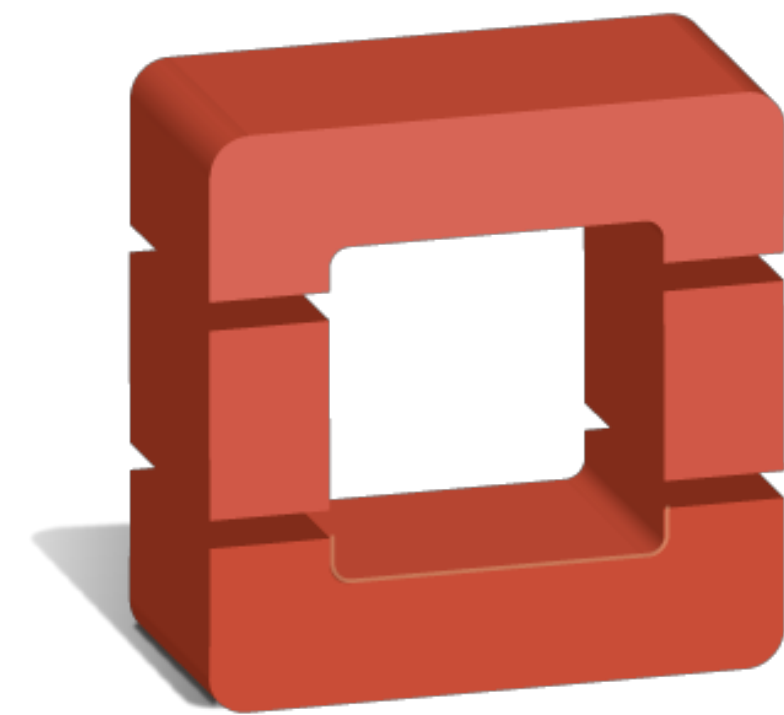
Scoreboard: プロ野球 | Jリーグ
9月7日 (金) の試合はありません J1試合予定
Jリーグトップ | スポーツナビ

Datacenter

- 6+ DCs (1DC in the US)
- 75,000+ Baremetal Servers
- 130,000+ Virtual Machines
- 60PB+ Storages



Private Cloud



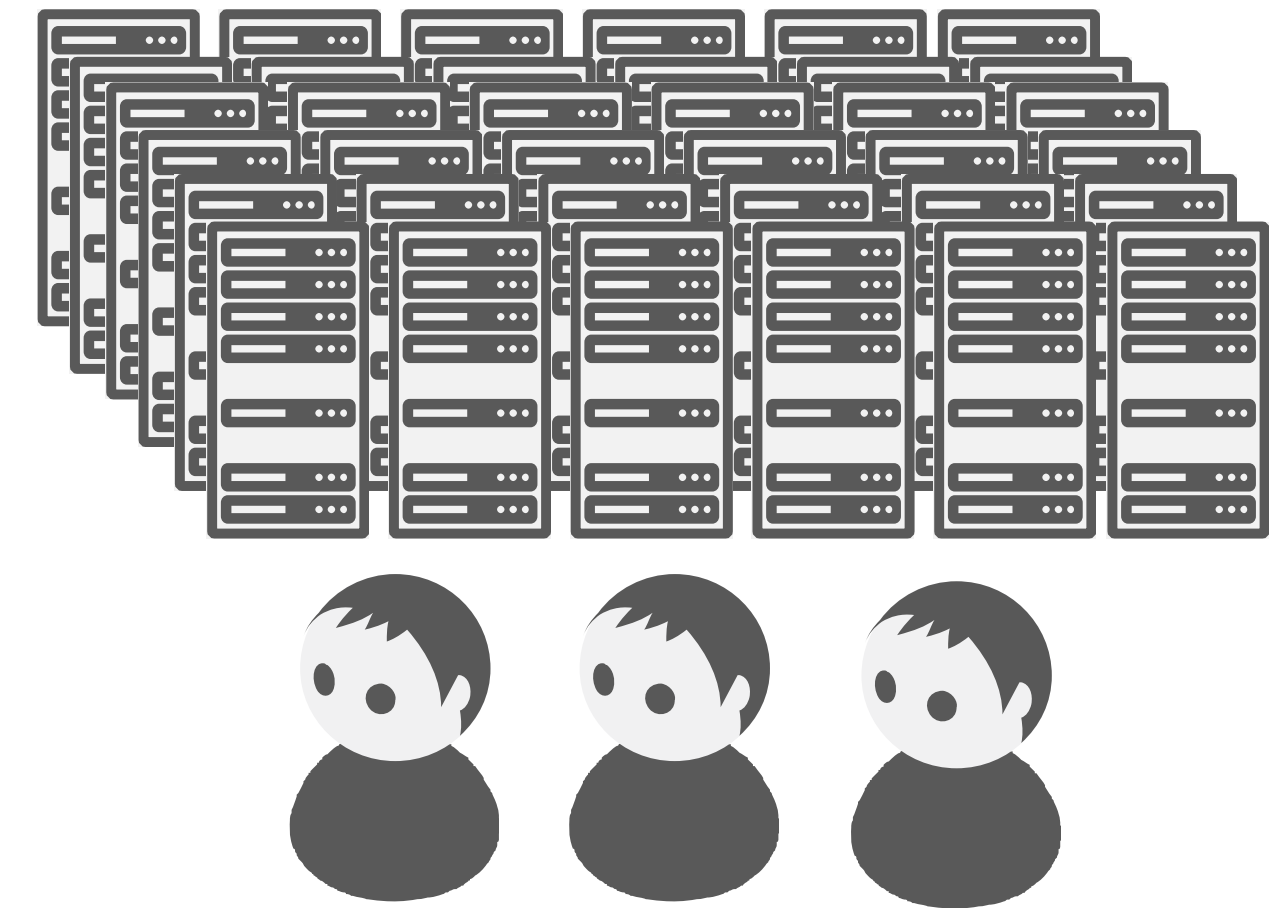
openstack™



kubernetes

OpenStack Environments

- 100+ OpenStack Clusters
130,000+ instances
- Operated by less than 20 engineers
- For reducing operating costs
 - Automated provisioning
 - ChatOps
 - Centralized logging
 - Monitoring & Visualizing status

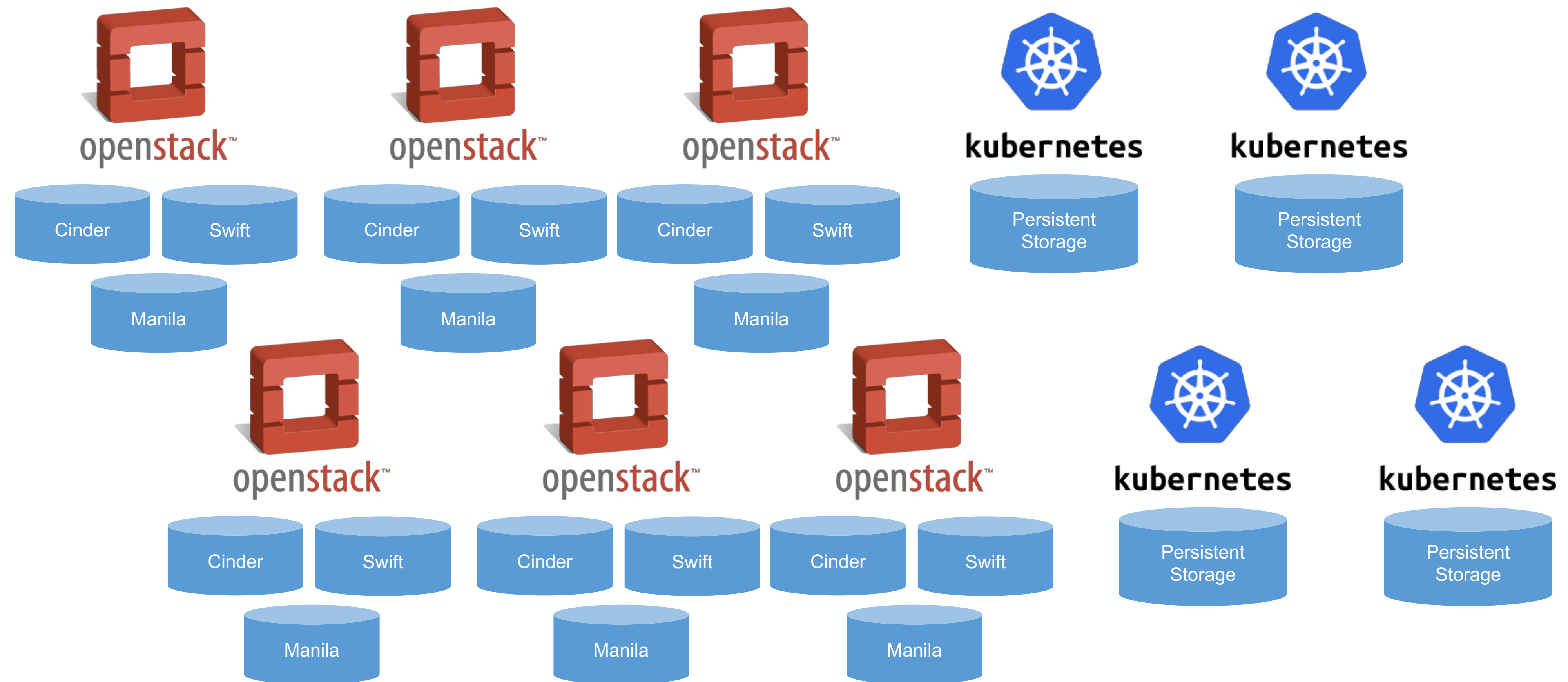


clusters								
Name	Clusters	Status			CTL Nodes	CTL Status	KVM Nodes	KVM Status

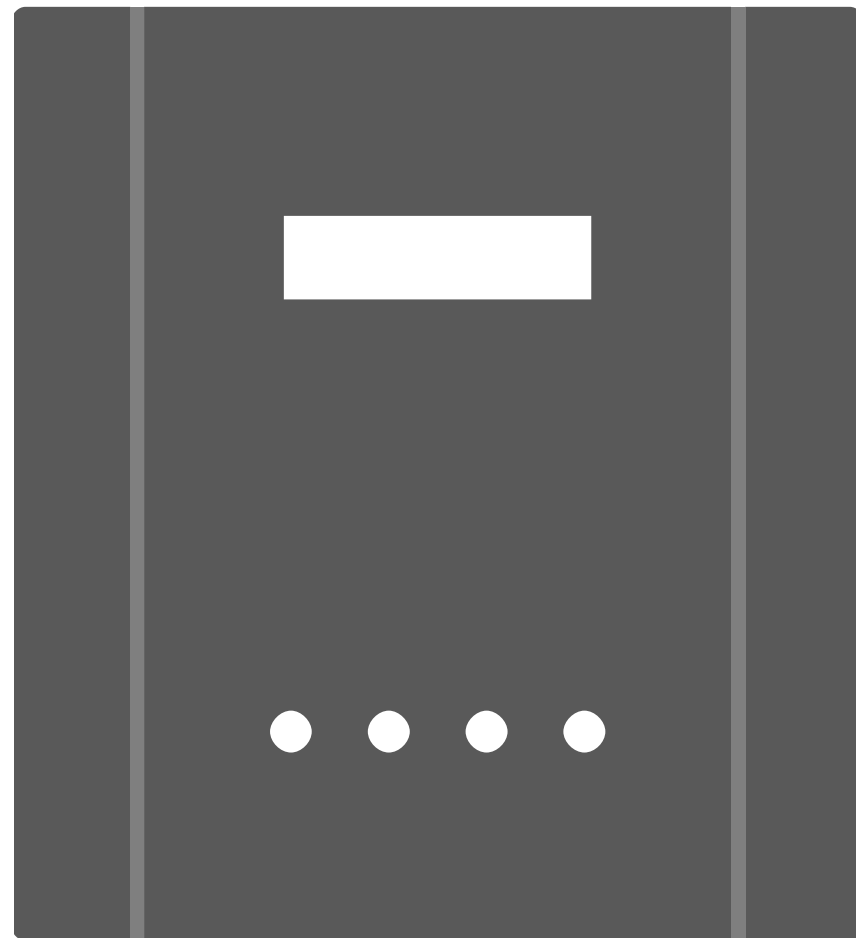
Name	Status

Name	YNW Status	CTL Subscription	CTL Nodes	CTL Status	KVM Subscription	KVM Nodes	KVM Status

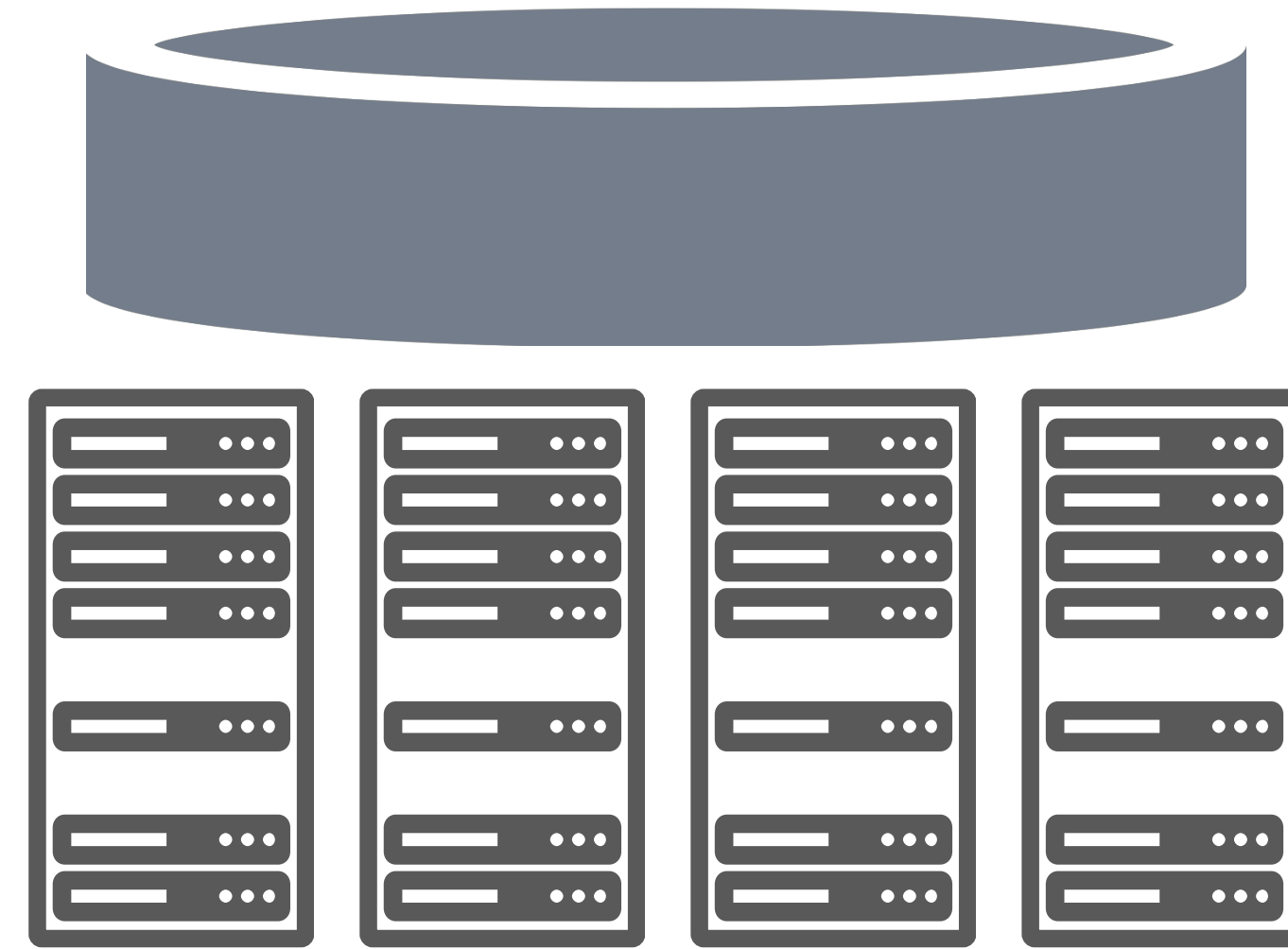
Storage Complexity



Software Defined Storage (SDS)



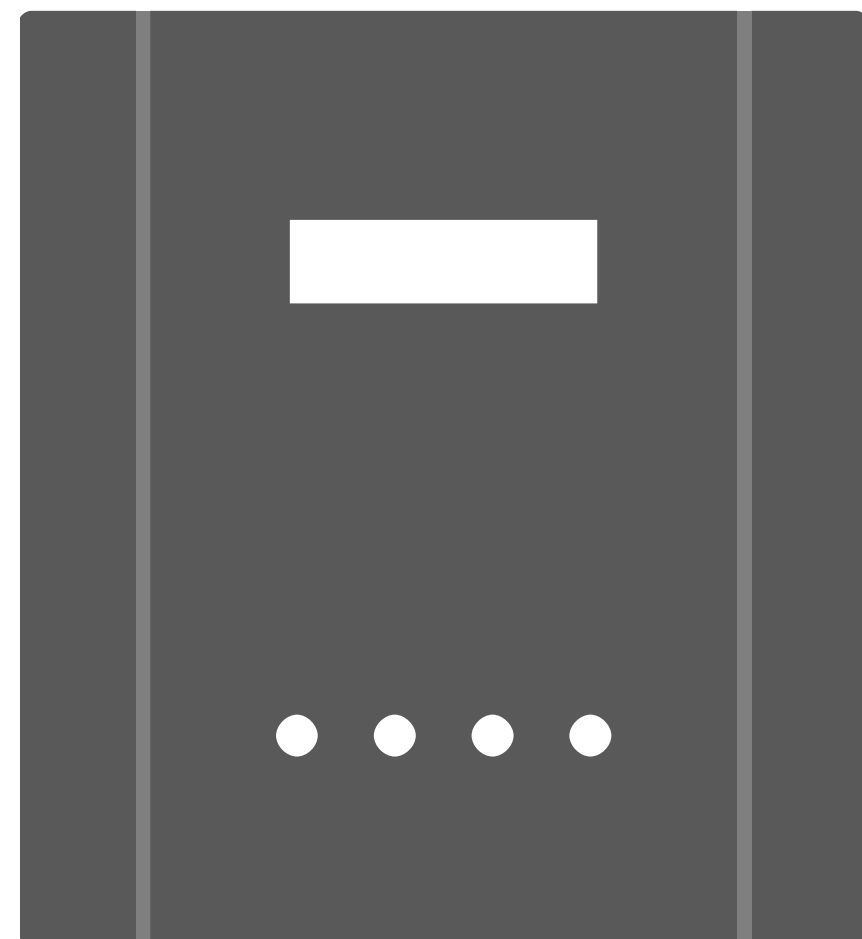
Storage Appliance



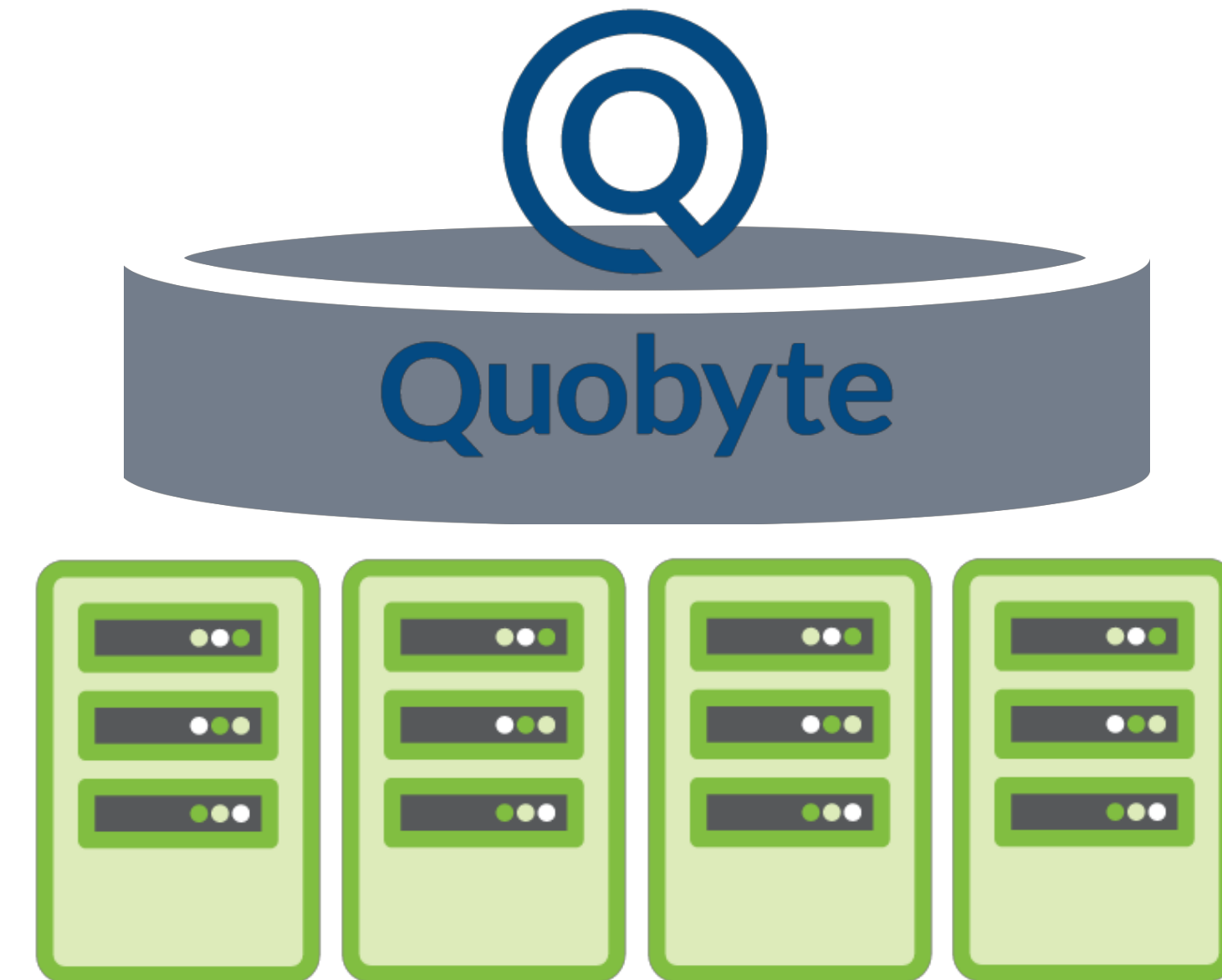
SDS on commodity hardware

- Short Lead Time
- Flexible
- Scalable

Software Defined Storage (SDS)



Storage Appliance



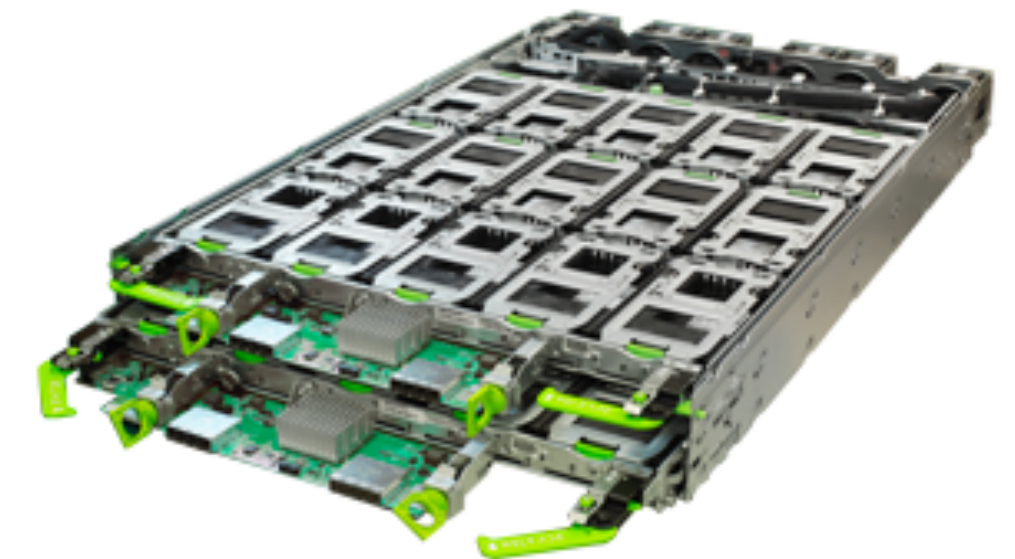
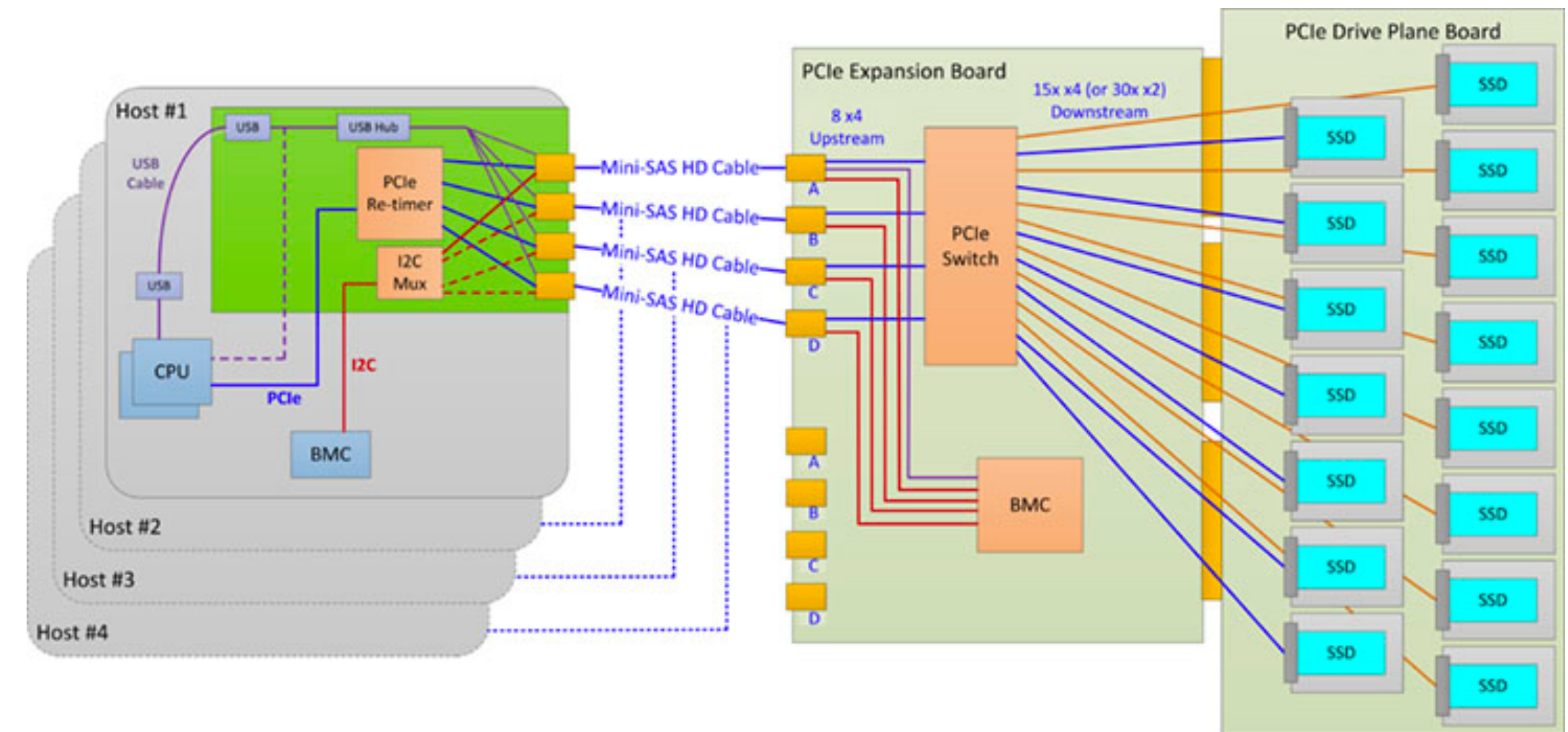
SDS on commodity hardware



- Short Lead Time
- Flexible
- Scalable

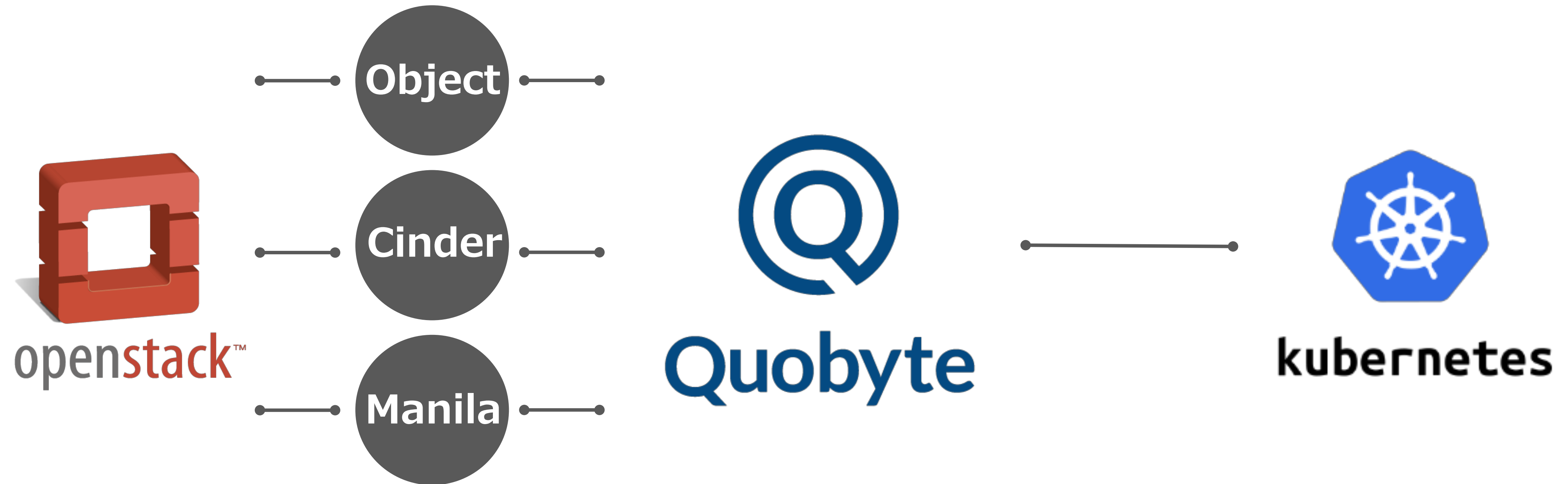
Why We Choose OCP Lightning

- Flexible NVMe JBOF
- High-Density
- Up to 30 NVMe SSDs in 2U
- High-Performance & Easy to Operate
 - Host can access NVMeSSDs directly via Mini SAS HD Cable
 - All SSDs are Hot-swappable



<https://www.opencompute.org/products/107/wiwynn-lightning-nvme-jbof-up-to-30-nvme-ssds>

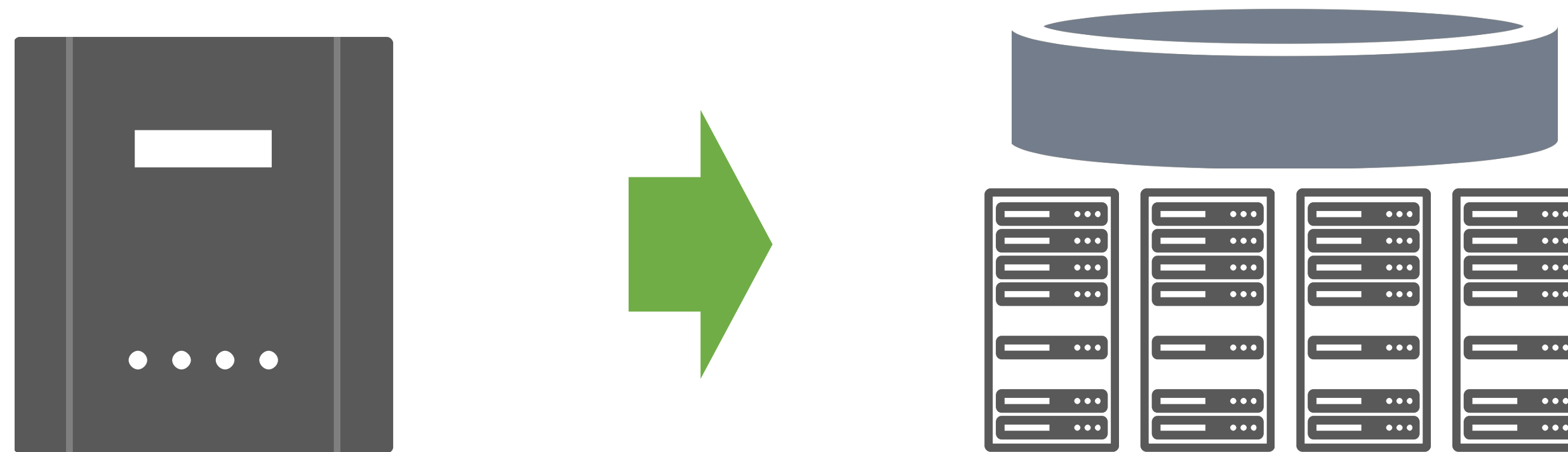
Why We Choose Quobyte



Unified Storage System

Challenges of SDS

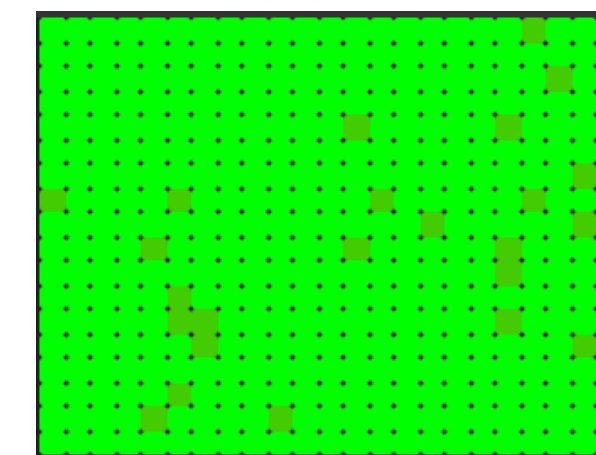
- SDS is harder to operate than Storage Appliance
- SDS is a type of Distributed System
- Network is equivalent to a backplane



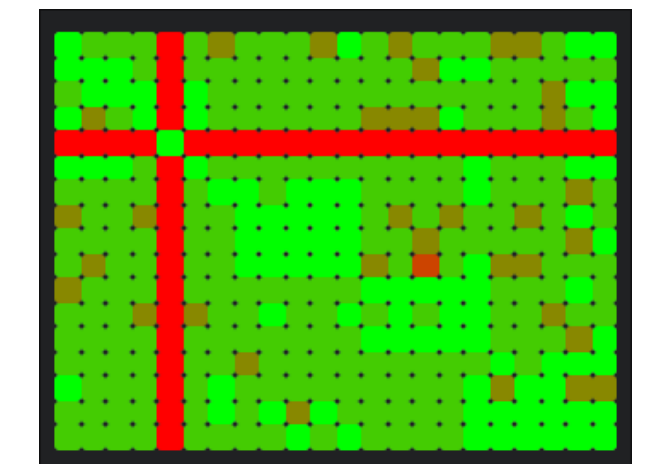
Network of Distributed System

- **Network is one of the most important piece for SDS**
- System Configuration
 - High-bandwidth network for East-West Traffic
- Monitoring
 - Error counter of NICs
 - All nodes ping each other

[Pingmesh: A Large-Scale System for Data Center Network Latency Measurement and Analysis](#)



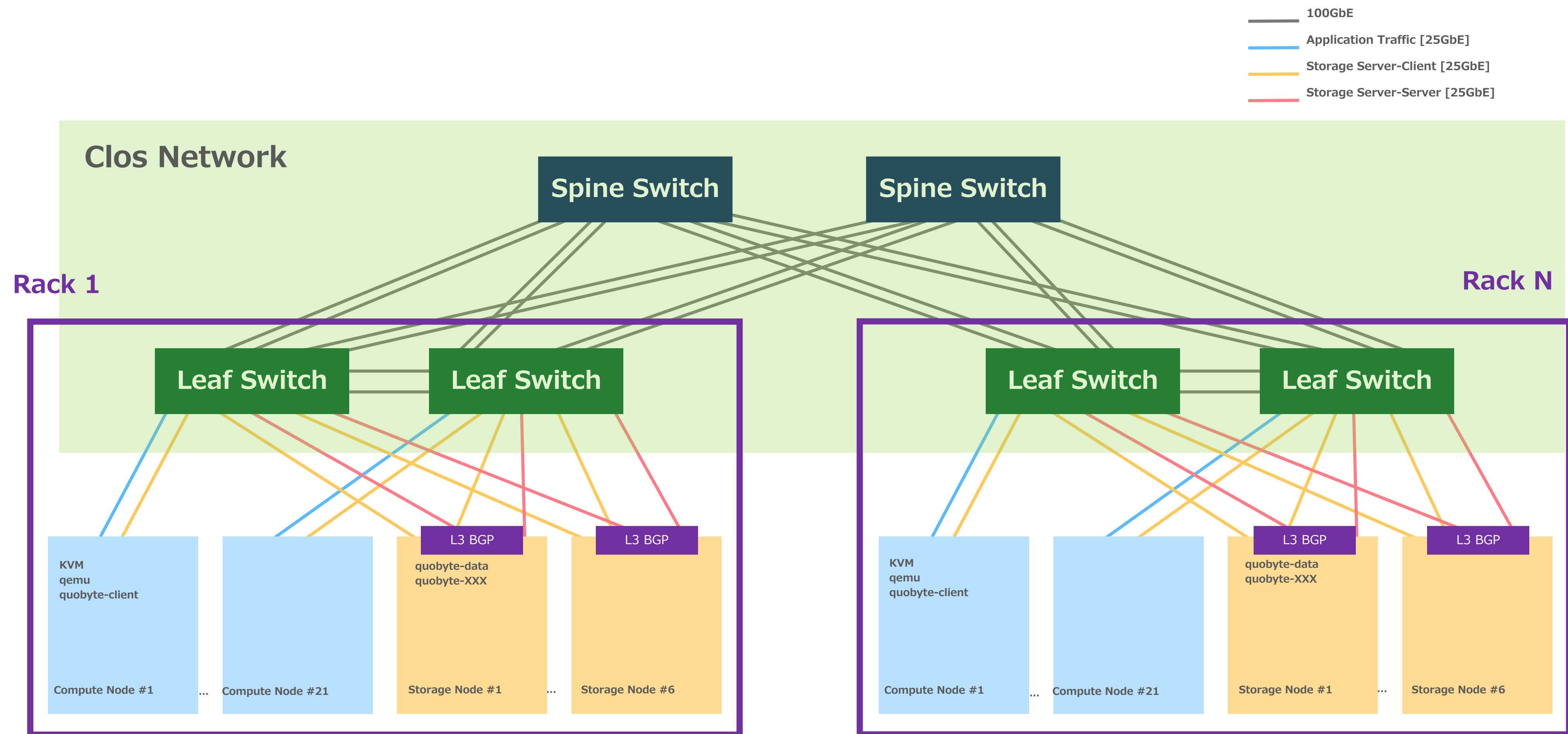
normal



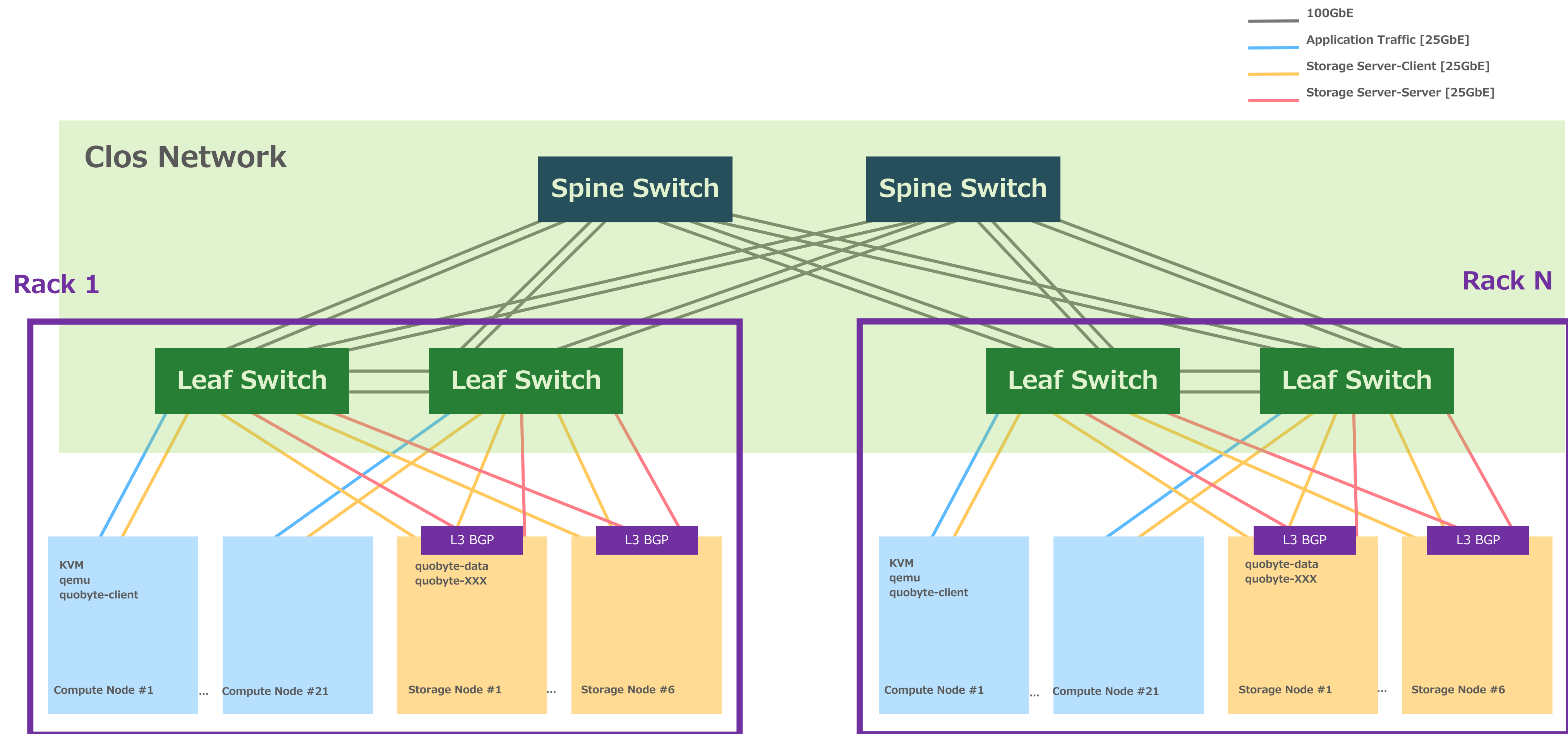
error

Meshed ping monitoring

System Overview



System Overview



Server Configurations

Storage Node

- CPU: Xeon E5-2683v4 x2
- MEM: 512GB
- Disk:
 - 240GB SATA SSD
 - **JBOF (3.8TB NVMe x15)**

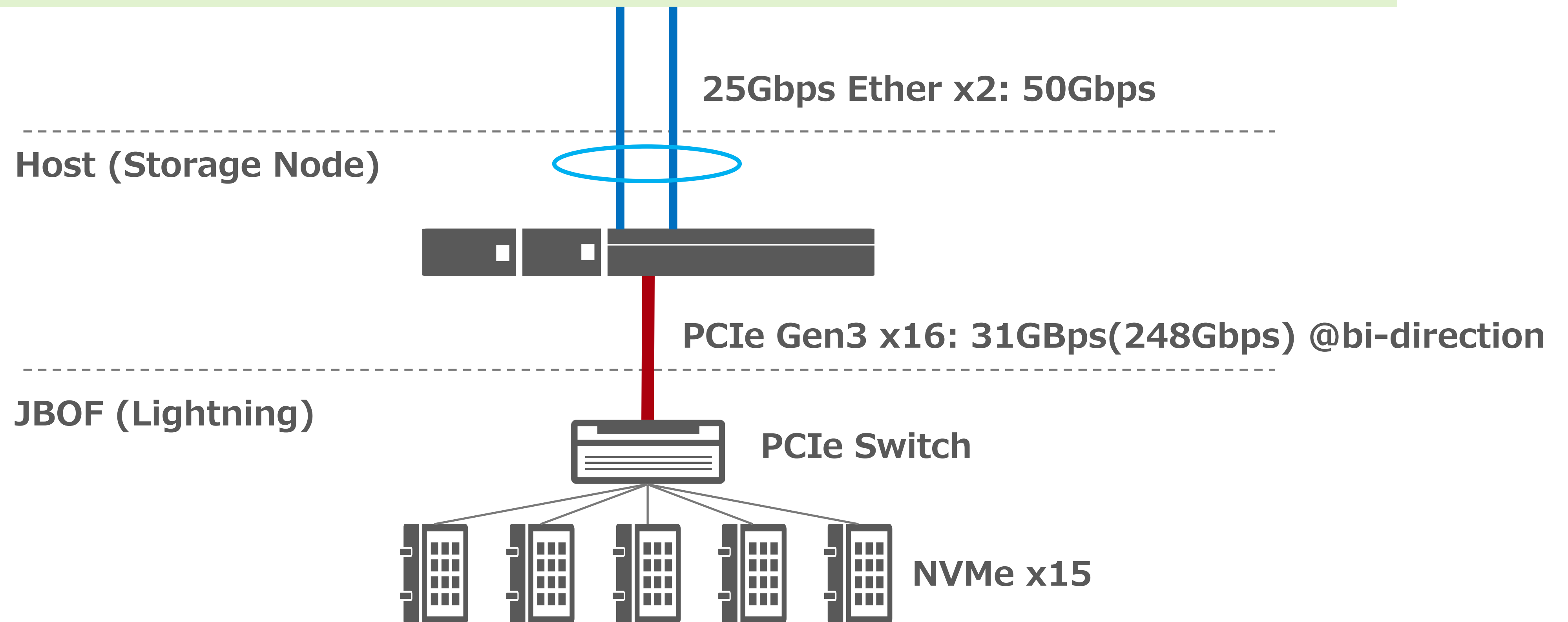
Compute Node

- CPU: Xeon E5-2683v4 x2
- MEM: 512GB
- Disk: 240GB SATA SSD



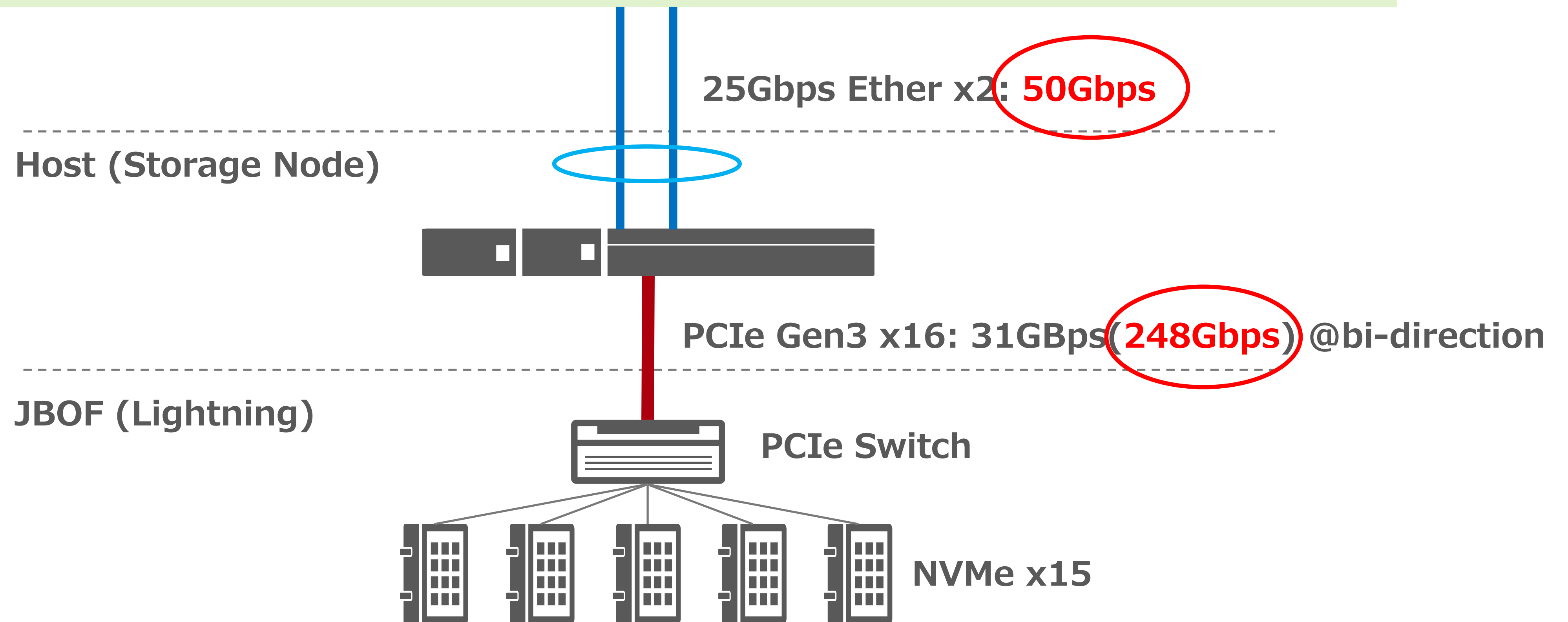
Storage Server Configurations

Clos Network



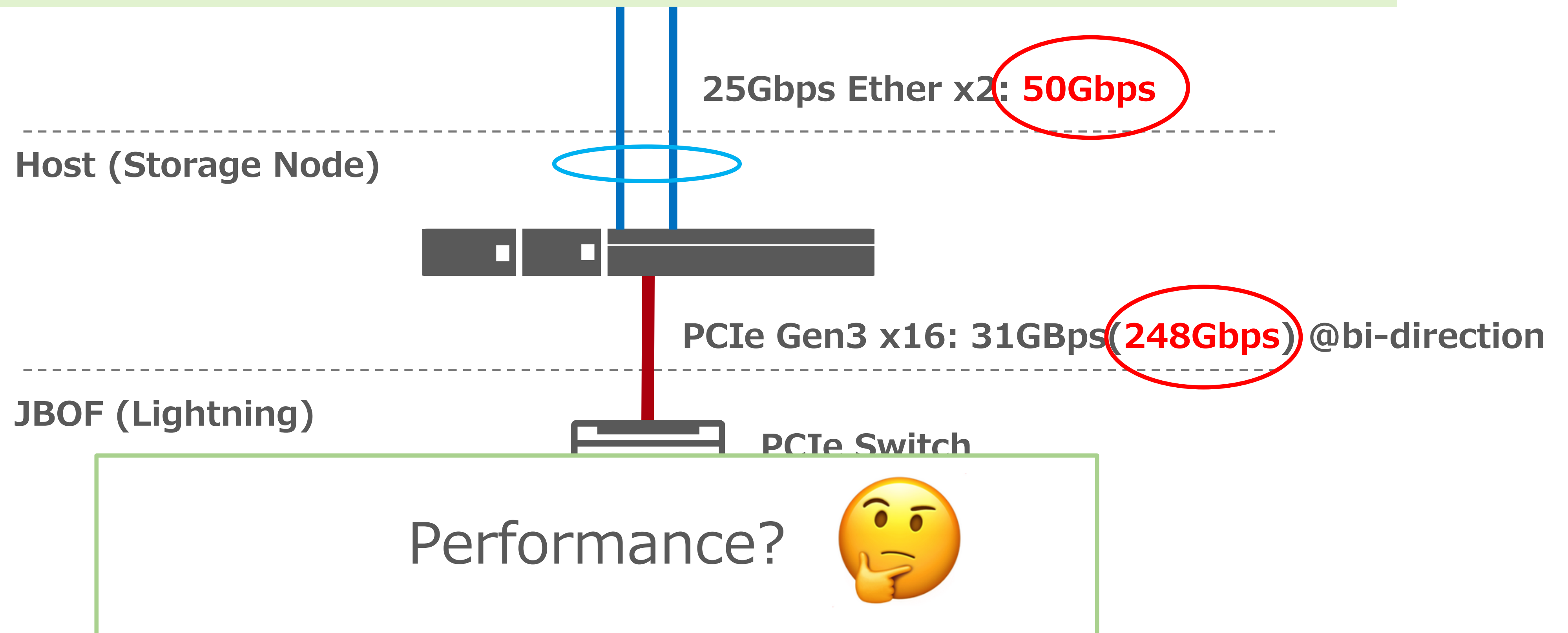
Storage Server Configurations

Clos Network



Storage Server Configurations

Clos Network



Performance Test: Environment

Storage Node

- CPU: Xeon E5-2683v4 x2
- MEM: 512GB
- Disk:
 - 240GB SATA SSD
 - JBOF (3.8TB NVMe x15)

Compute Node

- CPU: Xeon E5-2683v4 x2
- MEM: 512GB
- Disk: 240GB SATA SSD

Num of servers:

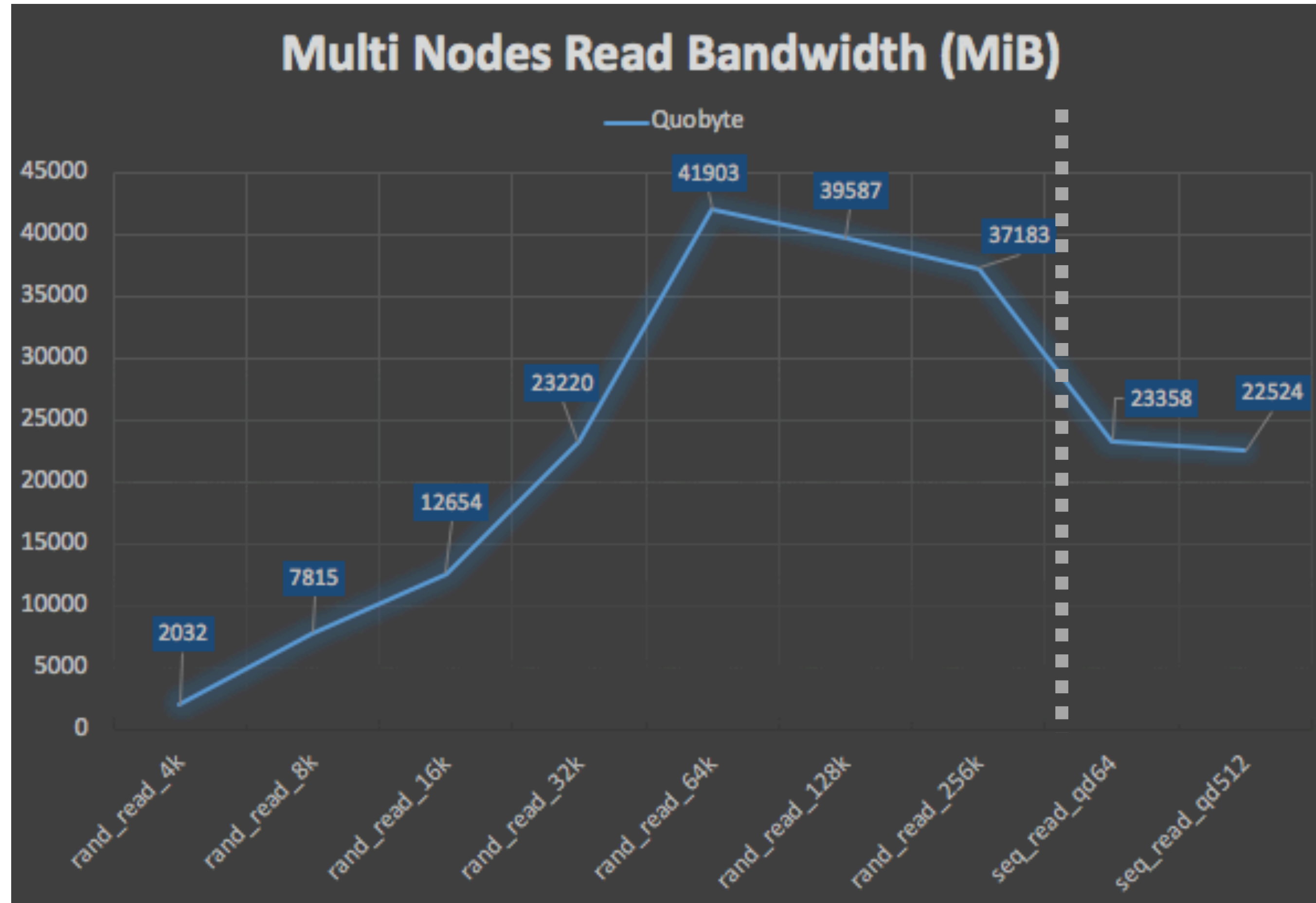
- **18 Storage Nodes**
- **70 Compute Nodes**

Benchmark Tool: fio

Benchmark Patterns:

- Sequential Read/Write
- Random Read/Write (4k/8k/16k/32k/64k/128k)

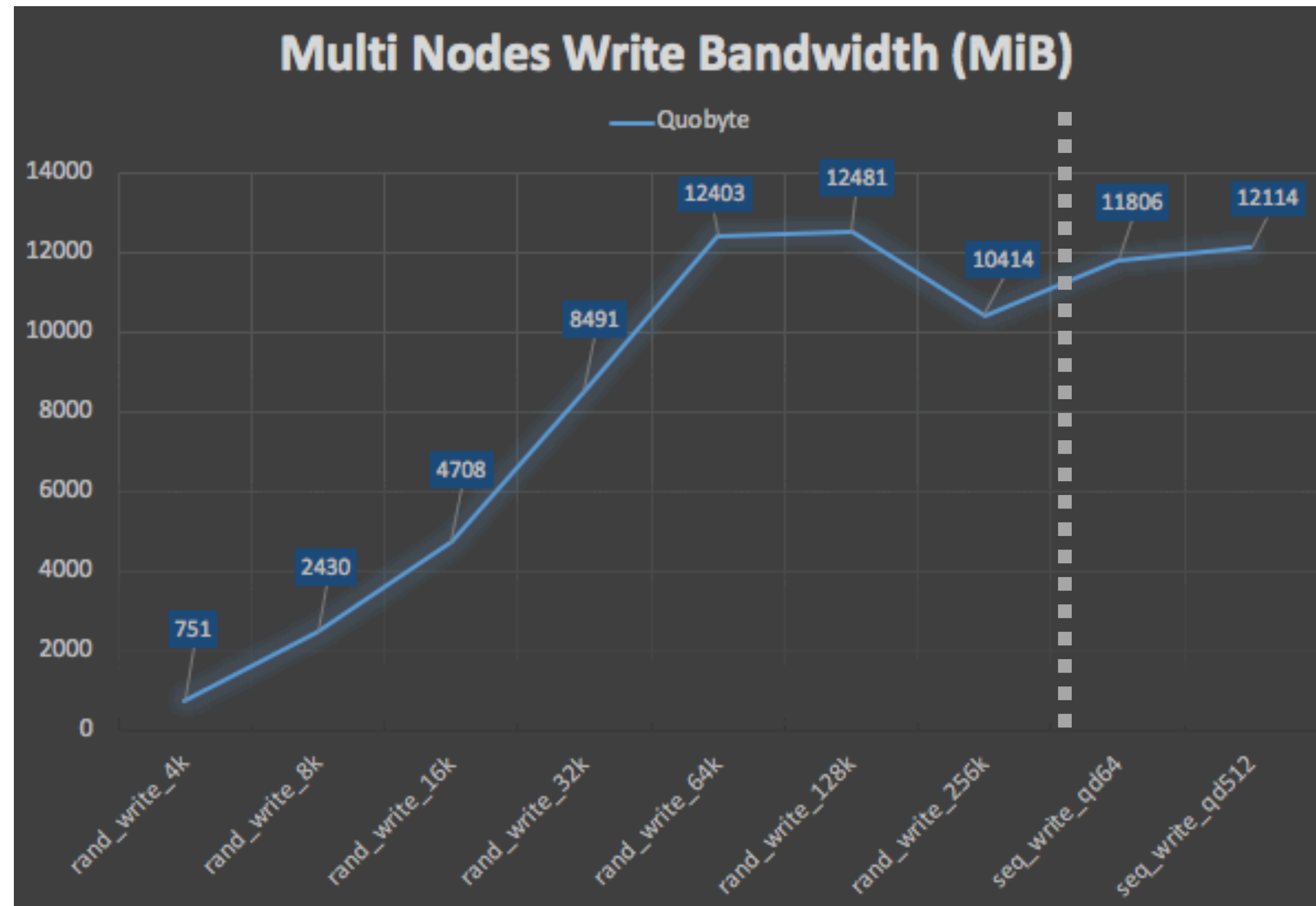
Performance: SDS Cluster



**Peak Read IOPS:
1000k IOPS+**

**Peak Read BW:
40GB/s+**

Performance: SDS Cluster

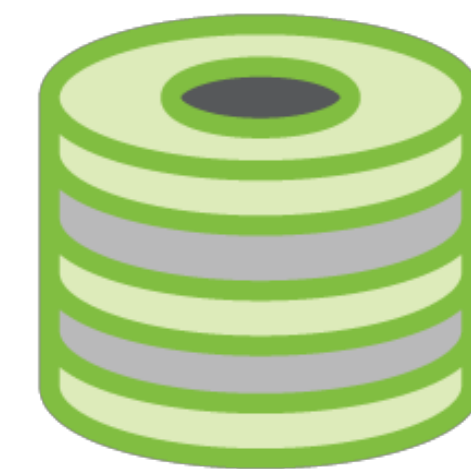


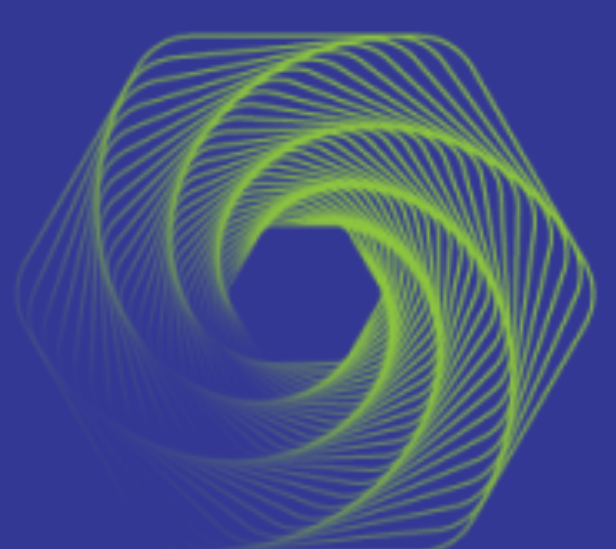
**Peak Write IOPS:
300k IOPS+**

**Peak Write BW:
12GB/s+**

Conclusions

- Yahoo! JAPAN is using Lightning as SDS backend
- Lightning is best for configuring SDS with OCP
- Better performance





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OCP Global Summit | March 14–15, 2019

