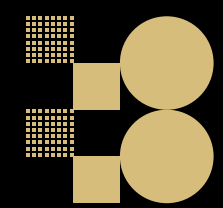


Synology®

S Y N O L O G Y
2 0 2 0

Unleash the Power of Data in Performance and Scale



Business Development
Jeremie Francois

DSM 7.0

The Next Evolution in Data Management

Empowering Users



Your connection is not private

Attackers might be trying to steal your information from **192.168.0.22** (for example, passwords, messages or credit cards). [Learn more](#)

NET::ERR_CERT_COMMON_NAME_INVALID

Help improve Safe Browsing by sending some [system information and page content](#) to Google. [Privacy Policy](#).

Advanced

Back to safety

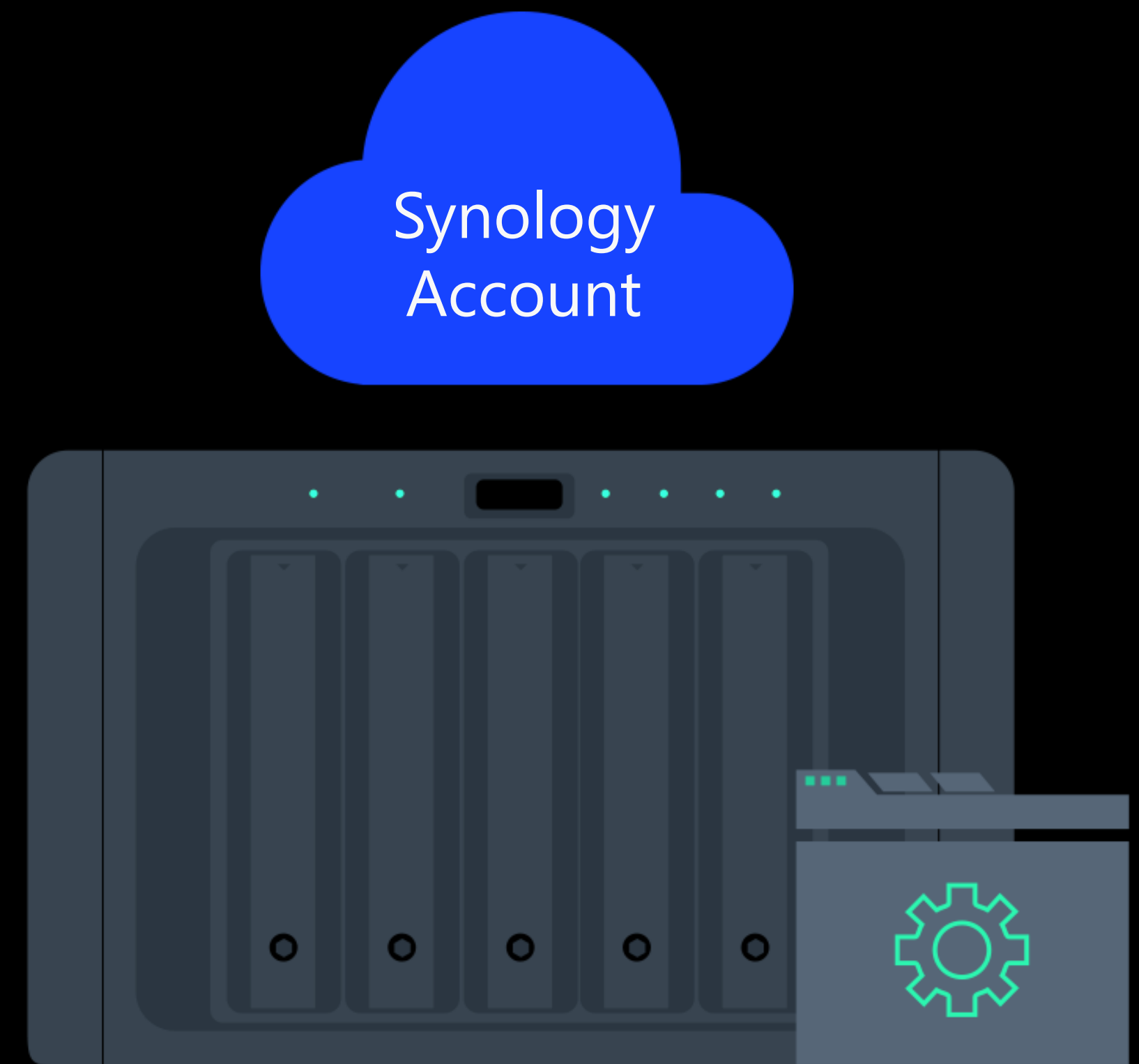


QuickConnect

All settings in one portal

System Config Backup

- Auto / scheduled backup.
- **Instantly** restore configurations in Control Panel





🏠

Connectivity ^

🌐 External Access

🏠 Network

🛡️ Security

System ^

ℹ️ Info Center

👤 Synology Account

🏠 Login Portal

🌐 Regional Options

💬 Notification

📅 Task Scheduler

💡 Hardware & Power

Automatic Backup

Back up your DSM configurations to Synology Account automatically and periodically.

Enable automatic DSM configuration backup

Backup status: Fail ⓘ

Auto encryption

Self-defined encryption

Password:

Confirm Password:

Backup Now

Manual Export

Manually export a system configuration backup file (.dss) and save it to your computer.

Back up configuration



Cache
Technology



Performance
Monitoring



Virtualisation
Console



Cache
Technology



Performance
Monitoring



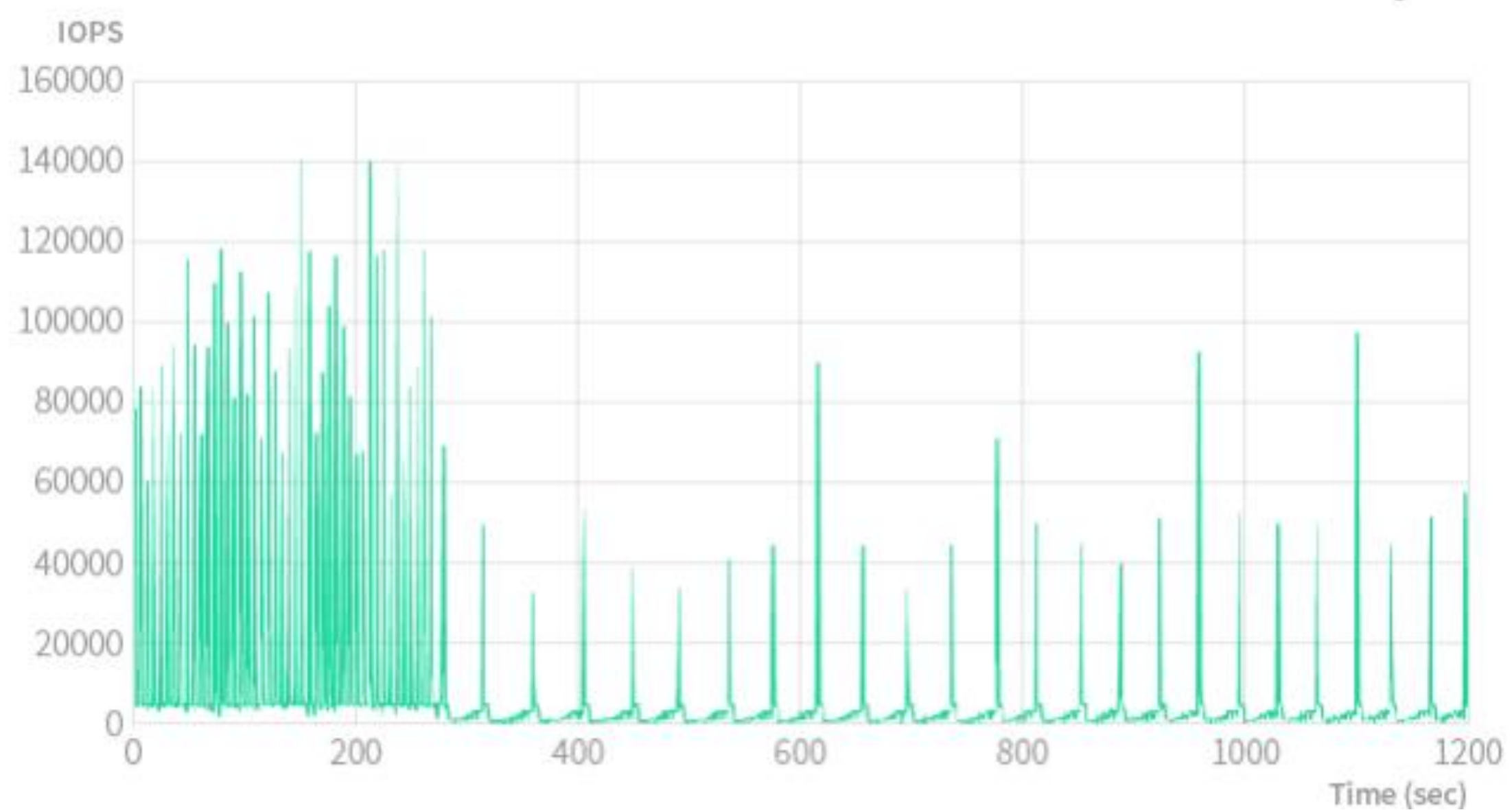
Virtualisation
Console

20%

DS918+ users enable SSD cache

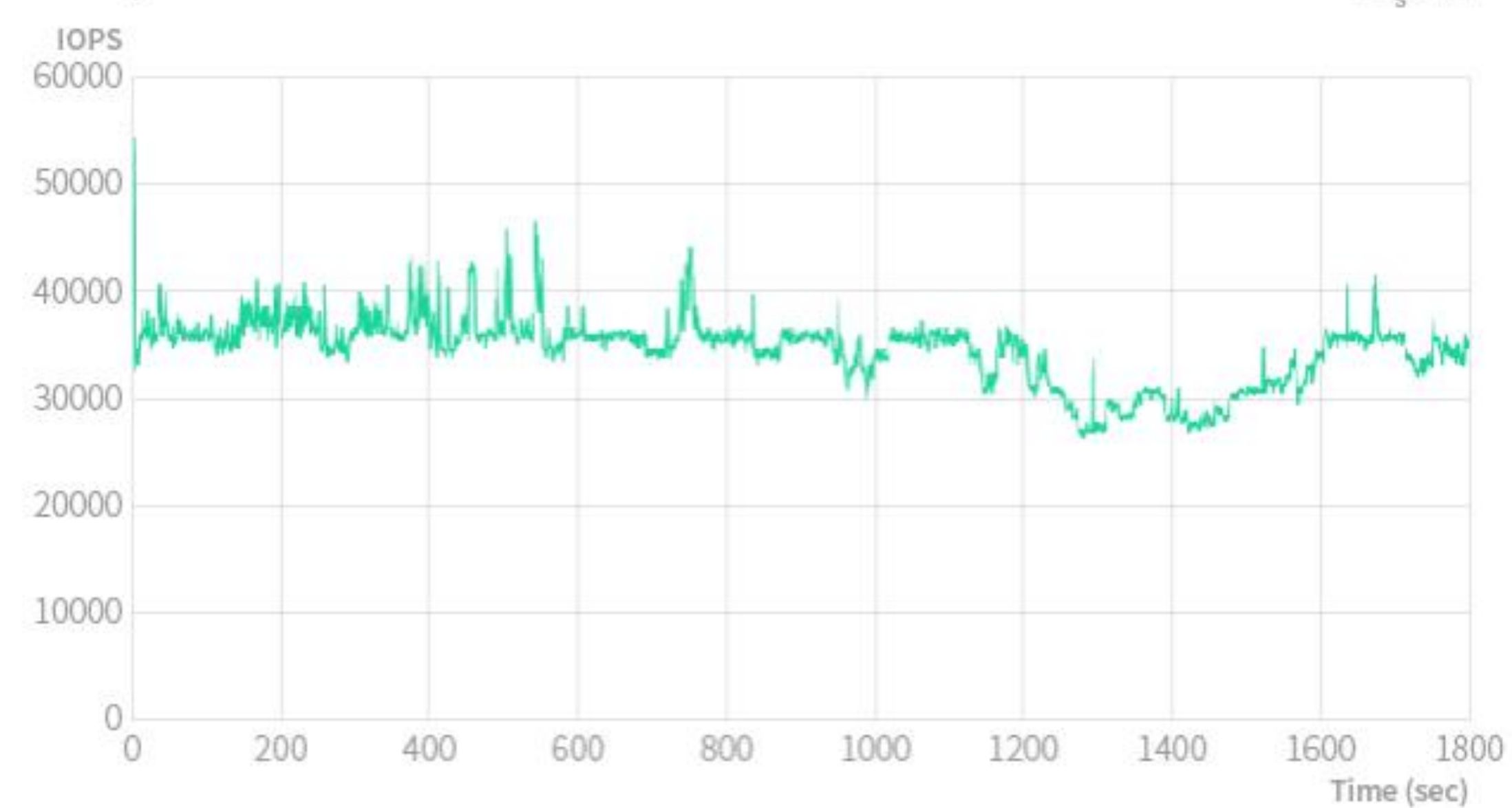
Consumer SSD

IO_sum



Enterprise SSD

IO_sum



Software-based Overprovisioning

- Stable performance
- Applicable to **consumer-grade** SSD





How much SSD storage
do you need for cache?

Impact on service availability
when mounting cache?

How to fully utilize SSD cache?



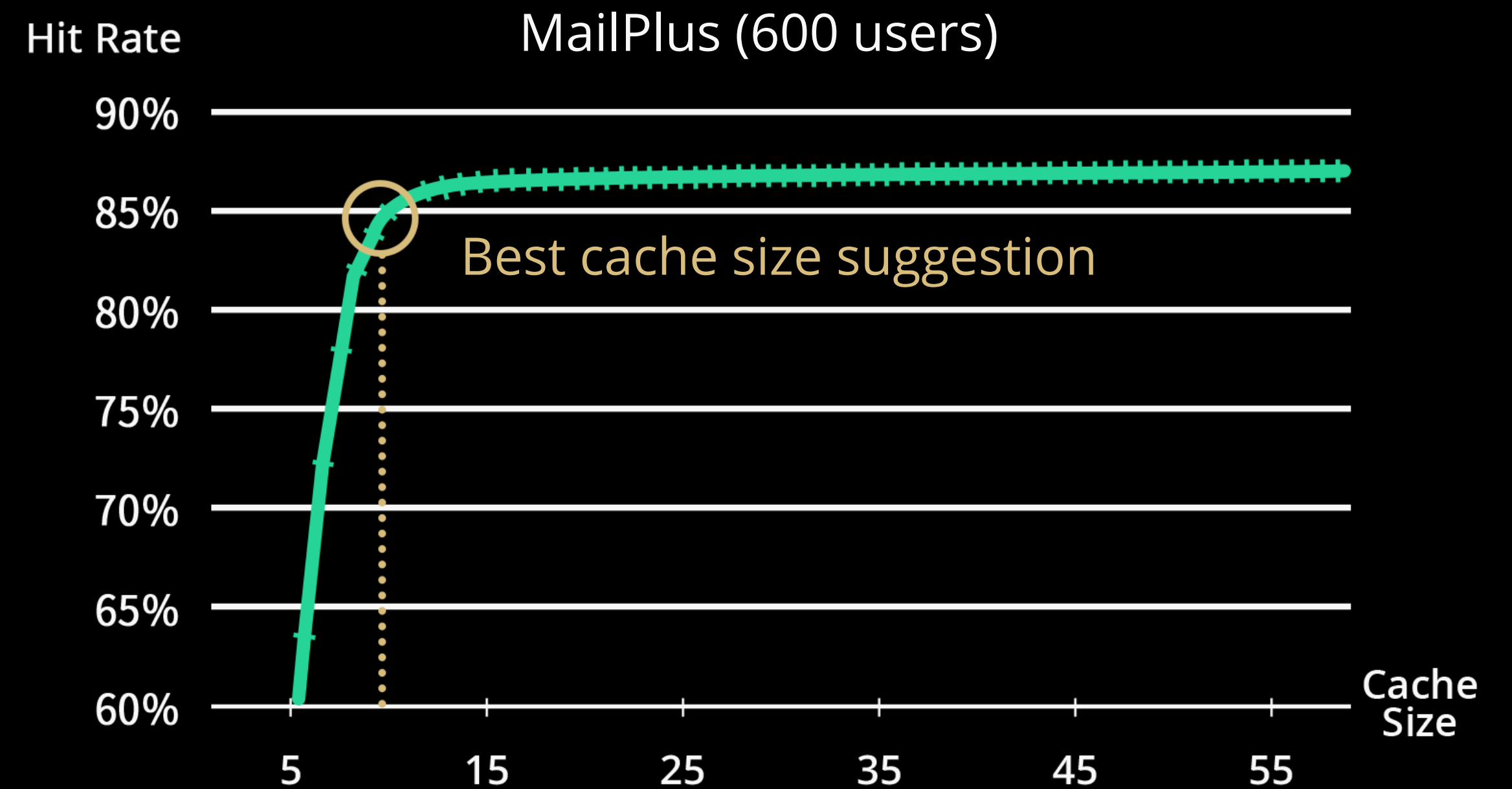
How much SSD storage do
you need for cache?

DSM 7.0

Based on 64KB block
Estimated by multiple factors
Scenario-based prediction

All-new SSD cache advisory

- Use multiple parameters
- Profile the IO pattern with actual workloads

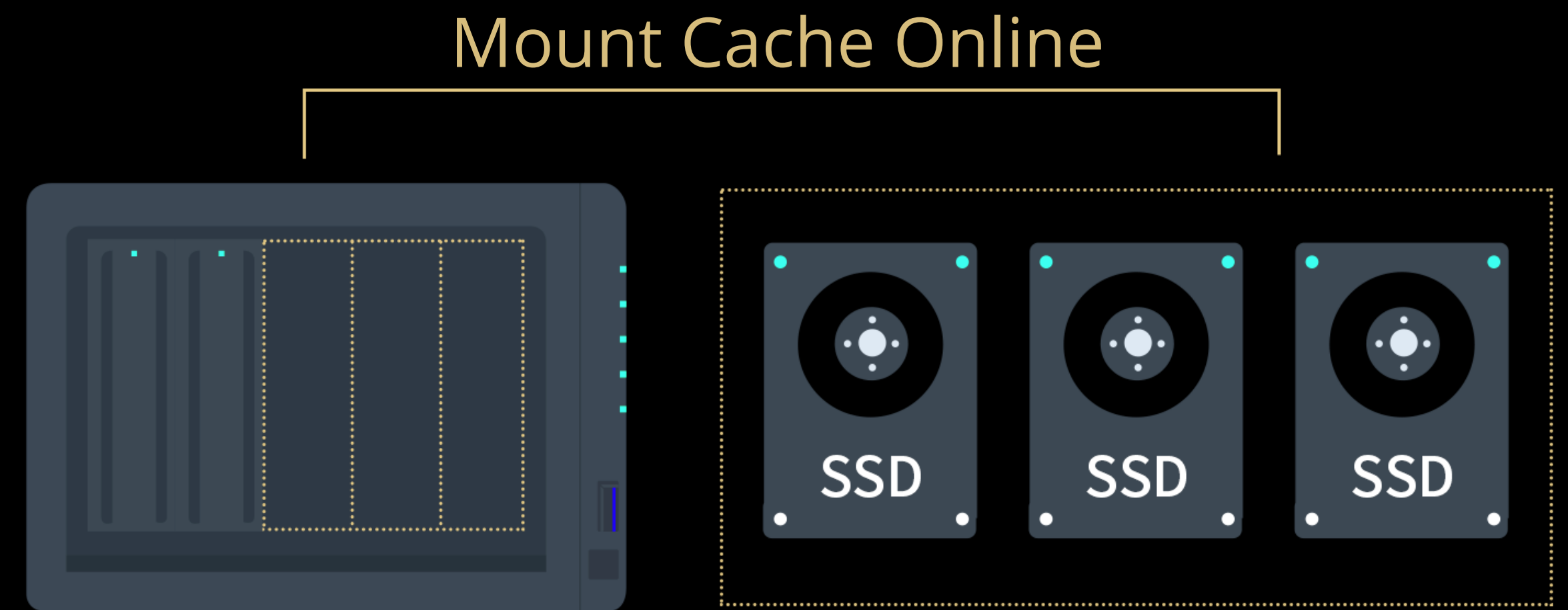




How much service interruption
when mounting the cache?

Cache creation

Mount/unmount SSD cache online
without service interruption



192.168.1.56

File Home Share View

Network > 192.168.1.56

Search 19...

Synology_2020 - Synology DiskStor

Not secure | 192.168.1.56:5000

Apps Bookmarks Mobile Apps Inbox (17) - jeremie... download Google Lessons learnt - Go... Solved: Delete inval... How to delete VM's... Other bookmarks

Storage Manager

- Overview
- Storage
 - Storage Pool 1
 - Volume 1
 - Storage Pool 2
 - Volume 2**
- HDD/SSD

| Storage Pool 1 | 442.5 GB |
|--|---------------------|
| Storage Pool 1 Healthy | |
| Volume 1 - SSD Healthy File system: Btrfs | 228.8 MB / 424.8 GB |
| Storage Pool 2 - HDD | 3.6 TB |
| Storage Pool 2 - HDD Healthy | |
| Volume 2 - HDD Healthy File system: Btrfs | 43.0 GB / 3.5 TB |

es (need a batch list)

Browse

GB

sible)

Create

Exit

Synology[®]

S Y N O L O G Y
2 0 2 0



How to fully
utilise SSD cache?



Data

Metadata

- 套件中心
- iSCSI Manager
- 資源監控
- Snapshot Replication
- 儲存空間管理員
- USB Copy
- File Station
- Virtual Machine Manager
- 控制台
- Cloud Sync
- Universal Search
- Cloud Station ShareSync
- 日誌中心
- Cloud Station Server

File Station

Jason_demo

Permission

General

Name: 1V4A9528a.jpg

Location: /volume1/Share1/1V4A9528a.jpg

Size: 8.9 MB (9,293,836 Bytes)

Size on Disk: 8.9 MB (9,297,920 Bytes)

Modified Date: 09/12/2019 21:12:30

MD5: Calculate

Owner: admin

Apply to this folder, sub-folders and files

關閉 確定

系統狀況

良好

DiskStation 運作正常

系統名稱: Jason_demo

區域網路 1: 10.17.20.125

已開機時間: 6天 17:32:53

資源監控

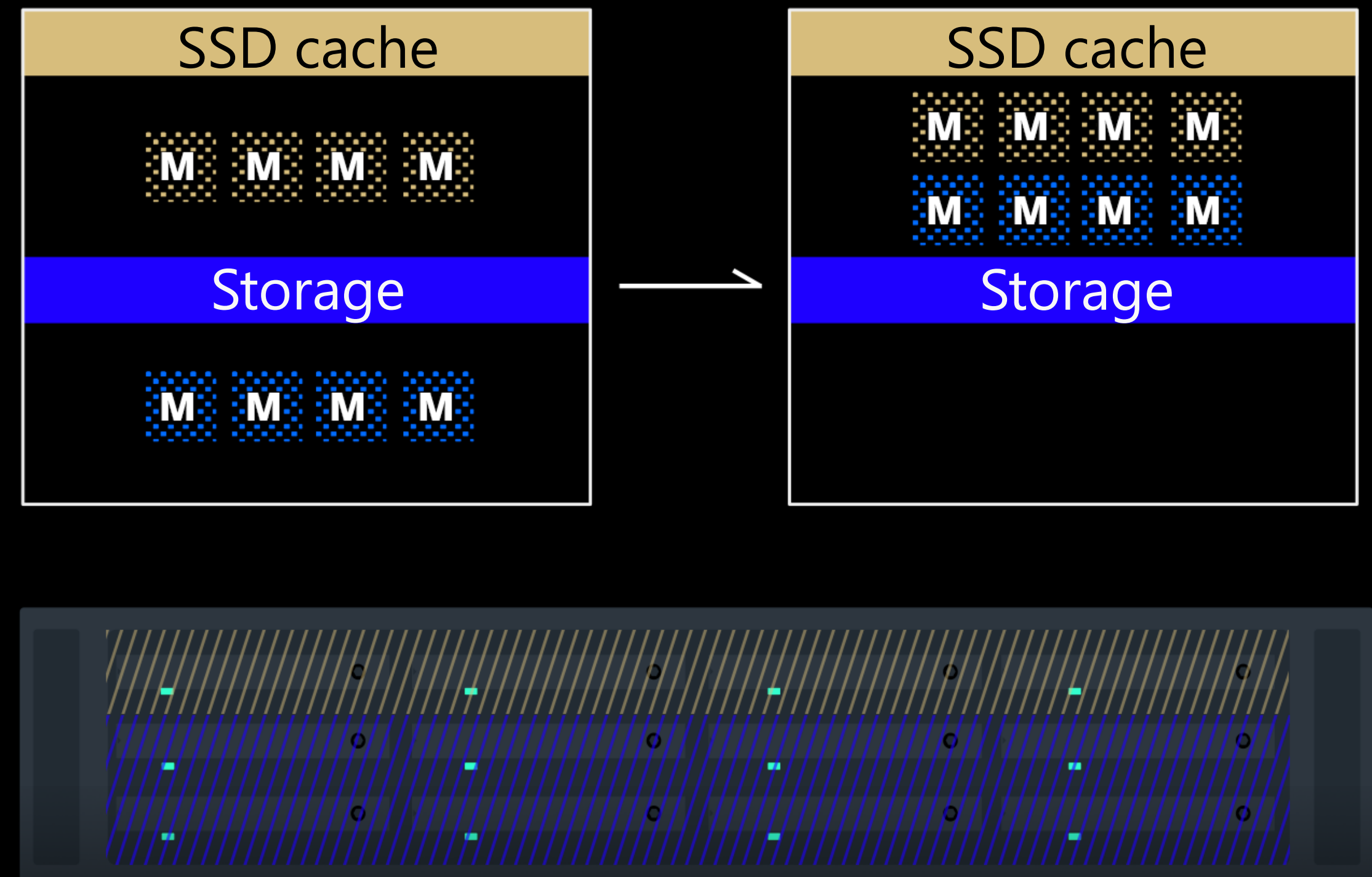
CPU: 13%

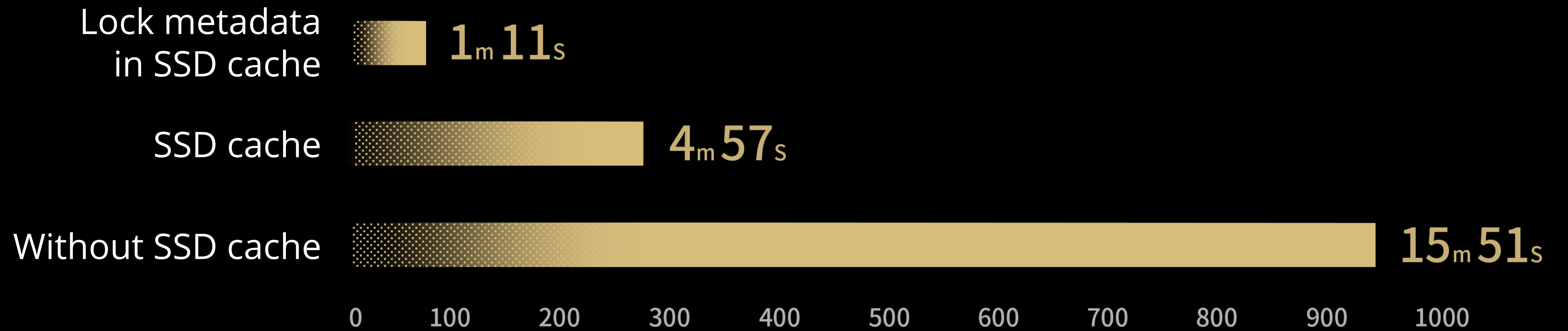
RAM: 21%

總計: 1.3 KB/s (upload), 5.4 KB/s (download)

Metadata Lock

- Lock metadata in SSD cache
- Optimise the performance of accessing cold metadata







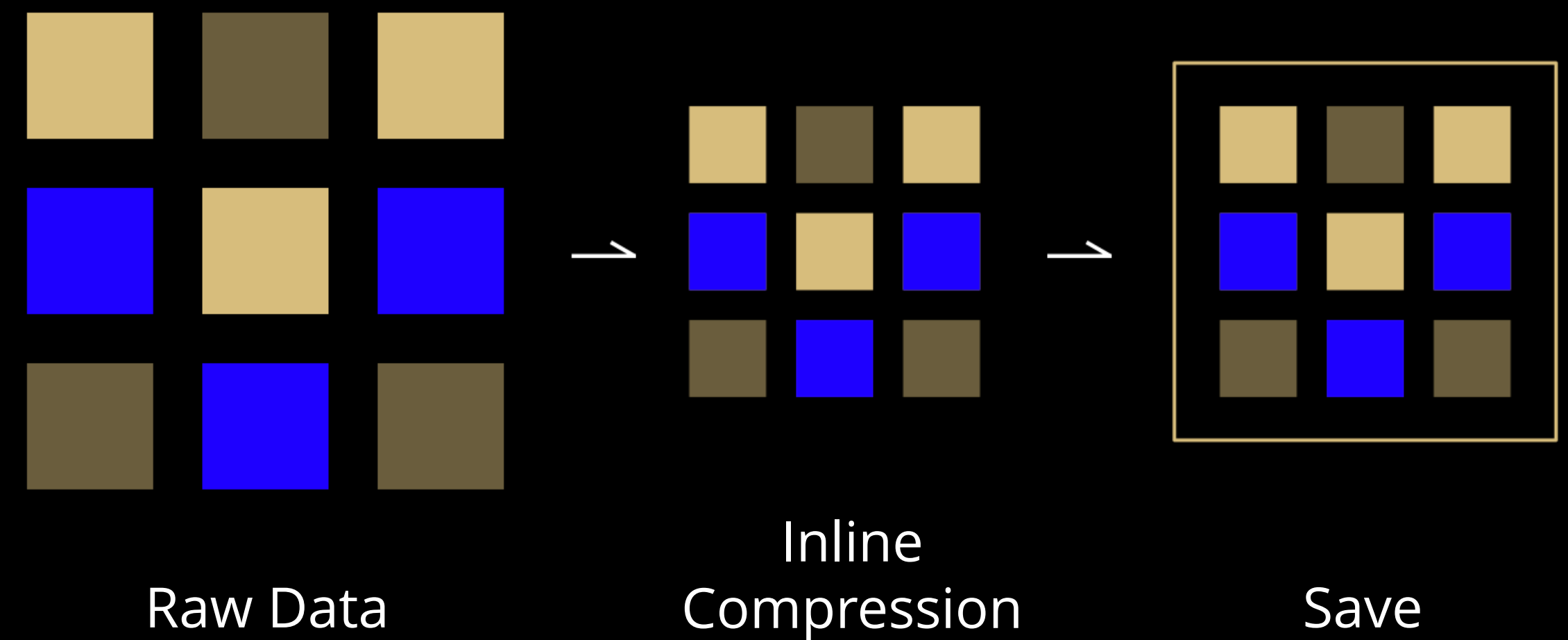
Faster cache

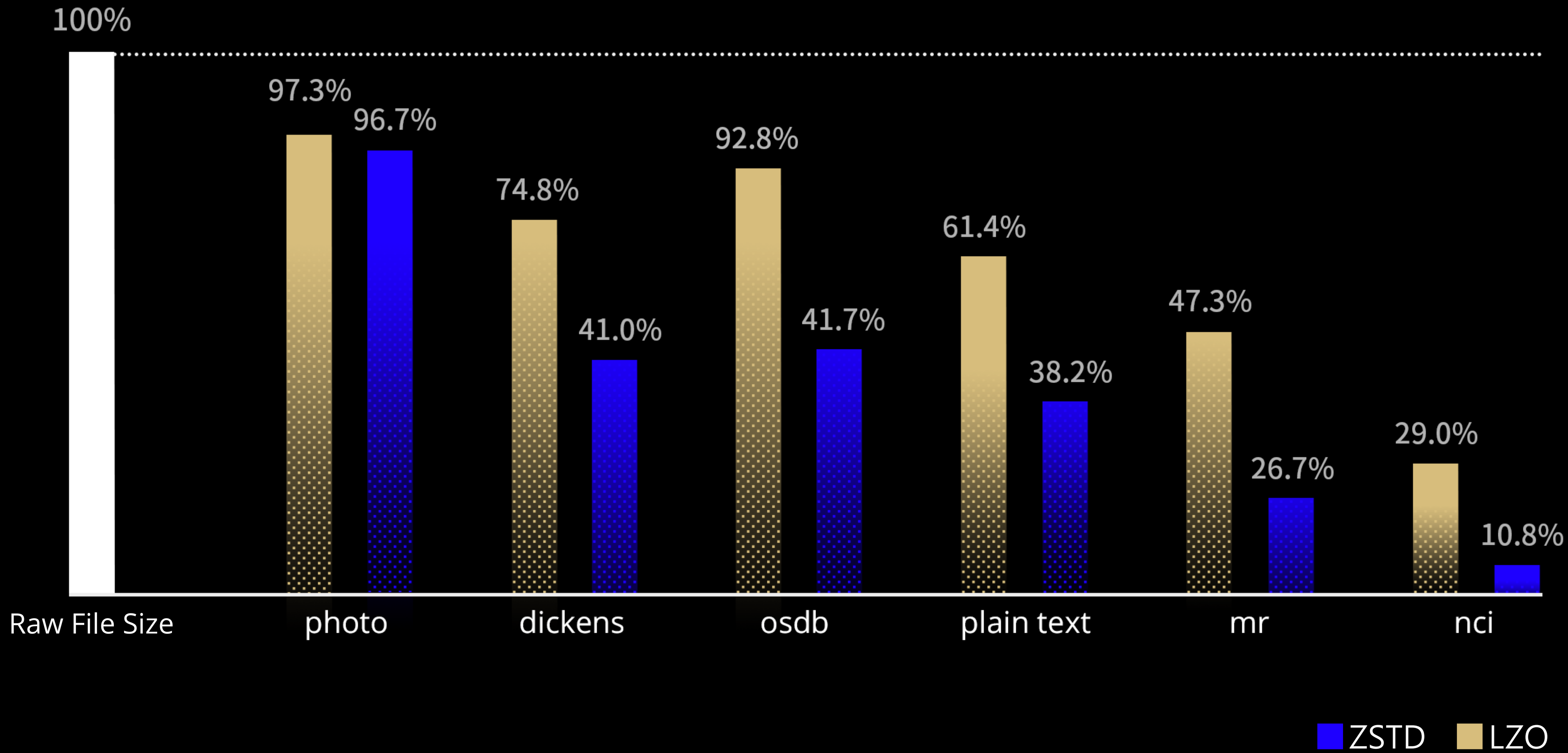
Stable performance

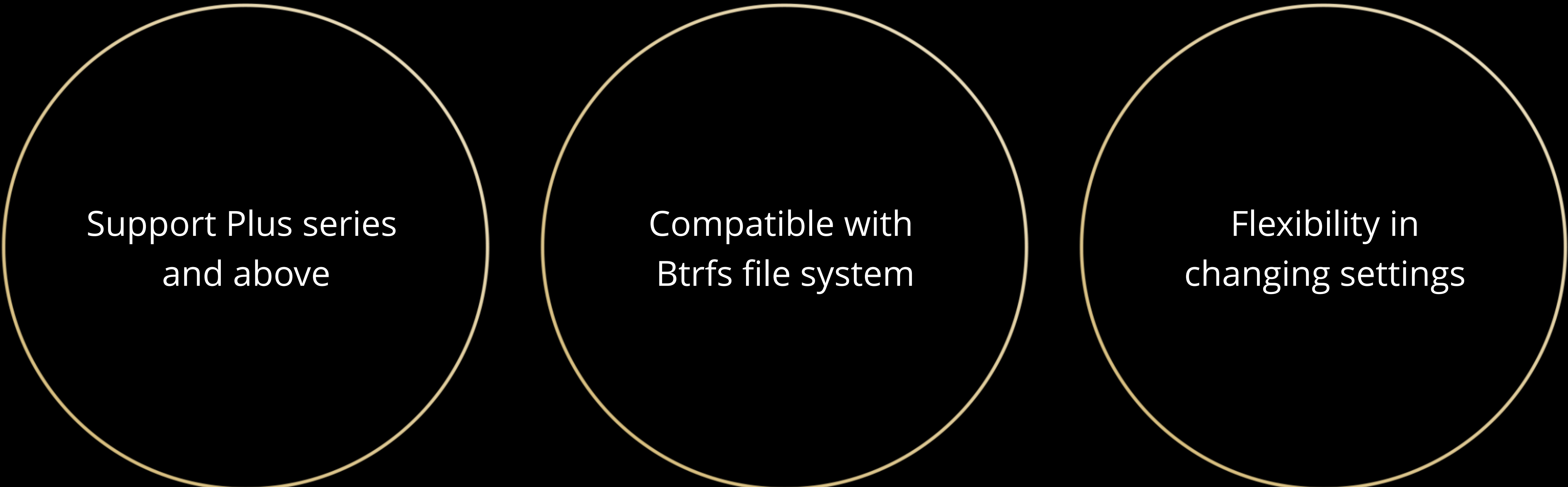
Precise Advisory

New inline data compression

- Zstd algorithm offers higher compression ratios
- Dynamic on/off switch







Support Plus series
and above

Compatible with
Btrfs file system

Flexibility in
changing settings

The background for the 'Cache Technology' section features a dark, abstract pattern of horizontal and vertical lines, resembling a circuit board or a data grid. The text is centered in a light gray, sans-serif font.

Cache
Technology

The background for the 'Performance Monitoring' section is a dark, radial pattern of light streaks and dots, creating a sense of motion and data flow. The text is centered in a light yellow, sans-serif font.

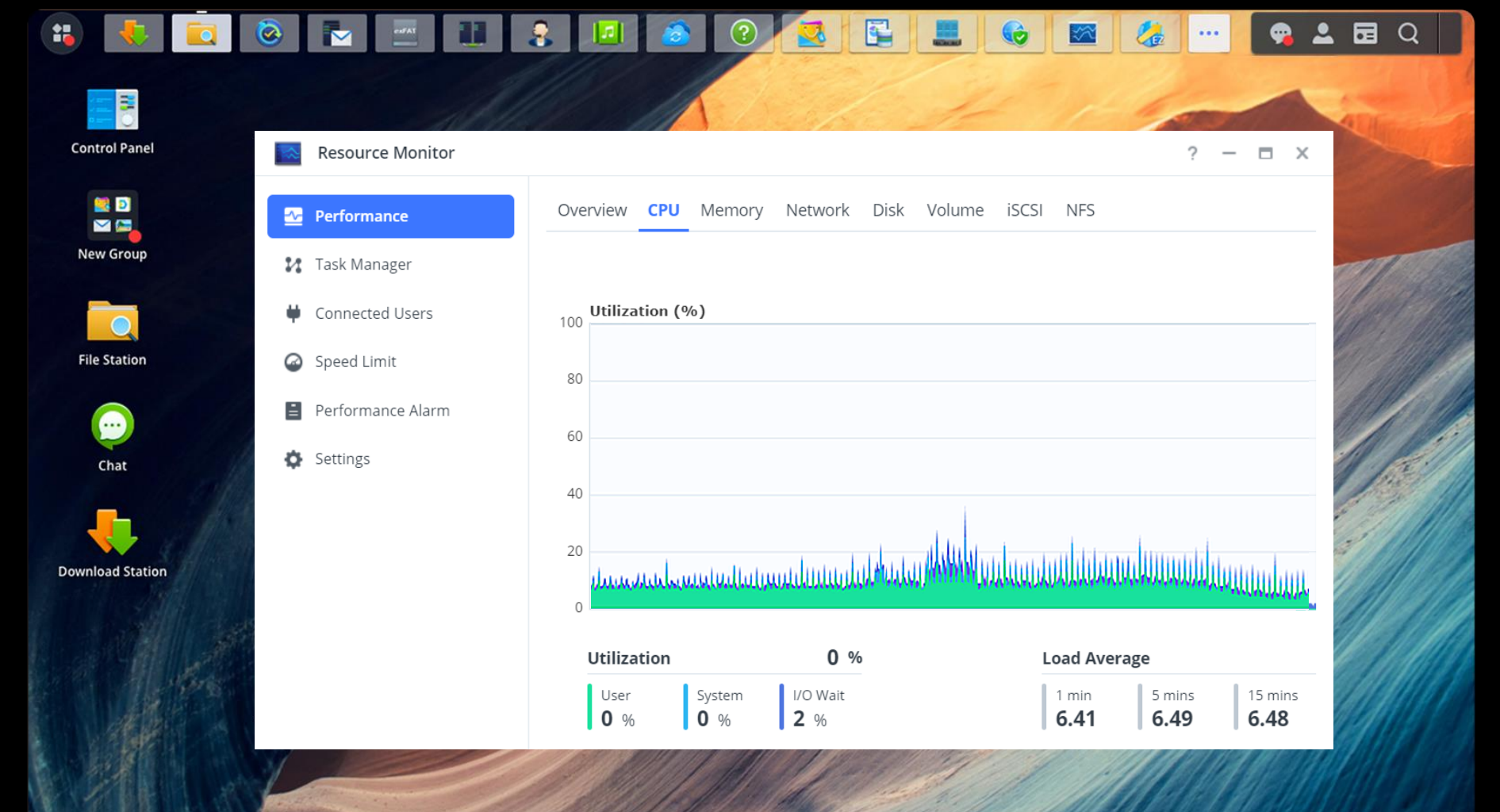
Performance
Monitoring

The background for the 'Virtualisation Console' section shows a close-up, dark view of server racks with glowing lights, suggesting a data center environment. The text is centered in a light gray, sans-serif font.

Virtualisation
Console

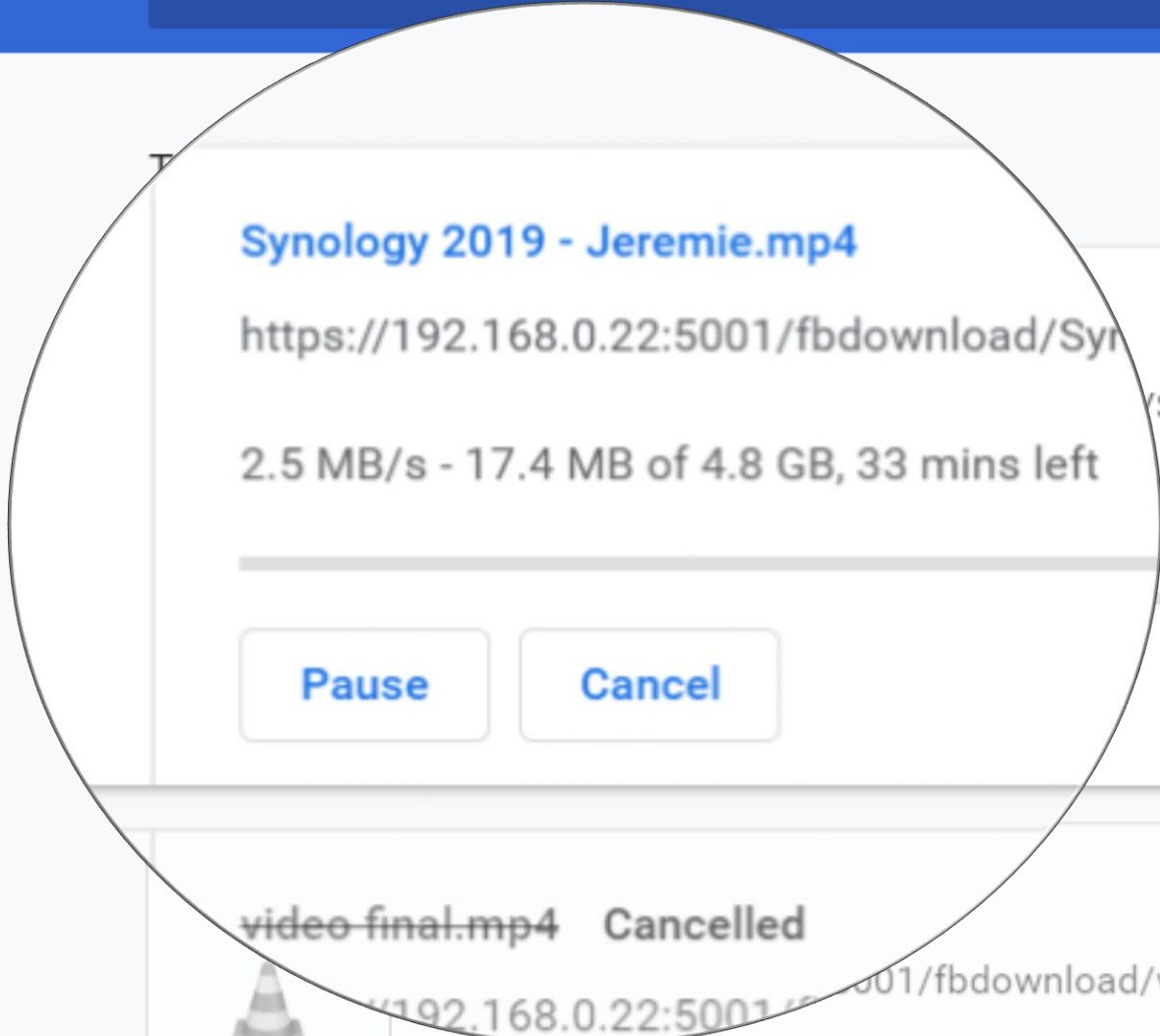
Intuitive Resource Monitor

Precise performance history



| | Day | Week | Month | ½ year | Year |
|---------|--------|---------|----------|---------|----------|
| DSM 6.2 | 5 mins | 30 mins | 120 mins | 1 day | 1 day |
| DSM 7.0 | 1 mins | 1 min | 5 mins | 30 mins | 120 mins |

Downloads Search downloads



Synology 2019 - Jeremie.mp4

<https://192.168.0.22:5001/fbdownload/Synology%202019%20-%20Jeremie.mp4?dlin...>

2.5 MB/s - 17.4 MB of 4.8 GB, 33 mins left



Pause Cancel

video final.mp4 Cancelled

<https://192.168.0.22:5001/fbdownload/video%20final.mp4?dlink=%222f4d61726b65...>



Retry



Webinar preview icon request.pptx

<https://192.168.0.22:5001/fbdownload/Webinar%20preview%20icon%20request.ppt...>

Show in folder

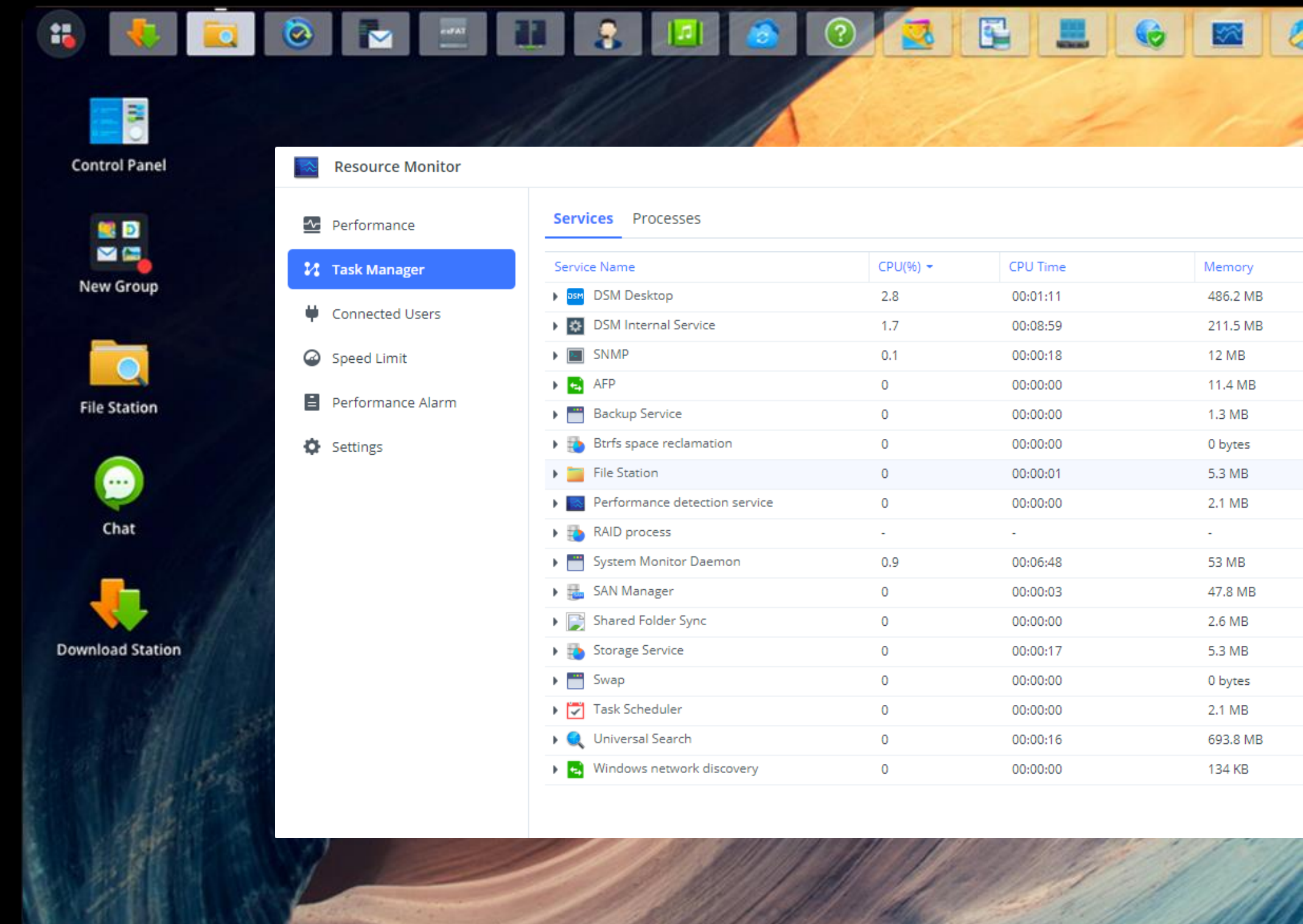


Active Backup Webinar.pptx

<https://192.168.0.22:5001/fbdownload/Active%20Backup%20Webinar.pptx?dlink=%2...>

Intuitive Resource Monitor

- Precise performance history
- Intuitive Task Manager



The screenshot displays the Resource Monitor application window. The left sidebar contains navigation options: Performance, Task Manager (highlighted), Connected Users, Speed Limit, Performance Alarm, and Settings. The main area shows a table of services with columns for Service Name, CPU(%), CPU Time, and Memory.

| Service Name | CPU(%) | CPU Time | Memory |
|-------------------------------|--------|----------|----------|
| DSM Desktop | 2.8 | 00:01:11 | 486.2 MB |
| DSM Internal Service | 1.7 | 00:08:59 | 211.5 MB |
| SNMP | 0.1 | 00:00:18 | 12 MB |
| AFP | 0 | 00:00:00 | 11.4 MB |
| Backup Service | 0 | 00:00:00 | 1.3 MB |
| Btrfs space reclamation | 0 | 00:00:00 | 0 bytes |
| File Station | 0 | 00:00:01 | 5.3 MB |
| Performance detection service | 0 | 00:00:00 | 2.1 MB |
| RAID process | - | - | - |
| System Monitor Daemon | 0.9 | 00:06:48 | 53 MB |
| SAN Manager | 0 | 00:00:03 | 47.8 MB |
| Shared Folder Sync | 0 | 00:00:00 | 2.6 MB |
| Storage Service | 0 | 00:00:17 | 5.3 MB |
| Swap | 0 | 00:00:00 | 0 bytes |
| Task Scheduler | 0 | 00:00:00 | 2.1 MB |
| Universal Search | 0 | 00:00:16 | 693.8 MB |
| Windows network discovery | 0 | 00:00:00 | 134 KB |

Granular Service

- Synology Drive
- Hyper Backup
- File Station
- Anti-Virus
- Synology High Availability
- iSCSI Service
- Data Scrubbing
- Delete Snapshots
- Btrfs process sequence
- RAID repair/resync

Everything seems normal

✓ Service

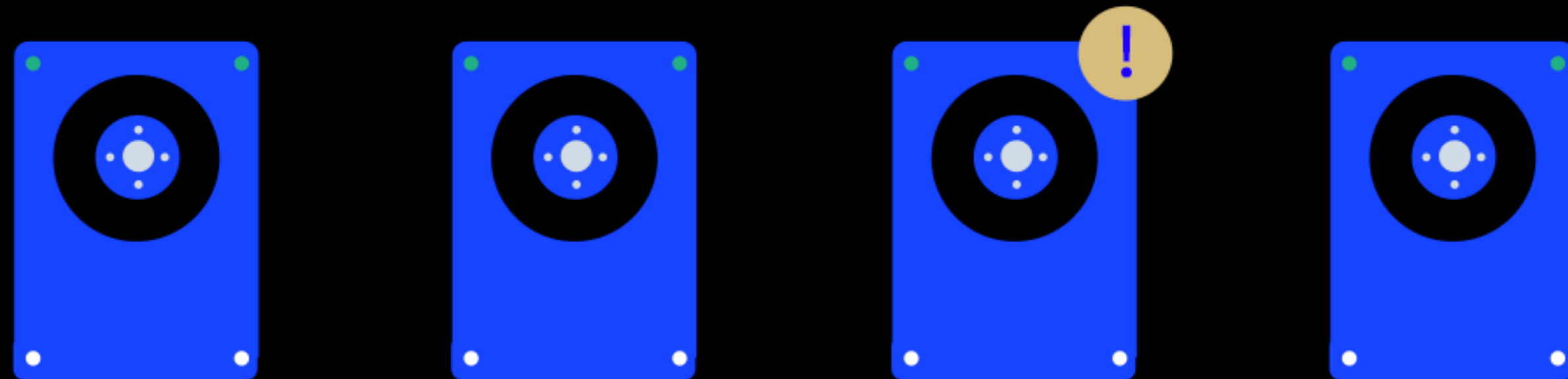
✓ Other Applications

✓ File System

✓ RAID



HDD causes The performance bottleneck



Identify the Performance bottleneck

- Schedule sampling for real-time feedback
- Identify the problematic disk for stable performance



Compare with others

Compare with other disks
in the same RAID

Issue an alert when a
replacement can increase
performance by 50%

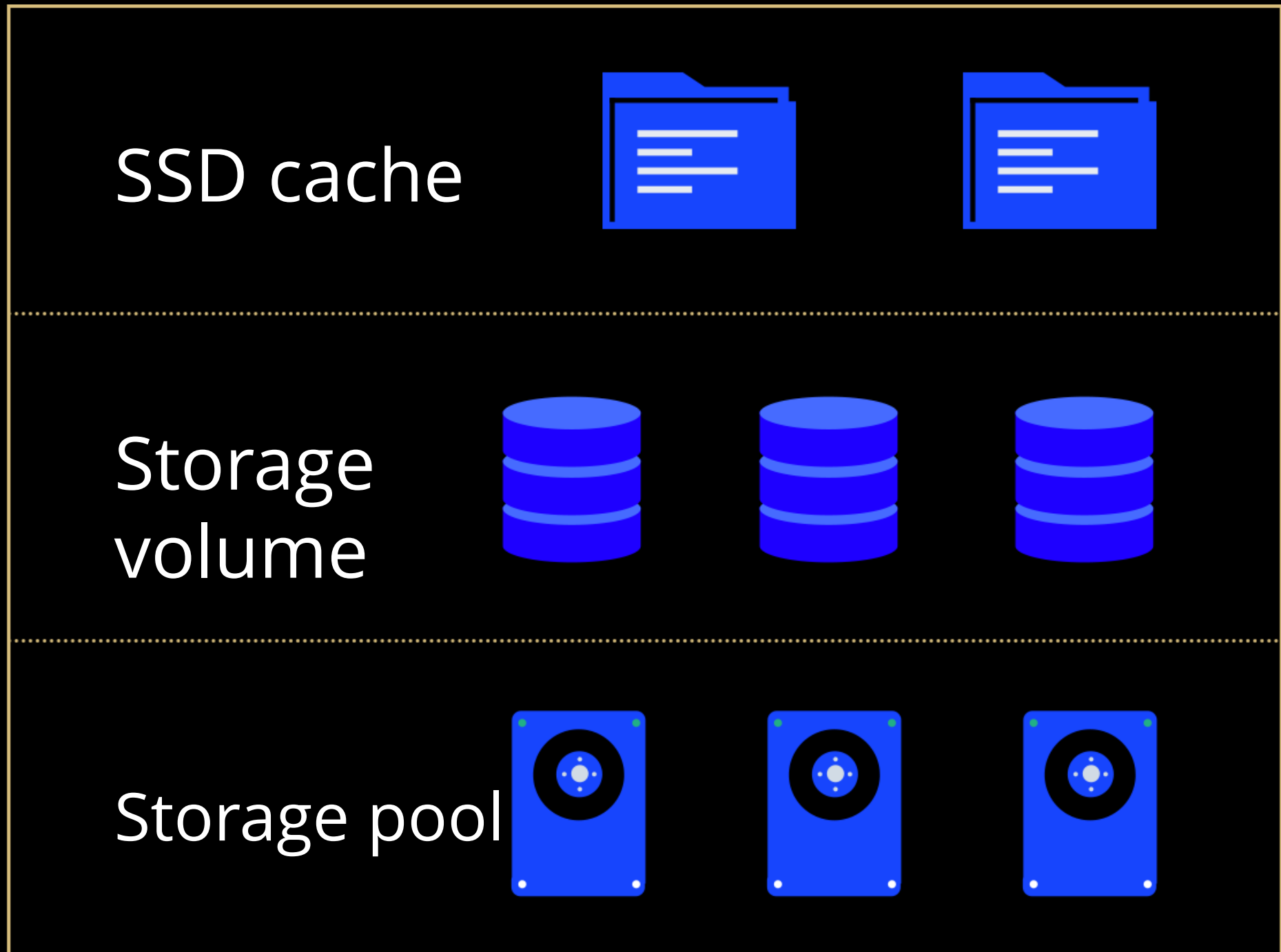
Compare with its history

Compare with past
performance history

Issue an alert when
performance
drops by more than 50%

Ease-of-use,
user-centered design

Storage Manager



The screenshot shows the 'Storage Manager' application interface. A circular callout highlights the details for 'Storage Pool 1':

- Storage Pool 1:** Healthy, 442.5 GB.
- Volume 1 - POOL 1:** Healthy, 64.4 MB / 424.3 GB. File system: Btrfs.
- SSD Cache 1:** Healthy. Status: RAID 1 (With d...), Cache mode: --%, Cache Usage: 6 MB / 447.1 GB.

Other visible elements include 'Storage Pool 2 - HDD' (Healthy, 3.6 TB) and a sidebar with 'Overview', 'Storage', 'Storage Pool 1', 'Volume 1', 'Storage Pool', and 'HDD/SSD'.

Cold data

Hot data

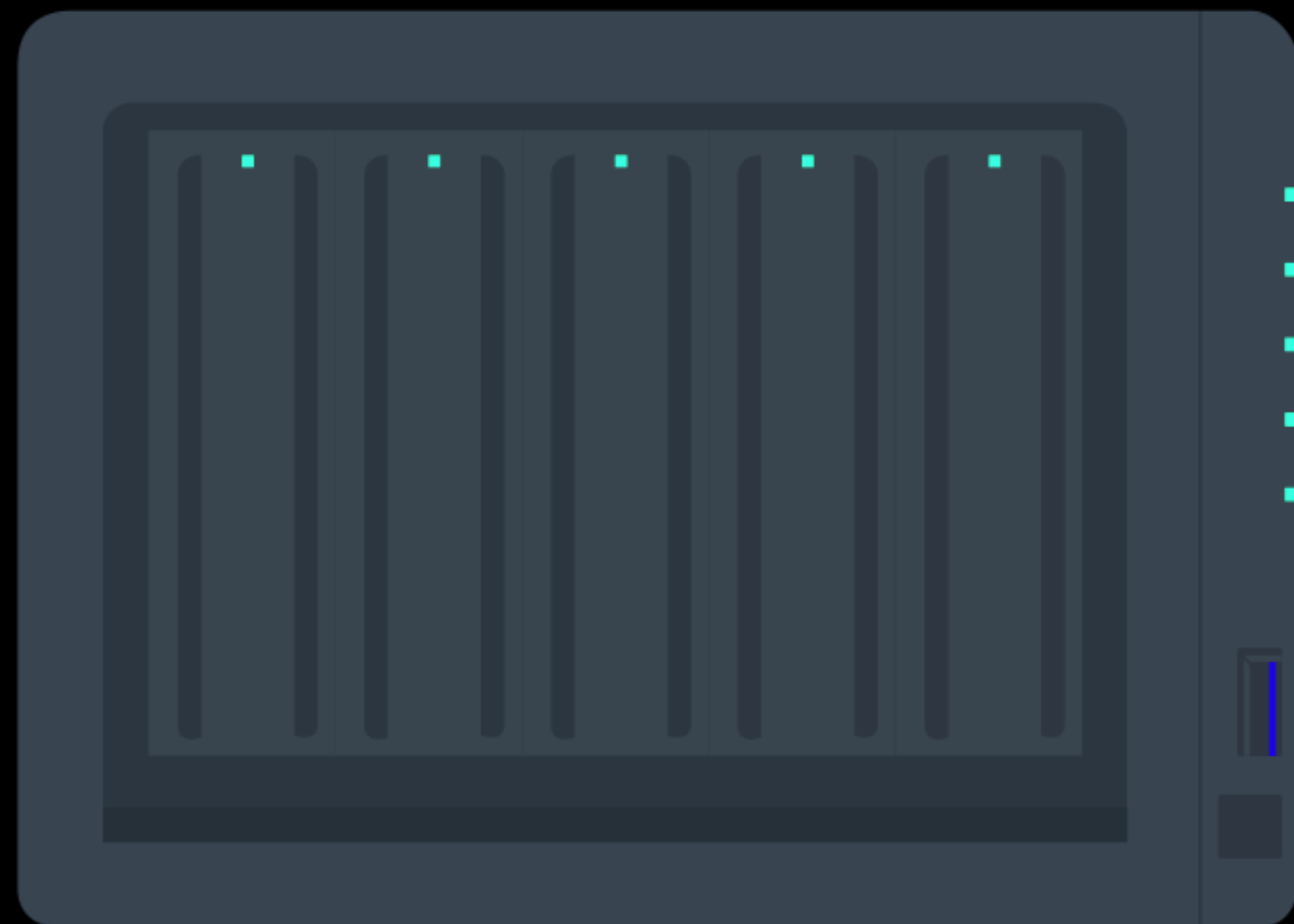


Market
Trends



User
Needs

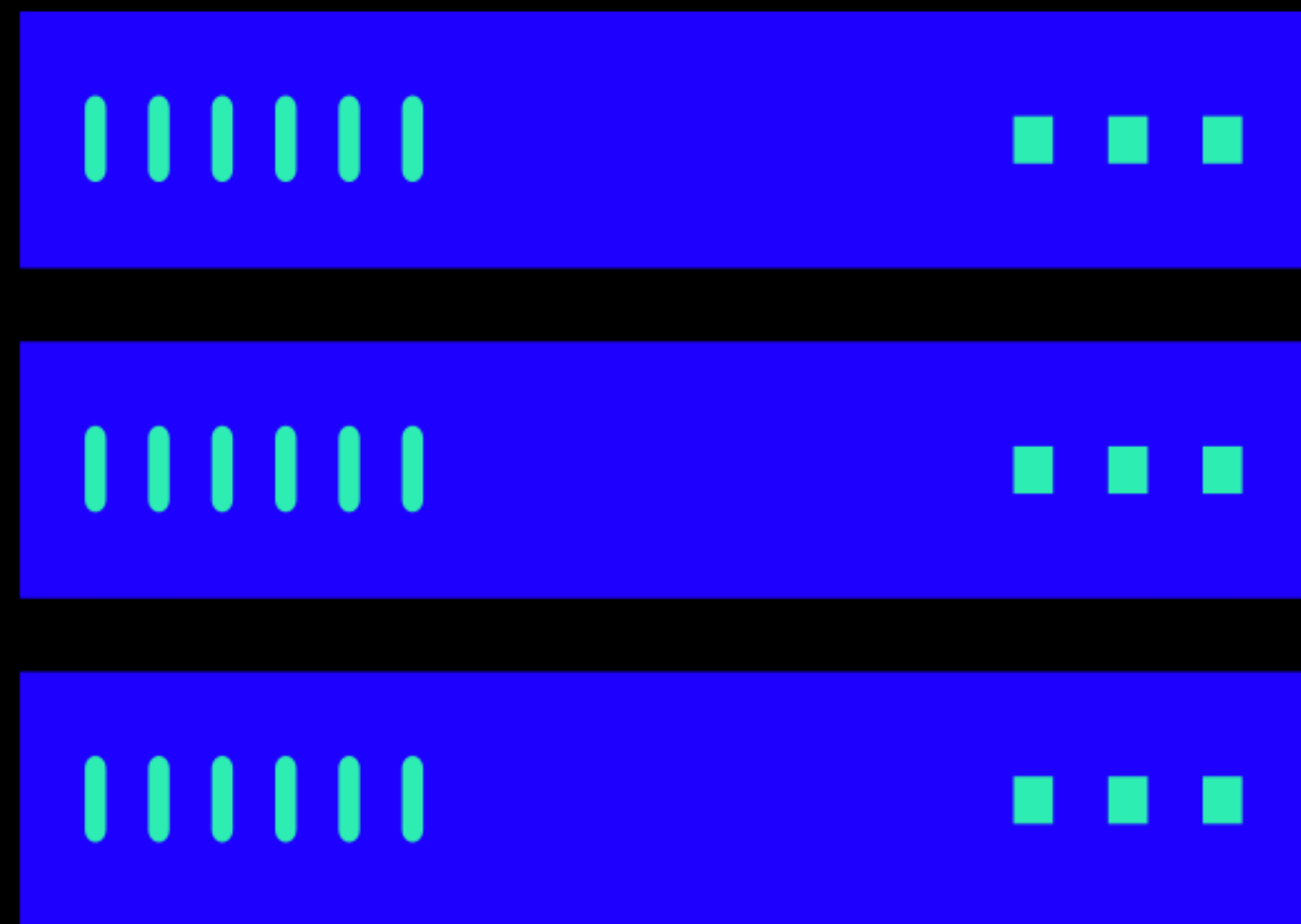
Mount storage pools safely online



Unmount safely



Mount online



Layered List

Unmount
Storage Pools

Synology[®]

S Y N O L O G Y

2 0 2 0

The background of the first panel shows a complex, layered structure of horizontal lines, resembling a circuit board or a data storage array. The lines are dark with some lighter highlights, creating a sense of depth and technical complexity.

Cache
Technology

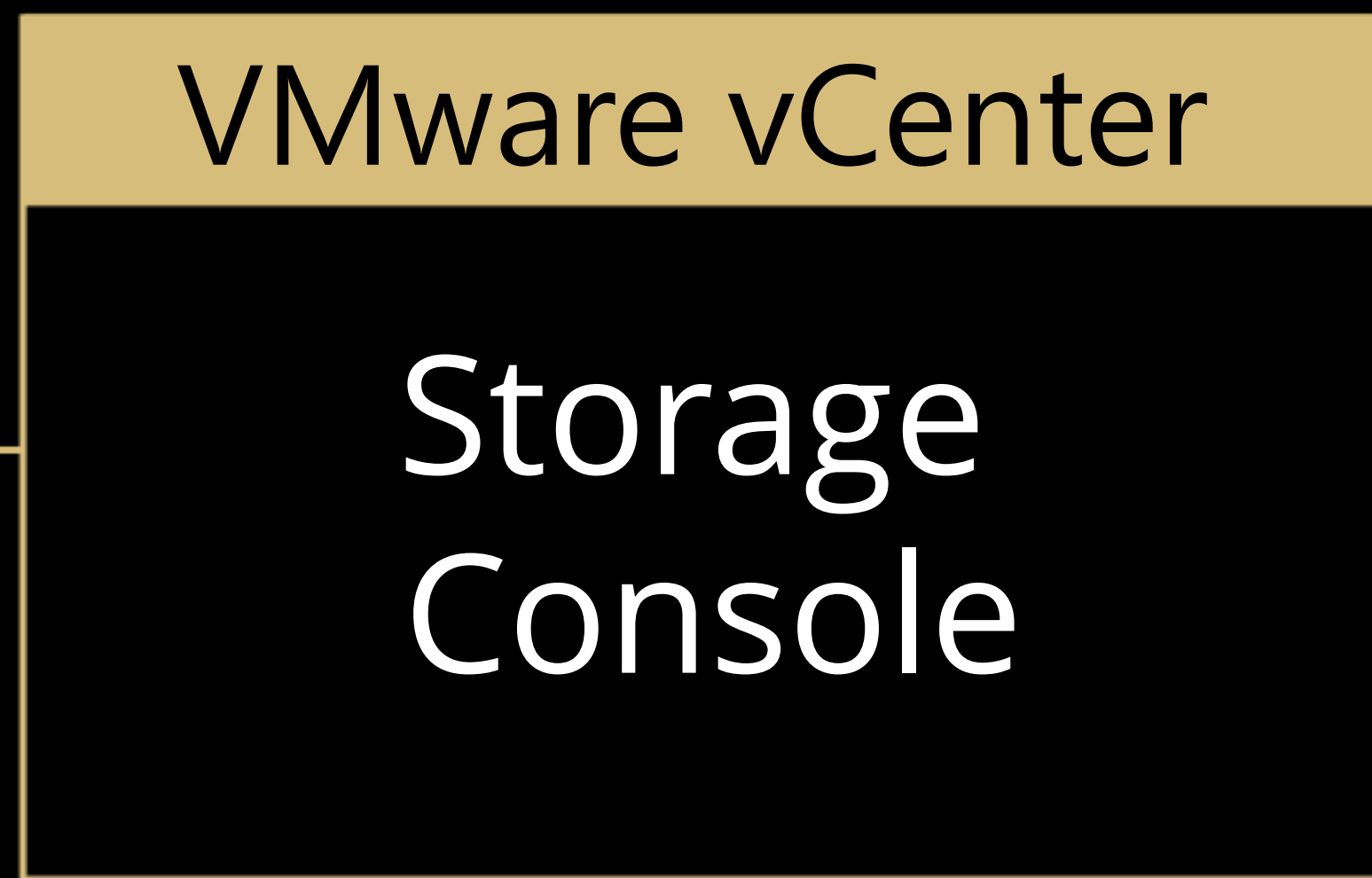
The background of the second panel features a dark, starburst-like pattern of light rays emanating from a central point. The rays are thin and numerous, creating a sense of dynamic energy and data flow.

Performance
Monitoring

The background of the third panel shows a close-up, slightly blurred view of a server rack. The focus is on the horizontal slots and components of the server units, with some light reflecting off the surfaces.

Virtualisation
Console

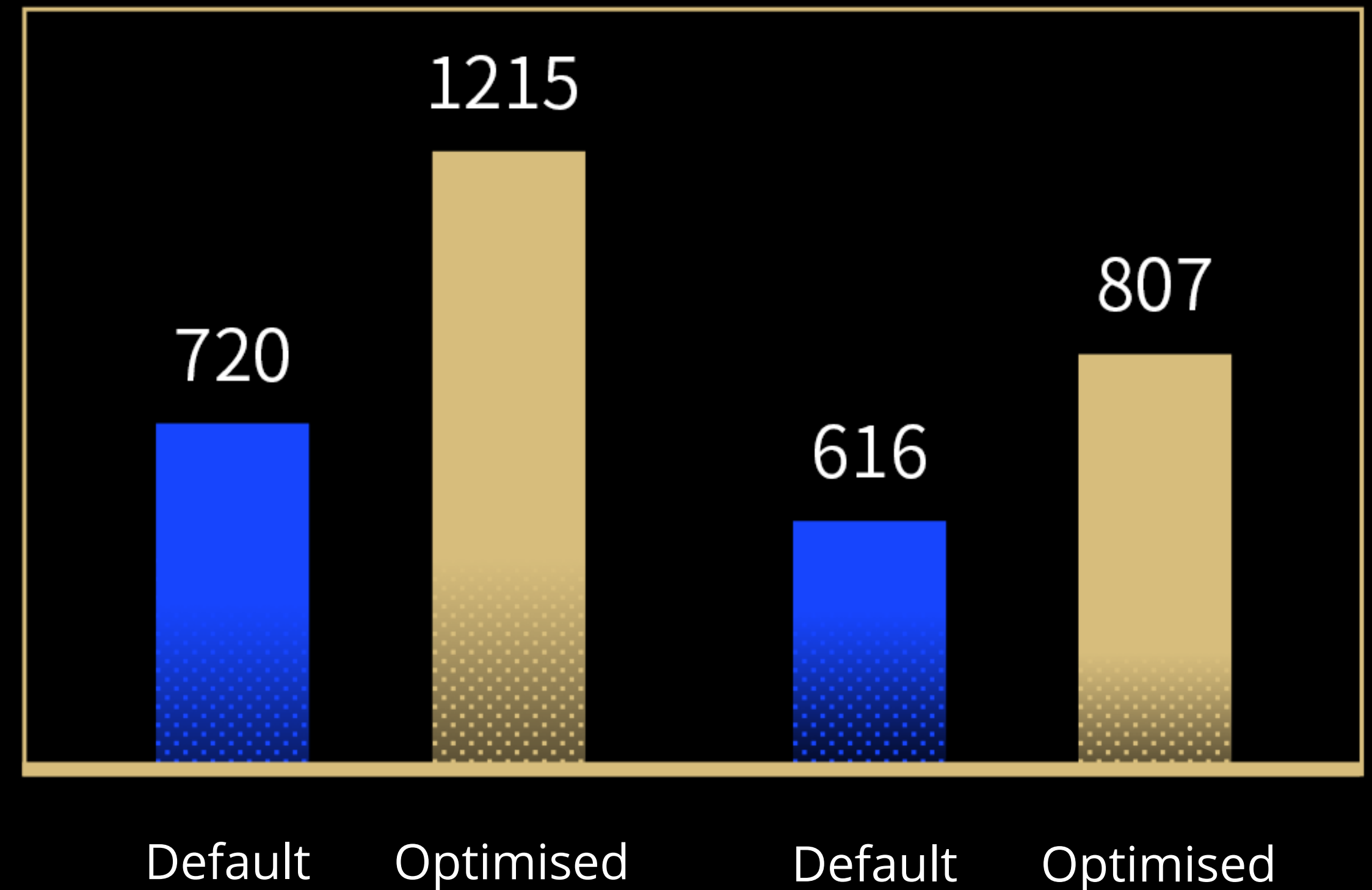
Single Interface.



One-click optimisation

- Time-out value of I/O, login, heartbeat
- I/O queue depth
- VAAI features

Random read IOPS Random write IOPS



- Home
- Shortcuts**
- Hosts and Clusters
- VMs and Templates
- Storage
- Networking
- Content Libraries
- Global Inventory Lists
- Policies and Profiles
- Auto Deploy
- vRealize Operations
- Synology Storage Console
- Administration
- Update Manager
- Tasks
- Events
- Tags & Custom Attributes

Shortcuts

Inventories

- Hosts and Clusters
- VMs and Templates
- Storage
- Networking
- Content Libraries
- Global Inventory Lists

Monitoring

- Task Console
- Event Console
- VM Customization Specifications
- VM Storage Policies
- Host Profiles
- Update Manager
- Synology Storage Console

Administration

- Licensing

Recent Tasks | Alarms

| Task Name | Target | Status | Initiator | Queued For | Start Time | Completion Time | Server |
|----------------------------------|---------------|-------------|------------------------------|------------|------------------------|------------------------|---------------|
| Create VMFS datastore | 10.17.195.175 | ✓ Completed | SYNOLOGY.LOCAL\Administrator | 2 ms | 09/16/2018, 2:12:43 PM | 09/16/2018, 2:12:44 PM | 10.17.195.174 |
| Rescan all HBAs | 10.17.195.175 | ✓ Completed | SYNOLOGY.LOCAL\Administrator | 2 ms | 09/16/2018, 2:12:38 PM | 09/16/2018, 2:12:42 PM | 10.17.195.174 |
| Add Internet SCSI static targets | 10.17.195.175 | ✓ Completed | SYNOLOGY.LOCAL\Administrator | 3 ms | 09/16/2018, 2:12:38 PM | 09/16/2018, 2:12:38 PM | 10.17.195.174 |

All | More Tasks



VMware
vSphere



Windows
Server

Brand New Hardware

Meet All User Demands

```
..._mod = modifier_ob.modifiers.new("mirror_x")
... object to mirror_ob
..._mod.mirror_object = mirror_ob

... == "MIRROR_X":
..._mod.use_x = True
..._mod.use_y = False
..._mod.use_z = False
... == "MIRROR_Y":
..._mod.use_x = False
..._mod.use_y = True
..._mod.use_z = False
... == "MIRROR_Z":
..._mod.use_x = False
..._mod.use_y = False
..._mod.use_z = True

... at the end -add back the deselected
..._ob.select=1
...st.scene.objects.active = modifier_ob
...selected" + str(modifier_ob)) # modifier
..._ob.select = 0
...y.context.selected_objects[0]
...e.objects[one.name].select = 1

...("please select exactly two objects,
...
... OPERATOR CLASSES
...
..._ob.select=1
```

Outstanding
Performance



High
Availability



Extreme
Density


```
..._mod = modifier_ob.modifiers.new("mirror_ob")
... object to mirror_ob
..._mod.mirror_object = mirror_ob

... == "MIRROR_X":
..._mod.use_x = True
..._mod.use_y = False
..._mod.use_z = False
... == "MIRROR_Y":
..._mod.use_x = False
..._mod.use_y = True
..._mod.use_z = False
... == "MIRROR_Z":
..._mod.use_x = False
..._mod.use_y = False
..._mod.use_z = True

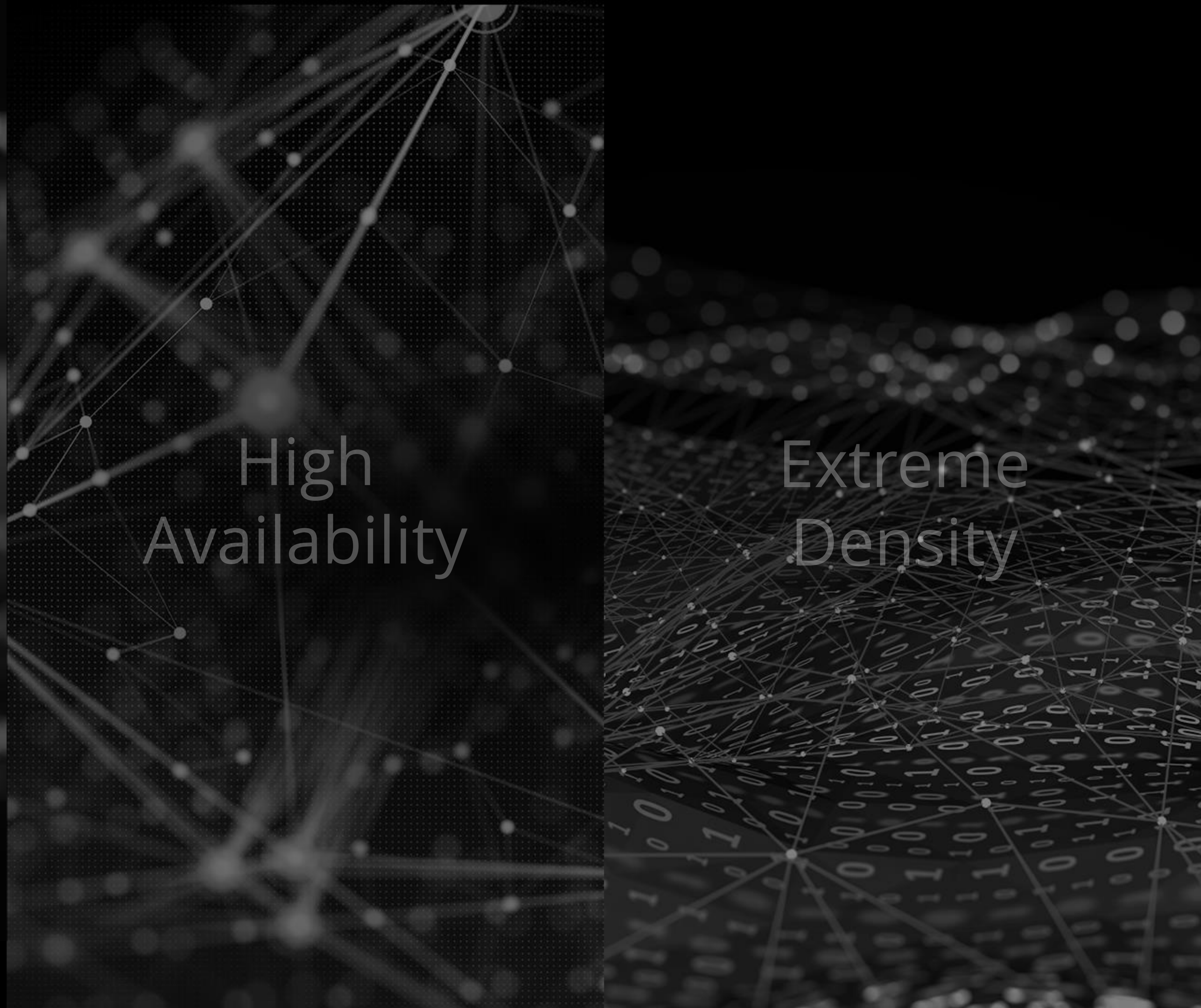
... at the end -add back the des
..._select=1
..._ob.select=1
..._scene.objects.active = modifier_ob
..._selected" + str(modifier_ob)) # modifier
..._ob.select = 0
..._context.selected_objects[0]
..._objects[one.name].select = 1

...("please select exactly two objects,
... OPERATOR CLASSES
```

Outstanding Performance

High Availability

Extreme Density



Performance

240,000

161,000

134,000

FS6400

Dual ® Xeon® Silver 8-core CPU



FS3600

Intel® Xeon® D 12-core CPU



FS3400

Intel® Xeon® D 8-core CPU



All-flash Product Line

Price

SA3400

SA3600

Enterprise SAS

Intel® Xeon® D 8-core processor
137,000 iSCSI random write IOPS
Support up to 128GB DDR4 ECC RDIMM

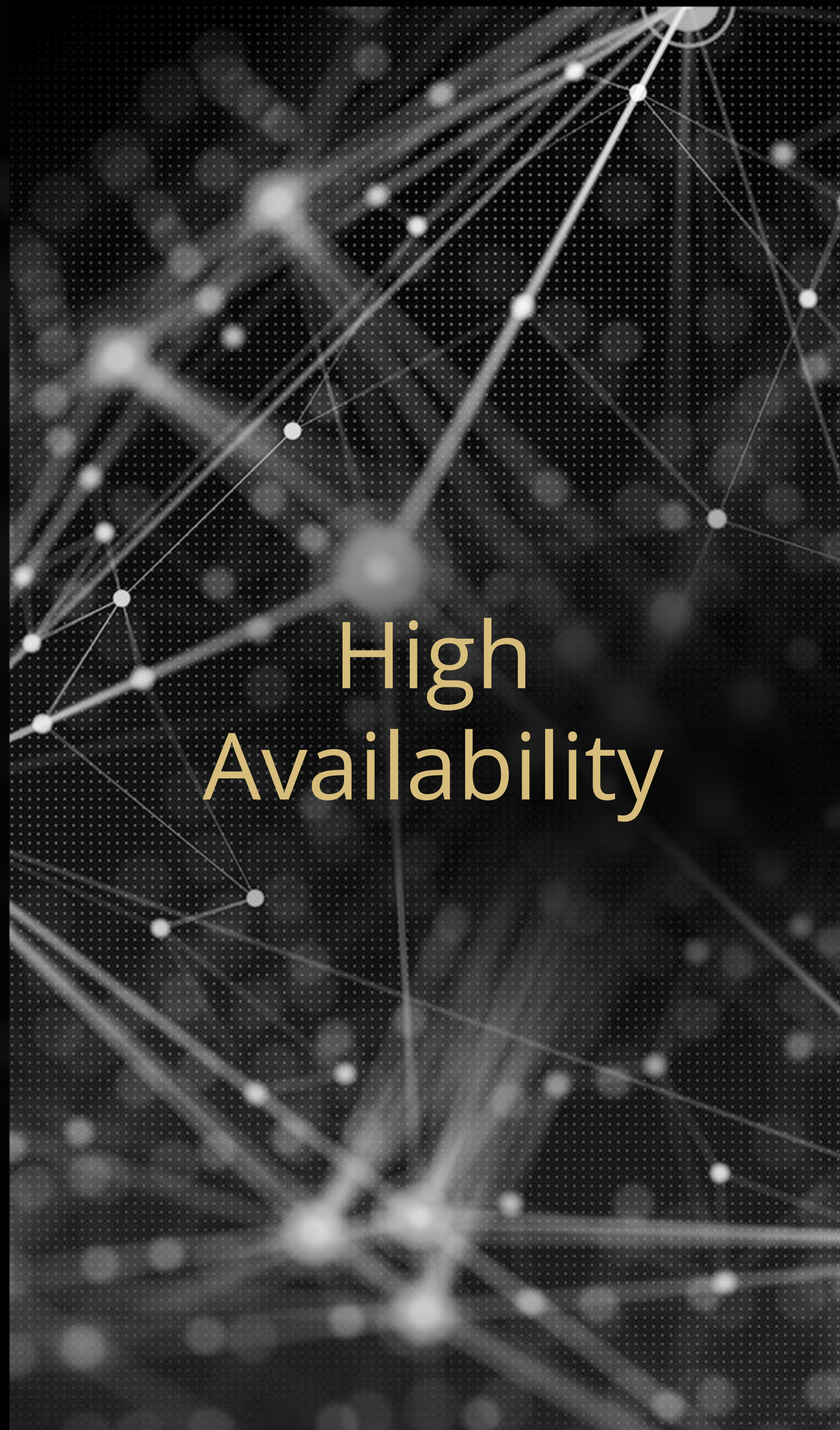
Intel® Xeon® D 12-core processor
Expandable up to 180 hard drives

Product Line



```
mod = modifier_ob.modifiers.new("MIRROR_X")
mirror_object = mirror_ob
mirror_object.use_x = True
mirror_object.use_y = False
mirror_object.use_z = False
mod = modifier_ob.modifiers.new("MIRROR_Y")
mirror_object.use_x = False
mirror_object.use_y = True
mirror_object.use_z = False
mod = modifier_ob.modifiers.new("MIRROR_Z")
mirror_object.use_x = False
mirror_object.use_y = False
mirror_object.use_z = True
...
scene.objects.active = modifier_ob
selected" + str(modifier_ob)) # modifier
modifier_ob.select = 0
context.selected_objects[0]
objects[one.name].select = 1
("please select exactly two objects,
OPERATOR CLASSES
```

Outstanding
Performance



High
Availability

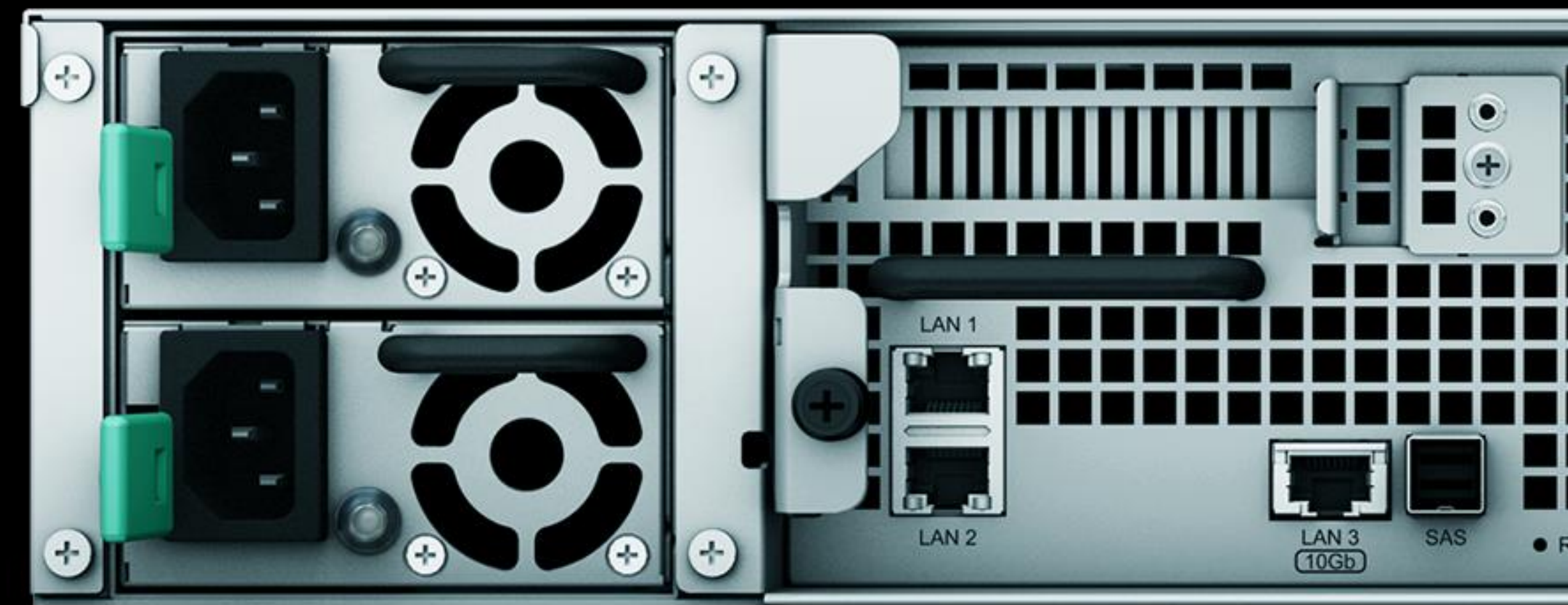


Extreme
Density

Unified Controller

UC3200

- Active-Active architecture
- 141,000 4K random write performance
- Provide high available iSCSI service



Enterprise SAS

SA3200D

- Active-Passive architecture
- Intel® Xeon® D 4-core processor
- Run on DSM with full support for packages



UC3200

Active-Active

High-performance and stable iSCSI service
Full feature and package support



SA3200D

Active-Passive

Comprehensive data protection
Full feature and package support



Synology High Availability

Active-Passive

Flexible budget allocation
Full feature and package support



```
mod = modifier_ob.modifiers.new("MIRROR_X")
mirror_object = mirror_ob
mod.use_x = True
mod.use_y = False
mod.use_z = False
mod = modifier_ob.modifiers.new("MIRROR_Y")
mod.use_x = False
mod.use_y = True
mod.use_z = False
mod = modifier_ob.modifiers.new("MIRROR_Z")
mod.use_x = False
mod.use_y = False
mod.use_z = True

scene.objects.active = modifier_ob
obj.select = 1
obj.context.selected_objects[0]
obj.name.select = 1

("please select exactly two objects,")

OPERATOR CLASSES
```

Outstanding
Performance



High
Availability



Extreme
Density

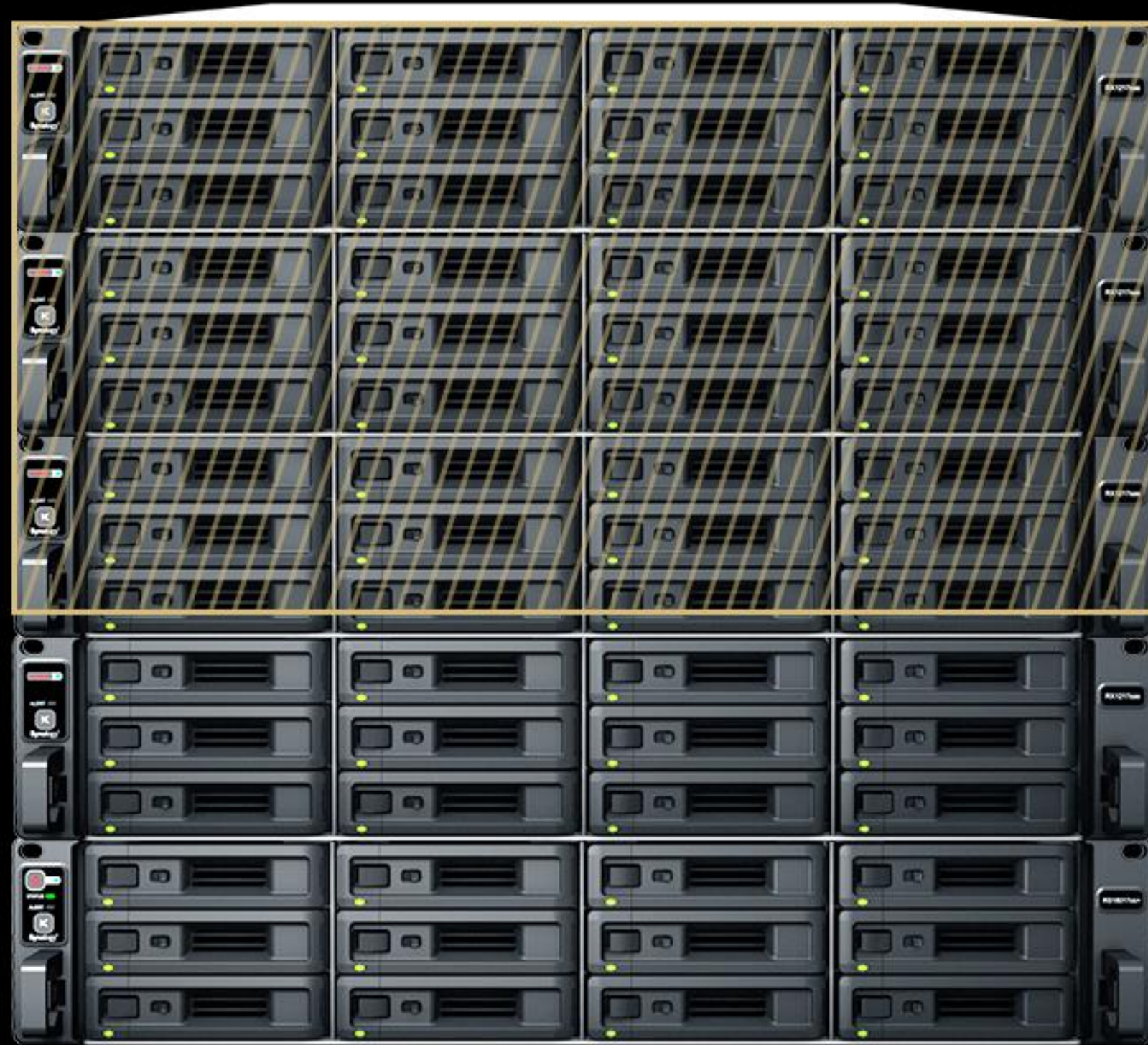
High Density / First 4U high-density server

HD6400

- 4U 60-bay to support up to 960TB
- Dual® Xeon® Silver 8-core processor
- Expandable up to 512GB ECC RDIMM



Maximize Storage Density



RS18017xs+ & RX1217sas x 4



HD6400

Fibre Channel

High-performance and reliable, with the support of FC expansion cards
Easily fit into Fibre Channel SAN environments



Enterprise-class Service levels

STORTRAC

The Next Level Of Service

- Support contracts on entire solution
- Up to 24/7 – 4 hours response
- Next Business Day replacement

Synology®

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2 0 2 0