



Synology

20

19

SMART
STREAMLINED
SOLID

Next Generation NAS

Evolution of DSM Platform



Jeremie Francois
Synology





Evolution of DSM Platform

Deep Machine Learning

Enhanced Data Safety

Hardware Resilience & Robustness

Enjoy Greater Privileges!

Imagine a wonderful trip with your family or friends, tasting exotic food, enjoying beautiful scenery, and experiencing a whole new culture. Infinity MileageLands members can save up to 25,000 miles by booking EVA Air or UNI Air tickets on certain travel dates!

[Log in](#) [SSO Authentication](#)

Synology2019

jefflee@synology.com

••••••••

☐ Stay signed in



[Forgot your password?](#)



DSM 7.0

Modern
Design

Responsiveness

Interactive
Experience

0.1_{sec}



Simplify the Complex: A Centralized portal

go.synology.com





To use Synology Application on your computer

QR code login simplifies authentication processes on devices that may be shared. Easily and securely login without needing to remember or type your device's address and credentials.

1. Open Synology app on your phone
2. Tap and select QR code login
3. Point your phone to this screen to capture the code.



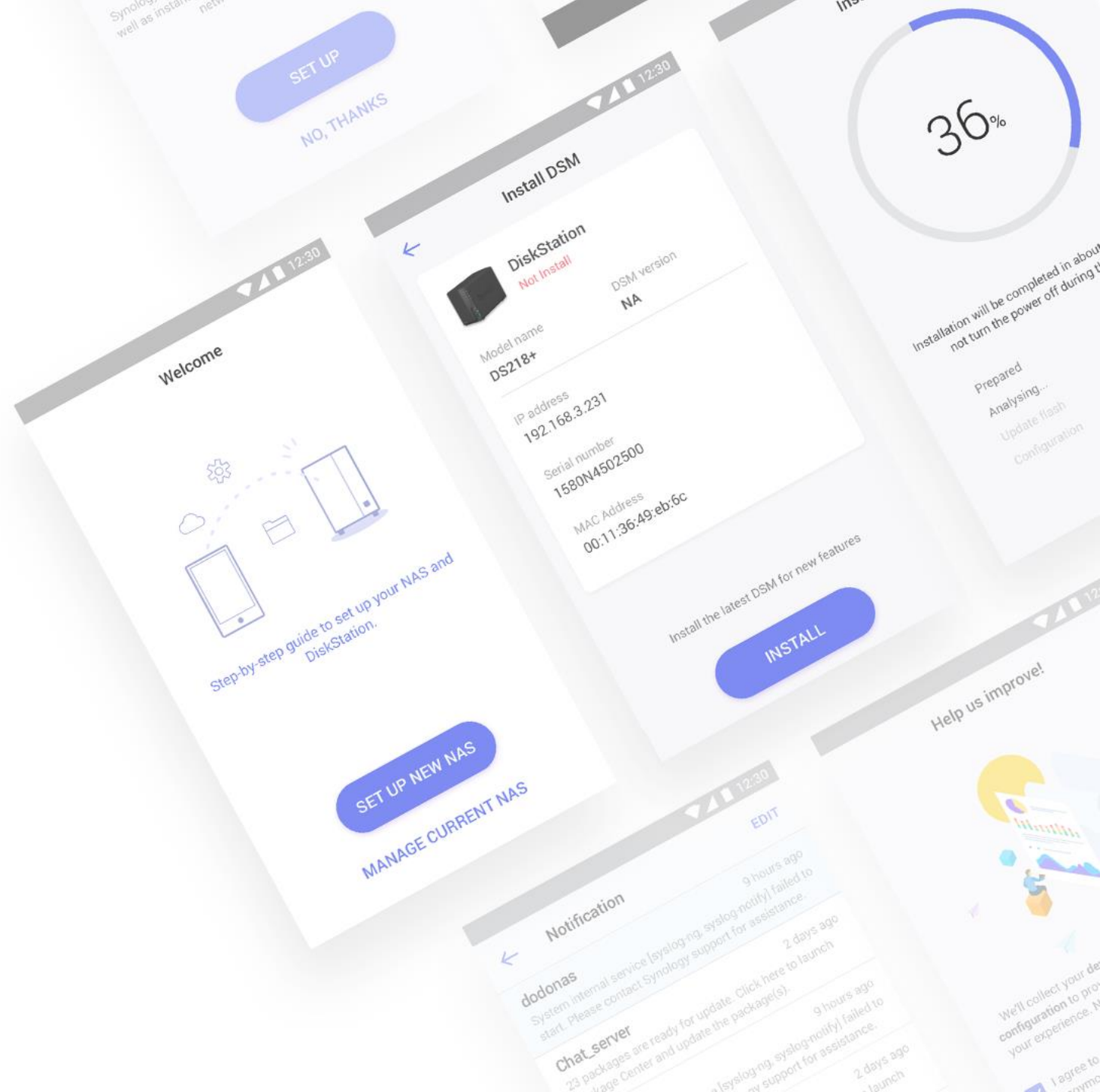
[Need help to get start?](#)

Smooth Mobile Installation

DSM updates

Package Centre

Quickconnect / Remote access





DS file



DS photo



DS video



DS audio



Synology Drive



Synology
Moments



DS finder



DS cloud



DS get



Synology
Chat



DS cam



DS note



DS router



Synology
VPN Plus



Synology
MailPlus



Moments

Designed for personal users

Smarter photo albums

Deep Machine Learning

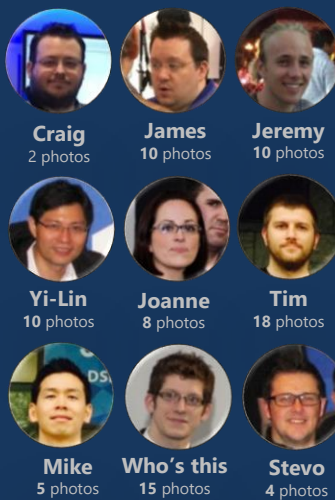


MOMENTS

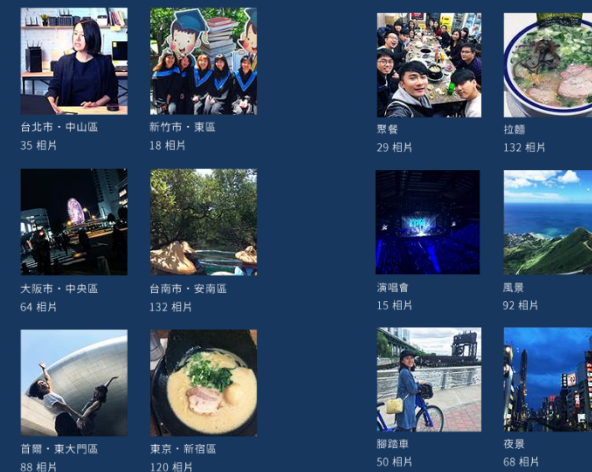
Timeline



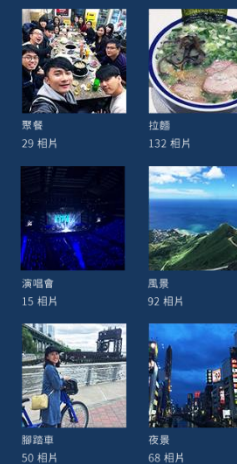
People



Places



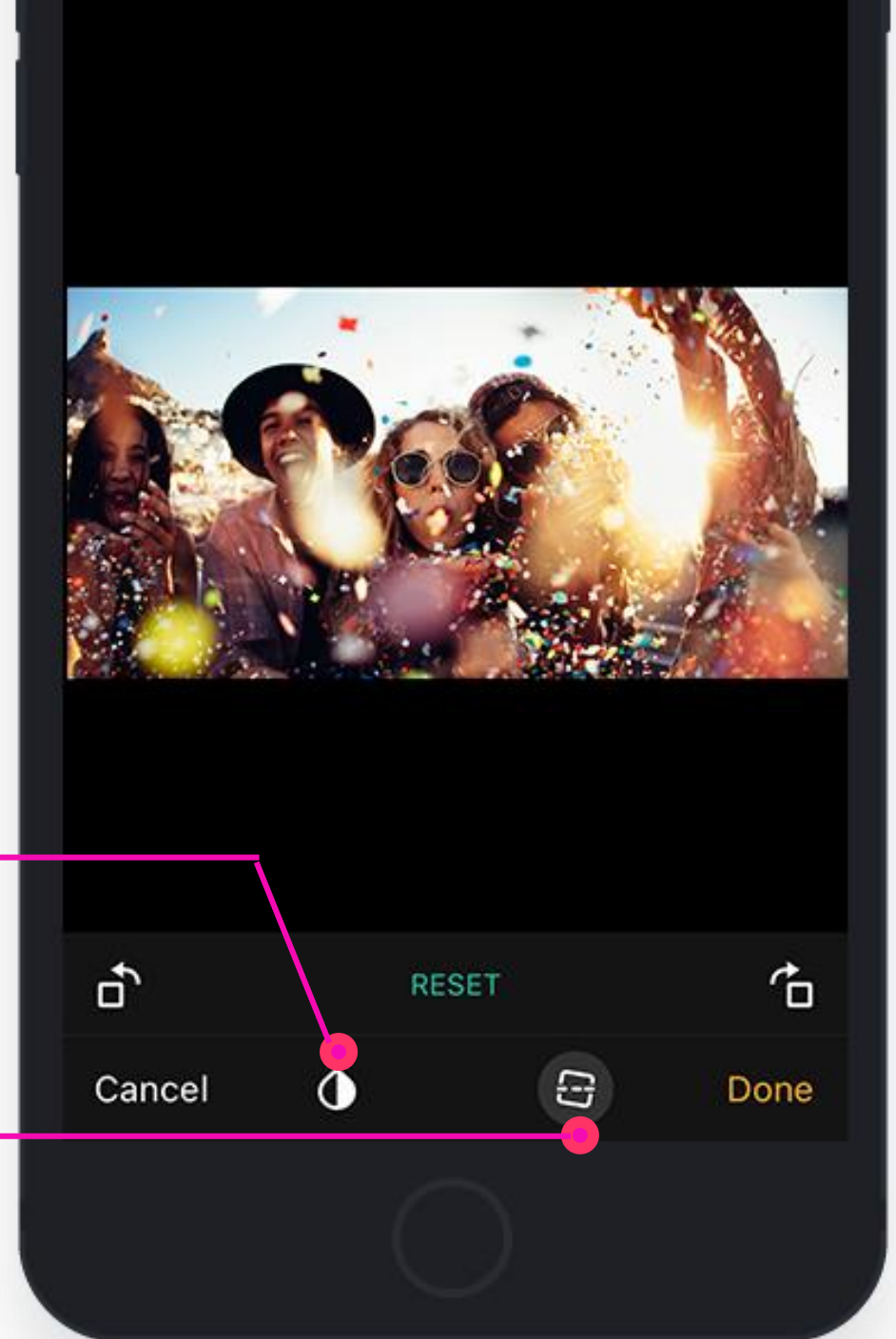
Subjects



Bring photos to life

Color Correction

Angular Adjustment



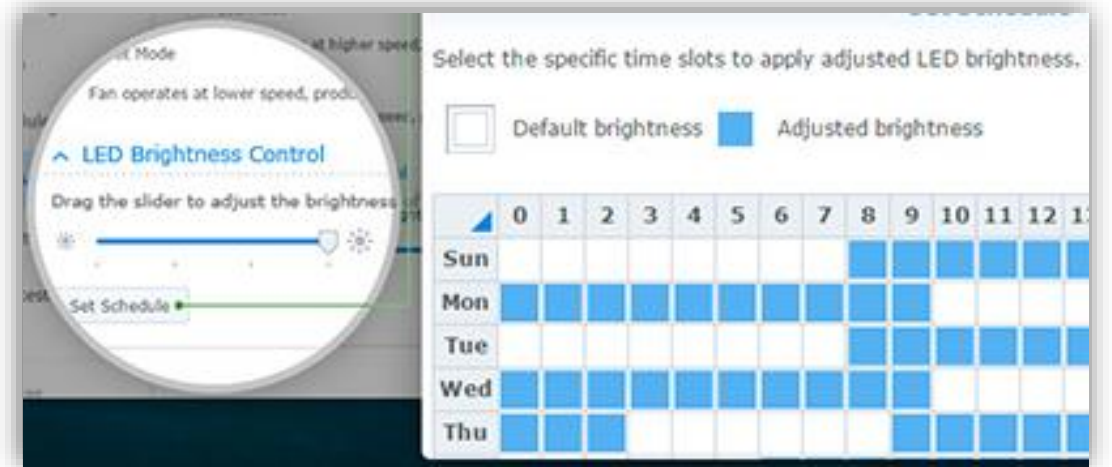
Global voice assistant market
30 billion USD by 2023

"Alexa"





Calendar Events



Synology LED

More Voice Assistants



Amazon
Alexa



Siri



Google
Assistant



Tmall
Genie

Protecting your data

S.M.A.R.T.

Health Info - Disk 1 (DX513-2)						
S.M.A.R.T. Info						
ID	Attribute	Value	Worst	Thres...	Status	Raw data
1	Raw_Read_Error_Rate	200	200	051	OK	208
3	Spin_Up_Time	187	185	021	OK	5633
4	Start_Stop_Count	099	099	000	OK	1934
5	Reallocated_Sector_Ct	200	200	140	OK	0
7	Seek_Error_Rate	100	253	000	OK	0
9	Power_On_Hours	098	098	000	OK	1678
10	Spin_Retry_Count	100	100	000	OK	0
11	Calibration_Retry_Co...	100	253	000	OK	0
12	Power_Cycle_Count	100	100	000	OK	1
192	Power-Off_Retract_C...	200	200	000	OK	0
193	Load_Cycle_Count	198	198	000	OK	6001
194	Temperature_Celsius	119	119	000	OK	31
196	Reallocated_Event_C...	200	200	000	OK	0
197	Current_Pending_Sec...	200	200	000	OK	0



IRONWOLF
HEALTH

Storage Manager

HDD/SSD | Logs | Test Scheduler | General

Health Info | Secure Erase

Disk 1 - Normal
Seagate ST4000VN008-2DR166, 3.6 TB HDD

Disk 2 - Normal
Seagate ST6000NE0021-2EN11C, 5.5 TB HDD

Health Info - Disk 1

Overview | IronWolf Health | S.M.A.R.T. Test | S.M.A.R.T. Info

Normal
The health status of the disk is normal.

Schedule Drive Tests

Statistics

Temperature: 31 °C / 88 °F

Power-On Time: 638 hour(s)

Disk Reconnection Count: 0

Bad Sector Count: 0

Disk Re-identification Count: 0

S.M.A.R.T. Status: Normal

IronWolf Health Status: Normal

Description

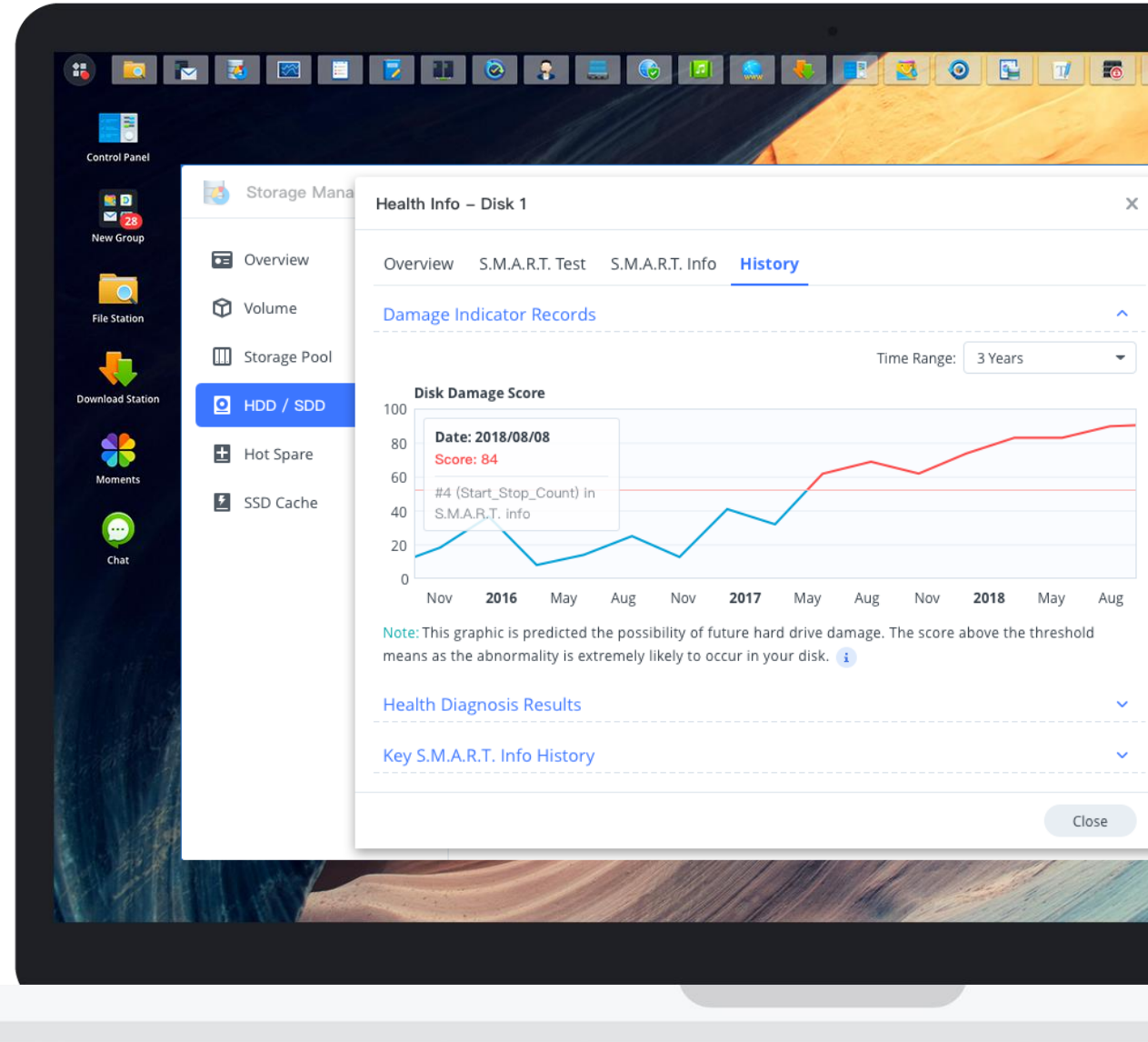
No diagnostic test is scheduled. We recommend you to run a self-diagnostic test on this drive to ensure its

Close

IronWolf Health Management

HDD Failure Prediction

An ounce of prevention is worth a pound of cure.



Accuracy Rate



90%

The system predicts the hard disk needs to be replaced, and its probability of failure in the short term.

Real-Time Data Clone

No recalculating parity

Automatic

Saves time and system resource



Real-Time Data Clone







No recalculating parity

Automatic

Saves time and system resource



 Storage Manager

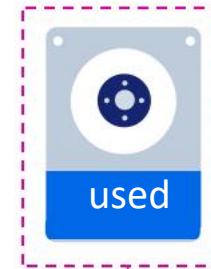
-  Overview
-  Volume
-  Storage Pool
-  **HDD/SSD**
-  Hot Spare
-  SSD Cache

HDD/SSD Logs Test Scheduler General

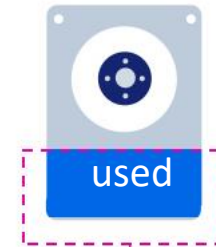
Health Info		Action ▾	
	Disk 1 - Normal WDC WD30EFRX-68AX9N0 , 2.7 TB HDD		▾
	Disk 2 - Normal Seagate ST4000DM000-1F2168 , 3.6 TB HDD		▾
	Disk 3 - Normal TOSHIBA DT01ACA050 , 465.8 GB HDD		▾
	Disk 4 - Normal WDC WD30EFRX-68AX9N0 , 2.7 TB HDD		▾

Accelerated RAID Rebuild

Intelligently rebuild data block
Accurately and efficiently utilize system resource
Synology patent application in process



Traditional
RAID Rebuild



Accelerated
RAID Rebuild

Rapid RAID Rebuilds

8hrs

All blocks checked

Testing environment: 3x HDD (4TB) to build RAID 5, 40% of usage

Recovery time

3 hrs

Testing environment: 3x HDD (4TB) to build RAID 5, 40% of usage

Risk-free Storage Space Management



Failure
Prediction

HDD
Replacement

Fast
Rebuild

Efficient Management on Different Scales



CMS

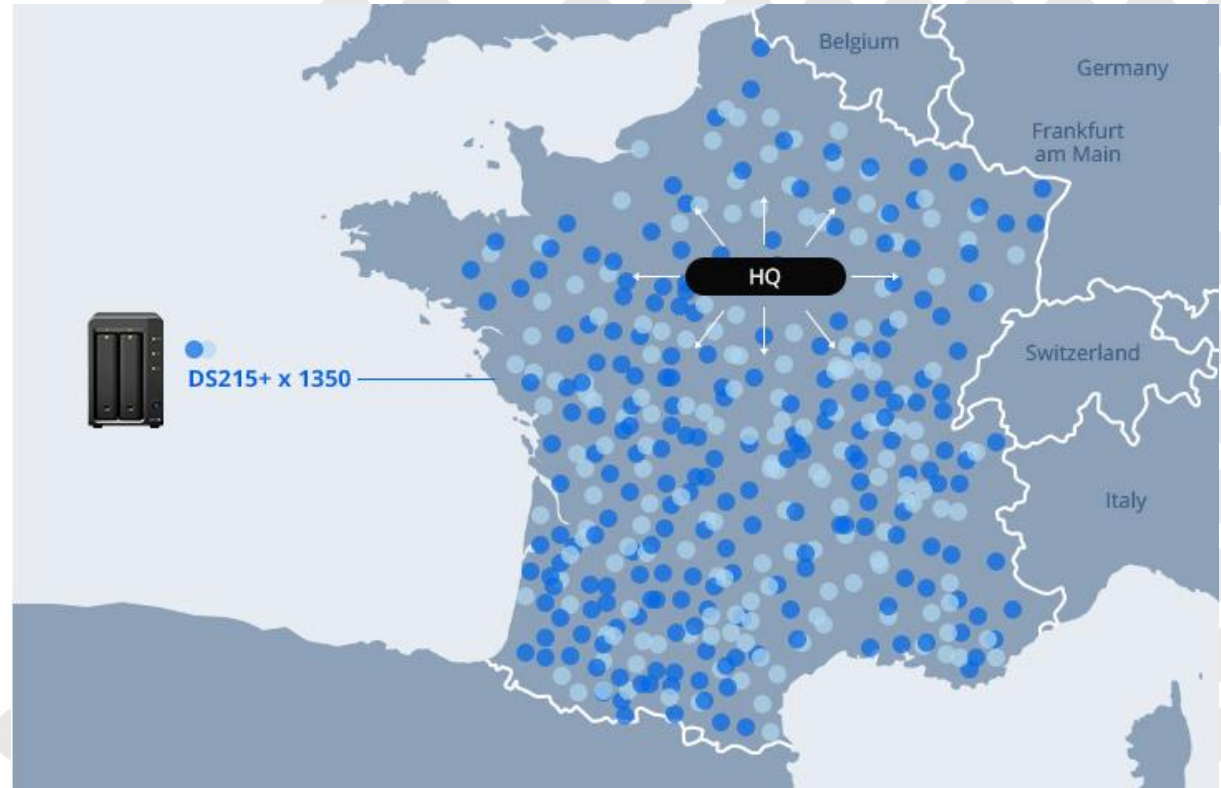
Centralised Management
System

One Interface, **N** servers

Groups and Policies

KRYS GROUP

- The leading optical retail group in France
- 2017: 1 €billion revenue
- Manages 1,350 Synology NAS



10,000

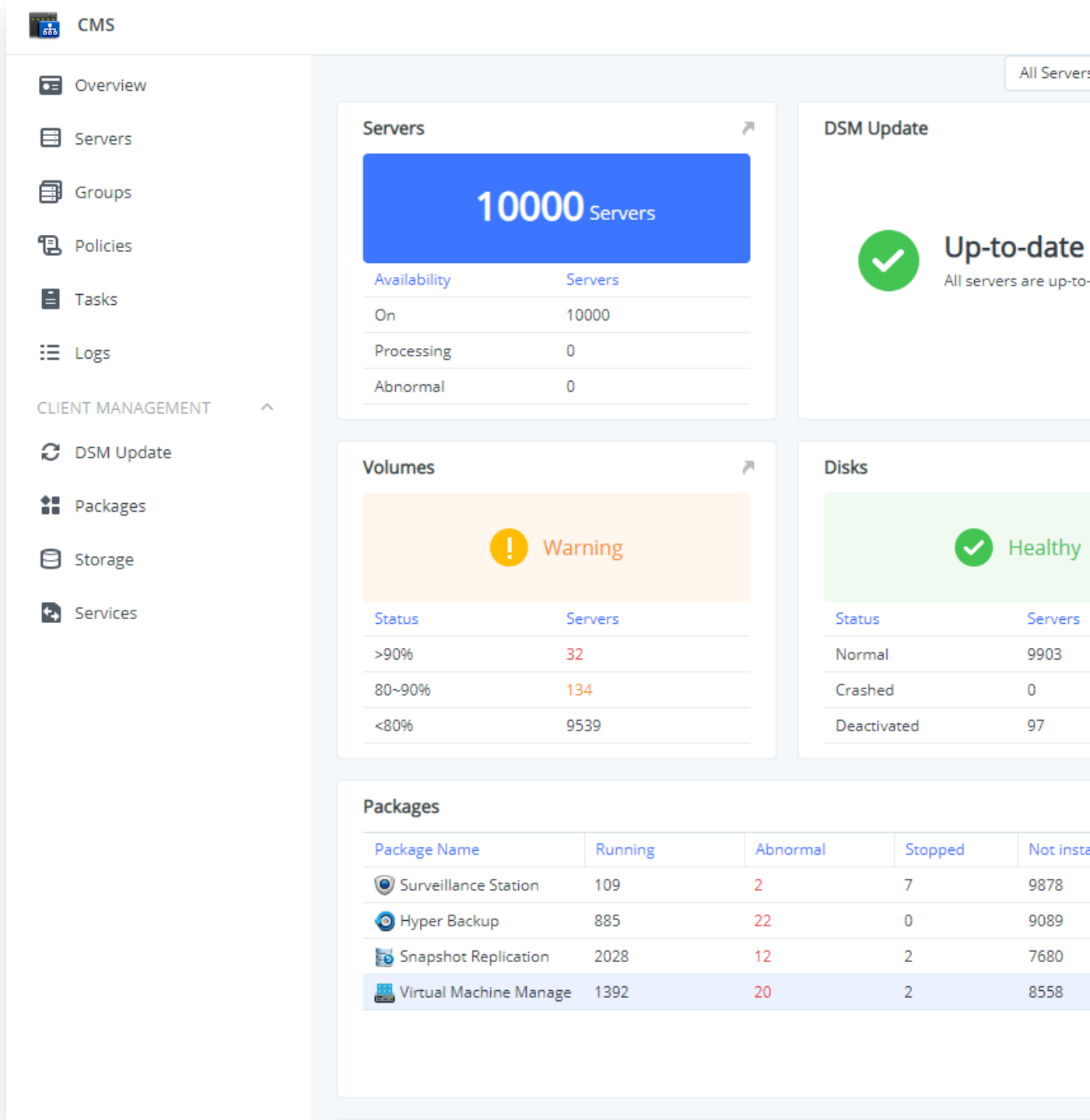
Server Management

CMS

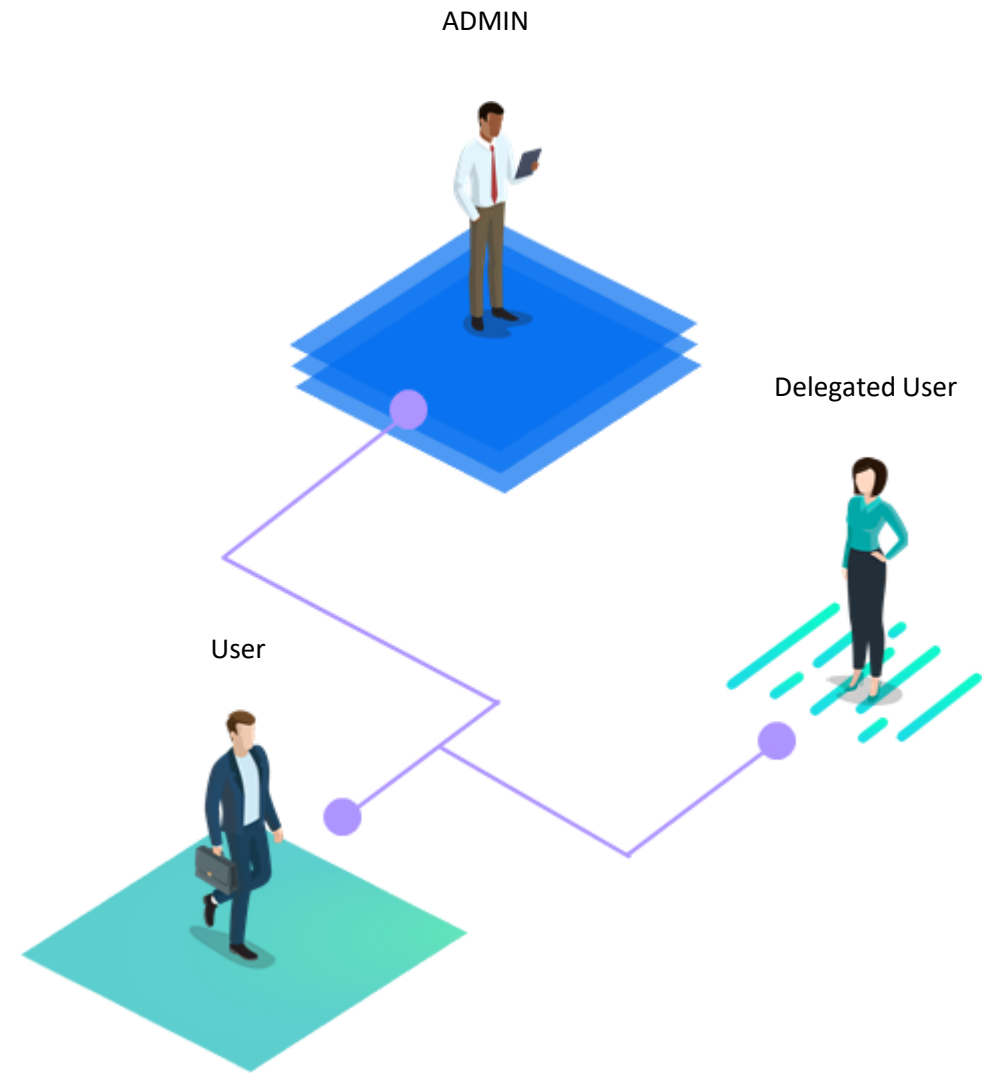
Capacity of 10,000 servers

Efficient & intuitive group management

Customizing task managements



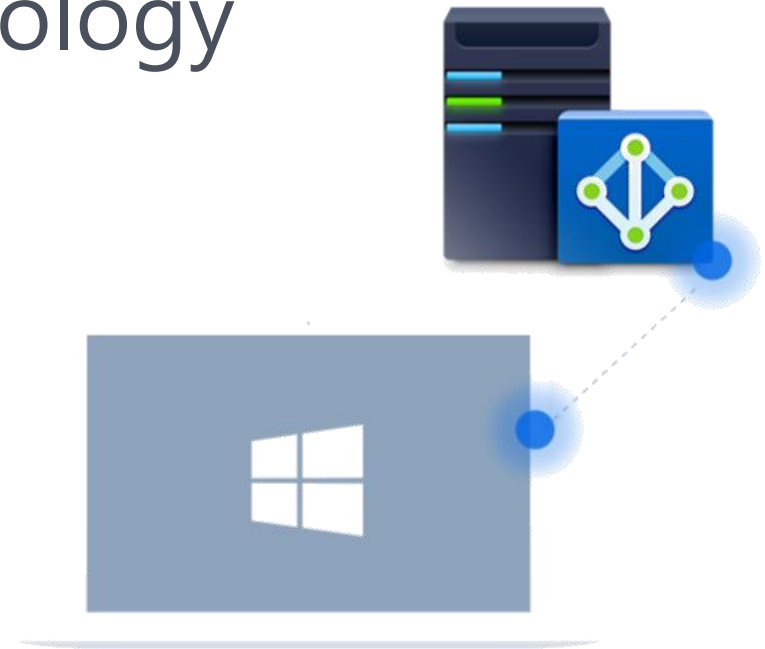
Admin delegation





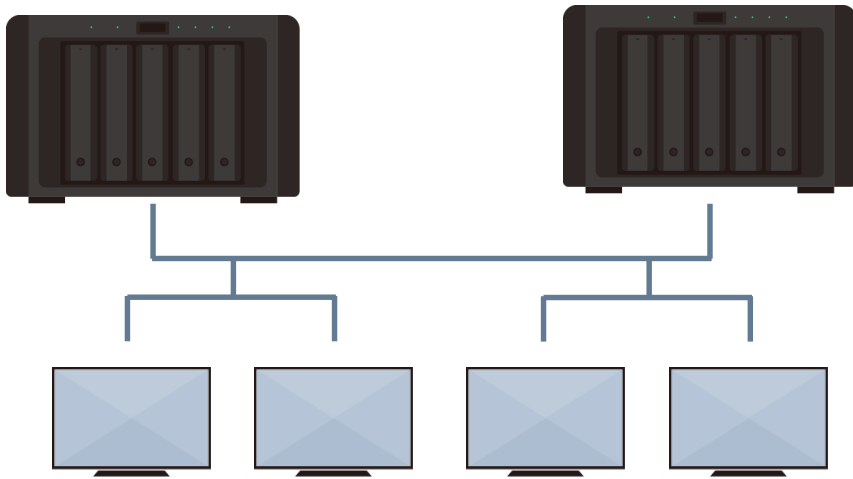
Directory Server For Windows Domain

Migrate from existing AD to Synology



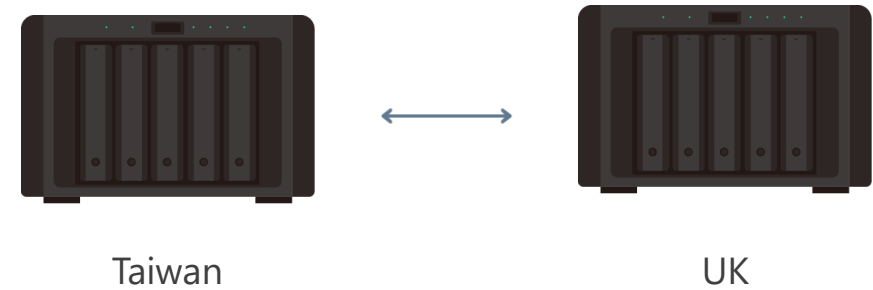
Dual active controller

Covers load balancing &
failover features



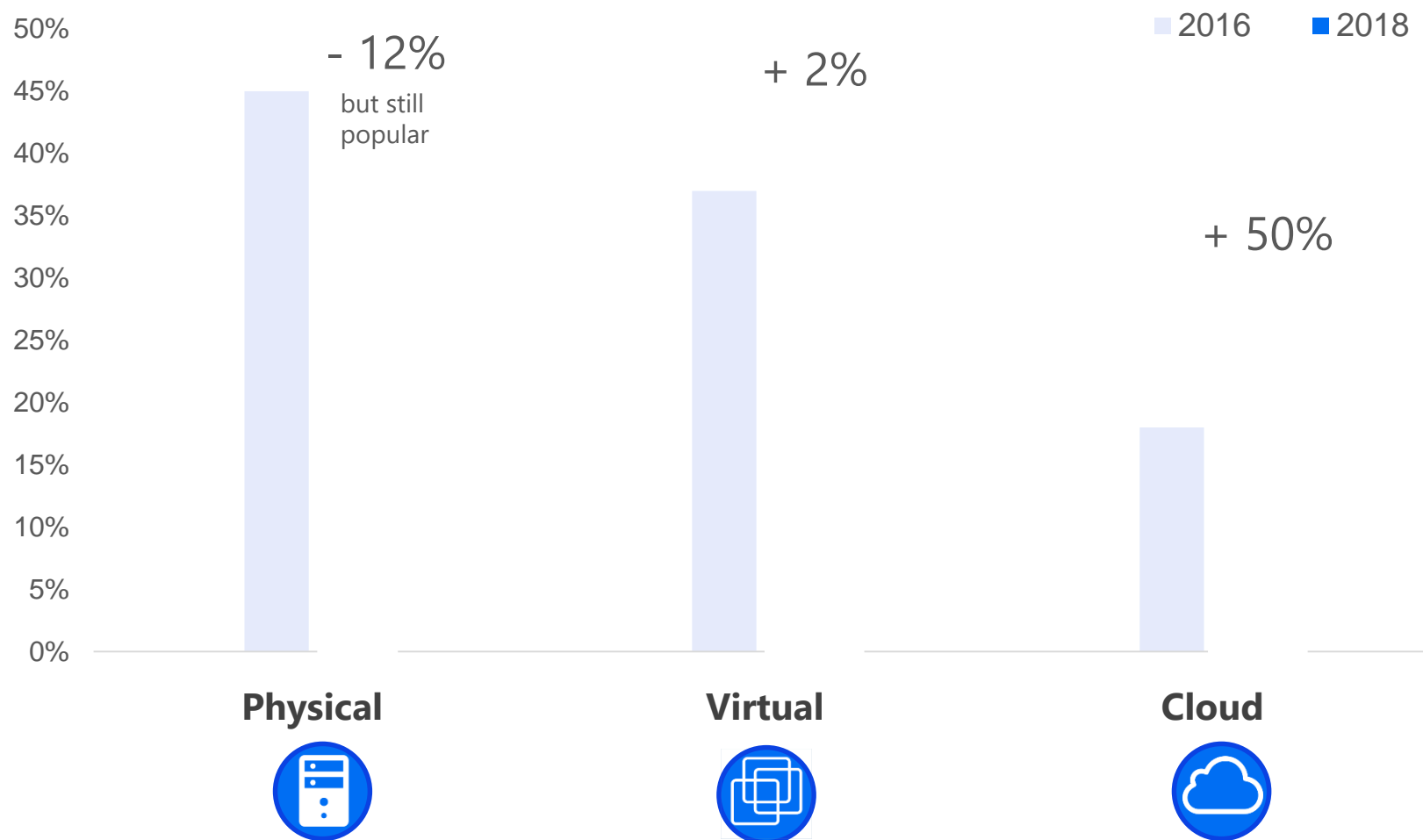
Read-only domain controller (RODC)

Cross-site and real-time security
confirmation





Data is scattered across storage platforms



More challenges to come....

33%

more data to be stored

4.1

average no. of backup solutions

RIGHT



← WRONG

Hardware

Disaster Recovery

Cost Effectiveness

Restore

Deployment

Easy Management

Data
Security

Reliability

Active Backup Suite

Local file backup

Backup from public cloud services

PC

Virtual
Machine

Server

Office 365

G Suite



Employee

With employee's
own user account



Active Backup for Business
Portal

Access and restore



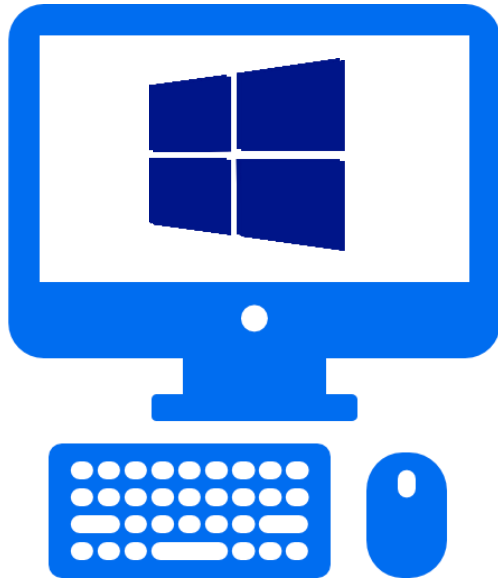
Files



Folders

Physical to Virtual (P2V)

Windows
Physical



Physical to Virtual (P2V)

Windows
Virtual

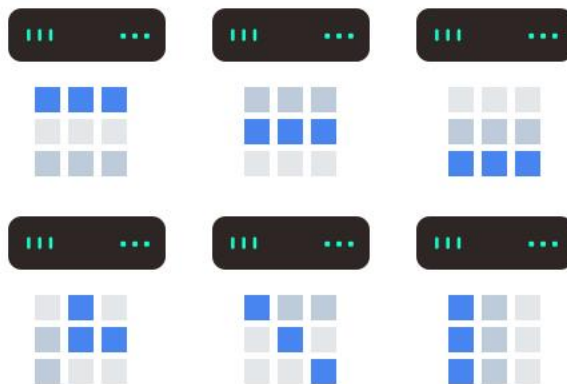


Virtual Machine
Manager





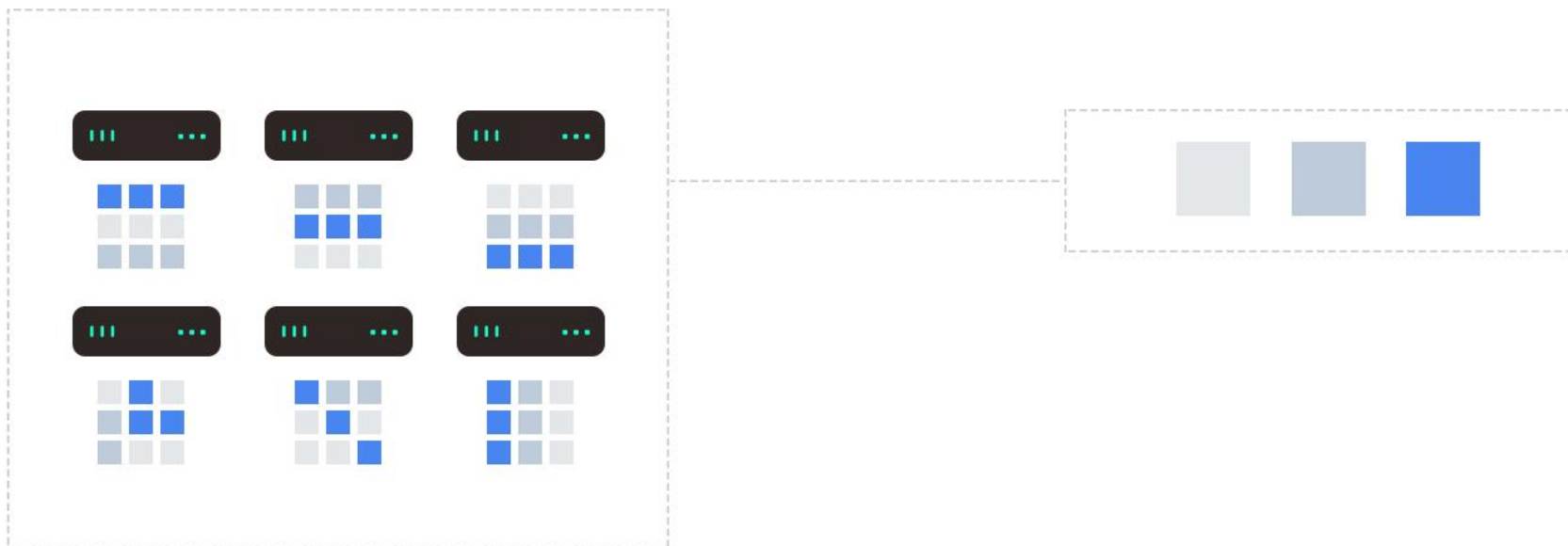
High Efficiency Backup



Total Data **66 TB**



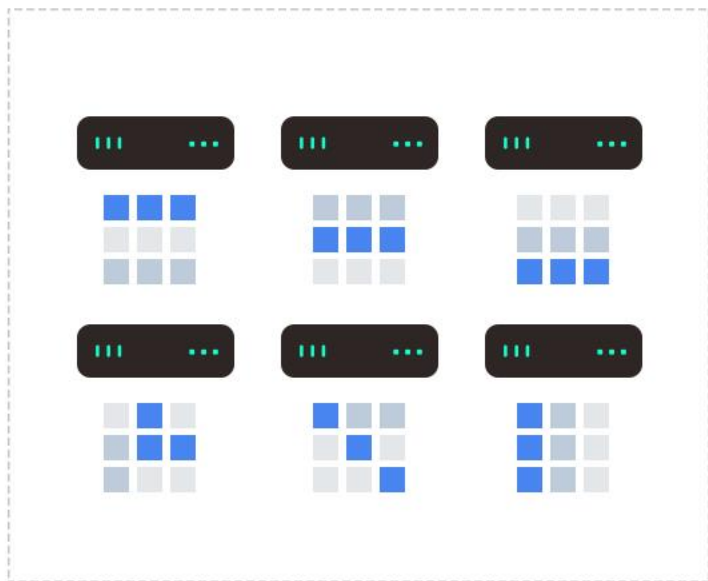
High Efficiency Backup



Total Data **66 TB**



High Efficiency Backup



Total Data **66 TB**



Total Backup Data **17 TB**

Competitor Cost Analysis

- Physical Workloads Backup
- Virtual Workloads Backup

	Synology®		A-brand	
	PC	Server	PC Advanced	Server Advanced
Licensing cost				
3-year Subscription	Free	Free	\$1245 per 5 clients	\$1799 per host
3-year Perpetual + Maintenance			\$809.6 per 5 clients	\$2447 per host
Features				
Mass deployment	V	V	V	V
Application-aware backup	V	V	V	V
Global deduplication	V	V	V	V
Changed Block Tracking (CBT)	V	V	V	V
Concurrent backup constraints	1 – 10	1-10	-	-
Policy-based group management	V	V	V	V
Backup verification	-	Power on video (Backup server)	Data integrity check	Data integrity check
Bare-metal/Volume-level restore	V	V	V (boot media)	V
Universal restore	-	-	V	V
Self-service file restore	V	V	V	V
Instant restore to VMware	-	V	-	v
Instant restore to VMM	-	V	-	-

Competitor Cost Analysis

- Physical Workloads Backup
- Virtual Workloads Backup

Source: US MSRP (July, 2018)

Synology® V-brand A-brand N-brand

Active Backup for
Business (VMware)

Backup & Replication
9.5 Standard

Backup Advanced for
Virtual Host Standard

N for VMware Pro

Licensing cost

3-year Subscription	Free	\$1347 per socket	\$1857 per host	\$888 per socket
3-year Perpetual + Maintenance		\$1050 per socket	\$1751.4 per host	\$638.4 per socket

Features

Snapshot-based backup	v	v	v	v
Replication	-	v	v	v
Backup copy	Next stage	v	v	v
Backup to cloud	Next stage	v	V (paid option)	v
Global deduplication	v	- (by backup task)	v	v
Changed Block Tracking	v	v	v	v
Backup compression	Data transfer compression	v	v	v
Backup verification	Power on video (Backup server)	Ping test, heartbeat, application	Data integrity check	Power on Screenshot (Production site)
File / VM / Instant restore	v	v	v	v
Object restore	-	v	v	v
Instant restore to VMM	v	-	-	-

Full-featured Backup Strategy

Cloud Storage



Office 365 / G Suite



Synology C2

Synology NAS



Active Backup

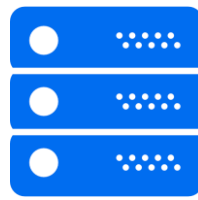


Snapshot Replication

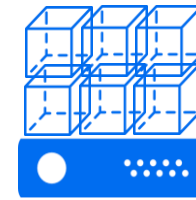
Other Servers/VM



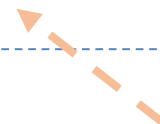
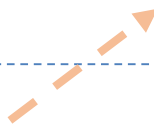
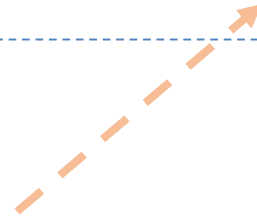
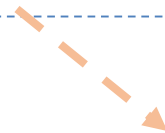
PC



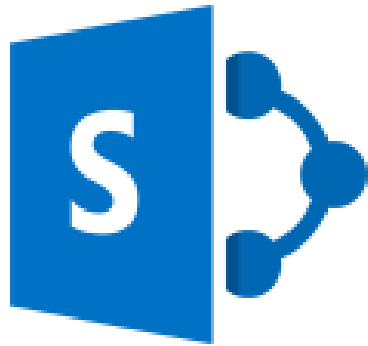
Server



Virtual Machines



Coming soon!



SharePoint support
Through Active Backup for Office 365

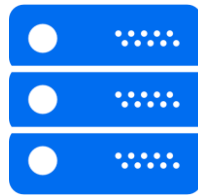


Active Backup Suite

FREE Software Provided



PC



Server



Virtual Machine

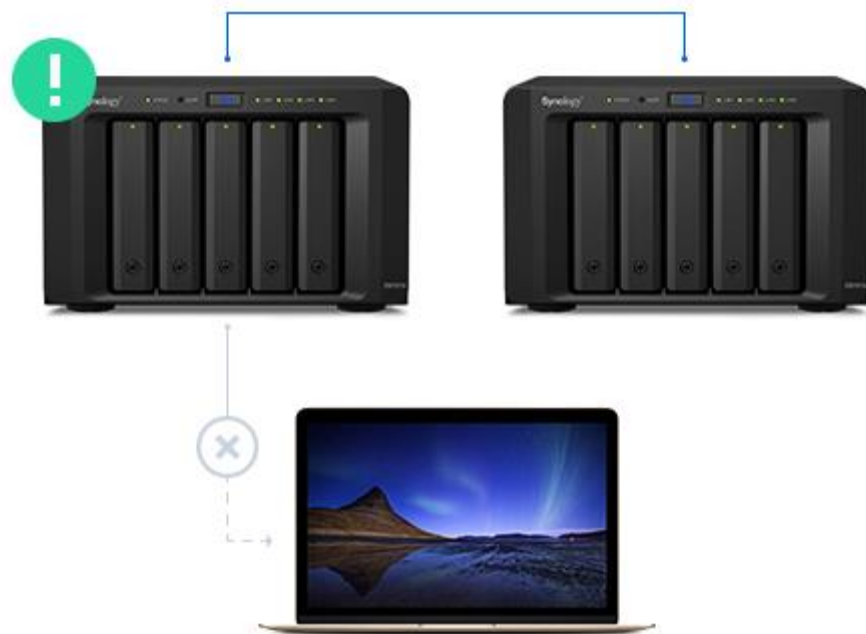


Cloud

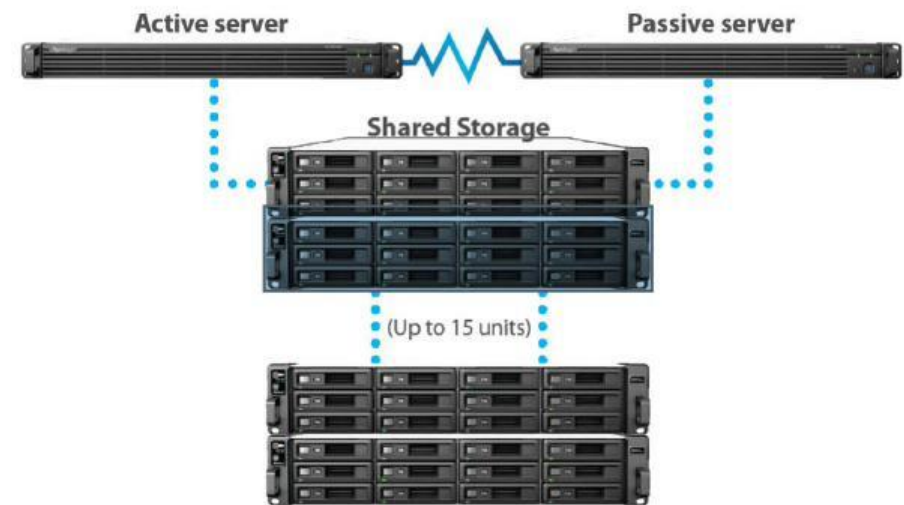


Two is one, and one is none.

- US Navy Seal



High Availability



RC18015xs+ Dual Controller

Unified Controller – UC300

Dedicated **iSCSI** server, equipped with **Dual Active** controller





Dual Active
Xeon D-1521

Up to 64GB
Memory

100,000+
Write IOPS



SATA DOM

- No more installation
- System not influence by services
- Independent from HDD

Extra 4 SSD slots

- No need internal space for SSD cache
- Best practice hint

Dual Protection

- CPU / Memory / Network / Power / SATA Dom / Mother board ...

NTB

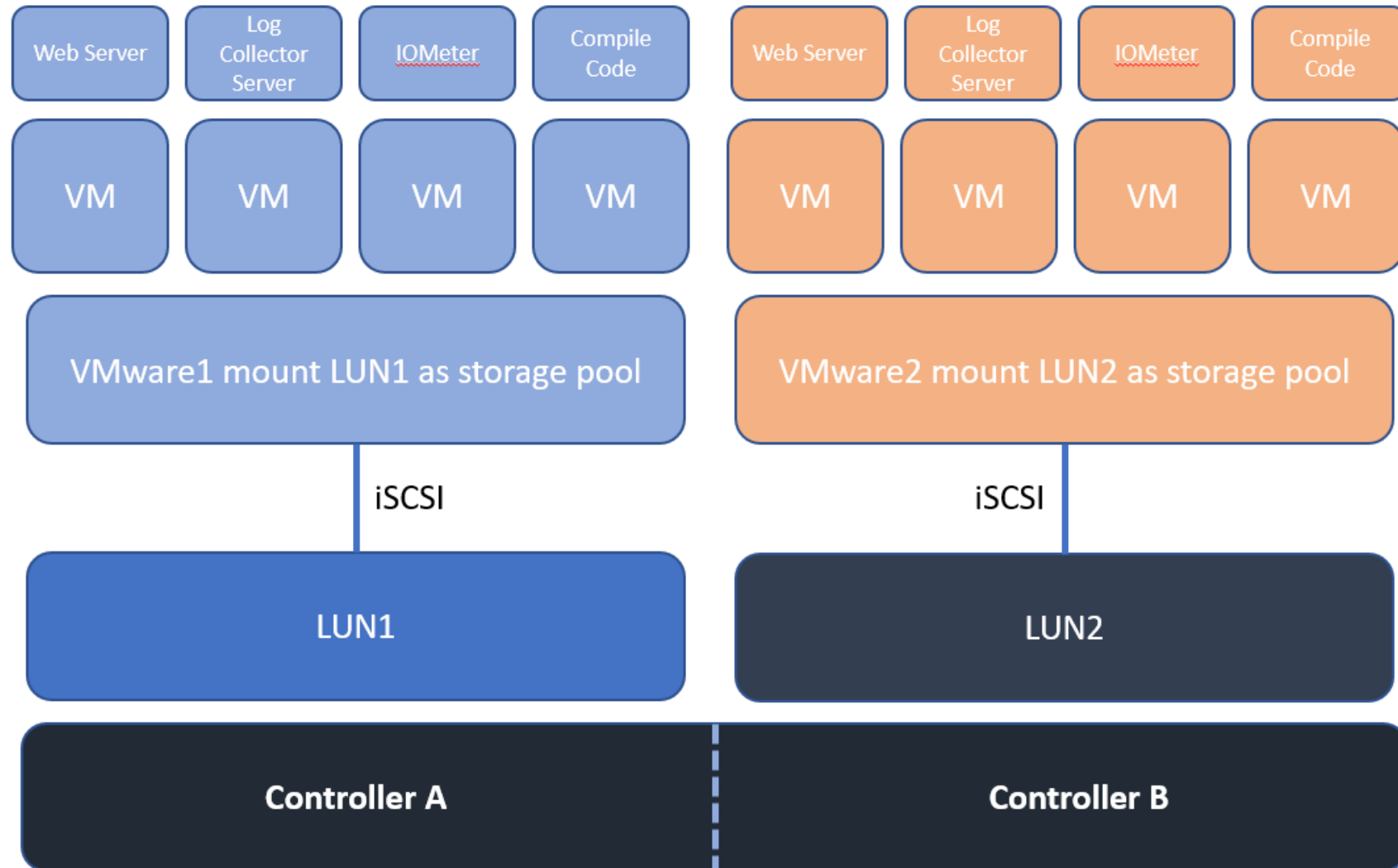
(Non-Transparent Bridge)

- High performance & Low latency (32Gbps)
- More reliable than network
- No extra cost for 10G





Test Scenario – Dual Active



Announcements | NodeBB

10.12.15.34:4567

Web Service

Home / Announcements

New Topic

test 1 8 days ago

Wed Sep 12 05:38:02 2018 1 6 days ago

Wed Sep 12 05:38:16 2018 1 6 days ago

Wed Sep 12 0 6 days ago

WELCOME BACK ADMIN!

You have successfully logged in

root@taipeidemo-virtual-machine: ~/kernel/linux-4.18.7

```
pio/gf119.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/g
pio/gk104.o
LD [M] net/bluetooth/rfcomm/rfcomm.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/i
2c/base.o
CC [M] net/bluetooth/af_bluetooth.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/i
2c/nv04.o
CC [M] net/bluetooth/hci_core.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/i
2c/nv4e.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/i
2c/nv50.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/i
2c/g94.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/i
2c/gf117.o
CC [M] net/bluetooth/hci_conn.o
CC [M]
2c/gf119
CC [M]
2c/gk104
```


Compile code

UC300 Monitor


CH-UC300 - Synology UC300

10.12.12.80:5000

High Availability Manager

 **Normal**
System is functional

Controller Information



Controller B — Controller A

Host Utilization

	Controller A (Normal)	Controller B (Normal)
CPU Utilization	45%	47%
CPU Load Average	8.44 / 1 min	13.21 / 1 min
	9.11 / 5 min	11.93 / 5 min
	9.81 / 15 min	11.97 / 15 min
Memory	6%	6%
Disk Activity	15%	16%

vSphere - demo-ubuntu-lun2-2 x demo-ubuntu-lun1-2

Log Collector Services

demo-ubuntu-lun1-2

Logstalgia

Wednesday, April 22, 2009 15:47:08

aol.com

ask.com

comcast.net

dialup.xtra.co.nz

global-gateway.net.nz

paradise.net.nz

192.147.202-

192.240.42-

192.32.127-

CSS

Script

/js/adclient.js

/js/menu.js

Images

/images/* (11)

Misc

/adclick.php?c=* (8)

/gallery.php?s


/latest.php?ca

/news.html

/stories.php?d

/stories/enter

00015043



47998.93

IO Stress (IOPS)

Settings

Total I/Os per Second

Range 0 Show Trace

Test Controls

Next >> Stop

Login to your account | NodeBB

10.12.15.34:451

NodeBB

Home / Login

Username / Email

admin

Password

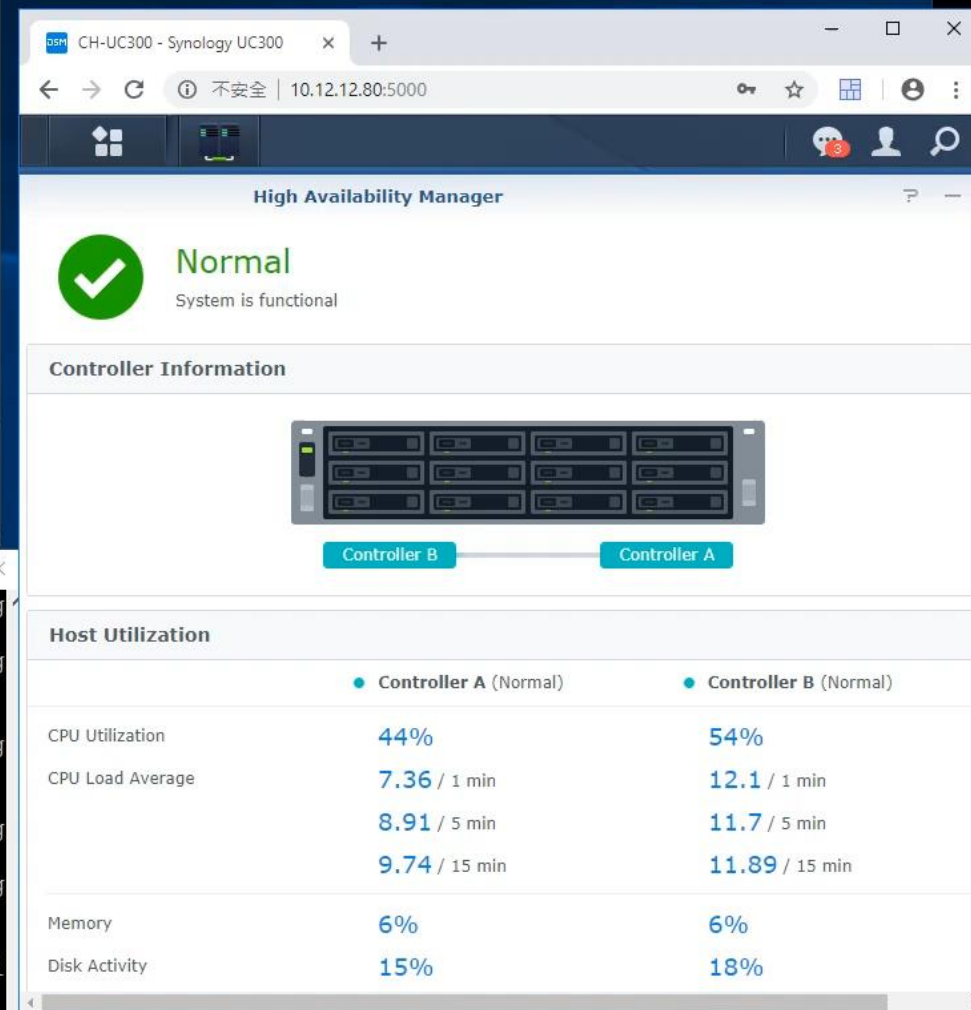
.....

☒ Remember Me?

Login

Don't have an account? [Register](#) [Forgot Password?](#)

```
root@taipeidemo-virtual-machine: ~/kernel/linux-4.18.7
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/g
pio/nv10.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/g
pio/nv50.o
CC [M] net/bluetooth/rfcomm/sock.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/g
pio/g94.o
CC [M] net/bluetooth/rfcomm/tty.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/g
pio/gf119.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/g
pio/gk104.o
LD [M] net/bluetooth/rfcomm/rfcomm.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/i
2c/base.o
CC [M] net/bluetooth/af_bluetooth.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/i
2c/nv04.o
CC [M] net/bluetooth/hci_core.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/i
2c/nv4e.o
CC [M] drivers/gpu/drm/nouveau/nvkm/subdev/i
2c/nv50.o
```



vSphere - demo-ubuntu-lun2-2 x demo-ubuntu-lun1-2 x

不安全 | https://10.12.15.124/ui/webconsole.html?vmId...

demo-ubuntu-lun1-2

強制使用美式鍵盤配置 檢視全螢幕 傳送 Ctrl+Alt+Delete

Logstalgia

Wednesday, April 22, 2009 15:47:04

ask.com

200 20200 200

302

200

192.240.42-

00015023

CSS
/styles/msie7.css

Script
/js/adclient.js
/js/menu.js

Images
/images/* (17)

Misc
/adclick.php?c=* (3)
/gallery.php?section=busin
/gallery.php?section=entert
/latest.php?category=natio
/news.html
/stories.php?date=2007
/stories/entertainment/0*



53499.16
All Managers - Total I/Os per Second

Settings

Total I/Os per Second

Range 0 ☐ Show Trace

Test Controls



Dual Active Controller

Breakthrough model for Enterprise market



Evolution of DSM Platform

Deep Machine Learning

Enhanced Data Safety

Hardware Resilience & Robustness



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