

# 北京博通创新新品介绍



**Broadcom 三模式12Gb/s 系列产品**



**群晖NAS**



**Promise FC SAN**



# Broadcom 12Gb/s 三模式产品介绍

## **Broadcom 三模式 12G SAS RAID**

**9440-8I**

**9460-8I/9460-16I**

**9480-8I8E**

**9560-8i/9560-16i**

## **Broadcom 三模式 12G SAS HBA**

**9400-8I/9400-16I /9405W-16I**

**9400-8E/9400-8I8E/9400-16E/9405W-16E**

**9500-8i/9500-16i**

# 9440-8i



| 特定参数                 | 内容                                           |
|----------------------|----------------------------------------------|
| RAID-Chip Controller | SAS3408 (IOC)                                |
| Host Bus Type        | x8 lane PCI Express® 3.1                     |
| Cache Memory         | ——                                           |
| Devices Supported    | SAS/SATA: 63, NVMe: 4 x4, up to 24 x2 or x4* |
| Internal Connectors  | 2 x4 SFF-8643                                |
| MTBF                 | >1,343,187 hours                             |
| RAID                 | RAID levels 0, 1, 5, 10 and 50 不支持JBOD       |

# 9460-8i



| 特定参数                 | 内容                                          |
|----------------------|---------------------------------------------|
| RAID-Chip Controller | SAS3508 (Dual core)                         |
| Host Bus Type        | x8 lane PCI Express® 3.1                    |
| Cache Memory         | 2GB 2133MHz DDR4 SDRAM                      |
| Devices Supported    | SAS/SATA: 240, NVMe: 24                     |
| Internal Connectors  | 2 Mini-SAS SFF8643 (Horizontal mount)       |
| Cache Protection     | CacheVault CVPM05                           |
| RAID                 | RAID levels 0, 1, 5, 6, 10, 50, and 60 JBOD |

# 9460-16i



| 特定参数                 | 内容                                          |
|----------------------|---------------------------------------------|
| RAID-Chip Controller | SAS3516 (Dual core)                         |
| Host Bus Type        | x8 lane PCI Express® 3.1                    |
| Cache Memory         | 4GB 2133MHz DDR4 SDRAM                      |
| Devices Supported    | SAS/SATA: 240, NVMe: 24                     |
| Internal Connectors  | 4 Mini-SAS SFF8643 (Horizontal mount)       |
| Cache Protection     | CacheVault CVPM05                           |
| RAID                 | RAID levels 0, 1, 5, 6, 10, 50, and 60 JBOD |

# 9480-8i8e



| 特定参数                 | 内容                                                                |
|----------------------|-------------------------------------------------------------------|
| RAID-Chip Controller | SAS3516 (Dual core)                                               |
| Host Bus Type        | x8 lane PCI Express® 3.1                                          |
| Cache Memory         | 4GB 2133MHz DDR4 SDRAM                                            |
| Devices Supported    | SAS/SATA: 240, NVMe: 24                                           |
| Connectors           | 2 Mini-SAS SFF8643<br>(Horizontal mount)<br>2 Mini-SAS HD SFF8644 |
| Cache Protection     | CacheVault CVPM05                                                 |
| RAID                 | RAID levels 0, 1, 5, 6, 10, 50,<br>and 60 JBOD                    |

# 9540-8i



| 特定参数                 | 内容                                                               |
|----------------------|------------------------------------------------------------------|
| RAID-Chip Controller | SAS3808                                                          |
| Data Transfer Rates  | 12Gb/s SAS and 16GT/s PCIe Gen4 (NVMe) compliant x8 lan PCIE 4.0 |
| Cache Memory         | —                                                                |
| Devices Supported    | SAS/SATA: 63, NVMe: 4                                            |
| Internal Connectors  | 1 x8 SFF-8654 (Horizontal mount)                                 |
| MTBF                 | >3,000,000 hours at 40° C                                        |
| RAID                 | RAID levels 0,00,1 and 10                                        |

# 9560-8i



| 特定参数                 | 内容                                                               |
|----------------------|------------------------------------------------------------------|
| RAID-Chip Controller | SAS3908 (Dual core)                                              |
| Data Transfer Rates  | 12Gb/s SAS and 16GT/s PCIe Gen4 (NVMe) compliant x8 lan PCIE 4.0 |
| Cache Memory         | 4GB,                                                             |
| Devices Supported    | SAS/SATA: 240, NVMe: 32                                          |
| Connectors           | 1 x8 SFF-8654 (SlimSAS)                                          |
| Cache Protection     | CacheVault CVPM05                                                |
| RAID                 | RAID levels 0, 00, 1, 10, 5, 6, 50, 60 JBOD                      |

# 9560-16i



| 特定参数                 | 内容                                                               |
|----------------------|------------------------------------------------------------------|
| RAID-Chip Controller | SAS3916 (Dual core)                                              |
| Data Transfer Rates  | 12Gb/s SAS and 16GT/s PCIe Gen4 (NVMe) compliant x8 lan PCIE 4.0 |
| Cache Memory         | 8GB                                                              |
| Devices Supported    | SAS/SATA: 240, NVMe: 32                                          |
| Connectors           | 2 x8 SFF-8654 (SlimSAS)                                          |
| Cache Protection     | CacheVault CVPM05                                                |
| RAID                 | RAID levels 0, 00, 1, 10, 5, 50, 6, 60 JBOD                      |

# 9580-8i8e



| 特定参数                 | 内容                                                               |
|----------------------|------------------------------------------------------------------|
| RAID-Chip Controller | SAS3916 (Dual core)                                              |
| Data Transfer Rates  | 12Gb/s SAS and 16GT/s PCIe Gen4 (NVMe) compliant x8 lan PCIE 4.0 |
| Cache Memory         | 8GB                                                              |
| Devices Supported    | SAS/SATA: 240, NVMe: 32                                          |
| Connectors           | 1 x8 SFF-8654 (SlimSAS)<br>2 x4 SFF-8644                         |
| Cache Protection     | CacheVault CVPM05                                                |
| RAID                 | RAID levels 0, 00, 1, 10, 5,50, 6, 60, JBOD                      |

# Cache Protection



**CVPM05**

05-50039-00

FBU345

9560-16i

9560-8i

9580-8i8e

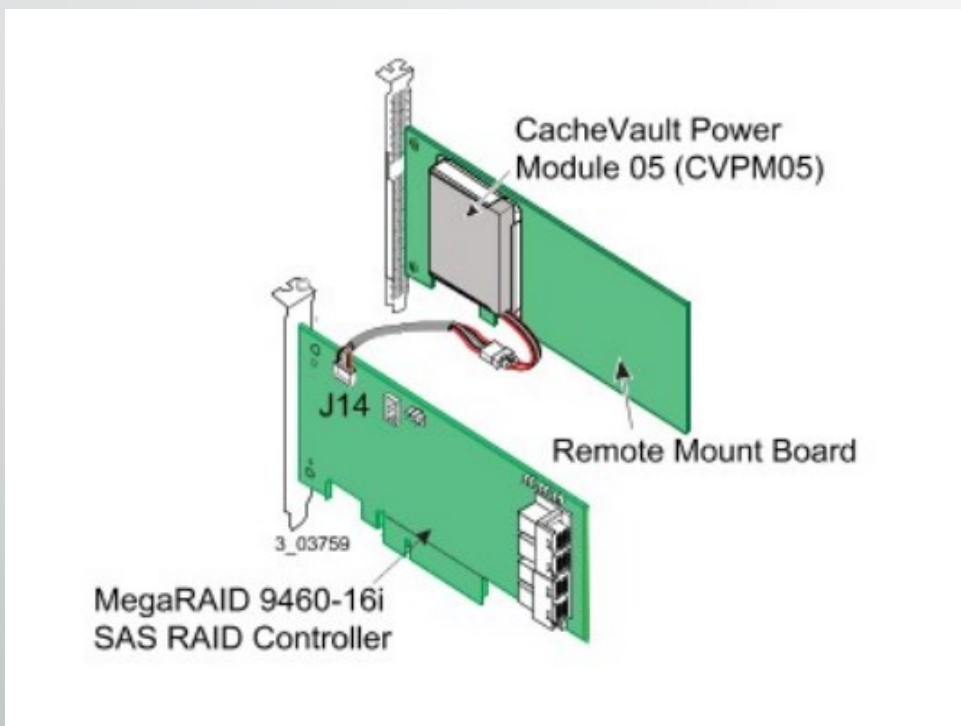
9460-16i

9460-8i

9480-8i8e

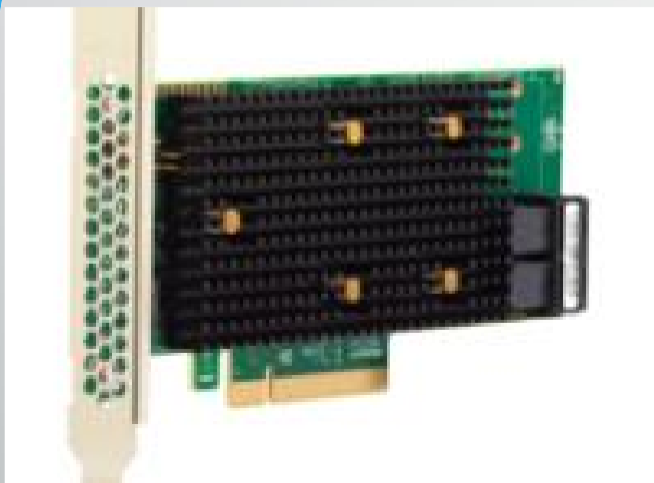
9365-28i\*

# CVPM05 连接方式



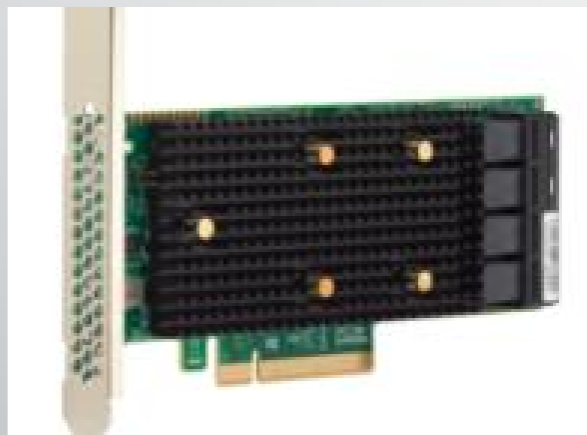
远端链接

# HBA 9400-8i



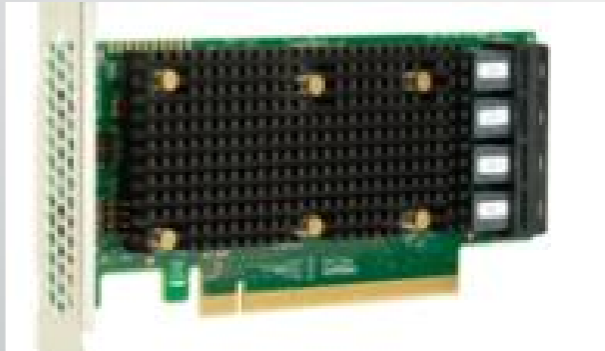
| 特定参数                           | 内容                                       |
|--------------------------------|------------------------------------------|
| I/O Processor / SAS Controller | SAS3408 I/O controller (IOC)             |
| Host Bus Type                  | x8 lane PCI Express® 3.1                 |
| Brackets                       | Full height and low profile vented       |
| Devices Supported              | SAS/SATA: 1024; NVMe: 24                 |
| Connectors                     | 2 Mini-SAS SFF8643<br>(Horizontal mount) |
| MTBF                           | > 4,500,000 hours at 40° C               |
| PCI Power                      | 10.05W                                   |

# HBA 9400-16i



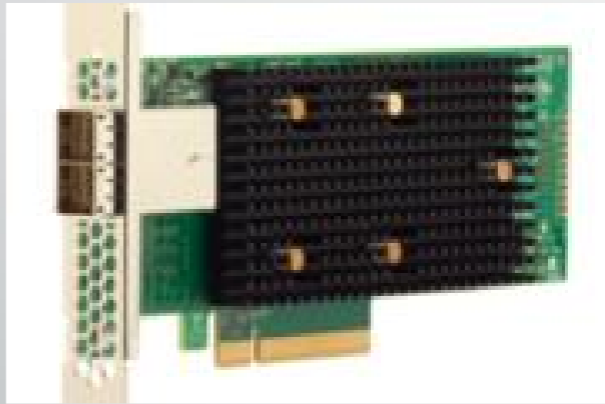
| 特定参数              | 内容                                    |
|-------------------|---------------------------------------|
| I/O Controller    | SAS3416                               |
| Host Bus Type     | x8 lane PCI Express® 3.1              |
| Brackets          | Full height and low profile vented    |
| Devices Supported | SAS/SATA: 1024; NVMe: 24              |
| Connectors        | 4 Mini-SAS SFF8643 (Horizontal mount) |
| MTBF              | > 4,500,000 hours at 40° C            |
| PCI Power         | 11.95W                                |

# HBA 9405W-16I



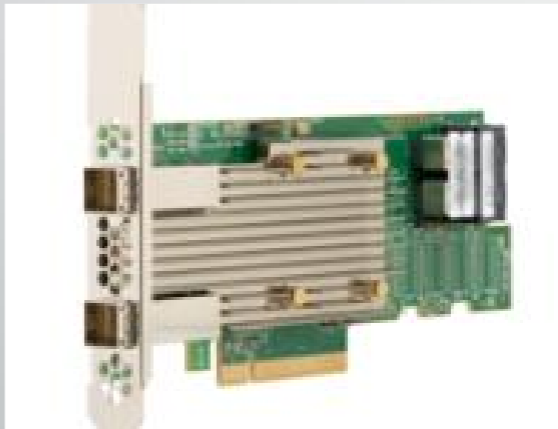
| 特定参数              | 内容                                    |
|-------------------|---------------------------------------|
| I/O Controller    | SAS3616W                              |
| Host Bus Type     | x16 lane PCI Express® 3.1             |
| Brackets          | Full height and low profile vented    |
| Devices Supported | SAS/SATA: 1024; NVMe: 24              |
| Connectors        | 4 Mini-SAS SFF8643 (Horizontal mount) |
| MTBF              | > 4,500,000 hours at 40° C            |
| PCI Power         | 14.0W                                 |

# HBA 9400-8E



| 特定参数              | 内容                                       |
|-------------------|------------------------------------------|
| I/O Controller    | SAS3408                                  |
| Host Bus Type     | x8 lane PCI Express® 3.1                 |
| Brackets          | Full height and low profile vented       |
| Devices Supported | SAS/SATA: 1024                           |
| Connectors        | 2 Mini-SAS HD SFF8644 (Horizontal mount) |
| MTBF              | > 4,500,000 hours at 40° C               |
| PCI Power         | 9.48W                                    |

# HBA 9400-8I8E



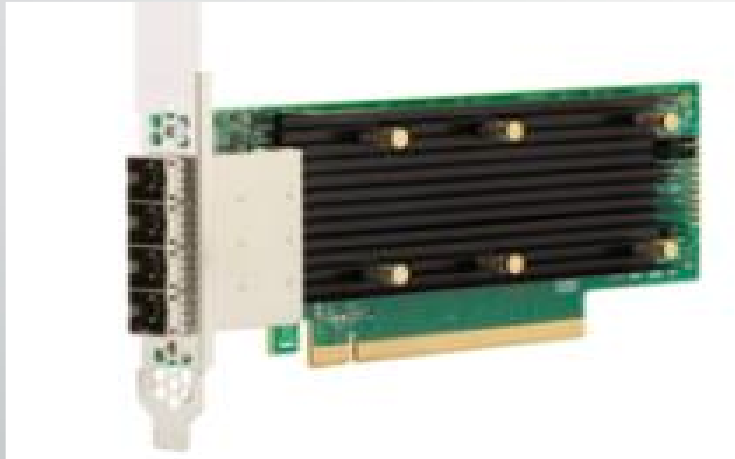
| 特定参数              | 内容                                             |
|-------------------|------------------------------------------------|
| I/O Controller    | SAS3516                                        |
| Host Bus Type     | x8 lane PCI Express® 3.1                       |
| Brackets          | Full height and low profile vented             |
| Devices Supported | SAS/SATA: 1024; NVMe: 24                       |
| Connectors        | 2 Mini-SAS HD SFF8644<br>2 Mini-SAS x4 SFF8643 |
| MTBF              | > 4,500,000 hours at 40° C                     |
| PCI Power         | 12.39W                                         |

# HBA 9400-16E



| 特定参数              | 内容                                       |
|-------------------|------------------------------------------|
| I/O Controller    | SAS3416                                  |
| Host Bus Type     | x8 lane PCI Express® 3.1                 |
| Brackets          | Full height and low profile vented       |
| Devices Supported | SAS/SATA: 1024                           |
| Connectors        | 4 Mini-SAS HD SFF8644 (Horizontal mount) |
| MTBF              | > 4,500,000 hours at 40° C               |
| PCI Power         | 11.18W                                   |

# HBA 9405W-16E



| 特定参数              | 内容                                       |
|-------------------|------------------------------------------|
| I/O Controller    | SAS3616W                                 |
| Host Bus Type     | x16 lane PCI Express® 3.1                |
| Brackets          | Full height and low profile vented       |
| Devices Supported | SAS/SATA: 1024                           |
| Connectors        | 4 Mini-SAS HD SFF8644 (Horizontal mount) |
| MTBF              | > 4,500,000 hours at 40° C               |
| PCI Power         | 14.00W                                   |

# HBA 9500-8i



| 特定参数              | 内容                                 |
|-------------------|------------------------------------|
| I/O Controller    | SAS3808                            |
| Host Bus Type     | x8 lane PCI Express® 4.0           |
| Brackets          | Full height and low profile vented |
| Devices Supported | SAS/SATA: 1024, NVMe: 32           |
| Connectors        | 1 x8 SFF-8654 (SlimSAS)            |
| MTBF              | > 5,000,000 hours at 40° C         |
| PCI Power         | 5.96W                              |

# HBA 9500-16i



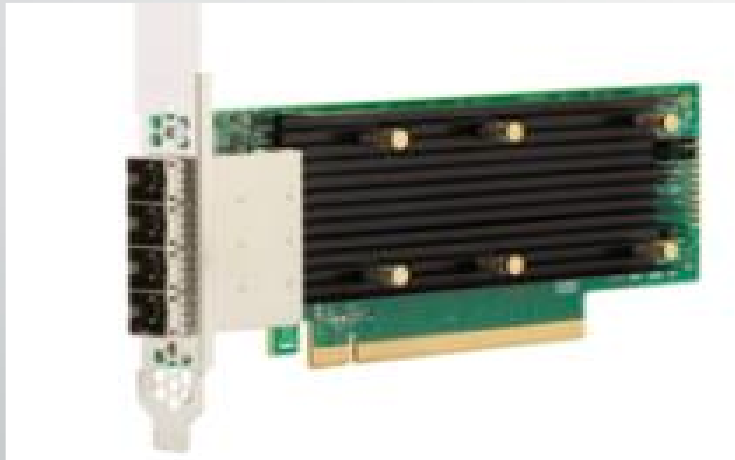
| 特定参数              | 内容                                 |
|-------------------|------------------------------------|
| I/O Controller    | SAS3816                            |
| Host Bus Type     | x8 lane PCI Express® 4.0           |
| Brackets          | Full height and low profile vented |
| Devices Supported | SAS/SATA: 1024, NVMe: 32           |
| Connectors        | 2 x8 SFF-8654 (SlimSAS)            |
| MTBF              | > 5,000,000 hours at 40° C         |
| PCI Power         | 8.9W                               |

# 9500-8E



| 特定参数              | 内容                                       |
|-------------------|------------------------------------------|
| I/O Controller    | SAS3808                                  |
| Host Bus Type     | x8 lane PCI Express® 4.0                 |
| Brackets          | Full height and low profile vented       |
| Devices Supported | SAS/SATA: 1024, NVMe: 32                 |
| Connectors        | 2 Mini-SAS HD SFF8644 (Horizontal mount) |
| MTBF              | > 5,000,000 hours at 40° C               |
| PCI Power         | 6.12W                                    |

# HBA 9500-16E



| 特定参数              | 内容                                       |
|-------------------|------------------------------------------|
| I/O Controller    | SAS3816                                  |
| Host Bus Type     | x8 lane PCI Express® 4.0                 |
| Brackets          | Full height and low profile vented       |
| Devices Supported | SAS/SATA: 1024, NVMe: 32                 |
| Connectors        | 4 Mini-SAS HD SFF8644 (Horizontal mount) |
| MTBF              | > 4,500,000 hours at 40° C               |
| PCI Power         | 8.74W                                    |



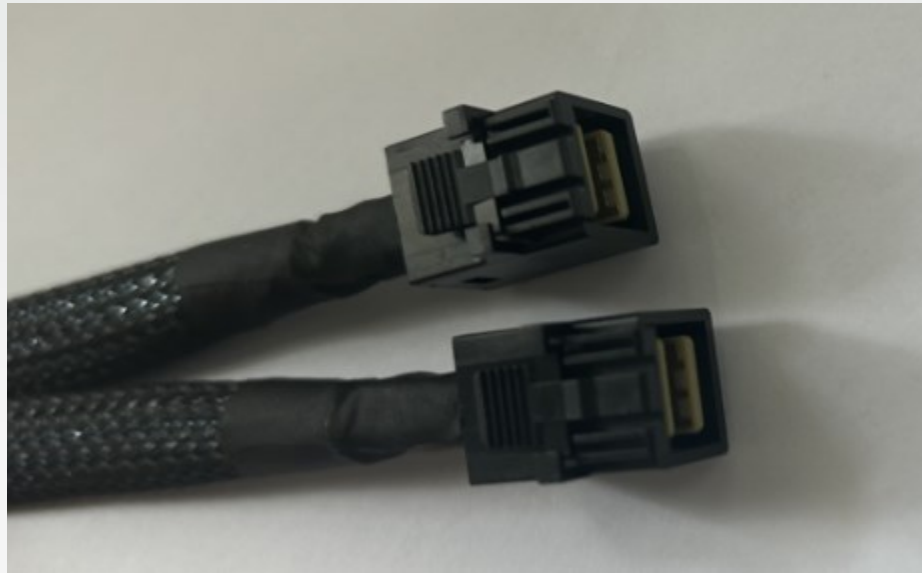
# 连接线缆介绍

# X8SFF-8643的转接线

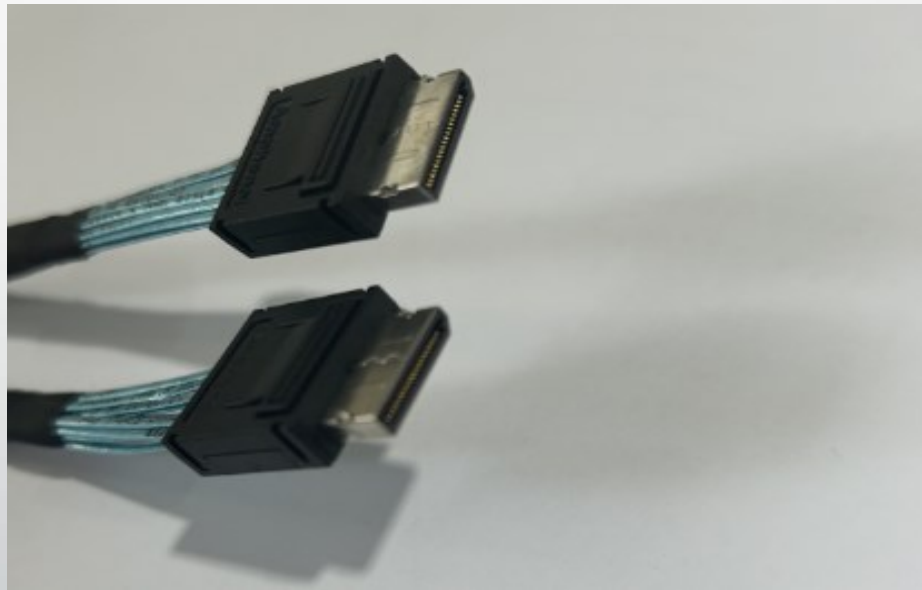


| To Controller | To Drives/Backplane                | Compatible Controllers<br>(i = internal,<br>e = external connectivity)                                                                                |
|---------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| x8 SFF-8643   | 2 x4 SFF-8643 Mini SAS HD (White)  | Internal Connectivity:<br>MegaRAID 9460 (-16i, 8i)<br>MegaRAID 9480 (-8i8e)<br>MegaRAID 9440 (-8i)<br>HBA 9400 (-16i, -8i, -8i8e)<br>HBA 9405W (-16i) |
| x8 SFF-8643   | 2 x4 SFF-8612 OCuLink              |                                                                                                                                                       |
| x8 SFF-8643   | 2 x4 SFF-8654 SlimLine             |                                                                                                                                                       |
| x8 SFF-8643   | 2 x4 SFF-8639 Direct Drive Connect |                                                                                                                                                       |

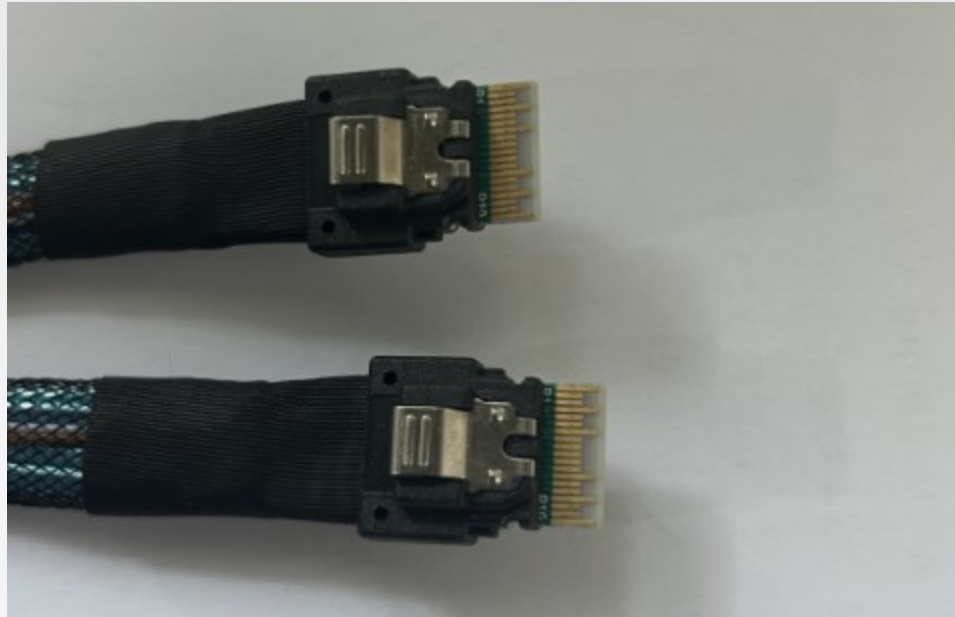
2 x4SFF-8643



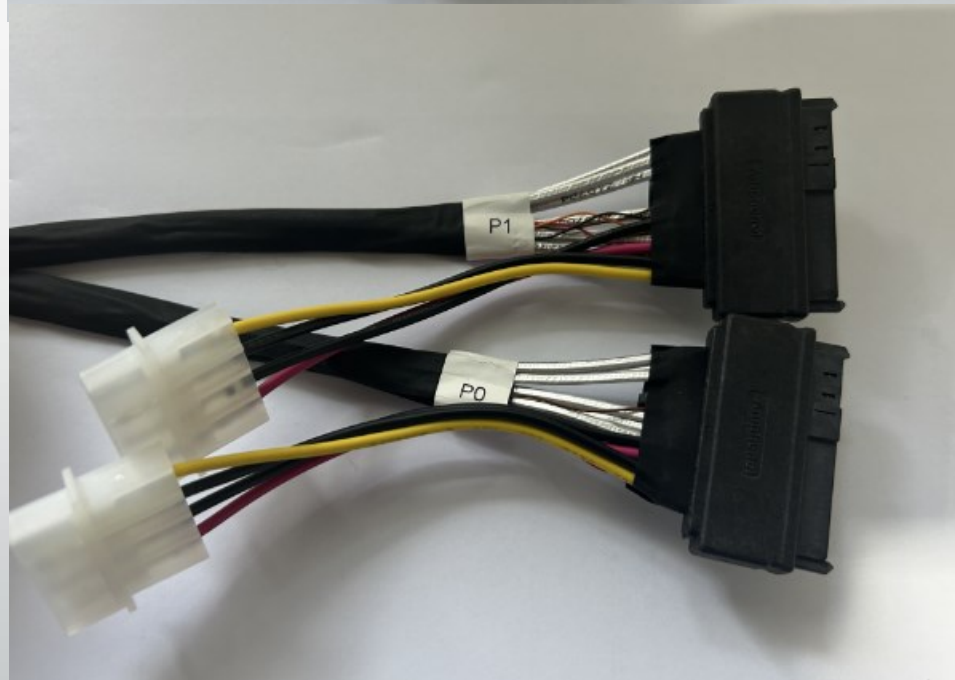
2 X4SFF-8611



2 X4SFF-8654



2X4SFF-8639

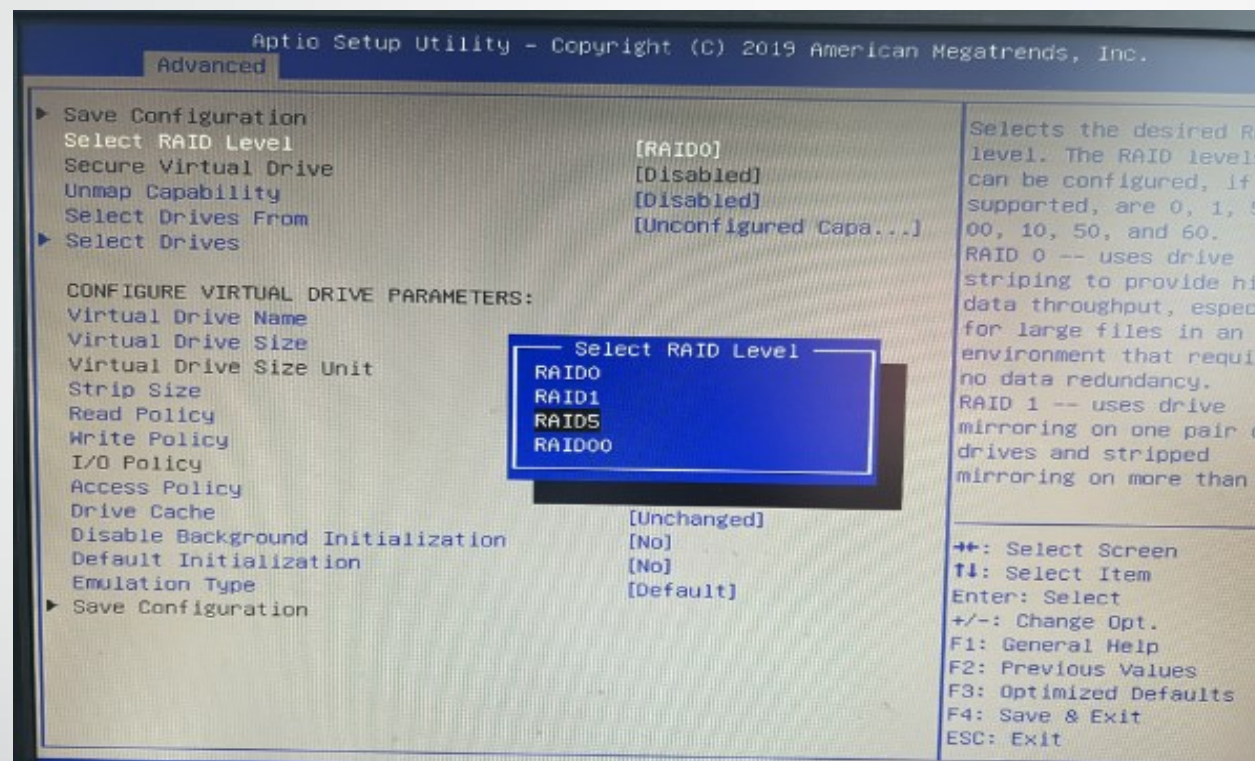


# X8SFF-8654转接线

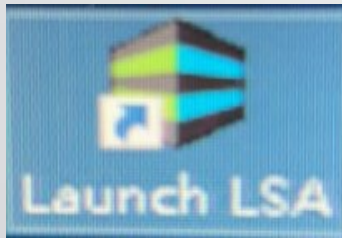


| To Controller      | To Devices/Backplane                         | Compatible Controllers<br>(i = internal,<br>e = external connectivity) |
|--------------------|----------------------------------------------|------------------------------------------------------------------------|
| SFF-8654 (SlimSAS) | 2 x4 SFF-8612 (OCuLink)                      | 9560-16i<br>9560-8i<br>9580-8i8e<br>9500-16i<br>9500-8i                |
| SFF-8654 (SlimSAS) | 2 x4 SFF-8643 Mini SAS HD (NVMe Connection)* |                                                                        |
| SFF-8654 (SlimSAS) | 2 x4 SFF-8643 Mini SAS HD (SAS Connections)  |                                                                        |
| SFF-8654 (SlimSAS) | 2 x4 SFF8654 SlimSAS                         |                                                                        |
| SFF-8654 (SlimSAS) | 2xU.2 Direct Connect                         |                                                                        |
| SFF-8654 (SlimSAS) | 8xU.3 Direct Connect                         |                                                                        |
| SFF-8654 (SlimSAS) | 1 x8 SFF8654 SlimSAS                         |                                                                        |

# 管理Broadcom 控制器的三种方式



HII (UEFI Human Interface Infrastructure)



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Configured Capacity 0 KB of 2.728 TB

|                             |                                   |           |                              |
|-----------------------------|-----------------------------------|-----------|------------------------------|
| Serial Number<br>SKB3171026 | SAS Address<br>0x500052b20a256e40 | Alarm<br> | Driver Version<br>7.71603.00 |
|-----------------------------|-----------------------------------|-----------|------------------------------|

Personality  
Profile Mana  
Configure  
Update Firmw  
Firmware Versi  
2004  
Show Events  
More Action

Go back to Drive Group, Drives and Other Hardware list Close

### Simple Configuration

Step 1/1: Choose your configuration settings

1. RAID Level Setting [Compare and select](#)

RAID 0 This RAID level is suitable for high performance with zero data redundancy. Choose this option only for non-critical data.

RAID 0

RAID 1

2. RAID 5 ☒ How many drives do you wish to create?

1 each with capacity of 2.727 TB

3. Miscellaneous Drive Attributes

Assign Hot Spare Hot Spare will be selected depending upon the availability of High End Hot Spare candidate drives. A Hot Spare drive will take over for a drive if a failure happens, ensuring the data remain intact.

Finish

LSI Storage Authority (LSA)

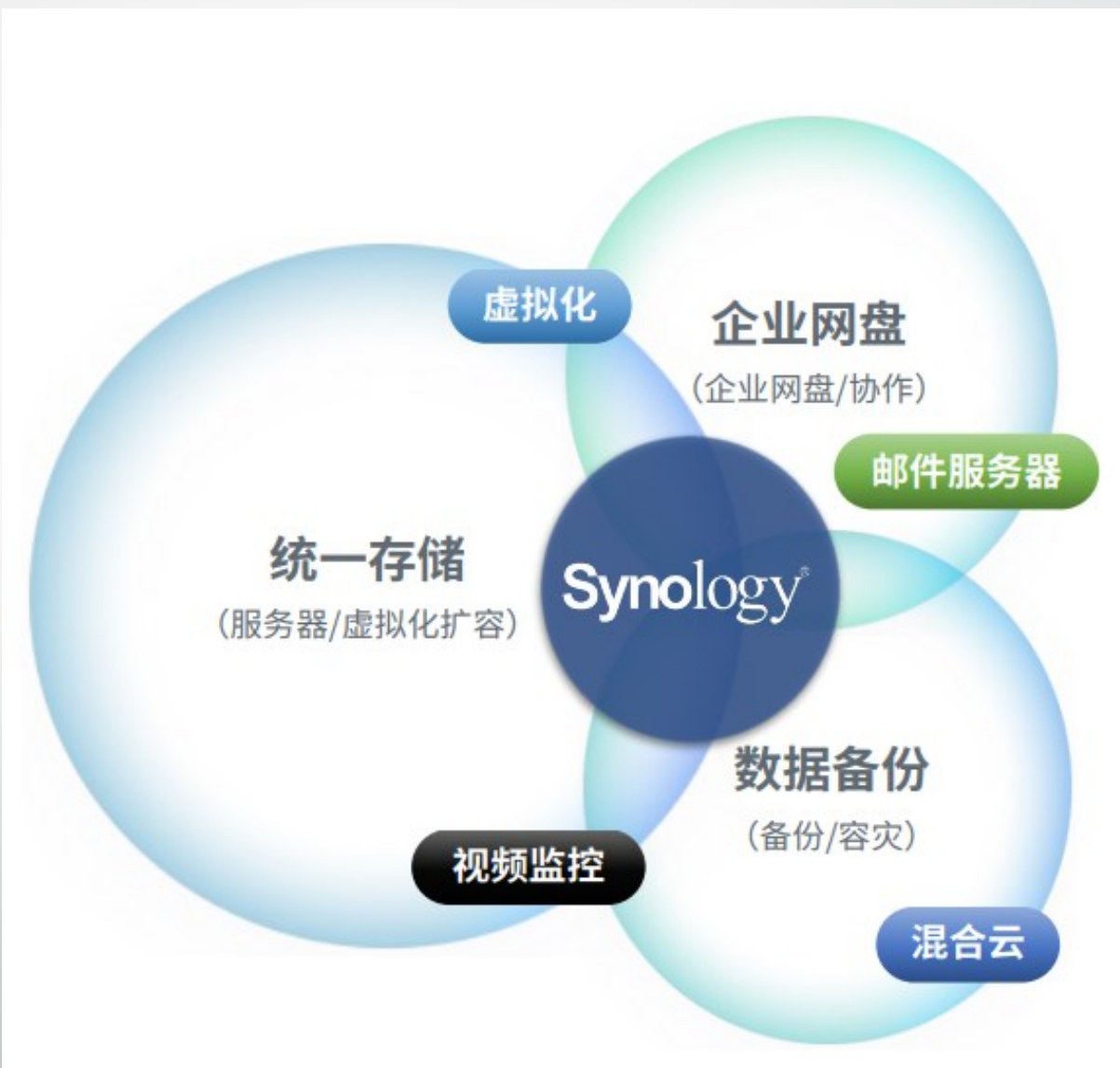
```
[root@localhost ~]# storcli64 -h
Storage Command Line Tool  Ver 007.0606.0000.0000 Mar 20, 2018

(c)Copyright 2018, AVAGO Technologies, All Rights Reserved.

storcli -v
storcli -h| -help| ?
storcli -h| -help| ? legacy
storcli show
storcli show all
storcli show ctrlcount
storcli show file=<filepath>
storcli /cx add vd r[0|1|5|6|00|10|50|60]
    [Size=<VD1_Sz>,<VD2_Sz>,..|all] [name=<VDNAME1>,..]
    drives=e:s|e:s-x|e:s-x,y,e:s-x,y,z [PDperArray=x][SED]
    [pdcache=on|off|default][pi][DimmerSwitch(ds)=default|automatic(auto)|
    none|maximum(max)|MaximumWithoutCaching(maxnocache)][WT|WB|AWB][nora|ra]
    [direct|cached] [cachevd] [Strip=<8|16|32|64|128|256|512|1024>]
    [AfterVd=X] [EmulationType=0|1|2] [Spares = [e:]s|[e:]s-x|[e:]s-x,y]
    [force][ExclusiveAccess] [Cbsize=0|1|2 Cbmode=0|1|2|3|4|7]
storcli /cx add vd each r0 [name=<VDNAME1>,..] [drives=e:s|e:s-x|e:s-x,y]
```

## StorCLI (command-line interface)

# 群晖NAS



# Promise SAN



**ISCSI FC SAN**



# Promise SAN

Host A



Host B



ISCSI FC SAN



# Q & A

