T-Series

Tool-less 12G Enclosure Solution

AGENDA

- Highlights of T-series
- Chassis design advantages
- Power saving advantage
- Backplane & Performance
- 3 solution mix of using T-series
- T-series SKUs

T Series Enclosures

2ET
2U 12 BAY 3.5

3ET
3U 16 BAY 3.5

4ET
4U 24 BAY 3.5

2AT
2U 24 BAY 2.5

4BT 4U 36 BAY 3.5

Highlights of T-series

T series is an AIC rackmount server enclosure product series with 12G SAS expander and Non-EOB support both NVMe and AS/SATA drives

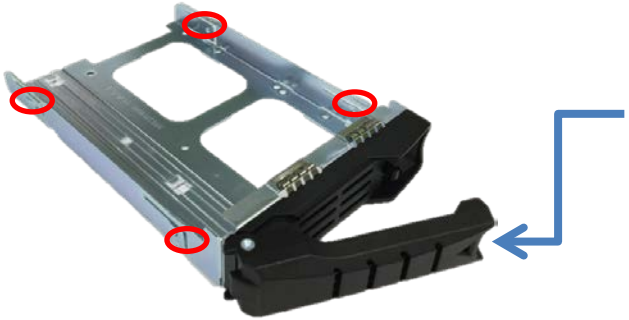
- Tool-less design from inside out to save workmanship and time for installing HDD and easy maintenance
- Power saving
- Brand new Industrial Design T Tray family

Tool-less

1. HDD Tray
2. Enclosure Top Cover
3. Backplane

4 areas have dimples to hold HDD when push into chassis

Toolless T Tray



Simply push the button and pull the tray out

Reserve holes for 2.5” HDD mounting with screw

T Tray

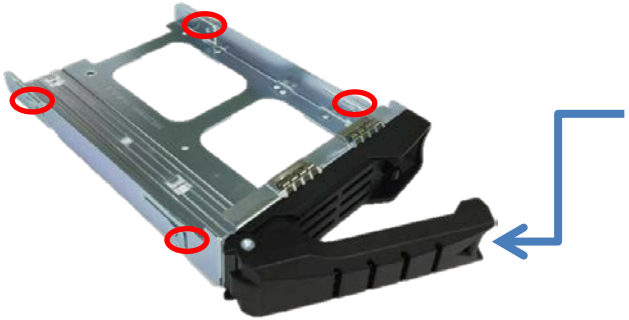
RSC-3ET

T Tray

RSC-2AT

4 areas have dimples to hold HDD when push into chassis

Toolless T Tray



Simply push the button and pull the tray out

Reserve holes for 2.5” HDD mounting with screw

T Tray

RSC-3ET

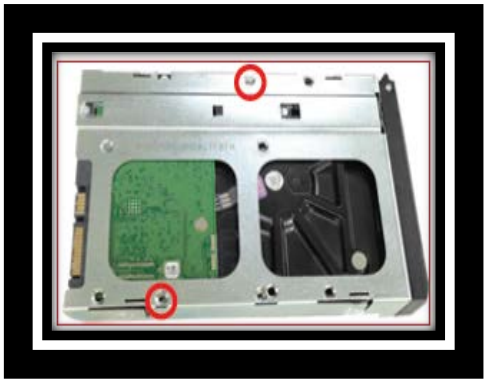
T Tray

RSC-2AT

Match screw holes

Press HDD in

Fitting firmly



Reserve 2 screws

Push HDD

Take out HDD

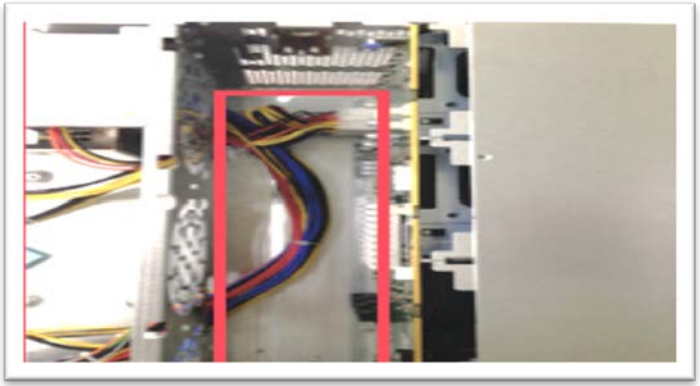
Toolless Top Cover Design

1 Push the button on both sides

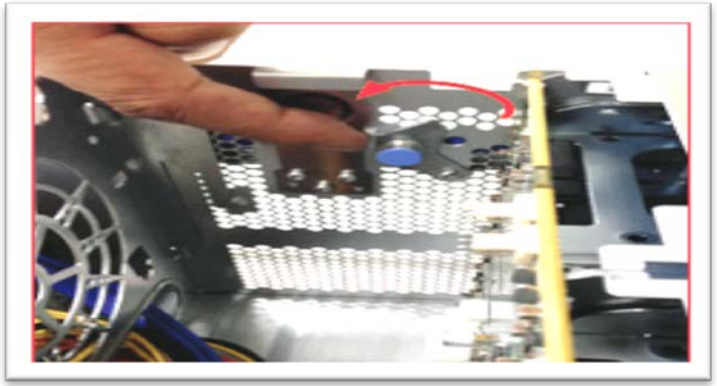
2 Push the top cover backward.

3 Lift up the top cover from the enclosure

Tool-less HDD backplane



REMOVE CABLES



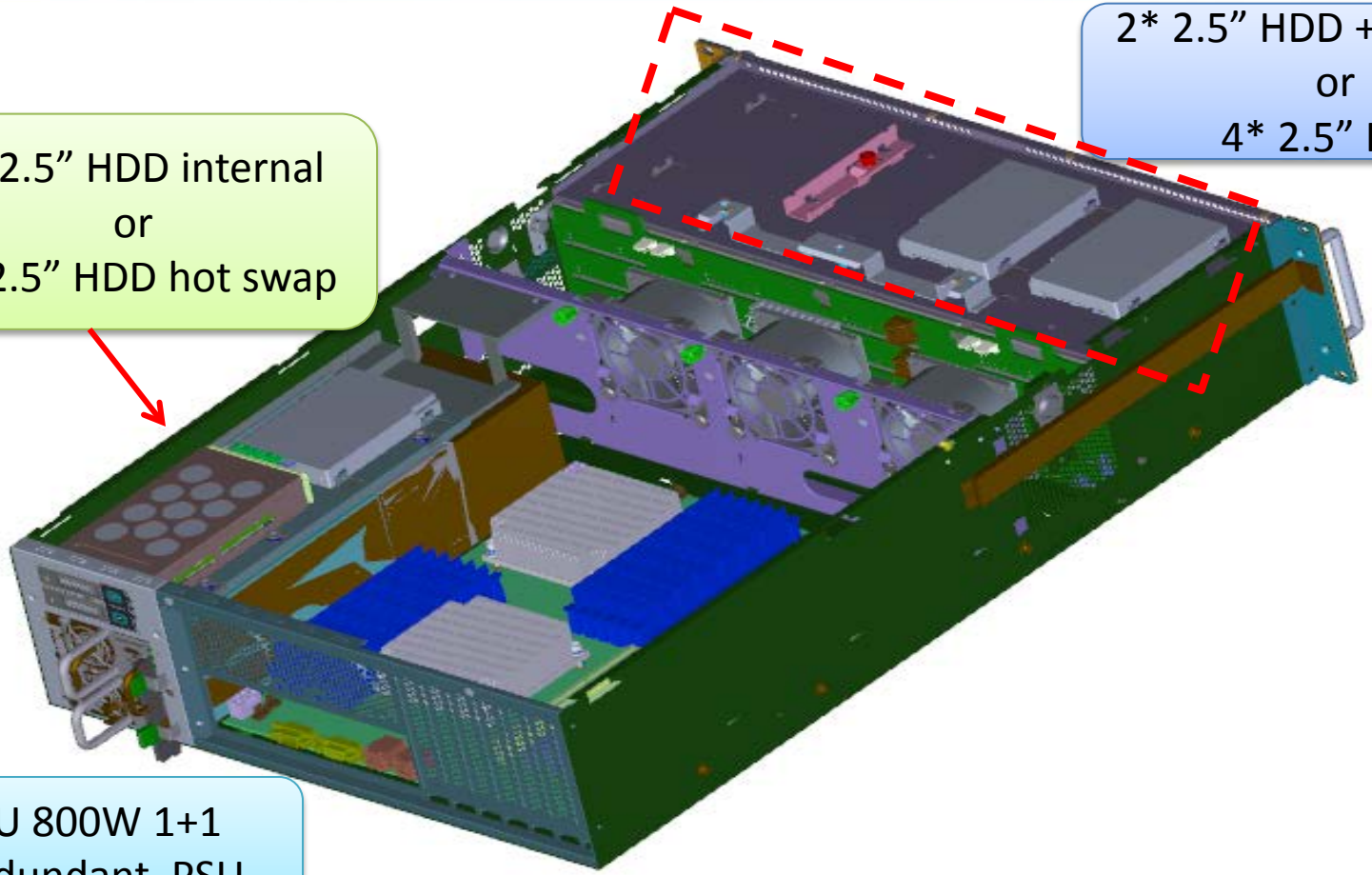
UNLOCK

RELEASE BP FROM HOOKS

LIFT THE BP UP

2* 2.5” HDD + slim DVD
or
4* 2.5” HDD

2* 2.5” HDD internal
or
2* 2.5” HDD hot swap

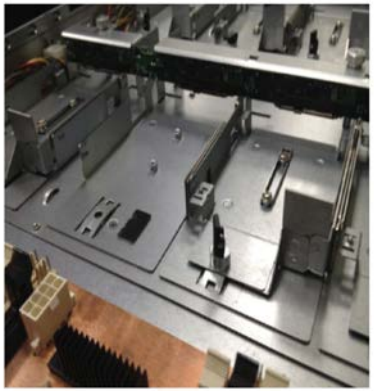
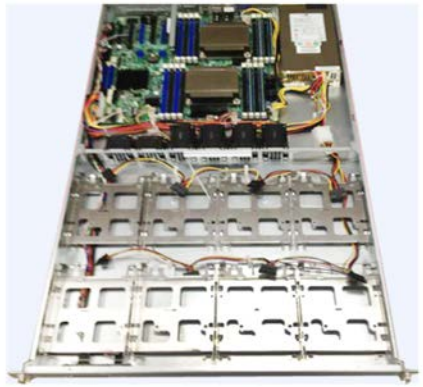


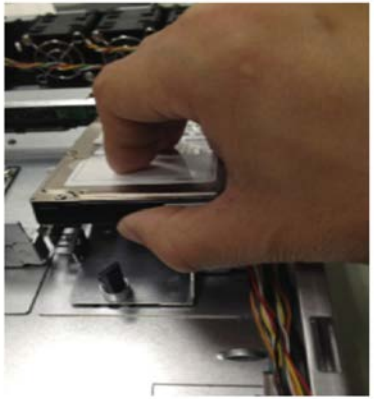
2U 800W 1+1
Redundant PSU

Demo is Model 3ET

Internal Toolless HDD design

Drawer Type DESIGN

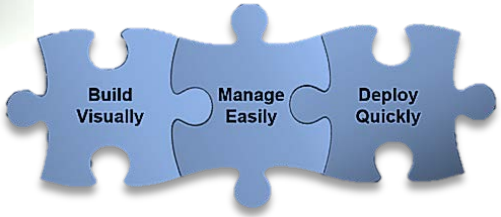

Toolless Benefits

It takes about 40 sec to assemble one HDD on tray with screws.

If assembling 1000 HDD, Tool-less can save 11 Hrs.

Save labor cost.

Increasing productivity 30%.



Easy maintain: no tool, no spare tray on field service.

Power Saving advantage

Normally dual Processor system power consumption is around 500W-900W. So we use 800W – 1200W to let power loading close to “**50%**” to have the best efficiency point.

HIGHT EFFICIENCY PSU

80 PLUS LEVEL	115V internal Non-Redundant				230V internal Redundant			
Loading	10%	20%	50%	100%	10%	20%	50%	100%
80 PLUS	---	80%	80%	80%	---	---	---	---
80 PLUS BRONZE	---	82%	85%	82%	---	81%	85%	81%
80 PLUS SILVER	---	85%	88%	85%	---	85%	89%	85%
80 PLUS GOLD	---	87%	90%	87%	---	88%	92%	88%
80 PLUS PLATINUM	---	90%	92%	89%	---	90%	94%	91%
80 PLUS TITANIUM	---	---	---	---	90%	94%	96%	91%

LOW POWER FANS

8038 High Performance with low power fan

Standard 8038 with 10200rpm require 3.8A x 12V = 45.6W
Low power type 8038 with 10500rpm require only 1.2A x 12V = 14.4W

System require 3-6pcs cooling fans such as 2ET/ 3ET / 3M / 4H / 4BT

Minimum save (45.6W – 14.4W) x 3pcs = 93.6W per system (2ET, 3ET , 3M, 4H)
Maximum save (45.6W – 14.4W) x 6pcs= 187.2W per system (RSC-4BT)

500 systems	Power Rate (USD)	Cost Saving / month	Cost Saving / Year
USA	0.08	$2,695.7	$32,348.2
Europe	0.15	$5,054.4	$60,653.3

USA Monthly saving : 93.6W/1KWH*0.08*24hr*30days*500system = $2695.7

USA Yearly saving : 93.6W/1KWH*0.08*24hr*30days*500system*12 month = $32348.2

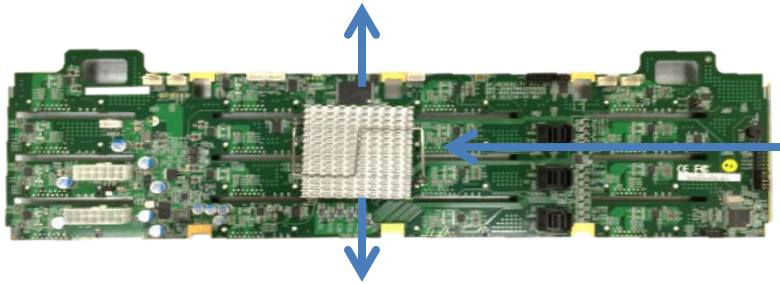
Backplane & Performance

12G Expander on board BP

Expander firmware key function :

- Single slot HDD power on/off setting (SG3_utils.exe & SES page command)
- Fan speed control by temperature setting
- Enable EDFB function
- HDD present

16 port for HDD.

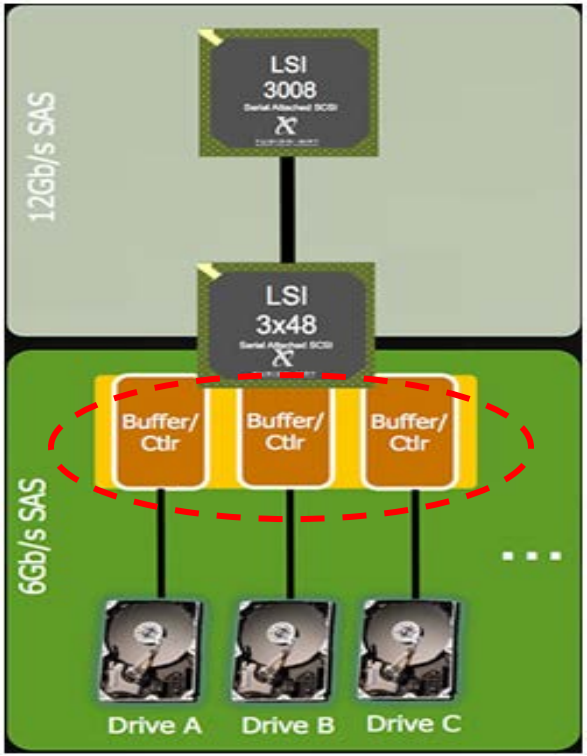


28 port 12G expander

(28-16)/4 = 3
so it can have 3pcs 8643 mini SAS connectors

Each 8643 support 4800MB/s bandwidth
Max bandwidth up to 14.4GB/s bandwidth

12G EXP EDFB FUNCTION



EDFB (Date Bolt) stand for End Device Frame Buffering

intelligence in the expander buffers data and then transfers it out to the drives at 6Gb/s speeds in order to match the bandwidth between faster hosts and slower SAS or SATA devices.

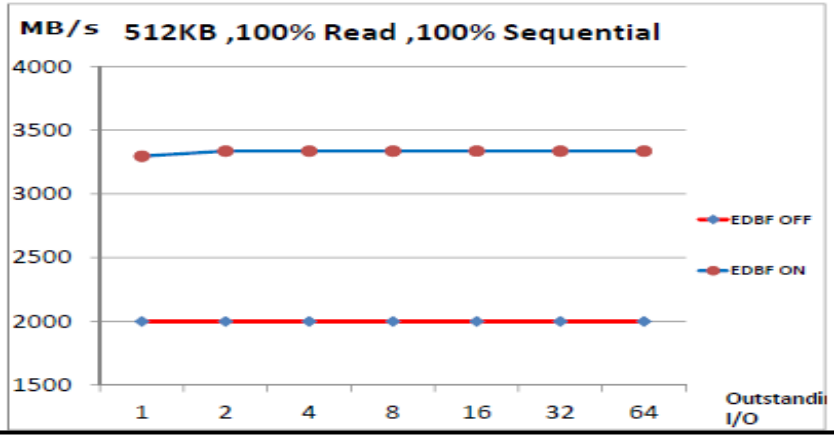
RSC-3ET Test Report

Test Config :

Test by 1 miniSAS port

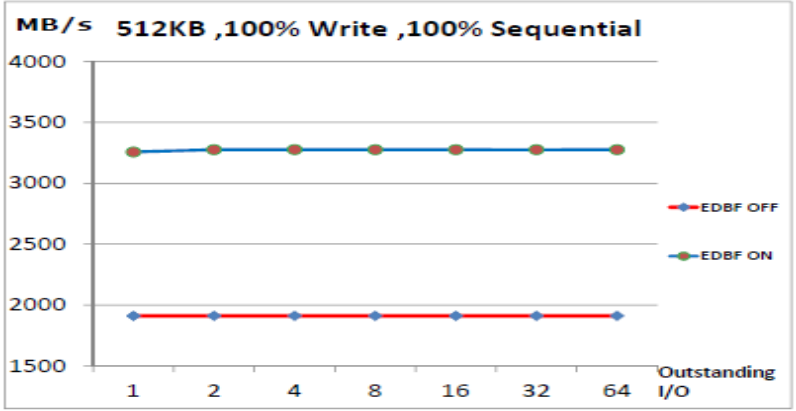
OS: Windows Server 2012R2 x64
M/B: Intel S2600CO **(PCIE Gen3 Status)**
BIOS: 01.06.0002
BMC: 01.16.4010
CPU: Intel Xeon E5-2680 *1
DRAM: DATARAM, DDR3 1333, DTM64308B, 4G*2
HDD :
SATA-6G:
Toshiba , MG04ACA500E , FW:A1 ,5TB
(Official SPE :Internal Data Rate 205 MBps)

LSI 9300-16 12G HBA card



60%

EDFB OFF			EDFB ON		
Per-Disk MB/s	512KB ,100% Read ,100% Sequential		512KB ,100% Read ,100% Sequential		er-sk B/s
	Outstanding I/O	MB/s	Outstanding I/O	MB/s	
124.99	1	1999.79	1	3296.34	200.02
124.95	2	1999.21	2	3336.41	208.53
125.01	4	2000.12	4	3336.73	208.55
124.99	8	1999.81	8	3336.53	208.53
124.99	16	1999.77	16	3336.99	208.56
124.99	32	1999.82	32	3336.84	208.55
125.00	64	1999.94	64	3336.58	208.54



60%

EDFB OFF			EDFB ON		
Per-Disk MB/s	512KB ,100% Write ,100% Sequential		512KB ,100% Write ,100% Sequential		Per-Disk MB/s
	Outstanding I/O	MB/s	Outstanding I/O	MB/s	
119.403	1	1910.46	1	3257.29	203.58
119.417	2	1910.67	2	3276.08	204.755
119.419	4	1910.70	4	3277.09	204.818
119.417	8	1910.67	8	3276.43	204.777
119.418	16	1910.69	16	3276.06	204.754
119.417	32	1910.67	32	3276.00	204.75
119.415	64	1910.64	64	3276.51	204.782

T-series solutions

Solution 1 – Best Stocking

"AIC RSC-2ET(NEOB)+ Non-AIC motherboard"

Non Expander On Backplane

RSC-2ET

Non-AIC Motherboard

Note: The RAID/HBA card or on board SAS port is required for HDD connection; if customer desires to use Non-AIC motherboard, the ports of RAID/HBA card must match the HDD numbers

Solution 2

“AIC RSC-2ET(EOB)+ Non-AIC motherboard”

Expander On Backplane

RSC-2ET

Non-AIC Motherboard

Note: The AIC EOB help customer reduces cost tremendously from purchasing individual RAID/HBA card; for example, with or without expander on BP is only 150 USD different but the individual RAID card between 8 and 24 ports can be 1,400 USD different.

Solution 3

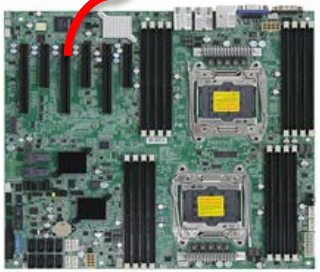
“AIC RSC-2ET(NEOB)+ AIC Libra motherboard with 4 NVMe SSD”

Mini SAS connectors for NVMe SSD

Non Expander On Backplane

4 ports SFF8643 PCIe x 16 Mini SAS Riser card

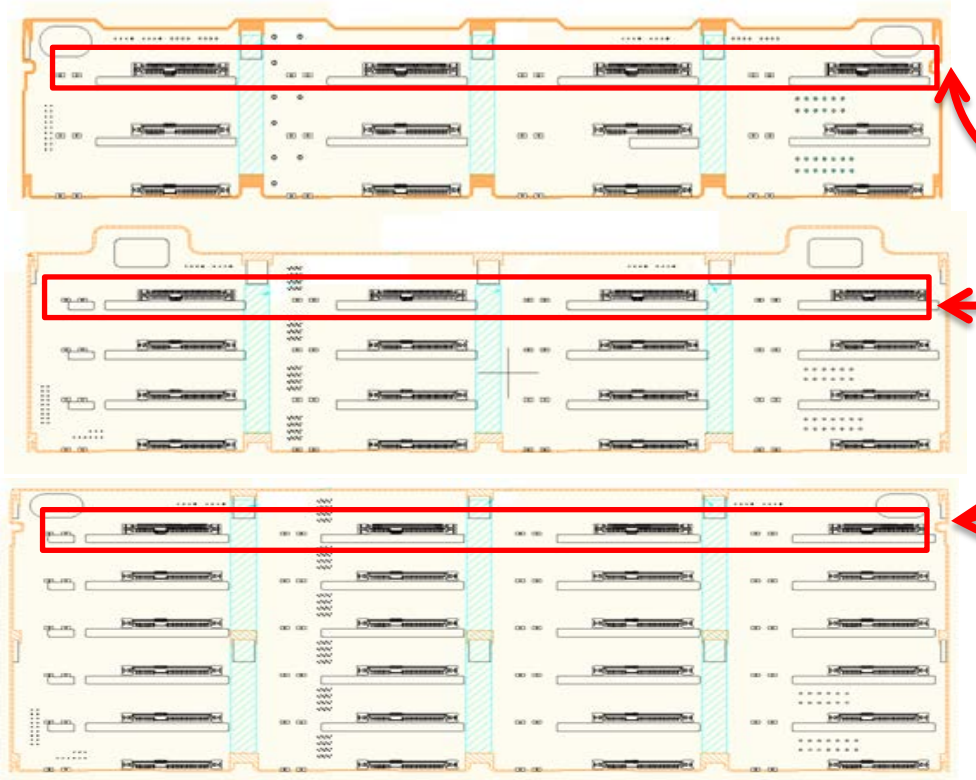
RSC-3ET



AIC Libra motherboard

Note: Using NVMe SSD is required AIC 4 ports SFF 8643 PCIe x16 Mini SAS riser card and enable function in Bios of AIC Libra motherboard. The IOPS of NVMe SSD is 450k, SAS HDD is 190k, SATA HDD is 100k; the performance can be maximized.

2ET, 3ET, 4ET None expander backplane



The top row supports NVME drive.

T-series product line

RSC-2AT (USB3.0)

- 24* Hot Swap 2.5” HDD Tool-less Tray
- 12G Expander on Board HDD BP/ none expander BP
- 2* Internal 2.5” HDD Tool-less Installation design
- 3* Hot Swap 8038 PWM system cooling fans
- 800W 1+1 Red. PSU 80+ platinum Level with PMBUS1.2
- Tool-less Ball Bearing Slide Rail

RSC-2ET (USB3.0)

- 12* Hot Swap 3.5” HDD Tool-less Tray
- 12G Expander on Board HDD BP
- 2* Internal 2.5” HDD Tool-less Installation design
- 3* Hot Swap 8038 PWM system cooling fans
- 800W 1+1 Red. PSU 80+ Platinum with PMBUS1.2
- Tool-less Ball Bearing Slide Rail

RSC-3ET (USB3.0)

- 16* Hot Swap 3.5” HDD Tool-less Tray
- 12G Expander on Board HDD BP
- 6* Internal 2.5” HDD Tool-less Installation design
- 3* Hot Swap 8038 PWM system cooling fans
- 800W 1+1 Red. PSU 80+ Platinum with PMBUS1.2
- Tool-less Ball Bearing Slide Rail

RSC-4ET (USB3.0)

- M/B size up to 12” x 13”(E-ATX)
- 24* Hot Swap 3.5” HDD Tool-less Tray
- 12G Expander on Board HDD BP
- 2* Internal 2.5” HDD Tool-less Installation design
- 3* Hot Swap 12025 PWM system cooling fans
- 1200W 1+1 Red. PSU 80+ Platinum with PMBUS1.2
- Tool-less Ball Bearing Slide Rail

RSC-4BT

- M/B size up to 12” x 13”
- 36* Hot Swap 3.5” HDD Tool-less Tray
- 12G Expander on Board HDD BP
- 2* hot swap 2.5” HDD Tool-less Installation design
- 3* Hot Swap 12025 PWM system cooling fans
- 1200W 1+1 Red. PSU 80+ Platinum with PMBUS1.2
- Tool-less Ball Bearing Slide Rail

RSC-4BT

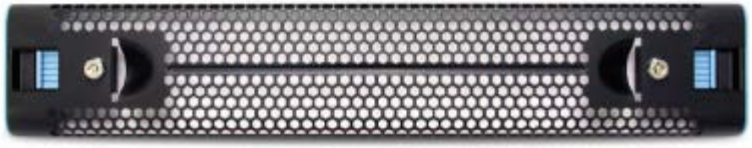
Hot swap & Low power 8038 fans

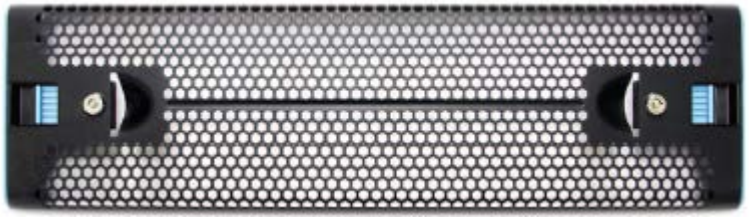
Release
4 screws

12G 24port and 12 port expander HDD BP

RSC-2ETS/3ETS/4ETS (USB3.0)

- M/B size up to 12” x 9.6”(ATX)
- Depth: 560mm
- 12*/16*/24* Hot Swap 3.5” HDD Tool-less Tray
- 12G Expander on Board HDD BP
- 2* Internal 2.5” HDD Tool-less Installation design
- 700W 1+1 Red. PSU 80+ Platinum with PMBUS1.2
- Tool-less Ball Bearing Slide Rail





T series front bezel