

## EchoStreams Redundant Servers & JBODs

2U 12x3.5"/ 3U 16x3.5" 4x2.5"/ 2U 12x3.5" JBOD/ 3U 16x3.5" JBOD

### The Importance of Redundancy

No one disputes that protecting data is incredibly important. That is why data protection schemes, such as RAID, have become ubiquitous. However, protecting data access is just as important as protecting the data itself. This is especially true for small to medium size businesses (SMBs) and remote offices and branch offices (ROBOs). If a business loses data access that could mean a retail store is unable to process transactions, an accounting company cannot issue payroll, or a small town doctor can't pull up a patient's medical records. Losing data access, even if the data is still safe, can be catastrophic.



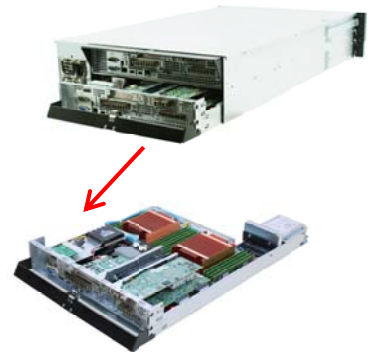
As important as protecting data access is, finding a practical way for SMBs and ROBOs to put in a system that offers multiple paths to storage that is fast, easy and affordable has been a challenge. While network based solutions such as SANs and NAS have been very good at providing data redundancy to large datacenters and corporate offices, they have proven too complex, too expensive and too limiting in performance to be effective in smaller scale. A better solution is needed. By understanding what the market needs, EchoStreams introduces the DSS series: DSS212, DSS320, DSS212J and DSS316J to satisfy these needs.

### Designed with Redundancy in Mind

With redundancy in mind right from the get-go, DSS series are designed for the redundant nodes within to communicate with each other. In order to apply LSI Syncro into the system, a special link is required within the system. This link is available to the controller to talk to each other node's expander, which makes this a very uniquely designed system, or should we say, one of a kind.

### Hassle-Free Maintenance

Easiness of maintaining systems for many SMBs could be as equally important as redundancy. When components fail, how easy and fast can system administrators access the failed components becomes a concern. Keep in mind that SMBs are most likely not going to have a team of system administrators waiting to respond to failed systems. In situations like this, ease of maintenance becomes a #1 priority.



Tool-less fan cover can be lifted open to expose only the redundant fans to swap.



All drive bays can be hot-swapped simply by pulling the drives out

Each node can be maintained tool-less. Simply push down the handle to pull it out.

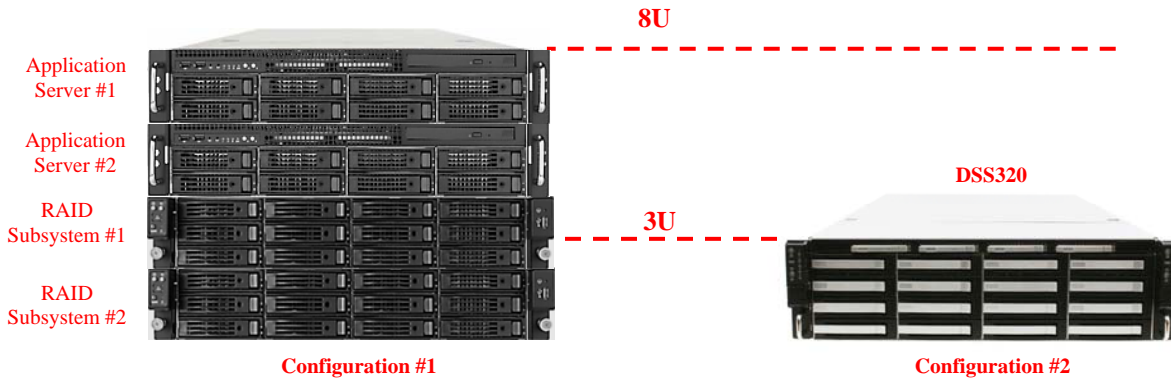


Install SSD to 2.5" tool-less tray in 5 seconds by simply raising the lever and slide the SSD in (DSS320 only)

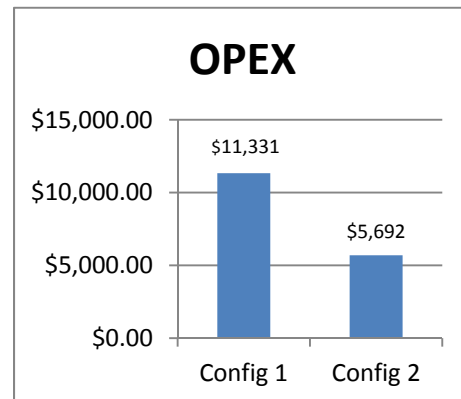
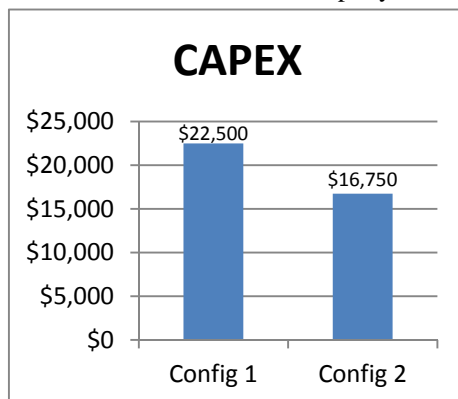
## Efficiency of DSS Series

The efficiency of the DSS series can be further broken down into three different categories: **Space**, **Cost**, and **Ease of Maintenance**. These three categories are crucial factors when trying to determine if the servers are suitable for one's environment, no matter how big the company is. DSS series optimizes efficiency in all three categories while providing above par performances.

**Space:** Space to host servers is often scarce for many businesses. How much space would the servers need becomes an important question when introducing new servers. Is a full-size rack or a half-height rack necessary? DSS Series eliminates all these concerns and uncertainty by simply fitting everything into 1 box. Below illustrates the difference between standard configuration vs DSS320.



**Cost:** There are 2 types of cost that are associated with setting up new servers. One is the initial Capex (capital expenditure) cost, and the other is the Opex (operating expenditure) cost. The initial set up cost is obvious and transparent to most. The Opex cost is however the hidden cost and often underestimated by many users. Let's look at the above illustration for example. Config #1 includes 4 systems; 2 application servers and 2 RAID Subsystems as a storage pool for the application servers. Each application server consumes 550W and each RAID Subsystem consumes 420W, total of 1940W while each DSS320 consumes 1000W. That's a difference of 940W. If we put this in dollar value:  $940W * 24(\text{hrs/day}) * 365(\text{days}) * \$0.1019$  (national commercial rate) = \$840. Furthermore, the extra cost to cool the extra wattages generated and maintain a more complex configuration is around \$400/month. That is a total of \$5,640 extra cost per year.



**Ease of Maintenance:** As system configurations becomes more complex, the complexity of setting up, maintaining, and troubleshooting servers increase as well. Misconfiguring the servers could result in improper failover, unable to recognize RAID subsystems, failure to backup data, etc. Therefore, simplicity is vital in building an IT infrastructure. With Configuration 1, IT personnel would need to set up the application server to properly fail over to its backup while both application servers see the shared storage pool. Whereas the DSS series is as simple as plug and go.

## Benefits of DSS212

Majority of the redundant servers current available are not meant to support single processor environments. Many SMBs are forced to purchase an overkilled system that they have no need for. The extra amount of CPU/Memory is not necessary as their environment does not call for it. But due to the lack of selections, SMBs are left with no choice. With DSS212, SMBs no longer have to worry about such an issue. DSS212 comes in two flavors, E3 and E5 single processor version. Although these systems are not meant to handle heavy calculating/processing workloads, it still carries enough power to run multiple virtual machines simultaneously for most of the SMBs. At the same time, the 12 drives in front allow users to expand shared data storage up to 96TB; more than enough for most small business companies.



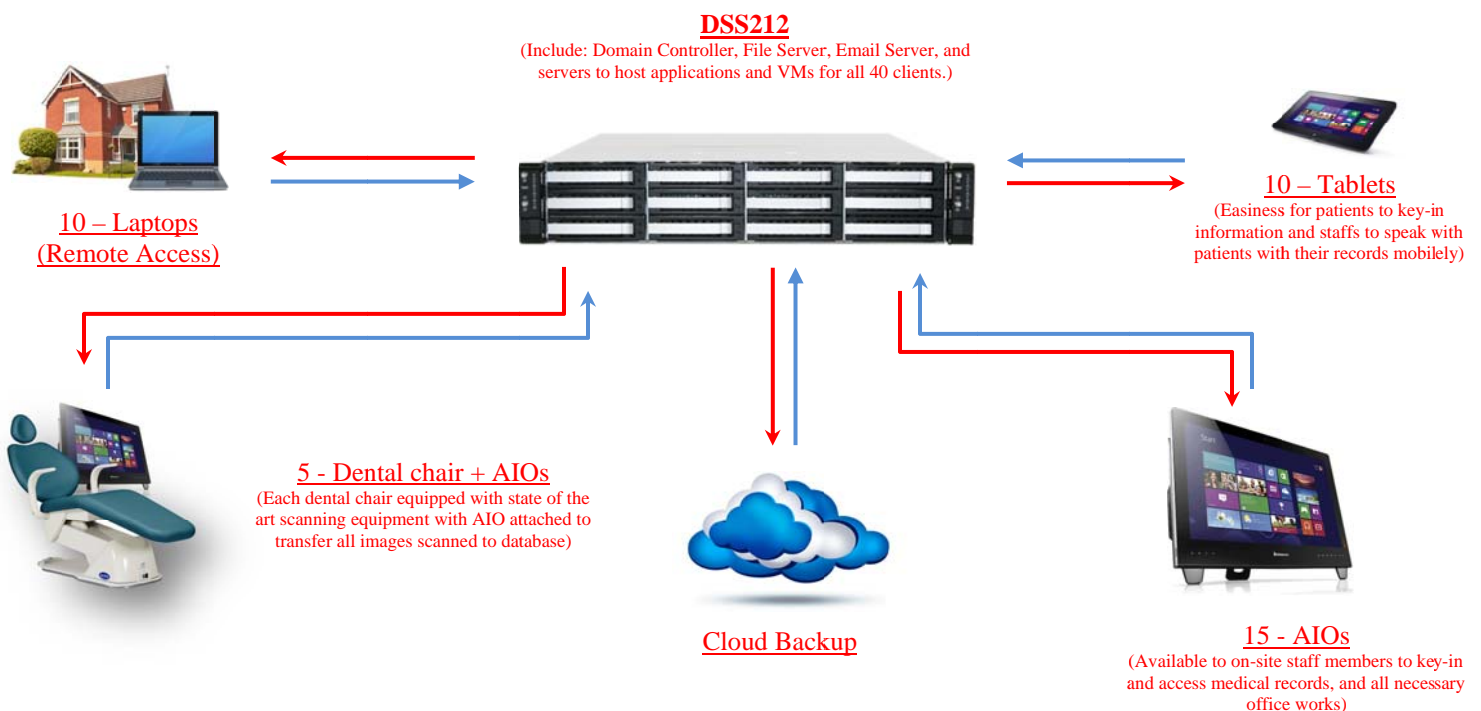
## Real-World Case Scenario for DSS212:

### Dental Franchise:

A high-potential dental franchise wanted to renovate its current IT infrastructure for all its franchisees locations and would like to begin building a prototype topology at one of the locations first to demonstrate the value of the renovation. A typical location consists of a domain controller, file server, email server, redundant application servers, VMs, 15 All-In-Ones (AIO), 10 tablets, 10 laptops, and 5 dental chairs with scanning abilities and AIOs attached to it. EchoStreams was able to assist this company in building their infrastructure by pre-loading all the servers and VMs into the DSS212, providing redundancy and fail-over capabilities for all the servers.

### Why Redundancy?

The value of redundancy could be exceptionally beneficial for even smaller businesses such as these individual dental locations. If the servers were to go down, that would result in: staff members not able to see patients' medical records, dental scanners not able to upload/download data to/from the server database, patients not able to access their records/insurance information, staffs not able to access data from home, and so forth. The location will therefore be inoperative for as long as the servers are down. These are all costs that might not reflect right away, but can be counted as true cost that will show up in the long run.



## Benefits of DSS320

DSS320 offers 16x3.5" HDD 4x2.5" 7mm SSD. The 4 SSD bays add enormous amount of benefits to the overall performance of the system by providing caching or tiering. Most of the products currently available in the market come with 16 drive bays only. To increase performance, they will need to sacrifice 4 additional drive bays. With LSI Syncro or Enmotus, you can easily provide caching or tiering capabilities with the available SSD bays. With careful consideration from the EchoStreams team, each 2.5" tray is equipped with an interposer so that SATA SSD can be used and accessed by both nodes. This is to provide alternative to the highly priced SAS SSD.

## Available Solutions

There are many solutions that can be applied with DSS320 and the expansion JBOD, DSS316J. Below are some of the common solutions that EchoStreams can help pre-configured for customers prior to shipment release.

### - Microsoft Server 2012 with LSI Syncro – SSD Caching

As a Microsoft certified Cluster-in-a-Box (CiB) system, Echostreams can pre-install Microsoft Sever 2012 along with LSI Syncro to provide redundancy between the two nodes. LSI Syncro supports a feature call CacheCade, which is caching managed by the controller. CacheCade transform the SSDs into high-performance flash cache to accelerate the I/O performance of existing HDD arrays.

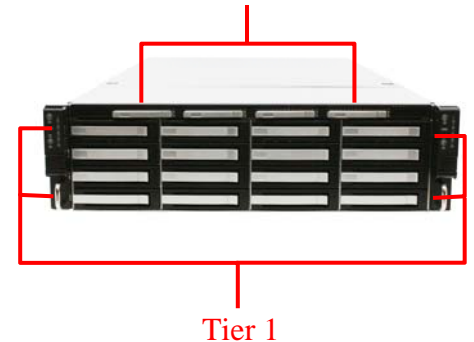
#### SSD Caching



### - Enmotus Micro-Tiering

Tiered storage can be configured on DSS320 by running Enmotus on top of any Linux distros. Enmotus provides a true tiering technology with the pool of flash drives and HDDs within the DSS320. It dynamically moves frequently accessed data in real time to high speed flash storage without user intervention. With our staff of experts, Echostreams can tune how tiered storage behaves according to the environment the systems will go into. DSS320 can offer you High Availability redundancy and tiered storage, all in one box.

#### Tier 0



### - MPStor Orkestra

With MPStor Orkestra preloaded, users can host their own private/public cloud, support multiple virtual machines for VDI environment, and provide tier storage all in one box (subject to license fees from MPStor). Users can further scale out its storage by adding additional DSS316J JBOD. In addition to aforementioned features, Echostreams can configure DSS320 into a NAS storage system by utilizing functions provided by Orkestra.



DSS320



DSS316J

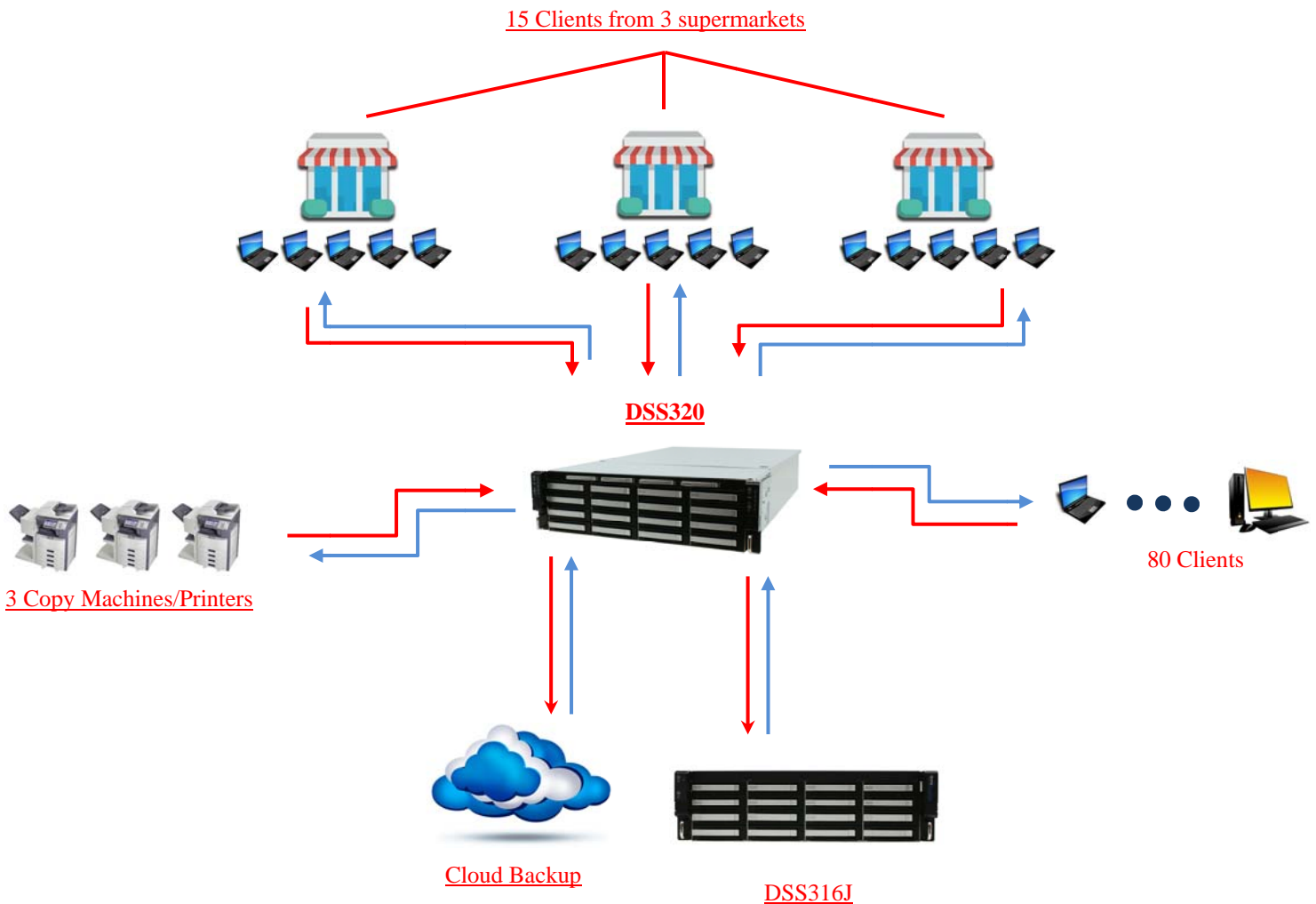
## Real-World Case Scenario for DSS320:

**Supermarket Corporation:** A supermarket corporation will like to centralize its IT infrastructure for its corporate office and 3 supermarkets. The new proposed systems will need to sustain the growth that the corporate foresees over the next several years. EchoStreams introduced DSS320 & DSS316J as a solution to meet their demands. DSS320 is pre-loaded with host server, domain controller, file server, email server, SQL server, print server, application servers, and VMs for clients. Moreover, it includes 4x1.6TB SSD and 16x6TB HDD. With the amount of data that the corporate office handles, DSS316J 16x6TB HDD JBOD was also included. The provided solution would be able to sustain the corporate for another 8 stores of expansion while performing at over expectation great performance with the SSD tiered storage.

Instead of having a rack of servers that greatly increases its cost of ownership and difficulty to maintain, EchoStreams provided a pre-configured and user-friendly solution for that customer that can very well fit in a staff member's cubicle. But most importantly, performance was not sacrificed, but rather increased.

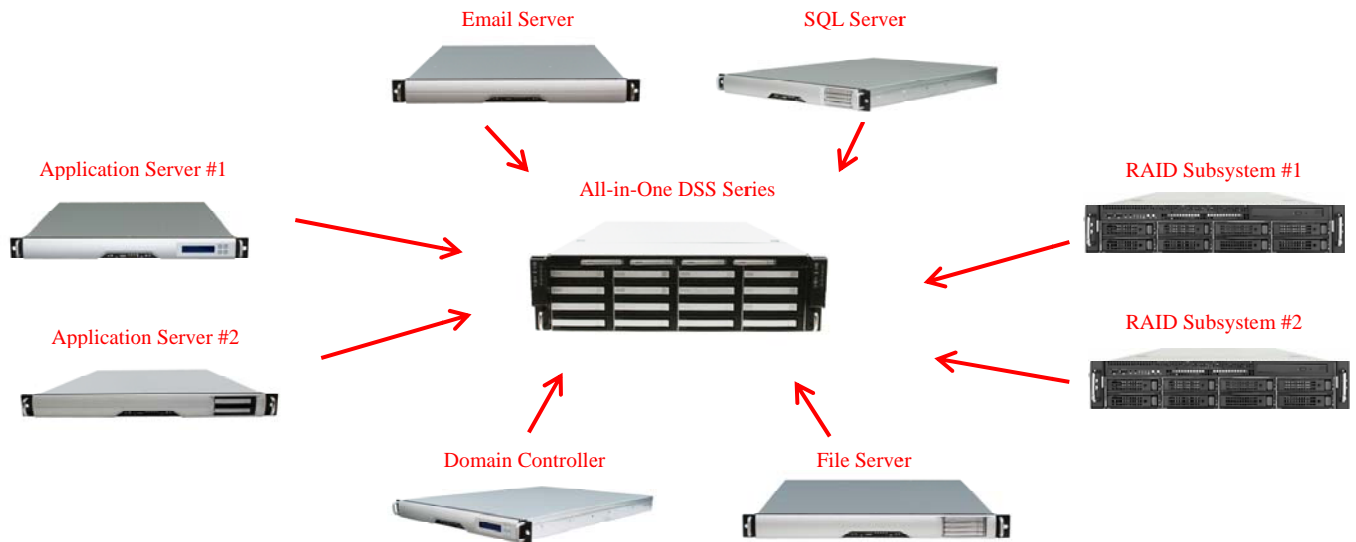
### Why DSS320?

DSS320 is suggested to customer due to the high amount of users that are accessing a large pool of data. With DSS320, 6.4TB of SSD data can be accessed at 2-3 times the speed of regular HDD. (Based on 1.6TB/SSD) The hot data will be continuously updated and rotated according to user habits.



## Simplicity is Key:

With the DSS series, everything can be preloaded and configured according to customer's demand. Everything from application servers, domain controller, file server, SQL server, to email server can all be loaded into the DSS series. If storage expansion is required, all DSS series provide a similar JBOD model that can be expanded and as simple as just plug and go. Furthermore, the cost of ownership to own redundant solutions is no longer unaffordable for SMBs. With DSS320 and DSS212, redundant solutions should be available for all businesses that cannot allow to have its servers down, its data inaccessible to its employees, or its customer transactions and data lost.



Specifications			
<b>DSS212</b>	<b>DSS212J</b>	<b>DSS320</b>	<b>DSS316J</b>
UP: E3-1200 v3 UP2: E5-2400 v2		UP: E5-2600 v2 DP: E5-2600 v2 DP3: E5-2600 v3	
UP: 4x DDR3 up to 32GB UP2: 6xDDR3 up to 96GB		Per node: UP: 8 xDDR3 up to 256GB DP: 16x DDR3 up to 512GB DP3: 16xDDR4 up to 512GB	
12x 3.5" SAS2 Dual Port HDD Bays Optional LSI Syncro CS	12x 3.5" SAS2 Dual Port HDD Bays	16x 3.5" and 4x 2.5" 7mm SSD SAS2 Dual Port HDD Bays Optional LSI Syncro CS	16 x 3.5" 6G Dual Port HDD Bays
UP: 2xGbE UP2: 4xGbE  <b>Other fabrics available via PCIe</b>	Per Expander: 1x SFF8088 - Uplink 1x SFF8084 - Downlink 1x SFF8084 - Fail-Over 1x Mini Jack for RS232 Management	UP: 4xGbE DP: 4xGbE DP3: 2xGbE, 2x10GbE  <b>Other fabrics available via PCIe</b>	Per Expander: 1x SFF8088 - Uplink 1x SFF8088 - Downlink 1x SFF8088 - Failover
1+1 800W AC/DC or -48VDC/DC RPSU	1+1 500W AC/DC or -48VDC/DC RPSU	1+1 1200W AC/DC or -48VDC/DC RPSU	1+1 500W AC/DC or -48VDC/DC RPSU