

USA+TERRITORIES ONLY

www.FtlSpinUp.com

Secured Mobile Data 777

Amazon = 10,000,000,000,000,000
$2,000,000 Dollars + Every Year
Peta Tera Giga Mega Kilo Hecto

Azure = 10,000,000,000,000,000
$2,000,000 Dollars + Every Year
Peta Tera Giga Mega Kilo Hecto

Google = 10,000,000,000,000,000
$2,000,000 Dollars + Every Year
Peta Tera Giga Mega Kilo Hecto

Backblaze = 10,000,000,000,000,000
$834,000 Dollars Every Year
Peta Tera Giga Mega Kilo Hecto

Wasabi = 10,000,000,000,000,000
$958,800 Dollars Every Year
Peta Tera Giga Mega Kilo Hecto

Seagate Lyve Cloud = 10,000,000,000,000,000
$7.50 TB/Mo Standard
$900,000 Dollars Every Year
Peta Tera Giga Mega Kilo Hecto

FtlSpinUp Disk
25GbE FDX (Formatted) 281,474,976,710,656,000,000,000
Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

OPTIONAL RAM DISK
(Formatted) 9,007,199,254,740,992,000,000,000
Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

$15,000 Dollars per "modem" 1Time Hardware Included
$5,000 Dollars (Once Per Customer) Every Year Factory Triple Backup

Optional Starlink Near Real-Time 50GbE HDX about 19,200 bps
288PB File at 44Mbps Uplink FDX = < 0.001 Sec = 12.384ZbE
75.557ZB Cartridge at 44Mbps Uplink FDX = 61 Sec = 12.384ZbE

Infinite Secured Desktop Data (2^52) Near Real-Time Base
All Data Never Erased and Guaranteed for LIFE

FtlSpinUp

Data compression and deduplication on *reducible data* are now available with a guaranteed 5:1 result, or more on typical systems. The fine print of *reducible data* does not include many pre-compressed or non-compressible data formats, or non-*reducible data* formats such as compressed audio, compressed image and compressed video file formats, PDF, most office work file formats, all compression formats, pre-compressed Data Sets, and almost any professional commercial file format being used. Large voluminous amounts of Data storage can achieve 65:1 or more with pattern sensitive data, and deduplication. Actual performance may vary.

FtlSpinUp is a dedicated computer intensive lossless subspace conversion system for digital data storage and communication that goes far beyond normal pattern sensitive digital data compression. FtlSpinUp will work with most digital storage, and communication systems available without modification in any way, shape, or form.

FtlSpinUp is a lossless subspace conversion unit that in no way, shape, or form ever does any Data content or pattern analysis. FtlSpinUp is not pattern or content sensitive, and there is no such thing as non-compressible data, or non-*reducible data*. FtlSpinUp has always been very unique since 1983 with an all data 6:1 ratio.

FtlSpinUp lossless subspace conversion is up to (2^52):1 at this time, not including any file formatting or pre compression ratio. FtlSpinUp subspace conversion requires simultaneous software threads of intense complex instruction set computer (CISC) time. All CISC cores will be 100% saturated per server. AI and GPU's are RISC.

Some custom hardware is included at each location for the physical security of FtlSpinUp. Once installed, FtlSpinUp can not be moved in any direction more than a couple of miles without termination of program. Special mobile FtlSpinUp locations are possible, if justified.

FtlSpinUp is a subspace conversion (state machine) only, and does not involve any normal processing of Data Center activity. Data is sent to FtlSpinUp in a maximum ultra compressed 7zip formated file with a hash number from the customer, and returned to the customer in a much smaller (2^52):1 maximum compressed FtlSpinUp formated file with a unique hash number. The processed data, serial number, time, conversion hash are all registered and stored into the Deep Freezer of the state machine to guarantee future returning file integrity.

Similar to a read head placed after the write head on a tape machine that reads back what has just been written on the tape, FtlSpinUp reads back the subspace converted file and verifies the hash signature that every subspace conversion process starts with, that is provided by the customer when the original 7zip file is created. Read after Write subspace conversion system with hash, and a full bit level integrity comparison cycle will guarantee, and verify no bit loss for any future return to the original bit pattern before being sent out of the FtlSpinUp machine with up to a (2^52) subspace conversion.

The (2^52):1 maximum compressed FtlSpinUp formatted file can then be manipulated with any conventional program, however the internal compressed subspace converted data is not available for use by any conventional program without being returned, or having a CargpBit subspace conversion first.

Every FtlSpinUp state machine is unique, and generate very different file contents that are not compatible with any other FtlSpinUp state machine. A subspace conversion file can be intercepted on the public Internet forever, and only the one single FtlSpinUp state machine that generated it will be able to return the data. The subspace converted file contents can only be returned by a customer authorized FtlSpinUp unit, remote or on site. (HERE) option will allow the customer to decide which different FtlSpinUp state machines can, and can not return the subspace conversion file. The factory has all customer signature data, and can be reconstructed in case of emergency.

Communication:

FtlSpinUp subspace converted files are naturally coded to specific FtlSpinUp units only, and the customer decides what if any remote FtlSpinUp units can return the file. FtlSpinUp subspace converted files are naturally secured without external encryption, and can be placed on the open unsecured Internet with millions of unauthorized intercepted copies made, and no copy can be returned without the customer specified authorized FtlSpinUp unit anywhere on planet earth.

Communication with subspace conversion files between different FtlSpinUp state machines that are typically located in the same building, or at great distances from each other with Starlink.

The reduced file size is a natural efficiency boost for any existing data communication link. The existing communication link with no modifications will achieve a (2^52) increase in both capacity and speed between the two FtlSpinUp state machines, or storage to storage with subspace conversion occurring later.



Data communication performance at (2^52):1 achieved has:
99.999,999,999,999,977,795,539,507,496...% Efficiency.

1 bit remains light speed. For every single 1 bit transmitted over fiber optics, or any physical transmission system running at the speed of light, (2^52) another 4,503,599,627,370,495 bits will also arrive at the same exact time.

Data Security

(2^52) x 1 bit = 4,503,599,627,370,496 bits or
(2^52) x 1 bit = 4,503,599,627,370,495 bits are missing for each 1 bit transmitted, making interception of communications a waste of time, and effort. The missing bits can possibly be seen with a crystal ball, however the amount of crystal balls required is enormous, and time consuming.

Secured Mobile Data 777
(Pages 20-27)

$15,000 Dollars 1Time Hardware Included
$5,000 Dollars Every Year Factory Triple Backup

50GbE FDX / 25GbE FDX

600 Tera Bytes - 50GbE / 25GbE FDX Fiber Optic

1.389 Days / 2.78 Days (Raw Data)

Secured Desktop Data 3600
(Pages 29-37)

$85,000 Dollars 1Time Hardware Included
$5,000 Dollars Every Year Factory Triple Backup

400GbE FDX

600 Tera Bytes - 400GbE FDX Fiber Optic

4.2 Hours (Raw Data)

CargoBit

2.2TbE FDX www.cargobit.com 4.4TbE FDX
$1Million Dollars+ 1Time Hardware Included
$Factory Determined Every Year Factory Triple Backup

600 Tera Bytes - 4.4TbE FDX Fiber Optic

22.73 Minutes (Raw Data)

FtlSpinUp Secured Mobile Data 777



AMD EPYC 4585PX 16 Core
NIC Fiber Optic 25GbE FDX
25GbE Full Duplex Near Real-Time
50GbE Half Duplex near Real-Time
1TB Disk for Customer - 1TB Disk Internal System

FtlSpinUp Disk 281,474,976,710,656,000,000,000,000
25GbE FDX (Formatted)
Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

$15,000 Dollars 1Time Hardware Included
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Modem represents [Modulator / De-Modulator] FtlSpinUp is a modem because it modulates binary digits into a smaller size, and De-Modulates the binary digits back to their original size with 100% Lossless performance.

Most modern compression systems require that the binary digits be “compressible” and use words like “Up To” to convey maximum performance.

FtlSpinUp is not pattern sensitive, and does not rely on “compressible” data patterns to be 100% Lossless.

FtlSpinUp Disk capacity numbers are accurate for one single file. They do not include file formatting for multiple file groups that may consume serious amounts of potential storage when used at (2^52).

777 has two 25GbE QSFP Fiber Optics and one is Full Duplex at all times. Or the working cores can be redirected to Half Duplex one direction for both QSFP Fiber Optic cables at 50GbE.

Please pay attention to data throughput rates such as 25GbE, 50GbE, 100GbE, 200GbE, and 400GbE.

FtlSpinUp and CargoBit use AMD EPYC CISC computer cores at full saturation, even when idle.

Different models have different core counts, providing more total near real-time throughput.

Once the Data has been input to the FtlSpinUp and CargoBit system, it will remain forever. Factory triple redundant storage provides 100% Guaranteed Data Integrity. Internal deep freeze provides emergency recovery only when necessary.

Security Cameras 777



25GbE Fiber Optic
Real-Time LIVE HDX
25GbE Fiber Optic
Real-Time LIVE HDX
up to 16 Panavision
Lossless Cameras
at 3GbE each Real-Time
up to 500 typ 8k Lossy
Compressed Cameras
Real-Time LIVE

FtlSpinUp 777
10 Mega Byte
File

Once Every 7.7 Days
Low Speed Link
10MB File 22Mbs
Starlink Upload
4.5 Seconds
600 Tera Bytes

FtlSpinUp

FACTORY

When Internet
Available

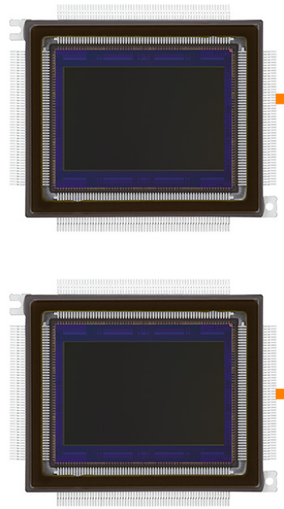
Designated
Data Center
24/7
When Internet
Available
Optional Secured
NotaryTimeStamp

Back Up Files
1

Back Up Files
2

Back Up Files
3

Security Cameras 777



25GbE Fiber Optic
Real-Time LIVE HDX
25GbE Fiber Optic
Real-Time LIVE HDX

Two (246) Mega Pixel
Canon Imagers
Please see Page 52
for YouTube video link

FtlSpinUp 777
10 Mega Byte
File

Once Every 7.7 Days
Low Speed Link
10MB File 22Mbs
Starlink Upload
4.5 Seconds
600 Tera Bytes

FtlSpinUp

FACTORY

When Internet
Available

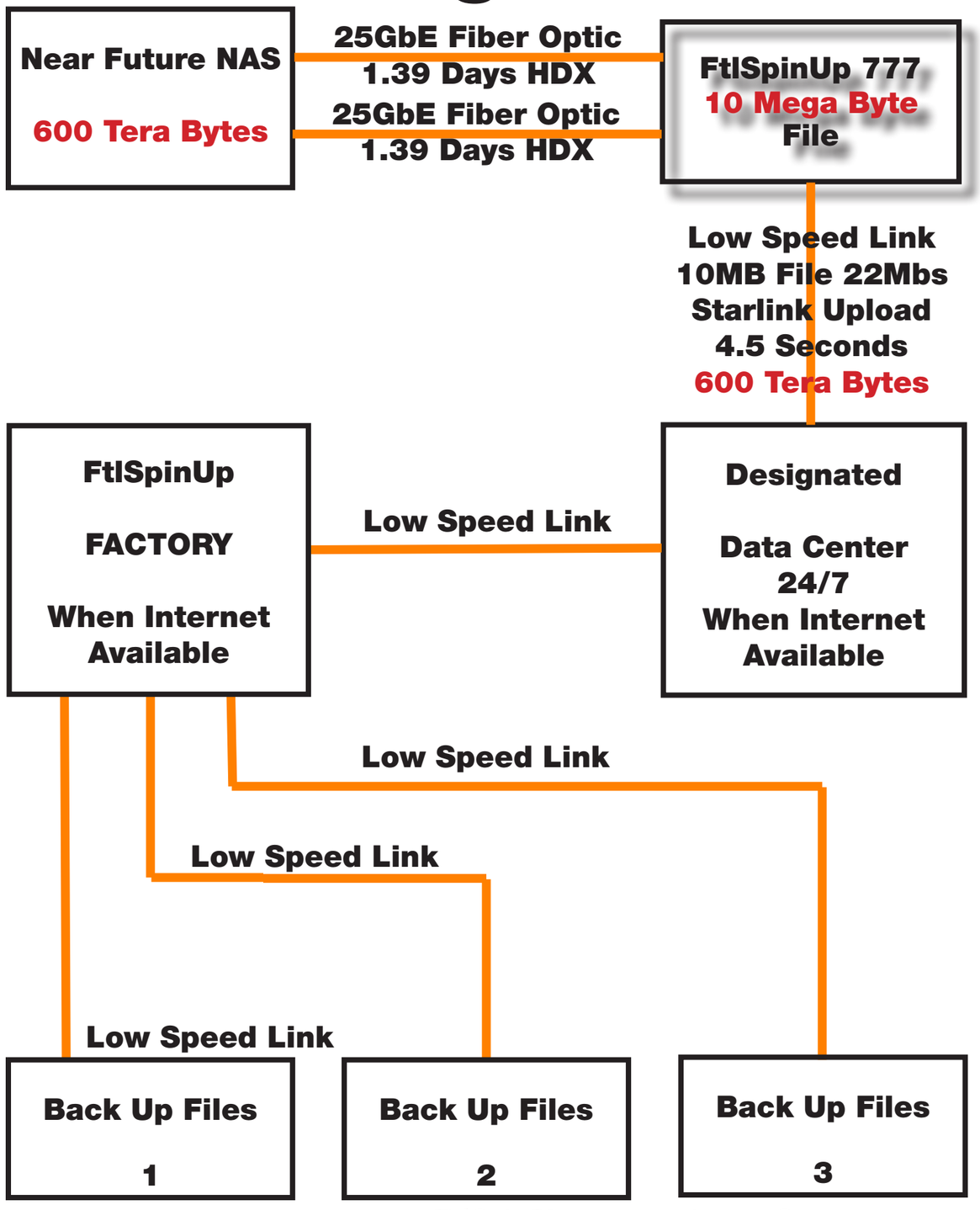
Designated
Data Center
24/7
When Internet
Available
Optional Secured
NotaryTimeStamp

Back Up Files
1

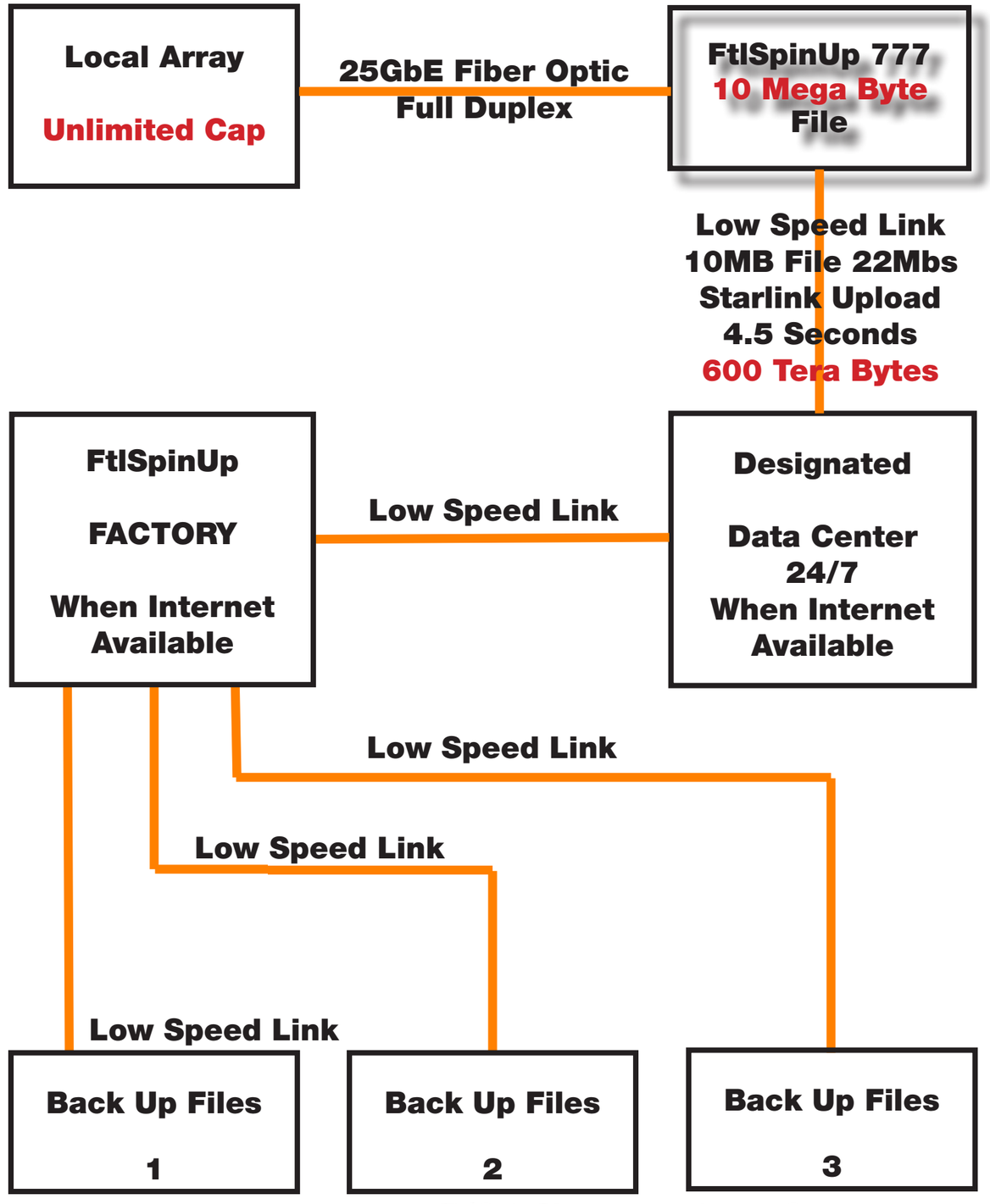
Back Up Files
2

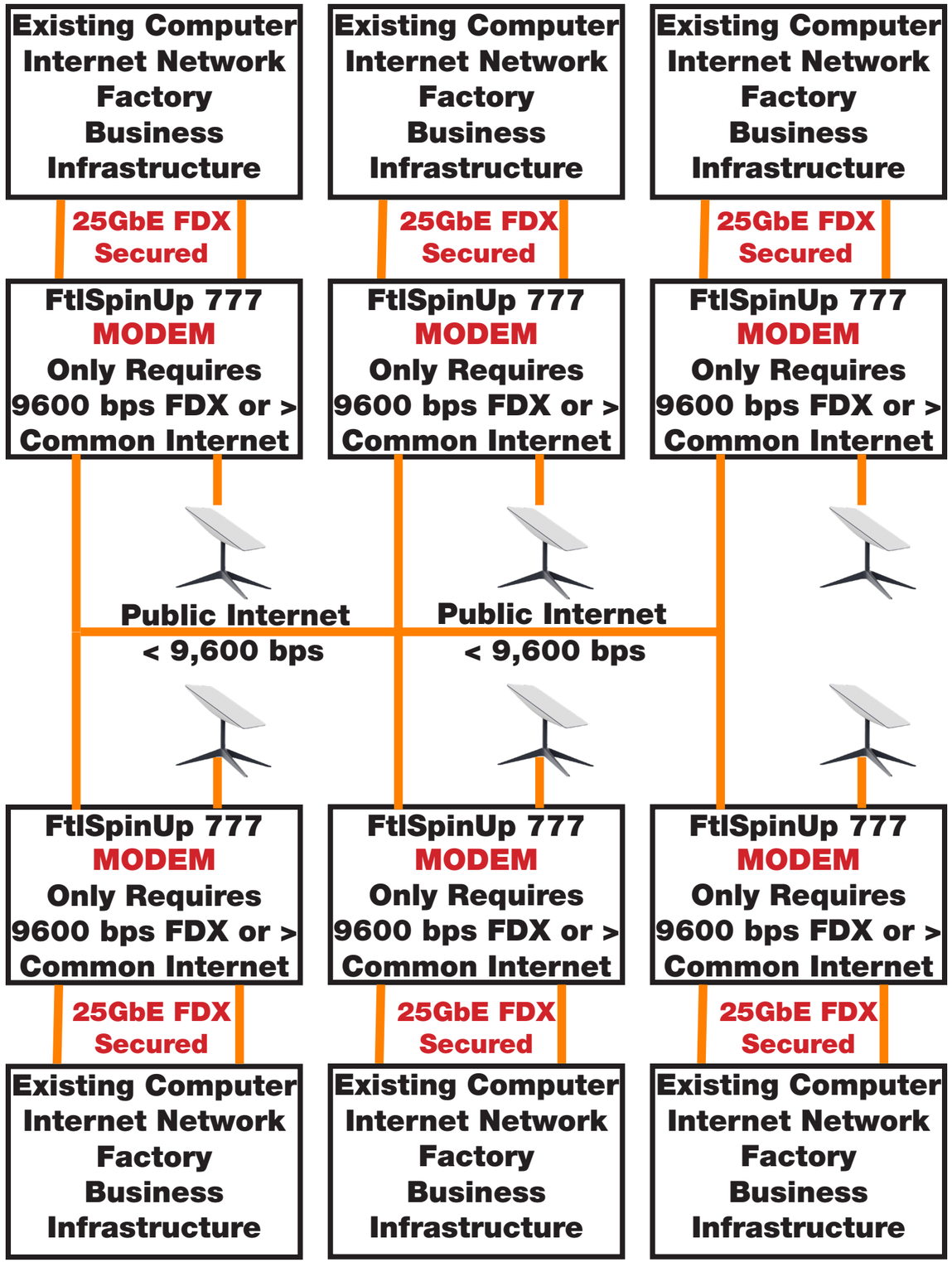
Back Up Files
3

Storage 777



Storage 777





AI-China-Russia-Iran-North Korea Immune Secured Modem Network

If your network is life support, critical infrastructure, secure data, strategic and tactical assets, and economic sensitive then you should not have any access to the Internet, and the Internet should not have any access to you.

International terrorist cyber attacks along with small scale hackers require large teams of expert trained professionals, and very expensive dedicated hardware / software to fight off ransom ware, espionage, and modern warfare. FtlSpinUp provides access to the Internet communication system without allowing access to or from the Internet.

Each and every single FtlSpinUp modem is an original work of art. If one is determined by the customer to be compromised, stolen, or destroyed, it will be disconnected from the secured modem network immediately. All FtlSpinUp modems are notified, updated, and a replacement can be installed. Each and every FtlSpinUp modem has its own physical security system. Every different customer has the ability to decide which modem is compatible, and different groups of customers can have different dynamic layers of compatibility.

9,600 bits per second minimum (in addition to network protocol overhead) provides up to 25 Giga bit Ethernet full duplex continuous throughput near real-time. For every single bit sent or received, 67,108,863 bits are missing. All the possible quantum computers on earth, and or space can not fill the missing 67,108,863 bits running 9,600 times per continuous second.

Any CHINA sneak circuits or Ethernet packet systems already located inside the existing computer Internet network will not be able to link to the public Internet network because of the FtlSpinUp modems while being connected to the unsecured public Internet network. They can be easily identified, and removed at any time without being able to comprise the secured network.

Only Customer Authorized FtlSpinUp modems will be able to communicate with each other providing a secured closed loop inside of a very world wide network.

Near Future 12 Disk SATA NAS Reference
[Reference Only]

NAS Electronics Box
12 Disk
(Not Included)
Two 25GbE Interface
$400 - $2,000

Possible 5 Year Disk
Data Retention
Nvme SSD
Possible 2 year
Data Retention



Typical Near Future 12 Disk
Network Attached Storage

50TB Hard Disk Drives

12 x 50TB = 600TB unformatted



Time to send 600TB over typical
5GbE Internet is about 14 Days

12 Disk x $1,2000 = $14,400 + $2,000 = $16,400

600TB / 40TB Tapes = 15 LTO 40TB Tapes

Peak Maximum 600TB with NO BACKUP

No Continuous Data Security

www.FtlSpinUp.com
Secured Mobile Data 777

FtlSpinUp Disk
25GbE FDX (Formatted)
281,474,976,710,656,000,000,000
Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

OPTIONAL RAM DISK
(Formatted)
9,007,199,254,740,992,000,000,000
Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

$15,000 Dollars **1Time** **Hardware Included**
$5,000 Dollars (Once Per Customer) **Every Year** **Factory Triple Backup**
UNLIMITED STORAGE 24/7 with NO INTERNET REQUIRED

$15,000 Dollars per “modem”

Purchase as many “modems” as required per Customer with the specific Customer authorized Code Controlled “modems” only being charged one time per year from (1 to 16 “modems”).

Same Customer with different specific Customer authorized Code Controlled “modems” are charged separately one time per year from (1 to 16 “modems”).

FtlSpinUp Secured Mobile Data 777
Internal 1TB Disk is full at
(2,814,749,767,106) x 100TB tapes

or (469,124,961,184) X 600 Tera Bytes

or (28,147,497,671) X 10 Peta Bytes

Time to send 288PB to another FtlSpinUp
Over 22Mega bit Ethernet Starlink Internet
Is Less Than < 0.001 Seconds



64 files at 22,528 Bytes each
sha512sum + Index
22,528 / 1024 = 22 (Sub Files)
Storage Bytes x (2^52)
Each (Sub File) has its own sha512sum + Index
Each (Sub File) stores
288,230,376,151,711,744
Peta Tera Giga Mega Kilo Hecto

(Selected Internal Format Amount)
or 2,882 LTO-10 100TB Tapes
Per (Sub File)

22 (Sub Files) = Combined into 1 (Single File)

6,341,068,275,337,658,368
Exa Peta Tera Giga Mega Kilo Hecto

64 (Single Files) = Total Diskette Usable Storage Capacity
405,828,369,621,610,135,552
Exa Peta Tera Giga Mega Kilo Hecto

or LTO-10 100TB Tapes
4 Million, 57 Thousand, 8 Hundred Fifty Six

One Single 1.44 diskette holds (4,057,856) 100TB LTO-10 Tapes
Of previous compressed video storage, programs, and data

LTO-10 40TB or LTO-10 100TB Tapes are NOT REQUIRED for Data Castle
And used for comparison ONLY.

Different Selected Internal Formats can be used for different applications and will change the Storage Capacity Pages (60-63)



Home > Store > Tape > Desktop Tape > SymplyPRO XTF Ethernet Tape – Desktop

SymplyPRO XTF Ethernet Tape – Desktop

SymplyPRO XTF Ethernet is a unique 10Gb iSCSI appliance with a full-height LTO appliance, designed to eliminate the need for dedicated servers. Housed in a durable, stylish metal alloy chassis, it features a premium cooling system and a reliable power supply for lasting performance.

Included Drive : LTO-10

LTO-9 LTO-10

× Clear

$21,999.00

– 1 + Add to Cart

Finance available — contact us for leasing options.

Got a question? Reach out to us—our team is ready to help!

AI Overview

The LTO-10 40TB tape cartridge is an enterprise-grade archival storage medium delivering a massive 40TB of native capacity and up to 100TB of compressed storage.



Key Specifications

- **Native Capacity:** 40TB uncompressed data
- **Compressed Capacity:** Up to 100TB using standard compression
- **Base Material:** Thin, high-strength Aramid base film that allows extra tape length inside standard dimensions
- **Archival Life:** Estimated at 30+ years of stable offline storage

Google lto 10 40tb tape

Pricing and Options

- **Fujifilm LTO-10 Ultrium 40TB Cartridge:** Typically priced around $499 to $592 per single tape depending on the supplier.
- **Quantum LTO-10 Ultrium 40TB Cartridge:** Premium enterprise labeling options retail around $2,825.
- **Compatibility:** Fully compatible with standard LTO-10 drives produced by hardware partners like MagStor.
- Read the official announcement from Fujifilm.
- Explore roadmap details from the LTO Program.
- View desktop options at MagStor.

If you would like, let me know:

- What **backup or archiving software** you plan to use
- Whether you need a **desktop drive** or a **tape library system**

I can recommend a complete hardware setup for your data volume.





MagStor
Fujifilm LTO-10 Ultrium 40TB Data Cartridge LTO10 16978170

$ 499.99 ~~$ 888.89~~

– 1 + Add to Cart

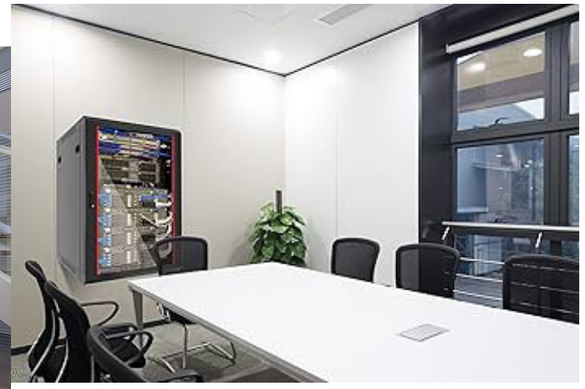
Share

Pickup Available At 7100 Huntley Rd.
View Store Details













USA+TERRITORIES ONLY

FtlSpinUp

Secured Mobile Data 777

HARDWARE

Pages (20-27)



FtlSpinUp Secured Mobile Data 777
QSFP Fiber Optic
NIC - 25GbE
25GbE Full Duplex Near Real-Time
50GbE Half Duplex Near Real-Time
1TB Disk for Customer - 1TB Disk Internal System

FtlSpinUp Disk
25GbE FDX (Formatted)

281,474,976,710,656,000,000,000,000

Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

$15,000 Dollars **1Time** **Hardware Included**
$5,000 Dollars **Every Year** **Factory Triple Backup**

Checksummed Files to eliminate communications error are sent to FtlSpinUp and converted to Zip Files for reduction of redundant data up to 90TB blocks that only require 1.44 MB on the 1TB Disk Drive. The 1.44 MB files are sent back to the factory for triple redundancy 100% Guaranteed return, and never erased. A simple email is used, and a return email for green light receipt. Automatic sha512sum checksum bits are used throughout the entire 1.44 MB file to ensure data communication integrity.

The 1.44MB file will fit onto a diskette, however it does not have any limitations as to storage media.

777 has two 25GbE QSFP Fiber Optics and one is Full Duplex at all times. Or the working cores can be redirected to Half Duplex one direction for both QSFP Fiber Optic cables at 50GbE.

FtlSpinUp

AMD EPYC 4585PX 16 Core
16 Cores ECC Ram
25GbE Full Duplex / 50GbE Half Duplex
Factory Triple Redundant Automated Backup
Data Sent to Factory is 100% Guaranteed and Verified on each and every FtlSpinUp

90TB sent to any NAS at 50GbE is 5 Hours
90TB returned to any NAS at 25GbE is 5 Hours
Actual time may be greater depending on Disk Drive Array

90TB sent with Starlink 22Mbs Uplink (No FtlSpinUp)
Is 1.425 Years
90TB returned with Starlink 22Mbs Uplink (No FtlSpinUp)
Is 1.425 Years

FtlSpinUp Demo 60GB File at 50GbE is 12 Seconds

FtlSpinUp 1TB Disk is Half Duplex 50GbE
469,124,961,184 Times More Storage than 600TB NAS
90TB sent to FtlSpinUp at 50GbE is 5 Hours
Only 1.44MB is used to store the 90TB
1.44MB returned from FtlSpinUp at 50GbE is 5 Hours

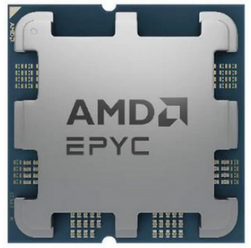
CargoBit (1Million Dollars+) is HDX 4 Tera bit Ethernet

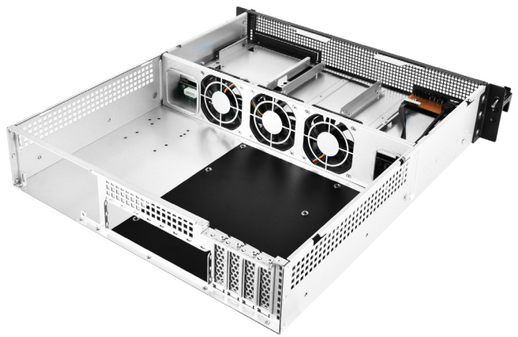
90TB sent to Cargobit at 4TbE is 3.75 Minutes
Only 1.44MB is used to store the 90TB
1.44MB returned from FtlSpinUp at 4TbE is 3.75 Minutes

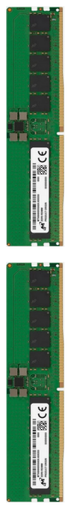


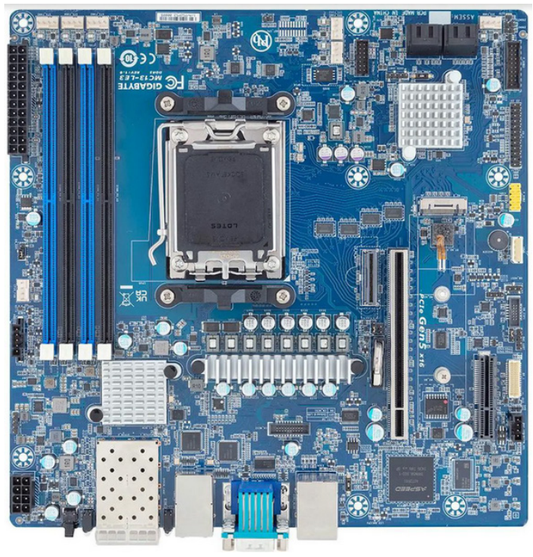














FtlSpinUp 777

AMD EPYC 4585PX 16 Cores

16 Cores 2 QSFP 25GbE / 25GbE



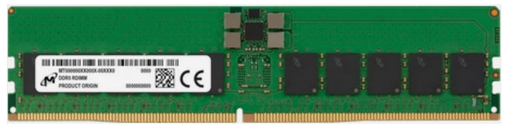


















OPTIONAL - RAM DISK for FtlSpinUp Secured Mobile Data 777

1TB Disk for Customer - 1TB Disk Internal System

FtlSpinUp Disk 25GbE FDX (Formatted) 281,474,976,710,656,000,000,000,000
Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

OPTIONAL RAM DISK (Formatted) 9,007,199,254,740,992,000,000,000
Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

$10,000 Dollars Included **1Time Forever** **Hardware Included Factory Triple Backup**

Additional customer 9.007 Yotta Byte RAM DISK and, 281.474 Yotta Byte disk drive with additional 1TB system support disk drive, 32 GB ram, 512 GB NVME SSD, and Eaton Tripp Lite SU1500RTXLCDN 1500VA Online Double-Conversion UPS 1350W SmartOnline Pure Sine Wave 2U Rackmount 8 Outlets AVR 2-Year Manufacturer's Warranty & $250 000 Insurance Electronics.

The ram disk is 32GB ram x (2^52) = 9,007,199,254,740,992,000,000,000 Bytes formatted of random access memory. Recommended for live Data, Data Set, and Data Base analysis, conversions, manipulations, calculations, with near real-time random access. When power is lost, the 32GB ram will be moved to the 512GB NVME SSD in under 1 minute. At power up the stored 32GB image is returned to the 32GB ram, and the additional 1TB Internal System disk drive. Occasional 32GB images are made to the 1TB Internal System disk drive also.

Please see (Pages 60 - 63) for OPTIONAL Data, Data Set, Data Base formatting. The data can be formatted for extremely fine grain to allow for random searching, analysis, conversions, manipulations, calculations, and mapping in near real-time. The Mobile Data 777 conversion rate is 25GbE FDX, or 50GbE HDX. Please see catalog for faster models.

OPTIONAL RAM DISK

FtlSpinUp Secured Mobile Data 777

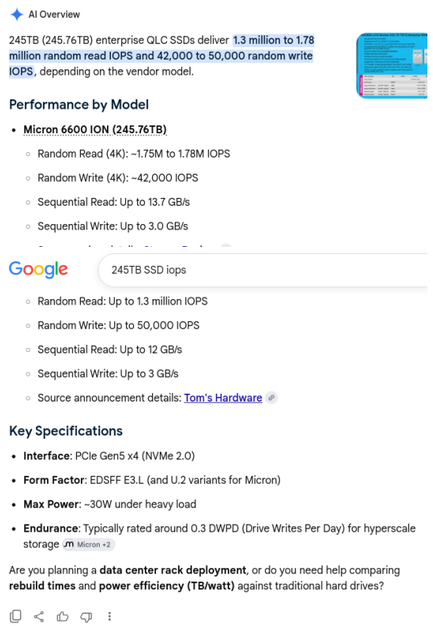
9.007 Yotta Byte RAM DISK / 245.76 Tera Byte SSD =
36,650,387,592 SSD Drives at $80,000 Each =
$ 2,932,031,007,402,666 a.k.a. Multiple Data Centers

180,143,985,094 50TB Hard Disk Drives at $2,000 Each =
$360,287,970,189,639 a.k.a. Multiple Data Centers

Capacity comparison only, the FtlSpinUp 777 is limited to 50GbE HDX or 25GbE FDX. IOPS is less than billions of drives supported by individual input / output systems. Of course approx. $25,000 FtlSpinUp 777 compared to Drive cost alone $3 Quadrillion Dollars may be one sided.

All compared to one single FtlSpinUp 777 with RAM DISK $25,000





OPTIONAL RAM DISK

FtlSpinUp Secured Mobile Data 777

IOPS (Input Output per Second) rating is better addressed by the over $80,000 cost for one single 245.76TB SSD Drive unit. The cost of 3 FtlSpinUp 777 units with optional RAM DISK is about $75,000 Dollars.

The total throughput is 150GbE HDX, and 75GbE FDX, meaning the IOPS of 3 FtlSpinUp 777 units is much greater than one single 245.76TB SSD Drive unit.

The total capacity of 3 FtlSpinUp 777 units with optional RAM DISK is: 27,021,597,764,222,976,000,000,000 Bytes
or
109,951,162,777 (245.76)TB SSD Drive units
or
$8,796,093,022,208,000 at $80,000 each

Compared to 3 FtlSpinUp 777 with RAM DISK $75,000

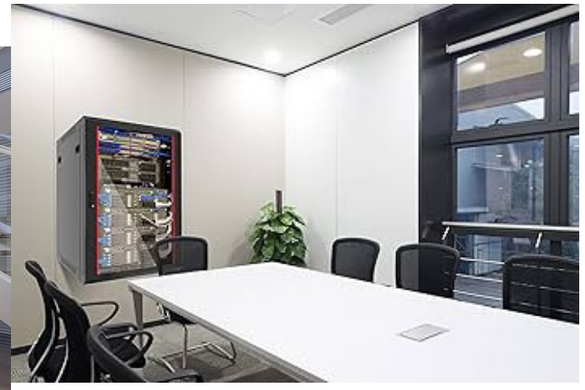
Support of Full 75GbE Input Output Full Duplex
Support of Full 150GbE Input Output Half Duplex
No Write Endurance Limit of any kind, unlike SSD Drives

Content Addressable Random Access Memory
With Generated Index Tables
Please see Pages: (42 - 45)
Near Real-Time Performance
No Industry Standard 5 Year Licensing per TB
Additional High Speed SSD Local Disk for power down storage
Additional Battery for power down no loss storage support













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FtlSpinUp

Secured Desktop Data 3600

HARDWARE

Pages (29-37)

USA+TERRITORIES ONLY

www.FtlSpinUp.com

Secured Desktop Data 3600

Amazon	=	10,000,000,000,000,000
$2,000,000 Dollars + Every Year		Peta Tera Giga Mega Kilo Hecto
Azure	=	10,000,000,000,000,000
$2,000,000 Dollars + Every Year		Peta Tera Giga Mega Kilo Hecto
Google	=	10,000,000,000,000,000
$2,000,000 Dollars + Every Year		Peta Tera Giga Mega Kilo Hecto
Backblaze	=	10,000,000,000,000,000
$834,000 Dollars	**Every Year**	Peta Tera Giga Mega Kilo Hecto
Wasabi	=	10,000,000,000,000,000
$958,800 Dollars	**Every Year**	Peta Tera Giga Mega Kilo Hecto
Seagate Lyve Cloud	=	10,000,000,000,000,000
$7.50 TB/Mo Standard		Peta Tera Giga Mega Kilo Hecto
$900,000 Dollars	**Every Year**	
FtlSpinUp Disk 400GbE FDX (Formatted)		281,474,976,710,656,000,000,000,000
		Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto
RAM DISK (Formatted) 400GbE FDX		720,575,940,379,279,360,000,000,000
		Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

$85,000 Dollars per "modem" **1Time** **Hardware Included**
$5,000 Dollars (Once Per Customer) **Every Year** **Factory Triple Backup**

Optional Starlink Near Real-Time 50GbE HDX about 19,200 bps
288PB File at 44Mbps Uplink FDX = < 0.001 Sec = 12.384ZbE
75.557ZB Cartridge at 44Mbps Uplink FDX = 61 Sec = 12.384ZbE

Infinite Secured Desktop Data (2^52) Near Real-Time Base
All Data Never Erased and Guaranteed for LIFE



FtlSpinUp Secured Desktop Data 3600
NIC 100GbE / 200GbE / 400GbE
100GbE Full Duplex Near Real-Time
200GbE Full Duplex Near Real-Time
400GbE Full Duplex Near Real-Time
One 1TB Disk with Customer Storage

FtlSpinUp Disk 400GbE FDX (Formatted)		281,474,976,710,656,000,000,000,000
		Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto
$85,000 Dollars	**1Time**	**Hardware Included**
$1,200 Dollars	**Every Year**	**Factory Triple Backup**

Checksummed Files to eliminate communications error are sent to FtlSpinUp and converted to Zip Files for reduction of redundant data up to 90TB blocks that only require 1.44 MB on the 1TB Disk Drive. The 1.44 MB files are sent back to the factory for triple redundancy 100% Guaranteed return, and never erased. A simple email is used, and a return email for green light receipt. Automatic sha512sum checksum bits are used throughout the entire 1.44 MB file to ensure data communication integrity.

The 1.44MB file will fit onto a diskette, however it does not have any limitations as to storage media.

FtlSpinUp
Two AMD EPYC 9965
(192 + 192) = 384 Cores ECC RAM
1 Fiber Optic - 100GbE / 200GbE / 400GbE

Factory Triple Redundant Automated Backup
100% Guaranteed Data Sent to Factory

90TB sent to any NAS at 200GbE is 1.25 Hours
90TB returned to any NAS at 200GbE is 1.25 Hours
Actual time may be greater depending on Disk Drive Array

90TB sent to any NAS at 400GbE is 37.5 Minutes
90TB returned to any NAS at 400GbE is 37.5 Minutes
Actual time may be greater depending on Disk Drive Array

90TB sent with Starlink 22Mbs Uplink (No FtlSpinUp)
Is 1.425 Years
90TB returned with Starlink 22Mbs Uplink (No FtlSpinUp)
Is 1.425 Years

FtlSpinUp Demo 60GB File at 400GbE is 1.5 Seconds

FtlSpinUp is Full Duplex 200GbE
2,236,962 Times More Storage than 600TB NAS
90TB sent to FtlSpinUp at 200GbE is 1.25 Hours
Only 1.44MB is used to store the 90TB
1.44MB returned from FtlSpinUp at 200GbE is 1.25 Hours
1.44MB is separated into 64 individual segments

FtlSpinUp is Full Duplex 400GbE
2,236,962 Times More Storage than 600TB NAS
90TB sent to FtlSpinUp at 400GbE is 37.5 Minutes
Only 1.44MB is used to store the 90TB
1.44MB returned from FtlSpinUp at 400GbE is 37.5 Min.
1.44MB is separated into 64 individual segments

CargoBit (1Million Dollars+) is HDX 4 Tera bit Ethernet

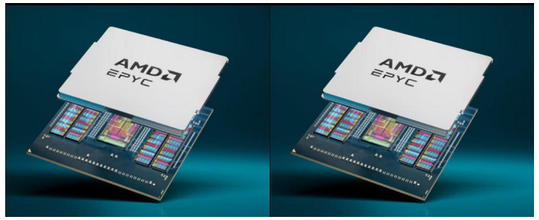
90TB sent to Cargobit at 4TbE is 3.75 Minutes
Only 1.44MB is used to store the 90TB
1.44MB returned from FtlSpinUp at 4TbE is 3.75 Minutes
1.44MB is separated into 64 individual segments

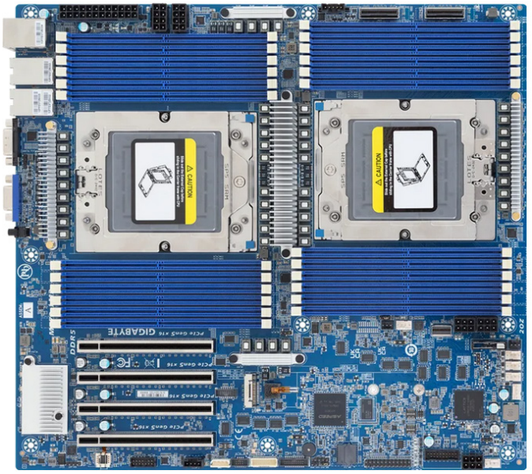






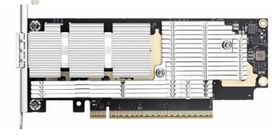


















FtlSpinUp

2 AMD EPYC 9965 192 + 192
1 QSFP 200GbE / 400GbE









FtlSpinUp OPTIONAL RAM DISK

Secured Desktop Data 3600

1TB Disk for Customer - 1TB Disk Internal System

FtlSpinUp Disk 400GbE FDX (Formatted) 281,474,976,710,656,000,000,000,000
Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

OPTIONAL RAM DISK (Formatted) 9,007,199,254,740,992,000,000,000
Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

$15,000 Dollars Included **1Time Forever** **Hardware Included Factory Triple Backup**

Additional customer 9.007 Yotta Byte RAM DISK and, 281.474 Yotta Byte disk drive with additional 1TB system support disk drive, 512 GB NVME SSD, Eaton Tripp Lite SU1500RTXLCDN 1500VA Online Double-Conversion UPS 1350W SmartOnline Pure Sine Wave 2U Rackmount 8 Outlets AVR 2-Year Manufacturer's Warranty & $250 000 Insurance Electronics.

The ram disk is 32GB ram x (2^52) = 9,007,199,254,740,992,000,000,000 Bytes formatted of random access memory. Recommended for live Data, Data Set, and Data Base analysis, conversions, manipulations, calculations, with near real-time random access. When power is lost, the 32GB ram will be moved to the 512GB NVME SSD in under 1 minute. At power up the stored 32GB image is returned to the 32GB ram, and the additional 1TB Internal System disk drive. Occasional 32GB images are made to the 1TB Internal System disk drive also.

Please see (Pages 60 - 63) for OPTIONAL Data, Data Set, Data Base formatting. The data can be formatted for extremely fine grain to allow for random searching, analysis, conversions, manipulations, calculations, and mapping in near real-time. The Desktop Data 3600 conversion rate is 400GbE FDX. Please see catalog for faster models.

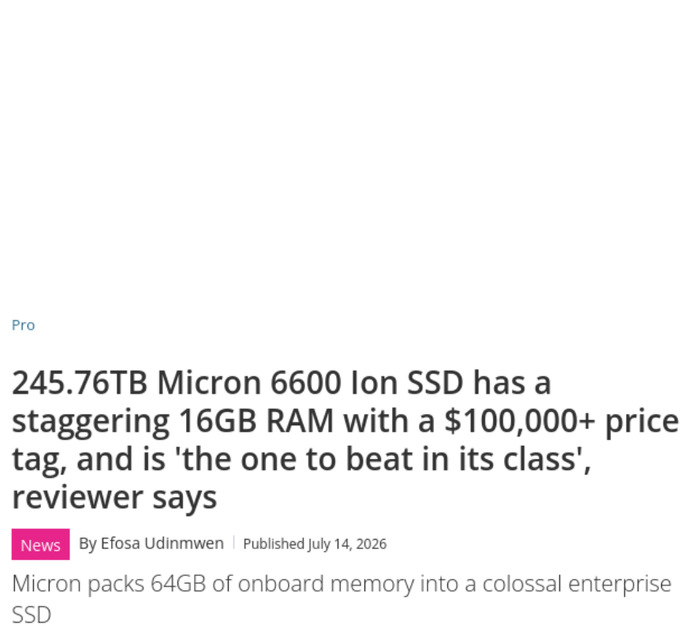
FtlSpinUp OPTIONAL RAM DISK
Secured Desktop Data 3600

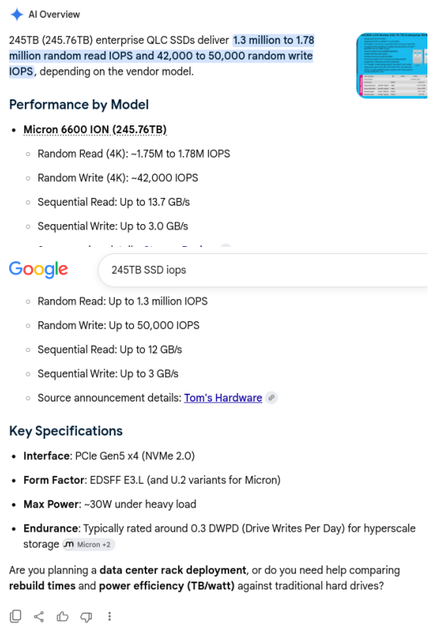
9.007 Yotta Byte RAM DISK / 245.76 Tera Byte SSD =
36,650,387,592 SSD Drives at $80,000 Each =
$ 2,932,031,007,402,666 a.k.a. Multiple Data Centers

180,143,985,094 50TB Hard Disk Drives at $2,000 Each =
$360,287,970,189,639 a.k.a. Multiple Data Centers

Capacity comparison only, the FtlSpinUp 3600 is limited to 400GbE FDX. IOPS (Input Output Per Second) is less than the billions of drives supported by individual input / output systems. Of course approx. $100,000 FtlSpinUp 3600 cost compared to over 36 billion of 245.76 SSD Drive cost alone $3 Quadrillion Dollars may be one sided.

All compared to one single FtlSpinUp 3600 with RAM DISK $100,000





FtlSpinUp OPTIONAL RAM DISK
Secured Desktop Data 3600

IOPS (Input Output per Second) rating is better addressed by the over $80,000 cost for one single 245.76TB SSD Drive unit. The cost of 1 FtlSpinUp 3600 unit with optional RAM DISK is about $100,000 Dollars.

The total throughput is 400GbE FDX, meaning the IOPS of 1 FtlSpinUp 3600 unit is much greater than one single 245.76TB SSD Drive unit.

The total capacity of 1 FtlSpinUp 3600 units with optional RAM DISK is: 9,007,199,254,740,992,000,000 Bytes
or
36,650,387,592 (245.76)TB SSD Drive units
or
$ 2,932,031,007,402,666 at $80,000 each

Compared to 1 FtlSpinUp 3600 with RAM DISK $100,000

Support of Full 400GbE Input Output Full Duplex
No Write Endurance Limit of any kind, unlike SSD Drives

Content Addressable Random Access Memory
With Generated Index Tables
Please see Pages: (42 - 45)
Near Real-Time Performance
No Industry Standard 5 Year Licensing per TB
Additional High Speed SSD Local Disk for power down storage
Additional Battery for power down no loss storage support

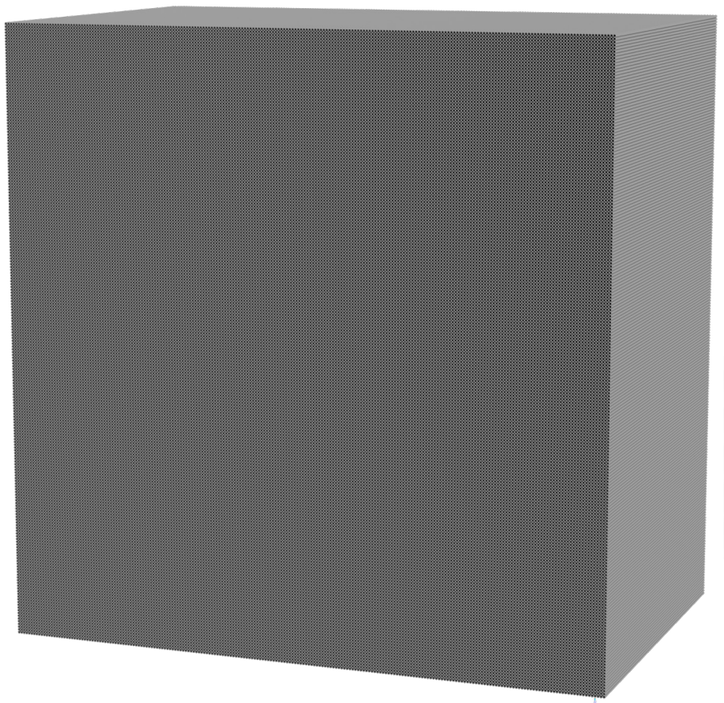
Faster Than Light

and

(2^52)

Practical Applications

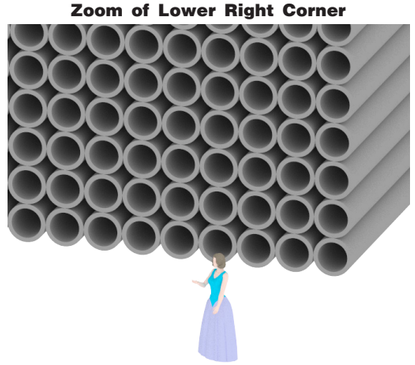
Pages ( )



Rough Approx.
216 X 216 Pipes
=10,964,533,248
~410TbE Fiber Strands

Same Number of Bytes over 1 Single 1GbE at (2^52)

Zoom of Lower Right Corner



450 359 962 737 049 600 000 000 Bytes

Zetta Exa Peta Tera Giga Mega Kilo Hecto

Same # of bytes sent over 1 single 1GbE in 1.0 Seconds
450,359,962,737,049,600,000,000 Bytes / (2^52)=100,000,000Bytes
100,000,000 Bytes over 1GbE = 1.0 Second
1.0 Second over 1 single 1GbE up/down Line

OR

Same bytes sent over 46,656 Pipes full of ~410TbE in 1 Second
450,359,962,737,049,600,000,000 = No Subspace Conversion
450,359,962,737,049,600,000,000 / ~410TbE = 10,964,533,248
10,964,533,248 ~410TbE Fiber Strands 1.0 Full Second

26-in. HDPE sleeve with 34 (2-in. 6912 Fiber Strands) per pipe
34 X 6912 = 235,008 ~410TbE Fiber Strands per pipe
10,964,533,248 / 235,008 Fiber Strands per pipe
= approx. 46,656 Pipes
Square Root 46,656 = 216 X 216 Pipes of ~410TbE Fiber Strands
Continuous Run for 1.0 Full Second

NTT Global Data Centers
We love our clients, but everyone needs space
7 campuses across the U.S.
Learn more

PODCAST

Data Center Fiber at Gigawatt Scale: A Talk With Quantum Loophole CEO Josh Snowhorn

The Cabling Podcast sits down with Josh Snowhorn, founder and CEO at Quantum Loophole, to discuss the massive QLoop fiber ring project under the Potomac.

DCF Staff

April 21, 2023



Quantum Loophole CEO Josh Snowhorn testing one of the giant conduits that will house fiber for the QLoop, the company's fiber ring connecting the new campus to Data Center Alley in Northern Virginia.

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The Power is On.
The Brattle Group:
Decarbonized Resilience
GET THE WHITE PAPER

VOICES OF THE INDUSTRY



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Collaboration is Multiplication: Listening and...

Phillip Marangella, Chief Marketing and Product Officer at EdgeConneX, shares his perspectives on why collaboration is the key to meeting the needs of data center customers.

Voices of the Industry

Data centers are more than just the sum of their parts and there

are far more pieces in play than most people outside the industry would consider. Connectivity is one of the key functions external to the data center that enables effective operation, and as such, we focus significant efforts in providing coverage of the activities of both the technology and the industry supporting these options.

Josh Snowhorn is founder and CEO at Quantum Loophole, an operator of data center campuses in the gigawatt scale. At DCF we've been providing regular updates on Quantum Loophole and its vision for "data center cities" since the company came out of stealth in early 2021. The company says it has already leased a massive 240 megawatts of capacity at its campus in Adamstown, Maryland.

Central to the entire undertaking is QLoop, the 43-mile hyperscale fiber ring connecting Quantum Loophole's 2,100+ acre data center development site in Frederick County, Maryland to the Data Center Alley connectivity ecosystem around Ashburn, Virginia.

ADVERTISEMENT



In a recent edition of **The Cabling Podcast**, our sister publication Cabling Installation & Maintenance checked in with Snowhorn for an update on the construction of data center and fiber conduit infrastructure.

Snowhorn said the projects is the largest medium haul fiber backbone that's ever been created. The QLoop network ring network ring offer capacity for more than 200,000 strands of fiber connecting to the Ashburn ecosystem in under one half millisecond Round Trip Time (RTT). "And we are bolstering that with some pretty amazing cross-connect capabilities," he added.

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"Each property will have access to conduits and thousands of strands of fiber directly into the QLoop system to enable seamless, private and secure connectivity for all of our campus-wide customers."

Here's the podcast with CIM host Matt Vincent, followed by a summary of the key discussion points.

Gigawatt-Scale Data Center Fiber

A frequent speaker at industry conferences, Snowhorn's key founding and executive positions include time at Terremark, Verizon, Cincinnati Bell, and CyrusOne. Snowhorn founded the Global Peering Forum, the annual meeting for the Internet interconnection and peering community, where he serves on the board of directors. He also serves on the advisory board of Telescent, a maker of automated data center interconnection machines.

As the discussion begins, Snowhorn provides an update on (1:46) underground fiber infrastructure linking up Quantum Loophole's Frederick data center campus' network center 1 and 2 sites, "which

are kind of like giant, horizontal meet-me rooms, multiple acres themselves. We have up to 60 conduits in some cases interconnecting the two network centers."

ADVERTISEMENT



Of the QLoop (2:27) fiber ring project, Snowhorn adds:

> "We have completed our south Potomac river boring, which was over 3000 ft., and it goes 91 feet below the bedrock of the Potomac. That was a huge, 26-in. HDPE sleeve that was pulled through, and then 34 two-inch ducts inside of that. That's been completed and approved and vaults have been put in place. Terrestrial construction has started with multiple crews working laying in the 34 ducts, buried deeply to accomodate the most extreme security standards."

Of his company's partnership with Aligned Data Centers, Snowhorn noted that (3:43) "at Quantum Loophole, we don't build data centers ourselves. We supply land, energy, water, and fiber, or conduit. We call those 'the elements of the data center business.' Aligned is our first customer, they have closed on the acquisition of 75 acres of land, and I believe they're well underway with their permitting process and preparing to construct, hopefully, their first building by the end of the year."

Snowhorn also discussed (4:24) the origin and founding of his company.

> "The impetus for creating Quantum Loophole is really that we saw a gap in the industry -- there wasn't anybody providing just those baseline services, and entitlement preparation of site so others can go and just have an 'easy button' to build their data centers. We felt like we had a unique offering and it's proven to be true, we have lots of company demand, and lots of big-scale entities going in. We've sold several conduits already, so that's already well underway."

At the root of Quantum Loophole's stated "dig once" approach, Snowhorn said (5:20):

> "You're really trying to just prevent cuts, prevent what happens in the famous backhoe pictures you see, where they tear up a bunch of duct. In our case, we can hold over 235,000 strands of fiber in our primary system; the whole thing is designed for 6912-fiber trunks -- so imagine a backhole pulling that up and the splicing hell that would ensue afterwards to repair it. So dig once means, put it all in place and hopefully we don't overbuild, and hopefully we don't underbuild."

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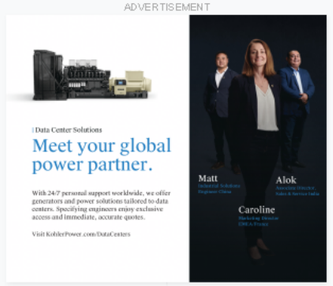



Quantum Loophole Founder and CEO Josh Snowhorn speaks to The Cabling Podcast.

Splicing Skills and Automated Connections

Later in the interview (6:36), Matt asks how working with a high-fiber-count cable like 3456 is different from working with 144-fiber cable (which the world used to consider high-fiber-count), and if installers had to to "level up" on their splicing skills or any other installation skills to get comfortable working with this high-fiber count fiber.

QLoop's press coverage mentions (7:51) that its network infrastructure has a radius that will accommodate 6912-fiber availability. In response to this info, we asked Snowhorn if his teams have worked with that fiber count yet; and if so, if there's been a noticeable difference between it and 3456-fiber cable.

Snowhorn also shared (9:07) his insights regarding the value proposition of automatic, robotic cross connections powered by Telescent, as installed at Quantum Loophole's Maryland data center campus.

> "It really comes out of a need to change how people do interconnection. Your classic way of doing it is either truck rolls to a remote hut, or having 24x7 staff with tickets open, and hopefully no RX/TX reversals in play. But when you start thinking about the scale of what we're building, with more fiber strand count coming into a single location than anyone's ever seen, that really starts to bring in a need for change. The Telescent machines do something quite unique in that we can give the control of the interconnection to the client, so they can use a portal via an API, log in,

Data Center Fiber at Gigawatt Scale: A Talk With Quantum Loophole ... https://www.datacenterfrontier.com/podcast/article/33003627/data-cente...

and enable a cross-connect in 2 minutes without ever touching it as long as the machine has been pre-patched.

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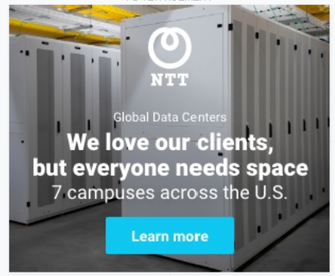

The bigger picture of that is they have the same machine on their campus and building, and then maybe they have the same machine located in Ashburn and Manassas, let's say 20 buildings, and they want to enable an interconnection. The machine has a built-in OTDR, they can punch light out, they can verify the connection and do 20 connections at the same time, all in 2 minutes, and batch a job. They can do 1,000 connections in 2,000 minutes theoretically, across 20 locations, without a human being touching it. That's game-changing. That really creates flexibility for outages, creates hopefully a reduction in truck roll and labor costs, and a more rapid delivery of interconnection."

As the QLoop is such a notably large outside and inside plant undertaking for data center construction, to close out the podcast (11:30) we asked Snowhorn for a recap of the project's specifications and a preview of what's in store for the rest of the year. In response, Snowhorn said:

> "It's literally hundreds of sites, hundreds of data centers, but we don't actually touch those other data centers once we get into Loudon County. We

November 14, 2026 www.FtlSpinUp.com Demo - Soon (47 of 80)

cross the Potomac, which is insanely hard to do: I now know why nobody tries to do it, becuase it's that hard. It's just been nothing but a struggle to get it done, but we're doing it. I don't think anybody's going to try and do it again for a long time. Machines blowing up, costs, the approvals -- going 9 stories below the bedrock of the Potomac is insane. The costs are through the roof -- I cannot think of a single thing that was easy about what we've done.

We drop down [and] have over 500 vaults on the 43-mile ring, and those vaults are designed to create a massive intersection of splice points, so that people can tie into the system. We're a wholesaler to the wholesalers, so our goal was not to go build throughout the entire Ashburn corridor and interconnect every building and be another competitive carrier. We wanted to be a support mechanism to create an expansion of that ecosystem."

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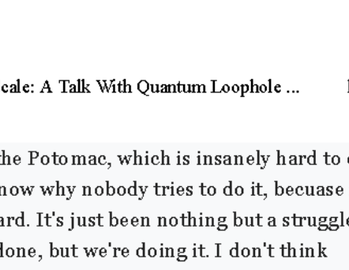




PODCAST

How Investment Powers the Global Growth of the Cloud



The Seagate Exos E SU84 storage enclosure supports 84 3.5 inch disk drives in a 5U box. A typical 42U rack cabinet will hold about 8-84 disk drive enclosures each.

CargoBit (2^52) will convert one single disk drive into the storage capacity of 4,503,599,627,370,496 disk drives, any size. 4,503,599,627,370,496 / 84 = 53,614,281,278,220 disk drive enclosures pictured above. 53,614,281,278,220 / 8 = 6,701,785,159,777 Cabinets full of disk drives. The electrical power and cost of physical space alone will pay for many, many CargoBit units instantly, not to mention the cost of all the disk drives that will wear out eventually, compared to the one single disk drive CargoBit uses.



FtlSpinUp is a Codex Grandeur LLC product, that in no way, shape, or form is connected to the SpaceX, or Starlink Corporation. The Starlink services and hardware are not modified in any way, shape, or form. This is an optional purchase by the customer

FtlSpinUp **ONLY WORKS** with FtlSpinUp data. One, two or more FtlSpinUp computers can be linked together with customer permission using Starlink business services. The FtlSpinUp allows up to 12.384 Zeta bits per second over the priority 44Mbs Uplink, and 44Mbs Downlink. Excessive service charges are not required.

Only the Uplink speed is ever used for FtlSpinUp data transfer
Starlink is NOT INCLUDED in FtlSpinUp - Optional Only

Starlink is used to demonstrate the low bits per second requirement of FtlSpinUp. Any reliable low speed Internet link will work, at a multiple of that available bit rate.



USA TERRITORIES ONLY





USA TERRITORIES ONLY

FtlSpinUp (1)

FtlSpinUp (2)

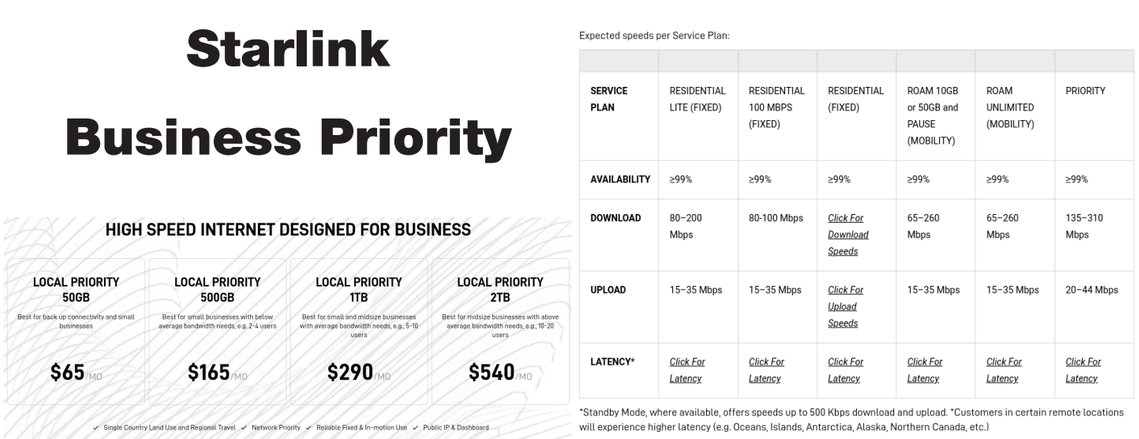
Business Priority Package Starlink
For 1 or 2 Customer Authorized FtlSpinUp Units Only
No modification to SpaceX or Starlink hardware
No signal modification in any way, shape, or form

Near Real-Time
FtlSpinUp Live Data Performance:
Starlink Uplink / Starlink Downlink
Maximum Continuous Bits per Second

9,600 bps Up FDX Near Real-Time x (2^52) = 25GbE
9,600 bps Down FDX Near Real-Time x (2^52) = 25GbE

19,200 bps Up HDX Near Real-Time x (2^52) = 50GbE
19,200 bps Down HDX Near Real-Time x (2^52) = 50GbE

Local Database File Real-Time Starlink Example
FtlSpinUp 288PB File (2^52) Data Performance:
[22Mbs] Starlink Uplink / [22Mbs] Downlink
Maximum Continuous Bits per Second Full Duplex
One 288PB File Transmission = < 0.001 Seconds
22Mbs uplink x (2^52) = 6.192 ZetabE
22Mbs downlink x (2^52) = 6.192 ZetabE



Expected speeds per Service Plan:

SERVICE PLAN	RESIDENTIAL LITE (FIXED)	RESIDENTIAL 100 MBPS (FIXED)	RESIDENTIAL (FIXED)	ROAM 10GB or 50GB and PAUSE (MOBILITY)	ROAM UNLIMITED (MOBILITY)	PRIORITY
AVAILABILITY	≥99%	≥99%	≥99%	≥99%	≥99%	≥99%
DOWNLOAD	80–200 Mbps	80-100 Mbps	*Click For Download Speeds*	65–260 Mbps	65–260 Mbps	135–310 Mbps
UPLOAD	15–35 Mbps	15–35 Mbps	*Click For Upload Speeds*	15–35 Mbps	15–35 Mbps	20–44 Mbps
LATENCY*	*Click For Latency*	*Click For Latency*	*Click For Latency*	*Click For Latency*	*Click For Latency*	*Click For Latency*

*Standby Mode, where available, offers speeds up to 500 Kbps download and upload. *Customers in certain remote locations will experience higher latency (e.g. Oceans, Islands, Antarctica, Alaska, Northern Canada, etc.)

FtlSpinUp uses the Starlink Business Priority service to only send FtlSpinUp data. No general purpose Internet data is supported, other than customer required transactions.

FtlSpinUp can connect to remote Cloud Storage locations. The FtlSpinUp file system can only be recovered by customer authorized FtlSpinUp systems, and the factory. Typically FtlSpinUp products send local storage data back to the factory, where the data is permanently stored in triplicate, in different locations, and never erased, or lost.

The local disk data is considered temporary, and only 100% guaranteed for 200 years plus when sent back to the factory, and a receipt is returned to the customer. The local 75.557ZB cartridge data is retention guaranteed for 200 years, however it is not 100% guaranteed for 200 years or more until sent back to the factory, and a receipt is returned to the customer.

A completely full 75.557ZB data cartridge with the equivalent of 755,578,637 (100TB LTO tapes), or 1 511 157 274 (50TB Disks) costing $2,000+ dollars each can be sent back to the factory over Starlink at 44Mbps in just over 61 seconds.

It may take years for the customer to fill up one 75.557 Zeta Byte data cartridge.

At 44Mbs Starlink upload speed the 75.557 Zeta Byte data cartridge was just sent at (**~ 12.384 Zeta bps)** in 61 seconds.

Local disk storage is also sent back to the factory, and 100% guaranteed for 200 years plus. File status will indicate when the 100% guarantee is achieved. Until then the file is single source, and vulnerable to loss.

The $1,200 every year provides access to the 100% guarantee for 200 years plus at the factory. This removes the requirement for tens of millions of dollars in local storage, and triple redundancy on top of that.

Customers can also purchase an M-Disc library of all their files at any time.

Starlink is one option only, and almost any local medium speed Internet service will work, if available. Typically the Starlink Business Priority customer will not use more than the $65 dollar service per month.

One possible application is where a 25Gbps camera using the Canon LI-8020SAC imager with lossless pixel data for image analysis, is connected to another FtlSpinUp unit with another Starlink package or local Internet service for a Near Real-Time image from the west coast to the east coast running 24 hours every single day. At that rate of Starlink service, the $65 would be increased to $165 per month.

It is possible to store the 25Gbps camera using the Canon LI8020SAC imager with lossless pixel data for image analysis on one FtlSpinUp local disk, and send periodic files back to the factory for 100% guaranteed for many years of storage, and or send to other customer authorized FtlSpinUp units.

(Head Lines)

All Data is located on Your Desk
All Hardware is at Customer Locations Only
Or Send Customer Data to
Another Customer Authorized FtlSpinUp at
25GbE Near Real-Time FDX at 9,600 bps
50GbE Near Real-Time HDX at 19,200 bps

28.1474 ZB File Data with Sha-512-Sum Hash
(2^52) Formatted Data Files over 1GbE Fiber
= 281.474 Zetta bit Ethernet

Or Optional Business Package Starlink to
Another Customer Authorized FtlSpinUp at
25GbE Near Real-Time Full Duplex
~2,500,000,000 Bytes per second
50GbE Near Real-Time Half Duplex
~5,000,000,000 Bytes per second

Stored (2^52) Data over 44Mbs Starlink
= 12.384ZbE

Or Local Fiber Optics
For Customer Authorized FtlSpinUp Units Only

Or Any Reliable Data Communications
For Customer Authorized FtlSpinUp Units Only

100% Mathematical Lossless Customer Data

All FtlSpinUp Data Can Be Stored on
200 Year Data Retention 75.557ZB Cartridges
1,000 Year Optical Discs

(Head Lines)

Deep Freezer for All Actions and Data Storage
For Emergency Use Only if everything fails
100% Recovery Return for Life Guaranteed
Only if Deep Freezer Data sent to Factory

All Raw Data is Subspace Converted at Input
No Raw Data Stored Anywhere in FtlSpinUp
Lossless Subspace Data Returned at Output

FtlSpinUp Header Used for Raw Data Blocks
No Analysis of Raw Data Content - No Internet

Raw Data Block Hash Codes - FtlSpinUp Header
Guaranteed Raw Data Block Integrity At Input

Raw Data Block Hash Codes Returned at Output

Near Real-Time Random Access Read and Write
From Computer at 25GbE FDX, and 50GbE HDX

Deep Freeze of All Actions and Data
For Emergency Use Only Possible by Customer

100% Recovery Return for Life
When Deep Freeze Copy sent to Factory

All FtlSpinUp Data Can Be Stored on
1,000 Year Optical Discs

Each and Every FtlSpinUp Unit is Original ART
Customer Authorized Remote Units Only



RGB
16 Bit
PRECISION COLOR

16 Stops
DYNAMIC RANGE

1600 ISO
NATIVE

1 TB/hr
FULL SENSOR RAW

HDR
PRIMO EVF

Modular
ENDLESS CONFIGURATIONS

Mounts
SP70, SYSTEM 65, PV35, PL

FILMED IN IMAX
Certified
8K FULL FRAME

Pixel Pitch

The 5-micron pixel pitch allows for 35 million pixels on the full 8K sensor. This combination of size and number eliminates edge sharpening and enables filmmakers to control the sharpness of their images through their choice of optics.

Bit Depth

Dynamic Range



Best Security Cameras on Earth

Codex Grandeur is not connected to Panavision in any way, shape, or form. The Dynamic Range with low light ability, and Panavision lens make these cameras ideal for large scale 24/7 monitoring. One hundred million dollar jets, and other aircraft need sabotage protection especially in hangers, and normally considered safe locations.

Farms, cattle, and even crops need monitoring 24/7, along with food storage facilitys, processing plants, and warehouses.

Lossless pixel data is important to computer image processing with remote locations required for most practical applications.

The 1 TB/hr data rate is supported by the FtlSpinUp at 25GbE, 24/7 non-stop.

1 TB/hr is ~277,777,778 Bytes per second
or
less than 3GbE with formatting
and
Will easily fit into the 25GbE FDX of FtlSpinUp
even
at the full rate of 25GbE
the
FtlSpinUp will store Lossless Pixel Data
for
2.575 Trillion YEARS Continuous
with
the onboard 1 TB Disk



Almost Anywhere
Near-Real Time

Almost Anywhere
Near-Real Time

Almost Anywhere
Near-Real Time

Almost Anywhere
Near-Real Time

Almost Anywhere
Near-Real Time

Almost Anywhere
Near-Real Time

Almost Anywhere
Near-Real Time

Almost Anywhere
Near-Real Time

Almost Anywhere
Near-Real Time

Almost Anywhere
Near-Real Time

Fast Movie Making

Continuous Recording 24/7

1 TB/hr Live is 277.8 MBs

Starlink UpLink is about 22Mbs or 2.2MBs

FtlSpinUp reduces 277.8 MBS to < 9,600 bps

Easily fits into Starlink UpLink speed NRT

Will easily fit into the 25GbE FDX of FtlSpinUp

All Cameras can link to each other at any time

All Cameras can send Live Video back to Base

All Data is Always Recorded and Never Erased

All Cameras can send full day recordings

to each other and back to base in seconds

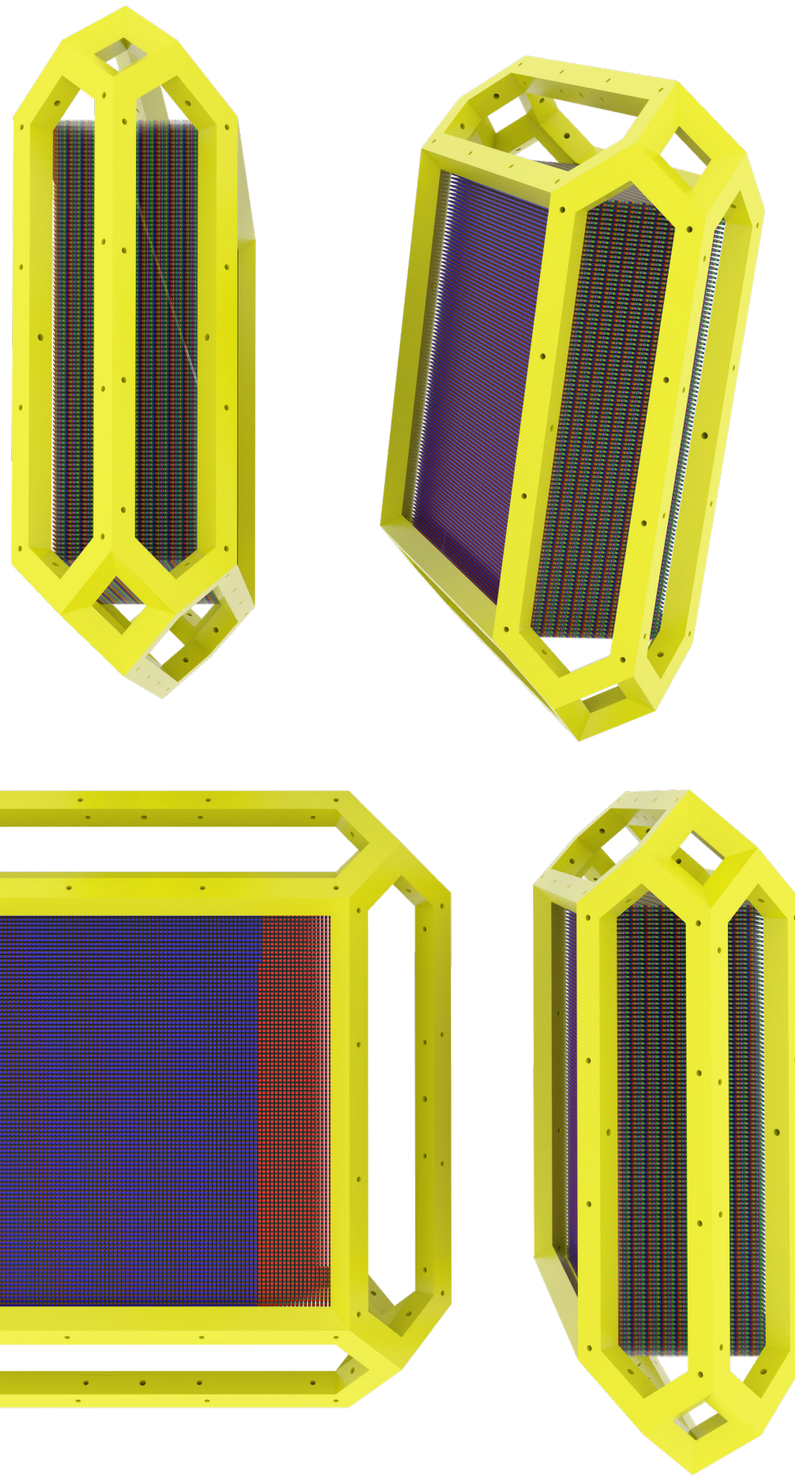
FtlSpinUp has a build in Back-Up Drive

FtlSpinUp can send data back to Factory at any

time for Triple Redundant Back-Up

288PB / (2^52) will easily fit onto one (Sub File) of a 1.44 Diskette

288PB file Starlink Up/Down in < 0.001 Seconds



OPTION = Data, Dataset, Database Formatting

Data are observations or measurements (unprocessed or processed) represented as text, numbers, or multimedia.

A **Dataset** is a structured collection of data generally associated with a unique body of work.

A **Database** is an organized collection of data stored as multiple datasets. Those datasets are generally stored and accessed electronically from a computer system that allows the data to be easily accessed, manipulated, and updated. **www.usgs.gov reference = USGS**

Customer OPTIONAL formatting is not required, when conventional file systems are used.

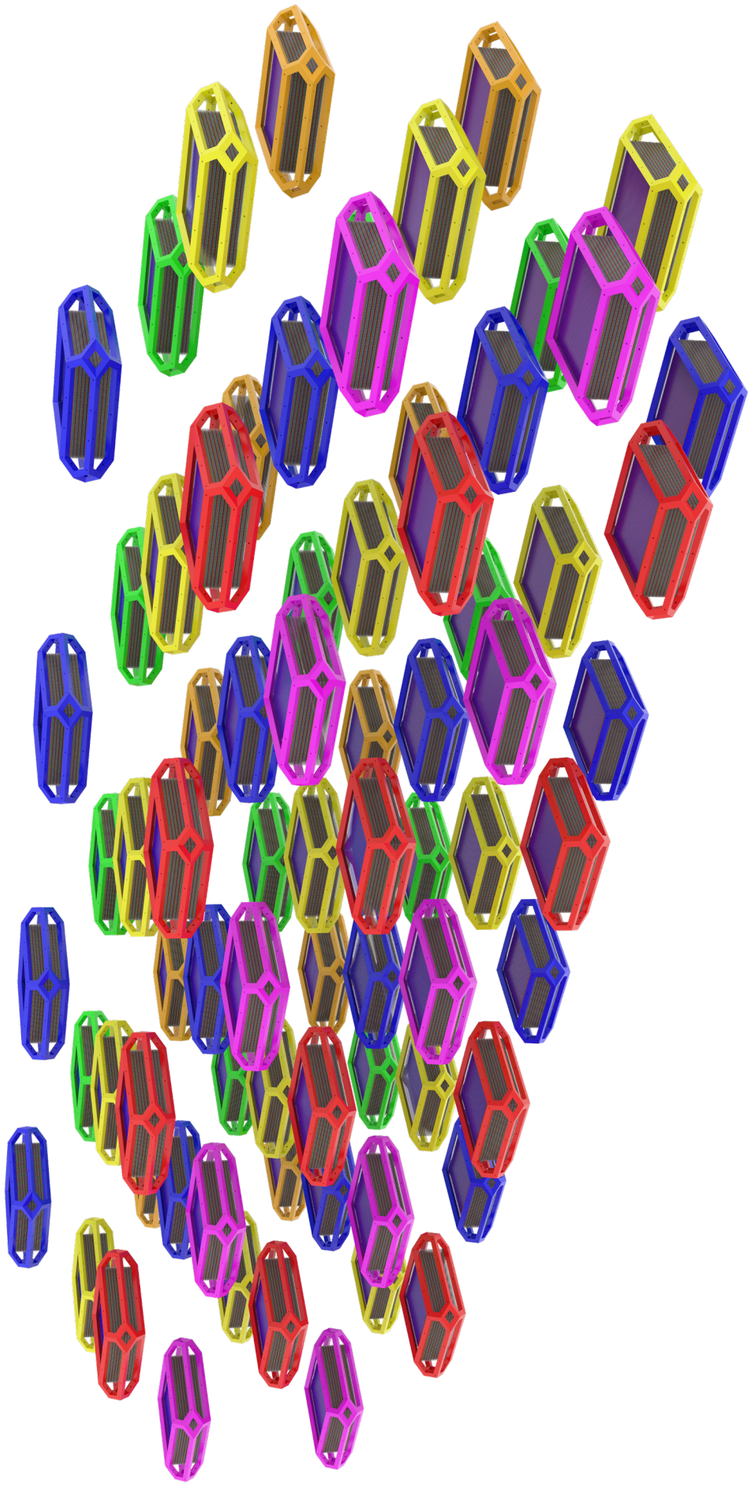
OPTIONAL formatting can be manipulated external to FtlSpinUp by remote existing computers. Only the initial subspace conversion and eventual return is required on the FtlSpinUp machine. Usage of the Ram Disk magnified from (2^52) can optionally be used in the form of extreme detail expansion, being the opposite to data storage efficiency. The conceptional model on Page 24 represents a structural housing containing the data array. The planar surfaces of the housing represent electrical interconnection socket panels providing data paths to the data array. One single housing is one single Element.

The Data, Dataset, and Database can be dynamically formatted with a vernier fine grain, to a coarse grain supporting custom Data, Dataset, and Database architectures. Vernier fine grain will use the most number of bytes, and provide the most multidimensional interconnected dynamic detail supporting optimal analysis, and work. Coarse grain is typical of current Database formatting designed for optimal byte storage efficiency.

Each conceptual model Element has 14 direct connection planar surfaces used for communication switching between different Elements in the array of multiple Elements. The 14 direct connection surfaces have 8 switchable positions for each separate Element. High frequency electrical switching between different Elements allows dynamic reconfigurations without computation of any kind. The constituent fine grain component factors that are customer defined inside of each Element are dynamic also, however with some computation required for location reconfiguration.

FtlSpinUp numerical multidimensional interconnected geometric array of Elements can be static or dynamic. FtlSpinUp has the customer option of dynamic constructions, where the Database is configured with customer input for optimized long distance fiber optic communications, and Dell computer architecture ability for diverse, multidimensional and dynamic numerical interconnection of Element arrays used in machine intelligence, machine vision, and pattern analysis.

Each element also has its own unique Database that is both local, and global to authorized customer elements. Additional bytes are used for checksum, ECC, and Database formatting, with proprietary overhead not involved in the direct customer usable data count. The customer byte count and actual byte count used for checksum, ECC, and Database formatting through the FtlSpinUp application program interface, both automatic, and customer programmable will be different. FtlSpinUp proprietary overhead is invisible to the customer, and not involved in any data communications. No additional charge is applied for the FtlSpinUp Element Database, or proprietary overhead, and is considered a unique FtlSpinUp feature.



OPTION = Data, Dataset, Database Formatting

Almost all data processing up till now has been concerned with limiting the real world needs to fit the boundary limitations of data storage, time, cost, energy, environment, human cost, buildings, communications, profit margin, and final product. Maximum efficiency with minimum resource allocation, and utilization, will achieve a serious loss of both strategic, and tactical performance.

FtlSpinUp is capable of exploding data detail into permutations, and combinations not practical and low cost until now. The current perspective of data is viewed from the outside-in because of human, and machine limitations. FtlSpinUp can achieve an inside-out perspective on data.

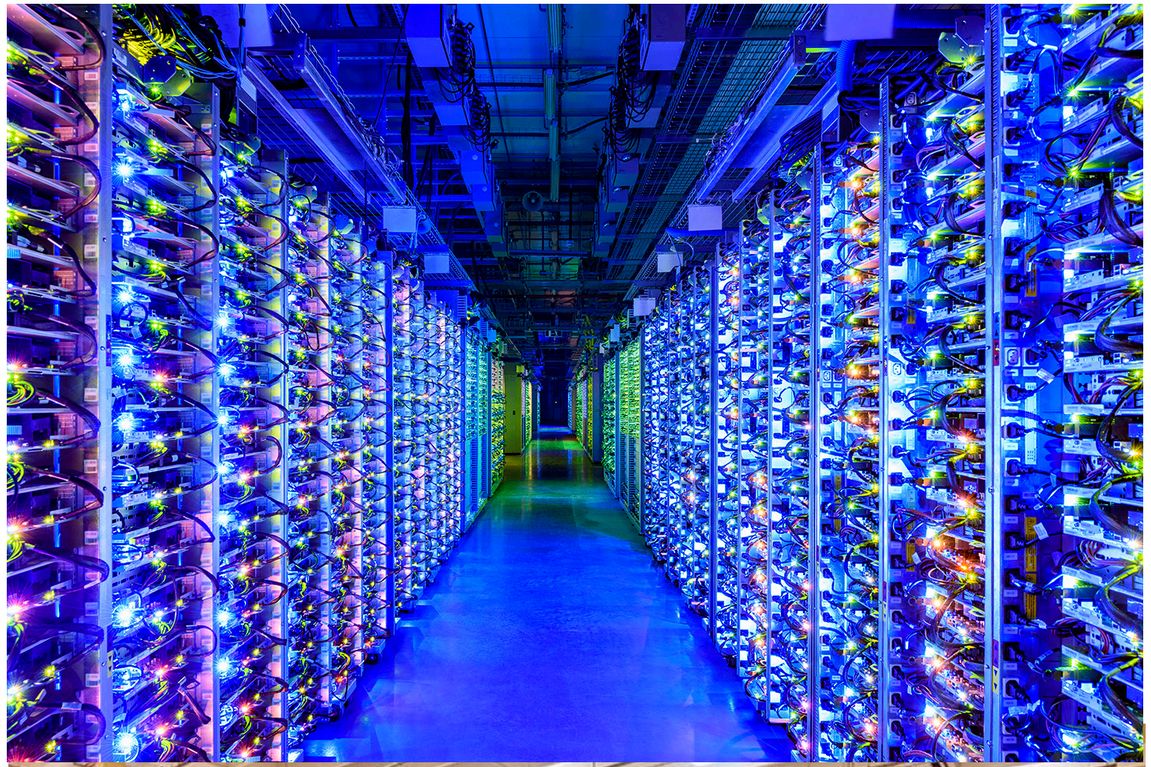
It is now possible to expand data into unlimited components that enhance association, analysis, and generate targeted processing segmentation, while quiet data remains dormant. The constant generation of associative data blocks insure new analysis results. FtlSpinUp compressed data blocks are created, and updated based on desired target characteristics such as video surveillance automobiles of a specific manufacture, color, shape, license, occupants, location, time, are stored in different associative blocks.

Knowledge-Based systems with deductive and inductive inference, and dynamically-reconfigurable systems with software-controlled reconfigurability are given almost unlimited data storage, including complex question-answering: knowledge-based systems with correlation analysis. Simultaneous communication of data among processors with (2^52) increase in performance. Lower native 1GbE Ethernet allows multi-dimensional network arrays with very low cost overhead. Actual data throughput is (2^52) time 1Gb Ethernet with FtlSpinUp. Of course 25GbE HDX is also multiplied by (2^52) with FtlSpinUp.

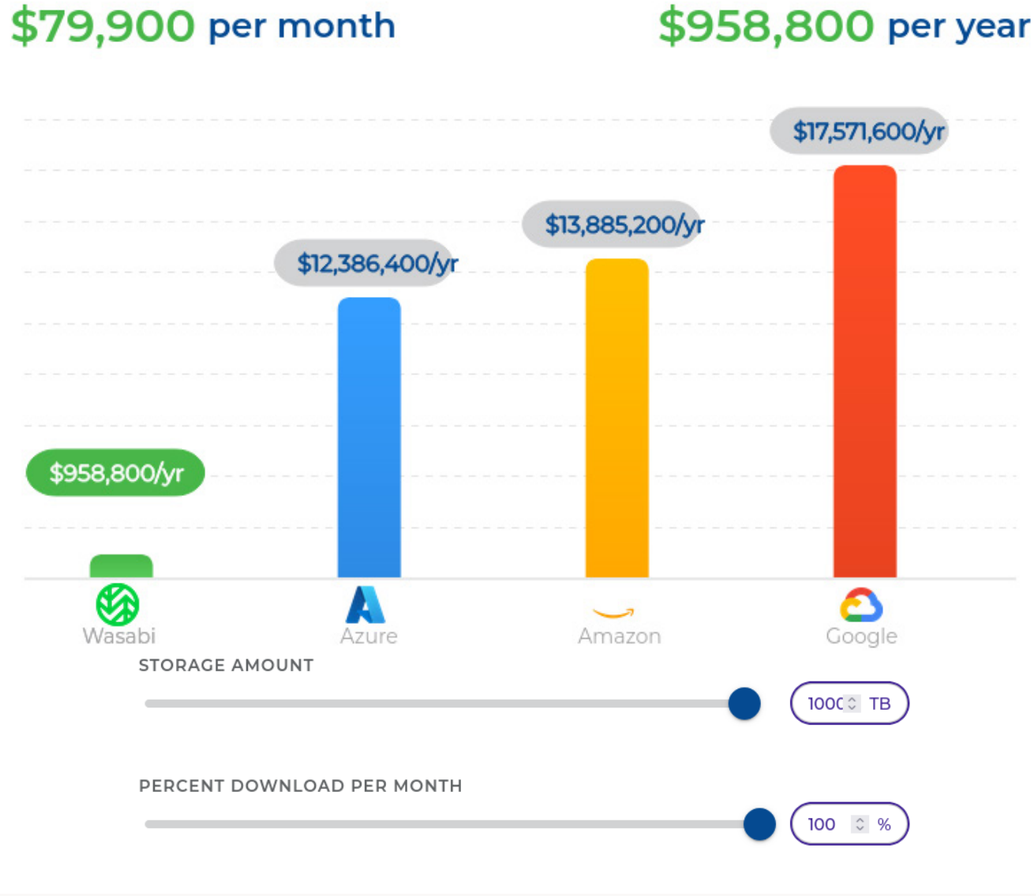
FtlSpinUp supports very fine grain subspace conversion data blocks eliminating the need for massive scale data storage and retrieval at one time. Every single FtlSpinUp payload section has a very limited non-compressed write-able area for customer usage that allows real time dynamic update of Data Base and Data Set pointers of the (2^52) compressed data, so no conversion is required. The (2^52) to 1 compression ratio is maintained. Of course a Data Base, and Data Set of pointers can be generated. Individual FtlSpinUp payload sections are independent, and can be maneuvered without destruction of overall compression. Only customer data contained in the individual FtlSpinUp payload section is relocated. Customer formatting of FtlSpinUp payload sections is possible with optional software.

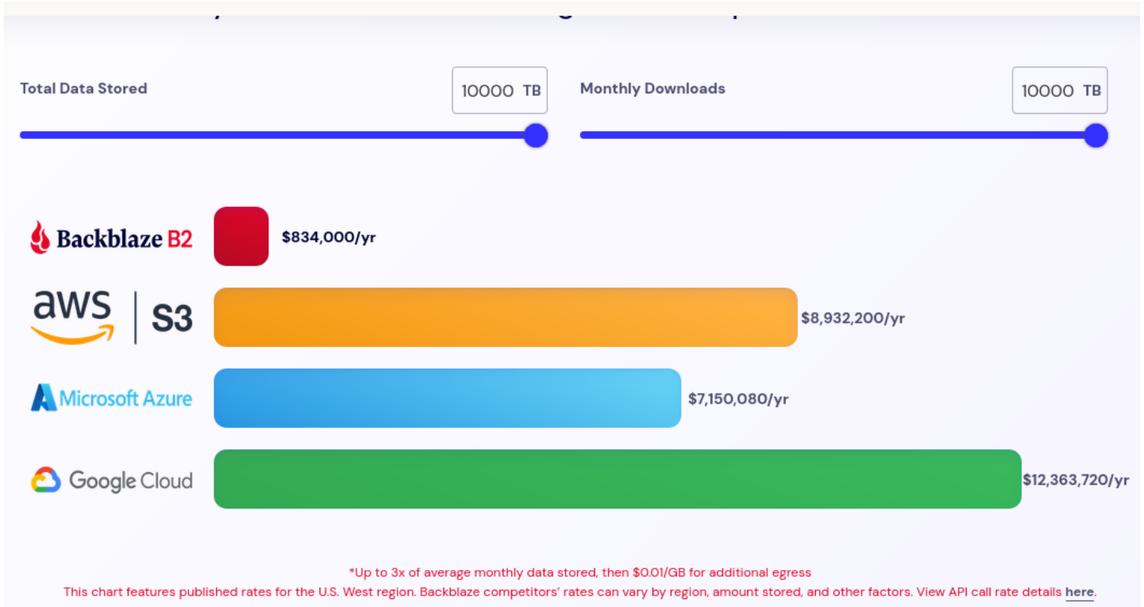
Similar to a very large file that has been compressed with the 7-zip file manager into different files numbering into the hundreds, where every single specific different numbered file has to be available, or the original very large file can not ever be decompressed. FtlSpinUp is just the opposite. The original very large file that has been compressed with FtlSpinUp into specific different files numbering into the hundreds, thousands, or millions, can be decompressed individually. Also the separate individuals, including individuals from different compressed very large files, can be assembled into new creations before decompression.

A very large file that has been compressed with the 7-zip file manager into segmented different files numbering into the hundreds, and every single specific different segmented numbered file has to be available, or the original very large file can not ever be decompressed. FtlSpinUp is just the opposite. The original very large file is subspace converted with FtlSpinUp into specific different files numbering into the hundreds, thousands, or millions, can be decompressed individually. Also the separate individuals, including individuals from different compressed very large files, can be assembled into new creations before decompression.






$79,900 per month
$958,800 per year
$17,571,600/yr
$13,885,200/yr
$12,386,400/yr
$958,800/yr
Wasabi
Azure
Amazon
Google
STORAGE AMOUNT
1000 TB
PERCENT DOWNLOAD PER MONTH
100 %


Total Data Stored
10000 TB
Monthly Downloads
10000 TB
Backblaze B2
$834,000/yr
aws S3
$8,932,200/yr
Microsoft Azure
$7,150,080/yr
Google Cloud
$12,363,720/yr
*Up to 3x of average monthly data stored, then $0.01/GB for additional egress
This chart features published rates for the U.S. West region. Backblaze competitors' rates can vary by region, amount stored, and other factors. View API call rate details here.



MagStor

Fujifilm LTO-10 Ultrium 40TB Data Cartridge LTO10 16978170

$ 499.99 ~~$ 888.89~~

1 + Add to Cart

Share

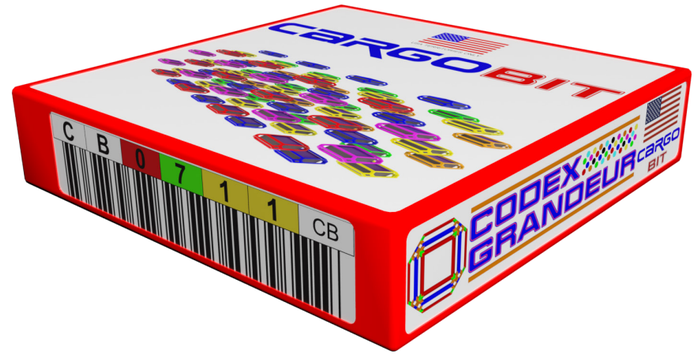
Pickup Available At 7100 Huntley Rd.
View Store Details

Precompressed video data is used to show how uncompressable data must use the RAW storage numbers of 40TB for the tape, and not the marketing numbers of 100TB.

777 also uses the same exact data to reduce the uncompressable data further to (2^52) or One Single FtlSpinUp working cell number of Bytes. The same exact same precompressed video data has to be moved into the 777 for conversion.

The LTO tape machine runs at 400 megabytes per second for raw data transfer. At 40TB of raw uncompressed data that requires about 27.8 Hours.

The 777 can double its 25GbE QSFP at half duplex input, or output and achieve 50GbE HDX. At 40TB of raw uncompressed data that requires 2.23 Hours.



75.557 Zetta Byte
200 Yr Retention
100,000 Cycles
8 second R/W
$512.00 Retail
Random Access
No Batteries
~ Size of LTO Tape Cartridge

Semiconductor Flash
x (2^52) (Formatted)

75,557,863,725,914,323,419,136
Zetta Exa Peta Tera Giga Mega Kilo Hecto

Existing LTO Native 40TB Tape
Maximum 400MBs = 1.157 Days Read, 1.157 Days Write

One Single FtlSpinUp 75.557 Zetta Byte Semiconductor Cartridge can hold over 755,578,637 Individual LTO 100TB Tapes
25GbE FDX R/W 40TB = 4.45 Hr. Simultaneous Read / Write
50GbE HDX 40TB = 2.23 Hr. Read or Write

(755,578,637) LTO-10 100TB Tapes

Once Data is Transfered into FtlSpinUp System, it is converted to (2^52) = 4.503 Quadrillion Times Smaller, 25GbE Throughput

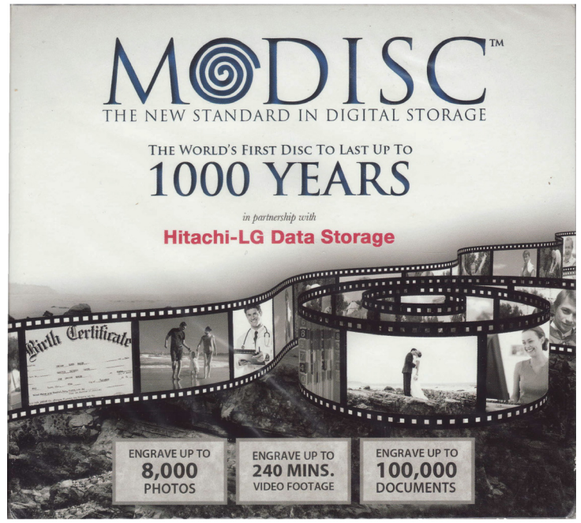
No customer raw data is ever stored inside the FtlSpinUp. 40TB of Customer data can be transmitted, or received at 25GbE Full Duplex (FDX) Near Real-Time, and automatically converted with (2^52) onto the internal 1TB Disk, and the 1.208YB semiconductor cartridge. An automatic system recording is also stored into the Deep Freezer for the Factory triple backup.

No customer raw data is ever stored inside the FtlSpinUp. A Typical 40TB of Customer data can be transmitted, or received to the FtlSpinUp at 25GbE Full Duplex and automatically converted at (2^52) onto the internal 1TB disk requiring only one minimum cell Bytes at a total of 4.45 hours. The minimum cell Byte total is then formatted and stored onto the FtlSpinUp Cartridge in a few seconds. 50Gbe possible.

The procedure is reversed for reading the file back at 25GbE, or 50GbE.

Only customer authorized FtlSpinUp systems are capable of returning any stored data. The FtlSpinUp has a secured processor that will not function if moved from the assigned location. Any theft of physical computers to another location will stop the secured processor from working. No other computer system can recover any stored data, other than a different customer authorized FtlSpinUp systems, or factory.

Retrieval of a stolen, or destroyed FtlSpinUp system storage can be reconstructed at the FtlSpinUp factory from previous Deep Freeze backups provided to the factory from the customer Deep Freeze via AT&T factory link, or a simple E-mail.







The 100GB BDXL M-DISC is recommended, and any optical disc supported by the drive is usable, and can be multiplied by FtlSpinUp (2^52) using the same (Formatted) data storage used with the 1.44 Diskette.

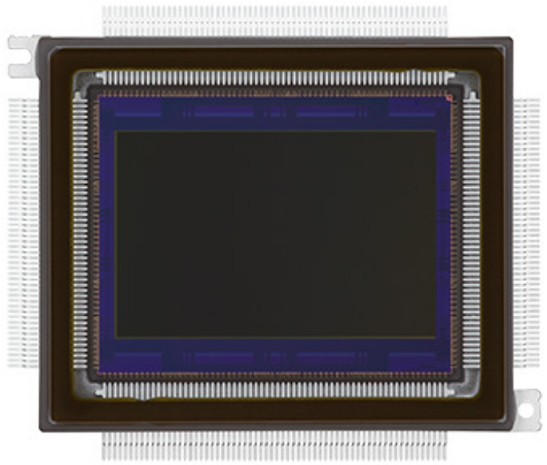
The special conversion formatting allows local storage of internal system Deep Freezer data.

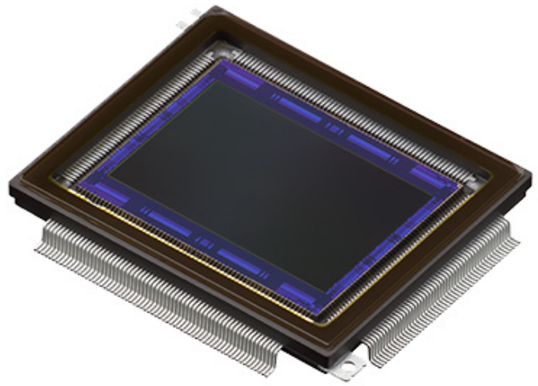
The special subspace conversion will function at near real-time for the data storage and data return from the optical disc drive, limited by the speed of the optical drive used.

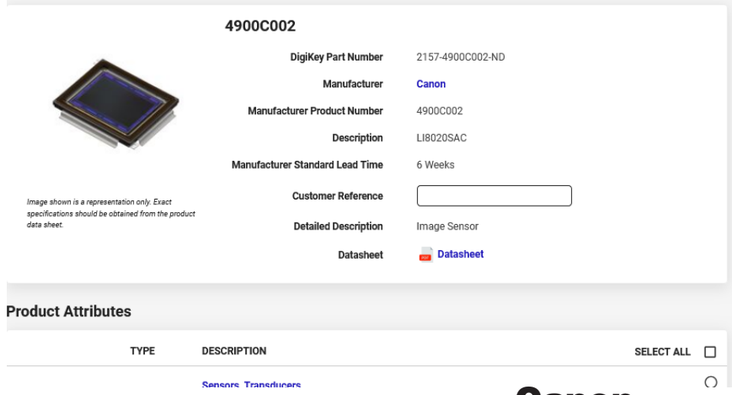
100GB BDXL (Formatted) M-DISC (2^52)

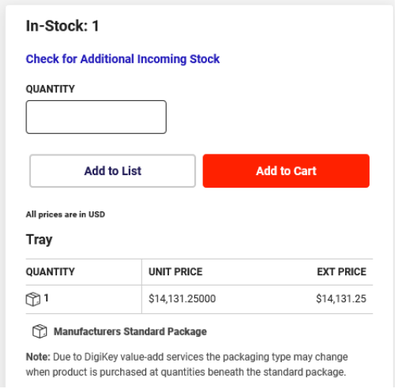
28,147,497,671,065,600,000,000,000
Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

One 1,000 year disk will hold 352 CargoBit 75.557 Zeta Byte cartridges.







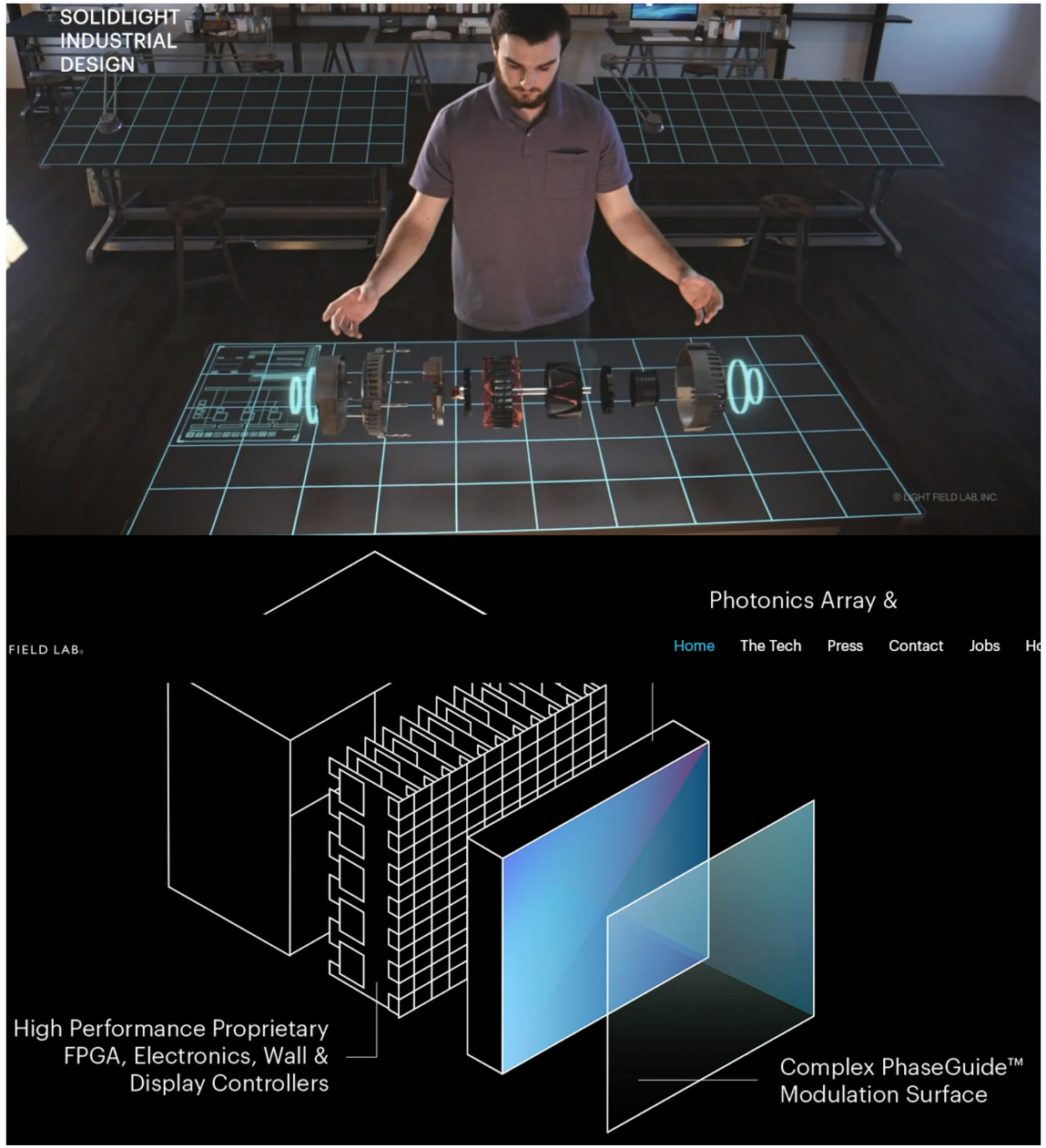


Canon
LI8020SAC
(Lima India 8020 Sierra Alpha Charlie)
19568 x 12588 (Horizontal x Vertical)

34.9mm Diagonal 246MP CMOS Sensor on 228pin QFP / 2.304 m Square Pixels at 5.0fps

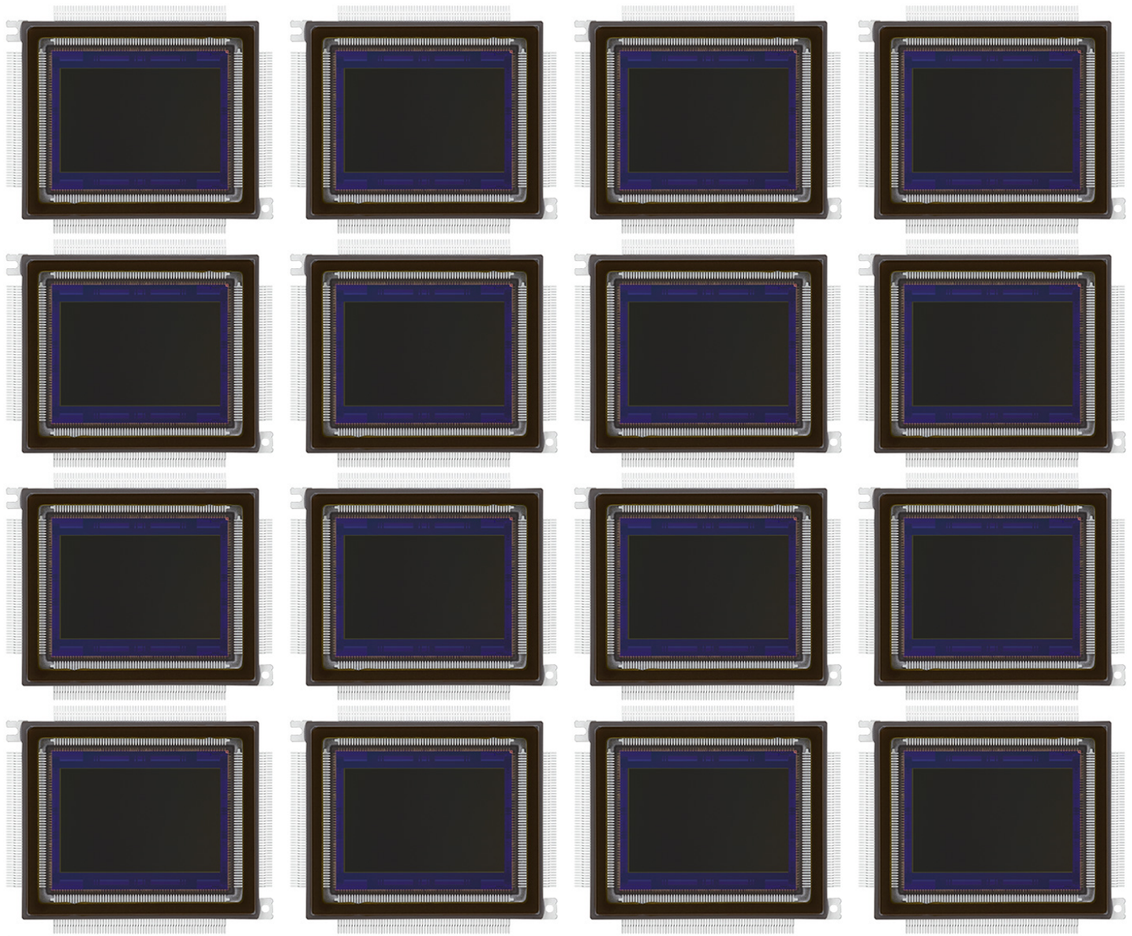
(Maximum Data Rate in bits per second)
(19568 X 12588) X (12 bits per pixel) X (5.0 Frames per second) =
14,779,319,040 bits per second = 14.779319040 Giga bits per second
Easily fits into one standard 25GbE Fiber Optic Cable

(1)-25GbE Fiber Optic Camera can be supported in Near Real-Time
With one FtlSpinUp System storing Centuries of Lossless Camera Detail
Possible to transmit Camera Starlink (A) to another
Starlink FtlSpinUp System at Location (B) in Near Real-Time
Please see the 4 minute Canon Video:
https://youtu.be/3ND210j4ElM?si=HspsorYzCeSHV0J9
[Possible Application]



The 25GbE Fiber Optic Cameras can be sent
Near Real-Time over Starlink to another FtlSpinUp unit
Thousands of miles away and displayed on the
Light Field Labs display in 3D with computer conversion
Of strategically placed cameras

Codex Grandeur LLC has no connection to Canon, or Light Field Lab.



$85,000 Dollars **1Time** **Hardware Included**

$5,000 Dollars **Every Year** **Factory Triple Backup**

16 Camera Sensors / 25GbE each = 400GbE Input

24 hours per day Lossless Pixel Storage / Transmission

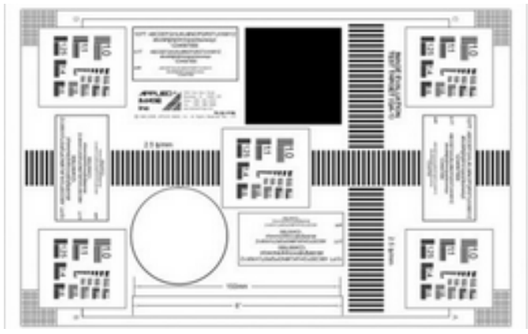
FtlSpinUp Internal Disk 1,342,177,280,000,000,000,000

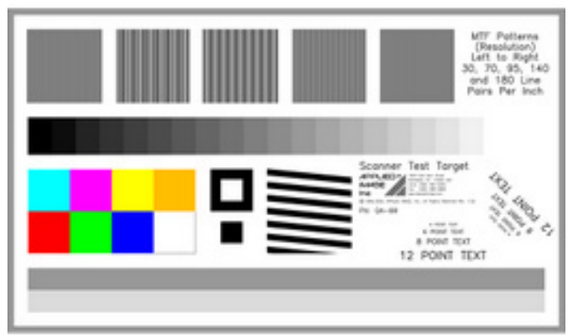
200GbE FDX-400GbE HDX Zetta Exa Peta Tera Giga Mega Kilo Hecto

1,063 Years of Continuous 24 hour Storage / Transmission

400GbE Input from Imagers - 5,961 bits per second OUT
Lossless sent over Starlink to Second FtlSpinUp Unit
Near Real-Time Conversion back to Original 400GbE Input

Simultaneous Triple Redundant Storage sent to Factory
Inside Automated 90TB Diskette Email File
Deep Freeze also included on Local Disk
100% Guaranteed Triple Redundant Data Backup





FtlSpinUp is 100% Lossless

No Video Compression Necessary

Replace 8k 35Mpixel lossy compression cameras
With (19568 X 12588) X (12 bits per pixel)
246Mpixel Lossless compression cameras

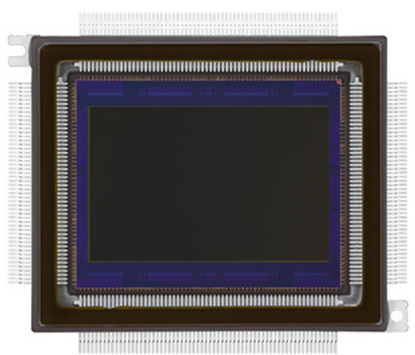
Blade Runner (1982 Movie) levels of Zoom Detail

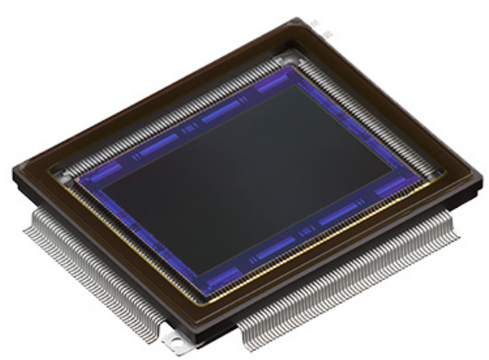
Airports, Trains, $100M+ Jets, Banks, Perimeter

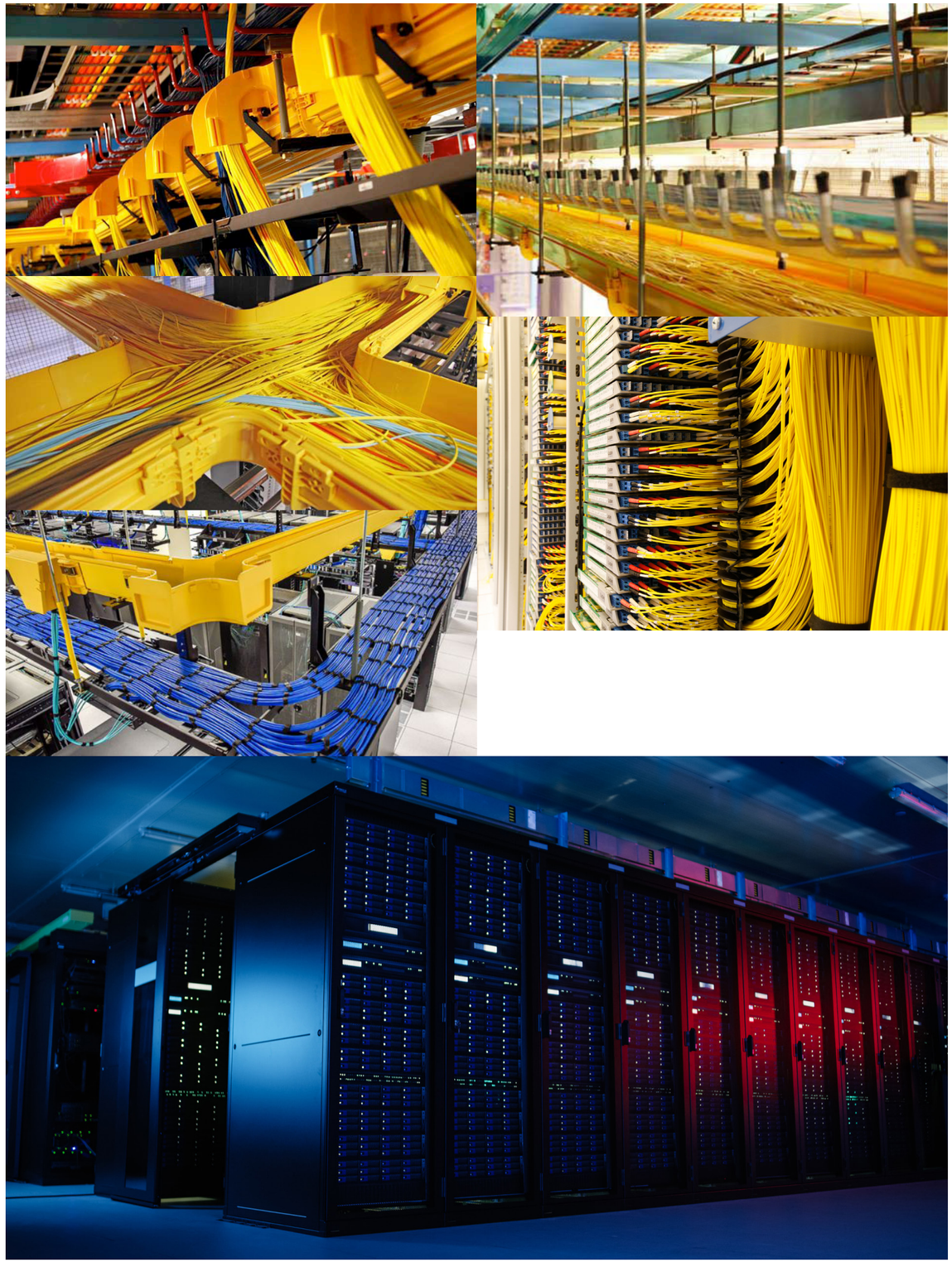
Warehouse, Farms, High Security Areas,

Machine Control, Factory, Robotics

Autonomous Vehicle Driving







FtlSpinUp Supercomputer

Cargo Bit at (2^52) operating at near real-time performance, and each single low cost 10GbE FDX link can carry the same generated, or previously converted data as 4,503,599,627,370,495 separated 10GbE FDX links near real-time. This makes the signal interaction of every single CPU processor can be simultaneously linked to any other CPU processor by any combination of the 128 PCIe lanes or SDRAM channels near real-time. ANY-ANY.

The RAM disk, SSD, input, output, program linkage, and more are supported by the FtlSpinUp. Local or long range communication is enhanced by every single 1 bit transmitted over fiber optics, or any physical transmission system running at the speed of light, another 4,503,599,627,370,495 bits will also arrive at the same exact time. 4,503,599,627,370,495 bits travel Faster Than Light.

Once characterized the hardware components will not be required. More cores are required for near real-time simultaneous conversions.

Complete CPU processors have the performance of Central Processor Unit (CPU) internal registers due to the data propagation increase possible in a running program memory distributed across large scale random access matrix, matched with a CPU large scale random access matrix.

Because of the massive amount of data storage available in FtlSpinUp, many CPU functions, and or GPU functions can be stored directly “canned”, eliminating the need for hundreds or thousands of actual physical processors.

Massive reduction in cable networks is possible.

[Possible Application]



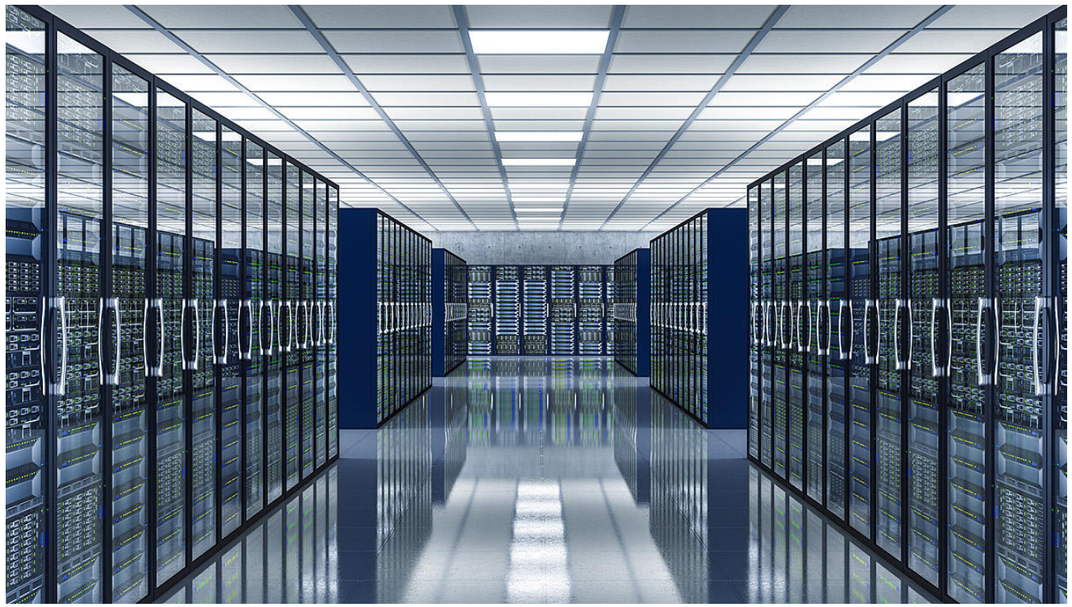




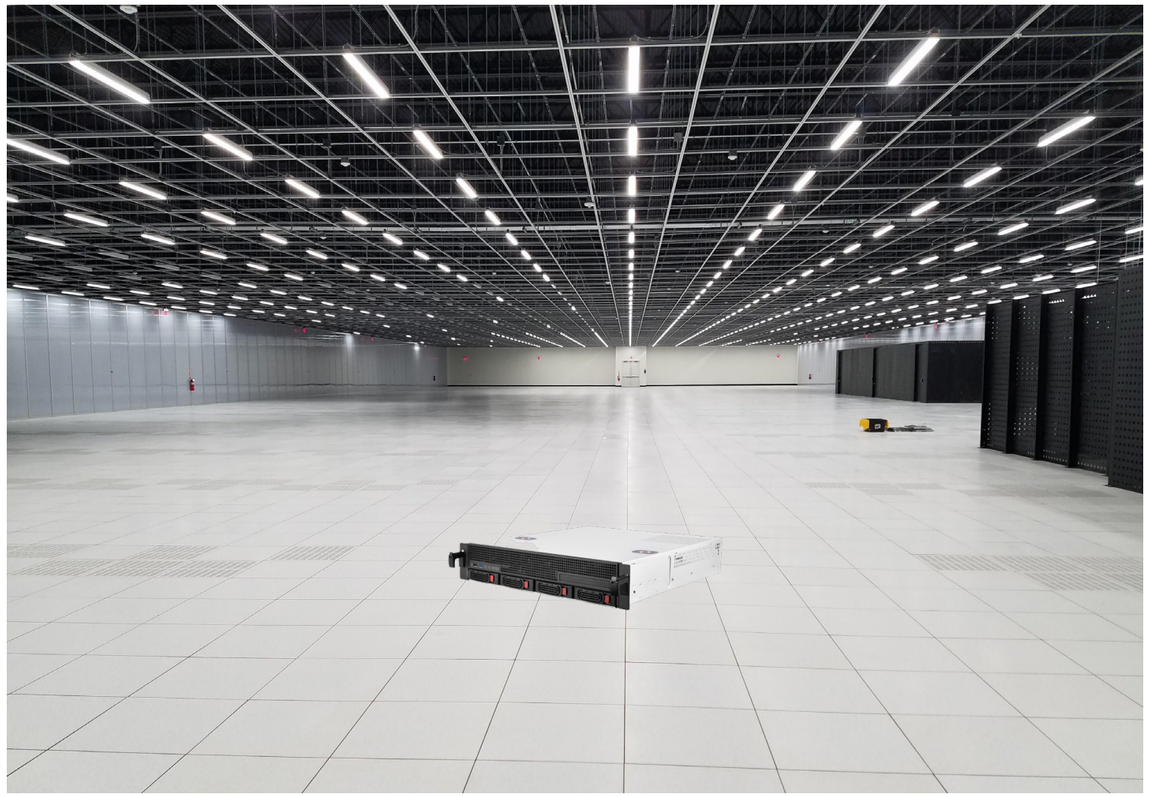




Small Data Centers Win against Large Data Centers With FtlSpinUp



Magnitudes More Space with Magnitudes Less Data Storage





Prefix	Symbol	1000^m	10^n	Decimal	Short scale	Long scale	Since[n 1]
yotta	Y	1000^8	10^{24}	1 000 000 000 000 000 000 000 000	Septillion	Quadrillion	1991
zetta	Z	1000^7	10^{21}	1 000 000 000 000 000 000 000	Sextillion	Trilliard	1991
exa	E	1000^6	10^{18}	1 000 000 000 000 000 000	Quintillion	Trillion	1975
peta	P	1000^5	10^{15}	1 000 000 000 000 000	Quadrillion	Billiard	1975
tera	T	1000^4	10^{12}	1 000 000 000 000	Trillion	Billion	1960
giga	G	1000^3	10^9	1 000 000 000	Billion	Milliard	1960
mega	M	1000^2	10^6	1 000 000	Million		1960
kilo	k	1000^1	10^3	1 000	Thousand		1795
hecto	h	$1000^{2/3}$	10^2	100	Hundred		1795
deca	da	$1000^{1/3}$	10^1	10	Ten		1795
		1000^0	10^0	1	One		–
deci	d	$1000^{-1/3}$	10^{-1}	0.1	Tenth		1795
centi	c	$1000^{-2/3}$	10^{-2}	0.01	Hundredth		1795
milli	m	1000^{-1}	10^{-3}	0.001	Thousandth		1795
micro	μ	1000^{-2}	10^{-6}	0.000 001	Millionth		1960
nano	n	1000^{-3}	10^{-9}	0.000 000 001	Billionth	Milliardth	1960
pico	p	1000^{-4}	10^{-12}	0.000 000 000 001	Trillionth	Billionth	1960
femto	f	1000^{-5}	10^{-15}	0.000 000 000 000 001	Quadrillionth	Billiardth	1964
atto	a	1000^{-6}	10^{-18}	0.000 000 000 000 000 001	Quintillionth	Trillionth	1964
zepto	z	1000^{-7}	10^{-21}	0.000 000 000 000 000 000 001	Sextillionth	Trilliardth	1991
yocto	y	1000^{-8}	10^{-24}	0.000 000 000 000 000 000 000 001	Septillionth	Quadrillionth	1991



Codex Grandeur LLC

www.ftlspinup.com

www.cargobit.com

www.codexgrandeur.com

www.numericalanalog.com

email:

Info@ftlspinup.com

Info@cargobit.com

info@codexgrandeur.com

Info@numericalanalog.com

