



USA TERRITORIES ONLY

www.FtlSpinUp.com

Secured Mobile Data 2400

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 Internal Disk 67,108,864,000,000,000,000
10GbE FDX-25GbE HDX Exa Peta Tera Giga Mega Kilo Hecto

Optional Data Base Package

\$5,000 Dollars per “modem” **1Time** **Hardware Included**
\$2,400 Dollars (Once Per Customer) **Every Year** **Factory Triple Backup**

Optional Starlink Near Real-Time 10GbE FDX or 25GbE HDX
18PB Stored File at 44Mbps Uplink = ~62 Seconds = 2.9 PbE

(2^26) Near Real-Time Base

Infinite Secured Desktop Data (Throughput Limited)

All Data Never Erased and Guaranteed for LIFE



FtlSpinUp Secured Mobile Data 2400
Intel Core Ultra 7 270K Plus
Intel E830 NIC two 10GbE or 25GbE
10GbE Full Duplex Near Real-Time
25GbE Half Duplex Near Real-Time
1TB Disk for Customer - 1TB Disk Internal System
FtlSpinUp Customer Disk
10GbE FDX-25GbE HDX

67,108,864,000,000,000

ExaPetaTeraGigaMegaKiloHecto

\$5,000 Dollars
\$2,400 Dollars

1Time
Every Year

Hardware Included
Factory Triple Backup

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.

Extensive computer cores are required and do saturate the modem 24/7, even when not moving data from one location to another.

FtlSpinUp Secured Mobile Data 2400 Business Model

This system is designed for one single modem to work by itself storing data internally, and sending that data to a remote data center that will be available 24/7 when the Internet is available. If the Internet is not available, it does have a internal “Deep Freeze” that does provide a permanent backup automatically.

The low cost hardware makes it possible to have multiple units located anywhere in the USA, and transmit Tera Bytes over very low speed communications such as the Starlink Satellite system. Also multiple modems can be employed in buildings to convert low cost low performance data links into Tera Bit per second near real-time.

The FtlSpinUp modem has a specific data center that it can occasionally download, and upload data from. The amount of data is unlimited. The availability of that triple redundant data is only limited by the Internet. No raw data is ever stored, or transmitted in any way, shape, or form, and only then when being sent or received by the modem at the 10GbE Ethernet Full Duplex, or 25GbE Ethernet Half Duplex uncompressed.

Once the data is inside the modem it is (2^26) or 67.108,864 Sixty Seven Million, One Hundred Eight Thousand, Eight Hundred Sixty Four times smaller. This is required because early experiments of existing practical low cost low speed data links showed thousands of times smaller was not enough performance.

The small data is unique to the individual customer payment plan. No data is ever erased or written over for any reason. When sent back to the factory from the data center, it is then triple redundant, and always available when required. The customer can authorize their data to be compatible with other specific customers, or even everyone, or no one.

The customer can have individual groups of modems from (1 to 16) each, and is only charged per individual group, not individual modem.

Not Finished

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 \$1,200 = \$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 2400

FtlSpinUp Internal Disk
10GbE FDX-25GbE HDX

67,108,864,000,000,000,000
Exa Peta Tera Giga Mega Kilo Hecto

Optional Data Base Package

\$5,000 Dollars

1Time

Hardware Included

\$2,400 Dollars (Once Per Customer) Every Year Factory Triple Backup

UNLIMITED STORAGE 24/7 with NO INTERNET REQUIRED

\$5,000 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”).

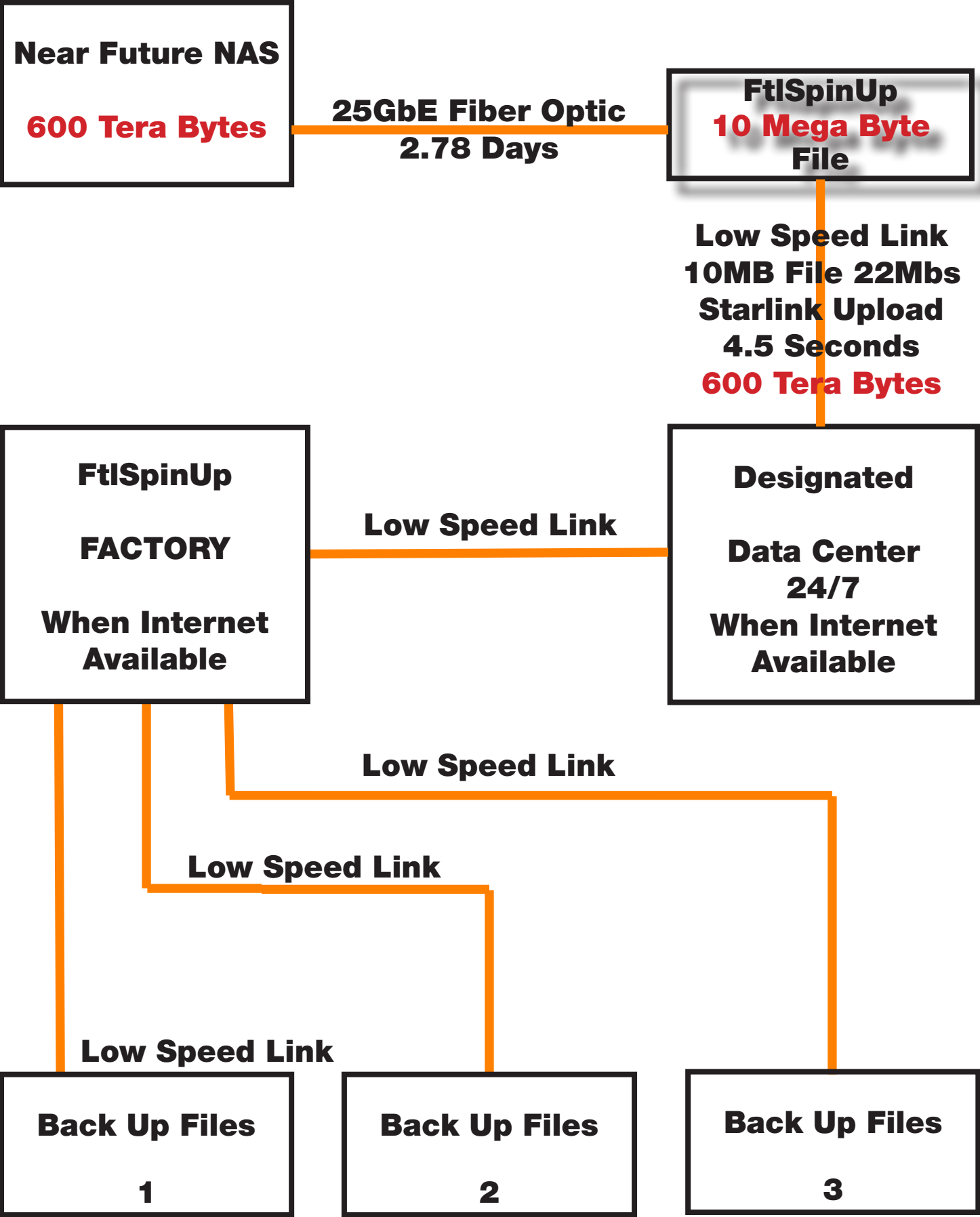
Same Customer with different specific Customer authorized
Code Controlled “modems” are charged separately one time
per year from (1 to 16 “modems”).

FtlSpinUp Secured Mobile Data 2400
Internal Disk is

111,848 X 600TB

Time to send 600TB to another FtlSpinUp
Over 22Mega bit Ethernet Starlink Internet
Is about 5 Seconds

Storage



Not Finished

1 = 1.44MB Diskette X (2^26) = 80TB of **Compressed Video**
2 = 80TB of **Compressed Video** on 2 **LTO-10** 40TB Tapes
Send 1.44MB Diskette Starlink at 22Mbps at 0.654 Seconds
Or 80TB LTO-10 Starlink at 22Mbps at 1.152 Years
Same Data 1.44MB Diskette or 80TB **LTO-10** Tapes
Your Choice 0.654 Seconds or 1.152 Years = **Same Data**

80TB Conversion Rate at 25GbE **FtlSpinUp** = 8.9 Hours
80TB Conversion Rate at 400MBs **LTO-10** = 55.56 Hours

80TB **Compressed Video Modern Compression 4X** = 20TB
20TB **Modern Compression** Starlink at 22Mbps = 105.2 Days

1.44MB Diskette **FtlSpinUp** Starlink at 22Mbps = 0.654 Sec.
Up = 80TB Conversion Rate 25GbE **FtlSpinUp** = 8.9 Hours
Down=80TB Conversion Rate 25GbE **FtlSpinUp** = 8.9 Hours
105.2 Days / 17.8 Hours = 141.8 X **FASTER**



USA TERRITORIES ONLY





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FtlSpinUp (1)



80TB
1.44MB / 4.4MBs UpLink
44Mbps = 0.327 Seconds
22Mbps = 0.654 Seconds

FtlSpinUp (2)



80TB / 4.4MBs UpLink
44Mbps = 210.437 Days
22Mbps = 1.152 Years





Secured Mobile Data 300
Pages 10-13
\$5,000 Dollars
\$300 Dollars
1Time
Every Year
1GbE FDX
No Fiber Optics
Hardware Included
Factory Triple Backup

Secured Mobile Data 2400
Pages 14-17
\$5,000 Dollars
\$2,400 Dollars
1Time
Every Year
10GbE FDX / 25GbE HDX
Hardware Included
Factory Triple Backup

Secured Desktop Data 3600
Pages 43-53
\$85,000 Dollars
\$3,600 Dollars
1Time
Every Year
200GbE FDX / 400GbE HDX
Hardware Included
Factory Triple Backup

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



FtlSpinUp Secured Mobile Data 300

**Intel E810 NIC - 1GbE
1GbE Full Duplex Near Real-Time
Wire Only**

1TB Disk for Customer - 1TB Disk Internal System

FtlSpinUp Customer Disk 67,108,864,000,000,000,000
1GbE FDX Exa Peta Tera Giga Mega Kilo Hecto

\$5,000 Dollars **1Time** **Hardware Included**
\$300 Dollars **Every Year** **Factory Triple Backup**

Checksummed Files to eliminate communica-
tions 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% Guar-
anteed 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
Intel Core Ultra 7 270K Plus
24 Cores ECC Ram
1GbE Full Duplex ONLY

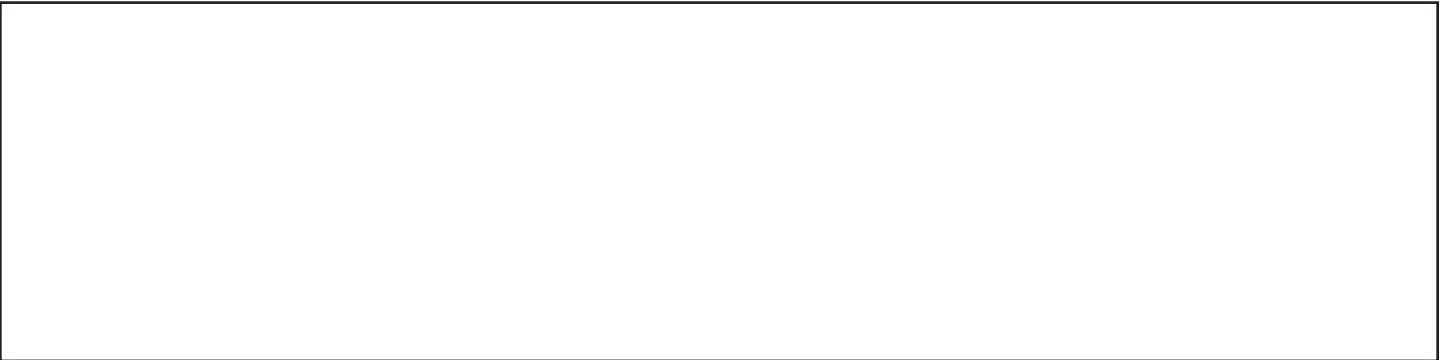
Easy Upgrade to Mobile Data 2400 Anytime
Factory Triple Redundant Automated Backup
100% Guaranteed Data Sent to Factory

90TB sent to any NAS at 1GbE is 10.42 Days
90TB returned to any NAS at 1GbE is 10.42 Days
Actual time may be greater depending on Disk Drive Array

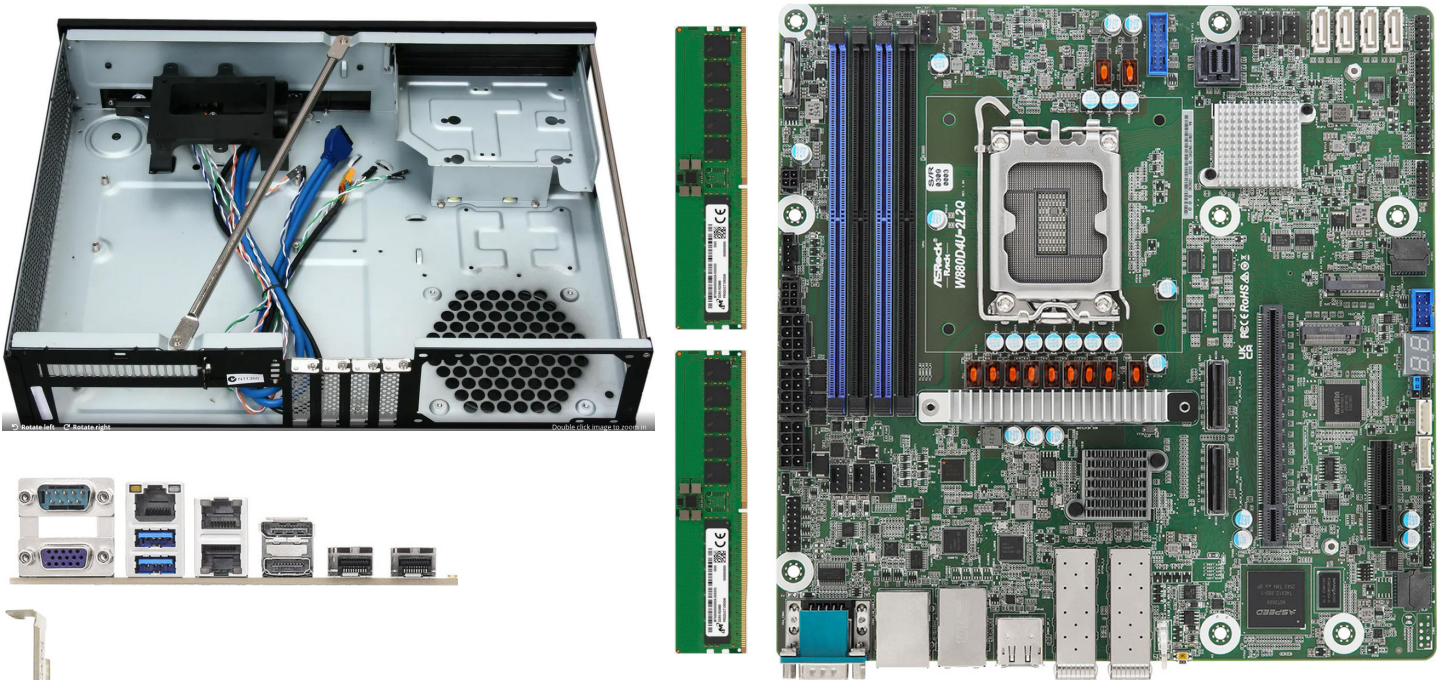
90TB sent with Starlink 22Mbps Uplink (No FtlSpinUp)
Is 1.425 Years
90TB returned with Starlink 22Mbps Uplink (No FtlSpinUp)
Is 1.425 Years

FtlSpinUp Demo 60GB File at 1GbE is 10 Minutes

FtlSpinUp is Full Duplex 1GbE
111,848 Times More Storage than 600TB NAS
90TB sent to FtlSpinUp at 1GbE is 10.42 Days
Only 1.44MB is used to store the 90TB
1.44MB returned from FtlSpinUp at 1GbE is 10.42 Days
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
Intel Core Ultra 7 270K Plus
24 Cores 2 QSFP 10GbE / 25GbE





FtlSpinUp Secured Mobile Data 2400

Intel E830 NIC two 10GbE or 25GbE
10GbE Full Duplex Near Real-Time
25GbE Half Duplex Near Real-Time
1TB Disk for Customer - 1TB Disk Internal System
FtlSpinUp Customer Disk 67,108,864,000,000,000,000
10GbE FDX-25GbE HDX Exa Peta Tera Giga Mega Kilo Hecto

\$5,000 Dollars **1Time** **Hardware Included**
\$2,400 Dollars **Every Year** **Factory Triple Backup**
Checksummed Files to eliminate communica-
tions 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% Guar-
anteed 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
Intel Core Ultra 7 270K Plus
24 Cores ECC Ram
2 SFP28 Fiber Optic - 10GbE / 25GbE

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

90TB sent to any NAS at 10GbE is 25 Hours
90TB returned to any NAS at 10GbE is 25 Hours
Actual time may be greater depending on Disk Drive Array

90TB sent to any NAS at 25GbE is 10 Hours
90TB returned to any NAS at 25GbE is 10 Hours
Actual time may be greater depending on Disk Drive Array

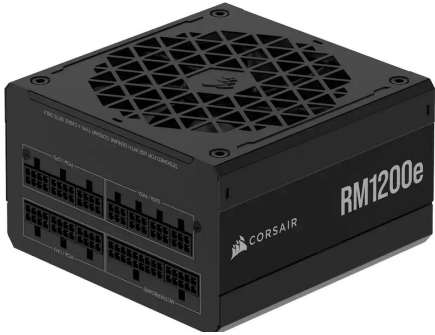
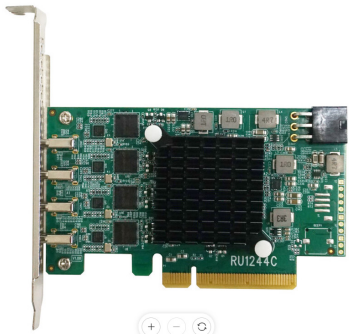
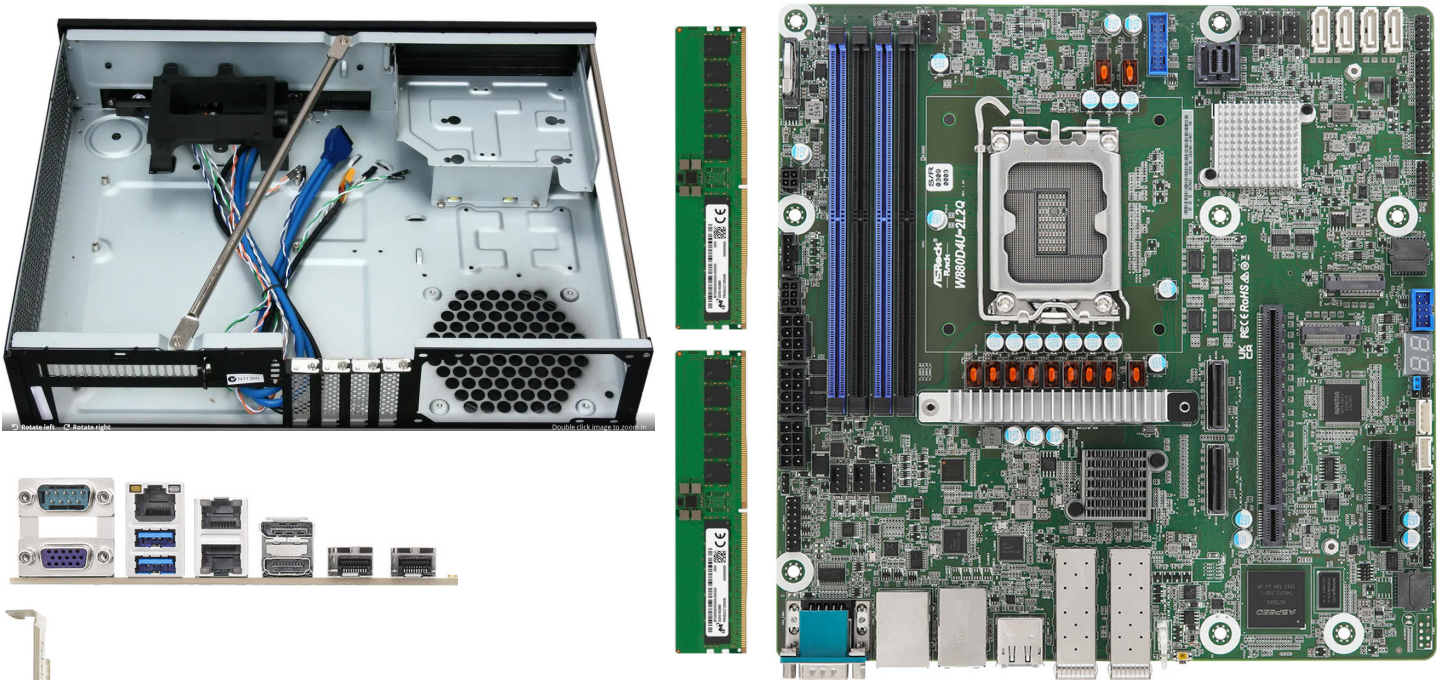
90TB sent with Starlink 22Mbps Uplink (No FtlSpinUp)
Is 1.425 Years
90TB returned with Starlink 22Mbps Uplink (No FtlSpinUp)
Is 1.425 Years

FtlSpinUp Demo 60GB File at 25GbE is 24 Seconds

FtlSpinUp is Full Duplex 10GbE
111,848 Times More Storage than 600TB NAS
90TB sent to FtlSpinUp at 10GbE is 25 Hours
Only 1.44MB is used to store the 90TB
1.44MB returned from FtlSpinUp at 10GbE is 25 Hours
1.44MB is separated into 64 individual segments

FtlSpinUp is Half Duplex 25GbE
111,848 Times More Storage than 600TB NAS
90TB sent to FtlSpinUp at 25GbE is 10 Hours
Only 1.44MB is used to store the 90TB
1.44MB returned from FtlSpinUp at 25GbE is 10 Hours
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

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^{26}) :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 formatted file with a hash number from the customer, and returned to the customer in a much smaller (2^{26}) :1 maximum compressed FtlSpinUp formatted 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^{26}) subspace conversion.

The (2^{26}) :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^{26}) 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^{26}) :1 achieved has: 99.999,998,509,883,880,615,234,375 % Efficiency.

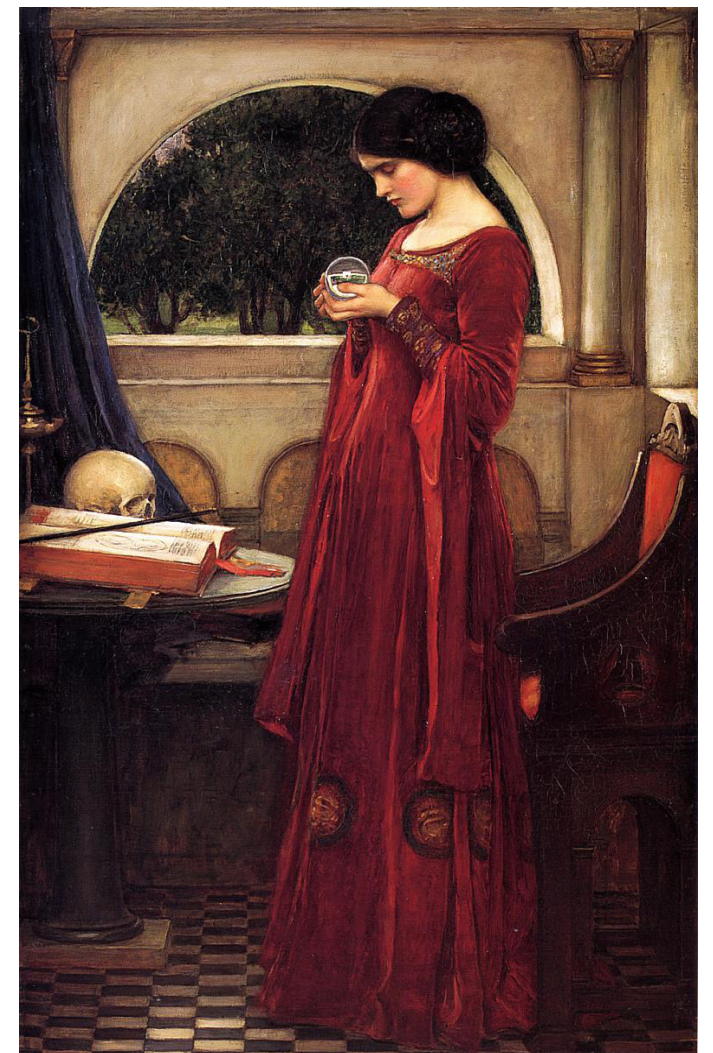
Data communication performance at (2^{52}) :1 achieved has: 99.999,999,999,999,977,795,539,574...% Efficiency.

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^{26}) another 67,108,863 bits will also arrive at the same exact time. At (2^{52}) another 4,503,599,627,370,495 bits will also arrive at the same exact time.

Data Security

(2^{26}) = 67,108,863 bits or

(2^{52}) = 4,503,599,627,370,495 bits are missing for each 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.





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 2.684 Peta bits per second over the common 10Mbs Uplink, and 10Mbs 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

FtlSpinUp (1)



FtlSpinUp (2)



USA TERRITORIES ONLY

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
Full Duplex / Half Duplex

150 bps Up	FDX Near Real-Time x (2^26) = 10 GbE
150 bps Down	FDX Near Real-Time x (2^26) = 10 GbE
373 bps Up	HDX Near Real-Time x (2^26) = 25 GbE
373 bps Down	HDX Near Real-Time x (2^26) = 25 GbE

Local Database File Real-Time Starlink Example
FtlSpinUp 18PB Cartridge (2^26) Data Performance:
[44Mbs] Starlink Uplink / [44Mbs] Downlink
Maximum Continuous Bits per Second Full Duplex
One 18PB Cartridge Transmission = ~62 Seconds

44Mbs uplink	X (2^26) = 2.9 PbE
44Mbs downlink	x (2^26) = 2.9 PbE

Starlink

Business Priority

HIGH SPEED INTERNET DESIGNED FOR BUSINESS

LOCAL PRIORITY 500GB

Best for back up connectivity and small businesses

\$65_{/MO}

LOCAL PRIORITY 500GB

Best for small businesses with below average bandwidth needs, e.g. 2-4 users

\$165_{/MO}

LOCAL PRIORITY 1TB

Best for small and midsize businesses with average bandwidth needs, e.g. 5-10 users

\$290_{/MO}

LOCAL PRIORITY 2TB

Best for midsize businesses with above average bandwidth needs, e.g. 10-20 users

\$540_{/MO}

✓ Single Country Land Use and Regional Travel ✓ Network Priority ✓ Reliable Fixed & In-motion Use ✓ Public IP & Dashboard

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.

A completely full 72PB data cartridge with the equivalent of 1,800 40TB tapes, or 2,402 30TB Disks costing \$2,041,700 dollars can be sent back to the factory over Starlink at 44Mbps in just over 1 minute. It may take years for the customer to fill up one 72PB data cartridge.

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.

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.)

*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.)

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

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 200 years plus 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
10GbE Near Real-Time FDX at 150 bps E
25GbE Near Real-Time HDX at 373 bps E**

Stored (2²⁶) Data over 1GbE = 67.108PbE

**Or Optional Business Package Starlink to
Another Customer Authorized FtlSpinUp at
10GbE Near Real-Time Full Duplex
~1,000,000,000 Bytes per second
25GbE Near Real-Time Half Duplex
~2,500,000,000 Bytes per second**

Stored (2²⁶) Data over 44Mbs = 2.9PbE

**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 18PB 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 10GbE FDX, and 25GbE 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

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

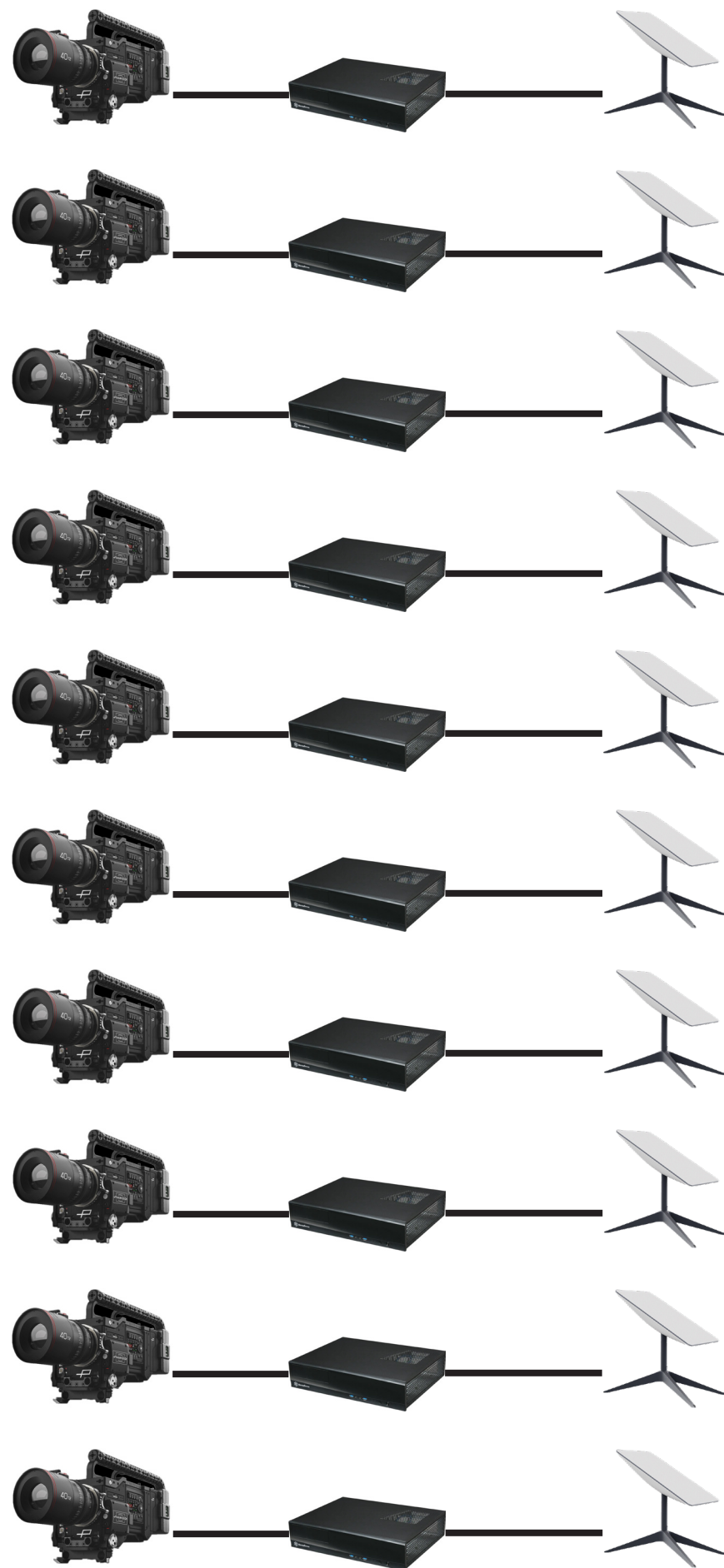
Codex Grandeur is not connected to Panavision in any way, shape, or form. The Dynamic Range with low light ability, and Panavision lens make these cameras ideal for large scale 24/7 monitoring. One hundred million dollar jets, and other aircraft need sabotage protection especially in hangers, and normally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

Farms, cattle, and even crops need monitoring 24/7, along with food storage facilities, 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 10GbE, 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 10GbE of FtlSpinUp
even
at the full rate of 10GbE
the
FtlSpinUp will store Lossless Pixel Data
for
7,765 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**

**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 < 10Mbs each

Easily fits into Starlink UpLink speed NRT
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
1 TB / (2^26) is < 14,902 Bytes
Send 150 TB Starlink UpLink in 1.02 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.

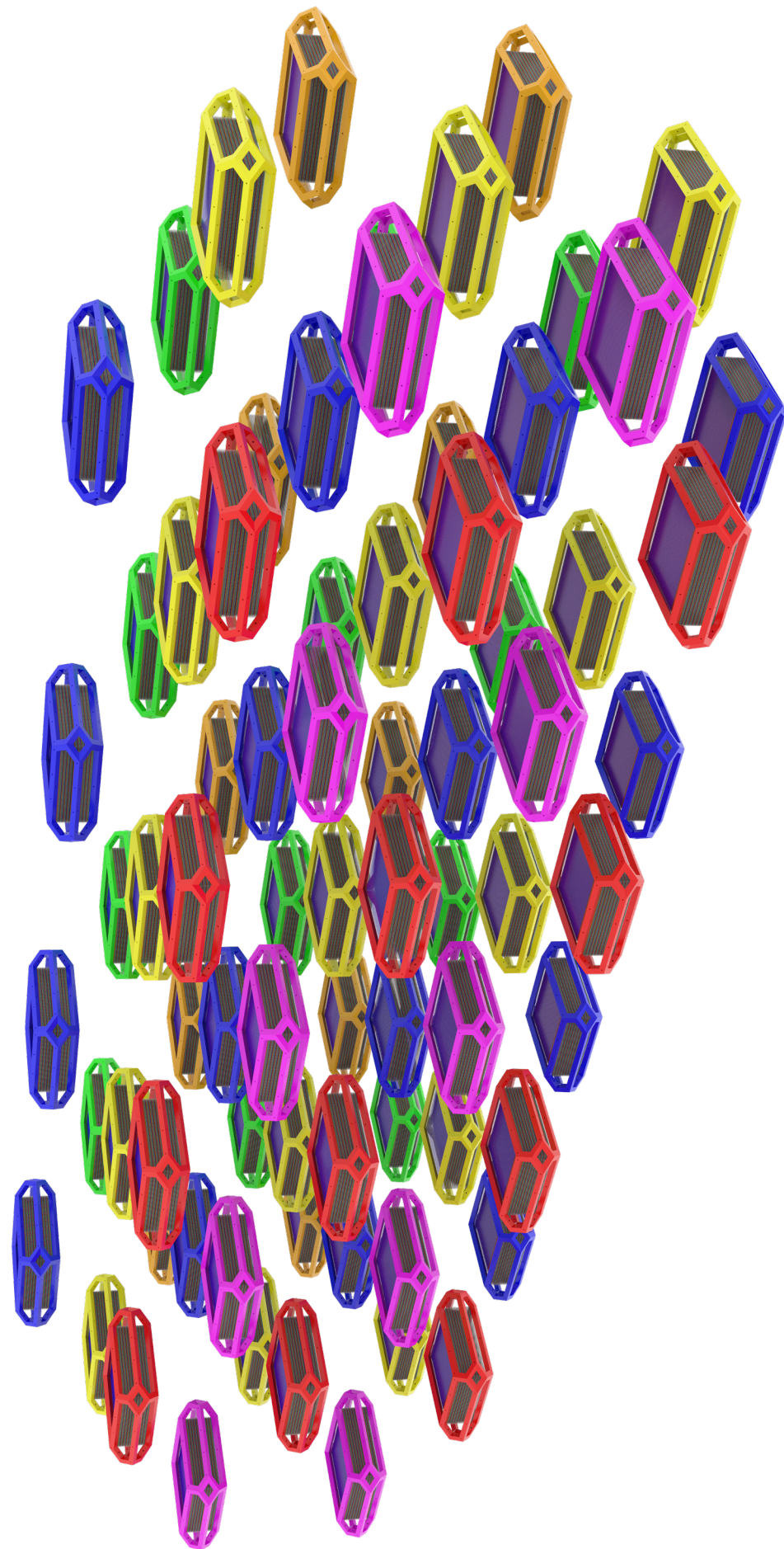
OPTIONAL formatting can be manipulated external to FtlSpinUp by remote existing computers. Only the initial subspace conversion and eventual return is required on the FtlSpinUp machine. Usage of the Ram Disk magnified from (2^{26}) can optionally be used in the form of extreme detail expansion, being 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.

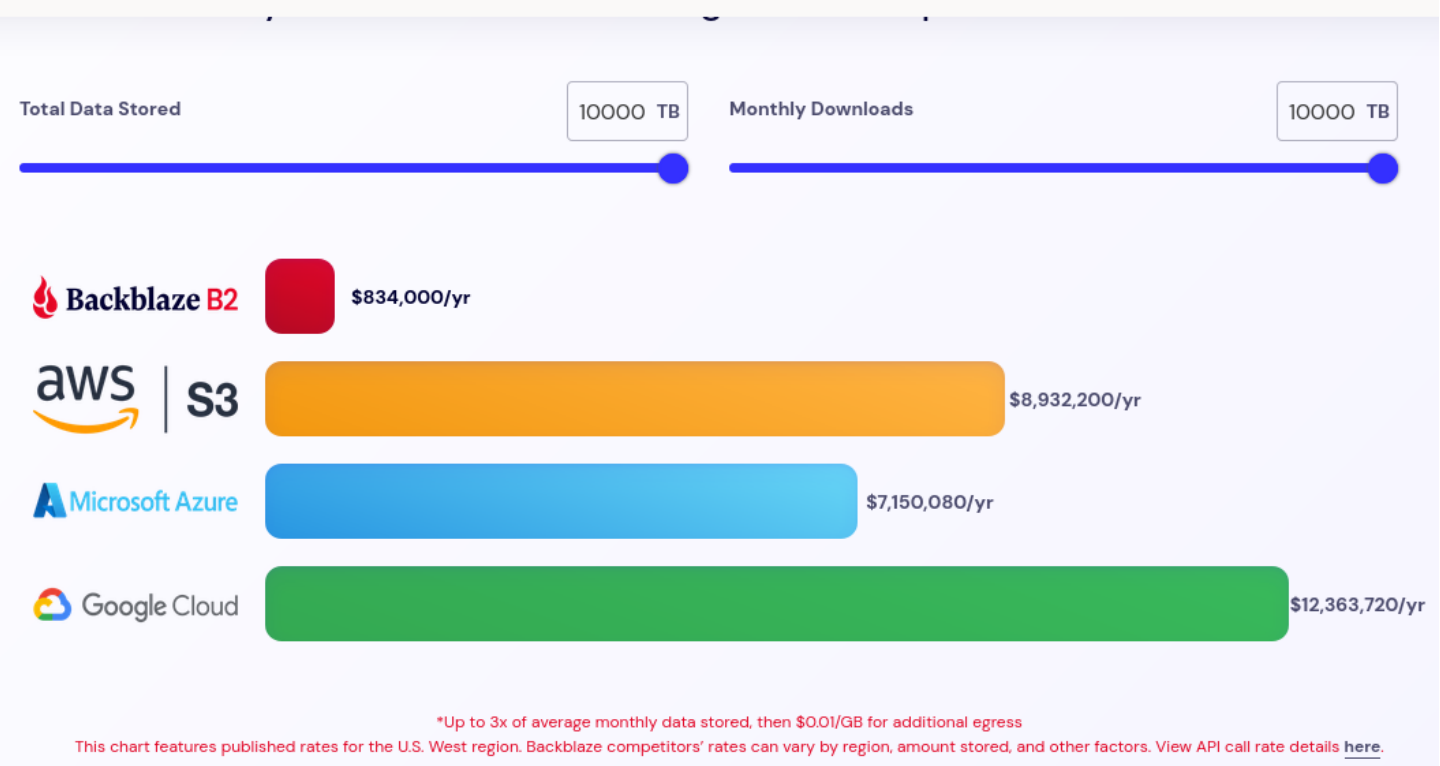
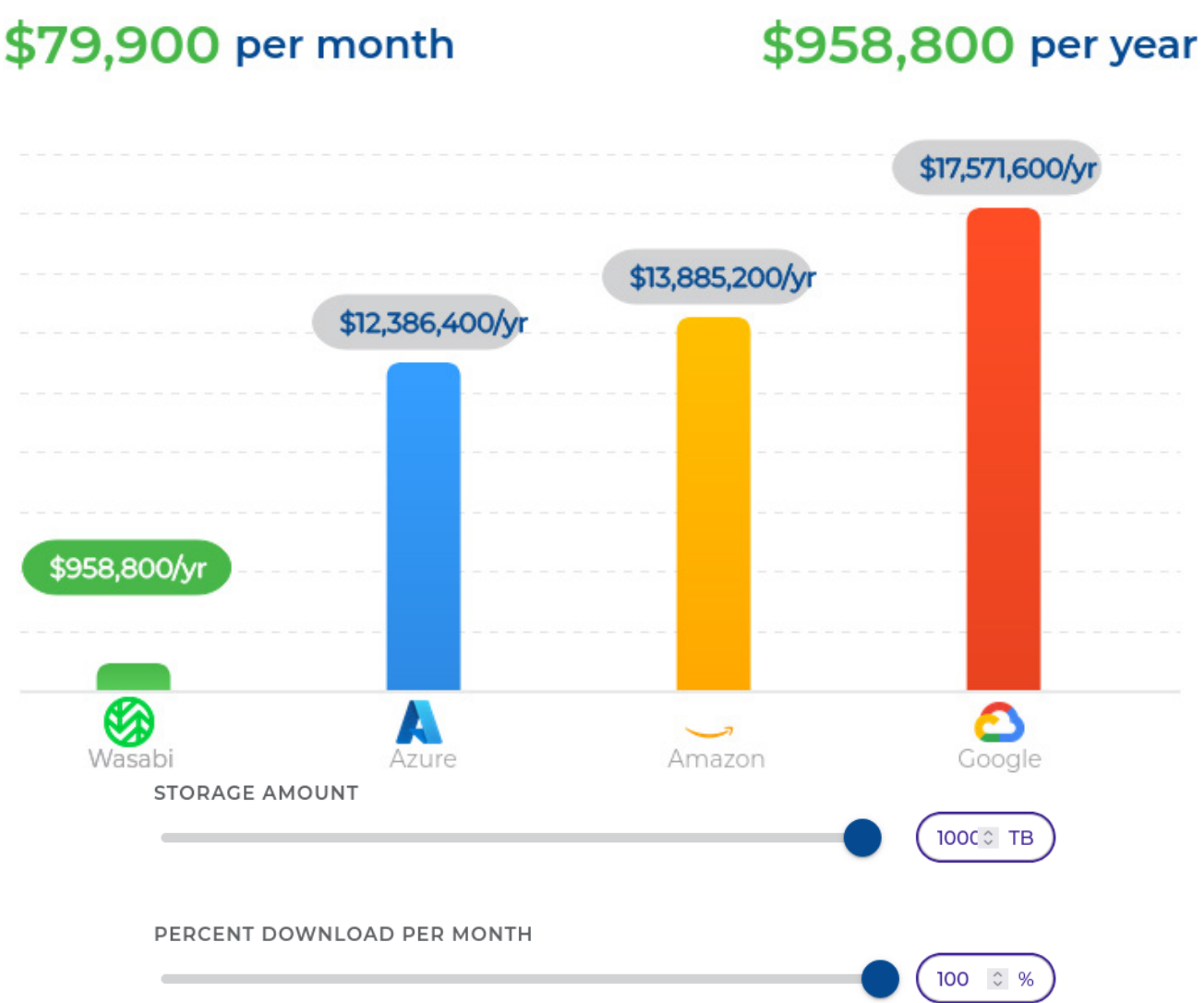
It is now possible to expand data into unlimited components that enhance association, analysis, and generate targeted processing segmentation, while quiet data remains dormant. The constant generation of associative data blocks insure new analysis results. FtlSpinUp compressed data blocks are created, 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^{26}) increase in performance. Lower native 1GbE Ethernet allows multi-dimensional network arrays with very low cost overhead. Actual data throughput is (2^{26}) time 1Gb Ethernet with FtlSpinUp. Of course 25GbE HDX is also multiplied by (2^{26}) 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^{26}) compressed data, so no conversion is required. The (2^{26}) 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.





64 files at 22,528 Bytes each
512 Bytes for sha512sum - Index
22,016 Bytes for Data Storage
22,016 Bytes X (2^26) =
1,477,468,749,824 Bytes or
1.477 Tera Bytes
X 64 files =
94,557,999,988,736 Bytes or
94.557 Tera Bytes
Divided by 40TB LTO-10 =
2.363 Tapes

One Single 1.44 diskette holds over two 40TB LTO-10 Tapes
Of previous compressed video storage, programs, and data

Starlink UpLink is now rated at 44 Million bits per second MAX
Actual available may be half or 22 Million bits per second

LTO-10 40TB Tapes are NOT REQUIRED for FtlSpinUp
And used for comparison ONLY.



USA TERRITORIES ONLY



USA TERRITORIES ONLY

FtlSpinUp (1)



80TB
1.44MB / 4.4MBs UpLink
44Mbs = 0.327 Seconds
22Mbs = 0.654 Seconds

FtlSpinUp (2)



80TB / 4.4MBs UpLink
44Mbs = 210.437 Days
22Mbs = 1.152 Years



SYMPPLY SymplyPRO XTF Thunderbolt
LTO-10 Desktop Tape Drive

BH # SYPRODT3LAF1 MFR # SYPRO-DT3LAF1B-AT

Key Features

- 1 x Full-Height LTO-10 Tape Drive
- Thunderbolt 3 Host Interface
- 12 Gb/s SFF-8644 Expansion Port
- Native Transfer Speeds up to 400 MB/s

\$12,349⁰⁵

12 Mos. Promo Financing with Payboo⁵

Add to Cart

Special Order

Expected availability: 4-6 Weeks

Free Standard Shipping

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

\$ 499.99 \$ 888.89

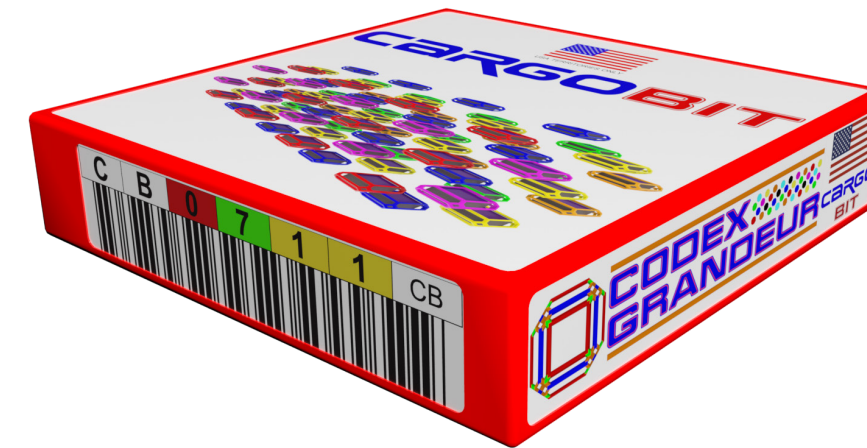
1

Add to Cart

Share

Pickup Available At 7100 Huntley Rd.
View Store Details





18 Peta Byte
200 Yr Retention
100,000 Cycles
8 second R/W
\$256.00 Retail
FtlSpinUp Only
No Batteries
~ Size of LTO Tape Cartridge

Semiconductor Storage X (2²⁶) = 18,014,398,509,481,984
Peta Tera Giga Mega Kilo Hecto

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

FtlSpinUp 18 Peta Byte Semiconductor Cartridge
One Single Cartridge can hold about 450 Individual 40TB Tapes
25GbE HDX R/W 40TB = 4.45 Hours Read, 4.45 Hours Write
10GbE FDX R/W 40TB = 11.12 Hours Simultaneous Read and Write

Once Data is Transferred into FtlSpinUp System, it is converted to (2²⁶) 67,108,864 Times Smaller, at Near Real-Time Throughput

No customer raw data is ever stored inside the FtlSpinUp. 40TB of Customer data can be transmitted, or received at 10GbE Full Duplex (FDX), or 25GbE Half Duplex (HDX) Near Real-Time, and automatically converted with (2²⁶) onto the internal 1TB Disk or 30TB Disk, and the 18PB semiconductor cartridge. An automatic system recording is also stored into the Deep Freezer for the Factory triple backup.

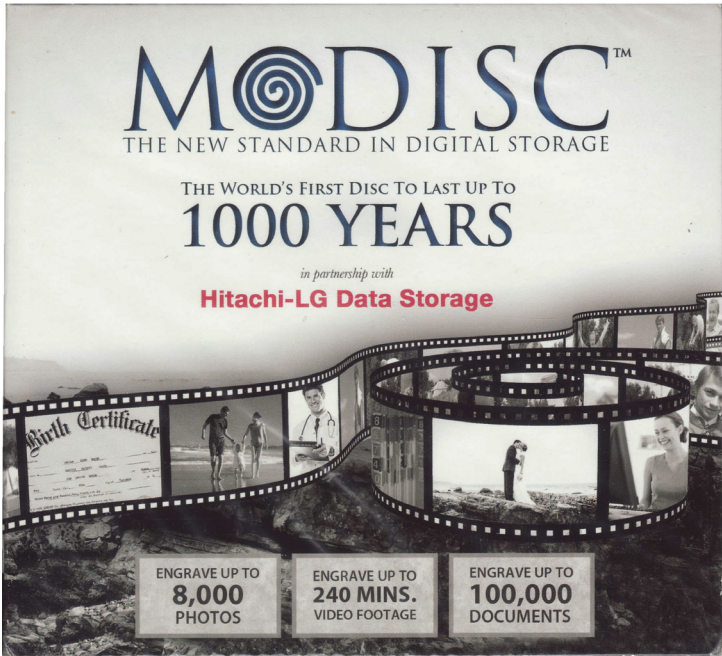
No customer raw data is ever stored inside the FtlSpinUp. A Typical 40TB of Customer data can be transmitted, or received to the FtlSpinUp at 25GbE Half Duplex and automatically converted at (2²⁶) onto the internal 1TB disk or 30TB Disk requiring only about 596,047 Bytes at a total of 4.45 hours. The 596,047 Byte total is then formatted and stored onto the FtlSpinUp Cartridge in a few seconds.

The procedure is reversed for reading the file back at 10GbE, or 25GbE.

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.

Not Finished



A special subspace conversion is required to reduce the FtlSpinUp data below the raw 100GB BD-XL M-DISC with more processor time required.

The 100GB BD-XL M-DISC is recommended, and any optical disc supported by the drive is usable, and can be multiplied by FtlSpinUp (2^26).

FtlSpinUp has a special internal formatting subspace conversion that takes the original subspace conversion of (2^26) storage data, and has another special subspace conversion, including read after write subspace conversion with hash, and a full bit comparison cycle for a guaranteed return before the burn process begins.

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

The process is reversed for retrieval of the (2^26) data stored from the one single 100GB BD-XL M-DISC. The special subspace conversion will function at near real-time for the data return from the optical disc drive.

100GB BD-XL M-DISC (2^26)
Formatting Not Included

6,710,886,400,000,000,000
Exa Peta Tera Giga Mega Kilo Hecto



www.FtlSpinUp.com

Secured Desktop Data 3600

Not Finished

Amazon	=	10,000,000,000,000,000	Peta	Tera	Giga	Mega	Kilo	Hecto
\$2,000,000 Dollars + Every Year								
Azure	=	10,000,000,000,000,000	Peta	Tera	Giga	Mega	Kilo	Hecto
\$2,000,000 Dollars + Every Year								
Google	=	10,000,000,000,000,000	Peta	Tera	Giga	Mega	Kilo	Hecto
\$2,000,000 Dollars + Every Year								
Backblaze	=	10,000,000,000,000,000	Peta	Tera	Giga	Mega	Kilo	Hecto
\$834,000 Dollars Every Year								
Wasabi	=	10,000,000,000,000,000	Peta	Tera	Giga	Mega	Kilo	Hecto
\$958,800 Dollars Every Year								
Seagate Lyve Cloud	=	10,000,000,000,000,000	Peta	Tera	Giga	Mega	Kilo	Hecto
\$7.50 TB/Mo Standard								
\$900,000 Dollars Every Year								
FtlSpinUp Internal Disk		1,342,177,280,000,000,000	Zetta	Exa	Peta	Tera	Giga	Mega
10GbE FDX-25GbE HDX								Kilo
Optional Internal RAM DISK		171,798,691,840,000,000	Exa	Peta	Tera	Giga	Mega	Kilo
Optional Data Base Package								Hecto
\$85,000 Dollars per “modem” 1Time Hardware Included								
\$3,600 Dollars (Once Per Customer) Every Year Factory Triple Backup								
Optional Starlink Near Real-Time 10GbE FDX or 25GbE HDX								
18PB Stored File at 44Mbps Uplink = ~62 Seconds = 2.9 PbE								

(2^26) Near Real-Time Base

Infinite Secured Desktop Data (Throughput Limited)
All Data Never Erased and Guaranteed for LIFE

FtlSpinUp Secured Desktop Data 3600



Nvidia NIC 200GbE / 400GbE
200GbE Full Duplex Near Real-Time
400GbE Half Duplex Near Real-Time
One 30TB Disk with Customer Storage

FtlSpinUp Internal Disk 1,342,177,280,000,000,000
10GbE FDX-25GbE HDX Zetta Exa Peta Tera Giga Mega Kilo Hecto

\$85,000 Dollars **1Time** **Hardware Included**
\$3,600 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 30TB 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 10GbE is 25 Hours
90TB returned to any NAS at 10GbE is 25 Hours
Actual time may be greater depending on Disk Drive Array

90TB sent to any NAS at 25GbE is 10 Hours
90TB returned to any NAS at 25GbE is 10 Hours
Actual time may be greater depending on Disk Drive Array

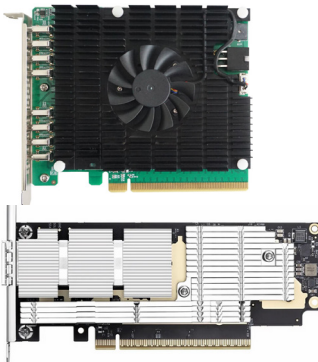
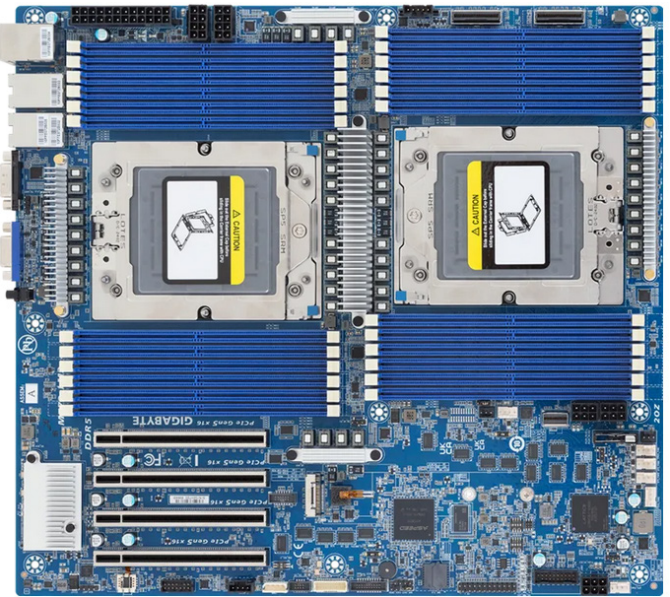
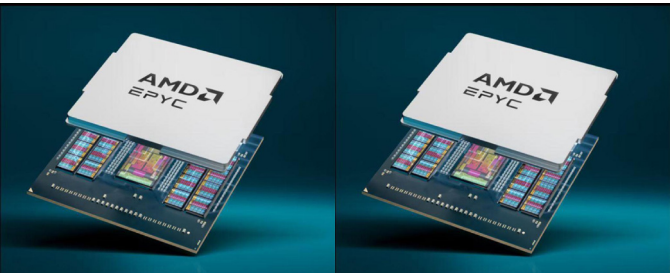
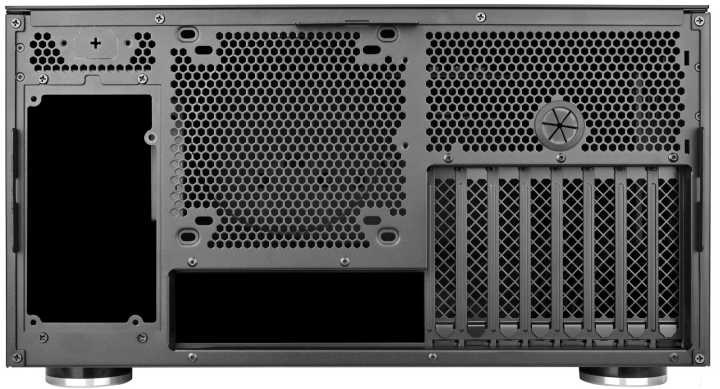
90TB sent with Starlink 22Mbps Uplink (No FtlSpinUp)
Is 1.425 Years
90TB returned with Starlink 22Mbps Uplink (No FtlSpinUp)
Is 1.425 Years

FtlSpinUp Demo 60GB File at 400GbE is 1.5 Seconds

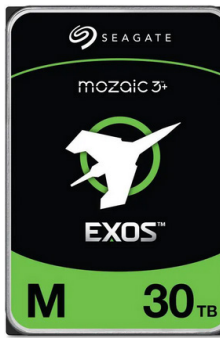
FtlSpinUp is Full Duplex 200GbE
2,236,962 Times More Storage than 600TB NAS
90TB sent to FtlSpinUp at 200GbE is 1.25 Hours
Only 1.44MB is used to store the 90TB
1.44MB returned from FtlSpinUp at 200GbE is 1.25 Hours
1.44MB is separated into 64 individual segments

FtlSpinUp is Half 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



FASTER than ANY equal cost SSD ARRAY
Recommended for Desktop Data 3600 Only

Random Access Memory 171,798,691,840,000,000,000
Near Real-Time RAM DISK Exa Peta Tera Giga Mega Kilo Hecto

Content Addressable Random Access Memory
With Generated Index Tables
Please see Pages: (42 - 45)

Twenty Four 128GB Ram Modules = 3.072TB RAM
- (512GB for system)

2.56TB Ram x (2^26) = 171.798,691,84 Exa Byte
171.798,691,84 EB / 245TB SSD = 701,219.15-245TB SSD
701,219.15 X \$30,000 Each = \$21,036,574,500 - Approx.
Near Real-Time Performance - No 5 Year Licensing per TB

Additional High Speed SSD Local Disk for power down storage
Additional Battery for power down no loss storage support

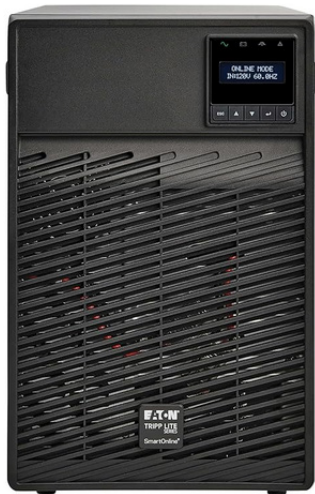
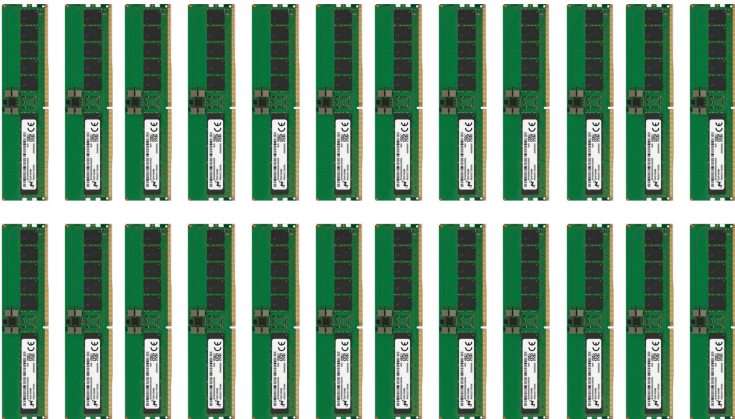
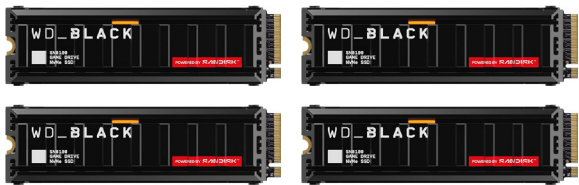
♦ AI Overview

As of early 2026, the 122.88TB Solidigm D5-P5336 enterprise SSD is priced ranging from roughly \$37,000 to over \$46,000, with some listings showing higher, reflecting significant price volatility. While initial estimates in May 2025 suggested a lower \$12,399 price point, costs have since increased significantly for this high-density U.2 NVMe drive designed for data centers. [Newegg +2](#)

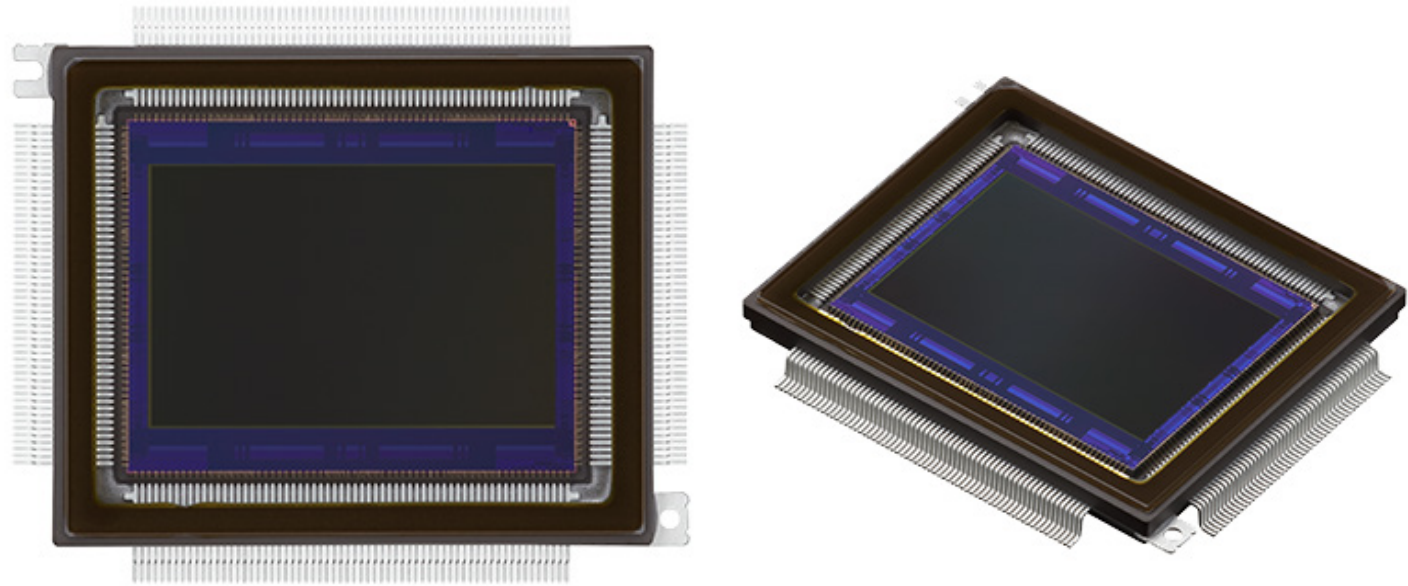
Key Pricing and Availability (122.88TB Enterprise SSD):

- **Tech-America:** Listed at \$37,128, noted to have increased from around \$12,399.
- **Newegg:** Listed for roughly \$43,000–\$46,100.
- **PC-Canada:** Prices listed around \$70,000+ for specific models.
- **Enterprise Focus:** These are specialized drives for AI, machine learning, and, big data analytics. [Newegg +4](#)

These drives are primarily marketed to corporate/data center clients, which explains the high, fluctuating costs compared to consumer storage solutions. [🔗](#)



Not Finished



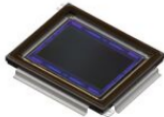


Image shown is a representation only. Exact specifications should be obtained from the product data sheet.

4900C002

DigiKey Part Number: 2157-4900C002-ND

Manufacturer: **Canon**

Manufacturer Product Number: 4900C002

Description: LI8020SAC

Manufacturer Standard Lead Time: 6 Weeks

Customer Reference:

Detailed Description: Image Sensor

Datasheet: [Datasheet](#)

In-Stock: 1

[Check for Additional Incoming Stock](#)

QUANTITY:

[Add to List](#) [Add to Cart](#)

All prices are in USD

Tray		
QUANTITY	UNIT PRICE	EXT PRICE
1	\$14,131.25000	\$14,131.25

Manufacturers Standard Package

Note: Due to DigiKey value-add services the packaging type may change when product is purchased at quantities beneath the standard package.

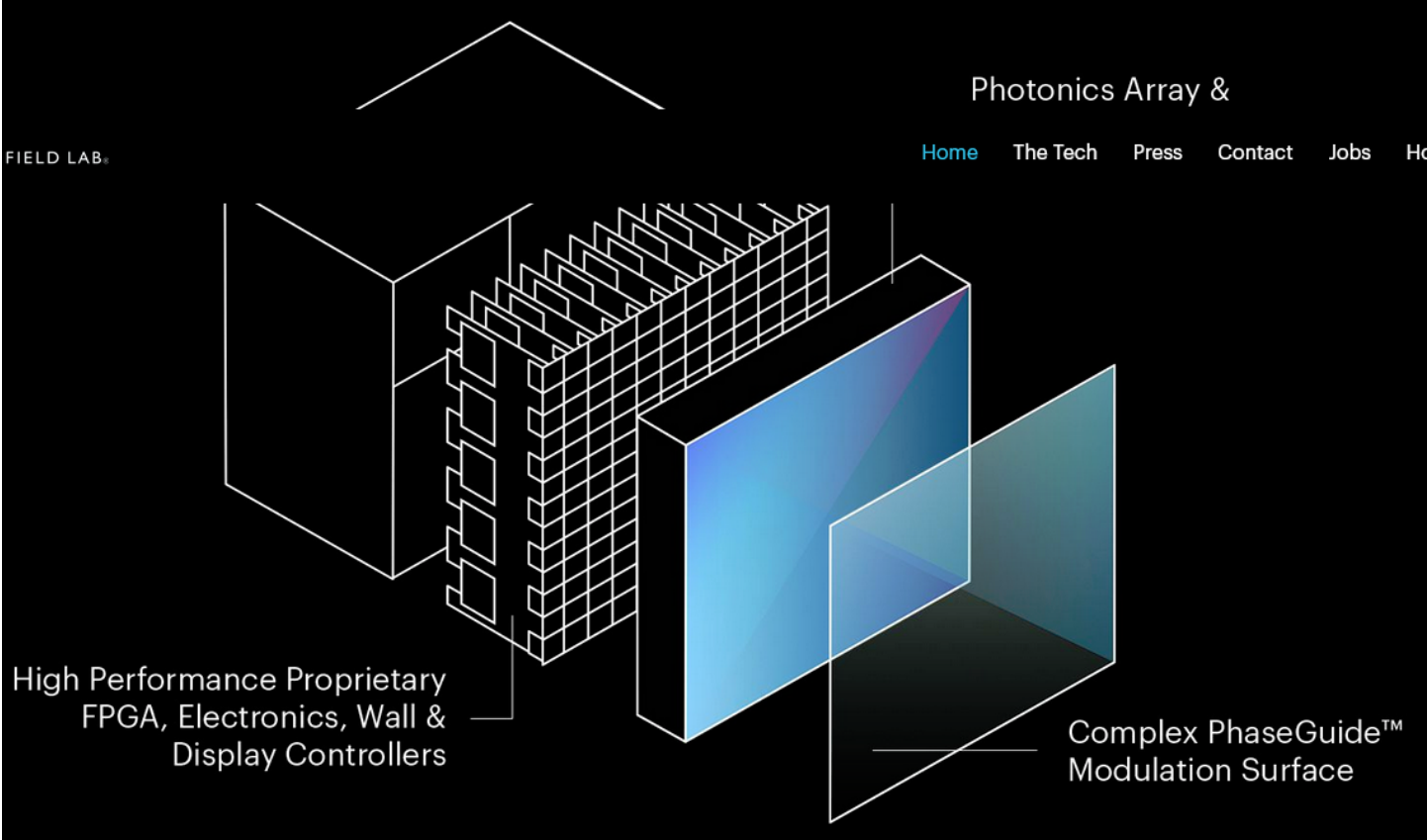
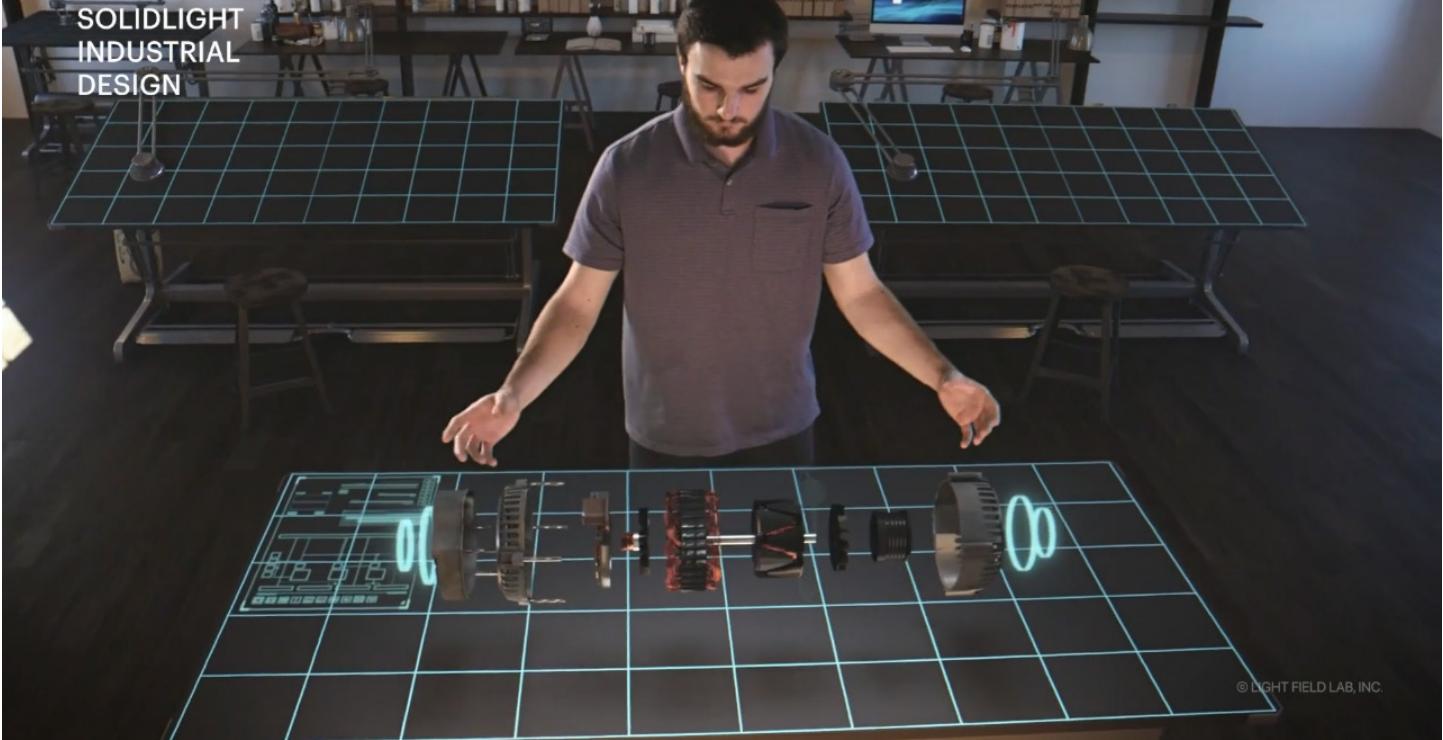
Product Attributes

TYPE	DESCRIPTION	SELECT ALL
☐	Sensors Transceivers	☐

**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**

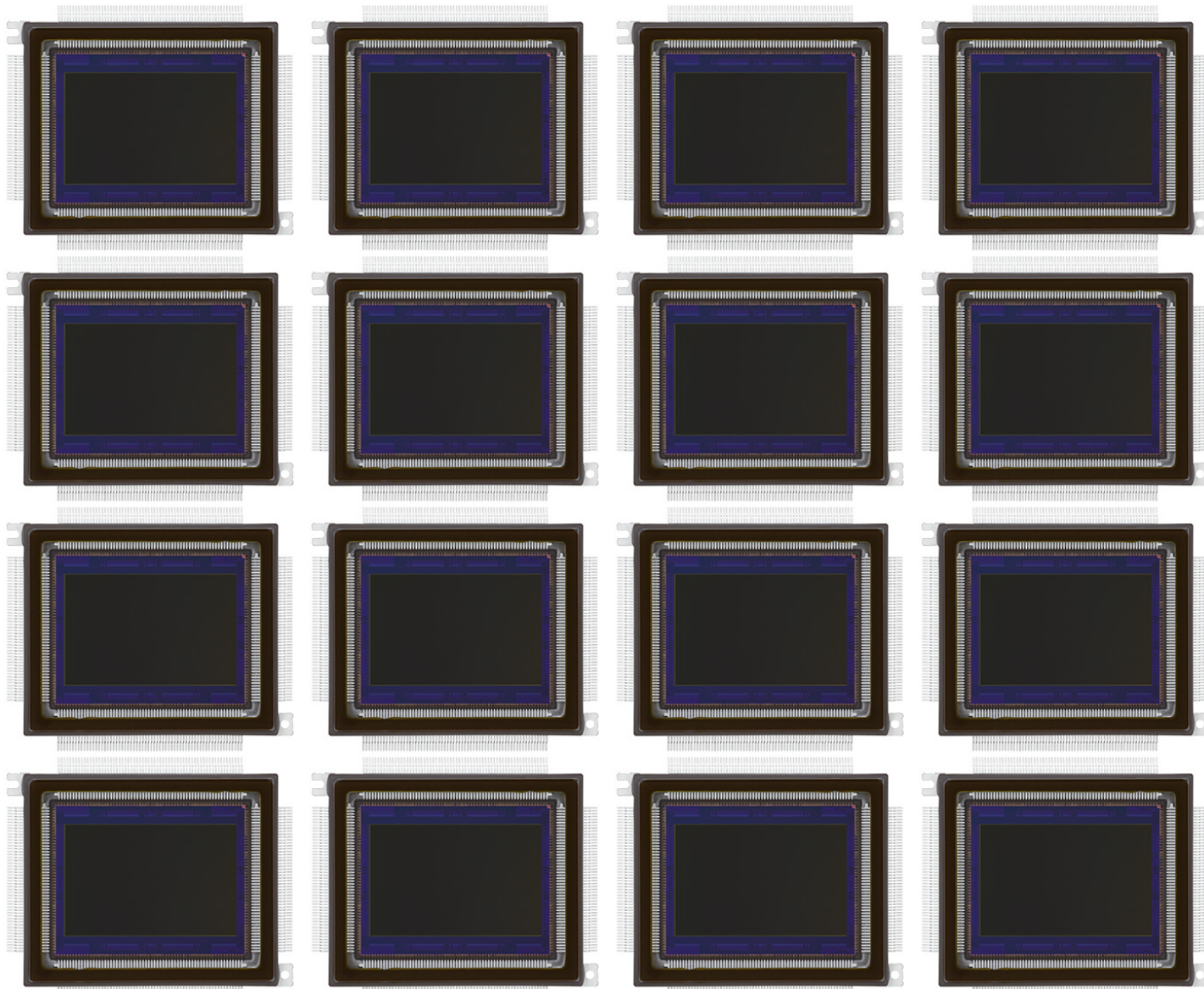
**(Maximum Data Rate in bits per second)
(19568 X 12588) X (12 bits per pixel) X (5.0 Frames per second) =
14,779,319,040 bits per second = 14.779319040 Giga bits per second
Easily fits into one standard 25GbE Fiber Optic Cable**

**(1)-25GbE Fiber Optic Camera can be supported in Near Real-Time
With one FtISpinUp System storing Centuries of Lossless Camera Detail
Possible to transmit Camera Starlink (A) to another
Starlink FtISpinUp System at Location (B) in Near Real-Time
Please see the 4 minute Canon Video:
<https://youtu.be/3ND210j4EIM?si=HspsorYzCeSHV0J9>
[Possible Application]**



**The 25GbE Fiber Optic Cameras can be sent
Near Real-Time over Starlink to another FtISpinUp 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**
\$3,600 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

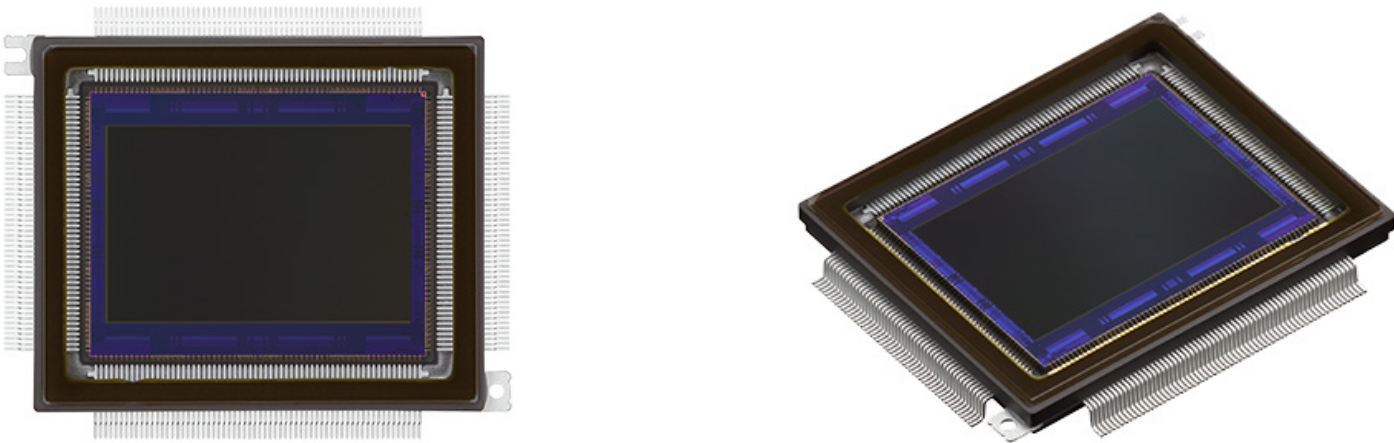
**Replace 8k 35Mpixel lossy compression cameras
With (19568 X 12588) X (12 bits per pixel)
246Mpixel Lossless compression cameras**

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

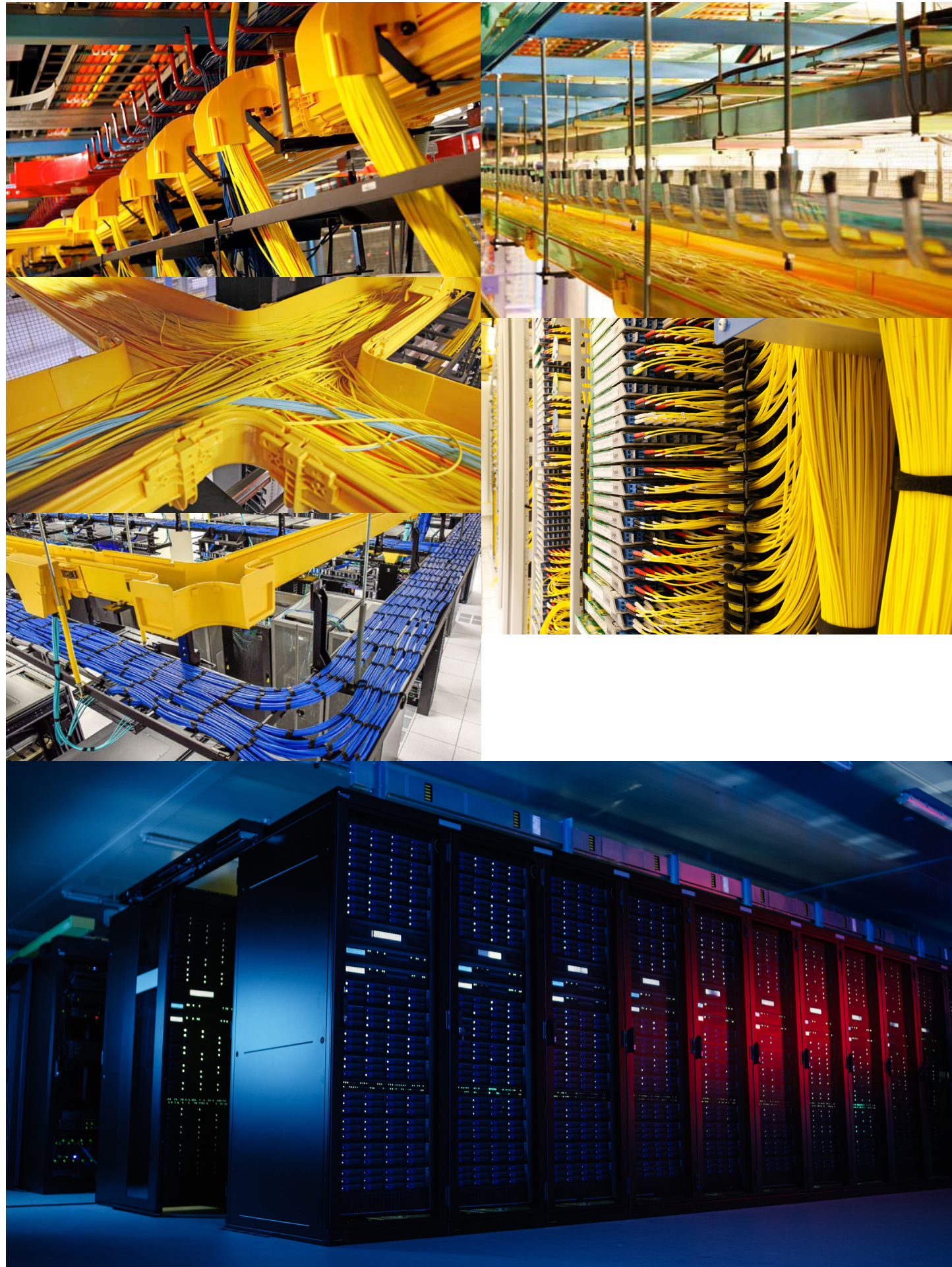




Not Finished

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.

FtlSpinUp (2^{26}) will convert one single disk drive into the storage capacity of 67,108,864 disk drives, any size. $67,108,864 / 84 = 798,915$ disk drive enclosures pictured above. $49,932 / 8 = 99,865$ Cabinets full of disk drives. The electrical power and cost of physical space alone will pay for many, many, many FtlSpinUp units instantly, not to mention the cost of all the disk drives that will wear out eventually, compared to the one single disk drive FtlSpinUp uses.



FtlSpinUp Supercomputer

Cargo Bit at (2^{26}) operating at near real-time performance, and each single low cost 10GbE FDX link can carry the same generated, or previously converted data as 67,108,864 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 67,108,863 bits will also arrive at the same exact time. 67,108,863 bits travel Faster Than Light.

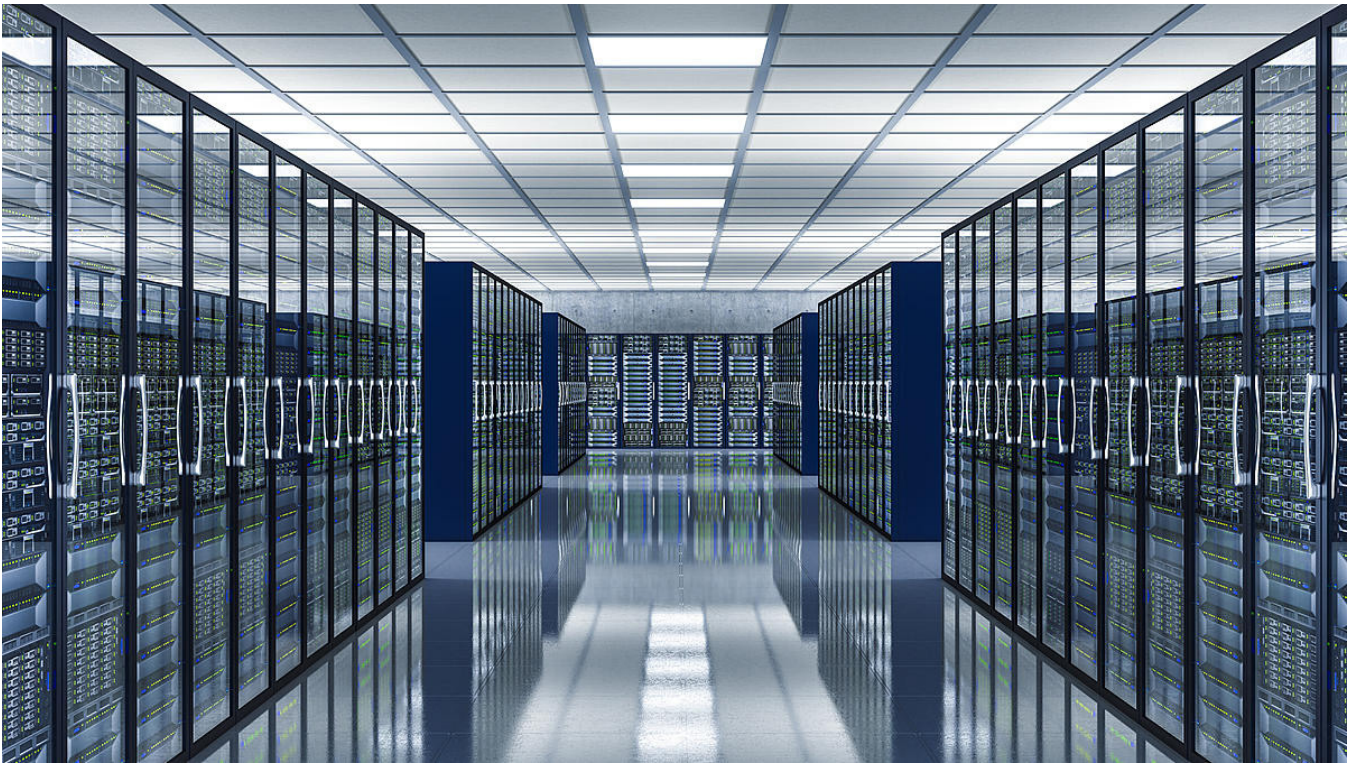
Once characterized the hardware components will not be required. More cores are required for near real-time simultaneous conversions.

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.

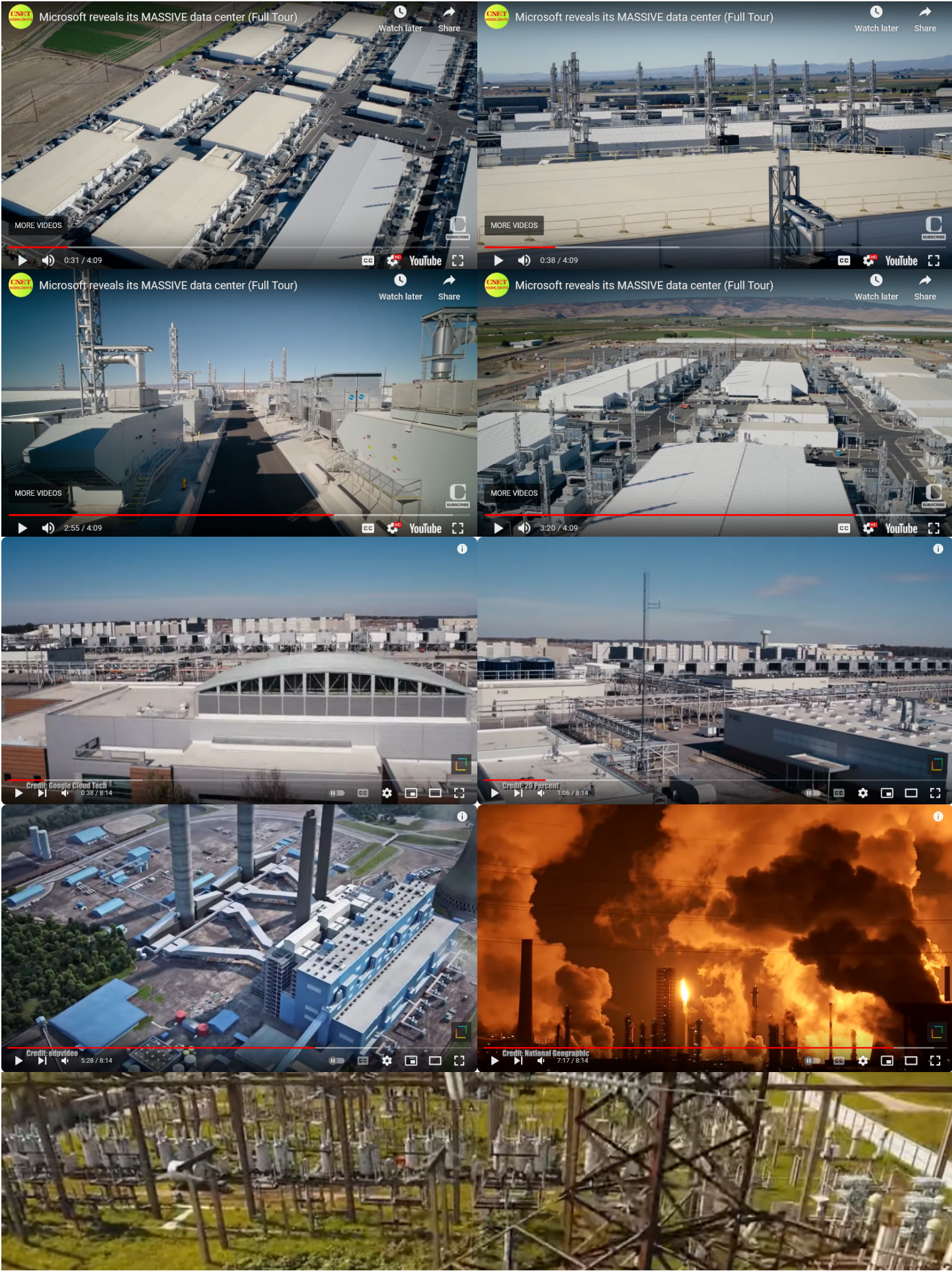
[Possible Application]



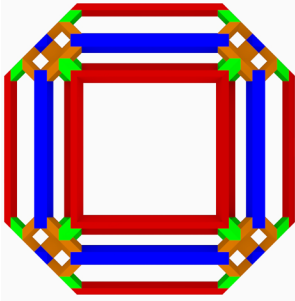
Magnitudes More Space with Magnitudes Less Data Storage



**Small Data Centers Win against Large Data Centers
With FtlSpinUp**



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
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SMT *Robotics*