

Data Castle

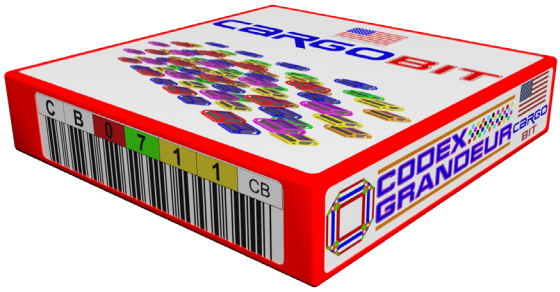
Cloud Storage

200Year Retention

Single Payment Storage
Never Erased Ever
Triple Factory Redundancy
100% Data Guarantee

1 Tera Byte TB (tebi) (2^40)
= 1,099,511,627,776 Bytes

3,435,973 TB per $1.00



25GbE Starting Package 1st Year
One Time Hardware Cost
Plus Annual Communications Cost

All original Data located at customer site
Loss of Internet does not lose any access to Data
Factory Cloud provides Triple Redundant Plus Backup

Connects to Local Windows or Linux as Millions largest possible Local Disk Drives for direct program usage with NVMe-oF QSFP 25GbE to 400GbE Storage Area Network

One Time Payment for ALL DATA LIFETIME at your location
Multiple Annual Communications Options for
Factory Triple Redundant Plus Backup



Data Castle **777**
$15,000 One Time Hardware Cost Plus $5,000 Annual Communications

Data Castle

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 incompressible 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.

Data Castle 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. Data Castle will work with most digital storage, and communication systems available without modification in any way, shape, or form.

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

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

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

Data Castle is a subspace conversion (state machine) only, and does not involve any normal processing of Data Center activity. Data is sent to Data Castle 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 Data Castle 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, Data Castle 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 Data Castle machine with up to a (2^52) subspace conversion.

The (2^52):1 maximum compressed Data Castle 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 Data Castle state machine is unique, and generate very different file contents that are not compatible with any other Data Castle state machine. A subspace conversion file can be intercepted on the public Internet forever, and only the one single Data Castle 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 Data Castle unit, remote or on site. (HERE) option will allow the customer to decide which different Data Castle 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:

Data Castle subspace converted files are naturally coded to specific Data Castle units only, and the customer decides what if any remote Data Castle units can return the file. Data Castle 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 Data Castle unit anywhere on planet earth.

Communication with subspace conversion files between different Data Castle 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 Data Castle 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.

Data Castle Secured 222

Lowest Cost Unit - Expanded to include:
Qty 2 - 4K Displays - Keyboard - Mouse
Local Massive Storage Disk Drive
<u>Customer Authorized</u> FTL Communications
For Starlink and Low Speed Internet of
Remote Massive Storage Disk Drives

High Performance Cold Storage
Limited by 25GbE Only
Customer Data is RAW only till 25GbE NIC
RAW only when returned with 25GbE NIC

Data Castle Secured 777

High Performance Operating System Largest Possible Active Disk Drive for use with existing software of any kind
Limited by dual 25GbE Only

Data Castle Secured 3600

High Performance Operating System Largest Possible Active Disk Drive for use with existing software of any kind
Limited by 400GbE Only



USA+TERRITORIES ONLY

Data Castle

Secured 222

HARDWARE

Pages (5-40)

Off-line Remote Cold Data Storage

Up to 78,840TB per Year

With Multiple ExabE+ over low speed Internet
Data Transfer Limited by Local 25GbE ONLY

216 Tera Bytes per 24 Hours MAX

One Cost for Hardware Upfront
Low Cost per Year of Lifetime Storage
Triple Redundant 3-2-1 Lifetime Storage
Data 100% Guaranteed Never Erased

Please see 777 and 3600 for
Local Hot Live Disk Drive Storage

$7,500 Dollars	**1Time**	**Hardware Included**
$1,200 Dollars	**Every Year**	**Factory Triple Backup**



Data Castle Secured 222
QSFP Fiber Optic
NIC - 25GbE
25GbE Full Duplex Near Real-Time

Secured 222

$7,500 Dollars
$1,200 Dollars

1Time
Every Year

Hardware Included
Factory Triple Backup

AI Overview

The cost for **216 TB** of data storage using Cloud Cold Storage is $334.80 per month (at a rate of **$1.55 per TB per month**). www.cloudcoldstorage.com

Cost Breakdown

- **Rate per TB: $1.55** per TB / month
- **Total Storage: 216 TB**
- **Base Monthly Cost: $334.80** / month www.cloudcoldstorage.com

Key Plan Features

- **Egress Fees:** $0 (Free egress and data retrieval)
- **Hidden/Surprise Fees:** None reported by the provider for standard recovery and streaming
- **Data Center Options:** Available in US (e.g., Los Angeles) at **$1.55/TB/month** and UK (London) at **£1.32 / €1.52 per TB/month** www.cloudcoldstorage.com

AI Overview

At a rate of **$1.55 per TB per month** (via Cloud Cold Storage), storing 6,480 TB costs $10,044.00 per month and **$120,528.00 per year**. www.cloudcoldstorage.... +1

Cost Breakdown

- **Per Terabyte Rate:** $1.55 / TB / month
- **Total Storage:** 6,480 TB
- **Monthly Cost:** $10,044.00
- **Annual Cost:** $120,528.00
- **Retrieval & Egress Fees:** $0.00 (zero fees for data recovery or streaming back) www.cloudcoldstorage.... +1

If you would like to compare this against other providers (such as AWS S3 Glacier Deep Archive or Google Cloud Archive), let me know and I can run the calculation for those tiers as well.

Data Castle Secured 222
216TB per 24 Hours = No Cost per Transfer
Another 6,480TB per every 30 Days = No Cost per Transfer
$1,200 per Year Flat Fee Lifetime + Triple Backup 3-2-1
With Unique Multiple ExabE+ over 1MbE+ Internet
Limited by Local 25GbE ONLY

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

Store or Return in 24 Hours up to:



almost anything (216TB) or

54 (4TB) Memory Cards or



5 (40TB) LTO-10 Cartridges or



2 (100TB) LTO-10 Cartridges or



6.75 (32TB) Disk Drives or



88.163% of (245TB) SSD or

AI Overview

Cold cloud storage rates typically range from $1.00 to $4.50 per TB per month for base storage capacity across major providers, though extra fees apply for retrieval and data transfer. Finout +1

Cold & Archive Rates by Provider (Per TB / Month)

- **AWS (Amazon S3):**
  - **S3 Glacier Flexible Retrieval:** ~$3.69 per TB ($0.0036 per GB)
  - **S3 Glacier Deep Archive:** ~$1.01 per TB ($0.00099 per GB) — lowest-cost archive tier Eon.io +1
- **Microsoft Azure:**
  - **Cold Blob Storage:** ~$4.61 per TB ($0.0045 per GB)
  - **Archive Blob Storage:** ~$1.01 per TB ($0.00099 per GB) Finout
- **Google Cloud Storage (GCP):**
  - **Coldline:** ~$4.10 per TB ($0.0040 per GB)
  - **Archive:** ~$2.46 per TB ($0.0024 per GB) Finout
- **Alternative Providers:**
  - **Cloud Cold Storage:** $1.55 per TB with zero retrieval or egress fees.
  - **IBM Cloud (One-Rate plan):** ~$10.00 per TB flat-rate across eligible storage.
  - **Backblaze B2:** Starts at $6.95 per TB per month (hot storage model with free egress/transactions). Backblaze +2

Important Cost Factors to Consider

- **Retrieval & Egress Fees:** Pulling data out of cold or deep archive tiers usually triggers hefty per-GB retrieval charges and transit/egress costs. Wasabi Technologies +1
- **Minimum Retention Periods:** Hyperscalers enforce mandatory minimum storage windows (e.g., 90 days for cold tiers and 180 to 365 days for archive tiers); deleting or overwriting files earlier incurs full-term penalties. University of California,... +1

If you share **how much data you plan to store, how often you need to retrieve it**, and **your preferred cloud provider (AWS, Azure, GCP, or independent)**, I can help calculate a more accurate cost estimate.

AI Overview

The cost for **216 TB** of data storage using Cloud Cold Storage is $334.80 per month (at a rate of **$1.55 per TB per month**). www.cloudcoldstorage.com

216TB at $1.55 per TB per Month = $334.80 every Month
The same 216TB is ~$4,017.60 per Year - every Year

365 Days X 216TB is ~$1,466,424.00 per Year - every Year
78,840TB total - NO NEW DATA every Year

Data Castle

216TB per 24 Hours = No Cost per Transfer
The same 216TB is $1,200.00 per Year - every Year

365 Days X 216TB is still $1,200.00 per Year - every Year
78,840TB total - ALL NEW DATA every Year

1TB Disk for Customer - 1TB Disk Internal System

Data Castle **Disk 25GbE FDX (Formatted)** 281,474,976,710,656,000,000,000,000

Yotta Zetta Exa Peta Tera Giga Mega Kilo Hecto

1TB Internal Disk for LOCAL STORAGE No Internet
Starlink Option possible

Data Castle will never erase data for any reason. All data remains for Life. It is possible to purchase the optical disc option and purchase usable copies from the Factory of all data stored over the years for local usage, without any Internet required on one single 1,000 Year Disc.

Optional dedicated fiber optic Business Internet from AT&T for Near Real-Time performance. Internet, Weather, Power, and Computer Systems dependent.

ALL DATA is triple redundant remote backup storage plus Factory storage, and customer optical disc.

Secured 222

Purchase hardware + 1 Year Triple Backup First
$7,500.00 + $1,200.00 = $8,700.00 and Options

Send Files, Data, Data Sets, Data Bases, Compressed Video Storage, Live Video Feeds, entire Disk Drives, SSD, Disc, or Tapes into the Data Castle 222. A customer assigned (Hash) code, and sha512-sum signature file will be sent to the Factory at a maximum of 216 Tera Bytes in 24 Hours. Larger files will continue on into more total time to transfer into the Data Castle 222.

For example moving one single 4TB memory card, a data image from clonezilla into 7z, and the sha512-sum signature are automatically generated and sent into the Data Castle 222 that requires about 27 minutes at 25GbE. If this is the only storage needed, and the Internet is available, the transmit code is sent to the Data Castle 222 Factory via a 24 hour per day available Data Center. The Factory will scan the Data Center multiple times per day when the Internet is available. A receipt code will be returned to the Data Castle 222 and the Log File Name will turn from YELLOW to GREEN, verifying that the 7z file, and the sha512-sum files matched when received at the Factory.

The stored data will never be erased for any reason for life, and if two or more data files have the same name, the old file is simply located below the new file, and the old files can be accessed at any time by returning all of them to the customer who can then sort them out.

Secured 222

All data sent to the Data Castle 222 is converted in near real-time, and no analysis of data content in any way, shape, or form is performed. Every single Data Castle 222 is unique, with its own signature code that if intercepted on the Internet, can not be read by any other Data Castle unit, or computer system unless customer authorized.

Data Castle 222 will store up to 90 days of 216TB per day into a local storage if no Internet available for transmission.

Data Castle 222 can receive up to 90 days of 216TB per day into a local storage from the Factory if requested by the customer. The files are returned when sent back over the 25GbE to the customer computer. The two files 7z with customer assigned (Hash), and sha512-sum signature files will confirm data integrity. Customer must have the customer assigned (Hash) code to return the original Clonezilla images in the customer computer system.

If after 1 Year the customer decides not to continue the service, all data will remain and never be erased for any reason. All data will be available at any time to the customer. At any time the customer can purchase one Month of service or 30 consecutive days of new storage available at $100.00 per Month.

This is Cold Storage, and the response time from the Factory is dependent on Internet, Power, and Computer Systems all working 24 hours per day. The optional disc drive unit will enable purchase of 1,000 Year optical discs.

Secured 222

LOCAL
Existing PC or Server
With 25GbE Dedicated NIC
Windows or Linux
Running Customer Software
Possible
Security Systems
Engineering - Business
Almost Anything

LOCAL
LTO Tape Drive

LOCAL
Memory Card

LOCAL
Network

25GbE

***Data Castle* Secured 222**

LOCAL *Data Castle* Secured 222

1TB Disk for Customer - 1TB Disk Internal System

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

Secured 222





USA TERRITORIES ONLY

Data Castle (2)

Low Speed Internet

Secured 222 Data Only

1GbE

REMOTE

Data Castle

FACTORY

REMOTE
Back Up Files 1

REMOTE
Back Up Files 2

REMOTE
Back Up Files 3



Data Castle 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

Data Castle **ONLY WORKS** with Data Castle data. One, two or more Data Castle computers can be linked together with customer permission using Starlink business services. The Data Castle 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 Data Castle data transfer
Starlink is NOT INCLUDED in Data Castle - Optional Only

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



USA TERRITORIES ONLY



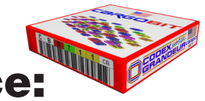


USA TERRITORIES ONLY

Data Castle (1) **Data Castle (2)**

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





Near Real-Time
Data Castle 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**

Local Database File Real-Time Starlink Example
Optional 75.557 Zetta Byte Cartridge Transfer
(Actual 268,435,456 Bytes / 22Mbs)
[22Mbs] Starlink Uplink / [22Mbs] Downlink
Maximum Continuous Bits per Second Full Duplex
One 75.557 ZB File Transmission = ~2.03 Minutes

Without *Data Castle* 75.557 ZB requires
22Mbs uplink = 1,089,056,427 Years
22Mbs downlink = 1.089,056,427 Years



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

2,882 LTO-10 100TB Tapes Per (Sub File)

22 (Sub Files) = 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

2,882 LTO-10 100TB Tapes/(Sub File) x 22 (Sub Files)
Per - 22,528 Bytes
x 64 - 22,528 Bytes = 1,441,792 Bytes / Diskette
2,882 100TB Tapes x 22 (Sub Files) x 64 Files = 4,057,856
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 / 100TB Tapes are NOT REQUIRED for Data Castle
And used for comparison ONLY.



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

Security Cameras 222



25GbE Fiber Optic
Real-Time LIVE FDX

up to 8 Panavision
Lossless Cameras
at 3GbE each Real-Time
up to 250 typ 8k Lossy
Compressed Cameras
Real-Time LIVE

Data Castle 222

Low Speed Link
or
Starlink Upload

Less Than 1 Sec

Data Castle

FACTORY

When Internet
Available

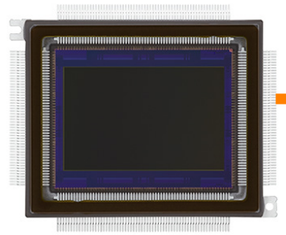
Designated
Data Center
24/7
When Internet
Available
Optional Secured
NotaryTimeStamp

Back Up Files
1

Back Up Files
2

Back Up Files
3

Security Cameras 222



25GbE Fiber Optic
Real-Time LIVE HDX

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

Data Castle 222

Low Speed Link
or
Starlink Upload

Less Than 1 Sec

Data Castle

FACTORY

When Internet
Available

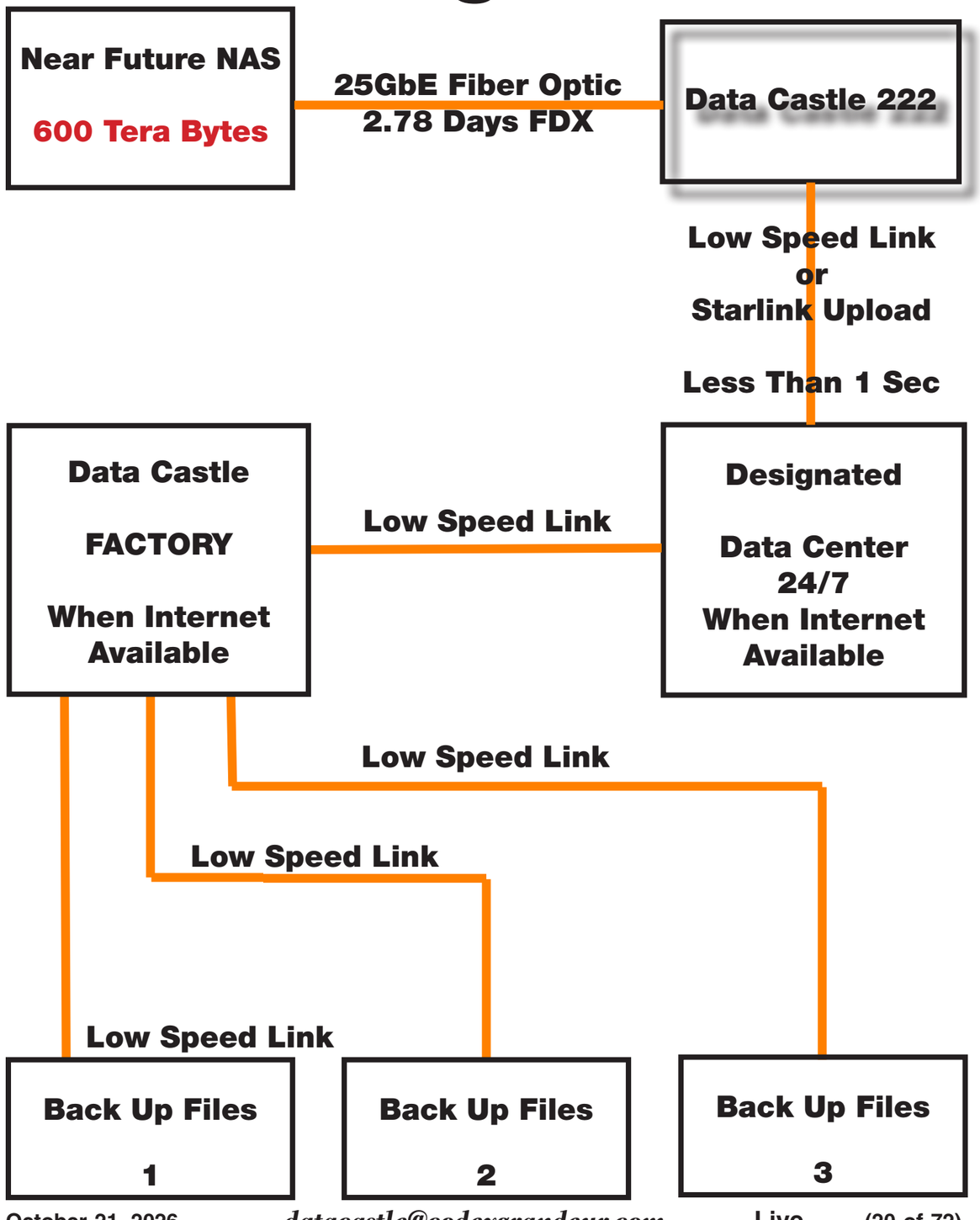
Designated
Data Center
24/7
When Internet
Available
Optional Secured
NotaryTimeStamp

Back Up Files
1

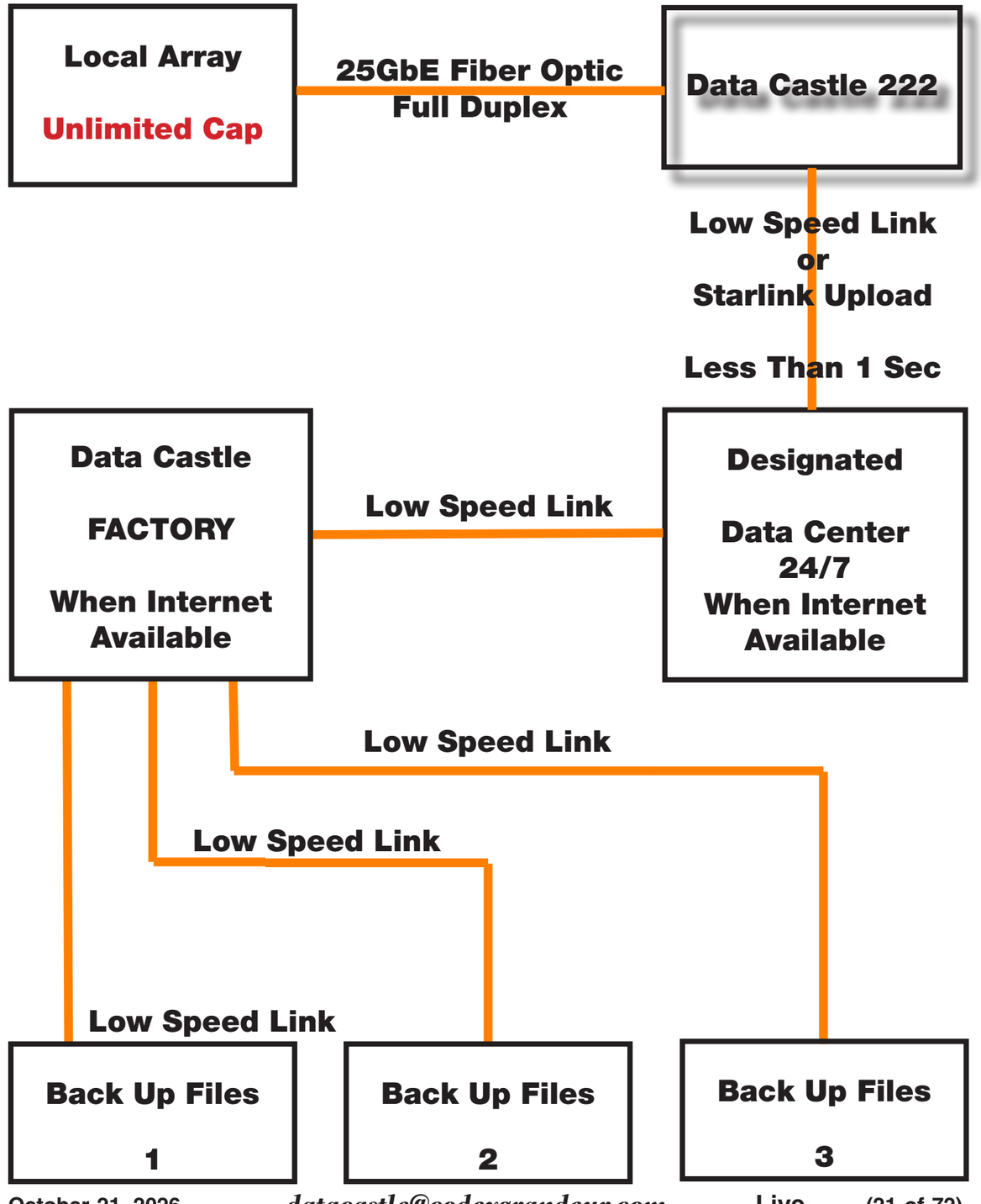
Back Up Files
2

Back Up Files
3

Storage 222



Storage 222





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 Data Castle 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 Data Castle
even
at the full rate of 25GbE
the
Data Castle will store Lossless Pixel Data
for
YEARS of Continuous Storage
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

Data Castle reduces 277.8 MBS to < 9,600 bps

Easily fits into Starlink UpLink speed NRT

Will easily fit into the 25GbE FDX of Data Castle

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

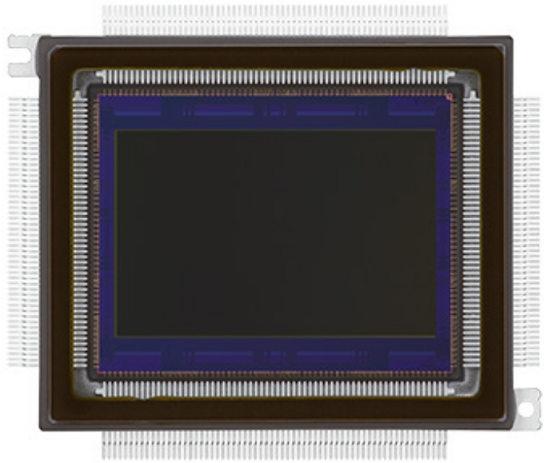
All Cameras can send full day recordings to each other and back to base in seconds

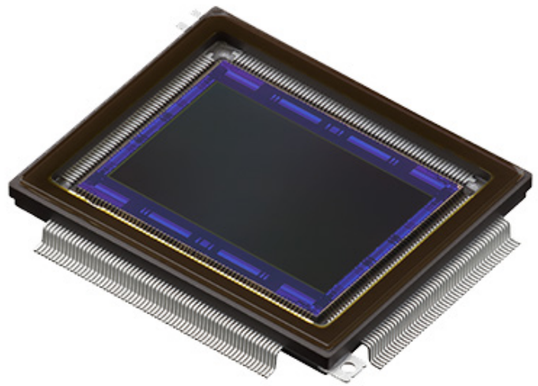
Data Castle has a build in Back-Up Drive

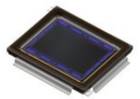
Data Castle can send data back to Factory at any time for Triple Redundant Back-Up

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

288PB file Starlink Up/Down in < 0.001 Seconds







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

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

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

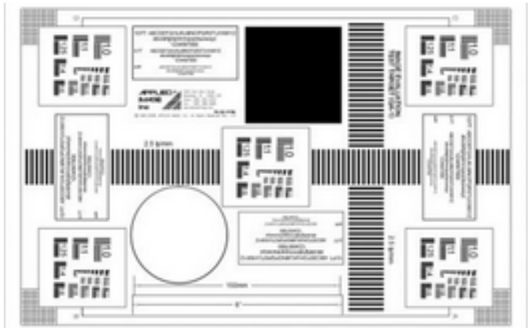
TYPE	DESCRIPTION	SELECT ALL
Sensors, Transducers		

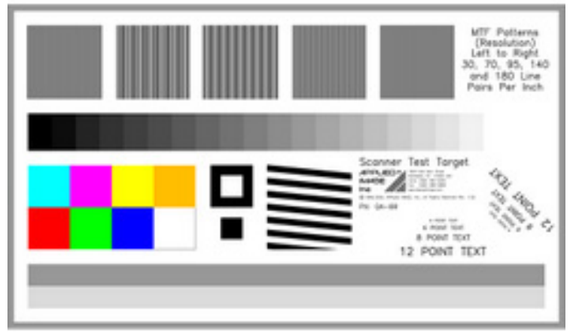
Canon
LI8020SAC
(Lima India 8020 Sierra Alpha Charlie)
19568 x 12588 (Horizontal x Vertical)

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 Data Castle System storing Centuries of Lossless Camera Detail
Possible to transmit Camera Starlink (A) to another
Starlink Data Castle System at Location (B) in Near Real-Time
Please see the 4 minute Canon Video:
https://youtu.be/3ND210j4ElM?si=HspsorYzCeSHV0J9
[Possible Application]





Data Castle 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

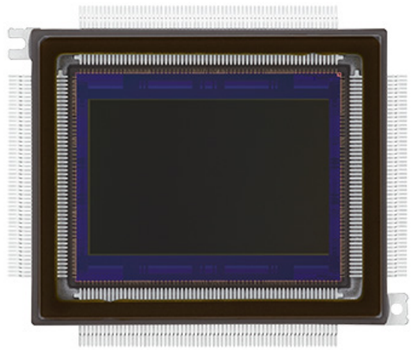
Blade Runner (1982 Movie) levels of Zoom Detail

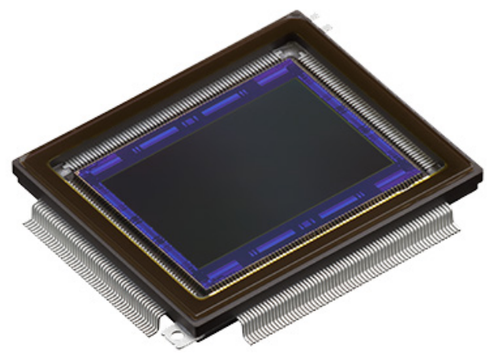
Airports, Trains, $100M+ Jets, Banks, Perimeter

Warehouse, Farms, High Security Areas,

Machine Control, Factory, Robotics

Autonomous Vehicle Driving









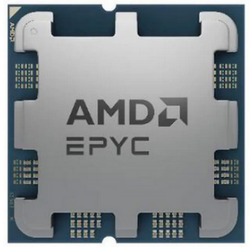


Data Castle Secured 222
Hardware

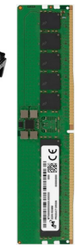


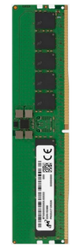






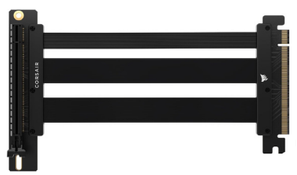










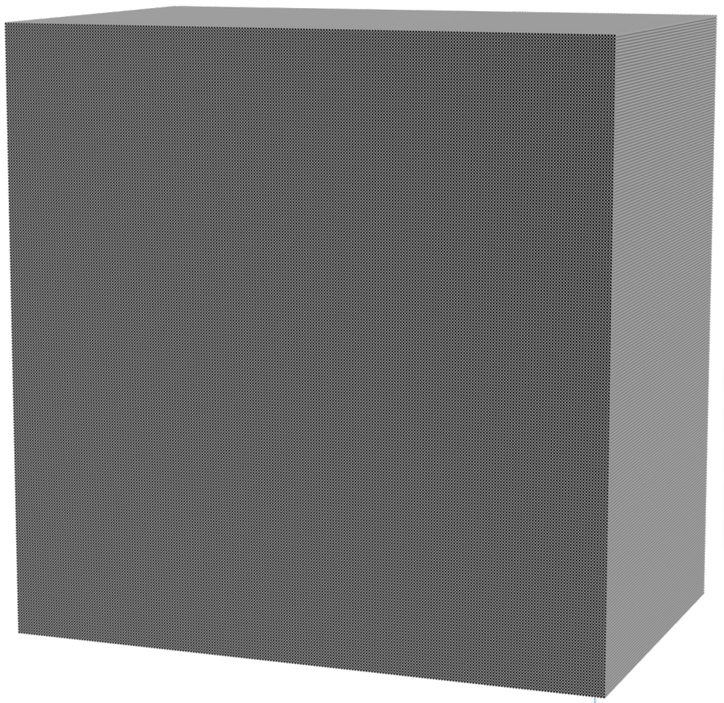








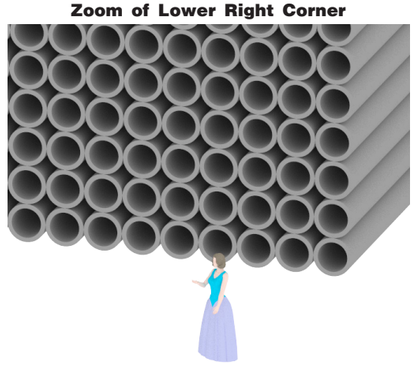
Data Castle Secured 222
AMD EPYC 4585PX 16 Cores
16 Cores 2 QSFP 25GbE / 25GbE



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

DATA CENTER Frontier SUBSCRIBE ABOUT US PARTNERSHIP OPPORTUNITIES PODCAST VIDEOS JOBS WHITE PAPERS LOGIN JOIN

COOLING CLOUD SUSTAINABILITY POWER COLO DESIGN EDGE HYPERSCALE AI METAVERSE 5G NETWORKS LOCATIONS

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.

ENCHANTED ROCK The Power is On.
The Brattle Group: Decarbonized Resilience
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VOICES OF THE INDUSTRY



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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."

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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."

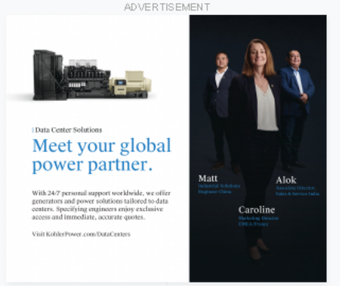
Snowhorn also discussed (4:24) the origin and founding of his company.

> "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.

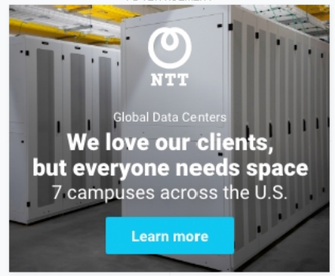
Snowhorn also shared (9:07) his insights regarding the value proposition of automatic, robotic cross connections powered by Telescent, as installed at Quantum Loophole's Maryland data center campus.

> "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:

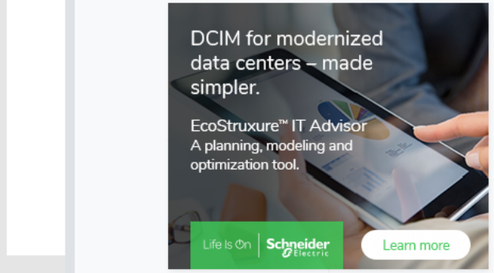
> "It's literally hundreds of sites, hundreds of data centers, but we don't actually touch those other data centers once we get into Loudon County. We

October 21, 2026 datacastle@codexgrandeur.com Live (37 of 72)

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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This art

PODCAST

How Investment Powers the Global Growth of the Cloud



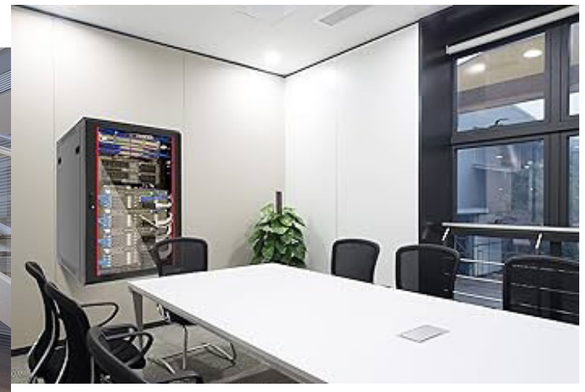
The Seagate Exos E SU84 storage enclosure supports 84 3.5 inch disk drives in a 5U box. A typical 42U rack cabinet will hold about 8-84 disk drive enclosures each.

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.













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Data Castle

Secured 777

HARDWARE

Pages (41-50)

$20,000 / 256,000,000,000,000TB inside

Local 1TB Hard Disk Drive Formatted

12,800,000,000 TB per $1.00

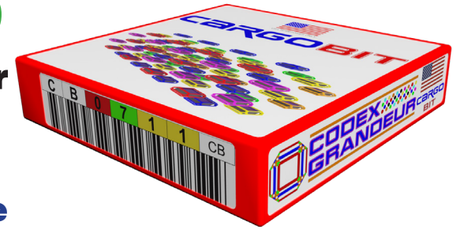
1 Tera Byte TB binary (tebi) (2^40)

= 1,099,511,627,776 Bytes



25GbE Starting Package 1st Year
One Time Hardware Cost
Plus Annual Communications Cost
Applied to 1TB Disk Drive

3,435,973 TB per $1.00



25GbE Starting Package 1st Year
One Time Hardware Cost
Plus Annual Communications Cost
Applied to 200 Year Data Cartridge



Data Castle Secured 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

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

Checksummed Files to eliminate communications error are sent to Data Castle 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.

Data Castle
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 every Data Castle unit

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

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

Data Castle Demo 60GB File at 50GbE is 12 Seconds

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

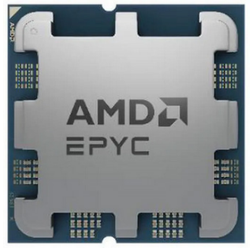
CargoBit (1Million Dollars+) is HDX 4 Tera bit Ethernet

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

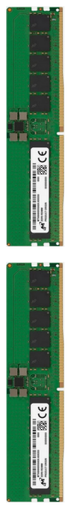


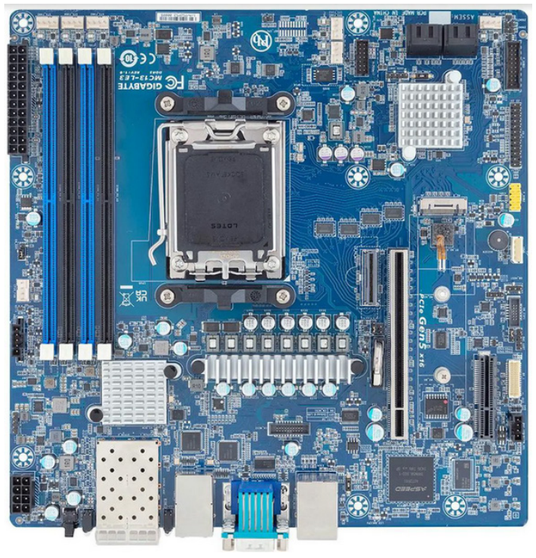


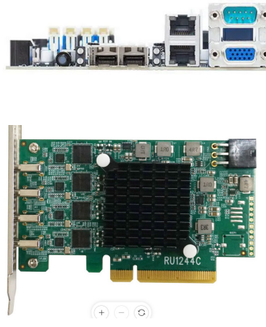












Data Castle Secured 777

AMD EPYC 4585PX 16 Cores

16 Cores 2 QSFP 25GbE / 25GbE





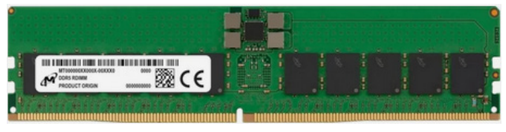




(Temp Blank)













OPTIONAL - RAM DISK for *Data Castle* Secured 777

1TB Disk for Customer - 1TB Disk Internal System

Data Castle 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.

Secured 777

LOCAL
Existing PC or Server
With 25GbE
Windows or Linux
Running Customer Software
Possible
Security Systems
Engineering - Business
Almost Anything

25GbE

25GbE

(In the Ball Park)
Linux + Windows limit of
Less Than 24.5 Exa Bytes per Drive
Requires about 100,000
245 Tera Byte SSDs to reach

***Data Castle* Secured 777**
Has Millions of
24.5 Exa Byte Drives LOCAL

1GbE

> 1,024 24.5 Exa Byte Drives
Can be sent over 1GbE Internet
From multiple customer authorized
777/3600 units located anywhere
through Factory switch in under
1 Second

LOCAL

Data Castle Secured 777

Millions of 24.5 Exa Byte Disk Drives

Secured 777

REMOTE
CLOUD
Services

REMOTE

Data Castle

FACTORY

REMOTE
Back Up Files 1

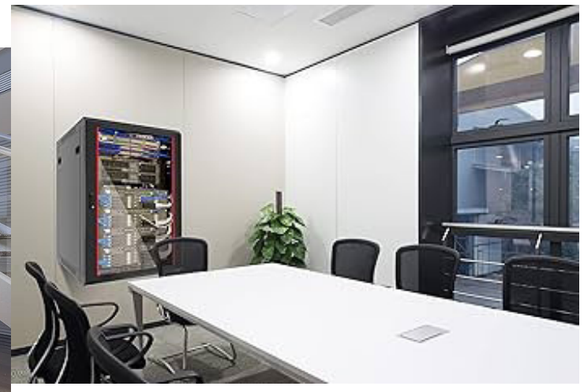
REMOTE
Back Up Files 2

REMOTE
Back Up Files 3















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Data Castle

Secured 3600

HARDWARE

Pages (51-61)

$90,000 / 256,000,000,000,000TB inside

Local 1TB Hard Disk Drive Formatted

2,844,444,444 TB per $1.00

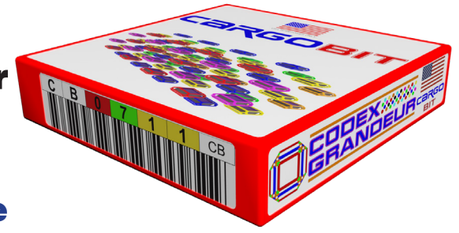
1 Tera Byte TB binary (tebi) (2^40)

= 1,099,511,627,776 Bytes



400GbE Starting Package 1st Year
One Time Hardware Cost
Plus Annual Communications Cost
Applied to 1TB Disk Drive

763,549 TB per $1.00



400GbE Starting Package 1st Year
One Time Hardware Cost
Plus Annual Communications Cost
Applied to 200 Year Data Cartridge

USA+TERRITORIES ONLY

Data Castle

Secured 3600

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

Data Castle 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** 9,007,199,254,740,992,000,000,000
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



Data Castle Secured 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

Data Castle 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
$5,000 Dollars Every Year Factory Triple Backup

Checksummed Files to eliminate communications error are sent to Data Castle 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.

Data Castle

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 Data Castle)
Is 1.425 Years
90TB returned with Starlink 22Mbs Uplink (No Data Castle)
Is 1.425 Years

Data Castle Demo 60GB File at 400GbE is 1.5 Seconds

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

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

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

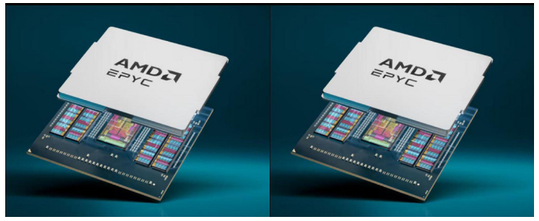
90TB sent to Cargobit at 4TbE is 3.75 Minutes
Only 1.44MB is used to store the 90TB
1.44MB returned from Data Castle at 4TbE is 3.75 Minutes
1.44MB is separated into 64 individual segments

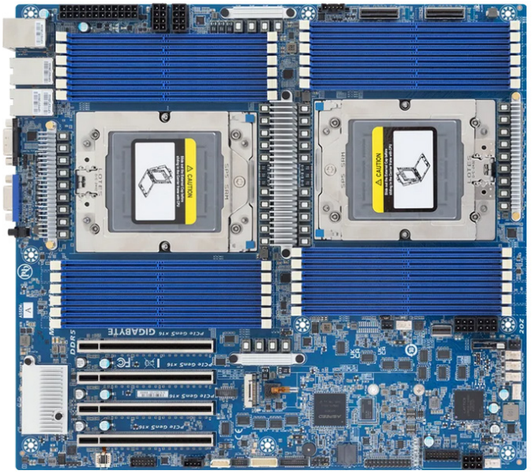










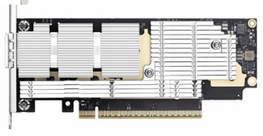




Data Castle

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



















Data Castle OPTIONAL RAM DISK

Secured 3600

1TB Disk for Customer - 1TB Disk Internal System

Data Castle 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.

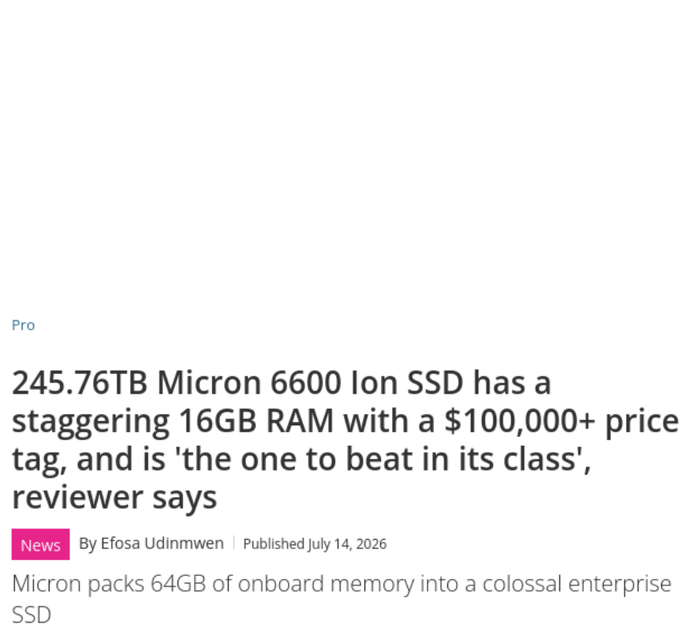
Secured 3600

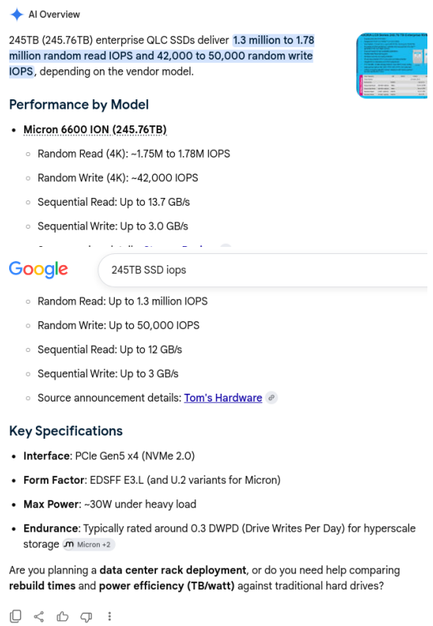
9.007 Yotta Byte RAM DISK / 245.76 Tera Byte SSD =
36,650,387,592 SSD Drives at $80,000 Each =
$ 2,932,031,007,402,666 a.k.a. Multiple Data Centers

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 Data Castle 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 Data Castle 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 Data Castle 3600 with RAM DISK $100,000





Data Castle **OPTIONAL RAM DISK**

Secured 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 Data Castle 3600 unit with optional RAM DISK is about $100,000 Dollars.

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

The total capacity of 1 Data Castle 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 Data Castle 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

Secured 3600

LOCAL
Existing PC or Server
With 400GbE
Windows or Linux
Running Customer Software
Possible
Security Systems
Engineering - Business
Almost Anything

400GbE

(In the Ball Park)
Linux + Windows limit of
Less Than 24.5 Exa Bytes per Drive
Requires about 100,000
245 Tera Byte SSDs to reach

***Data Castle* Secured 3600**
Has Millions of
24.5 Exa Byte Drives LOCAL

> 1,024 24.5 Exa Byte Drives
Can be sent over 1GbE Internet
From multiple customer authorized
777/3600 units located anywhere
Through Factory switch in under
1 Second

1GbE

LOCAL

***Data Castle* Secured 3600**

Millions of 24.5 Exa Byte Disk Drives

Secured 3600

REMOTE
CLOUD
Services

REMOTE

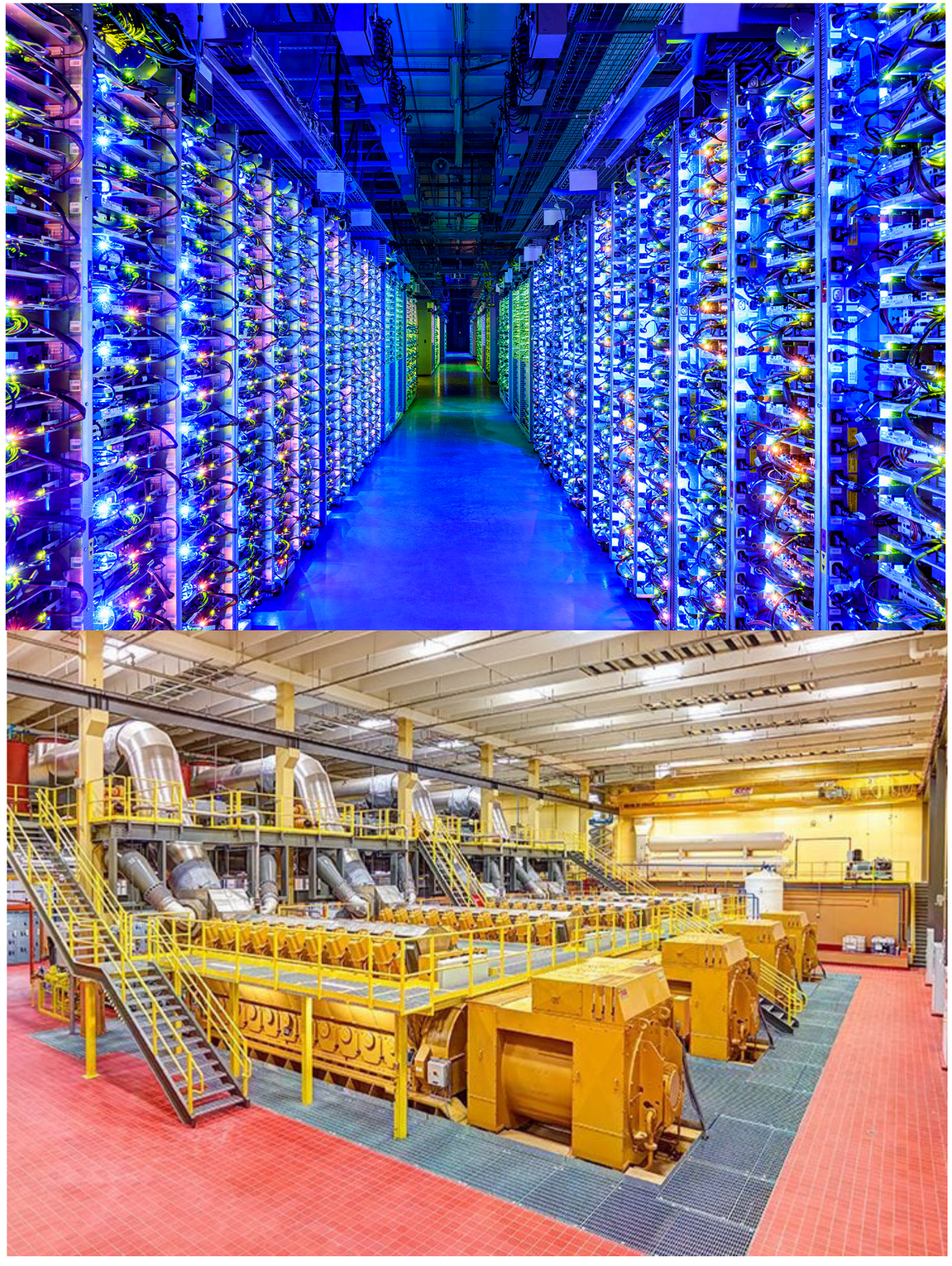
Data Castle

FACTORY

REMOTE
Back Up Files 1

REMOTE
Back Up Files 2

REMOTE
Back Up Files 3





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

1 Single Data Castle 75.557 Zetta Byte Semiconductor Cartridge can hold over 755,578,637 Individual LTO 100TB Tapes

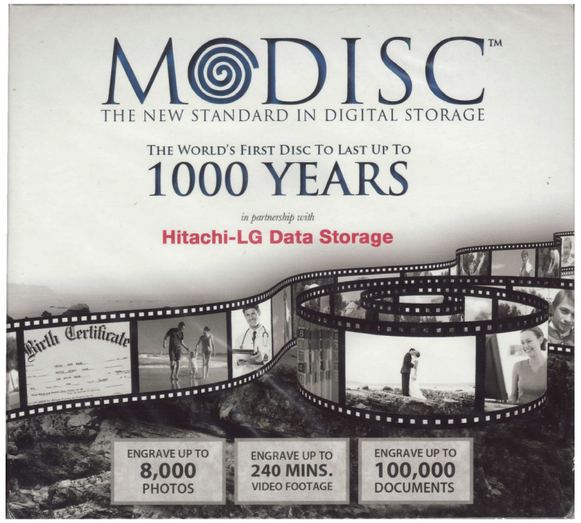
(755,578,637) LTO-10 100TB Tapes

Legacy Data Center storage as seen on the left page, typically requires huge amounts of power, and electric supply for cooling alone.

The Data Castle Trade Secret uses the 75.557 Zetta Byte cartridge pictured above, along with 1,000 Year Discs for permanent storage of Data that is never erased.

The Data is reduced by (2^52) (Formatted). This requires many Complex Instruction Set Computers working in parallel to store, verify, and Download Return the data.

The cartridge above, and 1,000 year discs require small amounts of electric, and generate almost no heat for centuries of on-line use.







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

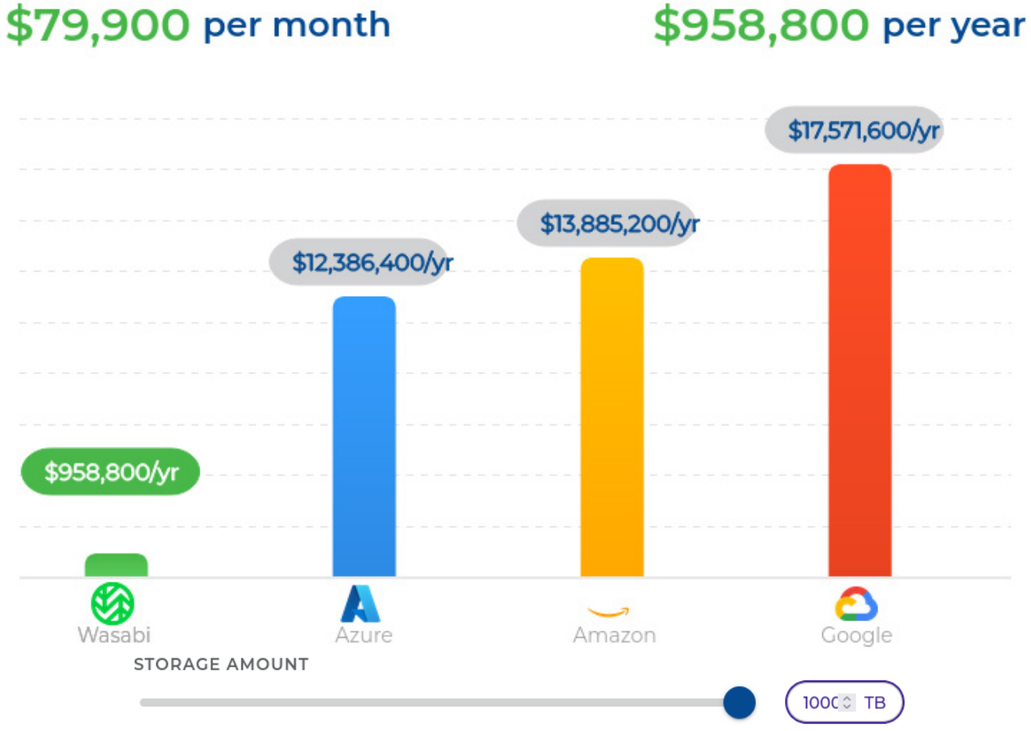
The special conversion formatting allows local storage of internal system Deep Freezer data.

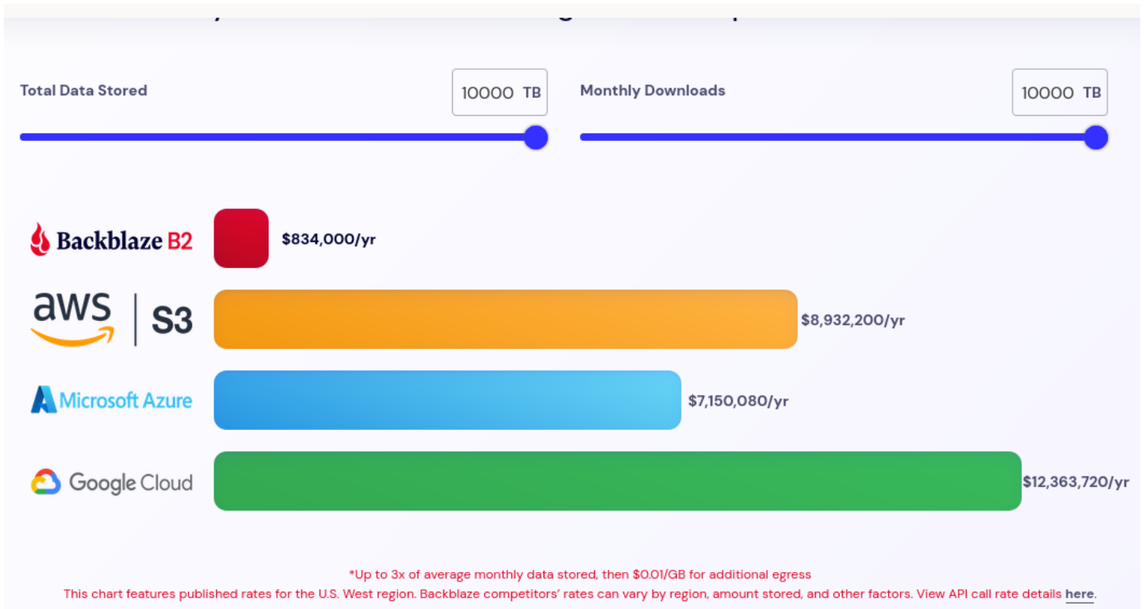
The special subspace conversion will function at near real-time for the data storage and data return from the optical disc drive, limited by the speed of the optical drive used.

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.





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		



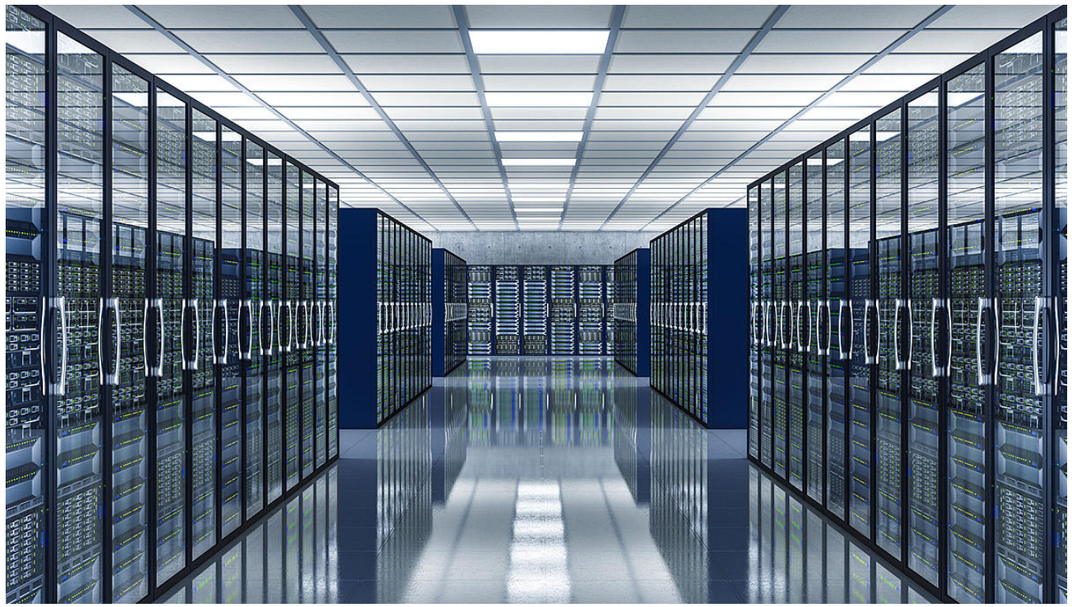








Small Business Wins against Large Data Centers With Data Castle



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

Prefix		Binary ÷ Decimal	Decimal ÷ Binary
kilo	kibi	1.024 (+2.4%)	0.9766 (−2.3%)
mega	mebi	1.049 (+4.9%)	0.9537 (−4.6%)
giga	gibi	1.074 (+7.4%)	0.9313 (−6.9%)
tera	tebi	1.100 (+10.0%)	0.9095 (−9.1%)
peta	pebi	1.126 (+12.6%)	0.8882 (−11.2%)
exa	exbi	1.153 (+15.3%)	0.8674 (−13.3%)
zetta	zebi	1.181 (+18.1%)	0.8470 (−15.3%)
yotta	yobi	1.209 (+20.9%)	0.8272 (−17.3%)
ronna	robi	1.238 (+23.8%)	0.8078 (−19.2%)
quetta	quebi	1.268 (+26.8%)	0.7889 (−21.1%)



Codex Grandeur LLC

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Info@numericalanalog.com

