

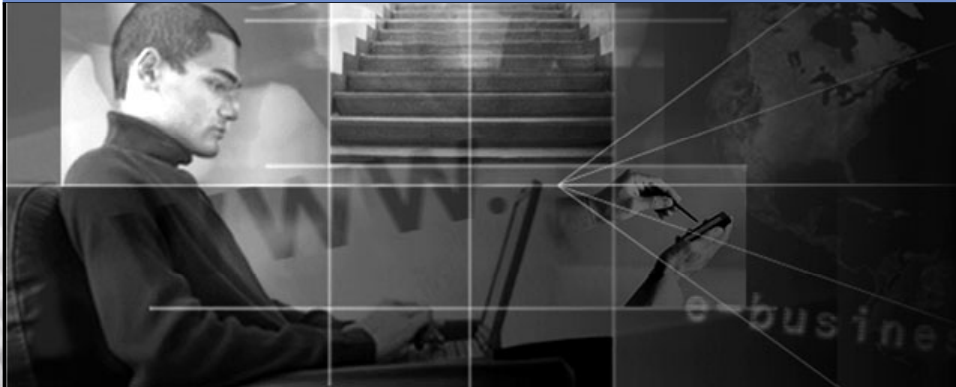
V04 IBM VXA-2

Why Packets Make it Better



Agenda

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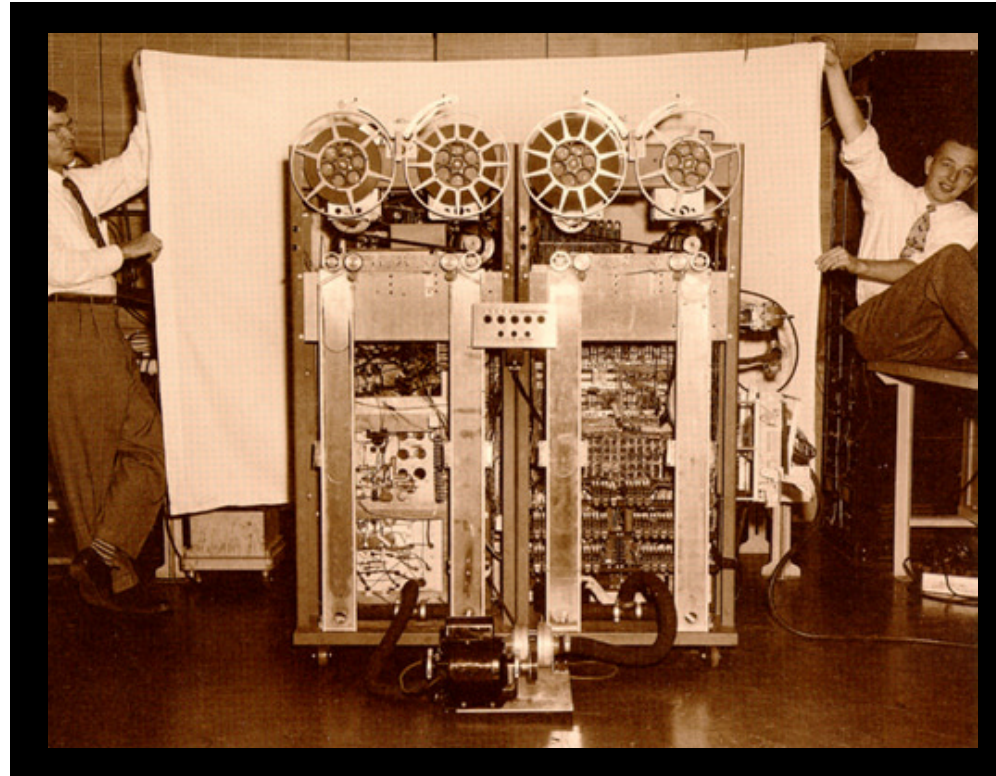


A Brief History

VXA Packet Technology

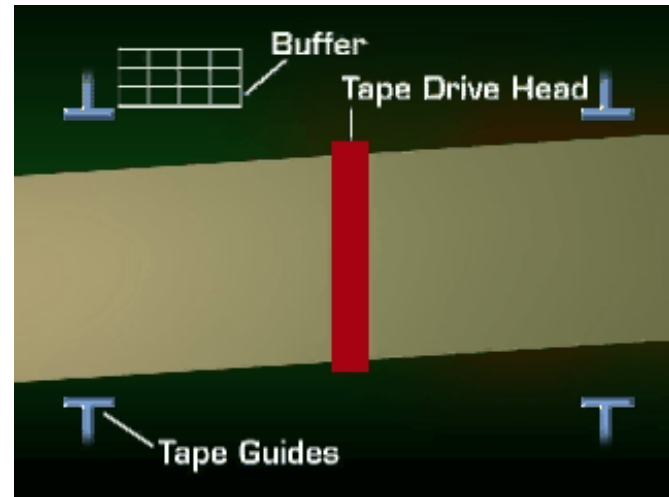
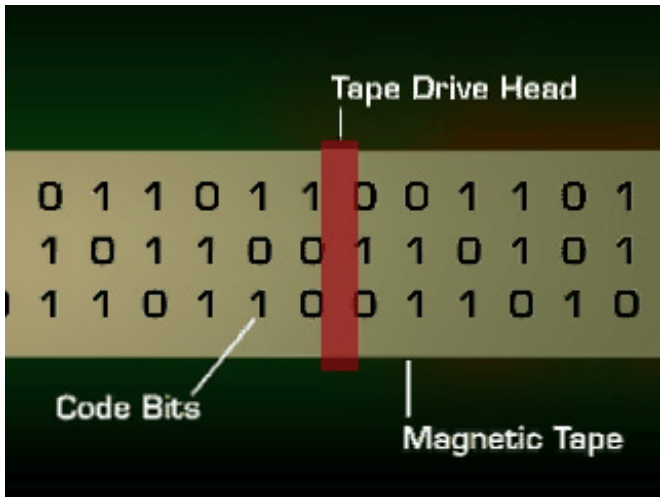
Product Overview

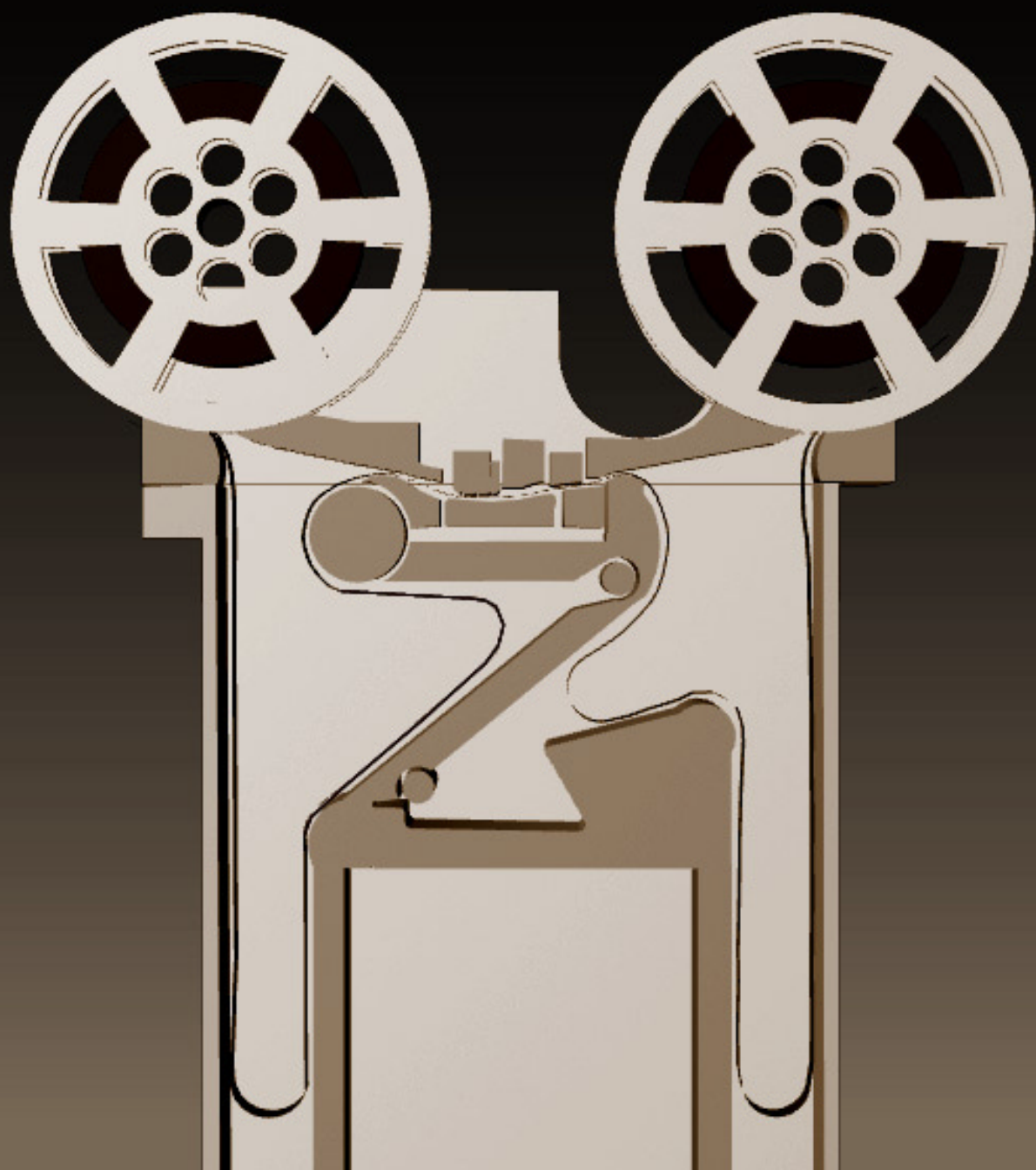
(Early 1950's)



IBM 726

Head to Tape Alignment a Constant Issue





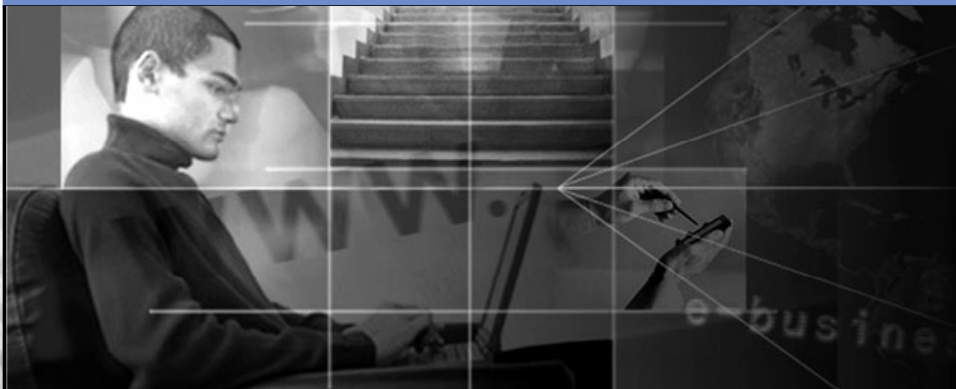


Large Form Factor

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IBM 2400



Streaming introduced in late 1970's

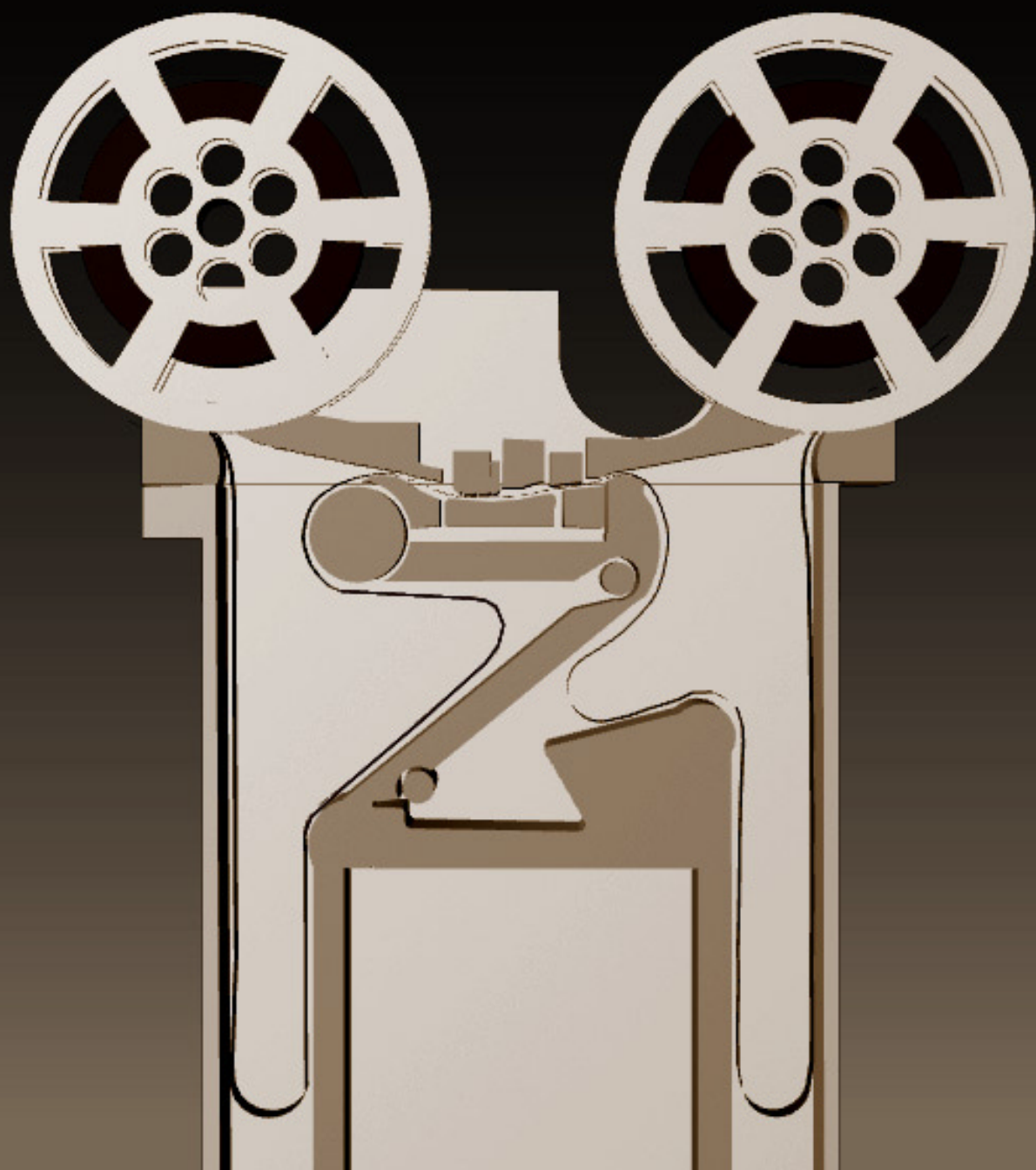
Reduced power

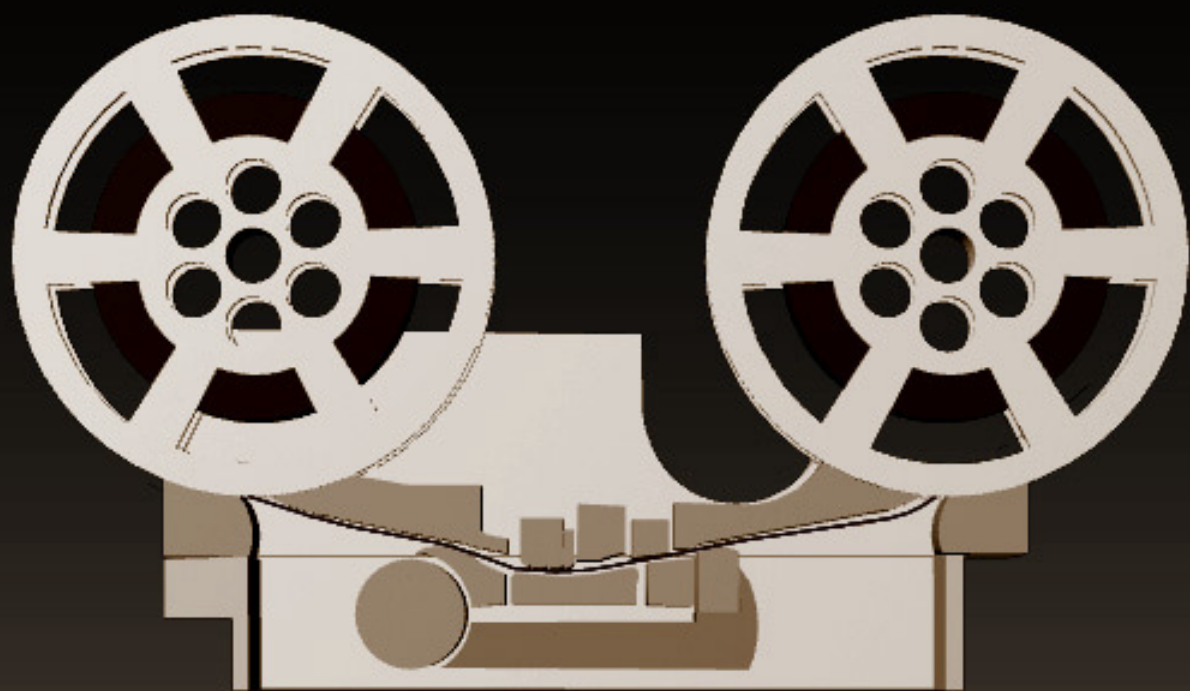
No vacuum

Small form factor, small media

Design for cartridge automation

Lower cost



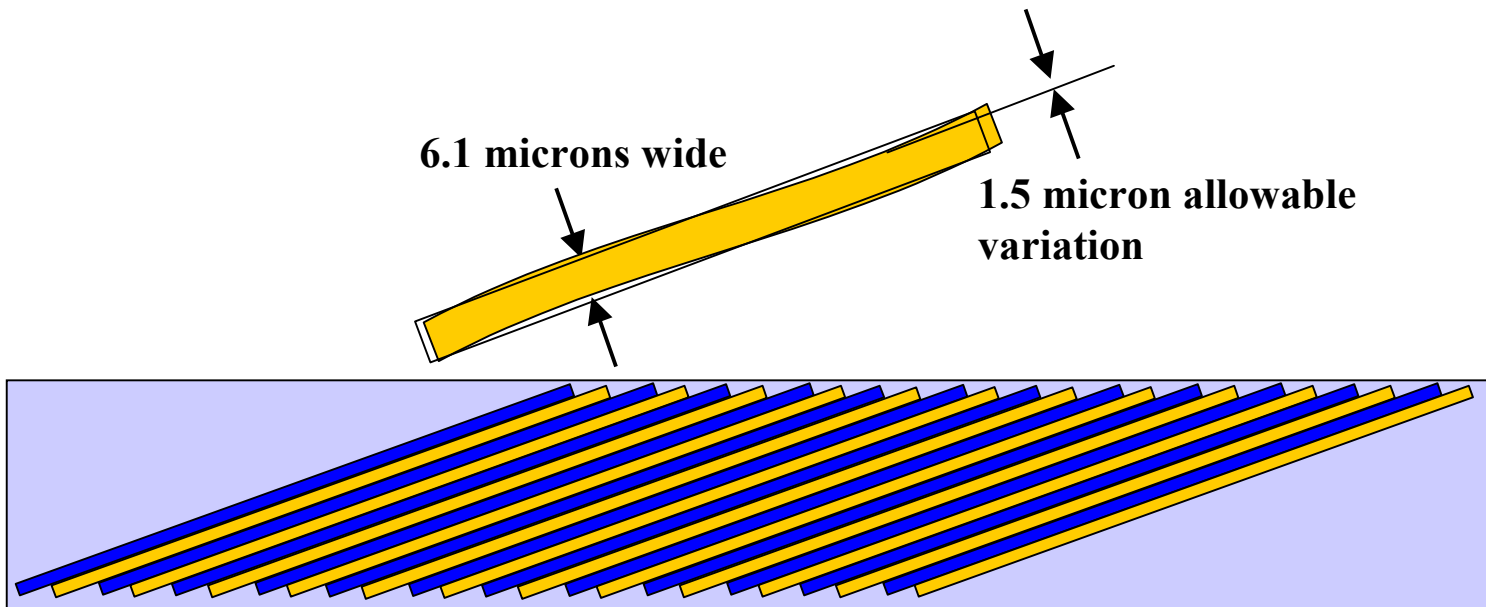


Back-hitching (shoe shining)

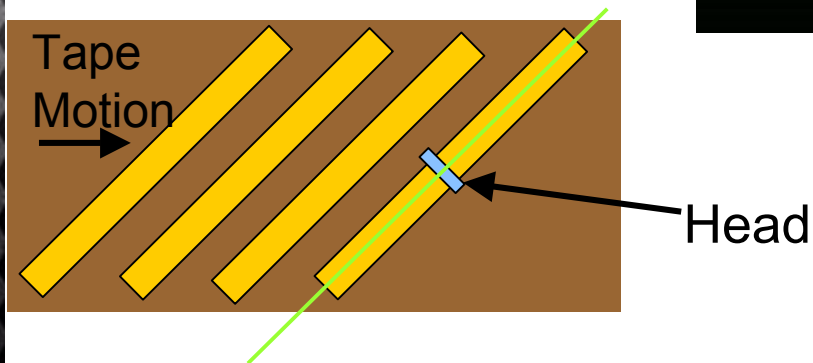
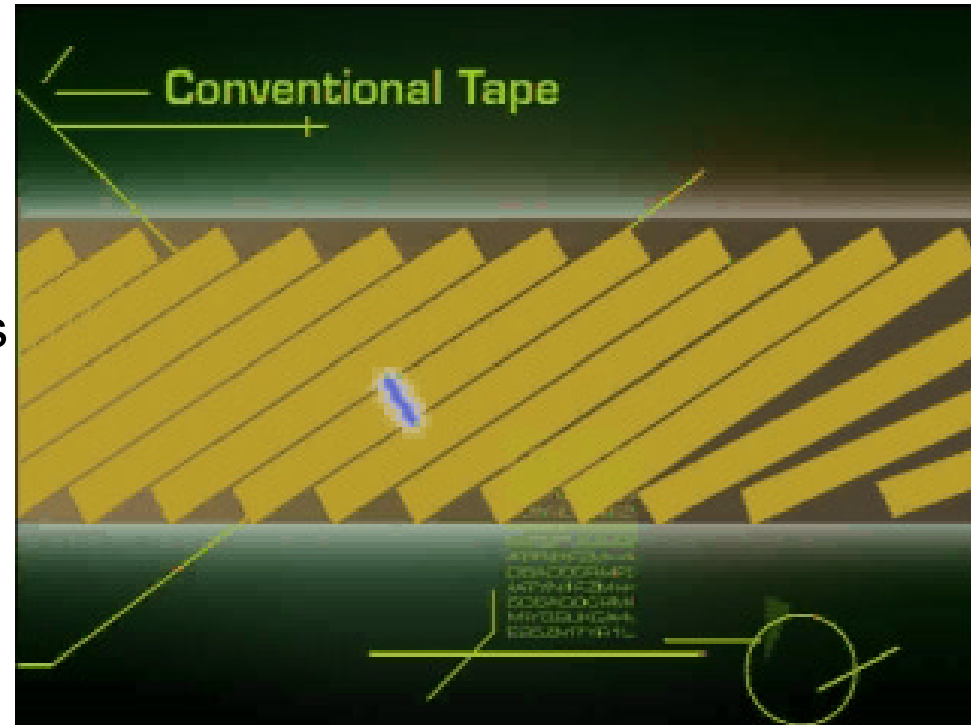
Tight tolerances

Complex mechanisms

- DDS-4 specifies +/- 1.5 micron maximum allowable track variation to restore data from tape
- This precision requires a complex mechanism
 - Higher costs
 - Lower reliability



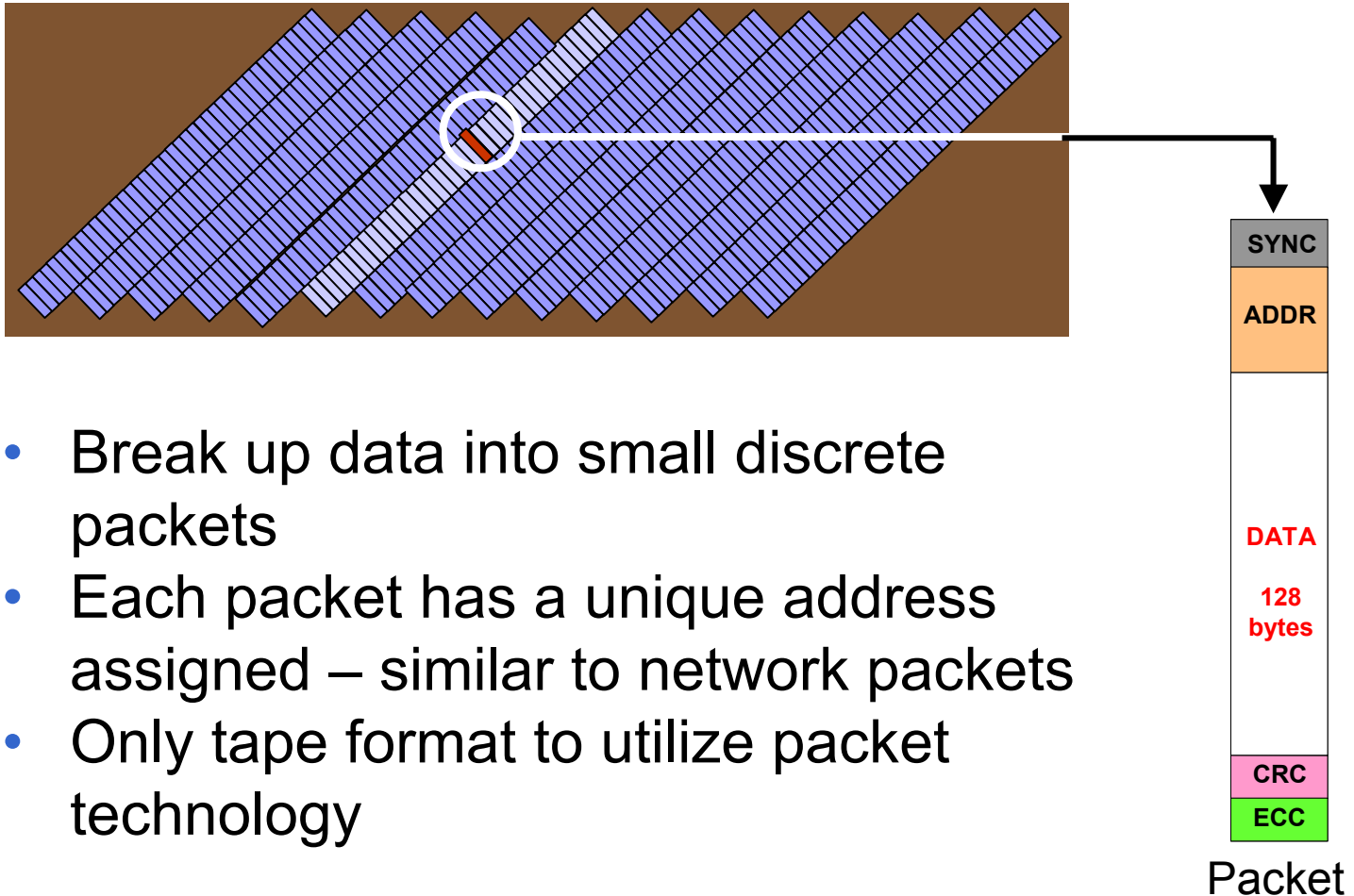
- 6.1 micron wide tracks
- 1.5 micron tolerance spec
- Tight specification requires complex mechanism
 - Higher cost
 - Lower reliability



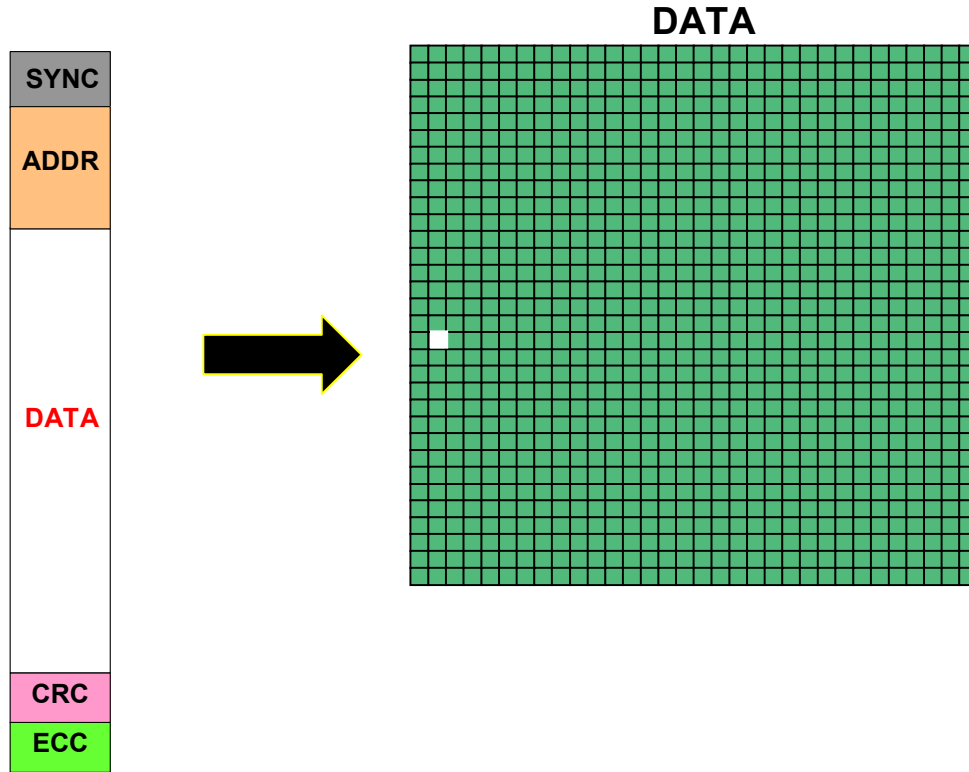


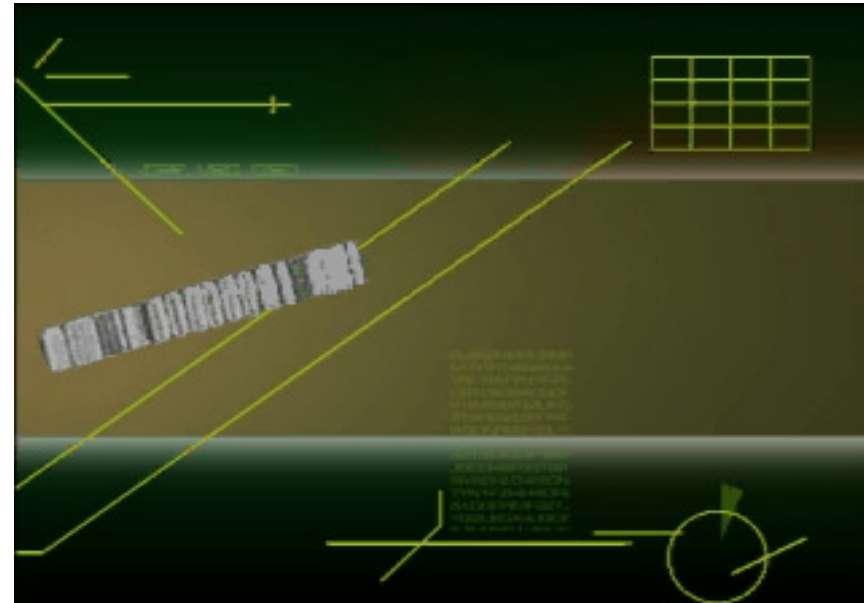
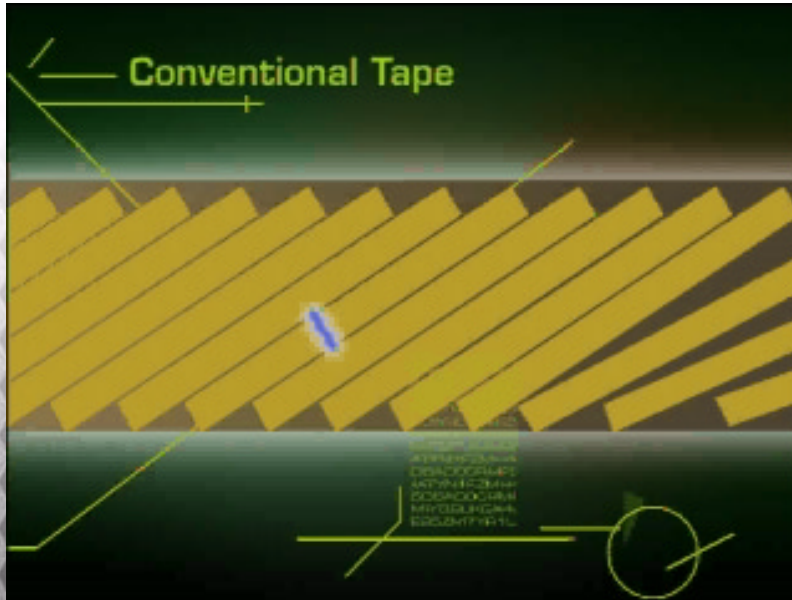
VXA Packet Technology

VXA Reads/Writes Packets Not Tracks



Address Assigns Buffer Location



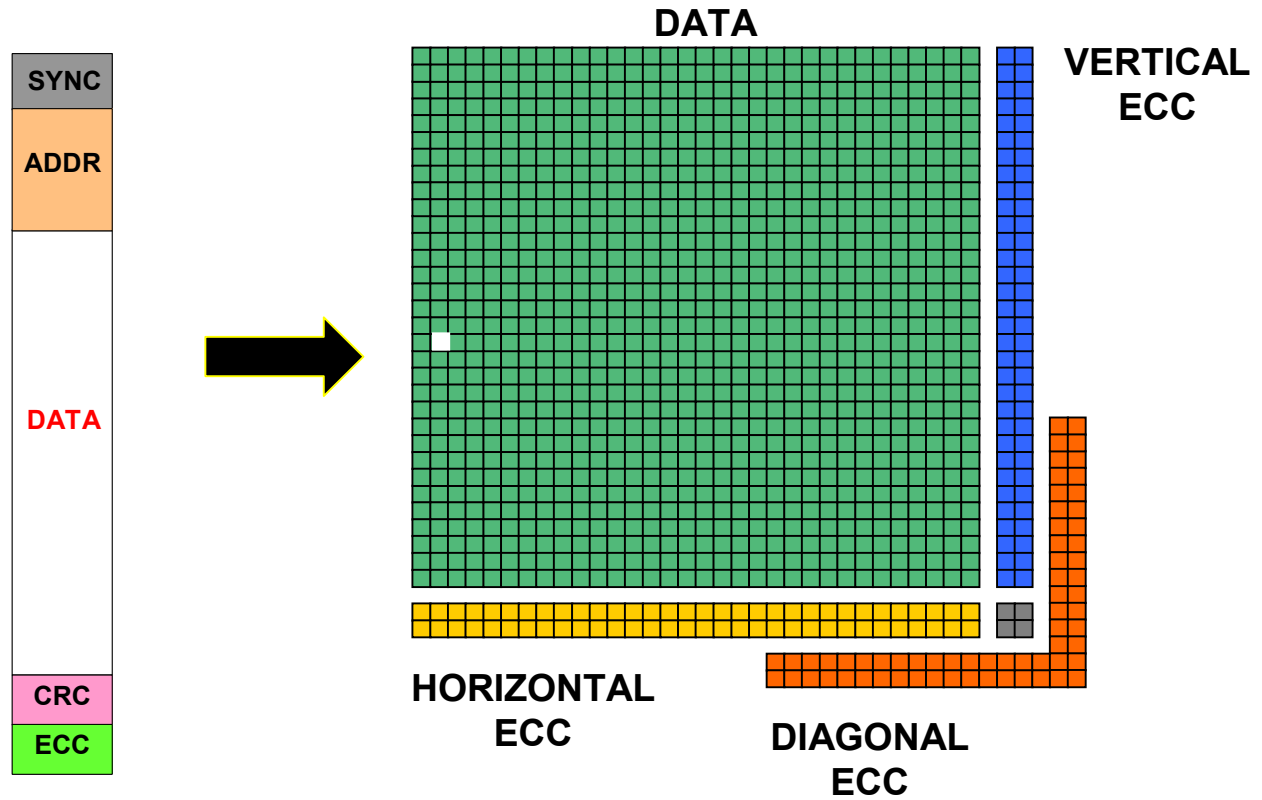


DDS-4

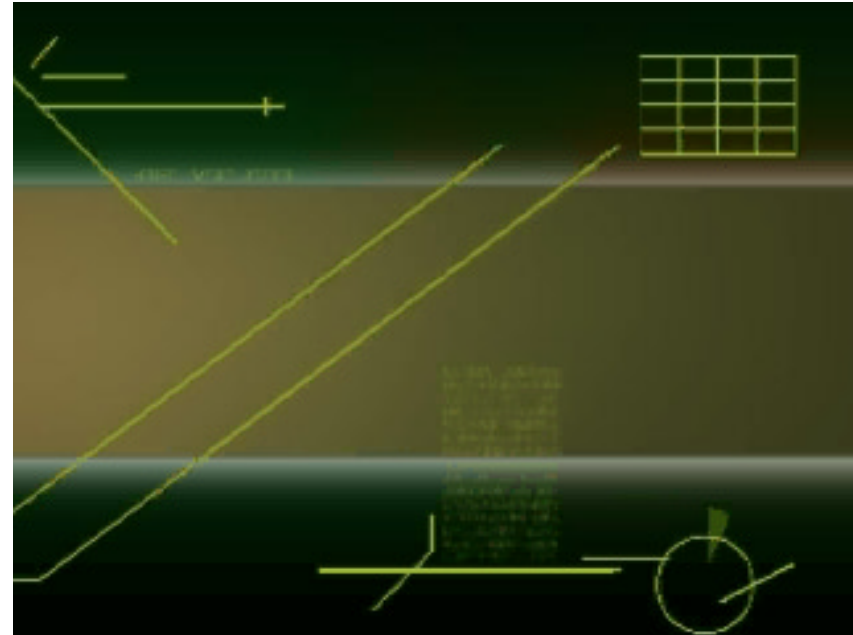
- Writes 6.1 micron wide tracks
- **1.5 micron tolerance spec**
- Tight specification requires complex mechanism
 - Higher cost
 - Lower reliability

VXA-2

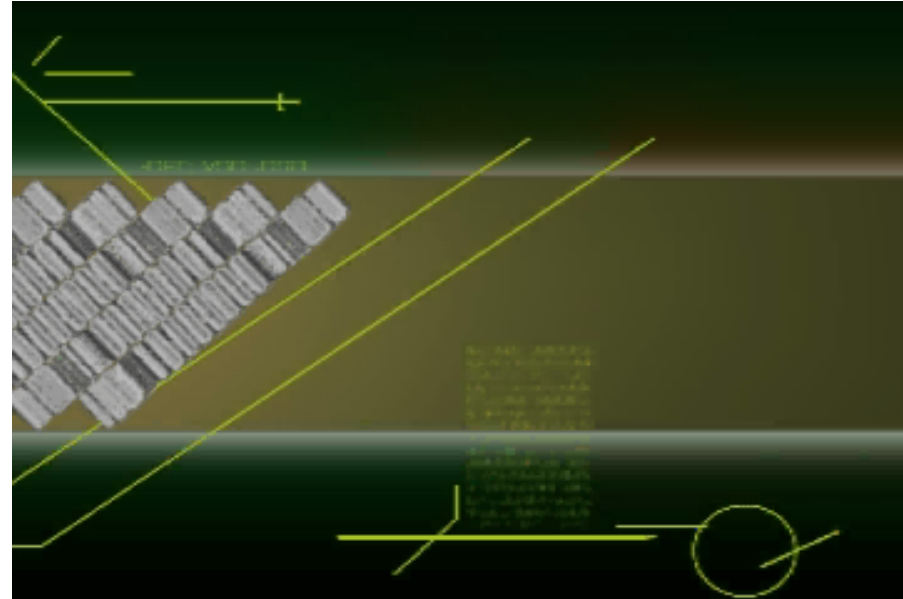
- Writes 9 micron wide sections
- 30+ section tolerance
 - **270 microns**
- **180 x greater allowable tolerance** allows simple mechanism
 - Lower cost
 - Higher reliability



- All packets written to tape are verified immediately by a following read head
- Any packet errors are written again on the fly
- Ensures perfect data is written on tape



- Two read heads sweep more than 100% of the tape surface area
- Adjusts the tape speed match host transfer rate – **eliminates back-hitching**
- Adjusts tape speed to increase head scans if necessary – **improve restore capability**



- **4x the capacity and 2x the speed of DDS-4 at a lower**
- **More than 2x the capacity and 2x the speed of DAT72 at a similar**
- **180x the restore integrity of DDS-4**

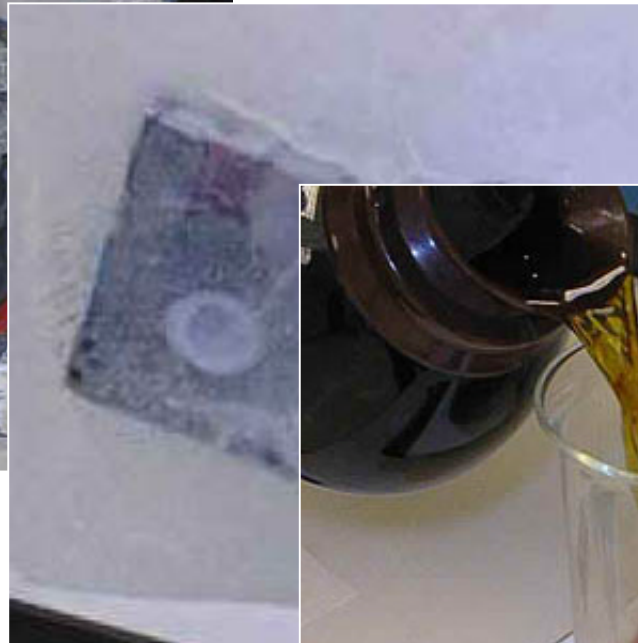


VXA: Extreme Tested- Proven Durability...

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Boiling

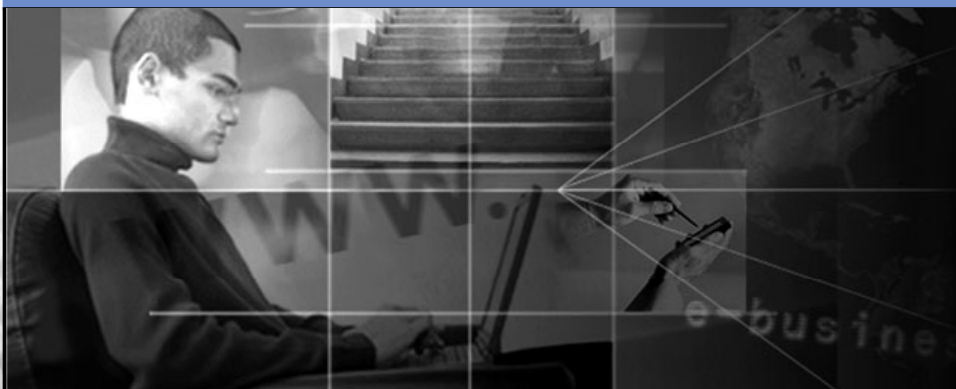


Freezing



Hot Coffee

The result: 100% restore
EVERY TIME!



VXA –2 Product Overview



- A New Tape Technology for xSeries
- Unique Packet Technology
 - ✓ Reduces Mechanical Complexity
 - ✓ Delivers Greater Value
 - ✓ Delivers Greater Reliability

Specifications:

Capacity	80/160 GB
Transfer Rate	6/12 MB/sec
Interface	SCSI LVD
Compression	ALDC (2:1)
IBM xSeries P/N	59P6746

Targeted Profile of a VXA Customer

- **They are buying servers.**
 - *Their business and their data are growing*
- **They are buying lots of tape.**
 - *They've run out of capacity on their current tape format*
- **They're swapping tapes out manually at night and on weekends, creating a nightmare for their IT staff, and a costly staffing issue for the company.**
- **They've outgrown their backup window, and the backup is running into valuable business hours when users need fast network access.**
- **They're experiencing reliability issues with an older tape technology product.**
- **IT Budgets are shrinking forcing personnel to do more with less.**

VXA-2 Packet Technology offers:

vs. DDS-4

- *4x capacity*
- *2x speed*
- *Similar price*
- *180x greater restore integrity*

vs. 5th Generation DDS

- *2x capacity*
- *2x speed*
- *Hundreds less*

- Superior Value

- *VXA is the Only Option Addressing the Increasing Price Performance Requirements*

Product	IBM List Price	Native Capacity (GB)	\$/GB	\$/MB/s
VXA-2	\$999	80	\$12.49	\$167
5th Gen DDS	\$999	36	\$27.75	\$285
DDS-4	\$699	20	\$34.95	\$254
VS80	\$999	40	\$24.98	\$333
VS160	\$1,899	80	\$23.74	\$237



Tape Drive Comparison Matrix

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IBM	eServer xSeries Products									
xSeries Product Name	TR7	DDS-4	DDS Gen5	DLTVS80	DLTVS160	VXA-2 Packet Tape Drive	Half-High LTO Gen 1	Full-High LTO Gen 1	SDLT320	Full-High LTO Gen 2
Web Price	\$499	\$699	\$999	\$999	\$1,899	\$999	\$2,699	\$3,519	\$3,299	\$3,849
Model	48P7042	00N7991	71P9145	59P6719	59P6745	59P6746	59P6717	00N8016	56P6736	59P6744
Form Factor	half-high internal	half-high internal	half-high internal	half-high internal	half-high internal	half-high internal	half-high internal	full-high internal	full-high internal	full-high internal
Capacity (native/compressed)	20/40 GB	20/40 GB	36/72 GB	40/80 GB	80/160 GB	80/160GB	100/200 GB	100/200 GB	160/320 GB	200/400 GB
Transfer Rate (native/compressed)	2/4 MB/sec	2.75/5.5 MB/sec	3.5/7 MB/sec	3/6 MB/sec	8/16 MB/sec	6/12MB/sec	8/16 MB/sec	15/30 MB/sec	16/32 MB/sec	35/70 MB/sec
Backward Compatibility	read TR-5	read/write DDS-3, DDS-2	read/write DDS-3, DDS-4	read DLT 4000	read DLTVS 80,	read/write VXA-1	N/A	N/A	read/write SDLT220 Read DLT4000 DLTVS80, DLT7000 DLT8000	read/write LTO Gen 1
Server Attached	http://www.pc.ibm.com/us/compat/storage/tmatrix.html	http://www.pc.ibm.com/us/compat/storage/tmatrix.html	http://www.pc.ibm.com/us/compat/storage/tmatrix.html	http://www.pc.ibm.com/us/compat/storage/tmatrix.html	http://www.pc.ibm.com/us/compat/storage/tmatrix.html	x205, x206, x225, x235, x305*, 306*, x335*, x345*	http://www.pc.ibm.com/us/compat/storage/tmatrix.html	http://www.pc.ibm.com/us/compat/storage/tmatrix.html	http://www.pc.ibm.com/us/compat/storage/tmatrix.html	http://www.pc.ibm.com/us/compat/storage/tmatrix.html
Comments	The only IDE tape drive for application where loc-cost is of the most importance	Where DDS compatibility is more critical than increased capacity and performance	Where DDS compatibility is more critical than increased capacity and performance	Where DLT compatibility is more critical than increased capacity and performance	Where DLT compatibility is more critical than increased capacity and performance	VXA Packet Technology makes VXA-2 the best value for customer not needing super-class drive performance	For customers requiring LTO compatibility in a half-high form factor	For customers requiring super-class drive performance	For customers requiring super-class drive performance & DLT back read compatibility	For customers requiring the highest available super-class performance

*Requires one of the following external enclosures: 45591UX IBM Netbay 1U xSeries Tape enclosure for up to (2) Half-High drives, 3510020 - holds (1) Half-High tape drive or 0034B0X - holds (6) Half-High or (4) Full-High tape drives.

- **VXA Packet Technology delivers greater capacity, speed, AND reliability at a value price**
- **VXA-2 is a great alternative for customers currently using DDS or DLT drives looking for a cost-effective growth path**