

Accelerating e-Commerce Systems with Solid State Disk Technology

Charlie Cassidy

Solid State Business Unit

Quantum Corporation

Phone: 508-770-3413

Email: charlie.cassidy@quantum.com

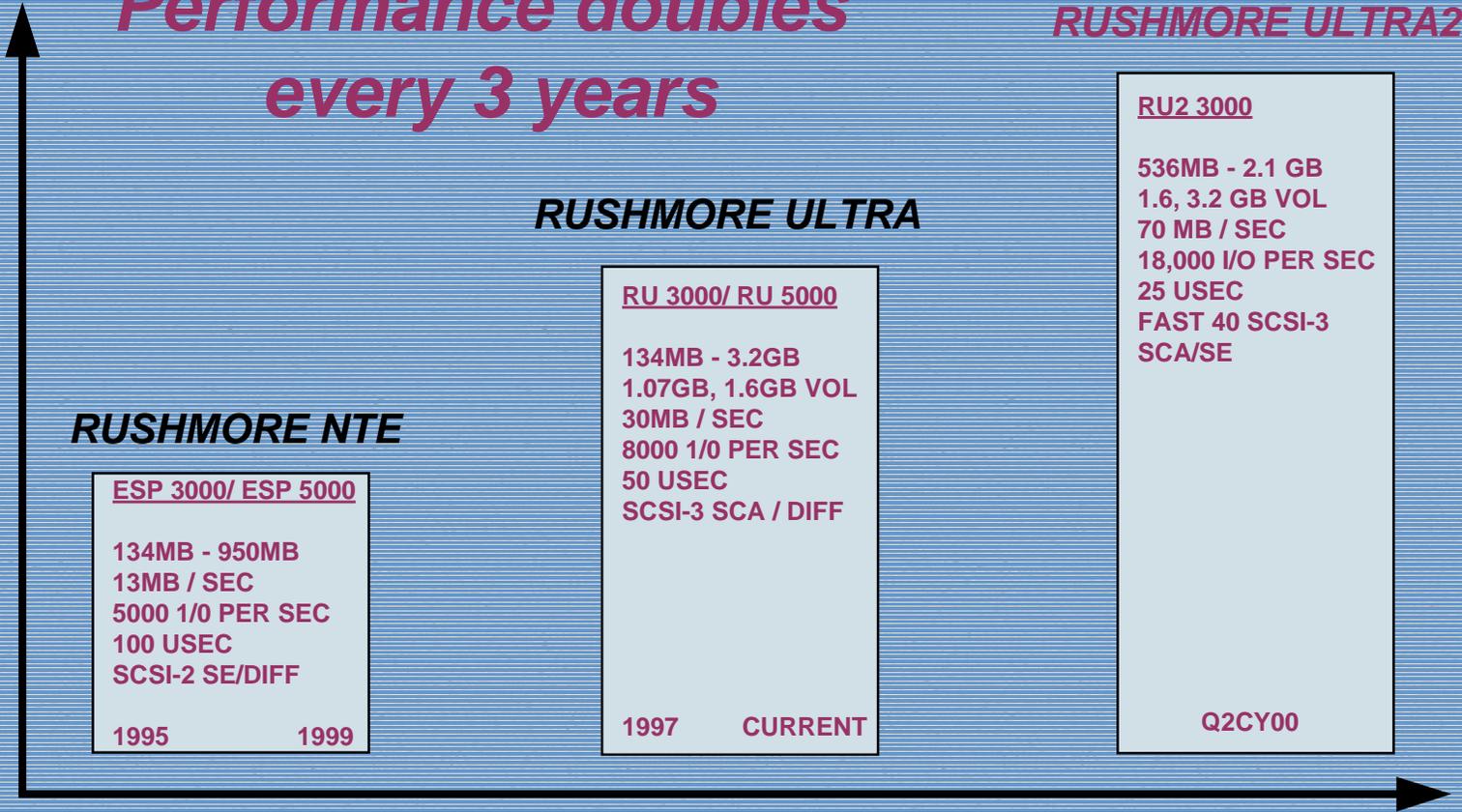
What is a Solid State Disk?

- Storage peripheral that performs as an application accelerator
- Uses DRAM as the primary storage medium.
- Eliminates mechanical latencies from the access time - over 100 times faster than HDD
 - $< 25 \mu\text{s}$ access time
 - $> 18,000$ I/Os per second
 - over 2X HDD sustained bandwidth
 $> 70 \text{ MB/s}$

SSD Product Evolution

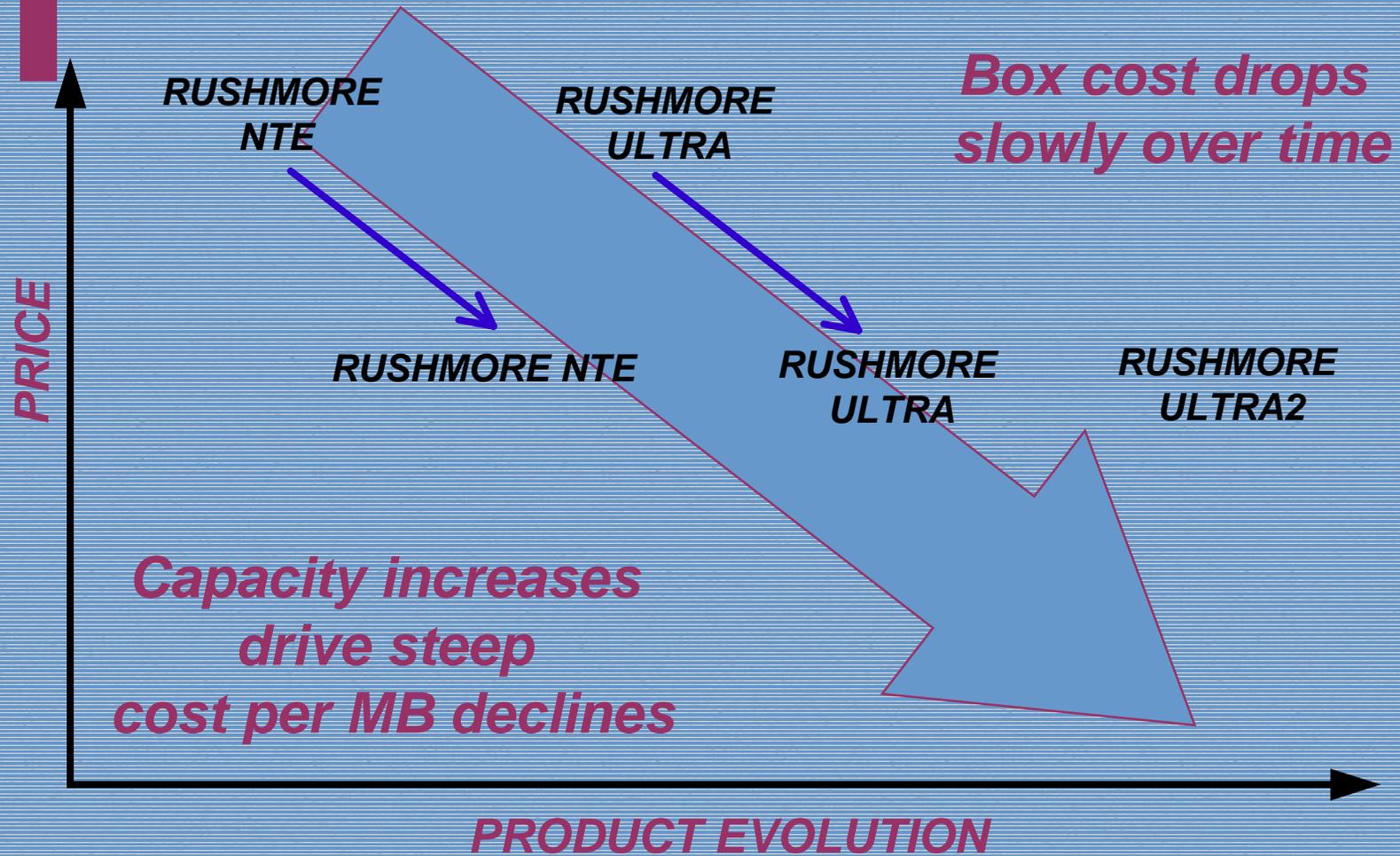
Performance doubles every 3 years

PERFORMANCE



PRODUCT EVOLUTION

SSD Product Evolution



July, 00

What to Look for in an SSD

Feature	Benefit
High Performance Fastest response time for web, transaction processing and e-commerce applications	<ul style="list-style-type: none">• Keep customers on your e-commerce site for higher revenues• Lower total costs by serving more customers with fewer, more powerful servers
Ease of Use Fits in standard rack-mount systems Plug and Play & Hot Swappable SCSI NT, Linux and Unix compatible	<ul style="list-style-type: none">• Can be added without system interruption• Works with most e-commerce systems and applications
Reliability / Robustness Field proven, 4 th generation technology Tested on all major platforms	<ul style="list-style-type: none">• Set it and forget it

How Are SSDs Available?

- Sold by major OEMs
 - HP SC10 Solid State Drive
 - Compaq StorageWorks
- Sold by major distributors
 - Wyle
 - Ingram Micro
 - Bell Microproducts
- Direct from manufacturers

Who Uses SSD for e-Commerce?



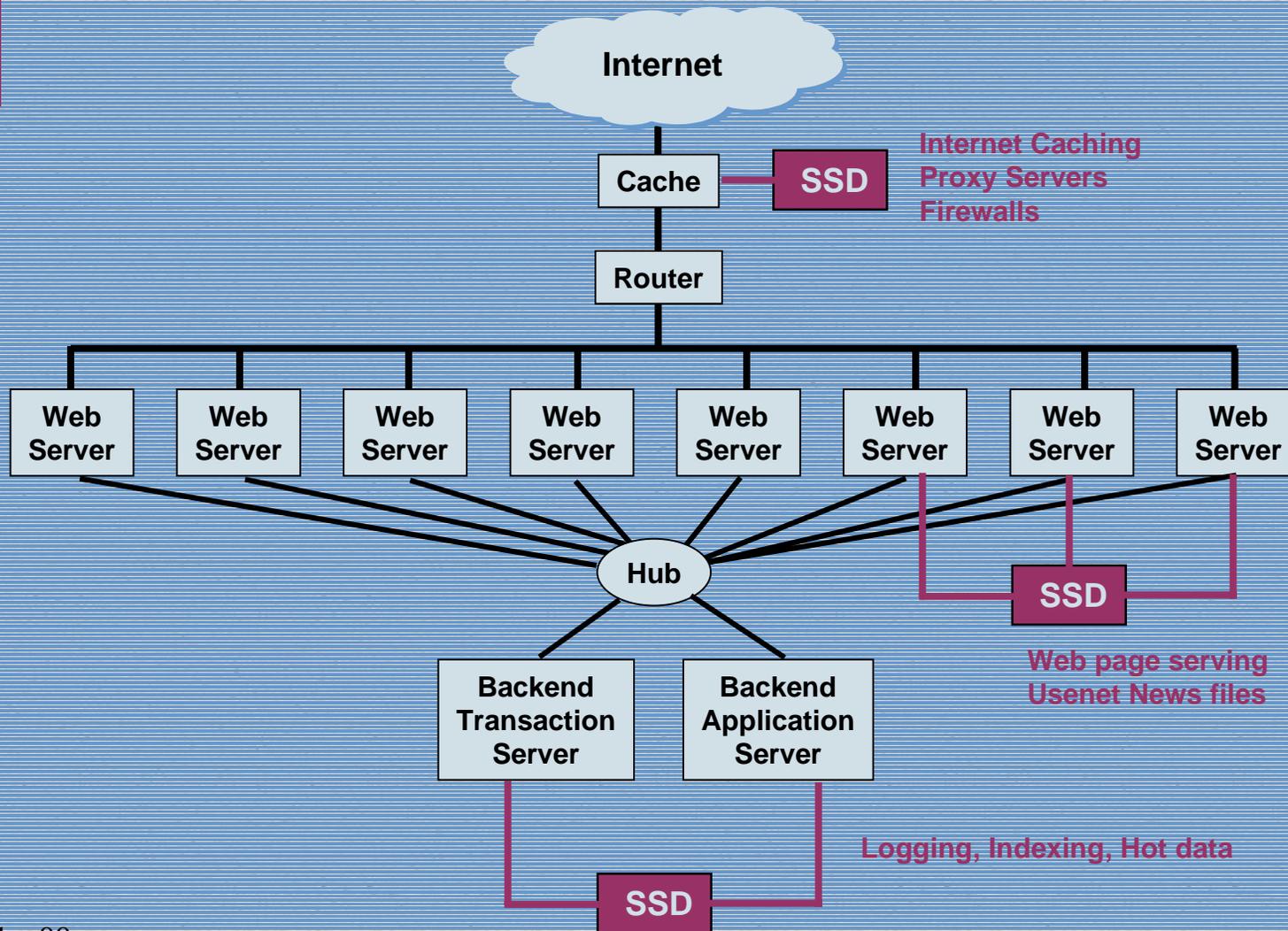
Why Use SSD on e-Commerce Systems?

- Boost performance of e-commerce systems
 - more throughput (hits)
 - better response time
 - KEY metric in customer satisfaction
 - impatient customers know competitor's site is just a click away
 - balanced performance for today's high power server CPUs

Why Use SSD on e-Commerce Systems?

- Lower total cost of ownership
 - serve the same workload with fewer, more powerful servers
 - lower management costs
 - lower maintenance costs (space, power, cooling)
 - less equipment means higher reliability and availability

How Do You Use SSD for e-Commerce?



Some Example SSD Benefits

- Volume of orders processed increased from 1-2 per second to 20-30 per second
- Hourly database update time reduced from 15 minutes to 4 minutes
- Workload increased by 40% without degraded application performance
- 400% increase in throughput while reducing queue wait time 95%

iPrint.com Experience

- Leading print shop on the Internet
- Problem - As the # of users rose all the servers were loaded and the response was degraded, especially during promotions.
- Solution - The architecture was changed to a single backend application server with an SSD.

The Benefit is the Bottom Line

“We needed performance. Our evaluation determined SSDs were better than hard disks, cache, or rewriting code for high-volume, e-commerce applications.

Plugging the Rushmore [SSD] made an immediate, order-of-magnitude difference. In fact, we just put the drive in the server, put the server back online and queue times immediate fell by 95 percent. That enables us to handle an additional 10,000 visitors a day with the same hardware.”

Dave Hodson,
VP of technology
iPrint.com

Digital Impact Experience

- Advertises messages to customer subscription lists, handles click-throughs and gauges response to the advertising campaign.
- Problem - Poor response time on the servers therefore, they were losing interest from customers on line.
- Solution - Stored the re-do log files on an array of SSDs
- Result - “a 400% increase in performance in our Oracle environment,” notes Gerardo Capiel, CTO.

AXA Rosenberg Experience

- Supports the mutual fund buying decisions of traders globally. They calculate a company's value and compare it to current share prices through a sophisticated computer model.
- Problem - Their growth in services world wide created I/O bottlenecks
- Solution - They moved the index files to a RAID5 array of SSDs
- Result - “creates nearly two extra trading hours a day,” says John Hagan, MIS Director.

July, 00

What Help is Available?

- White papers
 - How to use with Oracle, Sybase, SQLserver
 - How to use with IIS, Apache, NES/iPlanet
- Pre- and Post-sales Consulting
- Training

Summary

- Solid state disks benefit e-commerce systems by
 - improving system throughput, allowing more users and hence, more revenue
 - improving system response time, giving the best online experience available
 - lowering total cost of ownership by serving the same workload with less hardware, leading to less infrastructure and higher reliability