Extending Your Mainframe For More Business Value

Extend Your Investment In System z

Extend The Mainframe Like Never Before

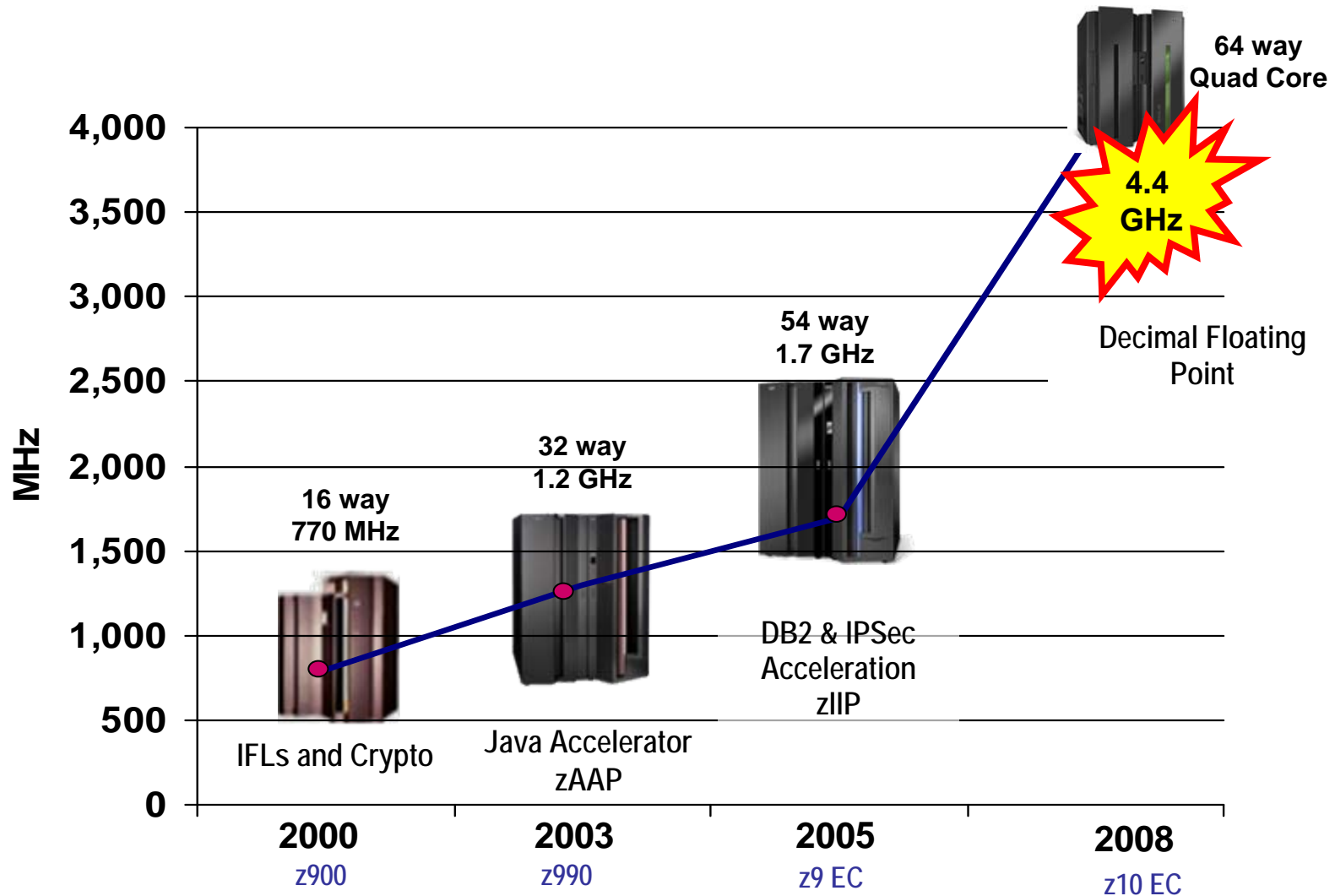**So mainframe extension sounds like the strategy I need.**

It gets better…the System z10 is a new release of the mainframe.

It has *breakthrough* performance to deploy the extensions we have discussed.

Service Oriented Finance CIO

IBM

z10 – Significant Performance Improvement

64 way Quad Core

4.4 GHz

Decimal Floating Point

54 way 1.7 GHz

32 way 1.2 GHz

16 way 770 MHz

DB2 & IPSec Acceleration zIIP

IFLs and Crypto

Java Accelerator zAAP

MHz axis: 4,000 / 3,500 / 3,000 / 2,500 / 2,000 / 1,500 / 1,000 / 500 / 0

2000 z900

2003 z990

2005 z9 EC

2008 z10 EC

Customer Quote

"The IBM mainframe has been a key part of our IT infrastructure over the years, with clear cost benefits, but this new system takes that value proposition a leap ahead.

"The capacity and scale of this system changes the economics of the mainframe and is a significant step forward in addressing our constantly evolving technology needs."

**Sandee Kotowski,
Manager of Mainframe Infrastructure,
Hewitt Associates**

System z10 Vital Statistics

	System z9	System z10	
MIPS per processor	580	920	**60% more**
Maximum number of processors	54+10=64	64+13=77	**20% more**
Maximum MIPS per system	17,802	30,361	**70% more**
Clock-speed	1.7 GHz	4.4 GHz	**Compute-intensive tasks benefit ~ 2X**
I/O bandwidth	2.7 GBps	6.0 GBps	**122% more**
Max I/O thruput/system	173 GBps	288 GBps	**67% more**
One MSU	7.3 MIPS	8.2 MIPS	**12% reduction in MLC price performance**
PVU's (IFL)	100	120	**32% reduction in OTC price performance**

Comparison Of z10 Throughput With z9 (Both 1-way)

Benchmark Name	CPU Use Profile	I/O	Memory subsys	z10 vs z9 Improvement
Java-based Batch	heavy appl, light OS	light	light	**68%**
Commercial Batch Long Job Steps	heavy appl, light OS	light	light	**67%**
WebSphere Application Server and Data Base	medium appl and OS	light	moderate	**61%**
Traditional On-line Workload	medium appl and OS	heavy	moderate	**64%**
Web-enabled On-line Workload	medium appl and OS	moderate	stress	**60%**

An experiment to improve industry-standard benchmark performance worsened these real-life benchmarks

Typical Banking Data Center Workload

- **Banking by Telephone**
  - ▶ Interactive Voice Response (IVR)
    - − Voice XML with WebSphere Application Server
  - ▶ 50 transactions per second
    - − Each transaction is also logged to DB2 or Oracle
  - ▶ 24x7x365 availability required
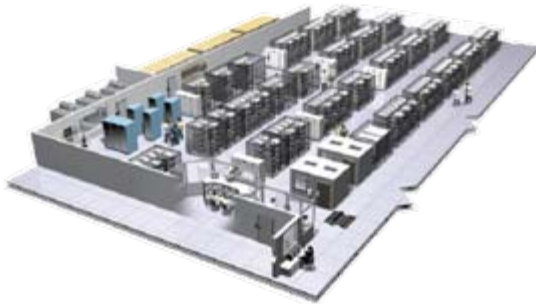- **Branch Transactions Sent to Backend Core Systems**
  - ▶ Message backbone with WebSphere MQ
  - ▶ Millions of messages per day
- **Workload is Separated by Function**
  - ▶ Production, development, quality assurance testing
- ***Let's Consider the Cost of Hardware, Software, Labor, Power, Cooling and Floor Space Over 5 Year Timeframe***

Three Choices to Run This Workload

Intel Servers	Intel Servers with VMWare	System z10 with z/VM and Linux
350 Intel Servers	45 Larger Intel Servers	1 System z10
HP DL145 G3 2.8 GHz	HP DL585 G2 3.2 GHz	24 IFL's 4.4 GHz
700 cores	360 cores	24 cores
2,464,650 rated capacity	1,263,555 rated capacity	14,238 MIPS
Low utilization	Better utilization	High utilization

Resources Consumed By This Workload

	Intel	Intel with VMWare	System z10	
Servers	350	45	1	
Memory GB	700	720	352	
Cores	700	360	24	*$5 to $7 million yearly savings*
Software Licenses	742	352	40	
System Administrators	35	18	5	
Floor space (m²)	12.5	7	5.8	
Kilowatt Hours Per Year	3.2M	697K	127K	

Mainframe Cost Per Unit Of Work Goes Down As Workload Increases

Accelerated by System z10 cost reductions!

Accruing benefits of workload consolidation

Cost per unit of work

Mainframe

Distributed scale out

Data Center Workload
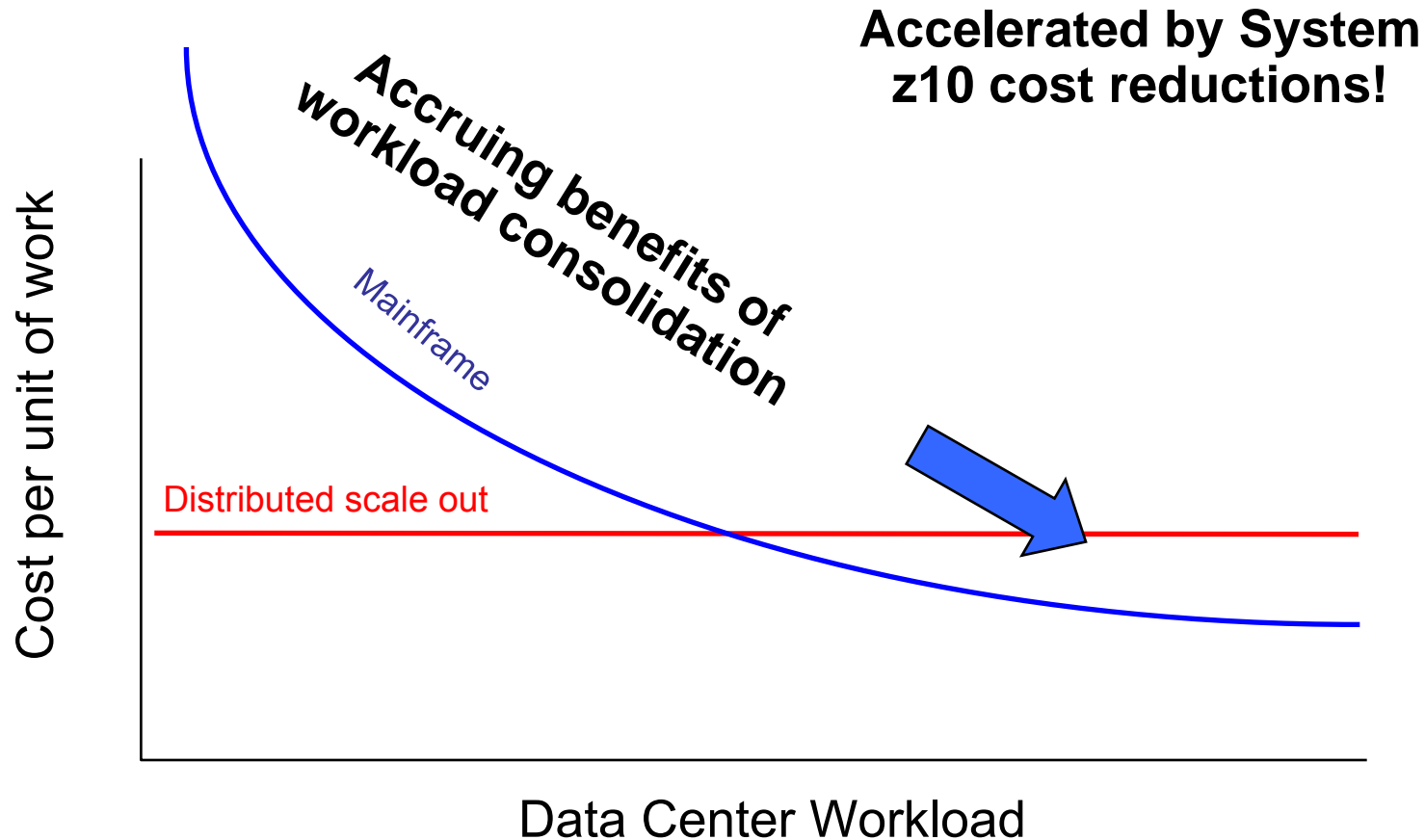
Remember This:

- Deploying a new application on System z, it will probably cost less if:

- **It is Incremental Workload to an existing system**

- **Specialty Engines can be used**

- **Disaster Recovery is required**

The Value Of Mainframe Computing

- ☑ Extending mainframe core business systems is a strategy to constrain growth of IT costs

- ☑ Mainframes deliver superior qualities of continuous operations, rapid scale up, virtualization and security

- ☑ Consolidation saves money and simplifies operations

- ☑ Mainframes have a lower environmental impact

- ☑ Modern mainframes leverage the latest hardware and software technology for maximum business value

- ☑ Modern mainframe tools enable speed to value, flexibility, deployment, productivity and reduced cost