



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.



**Service Oriented Finance
CIO**

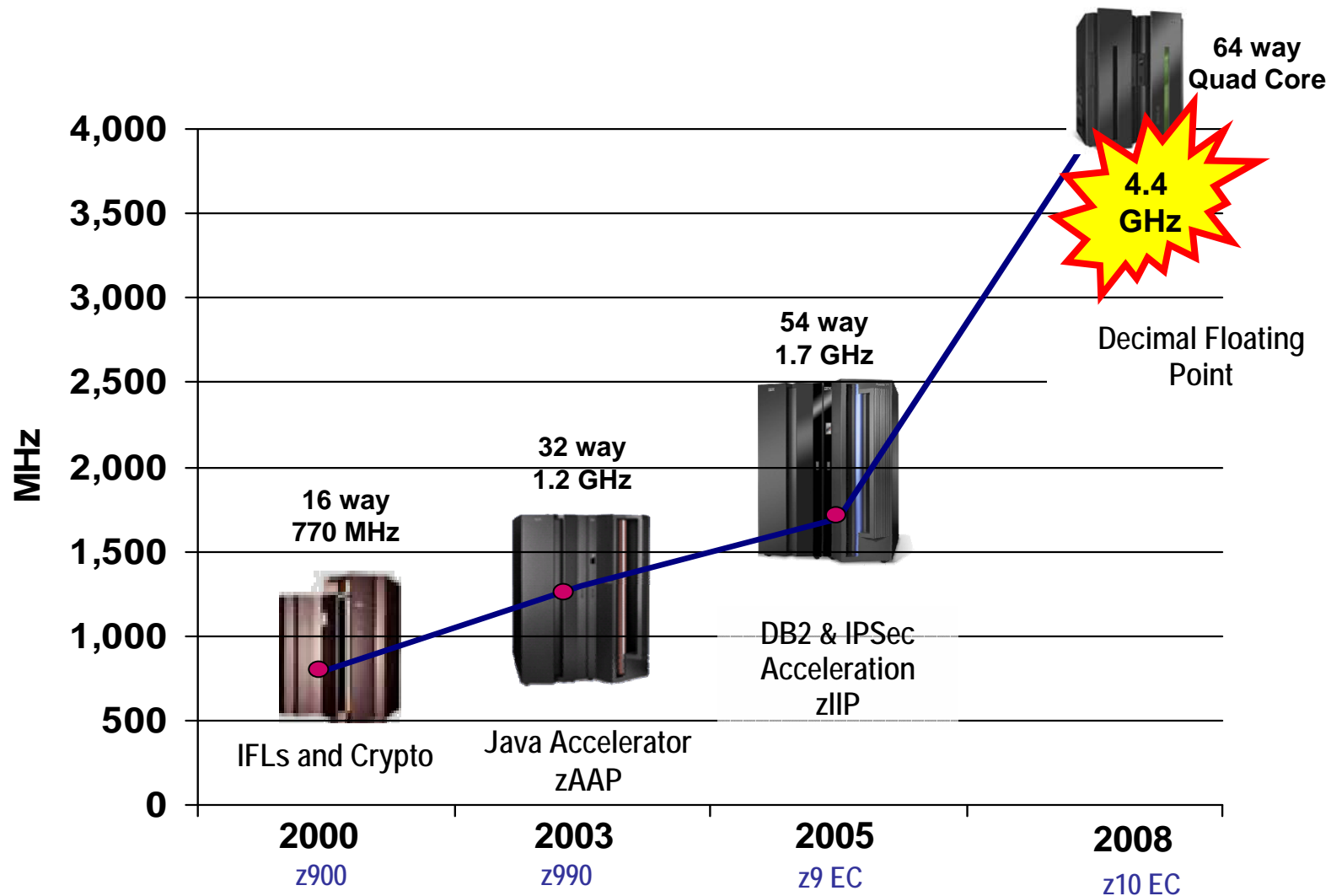
It gets better...the System z10 is a new release of the mainframe.

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



IBM

z10 – Significant Performance Improvement



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

	<i>System z9</i>	<i>System z10</i>
MIPS per processor	580	920
Maximum number of processors	54+10=64	64+13=77
Maximum MIPS per system	17,802	30,361
Clock-speed	1.7 GHz	4.4 GHz
I/O bandwidth	2.7 GBps	6.0 GBps
Max I/O thrupt/system	173 GBps	288 GBps
One MSU	7.3 MIPS	8.2 MIPS
PVU's (IFL)	100	120

60% more

20% more

70% more

Compute-intensive tasks benefit ~ 2X

122% more

67% more

12% reduction in MLC price performance

32% reduction in OTC price performance

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

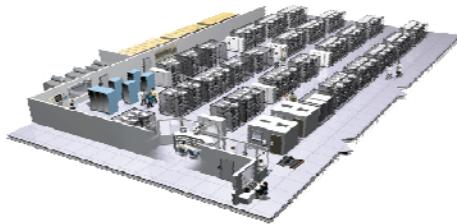
Benchmark Name	CPU Use Profile	I/O	Memory subsys	z10 vs z9 Improvement
Java-based Batch	heavy appl, light OS	light	light	68%
Commercial Batch Long Job Steps	heavy appl, light OS	light	light	67%
WebSphere Application Server and Data Base	medium appl and OS	light	moderate	61%
Traditional On-line Workload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

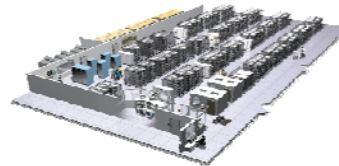
Typical Banking Data Center Workload

- **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 The Workload



Intel Servers



Intel Servers
with VMWare



System z10
z/VM, Linux, IFL's

350 Intel Servers

45 Larger Intel Servers

1 System z10

2.8 GHz each

3.2 GHz each

24 IFL's 4.4 GHz

700 cores

360 cores

24 cores

2,464,650 rated
capacity

1,263,555 rated
capacity

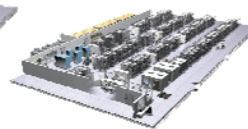
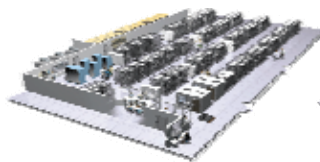
14,238 MIPS

Low Utilization

Better Utilization

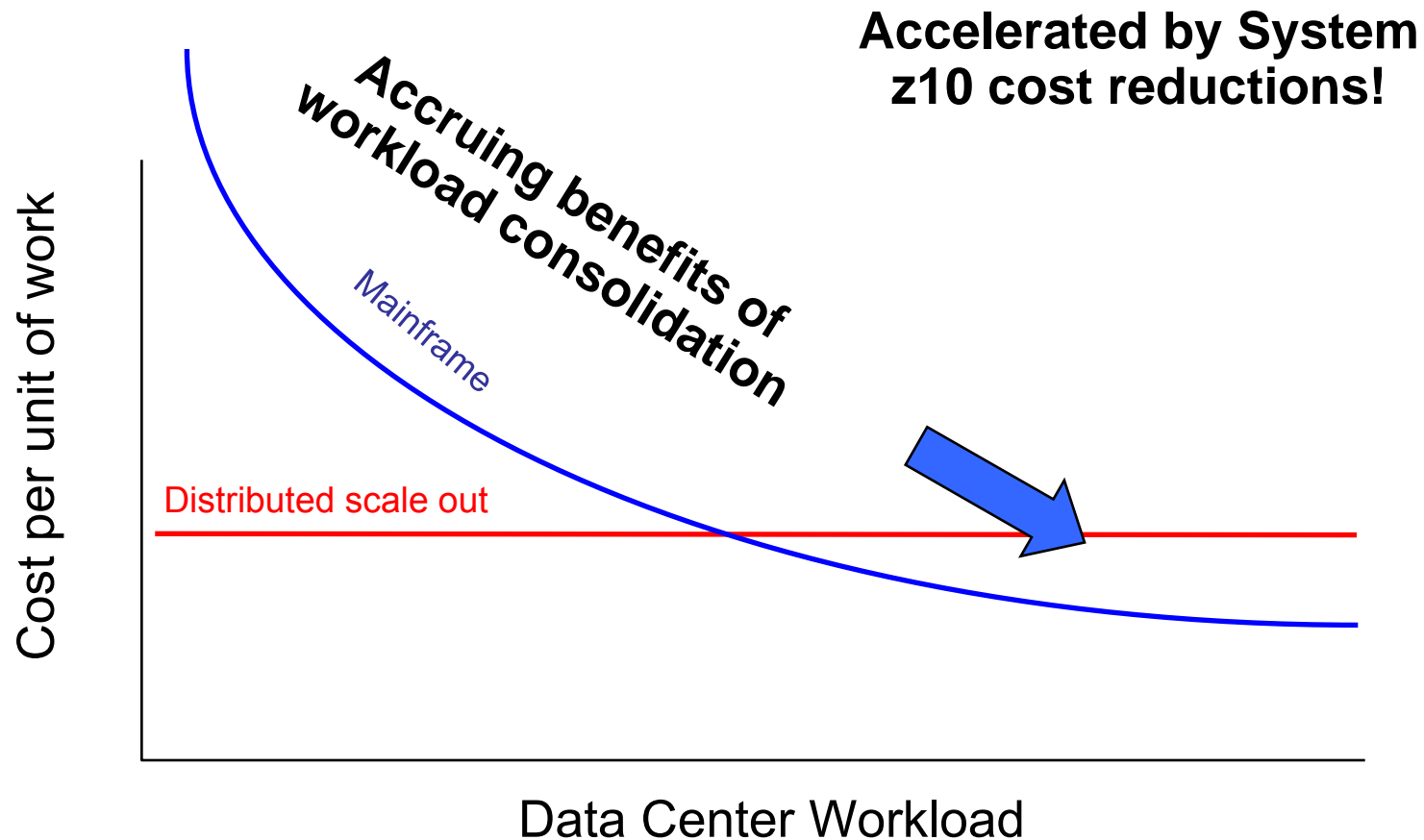
High Utilization

Resources Consumed By The Workload



	<u>Intel</u>	<u>Intel with VMWare</u>	<u>System z10</u>	
Servers	350	45	1	} \$5 to \$7 million yearly savings
Memory GB	700	720	352	
Cores	700	360	24	
Software Licenses	742	352	40	
System Administrators	35	18	5	
Sq. Feet of Floor Space	135	75	62	
Kilowatt Hours Per Year	3.2M	697K	127K	

Mainframe Cost Per Unit Of Work Goes Down As Workload Increases



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

