

An Analyst Perspective on the New z

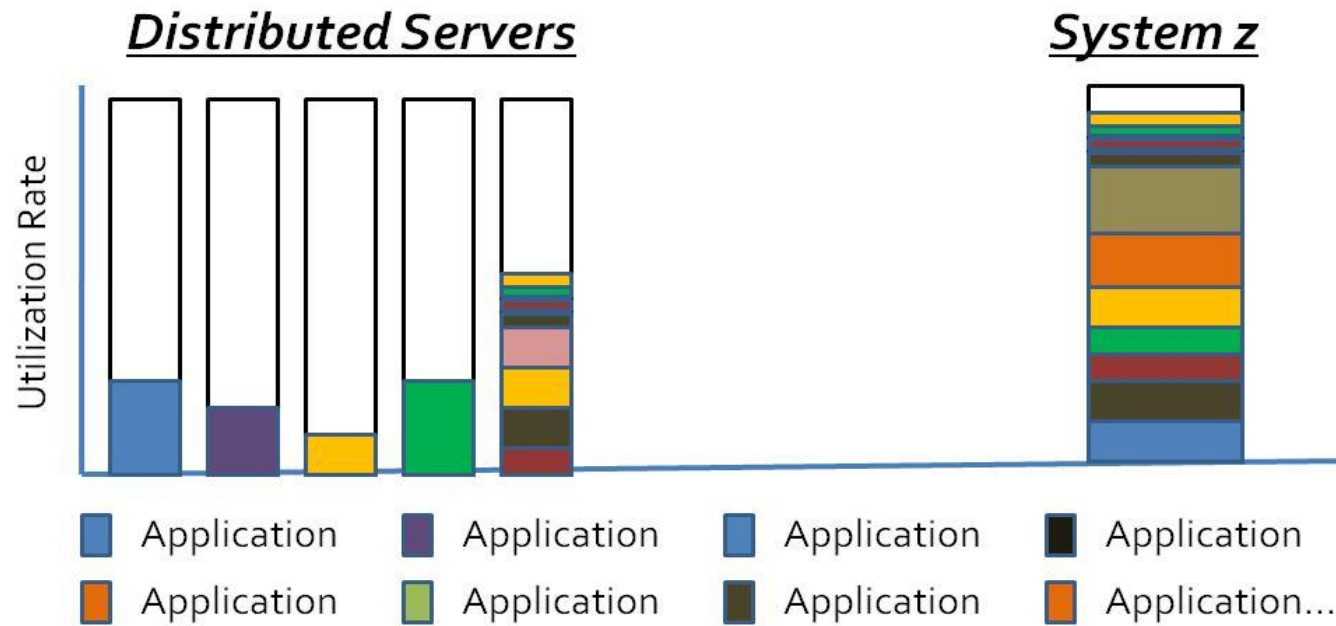
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July, 2010



Agenda

- Context: What's a mainframe?
- What was announced?
 - The new zEnterprise
 - A new “hybrid” (integrated z/Blade)
- Why Is z/blade integration so important?
 - A game-changing architecture
- Summary Observations

What Is a Mainframe?



- Notoriously underutilized
 - Often single app/db per server
 - Leave headroom for work spikes
- Complex to manage
- Difficult to govern
- Energy/real estate hogs

- Can run at 100% utilization sustained
- Most advanced virtualization, provisioning/workload management in the industry
- Much smaller management staff
- Best governance (example: security)
- Completely integrated
- Comparatively small footprint
- Significantly less energy draw

What Was Announced?

- A new System z (the “zEnterprise” announcement)
 - More scalability, capacity, performance — and better energy utilization
 - AND:
 - A new personality: *business analytics server* (expanded memory)
 - Better floating point
 - Leadership single thread processing performance
 - Expanded Linux consolidation services (up to 100,000 virtual machines a z/blade hybrid)
- Unified Resource Manager (firmware management)
- A “System of Systems” (the “hybrid” announcement)
 - The ability to tightly couple a z with blade servers
 - To share infrastructure and governance
 - For integrated management (major decrease in cost)
 - For extreme performance

What Was Announced? — The zEnterprise

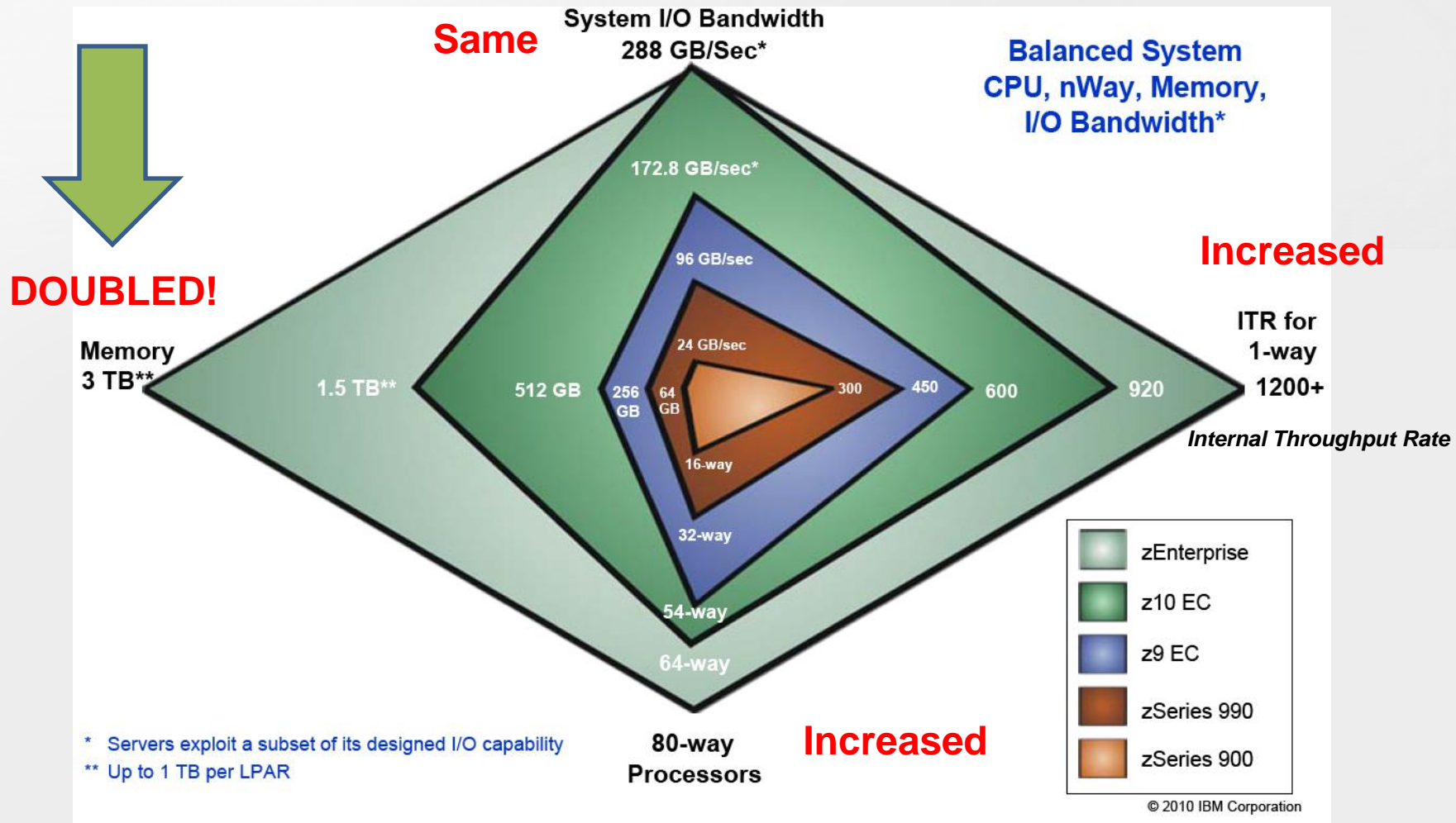
- The zEnterprise announcement — a closer look
 - 40% performance improvement
 - Lowers computing costs (better return-on-investment)
 - 60% capacity (headroom) improvement
 - Greater scalability (can do more work)
- But look even more closely:
 - *Memory size has DOUBLED*
 - A new personality (business analytics/decision support)
 - Workload optimizers yield 5 to 10X improvement in complex query performance
 - Improved floating point capability (more competitive)
 - Improved single thread performance (more competitive)



Strong appeal to existing base + new uses (analytics, floating point, threads)

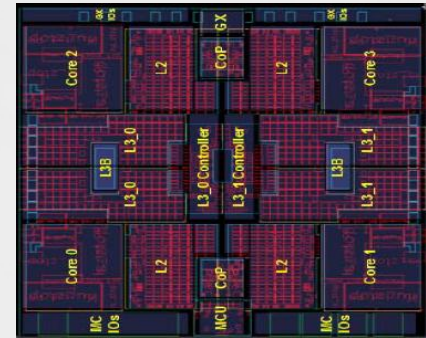
What Was Announced? — The zEnterprise

- A more powerful, balanced system



What Was Announced? — The z196 CEC

- Expanded z memory is *very important*
 - 1.5MB L2 Cache per core, 24MB L3 Cache per processor chip (significantly more cache than previous generations) — allowing more and more data to be processed in close proximity to the processor, thus improving processing speed (this is particularly useful for business analytics applications)
 - Up to 3 TB RAIM memory (this new “redundant array of independent memory” acts like RAID [redundant array of independent disks] — ensuring that if a memory error should occur it can be corrected rapidly)



What's Important About the The zEnterprise?

- Look at the results:
 - Major increases in processing performance for z/OS workloads
 - Traditional z/OS workloads may run 40% faster
 - Huge increases in handling CPU intensive workloads
 - Thanks to compiler enhancements — so CPU intensive workloads may run up to 30% faster
 - Significantly increased database processing performance
 - Dedicated workload optimizers yield 5 to 10X improvement in complex query performance
 - Now rivals application server competitors in single threaded application performance (CPU is now the industry's fastest single thread processor)

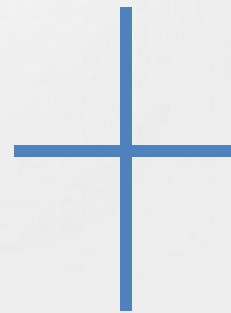


This zEnterprise announcement is compelling just on the improvements to z alone!

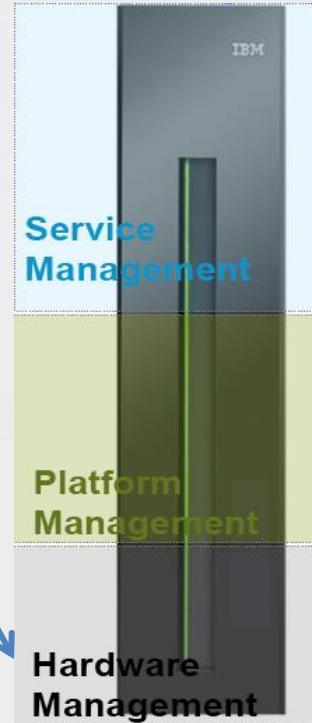
What Was Announced? — The Hybrid



Integrated, Optimized zEnterprise and zBX



*Unified Resource
Manager*



- World's most impressive, integrated infrastructure/management environment
 - Quality of service, security, integration of application servers with back-end mainframe databases — all under a common management environment

Why Is z/Blade Integration So Important?

- Operational Advantages
 - Data Center Simplification!
 - Survey: according to 1,541 CEOs, general managers and senior public sector leaders, “*complexity*” is the number one issue facing business and government leaders today
 - This announcement greatly simplifies data center operations
 - Single management scheme; single virtualization/provisioning/workload management scheme (versus today’s siloed approach); security under one umbrella (same governance rules)
 - 52% lower management/administrative costs
 - Need for people to “touch” systems decreases by 52%
 - Same energy use as z10 — but with 60% greater capacity!
 - Greatly improve mainframe/blade data processing performance (using optimizers)

Why Is z/Blade Integration So Important?

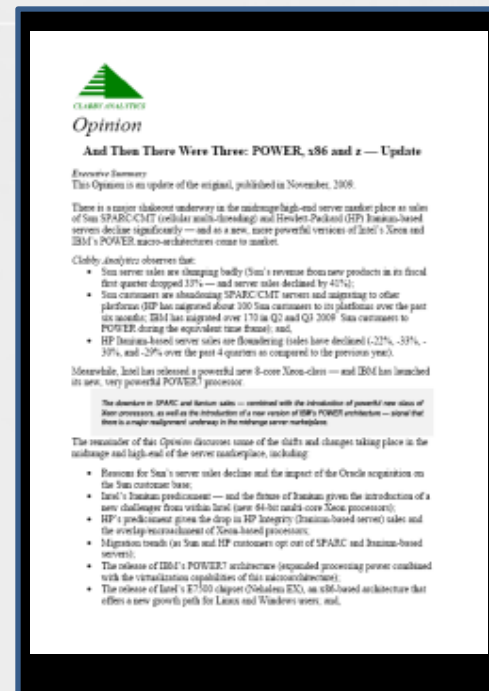
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- Secondly — organizational advantages
 - It eliminates scale-up vs. distributed turf wars
 - Both groups work together to achieve results
 - Workloads are assigned to the best system to perform a job (efficiency, ROI)
 - Advance virtualization/provisioning/workload management and combined management and security facilities take IT managers out of the role of managing physical and virtual systems and places them into the role of managing business initiatives (see next point)
- Thirdly — it aligns IT with the business
 - Resources for new initiatives
 - Focus on service management
 - Focus on efficient process flow

IT managers and administrators can start spending their time managing business initiatives rather than babysitting systems, storage, and network devices...

Other Insights

- And Then There Were Three: x86 Multi-cores, POWER, and z
 - Systems market is consolidating
 - Itanium and UltraSPARC are on the outs
 - Big differences in each architecture
 - Scalability characteristics
 - Consolidation, Virtualization, Provisioning and Workload Management
 - Etc.
 - <http://www.clabbyanalytics.com/uploads/ServerMarketViewMarch2010UPDATE.pdf>



Other Insights

Applications

- Execution Style
- Threading
- Memory usage
- Design Points
- Bittedness (32/64)
- ...

Design/Execution Requirements

Systems

(Servers, Storage, Networks)

- Reliability/availability
- Performance characteristics
- Scalability/capacity
- Memory management and memory capacity
- Consolidation/Virtualization/ Provisioning/Workload Balancing characteristics
- Power management
- Heat dissipation
- Security
- Energy usage characteristics

Service Levels



Other Insights

- Workload Application Scenarios
 - Get the right system to do the right job on a consistent infrastructure
- A zEnterprise with zBXs and Tivoli, Systems Director and Unified Resource Manager can help sort this all out



Summary Observations

- The zEnterprise is *IMPRESSIVE*
- But the whole integrated, virtualized management environment is *EVEN MORE IMPRESSIVE*
 - It *WILL* help reduce complexity
 - It *WILL* lower computing costs
 - It *WILL* enable your organization to focus on business problems rather than computer operations

Summary Observations

- If you choose to evaluate the hybrid environment, pay particularly close attention to:
 - The integrated **management** environment
 - IBM's System z offers the most advanced systems management environment in the industry
 - **Cross-platform virtualization**
 - By coupling z with blades, IT managers can now shift their attention to workload management and workload balancing
 - **Governance**
 - Consider the risk management benefits of operating a consistent security infrastructure..
 - **Energy Management**
 - Create a common view of energy usage, and manage resources accordingly
 - **Networks**
 - Examine the 10GB Ethernet connection directly from the blade environment to the mainframe, as well as a secondary management network.
 - Early adopters are finding that when they use this tightly-coupled network environment they are able to eliminate additional routers and firewalls
 - **Optimizers**
 - Leverage IBM DBMS and high-performance DW query software, based on advanced data in-memory technologies

You now have an opportunity to jump in front of your competitors ahead by at least five years!

Summary Observations

- In the end, it is all about finding the best architectures to support your applications
 - Applications run differently on different systems
 - Systems provide highly different service levels
- A common infrastructure and management scheme will go a long way toward helping your organization manage its workloads — freeing IT managers up to focus on solving business problems or launching new business initiatives
- IBM's zEnterprise is centric to building this infrastructure for heterogeneous environments