IBM System z Performance and Technology that meet Emerging Business Demands

Jim Porell,
Distinguished Engineer,
IBM Systems and Technology Group

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Notes:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

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Discussion Topics

- System z helping to build a smarter planet
- System z Linux Consolidation
- System z for new workloads
- System z and Cloud Computing
- System z Trends and Directions
  - Workload Optimized Systems
  - IBM Smart Analytics Optimizer

Smarter planet: Thinking and acting in new ways to make our systems more efficient, productive and responsive.

"Our resources are limited"
I need efficiency

Green & Beyond

"Data is exploding and it's in silos"
I need Insight

New Intelligence

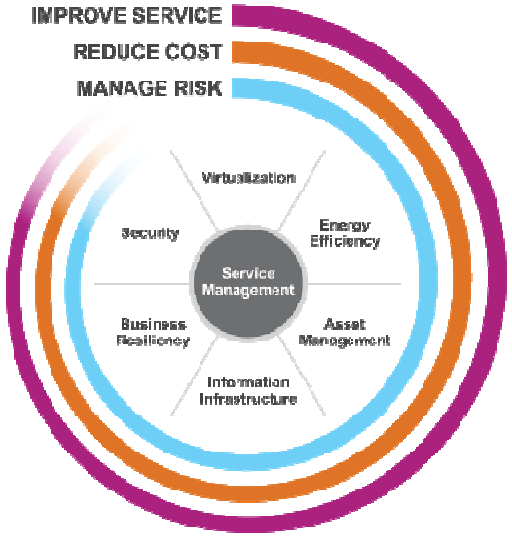
"My infrastructure is inflexible and costly"
I need to respond quickly

Dynamic Infrastructure

"New business & process demands"
I need to work smart

Smart Work

Dynamic Infrastructure:
Addressing today's challenges and tomorrow's opportunities



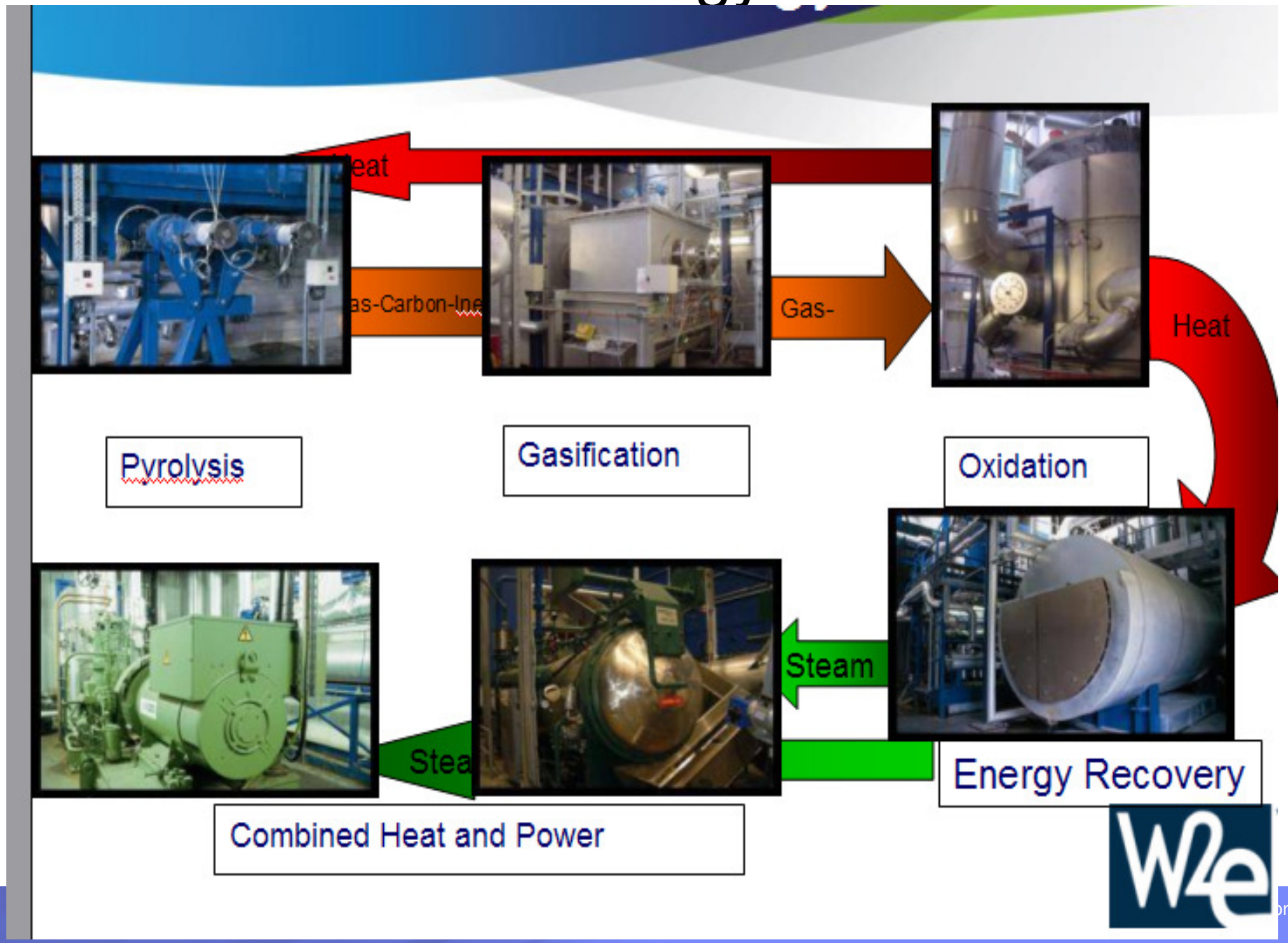
- **System z can help deliver systems for a smarter planet:**
  - Leadership in workload optimized technology
  - industry's leadership capabilities for management, audit, automation and control across the enterprise
  - flexible delivery choices for client workloads to match their unique business requirements

The result: lower cost, lower risk and improved service

SMART IS: Keeping up with growth while keeping markets on firm ground

Depository Trust and Clearing Corporation:
77% increase in transaction processing capacity
handling 3x the highest volume ever recorded
100% rate of reliability
the lowest cost per transaction in the world

Green Renewable Energy From Waste



Many clients are reducing cost with System z today by consolidating existing workloads

Why are clients consolidating to System z?
Real customers. Real workloads.

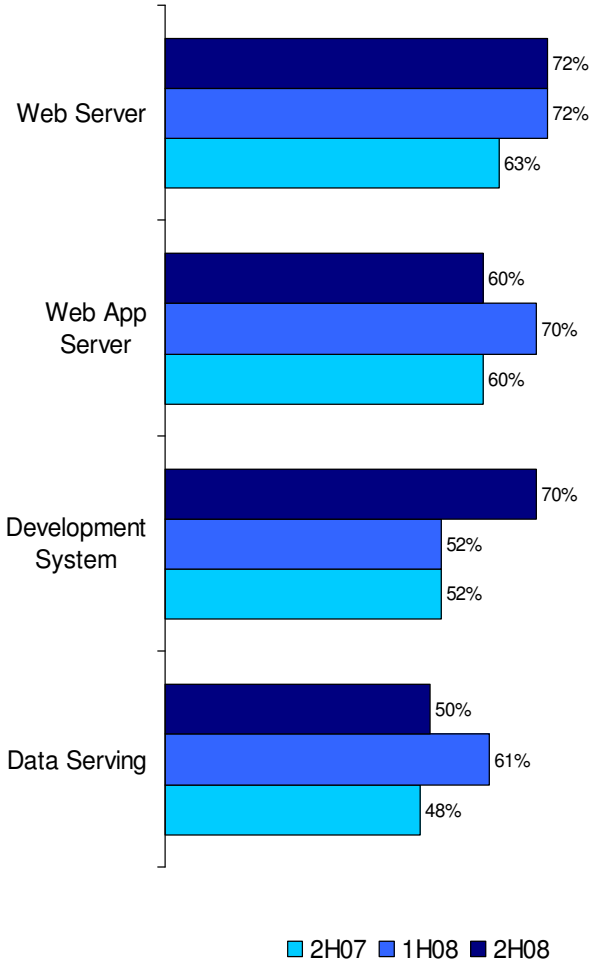
Customer	Distributed Cores	IBM System z Cores	Ratio of Distributed to System z cores*
Nationwide	**450**	**21 IFLs on z9**	**21 to 1**
Large bank	**111**	**4 IFLs on z10**	**27 to 1**
Government Agency	**292**	**5 IFLs on z10**	**58 to 1**

- Unique value of System z Virtualization
- Extremely efficient
- Superior availability and security

* Client results will vary based on each specific customer environment including types of workloads, utilization levels, target consolidation hardware, and other implementation requirements.

Source: zCPO

What are clients consolidating to System z?



Source: IBM Market Intelligence

Surveys indicate IBM System z® customers use Linux for:

- Web Serving
- Web Application Serving
- Data Services
- Systems Development

"Best Fit" Workloads for Linux on System z:

- **Business connectors**: WebSphere® MQSeries®, DB2® Connect, CICS® Transaction Gateway, IMS™ Connect for Java®
- **Business critical applications**: e.g. SAP
- **Development** of WebSphere and Java™ applications
- **WebSphere Application Server** (WAS)
- **Email & collaboration**: Domino™, Web 2.0
- **Network Infrastructure**: FTP, NFS, DNS, etc. and Comm Server and Communications Controller for Linux, CommuniGate Pro (VoIP)
- **Data services**: Cognos®, Oracle, Informix®, Information Builders WebFOCUS
- **Applications requiring top end disaster recovery model**
- **Virtualization and Security Services**

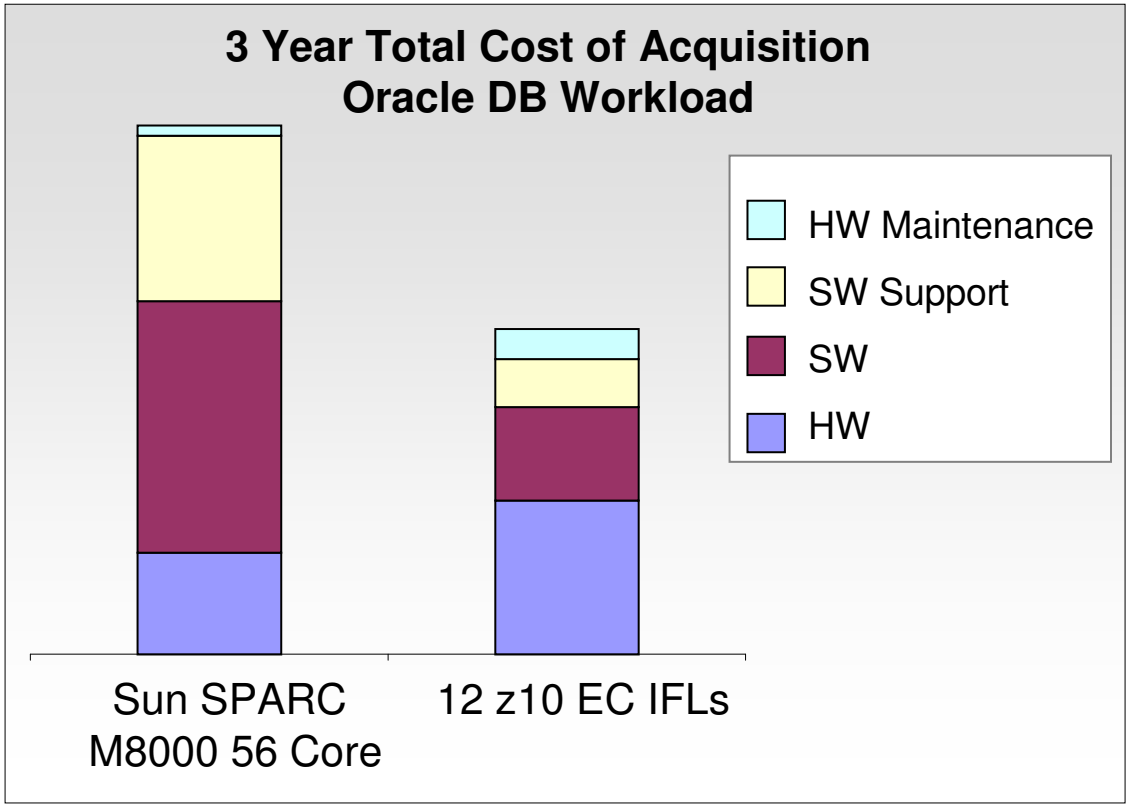
System z ISV Ecosystem

Dramatic growth responding to market demand

* 142 ISVs added to the System z portfolio in YTD 2009
* 900 New System z applications & tools YTD 2009
* 1,700 + ISVs developing for our System z Ecosystem
* 3,500 + applications available for z/OS
* 3,000 + applications available for Linux on System z
* 6,300 + applications available for System z

Now better economics for Linux workloads:
New prices lower the cost of acquisition.

Save up to 39% with System z before energy, admin, and floor space considerations



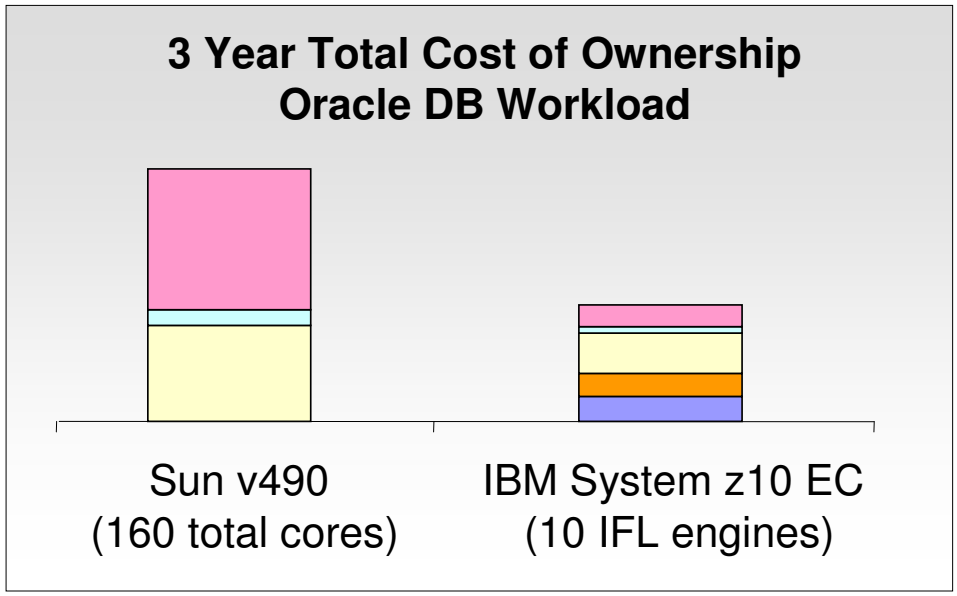
- IFL prices for System z10 ECs reduced to $75K USD*.
- Reduced Memory prices extended to ALL new workload running on System z10 Servers – Now $2250 USD per GB**.
- Lower costs of migration when combined with zRewards.

* Price are stated in US currency and may vary by country. This is for IFLs only, zIIPs and zAAP remain at $125k. Specialty engines do not include Internal Coupling Facilities (ICFs).

** New workloads defined consistent with zNALC terms and conditions and also include all Linux workloads. Prices will vary by country. Limited to 16GB per qualifying new processor.

Reduce cost through consolidation on System z.

Consolidating 20 Solaris® servers to 10 IFLs



- **Consolidation savings typically driven by:**
  - Lower software license cost
  - Lower staff cost
  - Lower energy costs
  - Lower facilities costs
- **Save up to 50% over x86 virtualization**

SMART IS: consolidating 1000s of servers

- Prices are in USD. Prices may vary in other countries.
- Data is based on real client opportunity and on internal standardized costing tools and methodologies.

IBM:

Consolidating workloads of 3900 servers
Re-deployed to about 20 System z10s
>80% Reduction in energy consumption and floor space
Lowering overall cost of ownership

- Client results will vary by types of workloads, technology level of consolidated servers, utilization factor, and other implementation requirements. Savings will vary by client.

Many clients are also choosing System z for deploying new applications

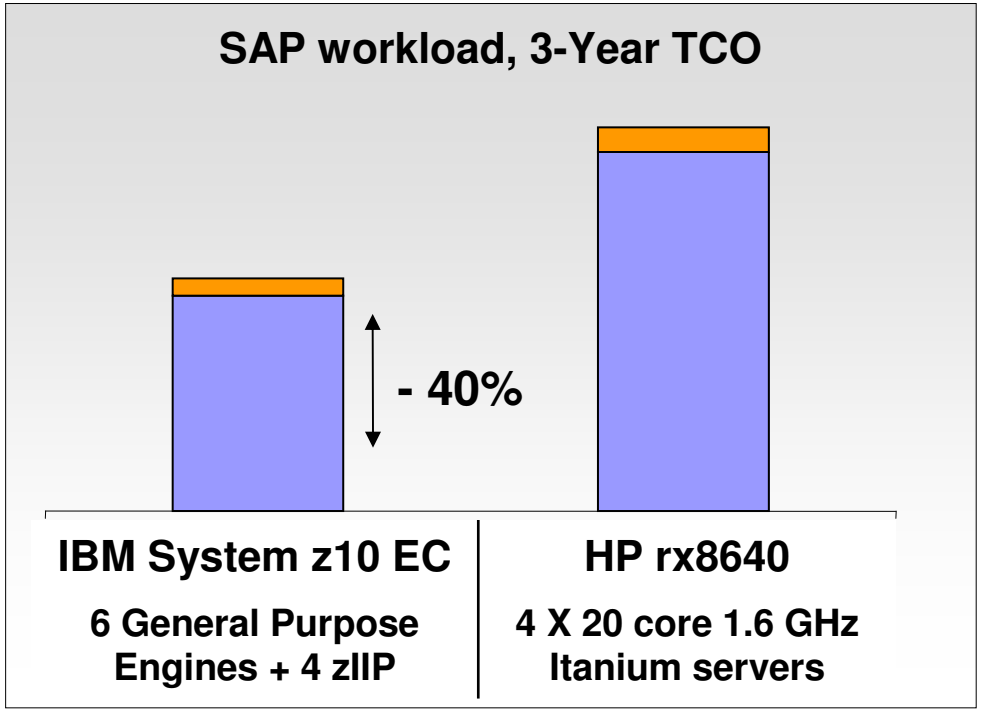
System z Solution Editions:
Unmatched value, competitive cost

- Building on the popularity of the Solution Edition for SAP
- Special package pricing for our most popular solutions
  - z10 HW (standalone footprint or isolated LPAR)
  - Prepaid HW maintenance
  - Comprehensive middleware stack (including S&S)
  - Services and Storage (as needed)
- Competitive acquisition prices, leadership TCO

Competitive cost, plus the legendary value of the mainframe

System z Solution Edition for SAP

Save 40% when compared to HP with the System z Solution Edition for SAP



- Lower cost of ownership, plus:
  - Unmatched resiliency for mission critical applications
  - Industry leadership in large scale secure data serving
  - Huge scalability and low cost for future growth
  - Centralized management and automation to deliver better control and efficiency

Smart is: Reducing cost within one year.

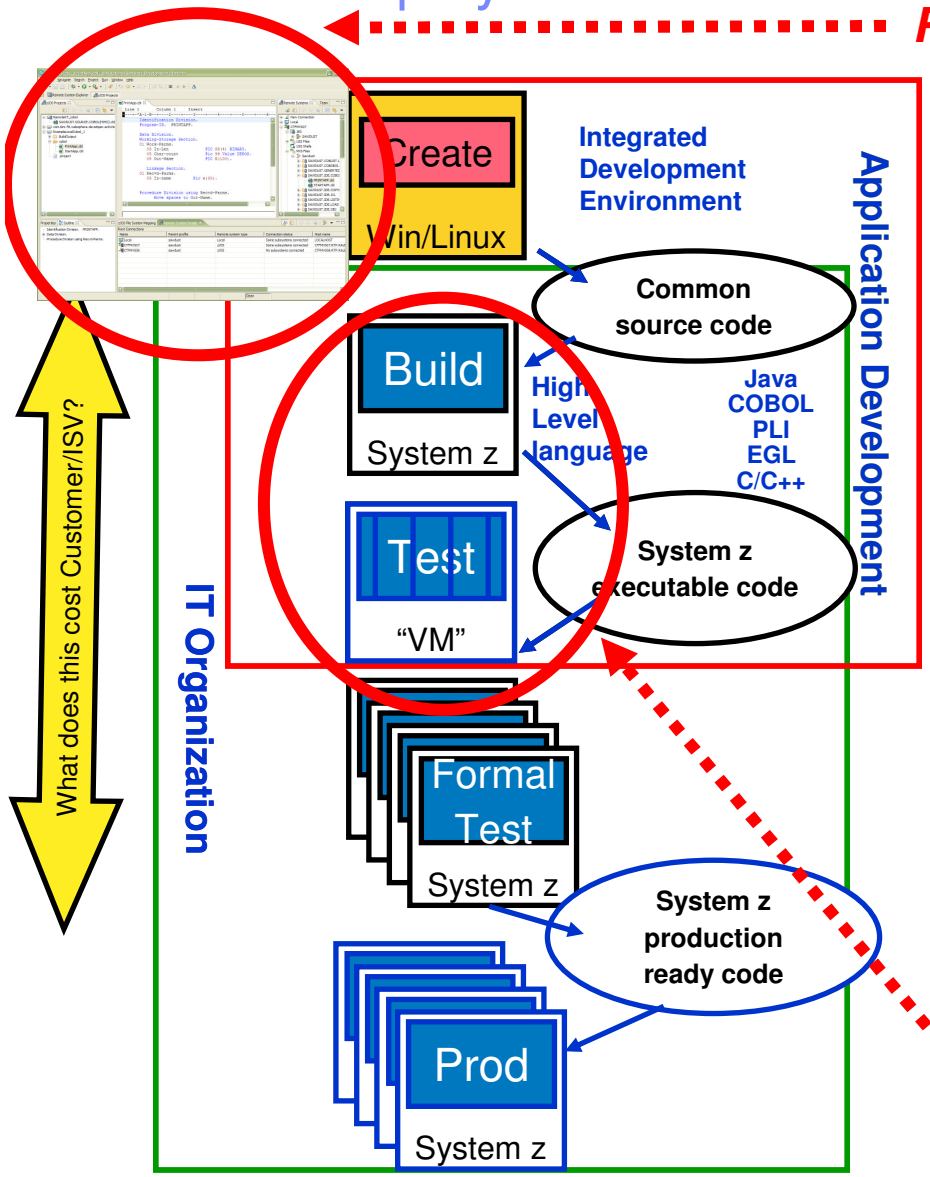
Prices are in USD. Prices may vary in other countries.
Data is based on real client opportunity and on internal standardized costing tools and methodologies.

GKD-EL:

Migrated SAP solutions to a z10 EC
Improved their SAP System throughput by 270%
Cut their costs by 30%

Client results will vary by types of workloads, technology level of consolidated servers, utilization factor, and other implementation requirements. Savings will vary by client.

Next Gen Deployment – Actions



Rational Developer for System z

- **Provides a** fixed priced deployment **stack for developers**
- **Priced to make development on z/OS and System z** more competitive **with other platforms**
- **Through use of z/VM, enables developers to control their own destiny when bringing up and modifying z/OS images to suit their individual needs. It appears as a** Private Development Cloud **for the business.**
- **Provides a** test environment that can mimic a production environment**, from an operational point of view.**
  - Several competitive offerings require changes, both operationally and through code changes, to get to production on System z.
- **When used in conjunction** with separately offered Rational Developer for z **(RDz)**
  - Provides a development life cycle manager that provides a **consistent development environment across platforms**
  - Enables a business to target multiple operating systems toward where there is the **best fit for workload** deployment

Application Development Solution Edition

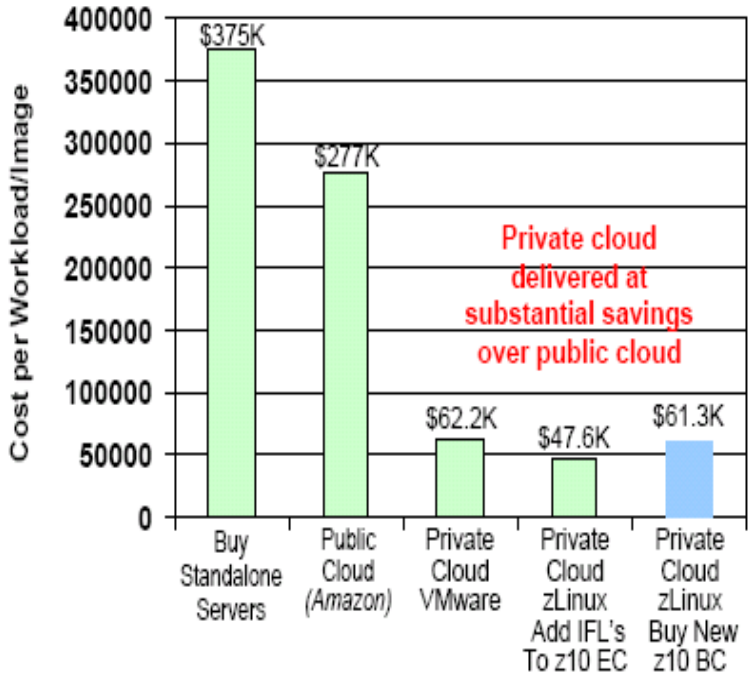
Extending the Solutions Edition family with new offerings for Cloud computing

System z clouds achieve operational efficiency through economies of scale

Dramatic Simplification through Virtualization

Unit	Distributed	System z Linux	% Reduction
Software Licenses	**26,700**	**1,800**	**93%**
Ports	**31,300**	**960**	**97%**
Cables	**19,500**	**700**	**96%**
Physical Network Connections	**15,700**	**7,000**	**55%**

Cost Per Image for Linux Workloads (5 Yr TCO)



New Offerings for Cloud computing

- **Solution Edition for Cloud Computing**
  - Creates a foundation for cloud computing workloads in the enterprise
  - Delivers an infrastructure management stack for cloud computing
- **IBM Smart Analytics Cloud for System z**
  - Access and analyze data from different sources
  - Enables knowledge dissemination in the enterprise
  - Moving enterprise quality workload to the cloud

SMART IS: Delivering Business Intelligence with greater efficiency across the corporation

IBM CIO OFFICE:

"Our commitment to informed decision making led us to consider private cloud delivery of Cognos via System z, which is the enabling foundation that makes possible >$20M savings over 5 years."

And what of the future…

System z futures for a workload-optimized world.

Re-write the rulebook and set new standards for business-centric IT with IBM System z, to be the world's premier workload-optimized platform for enterprise applications.

Our Vision:

Deliver the best of all worlds, Mainframe, UNIX, x86 and single function processors, integrated in a single system for ultimate flexibility and simplicity to optimize service, risk and cost across multiple heterogeneous workloads.

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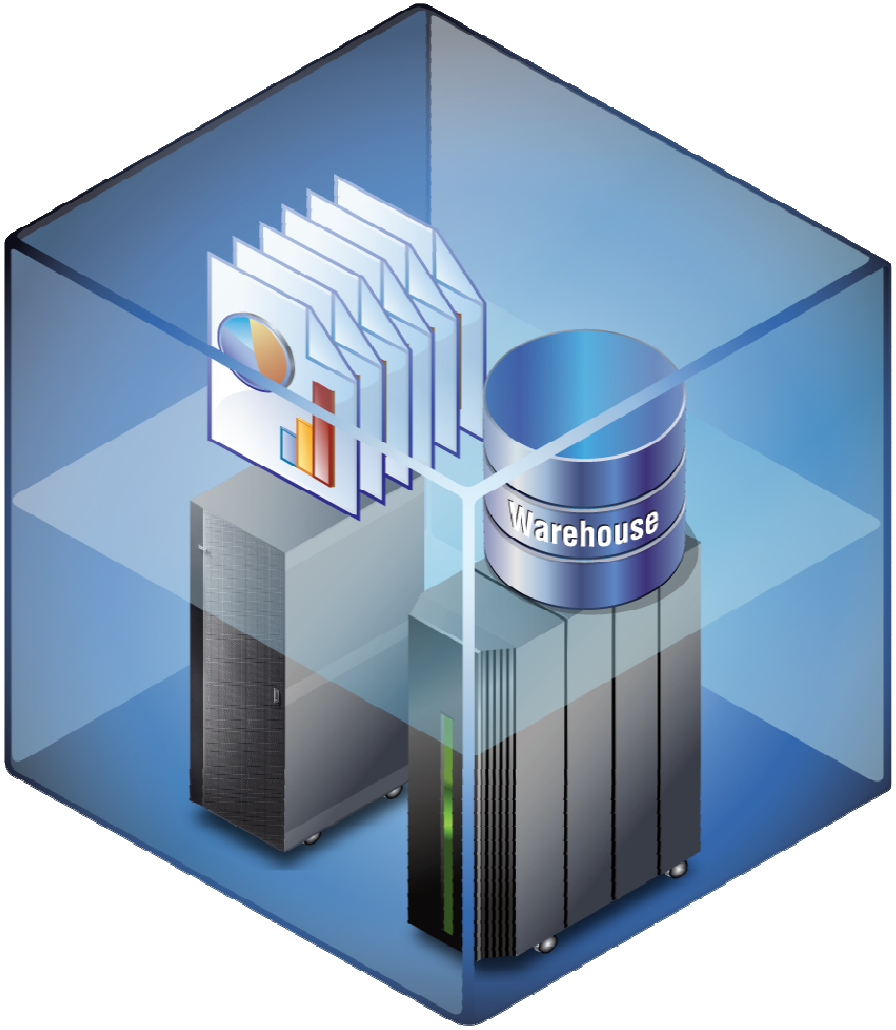
An example of workload-optimized systems:
Statement of direction - the IBM Smart Analytics Optimizer



An integrated business intelligence solution to deliver accelerated and accurate business insight

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System z for new workloads and consolidation:
Unmatched value, competitive cost

- A great tactical choice today:
  - Reduce cost, reduce risk and improve service
- A Strategic choice for the future:
  - Re-writing the rulebook to set new standards for business-centric IT

The Future Runs on System z