

# IBM System z Technology Summit



## Why WebSphere Application Server on System z?

**Scott Simons**

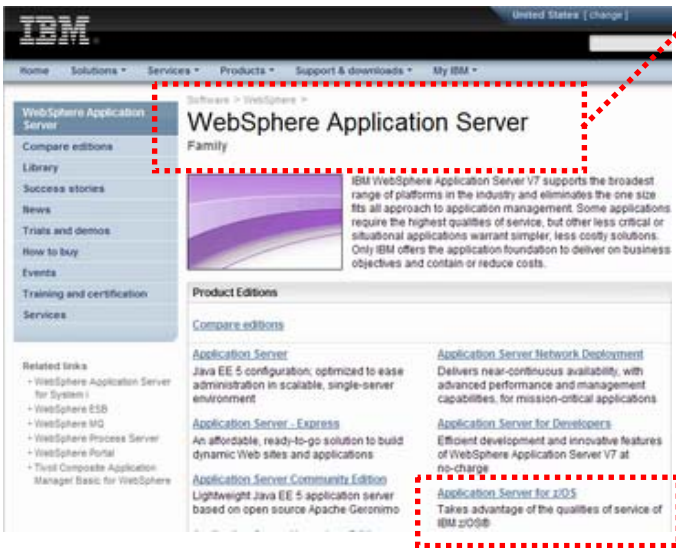
**WebSphere Technical Professional and zChampion**

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# Two Questions We'll Answer Today ...

ibm.com WebSphere page ...



WebSphere Application Server Family

**WebSphere.** software

**How does WebSphere Application Server address your business imperatives?**

Application Server for z/OS  
Takes advantage of the qualities of service of IBM z/OS®

**What is meant by "Takes advantage of the qualities of service of IBM z/OS?"**

# IBM zEnterprise System

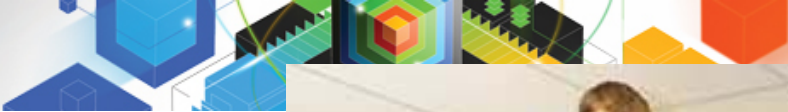


**IBM zEnterprise 196 (z196)**

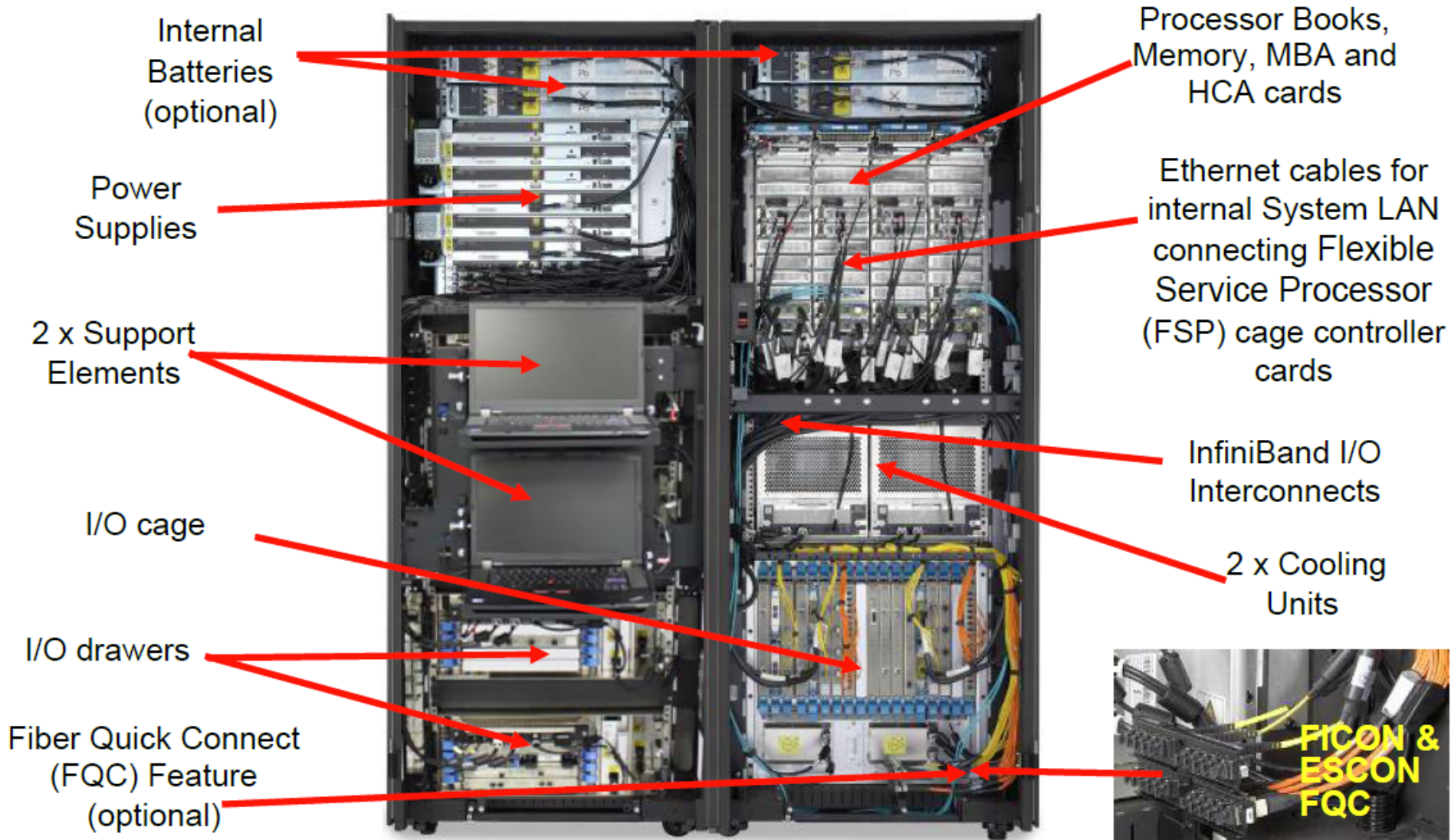


**IBM zEnterprise BladeCenter Extension (zBX)**

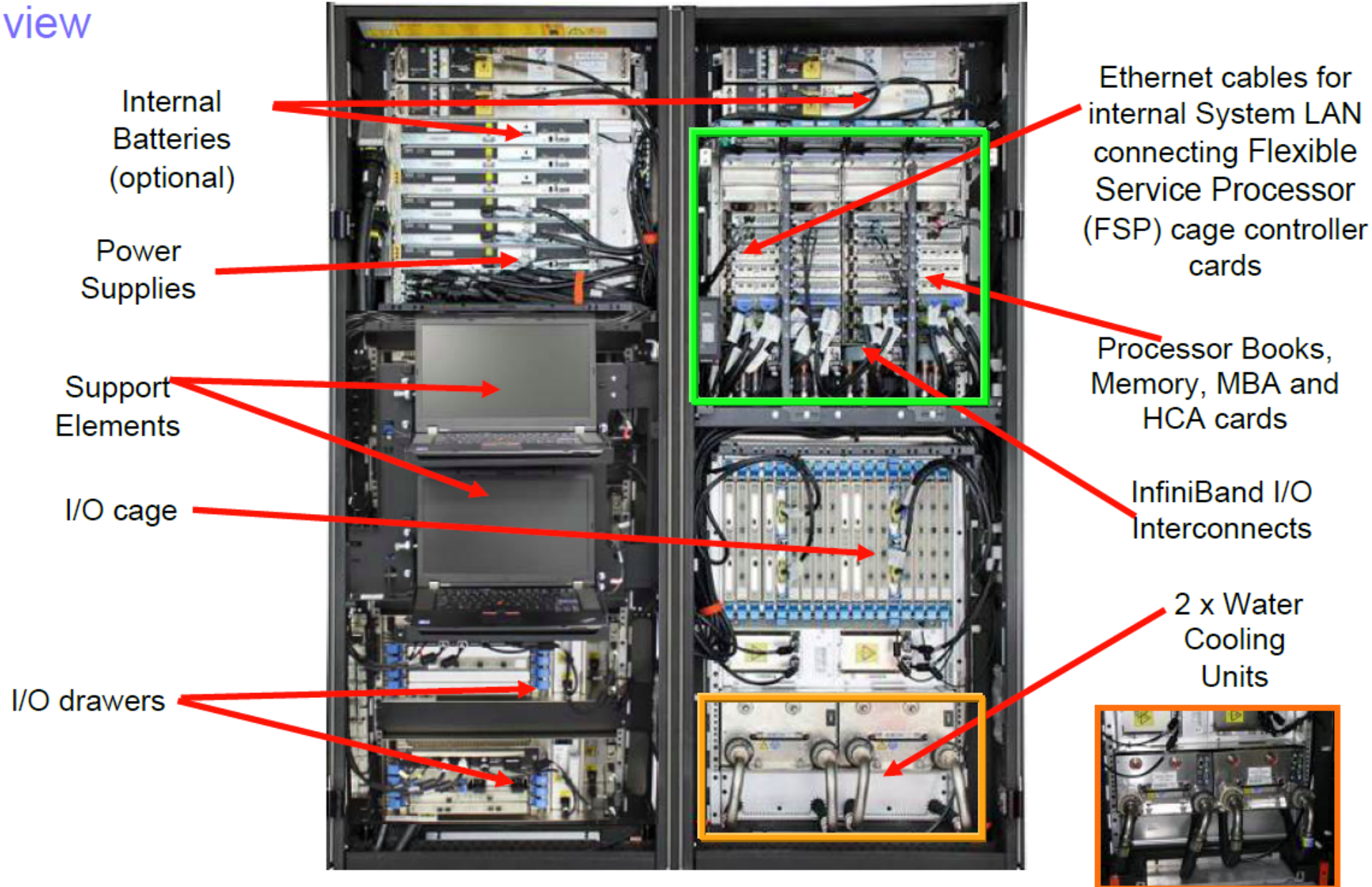
**IBM zEnterprise Unified Resource Manager (zManager)**



# z196 – Under the covers (Model M66 or M80)



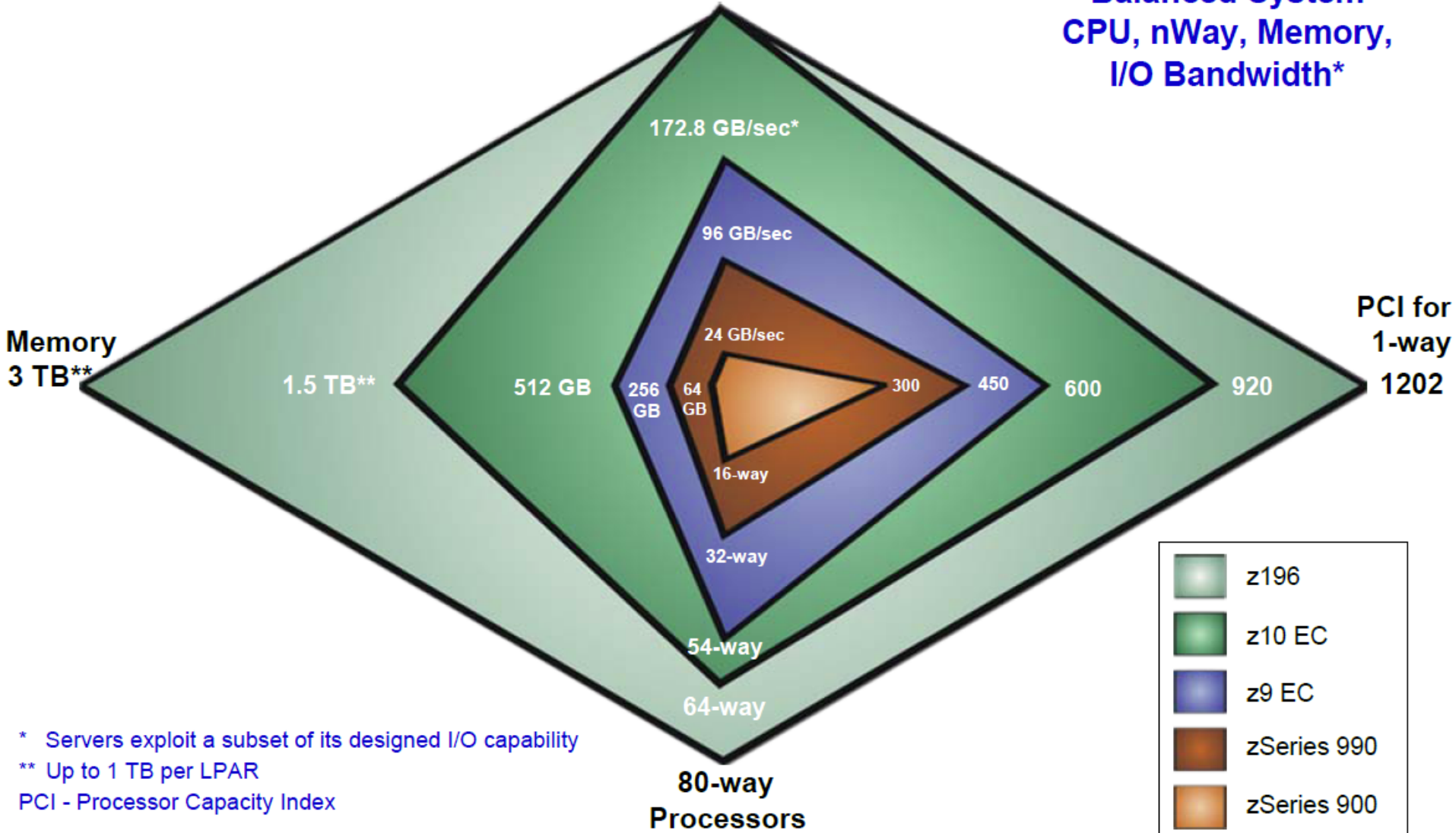
# z196 Water cooled – Under the covers (Model M66 or M80) front view



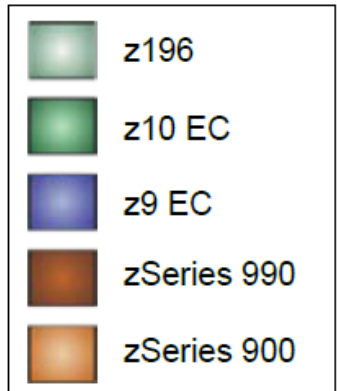
# IBM System z: System Design Comparison

**System I/O Bandwidth**  
288 GB/Sec\*

**Balanced System**  
CPU, nWay, Memory,  
I/O Bandwidth\*



\* Servers exploit a subset of its designed I/O capability  
 \*\* Up to 1 TB per LPAR  
 PCI - Processor Capacity Index







# The WebSphere Application Server Family

*An industry-leading open standard application server platform, with powerful business functionality*

## Manage Cost

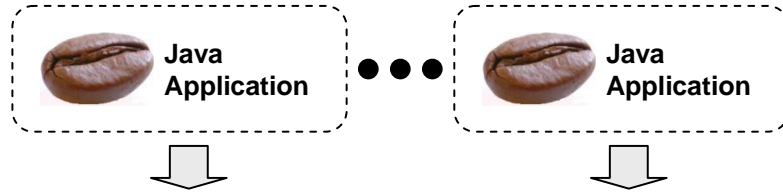
- Common standards across all platforms
- Common tooling across all platforms
- Many of the same skills across all platforms

## Enhance Agility

- Rapid development and deployment model
- Many dynamic runtime elements

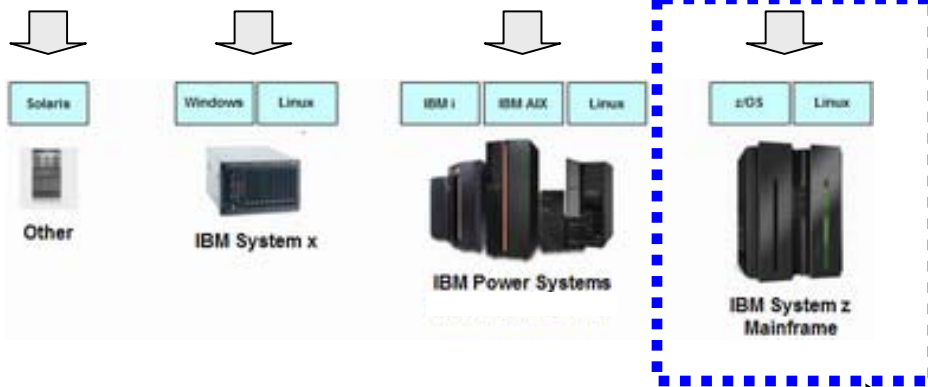
***Common business applications runtime across the enterprise ... development, test, production***

# Common Standards Across Family of Platforms



*Common specification support above the line*

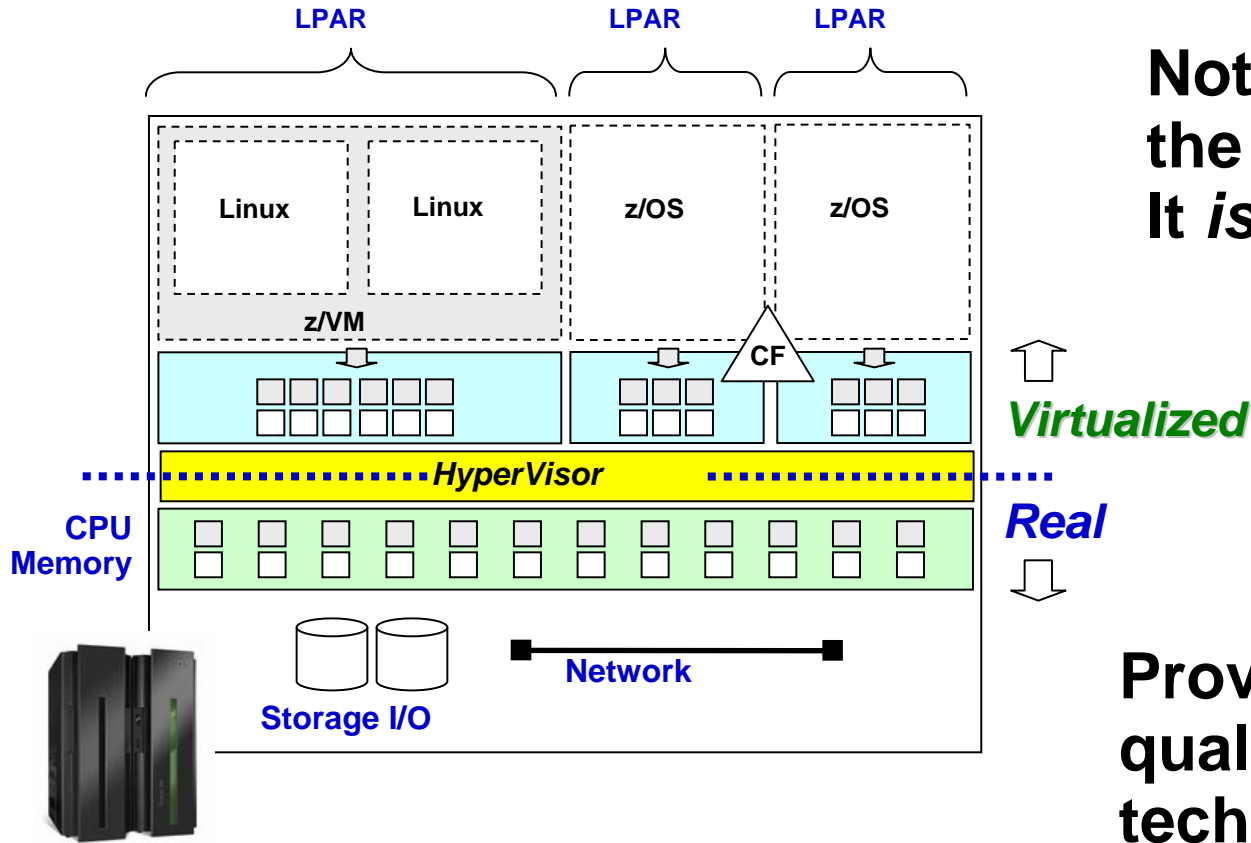
## Open Standard Specification Interfaces



*Platform exploitation takes place below the specification line*

*It's all about the System z and z/OS platform and the way WAS z/OS exploits the platform*

# Industry-Leading Virtualization Technology

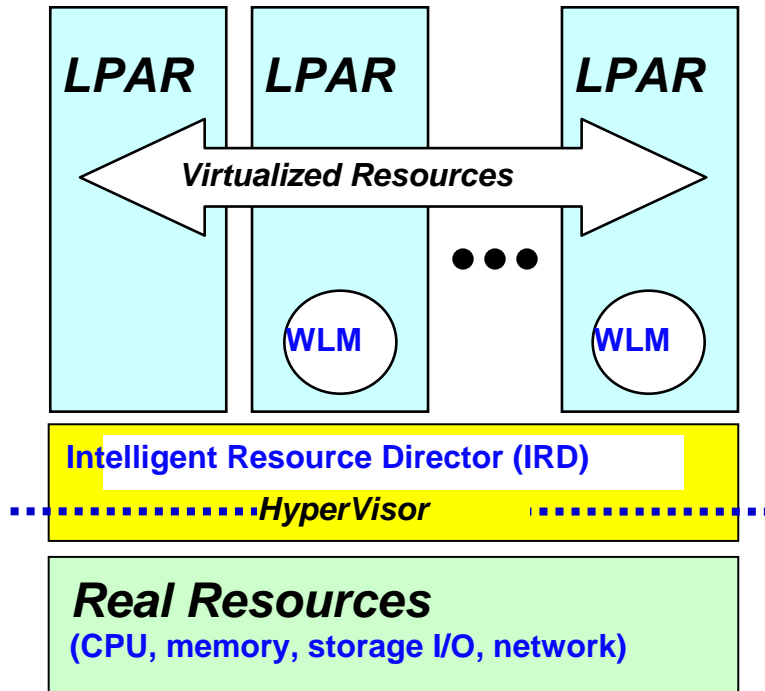


Not merely “like”  
the mainframe  
It *is* the mainframe

Proven enterprise  
quality virtualization  
technology

**Not all virtualization technologies are the same**

## Dynamic Resource Re-Allocation Between LPARs



**Add CPU non-disruptively**

**Re-allocate CPU non-disruptively**

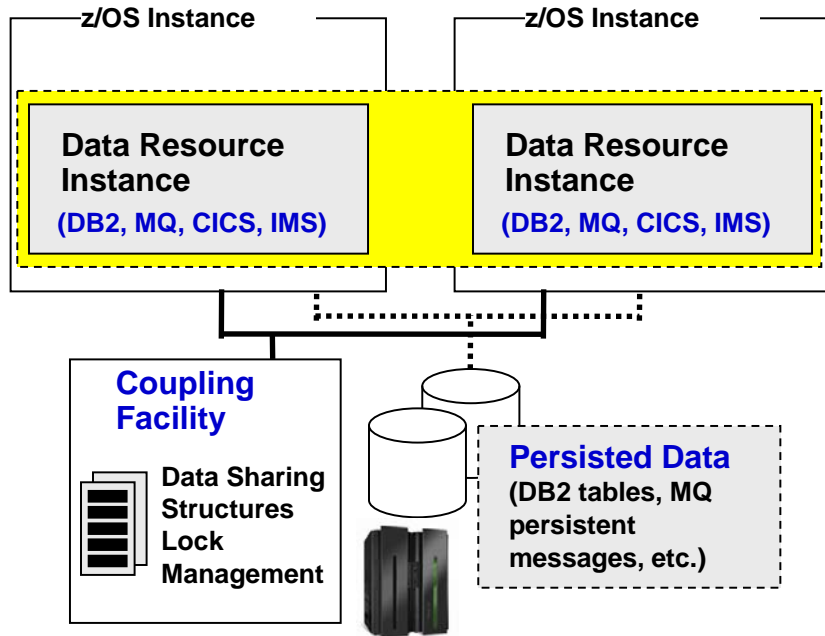
**IRD intelligently balances**

**Vary I/O capacity dynamically**

**WLM advise IRD**

**Virtualization technology that evolved in the enterprise**  
***Solid, stable and proven***

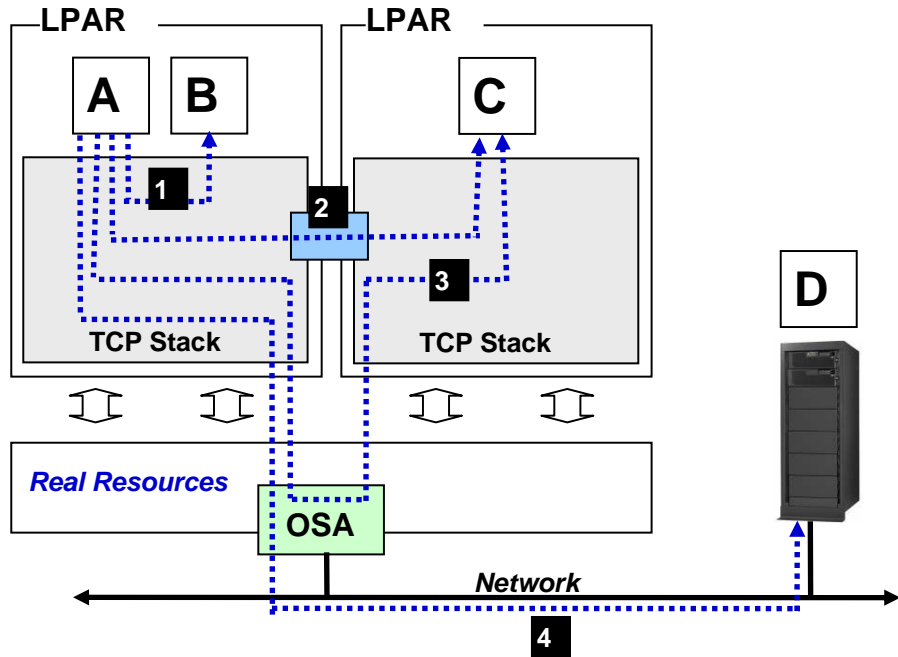
# True Data Sharing From Multiple Resource Instances



- **Parallel Sysplex provides clustered z/OS instances**
- **Shared data, lock management, coordinated time management, high-speed data transfer**
- **Mature, stable, reliable**
- **Unbeatable availability**

***Provides scalability and availability ... to levels used throughout the world for critical activity***

# Intelligent TCP/IP

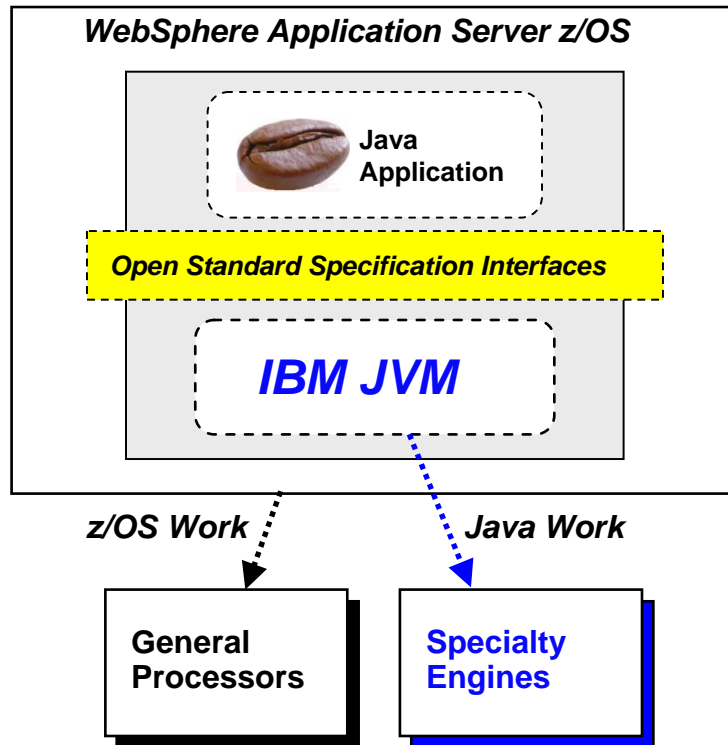


- 1. Same LPAR**  
No network ... cross memory ... *ultra fast*
- 2. Different LPAR, HiperSockets**  
No network ... cross memory ... *very fast*
- 3. Different LPAR, *not* HiperSockets**  
No wire ... just adapter card ... *fast*
- 4. Off System z**  
Traditional networking here

When throughput and scalability is important, network delays can add up

***TCP/IP on z/OS is very aware and optimizes its path to reduce overhead and benefit your business***

# Specialty Engine Exploitation

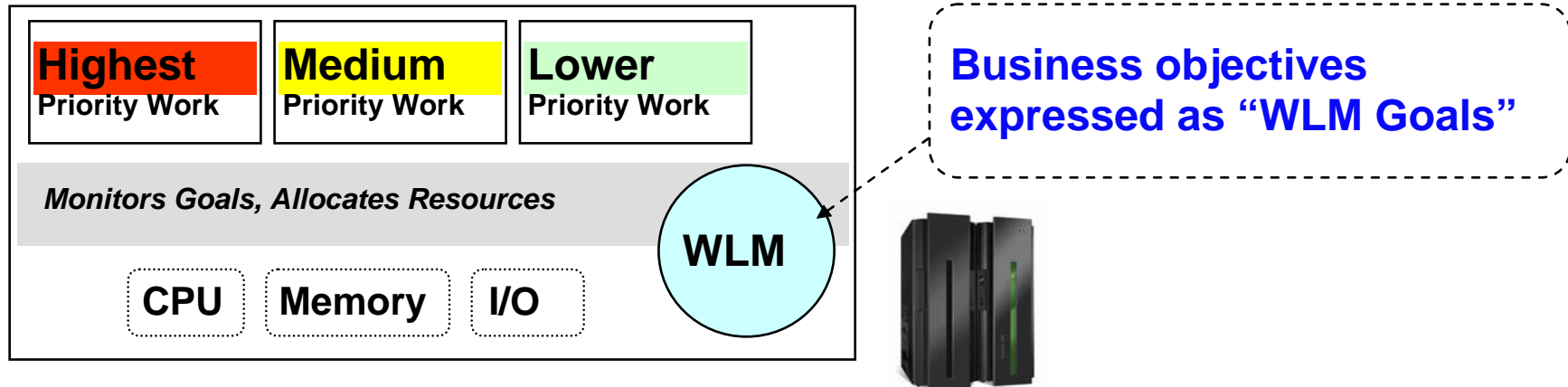


- Offload Java work to financially attractive specialty engines
- Completely transparent process to applications
- Greater general processor capacity for non-Java work
- Lower software licensing costs, and/or the avoidance of additional costs

Works for Java offload, Linux on System z offload and certain DB2 processing offload

***A feature enthusiastically embraced by many System z and z/OS customers!***

# Workload Manager (WLM) Exploitation



## Benefits to you and your business:

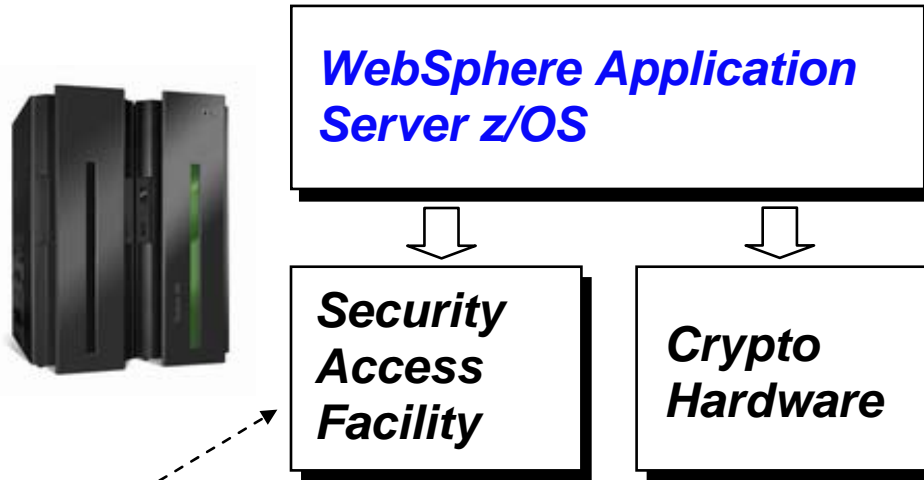
- Intelligent control of resources towards meeting *your* goals
- Very efficient resource sharing can be accomplished
- Critical work gets the resources, less critical held off temporarily
- Intelligent routing of work based on WLM monitoring of system

***Manage costs -- very efficient utilization of asset investment***

***Provide agility -- intelligent and dynamic allocation to meet goals***



# SAF and Crypto Hardware

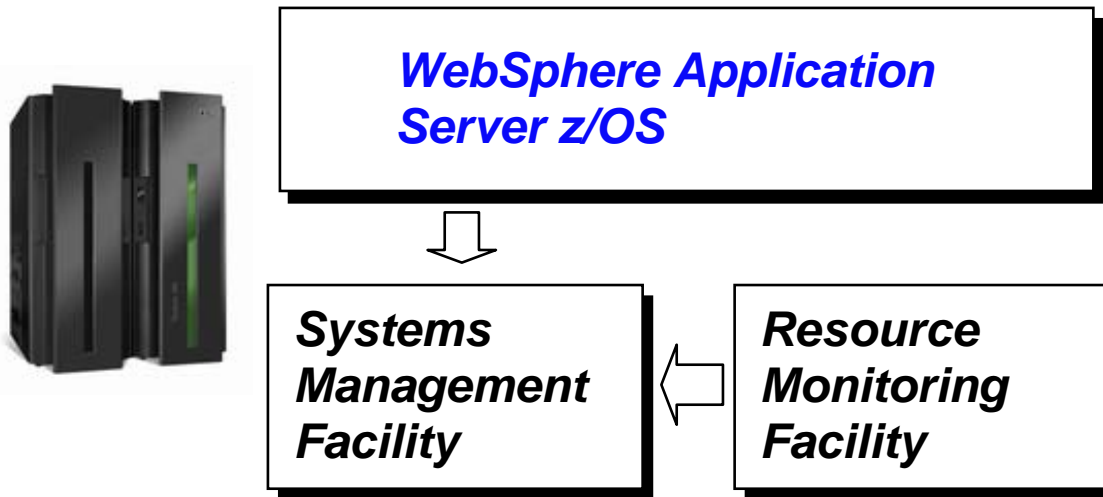


- Highest level of security for storage of private keys
- Very fast encryption and decryption
- Enhances security

- System interface for security products (IBM = RACF)
- Single, integrated security facility for tighter process control
- Define many classes of security profiles, including digital certificates

*Security breaches are very disruptive and very expensive  
Protecting secure data is a business imperative  
SAF has proven itself to be secure and trusted*

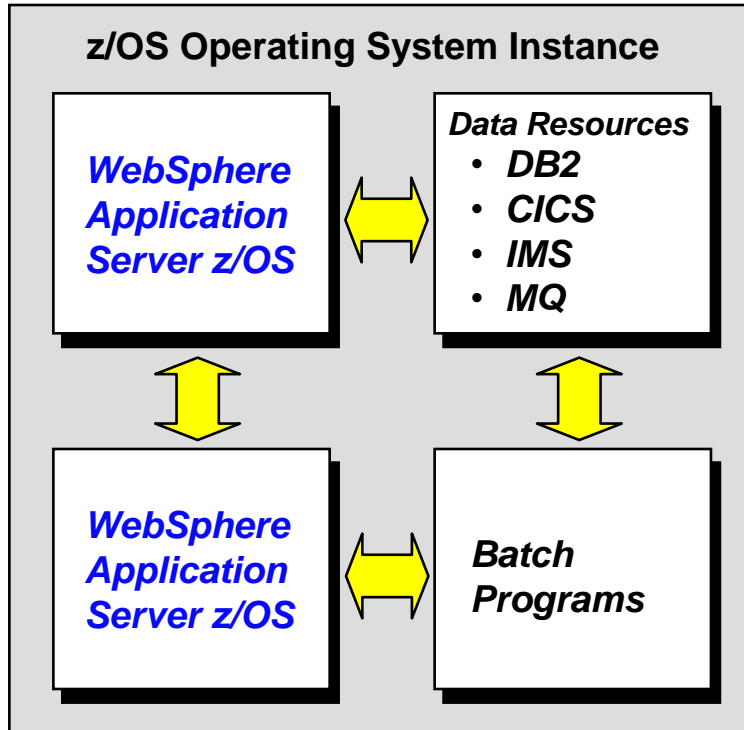
## SMF and RMF -- Measuring and Reporting on Activity



- Achieve very accurate and customized reporting of system activity
- Perform very precise capacity measurement and planning
- Capture who is using what resources and when
- Allows finer-grained accounting and chargeback
- Many tools on the shelf to do analysis and reporting

***Have a clear view of your resource investment.***

# Collocation Benefits



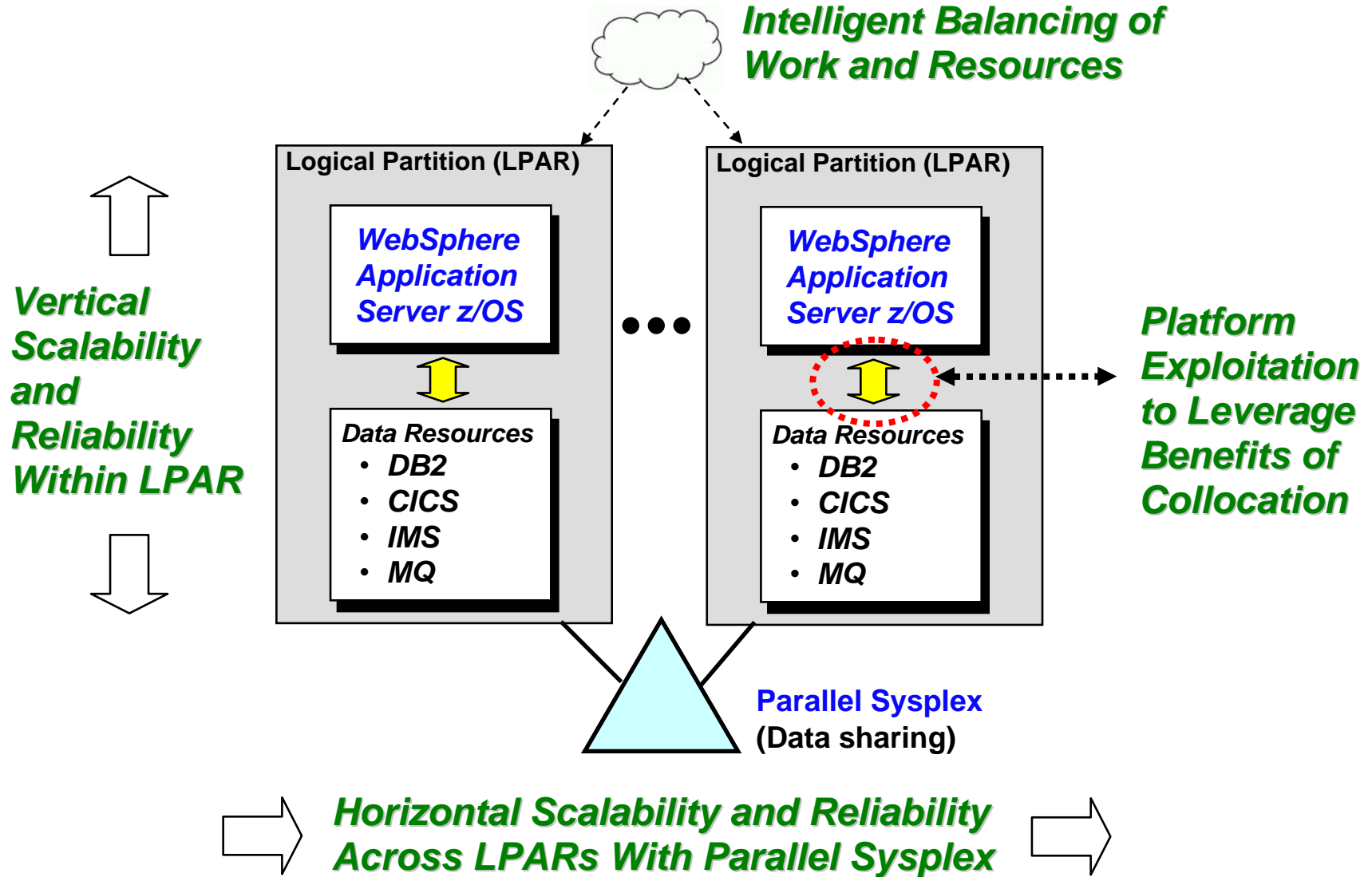
- ***Extremely*** fast data transfer
- Tightly controlled by z/OS authorization processes
- Eliminate need to serialize and deserialize data and objects
- Eliminate need for encryption overhead
- Propagate several forms of user identity

***Efficient -- very low overhead so scalability can be addressed***

***Secure -- no network, can't be sniffed or hacked***

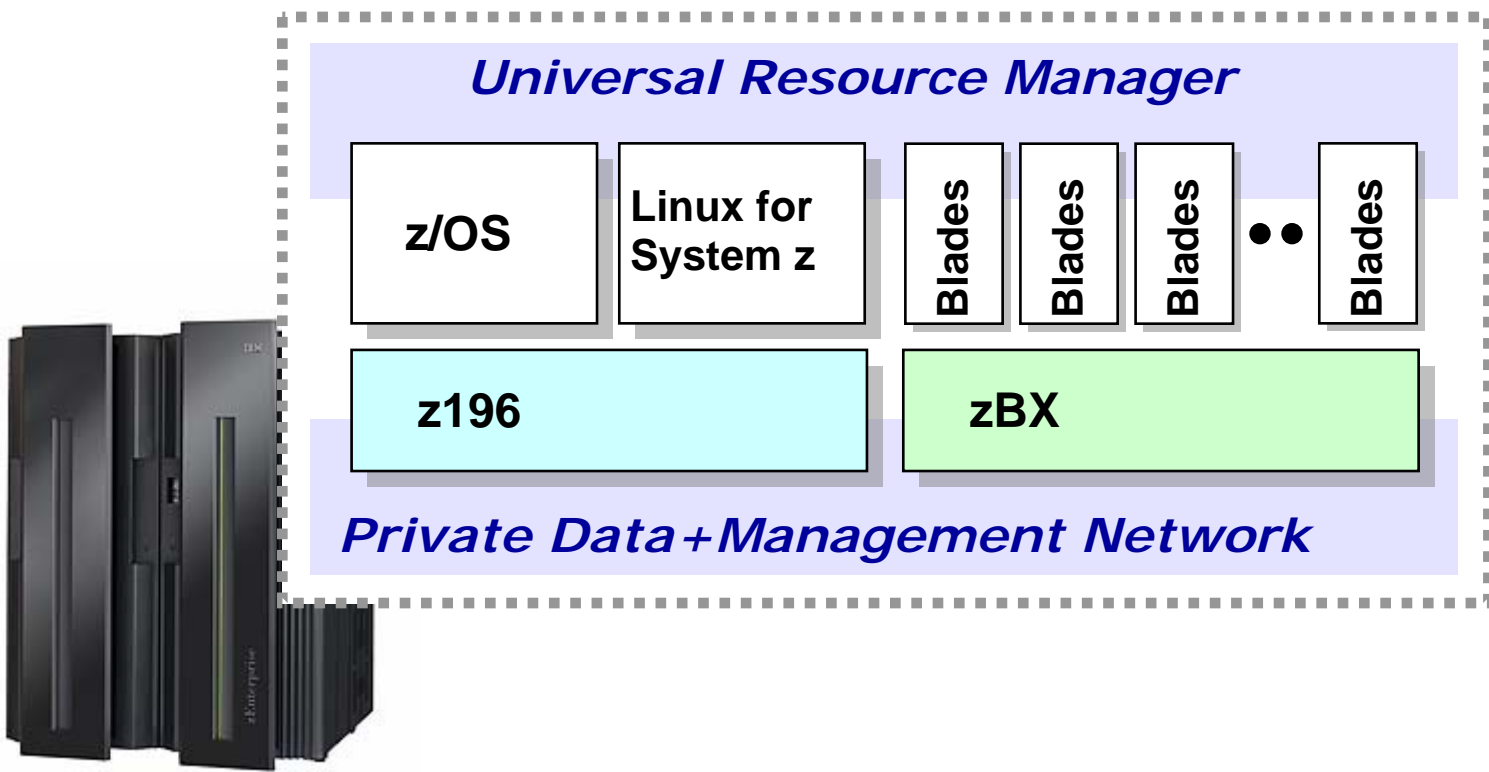
***Fast -- for very high volume workloads***

# Collocation, Scalability and High Availability



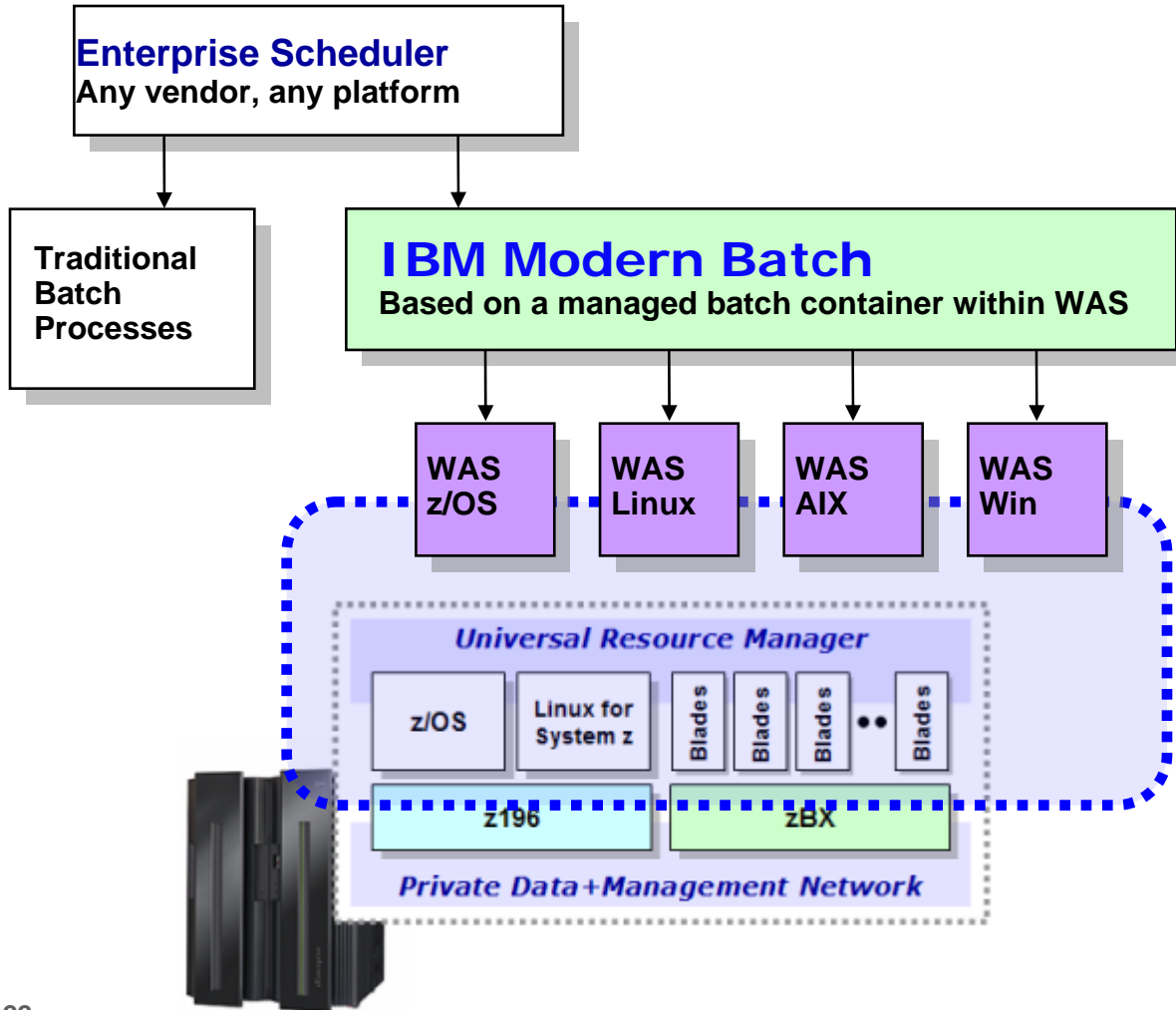
# zEnterprise – Best of All Worlds

*The z/OS benefits we've discussed also work for a coordinated and integrated multi-system machine.*



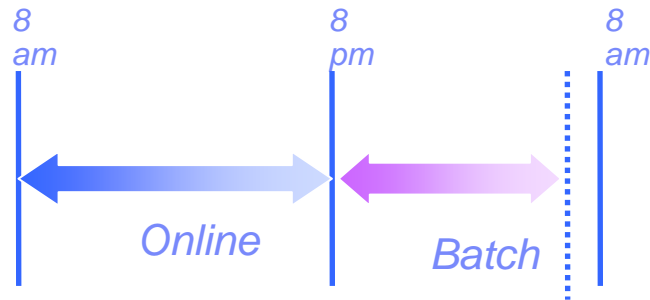
# Modern Batch ... Coupled with zEnterprise

*IBM's Modern Batch provides flexible Java batch processing across multiple environments. Put the zEnterprise underneath and ...*

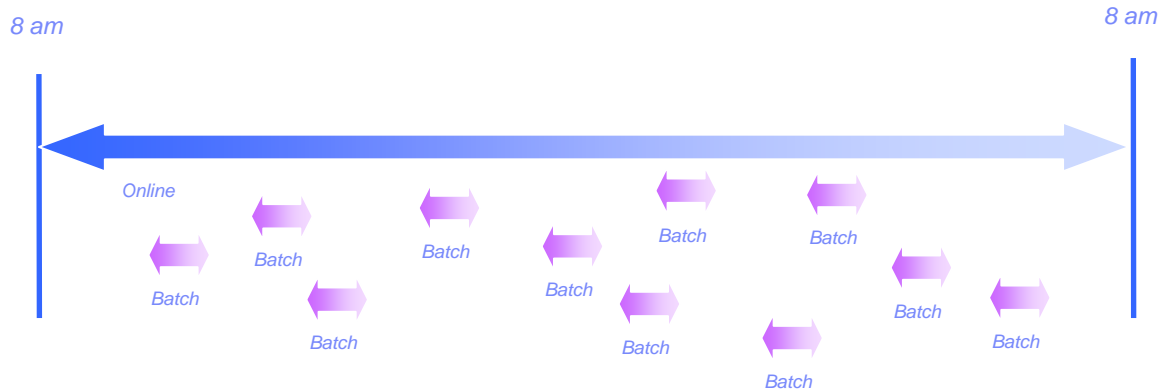


**IBM's Modern Batch provides the managed container environment for Java batch**  
**WAS provides the runtime for combined OLTP and Batch**  
**zEnterprise provides the execution environments that allow the best "fit for purpose" for your needs**

# Defining the Issues of Traditional Batch on a Mainframe

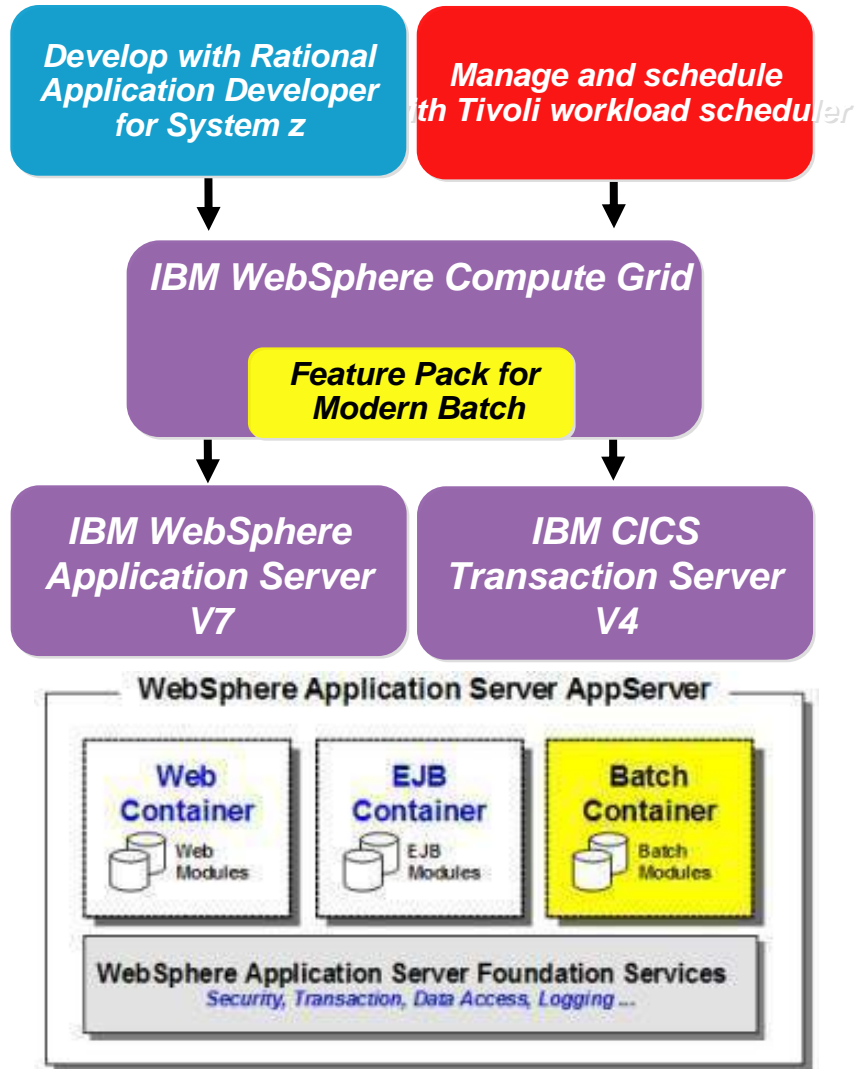


*Globalization is putting pressure on traditional "batch windows". There's more data but shrinking batch time.*



**Is there a way to run batch concurrent with OLTP without affecting SLA for on-line applications?**

# Improved Utilization using Modern Batch on the zEnterprise



## What it is

-- Architectural framework for meaningful integration between OLTP and batch applications. Reincorporates savings of batch processing into today's OLTP environment

## What it offers

- Continuous interweaving of batch and OLTP processes aka 24 x 7 batch and OLTP
- Reduced cost through business logic sharing on a **shared** infrastructure
- Reduced operational cost from OLTP application and batch job **integration**
- High throughput and low resource consumption on z/OS for Java Batch when collocated with data subsystems



## Already have a z/OS culture

- Already understand it
- Already built processes around it
  - Change management / Problem management
- Already know how to manage, measure, operate with it – tooling and experience

## Like zSeries Hardware Benefits

- Reliability, availability (5 or 6 nines capable), virtualization
- LPARs and internal network speeds - zBX

## Like z/OS Capabilities

- WLM for policy based performance management
- Parallel sysplex for multi-system data sharing
- RACF (resource access control facility) for most robust security system available
- RRS (resource recovery service) for transaction management

## Want WAS based products close to mainframe apps

- CICS, IMS, DB2; also z/OS optimizations / h/w optimizations
- Network bandwidth adds up

## Possible TCO benefits

- vs. distributed environments

## Performance Mgmt and Capacity Planning easier

- Tools and discipline exists – for many years
- vs. distributed concept of `buy more/bigger h/w` - drives up TCO

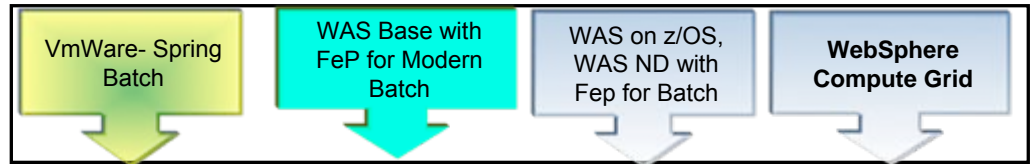
The IBM logo is positioned in the upper left corner of the image, rendered in its characteristic eight-stripe font.The words "THANK YOU" are displayed in large, three-dimensional, light blue letters. Each letter contains a portrait of a diverse individual, including a man in a suit, a woman, a man in a green shirt, a woman, a man with glasses, a man in a white lab coat, a man in an orange shirt, and a woman. The letters are set against a dark, metallic background with a large, stylized 'V' shape.

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The IBM logo is located at the bottom center of the image, rendered in its characteristic eight-stripe font.

# Batch features availability and comparison to Spring Batch

Features and QoS Guidance to choose optimal deployment option for Batch workloads



	VmWare- Spring Batch	WAS Base with FeP for Modern Batch	WAS on z/OS, WAS ND with Fep for Batch	WebSphere Compute Grid
<b>Portable batch container, development tools to develop batch applications, Operational commands to manage Batch Job Life Cycle</b>	√	√	√	√
<b>Container managed check point, restart capabilities</b>	√	√	√	√
<b>Job management console</b>	√	√	√	√
<b>Application Execution Platform</b>		√	√	√
<b>Basic Scheduler/Job dispatcher</b>		√	√	√
<b>System managed job logs</b>		√	√	√
<b>High availability and clustering of Batch Job Scheduler/Job Dispatcher</b>			√	√
<b>Multi-site disaster recovery for batch platform</b>			√	√
<b>Non-disruptive batch application update/endpoint quiesce</b>				√
<b>Job usage accounting, including SMF integration on z/OS</b>				√
<b>Job classes and workload classification</b>				√
<b>Parallel Job Manager to reduce Batch window</b>				√
<b>Enterprise Scheduler connectors</b>				√
<b>Enterprise Monitoring capabilities</b>				√
<b>Integration with VE to eliminate Batch window</b>				√