zCurrency is Your Currency

Paul R. Robichaux
NewEra Software, Inc.

Monday. August 6 at 3:00 - 4:00 pm
Session Number - 11698
Location - Platinum 5

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Technology · Connections · Results

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2012

Abstract and Speaker

- One of the primary missions of those charged with the responsibility to enhance and sustain the operational availability and integrity of the zEnterprise is to maintain their currency in both overall IT Server Market Trends and changes that specifically impact the z/OS Environment. Such individual currency helps organizations to adapt their IT Strategies to best fit the need of business users and aids them in their long term effort towards reducing the Total Cost of z/Enterprise Ownership (TCO).

- This presentation will provide insight into:

  First, the High-End Server Market and its shift to "Hyper-Scale" class and the recognition currently being given to the likely long-term market share leader: is it IBM, HP, Dell, Oracle or another?

  Second, the High-End Server attributes that will determine the success or failure of the market leader over time as needs shift from Hardware to Management Concerns: Tools, Space and Power.

Third, recent enhancements to old and/or the introductions of new z/OS Management Tools: The IBM Health Checker for z/OS, The Unified Resource Manager, z/OS System Management Facility, AUTORxx – A Parmlib Member, Runtime Diagnostics (RTD), The Policy Management Agent (PAGENT) and the DB2 Utility - *DSNTXAZP.*

- Paul R. Robichaux is CEO and co-founder of NewEra Software, Inc. He served as the Chief Financial Officer of Boole and Babbage for the ten years immediately preceding his co-founding of NewEra in 1990. He holds a BS in Accounting and a Masters in Business Administration from a Louisiana State University and is a Certified Public Accountant.

- The corporate mission of NewEra Software is to provide software solutions that help users avoid non-compliance, make corrections when needed and in doing so, continuously improve z/OS integrity.

2

Your Currency!

Continuous, Sustainable Improvements in z/OS Availability and Integrity.
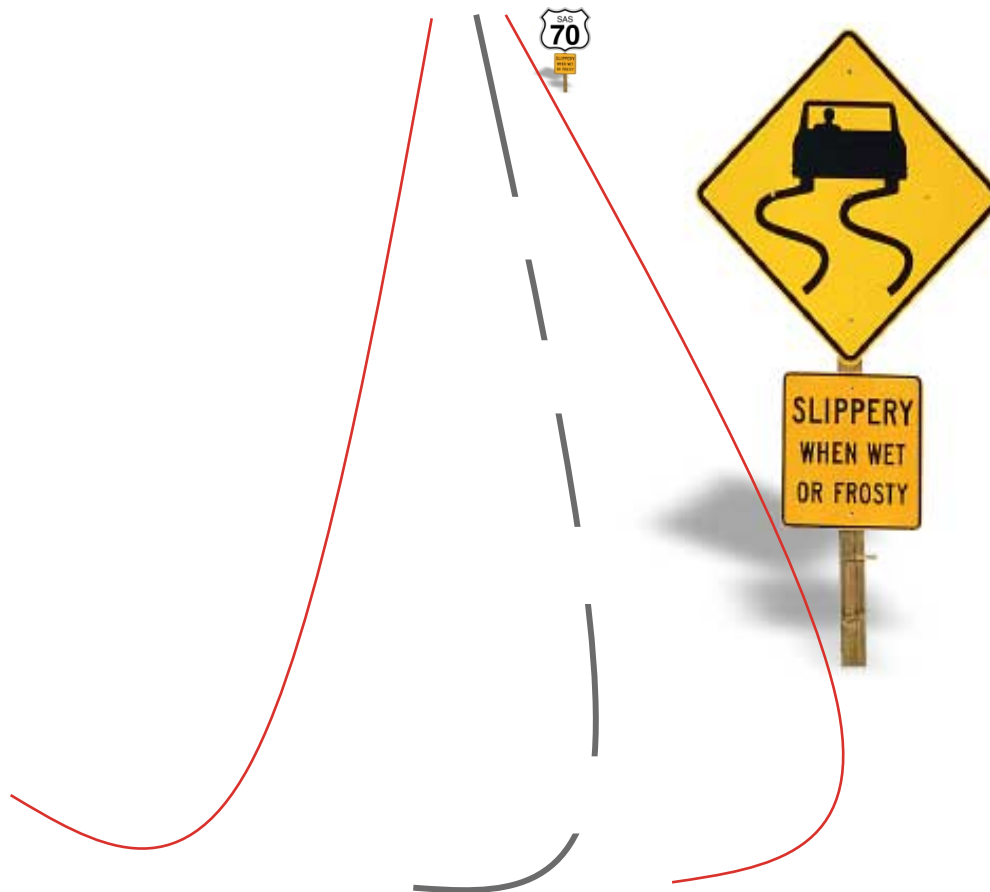
Why is this important?

"…generally we all want to be up-to-date current, not necessarily at the 'Bleeding-Edge' but close enough to be knowledgeable of the changing conditions that impact our information systems, their operational costs and organizational users."

Your Currency!

Presentation Outline:

- ❑ *A Macro Point of View*

  - The Battle for the Server Market
  - Some Things Old are New Again!
  - Market Share Drivers, Response
  - How is z/OS Doing?
  - Who is Best Positioned to Prevail
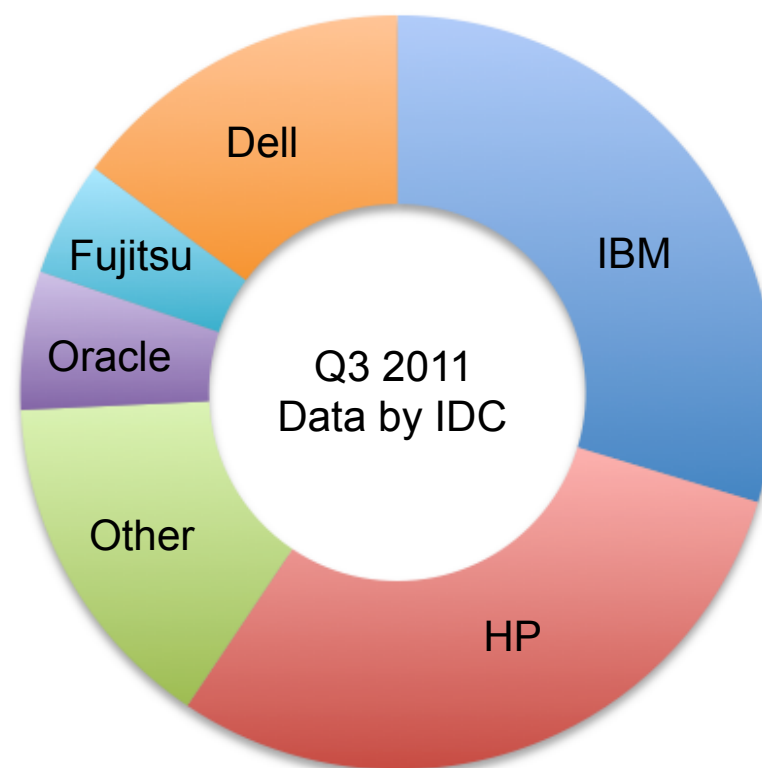 - Next Generation System Management Tools

- ❑ *Some Micro Bits and Pieces*

  - IBM Health Checker for z/OS (HZS)
  - Unified Resource Manager (URM)
  - z/OS Management Facility (z/OSMF)
  - AUTORxx - a ParmLIb Member
  - Runtime Diagnostics (RTD)
  - The Policy Management Agent (PAGENT)
  - *DSNTXAZP – A DB2 Utility*

4

The Battle for The Server Market

Meet the Actors & Their Relative Server Market Positions!

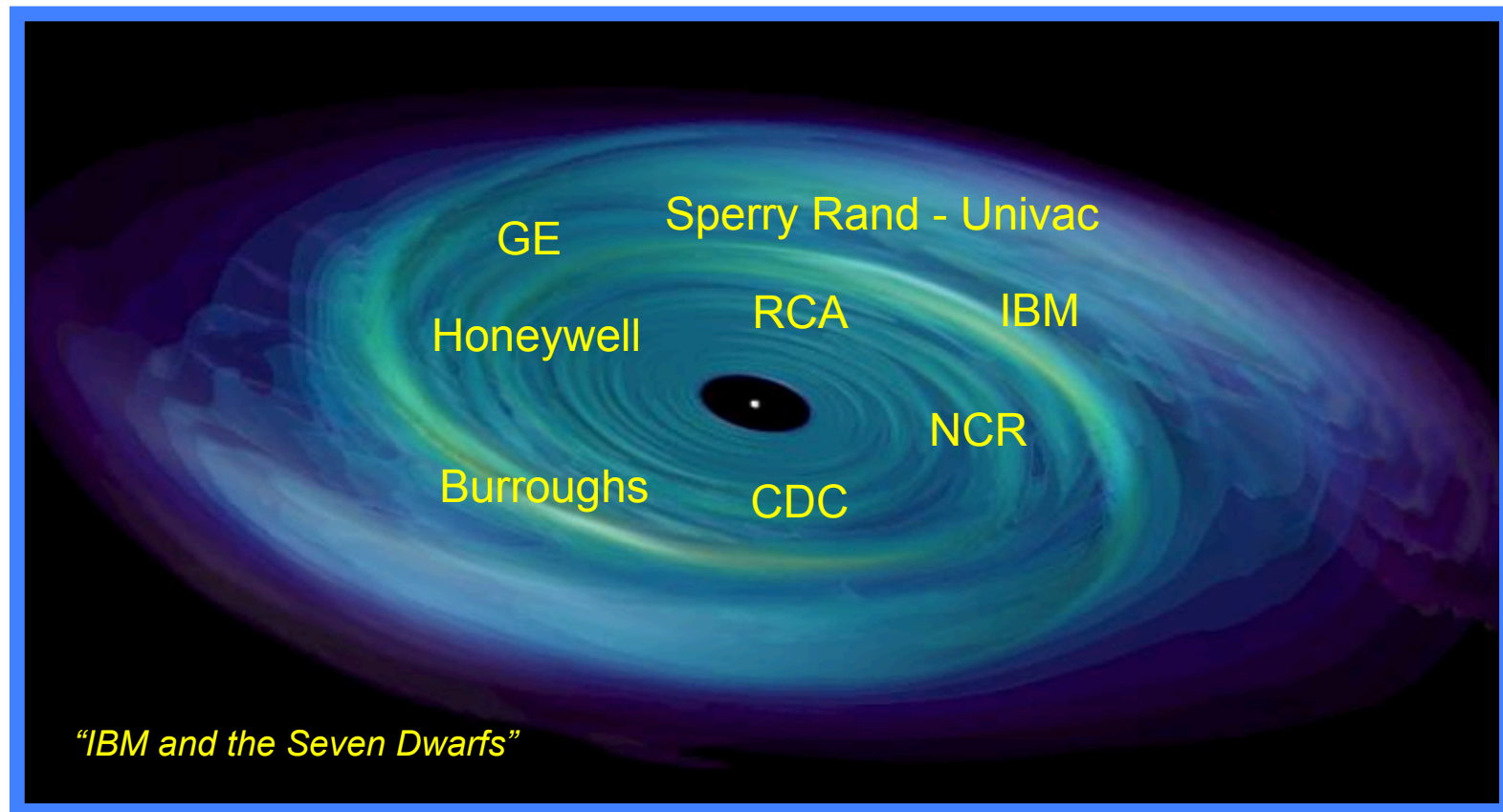| Actors	Billions	Share
IBM	$ 3.7	% 30
HP	3.7	30
Dell	1.9	15
Oracle	.7	6
Fujitsu	.6	5
Others[1]	1.8	15
	12.7	100

[1] Cisco (.3), SGI (.1) and Lenovo

Q3 2011
Data by IDC

5

The Battle for The Server Market

Some Things Old are New Again!

GE

Sperry Rand - Univac
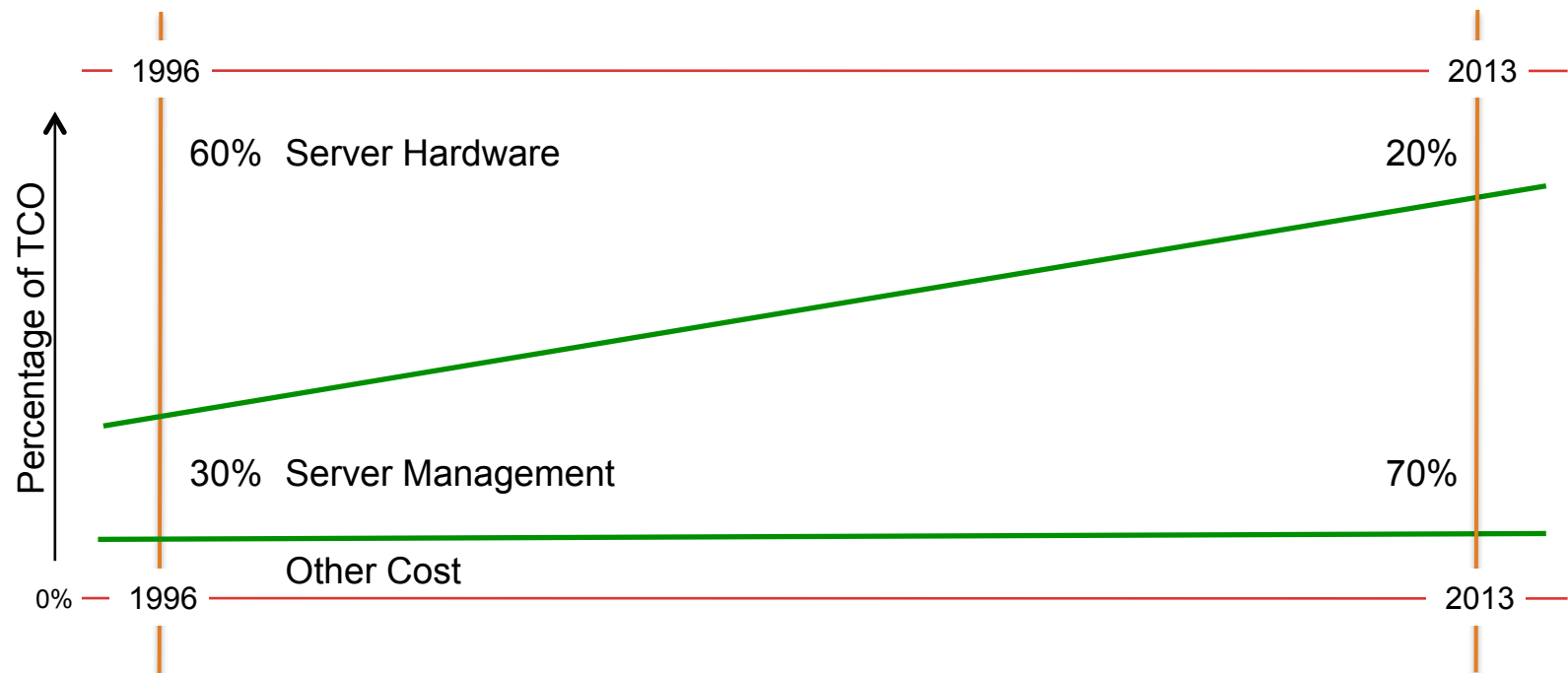
Honeywell

RCA

IBM

NCR

Burroughs

CDC

"IBM and the Seven Dwarfs"

The Battle for The Server Market

The Market's Primary Economic Driver – Total Cost of Ownership - TCO

Source: Dr. John Shedletsky – IBM Technical World – San Francisco – April, 2012

Complete your sessions evaluation online at SHARE.org/AnaheimEval

The Battle for The Server Market

How is the Server Business Doing? – zEnterprise Processors - Hardware

CPC Model	2094	2097	196	Rate	Next
Intro Date	Q2/06	Q1/08	Q3/10	24/30Mth	Q?/12
S/W MSU	2,409	3,739	6,140	+ 60% ↑	9,425
Purchase	$22M	$26M	$29M	+ 14% ↑	$33M
Average	$9.2K	$6.9K	$4.6K	- 30% ↓	$3.5K

Available S/W MSU Up 300%

Cost Per S/W MSU Down 60%

MSUs

8000
7000
6000
5000
4000
3000
2000

Q2/06   Q1/08   Q3/10   Q?/12

Source: http://www.tech-news.com/publib/pl2817.html
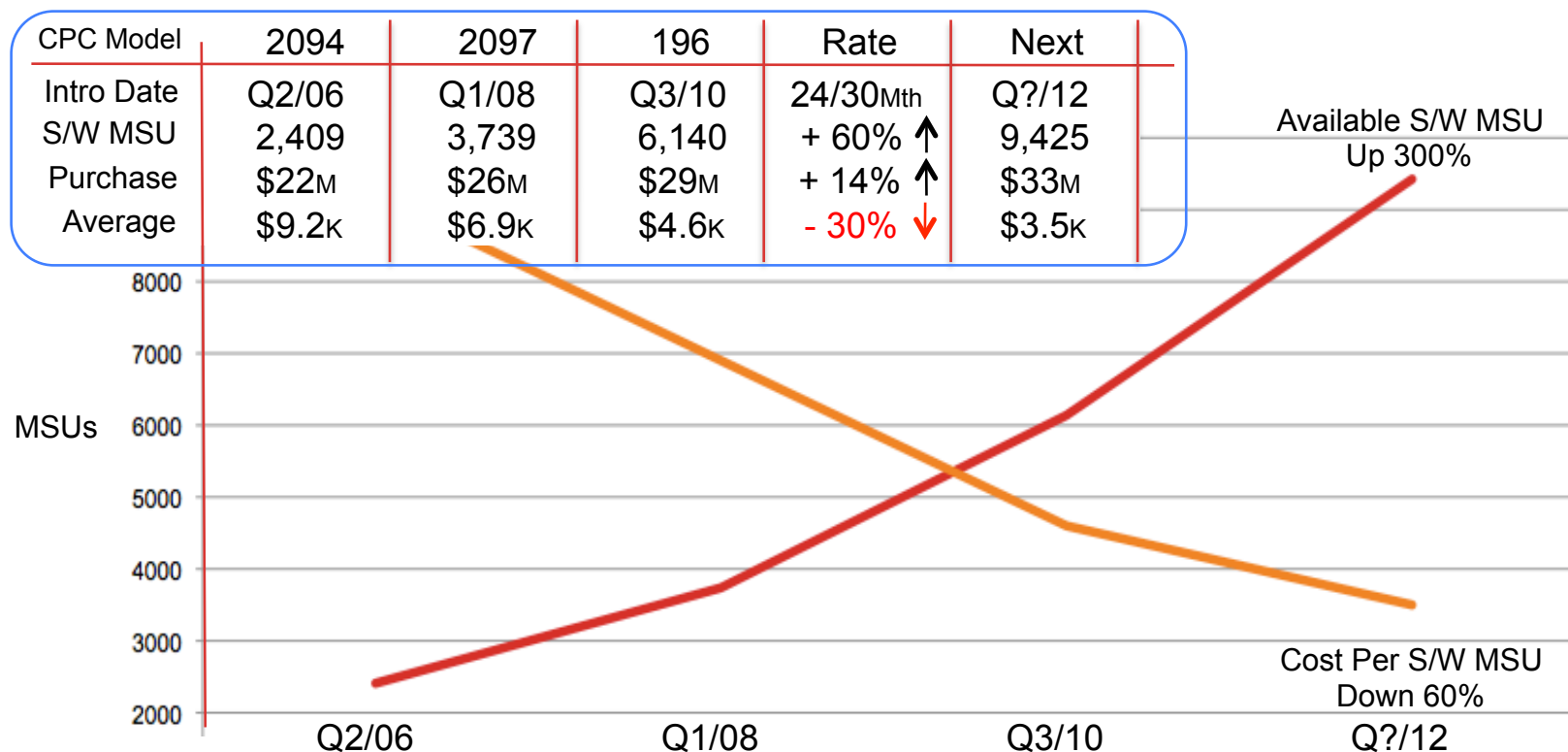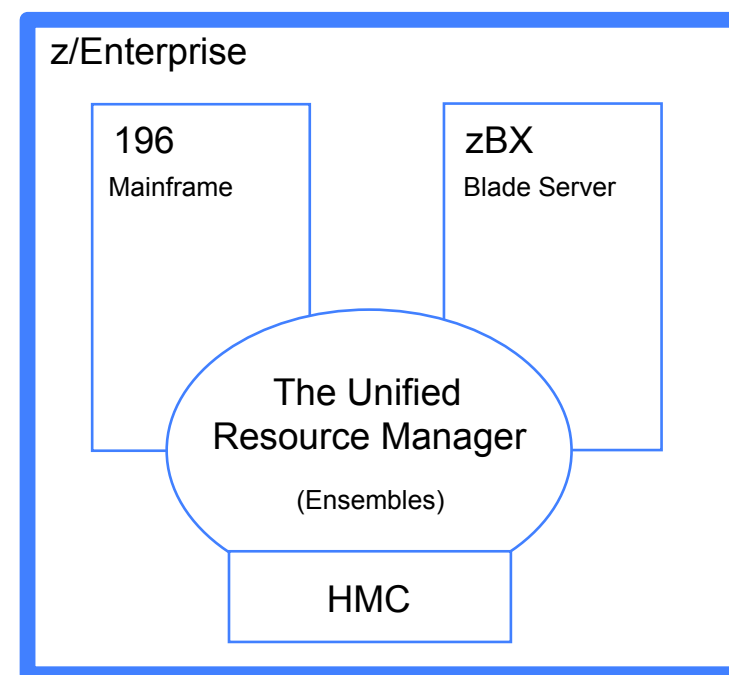
The Battle for The Server Market

How is the Server Business Doing? – Hyper-Scale Servers

❑ Hyper-scale servers are designed for large scale datacenter environments where parallelized workloads are prevalent. The form-factor serves the unique needs of these datacenters with streamlined system designs that focus on:

- Performance
- Energy efficiency
- Platform Density

❑ Hyper-scale servers forego the full management features and redundant hardware components found in traditional enterprise servers as these capabilities are accomplished primarily through software.

z/Enterprise

196
Mainframe

zBX
Blade Server

The Unified
Resource Manager

(Ensembles)

HMC

Starting Q3 2011, IDC began to track the new form-factor called hyper-scale servers.

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The Battle for The Server Market

IBM Server Revenue Growth Rates ($US)
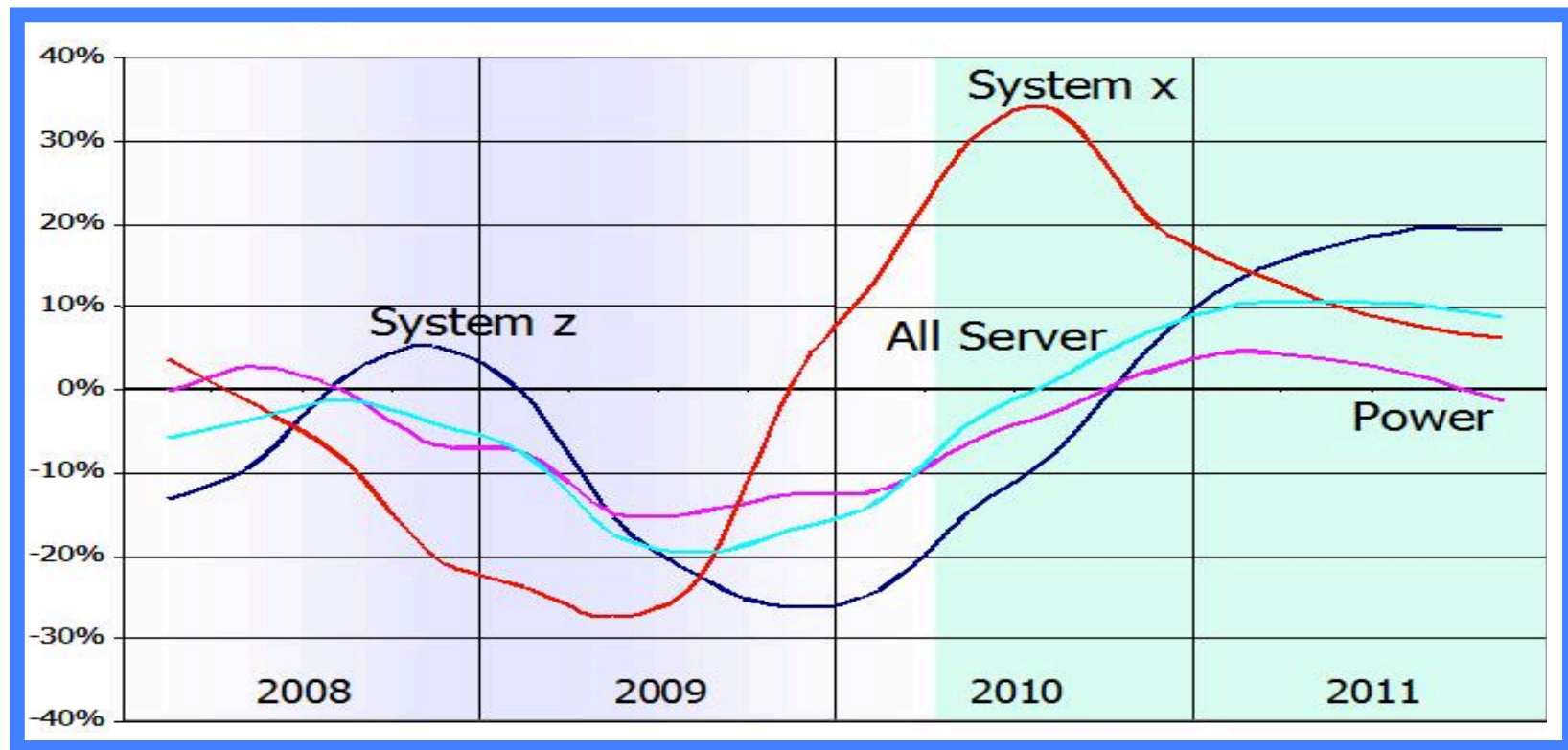
Source: ITCandor, July 2010

The Battle for The Server Market

How is the Server Business Doing? – In 2011 Revenue $53B up 7%

HP (30)	Dell (15)	Oracle (6)	IBM (30)
Down 10% in 2011 and 23% in most recent quarter. Lenovo a Threat? ↓	Still growing but pace has slowed. Large enterprise revenues up 5%. ↑	Shrinking, plan to give up on unprofitable businesses. ↓	High-end leader, business very profitable. Growth is modest. ↑

How is the Server Business Doing? – The Market Going Forward

☑ Slowing Growth
☑ Falling Margins
☑ Share gains for low-cost providers
☑ Questionable Macroeconomic Trends

Source: Financial Times – Friday, June 1, 2012 – Reporting on Gartner Group Findings
*(xx)Percentage Market Share – Q3 2011 - IDC*

The Battle for The Server Market

IBM zEnterprise Server Running z/OS – $4 Billion ($US) – Mixed Growth Rate

❏ After four consecutive quarters of growth driven by strong demand for IBM's zEnterprise mainframes, revenue for System z Servers running z/OS declined 4.5% year over year to $970 million representing 7.6% of all server revenue in Q3 2011.

❏ IDC continues to believe that weakening macroeconomic conditions around the world will serve to further moderate demand for new servers in 2012.
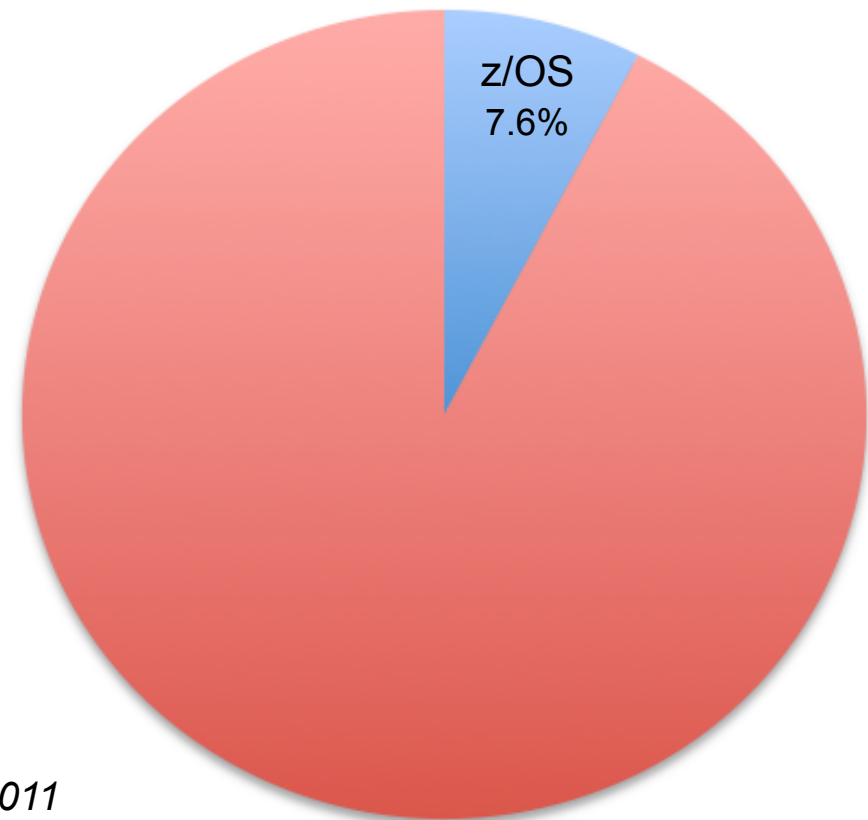
Source: IDC - Market Share Analysis – Q3 2011

z/OS
7.6%

The Battle for The Server Market

How is the Server Business Doing? – Mainframe vs. Distributed Computing

Industry	RGU*	Mainframe	Distributed	% Difference
Retail	*Location*	$ 421,346.000	$ 560,300.000	24.7 ↓
Auto	*Vehicle*	275.000	370.000	25.7 ↓
Banking[1]	*Transaction*	.120	.350	65.7 ↓
Web	*Click-Through*	.046	.041	12.2 ↑

* RGU = Revenue Generating Unit

[1] Of the World's 60 Largest Banks, 59 use Mainframe running z/OS

Source: Dr. John Shedletsky – IBM Technical World – Reporting on Gartner Group Findings

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The Battle for The Server Market

How is the Server Business Doing? – The Actors – Current Standing

Metric	IBM	HP	Oracle	Dell
Share Price	190.00	21.50	27.00	12.00
EPS	13.42	2.58	1.90	1.76
PE Ratio	14.1	8.4	14.0	6.9
Total Shares	1,153M	2,000M	5,128M	1,796M
Market Cap	218,000M	42,900M	134,200M	21,800M
	100%	19%	62%	10%

www.nasdaq.com - Financial Results – IBM, HPQ, ORCL, DELL

The Battle for The Server Market

How is the Server Business Doing? – Prepared for the Next Engagement

Total Revenue - $US-Billions

	IBM	HP	Oracle	Dell
2011	106	127	35	62
2010	99	126	26	61
2009	95	114	23	52
2008	103	118	22	61

Percentage Cash to Current Liabilities:

	IBM	HP	Oracle	Dell
2011	28	16	203	67
2010	29	22	126	74
2009	39	31	138	58
2008	30	19	110	61

Pre-Tax Margin Percentage:

	IBM	HP	Oracle	Dell
2011	20	7	32	7
2010	20	9	31	5
2009	14	8	34	4
2008	16	9	35	5

Pre-Tax Return on Equity Percentage:

	IBM	HP	Oracle	Dell
2011	104	23	29	48
2010	86	27	27	43
2009	80	23	31	36
2008	124	27	34	78

www.nasdaq.com - Financial Results – IBM, HPQ, ORCL, DELL

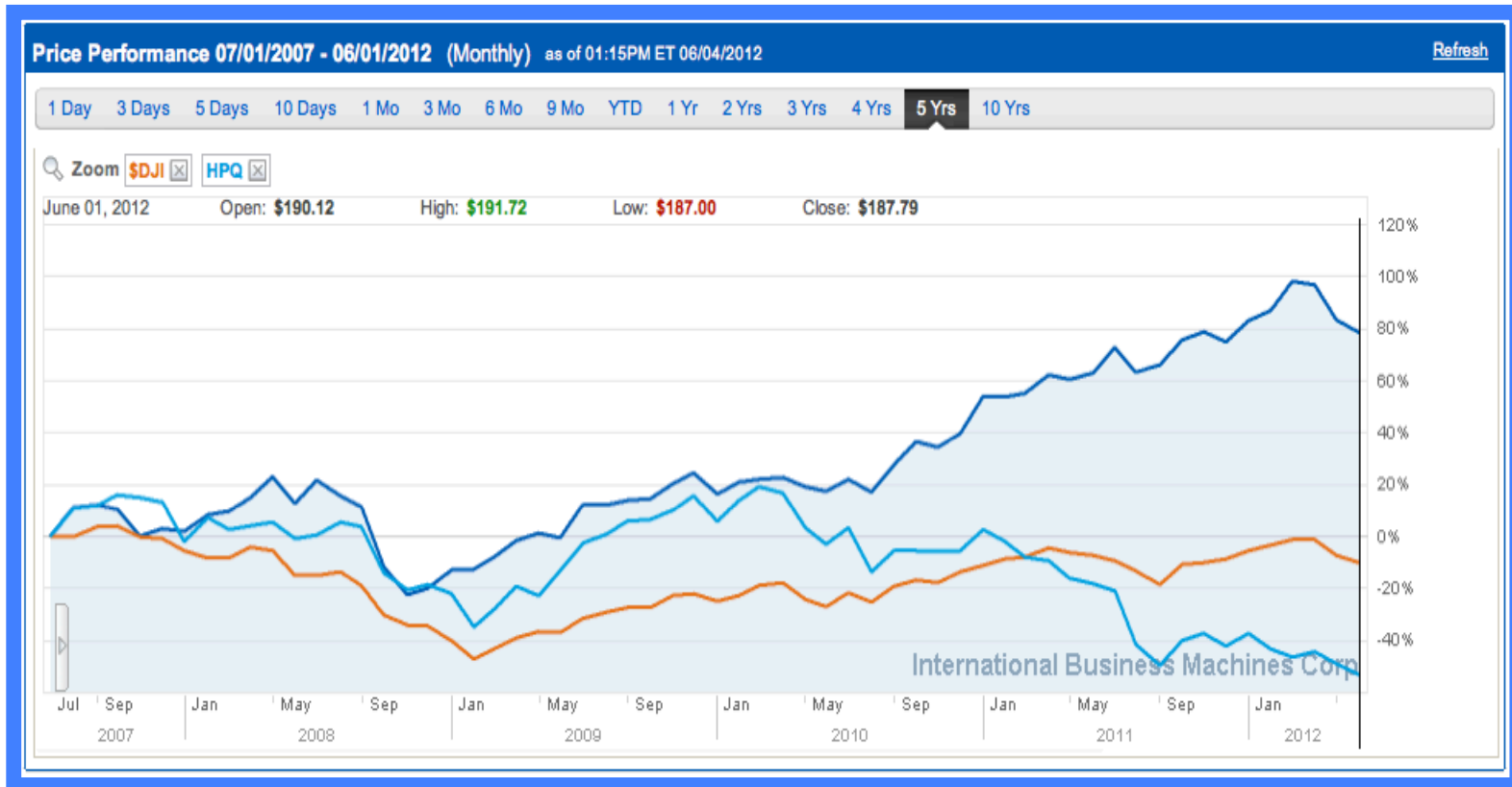# The Battle for The Server Market

How is the Server Business Doing? – Public Market Recognition

The Battle for The Server Market

How is the Server Business Doing? – Public Market Recognition
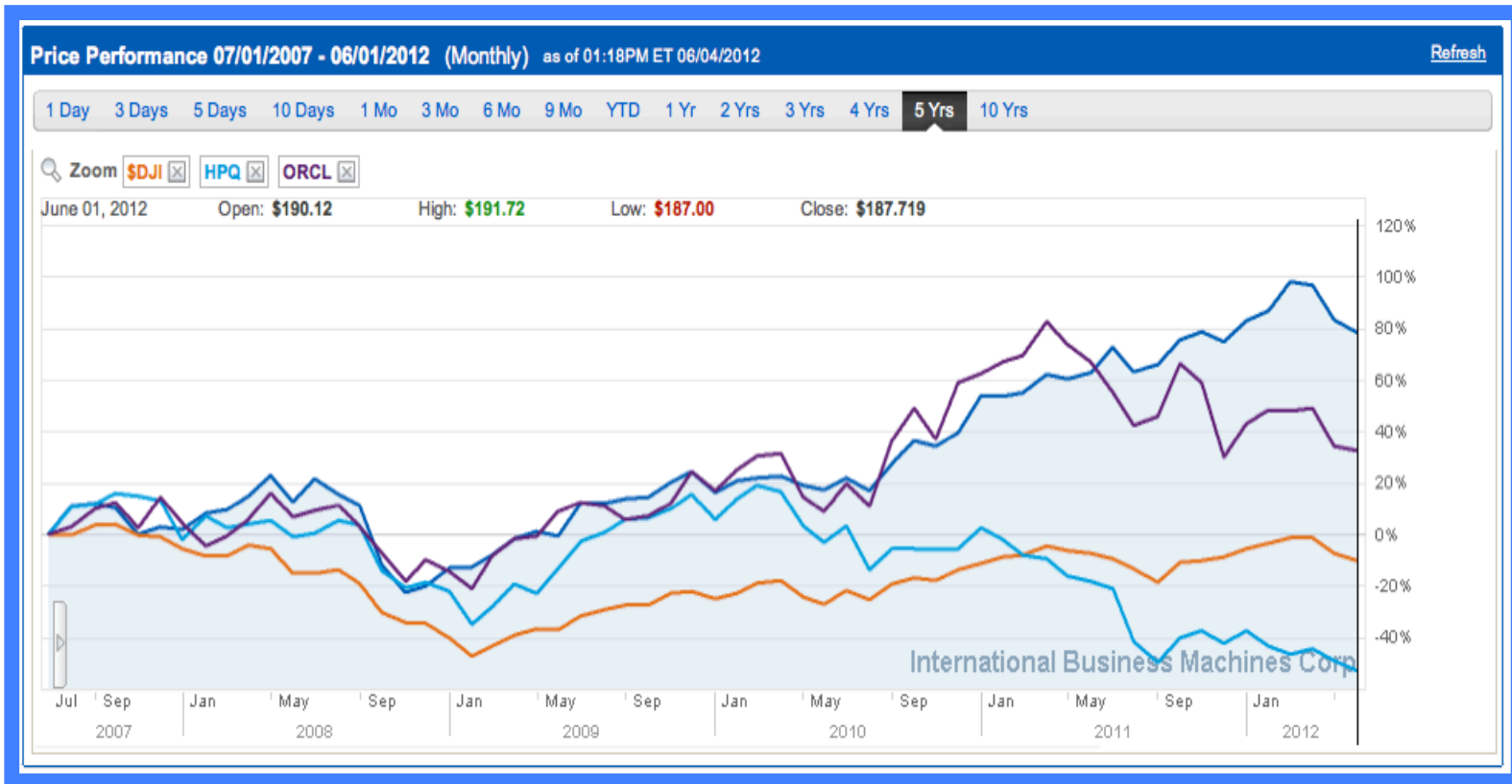
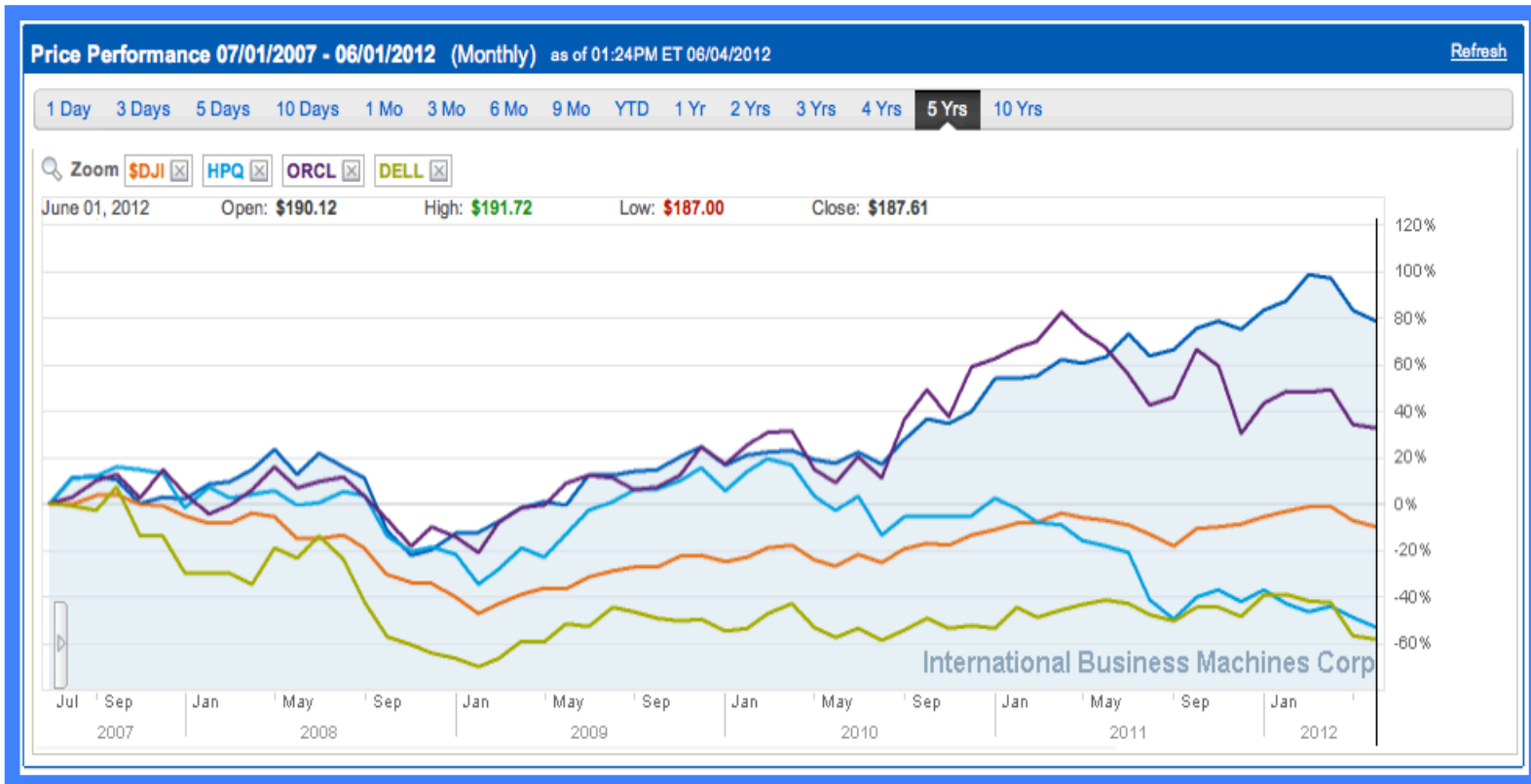# The Battle for The Server Market

How is the Server Business Doing? – Public Market Recognition

The Battle for The Server Market

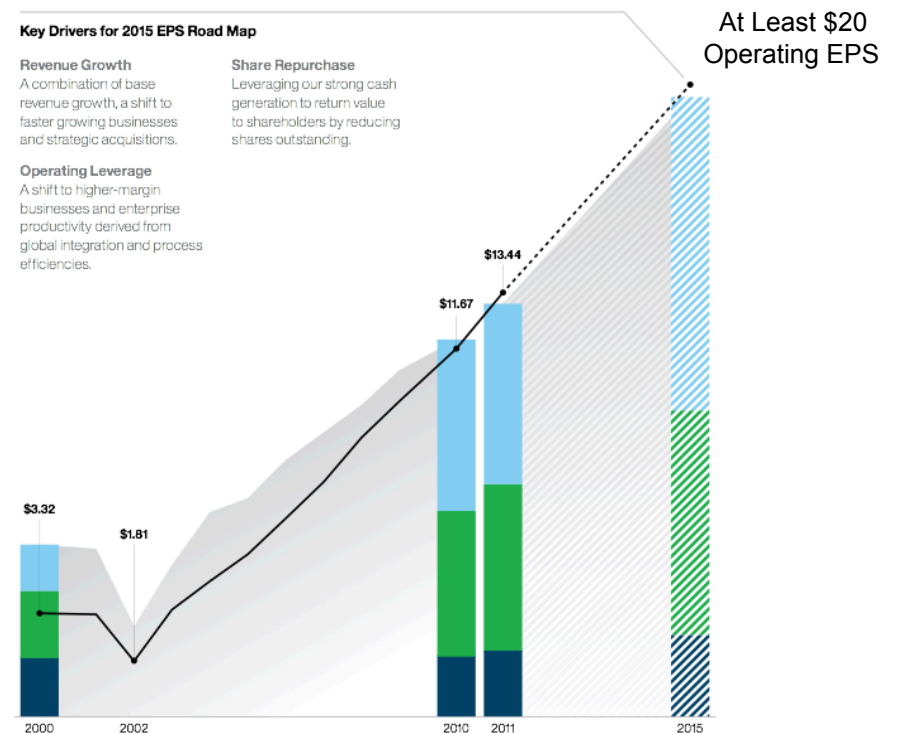*How is the Server Business Doing? – Public Market Recognition*

The Battle for The Server Market

How is the Server Business Doing? – Your New Best Friends!

Virginia M. Rometty, President and CEO
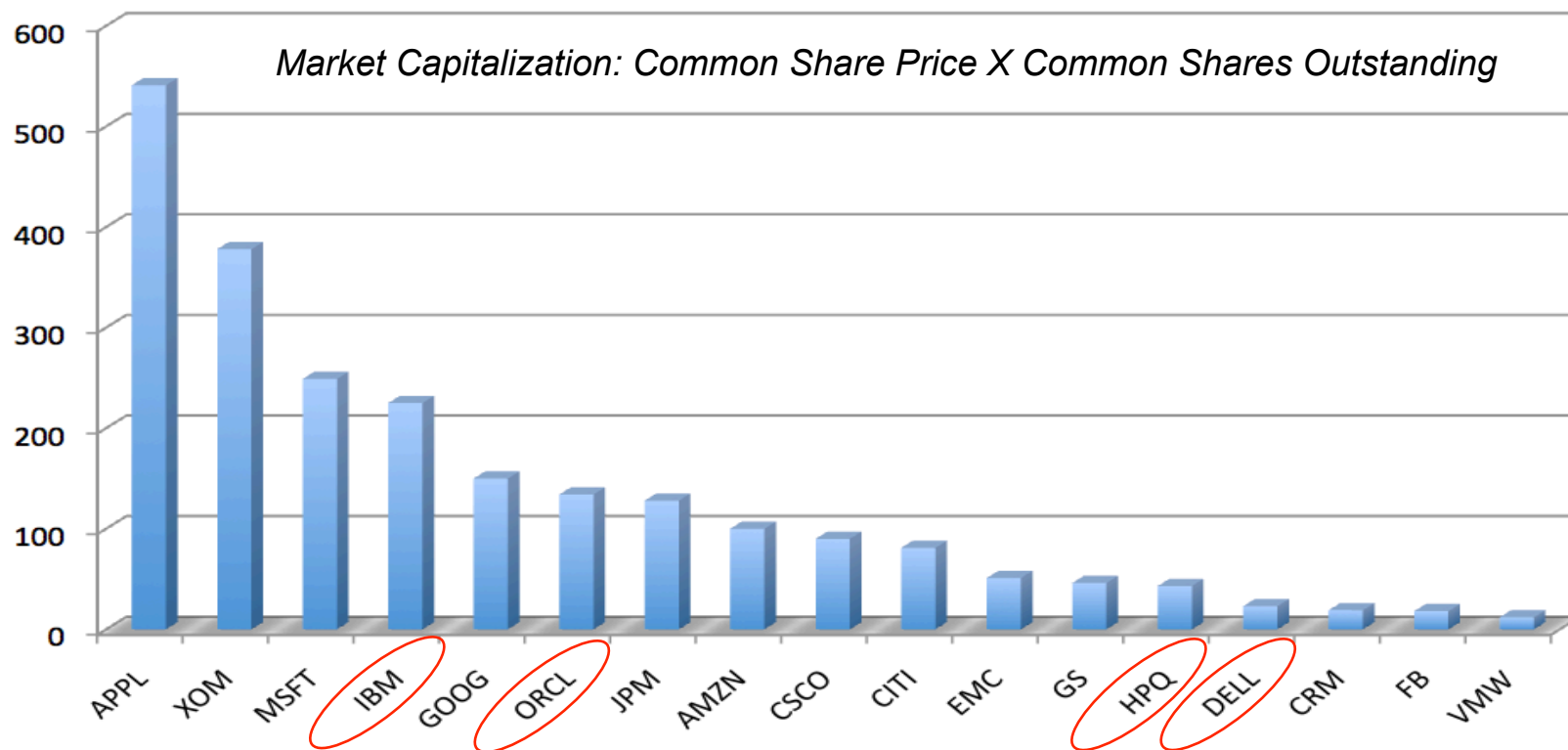Samuel J. Palmisano, Chairman of the Board

Source: IBM 2011 Annual Report - http://www.ibm.com/investor/pdf/2011_ibm_annual.pdf

The Battle for The Server Market

How is the Server Business Doing? – New Challenges Ahead?

Market Capitalization: Common Share Price X Common Shares Outstanding

www.nasdaq.com - Financial Results – APPL,XOM,MSFT,IBM,GOOG,ORCL,JPM,AMZN, CSCO, CITI,EMC,GS,HP,DELL,CRM,FB,VMW

The Battle for The Server Market

The Market's Primary Economic Driver – Total Cost of Ownership - TCO

The Bottom Line – Server Management = 70%

	1996	2013
Server Hardware	60%	20%
Server Management	30%	70%
Other Cost		

Percentage of TCO (vertical axis, 0% to top)

Tools

TCO
(Total Cost of Ownership)

Power   **Space**

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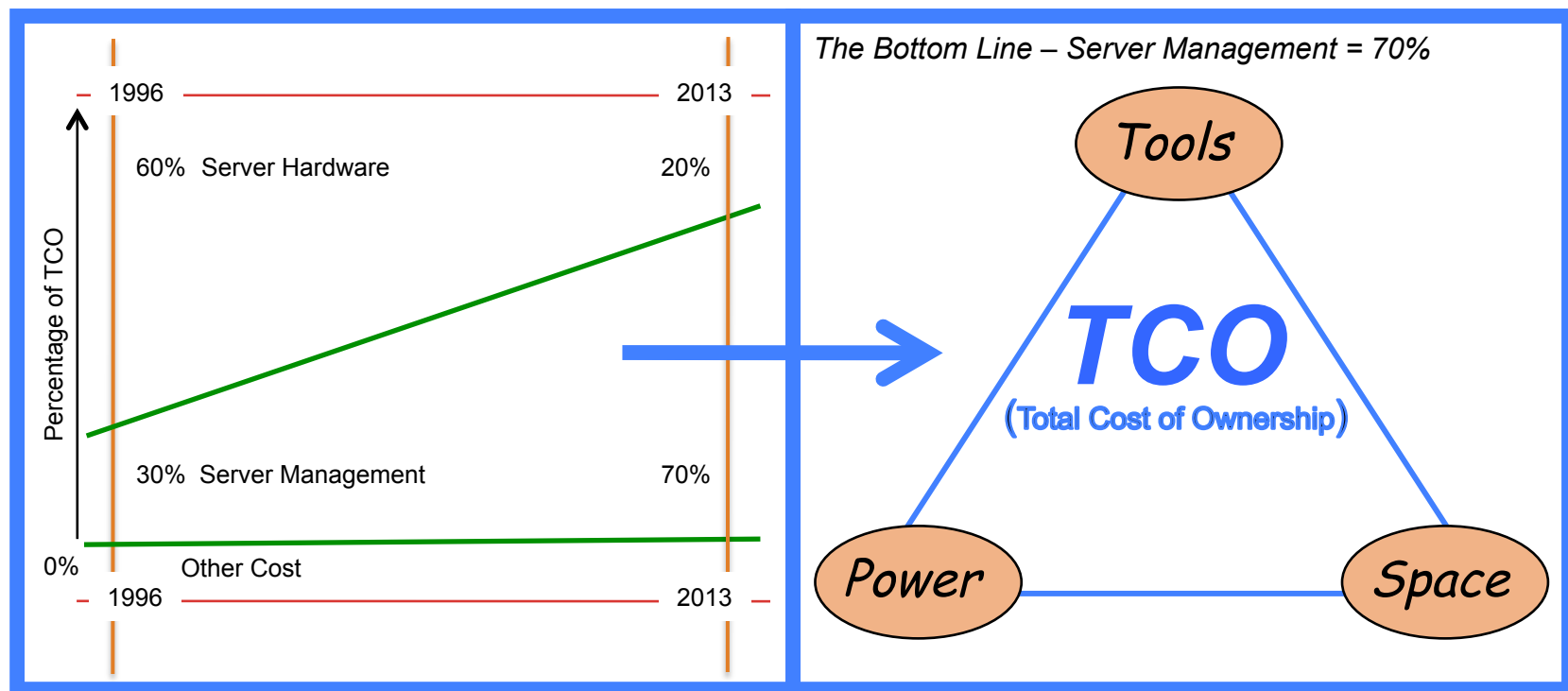
Next Generation of z/OS Tools

How is the Server Business Doing? – zEnterprise Processors - Software

❑ On October 4, 2006 IBM announced, in a press release, a $100 Million System z Platform Simplification Initiative. This announcement, in part the z/OS V1R8 introduction, foretold the coming of the Next Generation of z/OS Management tools.

❑ These Next Generation Tools appear to have the following positive attributes:

- ✓ Low or No Cost Entry Points
- ✓ Predictive Analytics
- ✓ Making Sense out of z/OS Events

❑ Many of these roll out as incremental enhancements to the Base Control Program.

Topical Area	Total	V1R13			V1R12		
		Add	Del	Chg	Add	Del	Cng
IPL Unit Address	3	1	-	2	-	-	-
IPL Parms - LOADxx	1	-	-	-	1	-	-
ParmLib Members	5	2	-	-	2	1	-
ParmLib Keywords	45	22	1	-	21	1	-
TCP/IP Components	17	10	-	-	7	-	-
JES2	7	2	-	1	1	-	3
JES3	5	1	-	3	-	-	1
VTAM	14	-	-	1	12	-	1
CICS - SIT and CSDS	13	1	-	4	1	-	7
DB2	1	1	-	-	-	-	-
Health Checker	39	16	-	-	23	-	-
HCD/HCM	8	6	-	-	2	-	-

Source: NewEra White Paper - A Brief Look at What's New in V1R12 and/or V1R13 – 9/01/2011
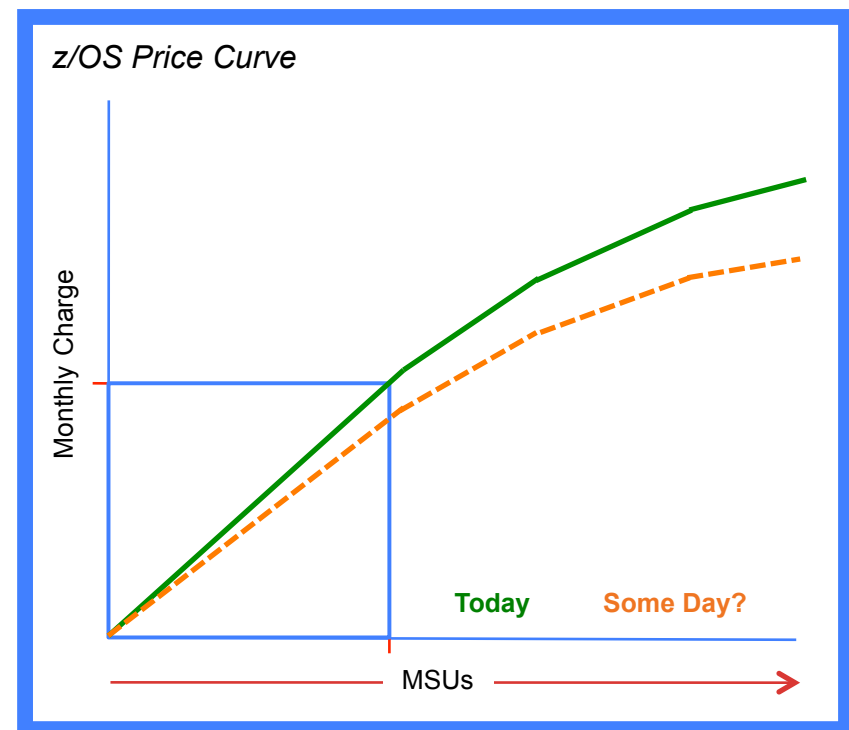
Next Generation of z/OS Tools

The Next Generation – "The Elephant in the Room"

❑ z/OS and its chargeable components can be relatively costly.

	500MSU	700MSU
z/OS [1]	$ 103,811	$ 122,286
NetView	15,890	19,430

[1] z/OS = BCP, UNIX System Services & XML
BCP = Base Control Program (sometimes called MVS)

z/OS Price Curve

Monthly Charge

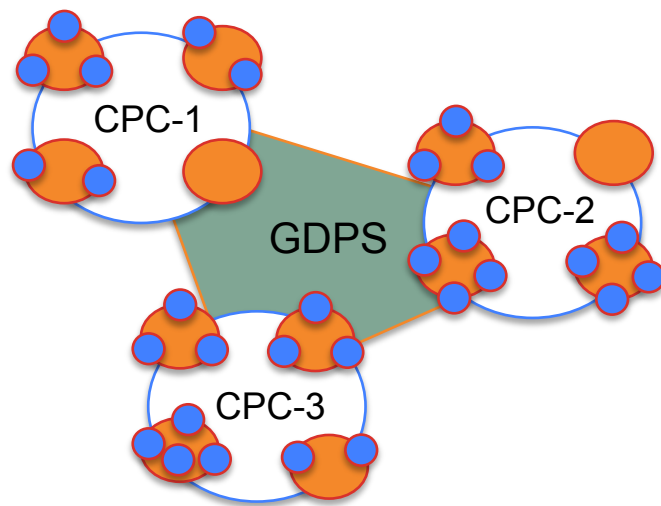**Today**   **Some Day?**

MSUs

Source: David Chase – IBM Technical World – Session zZS16 – zSoftware Pricing

Next Generation of z/OS Tools

The Next Generation – Can You Really Afford Plan "A"?

CPC-1

GDPS

CPC-2

CPC-3

GDPS: Geographically Disbursed Sysplex
CPC: Central Processing Complex

Total Cost of Tool Deployment - Lpars

Plan "A"

Plan "B"
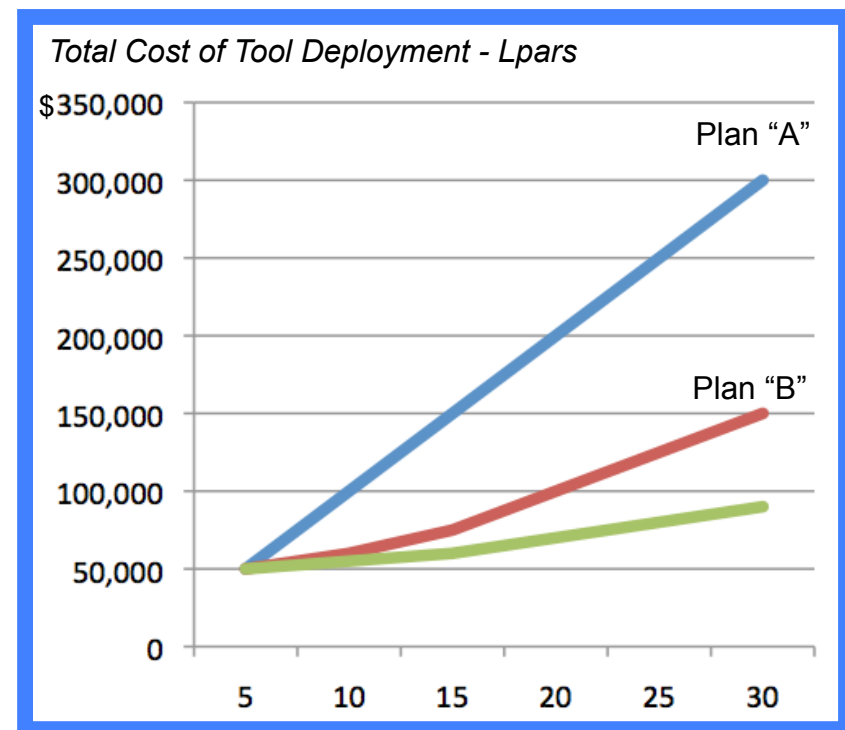
Next Generation of z/OS Tools

The Next Generation – Can You Wait for Problem to Happen?

History	*Real-time*	*Future*
❑ Data Collection ❑ Event Filtering ❑ Post-Processing ❑ Reporting	❑ Data Collection ❑ Discrimination ❑ Recognition ❑ Notification	❑ Data Collection ☑ Predictive Analytics ❑ Recognition ❑ Notification
Passive	*Reactive*	*Proactive*

Negative Assurance   *Positive Assurance*

Times Arrow
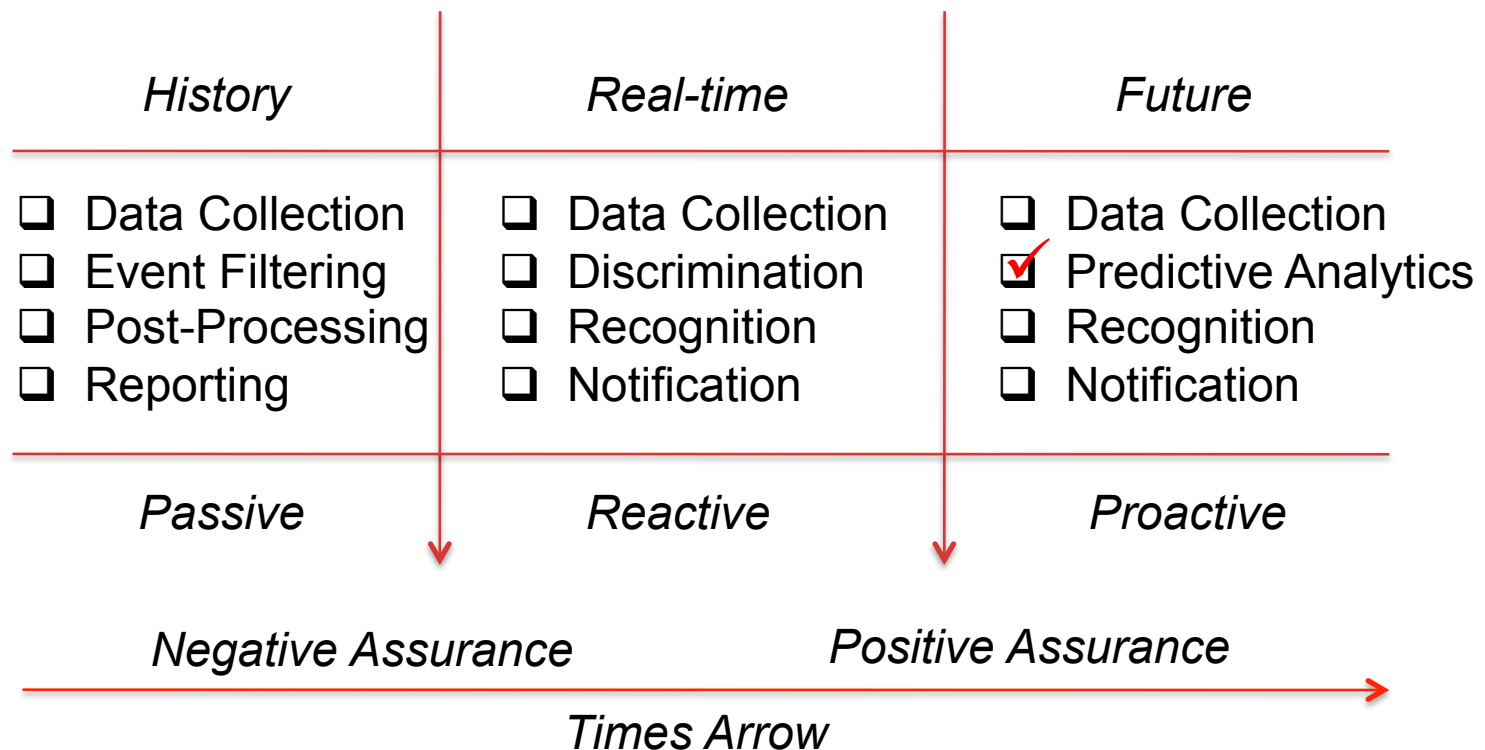
Next Generation of z/OS Tools

The Next Generation – How Will You Make Sense of it All?
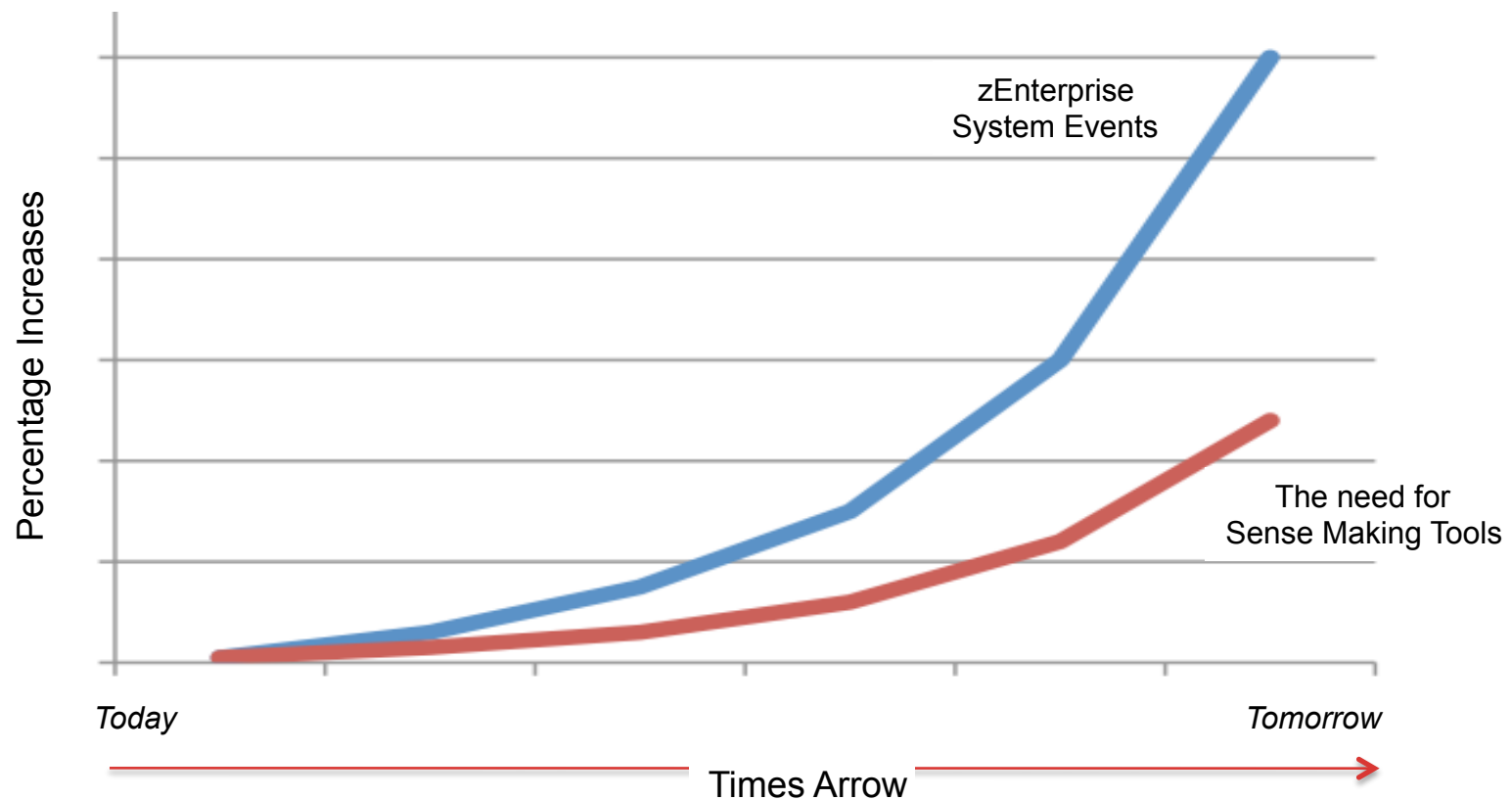
Next Generation of z/OS Tools

The Next Generation – Consider Adopting the Following:

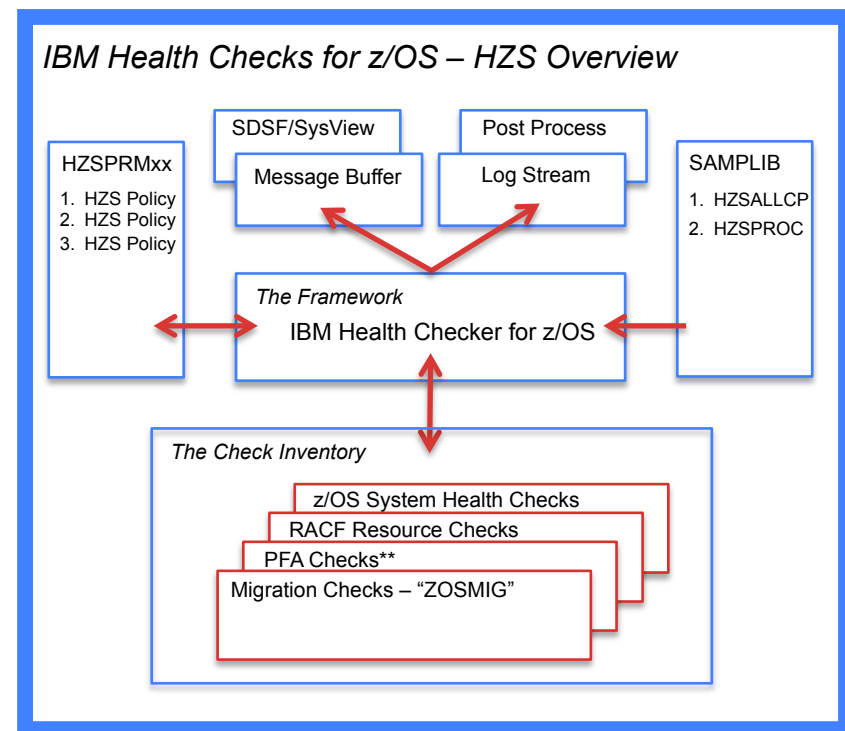| A Shortlist of Candidates	Little or No Cost	Predictive Analysis	Make Sense
❑ IBM Health Checker for z/OS – HZS – V1R8	?	?	?
❑ Unified Resource Manager – URM – V1R12	?	?	?
❑ z/OS Management Facility – z/OSMF – V1R11	?	?	?
❑ AUTORxx - ParmLib Member – V1R13	?	?	?
❑ Runtime Diagnostics – RTD – V1R13	?	?	?
❑ Policy Management Agent – PAGENT	?	?	?
❑ *DSNTXAZP – A DB2 Utility – V1R13*	?	?	?

Next Generation of z/OS Tools

The IBM Health Checker for z/OS - On Every z/OS LPAR - It's Free!

❑ IBM Health Checker for z/OS provides a foundation to help simplify and automate the identification of potential configuration problems before they impact system availability. It consists of the following:

▪ The framework manages functions such as check registration, messaging, scheduling, command processing, logging, and reporting.

▪ Check Objects are provided separately by IBM and others and independent of the framework and designed to evaluate z/OS settings and Definitions.

IBM Health Checks for z/OS – HZS Overview

SDSF/SysView	Post Process

HZSPRMxx	Message Buffer	Log Stream	SAMPLIB
1. HZS Policy			1. HZSALLCP
2. HZS Policy			2. HZSPROC
3. HZS Policy			

The Framework
IBM Health Checker for z/OS

The Check Inventory

z/OS System Health Checks
RACF Resource Checks
PFA Checks**
Migration Checks – "ZOSMIG"

Source: IBM Health Checker for z/OS V1R13 User's Guide - SA22-7994-12

Next Generation of z/OS Tools

The IBM Health Checker for z/OS - On Every z/OS LPAR - It's Free!

IBM Health Checks for z/OS – The Check Inventory
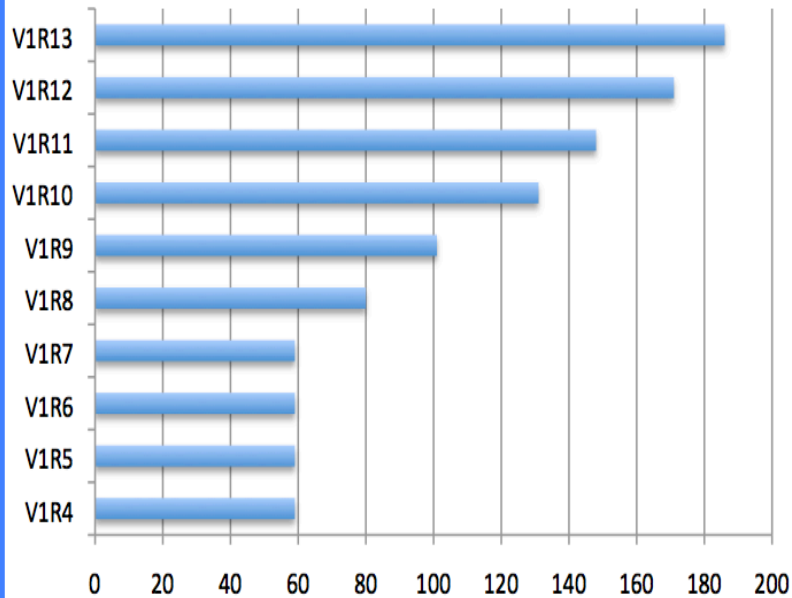
IBM Health Checks for z/OS – As an Interval Monitor

Remediation Certification

Process Automation

Standardized Reporting

Corrective Actions

z/OS System Standards

Critical Review

Remediation Alternatives

Problem Assignment

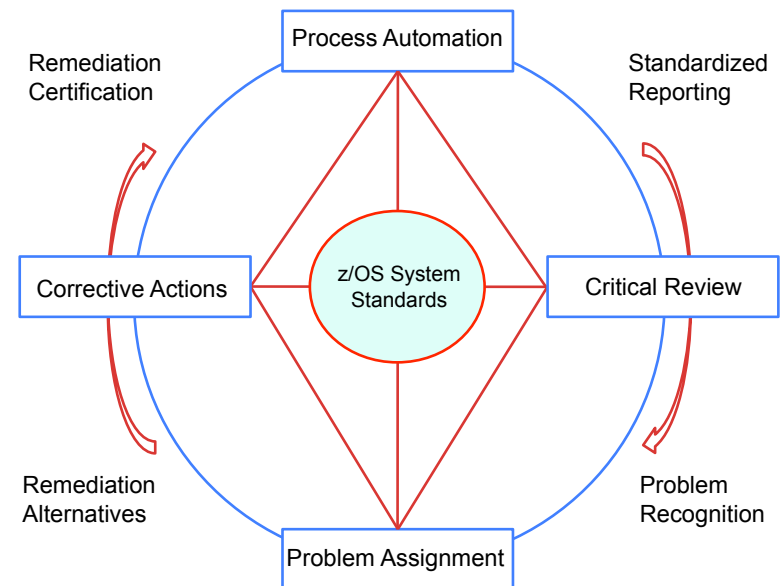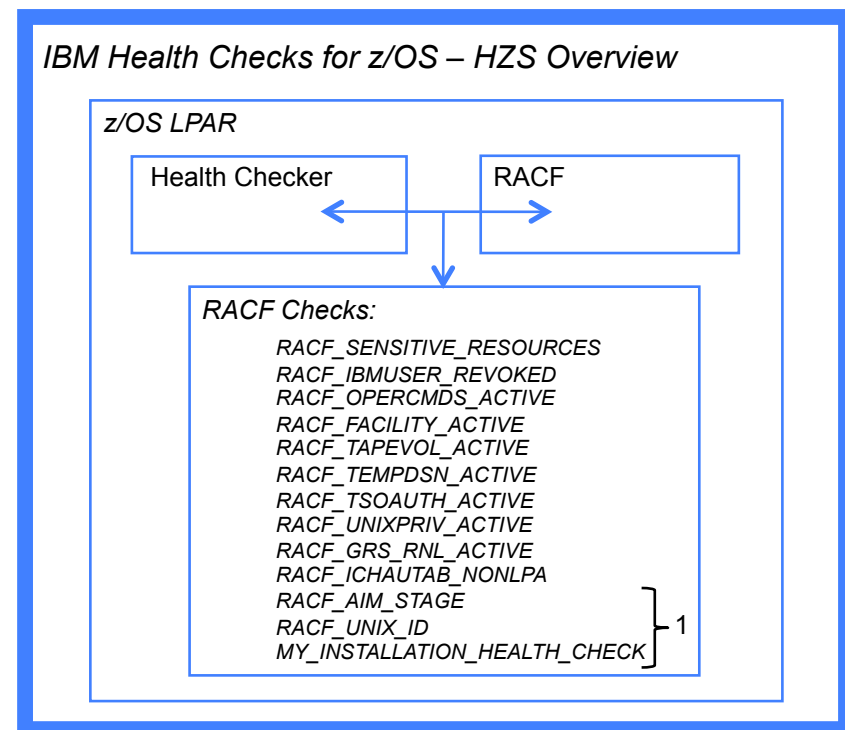Problem Recognition

Next Generation of z/OS Tools

The IBM Health Checker for z/OS - On Every z/OS LPAR - It's Free! - RACF

❑ All information systems and those based on the z/OS operating system must be continuously monitored in an effort to validate their conformity with established standards. Such standards are often times derived from Common Sense, Best Practices, Personal Preference, as well as vendor recommendations. The latter is true for RACF focused z/OS Health Checks.

❑ The IBM Health Checker for z/OS helps to improve zEnterprise integrity and security and, at the same time, reduce the overall total cost of zEnterprise Ownership (TCO).

IBM Health Checks for z/OS – HZS Overview

z/OS LPAR

Health Checker → ← RACF

RACF Checks:

RACF_SENSITIVE_RESOURCES
RACF_IBMUSER_REVOKED
RACF_OPERCMDS_ACTIVE
RACF_FACILITY_ACTIVE
RACF_TAPEVOL_ACTIVE
RACF_TEMPDSN_ACTIVE
RACF_TSOAUTH_ACTIVE
RACF_UNIXPRIV_ACTIVE
RACF_GRS_RNL_ACTIVE
RACF_ICHAUTAB_NONLPA
RACF_AIM_STAGE
RACF_UNIX_ID
MY_INSTALLATION_HEALTH_CHECK }1

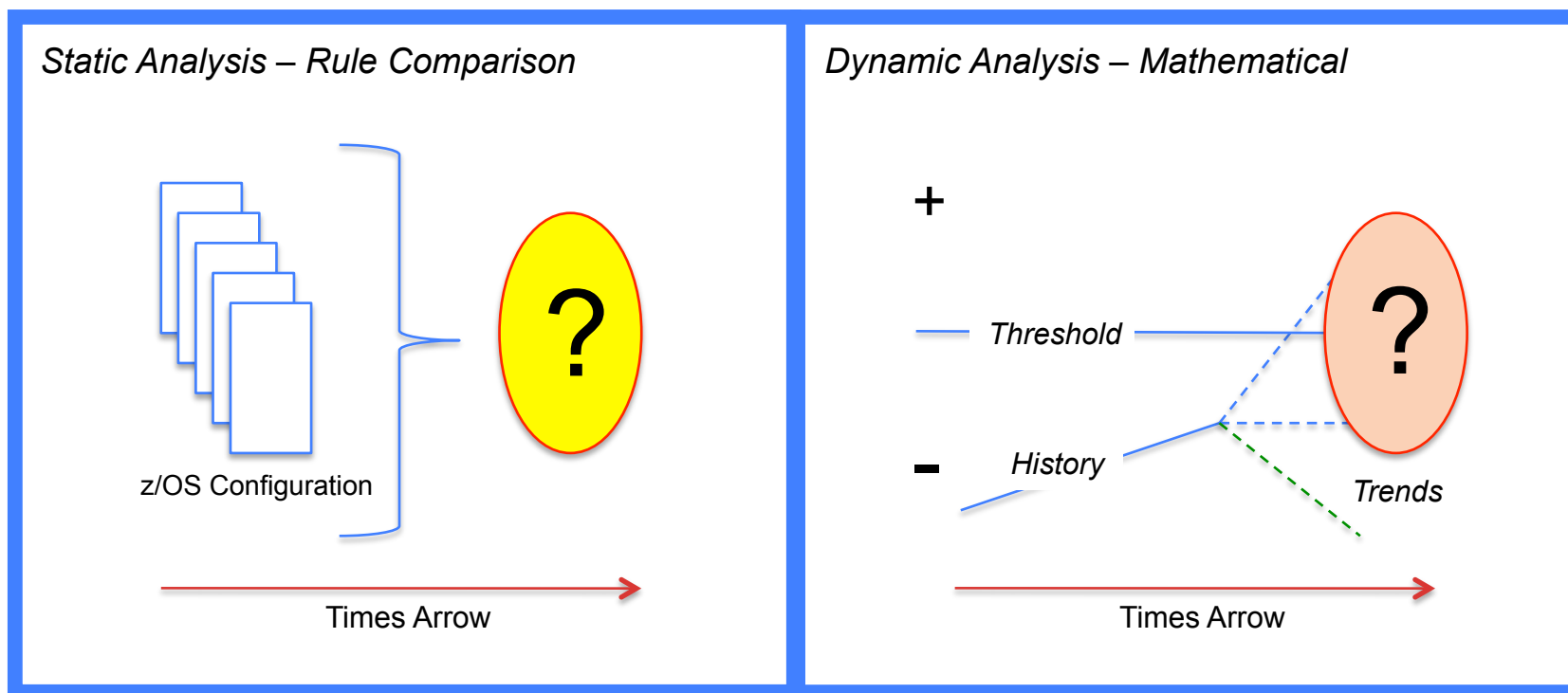*Source: IBM Health Checker for z/OS V1R13 User's Guide - SA22-7994-12*
Mark Nelson, z/OS Security Server (RACF) Design and Development - APAR OA37164 [1]

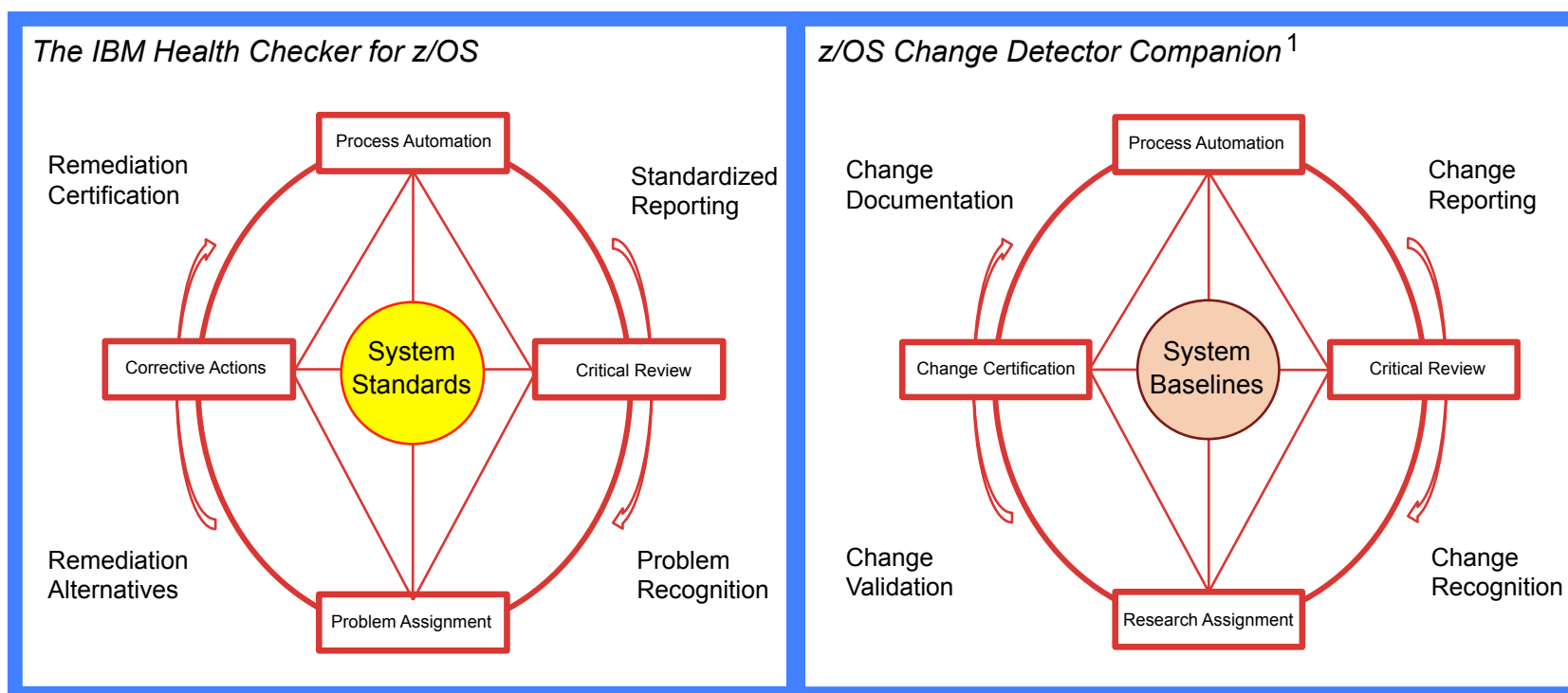# Next Generation of z/OS Tools

The IBM Health Checker for z/OS - Predictive Failure Analysis (PFA)

Static Analysis – Rule Comparison

z/OS Configuration

Times Arrow

Dynamic Analysis – Mathematical

+

Threshold

–

History

Trends

Times Arrow

Next Generation of z/OS Tools

The IBM Health Checker for z/OS – A Model for Companion Tools

The IBM Health Checker for z/OS

Remediation Certification
Standardized Reporting
Process Automation
Corrective Actions
System Standards
Critical Review
Remediation Alternatives
Problem Recognition
Problem Assignment

z/OS Change Detector Companion [1]

Change Documentation
Change Reporting
Process Automation
Change Certification
System Baselines
Critical Review
Change Validation
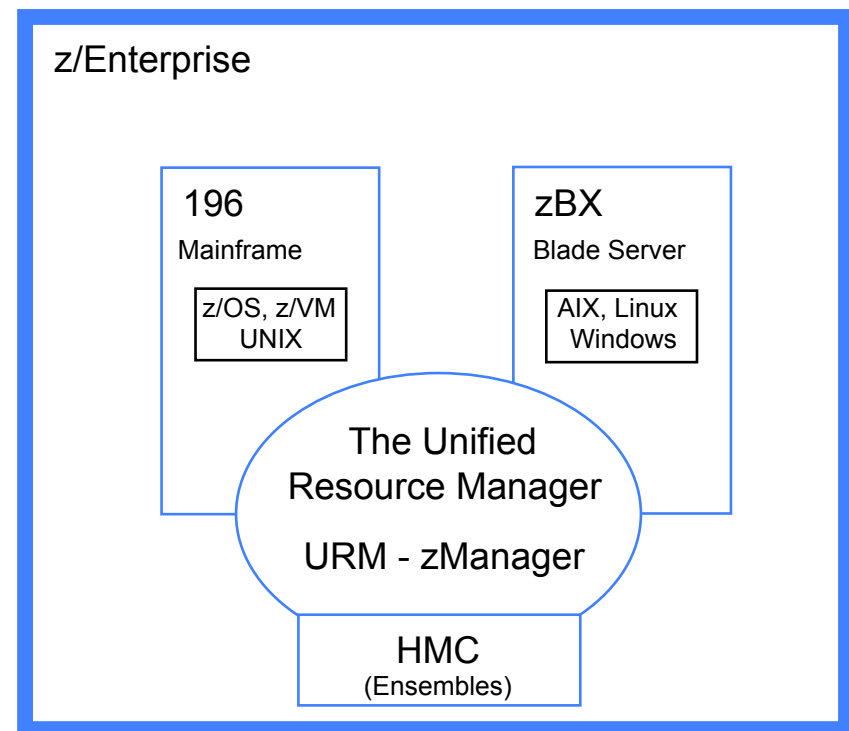Change Recognition
Research Assignment

[1] *Other Functions: Nanny Management, Notification and other Event Based Actions*

Next Generation of z/OS Tools

The Unified Resource Manager (URM) - V1R12 - Ensembles

❑ The integration of a hardware platform that brings mainframe and distributed technologies together will, over time, replace individual islands of computing. These integrated resources are called Ensembles.

❑ Each Ensemble will be managed as a single, logical "Virtualized" system by the URM, through the HMC. The HMC will create and manage ensemble resources.

❑ Some of the benefits of the ensemble:

    ✓ Reduction of complexity
    ✓ Improve security
    ✓ Applications closer to needed data.

z/Enterprise

196 Mainframe — z/OS, z/VM UNIX

zBX Blade Server — AIX, Linux Windows

The Unified Resource Manager

URM - zManager

HMC (Ensembles)

Source: zEnterprise Unified Resource Manager: Building an Ensemble, SG24-7921-00

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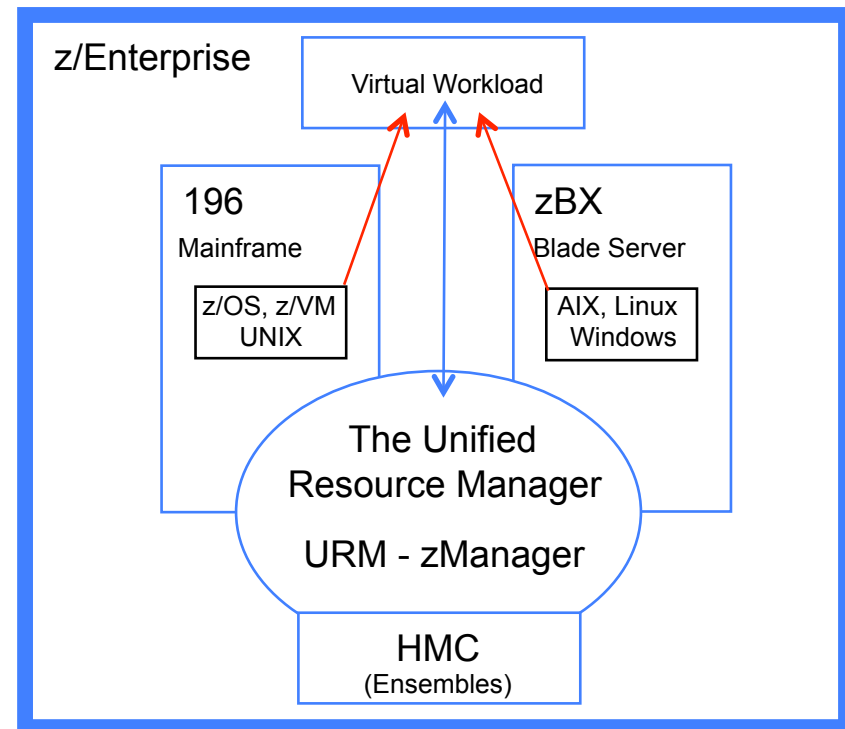2012

Next Generation of z/OS Tools

The Unified Resource Manager (URM) - V1R12 - Ensembles

❑ The zEnterprise Ensemble is a highly virtualized heterogeneous system that can be managed as a single logical entity and where heterogeneous workloads can be deployed. Some characteristics of an ensemble are:

✓ A CPC, with/without zBX, is called a node.
✓ An ensemble can contain one to eight nodes.
✓ A node can be in only one ensemble.
✓ Dedicated net for management and data.

❑ An ensemble is managed as a single system by the Hardware Management Console (HMC). The HMC is used to create/manage ensemble resources.

z/Enterprise

Virtual Workload

196 Mainframe

z/OS, z/VM UNIX

zBX Blade Server

AIX, Linux Windows

The Unified Resource Manager

URM - zManager

HMC (Ensembles)

Source: zEnterprise Unified Resource Manager: Building an Ensemble, SG24-7921-00
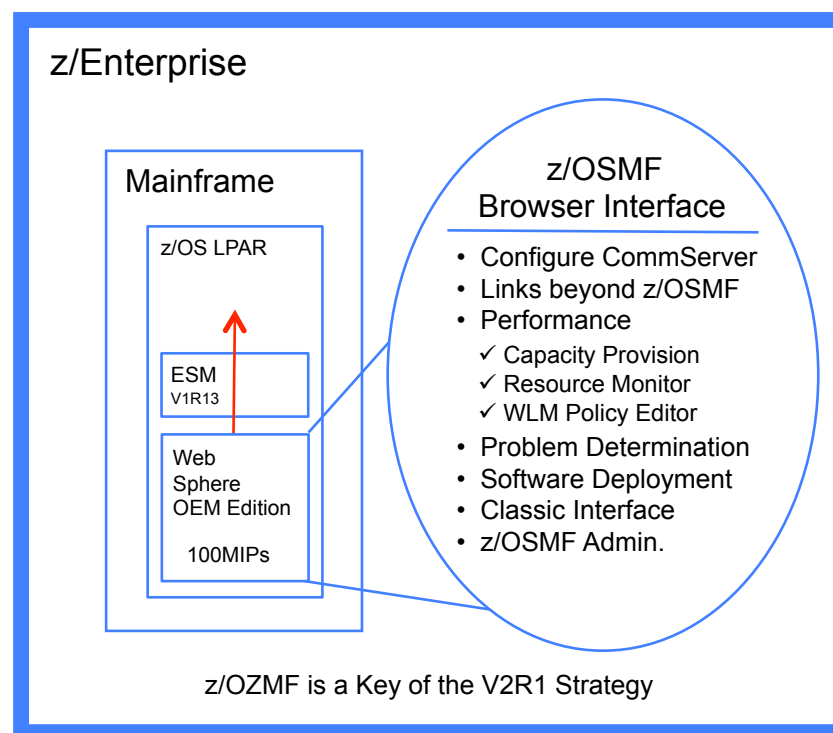
Next Generation of z/OS Tools

z/OS Management Facility (z/OSMF) - V1R11 - The z/OS Easy Button

❑ The many z/OS interfaces (including HCM) that are available are foreign to users new to platform. In most cases, manual tasks require extensive documentation and require years of z/OS experience to be productive.

❑ z/OSMF is a WEB 2.0 based application on z/OS with direct access to z/OS data and information, and a secure browser interface from the workstation. z/OSMF contains the GUIs and the application code. Everything is installed on the z/OS server. There are no client-side install requirements.

Source: z/OS Management Facility, SG24-7851-00

z/Enterprise

Mainframe

z/OS LPAR

ESM
V1R13

Web
Sphere
OEM Edition

100MIPs

z/OSMF Browser Interface

- Configure CommServer
- Links beyond z/OSMF
- Performance
  - ✓ Capacity Provision
  - ✓ Resource Monitor
  - ✓ WLM Policy Editor
- Problem Determination
- Software Deployment
- Classic Interface
- z/OSMF Admin.

z/OZMF is a Key of the V2R1 Strategy

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Next Generation of z/OS Tools

z/OS Management Facility (z/OSMF) - V1R11 - The z/OS Easy Button

❑ Provides support for a modern, Web browser-based z/OS management console.

❑ Helps system programmers to more easily manage a mainframe system by simplifying day to day operations and administration of a z/OS system.

❑ z/OSMF provides the intelligence needed to address the requirements of a diversified workforce, maximizing their productivity.

✓ Automation reduces the learning curve and improves productivity.

✓ Embedded assistance guides activities and simplifies operations.

z/Enterprise

Mainframe

z/OS LPAR

ESM
V1R13

Web
Sphere
OEM Edition

100MIPs

z/OSMF
Browser Interface

• Configure CommServer
• Links beyond z/OSMF
• Performance
  ✓ Capacity Provision
  ✓ Resource Monitor
  ✓ WLM Policy Editor
• Problem Determination
• Software Deployment
• Classic Interface
• z/OSMF Admin.

z/OZMF is a Key of the V2R1 Strategy
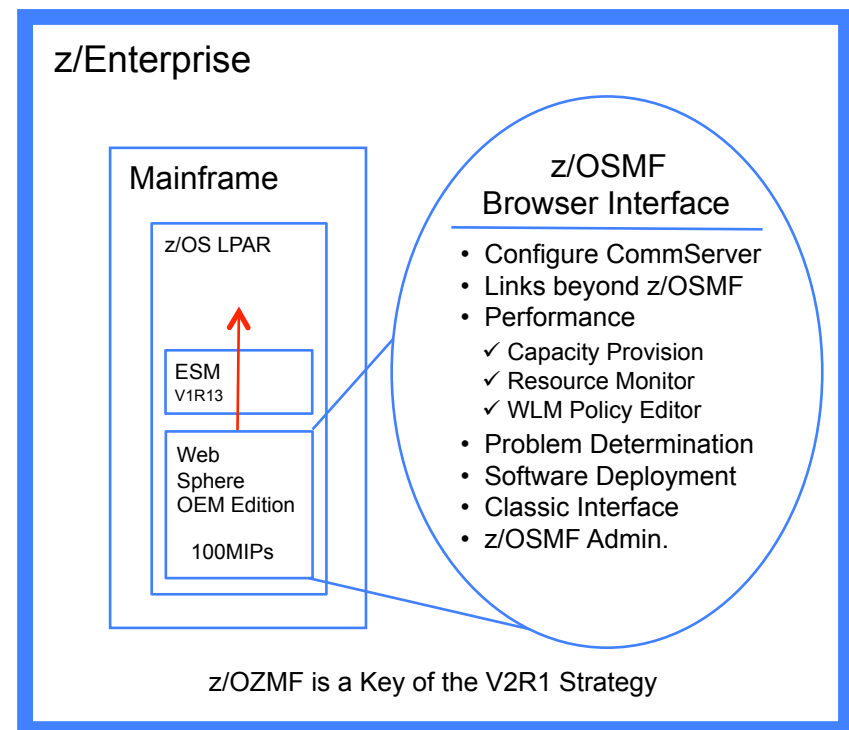
Source: SHARE Seattle, Session 2249 – Greg Daynes & Anuja Deedwaniya
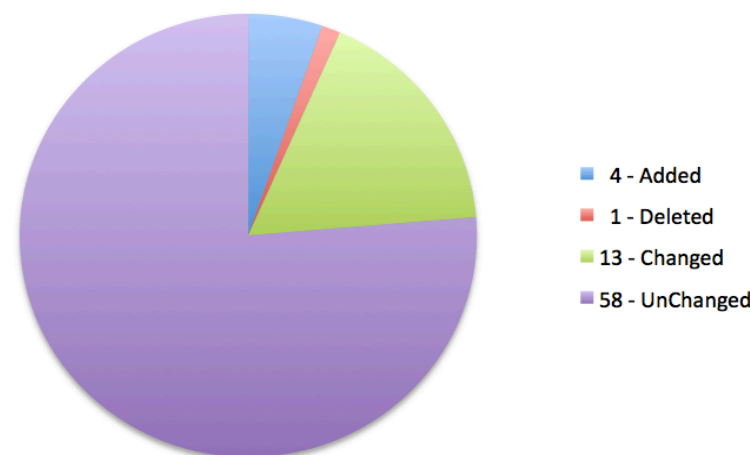
Next Generation of z/OS Tools

The AUTORxx – A New z/OS ParmLib Member – V1R13

❑ In V1R13 a new parmlib member was added to indicate the auto-reply policy. It contains comments that provide message text for each WTOR and related rules.

❑ Use AUTORxx to activate auto-reply processing. The default member AUTOR00 contains the policies suggested by IBM. You can modify AUTOR00 (Not Recommended), or define another to customize your policies.

```
notifymsgs(hc)
/********************************************************/
/* $HASP811 REPLY Y CONTINUE N TO TERMINATE PROCESSING  */
Msgid(?HASP811)Delay(30S) Reply(Y)
/********************************************************/
/* ANTU2220D FLASHCOPY. I TO INITIATE, C TO CANCEL      */
Msgid(ANTU2220D) Delay(60S) Reply(C)
```

76 MVS ParmLib Members in V1R13

- 4 - Added
- 1 - Deleted
- 13 - Changed
- 58 - UnChanged

z/OS = BCP, UNIX System Services & XML
BCP = Base Control Program (sometimes called MVS)

Source: MVS Initialization and Tuning Reference - SA22-7592-23 – See AUTORxx
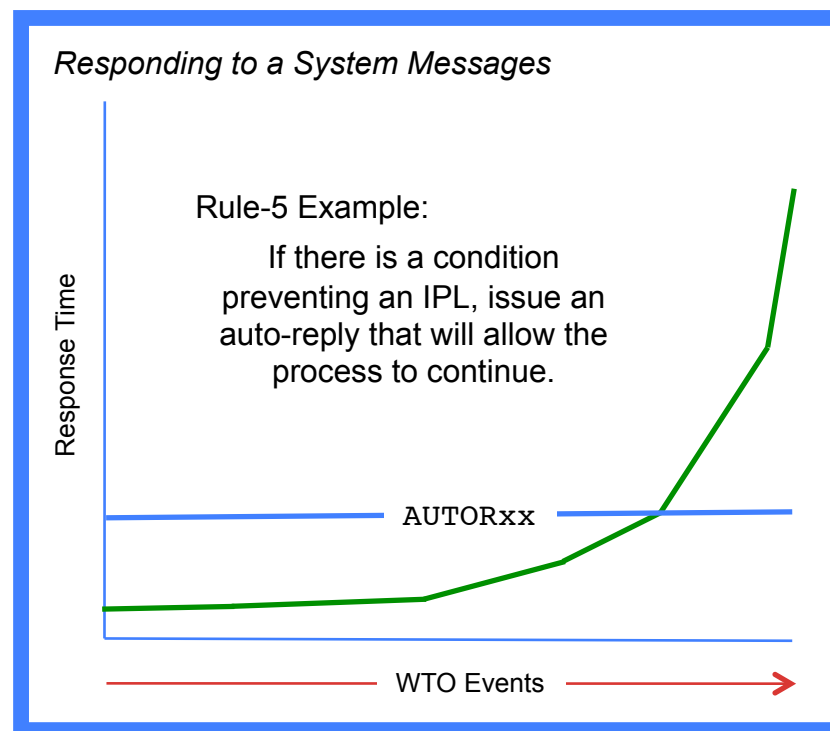
Next Generation of z/OS Tools

The AUTORxx – A New z/OS ParmLib Member – V1R13

☐ `[NOTIFYMSGS({HC│CONSOLE})]`

  ✓ HC - indicates that the auto-reply notification messages only appear in the hardcopy log.

  ✓ CONSOLE - Indicates that the auto-reply notification messages are displayed on consoles receiving operator or system programmer information.

☐ Auto-Reply Processing Possibilities:

  ✓ Rule-1: Problem
  ✓ Rule-2: Recovery Issues
  ✓ Rule-3: Dynamic Change
  ✓ Rule-4: Confirmation
  ✓ Rule-5: Continue IPL
  ✓ Rule-6: Recommended Value

Responding to a System Messages

Rule-5 Example:

  If there is a condition preventing an IPL, issue an auto-reply that will allow the process to continue.

Response Time

AUTORxx

WTO Events

Source: MVS Initialization and Tuning Reference - SA22-7592-23 - See AUTORxx
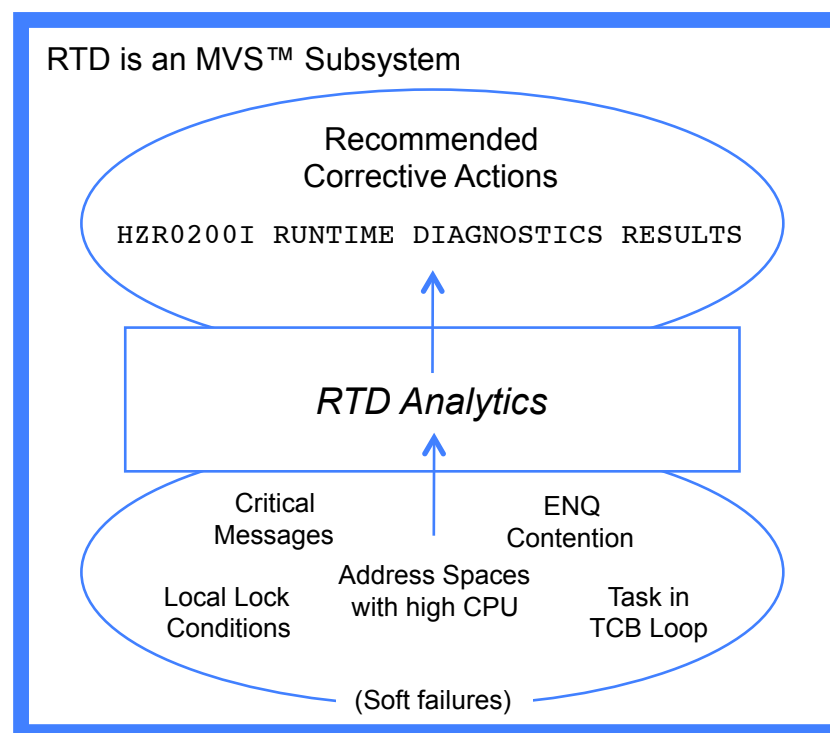
Next Generation of z/OS Tools

Runtime Diagnostics (RTD) – The HZR address space - V1R12

❑ RTD provides an extended diagnostic mechanism that results in the convergence of the functional processes and source information provided by:

- ✓ Operator commands
- ✓ System log
- ✓ Message searches
- ✓ Address space and Task analyses

❑ RTD produces console and system log messages which can alert supporting personnel, and drive manual and/or automated responses when RTD detected a z/OS system troubled by "Soft Failures".

RTD is an MVS™ Subsystem

Recommended Corrective Actions

`HZR0200I RUNTIME DIAGNOSTICS RESULTS`

RTD Analytics

Critical Messages   ENQ Contention

Local Lock Conditions   Address Spaces with high CPU   Task in TCB Loop

(Soft failures)

Source: z/OS V1R13.0 Problem Management V1R13 - G325-2564-08 - Part 2 Ch 4
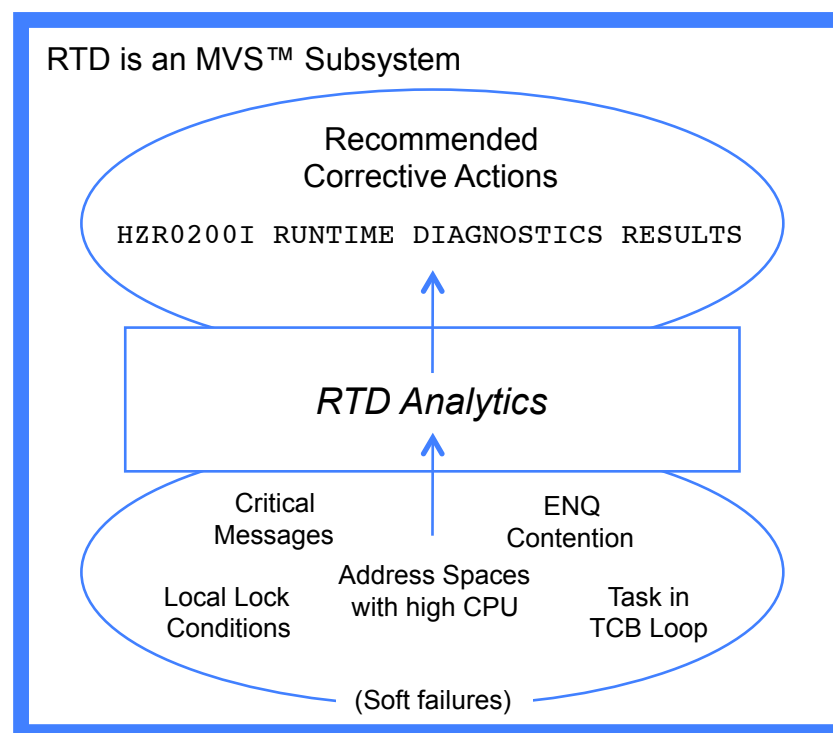
Next Generation of z/OS Tools

Runtime Diagnostics (RTD) – The HZR address space - V1R12

❑ RTD starts automatically at IPL time.

❑ In V1R13 messages generated by RTD analyses were updated to include possible actions to be taken when problems are discovered. For example:

> "…RDT analysis of an IEA230E message explains that the WTO buffer is 80% full and now includes the exact operator command sequence that can be used to increase the RLIM buffer limit."

❑ RDT will likely be used in conjunction with the IBM Health Checker for z/OS in a future z/OS release as a PFA Tool.

RTD is an MVS™ Subsystem

Recommended
Corrective Actions

`HZR0200I RUNTIME DIAGNOSTICS RESULTS`

RTD Analytics

Critical Messages   ENQ Contention

Local Lock Conditions   Address Spaces with high CPU   Task in TCB Loop

(Soft failures)

Source: z/OS V1R13.0 Problem Management V1R13 - G325-2564-08 - Part 2 Ch 4

Next Generation of z/OS Tools

Is your Mainframe Safe? How do you know?

❑ Think of a Network Port as an entry point into the Castle. Once inside friends and enemy spies have access to your treasure!

❑ In a typical computer network the Port Address and and IP address are joined together to create a unique access point that gives the requestor shared access to the data and applications under the control of the targeted processor/application.

❑ Spies Exploit Computer Networks by:

   ✓ Scanning for exposed Port defenses
   ✓ Sending fraudulent Data Packages
   ✓ Hiding Remote Attacks Trojans (RATS)

Source: http://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers

Note - Denial-of-Service (DoS) Attacks

42

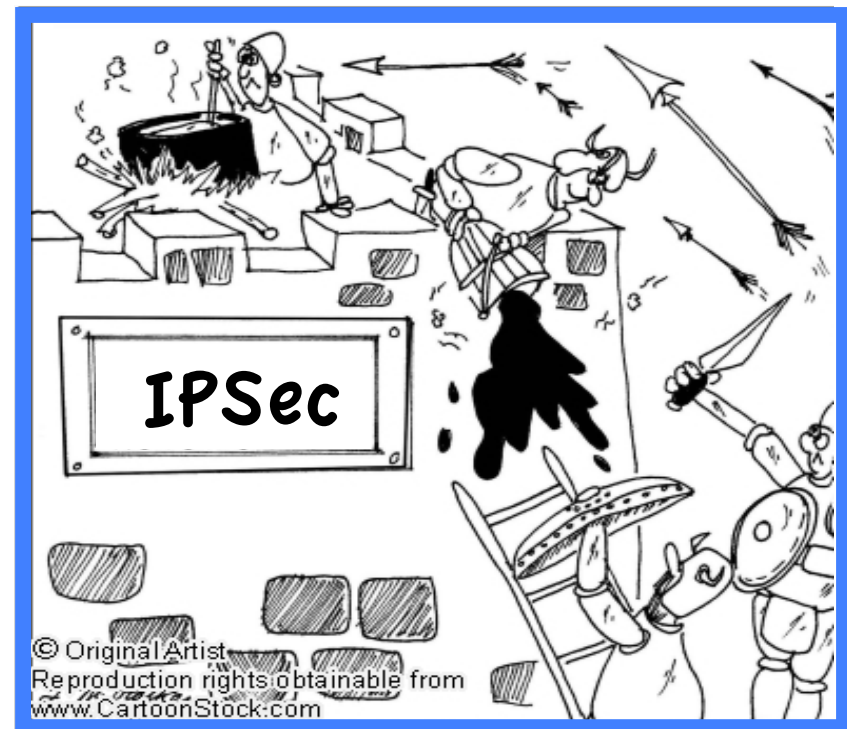# Next Generation of z/OS Tools

Is your Mainframe Safe? How do you know?

❑ One popular Spying Method used for identifying host targets is the Port Scan.

❑ Port Scanners are defined as "hostile Internet spy's searches for open 'doors,' or ports, through which they can gain access to networks and attached devices."

❑ Basically, this spying technique consists of sending a message to a port and listening for an answer.

❑ The response indicating a Port's status and can be used to determine a host's operating system and other information relevant to launching a future attack.

Spy vs. Spy

Good Guys   Bad Guys

Next Generation of z/OS Tools

Is your Mainframe Safe? How do you know? Are you fighting back?

❑ Identifying that scanning missions are underway can alert the security analyst as to what services or types of computers are being targeted for possible attack.

❑ Knowing what services are targeted allows an administrator to take preventative IPSec measures, e.g. installing patches, fire walling services from the outside, or removing services on machines which do not need to be running on them.

❑ Port Scan detection counts distinct destination IPs attempting to connect to a given Port within a certain time window.

Source: Scan Detection: A Data Mining Approach – 2006
By György J. Simon , Hui Xiong University of Minnesota, Rutgers University
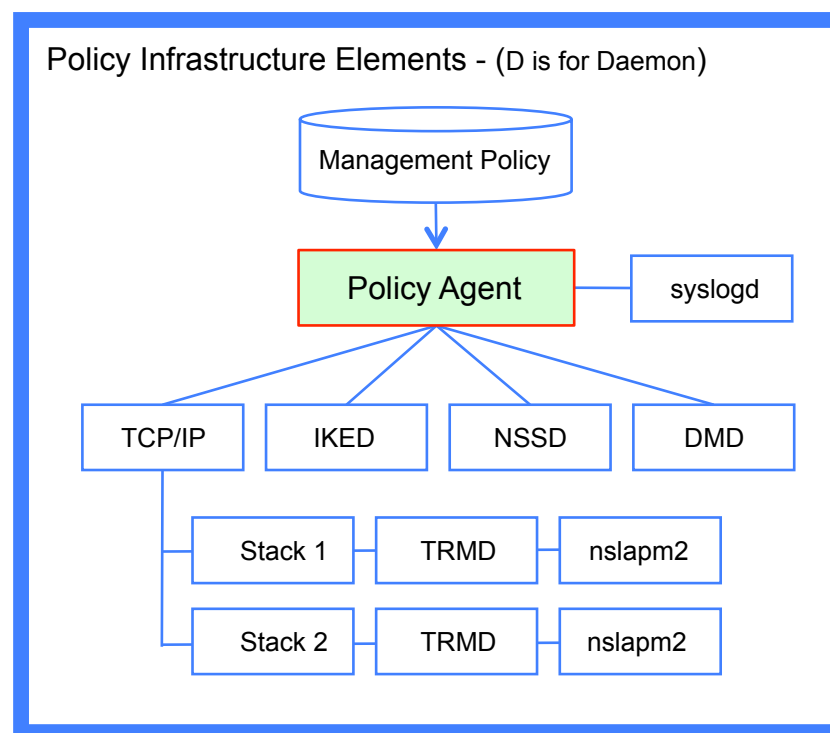
Next Generation of z/OS Tools

The Policy Agent – PAGENT – The Policy Infrastructure

❑ The Policy Agent, a z/OS address space, provides the policy infrastructure needed by the z/OS Communications Server. PAGENT can act in the following roles:

   ✓ Policy Server executes on a single system and installs policies of others
   ✓ Policy Client, retrieves remote policies from the Policy Server.

❑ Infrastructure Components:

   ✓ TRMD: Traffic Regulation Management
   ✓ IKED: Internet Key Exchange
   ✓ NSSD: Network Security Services
   ✓ DMD: Defense Manager
   ✓ nslapm2: a subagent used for reporting

Source: IBM z/OS V1R13 CS TCP/IP Implementation – March 2012
Volume 4 - Security and Policy-Based Networking

Policy Infrastructure Elements - (D is for Daemon)

- Management Policy
- Policy Agent
- syslogd
- TCP/IP
- IKED
- NSSD
- DMD
- Stack 1 — TRMD — nslapm2
- Stack 2 — TRMD — nslapm2

Next Generation of z/OS Tools

DSNTXAZP – A DB2 Utility – V1R13

❑ This tool updates a CLIST default input member (DSNTIDxx) with the current parameter and buffer pool settings defined to a specified DB2 subsystem.

❑ In addition the tool provides a report of all parameters. The report indicates whether a parameter was updated or if the original value from the input member was retained.

❑ The batch program requires the following arguments:

```
//STEP01   EXEC PGM=DSNTXAZP,PARM='ssid action'
```

Where: ssid= subsystem ID, action= function type

```
CLIST PARAMETER REPORT:

0001 PARAMETER NAME               = ABEXP
     ZPARM/BUFFERPOOL PARAMETER = ABEXP
     PARAMETER TYPE             = CHAR
     DATA SHARING SCOPE         = M
     MINIMUM VALUE              = NO
     MAXIMUM VALUE              = YES
     CURRENT CLIST VALUE        = YES
     CURRENT INSTALLED VALUE    = YES
     STATUS                     = RETAINED

0002 PARAMETER NAME               = ABIND
     ZPARM/BUFFERPOOL PARAMETER = ABIND
     PARAMETER TYPE             = CHAR
     DATA SHARING SCOPE         = M
     MINIMUM VALUE              = NONE
     MAXIMUM VALUE              = NONE
     CURRENT CLIST VALUE        = YES
     CURRENT INSTALLED VALUE    = NO
     STATUS                     = UPDATED
```

Source: DB2 for z/OS Installation and Migration Guide

Your Currency!

Presentation Outline:

❑ *A Macro Point of View*

- The Battle for the Server Market
- Some Things Old are New Again!
- Market Share Drivers, Response
- How is z/OS Doing?
- Who is Best Positioned to Prevail
- Next Generation System Management Tools

❑ *Some Micro Bits and Pieces*

- IBM Health Checker for z/OS (HZS)
- Unified Resource Manager (URM)
- z/OS Management Facility (z/OSMF)
- AUTORxx - a ParmLIb Member
- Runtime Diagnostics (RTD)
- The Policy Management Agent (PAGENT)
- *DSNTXAZP – A DB2 Utility*

Next Generation of z/OS Tools

Other Sessions at this SHARE – Recommended

Gordon Daniel, NewEra Software, Inc.
IBM Health Checker for z/OS – Hands on Lab
Monday, August 6 at 4:30 – 5:30 am
Session Number 11565, Salon 2/3 (Anaheim Marriott)

Brian Valentine, IBM
HMC (Hardware Management Console) Security Basics and Best Practices
Tuesday, August 7 at 9:30 – 10:30 am
Session Number 12088, Platinum 5

Paul R. Robichaux, NewEra Software, Inc.
How to Detect Mainframe Intrusion Attempts (IDS)
Friday, August 10 at 9:30 – 10:30 am
Session Number 11530, Platinum 8

That's it folks, all done!

Session Evaluation - Session Number - 11698

zCurrency is Your Currency

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