IBM SolutionsConnect 2013
L'IBM TechSoftware nouvelle génération

28, 29 et 30 août
IBM Client Center Paris

#solconnect13

Transformez vos opportunités en succès

IBM

Plateforme System z :

Les dernières nouveautés et solutions pour le
Cloud, l'analytique et la mobilité

Patrick KESLER – IBM - Directeur Business Mainframe France
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IBM zEnterprise

Patrick KESLER – IBM - Directeur Business Mainframe France
29 aout 2013

The extended role of the IBM Mainframe, the new zEnterprise

Data Ready
Enterprise data repository that integrates operational analytics for accelerated insight in one system
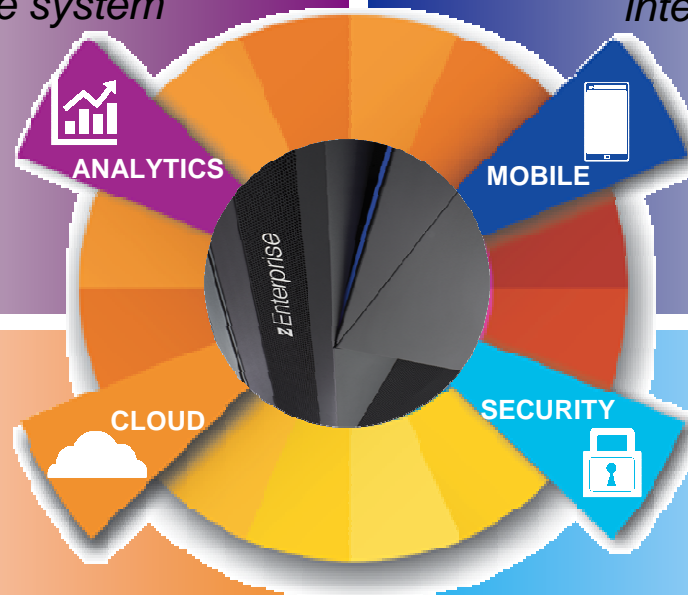
Mobile Ready
Connecting backend systems to mobile devices to turn each interaction into an opportunity

ANALYTICS

MOBILE

zEnterprise

CLOUD

SECURITY

Cloud Ready
Highly scalable, agile heterogeneous enterprise private cloud

Security Ready
Trusted security and reliability for critical business processes, applications and data
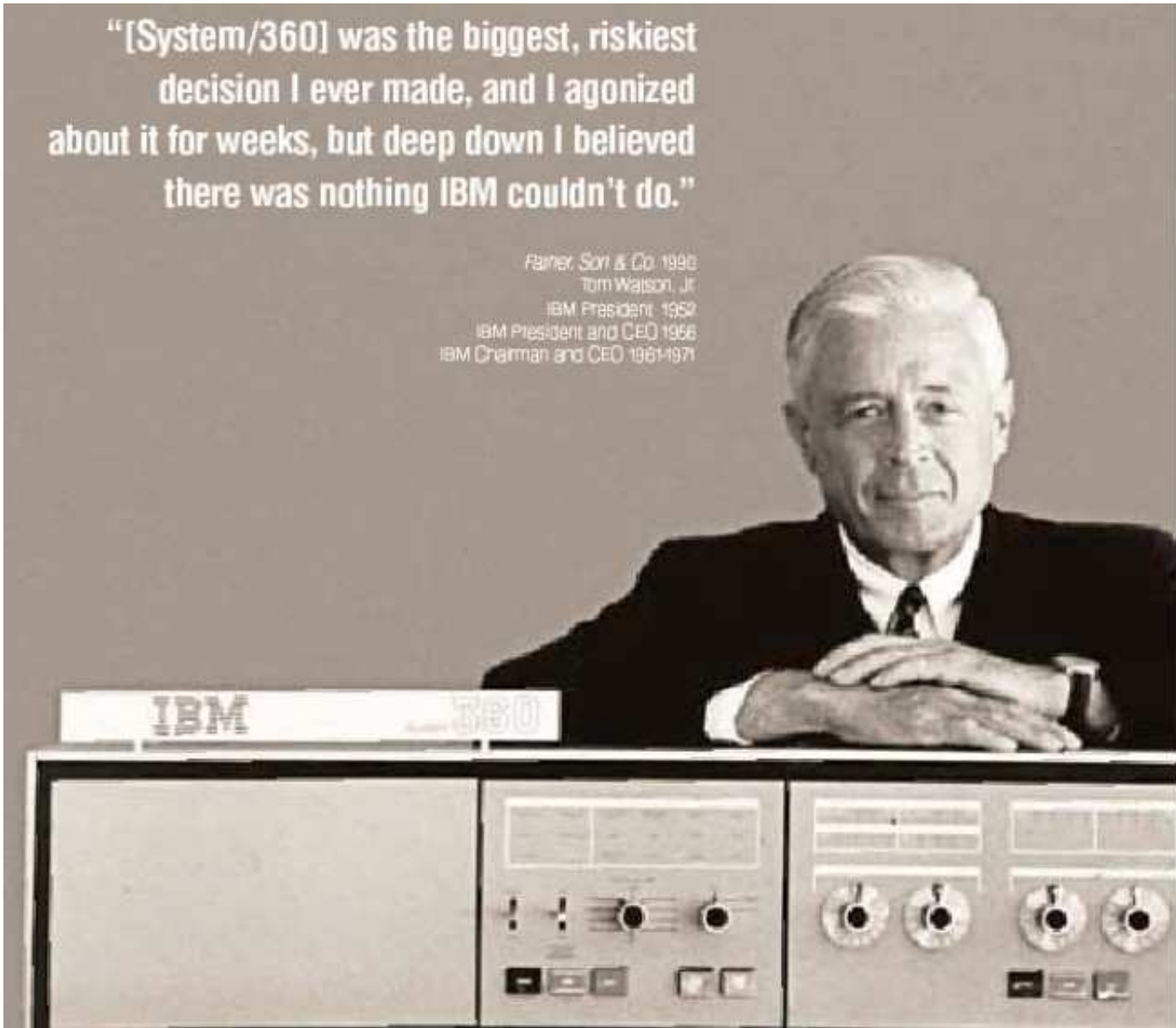
Reports of the death of the mainframe were premature

- "I predict that the last mainframe will be unplugged on March 15, 1996."
  - Stewart Alsop, March 1991
- "It's clear that corporate customers still like to have centrally controlled, very predictable, reliable computing systems – exactly the kind of systems that IBM specializes in."
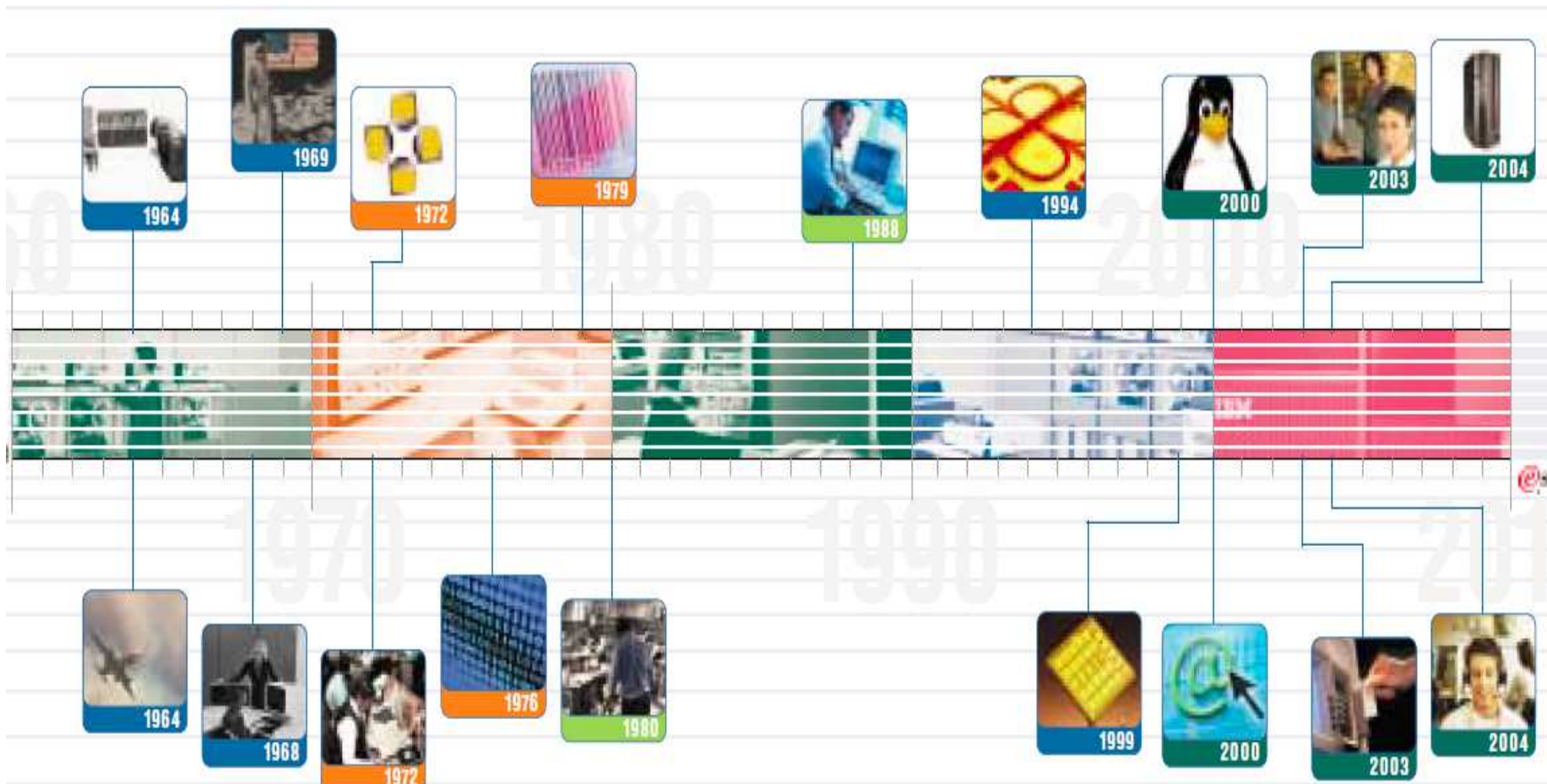 - Stewart Alsop, February 2002

Source: IBM Annual Report 2001

"[System/360] was the biggest, riskiest decision I ever made, and I agonized about it for weeks, but deep down I believed there was nothing IBM couldn't do."

Father, Son & Co. 1990
Tom Watson, Jr.
IBM President 1952
IBM President and CEO 1956
IBM Chairman and CEO 1961-1971

3033

How System z is Optimized

| Semiconductor Technology | Microprocessor Design | Systems Design | Virtualization & Operating Systems | Compilers & Java Virtual Machine | Optimized Middleware |

The world is constantly changing …

Customer expectations have never been higher

They are better informed

They operate in a network of peers

They interact through a multitude of devices

They demand personalized service and offerings

Forward thinking businesses are building competitive advantage through a better customer experience

Cloud, analytics and mobile aren't simply remaking computing…

Cloud

Mobile & Social

Analytics

…they are reshaping the customer engagement model

Security

Capitalizing on the opportunities brings new challenges

From stable to unpredictable …

Requiring a flexible system that can …

Volume	Connected devices will surge to **22 billion** by 2020	**React** and **scale** to handle growth and variability in data and transactions
Variety	Digital content will skyrocket to **8 zettabytes** by 2015	**Analyze** data in real-time to deliver actionable insight
Velocity	**70 percent** of IT budget is devoted to operations and maintenance	Deliver new and improved services with **speed** and **efficiency** at **lower costs**
Vulnerability	The average IT nfrastructure is attacked nearly **60,000** times a day	**Protect** critical data, applications and brand reputation with confidence

Underlying technology choice is more important than ever

The exended role of the IBM Mainframe, the new zEnterprise

Data Ready
Enterprise data repository that integrates operational analytics for accelerated insight in one system
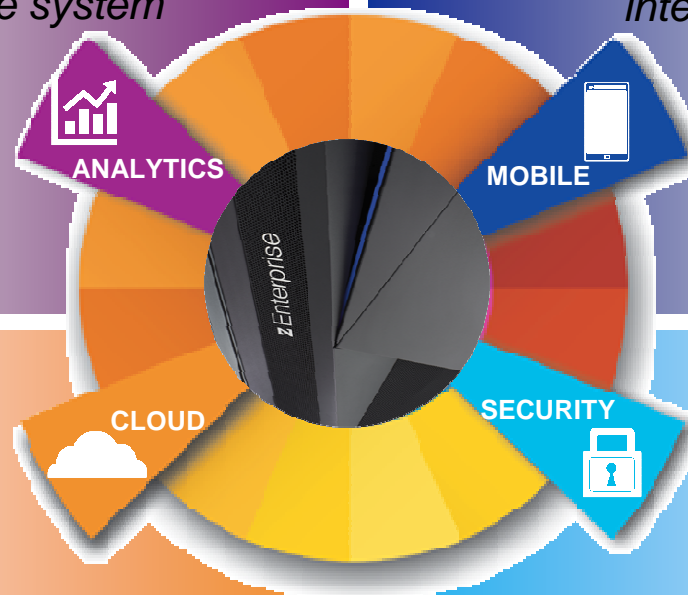
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ANALYTICS

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zEnterprise

zEnterprise: An Integrated Data & Analytics Engine

Data Ready:

Enterprise data hub

High-volume secure and reliable transaction processing

Integrated, real-time operational analytics

Up to **30%**
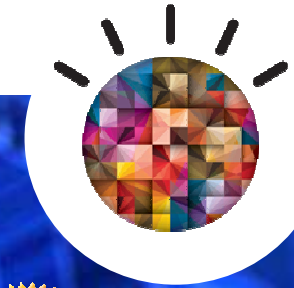performance improvement in query workloads with DB2® 11 for z/OS vs. DB2 9

9x
faster, with *10x* better price performance and *14% lower TCA than the closest competitor*

75+
IBM DB2 Analytics Accelerators in production

15

© 2013 IBM Corporation

Data Ready Solutions
Premier transaction and database management

NEW

PREVIEW

PREVIEW

NEW

z/OS 2.1

IMS™ 13

DB2 11 for z/OS

CICS TS 5.1

InfoSphere® Optim™ Family z7.2

Industry-leading operating system enhanced with new data serving, batch, analytics and security capabilities

Premier transaction and database manager with efficiency improvements for Java applications and SQL support

Improved data sharing performance and efficiency with 20% CPU reduction for OLTP batch and analytics

Advanced transaction processing solution enables rapid deployment of new Java workloads

Manage big data from requirements through retirement to promote business-driven governance

*By capitalizing on new functionality to **improving the performance and efficiency** of the Kela database processing capabilities, they are now better able to meet the growing demand for **improved social services delivery** for the citizens of Finland*

Kela

Data Ready Solutions
Integrated real-time operational analytics

ENHANCED **NEW** **NEW** **NEW**
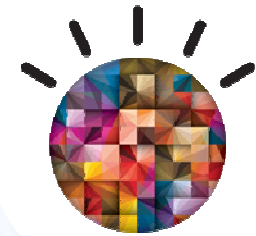
zEnterprise Analytics System 9710

IBM DB2 Analytics Accelerator V3

IBM Cognos® BI V10.2.1 for z/OS and Linux

IBM SPSS® Modeler 14 & SPSS Statistics 22

Enterprise Linux Server for Analytics

Integrated and ready to use analytics data warehouse solution

High performance appliance dramatically speeds response time for complex analytics queries

Integrate Hadoop data into DB2 as enterprise information hub and provide innovative reports and dashboards

Provide Enhanced state of the art DB2 real-time transaction scoring and analyze complex relationships with new algorithms

Dedicated Linux environment for operational analytics

Up to **30%** performance improvement in query workloads with DB2® 11 for z/OS vs. DB2 9

9x faster, with *10x* better price performance and *14% lower TCA than the closest competitor*

75+ IBM DB2 Analytics Accelerators in production

zEnterprise: A Holistic Cloud Computing Platform

Cloud Ready:

Elastic, virtually limitless expansion

Shared everything design

Secure hybrid computing with centralized management

Built on open industry standards

Up to **1,000s**
of virtual servers managed within a single system

Seconds
to deploy a new virtual server for rapid delivery of new services

Greater than **50%**
reduction in cost when compared to distributed systems

18

Cloud Ready Solutions

ENHANCED

Enterprise Linux Server

Reduces complexity and costs for 1,000s of apps with highly secure partitioning

ENHANCED

Cloud Ready for Linux on System z

Software based cloud services, integrated provisioning, monitoring, and storage management

NEW

IBM UrbanCode Cloud Solutions

Reduce software delivery cycle time with continuous integration and automated deployment of applications

ENHANCED

Tivoli OMEGAMON® for z/OS Family

System and network monitoring and performance management across the cloud to minimize or preclude business impacts

NEW

z/VM 6.3

openstack
CLOUD SOFTWARE

Support for 1TB memory for improved scale; HiperDispatch for improved CPU efficiency; Enabled for OpenStack support

NEW **CSL-WAVE**: Simplifies and automates the set up and management of a System z virtualized environment with drag and drop simplicity. (Announced intent to acquire.)

Up to **1,000s**
of virtual servers managed within a single system

Seconds
to deploy a new virtual server for rapid delivery of new services

Greater than **50%**
reduction in cost when compared to distributed systems

19

zEnterprise: Sophisticated System for Mobile Computing

Mobile Ready:

Build and connect to back end systems

Secure and manage with the highest level of security

Extend and transform capabilities to mobile devices

#1
in transaction throughput with ability to scale to handle millions of transactions daily

99.999%
availability of data and applications for constant access from mobile devices

>19,000
secure transactions per second ready for securing the mobile interaction

Mobile Ready Solutions

NEW

NEW

RECENTLY UPDATED

NEW

NEW

IBM Worklight®	CICS® TS Feature Pack for Mobile Extensions V1.0	IBM Endpoint Manager	IBM WebSphere® DataPower® Gateway Appliance	IBM Cognos Mobile
Common runtime environment and toolset for the development of rich multi-platform apps on zEnterprise	Extending CICS transactions and data connectivity to mobile applications with Native JSON standards support	Secure access to System z data on mobile devices; with integration of LDAP on zEnterprise	Easy-to-use security enhanced integration and IMS integration for mobile devices	Receive timely, informative and interactive dashboards, reports, metrics and analysis on mobile devices

#1

in transaction throughput with ability to scale to handle millions of transactions daily

99.999%

availability of data and applications for constant access from mobile devices

>19,000

secure transactions per second ready for securing the mobile interaction

zEnterprise: A Trusted hub for Enterprise Data Security

Security Ready:

Ultimate data security protection

Built-in cryptography

Unmatched resiliency and availability

#1	63%	74%
EAL 5+ – the highest certification for security in a virtualized environment	reduction in Total Cost of Information (TCI) when using zEnterprise security	staff savings for security administration personnel on zEnterprise system

Security Ready Solutions

ENHANCED

NEW

NEW

NEW

Crypto Express4S	Trusted Key Entry	Enterprise Key Management Foundation	IBM InfoSphere Guardium®	IBM Security zSecure™ suite V2.1
High performance throughput and authentication of secure transactions and enhanced support for industry standards (EMV, PKCS#11)	Migration & set up wizard to simplify initialization of cryptographic tasks	Protection of sensitive keys with centralized management across mainframe and distributed platforms	Reduce costs by automating the entire compliance auditing process in heterogeneous environments	Automated auditing and monitoring support to enforce policy compliance and threat detection

#1
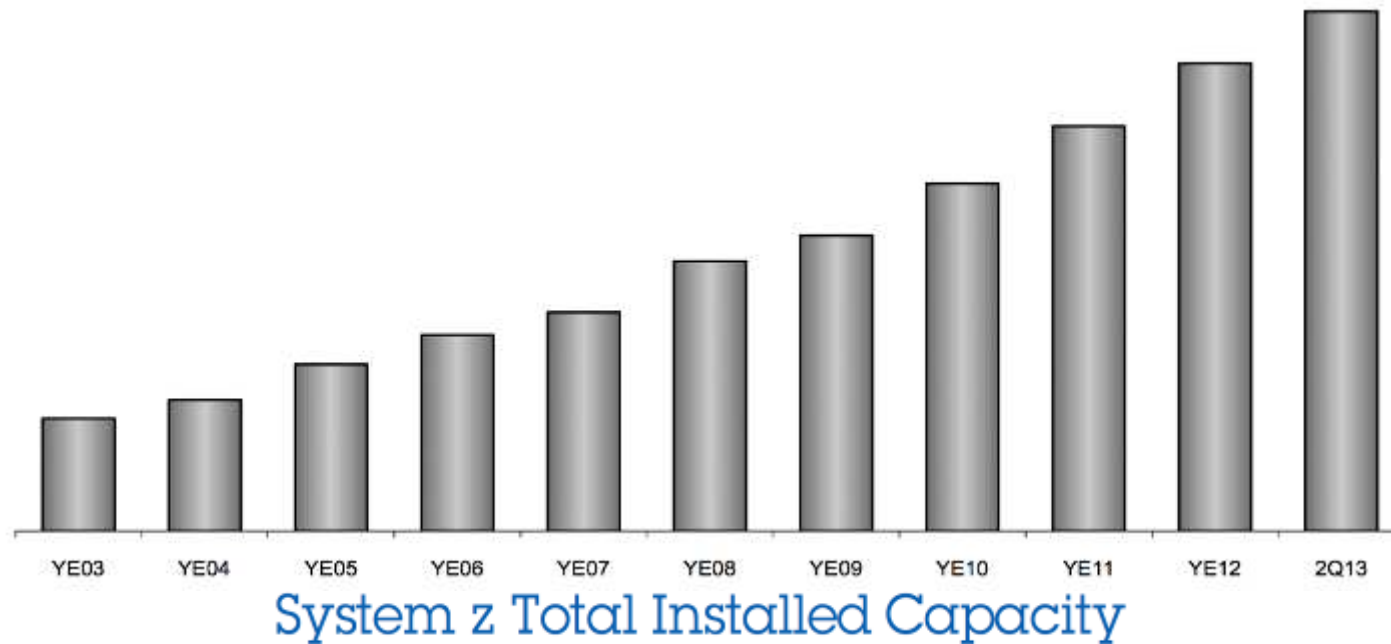EAL 5+ – the highest certification for security in a virtualized environment

63%
reduction in Total Cost of Information (TCI) when using zEnterprise security

74%
staff savings for security administration personnel on zEnterprise system

SmarterComputing

IBM

The Momentum is Growing around zEnterprise…

System z Total Installed Capacity

Chart categories: YE03, YE04, YE05, YE06, YE07, YE08, YE09, YE10, YE11, YE12, 2Q13

23%	210+	275+	3/4+	1,000+	7,400+
MIPS growth and 10% revenue growth year-to-year	new accounts since 3Q10 zEnterprise® launch, with 1/3+ in growth markets	hybrid computing units shipped since 3Q10	of Top 100 clients have installed IFLs	schools in 67 countries are part of the IBM Academic Initiative for System z®	ISV apps run on IBM System z; 55 new ISVs added in 1H13

[IFL = Linux-on-z Only Engine]

24

As of 2Q13

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zEnterprise is attracting new clients with differentiated value

WHITE CUBE

Leading contemporary UK art gallery needed real-time inventory access and continuous availability with expansion efforts

12 to 1

Consolidation of 12 distributed x86 servers onto a single z114 running Linux

佛山市公安局
Foshan Public Security Bureau

Chinese law enforcement agency sought a high-performance platform to support critical population management software

3.5M

Fast access to data on 3.5M residents with centrally managed, scalable solution

Now we are extending and enhancing the zEnterprise portfolio to bring new value to enterprises of all sizes ...

- New Software and Industry Solutions for Cloud, Analytics, Mobile and Security

- The New IBM zEnterprise BC12 & DS8870 BC Configuration

- The New Enterprise Linux® Server

- New Hardware Innovations for zEC12 & zBC12

- New and enhanced zHybrid capabilities

- New Operating Systems releases with z/OS® 2.1, z/OSMF 2.1 and z/VM® 6.3

Building a better customer experience for business advantage with zEnterprise

AND IT'S
JUST BEGINNING

PATRICK KESLER sur le net

- **TWITTER** :   KeslerPatrick

- **BUZZ ON Z :**   http://bit.ly/15gCzZa

Plateforme System z :

Les dernières nouveautés et solutions pour le Cloud, l'analytique et la mobilité

François Launay

Product Manager hardware System z

flaunay@fr.ibm.com

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Innovation to be shared !

2012

AUG   **DEC**

IBM zEnterprise® EC12

- Performance
- Availability innovations
- Optimized for data serving
- Boost to software

IBM zEnterprise Unified Resource Manager (zManager) and **zEnterprise BladeCenter® Extension (zBX) Mod 003**

- Investment protection
- Hosts PS701 and HX5 blades
- Commitment to future of zBX

31

zEnterprise EC12 satisfies the most robust enterprise requirements
Announced August 28, 2012

zEC12
2827, Models: H20, H43, H66, H89, HA1
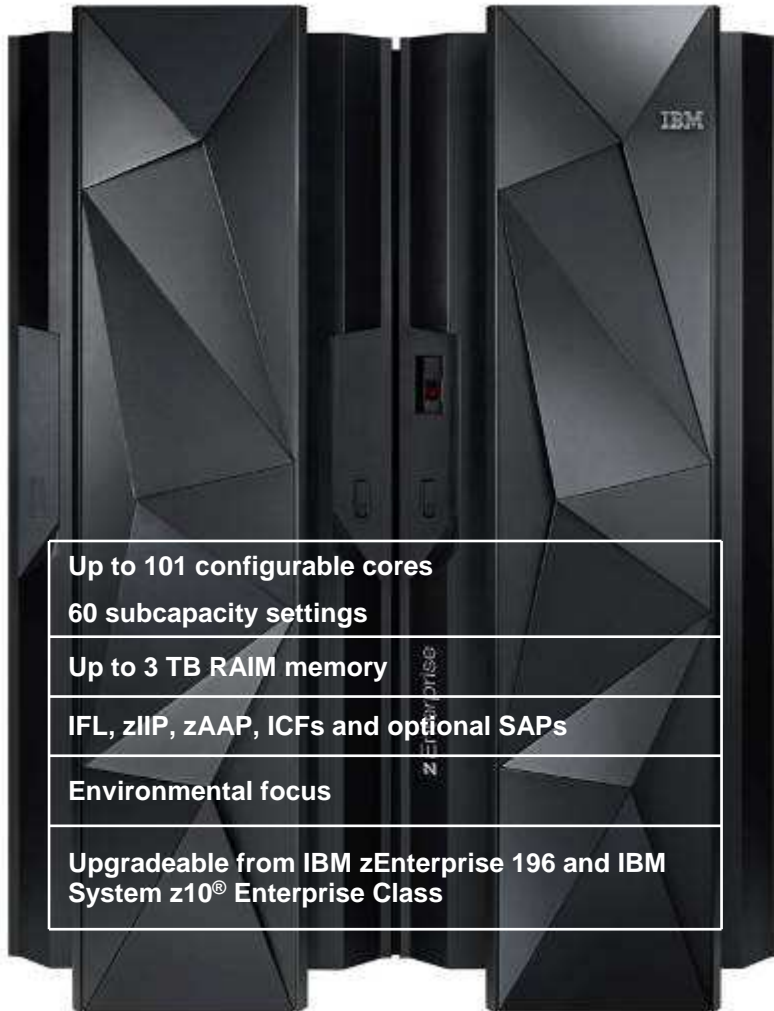
Up to 101 configurable cores

60 subcapacity settings

Up to 3 TB RAIM memory

IFL, zIIP, zAAP, ICFs and optional SAPs

Environmental focus

Upgradeable from IBM zEnterprise 196 and IBM System z10® Enterprise Class

- **Advanced Technology 5.5 GHz processor chip for performance boost for all workloads**
  - Over **78,000 MIPS** for large scale consolidation
- **Processor chip optimized for software performance**
- **Innovation to drive availability to superior levels**
  - *IBM zAware* offers snap-shot of the current state of your business
  - *FLASH Express and pageable large pages* to drive availability and performance for critical workloads
- **Trusted resilience is a zEnterprise standard**
  - High speed *cryptography integrated as part of the chip*
  - Enhanced functions with new *Crypto Express4S*
  - PR/SM™ received *EAL5+ certification*

[1]Based on preliminary internal measurements and projections against a z196. Official performance data will be available upon announce and can be obtained online at LSPR (Large Systems Performance Reference) website at: https://www.ibm.com/servers/resourcelink/lib03060.nsf/pages/lsprindex. Actual performance results may vary by customer based on individual workload, configuration and software levels.

Innovation to be shared !

2012

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IBM zEnterprise® EC12
- Performance
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- Investment protection
- Hosts PS701 and HX5 blades
- Commitment to future of zBX

DEC

System Director
- Enhancements for provisioning and image management on zBX

2013

MAR

Enhancements
- Updates to IBM zAware
- Updates to DataPower ® XI50z
- Top exit cabling for zBX
- 2GB page support for z/OS®

JUL

NEW

IBM Enterprise BC12
- Secure foundation for Cloud, Mobile & Data

zBX Model 003 & zManager
- Resource Management
- Availability Monitoring

zEC12 updates
- Data serving
- Secure

z/OS V2.1
- Optimized data storage
- Cloud like scale
- New Crypto as a Service
- Workload Optimization built in

z/VM® 6.3
- New scale opportunities with z/VM support for 1TB of real memory
- HiperDispatch – more efficient utilization of CPU resources

The game changer: New zBC12 based Enterprise Linux Server
Attracting new clients with differentiated value

Enterprise Linux Server (ELS)

Up to **13** Linux cores running at **4.2GHz**

Deploy up to **40** virtual servers per core or **520** in a single footprint

Secure isolation of Logical Partitions with **highest** level of security certification

Balanced System Design with **496GB** memory

Pre-Packaged Linux Server Solution including Hardware, Hypervisor, Maintenance

Enterprise Linux Server for **Analytics** Solution Edition

Support for **Red Hat**, **SUSE** and **OpenStack** Cloud

Hardware starting as low as

$75K USD

As low as

$1.^{00}/day

per virtual server

More than **3,000**

Linux ISVs apps supported

Save up to **55%**

on TCO over 5 years

Introducing the new IBM zEnterprise BC12

Performance

36% performance boost per core running at 4.2 GHz

58% more capacity for traditional workloads

62% more capacity for Linux® workloads

2X increase in RAIM memory

Economics

Same low entry price as the z114

27% improvement in P/P for specialty engines

Compression acceleration (zEDC) for better resource usage

20% increase in granularity

Networking and Hybrid

Reduced latency for server to server communications with z/OS V2.1 SMC-R and 10GbE RoCE Express

Resource management defined by business goals and objectives

Investment Protection

Start Small and Grow with Ease

Upgrade from z10™ BC and z114

Upgrade into zEC12

Upgrade zBX Mod 002 to Mod 003

Security and Availability

Simplified TKE 7.3 workstation

z/OS 2.1 Crypto as a service

IT analytics with IBM zAware to improve availability

Flash Express helps reduce downtime from application availability lapses

* US prices, may vary by country

Increased performance and flexibility in lower cost package extending the latest mainframe technology to organizations of all sizes

Increased scale and flexibility provide room for growth

Model	Total PUs	CPs	IFLs	zAAPs	zIIPs	ICFs	Std. SAPs	Add'l SAPs	Spares	IFP
H06	9	0-6	0-6	0-4*	0-4*	0-6	2	0-2	0	1
H13	18	0-6	0-13	0-7**	0-7**	0-13	2	0-2	2	1

zBC12
Machine Type: 2828 Models: H06, H13

- New 2:1 order ratio for zIIP and/or zAAP to CP
- New entry level – 50 MIPS at same z114 entry price
- Full uniprocessor running at over 1064 MIPS with total capacity available over 4900 MIPS

Increased scale and flexibility provide room for growth

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H06	9	0-6	0-6	0-4*	0-4*	0-6	2	0-2	0	1
H13	18	0-6	0-13	0-7**	0-7**	0-13	2	0-2	2	1

Z06
Y06
X06
W06
V06
U06
T06
S06
R06
Q06
P06
O06
N06
M06
L06
K06
J06
I06
H06
G06
F06
E06
D06
C06
B06
A06
6-way

26 capacity levels x 6 CPs = 156 settings

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- New entry level – 50 MIPS at same z114 entry price
- Full uniprocessor running at over 1064 MIPS with total capacity available over 4900 MIPS
- Increased granularity for right sizing -- 26 capacity levels x 6 CPs = 156 settings
- Cloud ready solution ideal for Enterprise Linux Server
  - Model H13 with up to 13 IFL/496 GB/ z/VM 6.3

Specialty Engine (×12)

* Max available with 2 CPs
** Max available with 4 CPs

zBC12 System Cache - SCM
Single Chip Module SC (Storage Control)
Number of Signal Nets: 703
Processor Frequency: 4.2 GHz
Max Power: 70W
Module Size: 50 x 50 mm
Chip size: 24.4 mm x 19.6 mm
Bottom Side IOs: 2294

zBC12 Processor - SCM
Single Chip Module CP (Central Processor)
Number of Signal Nets: 948
Processor Frequency: 4.2 GHz
Max Power: 170W
Module Size: 50 x 50 mm
Chip Size: 23.5 mm x 21.2 mm
Bottom Side IOs: 2294

Processor chip optimized for software performance
Exploited by Java, PL/I, compilers, DB2, more

- Our leadership in microprocessor design supports a boost in performance for all workloads

- Larger caches to optimize data serving environments

- Help for lockouts, reduction of Java™ overhead, improvements to DB2® bufferpools and Java heaps, complier improvements with decimal format conversions facility

- Exploitation of HiperDispatch in z/VM V6.3

IBM ☀

New innovations available on zBC12 and zEC12 (GA2)

NEW	**NEW**	**ENHANCED**	**ENHANCED**	**NEW**
Data Compression Acceleration	**High Speed Communication Fabric**	**Flash Technology Exploitation**	**Proactive Systems Health Analytics**	**Hybrid Computing Enhancements**
Reduce CP consumption, free up storage & speed cross platform data exchange	Optimize server to server networking with reduced latency and lower CPU overhead	Improve availability and performance during critical workload transitions, now with dynamic reconfiguration; Coupling Facility exploitation (SOD)	Increase availability by detecting unusual application or system behaviors for faster problem resolution before they disrupt business	x86 blade resource optimization; New alert & notification for blade virtual servers; Latest x86 OS support; Expanding futures roadmap
zEDC Express	*10GbE RoCE Express*	*IBM Flash Express*	*IBM zAware*	*zBX Mod 003; zManager Automate; Ensemble Availability Manager; DataPower Virtual appliance SoD*

Increasing Value with New Technology Innovations

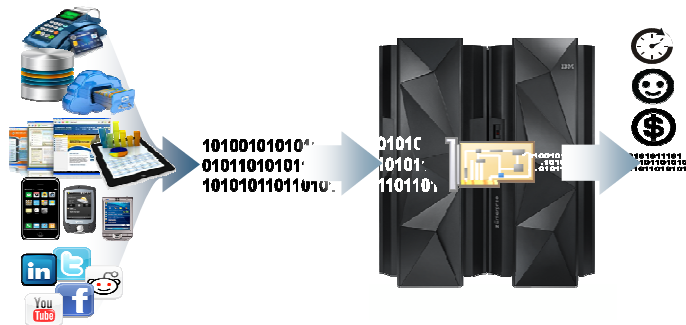| NEW! *zEDC Express*	NEW! *10GbE RoCE Express with SMC-R*	New! *Flash Express*	New! *IBM zAware*
Low latency, CPU Efficient Data Compression	Low latency, high performance network communications	Improved availability and performance during critical workload transitions	Improve availability through smarter problem determination

… available on both zEC12 and zBC12

IBM zEnterprise Data Compression (zEDC)

NEW

What is it?

✓ *A combined software (z/OS V2.1) and hardware (zEDC Express) solution designed to help reduce resource consumption, disk utilization and optimize cross platform exchange of data*

How is it different

- **Performance:** Efficient alternative for larger files. Reduced CPU overhead for SMF jobs.

- **Efficient:** Optimized algorithms scan text to locate the re-use of phrases and refers back to earlier references

- **Industry Standard:** Compatible with open zlib based compression – widely used across all platforms

- **Economical:** Reduced DASD space requirements and improved effective bandwidth without significant CPU overhead***

15% reduction in elapsed time for SMF extraction with up to **40%** reduction for CPU time

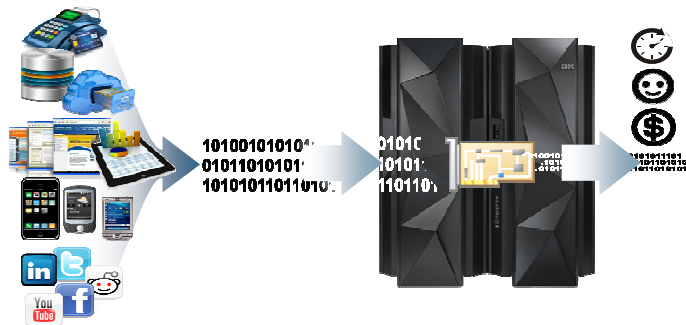Logger overhead reduced by up to **30%** **

*   When running an SMF extraction/dump against an SMF logstream with records compressed by zEDC
**   The amount of data sent to an SMF logstream can be reduced by up to 75% using zEDC compression – reducing logger overhead
*** SOD for BSAM/QSAM access methods

       All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

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zEnterprise Data Compression (zEDC) - can help to reduce CPU and storage
Every day 2.5 quintillion bytes of data are created
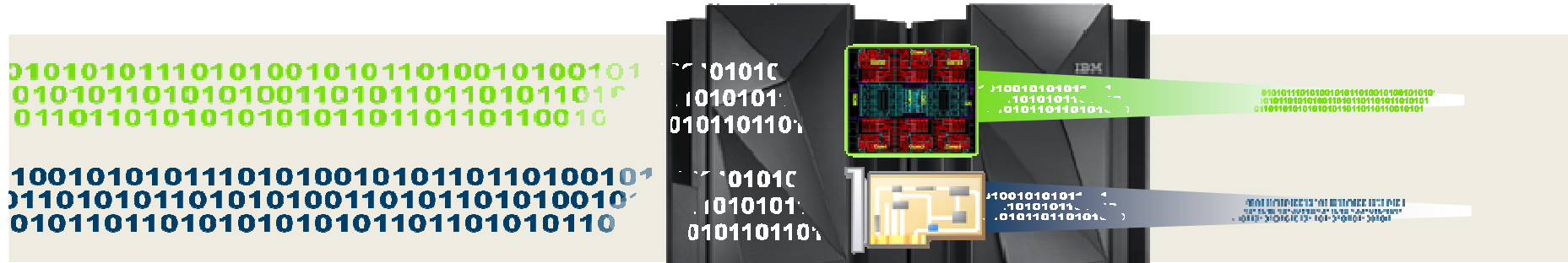
Compress your data

*4X**

(efficient system data compression)

Up to 118X reduction

*in CPU and up to 24X throughput improvement when zlib uses zEDC ***

Data Ready

Typical Client Use Cases:

Significant disk savings with trivial CPU cost for large BSAM/QSAM sequential files ***

More efficiently store audit data in application logs

Reduce the amount of data needed for data migration and backup/restore **

Transparent acceleration of Java compressed applications **

NEW zEDC Express

NEW z/VM 6.3 support for guests***

NEW z/OS V2.1 zEDC

* The amount of data sent to an SMF logstream can be reduced by up to 75% using zEDC compression – reducing logger overhead
** These results are based on projections and measurements completed in a controlled environment. Results may vary by customer based on individual workload, configuration and software levels
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Increasing Value with New Technology Innovations

NEW! *zEDC Express*	NEW! *10GbE RoCE Express with SMC-R*	New! *Flash Express*	New! *IBM zAware*
Low latency, CPU Efficient Data Compression	Low latency, high performance network communications	Improved availability and performance during critical workload transitions	Improve availability through smarter problem determination

… available on both zEC12 and zBC12

Optimize server to server networking - transparently
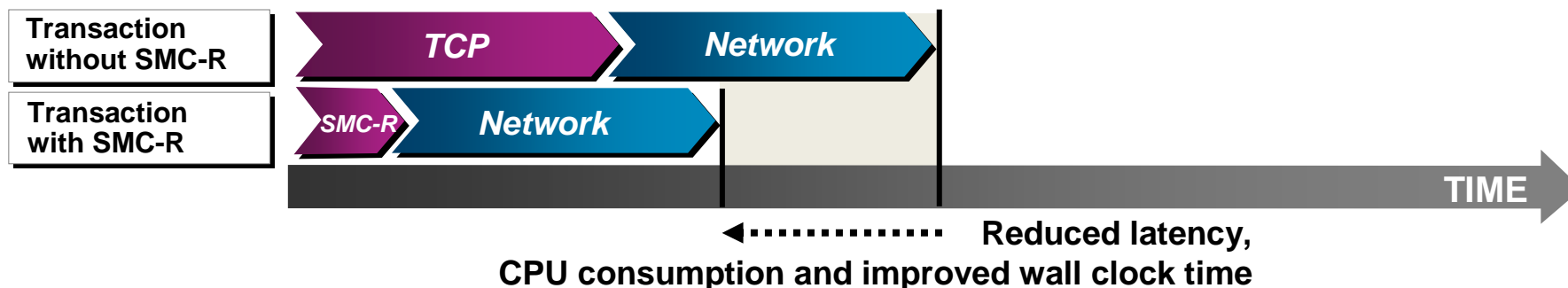*"HiperSockets-likes" capability*

NEW

What is it?

- ✓ ***Shared Memory Communications via Remote Direct Memory Access (SMC-R)** is a feature of z/OS V2.1 and will exploit a new **10GbE RoCE Express** feature of zEC12 or zBC12*
- ✓ *The combination is designed to **reduce latency** and **improve wall clock time***
- ✓ *Can be **server-to-server** communication in a multi-server environment or **LPAR-to-LPAR** communication on a single system*

How is it different

- ▪ **Industry Standard:** Exploits standard 10 Gb Ethernet fiber optic links
- ▪ **Transparent:** z/OS TCP sockets based applications can use seamlessly
- ▪ **Secure:** Preserves existing network security model, IP topology, network administrative and operational model
- ▪ **Coexist:** Coexists with HiperSockets

| Transaction without SMC-R | TCP | Network |
| Transaction with SMC-R | SMC-R Network | |

TIME

Reduced latency,
CPU consumption and improved wall clock time

47

Optimize server to server networking – transparently

Up to *50%* CPU savings for FTP file transfers across z/OS systems versus standard TCP/IP **

Up to *48%* reduction in response time and

10% CPU savings for a sample CICS workload exploiting IPIC using SMC-R versus TCP/IP ***

Up to *40%* reduction in overall transaction response time for WAS workload accessing z/OS DB2 ****

Up to *3X* increase in WebSphere MQ messages delivered across z/OS systems *****

zEC12   zBC12

Typical Client Use Cases:

Help to reduce both latency and CPU resource consumption over traditional TCP/IP for communications across z/OS systems

Any z/OS TCP sockets based workload can **seamlessly** use SMC-R without requiring any application changes

NEW z/OS V2.1 SMC-R   **NEW** z/VM 6.3 support for guests*   **NEW** 10GbE RoCE Express

* All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

** Based on internal IBM benchmarks in a controlled environment using z/OS V2R1 Communications Server FTP client and FTP server, transferring a 1.2GB binary file using SMC-R (10GbE RoCE Express feature) vs standard TCP/IP (10GbE OSA Express4 feature). The actual CPU savings any user will experience may vary.

*** Based on internal IBM benchmarks using a modeled CICS workload driving a CICS transaction that performs 5 DPL (Distributed Program Link) calls to a CICS region on a remote z/OS system via CICS IP interconnectivity (IPIC), using 32K input/output containers. Response times and CPU savings measured on z/OS system initiating the DPL calls. The actual response times and CPU savings any user will experience will vary.

**** Based on projections and measurements completed in a controlled environment. Results may vary by customer based on individual workload, configuration and software levels.

***** Based on internal IBM benchmarks using a modeled WebSphere MQ for z/OS workload driving non-persistent messages across z/OS systems in a request/response pattern. The benchmarks included various data sizes and number of channel pairs The actual throughput and CPU savings users will experience may vary based on the user workload and configuration.

Increasing Value with New Technology Innovations

NEW! *zEDC Express*	**NEW!** *10GbE RoCE Express with SMC-R*	**New!** *Flash Express*	**New!** *IBM zAware*
Low Latency, CPU Efficient Data Compression	Low latency, high performance network communications	Improved availability and performance during critical workload transitions	Improve availability through smarter problem determination

… available on both zEC12 and zBC12

Flash Express cuts away at availability lapses

Innovative PCI-e storage-class memory

Enables the use of large 1 MB pageable pages
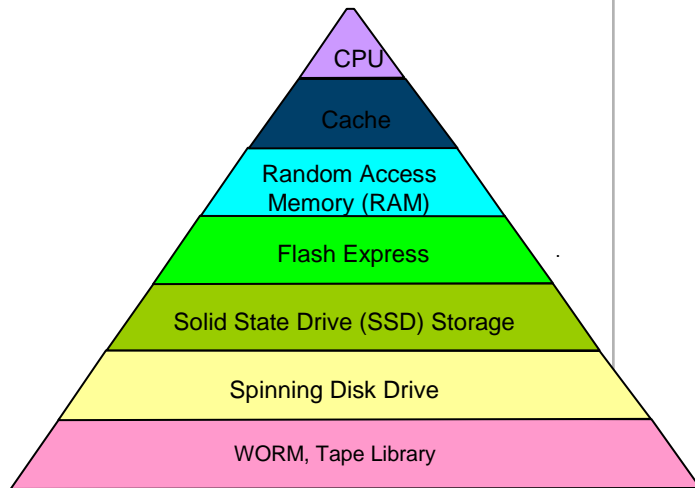
Typical Client Use Cases:

Improve availability and performance during workload transition and spikes

Faster, less disruptive diagnostics

**Supported on z/OS
V1.13
or Higher ****

CPU

Cache

Random Access Memory (RAM)

Flash Express

Solid State Drive (SSD) Storage

Spinning Disk Drive

WORM, Tape Library

* All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only

** With the March 2013 RSM Enablement Offering Web deliverable.

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SmarterComputing

IBM.

IBM Flash Express
Notable Increases in Availability and Performance

What's New?

- Dynamic Reconfiguration of Flash Express memory

- In the future, Coupling Facility use of Flash provides a cost effective, resilient solution for overflow of MQ shared queues in Coupling Facility (SOD) *

- Support for DB2 11 use of Flash planned for 2013, rollback of DB2 10 support via APAR

- Java SDK7 SR3 and middleware exploiters are available

Proof Points

37% increase
in transaction throughput during morning transition

Standalone Dump
19% reduction
in total elapsed time

SVC dump elapsed time
~25% less than
with DASD

28% improvement
in DB2 throughput

WAS Day Trader
8% performance improvement

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Increasing Value with New Technology Innovations

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Low Latency, CPU Efficient Data Compression	Low latency, high performance network communications	Improved availability and performance during critical workload transitions	Improve availability through smarter problem determination

… available on both zEC12 and zBC12

IBM zAware
Improve z/OS Problem determination and time to repair with a self contained firmware solution

What is it?

- ✓ IBM zAware is an integrated, self-learning, analytics solution for z/OS that helps identify unusual system behavior in near real time.

- ✓ Helps accelerate problem determination so service is restored faster, improving availability.
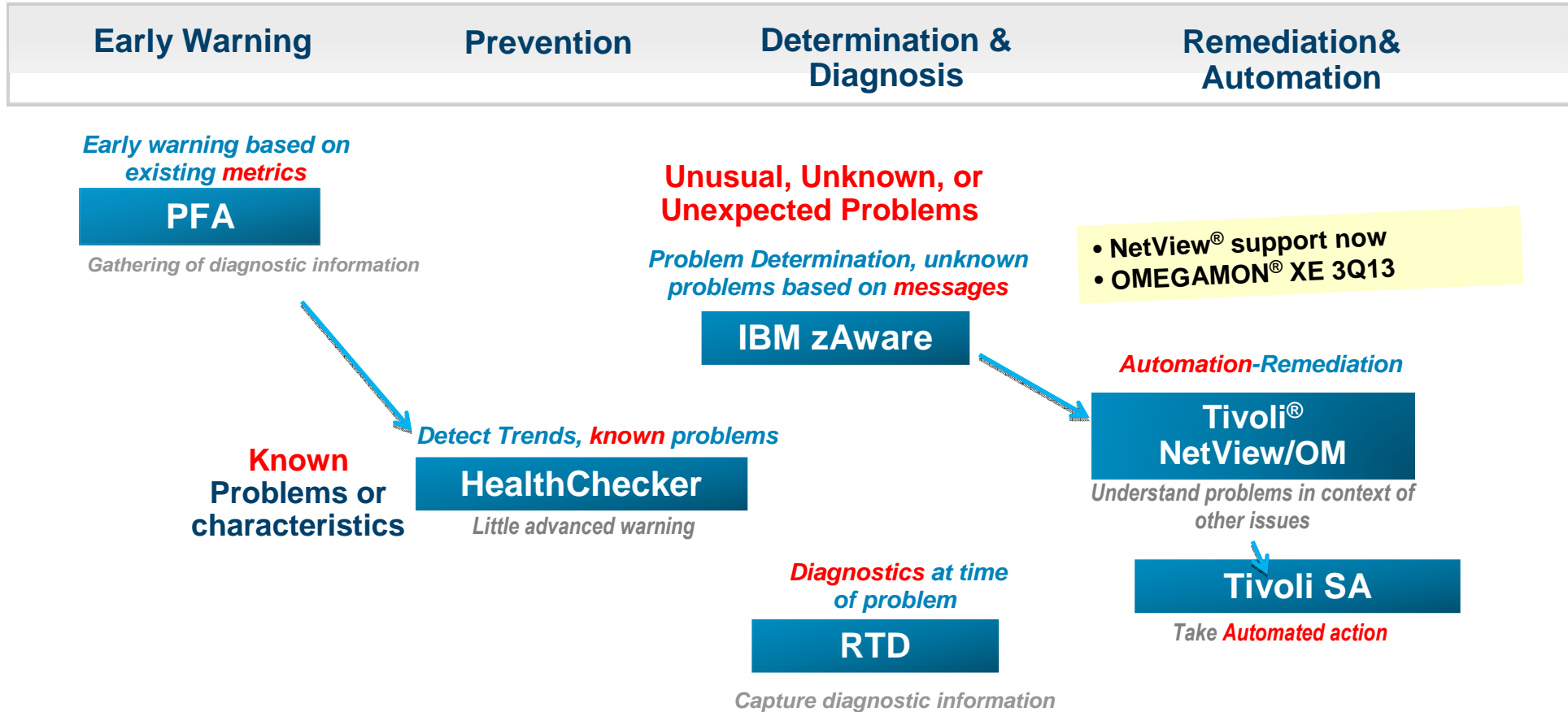
How is it different?

- **Efficient** : Needs no maintenance or integration, pre integrated "appliance-like" form factor

- **z/OS expertise:** Understands System z message patterns and can detect anomalies applying domain knowledge

- **Automated:** No need to code rules to recognize problems; supports integration with other products

- **Scalable:** can scale to monitor millions of messages

- **Easy to use:** Intuitive web based UI, easy to learn, use

Reduces time and effort to identify & diagnose problematic messages

Trends   Abnormalities   Unusual situations
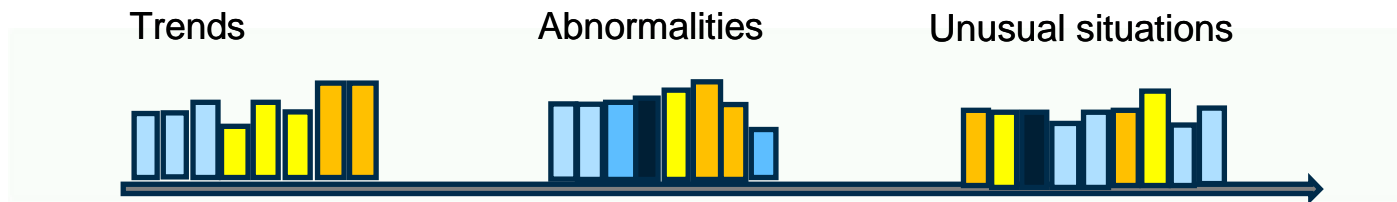
Lessons learned: Each Tool Has a Specific Role to Drive Availability

Early Warning	Prevention	Determination & Diagnosis	Remediation& Automation

Early warning based on existing metrics

PFA

Gathering of diagnostic information

Unusual, Unknown, or Unexpected Problems

Problem Determination, unknown problems based on messages

IBM zAware

- **NetView® support now**
- **OMEGAMON® XE 3Q13**

Automation-Remediation

Tivoli® NetView/OM

Understand problems in context of other issues

Known Problems or characteristics

Detect Trends, known problems

HealthChecker

Little advanced warning

Diagnostics at time of problem

RTD

Capture diagnostic information

Tivoli SA

Take Automated action

These tools provide several functions. They collectively help companies run operations effectively and achieve higher availability. No one product does it all.

Problem Determination in 2 clicks instead of Hours

Click on yellow bars to drill down on that interval

Each ten minute reporting interval (2 minutes sampling) is represented by a bar. Height and color coding signal potential anomalies

JES Spool full. This would have caused a **severe disruption**. When spool is full you can't logon, batch stops, a Severity 1 condition.

IBM zAware delivers smarter message monitoring capabilities
IT analytics to reduce service disruptions

Difficult or unusual problems can be found in

2 clicks
not hours

Ultimate in Resiliency

Typical Client Use Cases:

Diagnose complex problems **quickly** and restore service **faster**

Accelerate problem determination across IT functions

Real-time, self-learning solution accurately represents your environment – **automatically**

NEW **Customized analysis, scoring**

NEW **Supports long distances 3500km**

Supported on z/OS V1.13 or higher

Flexible connectivity
Improving bandwidth, granularity and options for connections

Clustering for availability

- HCA-3 InfiniBand® Coupling Links
  – 1x and 12x
- ISC-3 (peer mode only) [1]
- STP

Controlled and simplified management

- IBM zAware partition managed from Hardware Management Console (HMC)
- Central management of heterogeneous resources with zManager
- Connectivity of zBX for Hybrid Computing

Efficient data access

NEW
- ***zEDC Express***
- Flash Express
- FICON Express8S
- Carry forward only - FICON Express8[1], FICON Express4S[1], FICON Express4[1]

Linking up to Speed Up

NEW
- ***10GbE RoCE Express***

NEW
- ***OSA-Express5S***

- OSA-Express4S
- OSA Express3[1]
- 10 GbE for connecting a IBM PureSystems™

Note: No ESCON support on zEC12 and zBC12
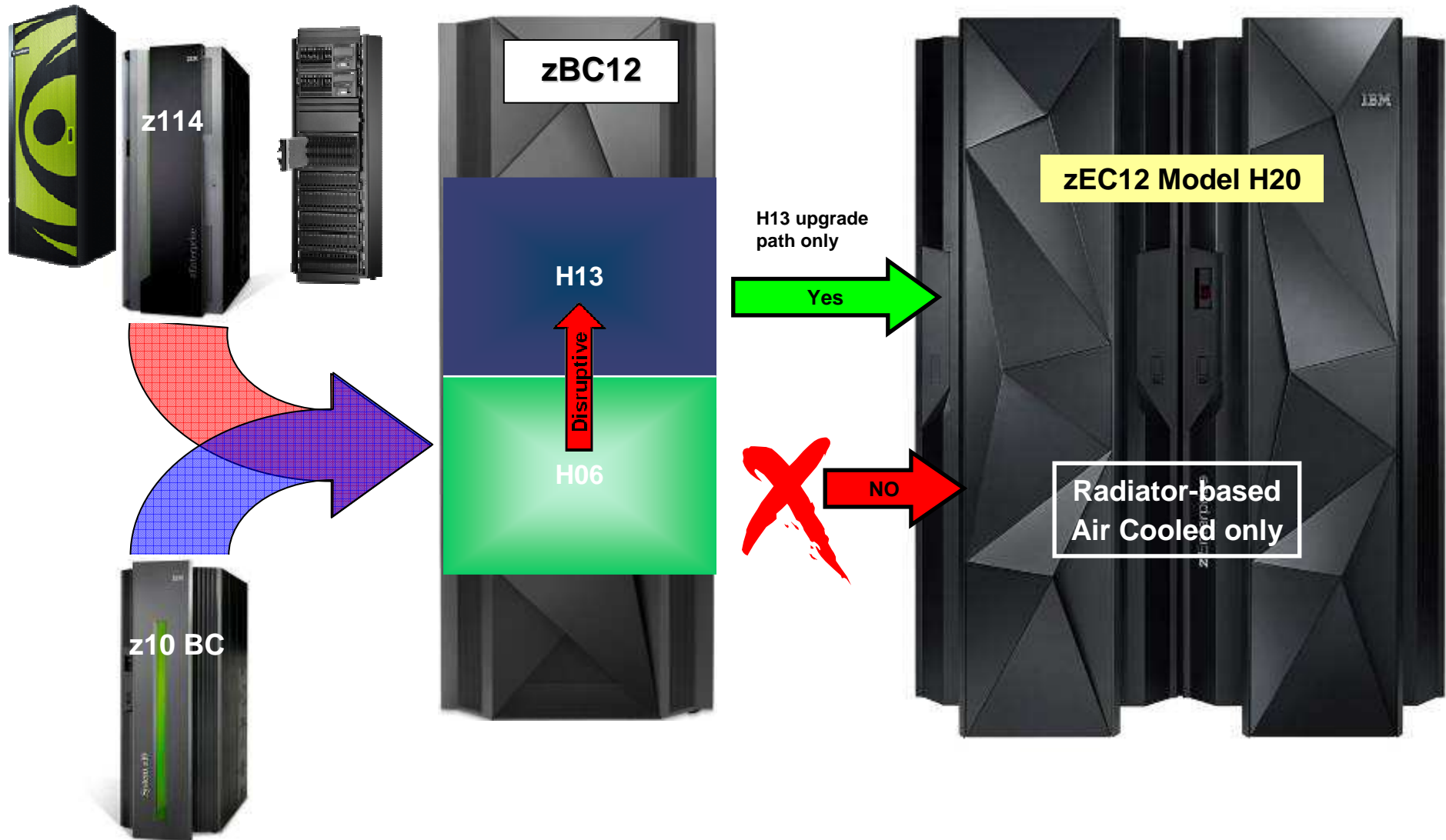
[1] Carry forward only

**** Green* indicates new for zEC12**

Plus – High Performance FICON for System z (zHPF) is a performance and RAS enhancement designed to help reduce FICON channel overhead

zBC12 Upgrade paths

z114

zBC12

H13

Disruptive

H06

H13 upgrade path only

Yes

NO

z10 BC

zEC12 Model H20

Radiator-based Air Cooled only

Advantages of building your Private Cloud on IBM zEnterprise

Increased Productivity

Higher Utilization, Scalability

More Efficient Data Center

Greater Reliability, Availability, Security

- Advanced workload management that provisions resources on the fly

- U.S. Bank reduced provisioning time from 45 days to 20 minutes

- Up to 100% CPU utilization

- "Shared everything" architecture

- Manage up to 100,000 virtual servers

- Up to 80% less energy than existing distributed servers

- Less floor space

- Fewer parts to manage

- Built-in hardware redundancy

- Decades of RAS innovation

- Capacity and Backup on Demand

- Highest security rating EAL5+

*The City and County of Honolulu implemented a cloud environment that **reduced database licensing costs by 68 percent and reduced time to deploy applications from one week to a few hours***

zEnterprise Delivers an Open Cloud infrastructure

Integrate | **Automate** | **Orchestrate**

IBM Products & Offerings

- IBM zEnterprise®: zEC12, z196, zBC12, z114
- Linux® on System z

- Tivoli® Provisioning Manager
- Cloud Ready for Linux on System z

- Tivoli Service Automation Manager

openstack CLOUD SOFTWARE

New

- z/VM® 6.3

- SmartCloud Entry
- SmartCloud Provisioning

- SmartCloud Orchestrator

System z support currently in development
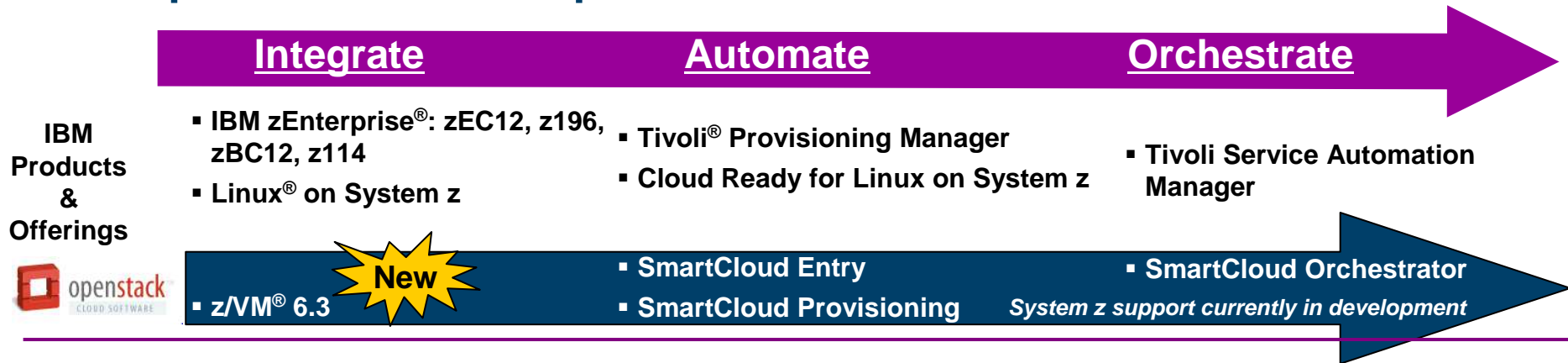
z/VM 6.3 - Smarter Computing with Efficiency at Scale

Improved economies of scale with z/VM Support for 1TB of Real Memory

- **Better performance** for large virtual machines
  - 4x increase in memory scalability while continuing to maintain nearly 100% resource utilization

- **Reduce LPAR sprawl** for additional horizontal scalabililty
  - up to 4x more virtual machines in a single LPAR depending on workload characteristics

- **Reduced administrative expense** for management of a smaller number of large capacity z/VM host servers

Higher server consolidation ratio with support for more virtual servers than any other platform in a single footprint

Ready for Cloud Deployments

- **Integrated OpenStack support** to allow customers to set up private cloud deployments using SmartCloud Technology

Improving workload deployment for Linux on System z

Learn More: www.vm.ibm.com

System z Virtualization Enables Mixing Of High And Low Priority Workloads Without Penalty

Too much resource given to Low Priority workload

System z

Leading Intel Hypervisor

High Priority workload gets less resource than needed
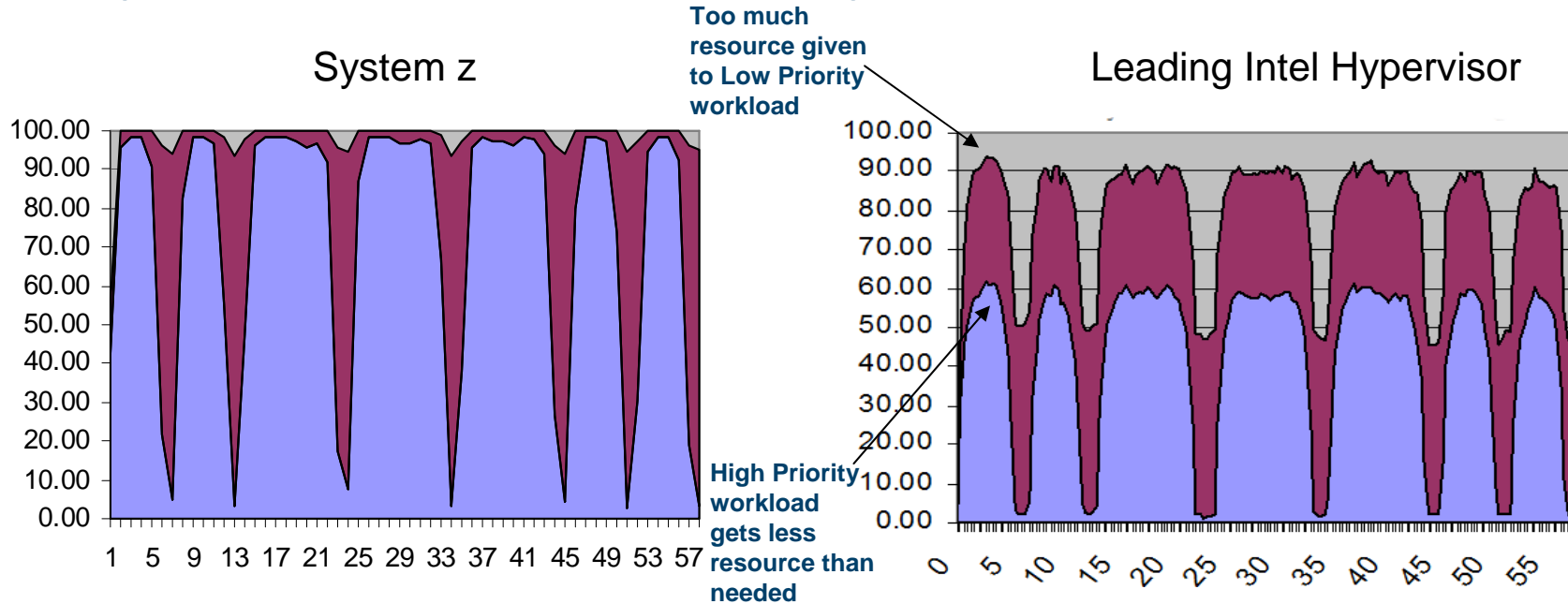
- Priority Workload
  - No throughput reduction
  - No response time increase
- Low Priority Workload
  - Soaks up remaining CPU minutes
- Unused CPU minutes 1.9%

- Priority Workload
  - 31% throughput reduction
  - 45% response time increase
- Low Priority Workload
  - Soaks up more CPU minutes
- Unused CPU minutes 21.9%

zEnterprise Delivers an Open Cloud infrastructure
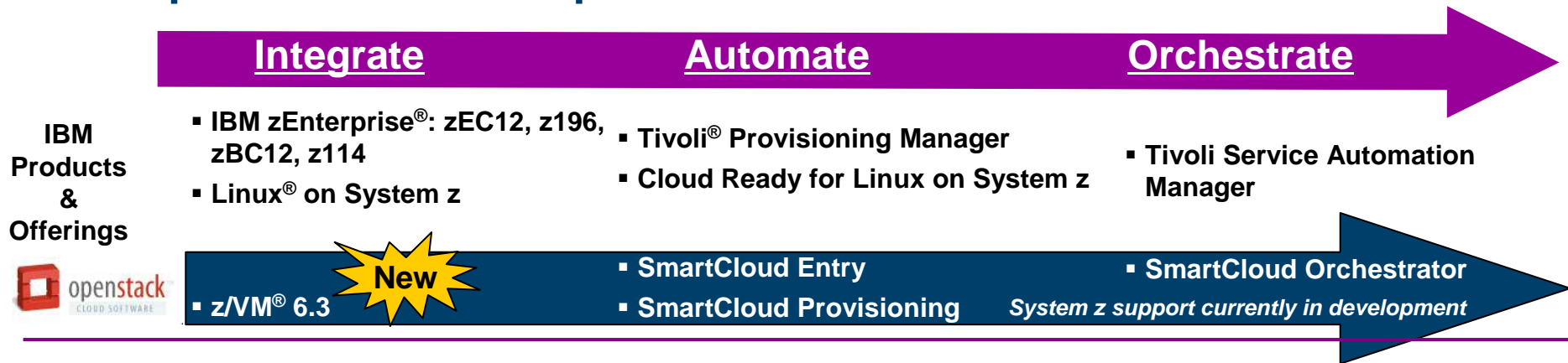
Integrate → **Automate** → **Orchestrate**

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Integrate	Automate	Orchestrate
▪ IBM zEnterprise®: zEC12, z196, zBC12, z114 ▪ Linux® on System z	▪ Tivoli® Provisioning Manager ▪ Cloud Ready for Linux on System z	▪ Tivoli Service Automation Manager

openstack CLOUD SOFTWARE

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▪ SmartCloud Orchestrator
System z support currently in development

ISV Solutions

CSL Wave
▪ Provided by **CSL International**
▪ Hypervisor Manager
▪ Cross marketing agreement to market and promote product

zPRO
▪ Provided by **Velocity Software**
▪ Add-on feature to Velocity's zVPS product that provides performance management
▪ Provides golden image creation, cloning, and operational controls

APPLogic
▪ Provided by **Computer Associates**
▪ Manages both distributed and z/VM environments.

MOAB
▪ Provided by **Adaptive Computing**
▪ Provides a policy based cloud management based on xCAT

Cloud: CSL-WAVE on IBM zEnterprise

CSL-WAVE 3.1

Unleashing the power of the zPenguins

Virtualization Management Where IT Counts

CSL-WAVE = All z POWER !!!

(Without z Learning Curve...)

zEnterprise Delivers an Open Cloud infrastructure

Integrate → Automate → Orchestrate →

IBM Products & Offerings

Integrate
- IBM zEnterprise®: zEC12, z196, zBC12, z114
- Linux® on System z

Automate
- Tivoli® Provisioning Manager
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Orchestrate
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openstack CLOUD SOFTWARE

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ISV Solutions

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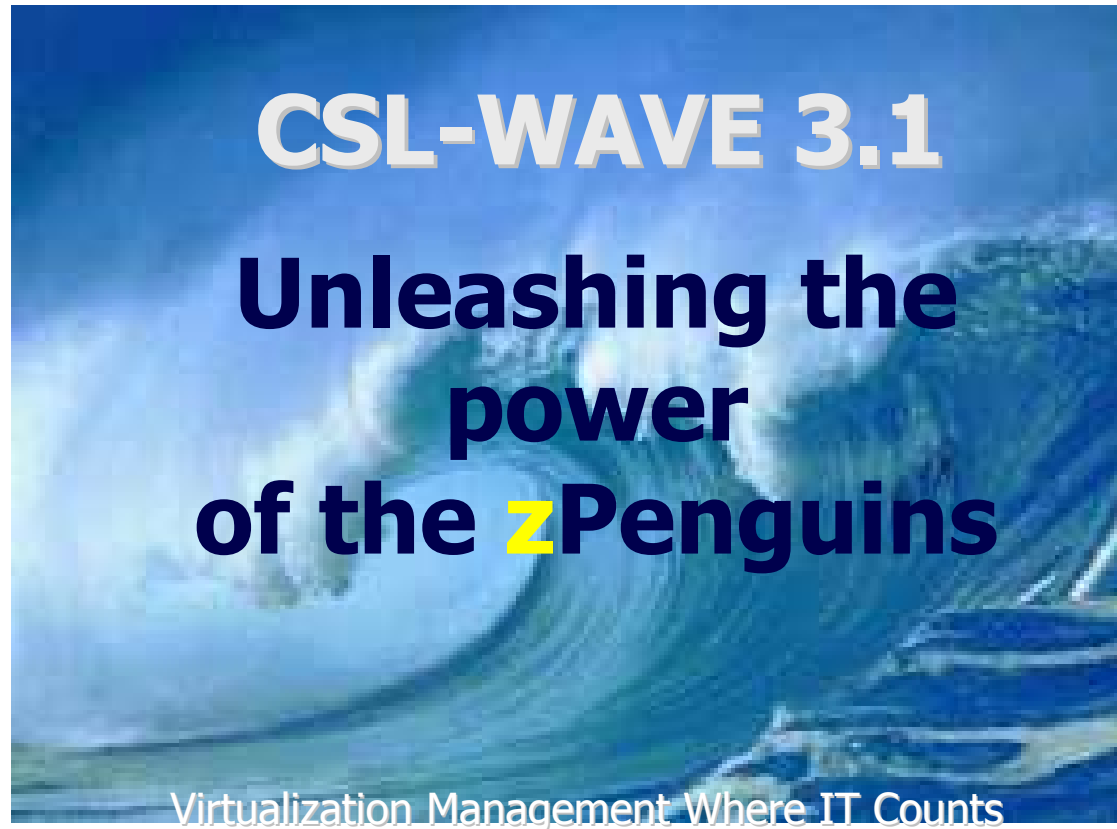- Provides golden image creation, cloning, and operational controls

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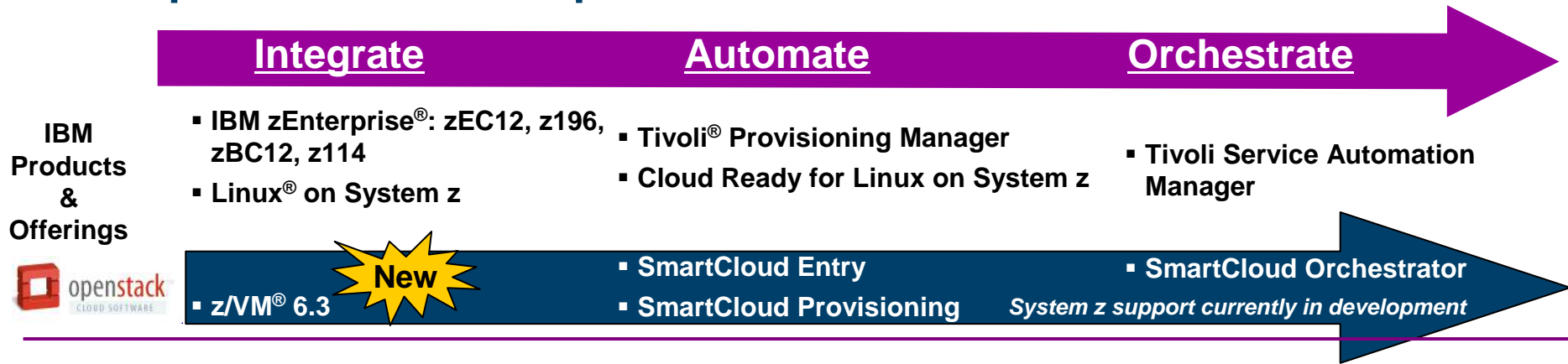- Provides a policy based cloud management based on xCAT

Open Source Options

xCAT
- **E**xtreme **C**loud **A**dministration **T**ool
- Now supported on z/VM through services offering (GTS)

OpenStack®
- Being enabled for z/VM first and eventually zManager
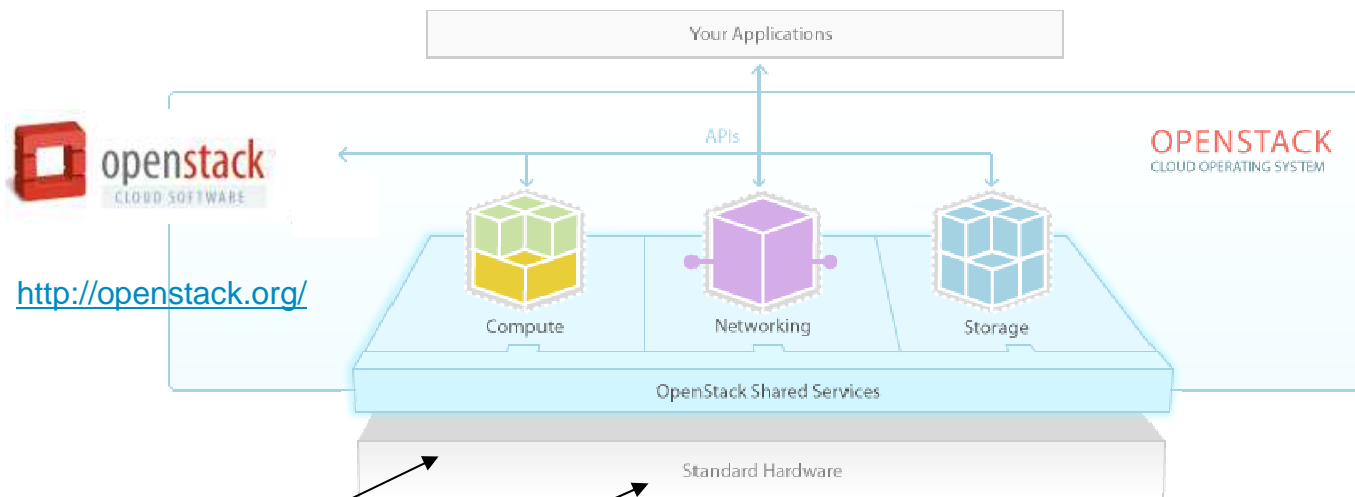- Being used as a code base for SCE / SCP / SCO

OpenStack Strategy

Cloud Management Application
(including SmartCloud technologies)

Self-Service

Services Catalog

Multi-Tenant

Billing and Charge-back

Your Applications

APIs

openstack
CLOUD SOFTWARE

OPENSTACK
CLOUD OPERATING SYSTEM

http://openstack.org/

Compute

Networking

Storage

OpenStack Shared Services

Standard Hardware

Compute (Nova) Storage (Cinder) Network (Quantum) Provision and manage virtual resources such as servers, networking, and storage.

Direct Hypervisor Integration System z support (z/VM followed by zManager) being added to OpenStack, in the same manner as other hypervisors
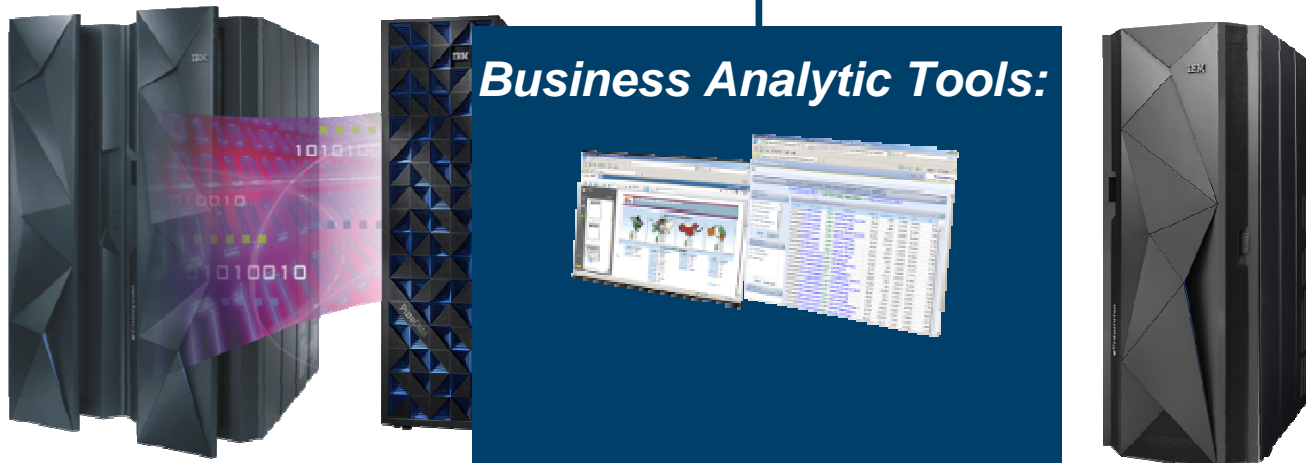
z/VM   zManager

kvm Xen Hyper-V Power VM FSM VMware

66

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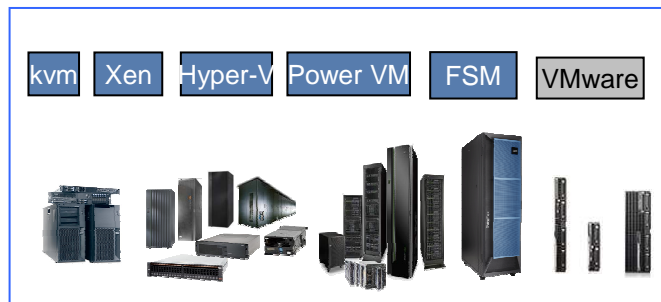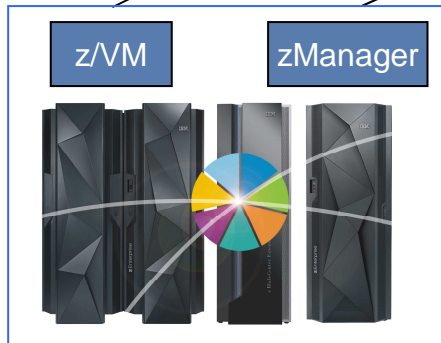
System z: The INFORMATION HUB of the Enterprise

Infrastructure Matters…

IBM zEnterprise® Analytics System 9700/9710

Enterprise Linux® Server for Analytics

Business Analytic Tools:

- *Both have Linux LPAR*
- *Cognos®, SPSS®*
- *Dashboards, Scorecards*

- z/OS® based analytics offering:
  - DB2® for z/OS LPAR for data
  - Accelerator for query performance
  - z/OS QoS: Security, Availability

- Linux LPAR for Analytic workloads
  - Distributed database
  - Linux, z/VM® QoS
  - Scalability, Virtualization

IBM DB2 Analytics Accelerator V3.1 - Highlights

Building on the Core Values

Fast
Complex queries run up to 2000x faster while retaining single record lookup speed

Cost Saving
Eliminate costly query tuning while offloading complex query processing

Appliance
No applications to change, just plug it in, load the data, and gain the value

Reducing the Cost of High Speed Analytics

- **Choice of historical data location – High Performance Storage Saver**
  - Reduces host data warehouse storage usage by over 95%
  - Significantly reduces cost of host storage resources and administration

- **Real time analytics – Incremental Update**
  - Data changes are propagated for high-speed use as they occur
  - Current information is available for right-time decisions
  - Extends the accelerator use to reporting on operational data

- **Faster data refresh – Unload Lite**
  - Data available for analytics faster
    - Refresh of tables or partitions is much faster and more efficient
    - More optimized version of unloading data from DB2

- **New capacity – Full range of Netezza® models supported**
  - Now expandable to 960 cores and 1.28 petabytes

- **New queries**
  - More queries eligible for acceleration

68
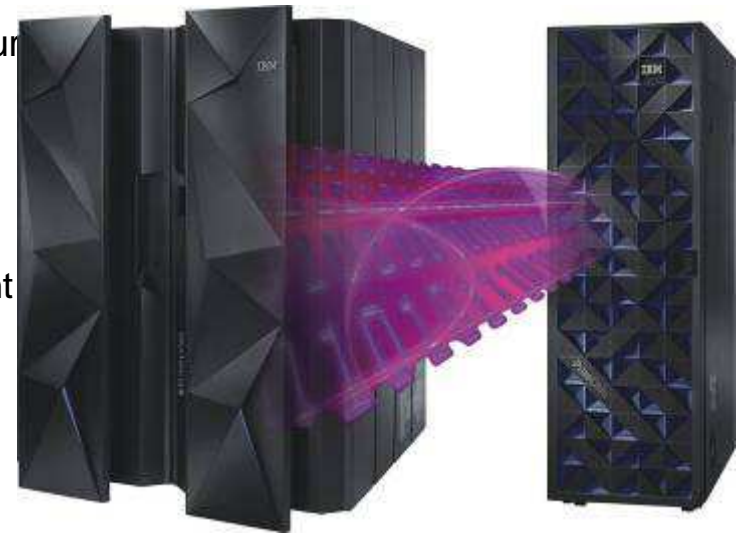
zEnterprise System delivers a security ready infrastructure

Up to 52%
lower security administrator efforts by using zSecure with RACF[1]

Intrinsic platform security and privacy

- Cryptography built into processor chip and Crypto Express4S
- Secure your critical information assets (or data) throughout their life cycle
- Simplified setup and management with *new TKE 7.3*

Spanning multiple industries

- *Enhanced* digital signature cryptography (PKCS#11) to protect data
- Payment card industry solutions with EMV support for credit and debit cards

Leveraging operating system security

- Qualities needed by enterprises adopting cloud application architectures
- Wide range of cryptographic primitives exploited by operating system and middleware to help secure and accelerate workloads

System z exclusive cryptography

- *z/OS V2.1 Crypto as a service*
- Blends the speed of processor based crypto with the security of the Crypto Express coprocessor

Total isolation of workloads and data

- EAL5+ means the highest levels of protection on commercial server for secure isolation of LPARs
- EAL4+ for z/OS and z/VM

* Green indicates new for zEC12

New z/OS V2.1 ready to protect data, reduce risk and strengthen customer trust

[1]   Based on input from a Financial Service Provider and ROI business value tools by IBM SWG   © 2013 IBM Corporation

# Why select zEnterprise to protect your business

- **Highest security rating** for commercially available servers[1]

- System z has a large number of cloud users with **98%** fewer cloud incursions then other platforms[2]

- **52%** lower security administrative costs[3]

- Total Cost of Information can be reduced as much as **63%** over other offerings[4]

- Savings of up to **70%** of audit and compliance overhead[5]

- Up to **74%** lower staffing level requirements[6]

- **Helps identify fraud risks in real time** and help stops them before they happen

- Enables a **reduction of risk** and **simplification of governance** and compliance

- IBM System z® has secured systems for over **40 years**

1. Based on Common Criteria Evaluation Assurance Level 5+ security classification. http://www-03.ibm.com/press/us/en/pressrelease/38653.wss
2. Analyst Paper Solitaire Interglobal Tracked, Hacked and Attacked 2013
3. *Source:* IBM Study with external customers. Results may vary.
4. Analyst Paper Solitaire Interglobal Tracked, Hacked and Attacked 2013
5. Based on a European Insurance Co's input to IBM BVA using IBM zSecure
6 Analyst Paper: Solitaire Interglobal Tracked, Hacked and Attacked 2013

SmarterComputing

Mobile and cloud with the zEnterprise
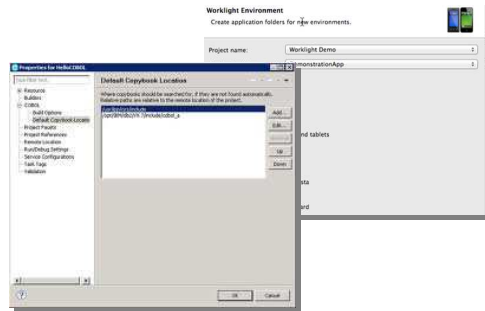
System z applications
Core CICS, IMS, DB2 and other applications and databases cloud and mobile ready

Mobile Devices
developed for the Cloud through web-based shared apps using Worklight

Infrastructure
Cloud orchestration, provisioning and automation with Tivoli® solutions

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Why System z and mobile?

- ✓ System z is leader in transaction processing with the ability to handle volumes of critical data

- ✓ System z secures the data for mobile processing from mainframe to mobile device

- ✓ System z is the perfect environment for developing a mobile, cloud, and analytics integrated solution

System z
A sophisticated platform for mobile computing

Extending the mainframe with new capabilities

An Integrated
Data & Analytics
Engine

Efficient, Agile
Cloud Computing
Foundation

Sophisticated
platform for
Mobile Computing

Ultimate in
**Trusted Security
& Resiliency**

Extending the mainframe with new capabilities

- **Energize your applications** *through integration, improved performance and networking innovations*

- **Save money** *by rightsizing without compromise, consolidation opportunities broadened and compression acceleration*

- **Secure it all** *with confidence on a trusted and resilient infrastructure*

An Integrated **Data & Analytics** Engine

Efficient, Agile **Cloud Computing** Foundation

Sophisticated platform for **Mobile Computing**

Ultimate in **Trusted Security & Resiliency**

Merci de votre attention

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BladeCenter*	InfoSphere*	z/VSE*
CICS Explorer*	OMEGAMON*	zEnterprise*
CICS*	Optim	zSecure
Cognos*	SPSS*	
DataPower*	System z*	

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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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