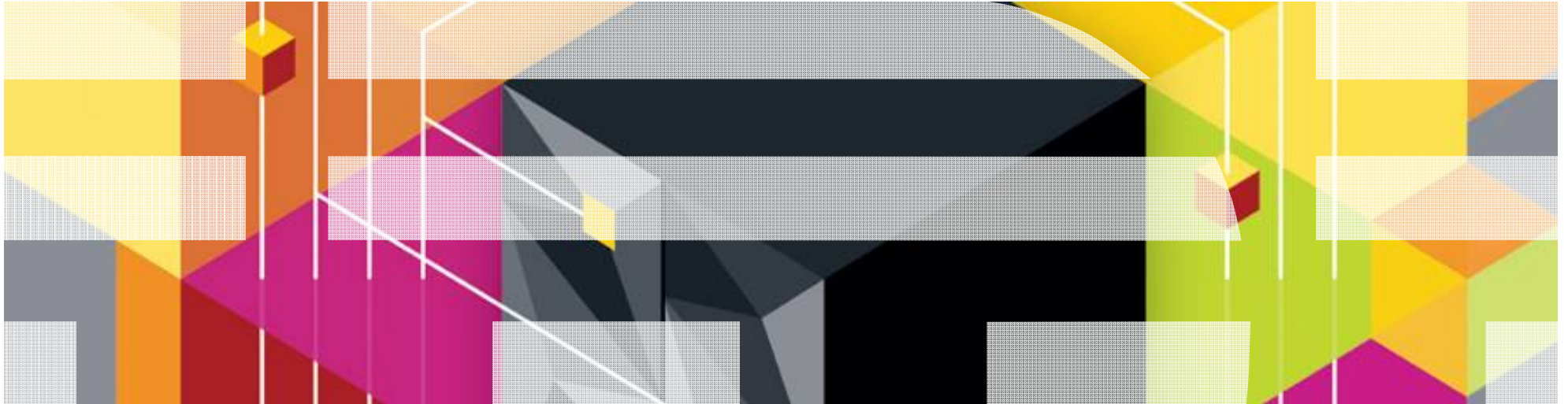Jim Elliott
Consulting Sales Specialist – System z; zChampion; Linux Champion
IBM Canada Ltd.

IBM

Cross Architectural Services for Cloud on System z

IBM

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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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Smarter Computing: What's next. Ready now.
IBM System z delivers capabilities for Smarter Computing

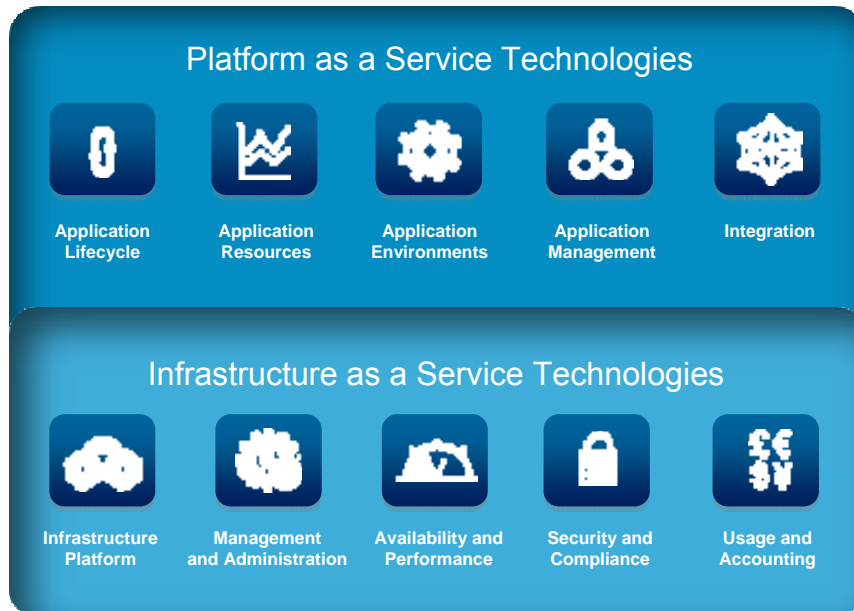| Cloud Ready	Data Ready	Security Ready
- An efficient, scalable infrastructure - Improved speed and flexibility - Business innovation	- Shared access to trustworthy information - Actionable insight on operational data - Maximum availability of business insight	- Data security and integrity - Trusted identity and access - Minimal overhead to meet compliance requirements

SmartCloud – IBM's vision for cloud computing

IBMSmart**Cloud** Foundation

Platform as a Service Technologies

| Application Lifecycle | Application Resources | Application Environments | Application Management | Integration |

Infrastructure as a Service Technologies

| Infrastructure Platform | Management and Administration | Availability and Performance | Security and Compliance | Usage and Accounting |

- **System z is a logical choice for cloud computing:**
  - Leading virtualization capabilities
  - Massively scalable
  - Offers a superior user experience
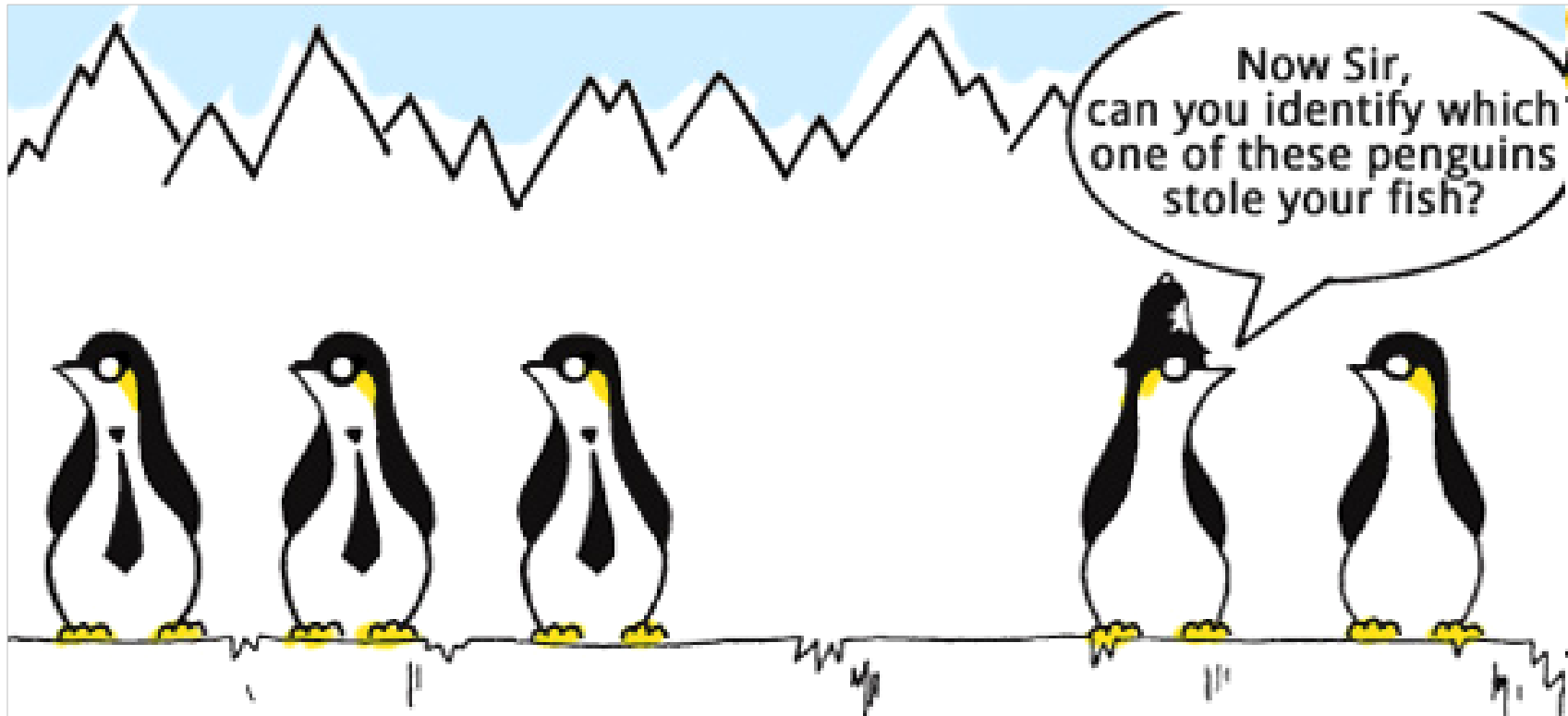 - Characterized by great economics.

VISIBILITY   **CONTROL**   **AUTOMATION**

## IBM Tivoli offers integrated service management capabilities for cloud

- **All Linux systems look the same, though on different architectures, and have the same Linux kernel source**

- **But they have different personalities, qualities, features and options derived from the architectures**

- **Linux on System z has some unique characteristics which make it well suited to extreme virtualization and the Cloud**

Consolidate and deploy software to the "Best Fit" technology
*Up to hundreds of distributed server workloads on a single server*

- **Extreme consolidation of servers and networking**
- **Fewer components and reduced complexity**
- **Excellent price performance from a software licensing perspective:**
  - 1 System z processor ≈ 1 x86/RISC core
- **Industry-best virtual I/O bandwidth and reliability**
- **Superior levels of virtual server provisioning, monitoring and workload management**
- **System z qualities of dynamic resource management and capacity-on-demand**
- **Seamless integration with z/OS backup and disaster recovery solutions**
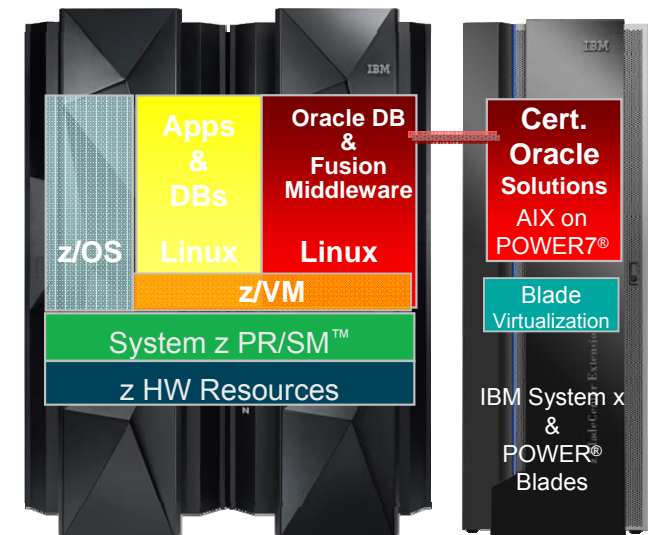
Linux on IBM System z at year-end 2012
Installed Linux MIPS at 51% CAGR[1]

- **22.8% of total installed MIPS run Linux as of 4Q12**

- **Installed IFL MIPS increased 32% from 4Q11 to 4Q12**

- **36% of System z Customers have IFLs installed as of 4Q12**

- **70 of the top 100 System z Customers are running Linux on the mainframe as of 4Q12[2]**

- **43% of new System z Accounts run Linux (2010 through 3Q12)**

- **32% of all System z servers have IFLs**

Installed Capacity Over Time

Installed IFL Capacity

YE04 YE05 YE06 YE07 YE08 YE09 YE10 YE11 YE12
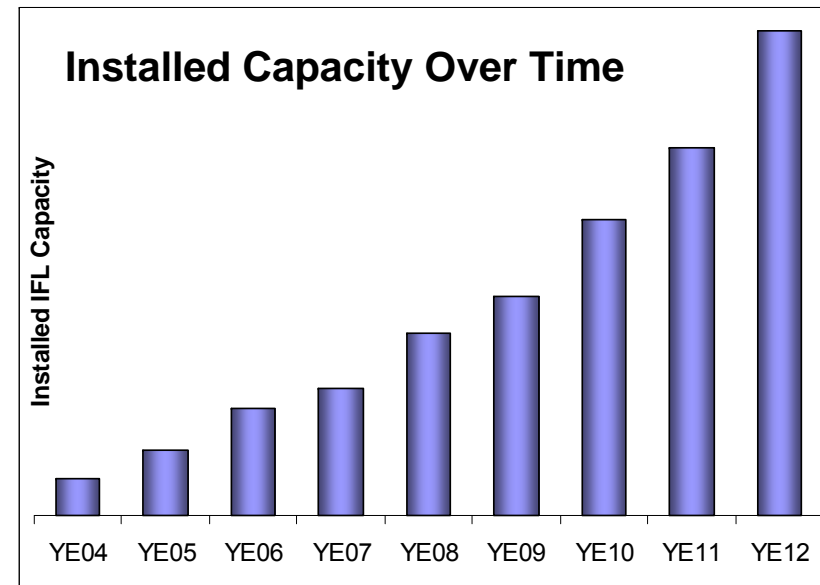
1. Based on YE 2003 to YE 2012
2. Top 100 is based on total installed MIPS

Linux consolidation on System z offers a powerful solution to transform your IT economics

- **Dundee City Council delivers value through new technologies**
  - For several years, the council has run all its core IT systems (mostly Oracle databases and applications) on SUSE Linux Enterprise Server, running on IBM System z servers.
  - *"Running Linux on the System z platform is a cost-efficient approach, especially for software like Oracle, which is licensed on a per-processor basis,"* explains Tim Simpson, IT Support Manager at Dundee City Council.
  - *"We can run 60 virtual machines on just four System z processors – whereas an equivalent x86-based architecture might require several processors for each server! So the savings can be considerable."*
- *http://ibm.com/software/success/cssdb.nsf/CS/STRD-8E3FV7*

- **Baldor Electric Company consolidated hundreds of servers and cuts IT and energy cost**
  - Baldor runs its core SAP landscape on IBM zEnterprise 196 and IBM System z10 Enterprise Class servers. Its IBM DB2® 10 for z/OS® databases run in IBM z/OS partitions, while 70 virtual servers under z/VM provide Linux environments that act as SAP application servers. The company uses 12 Central Processors (CPs) and 6 System z Integrated Information Processors (zIIPs) for DB2 on z/OS and 32 Integrated Facility for Linux (IFL) processors for SAP.
- **http://ibm.com/software/success/cssdb.nsf/CS/STRD-93LEG7**

z/VM Version 6 Release 2 Overview
Accelerate the journey to smarter computing with multi-system virtualization and virtual server mobility

- **Features:**
  - Multisystem virtualization allows up to 4 z/VM instances to be clustered, serviced, and administered as a single system image
  - Live guest relocation moves running Linux virtual servers without disruption to the business
  - Provides a set of shared resources for the z/VM systems and their hosted virtual machines
  - Scales up to four systems horizontally, each with up to 32 CPUs and 256 GB memory
  - High server consolidation ratio with support for more virtual servers than any other platform in a single footprint

- **Benefits:**
  - Relief from the challenges associated with virtual machine sprawl on competitive systems
  - Helps clients avoid planned outages for virtual servers when performing maintenance
  - Provides a more manageable infrastructure for cloud computing
  - Improved systems management to help manage the life cycle of the z/VM hypervisors and the virtual servers
  - Enhanced workload balancing with the added ability to move work to available resource in addition to long standing capability to move system resources to work

2013-02-04 SHARE 13175 Cross Architectural Services for Cloud on System z

Virtualization is evolving from being a way to reduce costs to being a change agent that enables new and more flexible infrastructures

- **Cloud computing**
  - Elastic computing
  - Shared resources
  - Delivered as a service
  - Private, Public, and Hybrid
- **Flexible infrastructure**
  - Pools of heterogeneous resources
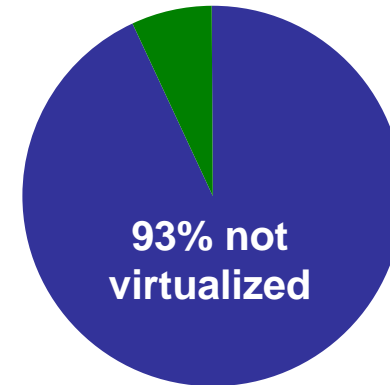 - Policy-based management automation
- **Availability**
  - More running workloads
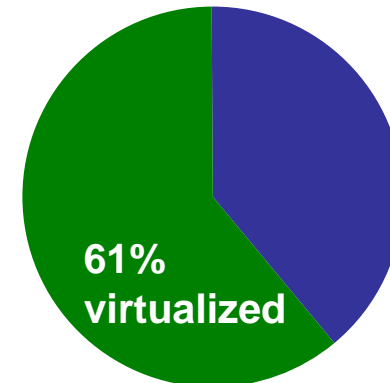 - Improve maintenance window
  - Support old application environments
- **Test and server consolidation**
  - Better hardware utilization
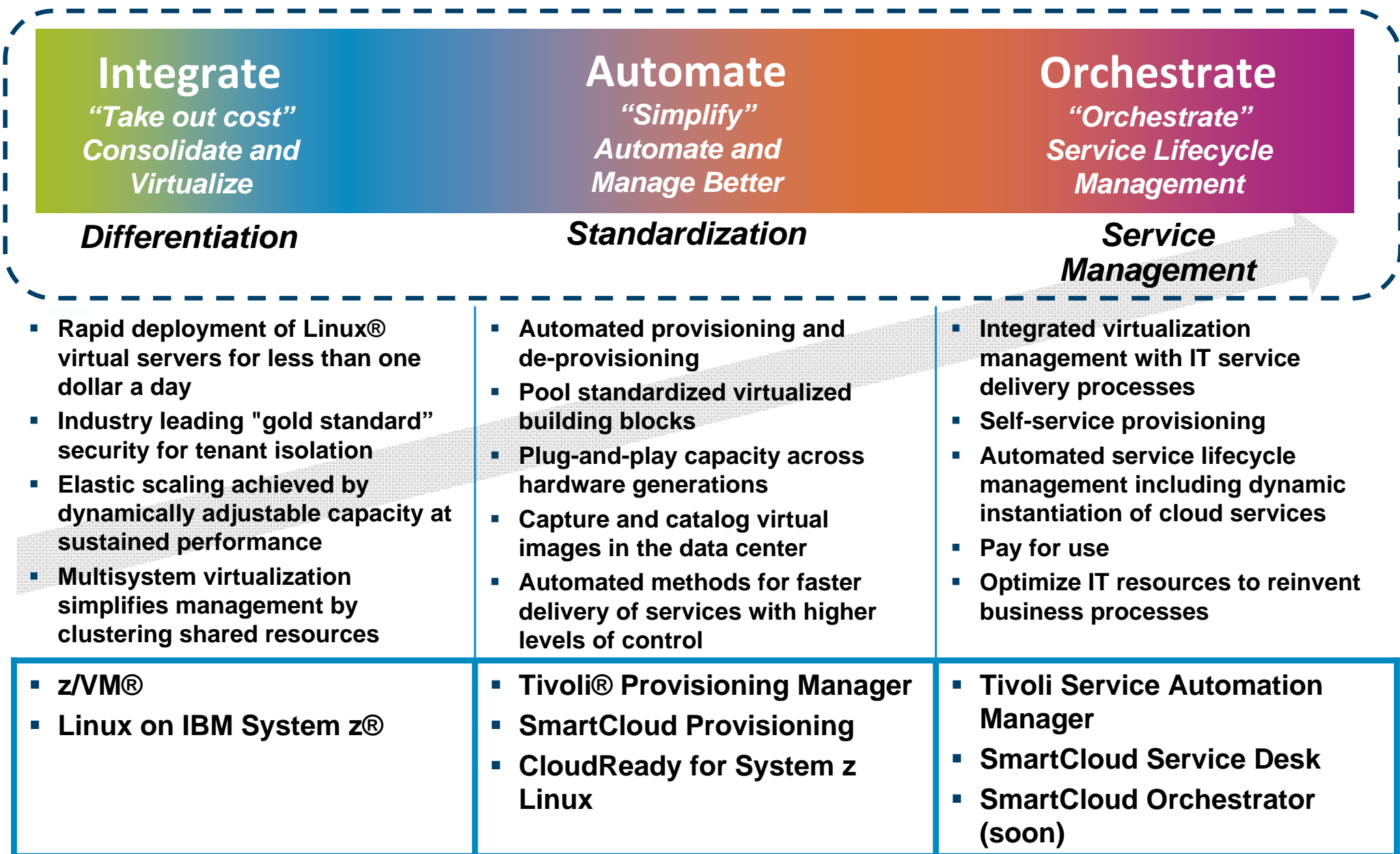 - Lower power consumption

2007

93% not virtualized

2011

61% virtualized

IBM

IBM System z Cloud Blueprint

Integrate	Automate	Orchestrate
"Take out cost" *Consolidate and Virtualize*	*"Simplify"* *Automate and Manage Better*	*"Orchestrate"* *Service Lifecycle Management*
Differentiation	*Standardization*	*Service Management*

▪ Rapid deployment of Linux® virtual servers for less than one dollar a day ▪ Industry leading "gold standard" security for tenant isolation ▪ Elastic scaling achieved by dynamically adjustable capacity at sustained performance ▪ Multisystem virtualization simplifies management by clustering shared resources	▪ Automated provisioning and de-provisioning ▪ Pool standardized virtualized building blocks ▪ Plug-and-play capacity across hardware generations ▪ Capture and catalog virtual images in the data center ▪ Automated methods for faster delivery of services with higher levels of control	▪ Integrated virtualization management with IT service delivery processes ▪ Self-service provisioning ▪ Automated service lifecycle management including dynamic instantiation of cloud services ▪ Pay for use ▪ Optimize IT resources to reinvent business processes
▪ **z/VM®** ▪ **Linux on IBM System z®**	▪ **Tivoli® Provisioning Manager** ▪ **SmartCloud Provisioning** ▪ **CloudReady for System z Linux**	▪ **Tivoli Service Automation Manager** ▪ **SmartCloud Service Desk** ▪ **SmartCloud Orchestrator (soon)**

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IBM System z technology to support your Cloud journey

Infrastructure Management

Infrastructure Operation

Private Cloud Management

Private Cloud SAP Management

zEnterprise Starter Edition for Cloud

Cloud Ready for Linux on System z

IBM System z Solution Edition for Cloud Computing

IBM Service Automation Cloud for SAP on zEnterprise

- **Supporting Cloud implementation stages**
  - Infrastructure virtualization
  - Infrastructure management solutions
  - Private Cloud management solutions

Enterprise Cloud Computing
A secure cloud for data enables improved service to their customers

- **The University of Bari fosters innovation in the cloud**

  - The University leveraged the IBM System z Solution Edition for Cloud Computing – a virtualized infrastructure that uses IBM System z, IBM System Storage®, SUSE Linux Enterprise Server for IBM System z and IBM Tivoli® Service Automation Manager to enable intelligent management of Linux virtual machines.

  - The System z cloud has enabled the development of innovative applications for the local fishing, wine-making and logistics industries, as well as the University itself.

- **http://ibm.com/software/success/cssdb. nsf/CS/STRD-8D7NNV**

- **Nationwide cuts costs in the cloud**

  - Smart workload consolidation from IBM.

  - Nationwide consolidated its distributed server landscape to Linux virtual servers running on IBM System z mainframes, creating a multi-platform private cloud optimized for all its different workloads.

  - With IBM z/VM, the virtualized servers are able to use the fast I/O of the mainframe and share its resources, while simultaneously taking advantage of the traditional mainframe strengths of reliability and high availability.

- **http://ibm.com/software/success/cssdb. nsf/CS/STRD-8YSM3M**

All information can be incorporated into an enterprise information system on IBM System z
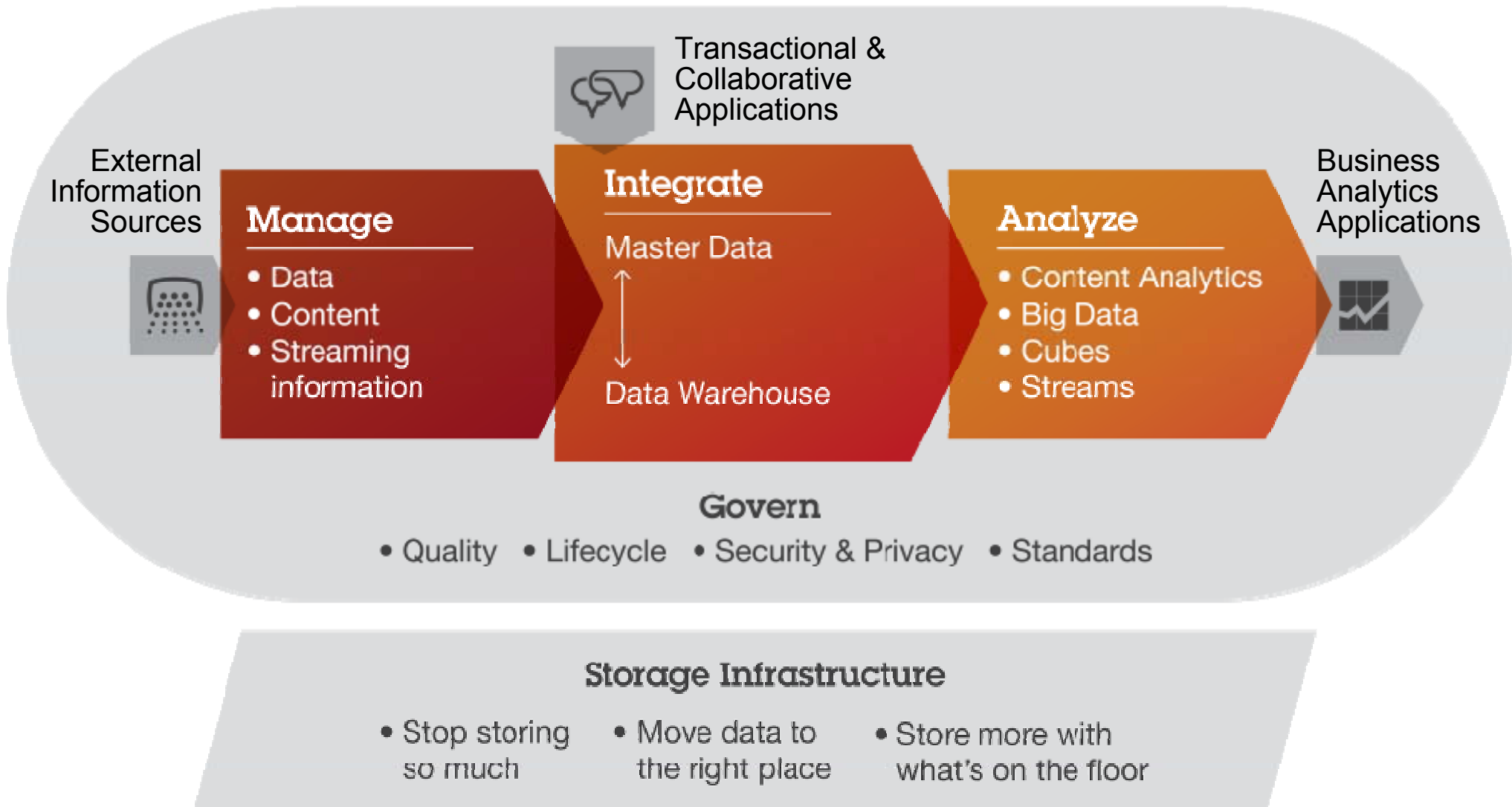
IBM business analytics and data warehousing solutions on System z
Cost effectively exploit information for optimized business performance

- **Miami-Dade County builds a highly scalable private cloud analytics platform**

  - *"We realized that Linux on System z was an extremely cost-effective platform for certain types of applications, especially if they need the rock-solid reliability and availability that the mainframe can offer,"* comments Jose Eskert, Senior System Programmer at Miami-Dade County.

  - Rosario Fiallos, Enterprise Business Intelligence Architect, adds: *"We had a situation where there were a few different Cognos systems that were being used by different departments—some running on small Wintel servers, or even on desktop PCs, and others on Unix servers. But we had big ambitions for Cognos to become a true enterprise system, which meant we needed a much more powerful and scalable infrastructure. Moving to Linux on System z was the perfect option."*

- *http://ibm.com/software/success/cssdb.nsf/CS/STRD-8WZDE2*

- **Bankia gains innovative insights to boost competitiveness**

  - *"An ETL solution like InfoSphere DataStage was vital for our business, as we wanted to make sure that data from each of the seven joint-venture banks could be gathered and analyzed by a single central system, instead of having our analytics function scattered across several different tools and data sources. A reliable method of collecting, cleaning and standardizing data was critical to ensure consistent, accurate group-wide analysis, which would help us manage the business as effectively as possible."*

  - Bankia chose to run the IBM InfoSphere software on Linux on System z, which combines the open standards of Linux with the power and resilience of the IBM System z mainframe.

- **http://ibm.com/software/success/cssdb.nsf/CS/STRD-924MB2**

IBM business analytics and data warehousing solutions on System z
Cost effectively exploit information for optimized business performance

- **Marist College gets the most out of its cloud environment**
  - The IBM SmartCloud solution at Marist College is based on the IBM zEnterprise 114 mainframe with Integrated Facility for Linux engines running a combination of IBM z/OS, IBM z/VM and SUSE Linux® operating systems.
  - For its analytics software, the college uses IBM Cognos® Business Intelligence for Linux on IBM System z® and IBM SPSS® Modeler. The college primarily uses IBM DB2 for Linux and also IBM DB2 for z/OS to provide database support for college courses.
- **http://ibm.com/software/success/cssdb. nsf/CS/KFIN-8ZKPB4**

- **Analytics on an enterprise scale**
  - Blue Insight offers services for data warehousing and analytics, all based on the IBM System z architecture. The services include IBM Information Server and IBM InfoSphere® Warehouse, with InfoSphere DataStage® and QualityStage® to handle extract, transform and load (ETL) from the source systems. All data is analyzed using IBM Cognos Business Intelligence for Linux on System z, which generates the reports and distributes them to the appropriate users, or publishes them on the IBM intranet. The Blue Insight team has also introduced IBM SPSS Statistics and SPSS Modeler to provide predictive analytics capabilities as a service from the same System z private cloud.
- **http://ibm.com/software/success/cssdb. nsf/CS/STRD-8U4FCL**

IBM Enterprise Linux Server
An ideal platform for optimized workload deployment

- **The Enterprise Linux Server (ELS)**
  - Combines the modern System z server and virtualization technologies with Linux

  - Provides high scalability, flexibility and security

  - Allows for an IT infrastructure inside a single, physical server

  - Allows for processor-based pricing for most IBM Linux software and most vendor software products

  - Does not require any other operating system skill, beside virtualization and Linux skills

  - Does not increase any IBM software charges for traditional System z operating systems and middleware

ELS with up ro 101 cores running at 5.5 GHz

ELS with up to 80 cores running at 5.2 GHz

ELS with up to 10 cores running at 3.8 GHz

Improve IT economics and drive greater performance
IBM Enterprise Linux Server can do more for less

- **EFiS EDI Finance Service AG boosts business flexibility and efficiency**
  - EFiS implemented an IBM System z Solution Edition for Enterprise Linux based a new IBM zEnterprise® 114 server. It also uses IBM WebSphere® software to manage its application environment.
  - In 2008, this strategy led the company to replace approximately 200 x86-architecture servers, including a number of Sun Solaris systems, that were not fully meeting its performance or scalability requirements. EFiS migrated key applications from its existing servers to an IBM System z Solution Edition for Enterprise Linux based on a single IBM System z9® Business Class server.
- **http://ibm.com/software/success/cssdb. nsf/CS/STRD-8VVEU5**

- **Transzap fuels a competitive edge with increased application uptime from IBM System z**
  - Transzap knew that they wanted to implement virtualization to improve their scalability and business flexibility, and started investigating IBM System z offerings. They were particularly excited to discover the Linux on System z platform, as they had previous experience running their business applications on Linux operating systems.
  - Being able to virtualize Oracle and other applications with z/VM® on System z and having Linux as the operating system foundation have provided Transzap with significant advantages. For example, they are now able to create new database instances over a period of two or three days.
- **http://ibm.com/software/success/cssdb. nsf/CS/ARBN-7V8R8N**

~300 IBM Software products available for Linux on System z
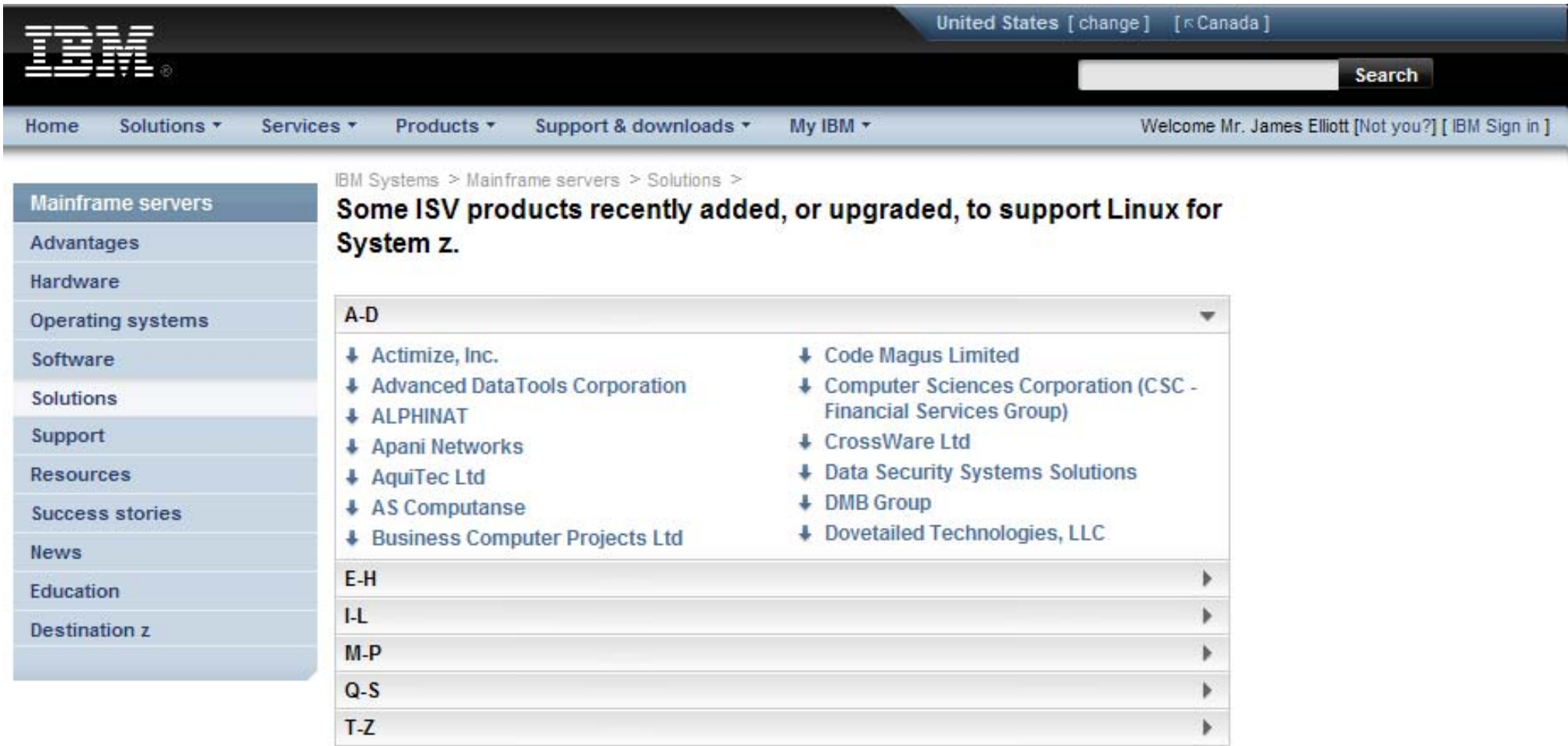
Software products by "brand"

- **AIM (WebSphere)**   90

- **Enterprise Content Management**   8

- **Information Management**   58

  – Infosphere   20

- **Lotus / WorkPlace**   6

- **Rational**   17

- **Tivoli**   101

  – Maximo   26

- **Other**   20

IBM Software workload focus

- Application infrastructure
- People productivity with portal
- Connectivity and integration
- Business process management
- Content management
- Business intelligence
- Cloud computing
- Service and security management
- Service management and process automation

New ISV solutions on Linux on System z solutions

http://www.ibm.com/systems/z/solutions/isv/linuxproduct.html

United States [change]   [↖ Canada]

Search

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IBM Systems > Mainframe servers > Solutions >

Mainframe servers
Advantages
Hardware
Operating systems
Software
Solutions
Support
Resources
Success stories
News
Education
Destination z

Some ISV products recently added, or upgraded, to support Linux for System z.

A-D ▾

↓ Actimize, Inc.
↓ Advanced DataTools Corporation
↓ ALPHINAT
↓ Apani Networks
↓ AquiTec Ltd
↓ AS Computanse
↓ Business Computer Projects Ltd

↓ Code Magus Limited
↓ Computer Sciences Corporation (CSC - Financial Services Group)
↓ CrossWare Ltd
↓ Data Security Systems Solutions
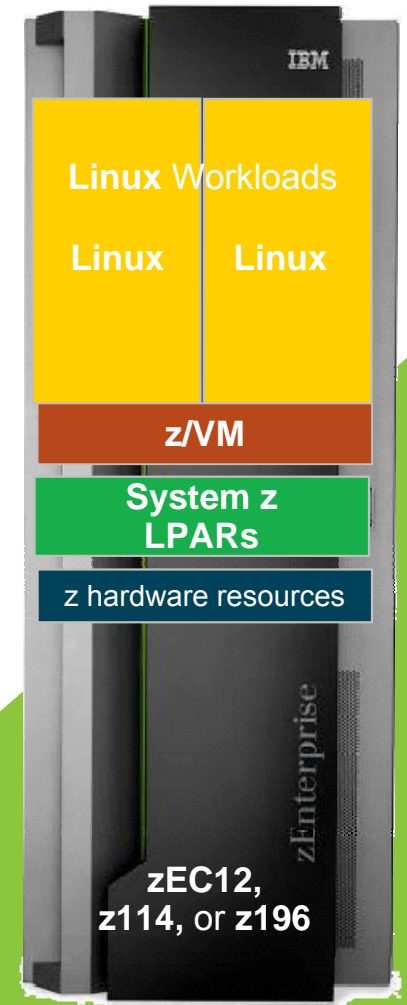↓ DMB Group
↓ Dovetailed Technologies, LLC

E-H ▸

I-L ▸

M-P ▸

Q-S ▸

T-Z ▸

In 2011, we had more than 1400 new / upgraded applications added for z/OS and Linux on System z with 90 new ISV partners

Built-in security for Linux workloads

- **Industry's top-rated EAL5+ security classification* for hardware logical partitions (PR/SM LPAR)**
- **EAL4+ security classification on z/VM offering unmatched levels of secure virtualization and consolidation**
- **Security-rich holistic design to help protect system from malware, viruses, and insider threats**
- **Granular access controls integrated across the platform**
- **Network security features to help address outside threats**
- **Encryption solutions to help secure data from theft or compromise**

The IBM advantage … only System z can boast the combination of EAL5+, an EAL4+ certified hypervisor, FIPS 140-2 Level 4 and related security certifications
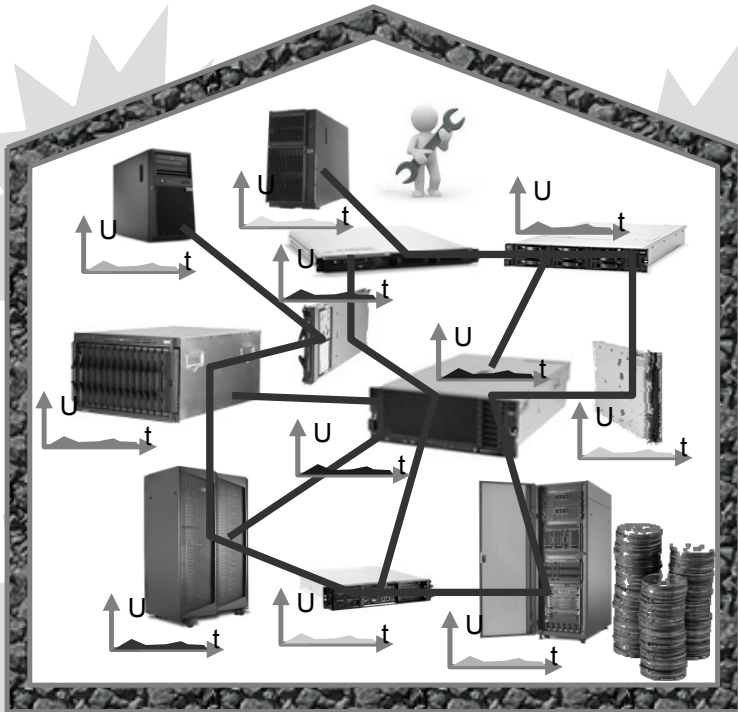
Linux Workloads

Linux | Linux

z/VM

System z LPARs

z hardware resources

zEnterprise

zEC12, z114, or z196

The Gold Standard for Security

* https://www.bsi.bund.de/ContentBSI/EN/Topics/Certification/newcertificates.html

Why IT Optimization with IBM System z
Improved IT efficiency and reduced costs

- Software cost reduction
- Operational and management reduction
- Floor-space and energy reduction
- Network reduction
- Maximizing utilization
- Proximity of data and applications
- Technology refresh effort reduction
- Growth inside a server
- Disaster recovery cost reduction
- Improving security

IT Optimization with IBM System z provides

- **Single server simplicity**
  - Fewer components lead to a simpler and less complex IT environment which requires less administration efforts
- **Efficiency at scale – high flexibility, scalability and resource utilization**
  - All system resources can be shared and directed dynamically between applications, virtually, whenever and wherever they are needed
- **High server capacity with up to 101 processors running at 5.5 GHz**
  - Host up to hundreds of virtual Linux servers in a single footprint
- **Non-disruptive growth within one physical server**
  - Computing capacity can be added on the fly[1]
- **Ultimate security**
  - EAL5+ certification and high-speed cryptography integrated as part of the chip
- **Economics**

[1] Processors, memory, I/O connectivity can be added without disruption.

Thanks!

J. L. (Jim) Elliott

Consulting Sales Specialist – System z

zChampion & Linux Champion

Systems & Technology Group

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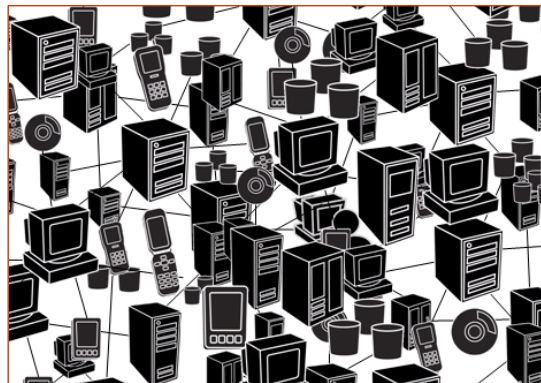*ibm.com/vm/devpages/jelliott/*

IBM

Backup

IBM Enterprise Linux Server
Saving money and reducing complexity

- **Run more applications/software at less expense**
- **Manage more virtual servers with fewer people**
- **Absorb workload spikes more easily**
- **Consolidate more servers per core**
- **Spend less on disaster recovery**
- **Occupy less floor space**
- **Save on energy**

**Helping you
"Do More with Less"**

Linux Servers

Linux Servers

z/VM

z/VM

Shared Everything Infrastructure
(Processor, Memory, Network, Adapters, Crypto, Devices)

A refrigerator size box versus vs. a full room of servers.
The differences are quantum.

Why System z for cloud workloads

Key differentiators for clients dependant on systems to provide flexible, secure, 24x7 uptime for improved QoS and drive innovation

- **Resilient & Secure**
  1. System z is trusted for its' ability to consistently deliver higher workload availability, and higher security than x86 platforms, especially those running Microsoft® Windows®
  2. System z hypervisor and virtualization technologies provide higher security levels with fewer vulnerabilities reported than VMware on x86, providing EAL5+ security
  3. Because IBM owns the server design, manufactures and tests components, and provides warranty and maintenance service for the systems (including processors, memory buffers, I/O hub controllers, service processors, firmware, etc.), IBM system architects have a broad view of how to build a reliable server
  4. Predictive Failure Analysis® and dynamic system adaptation, the IBM availability team has helped to create a unique processor that unleashes significant value to the client.
  5. Superior availability versus competition: 80% more downtime for Windows/x86 and 35% more downtime for Linux/x86

Source: <u>Does Your OS Matter? Selecting a Strategic Operating System</u>; Solitaire Interglobal Ltd (All rights reserved); October 2011.

Why System z for cloud workloads

Key differentiators for clients dependant on systems to provide flexible, secure, 24x7 uptime for improved QoS and drive innovation

- **Optimized**
  1. Unlike x86 systems that feature components from multiple vendors, IBM can optimize performance across the full software and hardware on System z
  2. IBM has specifically optimized Tivoli to leverage the System z software stack
  3. More than 5x the throughput and 2x the efficiency over VMware/x86[1]
  4. IBM provides a complete system stack optimized across hardware, firmware, hypervisor, operating system, middleware and applications to deliver maximum efficiency
  5. Higher utilization of larger shared resource pools adapt better to peak demand
  6. System utilization driven at over 80% sustained average

[1]Source: The Edison Group, A Comparison of PowerVM and VMware vSphere (4.1 & 5.0) Virtualization Performance
https://www14.software.ibm.com/webapp/iwm/web/signup.do?source=stg-web&S_PKG=us-en-po-ar-edison&S_CMP=web-ibm-po-_-ws-powervm

Why System z for cloud workloads
Key differentiators for clients dependant on systems to provide flexible, secure, 24x7 uptime for improved QoS and drive innovation

- **Scalable**
  1. In addition to scale out deployments common on x86 servers, System z can scale up and scale within providing near linear performance scalability
  2. Unlike x86 systems with VMware, System z has highly efficient hypervisor technologies with dynamic workload resource balancing that maximize system utilization
  3. Autonomous system resources management improves response time, lowers cost and improves performance
  4. Greater flexibility to meet peak workload requirements of individual workloads
  5. Fewer systems required for equivalent workloads due to higher VM density and leading per-core performance

Linux on System z has a continuous focus on workload benefits

- **Security Capabilities:**
  - Privacy,
  - Regulatory requirements, Identity management, Common Criteria Certification, Image Isolation,
  - Cryptographic Acceleration,
  - Centralized Authentication,
  - Physically secure communications with HiperSockets and Guest LANs

- **Operational Simplification Capabilities:**
  - Virtualization,
  - Simulation,
  - Single Point of Control,
  - Single System Image,
  - z/OS Similarities/Synergies,
  - Resource Sharing

- **Consolidation Capabilities:**
  - Server, Network, Storage, Staff, Skills, Utilities, Environmental, Applications Hosting of different workloads at the same time

- **Business Resiliency Capabilities:**
  - High Availability,
  - Disaster Recovery, Serviceability, Reliability,
  - Storage failover (HyperSwap), Data replication (XRC, PPRC)
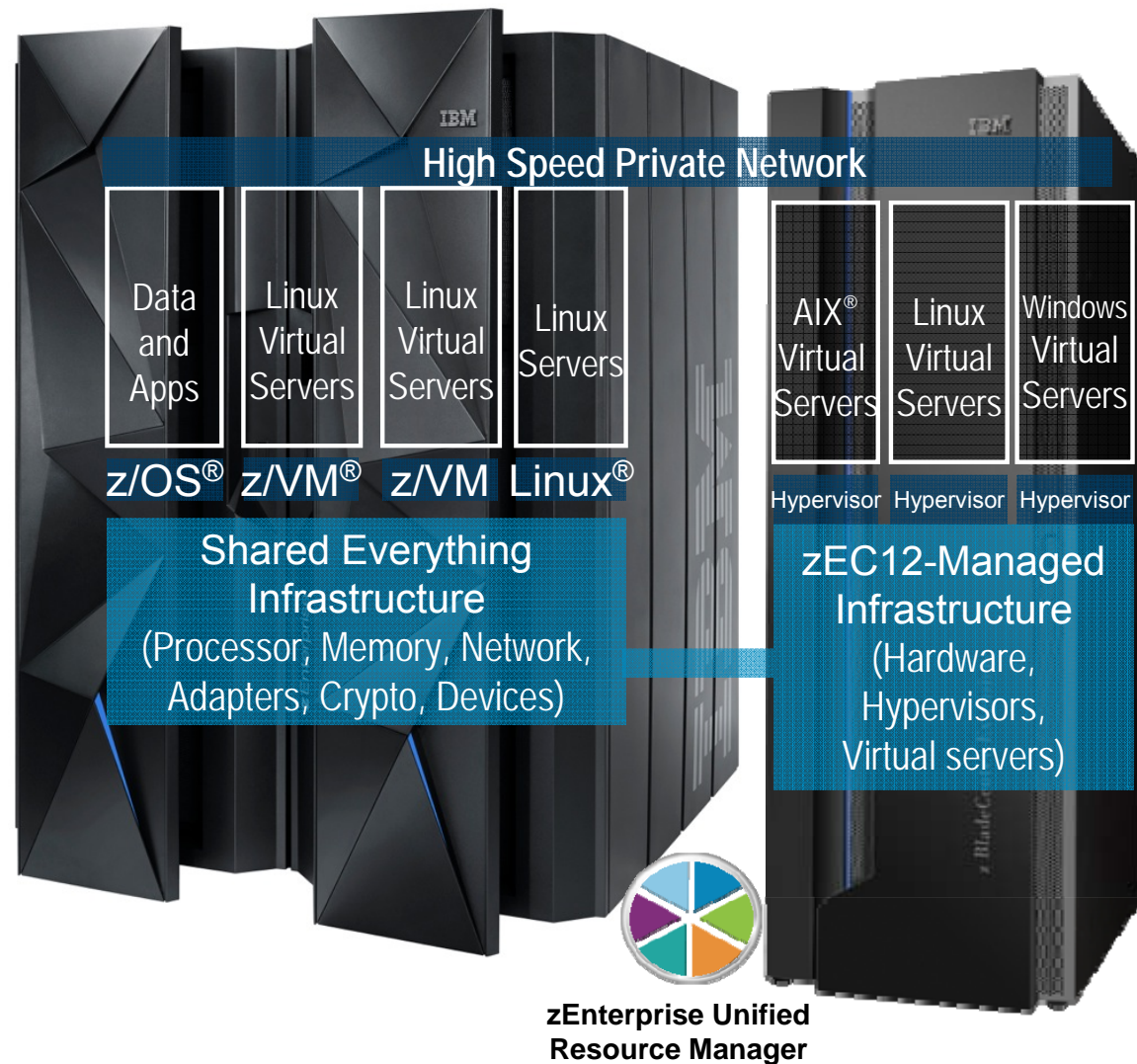
- **Flexibility / On demand Capabilities:**
  - Mixed Workloads: Scale-up & scale-out,
  - Rapid server (de)commissioning,
  - Idle Servers don't consume resources
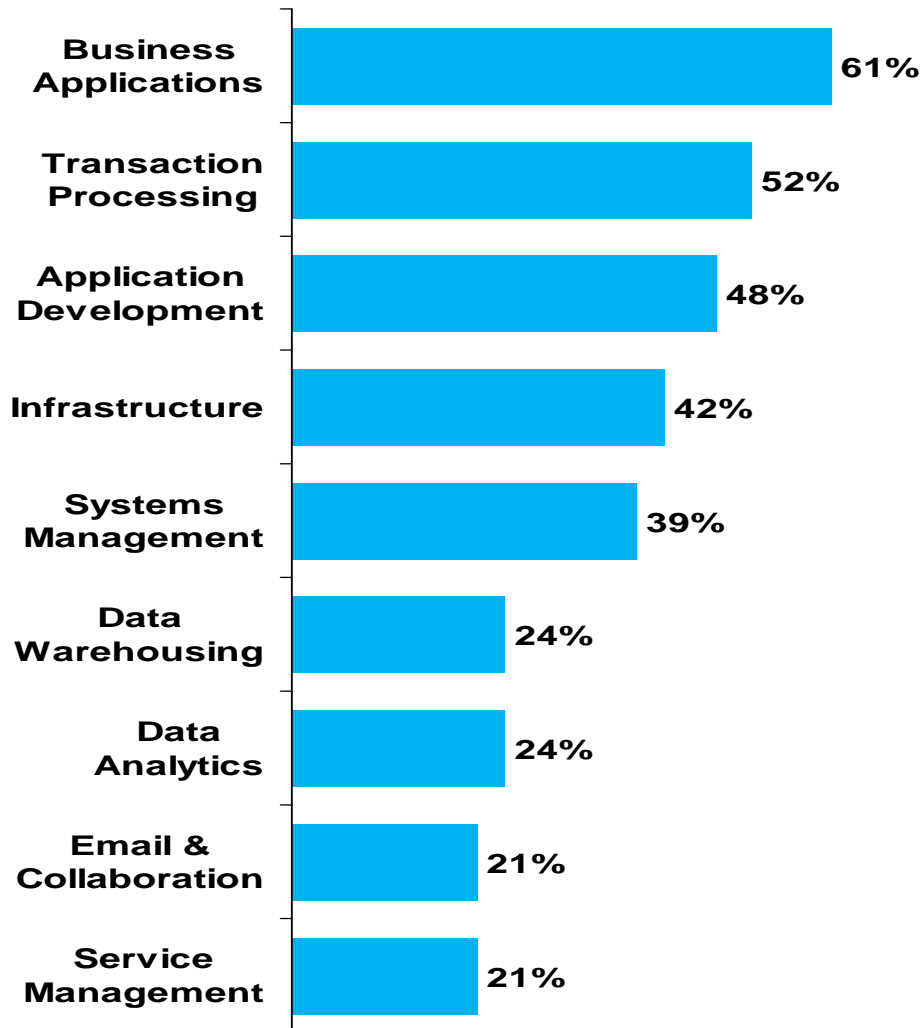
- **Proximity to z/VSE & z/OS managed Data:**
  - Increased transaction throughput, HiperSockets
  - Shared data access
  - Integrated storage management

Best fit usage scenarios for IT Optimization with IBM System z

- **Virtualization and server management**
- **Security services for entire enterprise**
- **Database and warehouse services**
- **Cloud and cloud management**
- **Application development and test**

High Speed Private Network

Data and Apps | Linux Virtual Servers | Linux Virtual Servers | Linux Servers | AIX® Virtual Servers | Linux Virtual Servers | Windows Virtual Servers

z/OS® z/VM® z/VM Linux®

Hypervisor Hypervisor Hypervisor

Shared Everything Infrastructure
(Processor, Memory, Network, Adapters, Crypto, Devices)

zEC12-Managed Infrastructure
(Hardware, Hypervisors, Virtual servers)

zEnterprise Unified Resource Manager

Preferred workloads – Client feedback

Chart (Percentage of survey respondents):

- Business Applications: 61%
- Transaction Processing: 52%
- Application Development: 48%
- Infrastructure: 42%
- Systems Management: 39%
- Data Warehousing: 24%
- Data Analytics: 24%
- Email & Collaboration: 21%
- Service Management: 21%

- **Survey indicates clients run:**
  - Business applications
  - Transaction processing
 - Data warehouse and data analytics
  - Application development

- **Recommended workloads for Linux on System z:**
  - Data services: Cognos, SPSS, DB2, InfoSphere, Informix, Oracle Database, IBI WebFOCUS, …
  - Business applications: WebSphere, SAP, …
  - Development and test: e.g. of WebSphere / Java applications, …
  - Email and collaboration: Lotus Domino, Lotus Collaboration products, …
  - Infrastructure services: FTP, NFS, DNS, Firewall, Proxy, WebSphere MQ, DB2 Connect, CICS Transaction Gateway, …
 - Cloud management: Infrastructure (IaaS) / Platform (PaaS) / Software (SaaS) / Business Process as a Service

Source: 2012 IBM Market Intelligence, Percentage of survey respondents

Example: Leverage proximity of data and applications

- **Proximity of existing and new applications / data on the same physical System z server allows to "Get the best from your investments"**
  - Access from all applications to all data
  - Centralized management
  - High performance
  - High security
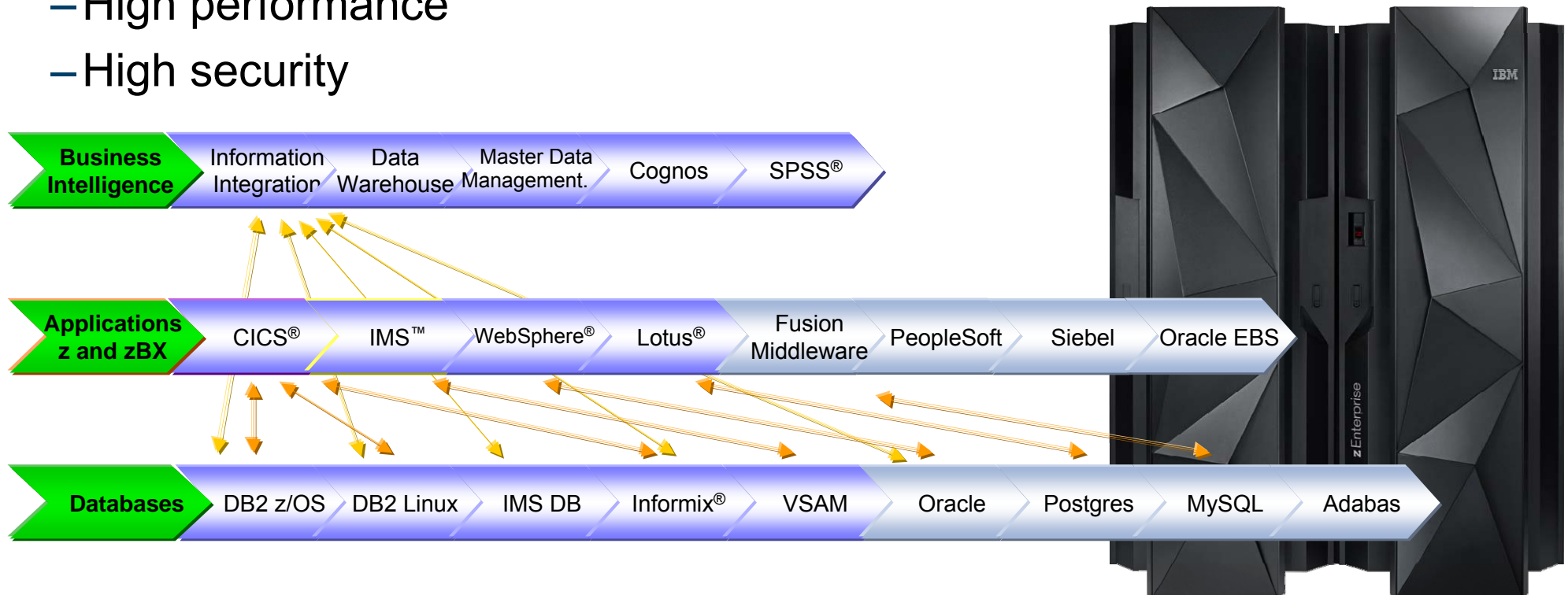
Deploy Oracle DB to the "Best Fit" technology
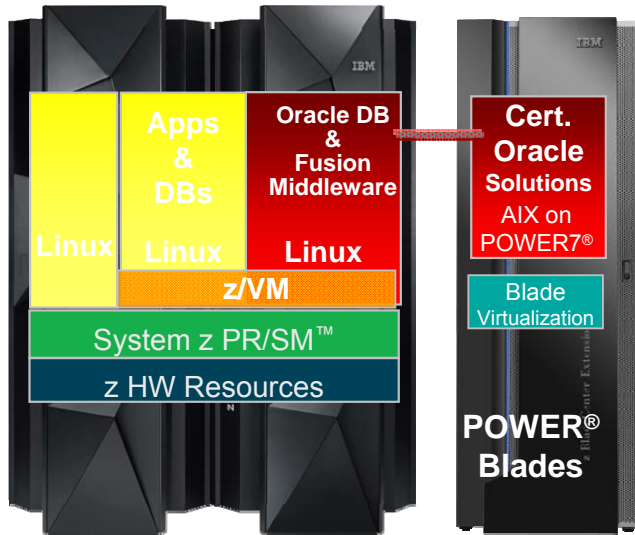
Oracle software deployments (incl. consolidations) **with an Enterprise Linux Server (ELS) provides an excellent price performance.**

- From an Oracle licensing perspective 1 ELS core = 1 core from distributed server
- Less operational efforts
- High levels of security and availability

Business Connexion – South Africa	Sparda Datenverarbeitung EG – Germany
▪ ICT services to the financial sector, government, … and more	▪ IT provider for approximately 4.2 million customers
▪ Approximately 50 virtual Linux servers; flexible environment for hosted services; high performance for Oracle databases	▪ Runs a number of very large Oracle databases, where the virtual Linux server requires 30 GB memory and ~350 GB storage
▪ Enabled competitive pricing for client services	▪ Eperienced >99% availability, which proves the Linux reputation

Business Intelligence and Predictive Analytics
IBM Cognos BI and SPSS
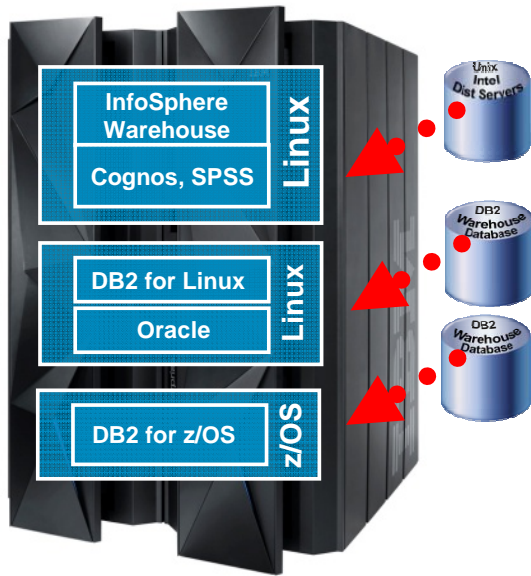
Integrated Stack creates compelling value for the Business Users

- Predictive Analytics, BI, DW on highly scalable, secure and available IBM System z®
- Low cost, easy to manage
- Simplified and faster access to the transactional data

Commercial Bank – China	IBM Blue Insight – USA
▪ **Wanted to transition to a more suitable platform to support new core-banking system**	▪ **IBM's strategic analytics platform, designed to empower IBM employees**
▪ **zEnterprise is best platform for their large data center - a nation-wide consolidation**	▪ **Offers services for data warehousing and analytics, all based on System z; all data is analyzed using Cognos® for Linux on System z, which generates reports for distribution**
▪ **Eliminating potential procurement delays**	▪ **Delivers $25 million savings over five years; enables further savings**

SAP Application Server Deployment and Consolidation
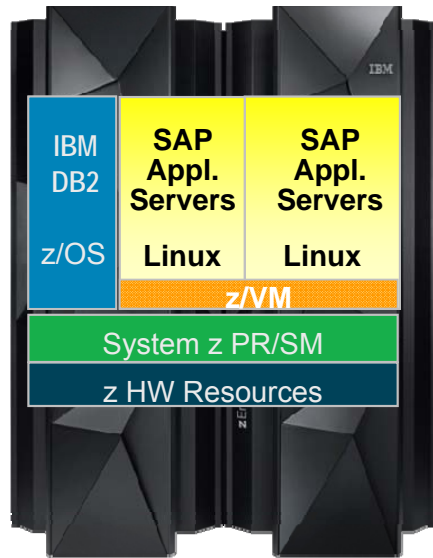
Business Continuity

- DB on z/OS
- Data Sharing in Parallel Sysplex®
- HA with Tivoli® System Automation

Server Consolidation

- Internal near memory-speed communication
- Scale-up and scale-out capabilities
- Fabulous performance throughout

Embasa - Brazil	Endress+Hauser – Germany
▪ **Manages one of the largest water treatment services** ▪ **Needed a high-performance, cost-effective way to introduce SAP software while continuing with the tried and trusted database solution** ▪ **Commercially attractive "Solution Edition" gave confidence to go ahead**	▪ **Specialist in measurement technology; 89 companies across 42 countries** ▪ **Detailed cost-benefit analysis compared Linux on System z to Power®/x86 servers. z/OS, z/VM and a total of 80 IFLs,** ▪ **Simple and intuitive user management tools make it possible for just 1.5 FTEs to administer the entire Linux landscape**

Reliable and scalable business collaboration

Imagine the possibilities on zEC12

Lotus Domino

+ TREND MICRO

Lotus Sametime

Lotus Quickr

Lotus Connections

- **Lotus offers solutions to deliver:**
  – Exceptional web experience
  – Social Software
  – Collaboration
  – Messaging

- **IBM's Smarter Computing Transformation**
  – Highest average TCO savings achieved – $780 per server per month – with migrations from UNIX to Linux on System z.

- **Gruppo API – Italy[1]**
  – The migration of Lotus Domino, the corporate email system, worked extremely well. Over a two week period, 1,200 user email boxes were moved to System z without interruption of service to users.

- **BG-Phoenics – Germany[2]**
  – Email is still highly important; using Linux makes it cost-effective to run this service on the ultra-reliable z196 server with the efficiencies of virtualization on System z.

  1. http://enterprisesystemsmedia.com/article/gruppo-api-consolidates-distributed-platforms-to-system-z10
  2. http://ibm.com/software/success/cssdb.nsf/CS/STRD-8PBJCA

IBM Enterprise Content Management Solutions

- **Enterprise Content Management (ECM) manages unstructured information**
  - Capture it, index it, store it, and route it electronically through business processes
  - Analyzing it and deleting it are new capabilities
- **IBM ECM includes one of more of approximately 40 different software products**
  - e.g. FileNet or IBM Content Manager
- **Most components run on Linux on System z.**
- **IBM is the only ECM solution provider who provides an ECM solution for System z.**

- **Russian Hydrometeorological Research Institute***
  - World Data Center is the world's largest publicly available archive for hydrometeorology monitoring data. The solution enables them to collect, process, store and disseminate information digitally. The client can now consolidate different media types and has a simplified data access.
- **Large Healthcare Insurer – USA**
  - FileNet and Content Manager OnDemand are used with DB2, InfoSphere and Cognos to support the business processes for the Integrated Health Management initiatives. The solution brings together data from disparate sources and creates an enterprise data warehouse that can be used for data mining and forecasting.

* http://ibm.com/software/success/cssdb.nsf/CS/DLAS-7WCQF4

IBM Maximo Asset Management

- **Key client business issues:**
  - Cost inefficiencies and operational complexity associated with leveraging the asset infrastructure
  - Need to measure and manage the asset availability and risk across all strategic assets
- **Maximo Asset Management unifies comprehensive asset life cycle and maintenance management on a single platform.**
- **Maximo software provides insight for all of enterprise assets, their conditions and work processes, for better planning and control.**

- **City and County of Honolulu – USA***
  - The original offer was for x86 technology with Oracle on System z, but IBM suggested that a Maximo solution that leverages mainframe application and database would be more advantageous to the customer.
- **Technology Solutions Company – Brazil**
  - Maximo software is used as a single point of management for every aspect of a wide range of public services. Using the solution, a city maintains and monitors its public services, assets, water, roads, parks, urban mobility and utilities, thus performing more preventive and corrective maintenance.
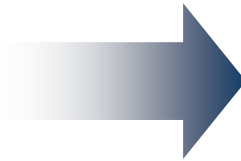- **IBM Green Data Center – USA**
  - Maximo Asset Management for Energy Optimization transforms data into insights that help staff improve airflow and maximize data center efficiency.
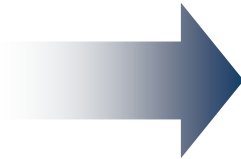
* http://ibm.com/software/success/cssdb.nsf/CS/DLAS-8XWQEU

Strategies to improve value and reduce costs

Optimize the Overall IT Environment

Consolidate Hardware Infrastructure
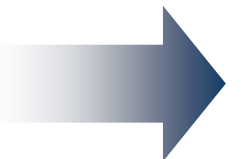
Consolidate Redundant Software and Data

- SOA
- Compress
- Deduplicate
- Integrate
- Archive

Appl Appl Appl Appl

Appl Appl

Improve Service Delivery

Integrated Service Management

Visibility   Control   Automation

Cloud Computing

The new evolution of the IT infrastructure

Large Infrastructure

Small Infrastructure

**Less Space
Less Power
Less Admins
More Efficient**

x86 RACK Systems	x86 Blade Center Systems	IBM zEnterprise
15 kw/m^2	Energy Use[1]	1.5 kw/m^2
20x more Expensive	Software Licenses[2]	95% Less Cost
38%	Executive Satisfaction[3] Survey	90%

1. http://ibm.com/systems/services/briefingcenter/montpellier/
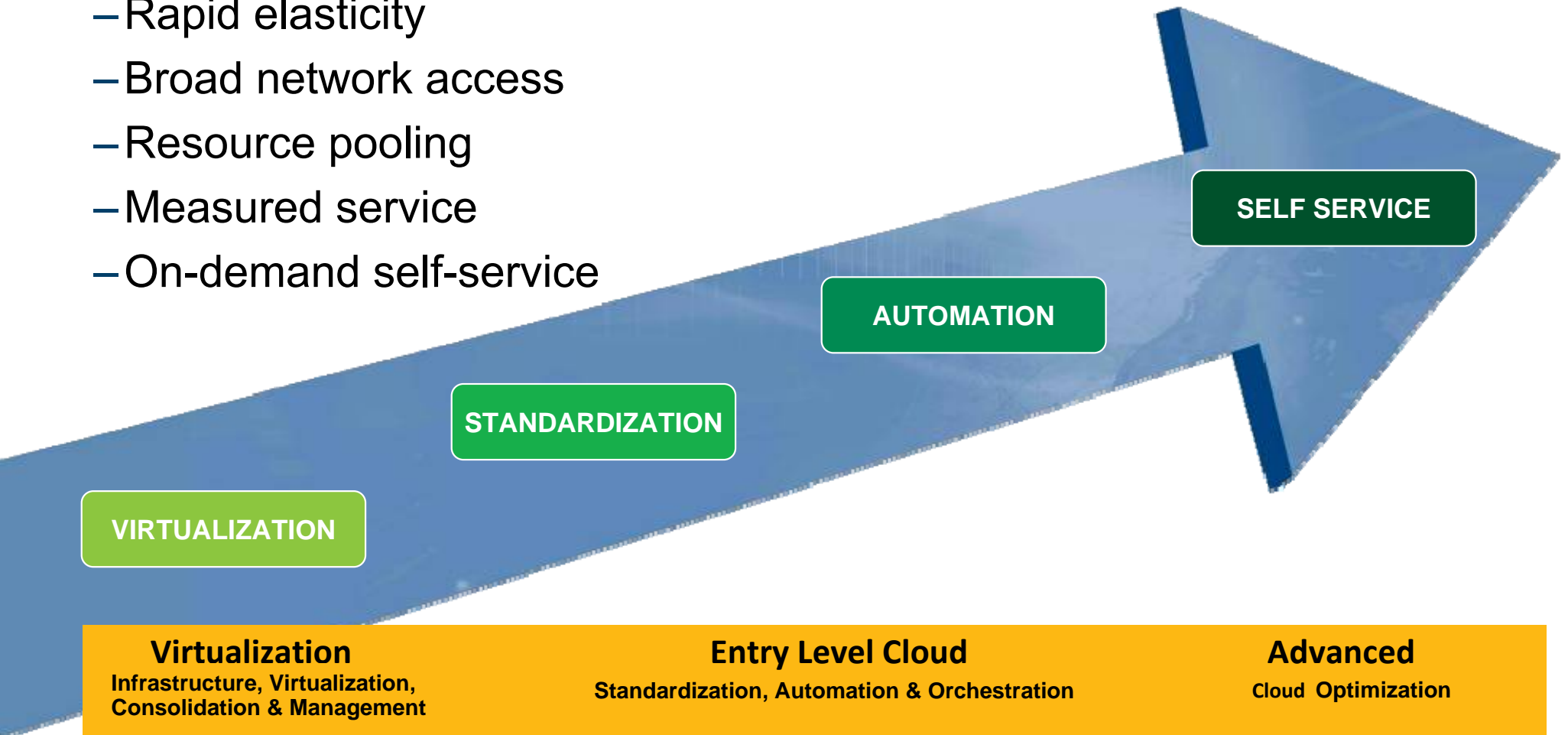2. http://ibm.com/software/success/cssdb.nsf/CS/STRD-93LEG7
3. https://www14.software.ibm.com/webapp/iwm/web/signup.do?source=stg-web&S_PKG=ov7466

Cloud Computing – Based on virtualization and standardization

- **Cloud Computing characteristics*:**
  - Rapid elasticity
  - Broad network access
  - Resource pooling
  - Measured service
  - On-demand self-service

SELF SERVICE

AUTOMATION

STANDARDIZATION

VIRTUALIZATION

Virtualization	Entry Level Cloud	Advanced
Infrastructure, Virtualization, Consolidation & Management	Standardization, Automation & Orchestration	Cloud Optimization

* Source: National Institute of Standards and Technology (NIST)