

Hybrid Workloads

Diego 迪戈 Bessone

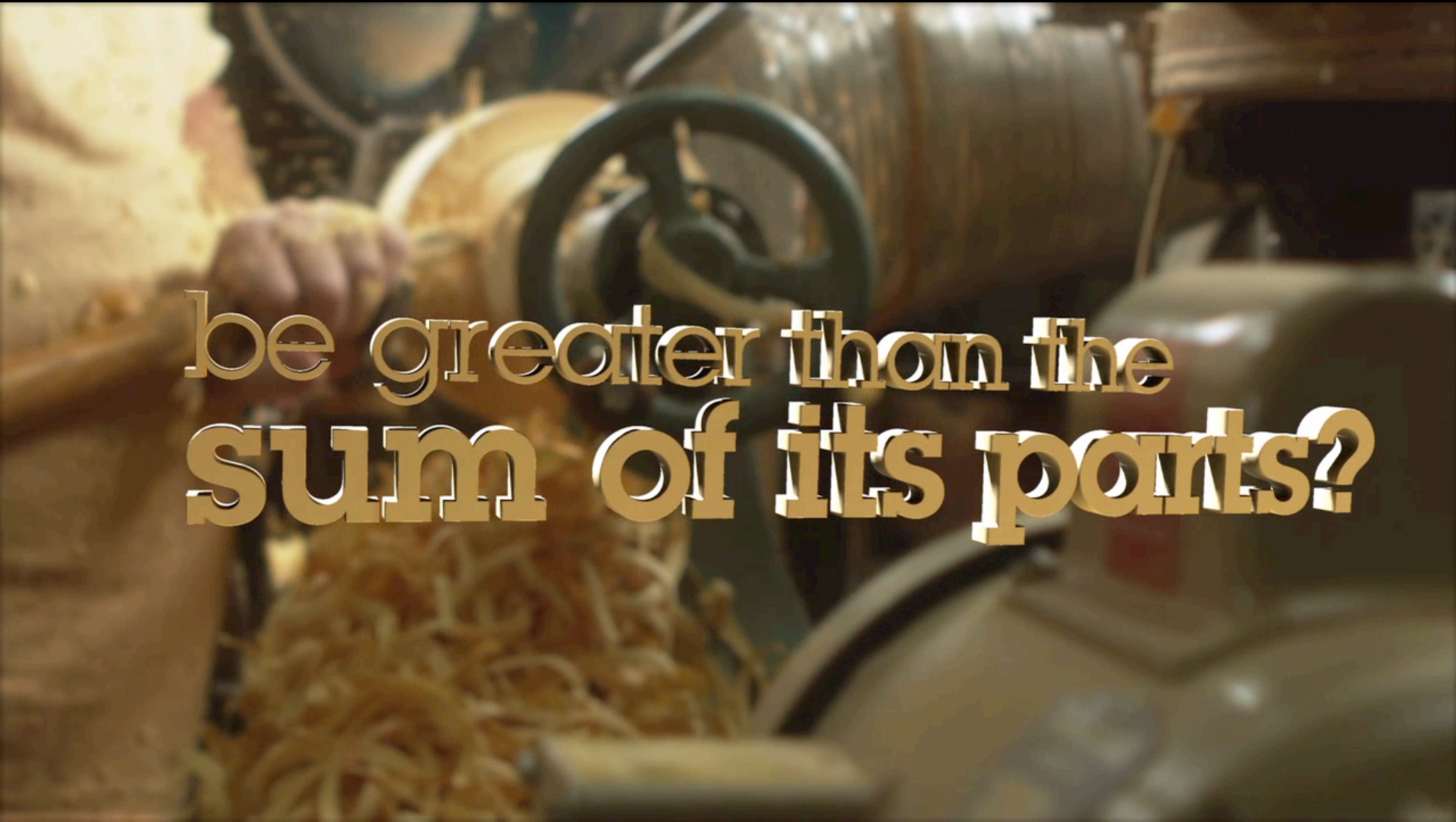
Beijing 北京, China – May 20th, 2015



Hybrid Workloads

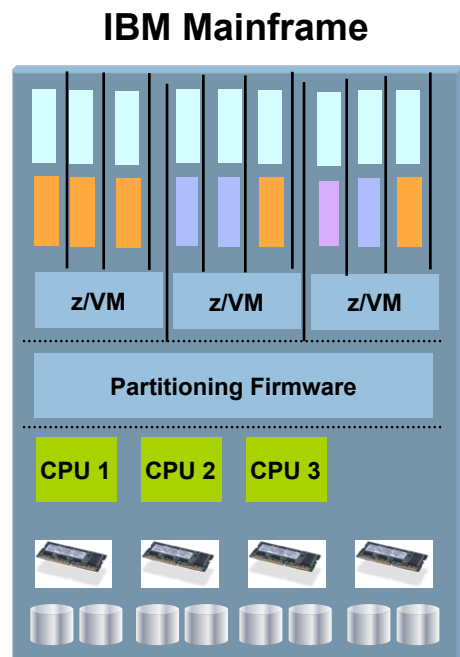
Once you have completed this module, you should be able to:

- Define Hybrid Computing
- Identify virtualization importance for a Hybrid Infrastructure
- Describe customer scenarios where a hybrid infrastructure was a key piece of the solution
- Explain the importance of fit for purpose and workload awareness



be greater than the
sum of its parts?

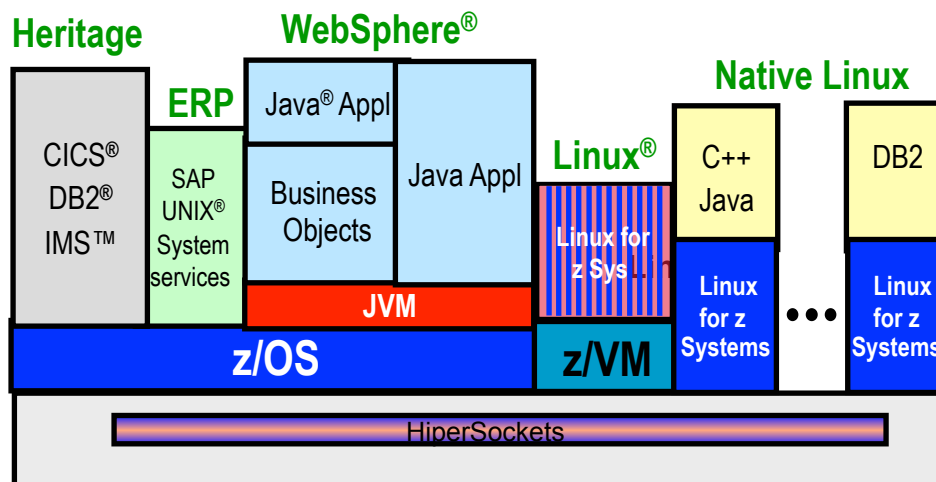
IBM z Systems – The ultimate virtualized system



Utilization often > 80%

Handles peak workload utilization of up to 100%
without service degradation
for high priority workloads

- Massive, robust consolidation platform
- Up to 85 logical partitions, 100's to 1000's of virtual servers under z/VM®
- Virtualization is built into processor and I/O - not add on
- HiperSockets™ for memory-speed communication
- Single System Image Clustering (Sysplex)
- z/OS® offers intelligent and autonomic management of diverse workloads and resources based on business policies and workload performance objectives



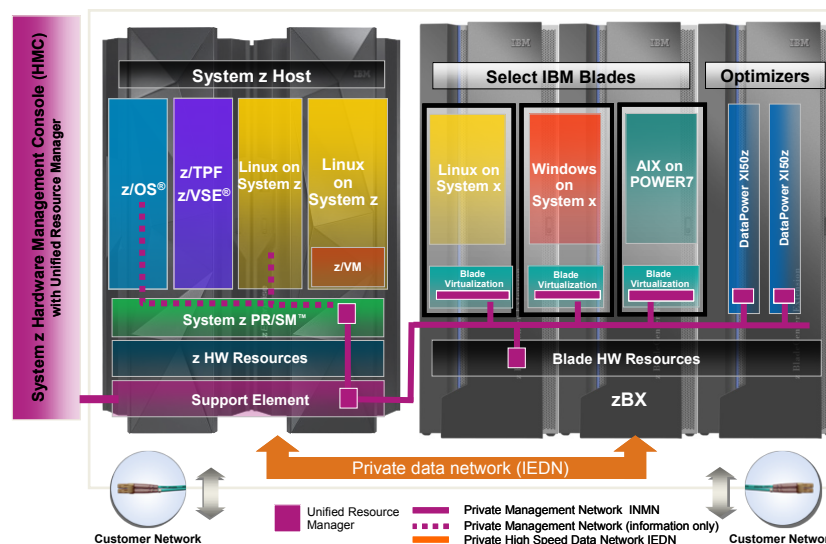
A blurred, high-tech background image featuring blue and green light streaks, suggesting a futuristic or data-driven environment. The text "could be MANAGED TOGETHER?" is overlaid in a bold, white, sans-serif font. The word "MANAGED" is in all caps and larger than the other words. The text is reflected on a surface below it.

could be
MANAGED TOGETHER?

Hybrid Computing and the z Systems

Transforming virtualization across your infrastructure

- ✓ Flexibility, consistency and uniformity of virtualization with a single view across platforms
 - Management stack that builds an architectural construct of hardware, software and services
- ✓ Workload awareness to optimize the system resources in accordance with understanding the policies assigned to that particular workload
- ✓ Faster time to market – fast deployment without changes to applications
- ✓ Integration provides a single point of control, common skills for resources, reduces complexity of day to day operations



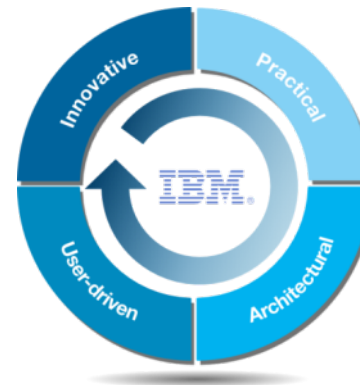
Hybrid computing became a catalyst for change



Open Source Only
Significant Assembly Required



Proprietary
Prescriptive, tightly coupled,
physical integration

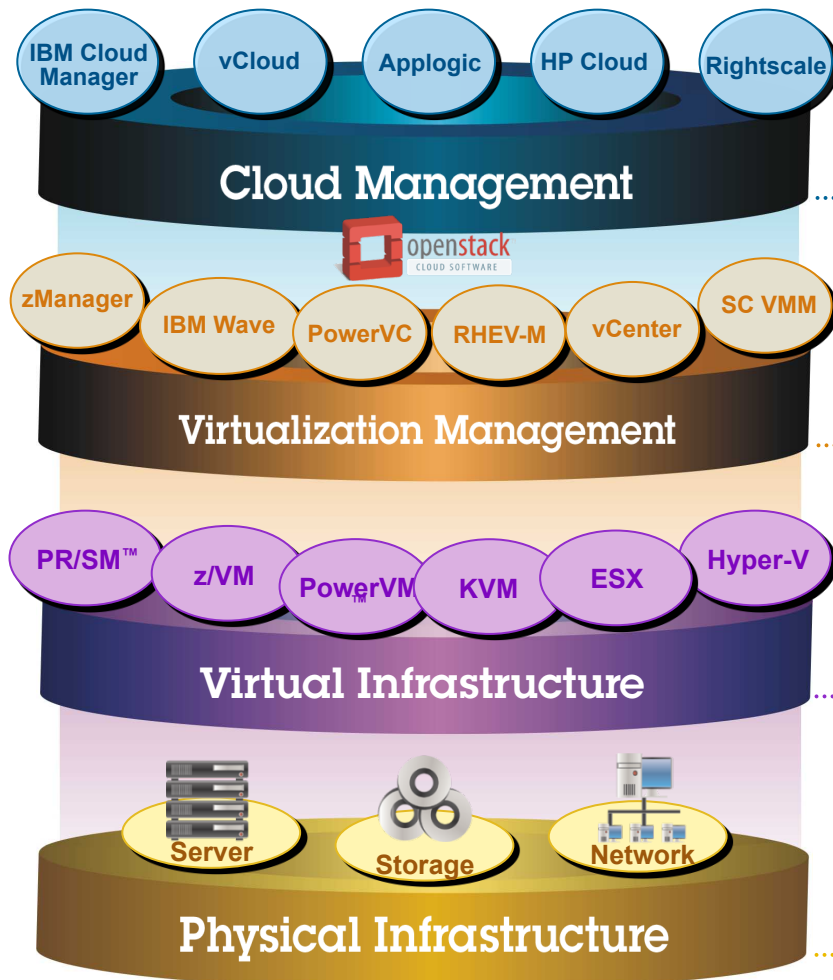


Open “Plus” Enterprise Innovation

- Ecosystem changed to support **plug and play for logical integration**
- More virtualization functions and hardware configuration **choices** exist
- **Reduced complexity** – ‘domain’ achieved with ecosystem components

Management stack based on lessons learned from our clients

Building an architectural construct of hardware, software, services



Private cloud and service provider solutions across the entire organization

Visibility, Control and Automation for all Data Center resources

Exploits standards-based management of virtualized resources

End to end management of hardware/firmware

Standardized IT Infrastructure through Virtualization

The emerging “center of gravity” for the virtualized IT platform is distinct from physical infrastructure

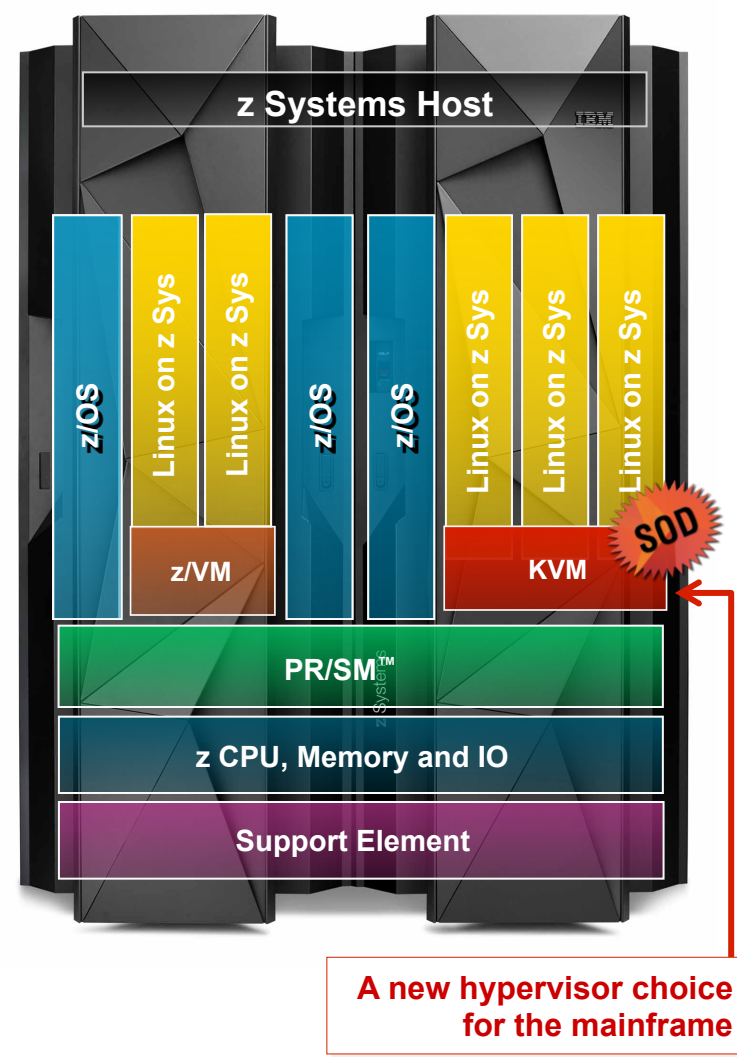
- **Standards-based virtualization management** approaches are advancing within the open and 3rd party vendor community, and are being adopted at an accelerated rate
- **Differentiated virtualization management features** are built upon standardized hypervisor interfaces
- Standards-based management of virtualized IT platforms **breaks down platform-specific operational silos and enables data center integration**
- Need for **competitive time-to-market and advancing eco-system alignment and integration**
- **Freedom of choice in hypervisor and associated management tooling** eliminates key barriers to platform adoption
- Freedom of choice in virtualization mechanisms provides **client investment protection**
- **Freedom of choice for hardware** maintains currency for technology changes
- **Deliver an open source hypervisor by offering KVM* on the mainframe**

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

Standardized virtualization for z Systems

SOD at announcement for KVM optimized for z Systems

- **Expanded audience** for Linux on z Systems
 - KVM on z Systems will co-exist with z/VM
 - Attracting new clients with in house KVM skills
 - Simplified startup with standard KVM interfaces
- Support of modernized **open source** KVM hypervisor for Linux
 - Provisioning, mobility, memory over-commit
 - Standard management and operational controls
 - Simplicity and familiarity for Intel Linux users
- **Optimized for z Systems** scalability, performance, security and resiliency
 - Standard software distribution from IBM
- Flexible **integration to cloud** offerings
 - Standard use of storage and networking
 - No proprietary agent management
 - Off-the-shelf OpenStack® and cloud drivers
 - Standard enterprise monitoring and automation (i.e. GDPS®)



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z Systems with zBX or... z Systems with PureSystems... or both

Additional flexibility with New Possibilities

Hybrid computing with z Systems

- The industry's first heterogeneous cloud platform
- Extend IBM z Systems governance to POWER and System x blades
- Application integration with Microsoft Windows
- Greater opportunity for consolidation and simplification
- Consistent business controls across applications and platforms

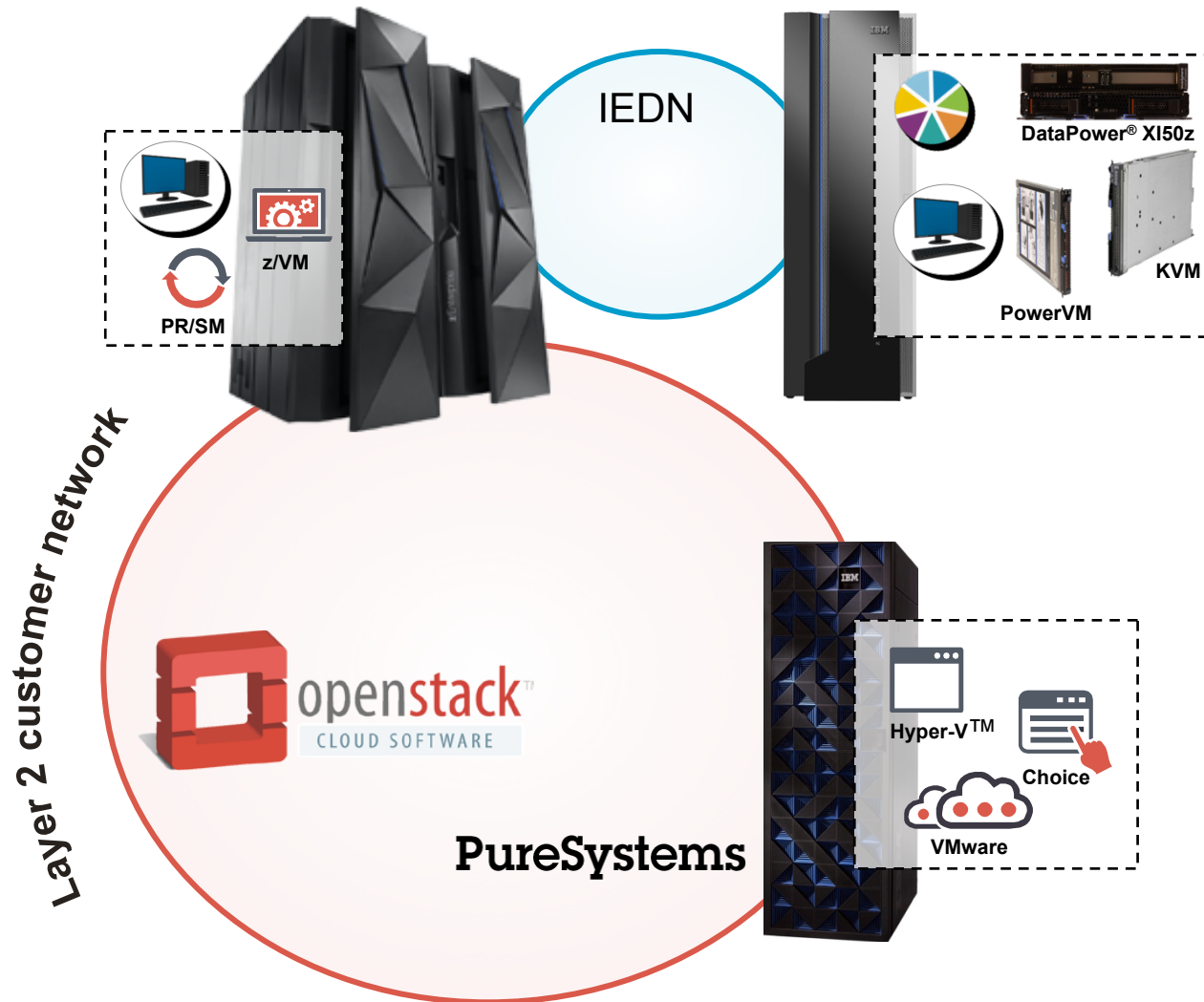


Use existing 10 GbE to attach PureSystems to z Systems

- Supports additional blade choices
- Works with existing hypervisors (including HyperV and VMware)
- Supports Image mobility
- Integrated storage for distributed environments
- More connectivity options

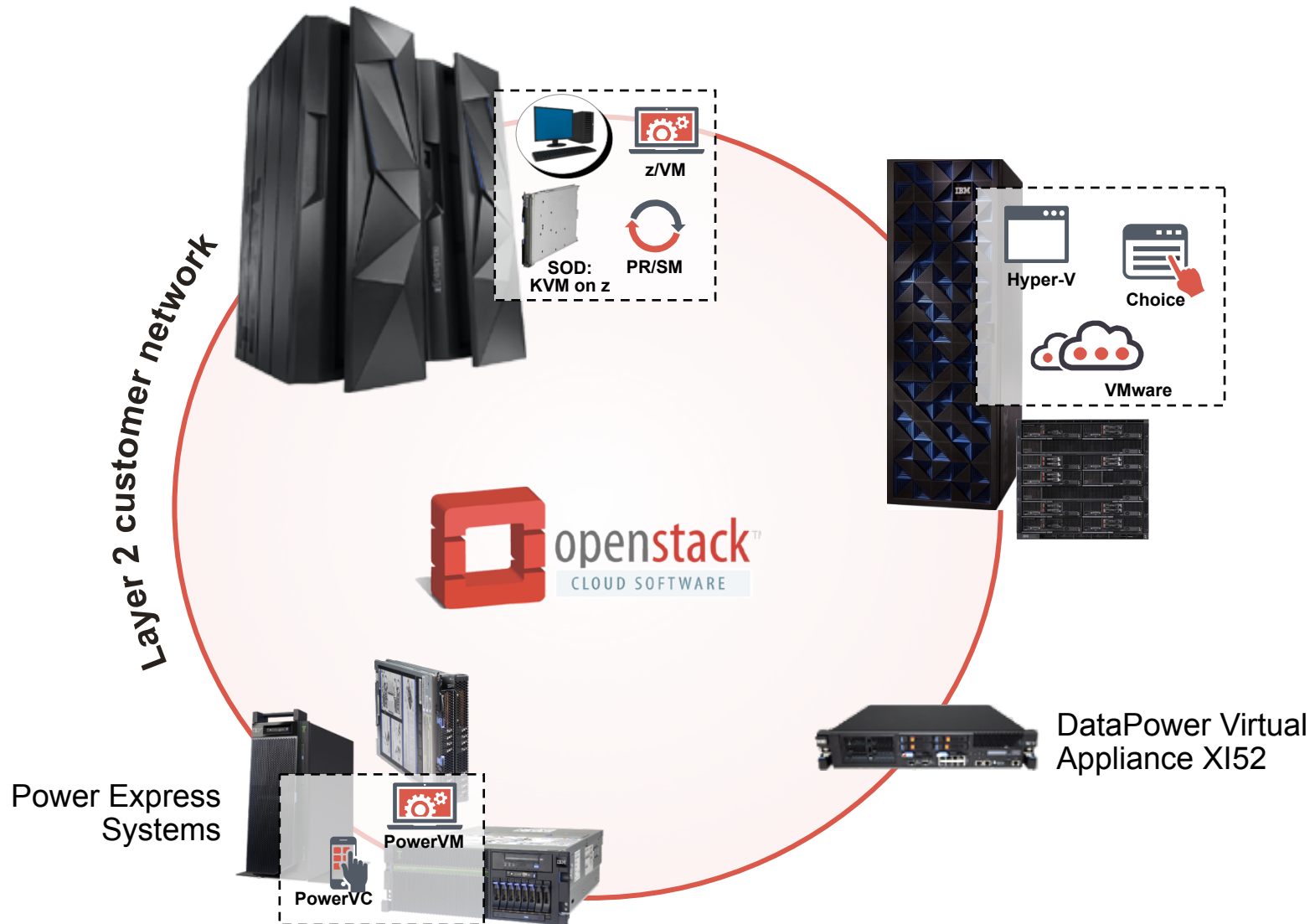
Current hybrid computing environment

Resources in z Systems can be managed together but no “total” cloud capability



The future with flexibility of choice

Open innovation gives choice



zBX and zManager – Proven hybrid computing environment

Support for multi-platform infrastructure with single resource management

- Investment protection Model 002 or Model 003 to Model 004
- Direct management connection to server removed
- Eliminated distance from server limitations



What's new?

For zManager

- Microsoft® Windows® Server R2 2012 on HX5 blades
- Linux: Red Hat RHEL 7.0 and SUSE Linux Enterprise Server (SLES) SLES 12 on HX5 blades*

New Support

- Support on Model 004 for DataPower firmware version 7.0

Available only as an upgrade

- No need to purchase a IBM z13™ (z13) to upgrade to a zBX Model 004

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Integrated Service Management Portfolio

Unifying layer for enterprise-wide integration



- **Tivoli Performance Monitoring – OMEGAMON, ITM, ITCAM**
 - End-to End Application Performance Monitoring
 - zEnterprise Hybrid Application Management
- **Tivoli Financial & Asset Management, Usage & Accounting, Asset Discovery**
 - Common usage and accounting for business accounting
 - Asset and Change Management for physical and virtual resources
- **Enterprise Security Portfolio – TAM, Tivoli Security Policy Manager, zSecure**
 - End-to-End Enterprise Security support, including RACF
- **Tivoli Storage: TSM, TPC, Tivoli Advanced Storage portfolio**
 - Multi-site Storage management and disaster recovery
- **Smart Cloud Family – Provisioning, Orchestration, Monitoring**
 - Resource provisioning and management for Cloud on System z
- **Tivoli System Automation: NetView® SA for z/OS, SA for Multi-platform and Application Manager**
 - High availability, GDPS and disaster recovery
- **Tivoli Workload Automation and Business Service Management – TWS, TBSM, Netcool®/Omnibus**
 - Policy based dynamic/centralized management of Application Workloads
 - End-to End Workload Automation and Service Level Objectives

zEnterprise Enhanced Security for Workloads



Consolidated Systems

Cloud Servers and
Virtual Systems

Data Hubs

Security Services

Garanti Bank – Turkey: The adoption of IBM z Systems reinforced Garanti's strategy to deliver fast and secure banking services 24 hours a day, ensuring fast, scalable, robust, flexible, cost-effective and **secure environment across different channels** - banking branches, ATMs, POSs, Internet and mobile channels.

"The HP, Oracle infrastructure simply couldn't support our growing business," said Danny Gurizzan, executive vice president of operations, **Payment Solution Providers (PSP)**. "By teaming with IBM, we are actively pursuing new clients and opportunities, confident that our technology can keep pace and hold operating costs to a minimum. Further, selecting the IBM mainframe gives PSP instant credibility with potential clients thanks to its **well-known security and reliability.**"



**Point of
Sale**

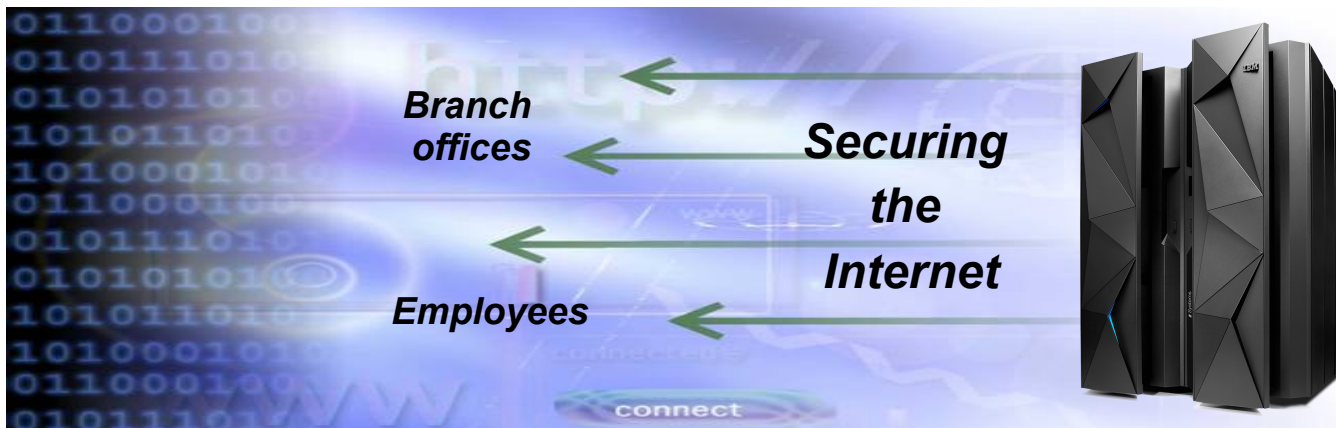
<http://www-03.ibm.com/press/us/en/pressrelease/34329.wss>

Banco do Brasil saves over \$16M a year z Systems as a Certificate Authority

Requirement: Establish a more secure enterprise network after outsourcing network management

Solution:

- Created a VPN (Virtual Private Network) between each device in the network
- Established “Trust” using digital certificates
- Saved millions annually by hosting digital certificates on z/OS



- 30 million accounts
- 4,000 locations
- 20 million transactions per day
- Hosting certificates for all network devices at branch offices

Banco Itaú Offers Secure Smart Card Solution with z Systems Encryption



- *Problem*
 - To ensure the security of its 12 million issued debit cards, the Bank needed to replace its regular cards with security chip-enabled smart cards.
 - Performance bottleneck with current security servers processing smart cards
- *Solution*
 - Leverage superior mainframe security, eliminating separate security servers and migrating smart card solution to the mainframe
 - Installed mainframe PCI Cryptographic Coprocessor cards
 - Encryption keys generated and stored on cards used for smart card authentication
 - Expect to scale to support 15M smart cards
- *Benefit*
 - Reduce fraud from stronger smart card security, while lowering costs, and increased efficiency

The IBM Crypto solution offers considerable scope for expansion and is expected to comfortably support all 15 million smart cards when the rollout is complete.

Banco Galicia plans its global future, with help from SAP and IBM



Enables

Launch of new financial services

Helps

To ensure availability and reliability of SAP applications

Improves

Time-to-market for new financial services and products

Solution Components

- SAP® Banking Services, ERP, PI, SCM, NetWeaver® PI
- IBM® zEnterprise® EC12, IBM System Storage® DS8800, z/OS®, IBM DB2®, System Storage Easy Tier®, IBM Global Business Services®



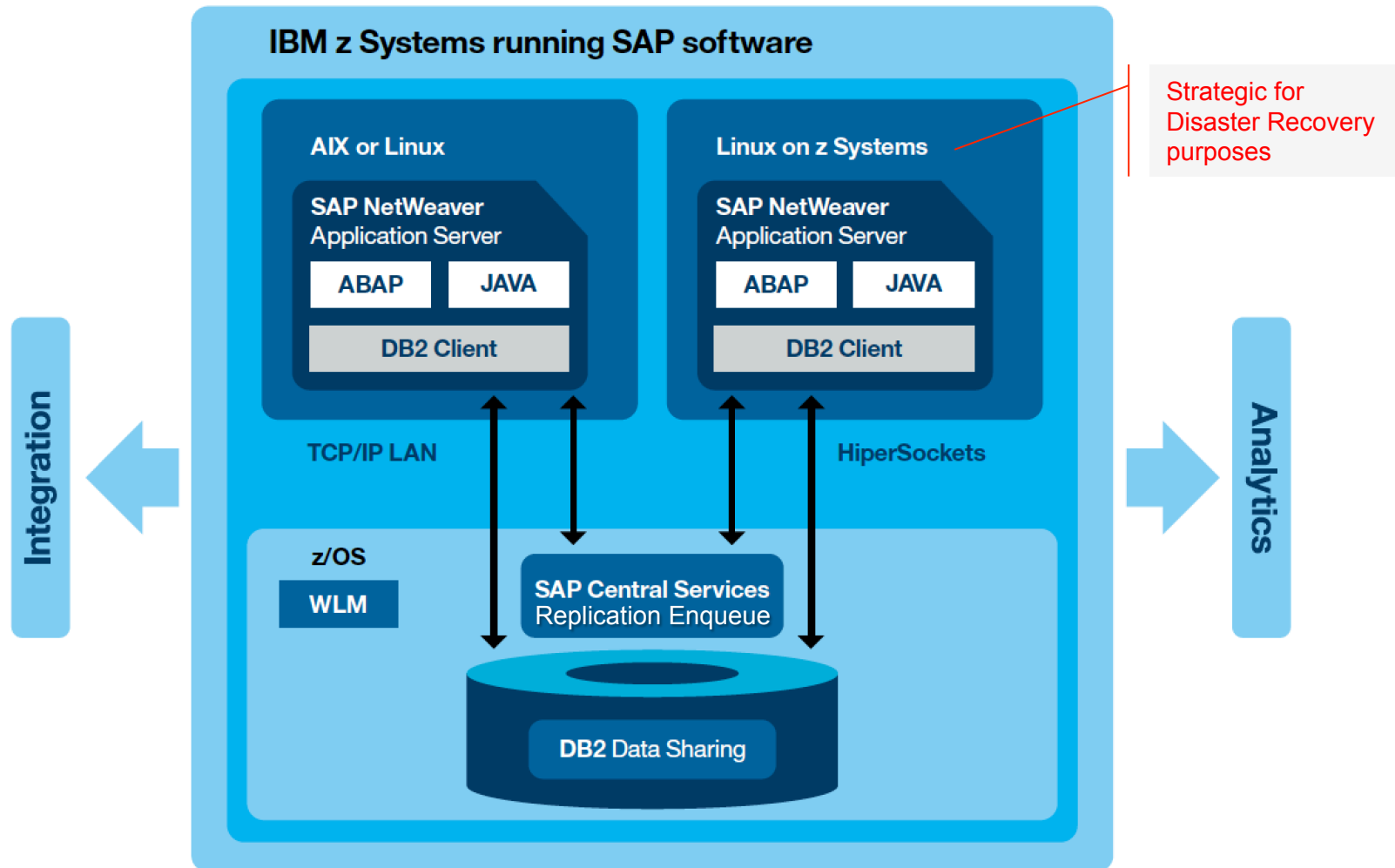
Business challenge: Banco Galicia wanted to improve the time-to-market for new financial products and services. Legacy IT applications and systems were unable to support the rapid changes required.

The solution: Banco Galicia selected the SAP for Banking solution and chose to upgrade to an IBM zEnterprise EC12 server. To store customer data, the Banco Galicia team implemented two IBM System Storage DS8800 storage devices. For support, training and management, the bank engaged IBM Global Business Services.

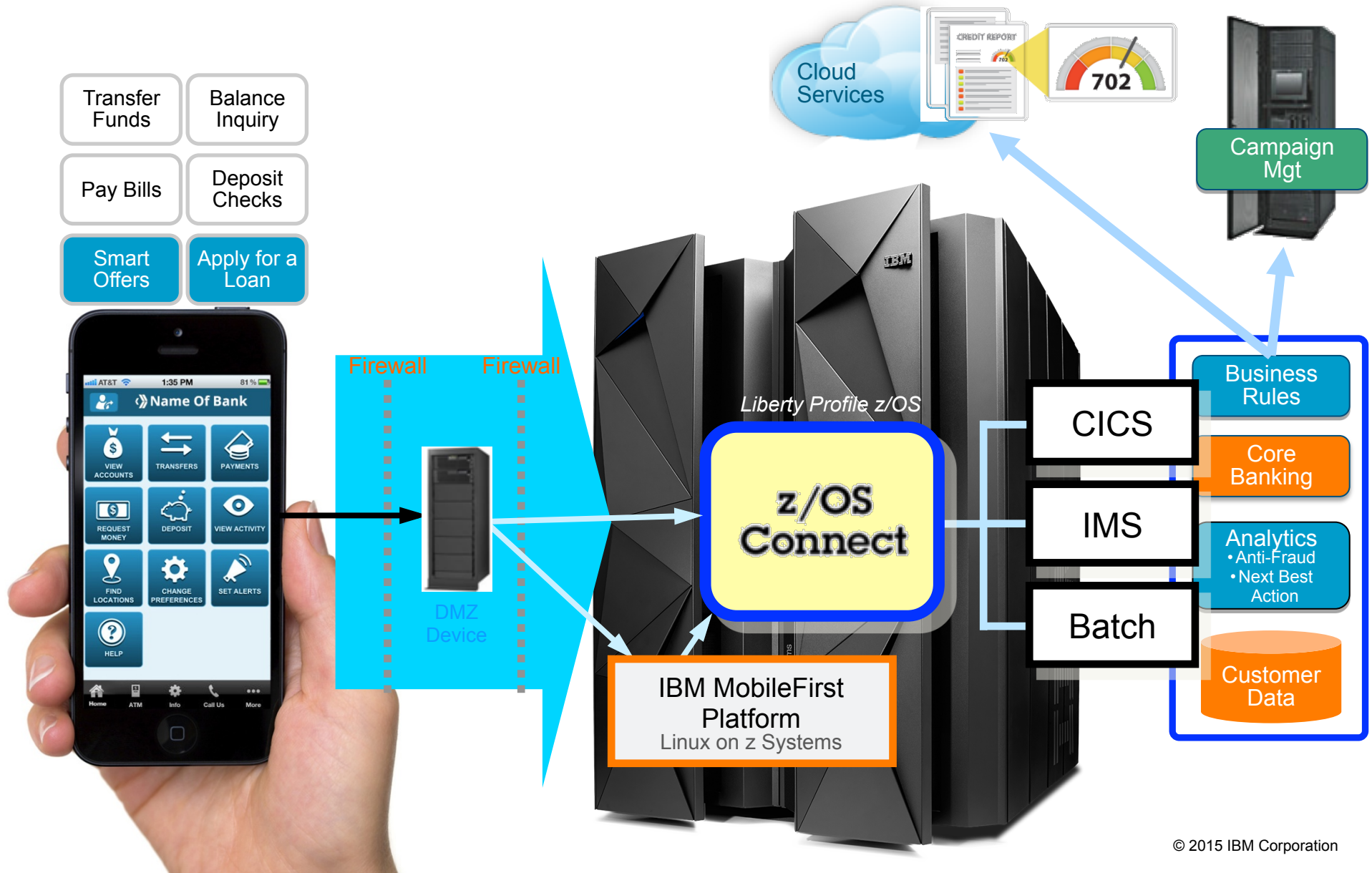
“We expect the combined SAP and IBM solution to significantly improve the time-to-market, development and design of our financial products and services, with optimized operations that enhance rapidity and flexibility.”

—Diego Revello, ITC Manager, Banco Galicia

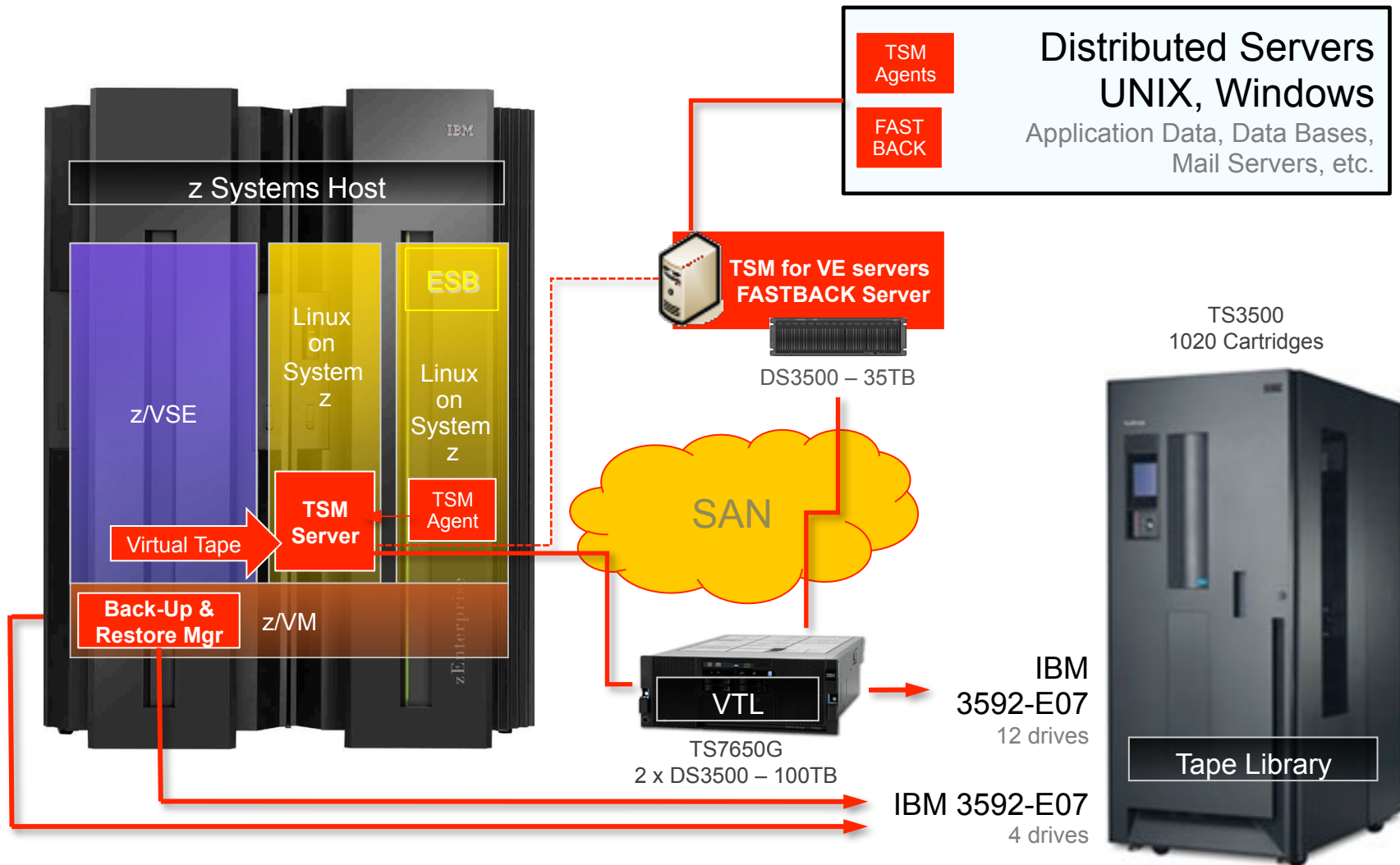
IBM z Systems brings together different platforms under a single management umbrella



z Systems infrastructure provides the value in mobile apps



What can I use the Linux on z Cloud for? – Real Example



Key learning points

- **Integration** provides a single point of control, common skills for resources, and reduces complexity of day to day operations.
- **Workload awareness** to optimize the system resources in accordance with understanding the policies assigned to that particular workload
- **Virtualization** with a single view across platforms offers a management stack that builds an architectural construct of hardware, software and services
- **Hybrid computing** is a catalyst for change
- An underlying principle for efficiency and effectiveness is **fit for purpose** computing: simply speaking... Put work where it runs best and costs less

Advanced Top Gun: Winning with z Systems™



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