

WAVV 2011



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Linux on System z - the Enterprise hub

Wilhelm Mild, IBM

18-Apr-11

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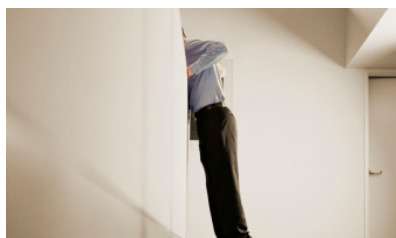
Global forces are driving a fundamentally different world



- * **Global financial crisis is changing business priorities – and the IT that supports them**
 - New incentives to reduce cost
 - Financial crisis putting new lens on TCO claims



- * **The business landscape is evolving, and IT must evolve with it**
 - Increased M&A activity in a tight economy requires rapid integration



- * **Government IT priorities are increasingly aligned with those of business**
 - Major stimulus packages include both funding for IT infrastructure – and increased scrutiny



- * **Technology has enabled solutions that weren't feasible in the last downturn**
 - Bandwidth has evolved, providing greater capacity and reliability at much lower costs

The growth of Linux for business-critical workloads



Linux continues to enable new ways of doing business

Edge and Web Infrastructure

- Community Driven
- Internet Enabled
- Worldwide Volunteers

Application and Data Serving

- Open Industry Driven
- Open elements of IT industry join existing community
- Linux adoption in the enterprise accelerates

Business-Critical Enterprise Workloads

- Competition Driven
- Accepted as mature, open, lower-cost alternative for hosting DB, BI, ERP, CRM in business-critical environments
- Linux is a permanent presence in the datacenter

- Typical Applications
- E-mail Servers
 - Apache
 - Lightweight database
 - DHCP
 - HPC

- e-Business Applications
- Application Servers
- Mission critical database
- Dynamic Business Models

- Next-generation workloads
- Virtualization / consolidation
- Cloud and dynamic infrastructure
- New business models



IBM's Linux strategy is aligned with our clients' needs

* Linux for Business-Critical Workloads

- *Key drivers*
 - Demand for a lower-cost, enterprise-grade OS
 - Demand for support of Linux on highly reliable and highly available platforms
 - General acceptance and ISV support of Linux for core datacenter workloads

* Linux in the Mid-Market

- *Key drivers*
 - Microsoft license agreements drive excessive cost for small business
 - Increased need for enterprise-grade applications and middleware for smaller businesses

* Project Big Green Linux

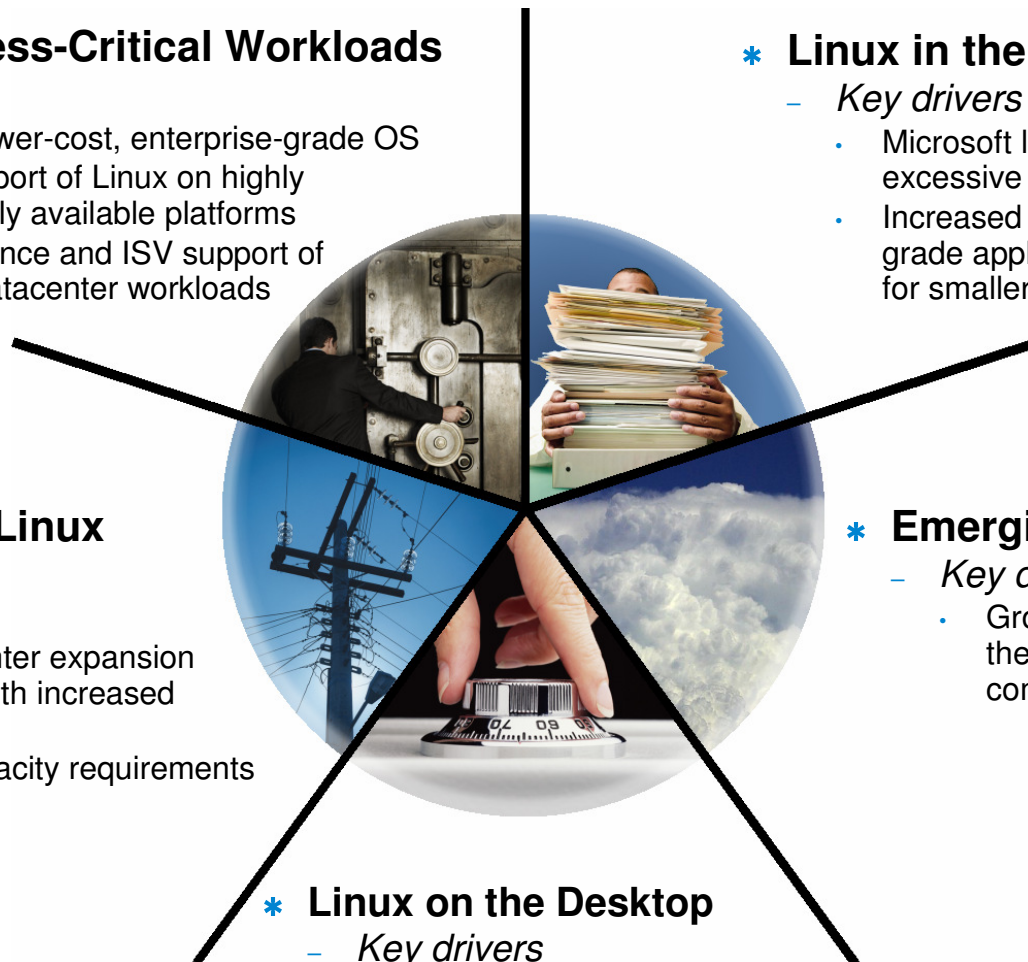
- *Key drivers*
 - Rising energy costs
 - Incremental datacenter expansion leading to sprawl, with increased management costs
 - Ever increasing capacity requirements

* Emerging Technologies

- *Key drivers*
 - Growing need for solution to the complexity problem, as complexity is a key driver of cost

* Linux on the Desktop

- *Key drivers*
 - Need for cost reduction but increased productivity
 - Usage paradigms outgrowing one-size-fits-all approach



The Future runs on System z, the largest scalable server



... System z delivers extreme business value by helping to reduce cost, manage risk, and improve service.



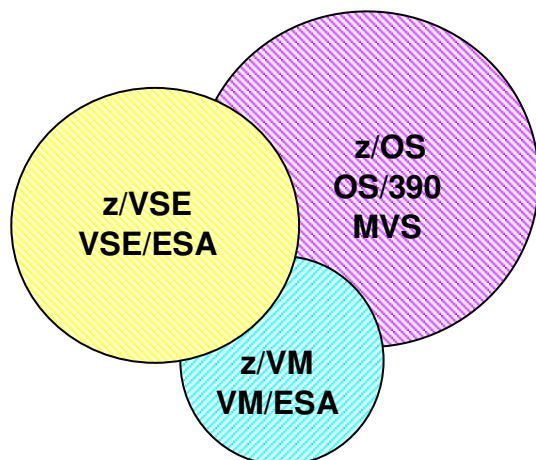
■ Agenda



1. The Role of Linux on System z
2. Linux on System z as 'Central Portal'
3. Linux on System z as 'Data Hub'
4. Linux on System z as 'SOA Hub'
5. Linux on System z as 'Mail and Collaboration Hub'
6. Linux on System z as 'Recovery Hub'

Operating Systems on IBM System z

Traditional Mainframe Operating Systems

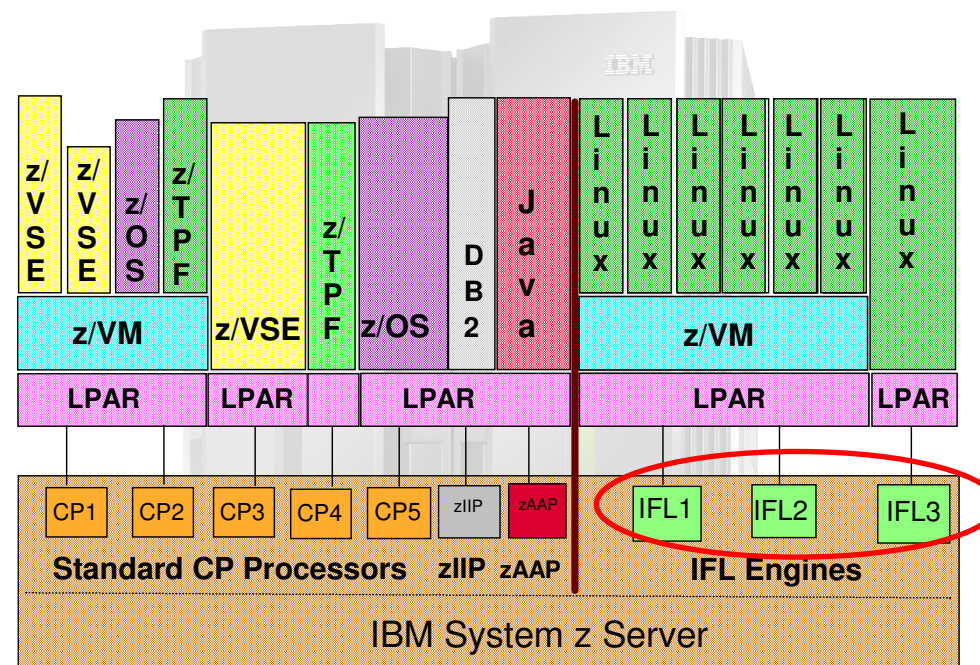


Standard Processors

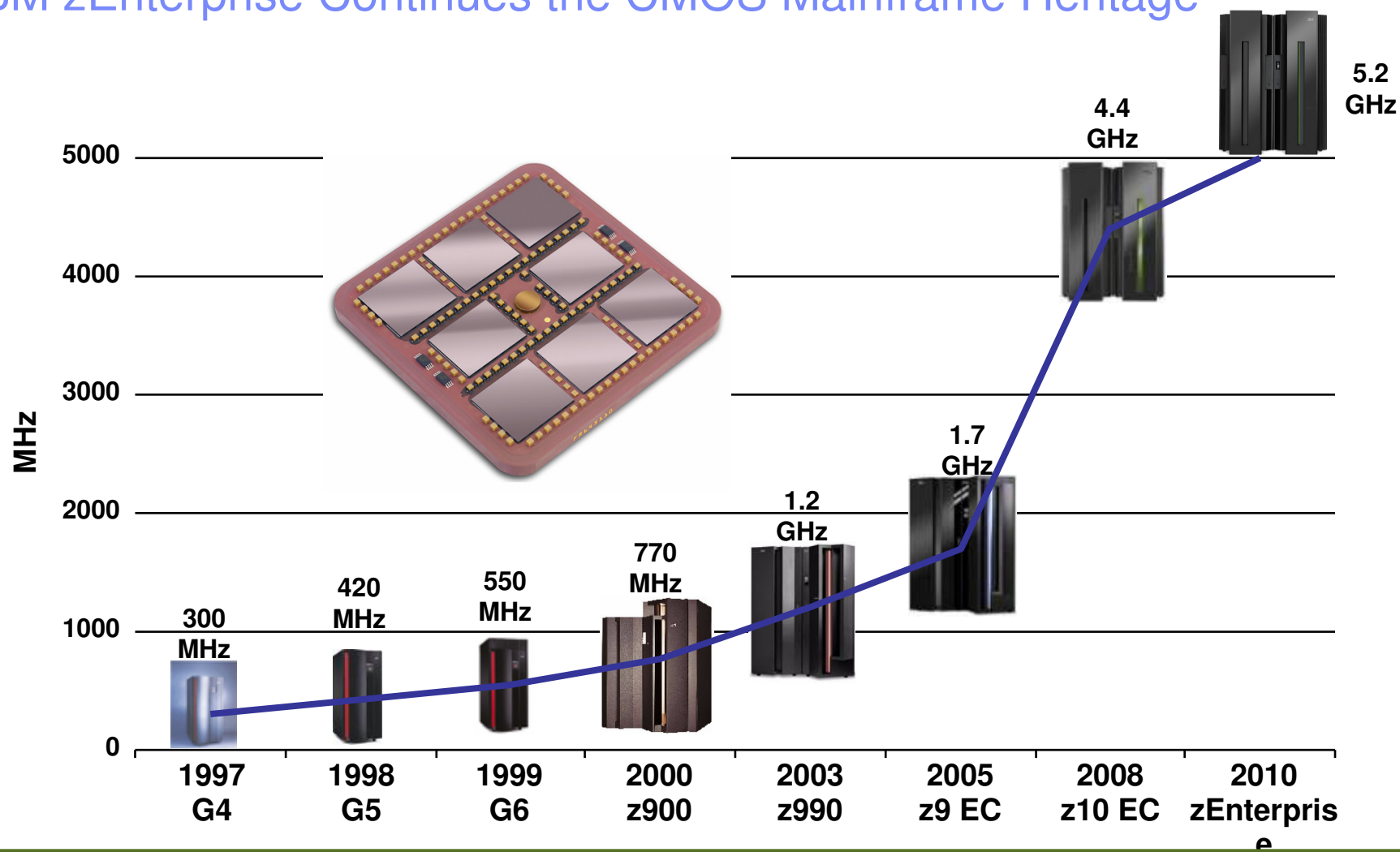
- CP
 - For z/OS, z/VSE, z/VM workloads

Specialty Processors

- CF (Coupling Facility)
 - For Parallel Sysplex with z/OS
- IFL (Integrated Facility for Linux)
 - For Linux and Linux applications
- zAAP (zSeries Application Assist Processor)
 - For offload of Java applications from z/OS
- zIIP (System z9 Integrated Information Processor)
 - For z/OS offload of DB2 distributed requests



IBM zEnterprise Continues the CMOS Mainframe Heritage



- **G4** – 1st full-custom CMOS S/390®
- **G5** – IEEE-standard BFP; branch target prediction
- **G6** – Copper Technology (Cu BEOL)

- **z900** – Full 64-bit z/Architecture®
- **z990** – Superscalar CISC pipeline
- **z9 EC** – System level scaling

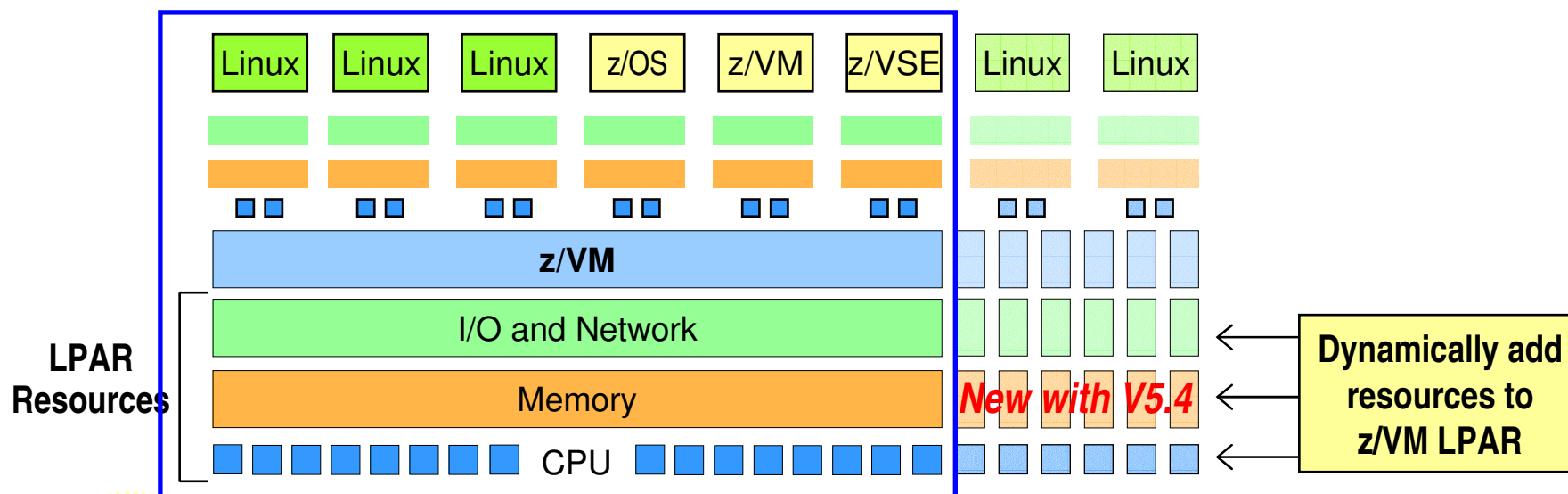
- **z10 EC** – Architectural extensions
- **zEnterprise** – Additional Architectural extensions

Virtualization – per Excellence

Virtualization for different workloads on the same layer

z/VM V5.4 and 6.1 Function Enhances System Availability

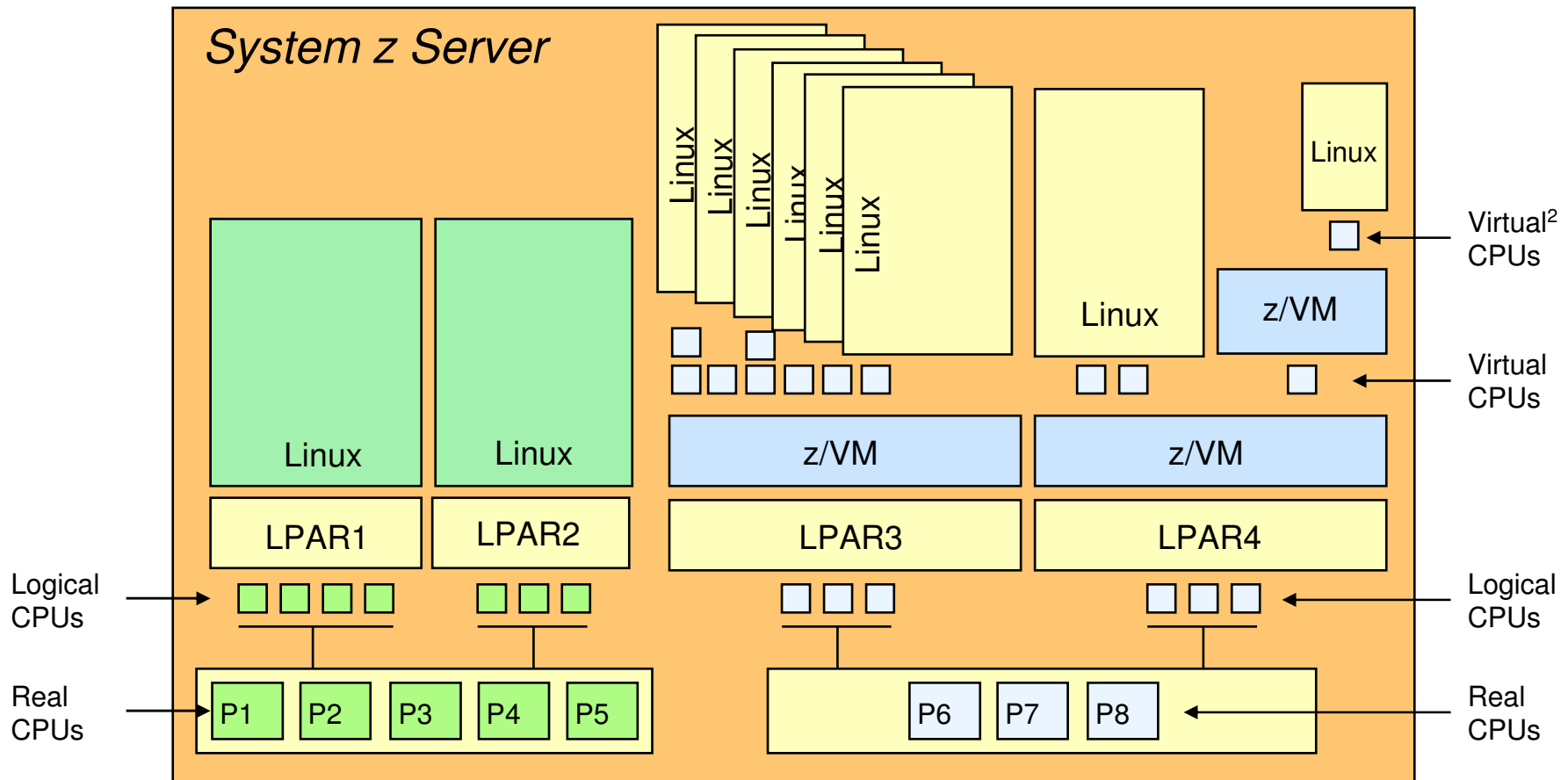
- **Users can non-disruptively add memory to a z/VM LPAR**
 - ▶ Additional memory can come from: a) unused available memory, b) concurrent memory upgrade, or c) an LPAR that can release memory
 - ▶ Memory *cannot* be non-disruptively removed from a z/VM LPAR
- **z/VM virtualizes this hardware support for *guest machines***
 - ▶ Currently, only z/OS and z/VM support this capability in a virtual machine environment
- **Complements ability to dynamically add CPU, I/O, and networking resources**



Smart economics: non-disruptively scale your z/VM environment by adding hardware assets that can be shared with every virtual server

System z Virtualization

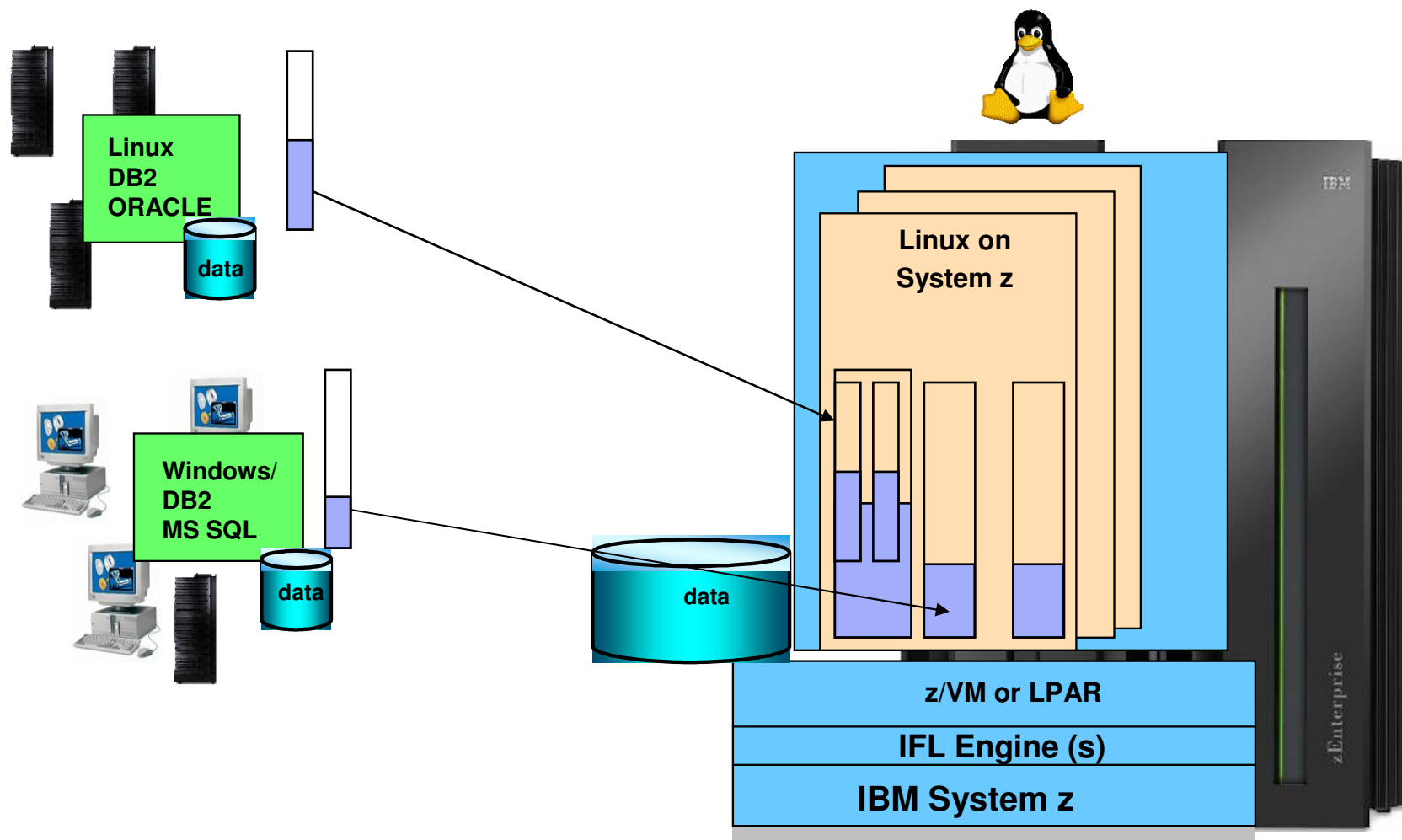
Note: There are typically dozens or hundreds of Linux servers in a z/VM LPAR.



P1 – P8 are Integrated Facility for Linux (IFL) Processors

Linux on System z as workload concentrator

Virtualize, Consolidate, Integrate



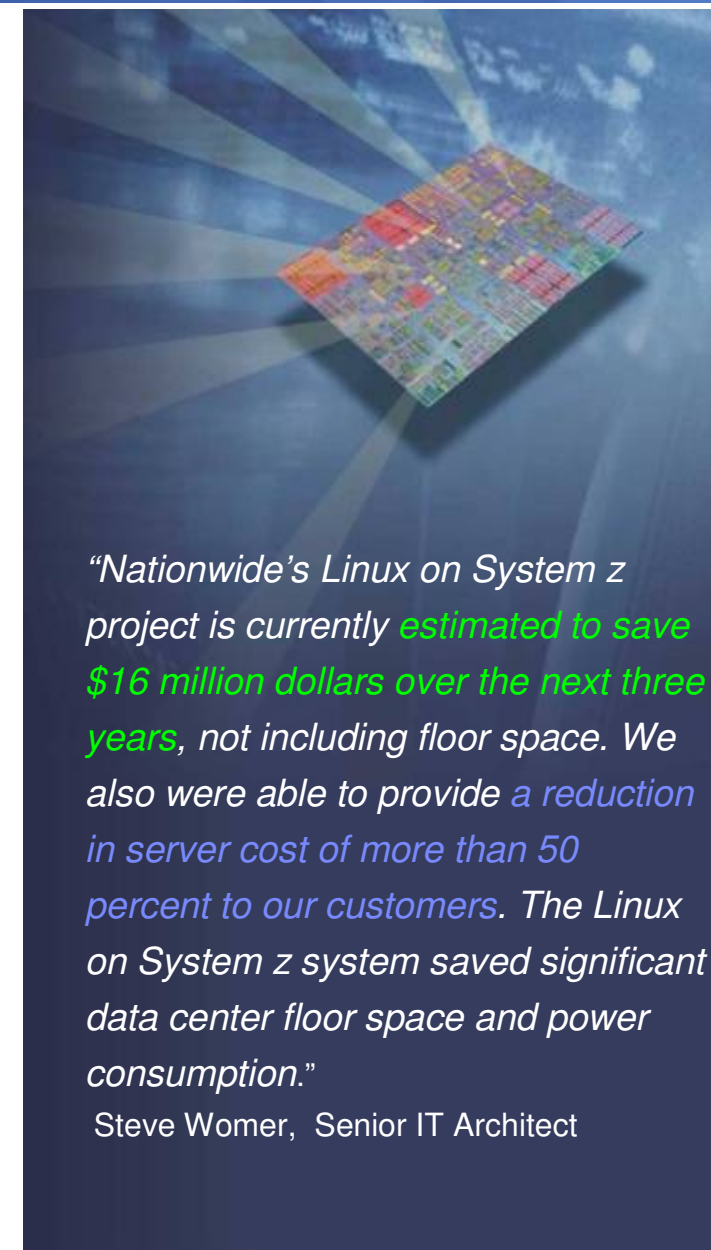


Nationwide®
On Your Side™

Key Benefits (Value Proposition)

- Expects to save \$16M over the next 3 years
- Initial phase consolidated 250+ Production, Development & Test servers to 6 IFLs
- Savings will be in cooling, maintenance, software and equipment costs
- Lower middleware and application software costs
- 50% reduction in monthly charges for Web infrastructure
- Dramatically improved server provisioning speed

IFLs reduced the space and power consumption by 80% vs. the alternative distributed server solution.

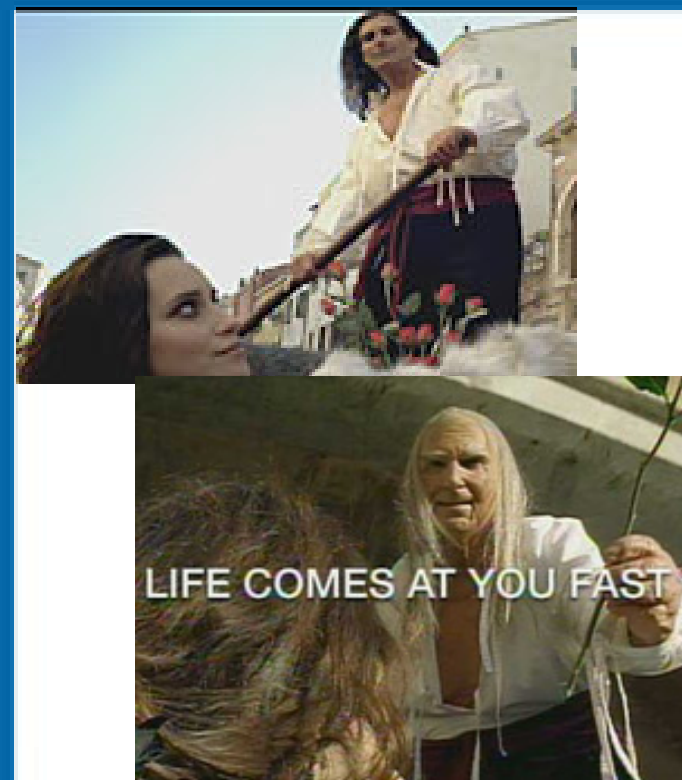


*“Nationwide’s Linux on System z project is currently **estimated to save \$16 million dollars over the next three years**, not including floor space. We also were able to provide a reduction in server cost of more than 50 percent to our customers. The Linux on System z system saved significant data center floor space and power consumption.”*

Steve Womer, Senior IT Architect

Upgrade Server “Hardware” on the fly

- Add IFLs and real memory to an LPAR non-disruptively.
 - Add virtual CPUs and virtual memory to a guest non-disruptively.
 - Create servers for a temporary project, then delete them when done.
- Nationwide.com runs on WebSphere on Linux for System z
 - Superbowl 2006 commercial -- anticipate 22X increase in traffic.
 - Rent 1 IFL for 2 weeks.
 - Test to anticipated load before superbowl.
 - Handle superbowl load for a few weeks.
 - After superbowl, returned the IFL.
 - Zero downtime during this process. Zero time spent acquiring/provisioning new servers. Zero time spent changing server configurations.



Nationwide®

Bank of New Zealand

A bank uses Red Hat Enterprise Linux on System z10 to reduce their carbon footprint, and address datacenter cost and capacity concerns

The Bank of New Zealand reduce their datacenter footprint by 30%, heat output by 33%, carbon footprint by 39%, and expects a 20% ROI

* The Challenge

- **A datacenter with 200 Sun servers was at capacity end**
- Bank of New Zealand needed to grow, reduce emissions and costs, become more open, and seeks to become carbon-neutral by 2010

* The Solution

- **Consolidate 200 Sun servers** down to just 1 IBM System z10 mainframe running Red Hat Enterprise Linux

* The Benefit

- Bank of New Zealand reduced power consumption by close to 40%, heat output by 33%
- Just one administrator is needed per 200 virtual servers
- New environments are deployed in minutes, not days

“Deploying IBM mainframes with Red Hat Enterprise Linux to address our carbon footprint and cost savings concerns was a very big deal, especially at the senior management level.”

*Lyle Johnston
Infrastructure Architect
Bank of New Zealand*

Change to the solution based view !

<http://www-03.ibm.com/systems/z/solutions/editions/linux.html>

United States [change]

Home Solutions Services Products Support & downloads My IBM Welcome Mr. Wilhelm Mild [Not you?] [IBM Sign in]

IBM Systems > Mainframe servers > Solutions >

IBM System z Solution Edition for Enterprise Linux

z/Solution Editions

The primary goal of the System z Solution Edition for Enterprise Linux is to improve your return of investment (ROI) through server virtualization and workload consolidation on a single mainframe. At the same time, your infrastructure will evolve by standardizing on the platform that offers industry-leading virtualization, scalability, security, and reliability that your business needs.

The IBM System z platform has become well known for server virtualization and workload consolidating through its superior capabilities, thus providing the opportunity to minimize IT costs. The Linux environment on System z builds on the outstanding capabilities of the hardware technology and z/VM virtualization for optimal resource utilization, high flexibility, easy and fast provisioning, load-balancing and efficient systems management. System z is designed to run multiple and different workloads in parallel, providing a balanced system, internal networking, and unmatched levels of availability and security.

The *System z Solution Edition for Enterprise Linux* can add a set of Integrated Facility for Linux (IFL) processors, memory and I/O connectivity and z/VM virtualization software to an existing mainframe system. Flexible configurations are offered to extend your existing System z servers.

An *IBM Enterprise Linux Server* is offered as well, a standalone System z Linux server, equipped with IFLs, memory, I/O connections and the z/VM virtualization software.

Both solutions include 3 to 5 years hardware maintenance and 3 to 5 years subscription & support for the z/VM software.

Linux distribution partners Novell SUSE and Red Hat are partnering with IBM for the *Solution Edition for Enterprise Linux* and the *IBM Enterprise Linux Server*.

Please contact your IBM representative or IBM business partner to learn how this offering can help you standardize on a scalable, flexible virtual infrastructure to meet the requirements of your business.

Learn more

This new Linux solution makes the System z platform a great alternative for your virtualization and consolidation of distributed workloads and new Linux deployments for maximizing the strength of your business.

Download PDF (120KB)

Smarter Systems for a Smarter Planet

Success on a smarter planet demands smarter systems.

→ Discover optimized, integrated, proven systems for your business

Enterprise Linux Server

Leading virtualization, massive scalability and high resiliency.

→ Learn more

Linux on System z

Get to market faster with the advantages and flexibility of Linux and System z.

→ Learn more

In the news

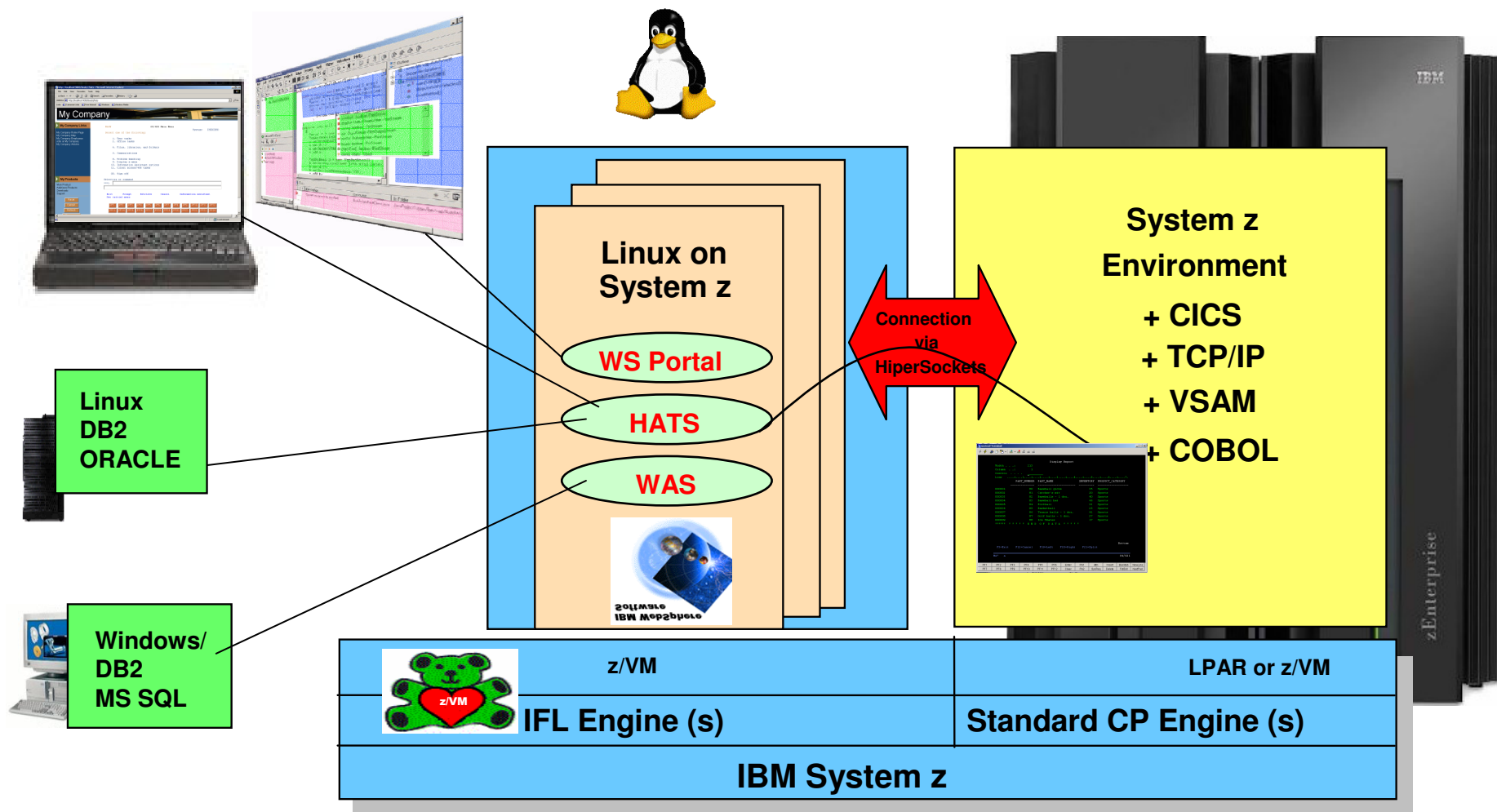


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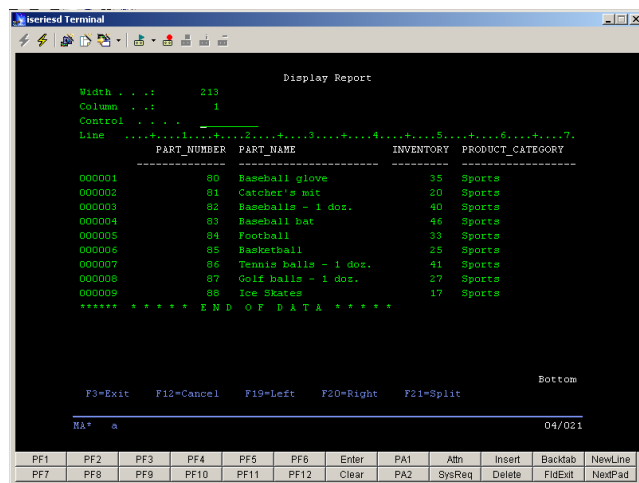
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Scenario 1: Linux on System z as Central Access Hub

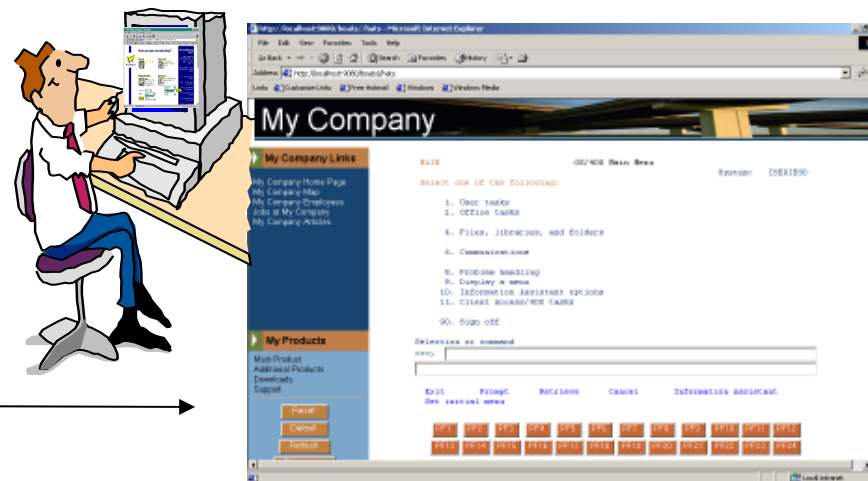
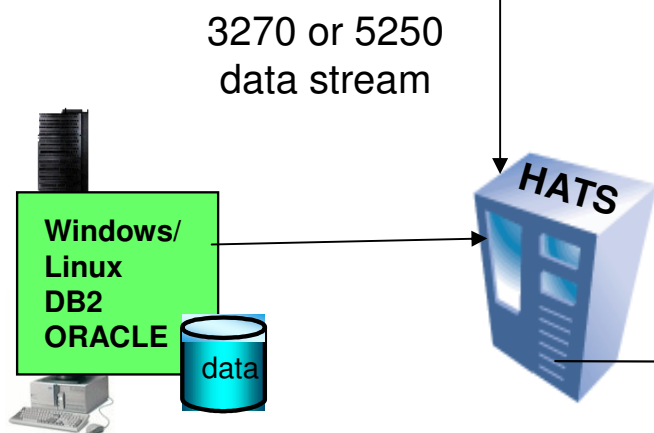
Web enable, improve interface, simplify, extend existing applications



Application Integration with Host Access Transformation Services (HATS)



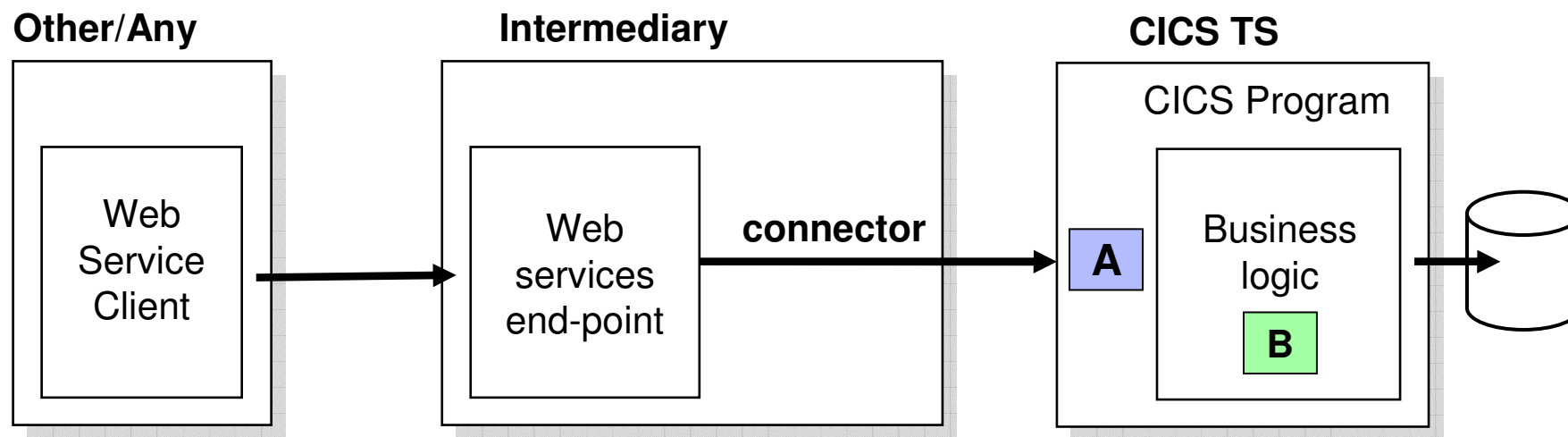
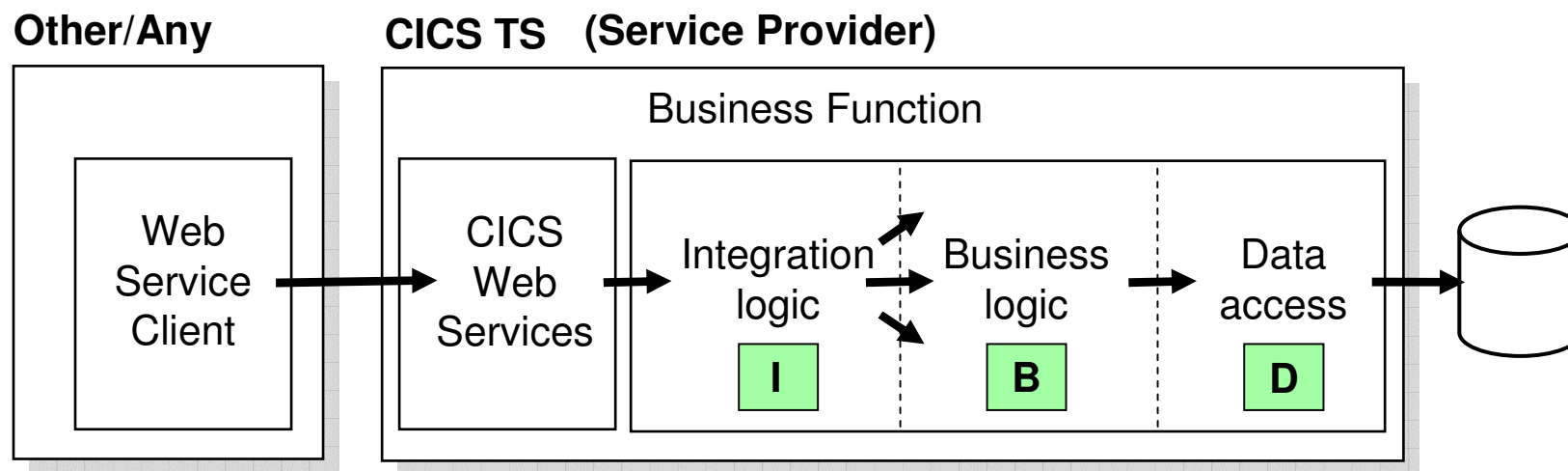
- No software download to the client
- Converts **green screens to Web GUI**
- **Integration with distributed applications**
- improves ease of use of host applications
- **Web Service** on the fly



Screen transformation rules running on WebSphere Application Server

HTML in a Browser

The Two Models of CICS Integration



.NET application run on Linux on System z

- 03/2009 Announcement Novell / SUSE
 - New Version of MONO runs .NET applications
- High scalable Web environment possible with Linux on System z
- Centralization on a large scalable platform on Linux

Novell's Mono Gets Faster and More Visual

Novell delivers new releases of Mono and MonoDevelop, making .NET on Linux easier and Windows-based development for Linux deployment faster.

March 31, 2009

By Sean Michael Kerner: [More stories by this author.](#)

Novell is making it easier for a Microsoft .NET developer to develop applications on Linux, whether they develop their applications on Linux, with the release of Mono 2.4.

Mono is a .NET on Linux implementation and the new version, Monday, promises greater compatibility and better performance deploying .NET apps on Linux. Also, Novell is also releasing Mono an improved IDE ([define](#)) for building .NET applications.

All told, the two new releases continue Novell's push to ensure Linux remains a viable platform choice for .NET applications. The new Mono on the heels of Novell's SUSE Linux Enterprise Server 11 release includes for the first time commercial support for Mono.

"MonoDevelop 1.x was the basic foundation, but we knew it was missing many features," Miguel de Icaza, vice president of development at Novell (NASDAQ:NOVL) and leader of the Mono project told *ZDNet*. "The editing experience now is night and day."

RELATED ARTICLES

- > [Is .NET on Linux Finally Ready?](#)
- > [Novell SUSE Linux 11 Everywhere?](#)
- > [.NET Goes Open Source and Catches Mono](#)
- > [Open Source Mono Gets Visual Basic](#)

For more stories on this topic:

GO

De Icaza explained how he rebuilt the editor from the ground up. MonoDevelop 2.0 now includes an integrated debugger, trackable changes and code templates. Additionally, MonoDevelop 2.0 now uses the same msbuild file format for project code that is used by Microsoft's Visual Studio.

Visual Studio integration

While MonoDevelop offers Linux developers a way of natively developing .NET application on Linux, Windows developers tend to use Microsoft's Visual Studio. Making Mono a more attractive deployment target for Visual Studio developers is also part of De Icaza's plans.

LATEST NEWS

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- > [FTC Red Flags Rule Enforcement Starts Friday](#)
- > [Acer Looks to Build on Netbook Gains](#)
- > [IBM Gives Developer Site a Social Network Feel](#)
- > [Open Source Eucalyptus Cloud Goes Commercial](#)

He commented that for developers that are comfortable with Visual Studio today, they should keep using it and just publish to Linux for deployment instead of a Windows Server.

"Today's story for Visual Studio is pretty good, you just have to hit the publish button and it will give you a site that will run on Mono," De Icaza

said. "But we want to do a lot more integration points. We are working on a Visual Studio plug-in but we're not announcing that today. That will do more than what we can do today."

The new plug-in when available will allow for more integrated Visual Studio to mono debugging and control than what is currently available.

<http://www.internetnews.com/dev-news/article.php/3812851/Novells+Mono+Gets+Faster+and+More+Visual.htm>

Special Software offerings: WebSphere Application Servers and the Open Source Consolidation

WHAT IT IS: Package of products and services to consolidate open source application servers on System z10 BC running Linux, to lower TCO of hardware, software, and administrative costs

WebSphere Application Server Community Edition with Elite Support Offering
WebSphere Virtual Enterprise
WebSphere Application Server

A new Java EE application server built on open source Apache Geronimo technology and optimized for z10 virtualization capabilities



Small Software Foot Print
(~60MB download)



Java EE 5 Compatible



No WAS CE Upfront Costs



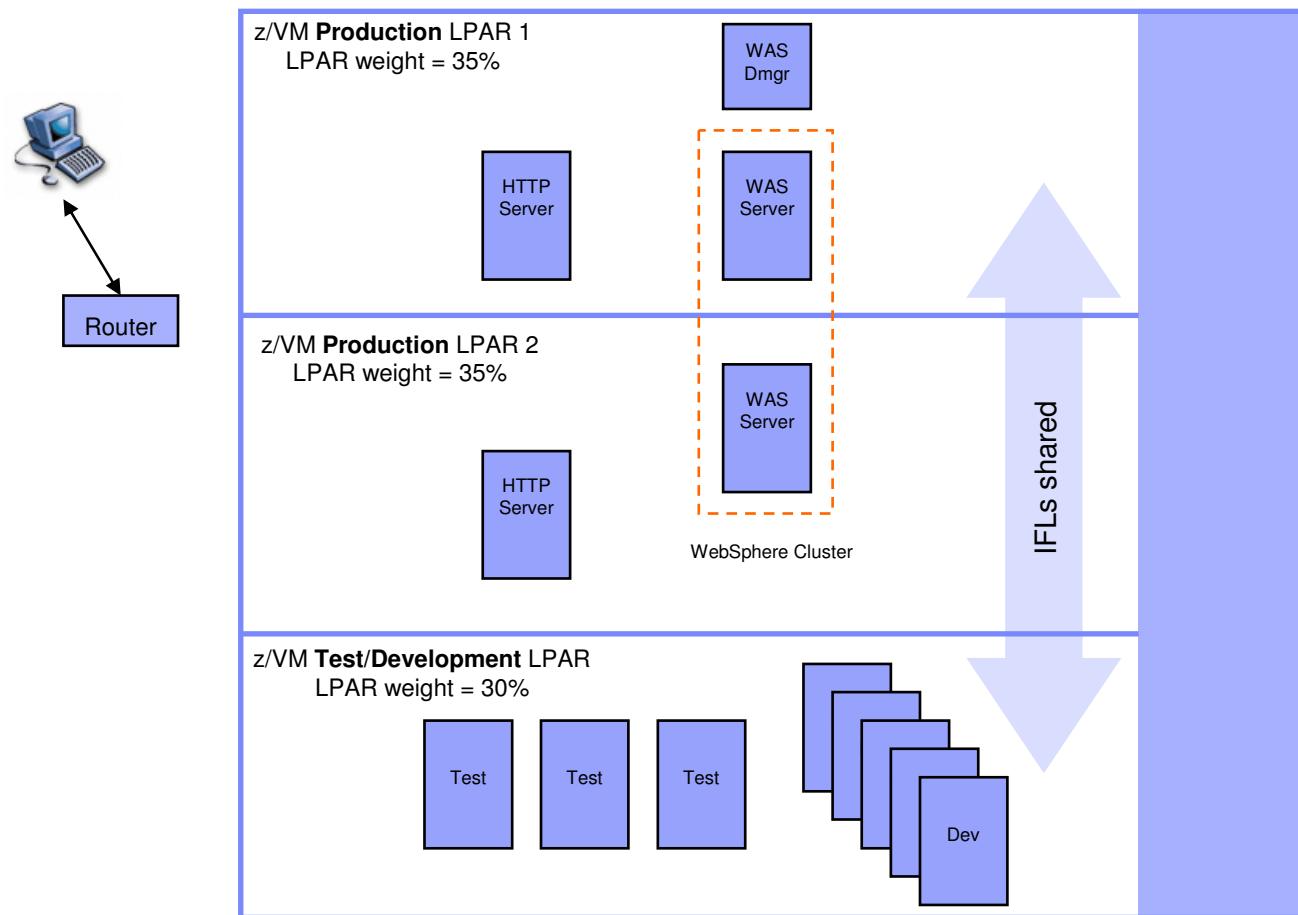
World-class Support Options
(3 tiers)



The Apache Software Foundation
<http://www.apache.org/>

Built on Apache technology - The Gold Standard in Open Source

Typical Recommended Solution on Linux on System z

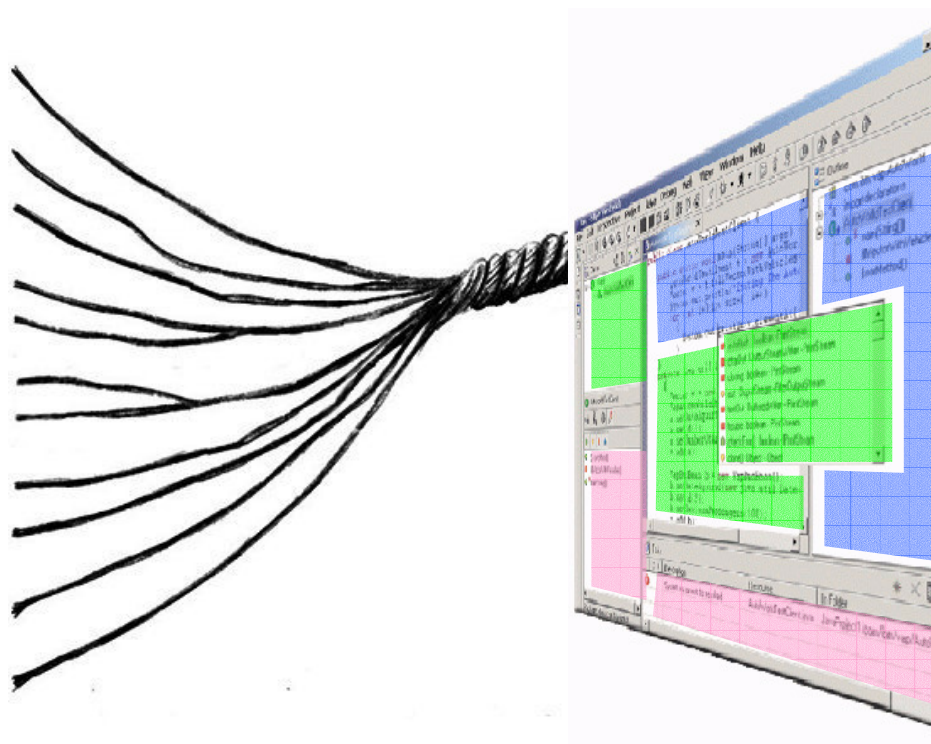


- All Linux virtual servers draw from a common pool of memory and IFLs.
- Resources from a failed server flow to surviving servers
- Small application clusters (Just enough nodes for failover)
- Smaller cluster reduces failure points
- Two LPARs run production workload.
- Applications run in clusters split between the prod LPARs.

Application integration with Portal

A single point of personalized interaction with applications, content, processes and people

- Enterprise Applications
- Messaging
- Search
- Collaboration
- E-meetings
- Web Content
- People Finder
- Knowledge Management
- Business Intelligence
- Document management
- Host systems



Benefits with Linux on System z

- High Stability – inherits from System z
- Highly Scalable horizontally and vertically
- High availability and load balancing in the box
- Very flexible environment with Virtualization z/VM
- Use of Standard interfaces and applications
- Very effective integration with existing applications

State Court....

serves timely information to protect public safety with IBM WebSphere Software

Business Challenge

- State Supreme Court needed centralized system to provide magistrates and other agencies with up-to-date and around-the-clock access to offender information

Solution

- **Online system for processing offenders and reviewing records of previous arrests**
- **WebSphere Application Server on the mainframe fields queries from users and retrieves information from a new centralized database of offenders across the state**

Benefits

- Improved public safety through more informed magistrate decisions and better ability to track and identify suspects across the state
- Increased productivity among court staff
- Reduced application development time




Customer Quote

“WebSphere Application Server scales quickly and easily while also supporting the Java-based applications that represent our future direction. It gives us the foundation we need for new applications and services to come.”

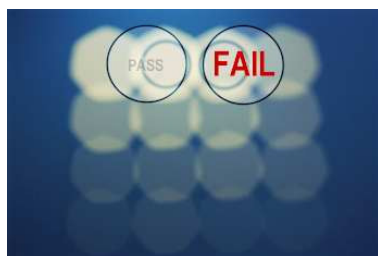


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Bad Data Can be Costly

83% of data integration projects either overrun or fail



Scrap and rework
Increased costs



Lack of consumer confidence

Inaccurate or incomplete data is a leading cause of failure in business-intelligence and CRM projects



Lost opportunities

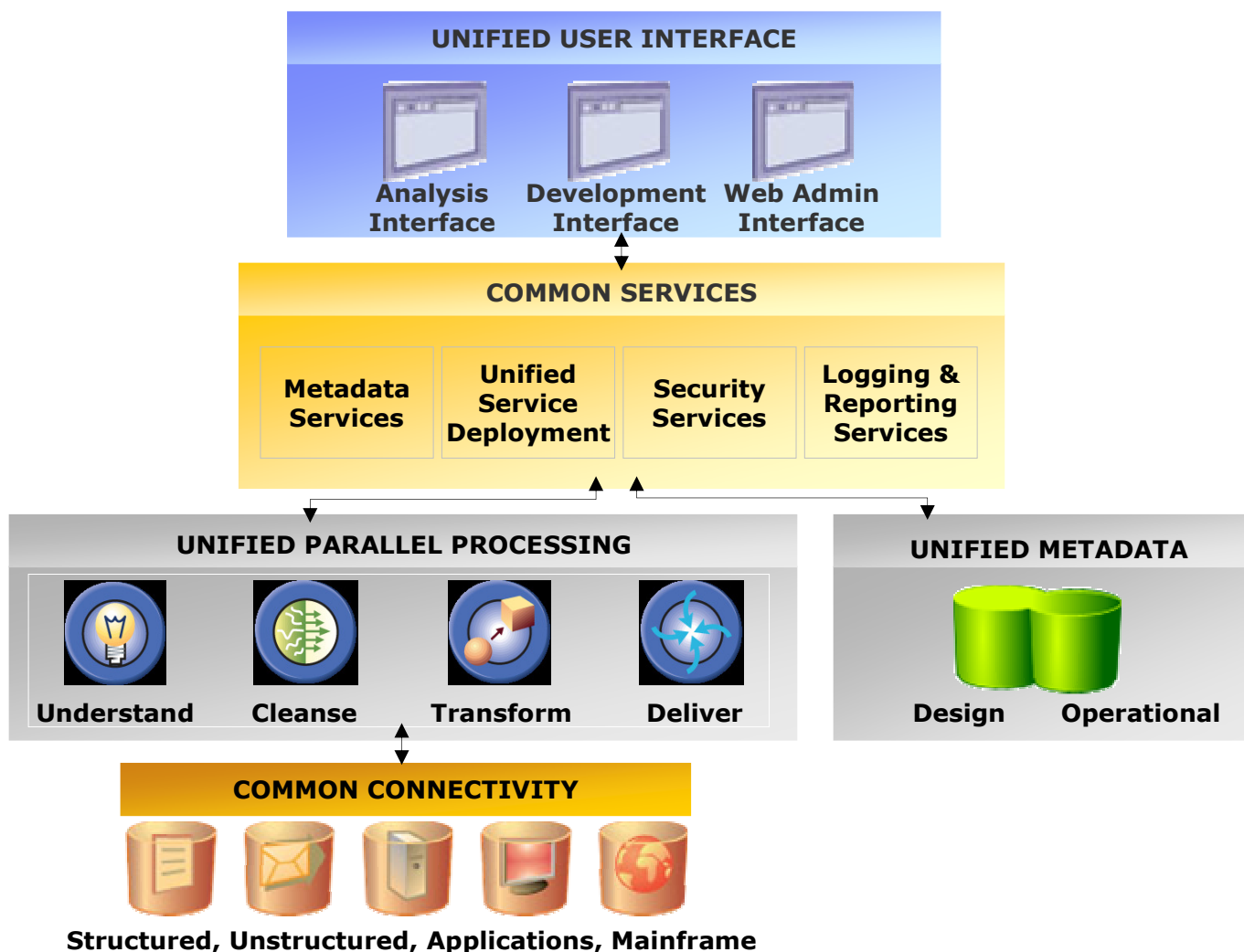
Low data quality costs companies \$611 billion annually

25% of time is spent clarifying bad data

Undetected defects will cost 10 to 100 times as much to fix upstream

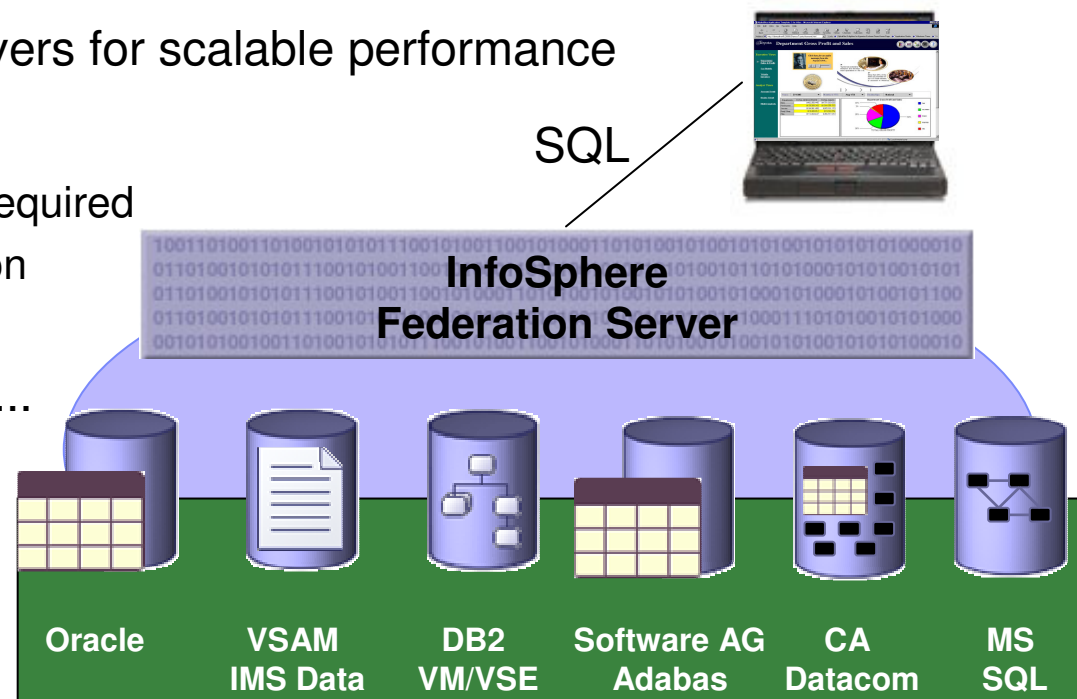
InfoSphere Information Server for Linux on System z

Operational Platform Architecture



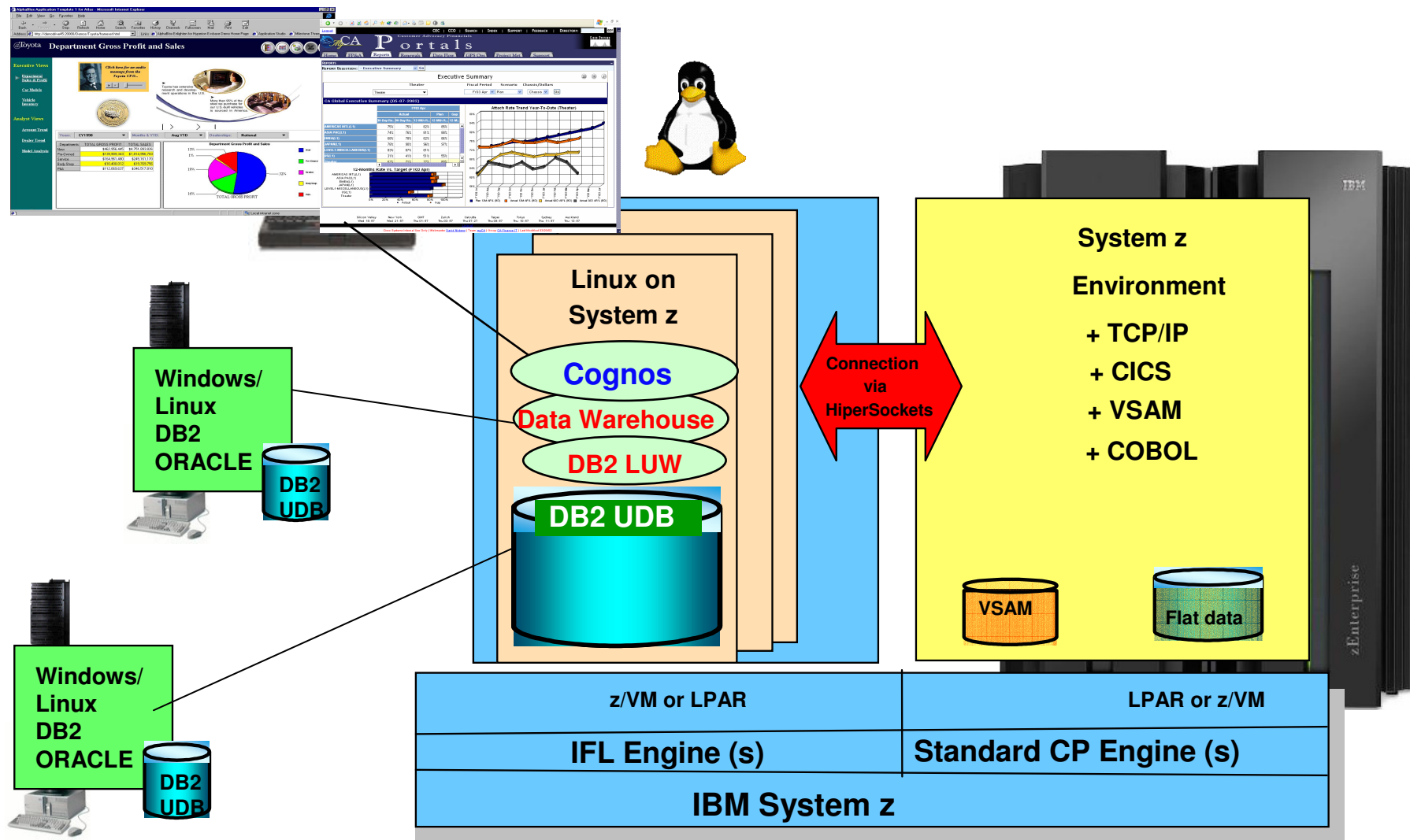
InfoSphere Federation Server on Linux on System z

- Integrating at the data layer – Federation of data
 - Read from and write to federated mainframe data sources using SQL
 - Standards-based access via JDBC, ODBC, or Call Level Interface
 - Including for mainframe VSAM data and flat files
 - Multithreaded with native drivers for scalable performance
 - Metadata-driven means...
 - No mainframe programming required
 - Fast installation & configuration
 - Ease of maintenance
 - Works with existing and new...
 - Mainframe infrastructure
 - Application infrastructure
 - Toolsets



Scenario 2: Linux on System z as data hub

Consolidate, Integrate, Evaluate, Decide,
Base for Business Intelligence (BI)



DB2 9 with pureXML feature – A Hybrid Data Server

XML Developer
"I see a sophisticated XML repository that also supports SQL."



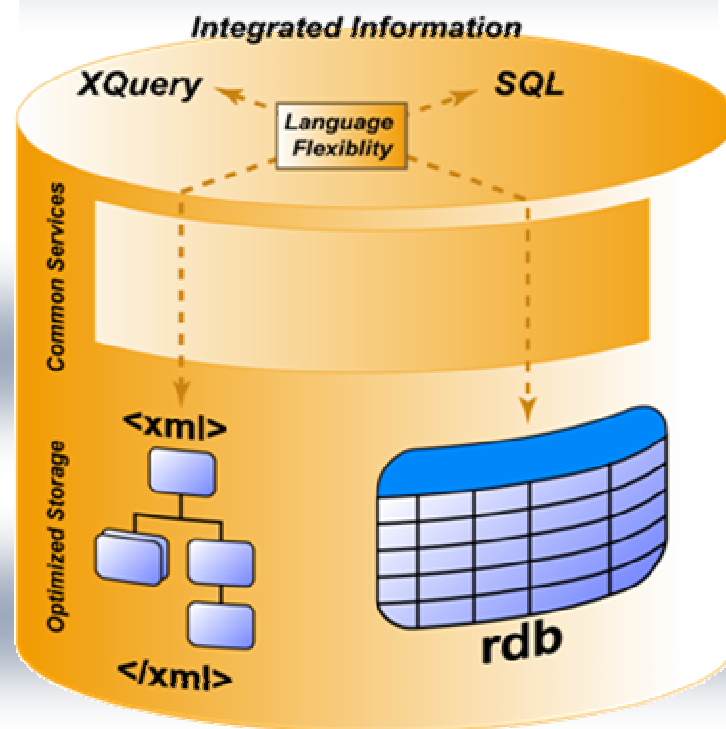
Familiar Programming Models



SQL Developer
"I see a sophisticated RDBMS that also supports XML."

Mature Services

Optimized Storage Models



Familiar Tooling

Optimized Performance & Scale

New XML applications benefit from:

- Ability to seamlessly leverage relational investment
- Proven Infrastructure that provides enterprise-class capabilities

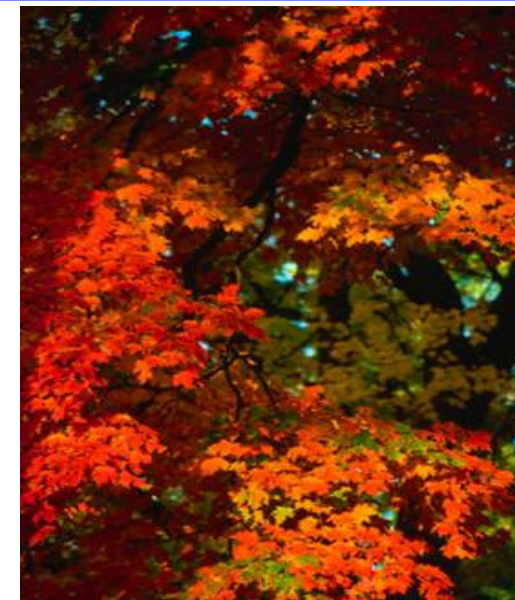
Benefits with Linux on System z

- High Scalability of Databases
- Very flexible environment with z/VM
- High Availability, Stability – inherits from System z
- Use of Standard ASCII databases
- Very effective consolidation and federation
- Excellent possibilities for centralized data analysis
- Rapid decisions with BI solutions
- Centralized data management

Province of Québec, Canada

Improves citizens' services while saving money and improving operation

- **Government of the province of Québec, Canada**
 - Relies heavily on large Web-based application environment to serve the needs of its citizens
 - DGTI (Direction generale des technologie de l'information) supports applications and underlying infrastructure
- **Situation:**
 - **Fast growth of applications and infrastructure (150+) distributed servers, staffing pressures**
- **Problems:**
 - Slow deployment of new applications, limited general manageability (including backup/recovery)
 - Rising software licensing costs, especially for the Oracle environment
- **Solution:**
 - IBM System z9™ Enterprise Class (z9 EC) was ideal choice: robust virtualization capabilities, proven high availability and ease of management
 - **Consolidated approximately 60 hard-to-manage distributed server environment (UNIX® servers) to single z9 EC server with 5 IFLs and 96GB of memory running SUSE Linux® Enterprise Server (SLES) operating system under z/VM®**
 - **80+ Oracle 9i and 10g database instances consolidated to the z9**
 - Consolidation from 60 servers down to 1 server resulted in significant reduction in Oracle licenses
 - Plan to move WebSphere Application Server and Domino instances as well



Results:

New application deployment time fell from several weeks to days
Saved CA\$1.2M (software licensing) & reduction in management cost
Drastic improvement in backup and recovery operations

Satyam

Achieving up to 88% faster response times

Business challenge:

Satyam has a strong presence in the IBM Cognos business intelligence space. **Its delivery of IBM Cognos software has been vital in helping its clients use information as a strategic asset for improved business performance and competitive advantage.** As its clients migrate business intelligence solutions to the IBM System z platform for outstanding performance and energy efficiency, Satyam sought to test performance of Cognos 8.3 BI for Linux on System z.

Solution:

Through the IBM Beta Testing Program for **Cognos 8.3 BI for Linux on System z, Satyam confirmed the seamless integration with IBM DB2 and IBM WebSphere Application Server software**; easy migration to the System z platform; exceptional application performance; and robust scalability. Staff found that often report response times on the System z platform were between 15% and 88% faster giving clients rapid access to business information through a single, real-time consolidated view.

Benefits:

- Better performance and throughput for up to an 88% decrease in report response times
- Gains a competitive edge through delivery of a proven and tested business intelligence environment
- Enables more effective decision making through a single, real-time and consolidated view of business information

“IBM Cognos 8 BI for Linux on System z is a powerful business intelligence solution on a mainframe platform which addresses all important parameters related to performance and scalability. This provides a single, real-time and consolidated view of business information to support operational processes and disperse information to the right teams across the company for more effective decision making.”

— Hemant Kulkarni, Head, BI Technology CoE, Satyam

Solution components:

- IBM Cognos® 8.3 BI for Linux® on System z™
- IBM DB2® 9.5
- IBM System z9® Business Class
- IBM WebSphere® Application Server 6.1




Business Transformation. Together.

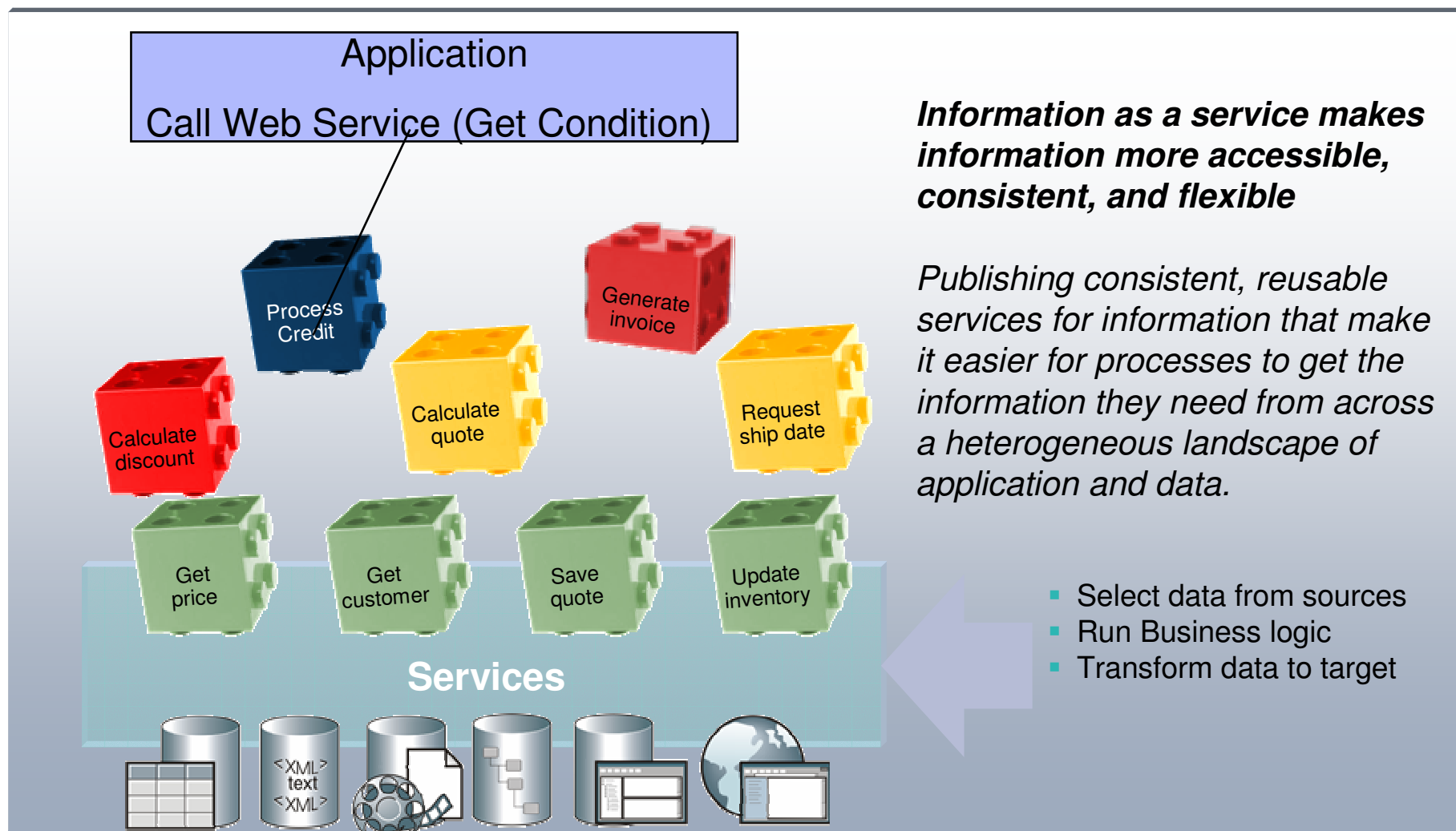
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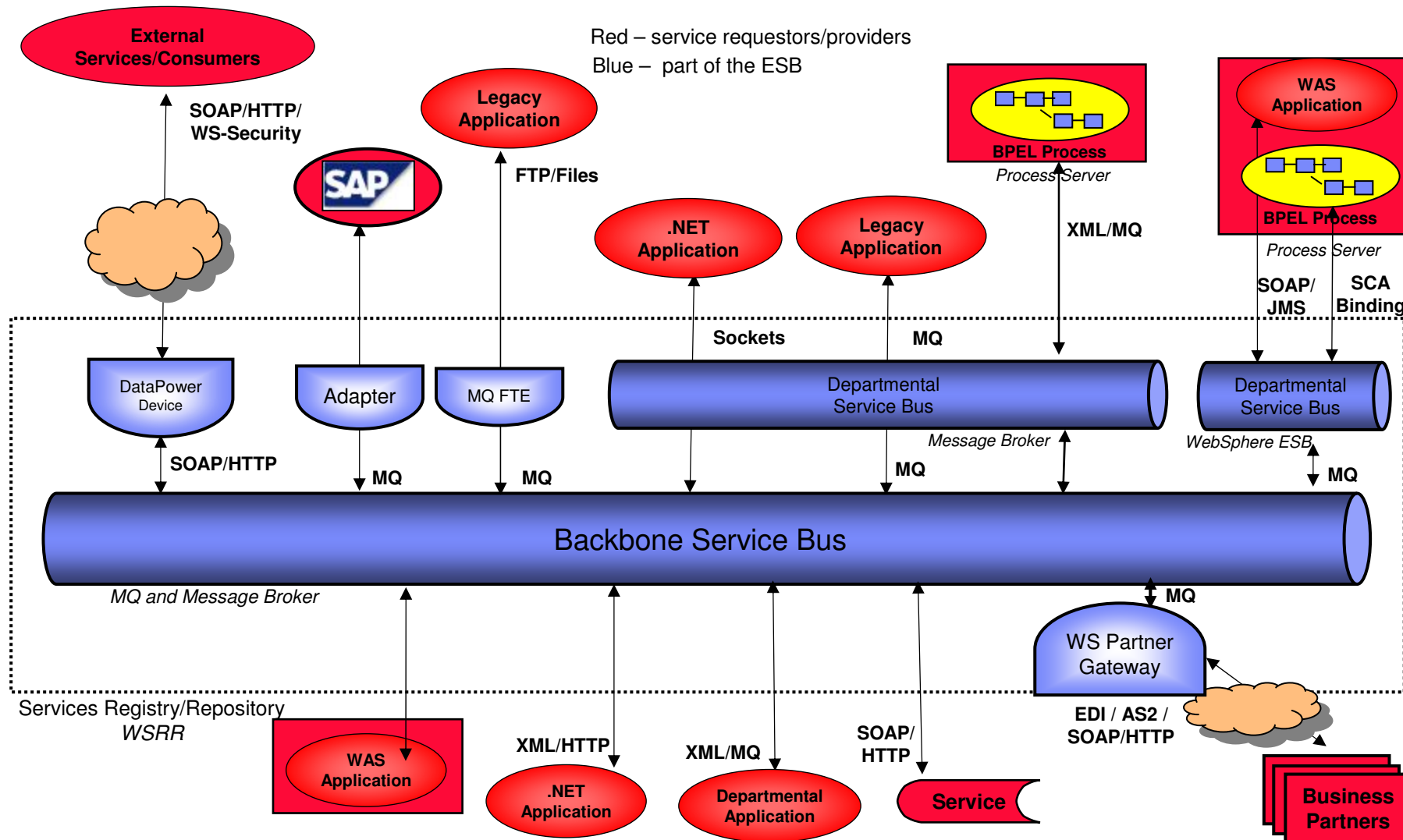
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2. Linux on System z as 'Central Portal'
3. Linux on System z as 'Data Hub'
-  4. Linux on System z as 'SOA Hub'
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6. Linux on System z as 'Recovery Hub'

SOA evolution - Integrating Logic across platforms

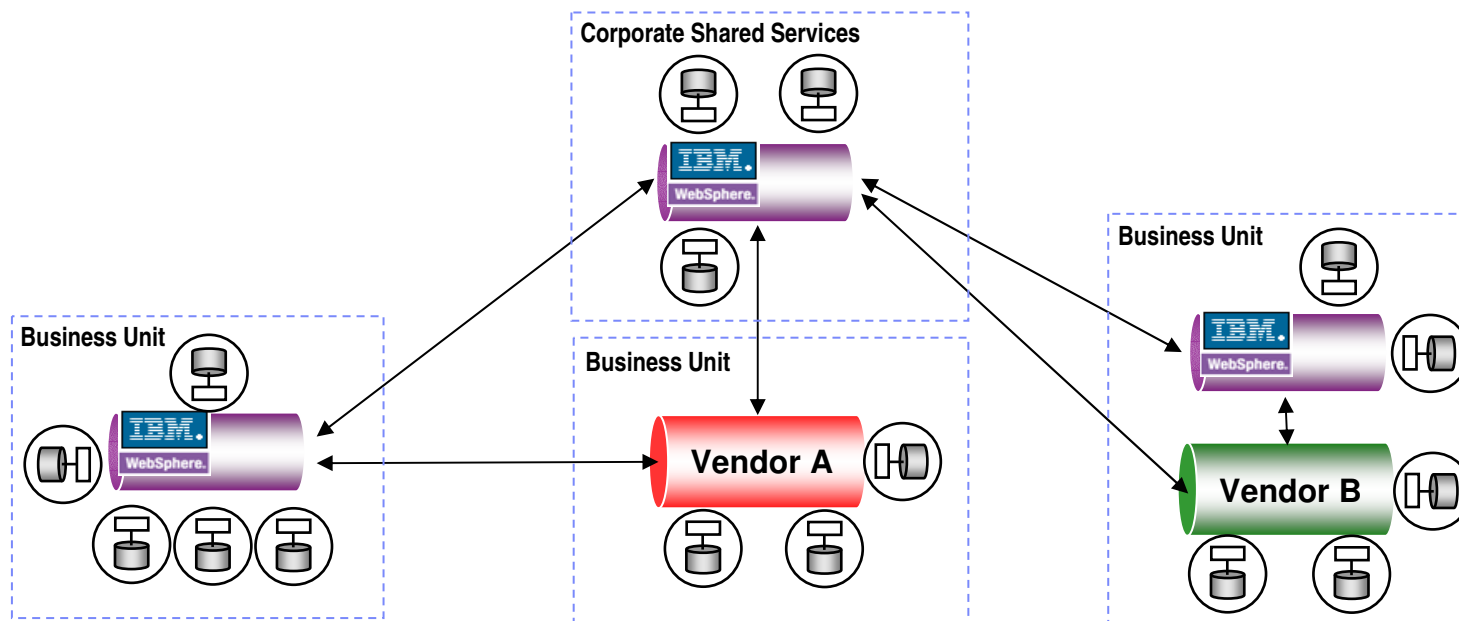


Example of Federated ESB



Federated ESB Topology Patterns

A single enterprise-wide ESB is rarely attainable – most businesses will have multiple ESBs across business units



WebSphere Services Registry and Repository

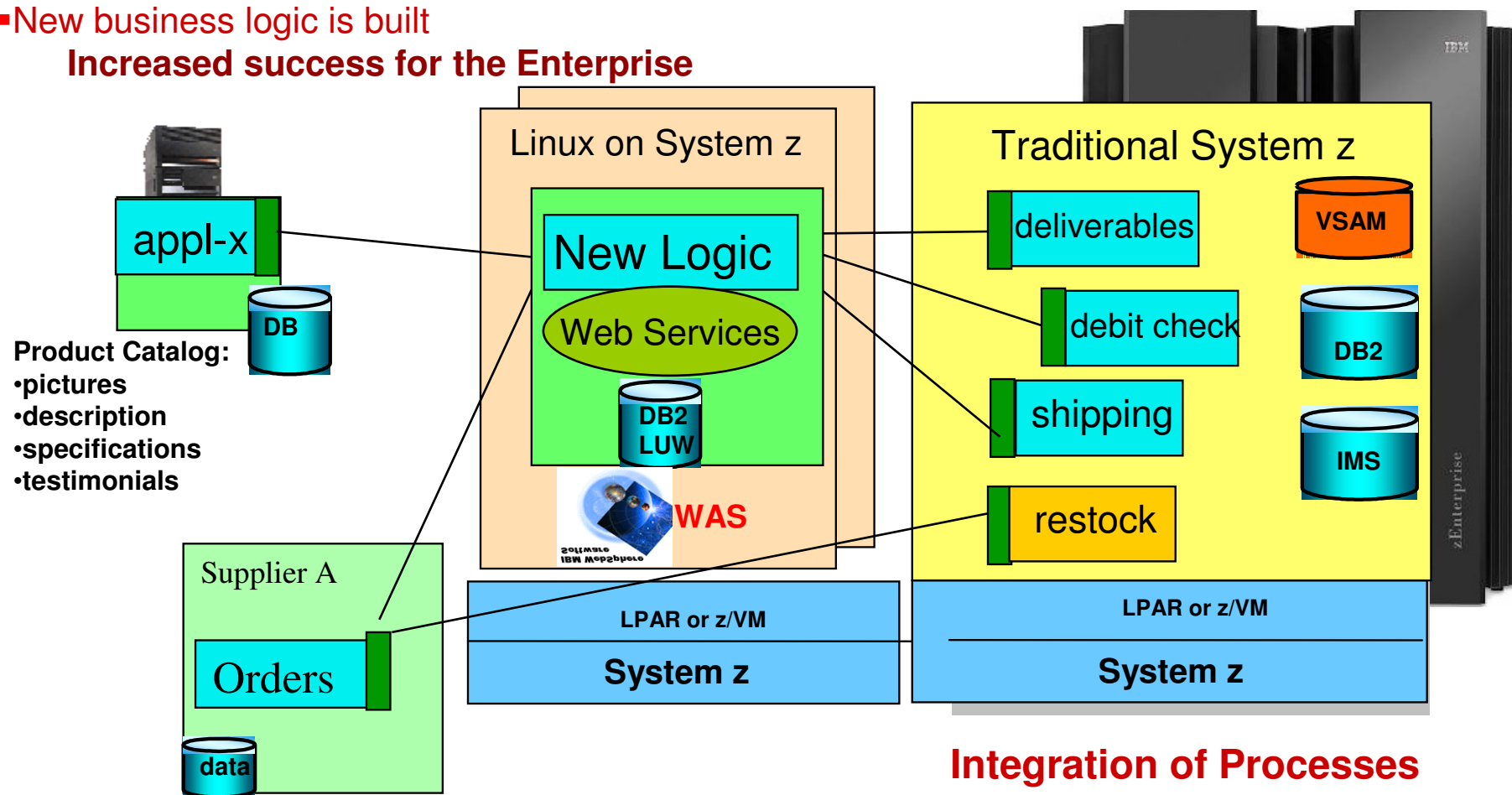
Tivoli Composite Application Management for SOA

Federated Security

Service Oriented Architecture (SOA) – the way to new applications and processes

- Applications look the same for all users
- Core applications can be enhanced with an interface (independent of their language, COBOL, ASM, PL/I, Java, C#)
- New business logic is built

Increased success for the Enterprise



Integration of Processes

Benefits with Linux on System z

- High Scalability and effective Hub for applications
- Use of Standard SOA architecture and interfaces
- Very good possibility for new solutions
- High performance integration with transactional load
- System z integration with distributed applications using standard interfaces
- High scalable ESB using WMQ or WebSphere ESB

St. George Bank

Saves \$15M USD through re-use of key business functions with SOA

Business Need

- Growth by acquisition of several regional banks
- Integrate multiple applications with disparate back-end systems

Solution

- *Service oriented architecture that re-uses business functions and loosely couples them to back-end systems with IBM messaging middleware*

Benefits

- Significant improvement in customer satisfaction
- Ability to present customized bundled offerings to cross-sell and drive more revenue.

"In our messaging layer, we have 200 services, which have completely opened up the core systems that the bank runs. And within those 200 services, we get 47% re-use. Some of them are used two or three times and some of them are being re-used up to 10 or 12 times. "

Greg Booker, Head of Group Architecture



"We no longer want to invest the time and resources in two or three year initiatives. Business is changing so fast these days that we can't afford to roll something in production that represents the thinking of three years ago."



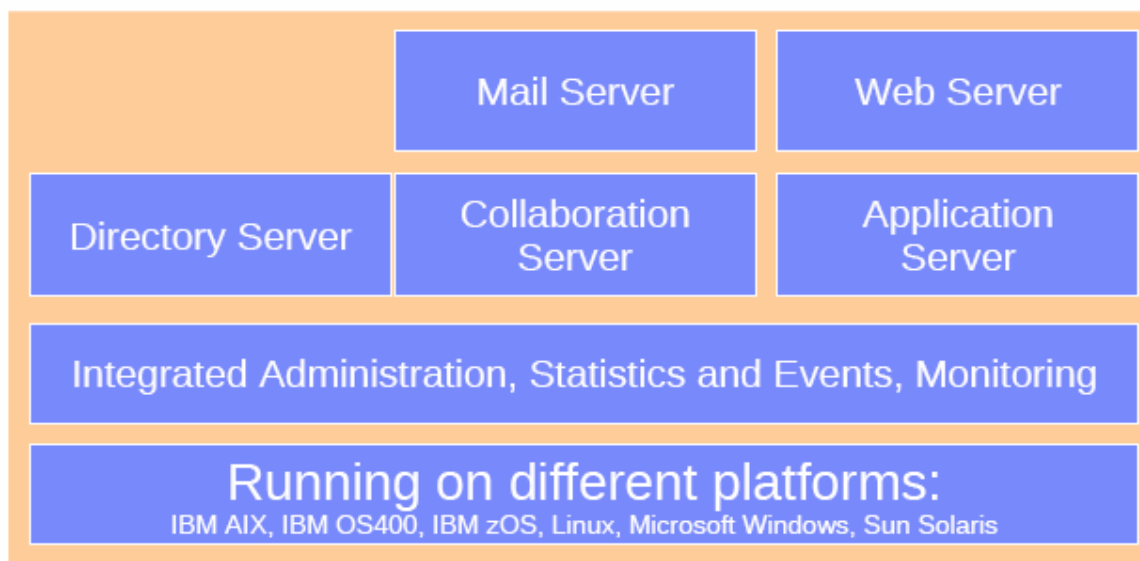
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Lotus Domino – more than just Mail server



Choose your Client: Lotus Notes (Windows, Linux und Mac), Domino Web Access, POP3/IMAP, Mobile Devices, MS Outlook



Development Tools



High Availability of Lotus Domino

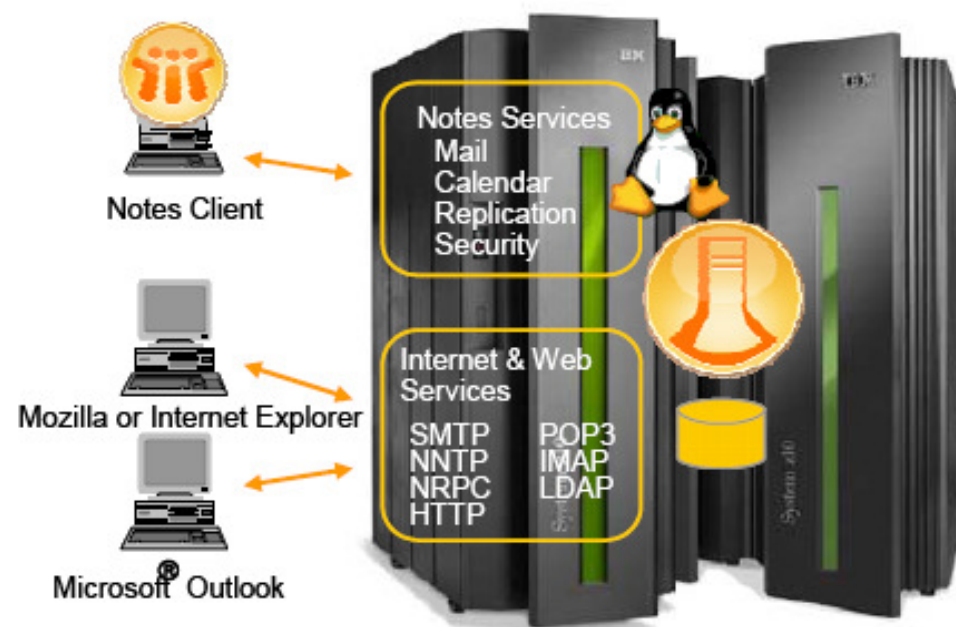
Domino Clustering

- High Availability of critical databases (mail and applications)
- Fail over and Workload Balancing
 - Active/Hot-Standby
 - Active/Active
- Supported by Domino Utility Server and Enterprise Server
- Use of any supported hardware and operating system
- Can be combined with operating system cluster

Linux on System z as Mail and Collaboration Hub

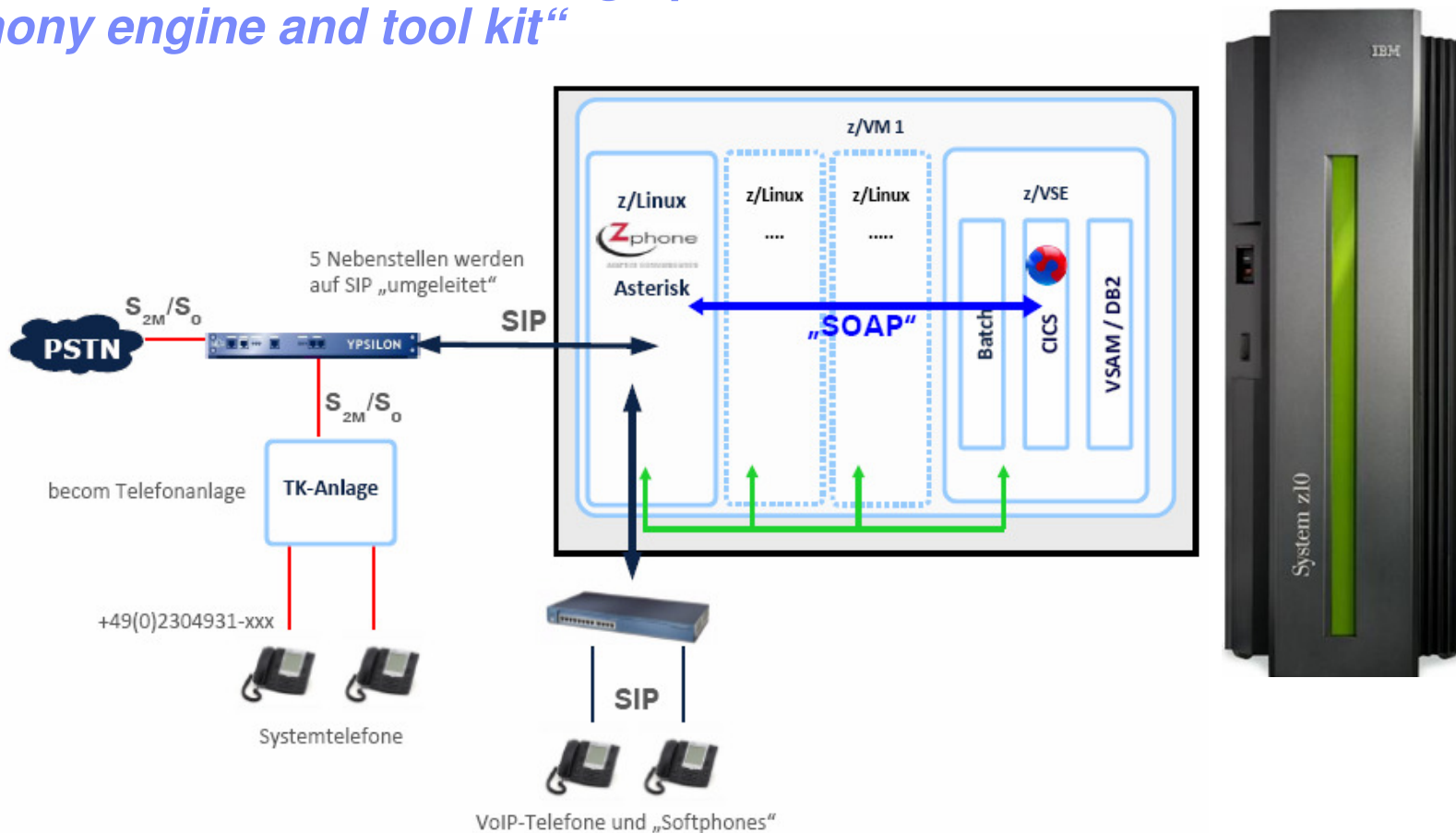
▪ Mail

- Lotus Domino for Linux on System z
- ISV products such as :
 - Bynari,
- Open source products:
 - Exchange4Linux, Evolution, Kroupware, OpenGroupware, Postfix, sendmail
- Asterisk- manages telephone calls, mails



IBM System z – the next generation **voice** Hub! – more than a simple Phone Server

„Asterisk® is the world’s leading open source telephony engine and tool kit“



27.04.2009

© TDMi 2009

(<http://www.asterisk.org/support/about>)

Benefits with Linux on System z

- High Scalability for Mail servers
- Very good possibility for integrated solutions
- System z integration with mailing applications using standard interfaces

Winnebago Industries

Slashing e-mail costs and administration time



Business challenge

One of the country's leading manufacturers of recreational vehicles, Winnebago Industries, **was using an outdated e-mail system.**

Winnebago needed to replace its e-mail system with one that could handle thousands of users.

Solution

Winnebago Industries chose a solution from Bynari, Inc., an IBM Advanced Business Partner, Insight Server on the Linux operating system running on the company's existing IBM System z™ mainframe.

Insight Server is a [Linux operating system-based e-mail solution that runs on all IBM platforms and can handle thousands of users](#). It includes anti-spam and anti-virus protection, backup and recovery software and a complete statistics tool to monitor performance.

Benefits

- Slashed e-mail serving costs by 80 percent
- Reduced e-mail management time by 50 percent
- Enjoyed nearly 100 percent email availability


“Winnebago Industries is a 24/7 shop so it's critical that their e-mail is up all the time — and that's where Linux really shines.”

*— Hyun Kim, President,
Bynari, Inc*



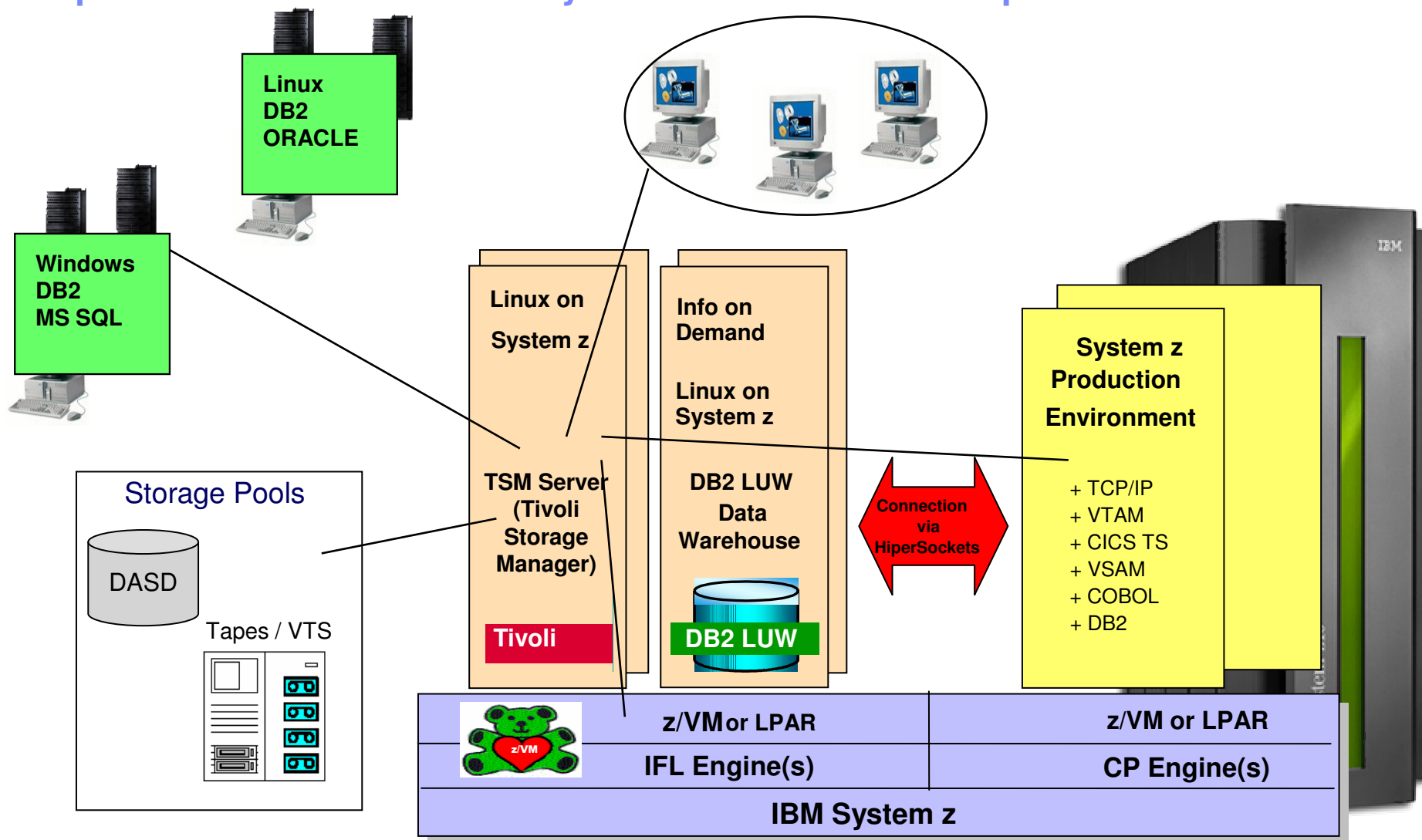


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Enterprise Backup Hub

Implement TSM on Linux on System z as central Backup Hub



Solution Benefits with Linux on System z

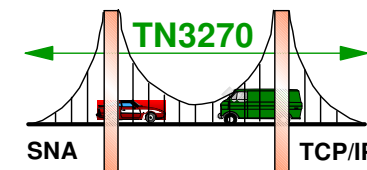
- Centralized Backup procedure for the enterprise
- One central tool for System z and distributed backups and archives
- Use of Stability of System z for Recovery and High availability



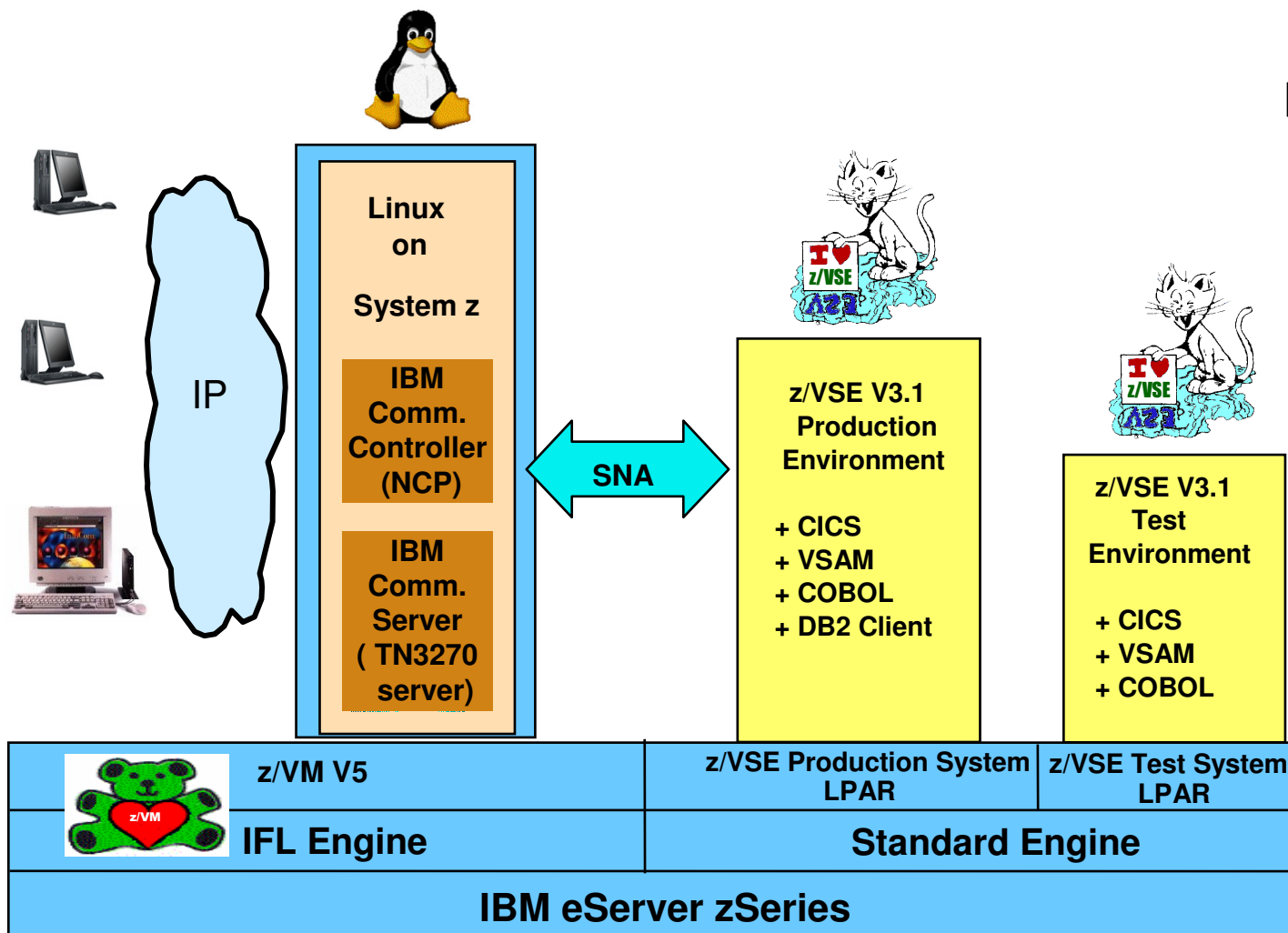
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- ➔ 7. Linux on System z as SNA hub

Network Infrastructure Simplification: 374x (NCP) and TN3270 network replacement



Easy, high-value transition



Anticipating Virtualization Challenges

When a virtual environment has a problem, where did it originate?

The are no “virtual performance problems”, only very real performance problems manifested in a very complex consolidated, virtual environment.

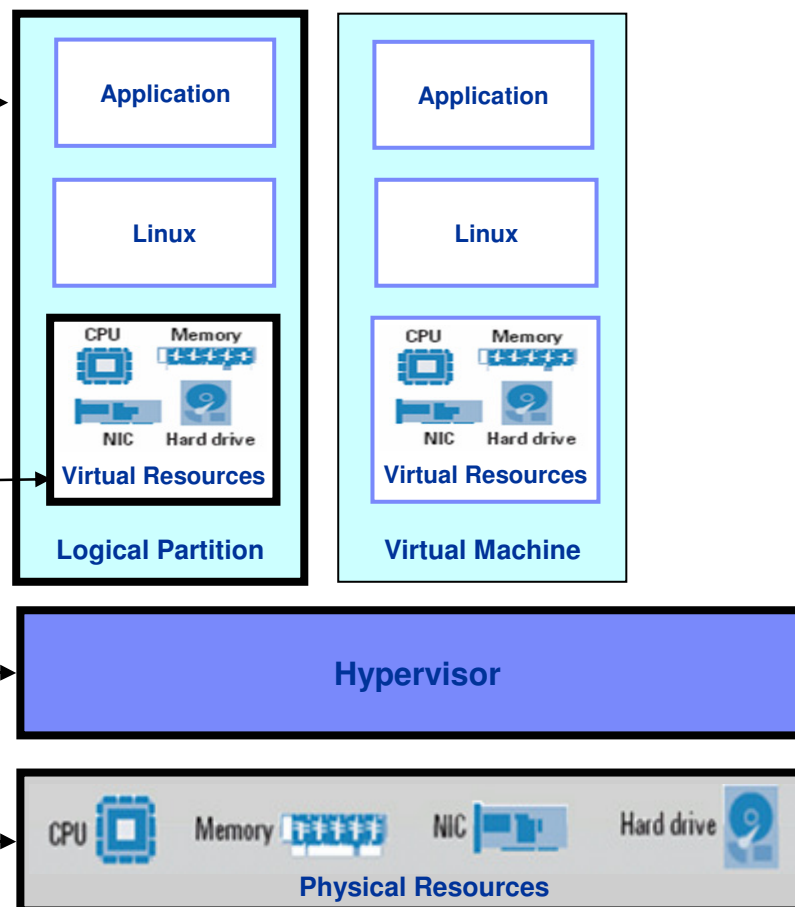
In the **Application (bad process)** running on the virtual resource?

In the **Logical Partition/Machine** sharing the same physical resource?

In the **VIRTUAL RESOURCE?**

In the **HYPERVISOR** overhead?

Or in the **PHYSICAL RESOURCE?**



IBM® Tivoli® Monitoring

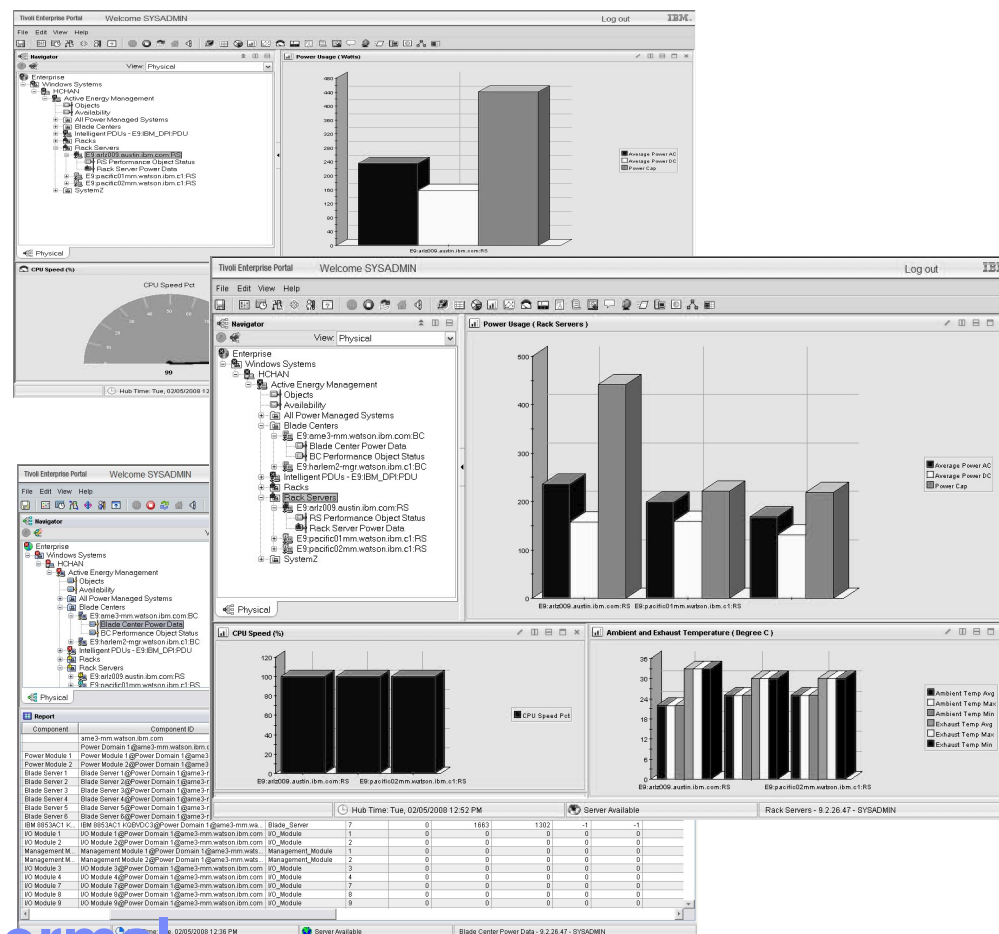
The Industries' Most Extensive Resource Monitoring

Operating Systems	Infrastructure	Application and Collaboration	Business Integration	Web Environment	Database	Agent Builder
AIX	AIX (LPAR DLPAR WPAR) VMware Windows Hyper-V Solaris Zones Citrix Clustering	SAP	CICS	WebSphere	DB2	Agentless or Agent Adapter (Universal Agent) OPAL solutions (100+ packages) Microsoft Message Queue and more.... Blackberry Micromuse
i5/OS		Siebel	Web Services	WebLogic	SQL	
z/OS		PeopleSoft	IMS	IIS	Oracle	
Windows		Tuxedo	MQ	Oracle	Sybase	
Linux		Domino	Message Broker	NetWeaver	Informix	
Unix		Exchange	.Net Biztalk Sharepoint	JBoss		
z/VSE		Citrix		Apache		
	Clustering	Sun Java System				

Tivoli Monitoring for Green Energy Data Center Optimization and Reporting

Metric Collection, Analytics,
Thresholding and Eventing

- Monitor power usage and thermal data from IT resources through embedded sensors or via remote sensors
- Operations dashboard integrates traditional IT measurements and emerging environmental measurements onto common dashboard
- Aggregation of IT and environmental metrics with ability to take manual or automated actions when needed
- Intelligent thresh-holding and event generation



Monitoring Power and Thermal

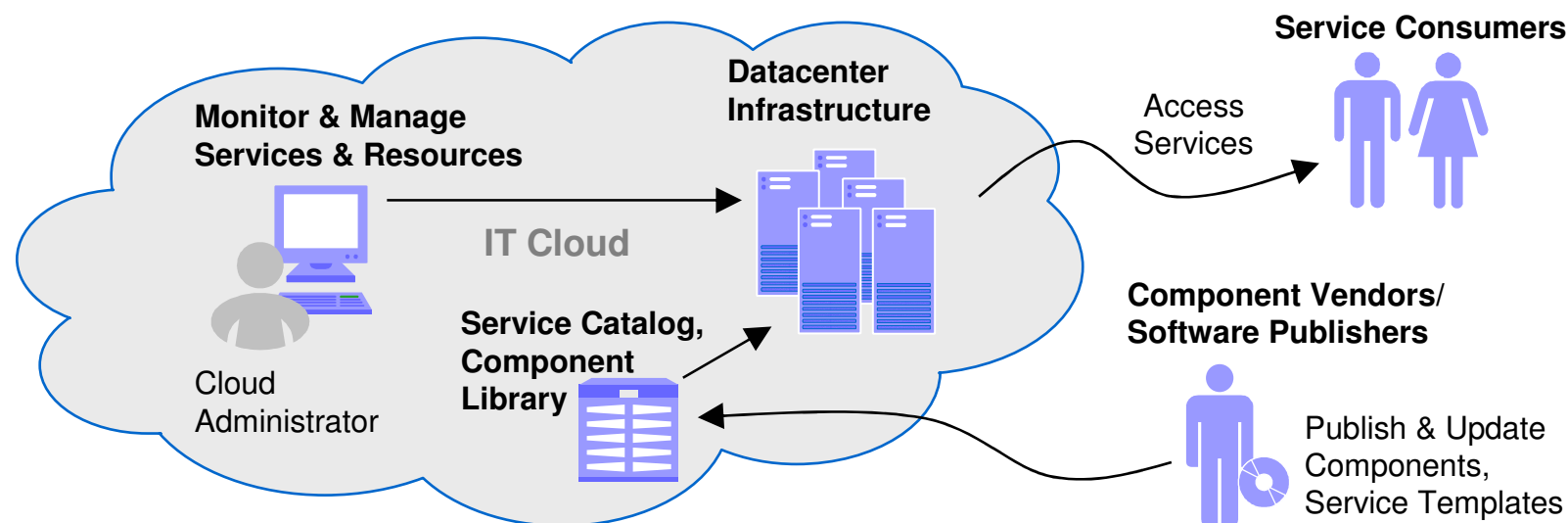
Linux perfect match: Cloud Computing

A user experience and a business model

- Cloud computing is an emerging style of IT delivery in which applications, data, and IT resources are **rapidly provisioned** and provided as **standardized offerings** to users over the web in a **flexible pricing model**.

An infrastructure management and services delivery methodology

- Cloud computing is a way of **managing** large numbers of highly **virtualized resources** such that, from a management perspective, they resemble a single large resource. This can then be used to deliver services with **elastic scaling**.

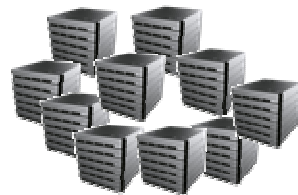




Guaranteed application uptime to SaaS customers



10 Intel Servers



Triple digit growth

Transaction volume

69,000 users

6800 Companies

SaaS customers

BENEFITS to Clients

Comparison to Distributed



"Our business and reputation rest on promising a fast, reliable and secure service to our clients," said Peter Flanagan, CEO of Transzap. "We're a small company but our transaction data volumes are growing upwards of 100 percent, annually. We couldn't trust our business to any competitive product other than the IBM System z."

Superior Scalability and Availability

Transzap offers its customers a suite of financial tools delivered via Software-as-a-Service model. It operates Oildex, an ePayable system and digital data exchange.

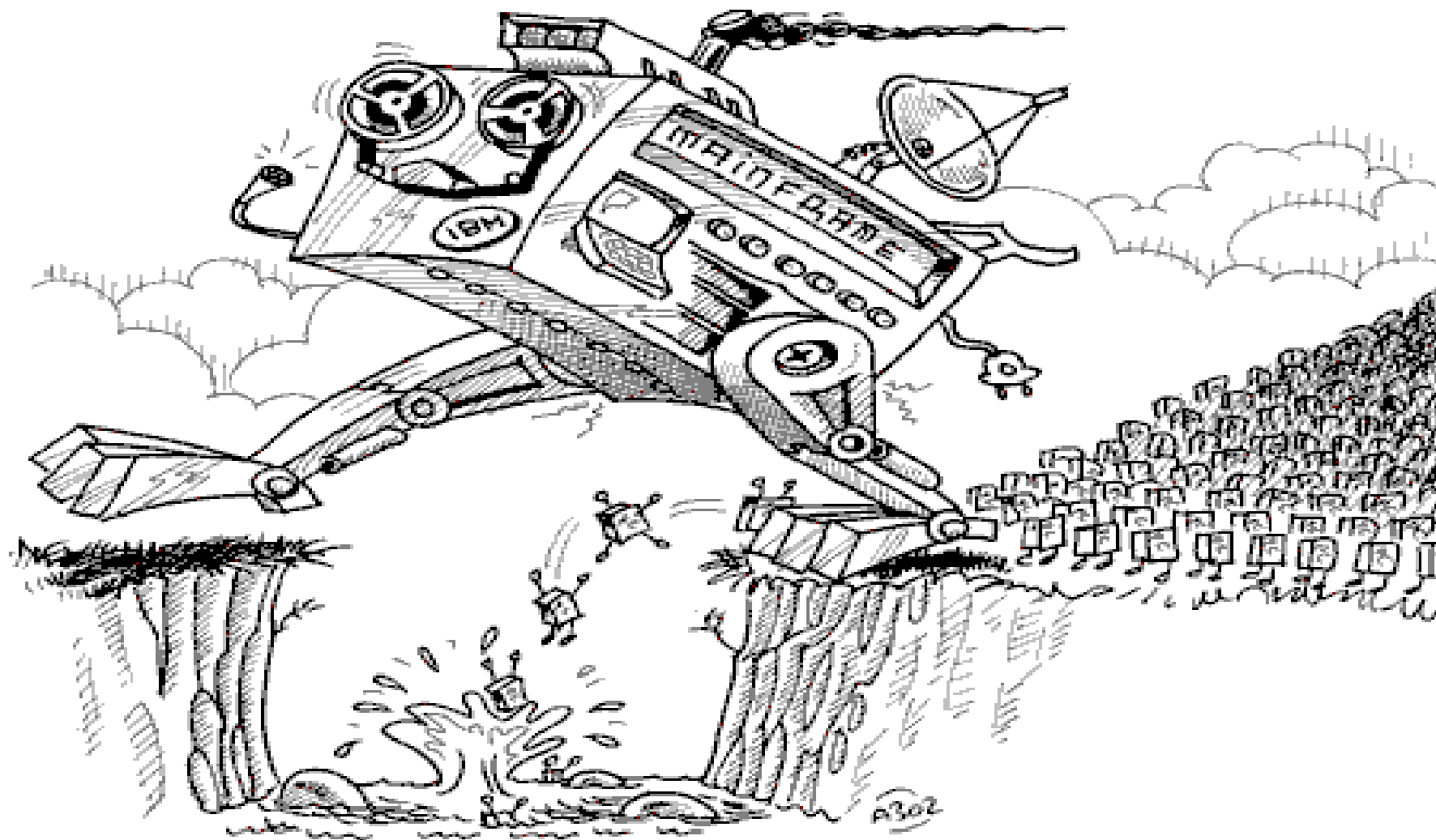


The Future runs on System z, the largest scalable server



... System z delivers extreme business value by helping you reduce cost, manage risk, and improve service.

Do you want to make bigger steps forward ?





More Information about Linux on System z

Linux on System z in IBM:

<http://www-03.ibm.com/systems/z/os/linux/>

Linux on System z at Developerworks:

<http://www.ibm.com/developerworks/linux/linux390>

Tuning Linux on System z:

<http://www.ibm.com/developerworks/linux/linux390/perf/index.html>

IBM Systems Consolidation Evaluation Tool:

<http://www-03.ibm.com/systems/migratetoibm/whyibm/campaigns/sconevalttool1.html>