IBM z/VSE V4.3 in modern solutions with Linux on System z
The future started long ago

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DS6000	IBM eServer	System z10	zSeries*
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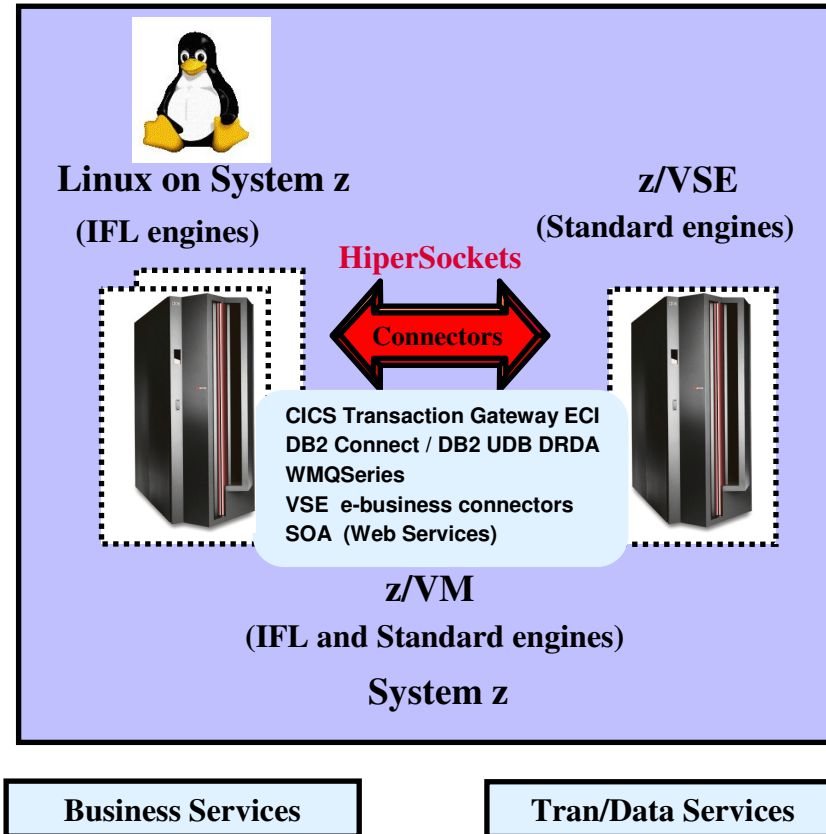
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z/VSE Strategy is PIE - since more than a decade

Think *inside* the box – with Linux on System z

alias

- **3-tier Strategy**

- **Hybrid Strategy**

- **Connector Strategy**

- **Coexistence Strategy**

- **Linux Surround Strategy**

- **PIE Strategy**

Linux on System z

(IFL engines)

z/VSE

(Standard engines)

HiperSockets

Connectors

CICS Transaction Gateway ECI
DB2 Connect / DB2 UDB DRDA
WMQSeries
VSE e-business connectors
SOA (Web Services)

z/VM

(IFL and Standard engines)

System z

Business Services	Tran/Data Services

Protect **existing VSE investments**

Integrate **using middleware and VSE connectors**

Extend **with Linux on IBM System z technology & solutions**

IBM

z/VSE Evolution
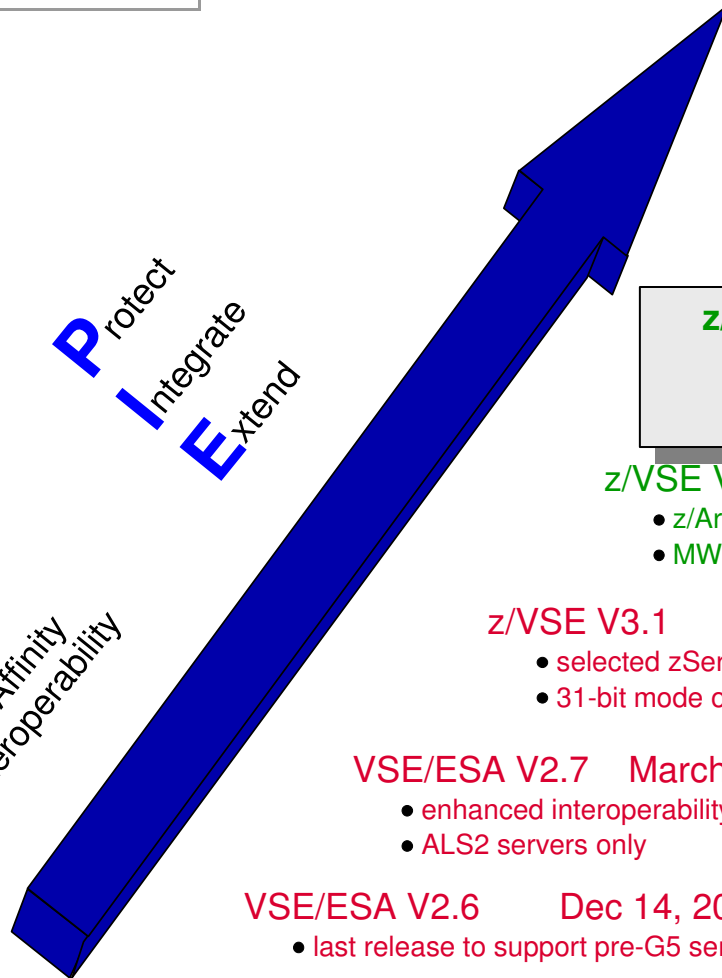
z/VSE V4.3   Nov. 26, 2010
- **Update with z196 announcement**
- **Capacity growth**
- **Monitoring facility (SNMP)**
- **Linux Fast Path (LFP)**

z/VSE V4.2.2   April 30, 2010
- **Crypto Express3**
- **IPv6/VSE*** **(May 28, 2010)**

z/VSE V4.2   Oct 17, 2008
- **More tasks, PAV, LDAP Client, SVC**
- **SoD** for CICS/VSE, EGL, WMQ**

z/VSE V4.1   March 16, 2007
- z/Architecture only / 64-bit real addr
- MWLC full & sub-cap pricing

z/VSE V3.1   March 4, 2005
- selected zSeries features, FCP/SCSI
- 31-bit mode only

VSE/ESA V2.7   March 14, 2003
- enhanced interoperability
- ALS2 servers only

VSE/ESA V2.6   Dec 14, 2001
- last release to support pre-G5 servers

Protect **I**ntegrate **E**xtend

Capacity
Quality
z/OS Affinity
Interoperability

All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.
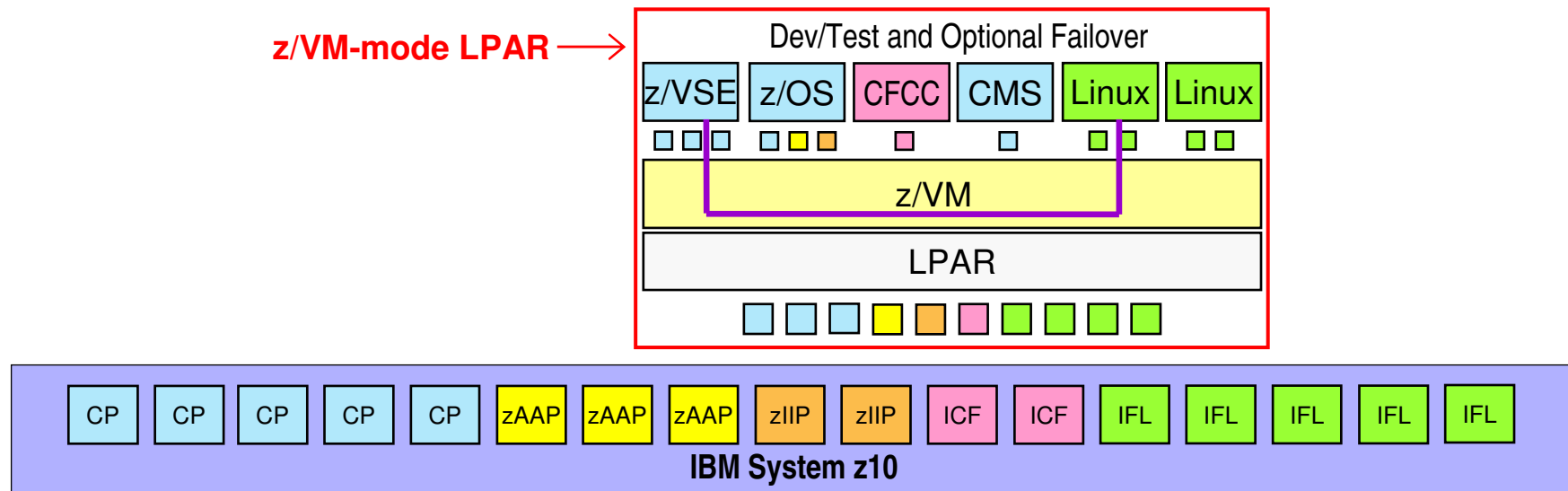
* IPv6/VSE is a registered trademark of Barnard Software, Inc.
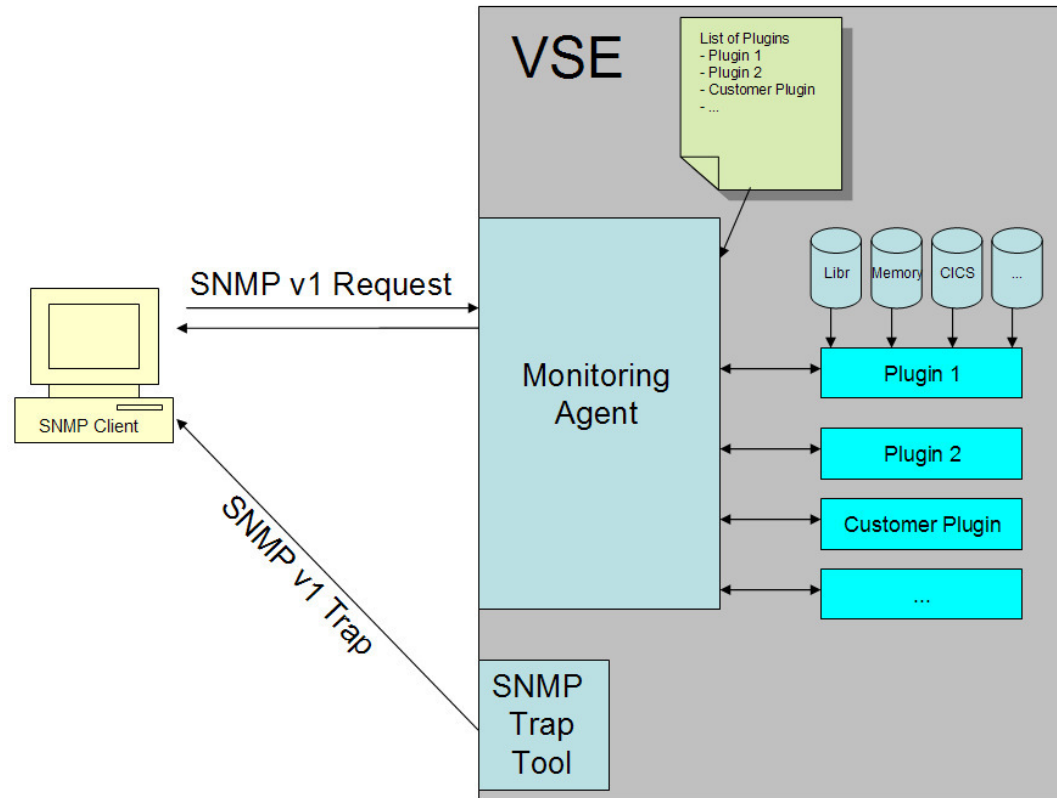
z/VM-Mode LPAR exploitation

- **One System z LPAR with all CPU types - various z/VM guest systems**
- **Run Linux and z/VSE solutions in the same LPAR**
- **Software continues to be licensed according to CPU type (n**o change)

- **Required z/VM 5.4 or z/VM 6.1 and IBM System z10 or IBM zEnterprise**

z/VSE 4.3 in z/VM-Mode LPAR:

- **New Network type: LFP – Linux Fast Path, using z/VM-Mode LPAR in z/VSE 4.3**
- **Reduce communication path length for z/VSE applications to Linux on System z**
- **transparent for socket applications**

z/VM-mode LPAR ⟶

Dev/Test and Optional Failover

| z/VSE | z/OS | CFCC | CMS | Linux | Linux |

z/VM

LPAR

| CP | CP | CP | CP | CP | zAAP | zAAP | zAAP | zIIP | zIIP | ICF | ICF | IFL | IFL | IFL | IFL | IFL |

IBM System z10

z/VSE 4.3 Monitoring enhancement

- ▪ Monitoring Agent based on SNMP V1
  - – Real time monitoring
    - • retrieve z/VSE specific system and performance data
  - – Event driven monitoring using SNMP Trap tool
    - • Helps to automate processes in z/VSE with SNMP traps

# z/VSE V4.3 shows commitment and dedication to clients' needs

z/VSE V4.3 is designed to:

- Help clients protect their existing investment in applications and data

- Address requirements for growing z/VSE workloads

- Allow consolidation of z/VSE systems

- Exploit the value of IBM System z and zEnterprise and IBM System Storage technology

- Provide ease of use for configuration and management of mixed IT environments

z/VSE V4.3 continues to deliver functions and benefits based on the z/VSE strategy
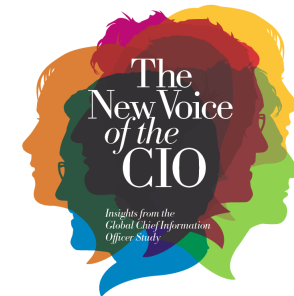
Solutions with Linux on System z – Advantages for z/VSE Customers

- **New Linux applications** from Vendors (ISV) and open source
  - Linux on system z to exploit 64-bit capabilities
  - Enhance and modernize core VSE applications
- **New solutions with IBM Middleware** based on Linux on System z
  - WebSphere Application Server
  - Modern Data management (i.e. DB2, Cognos)
  - Mailing system with IBM Lotus® Domino™
  - Network simplification with IBM Communications Server
  - Advanced application development tools
- **Integrate Linux technology and z/VSE solutions**
  - Use Linux and Java to integrate z/VSE applications and data
- **Infrastructure simplification** to help reduce cost
  - Possible TCO benefits with Linux
    - NO increase in z/VSE License Costs
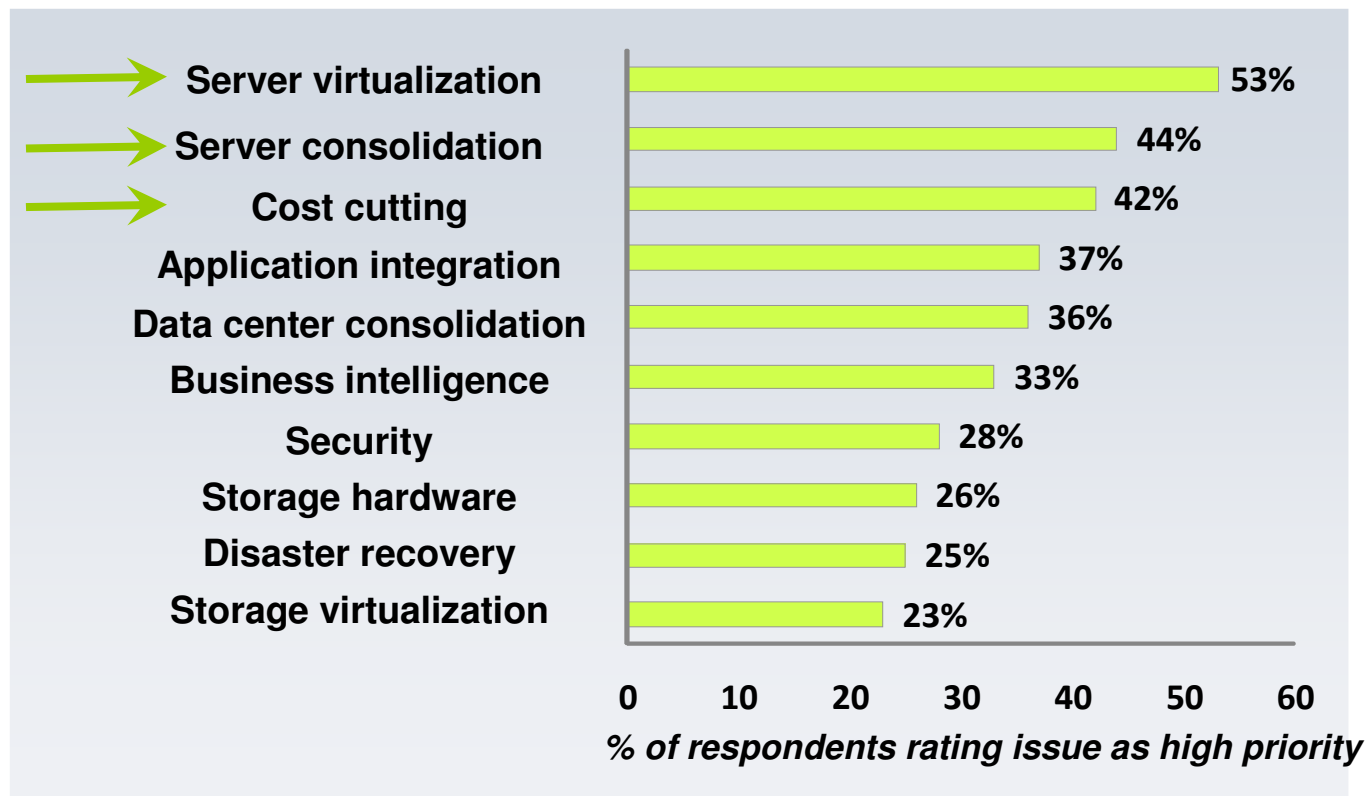 - Consolidation of existing distributed workloads to Linux on System z
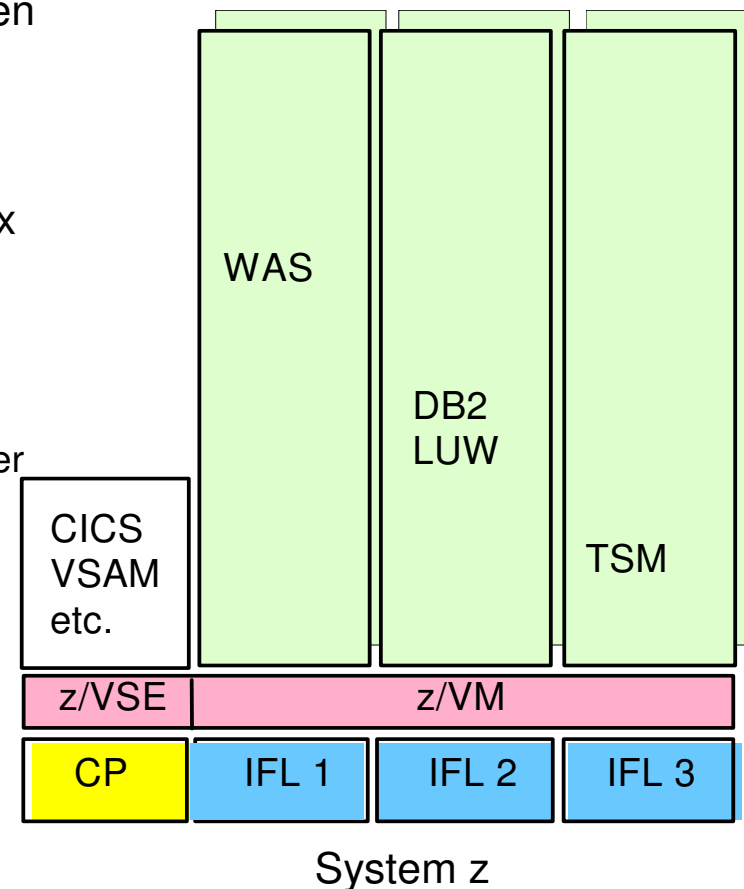
System z

IBM CIO Survey Results
CIO Key Spending Priorities

76% of CIOs cited "implementing a virtualized computing environment" as part of their visionary plans to enhance competitiveness

The New Voice of the CIO

Insights from the Global Chief Information Officer Study

Priority	%
Server virtualization	53%
Server consolidation	44%
Cost cutting	42%
Application integration	37%
Data center consolidation	36%
Business intelligence	33%
Security	28%
Storage hardware	26%
Disaster recovery	25%
Storage virtualization	23%

0   10   20   30   40   50   60

% of respondents rating issue as high priority

z/VSE 4.3 Solutions with Linux on System z

(1) Web Interaction: Large scalable, dynamic Web Integration
      - Browser GUI, modernization and integration

(2) Data Optimization: Fast effective decisions with BI
        - Common Enterprise Data pool with
          Data Warehouse (DW) and Business Intelligence (BI)

(3) Recovery: Centralized Backup process for all platforms
        - One tool to Backup and recovery

IBM

(1) Web Interaction solution
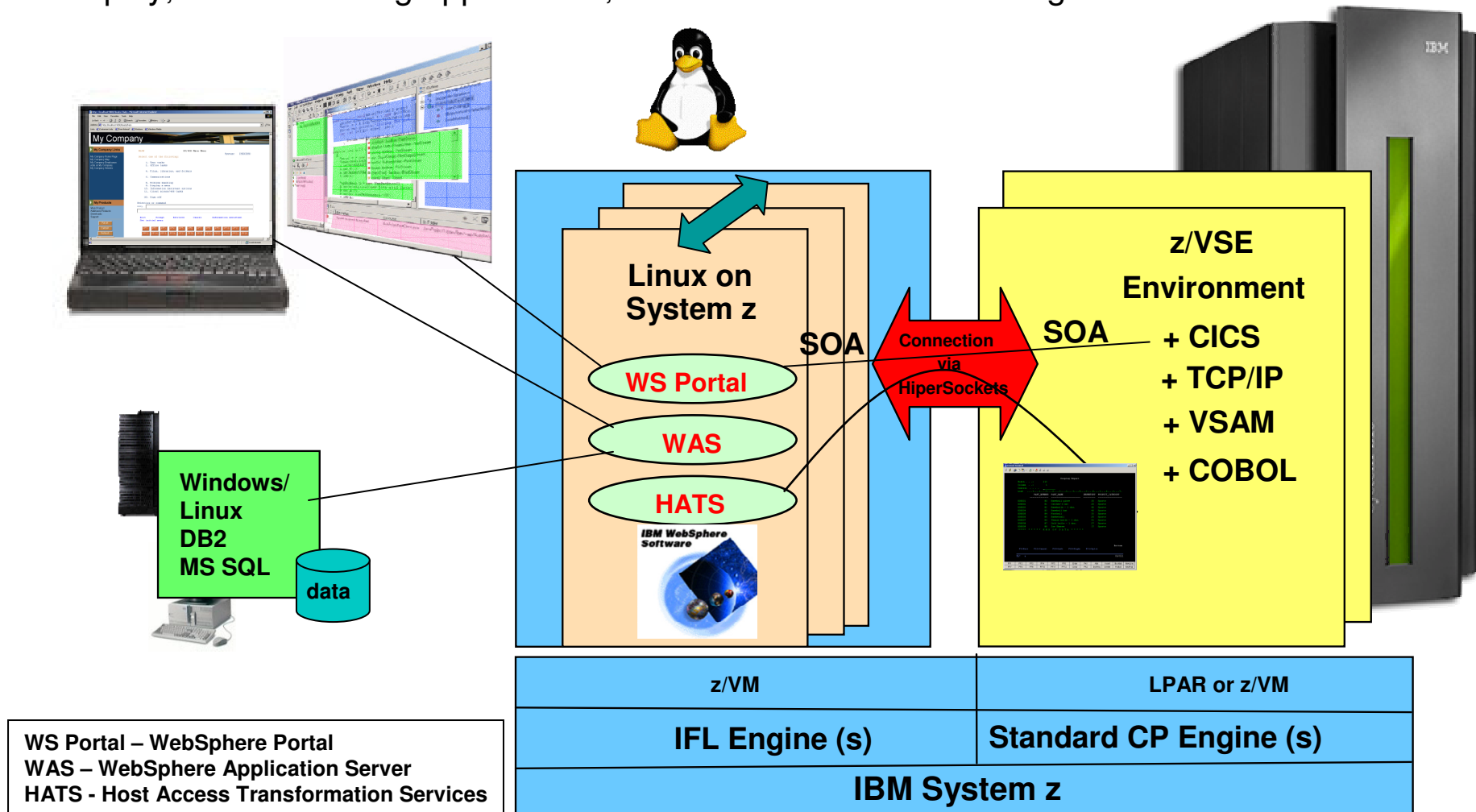## - The Enterprise Portal

Advantages:
- **High scalability of workload**
  - **scalable horizontally and vertically**
- **High Reliable solution on System z**
- **Integrated solution of z/VSE with Linux**
- **Most modern Internet technologies**
- **Integration with z/VSE applications**
- **Single point of control using Portal technology**

With Linux on System z a modern Web Interaction solution

Web enable, build dynamic Web pages to existing applications, improve interface, simplify, extend existing applications, enable new workload – using internet standards
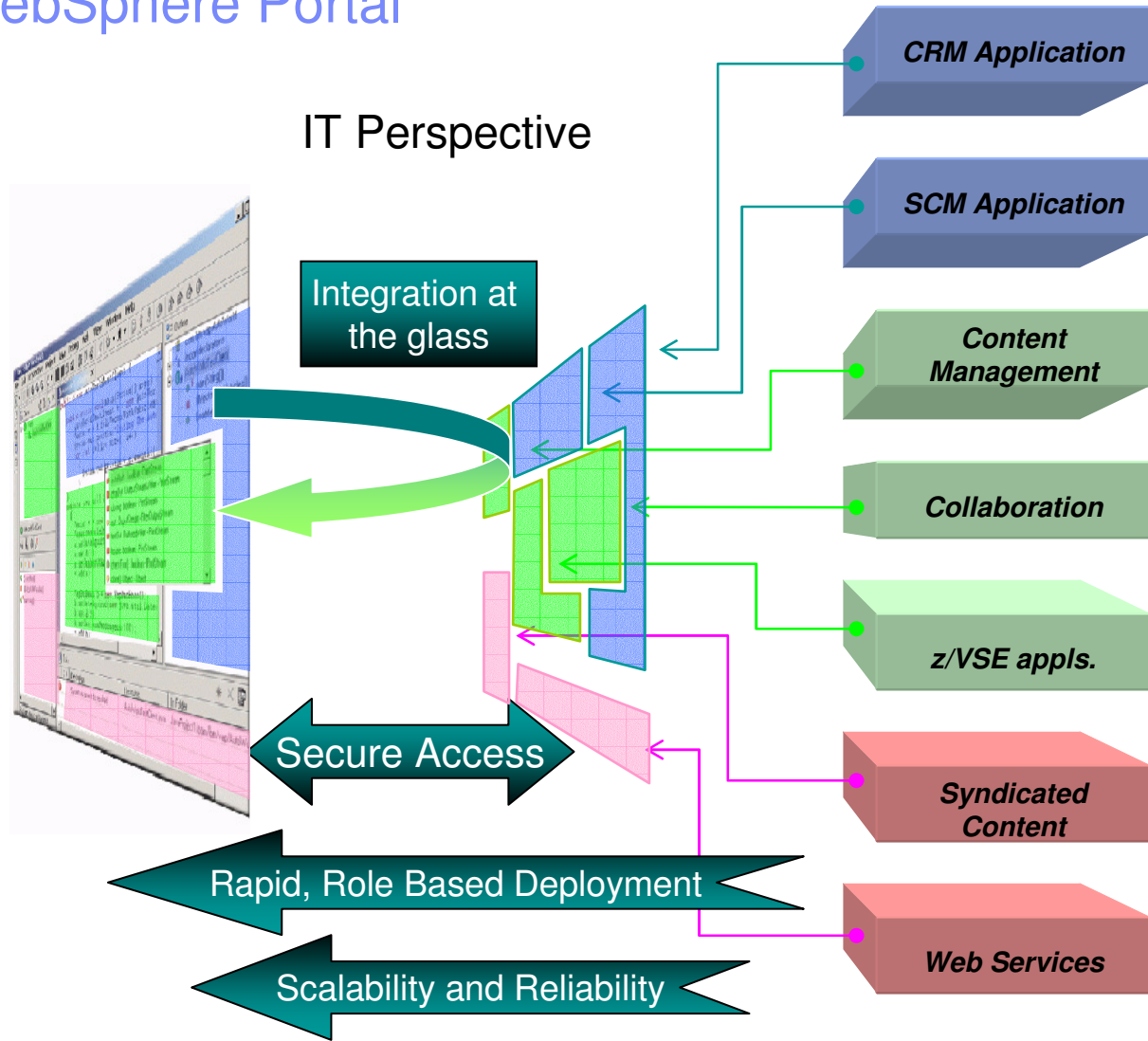
Linux on System z

WS Portal

WAS

HATS

SOA

Connection via HiperSockets

SOA

z/VSE Environment

+ CICS

+ TCP/IP

+ VSAM

+ COBOL

Windows/ Linux DB2 MS SQL

data

z/VM	LPAR or z/VM
IFL Engine (s)	Standard CP Engine (s)
IBM System z	

WS Portal – WebSphere Portal
WAS – WebSphere Application Server
HATS - Host Access Transformation Services

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Integration variety of WebSphere Portal

User Perspective

IT Perspective

CRM Application

SCM Application

Integration at the glass

Personalization

Customization

Navigation

Content Management

Collaboration

z/VSE appls.

Single Sign On

Secure Access

People Awareness

Syndicated Content

Rapid, Role Based Deployment

Web Services

Scalability and Reliability

z/VSE Integration of CICS Transactions and subsystems

- Access to CICS logic from web applications using CTG

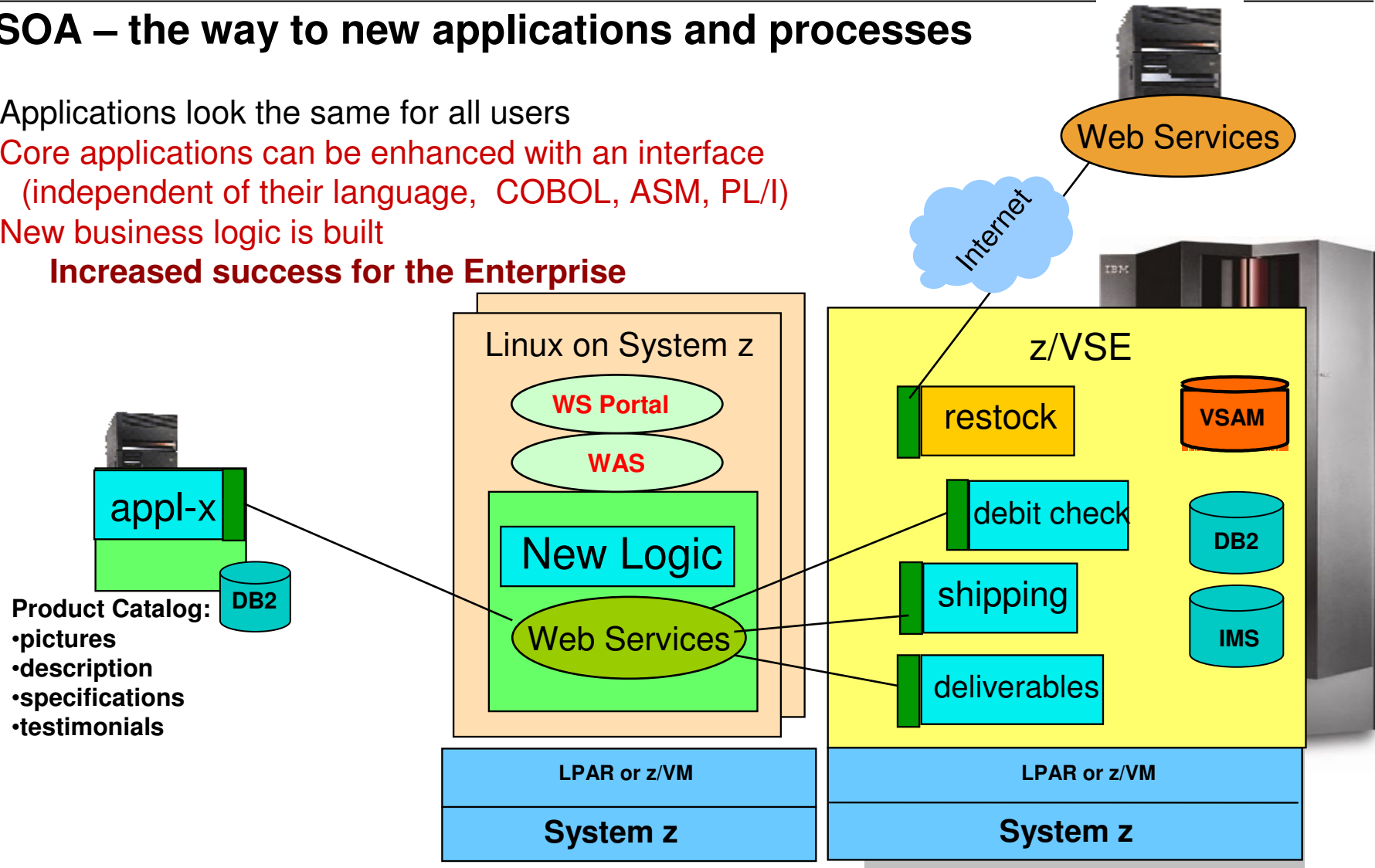- Java access and dynamic jobs generation
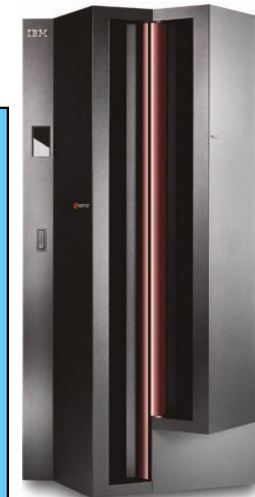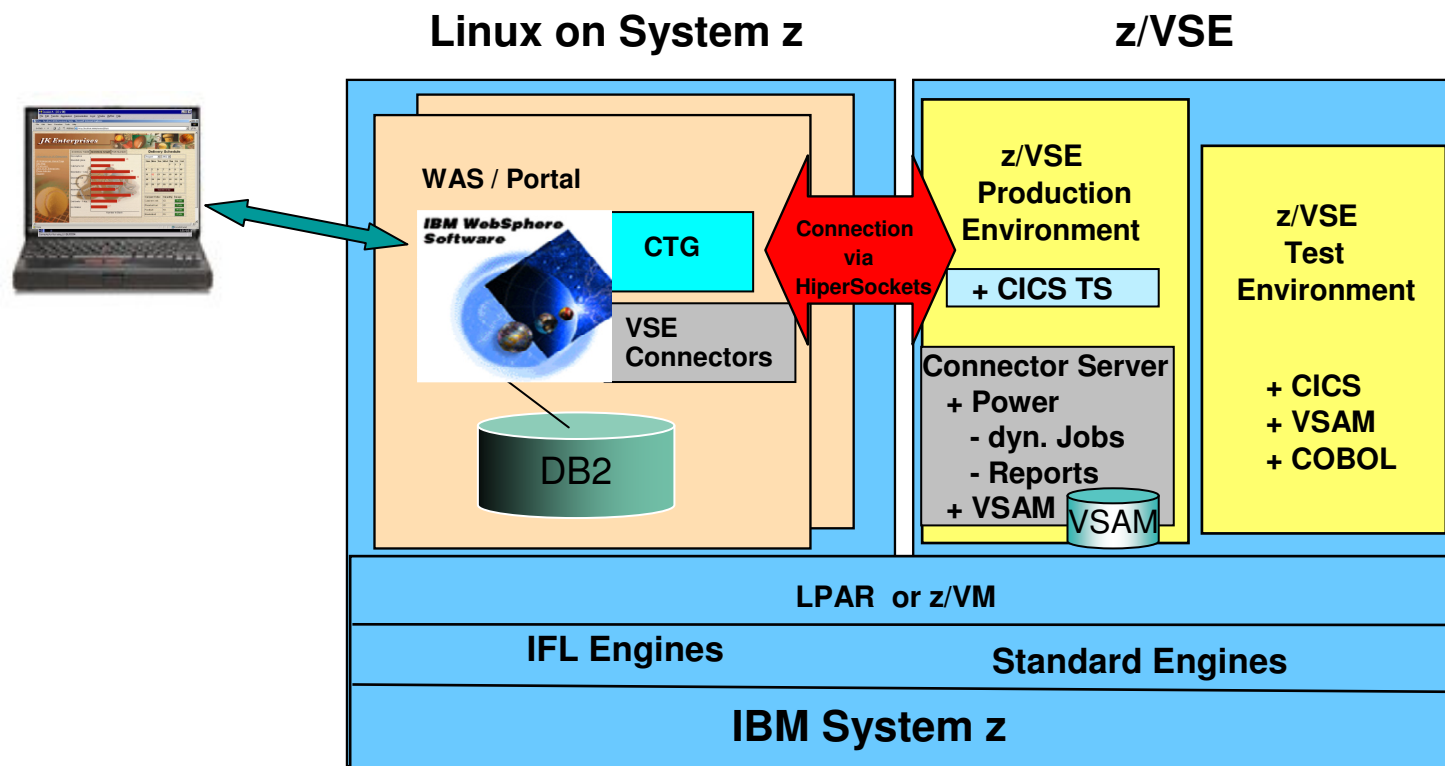
WAS – Web Application Server
CTG – CICS Transaction Gateway
VSE Conn. - VSE Connector Client, including VSAM JDBC driver

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)
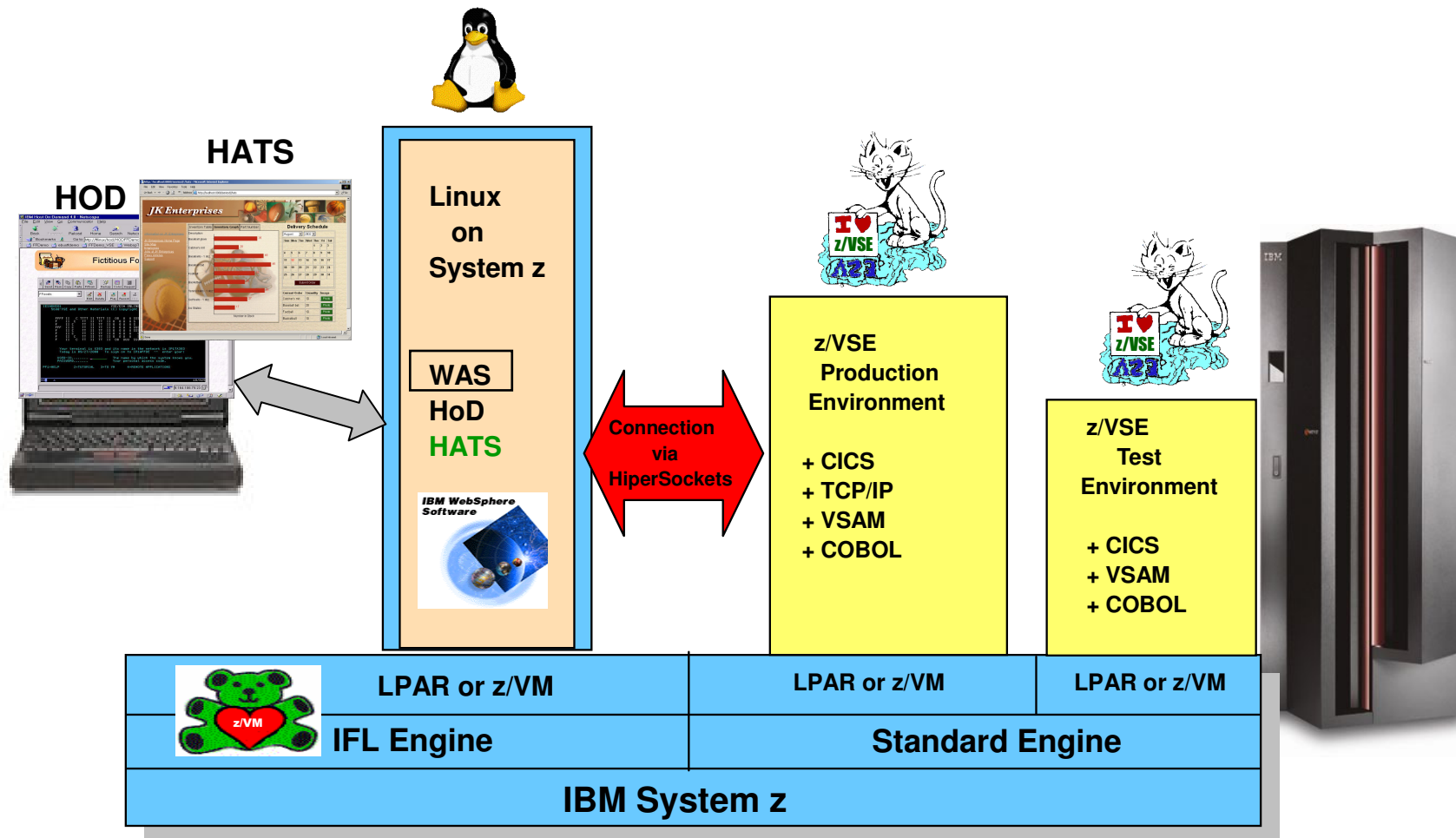- New business logic is built

Increased success for the Enterprise

Web Services

Internet

Linux on System z

WS Portal

WAS

New Logic

Web Services

appl-x

DB2

Product Catalog:
- pictures
- description
- specifications
- testimonials

z/VSE

restock

VSAM

debit check

DB2

shipping

IMS

deliverables

LPAR or z/VM

System z

LPAR or z/VM

System z

Integration of Processes

User Interface modernization
Browser access to core applications

HATS

HOD

**Linux
on
System z**

WAS
HoD
HATS

IBM WebSphere Software

**Connection
via
HiperSockets**

**z/VSE
Production
Environment**

**+ CICS
+ TCP/IP
+ VSAM
+ COBOL**

**z/VSE
Test
Environment**

**+ CICS
+ VSAM
+ COBOL**

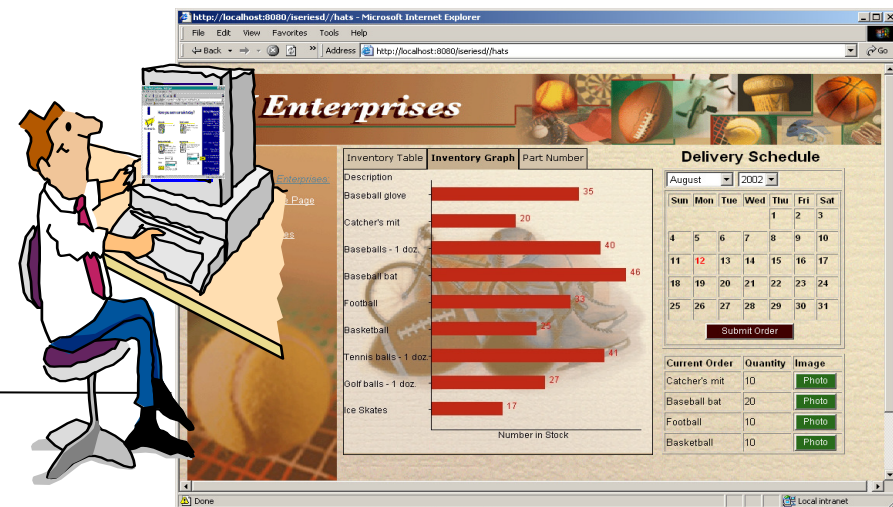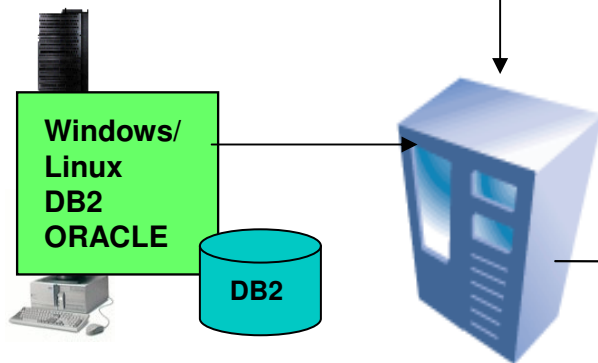| LPAR or z/VM	LPAR or z/VM	LPAR or z/VM
IFL Engine	**Standard Engine**	

IBM System z

Application Integration with Host Access Transformation Services (HATS)

- No software download to the client
- Converts green screens to a GUI
- Integration with distributed applications
- Web Service on the fly (SOA)

3270 or 5250
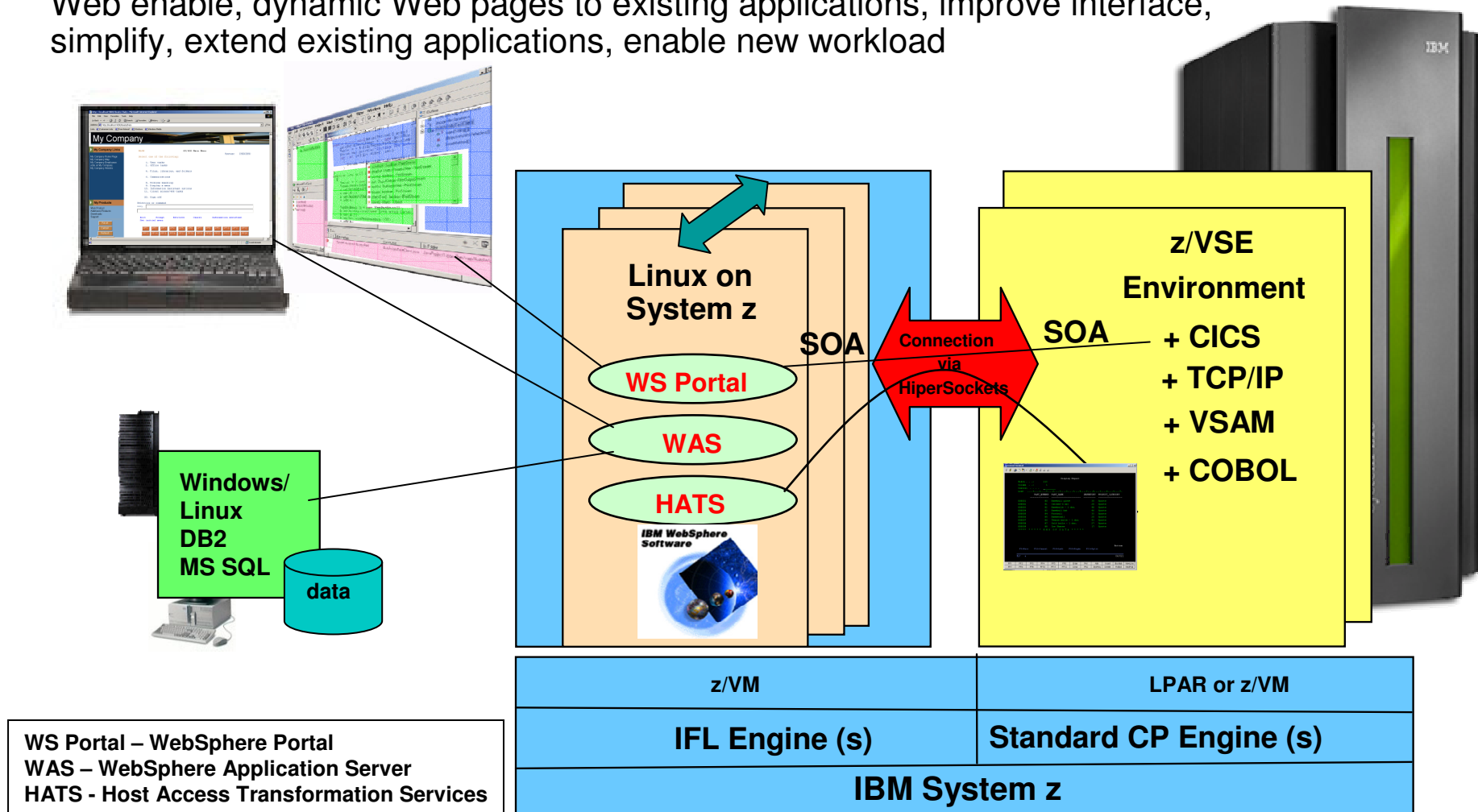data stream

Windows/
Linux
DB2
ORACLE

DB2
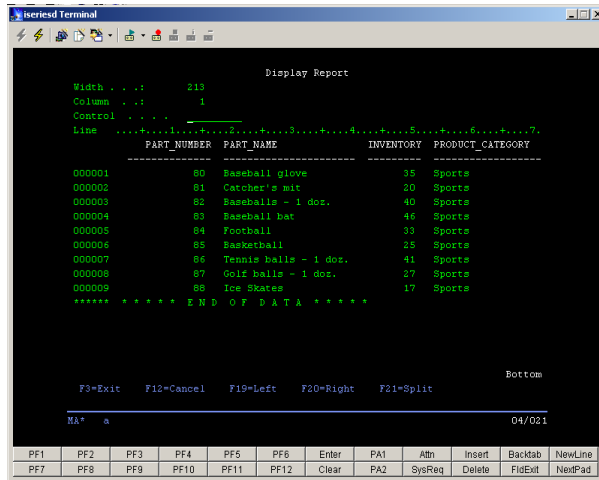
Browser access

Screen transformation rules running on
WebSphere Application Server

Conclusion: High User satisfaction with a modern Web Interface solution with Linux on System z

Web enable, dynamic Web pages to existing applications, improve interface, simplify, extend existing applications, enable new workload

Linux on System z

- WS Portal
- WAS
- HATS

IBM WebSphere Software

Windows/ Linux DB2 MS SQL

data

SOA

Connection via HiperSockets

SOA

z/VSE Environment

- **+ CICS**
- **+ TCP/IP**
- **+ VSAM**
- **+ COBOL**

z/VM	LPAR or z/VM
IFL Engine (s)	Standard CP Engine (s)
IBM System z	

WS Portal – WebSphere Portal
WAS – WebSphere Application Server
HATS - Host Access Transformation Services

z/VSE 4.3 Solutions with Linux on System z

(1) Web Interaction: Large scalable, dynamic Web Integration
- Browser GUI, modernization and integration

(2) Data Optimization: Fast effective decisions with BI
- Common Enterprise Data pool with
Data Warehouse (DW) and Business Intelligence (BI)

(3) Recovery: Centralized Backup process for all platforms
- One tool to Backup and recovery

IBM

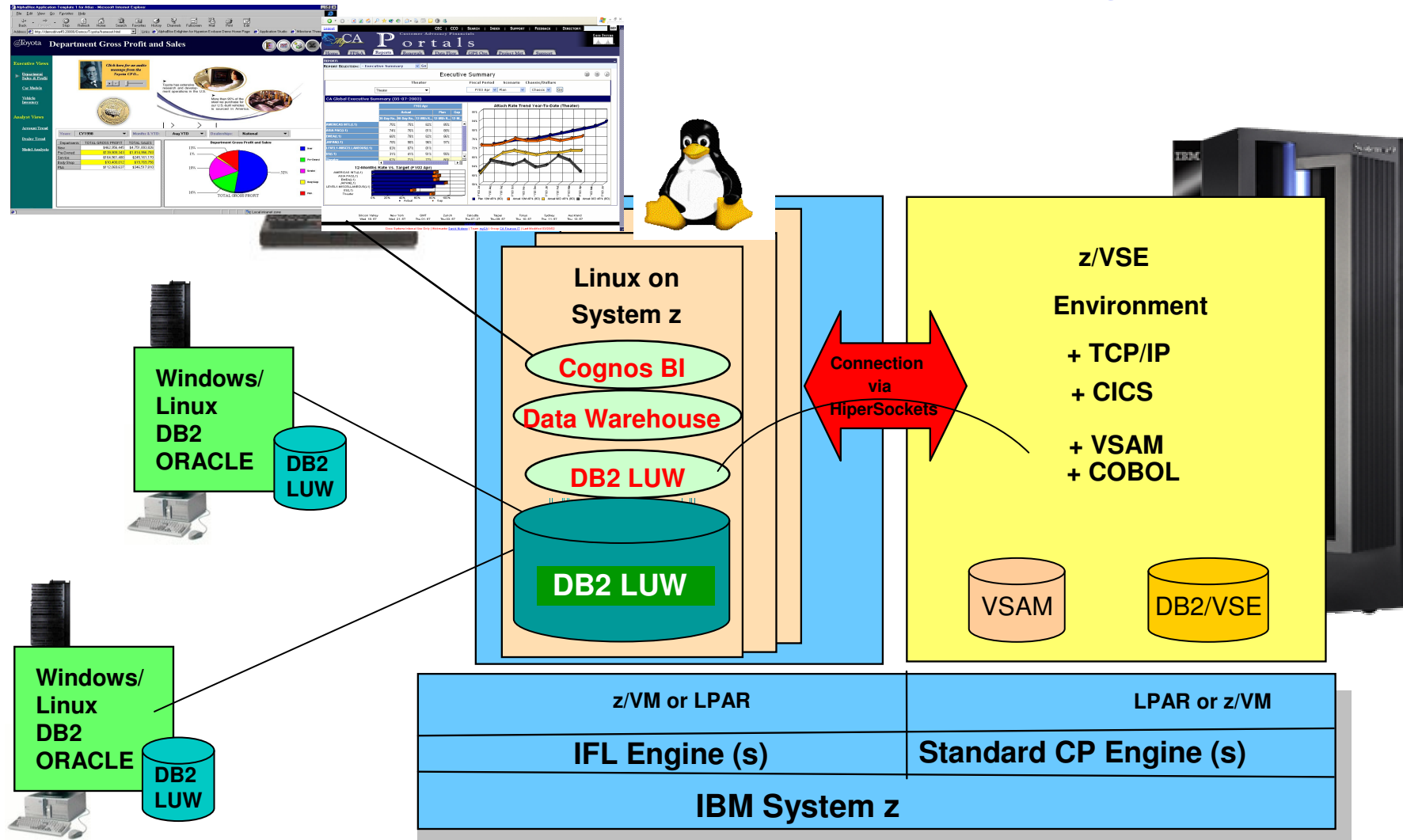## (2) The Enterprise Data pool with Data Warehouse and Business intelligence (BI)
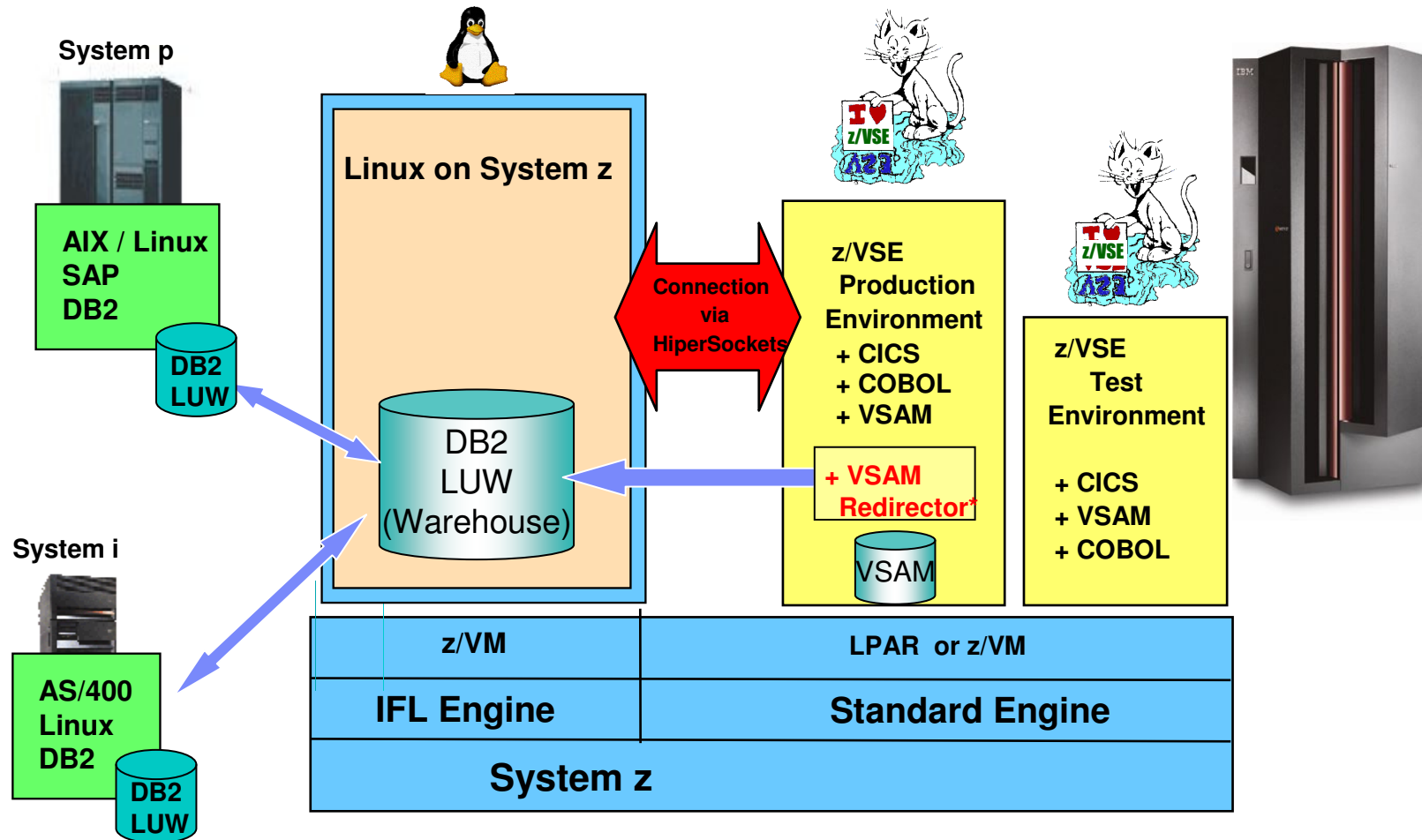
Advantages:
- **High scalability of the databases**
  - **scalable horizontally and vertically**
- **High Reliable solution on System z**
- **Integrated solution for all platforms**
- **Most modern Internet technologies**
- **Integration with z/VSE data**
- **Data Warehousing and Business intelligence for faster and effective decisions**

Central Data store on Linux on System z

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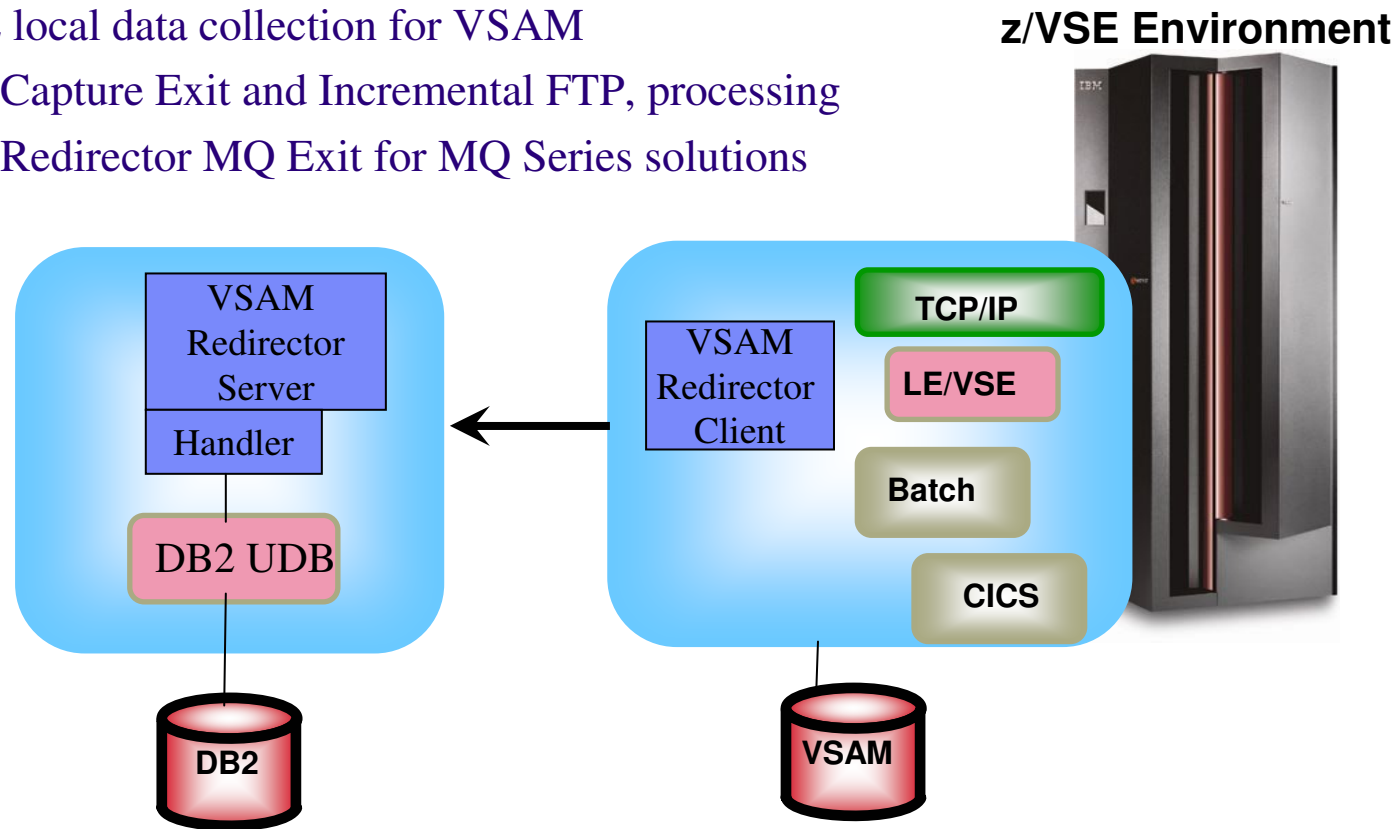- •**Base for Business Intelligence (BI)**

Linux on System z

- **Cognos BI**
- **Data Warehouse**
- **DB2 LUW**

DB2 LUW

Connection via HiperSockets

z/VSE Environment

+ TCP/IP

+ CICS

+ VSAM
+ COBOL

VSAM

DB2/VSE

Windows/ Linux DB2 ORACLE

DB2 LUW

Windows/ Linux DB2 ORACLE

DB2 LUW

z/VM or LPAR	LPAR or z/VM
IFL Engine (s)	Standard CP Engine (s)
IBM System z	

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Transparent Work of VSAM programs with DB2 on Linux on System z

System p

AIX / Linux
SAP
DB2

DB2
LUW

System i

AS/400
Linux
DB2

DB2
LUW

Linux on System z

Connection
via
HiperSockets

DB2
LUW
(Warehouse)

z/VSE
Production
Environment
+ CICS
+ COBOL
+ VSAM

+ VSAM
Redirector*

VSAM

z/VSE
Test
Environment

+ CICS
+ VSAM
+ COBOL

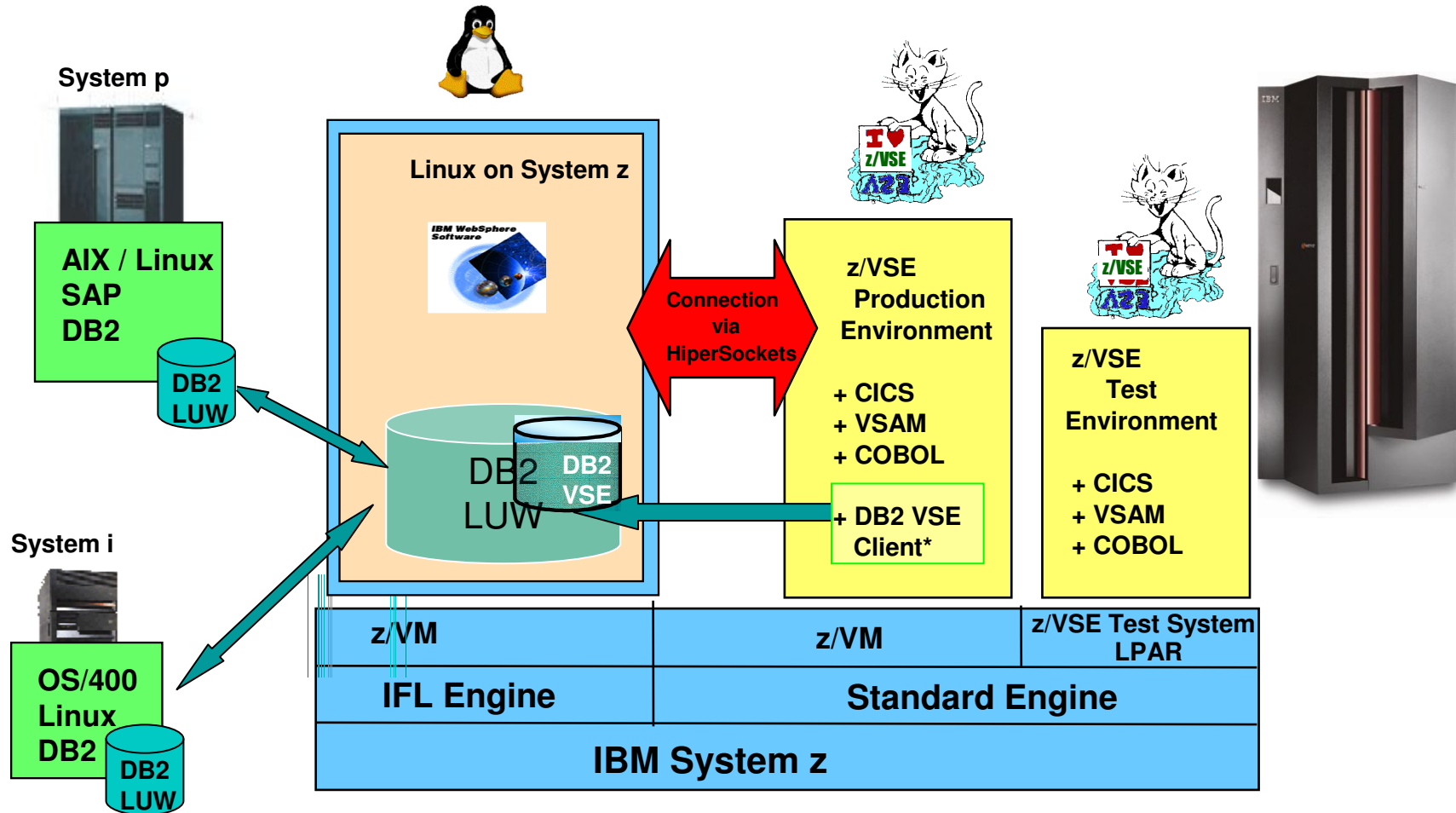| z/VM	LPAR or z/VM
IFL Engine	Standard Engine
System z	

**(*) VSAM Redirector – 'Common data store' solution – with DB2 on Linux on System z
without changes to the VSAM applications**

(B)PUSH scenario: VSE/VSAM applications, access remote relational databases

(1)   Real time access VSAM to relational databases

    a)   synchronization (two phase commit of VSAM and DB2)

    b)   Real time access to DB2 (no VSAM access anymore)

(2)   VSE local data collection for VSAM

    a)   Capture Exit and Incremental FTP, processing

    b)   Redirector MQ Exit for MQ Series solutions

z/VSE Environment

From DB2 VSE to – DB2 LUW on Linux on System z

System p

AIX / Linux SAP DB2

DB2 LUW

Linux on System z

DB2 LUW

DB2 VSE

Connection via HiperSockets

z/VSE Production Environment

+ CICS
+ VSAM
+ COBOL

+ DB2 VSE Client*

z/VSE Test Environment

+ CICS
+ VSAM
+ COBOL

System i

OS/400 Linux DB2

DB2 LUW

z/VM	z/VM	z/VSE Test System LPAR
IFL Engine	Standard Engine	

IBM System z

(*) DB2 VSE Client – the client only functionality in DB2 Server Client Edition 7.5

InfoSphere Federation Server

- Integrating at the data layer – Federation of data
  - Read from and write to federated data sources using SQL
  - Standards-based access via JDBC, ODBC, or Call Level Interface
    - Including access for VSAM

  - Metadata-driven access
    - No programming required
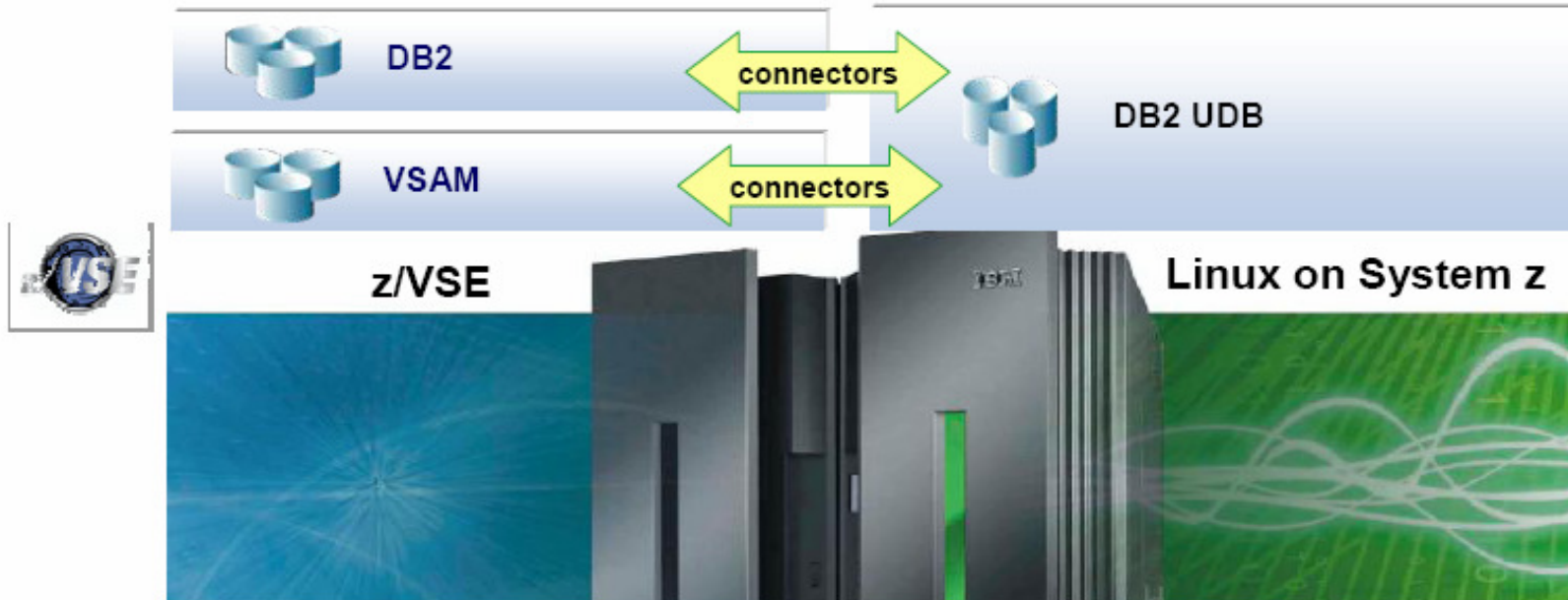   - Fast installation & configuration
    - Ease of maintenance

SQL

InfoSphere Federation Server

DB2 UDB for z/OS	VSAM IMS Data	DB2 VM/VSE	Software AG Adabas	CA Datacom	CA IDMS
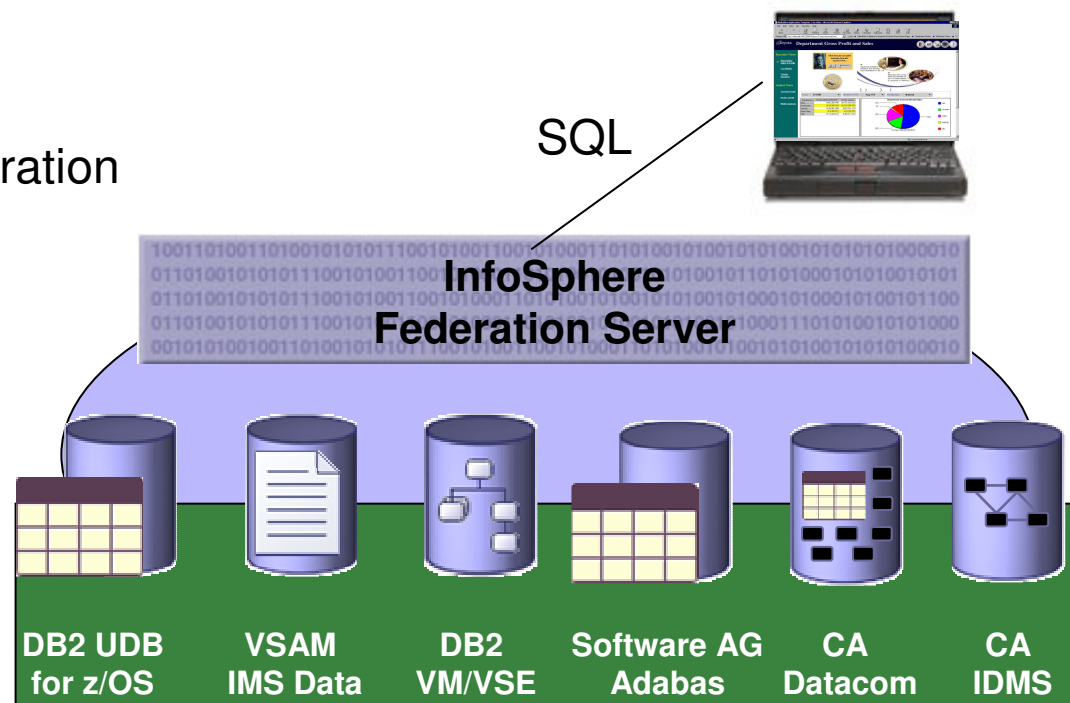
BI with Cognos on IBM System z with z/VSE
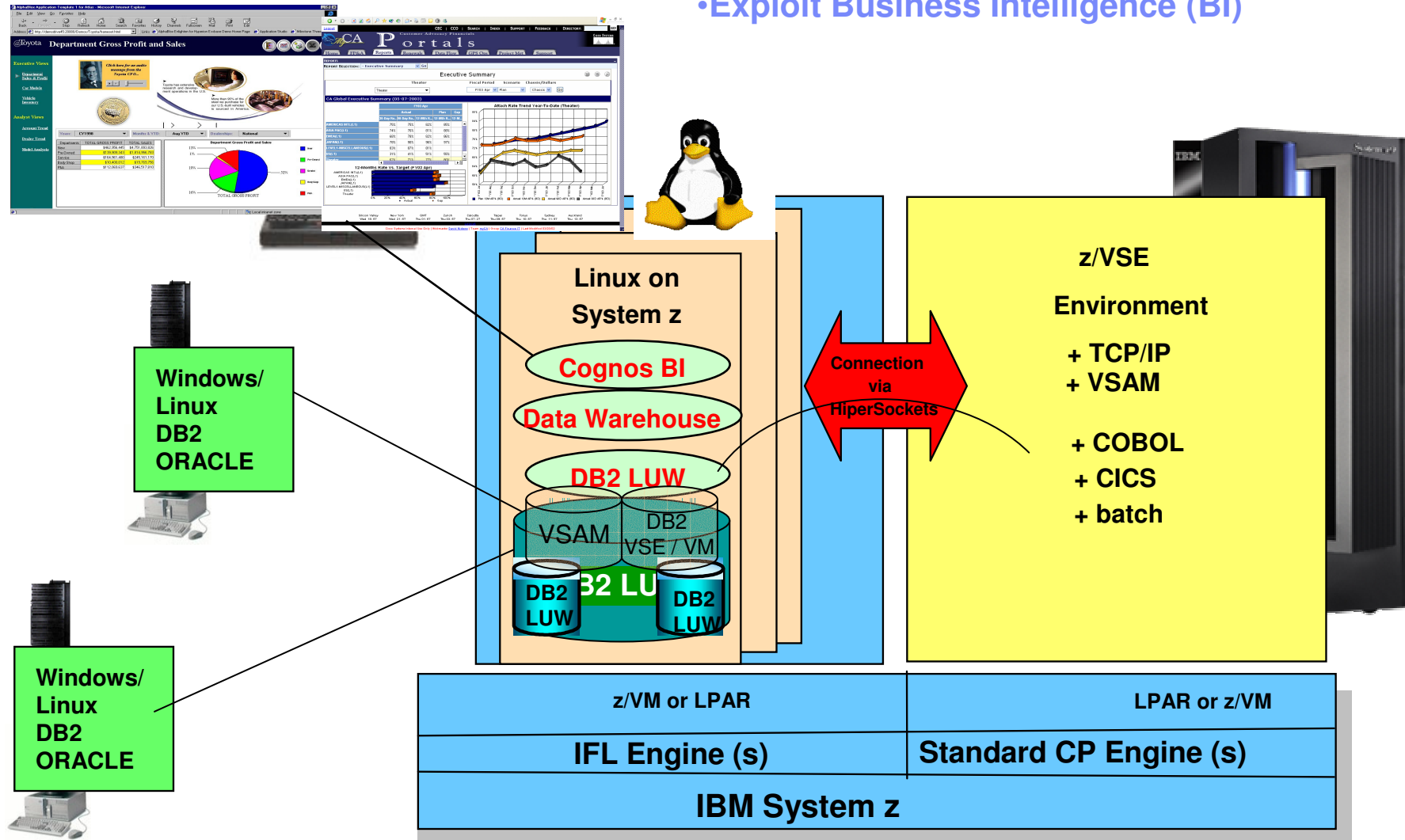## Generate Reports, analyze and take faster decisions

Connectors like VSAM Redirector enable a z/VSE application to store data on a remote system.

The z/VSE program doesn't need any change. Working with a remote relational database (i.e. DB2 on Linux on System z), a real time synchronization between VSAM data and the database can be done.

COGNOS Cognos Bi V8.3

IBM Information Server

DB2   connectors   DB2 UDB

VSAM   connectors

z/VSE   Linux on System z

IBM

Conclusion: More business with a Central Data store on Linux on System z

- **Consolidate, Integrate, Evaluate, Decide**
- **Exploit Business Intelligence (BI)**

Linux on System z

Cognos BI

Data Warehouse

DB2 LUW

VSAM | DB2 VSE / VM

DB2 LUW | B2 LU | DB2 LUW

Connection via HiperSockets

z/VSE Environment

+ TCP/IP
+ VSAM

+ COBOL
+ CICS
+ batch

Windows/ Linux DB2 ORACLE

Windows/ Linux DB2 ORACLE

z/VM or LPAR	LPAR or z/VM
IFL Engine (s)	**Standard CP Engine (s)**
IBM System z	

z/VSE 4.3 Solutions with Linux on System z

(1) Web Interaction: Large scalable, dynamic Web Integration
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(3) Recovery: Centralized Backup process for all platforms
- One tool to Backup and recovery

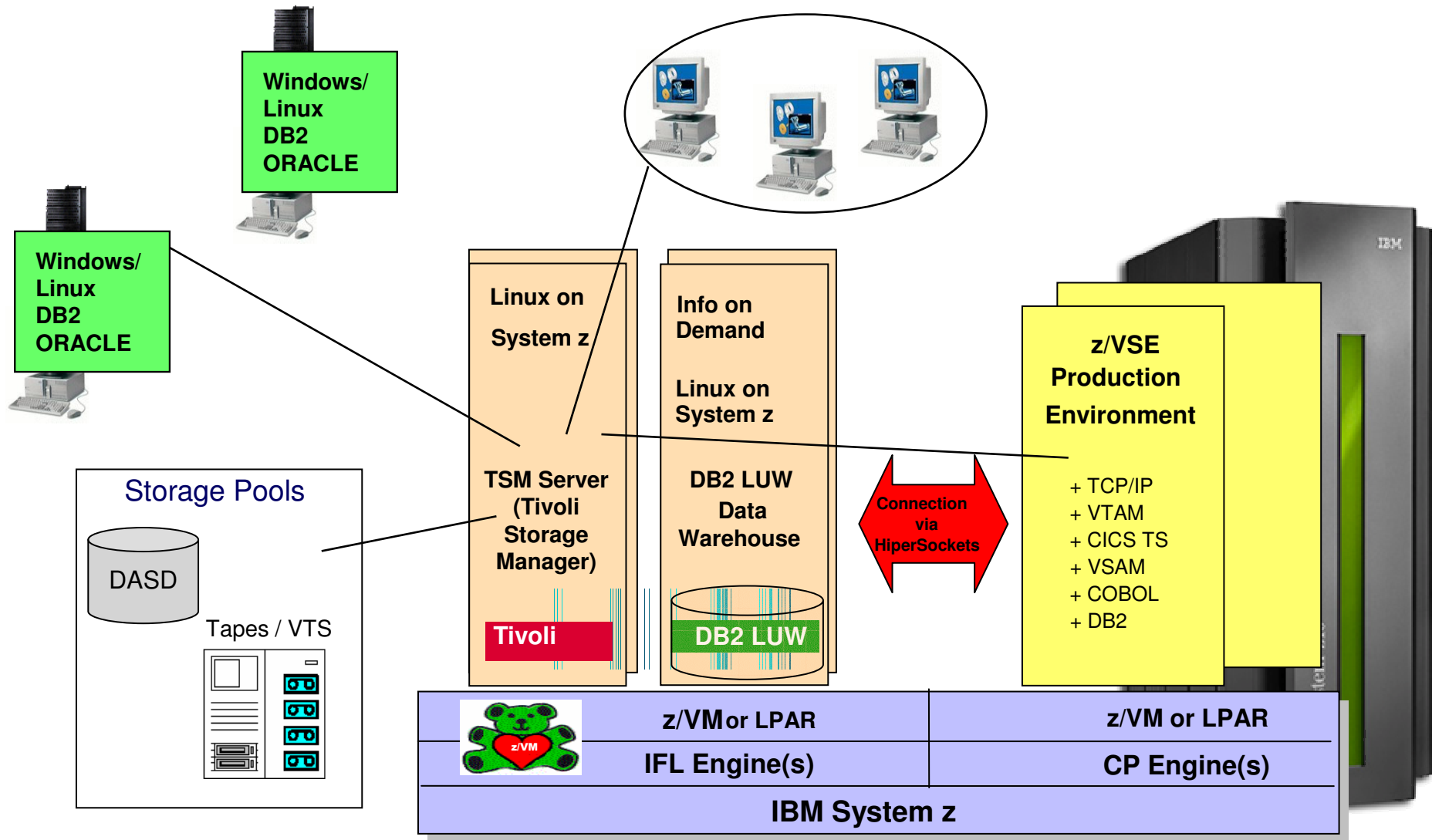# (3) Recovery: Centralized Backup process for all platforms with a single tool

Advantages:
- **High availability and reliability of System z**
- **Integrated backup for all platforms**
- **Integration with z/VSE backup processes**
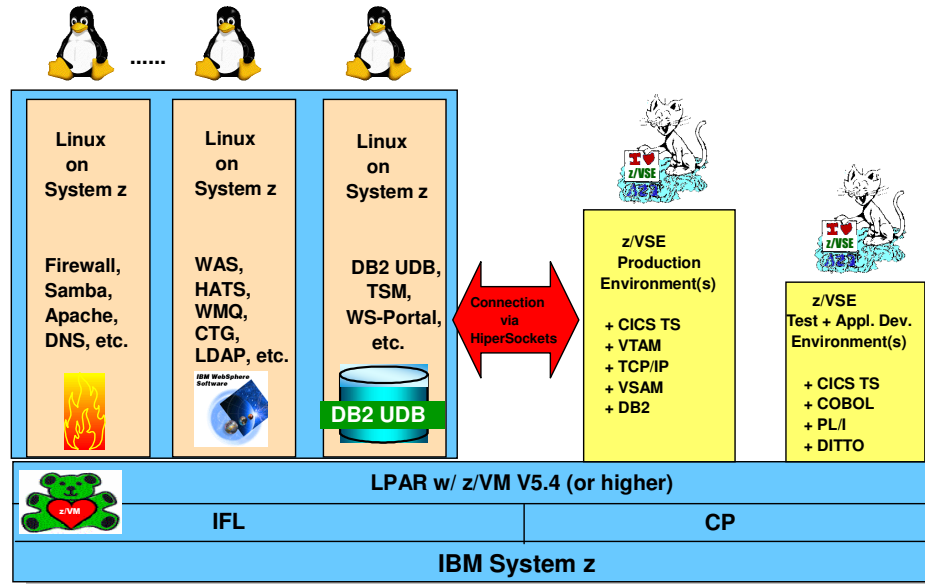- **Single point of control using TSM on Linux on System z**

(3) Backup/Restore Concepts for z/VSE

Integrate z/VSE with TSM on Linux on System z as central Backup Hub

Windows/
Linux
DB2
ORACLE

Windows/
Linux
DB2
ORACLE

Storage Pools

DASD

Tapes / VTS

Linux on

System z

TSM Server
(Tivoli
Storage
Manager)

Tivoli

Info on
Demand

Linux on
System z

DB2 LUW
Data
Warehouse

DB2 LUW

Connection
via
HiperSockets

z/VSE
Production
Environment

+ TCP/IP
+ VTAM
+ CICS TS
+ VSAM
+ COBOL
+ DB2

z/VM or LPAR

IFL Engine(s)

z/VM or LPAR

CP Engine(s)

IBM System z

z/VSE "PIE" Strategy enables modern solutions
with IBM System z, IBM zEnterprise, IBM System Storage, and IBM Middleware

| Linux on System z
Firewall, Samba, Apache, DNS, etc. | Linux on System z
WAS, HATS, WMQ, CTG, LDAP, etc.
IBM WebSphere Software | Linux on System z
DB2 UDB, TSM, WS-Portal, etc.
DB2 UDB | Connection via HiperSockets | z/VSE Production Environment(s)
+ CICS TS
+ VTAM
+ TCP/IP
+ VSAM
+ DB2 | z/VSE Test + Appl. Dev. Environment(s)
+ CICS TS
+ COBOL
+ PL/I
+ DITTO |

LPAR w/ z/VM V5.4 (or higher)

| IFL | CP |

IBM System z

Tivoli Rational WebSphere COGNOS Lotus DB2

- **z/VSE**
  - Protect core IT investments thru PIE
  - Robust, secure enterprise server
  - Cost-effective solutions
  - Interoperability with network / servers
  - Highly improved price / performance

- **z/VM**
  - Highly flexible, industrial strength
  - Advanced virtualization
  - Multiple z/VSE and Linux images
  - Designed to exploit System z

- **Linux on System z**
  - Large portfolio of new applications
  - Platform for IBM middleware
  - Infrastructure Simplification
  - Massive scalability and consolidation

zJournal and z/VSE – a tradition

Pete Clark on z/VSE: z/VSE Event Calendar for 2011

Print this article

TRANSLATE

by Pete Clark

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January 4, 2011

2011 promises to be another exciting year for z/VSE with z/VSE 4.3 just now becoming available, and some excellent education events, and conferences. What follows should help you plan the year ahead.

April 15 - 19, 2011—WAVV in Colorado Springs: WAVV 2011 will be held at the Crowne Plaza in Colorado Springs, CO. The agenda grid with session titles is available at www.wavv.org; as the abstracts are completed, they'll also be posted. The session grid for WAVV 2011 contains some very enticing topics.

May 2011—IBM System z Technical University in Vienna, Austria: The popular IBM System z Technical University featuring z/OS, z/VM, z/VSE and Linux on System z will be held in Vienna, Austria. For more information, visit www.ibm.com.

September/October 2011—Planning for WAVV 2012: The WAVV planning sessions are now done via Web conferencing in September and October, so be sure a WAVV committee person knows ahead of time what session topics are important to you and is aware of your ideas to improve the WAVV experience. Visit www.wavv.org for contact information.

October 3 - 7, 2011—IBM System z Technical University in Miami: Technical experts from IBM will share their experience and expertise on z/OS, z/VM, z/VSE, and Linux on System z. For more information, visit www.ibm.com.

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