New possibilities with z/VSE and zEnterprise

Wilhelm Mild
IT Architect
mildw@de.ibm.com

http://www.ibm.com/zVSE
http://twitter.com/IBMzVSE

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Agenda

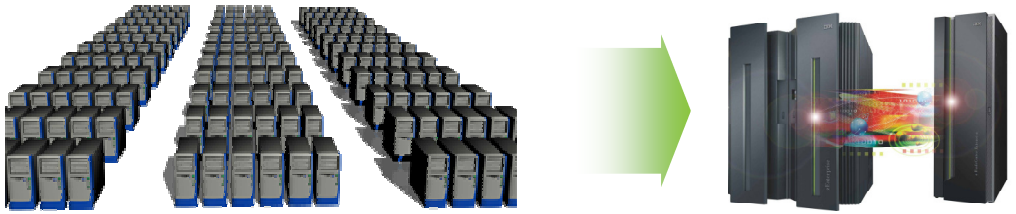
- **zEnterprise and z/VSE Positioning**
- **z/VSE Modernization Options**
- **Wrap-up**

The Data Center Challenge - Controlling IT complexity and cost while maintaining daily operations

- An Integrated system of multiple architectures for optimizing the deployment of multi-tier workloads
- Creating a single point of control for management and administration to reduce operational overhead by up to 80%, including:
  - Power and Facilities
  - Labor
  - Software License

zEnterprise

- Lowers cost of acquisition by up to 56%
- Reduces cost of ownership by up to 55%*

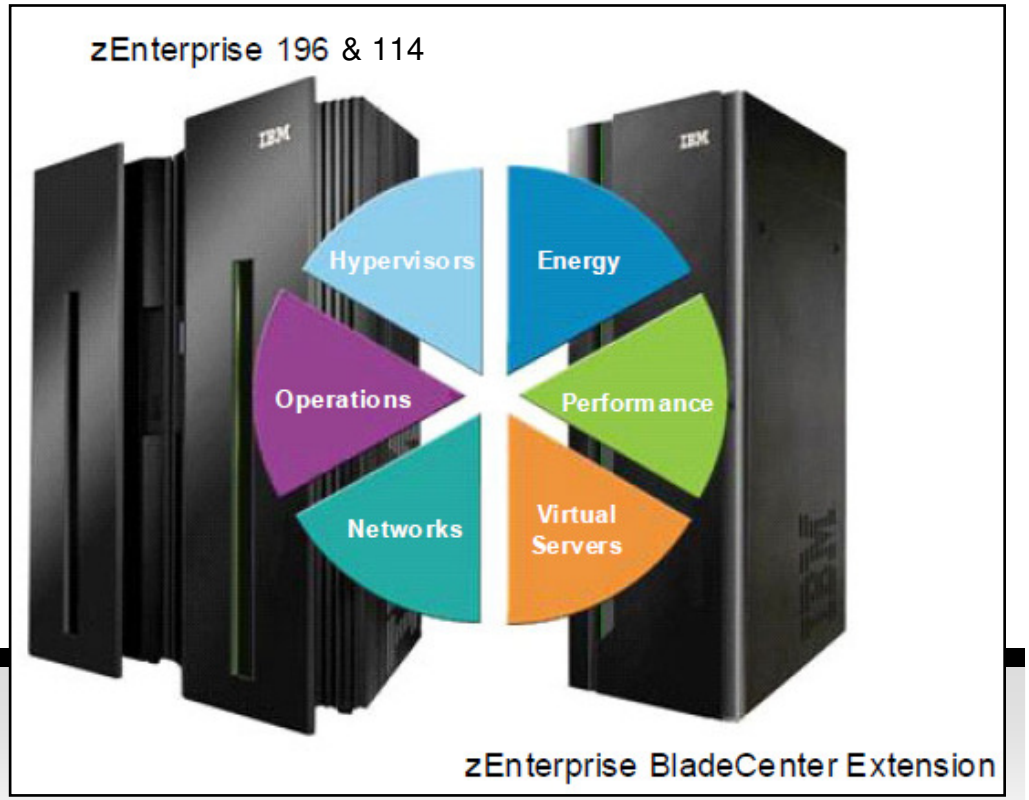


A strategic systems platform….
Helping to free up resources for critical projects and establish a base for the future

- Based on IBM analysis of a large Financial Services company Datacenter. See details on ibm.com/systems/zenterprise/ Deployment configurations based on IBM studies and will vary based on workload characteristics. Price calculations based on publicly available US list prices, prices will vary by country.

IBM zEnterprise System – one for everything !

Re-write the rulebook and set new standards for business-centric IT with IBM System z, to be the world's premier workload-optimized platform for enterprise applications.

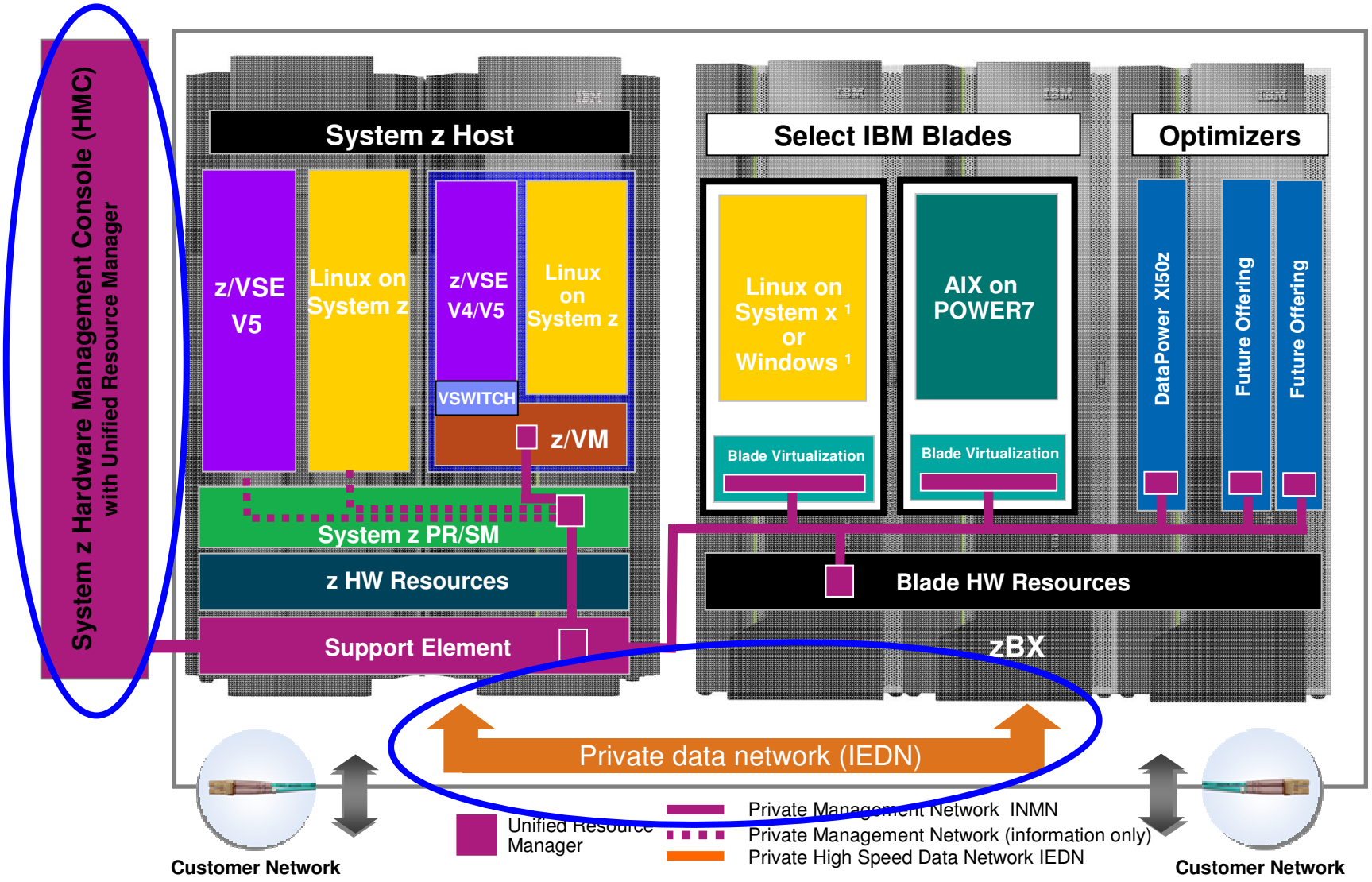


Our Vision:

An IT environment driven with one centralized System
- IBM zEnterprise System -

Deliver the best of all worlds - Mainframe, UNIX, x86 and single function processors - integrated in a single system for ultimate flexibility and simplicity to optimize service, risk, and cost across multiple heterogeneous workloads.

z/VSE 5 Support for IBM zEnterprise - IEDN to zBX



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z/VSE Support for IBM Mainframe Servers

IBM Servers	z/VSE V5.1	z/VSE V4.3	z/VSE V4.2	z/VSE V4.1 (out of service)
IBM zEnterprise 196 & 114	✔	✔	✔	✔
IBM System z10 EC & z10 BC	✔	✔	✔	✔
IBM System z9 EC & z9 BC	✔	✔	✔	✔
IBM eServer zSeries 990 & 890	✘	✔	✔	✔
IBM eServer zSeries 900 & 800	✘	✔	✔	✔

The Intra Ensemble Network (IEDN) is only supported by z/VSE 5.1

Please note:

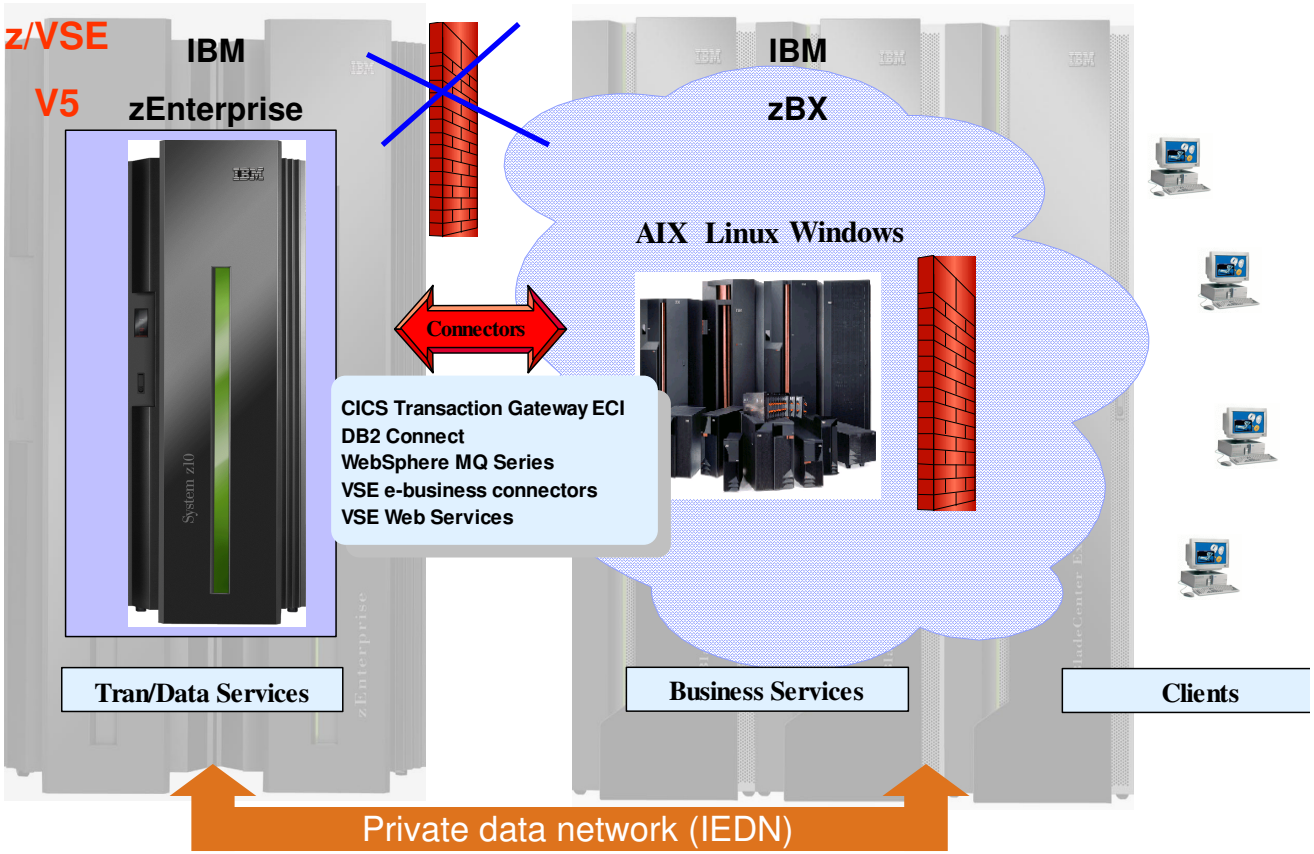
- z/VM V6 requires System z10 technology (or higher)
- Novell SLES 11 requires System z9 technology (or higher)
- Red Hat RHEL 6 requires System z9 technology (or higher)

z/VSE Strategy – successfully established since 2000

z/VSE V5 Strategy with zEnterprise - More options, highly integrated

alias

- 3-tier Strategy
- **Hybrid Strategy**
- Connector Strategy
- Migration Strategy
- Coexistence Strategy
- Linux Surround Strategy
- **PIE Strategy**



Protect existing z/VSE investments

Integrate using middleware and z/VSE connectors

Extend with zBX or with Linux on z to access new applications & solutions

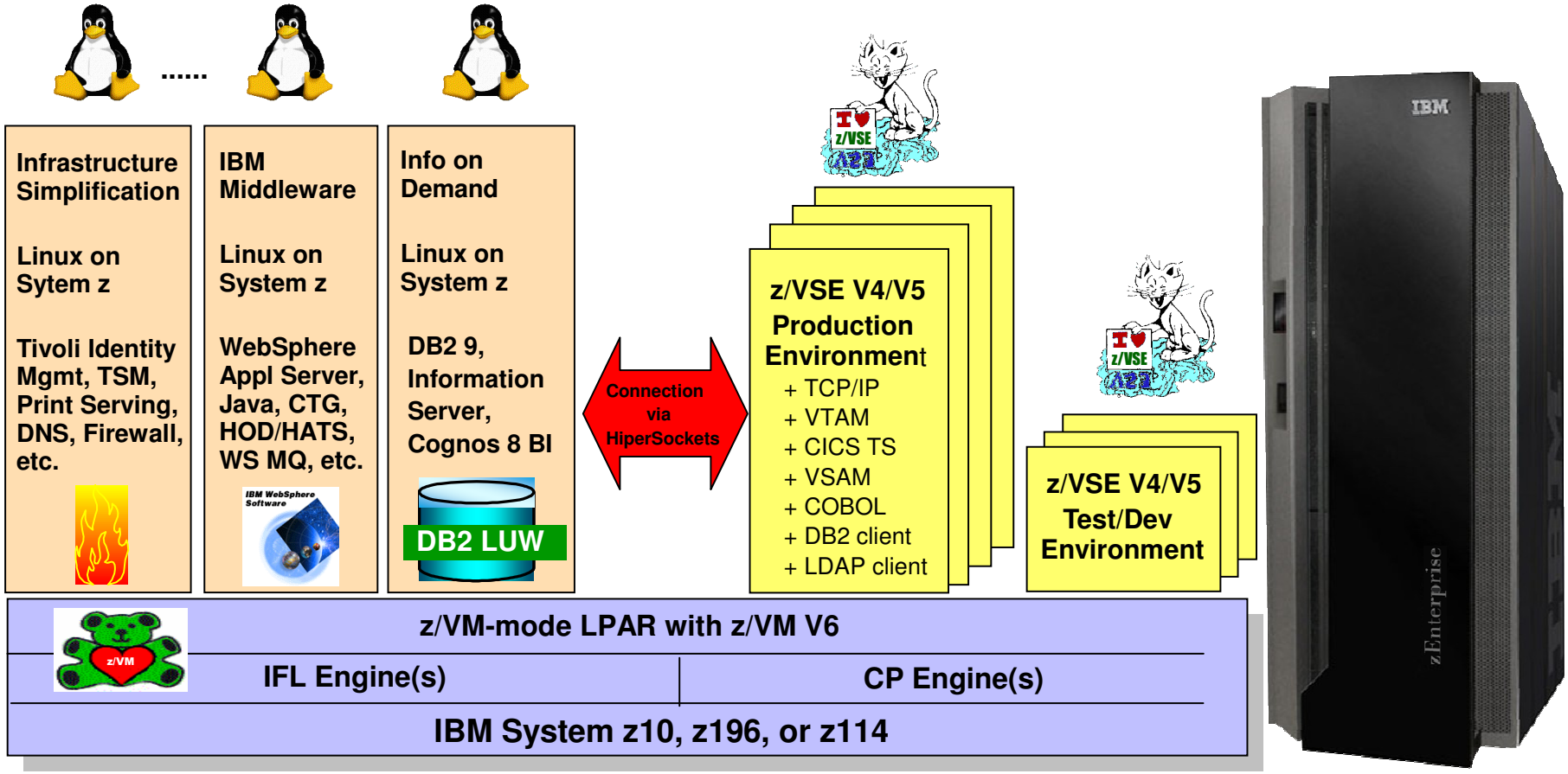
z/VSE Strategy w/ Linux on System z

Hybrid Environment leveraging z/VSE, z/VM, and Linux on System z

Protect existing VSE investments

Integrate using middleware and VSE connectors

Extend with Linux on IBM System z technology & solutions



Agenda

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z/VSE SOA and Interoperability to support the PIE Strategy

Connector Functions	z/VSE V5.1	z/VSE V4.3	z/VSE V4.2	z/VSE V4.1
z/VSE Connectors (no additional charge)				
VSAM, POWER, Librarian, ICCF lib, console	Yes	Yes	Yes	Yes
VSAM Redirector	Yes	Yes	Yes	Yes
SOA Web Services, i.e. SOAP and XML	Yes	Yes	Yes	Yes
z/VSE Script and DL/1	Yes	Yes	Yes	Yes
DB2 Stored Procedures for VSAM and DL/1	Yes	Yes	Yes	Yes
VTAPE interface to IBM Tivoli Storage Manager (TSM)	Yes	Yes	Yes	Yes
LDAP client (LDAP server on another platform required)	Yes	Yes	Yes	
SNMP agent	Yes	Yes		
Linux Fast Path from z/VSE to Linux TCP/IP in z/VM-mode LPAR	Yes	Yes		
z/VSE z/VM IP Assist (VIA)	Yes			
GDPS client	Yes			
Linux Fast Path via zEnterprise HiperSockets Completion Queues	SoD			
IBM Middleware (priced)				
CICS Transaction Gateway ECI	Yes	Yes	Yes	Yes
Host on Demand / Host Application Transformation	Yes	Yes	Yes	Yes
DB2 Connect / DB2 UDB (DB2 Server for z/VSE V7.5 Client)	Yes	Yes	Yes	Yes
WebSphere MQ (z/VSE Client no charge)	Yes	Yes	Yes	Yes

Mixed workload consolidation with zEnterprise

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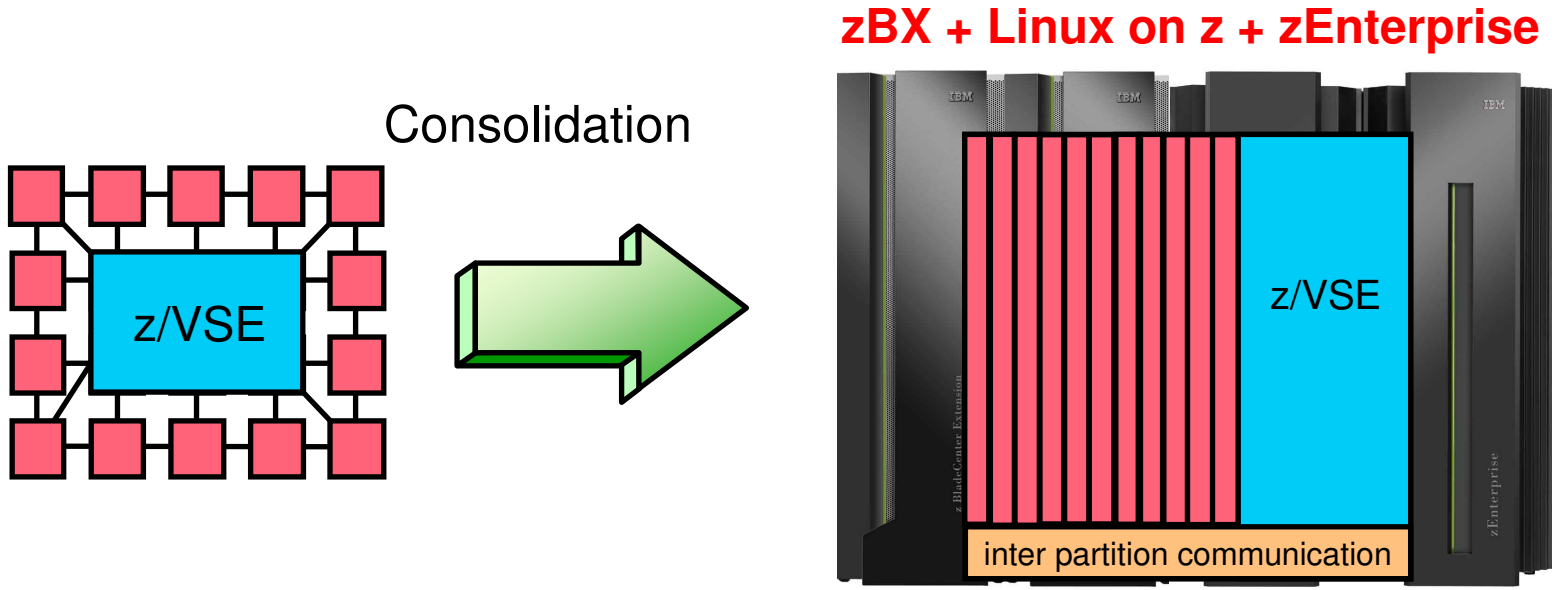
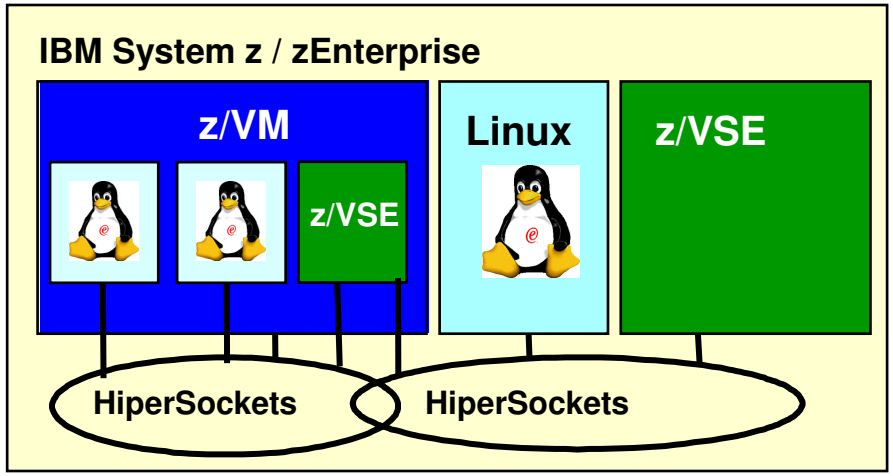
Mixed Workload consolidation on zEnterprise



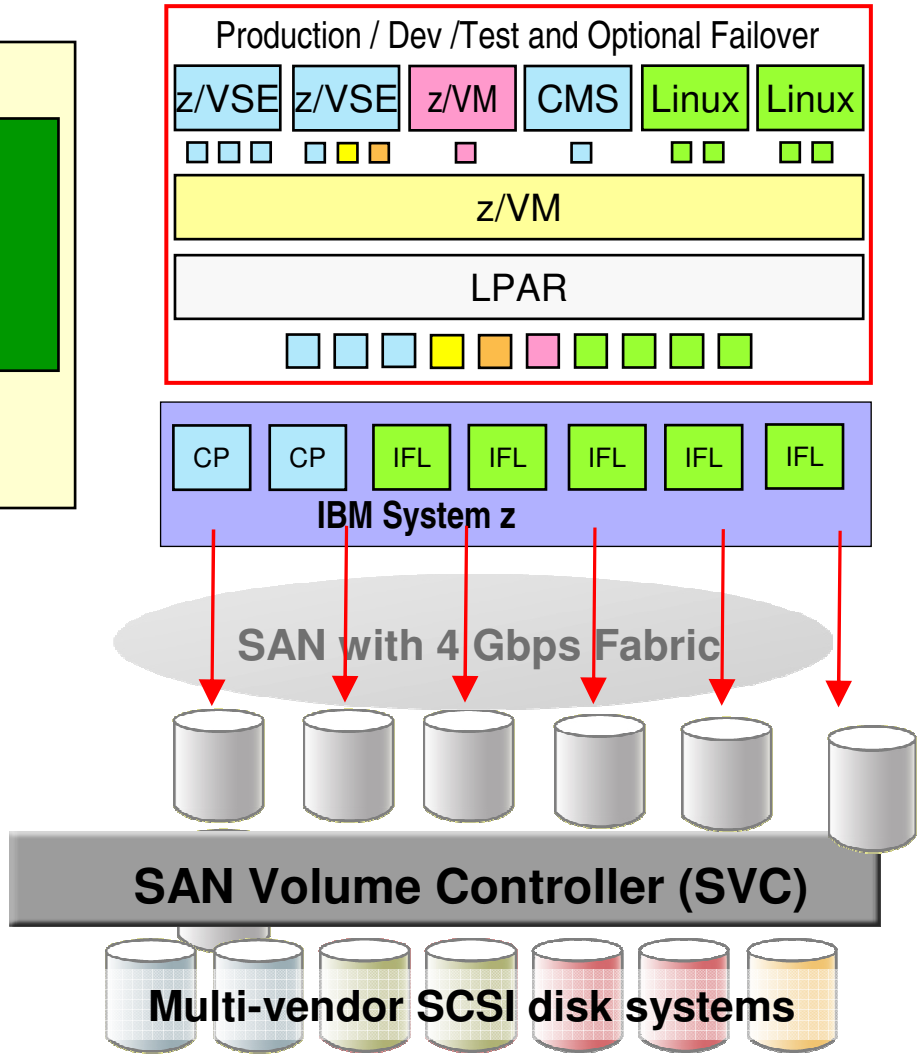
For z/VSE customers, zEnterprise opens new horizons:

- Integration of multiple platforms of the Enterprise
- A big variety of standard applications
- The integration of existing applications and data using e-business Connectors
- Modern, scalable new solutions

Global Virtualization – with System z



- Network Virtualization
- Memory Virtualization
- Processor Virtualization
- System Virtualization
- Disk Virtualization



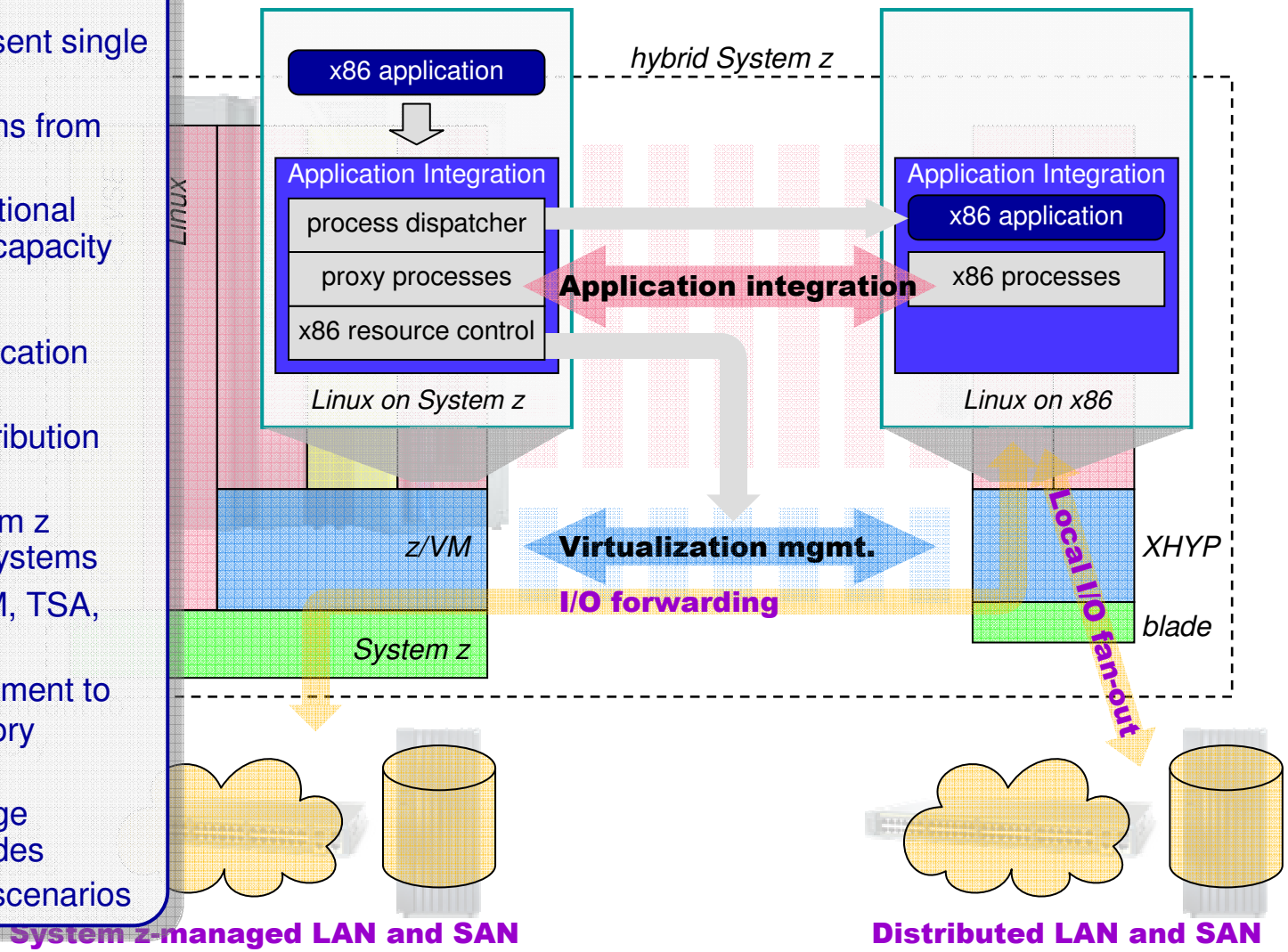
Linux Application Integration

Capabilities:

- Reduce complexity: present single system image
- run x86 Linux applications from Linux on System z
- x86 blades feel like additional processor and memory capacity

Values:

- reduced number of application management endpoints
- retains certified x86 distribution environments
- leverage Linux on System z security model for x86 systems
- can integrate with eWLM, TSA, Energy Management
- converged data management to better comply to regulatory requirements
- offline and online package management for both sides
- complete consolidation scenarios



Web integration with Linux and z/VSE

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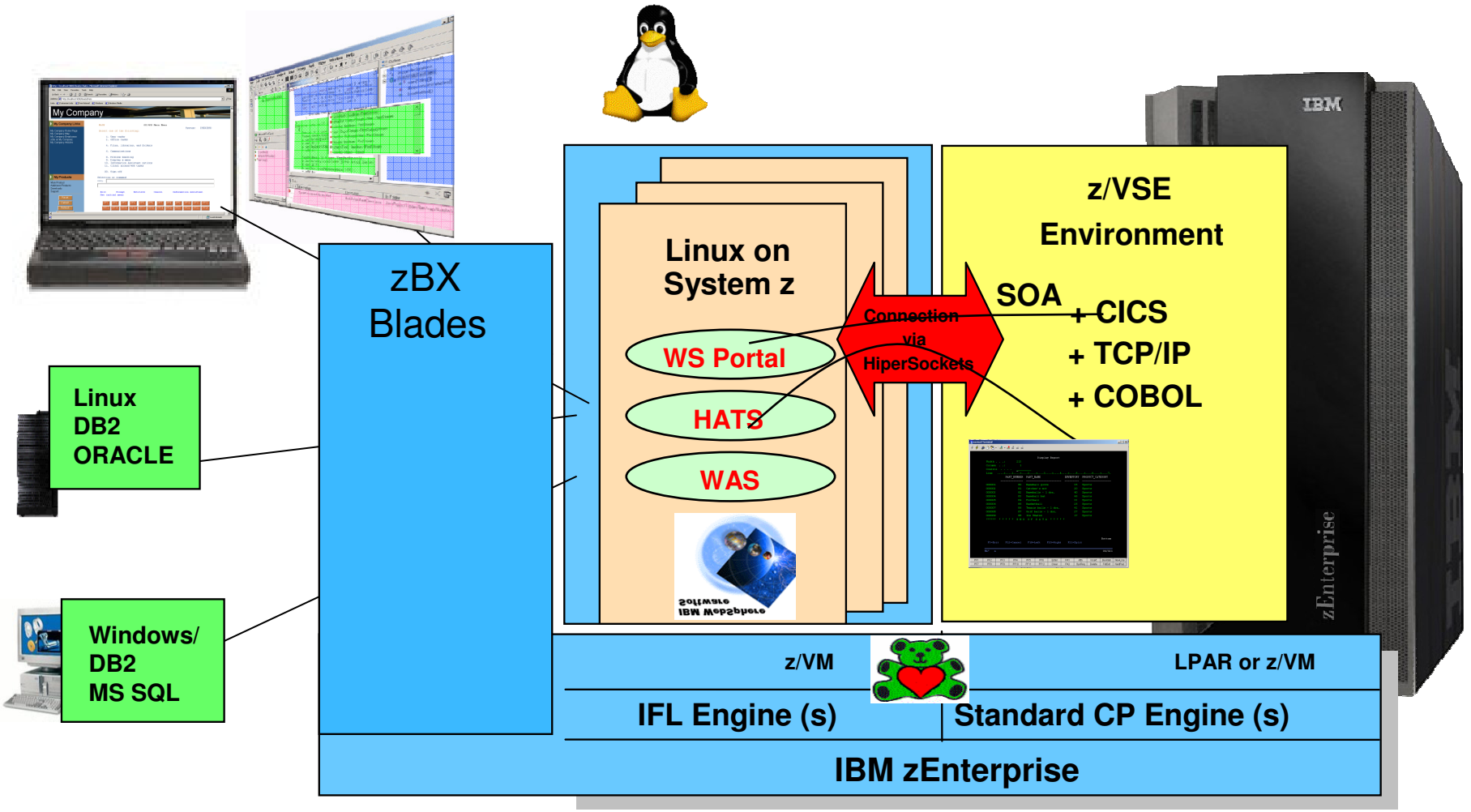
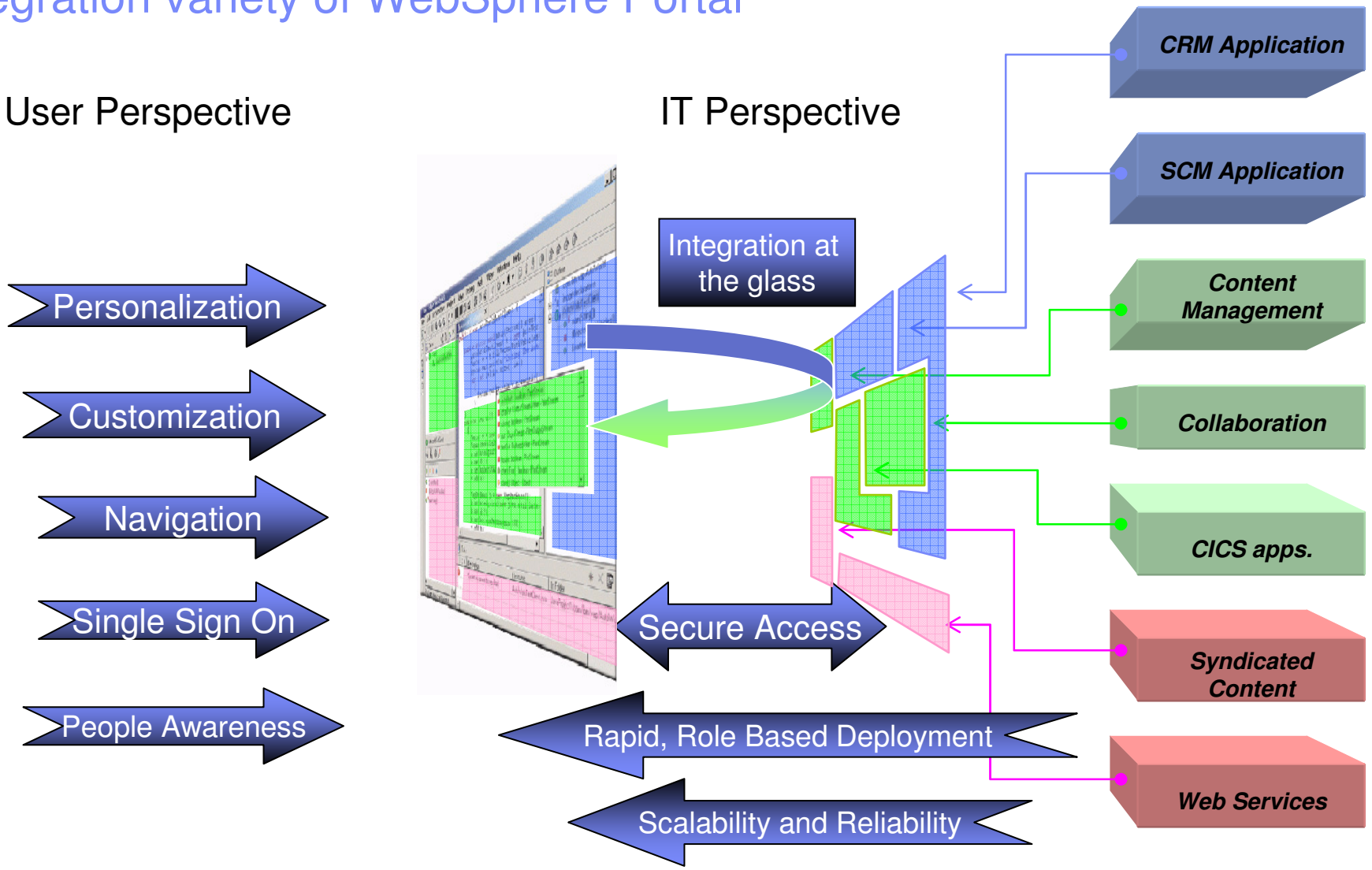
Linux on System z as Central Access Point

Web enable, improve interface, simplify, extend existing applications

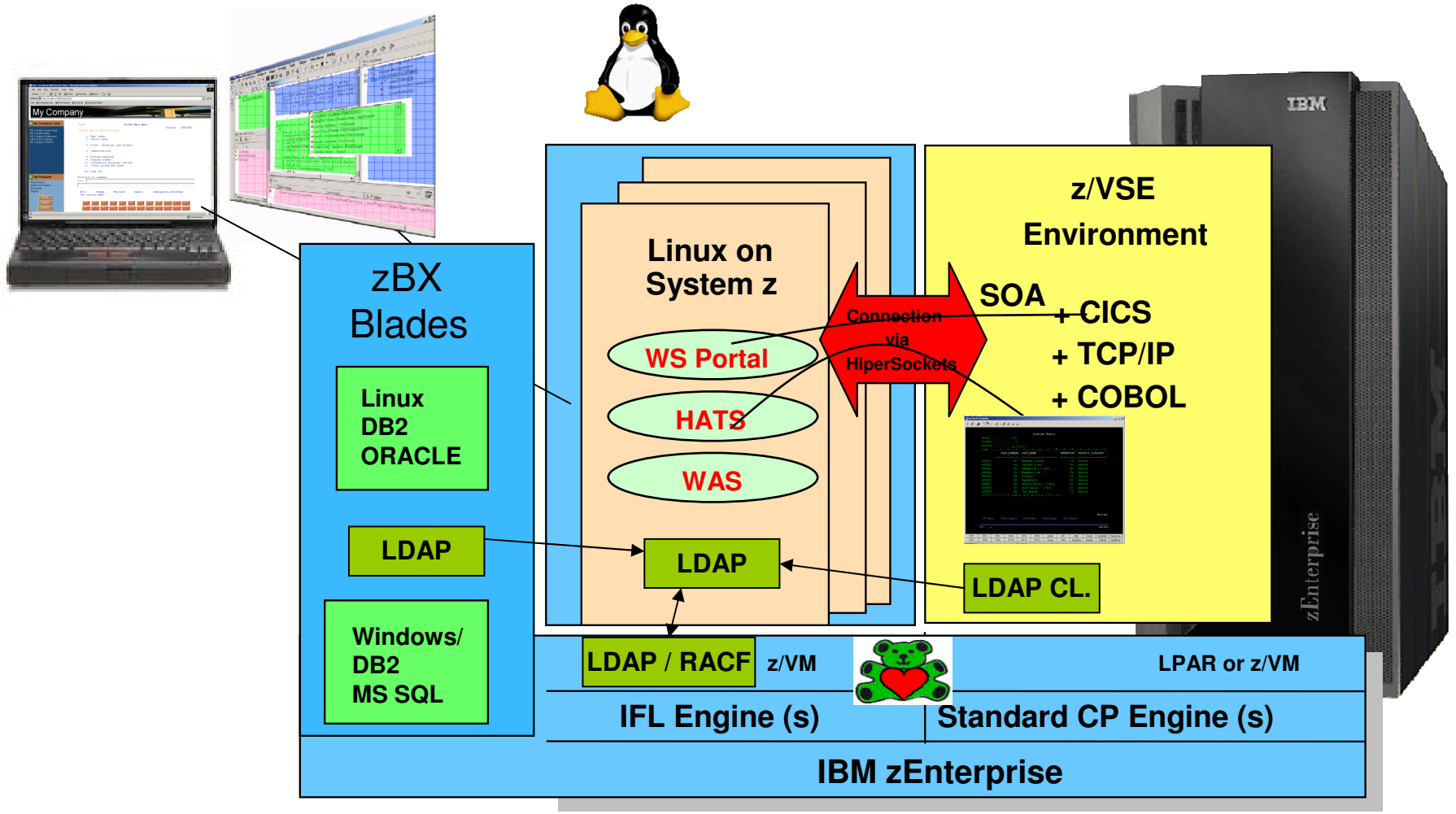


Integration variety of WebSphere Portal



Central Authentication Options – LDAP or RACF in z/VM

Single sign on, Web enable, improve interface, simplify, extend existing applications



CICS workload integration with Linux on System z

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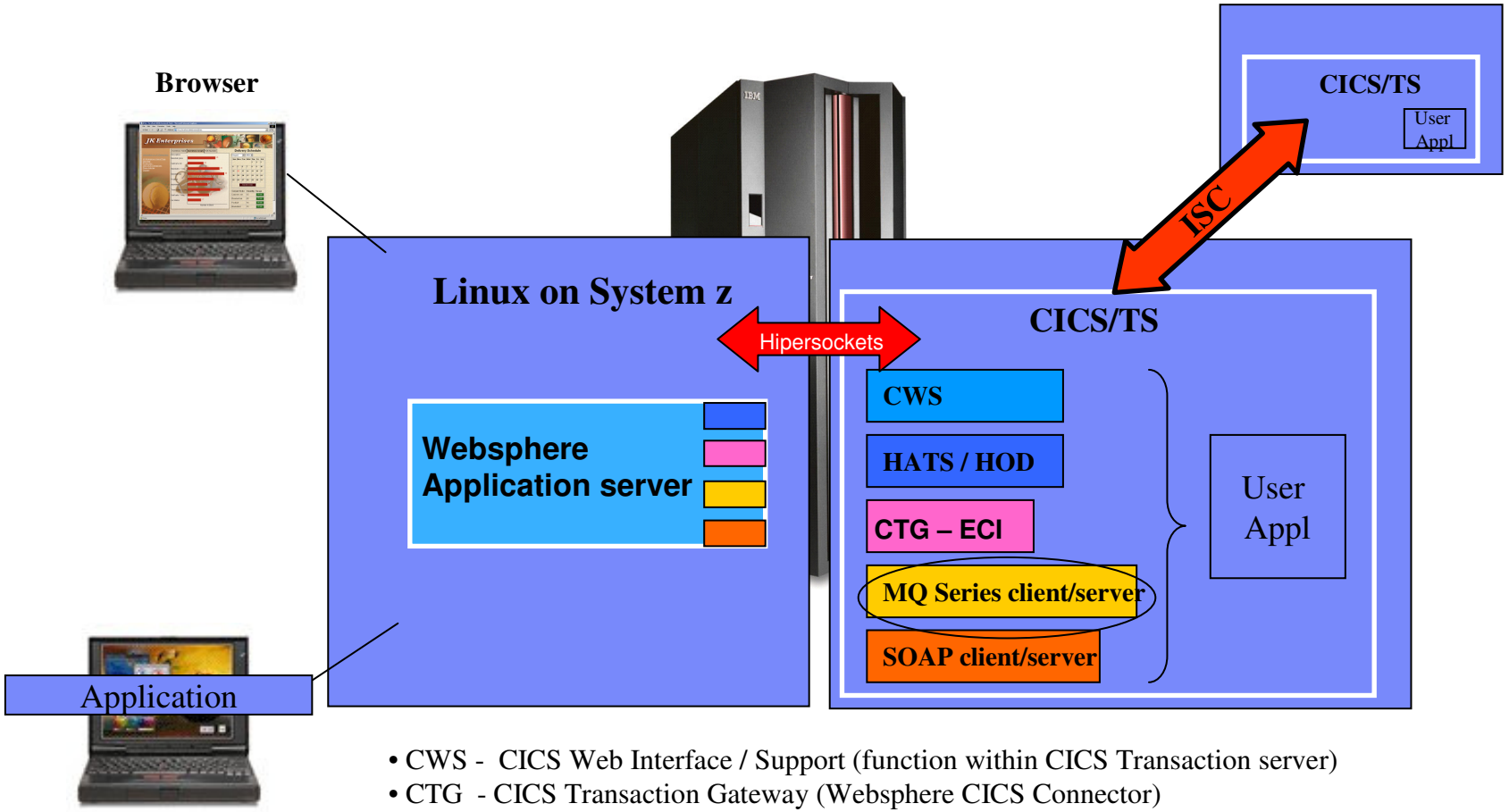
Web Integration with traditional CICS transactions

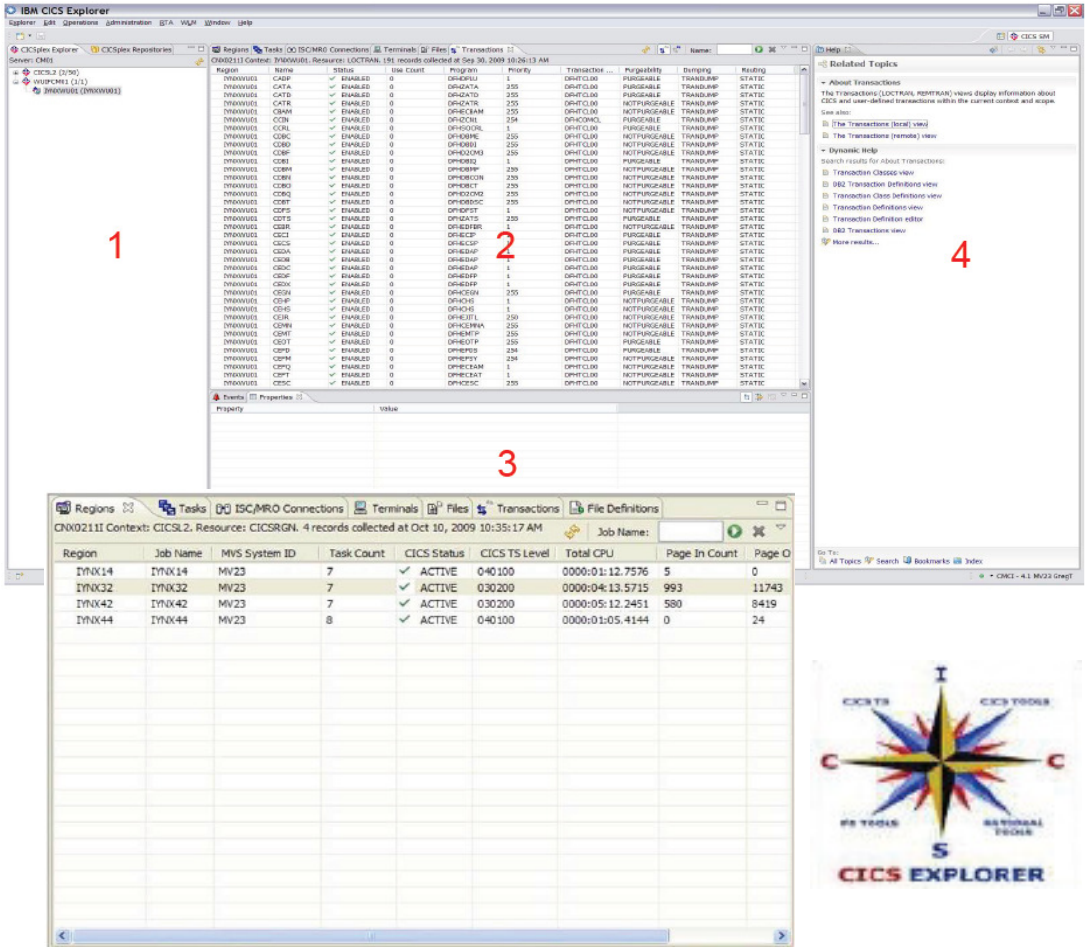


- CWS - CICS Web Interface / Support (function within CICS Transaction server)
- CTG - CICS Transaction Gateway (Websphere CICS Connector)
- HATS – Host Access Transformation Server
- HOD - Host OnDemand (Websphere Host Integrator)
- SOAP - Simple Object Access Protocol (Web Services based with XML data)

z/VSE support for IBM CICS Explorer – The “new face of CICS Transaction Server for VSE/ESA“

CICS Explorer

- New systems management framework for CICS TS
- Consists of client and server part
- Based on the Eclipse Rich Client Platform (RCP)
- Provides integration platform
- Scalable and intuitive way to monitor CICS systems
- Can be extended via plug-ins
- Client part of CICS Explorer common for z/OS and z/VSE
- Server part requires CICS TS and z/VSE 5.1

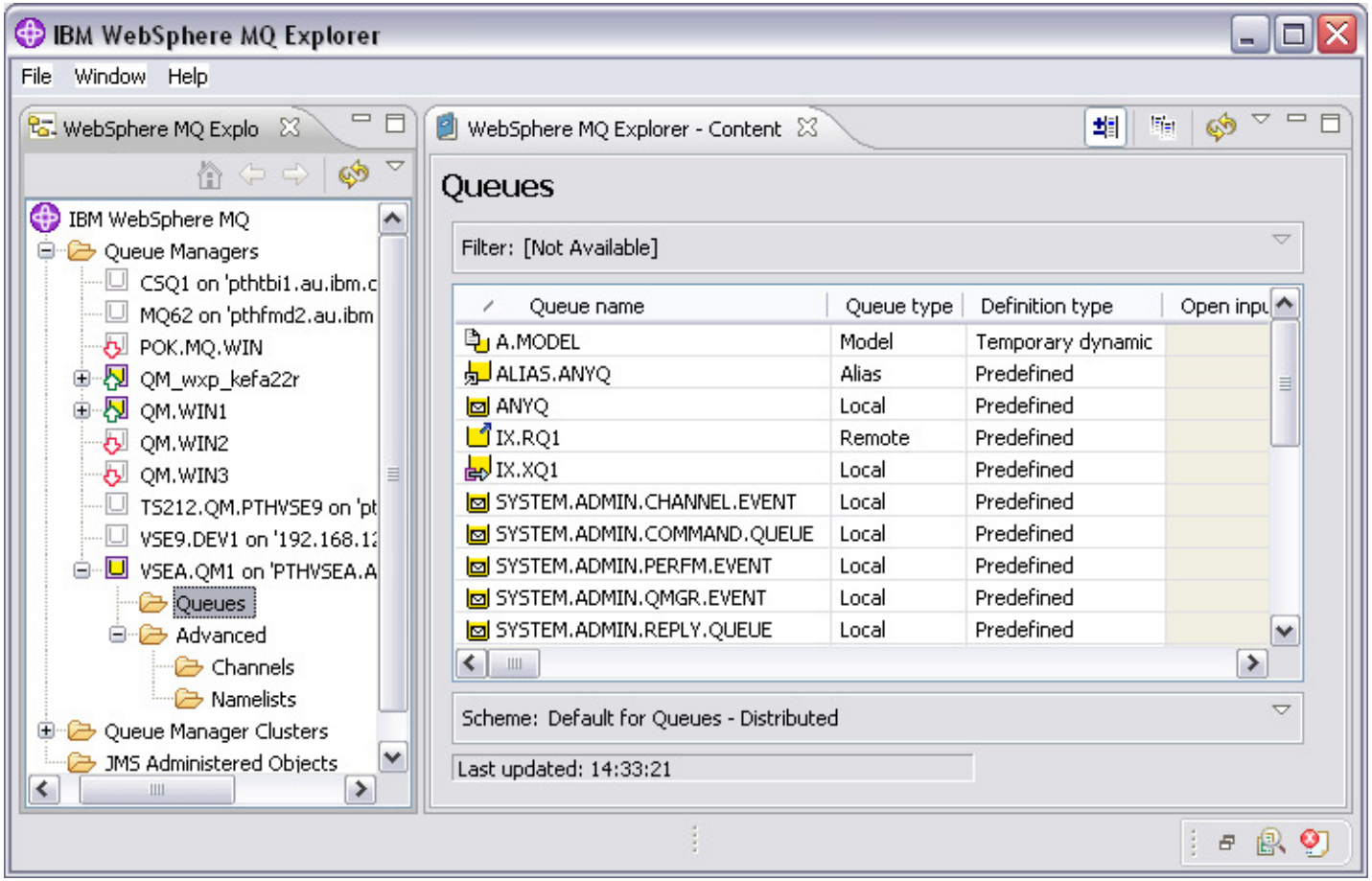


Fulfills Statement of Direction:

“IBM intends to provide CICS Explorer capabilities for CICS TS for VSE/ESA, to deliver additional value.“

New in WMQ for z/VSE V3R0

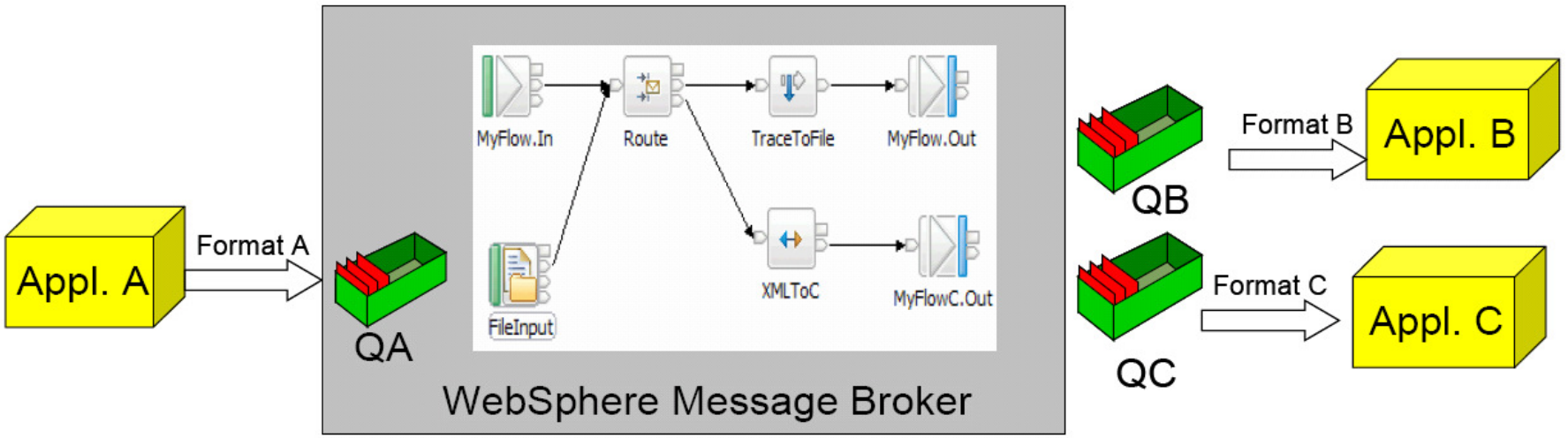
Graphical administration of WebSphere MQ for z/VSE Queues with WMQ Explorer



You can use Explorer to administer the z/VSE queue manager, its queues, channels and namelists, including create, delete, modify and display.

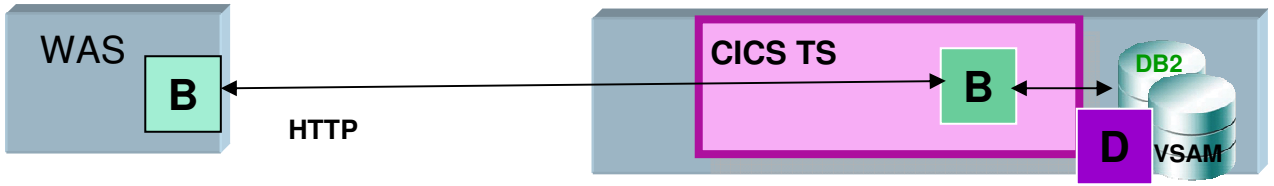
WMQ Message Broker - Workflow handling
MQ with Message Broker can be the ESB for SOA

- **Distributes information and data generated by business events in real time to applications, and devices throughout your enterprise and beyond.**
- **Using WebSphere Message Broker decouples the applications.**
  - **Application A writes a message into a queue QA.**
  - **Application B reads its messages from the queue QB and application C reads its messages from the queue QC.**
  - **These applications do not have to be aware of each other and their used format. The message mediation, routing and transformation is done by the WebSphere Message Broker.**

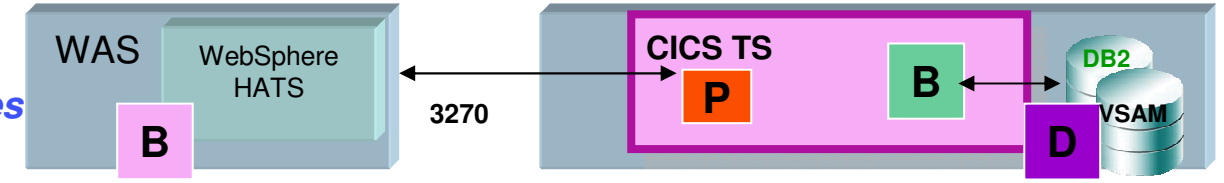


Connectivity to CICS transactions

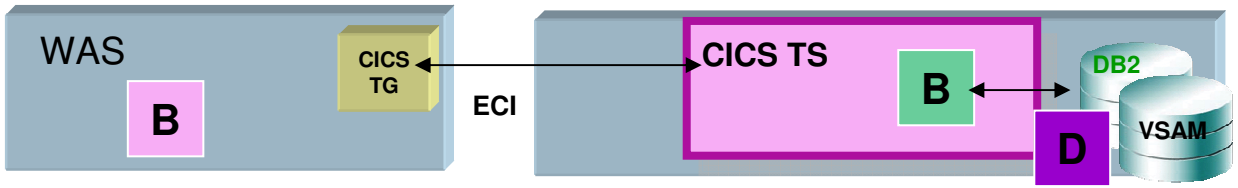
HTTP Access:
CICS Web Interface/Services (CWI/CWS) within CICS



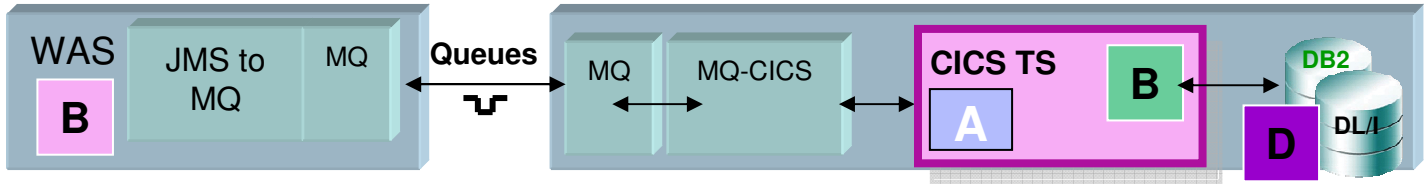
WebSphere
Host Access Transformation Services (HATS)



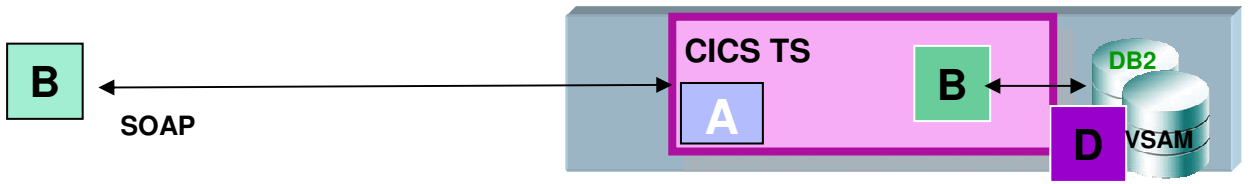
J2C Connector:
CICS Transaction Gateway (CTG)



JMS Connector:
MQ to CICS Bridge

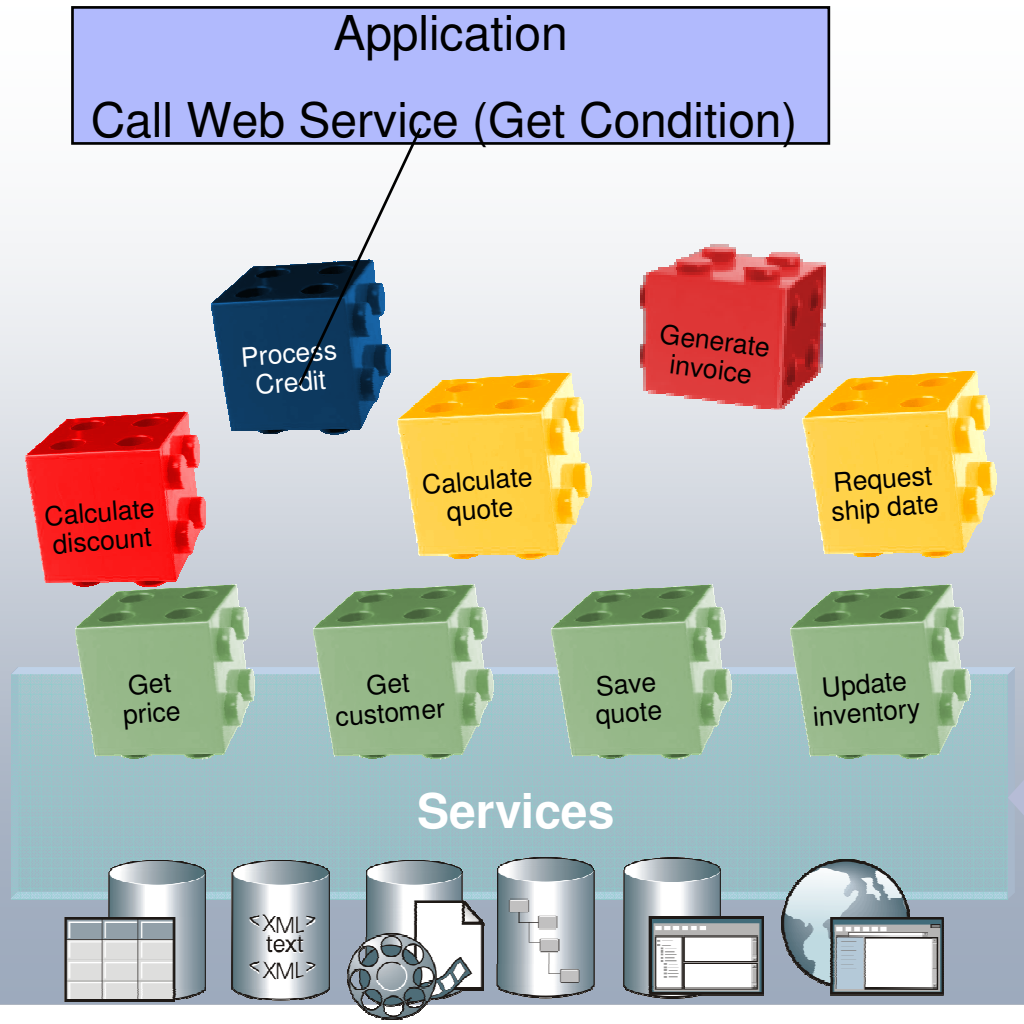


SOA Integration:
Web Services access to CICS



WAS can be on Linux on z or on zBX in an zEnterprise Ensemble. Qualities of Services will vary.

Integrating Logic in an SOA

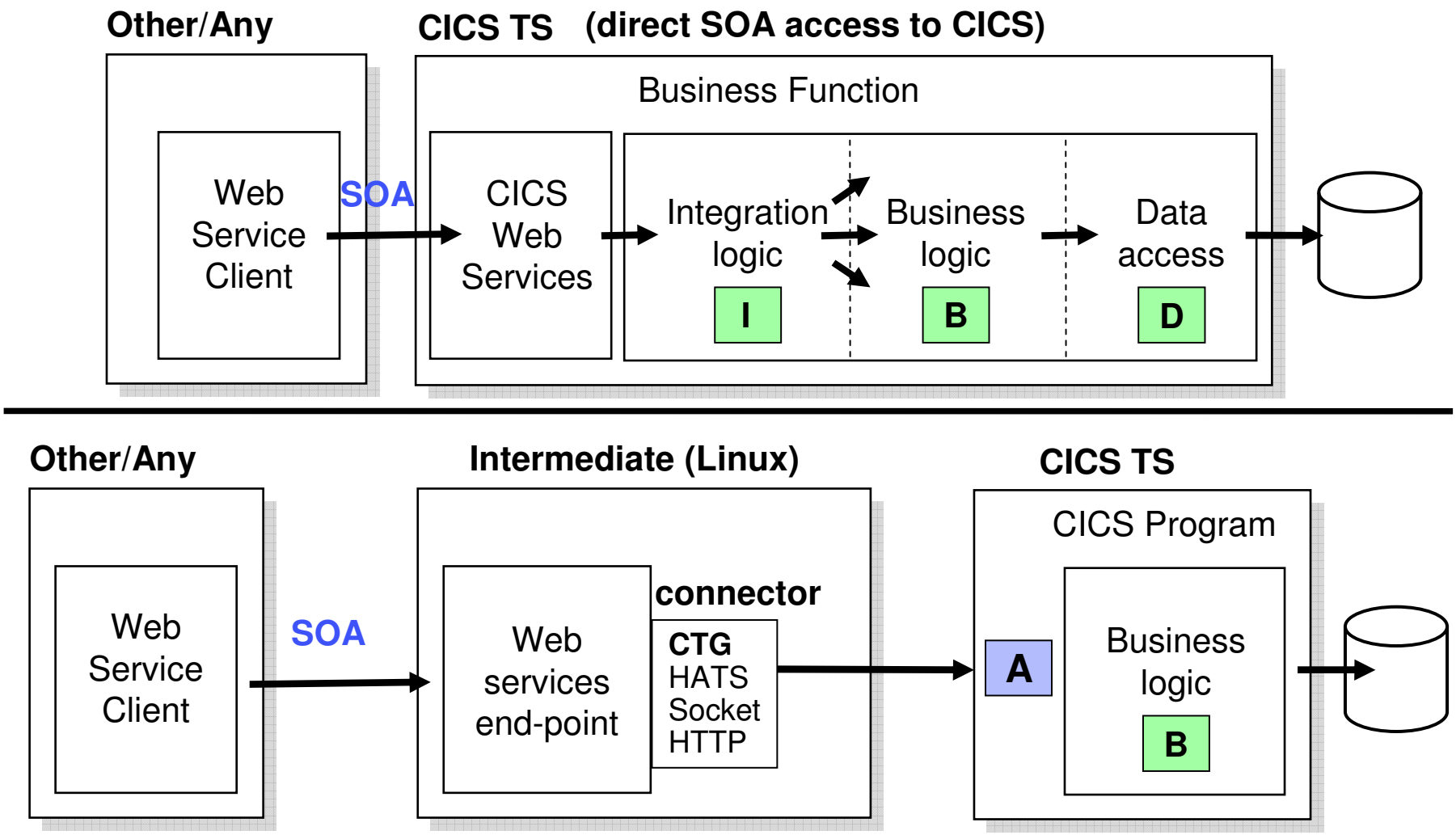


Information as a service makes information more accessible, consistent, and flexible

Publishing consistent, reusable services for information that make it easier for processes to get the information they need from across a heterogeneous landscape of application and data.

- Select data from sources
- Run Business logic
- Transform data to target

The Two Models of SOA CICS Integration via Web Services



Integration using an Enterprise Service Bus

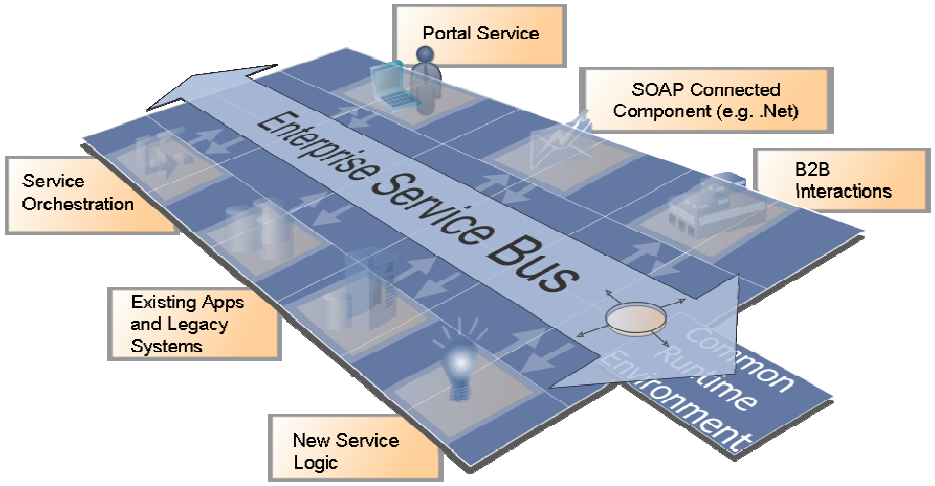
What is an Enterprise Service Bus?

An Enterprise Service Bus (ESB) is a flexible Infrastructure for services and application integration

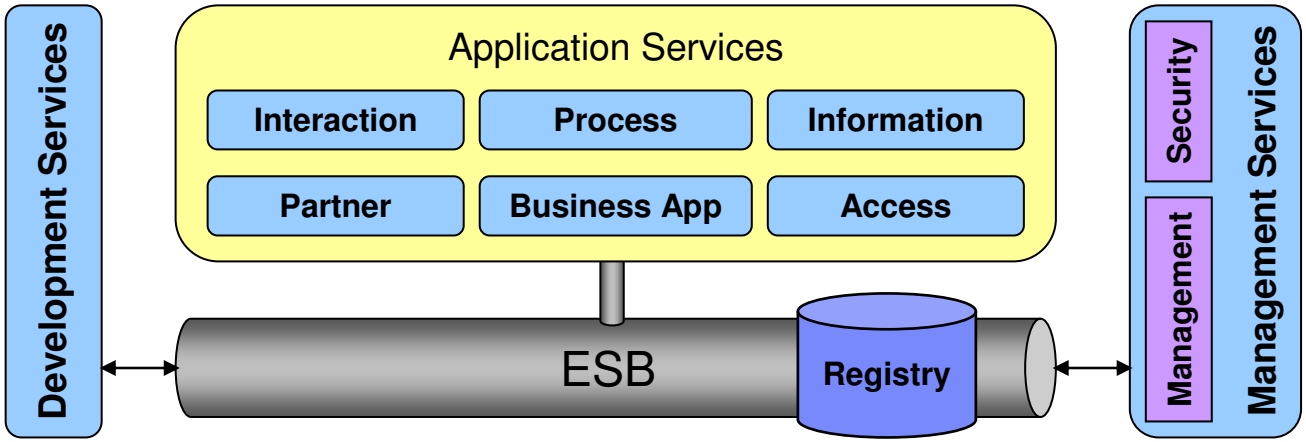
An ESB reduces the number, size and complexity of your interfaces in a SOA solution.

An ESB realizes following tasks between requestor und service

- **ROUTING of messages between Services**
- **CONVERTING the transport protocol between requestor and service**
- **TRANSFORMING message formats between requestor and service**
- **HANDLING of business events between different types of services**



An Enterprise Service Bus (ESB) -centric view of the Logical Model



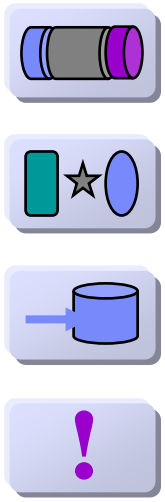
- Outside ESB
  - Business Logic (Application Services)
    - ESB ***does*** contain integration logic or connectivity logic
    - Criteria: semantics versus syntax; aspects
- Loosely coupled to ESB
  - Security and Management
    - Policy Decision Point outside the ESB
    - ESB can be Policy Enforcement Point
- Tightly coupled to ESB
  - Service Registry
    - •Registry a Policy Decision Point for ESB
    - •ESB a Policy Enforcement Point for Registry
    - •But, Registry has a broader scope in SOA
- Tooling required for ESB
  - Development
  - Administration
  - Configures ESB via Service Registry

More details at: http://www.ibm.com/developerworks/library/ar-esbpat1/

ESB Integration Appliance XI50

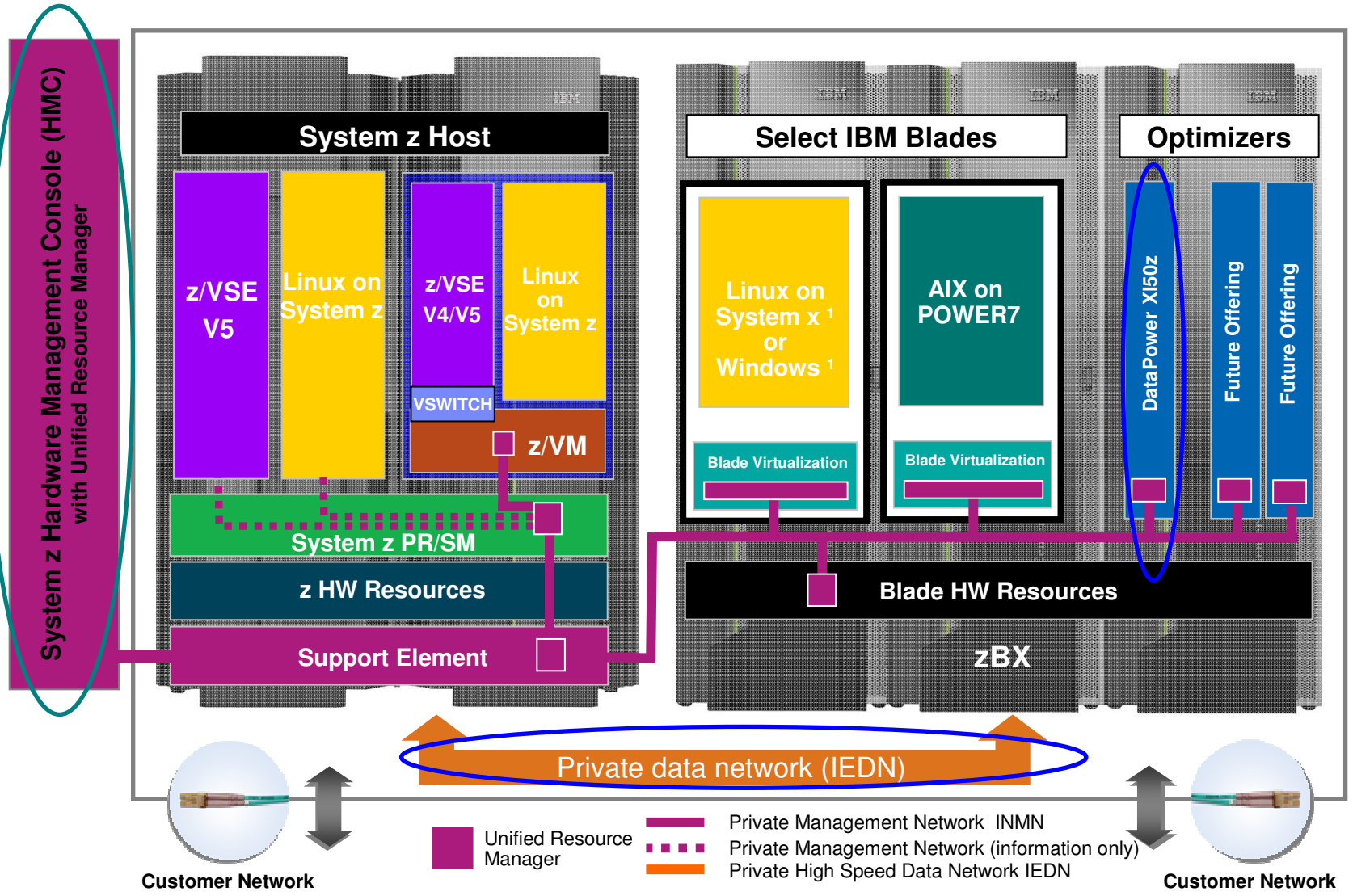
Purpose-built hardware for Enterprise Service Bus functionality

- **SOA Integration / ESB Message Enrichment / Web Service virtualization for legacy applications**
- **Enforce high levels of security independent of protocol or payload format**
- **Integrate with enterprise monitoring systems**
- **Service level management options to shape traffic**



- **Advanced protocol-bridging seamlessly supports a wide array of transports, including HTTP, WebSphere MQ, WebSphere JMS, Tibco EMS, FTP, NFS, et al.**
- **Any-to-any "DataGlue" engine supports XML and Non-XML (Binary) payloads, promoting asset reuse and enabling integration without coding**
- **Direct database access enables message-enrichment and data-as-a-service messaging patterns (DB2, Oracle, MS-SQL, Sybase)**
- **High performance architecture creates low-cost, easily-scalable ESB solution for Smart SOA needs**

The SOA ESB with Datapower in zEnterprise connecting via IEDN to z/VSE



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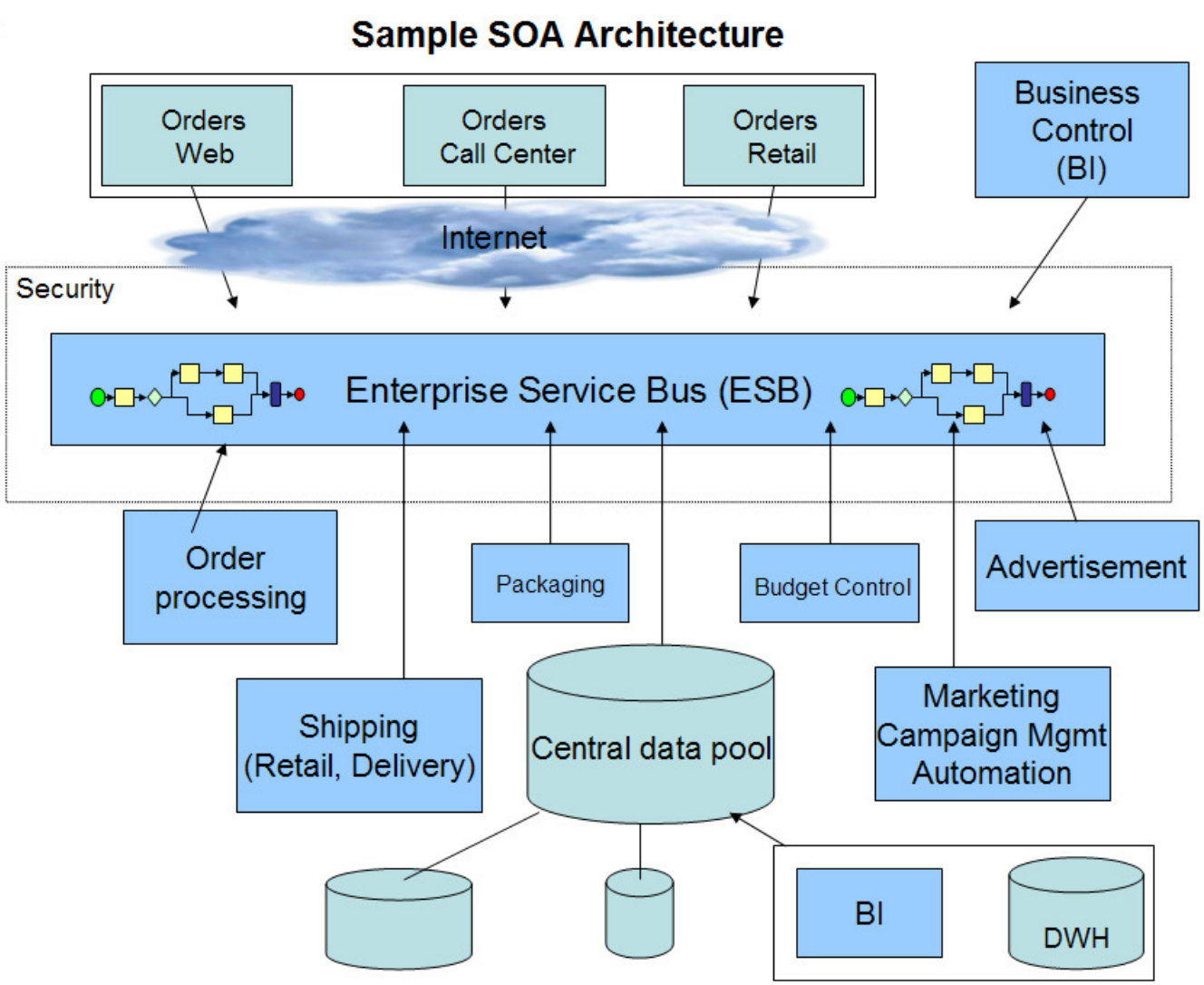
SOA – it is the implementation phase

- Active Projects in:
  - Germany
  - Italy
  - Ecuador
  - Philippines



Reducing Network complexity and balance traffic with zEnterprise

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z/VSE V5 Strategy with zEnterprise - More options, highly integrated

Accelerators with zBX

Reduce
- Routers
- Switches
- Firewalls

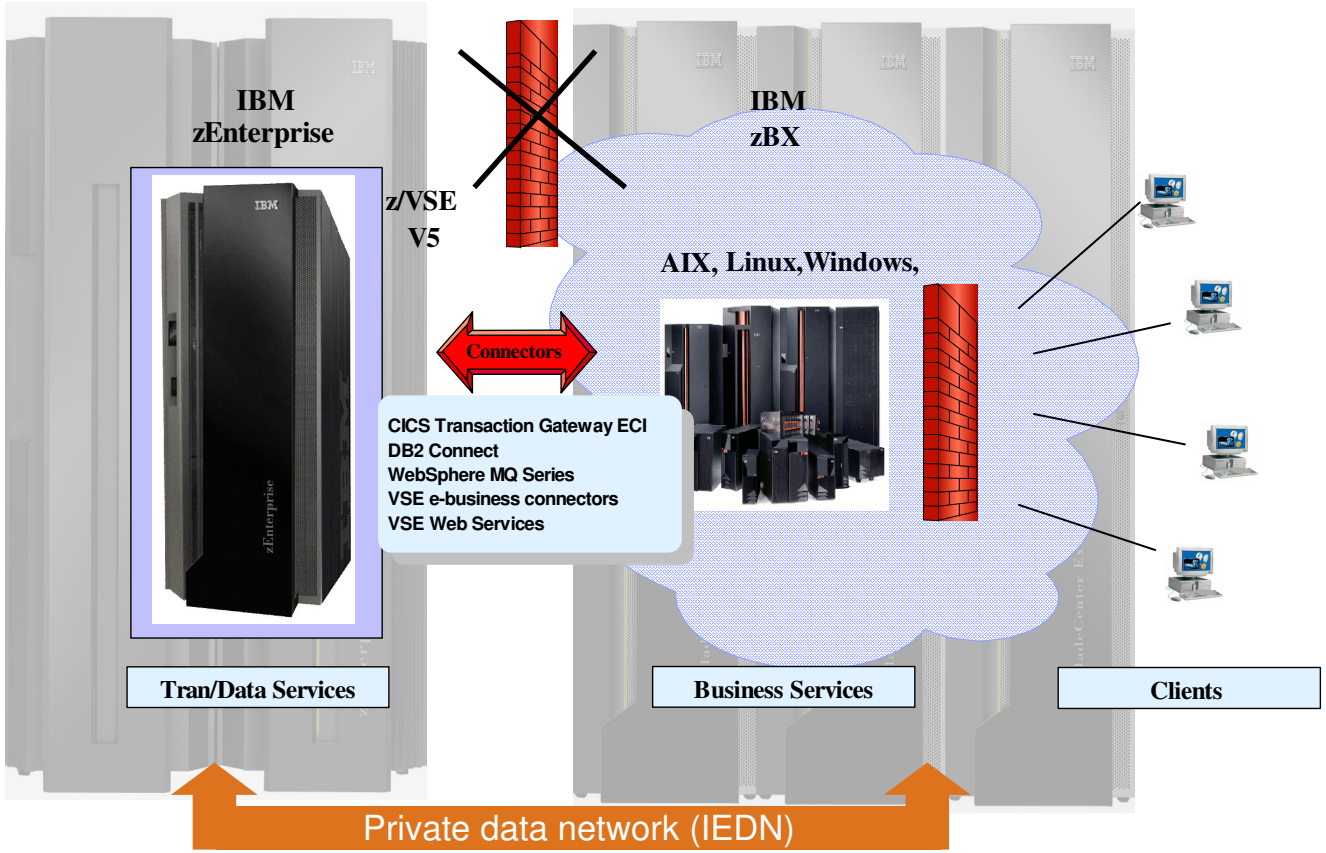
▪Centralize
- DNS Server
- Network filtering
- Work balancer
- Edge Server

▪ LDAP security integration

➢Uses the internal IEDN network.

➢No need for additional DMZ security to z/VSE

➢use standard Intel based software



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Extend with zBX or with Linux on z to access new applications & solutions

Data Warehouse and BI Solutions with Linux on System z

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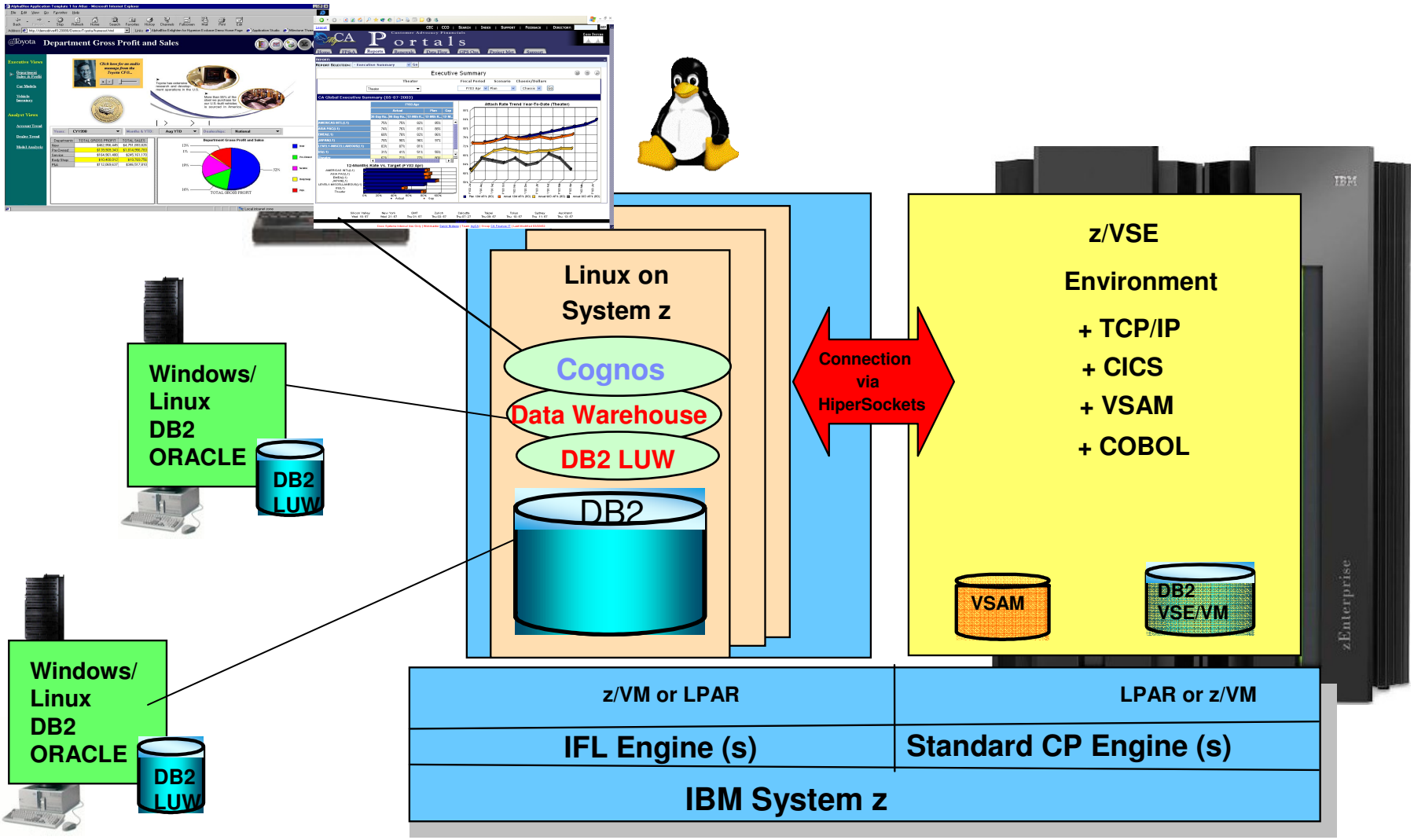
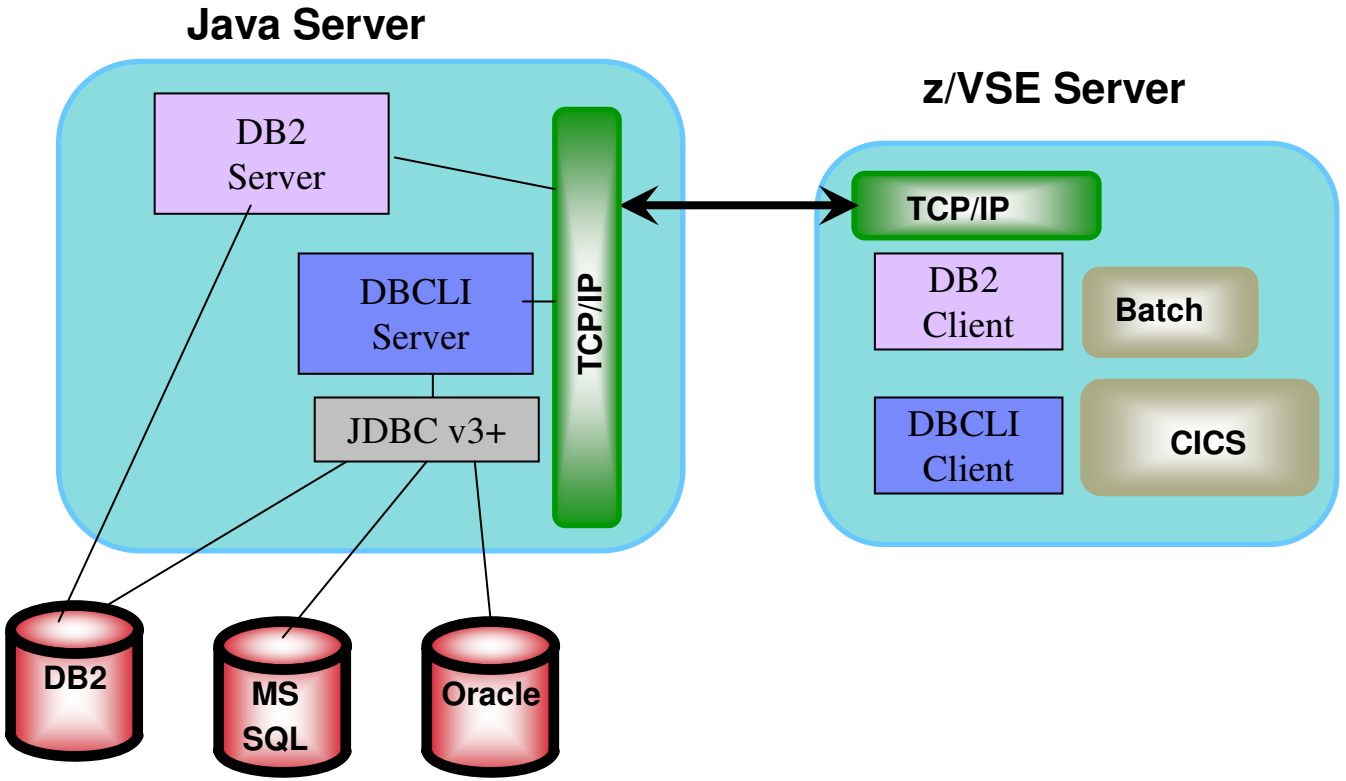
Data Warehouse and BI with Linux on System z

Consolidate, Integrate, Evaluate - DB2 Client, VSAM Redirector



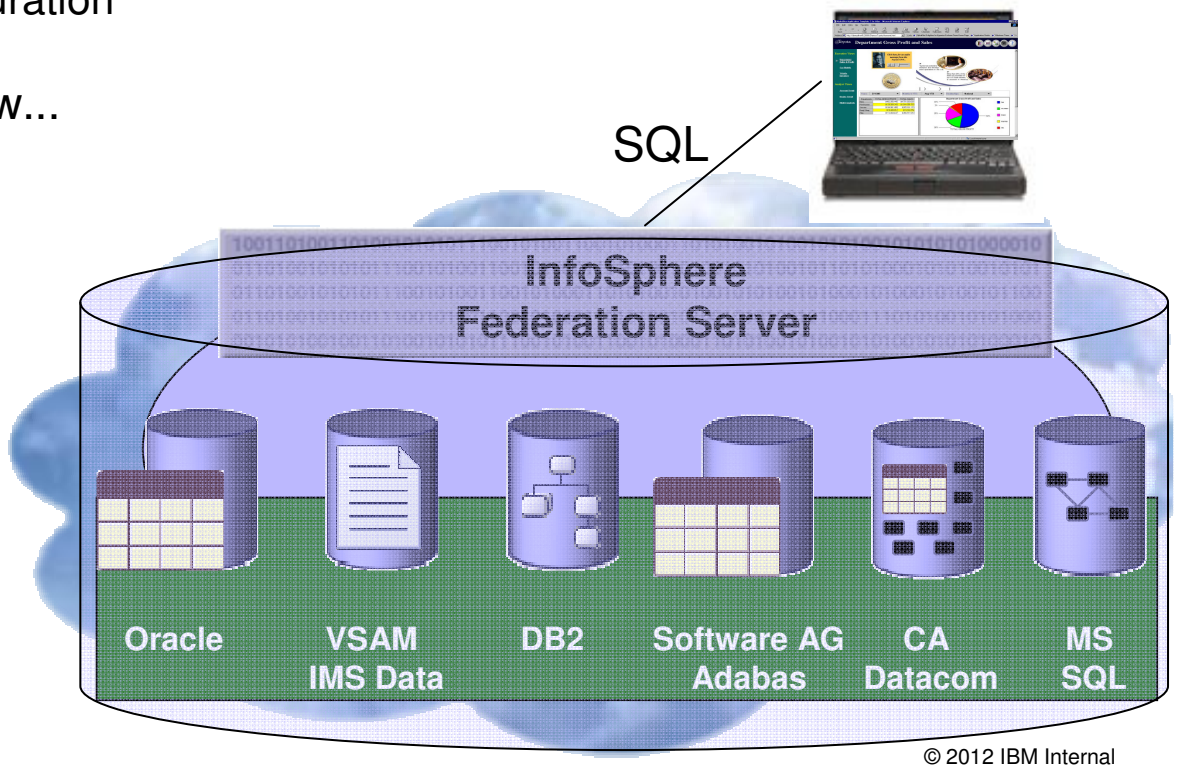
Applications on z/VSE access remote 'any' relational databases

- Real time access to Relational databases
  - two different ways from batch and CICS
  - Access based on z/VSE DBCLI interface **AND / OR** DB2 Client

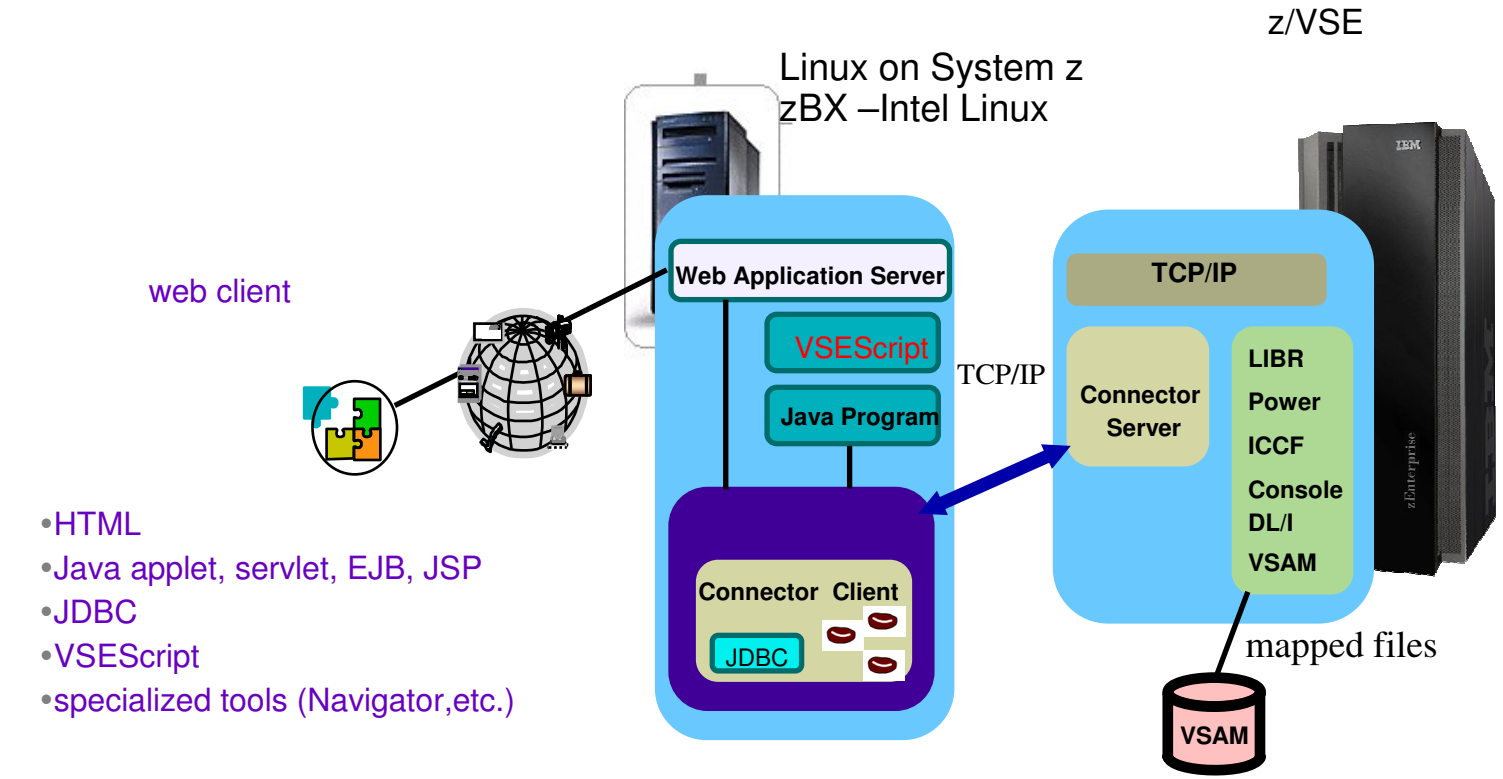


InfoSphere Federation Server on Linux on System z

- 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



Real time access to VSE resources using the Java–Based Connector (feature included in z/VSE)



- real time access to VSE resources from remote systems
- new possibilities for leveraging the VSE investment

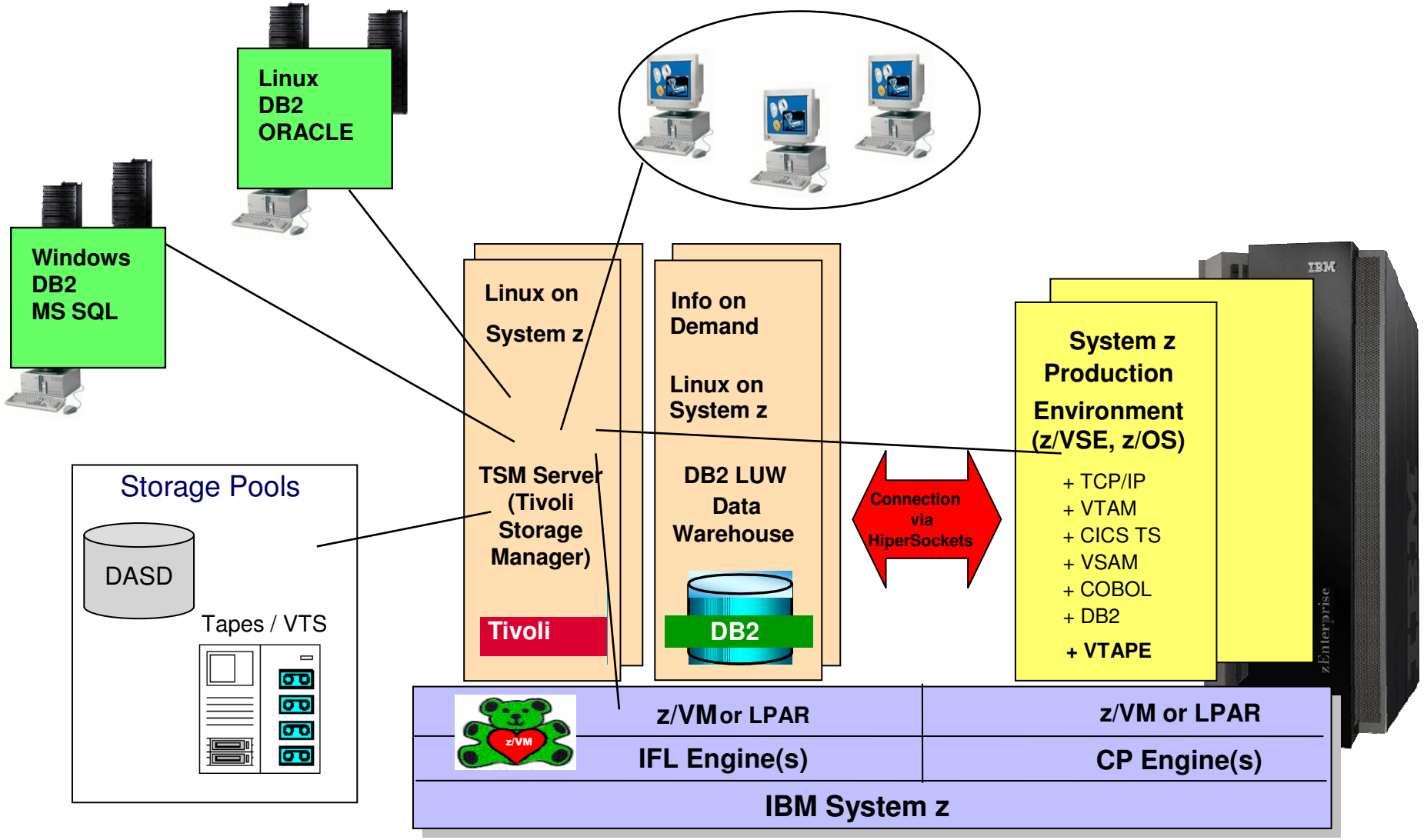
Enterprise Backup and z/VSE Virtual Tape support

http://www.ibm.com/zVSE

http://twitter.com/IBMzVSE

Enterprise Backup with Linux on System z

Implement TSM on Linux on System z as central Backup Hub



z/VSE 5.1 – System Storage Support – D/R

Virtual Tape Library TS7700

Tape Library : logical

TS7700 Virtualization Engine

Standalone System support only in z/VSE (GRID in z/VSE 5.1)

TS7740 Virtualization Engine (TS3500 can be attached)

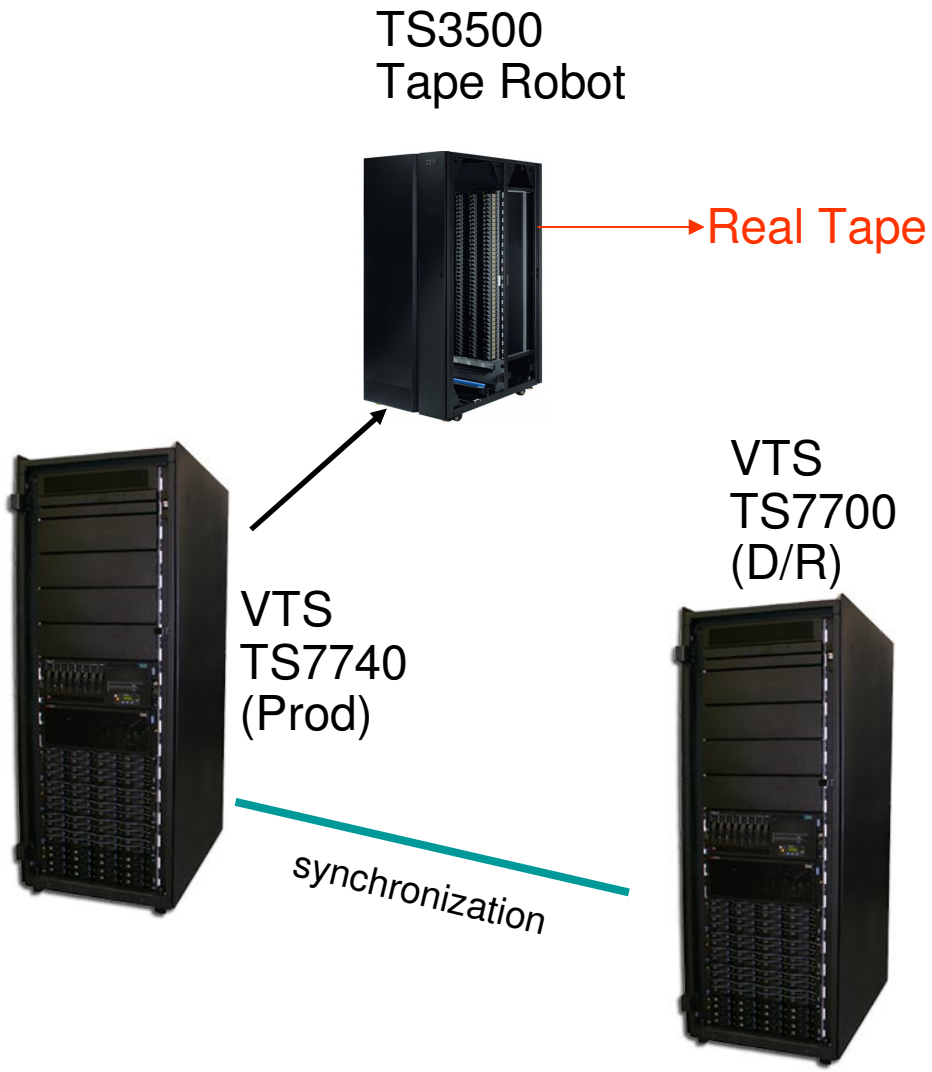
- New: z/VSE 5.1 Copy Export support
  - for Real Tape archiving

- Maximum of 256 virtual drives (3490E) and 1,000,000 virtual volumes

- Web-based management tools

- up to 6 TB native tape volume cache

- Supports TS1120 / TS1130 tape drive-based encryption

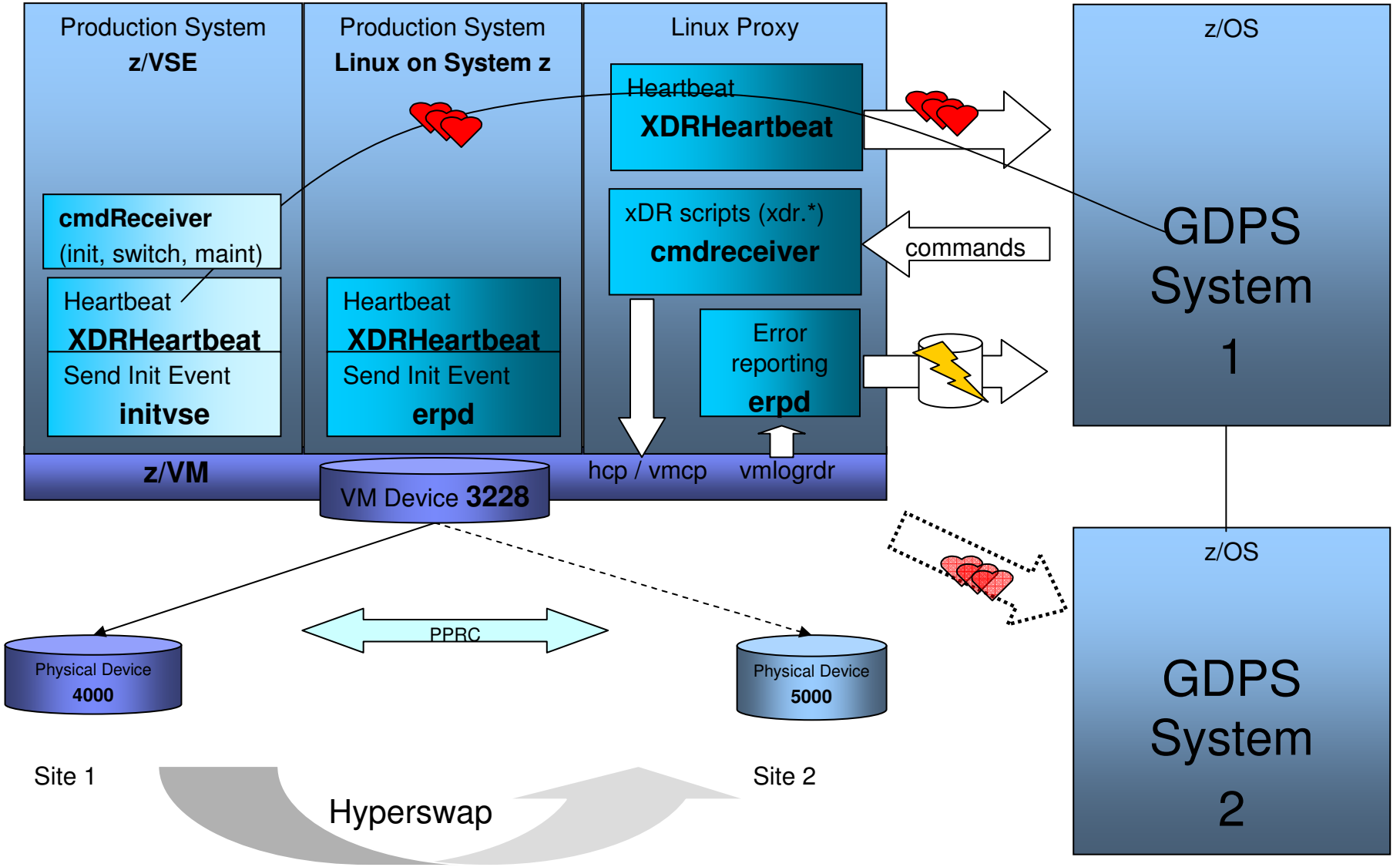


Extended Disaster Recovery (xDR) with z/VM and Linux on System z

http://www.ibm.com/zVSE

http://twitter.com/IBMzVSE

xDR Support for z/VSE as active guest under z/VM

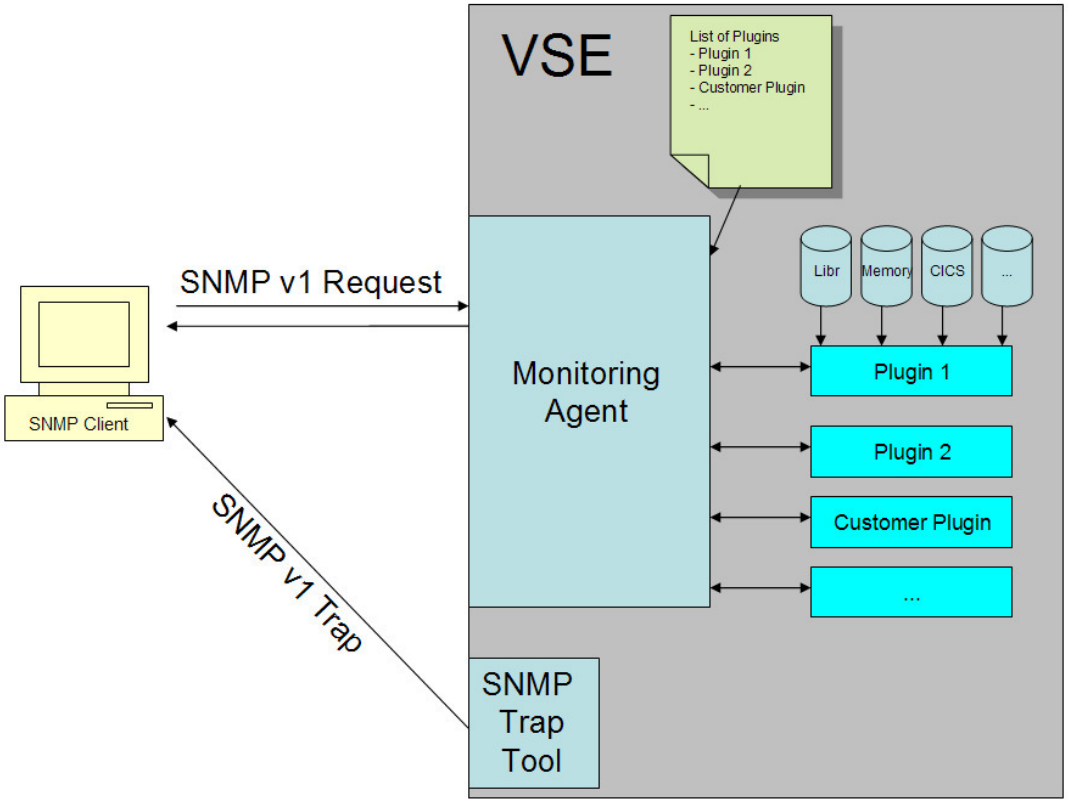


Monitoring interface for z/VSE

http://www.ibm.com/zVSE

http://twitter.com/IBMzVSE

z/VSE Monitoring possibilities

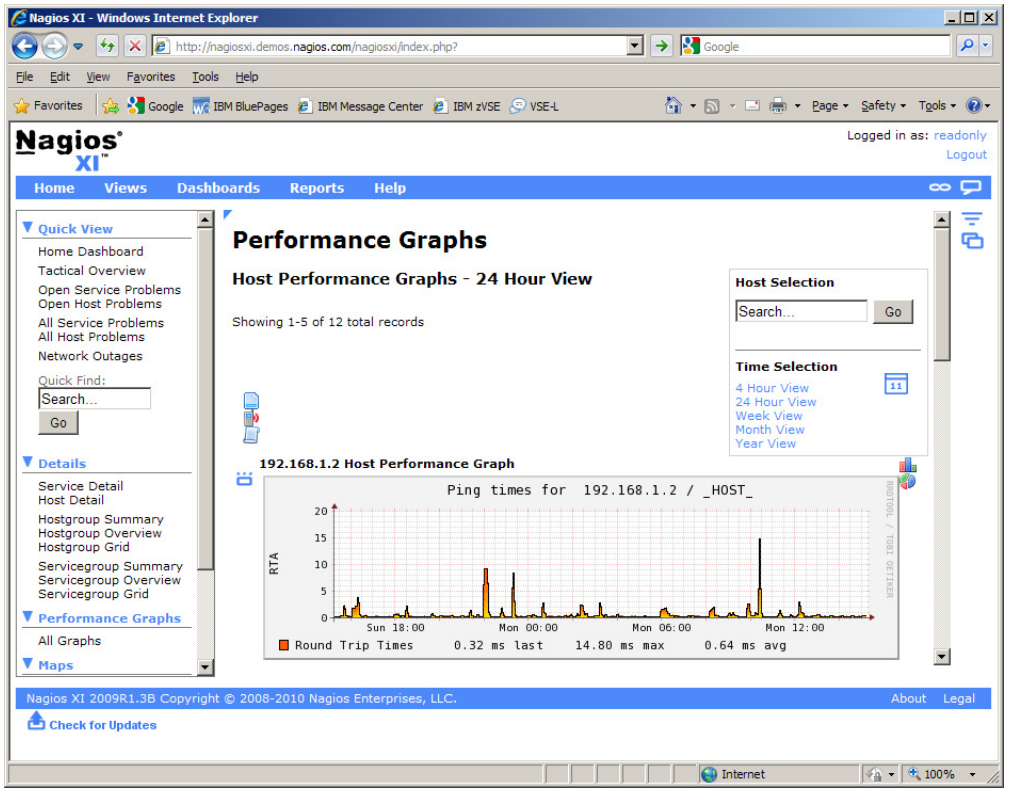


- Monitoring Agent based on SNMP V1
  - Real time monitoring
    - retrieve z/VSE specific system and performance data
  - Event driven monitoring using SNMP Trap tool
    - Helps to automate processes in z/VSE with SNMP traps

z/VSE 4.3 – SNMP Monitoring Agent support

- **Standard SNMP based monitoring tools can be used to collect, display and analyze z/VSE performance monitoring data**
  - e.g. ITM (IBM Tivoli Monitoring), Velocity monitoring, Nagios,…

- **z/VSE SNMP Trap client**
  - Sends SNMP V1 traps to inform one or more monitoring stations or servers about important events
  - For example:
    - The end of a job stream is reached.
    - An error has occurred during a job stream
  - **z/VSE 5.1 the Trap client was enhanced to be a callable API (SNMP Trap API) from within an application**

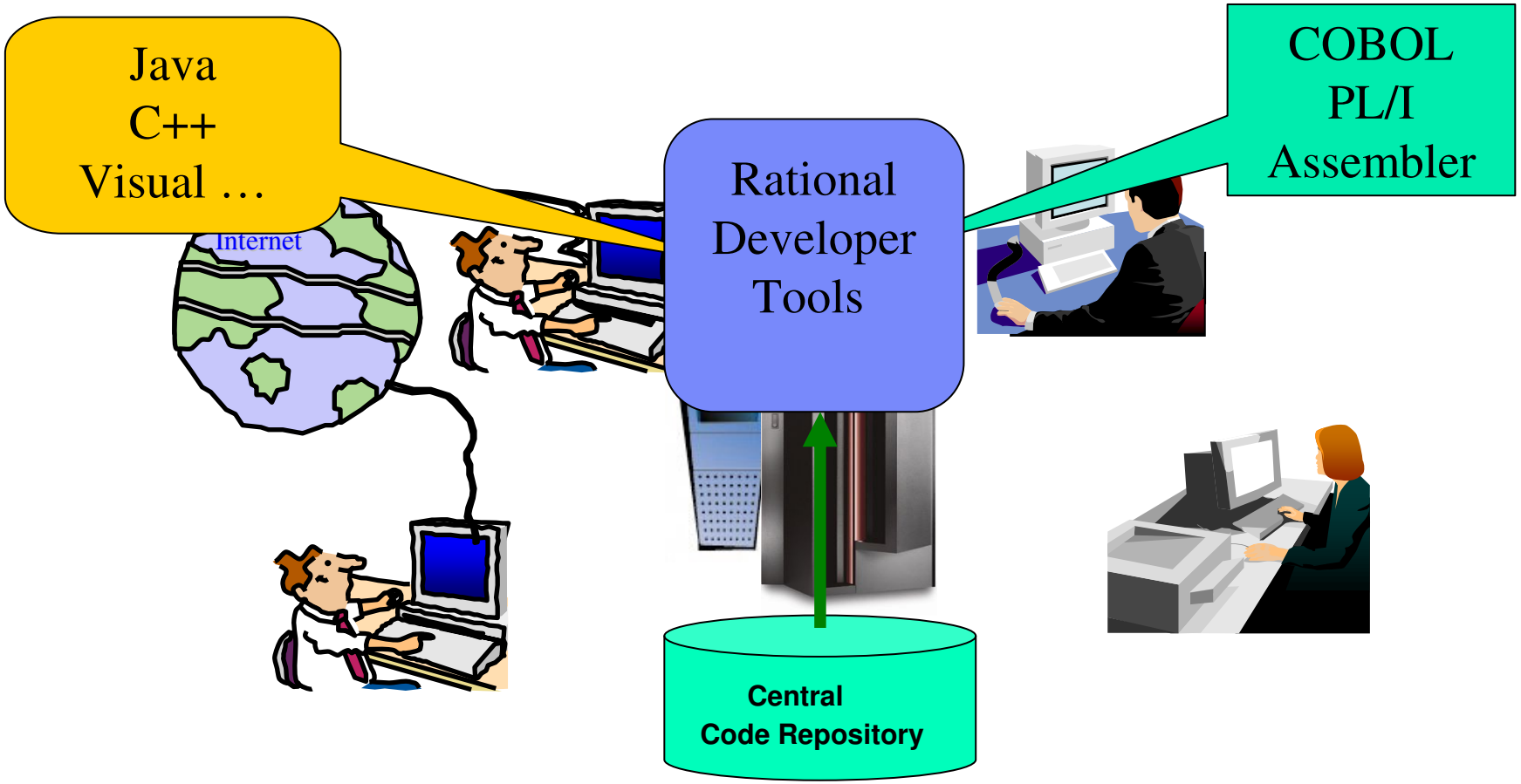


Modern Development Environments for z/VSE

http://www.ibm.com/zVSE

http://twitter.com/IBMzVSE

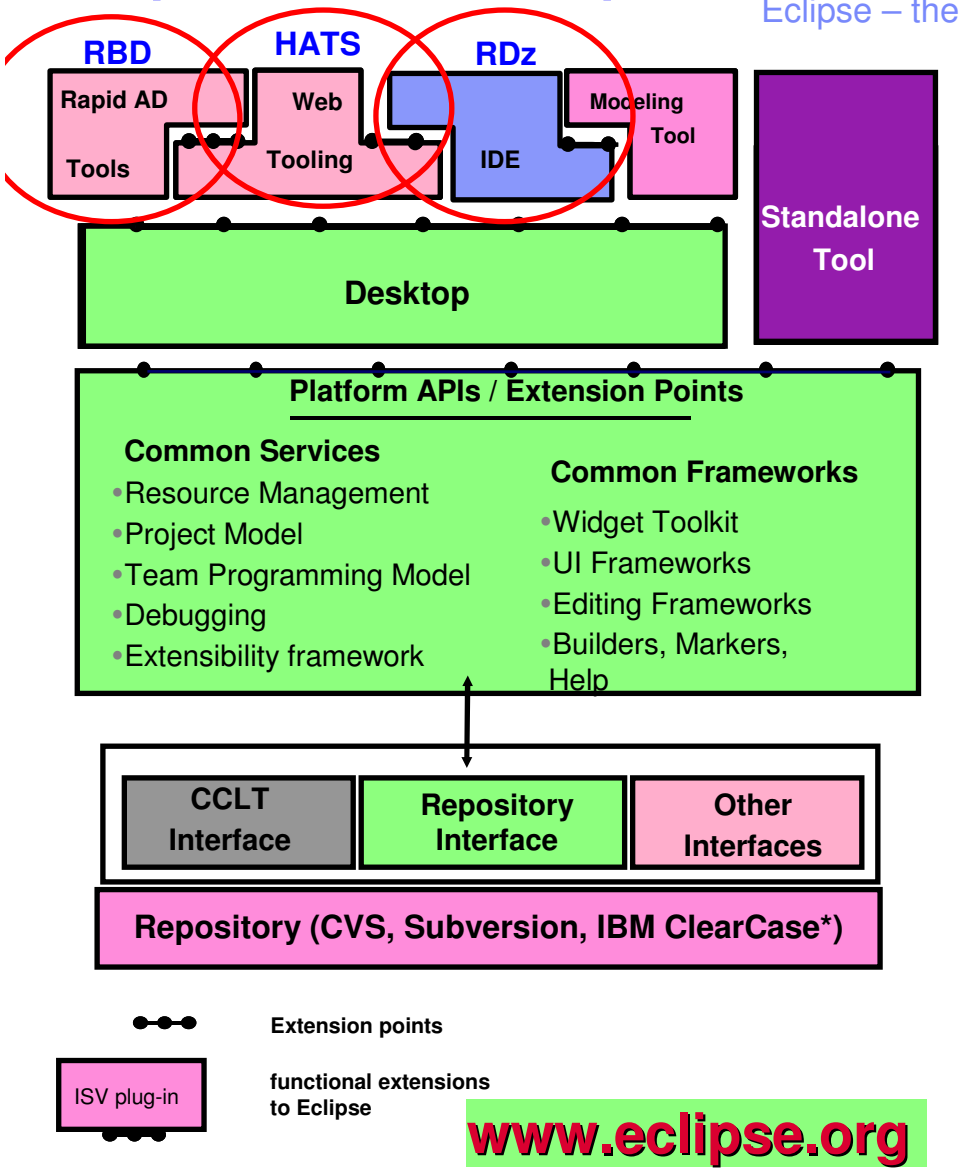
‘Common’ development Environment…



Eclipse helps !

Eclipse based Development Environments for z/VSE

Eclipse – the open Standard for application development



What is Eclipse about:

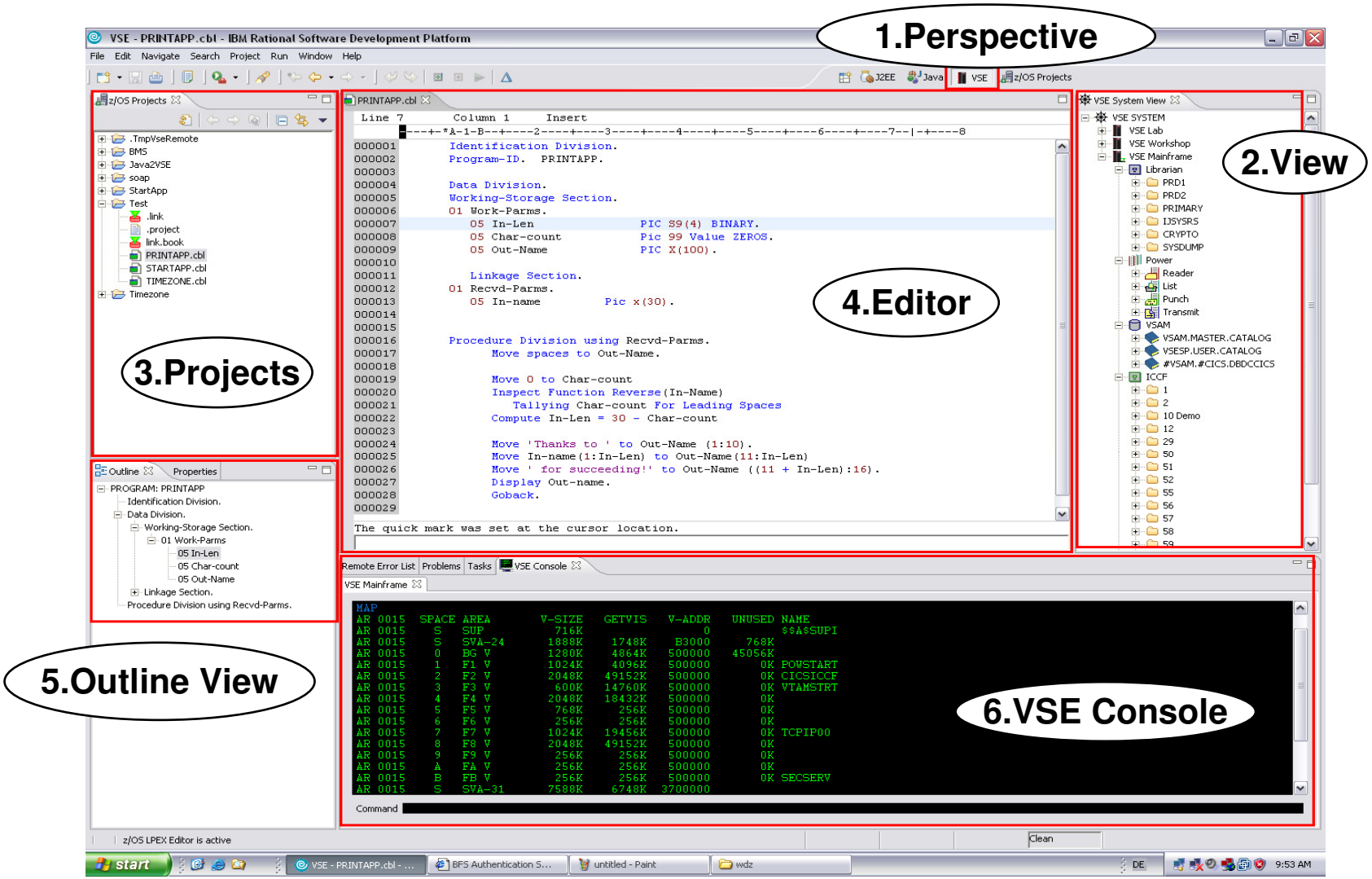
- Open source development framework
  - with modern Editors
  - syntax help & check
  - semantic check
- Centralized source code maintenance
  - entire source code in central Repository
  - cross platform project administration
- Versioning software interface
  - CVS, Subversion, or IBM ClearCase
  - automatic Workgroup-control
- Open for ISVs development Plug-Ins

1) Integrated Development Environment (IDE)
   - Rational Developer for System z (RDz)
   - for Java, COBOL, PL/I, ASM,C

2) IBM HATS Development Plug-In
   - develop new front-ends to 3270 applications

3) IBM EGL development for z/VSE
- Rational Business Developer (RBD)
- EGL Plug-In for z/VSE
- follow-on to Visual Age GeneratorIBM HATS

IBM Rational Developer for system z - the z/VSE Perspective



Summary

The demands placed on the data center have never been greater.

IBM System zEnterprise:

1. Enables **mixed workload Business Processes** to be deployed, and centrally managed

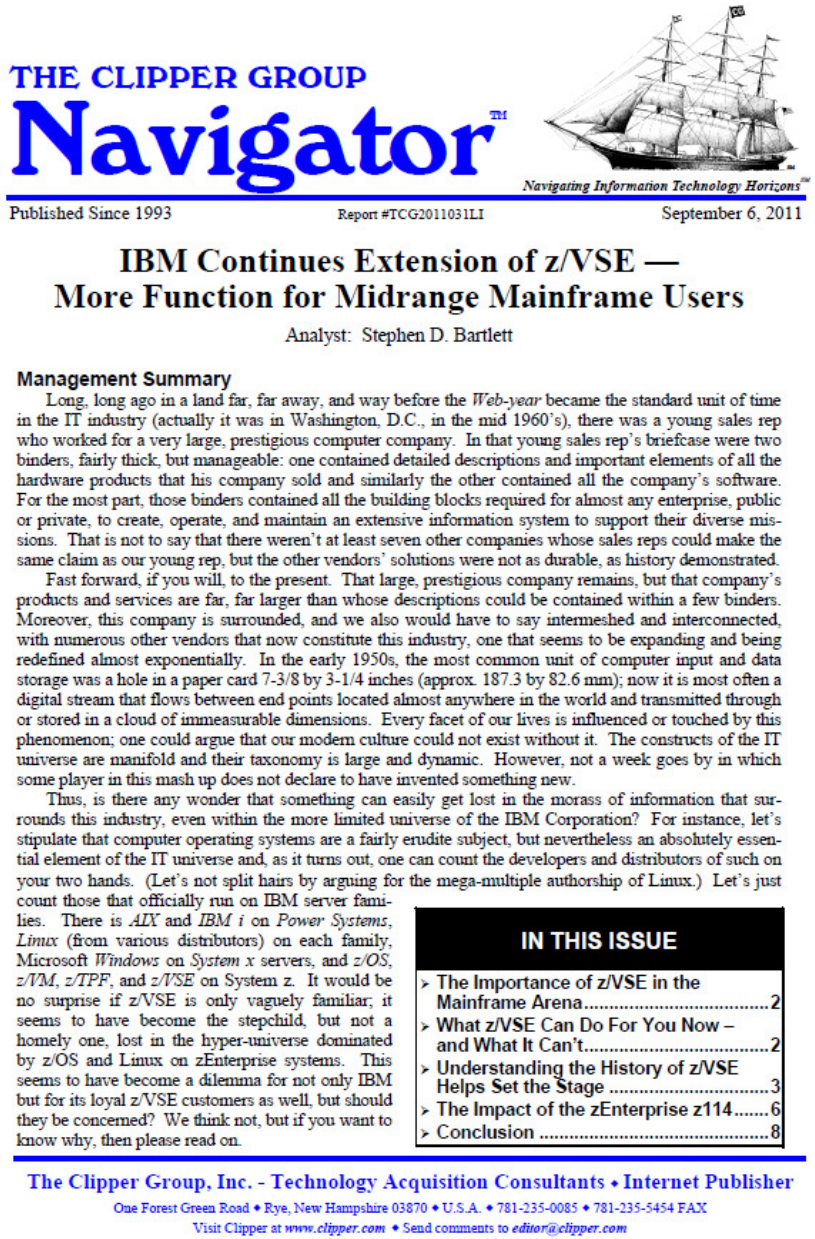
2. Allows z/VSE **optimized integration** of data, applications, and web serving with
3. Delivers **dynamically responsive IT** with **lower acquisition and operating costs**
4. **Meets the need** of **heterogeneous data centers**

A strategic systems platform….
Helping to free up resources for critical projects and establish a base for the future

The Clipper Group
Sept 2011

Get the paper from:
www.clipper.com

or from the z/VSE homepage:
http://www-03.ibm.com/servers/eserver/zseries/zvse/



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Published Since 1993 | Report #TCG2011031LI | September 6, 2011

IBM Continues Extension of z/VSE — More Function for Midrange Mainframe Users

Analyst: Stephen D. Bartlett

Management Summary

Long, long ago in a land far, far away, and way before the *Web-year* became the standard unit of time in the IT industry (actually it was in Washington, D.C., in the mid 1960's), there was a young sales rep who worked for a very large, prestigious computer company. In that young sales rep's briefcase were two binders, fairly thick, but manageable: one contained detailed descriptions and important elements of all the hardware products that his company sold and similarly the other contained all the company's software. For the most part, those binders contained all the building blocks required for almost any enterprise, public or private, to create, operate, and maintain an extensive information system to support their diverse missions. That is not to say that there weren't at least seven other companies whose sales reps could make the same claim as our young rep, but the other vendors' solutions were not as durable, as history demonstrated.

Fast forward, if you will, to the present. That large, prestigious company remains, but that company's products and services are far, far larger than whose descriptions could be contained within a few binders. Moreover, this company is surrounded, and we also would have to say intermeshed and interconnected, with numerous other vendors that now constitute this industry, one that seems to be expanding and being redefined almost exponentially. In the early 1950s, the most common unit of computer input and data storage was a hole in a paper card 7-3/8 by 3-1/4 inches (approx. 187.3 by 82.6 mm); now it is most often a digital stream that flows between end points located almost anywhere in the world and transmitted through or stored in a cloud of immeasurable dimensions. Every facet of our lives is influenced or touched by this phenomenon; one could argue that our modern culture could not exist without it. The constructs of the IT universe are manifold and their taxonomy is large and dynamic. However, not a week goes by in which some player in this mash up does not declare to have invented something new.

Thus, is there any wonder that something can easily get lost in the morass of information that surrounds this industry, even within the more limited universe of the IBM Corporation? For instance, let's stipulate that computer operating systems are a fairly erudite subject, but nevertheless an absolutely essential element of the IT universe and, as it turns out, one can count the developers and distributors of such on your two hands. (Let's not split hairs by arguing for the mega-multiple authorship of Linux.) Let's just count those that officially run on IBM server families. There is *AIX* and *IBM i* on *Power Systems*, *Linux* (from various distributors) on each family, Microsoft *Windows* on *System x* servers, and *z/OS*, *z/VM*, *z/TPF*, and *z/VSE* on System z. It would be no surprise if z/VSE is only vaguely familiar; it seems to have become the stepchild, but not a homely one, lost in the hyper-universe dominated by z/OS and Linux on zEnterprise systems. This seems to have become a dilemma for not only IBM but for its loyal z/VSE customers as well, but should they be concerned? We think not, but if you want to know why, then please read on.

IN THIS ISSUE

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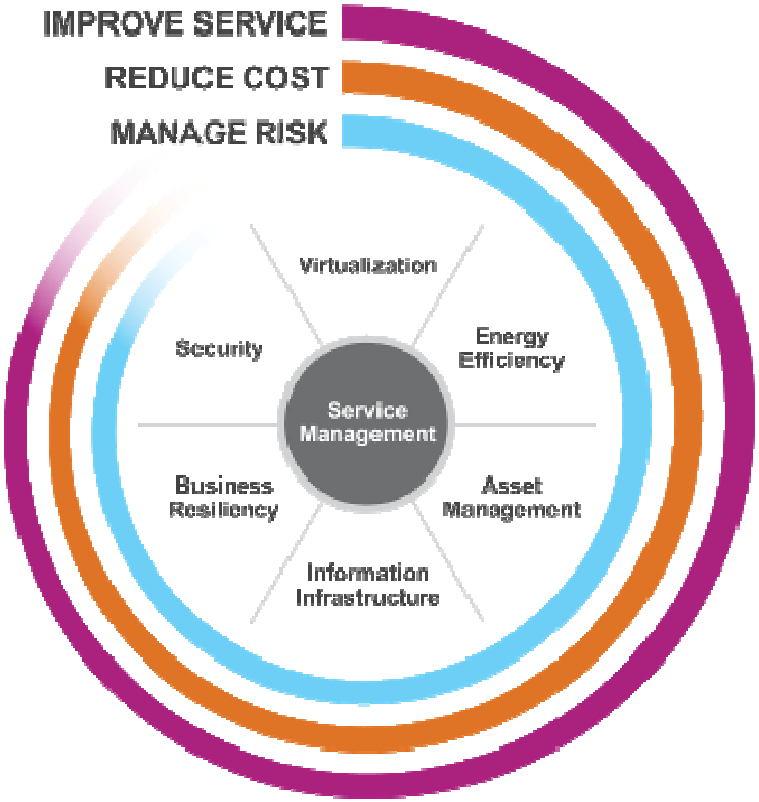
The Future runs on System z, the largest scalable server



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

Thank You

For more information, please see the z/VSE web site:

http://www.ibm.com/zvse/