Exploit new z/VSE solutions with zBC12 in a virtualized environment

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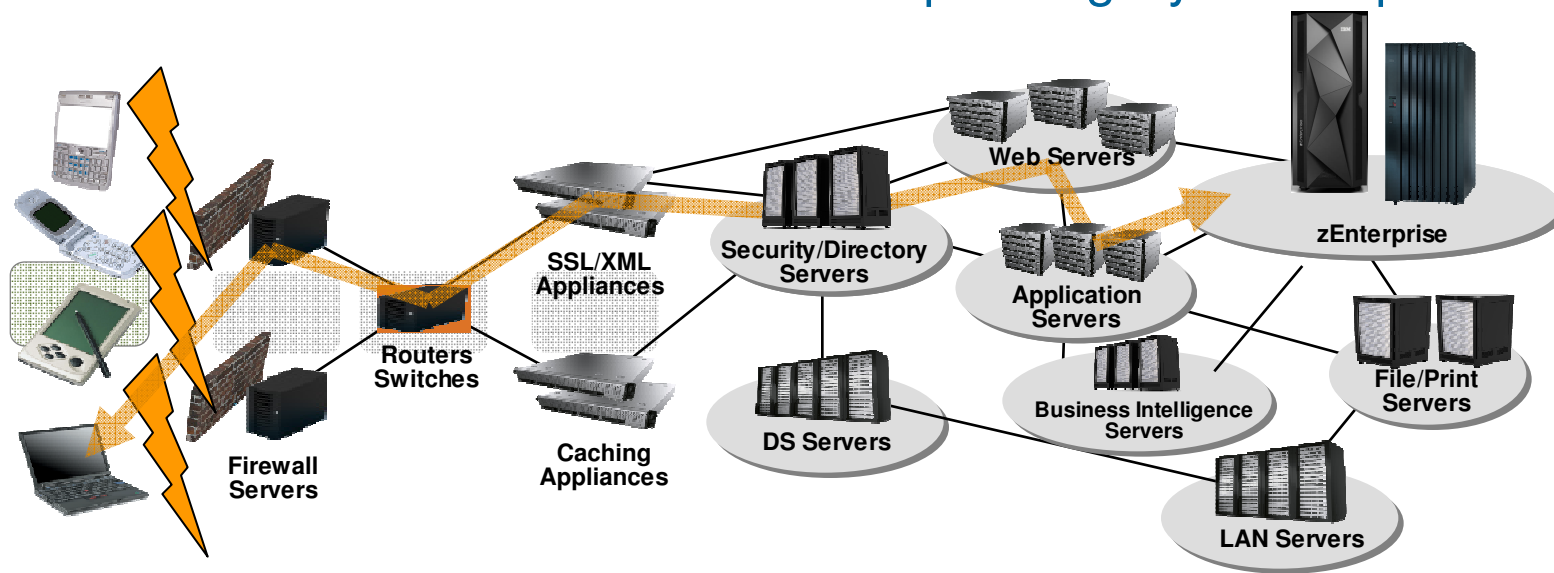
Agenda

- **zEnterprise and z/VSE 5.1**

- **z/VSE Modernization Options**

- **Wrap-up**

Motivation for change / optimization
- Server Sprawl Limitations
- Platform diversification
- Architecture diversification
- Operating Systems sprawl

- **How many x86/Unix servers are deployed every month?**
- **How much data center space is available, or will it become a problem?**
- **How big is the energy consumption growing?**
- **How many additional people are required to maintain the constantly growing number of servers?**
- **How will the software license cost grow, including the virtualization software?**
- **How can IT availability ensured, what happens in the case of a disaster?**

Do you have to re-think your IT server strategy?

zBC12: Extending the capabilities of the modern mainframe

zBC12

Machine Type: 2828
2 Models: H06 and H13

Twice the capacity at the same entry IBM hardware cost as the zEnterprise 114

36% boost in per core processor performance

58% more total system capacity

Up to **6** CPs

Up to **13** IFLs

62% more total Linux capacity
with **27%** price performance improvement

2x available memory

156 available capacity settings

Fully Upgradeable from the z10 BC and z114; and to the zEC12 H20

- **New technology with unprecedented performance**
  - New 4.2 GHz core with improved cache designs and new hardware function designed to boost software performance
  - Increased core counts and memory and SSI scale for additional flexibility, growth and economies of scale consolidation
  - Increased granularity for right-sizing system to business needs
  - Built to support future data center design, modernization and energy efficiencies requirements

- **Improved Platform Economics**
  - Modular two drawer design for low cost of entry
  - Improved price performance across the stack
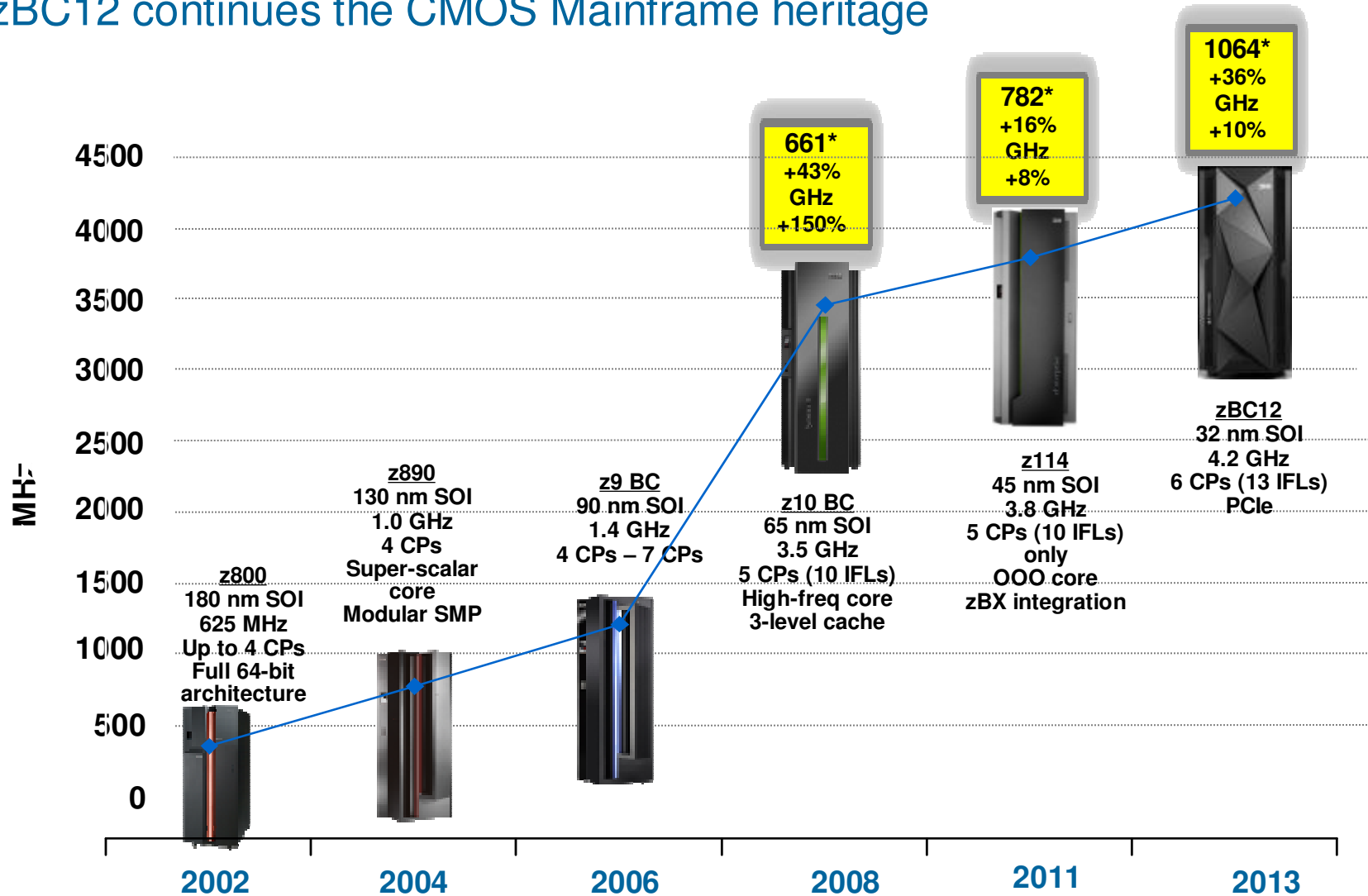 - Second generation upgradeability for investment protection

- **z/VM V6.3**
  - New scale opportunities with z/VM support for 1TB of real memory
  - HiperDispatch – more efficient utilization of CPU resources

zBC12 continues the CMOS Mainframe heritage

1064*
+36%
GHz
+10%

782*
+16%
GHz
+8%

661*
+43%
GHz
+150%

MHz

4500

4000

3500

3000

2500

2000

1500

1000

500

0

zBC12
32 nm SOI
4.2 GHz
6 CPs (13 IFLs)
PCIe

z114
45 nm SOI
3.8 GHz
5 CPs (10 IFLs)
only
OOO core
zBX integration

z890
130 nm SOI
1.0 GHz
4 CPs
Super-scalar
core
Modular SMP

z9 BC
90 nm SOI
1.4 GHz
4 CPs – 7 CPs

z10 BC
65 nm SOI
3.5 GHz
5 CPs (10 IFLs)
High-freq core
3-level cache

z800
180 nm SOI
625 MHz
Up to 4 CPs
Full 64-bit
architecture

2002   **2004**   **2006**   **2008**   **2011**   **2013**

z/VSE supports zEnterprise zEC12 and zBC12 from start !

- Availability date of zEC12 September 19, 2012
- Availability date of zBC12 September 20, 2013
- **z/VSE supports the zEC12 & zBC12 with z/VSE 4.3 and later**
  - No PTFs are requried to run z/VSE on zEC12.
  - As always, there will be PTFs for IOCP, EREP, HLASM.
- **zEC12 & zBC12 offers the new Crypto Express4s card.**
  - A z/VSE PTF toleration PTF is required to use the configurable Crypto Express4s.
  - This PTF will be offered for z/VSE 5.1 only, that is Crypto Express4s can't be used with z/VSE V4.
  - z/VSE 5.1 (with PTF) supports the Crypto Express4s in (CCA) coprocessor and accelerator mode.
    - PKCS #11 (EP11) coprocessor is not supported

- **z/VSE supports zEC12 & zBC12 with new OSA Express4s 1000BASE-T card**
  - No z/VSE PTF is required.
  - OSA/SF support is already included in existing PTFs.
  - z/VSE supports the OSA Express4s 1000BASE-T with existing z/VSE functionality.
- Information available on the z/VSE home page http://www.ibm.com/zvse

z/VSE Support for IBM Mainframe Servers

IBM Servers	z/VSE V5.1.2	z/VSE V4.3	z/VSE V4.2 (out of Service since 31.10.2012)	z/VSE V4.1 (out of service)
IBM zEnterprise zEC12 & zBC12 **IBM zEnterprise z196 & z114**	✔	✔	✔	✔
IBM System z10 EC & z10 BC	✔	✔	✔	✔
IBM System z9 EC & z9 BC	✔	✔	✔	✔
IBM eServer zSeries 990 & 890	✘	✔	✔	✔
IBM eServer zSeries 900 & 800	✘	✔	✔	✔

On June 14, 2011, IBM announced withdrawal of service for Multiprise 3000 (7030-H30, -H50, -H70), to become effective December 31, 2012.

Please note:

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

Leveraging the successful z/VSE strategy

Protect existing investments

Legacy applications and data on z/VSE

Key Capabilities

- 64-bit virtual addressing to reduce memory constraints through exploitation of data in memory
- Exploitation of selected zEnterprise functions and features as well as IBM System Storage options
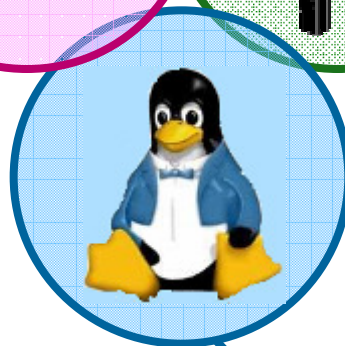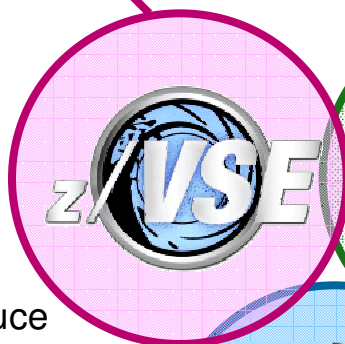
Integrate with other Systems

Connect to, and run backend System z applications

Build mobile apps

Key Capabilities

- z/VSE Connectors to Java capable clients, SOAP (Web Service), DRDA
- New connector for transparent connections to relational databases outside z/VSE
- Linux Fast Path reduces CPU overhead of TCP/IP stack

Extend for new workloads

Use the combination of Linux on System z and z/VSE

Key Capabilities

- Leverage Linux on System z for
  - ✓ Information on demand
  - ✓ z/VSE – Linux Cloud
  - ✓ Infrastructure simplification
  - ✓ Enablement for Mobile computing

Orange=new

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z/VSE Strategy - Successful in place since Year 2000

alias

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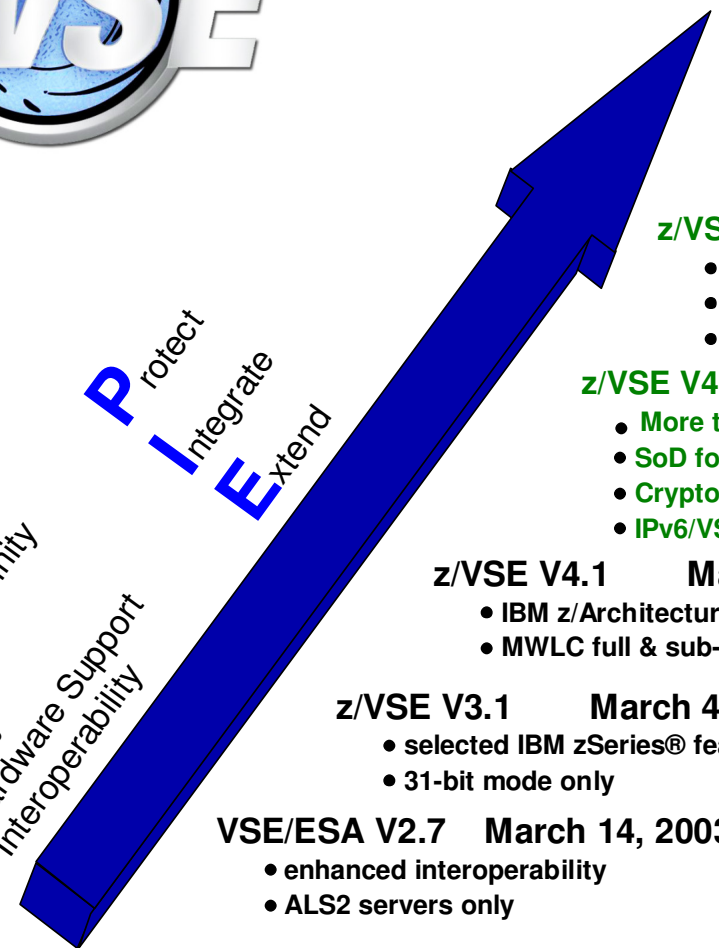- Linux Surround Strategy
- **PIE Strategy**

IBM System z
Enterprise Server

System i
System p
System x
System z
BladeCenter

Connectors

CICS Transaction Gateway ECI
DB2 Connect
WebSphere MQ Series
VSE e-business connectors
VSE Web Services

Web

Linux on System z

Tran/Data Services

Business Services

Clients
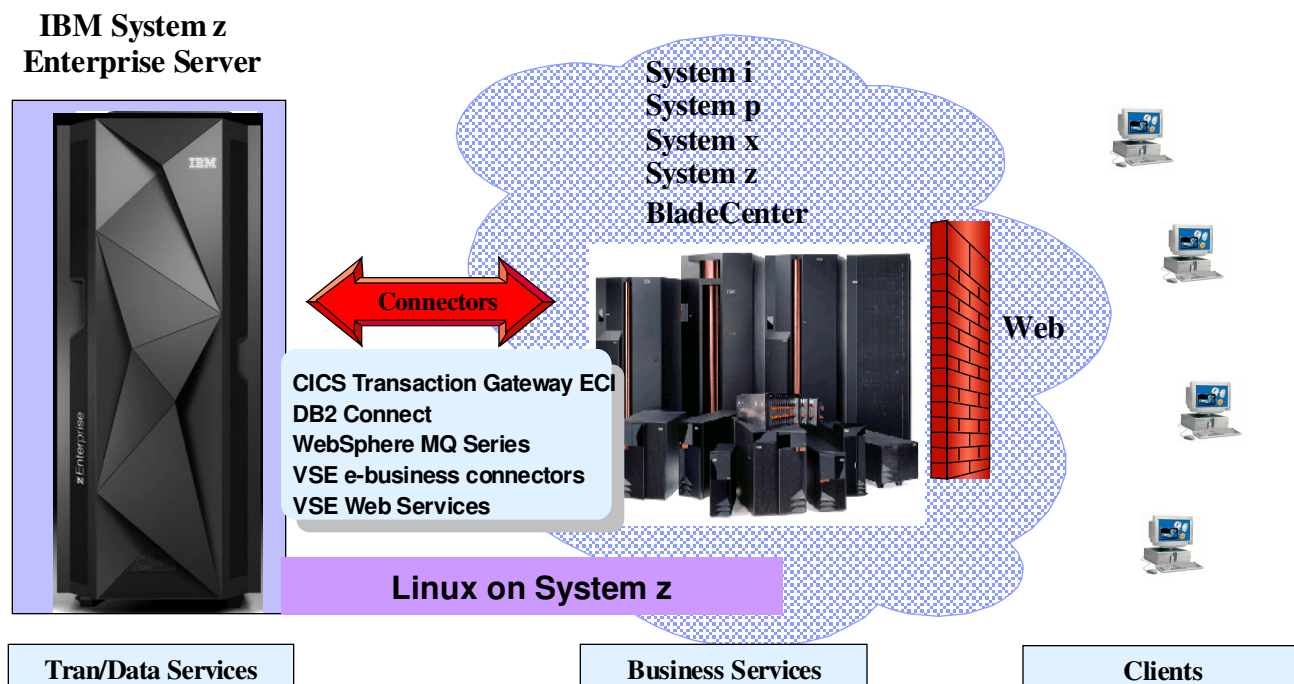
Protect existing VSE investments

Integrate using middleware and VSE connectors

Extend with another platform to access new applications & solutions

z/VSE Evolution

NEW

z/VSE V5.1.2   **June 14, 2013**
- zEnterprise exploitation, 64-bit I/O
- Security and DB connector enhancements
- SoD for IPv6/VSE pricing, DVD base install

z/VSE V5.1.1   **June 15, 2012**
- Enhancements (LFP, Connector)
- CICS Explorer

z/VSE V5.1   **Nov 25, 2011**
- zEnterprise exploitation
- ALS to IBM System z9® (and higher)
- 64-bit virtual addressing

z/VSE V4.3   **Nov 26, 2010**
- **Virtual storage (24-bit) constraint relief**
- **4-digit device addresses, IPv6/VSE**
- **Security / Crypto / Networking enhancements**

z/VSE V4.2   **Oct 17, 2008**
- **More tasks, PAV, SVC, SCRT, LDAP Client**
- **SoD for IBM CICS®/VSE, RBD V7, WMQ V3**
- **Crypto Express3 (April 30, 2010)**
- **IPv6/VSE* (May 28, 2010)**

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

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

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

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

IBM z/OS® Affinity
Capacity
Quality
Hardware Support
Interoperability

IPv6/VSE is a registered trademark of Barnard Software, Inc.

z/VSE continues to demonstrate IBM's commitment

**Hardware Support
More Capacity
Quality
z/OS Affinity
Interoperability
Protect Integrate Extend**

z/VSE V5.1.1 - 2Q2012
- CICS Explorer Monitoring
- Universal database connector
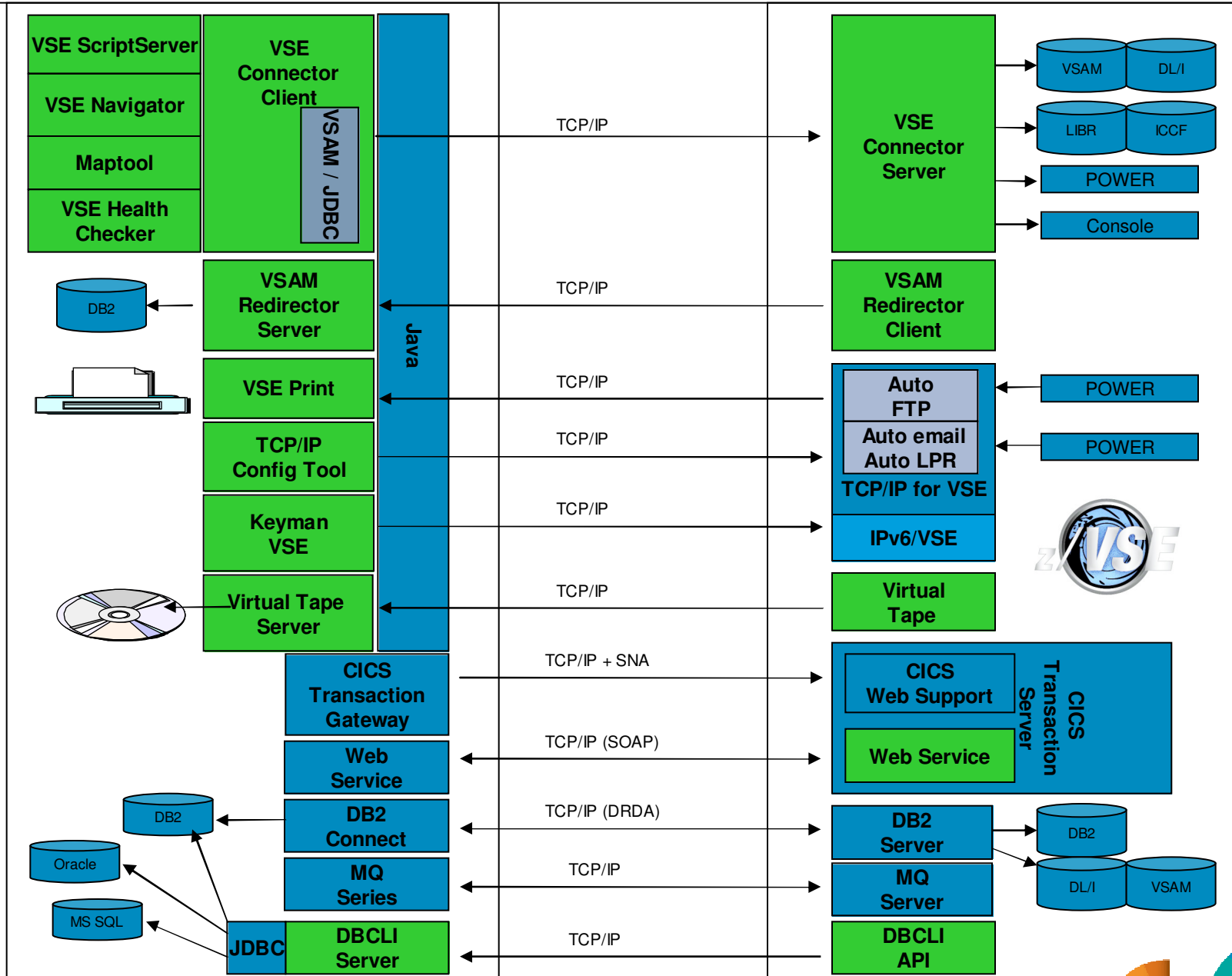- Linux Fast Path in LPAR

z/VSE V5.1 - 4Q2011
- zEnterprise exploitation
- IEDN connection to zBX
- 64-bit virtual memory objects
- ALS to System z9 (+ higher)
- z/VSE z/VM IP Assist (VIA)

z/VSE V5.1.2 - 2Q2013
- 64-bit I/O for applications
- Networking enhancements
- Security enhancements

z/VSE V4.3 - 4Q2010
- z196 toleration / exploitation
- 4-digit device addresses
- 24-bit virtual storage constraint relief
- IPv6/VSE as optional product
- Linux Fast Path with z/VM

+ SoD: CICS Explorer Update, DVD Install, Price Reduction IPv6/VSE

+ SoD: CICS Explorer, LFP in LPAR

+ SoD: 64-bit virtual support

z/VSE 5.1+ and ++ denote enhancements made available via PTF

Integration of z/VSE using IBM Middleware & Connectors

IBM

Component		Connection	Component

VSE ScriptServer

VSE Navigator

Maptool

VSE Health Checker

VSE Connector Client

VSAM / JDBC

Java

TCP/IP → VSE Connector Server

VSAM · DL/I

LIBR · ICCF

POWER

Console

DB2

VSAM Redirector Server

TCP/IP ← VSAM Redirector Client

VSE Print

TCP/IP ← Auto FTP — POWER

Auto email Auto LPR — POWER

TCP/IP for VSE

TCP/IP Config Tool

TCP/IP →

Keyman VSE

TCP/IP → IPv6/VSE

Virtual Tape Server

TCP/IP ← Virtual Tape

CICS Transaction Gateway

TCP/IP + SNA → CICS Web Support

CICS Transaction Server

Web Service

TCP/IP (SOAP) ← Web Service

DB2 Connect

TCP/IP (DRDA) ← DB2 Server — DB2

DB2

Oracle

MS SQL

MQ Series

TCP/IP ← MQ Server — DL/I · VSAM

JDBC

DBCLI Server

TCP/IP ← DBCLI API

IPv6/VSE Secure Socket Layer (SSL) support

- **Secure TCP/IP data transmission**

- z/VSE 5.1 enhancements
  - Large TCP window support, can increase throughput
  - 64 bit virtual exploitation, large TCP window storage allocated above the bar
  - Layer 2 (data link layer) and Layer 3 (IP layer) support
  - VLAN support
  - On extended base tape
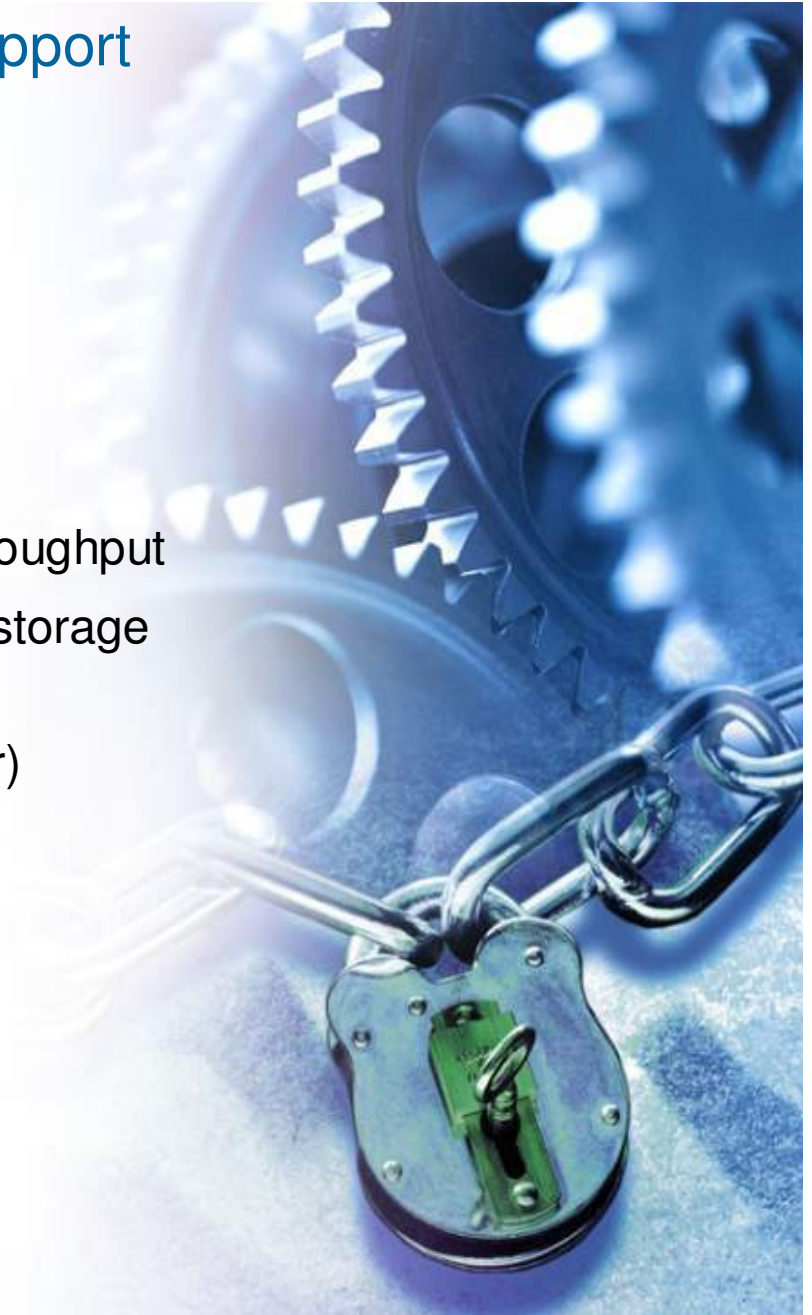
TCP/IP Products

- **IPv6/VSE V1.1** (licensed from Barnard Software, Inc)
  - IPv6/VSE provides:
    - An **IPv6 TCP/IP stack**
    - IPv6 application programming interfaces (APIs)
    - IPv6-enabled applications
  - The IPv6 TCP/IP stack of IPv6/VSE can be run concurrently with an IPv4 TCP/IP stack within one z/VSE system
  - The IPv6/VSE product also includes
    - A **full-function IPv4 TCP/IP stack**
    - IPv4 application programming interfaces
    - IPv4 applications.
  - The IPv4 TCP/IP stack does not require the IPv6 TCP/IP stack to be active.
  - With **z/VSE V5.1** IPv6/VSE became a **base product**. With z/VSE V4.3 it is an optional product
  - Supports Layer 2 and 3 mode (z/VSE V5.1)
  - Supports Virtual LAN (VLAN) (z/VSE V5.1)

- **TCP/IP for VSE/ESA V1.5** (licensed from CSI International)
  - Supports IPv4 only
  - Layer 3 mode only

- **Fast Path to Linux on System z** (part of z/VSE V4.3 or later)

Linux Fast Path in a z/VM-mode LPAR - Supported by z/VSE V4.3 + V5.1
Faster communication between z/VSE and Linux applications under z/VM

Without LFP		With LFP	
Application	Application	Application	Application
↕	↕	↕	LFP Daemon
TCP/IP Stack	TCP/IP Stack		TCP/IP Stack
↕	↕		
z/VSE Supervisor	Kernel	z/VSE Supervisor	Kernel
z/VM	**z/VM**	IUCV	**z/VM**
HiperSockets		**System z10, z196, z114 + follow-on**	

network

network

network

Without LFP

With LFP
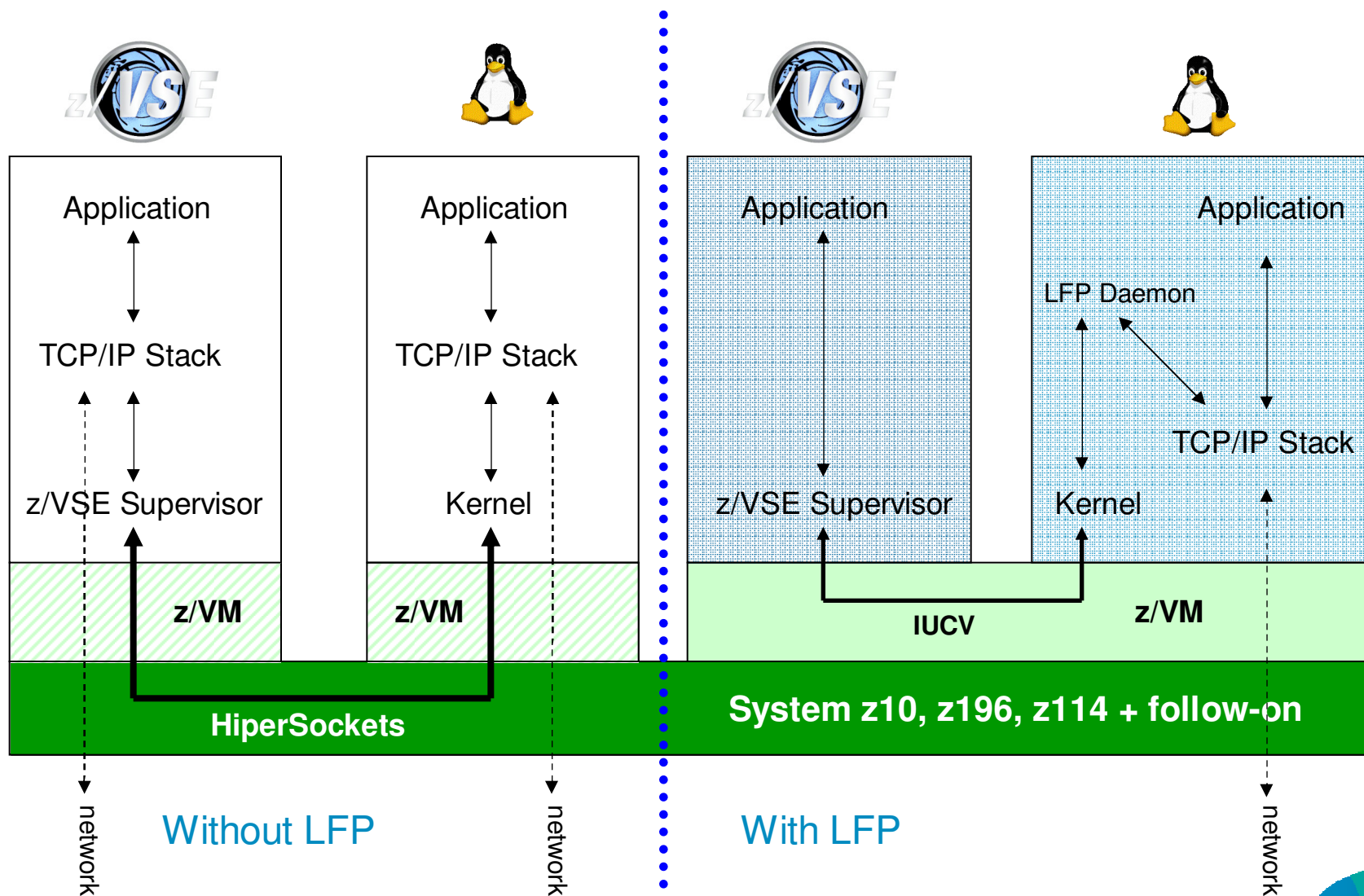
z/VSE z/VM IP Assist (VIA) - Supported by z/VSE V5.1
No Linux on System z is needed to utilize the LFP advantage

Without LFP

- Application
- TCP/IP Stack
- z/VSE Supervisor
- **z/VM**

- Application
- TCP/IP Stack
- Kernel
- **z/VM**

HiperSockets

network

With LFP + VIA

- Application
- z/VSE Supervisor

IUCV   **VIA**   **z/VM**

z196, z114 + follow-on

network
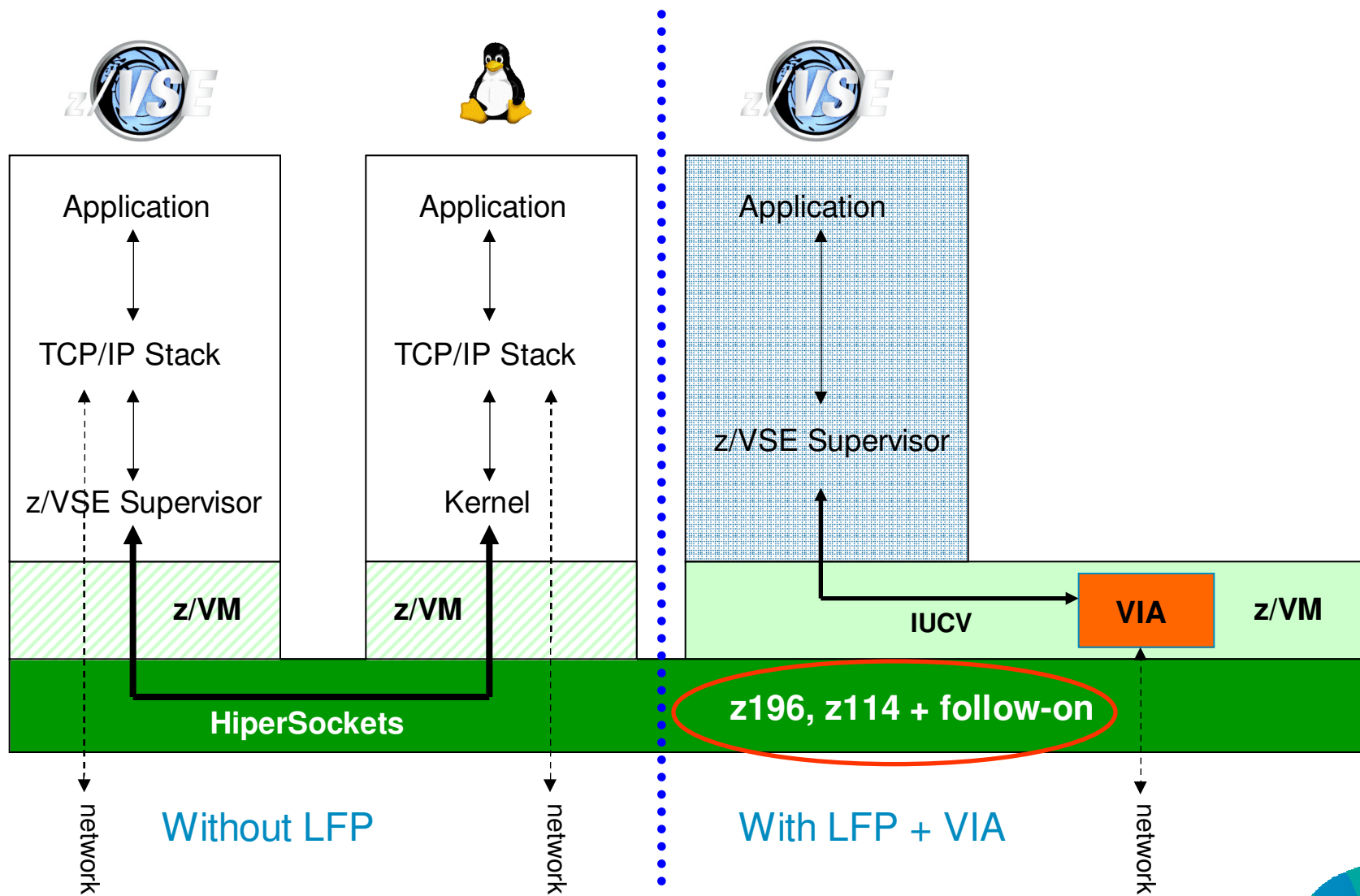
Fast Path to Linux on System z (LFP) in LPAR

- Allows TCP/IP applications to communicate with TCP/IP stack on Linux w/o using a TCP/IP stack on z/VSE

- Provides (for example) fast access to a data base server on Linux

- LFP in a z/VM guest environment available since z/VSE V4.3 – now LPAR support is added with z/VSE V5.1 + PTFs

- LFP in LPAR requires HiperSockets Completion Queue function of zEnterprise

Application

Application

LFP Daemon

TCP/IP Stack

z/VSE Supervisor

Kernel

HiperSockets CQ

z196, z114 & newer

network
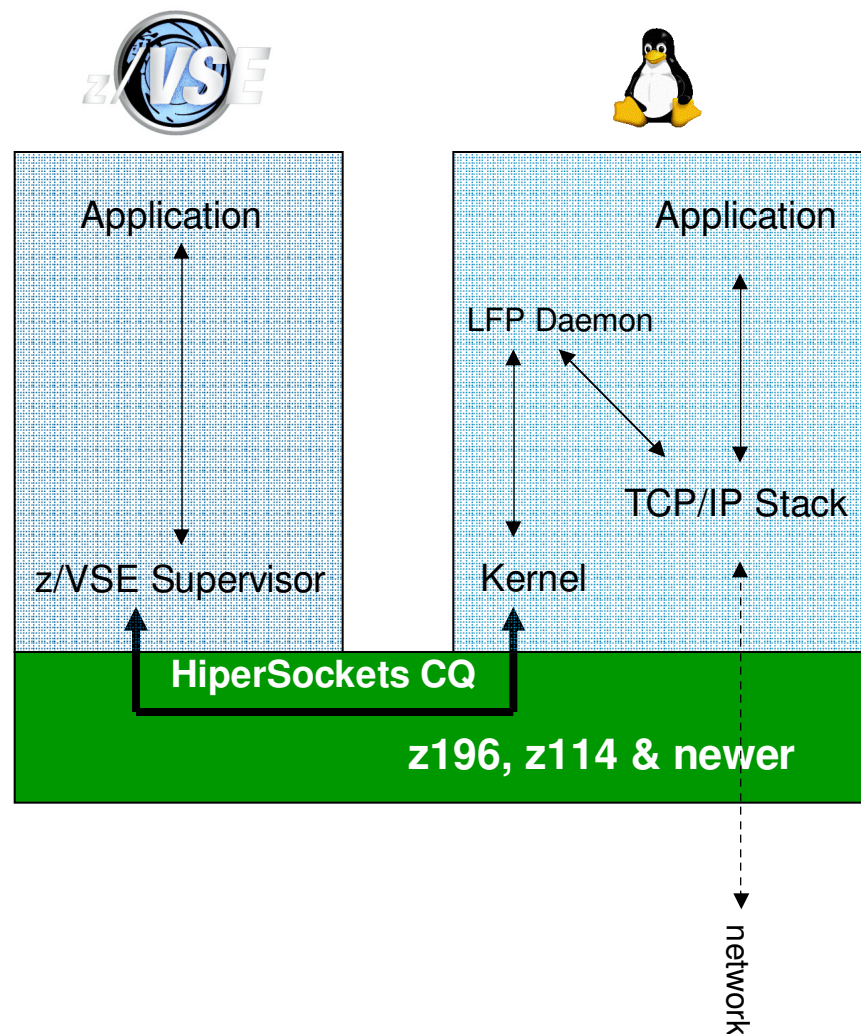
z/VSE V5.1 SAN integration: SAN Volume Controller (SVC)

- SAN Volume Controller (SVC) creates a single pool of SCSI disk capacity

- Disk storage options include IBM DS8000, DS6000, ESS, DS4000, etc. plus qualified systems from various non-IBM vendors

- SVC *platform* includes both hardware and software components:
  - **SVC 'nodes' provide redundant components plus cache**
  - **Systems Storage Productivity Center (SSPC) software provides administrative and copy services**

- z/VSE can be integrated in a SAN with native support for Storwise V7000 and XIV

- Benefits include a simpler, more flexible, less costly disk storage infrastructure

Learn more at: **ibm.com**/storage/support/2145

z/VSE   z/VSE   Linux   CMS   Non-z Distributed

z/VM CP

FBA Emulation   Spooling
                     Paging

SAN with 8 Gbps Fabric

SAN Volume Controller

Multi-vendor SCSI disk systems

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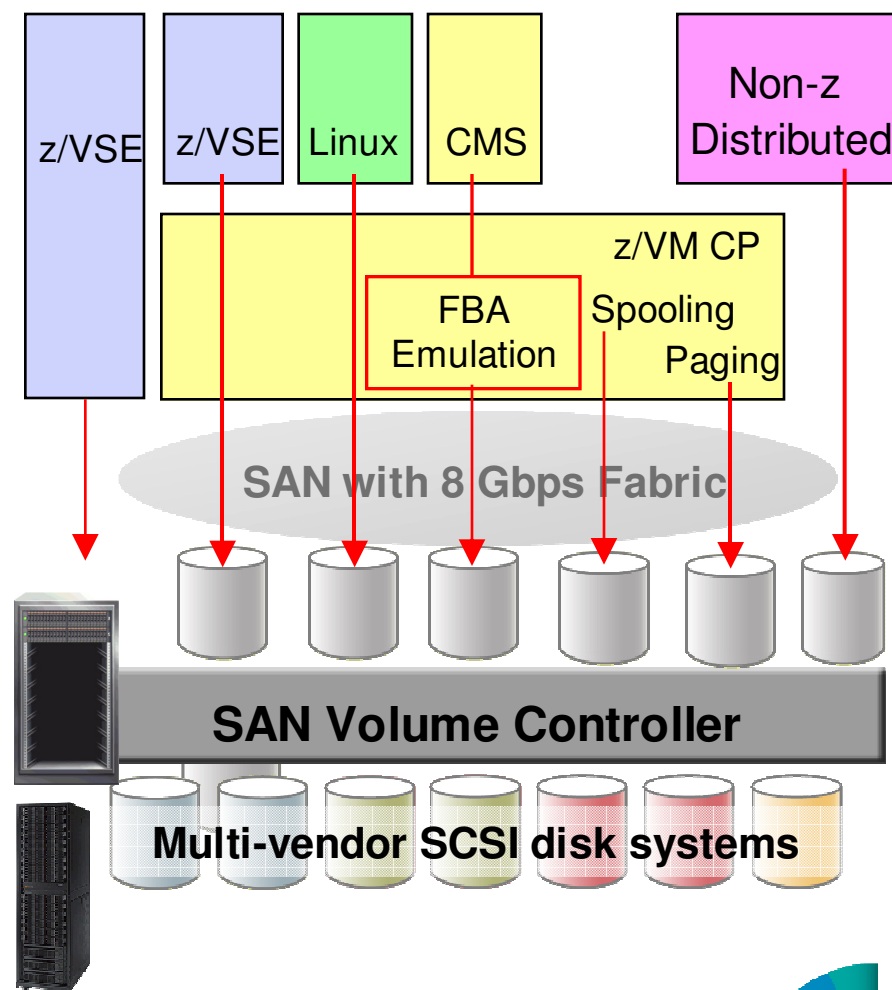
Exploitation of IBM System Storage options

- IBM System Storage **TS7700** Virtualization Engine Release 3.0
  - Copy Export function can be used for disaster recovery purposes
  - Multi-Cluster Grid Support enables disaster recovery or high availability solutions
- **FCP-attached SCSI disks** can be used with:
  - IBM Storwize® V7000 Midrange Disk System
  - IBM XIV® Storage System
  - IBM San Volume Controller
  - IBM FlashSystem™
- IBM System Storage **DS8870**
  - Newest member of the IBM System Storage DS8000 series
  - Supports FICON-attached ECKD and FCP-attached SCSI
- IBM System Storage **TS1140**
  - Tape Drive Model E07 – fourth generation
  - Designed to provide higher levels of performance, reliability and capacity

TS7700

TS3500

TS1140

FlashSystem 720 / 820

Midrange size system with great high-end features

Storwize V7000

XIV

High-end system with grid architecture

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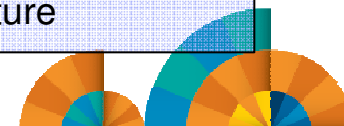
z/VSE Strategic solutions with Linux on System z

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

Infrastructure Simplification

Linux on Sytem z

Tivoli® Identity Mgmt, TSM, Print Serving, DNS, Firewall, etc.

IBM Middleware

Linux on System z

WebSphere Appl Server, Java, CTG, HOD/HATS, WS MQ, etc.

Info on Demand

Linux on System z

DB2 LUW, Information Server, Cognos® 8 BI

DB2

Connection via HiperSockets

z/VSE Production Environment
+ TCP/IP
+ VTAM
+ CICS TS
+ VSAM
+ COBOL
+ DB2 client
+ LDAP client

z/VSE Test/Dev Environment

z/VM-mode LPAR with z/VM V6

IFL Engine(s)	CP Engine(s)

IBM System z10®, IBM zEnterprise z196, z114, EC12, BC12

Agenda

- **zEnterprise and z/VSE 5.1**

- **z/VSE Modernization Options**

- **Wrap-up**

Mixed Workload consolidation on zEnterprise

zBX + Linux on z + zEnterprise

Consolidation

z/VSE

z/VSE

inter partition communication
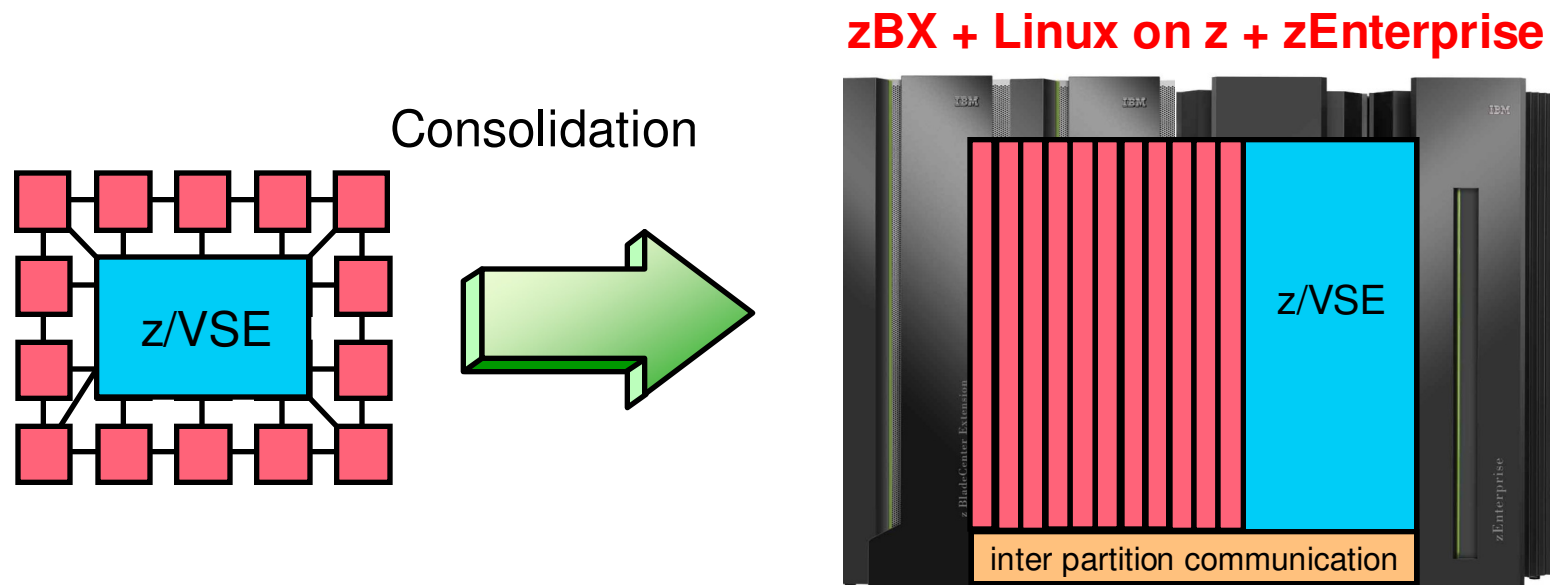
For z/VSE customers, zEnterprise opens
new horizons:

- 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 and z/VM

IBM System z / zEnterprise

z/VM
- z/VSE

Linux

z/VSE

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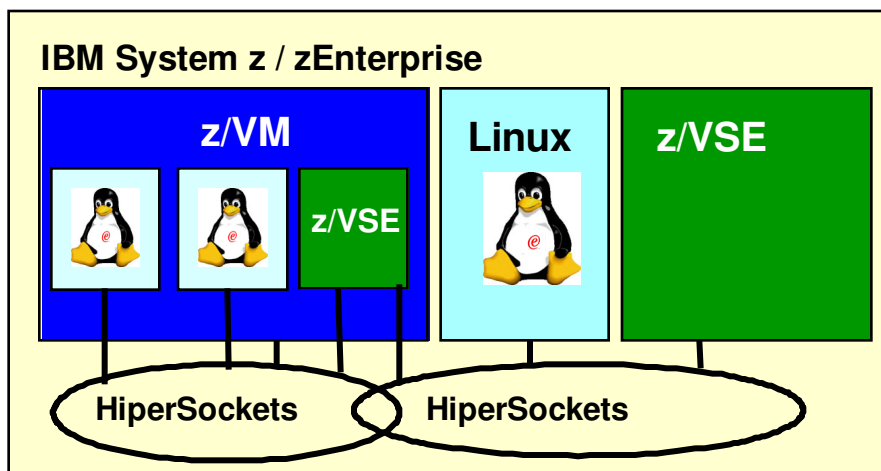
- Network Virtualization
- Memory Virtualization
- Processor Virtualization
- System Virtualization
- Disk Virtualization

Production / Dev /Test and Optional Failover

| z/VSE | z/VSE | z/VM | CMS | Linux | Linux |

z/VM

LPAR

| CP | CP | IFL | IFL | IFL | IFL | IFL |

IBM System z

SAN with 8 Gbps Fabric

SAN Volume Controller

Multi-vendor SCSI disk systems
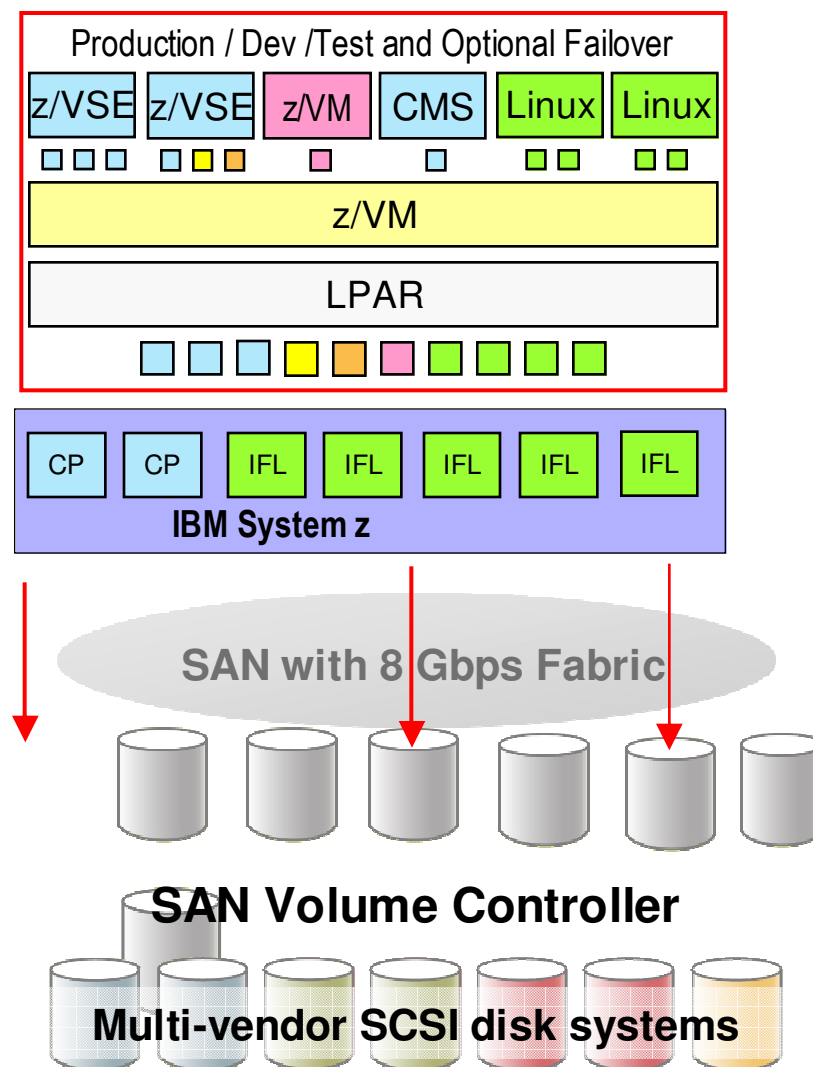
OpenStack and z/VM with cross platform Open source xCAT tool

SmartCloud Technology Products

openstack™
CLOUD SOFTWARE

I know z/VM

xCAT Appliance

SMAPI Services

Directory Product

IBM

zEnterprise
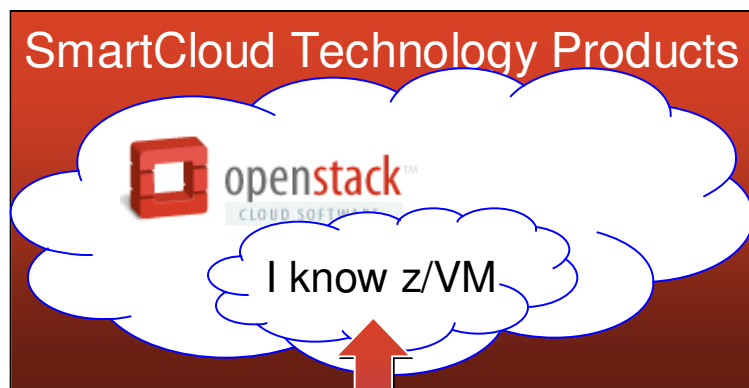
- **OpenStack and z/VM:**
  - OpenStack, a Open Source project to provide Multi-platform Infrastructure as a Service mangement
  - Consists of separate projects to handle different types of resources
  - Portions of OpenStack support know z/VM (i.e. code that connects and understands how to talk to z/VM).

- **Bottom Half of the Solution:**
  - Rest APIs are used to communicate with the OpenStack code from the top half.
  - The xCAT appliance utilizes new and existing Systems Management APIs (SMAPI) to interact with the z/VM system
  - SMAPI can interact with additional products or features (e.g. a directory manager).

Product with OpenStack Support

z/VM 6.3 Product

Additional Product or Feature
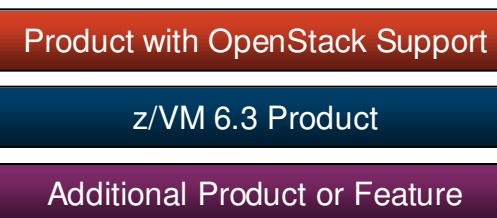
CSL-WAVE - the new IBM tool - *visualizes virtual and physical resources*

CSL-WAVE provides the graphical interface that simplifies and helps to automate the management of z/VM guests and Linux on System z virtual servers.

- Monitors and manages virtual servers and resources **from a single graphical interface**

- Simplifies and Automates **tasks**

- Provisions virtual resources **(Guests, Network, Storage)**

- Supports advanced z/VM capabilities **such as Single System Image and Live Guest Relocation**

- Allows delegation of administrative capabilities **to the appropriate teams**
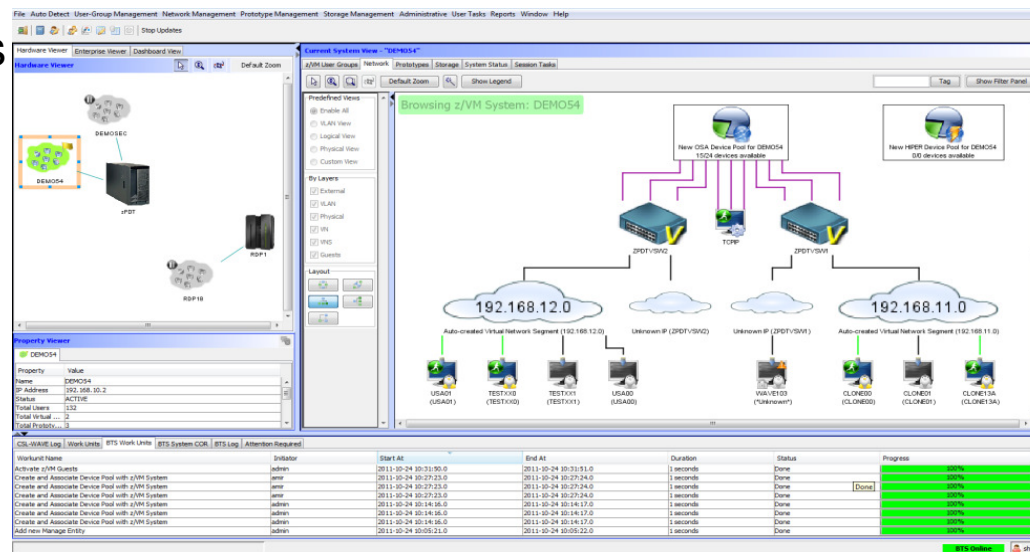
A simple, intuitive graphical tool providing management, provisioning, and automation for a z/VM environment, supporting Linux virtual servers.

Central Authentication Options – LDAP in Linux or LDAP/RACF in z/VM

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

zBX Blades

Linux on System z

z/VSE Environment

SOA
+ CICS
+ TCP/IP
+ COBOL

Connection via HiperSockets

WS Portal

HATS

WAS

Linux DB2 ORACLE

Windows/ DB2 MS SQL

LDAP

LDAP

LDAP CL.

LDAP / RACF   z/VM

LPAR or z/VM

IFL Engine (s)

Standard CP Engine (s)

IBM zEnterprise

z/VSE Security Components

LDAP Client

CICS TS   CICS/VSE   Batch   TCP/IP   Connectors   MQ

DTSECTXN   **Signon Table**   Exit   **DTSECTAB**   **Defined Users**   Exit

Security Manager
(Basic Security Manager or External Security Manager)

Audit Logging & Reporting

LDAP Mapping File   VSE Control File   BSM Control File   DMF Datasets

Linux on System z as Central Access Point

Web enable, improve interface, simplify, extend existing applications

zBX Blades

Linux DB2 ORACLE

Windows/ DB2 MS SQL

Linux on System z

WS Portal

HATS

WAS

Connection via HiperSockets

z/VSE Environment

SOA

+ CICS

+ TCP/IP

+ COBOL

z/VM

IFL Engine (s)

LPAR or z/VM

Standard CP Engine (s)

IBM zEnterprise
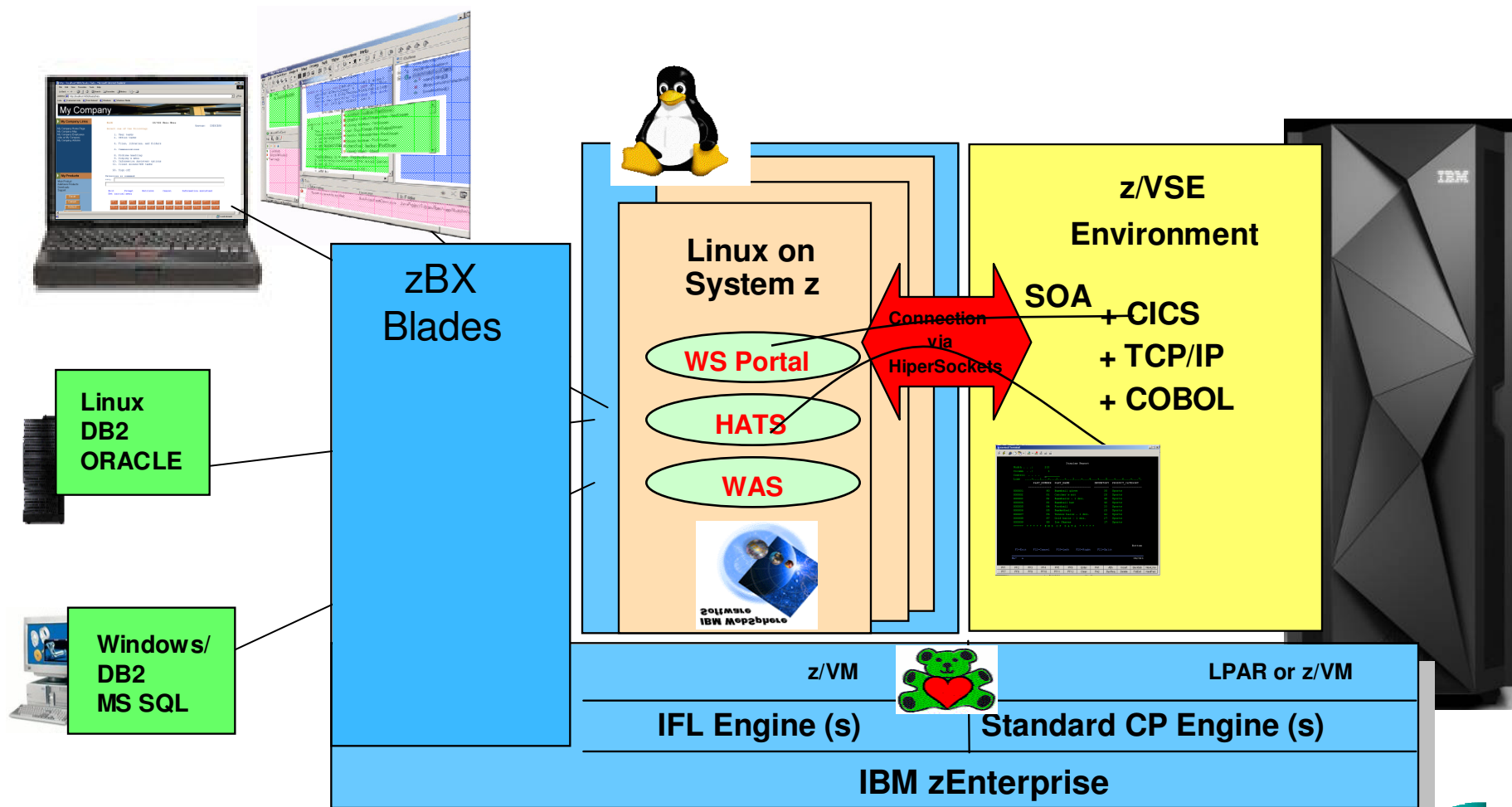
Data Warehouse and BI with Linux on System z

Consolidate, Integrate, Evaluate - DB2 Client, VSAM Redirector

Windows/ Linux DB2 ORACLE

DB2 LUW

Linux on System z

Cognos

Data Warehouse

DB2 LUW

DB2

Connection via HiperSockets

z/VSE Environment

+ TCP/IP

+ CICS

+ VSAM

+ COBOL

VSAM

DB2 VSE/VM

Windows/ Linux DB2 ORACLE

DB2 LUW

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

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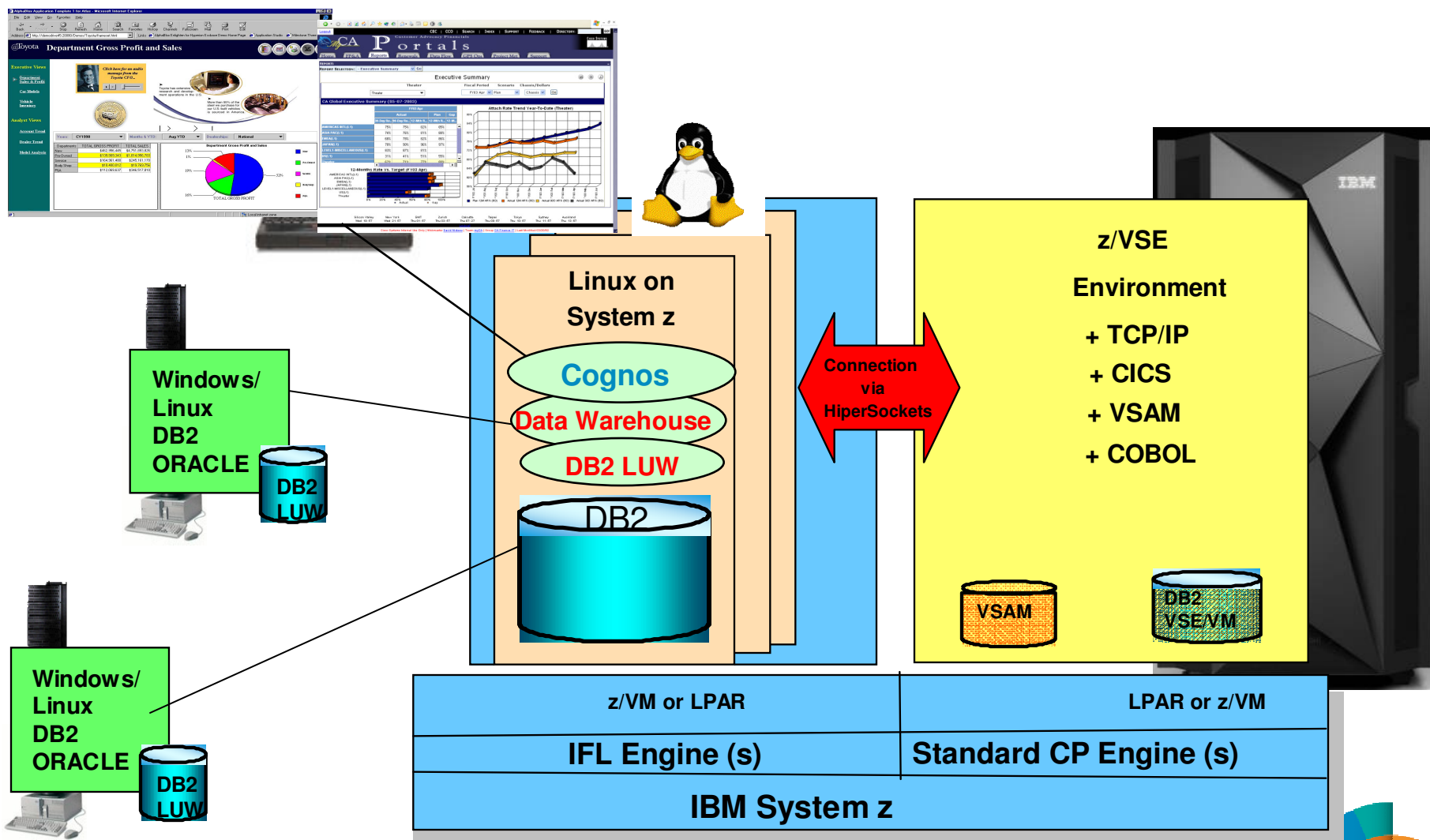
(B)PUSH scenario: VSE/VSAM applications, access remote relational databases

(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 Apply processing

    b) MQ Exit and MQ Series solutions

PUSH- scenario

z/VSE Server

VSAM Redirector Server

Handler

DB2

DB2

VSAM Redirector Client

TCP/IP

LE/VSE

Batch

CICS

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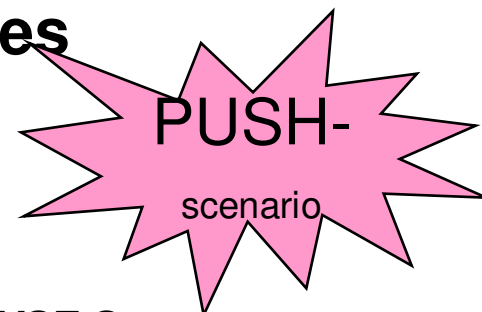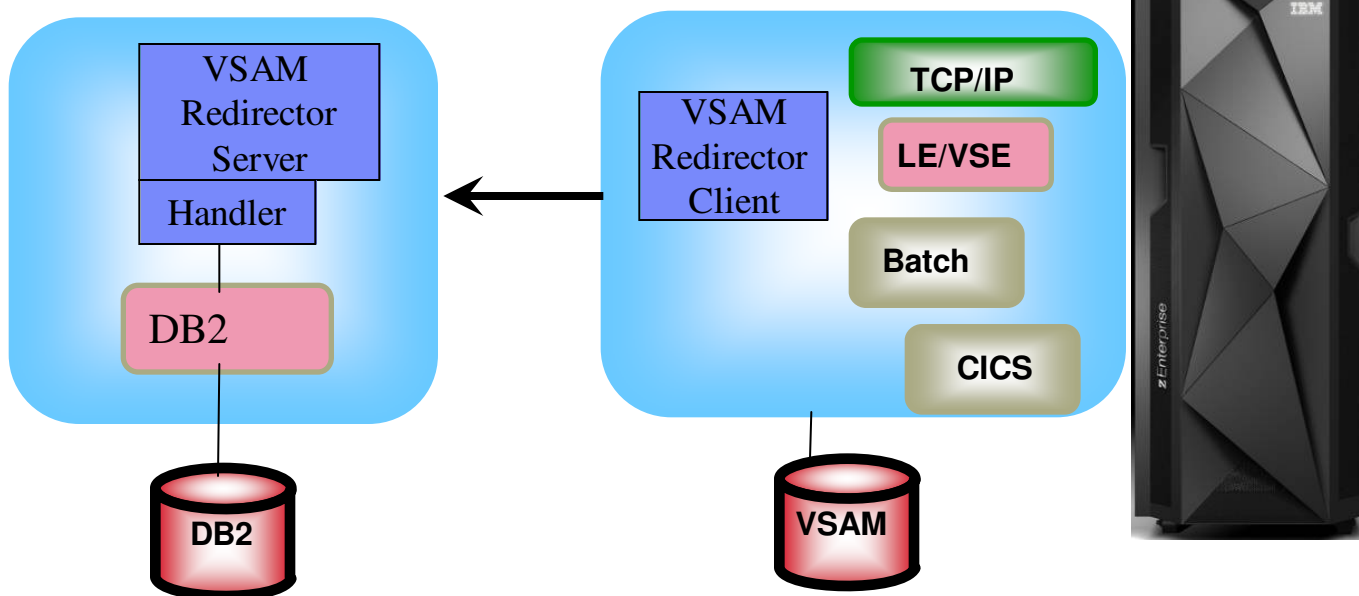
Applications on z/VSE
access 'any' remote relational databases

**New in
z/VSE 5.1+**

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

Java Server

z/VSE Server

DB2 Server

TCP/IP

DBCLI Server

JDBC v3+

TCP/IP

DB2 Client	Batch

DBCLI Client	CICS

DB2
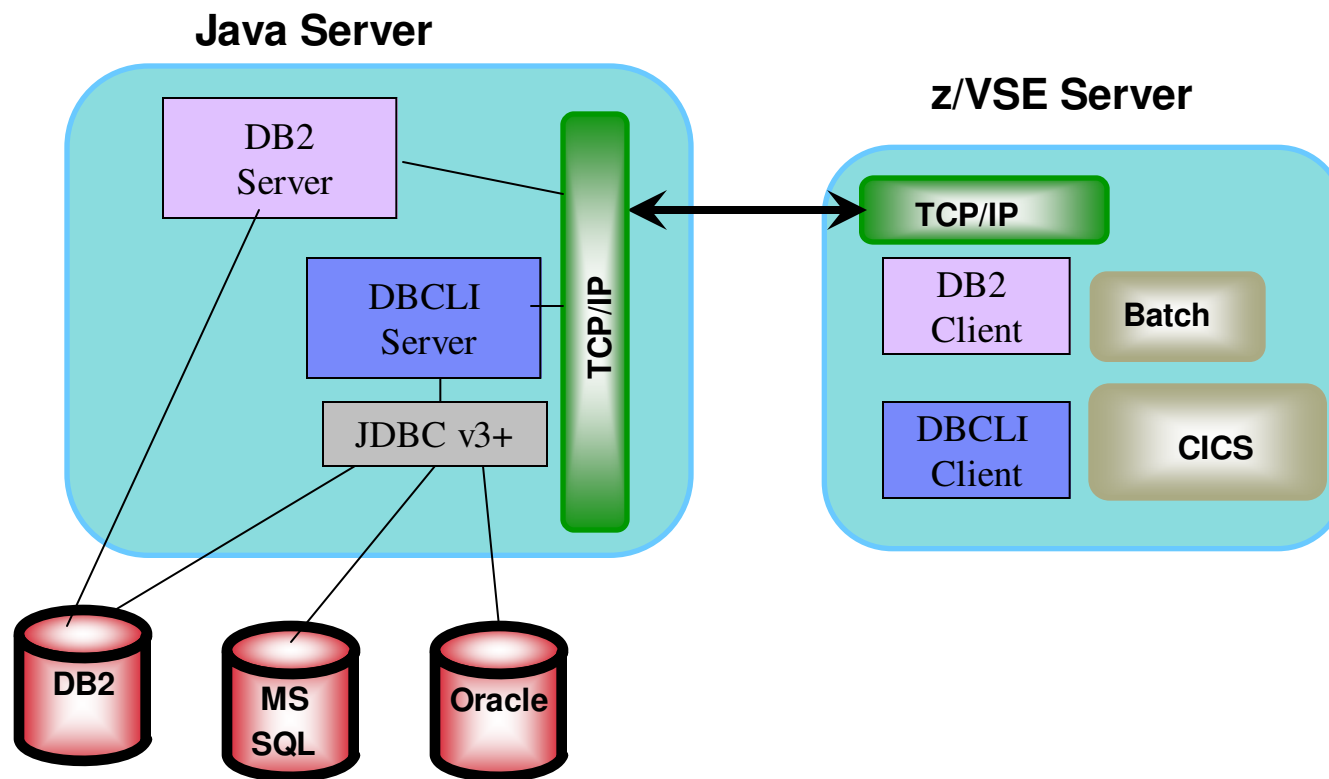
MS SQL

Oracle

z/VSE database connector for applications in z/VSE V5

z/VSE Database Call Level Interface (DBCLI)

- Allows z/VSE applications to access a relational database on any suitable database server
  - IBM DB2, IBM Informix, Oracle, MS SQL Server, MySQL, etc.
    → *The database product must provide a JDBC driver that supports JDBC V3.0 or later*
- Utilize advanced database functions and use SQL statements
- Flexibility to use a database server on a platform other than z/VSE
  - for example zBX environment

z/VSE	**Java capable platform** (e.g. Linux on System z)	**Database Server** (may run on the same system as the DBCliServer)
Batch or CICS application		
DBCLI API		
DBCLI Client	**DBCliServer**	**Database** • IBM DB2, • IBM Informix • Oracle, • MS SQL, • MySQL
TCP/IP or Linux Fast Path	**JDBC V3 Driver**	

TCP/IP (between z/VSE and Java capable platform)

TCP/IP or local (between JDBC V3 Driver and Database)

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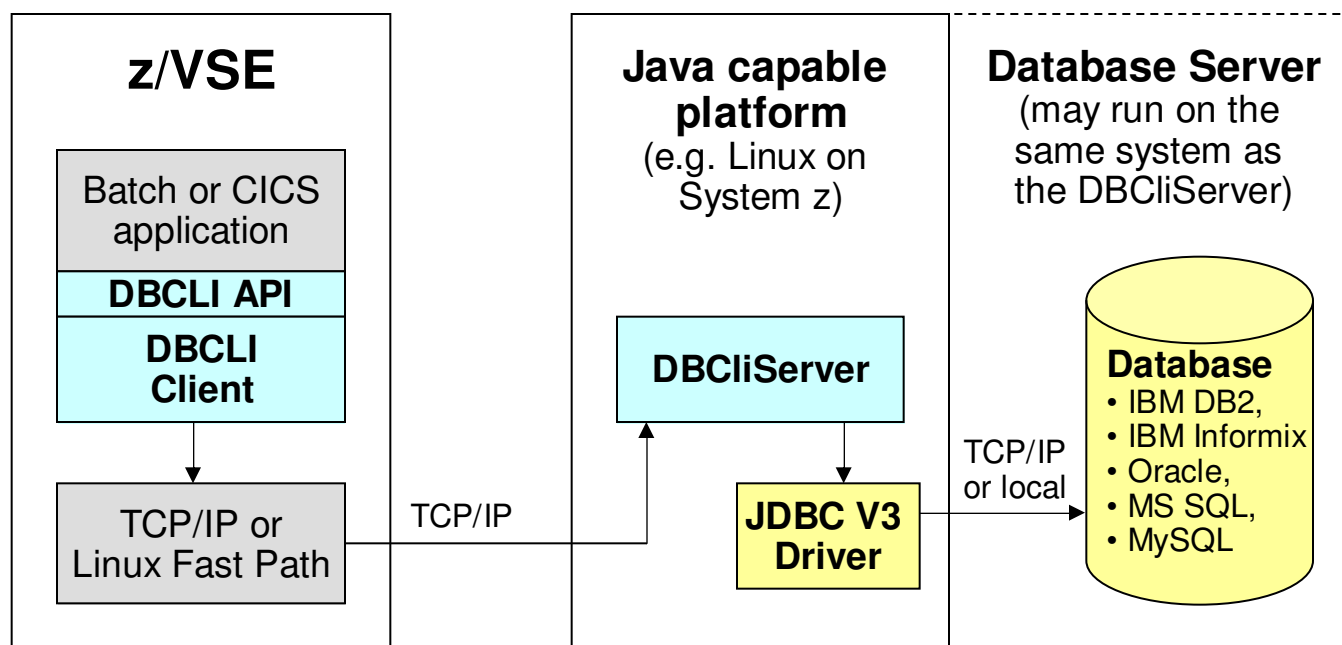
Real time access to VSE resources using the Java–Based Connector (feature included in z/VSE)

z/VSE

Linux on System z
zBX –Intel Linux

web client

Web Application Server

VSEScript

TCP/IP

Java Program

TCP/IP

Connector Server

LIBR

Power

ICCF

Console
DL/I

VSAM
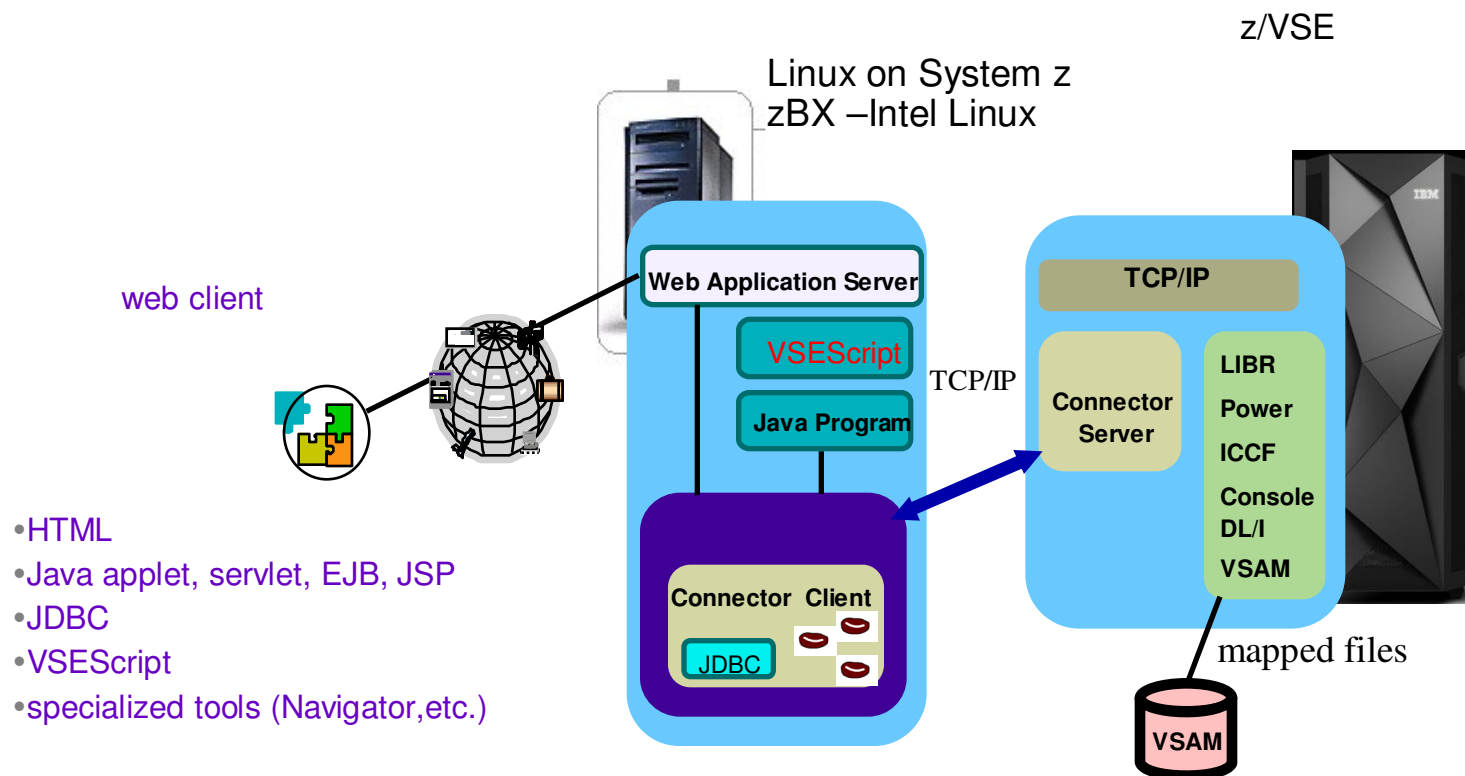
•HTML
•Java applet, servlet, EJB, JSP
•JDBC
•VSEScript
•specialized tools (Navigator,etc.)

Connector Client

JDBC

mapped files

VSAM

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

z/VSE Navigator: Windows-like VSE Interface

z/VSE Navigator: Windows-like VSE Interface

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Integration with traditional CICS transactions

Browser

CICS/TS

User Appl

ISC

Linux on System z

CICS/TS

Hipersockets

Websphere Application server

CWS

HATS / HOD

CTG – ECI

MQ Series client/server

SOAP client/server

User Appl

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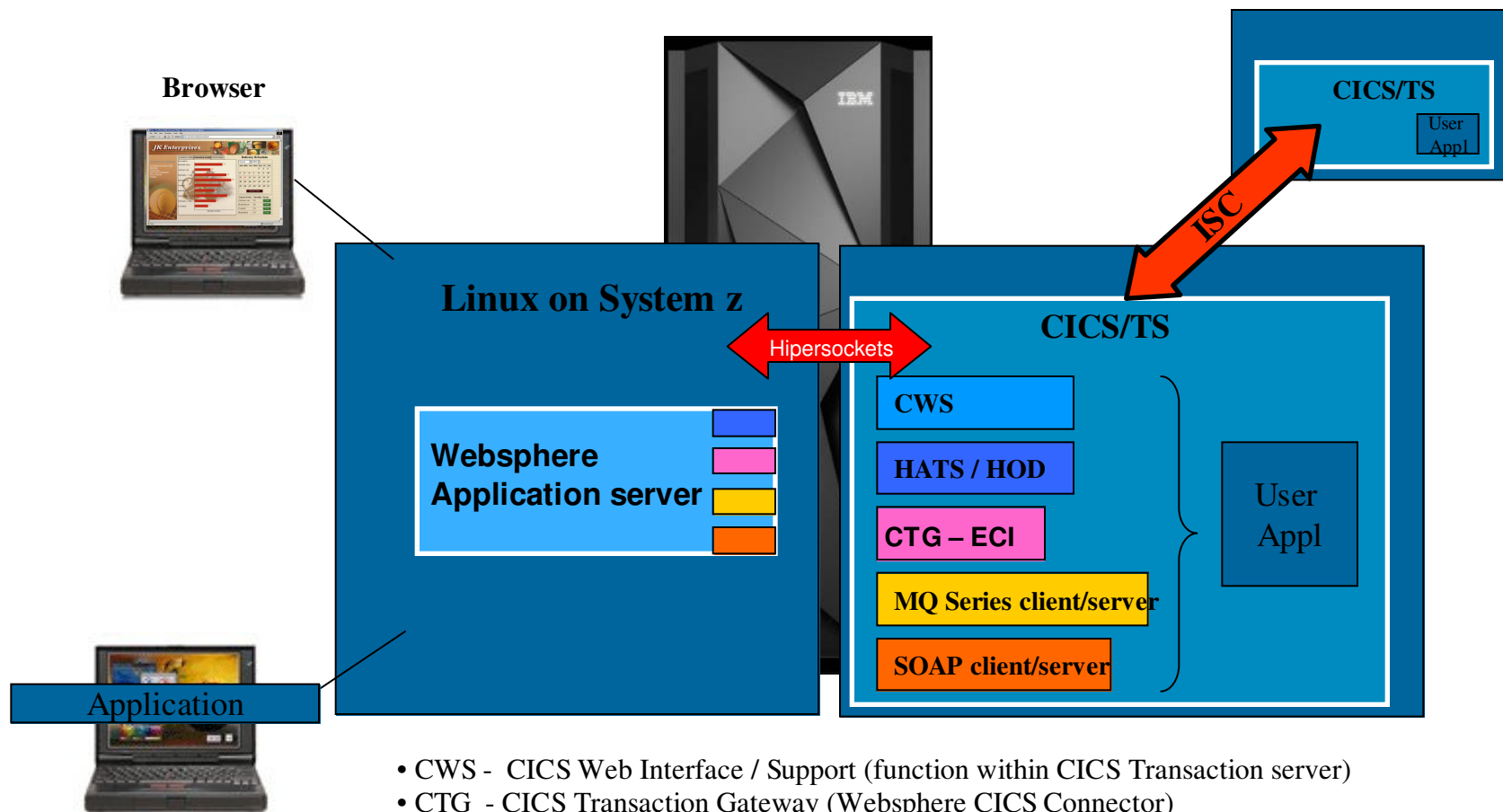
- CWS - CICS Web Interface / Support (function within CICS Transaction server)
- CTG - CICS Transaction Gateway (Websphere CICS Connector)
- HATS – Host Access Transformation Server
- HOD - Host OnDemand (Websphere Host Integrator)
- SOAP - Simple Object Access Protocol (Web Services based with XML data)

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."

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New in WMQ for z/VSE V3R0

Graphical administration of WebSphere MQ for z/VSE Queues with WMQ Explorer
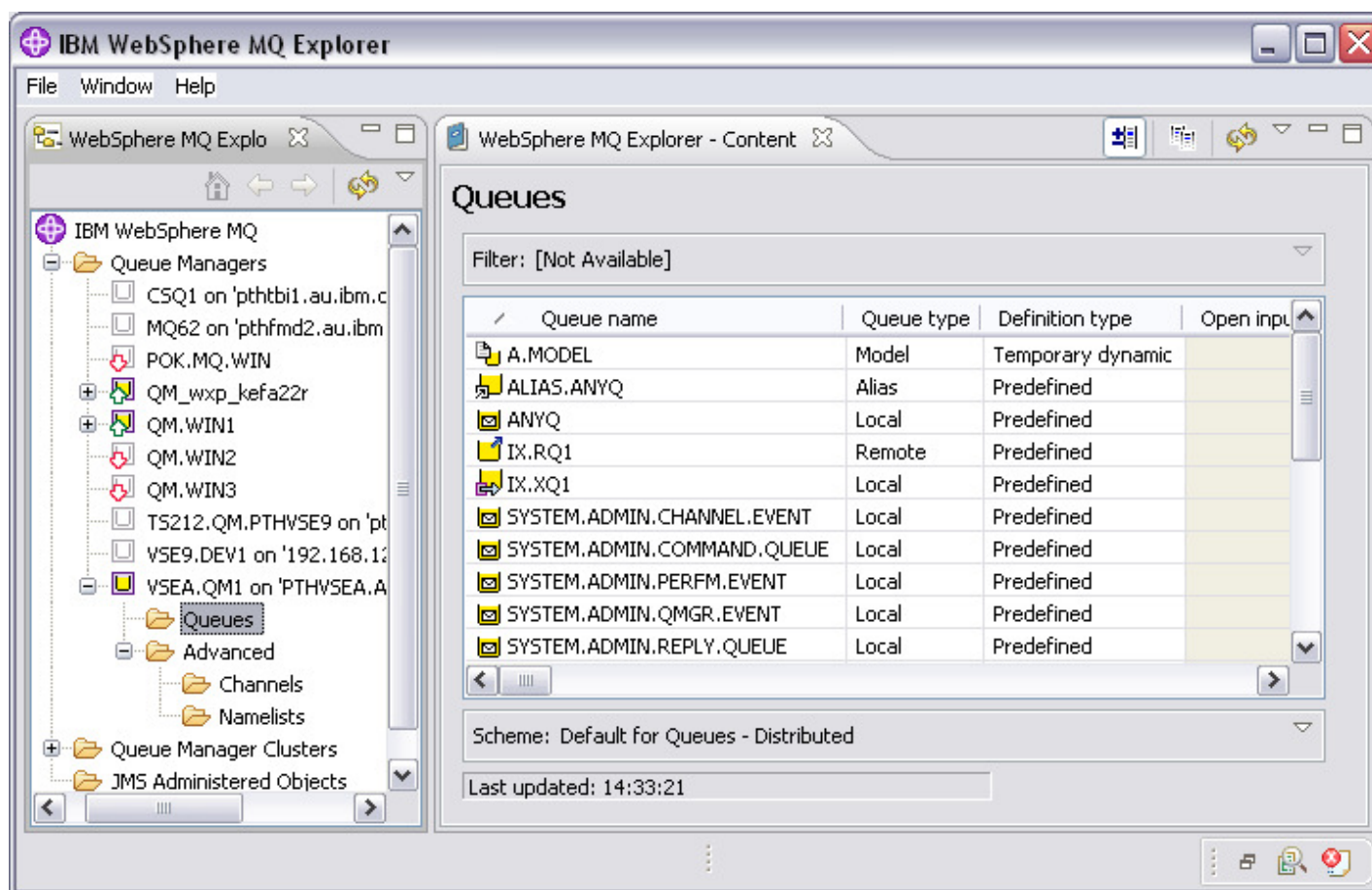
You can use Explorer to administer the z/VSE queue manager, its queues, channels and namelists, including create, delete, modify and display.

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**
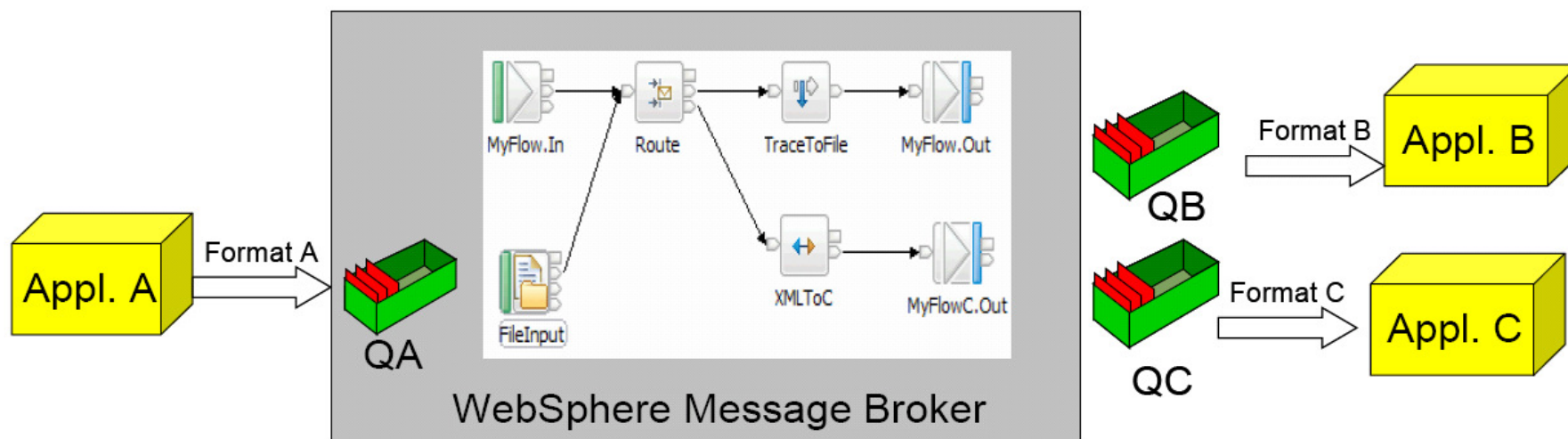
Connectivity to CICS transactions

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

WAS — **B** — HTTP — CICS TS — **B** — DB2 / VSAM — **D**
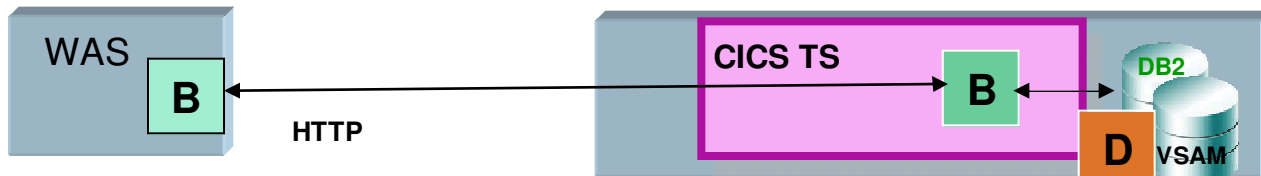
WebSphere
Host Access Transformation Services (HATS)

WAS — WebSphere HATS — **B** — 3270 — CICS TS — **P** — **B** — DB2 / VSAM — **D**
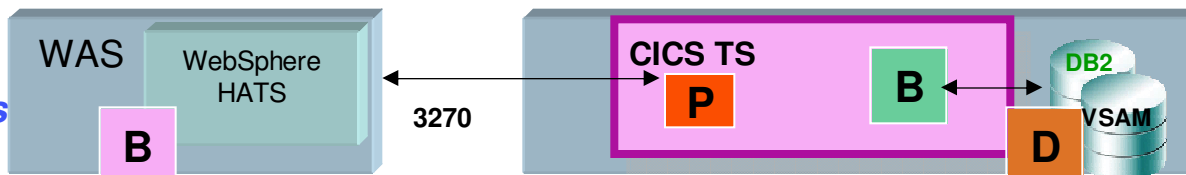
J2C Connector:
CICS Transaction Gateway (CTG)

WAS — **B** — CICS TG — ECI — CICS TS — **B** — DB2 / VSAM — **D**
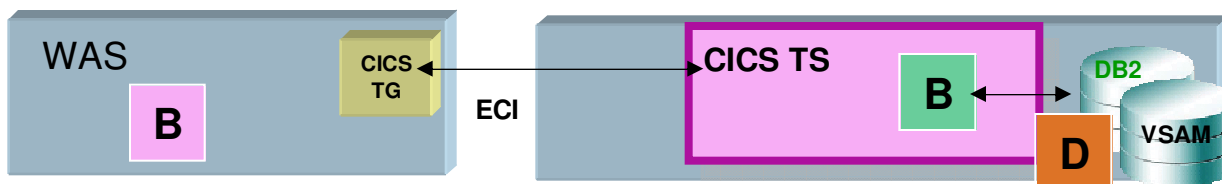
JMS Connector:
MQ to CICS Bridge

WAS — **B** — JMS to MQ — MQ — Queues — MQ — MQ-CICS — CICS TS — **A** — **B** — DB2 / DL/I — **D**
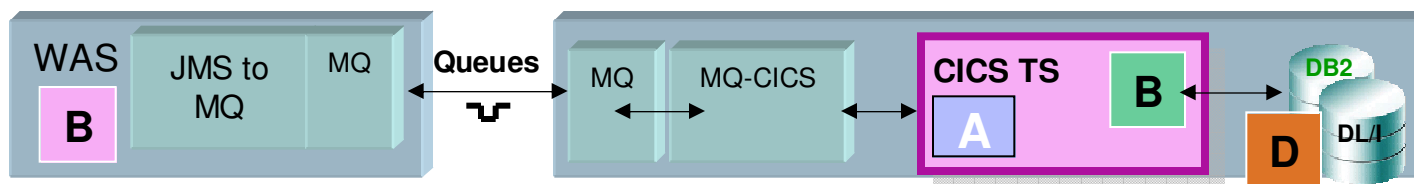
SOA Integration:
Web Services access to CICS

B — SOAP — CICS TS — **A** — **B** — DB2 / VSAM — **D**
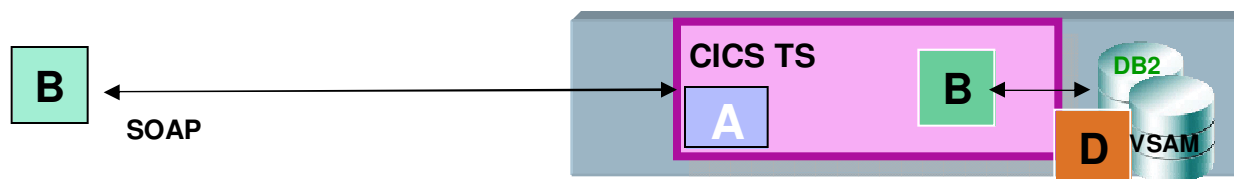
WAS can be on Linux on z or on zBX in an zEnterprise Ensemble. Qualities of Services will vary.

Integrating Logic in an SOA

Application

Call Web Service (Get Condition)

Process Credit

Generate invoice

Calculate discount

Calculate quote

Request ship date

Get price

Get customer

Save quote

Update inventory

Services

XML text XML

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

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**

Portal Service

SOAP Connected Component (e.g. .Net)

B2B Interactions

Service Orchestration

Enterprise Service Bus

Common Runtime Environment

Existing Apps and Legacy Systems

New Service Logic
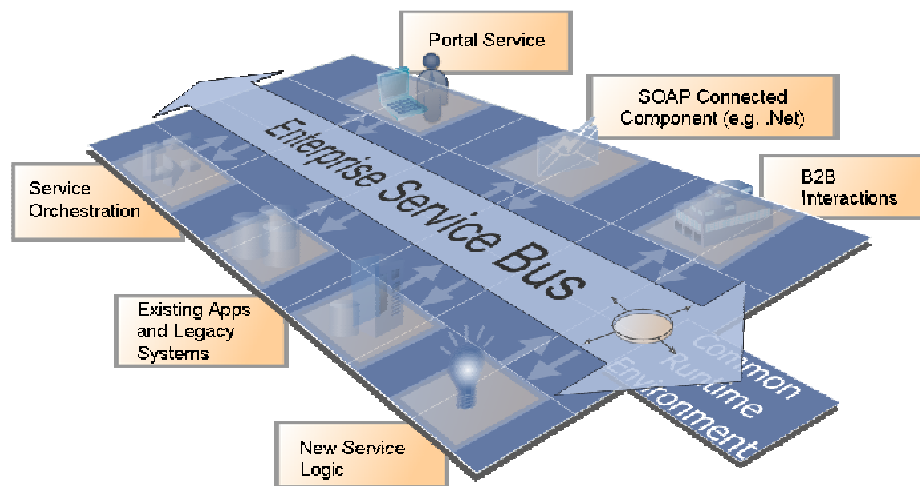
SOA – it is the implementation phase

- Active Projects in several z/VSE customer sites.

Sample SOA Architecture

| Orders Web | Orders Call Center | Orders Retail | Business Control (BI) |

Internet

Security

Enterprise Service Bus (ESB)

Order processing

Packaging

Budget Control

Advertisement

Shipping (Retail, Delivery)

Central data pool

Marketing Campaign Mgmt Automation

BI

DWH
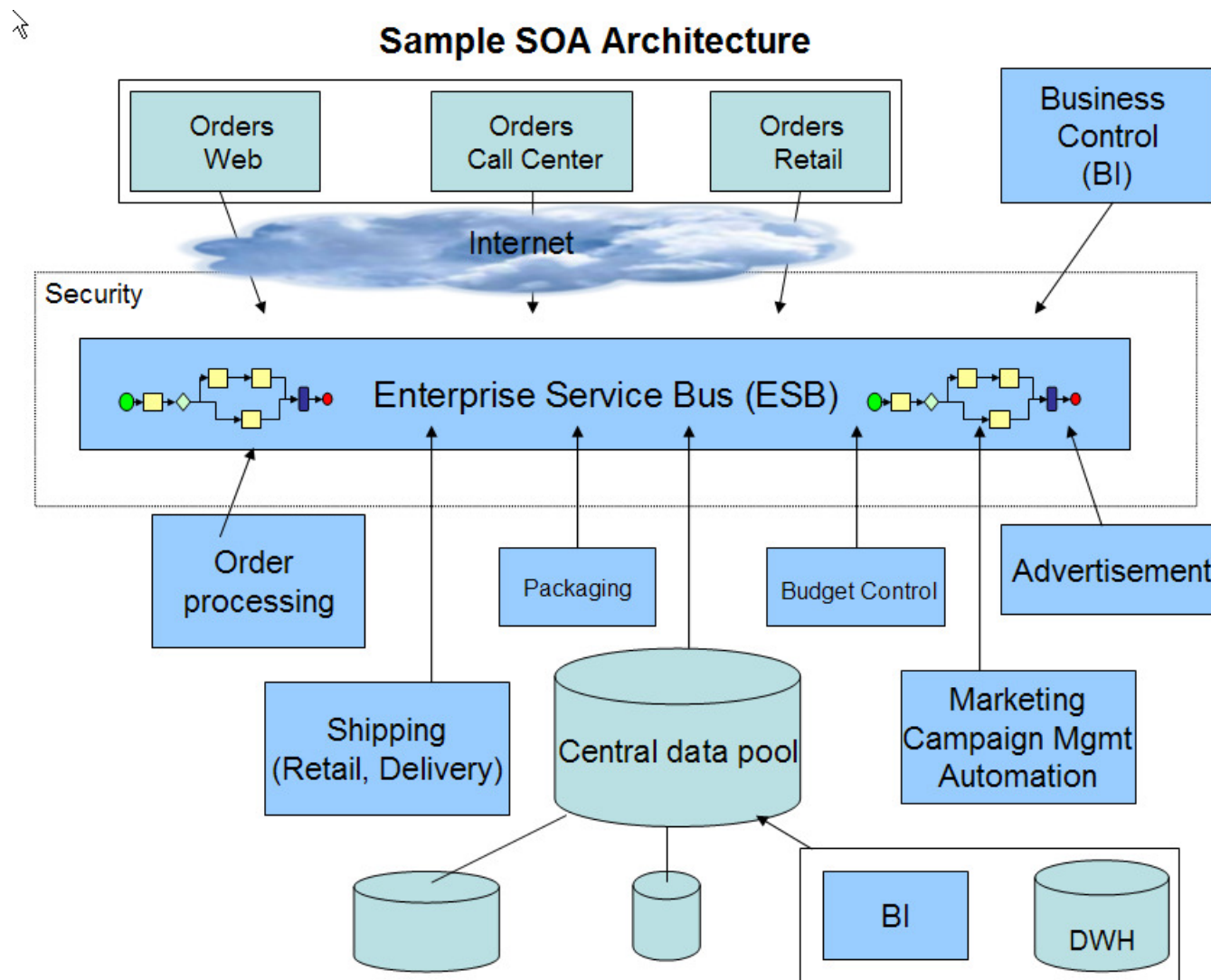
Web Services with z/VSE

SOA and XML data interchange with CICS transactions in VSE

z/VSE

Microsoft .NET
Websphere
Apache SOAP
AXIS
Java

SOAP Client/Server

HTTP (HTTPS)
SOAP Envelope

XML

CICS TS

XML Parser

SOAP Engine

XML to Commarea proxy

Commarea

⭐ Transaction

Tool to generate the Proxy code
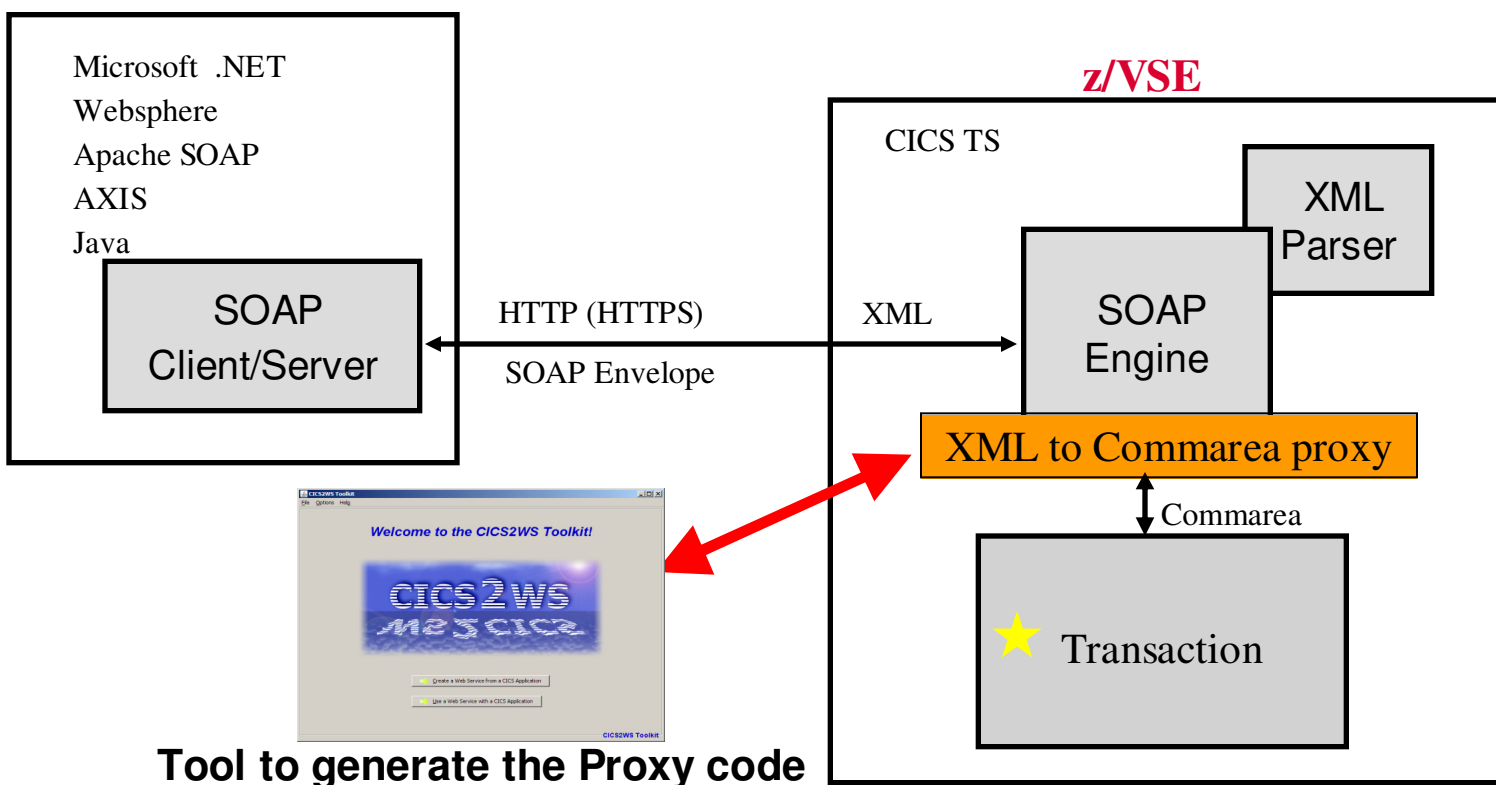
⭐ Existing VSE Transactions as Web Service

⭐ Existing Transactions can call a remote Web Service

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Multi-tier mobile environments – THE trend in industry

Systems of Engagement

Systems of Record

Client Tier Devices

Middle Tier Server

Back-end Data & Services

- OS Device Variety
- Screen size variety
- Various Smartphones
- Tablets

- Web Application Server
- Mobile Application Runtime Server
- Security components
  - Authentication
  - Crypto
- Back-end access services
- Caching of back-end services

- Databases and Data sources
- z/VSE transactional services
- SOA services from Linux

System z Mobile Enterprise with IBM Worklight Server

Linux on z

z/OS or z/VSE

Linux on z

Device Runtime

PhoneGap

Worklight

- Security and Authentication
- Back-end Data Integration
- Caching and local data

Application Code

Worklight Server on WAS

Server-side Java App Code -- WAS	**Application Center Enterprise App Store**
Worklight Console	JSON Translation
Push Notifications	Authentication
Analytics	Adapter Library

SAP
SQL
WMB
SOAP
HTTP/REST
Cast Iron

z/OS z/VSE

CICS

Worklight Video: http://www.youtube.com/watch?feature=player_embedded&v=zHnFw70XXXo

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z/VSE CICS Connectivity Options with Worklight

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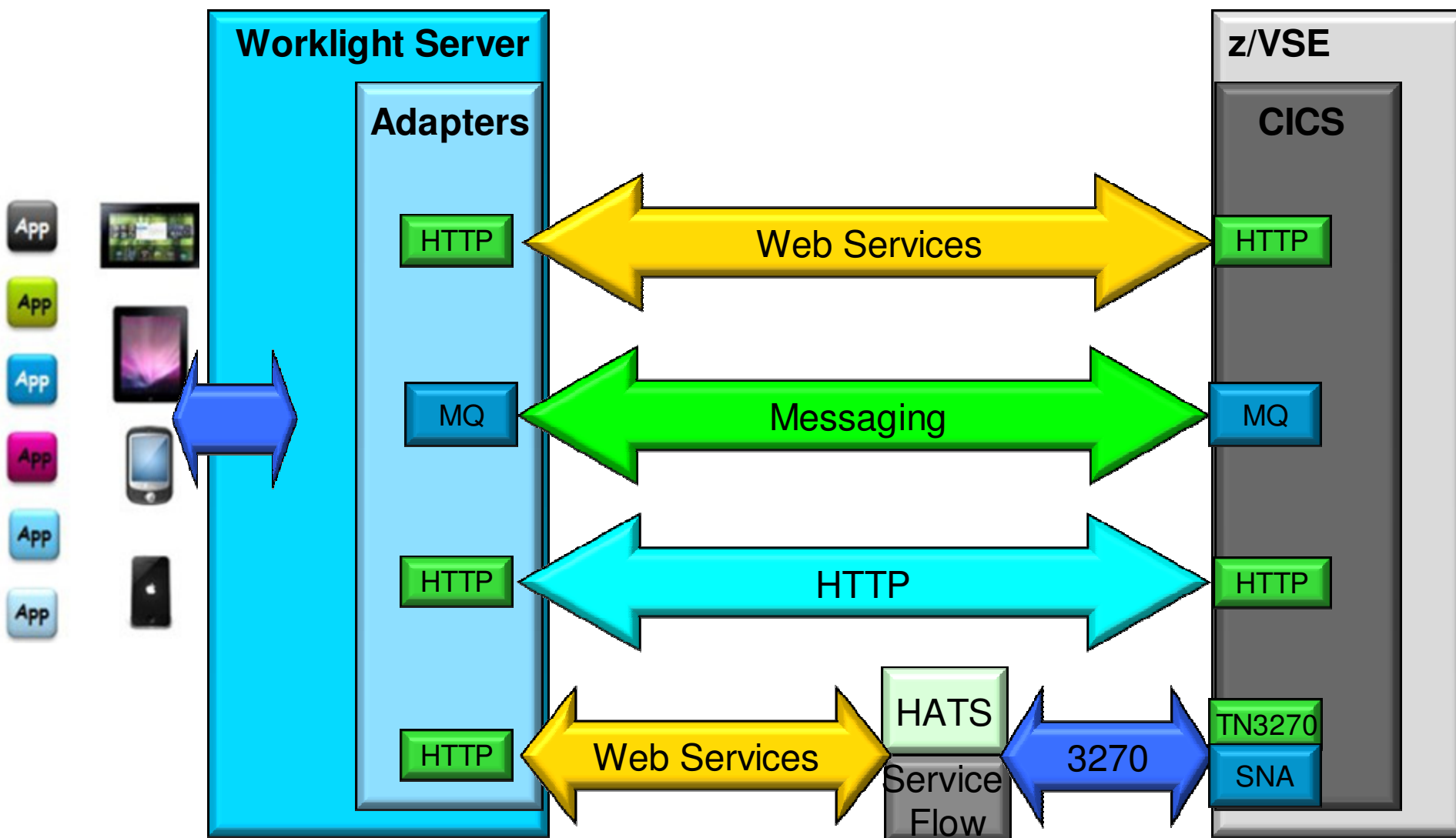
z/VSE Monitoring possibilities
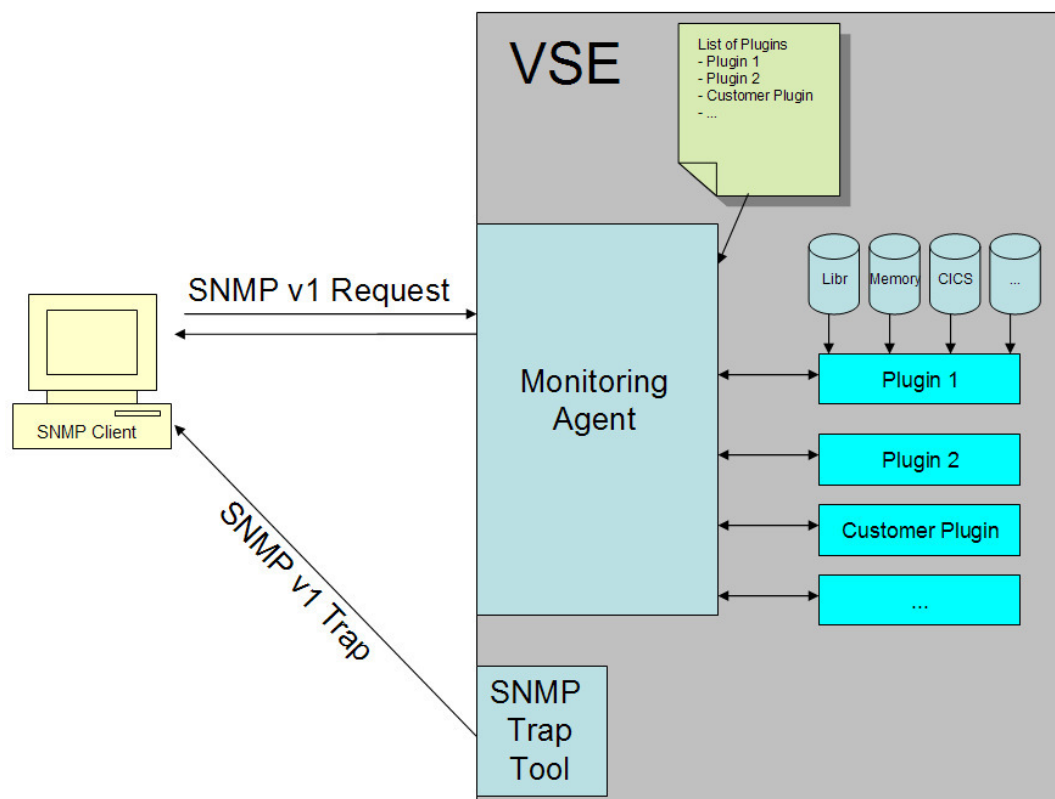
- Monitoring Agent based on SNMP V1
  - Real time monitoring
    - retrieve z/VSE specific system and performance data
  - Event driven monitoring using SNMP Trap tool and API (z/VSE V5.1)
    - Helps to automate processes in z/VSE with SNMP traps

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'Common' development Environment…

Java
C++
Mobile …

COBOL
PL/I
Assembler

Internet

Rational
Developer
Tools

Central
Code Repository
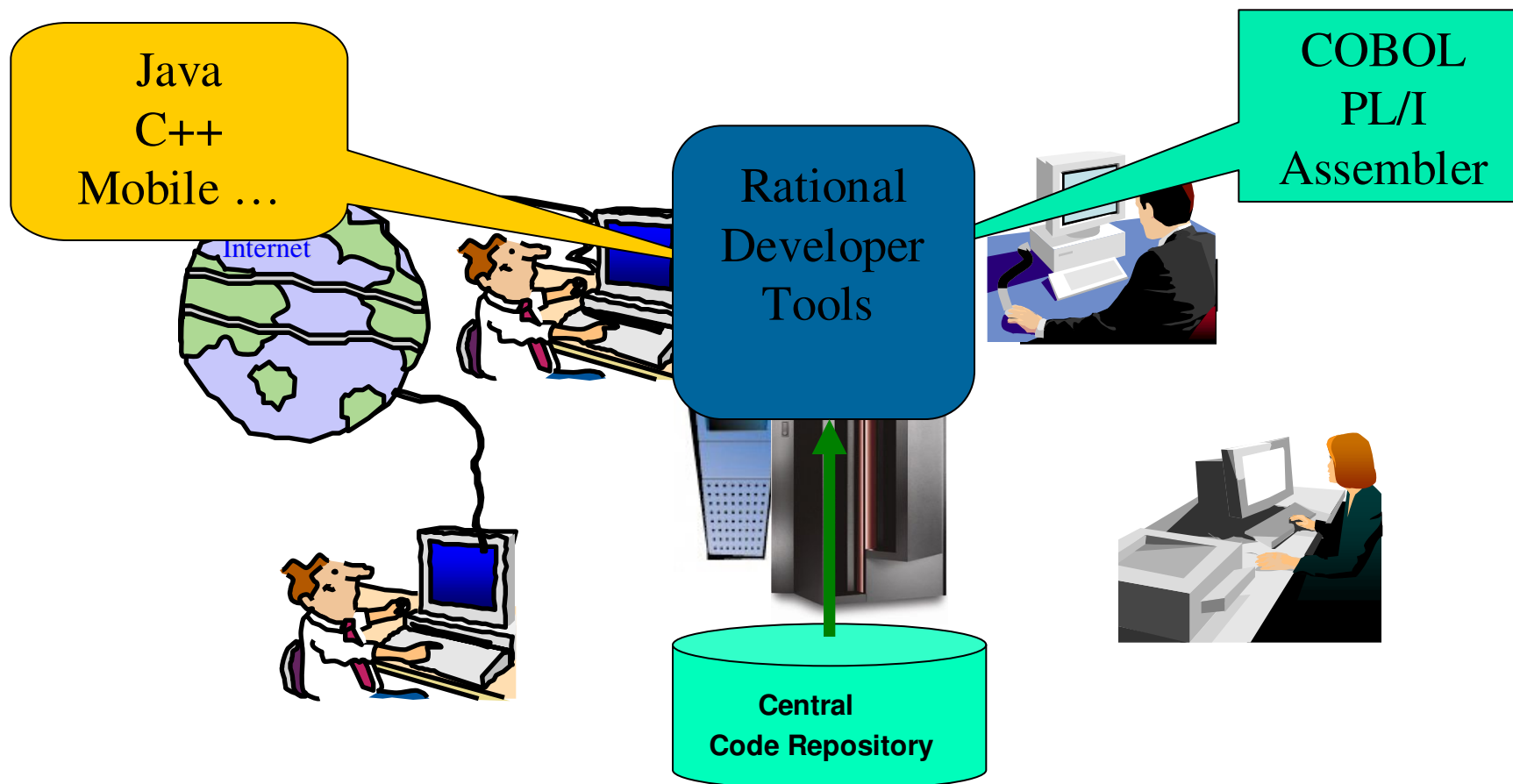
Eclipse helps !

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

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Development for IBM Worklight on System z

IBM Worklight Studio with Rational Developer for zEnterprise

Business   Development

Design | Code | Test | Deploy

COBOL

WL Adapters

Java

Native App with HTML, JS, CSS

- Built on Eclipse
- Common code base across all mobile platforms (with ability to override at platform level)
- Build, preview, and deploy within the IDE
- Mobile simulator (for unit test)
- End-to-end debug
- Integrate with third-party SDKs (e.g. Android Development Tools)

System z

WebSphere Application Server with IBM Worklight Server

Worklight
An IBM company

Mobile

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Overview - All Tools

http://www-03.ibm.com/systems/z/os/zvse/downloads/

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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

ZSP03505-USEN-00

More than a decade
Linux on System z and z/VSE

z/VSE customers with Linux on System z,
- in a variety of industries

- Fashion
- Financial Institutes / Insurance
- Hotel chain / Vacation clubs
- Health institutes/ Hospitals
- Public Sector / County
- Payroll accounting
- Whole Sale – Home Articles, Pharma, Car parts
- Grocery
- Furniture manufacturing
- Horse Racing – Bets
- Church administration
- Bakery
- National Sport clubs

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Subscribe to be get on the distribution list for latest news for z/VSE

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

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