IBM

zVSE 51 and zEnterpise exploitation

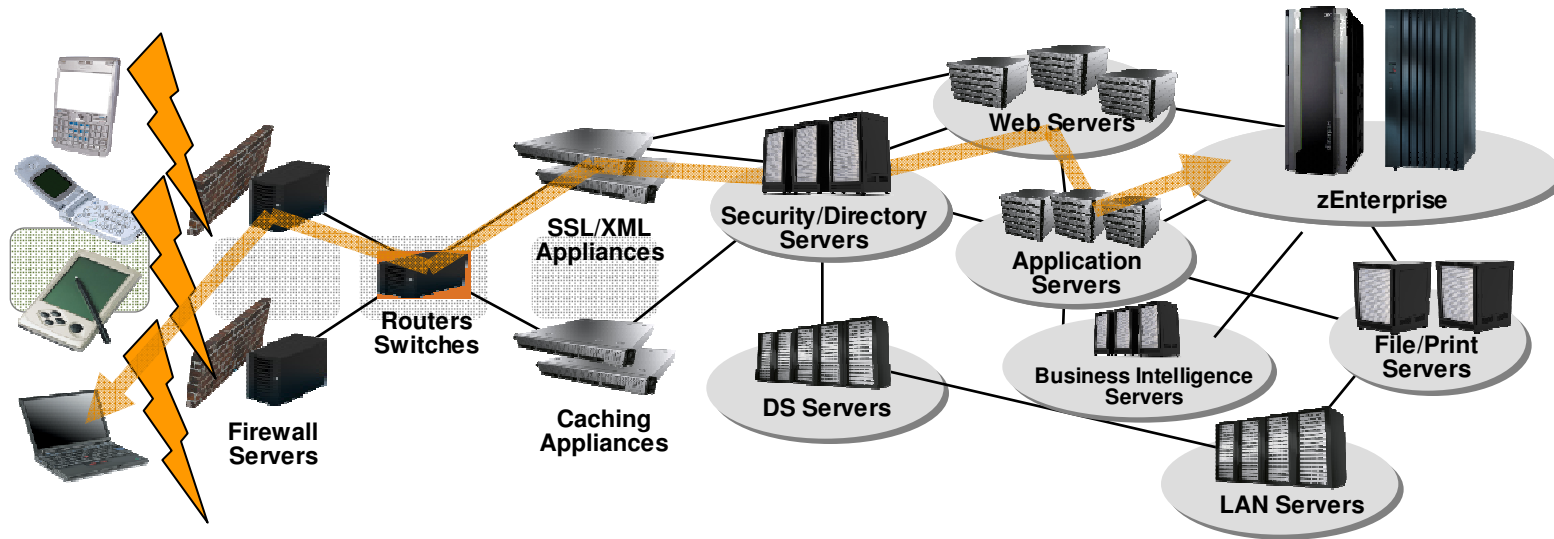Enterprise**2013**

Agenda

- **zEnterprise and z/VSE 5.1**

- **z/VSE Modernization Options**

- **Wrap-up**

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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?

IBM

z/VSE supports zEnterprise zEC12 and zBC12 from start !

- Availability date of zEC12 September 19, 2012
- **z/VSE supports the zEC12 with z/VSE 4.3 and later**
    - However, since z/VSE 4.2 is still in service it can be used with zEC12
  - No PTFs are requried to run z/VSE on zEC12.
  - As always, there will be PTFs for IOCP, EREP, HLASM.
- **zEC12 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

- **zEC12 offers the 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.
- In time for GA, the PTFs will be listed in the PSP bucket.
- Information will also be available on the z/VSE home page.

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IBM

z/VSE Support for IBM Mainframe Servers

IBM Servers	z/VSE V5.1.2	z/VSE V4.3	z/VSE V4.2 (Service till 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)

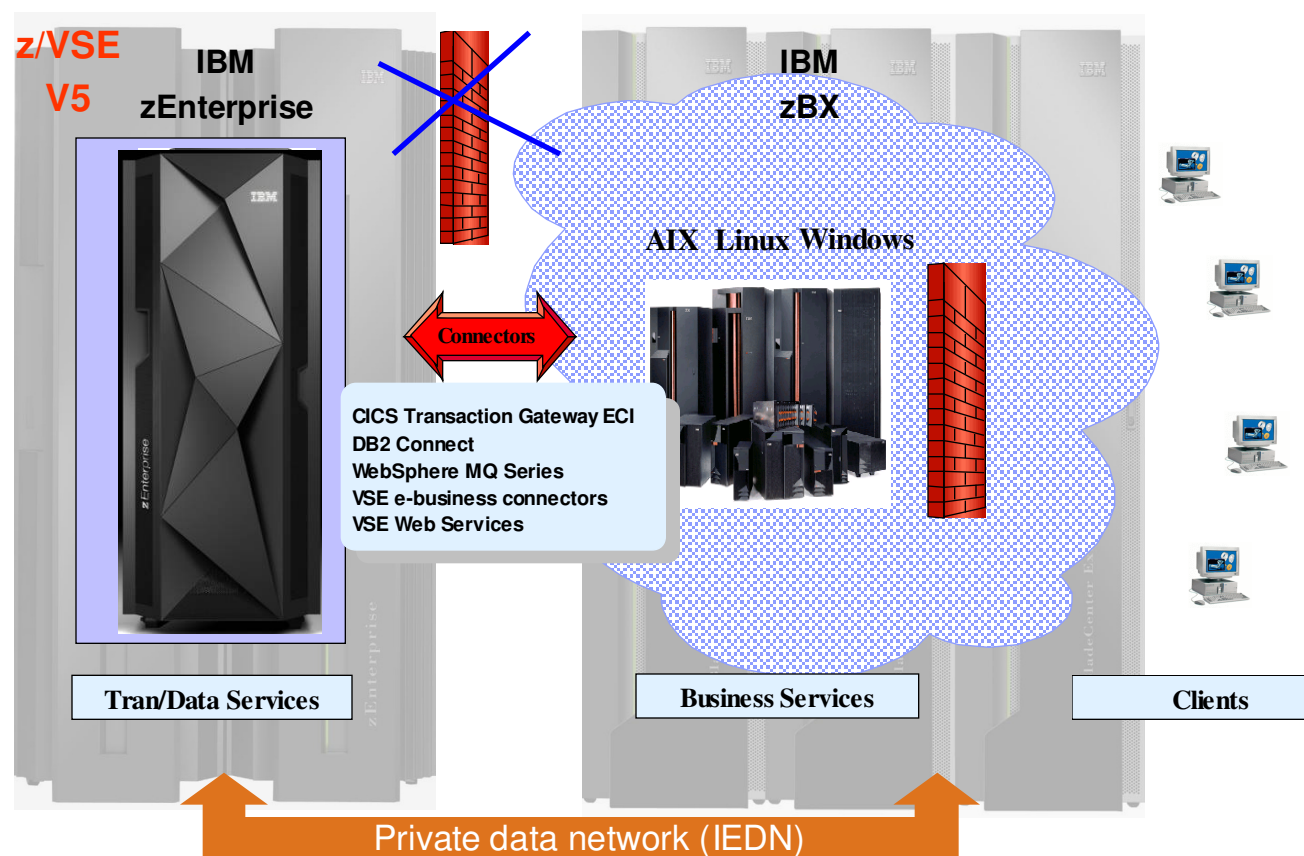 – Red Hat RHEL 6 requires System z9 technology (or higher)

IBM

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**

z/VSE V5

IBM zEnterprise

IBM zBX

AIX Linux Windows

Connectors

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

Tran/Data Services

Business Services

Clients

Private data network (IEDN)

Protect existing z/VSE investments

Integrate using middleware and z/VSE connectors

**E**xtend with zBX or with Linux on z to access new applications & solutions

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z/VSE positioning among traditional IBM System z Operating Systems

- 25% of worldwide System z Servers have VSE* installed
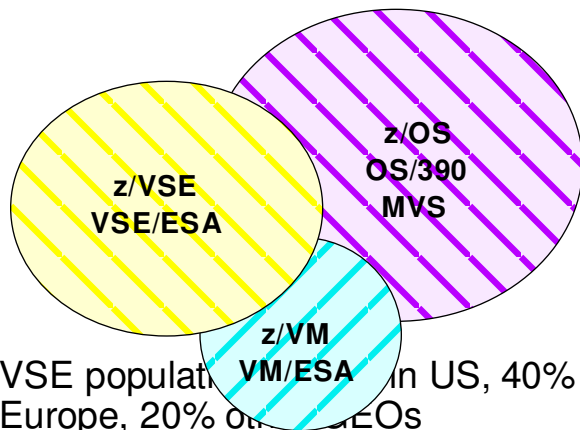
- VSE populati... ...n US, 40% in Europe, 20% ot... ...EOs
- Worldwide 50% run VSE under z/VM, in Europe 90+% are VSE under z/VM
- IFLs play an important role in VSE's strategy
- zIIP/zAAP have no meaning to VSE (not exploited)
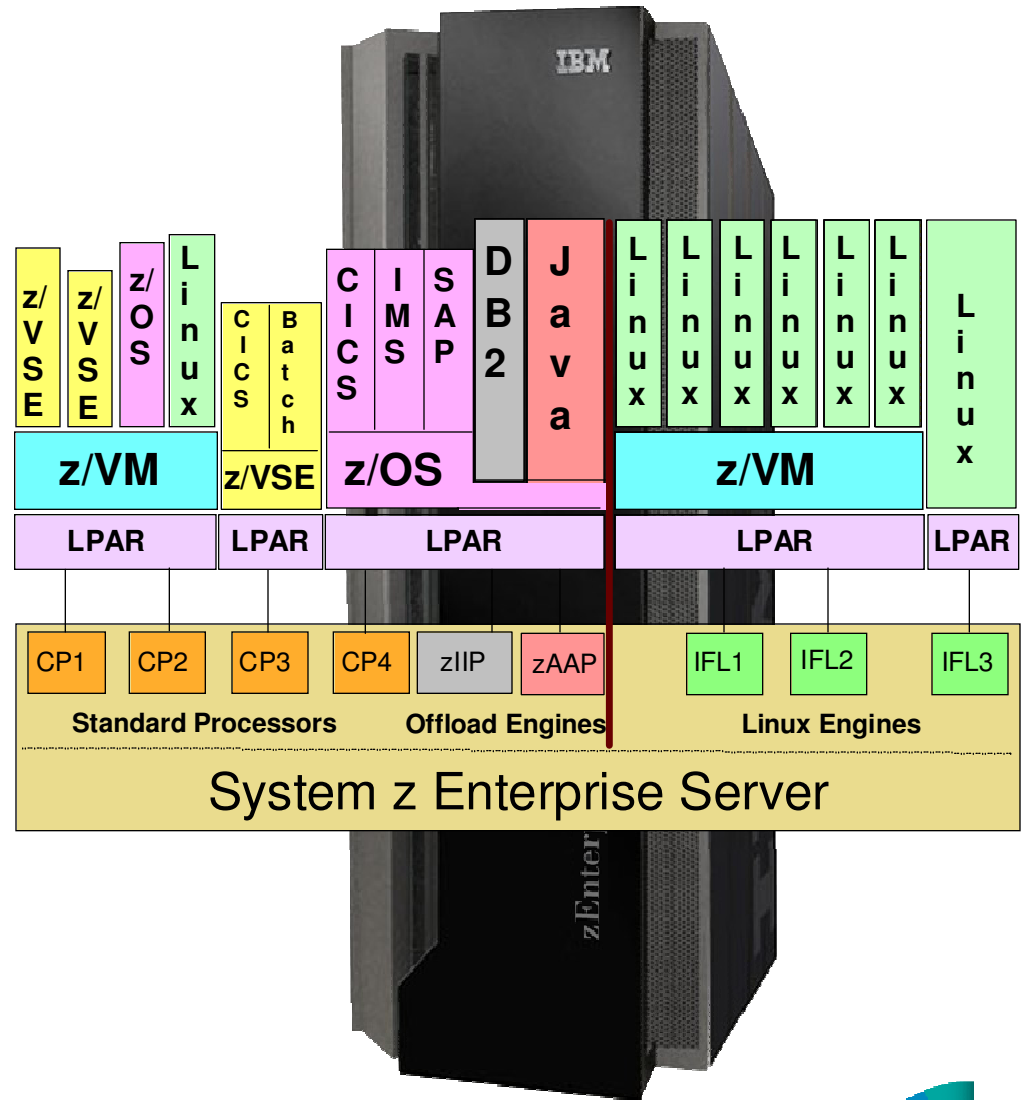
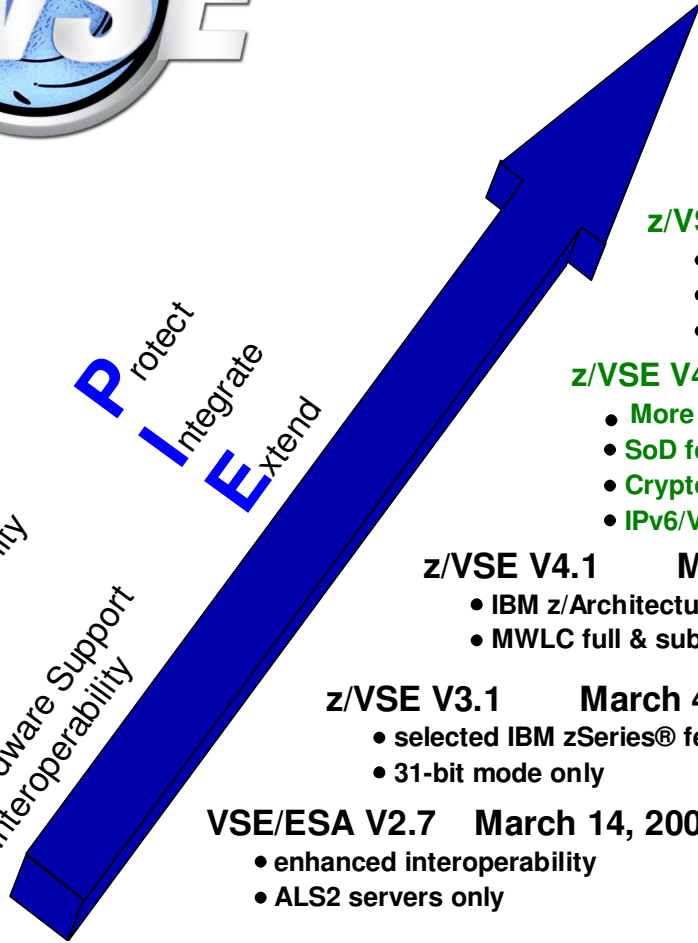(*) The term "VSE" stands for both, VSE/ESA and z/VSE.

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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

© 2013 IBM Corporation IPv6/VSE is a registered trademark of Barnard Software, Inc.

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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

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Integration of z/VSE using IBM Middleware & Connectors

VSE ScriptServer	**VSE Connector Client**				**VSE Connector Server**	VSAM / DL/I
VSE Navigator						LIBR / ICCF
Maptool		VSAM / JDBC				POWER
VSE Health Checker						Console

TCP/IP (VSE Connector Client → VSE Connector Server)

VSAM Redirector Server	**VSAM Redirector Client**

DB2 ← VSAM Redirector Server — **TCP/IP**

VSE Print — **TCP/IP** — **Auto FTP** ← POWER

TCP/IP Config Tool — **TCP/IP** — **Auto email Auto LPR** ← POWER

Keyman VSE — **TCP/IP** — **TCP/IP for 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** (CICS Transaction Server)

DB2 Connect — **TCP/IP (DRDA)** — **DB2 Server** → DB2

DB2 ← DB2 Connect

MQ Series — **TCP/IP** — **MQ Server** → DL/I / VSAM

Oracle, MS SQL ← JDBC — **DBCLI Server** — **TCP/IP** — **DBCLI API**

Java

z/VSE

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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
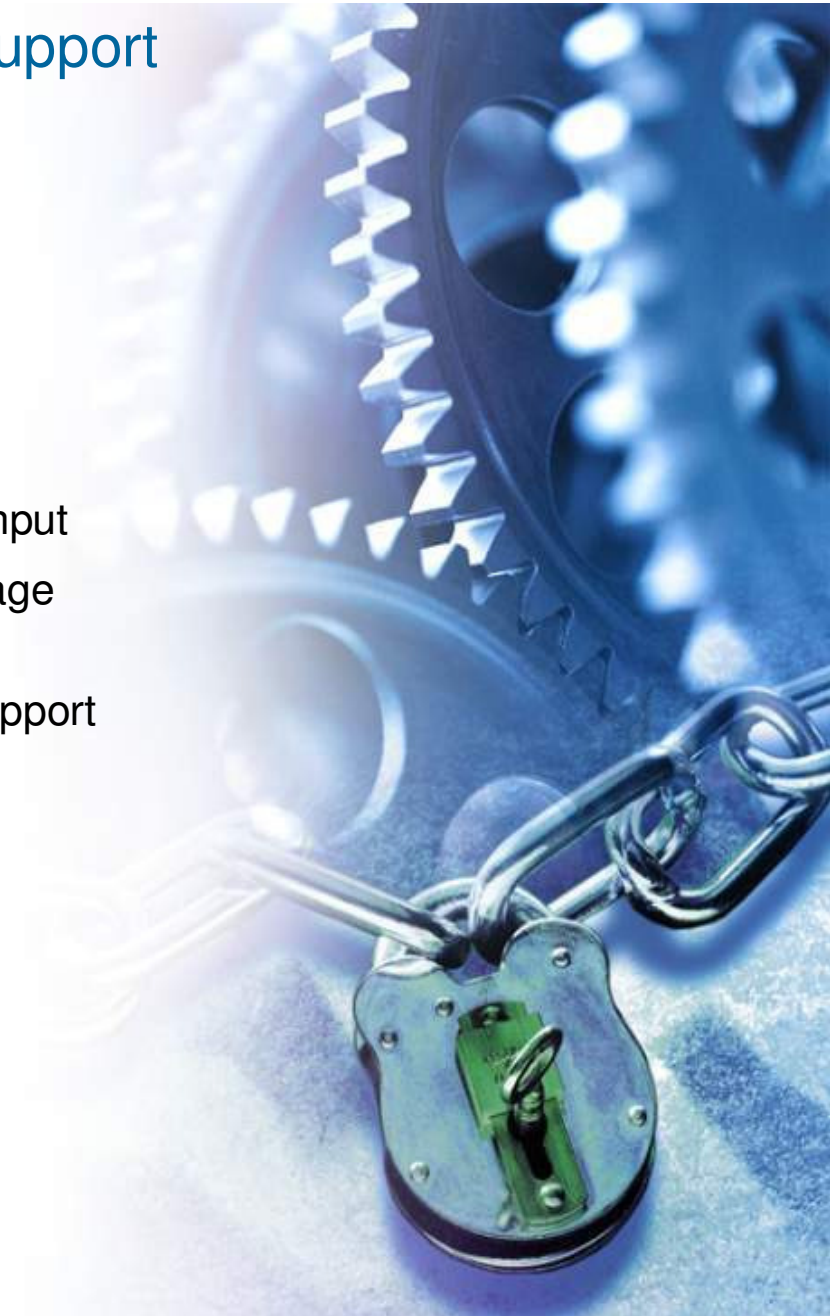
z/VSE database connector for z/VSE applications

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 → TCP/IP	**JDBC V3 Driver** → TCP/IP or local	

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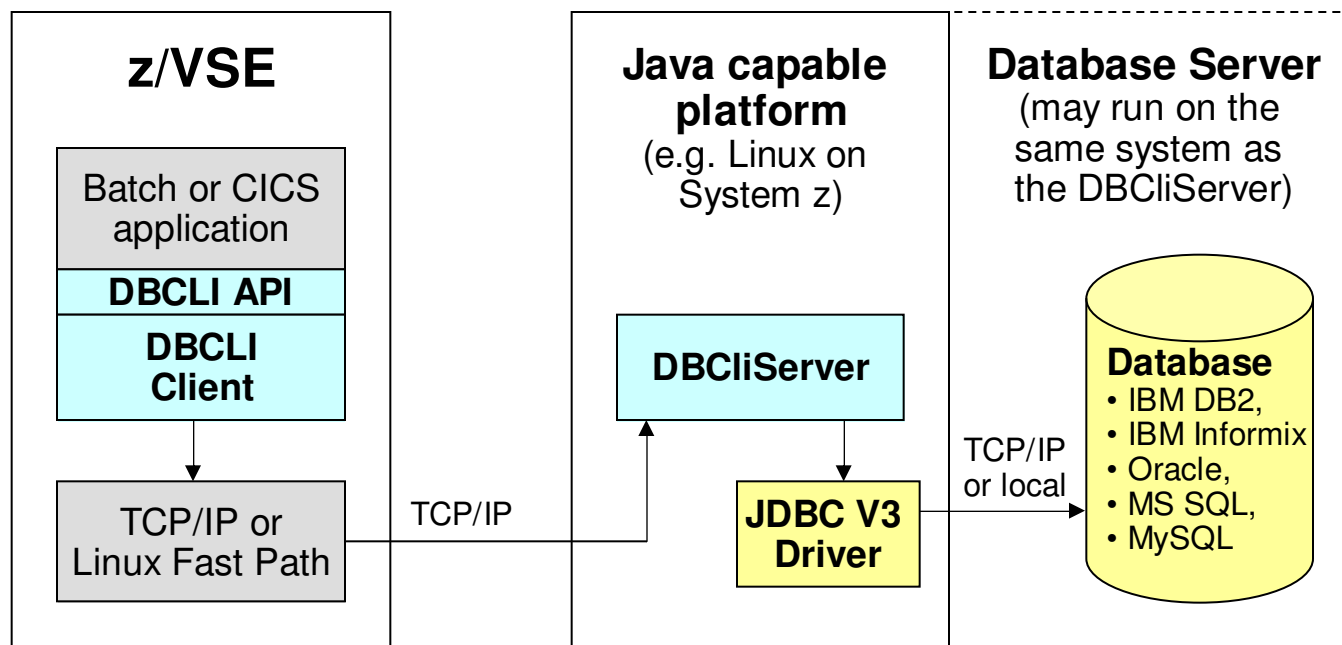
z/VSE's evolution to 64-bit Addressing

- z/VSE 4.1 implemented the z/Architecture – required for 64 bit addressing – and supported real memory up to 8 GB. To access the real memory above 2 GB the page manager has to switch into AMODE 64 (real addressing only).

- z/VSE 4.2 increased the supported real memory to 32 GB, moved page manager control blocks above 2 GB and added support for 64 bit general purpose registers (64 bit registers).

- z/VSE 4.3 implemented 1 MB frames (large pages) for data spaces, which will be the base for a 64 bit virtual sub-function. However, large pages for address spaces will not be implemented in z/VSE 5.1.

- z/VSE 5.1 will support 64 bit (virtual) address spaces for static partitions as well as dynamic partitions.

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z/VSE 31-bit Address Space layout

2 GB	

Shared areas (31 bit)	System Getvis
	Virtual Library Area (VLA)

SVA (31 bit)

X2

C1

Y1

Private area (PASIZE)

The (16 MB) line

BG

	Shared Partitions
	VPOOL
	System Label Work Area (SLA)
Shared areas (24 bit)	System GETVIS Area
	Virtual Library Area (VLA)
	System Directory List (SDL)
	Supervisor

SVA (24 bit)

0

31 bit address space layout

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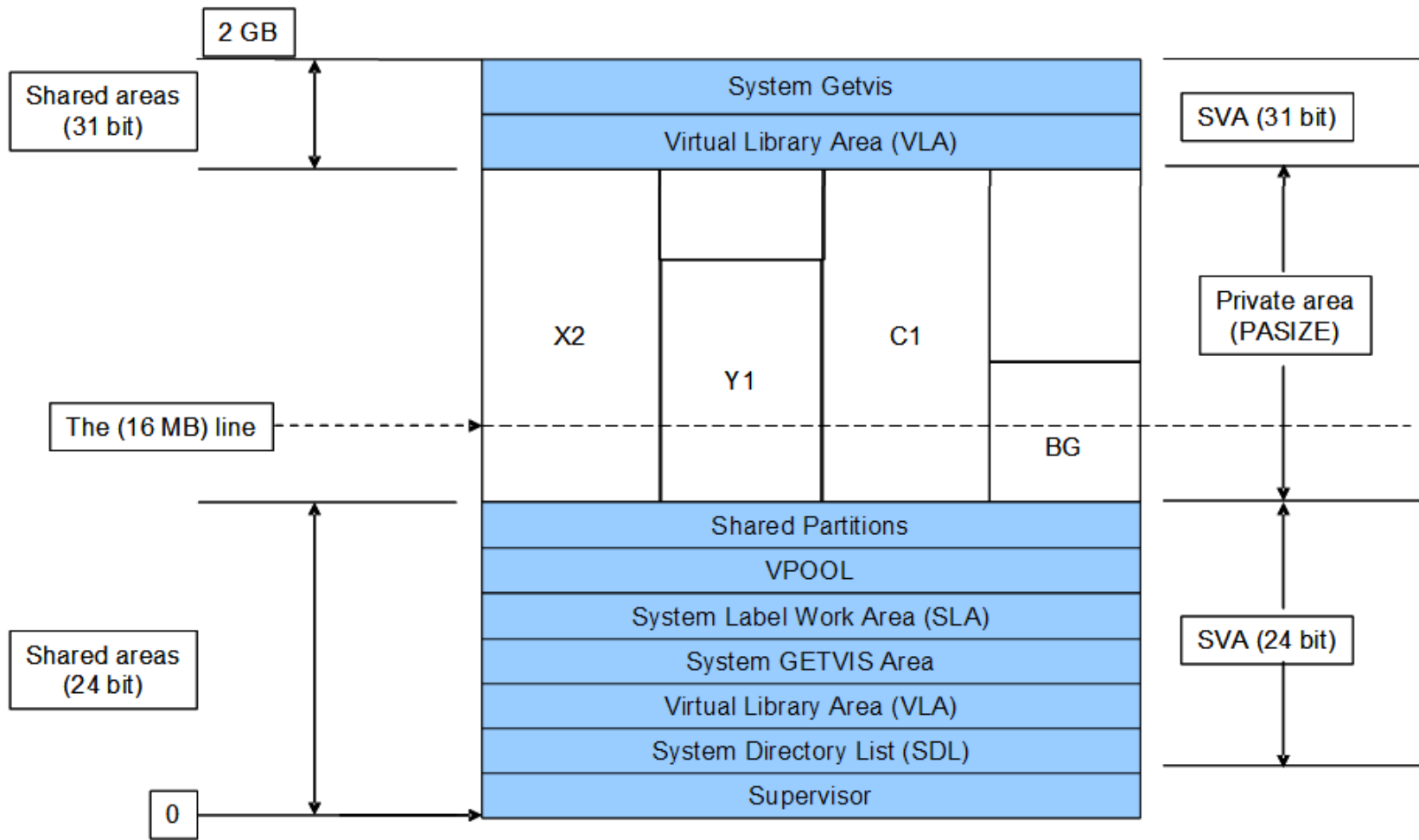
64-bit Virtual Addressing

64 bit address space layout:

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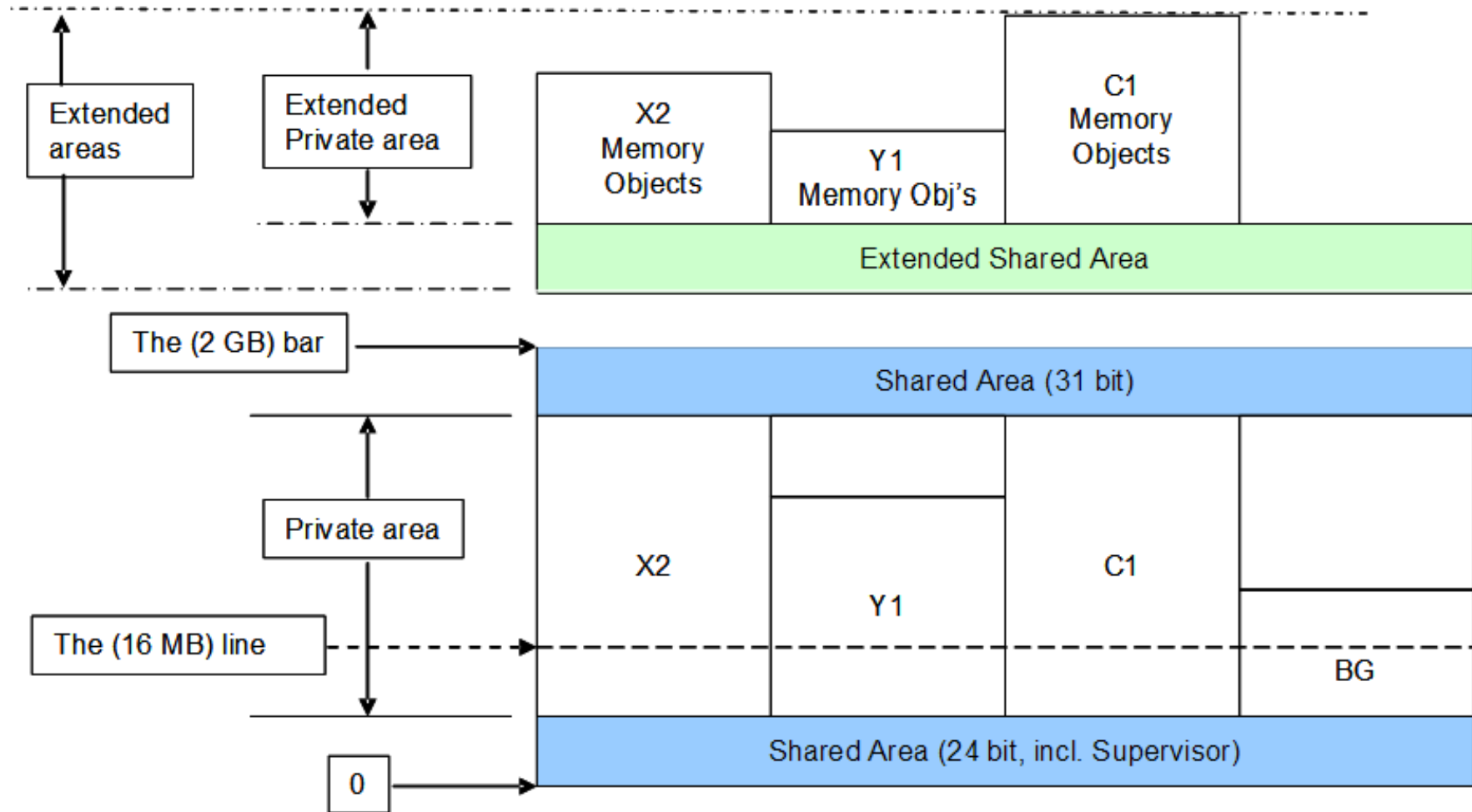
z/VSE V5.1 SAN integration: SAN Volume Controller (SVC)

- 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 interated in a SAN with native support for Storwise 7000 and XIV

- Benefits include a simpler, more flexible, less costly disk storage infrastructure
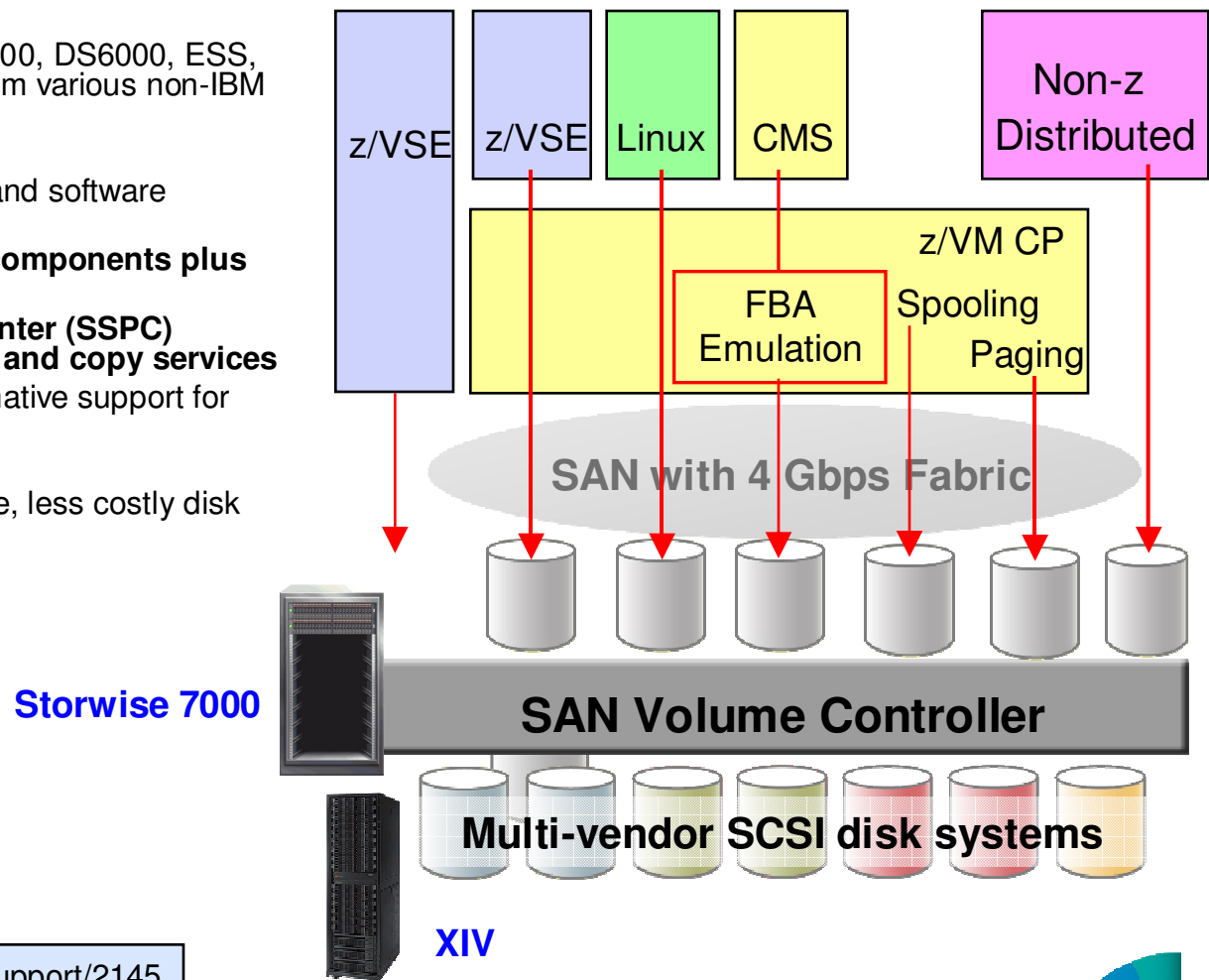
Learn more at: **ibm.com**/storage/support/2145

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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

Application	**Application**	**Application**	**Application**
TCP/IP Stack	TCP/IP Stack		LFP Daemon
			TCP/IP Stack
z/VSE Supervisor	Kernel	z/VSE Supervisor	Kernel
z/VM	**z/VM**	**IUCV**	**z/VM**
HiperSockets		**System z10, z196, z114**	

network   Without LFP   network   With LFP   network

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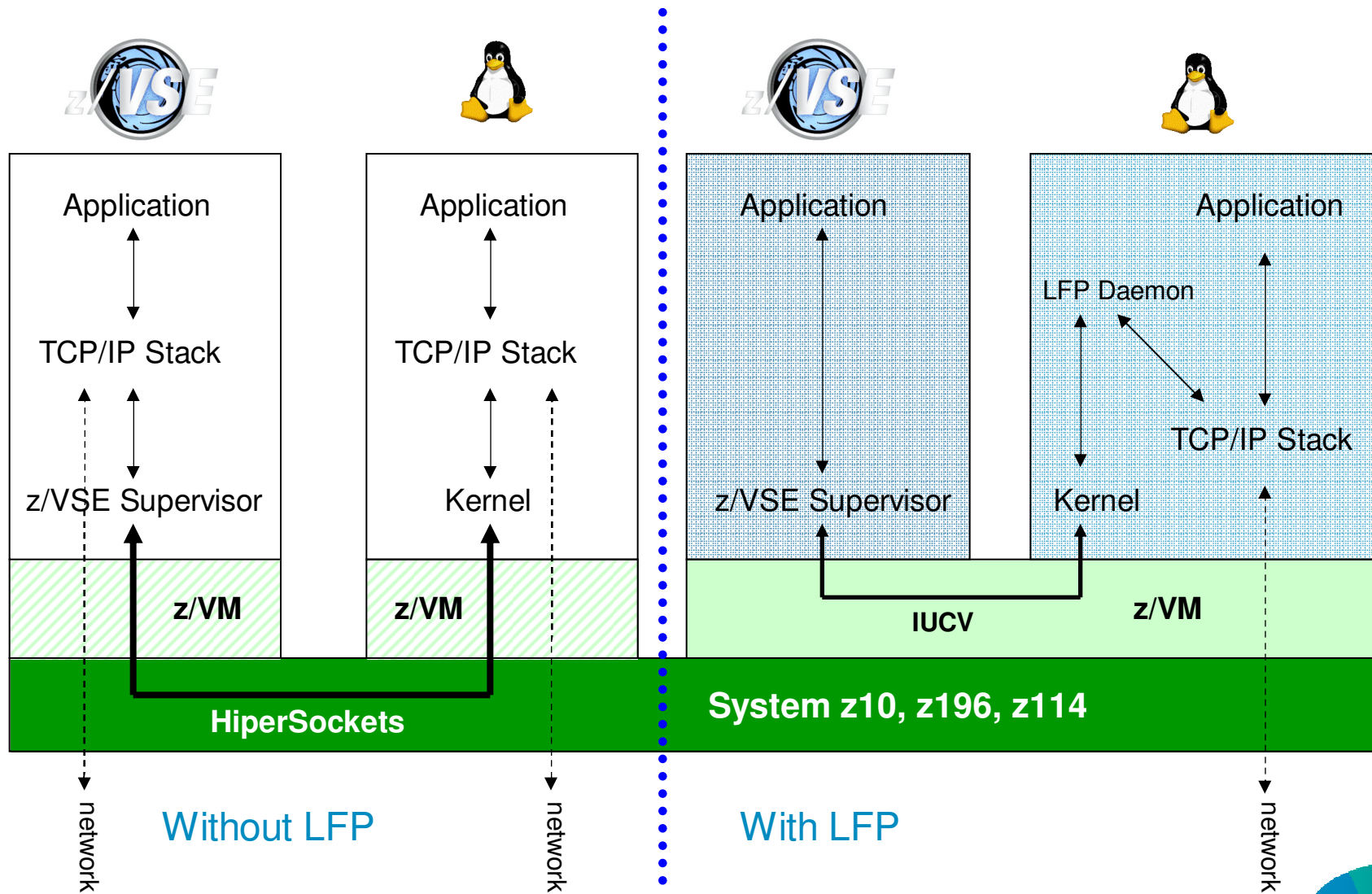
z/VSE z/VM IP Assist (VIA) - Supported by z/VSE V5.1
No Linux on System z is needed to utilize the LFP advantage

Without LFP

With LFP + VIA

z196, z114

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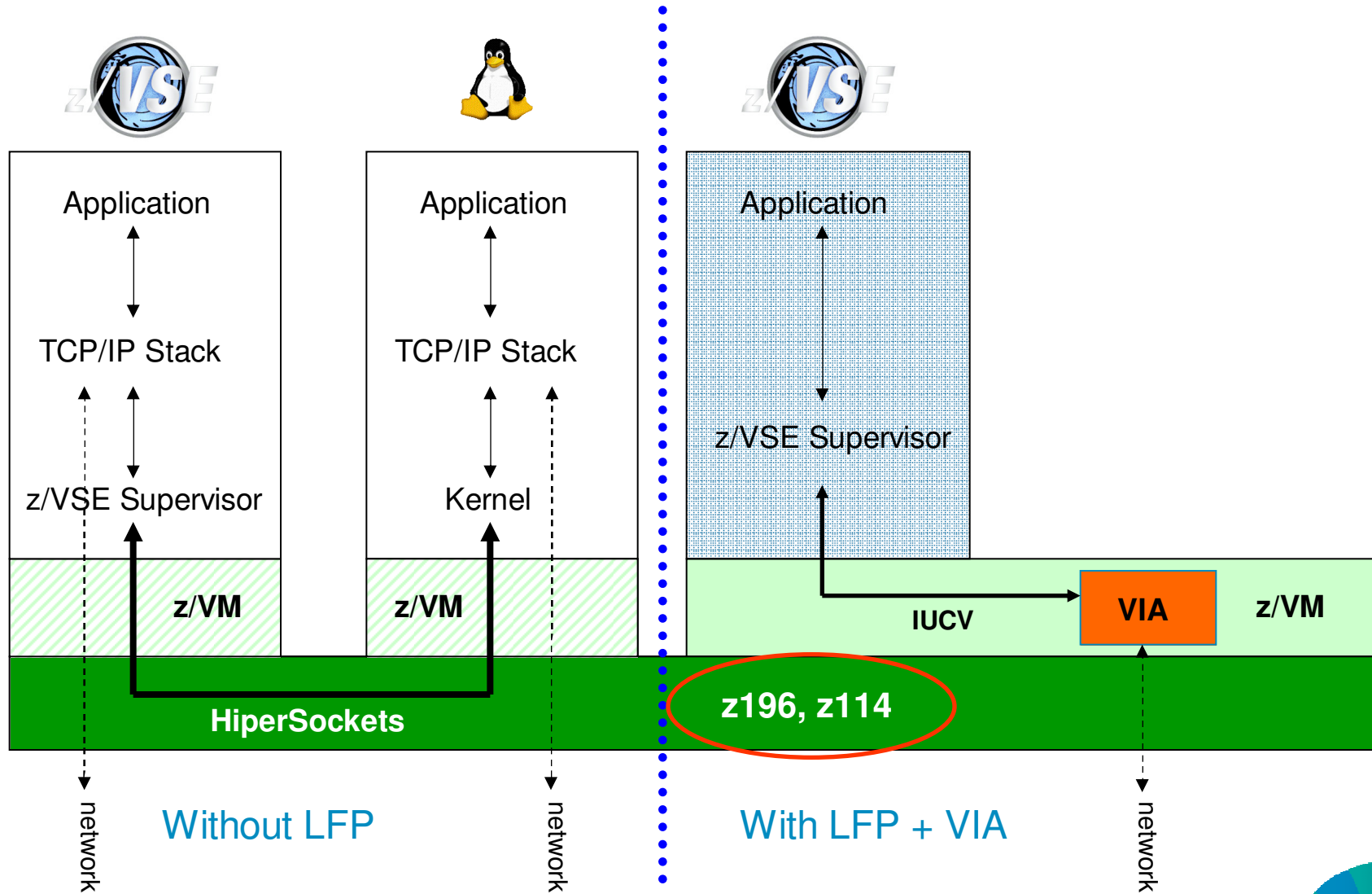
Fast Path to Linux on System z (LFP) in LPAR

- 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

network

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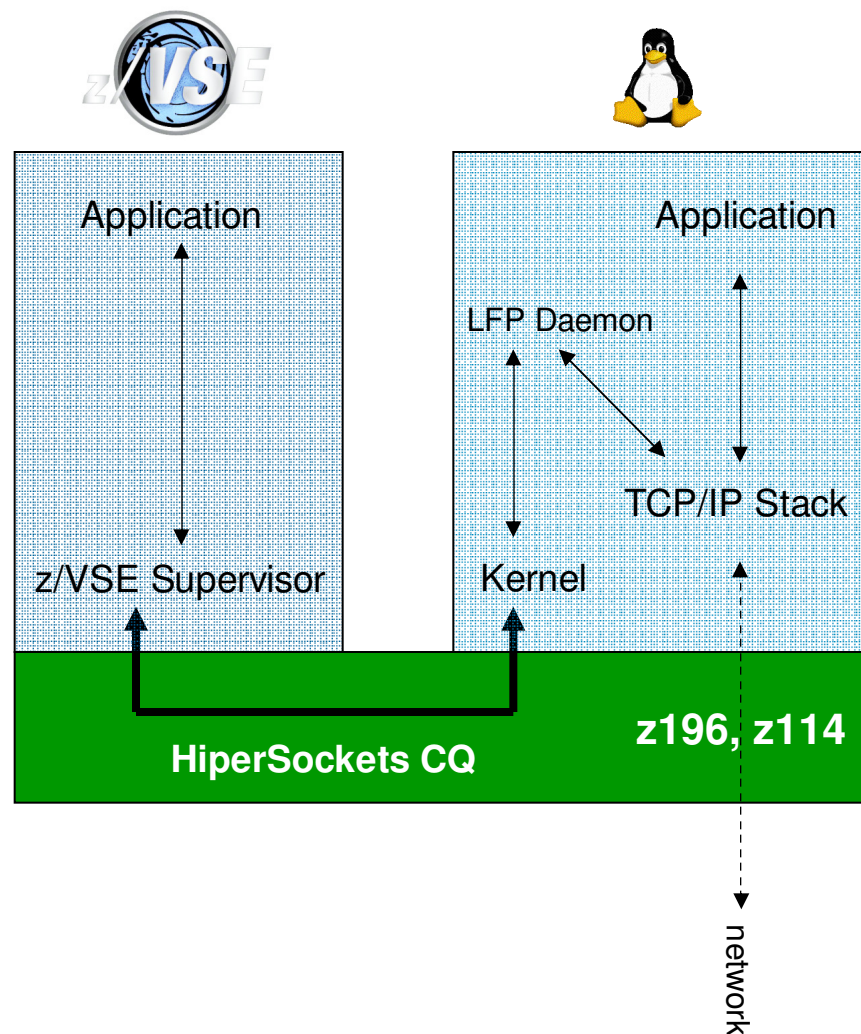
z/VSE Strategy w/ Linux on System z
*Hybrid Environment leveraging
z/VSE, z/VM, and Linux on System z*

Protect existing VSE investments
Integrate using middleware and VSE connectors
Extend with Linux on IBM System z technology & solutions

......

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.

IBM WebSphere Software

Info on Demand

Linux on System z

DB2 9, Information Server, Cognos 8 BI

DB2 LUW

Connection via HiperSockets

z/VSE V4/V5 Production Environment
+ TCP/IP
+ VTAM
+ CICS TS
+ VSAM
+ COBOL
+ DB2 client
+ LDAP client

z/VSE V4/V5 Test/Dev Environment

z/VM-mode LPAR with z/VM V6

IFL Engine(s) | **CP Engine(s)**

IBM System z10, z196, or z114

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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
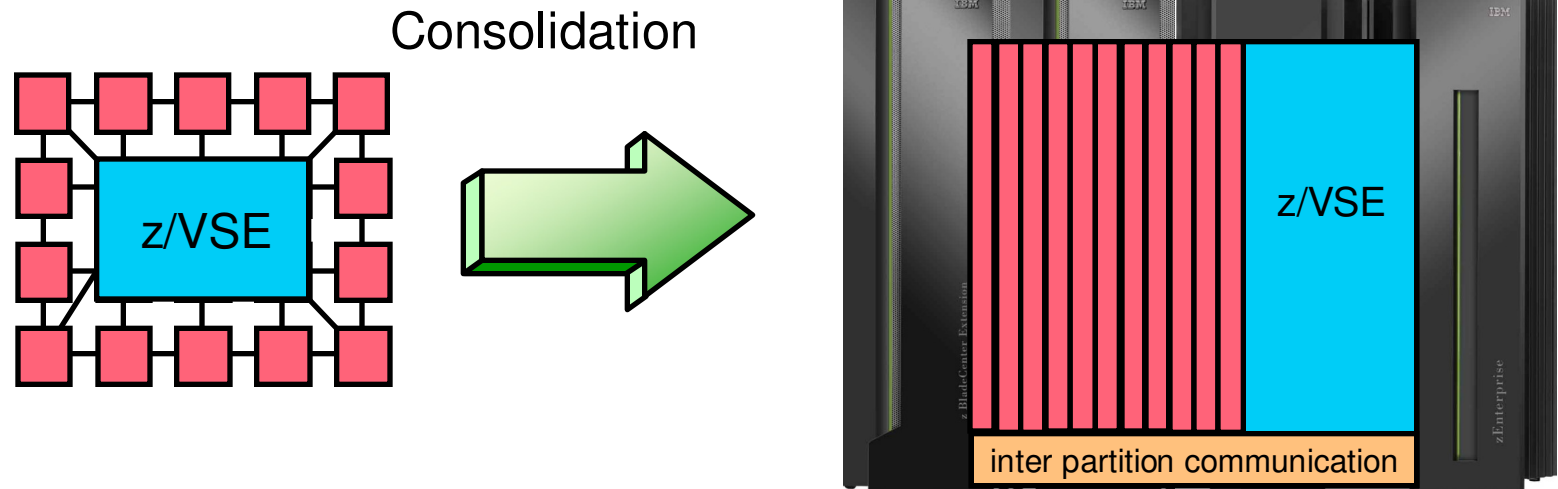
For z/VSE customers, zEnterprise opens new horizons:
- Integration of multiple platforms of the Enterprise
- A big variety of standard applications
- The integration of existing applications and data using e-business Connectors
- Modern, scalable new solutions

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Global Virtualization – with System z

IBM System z / zEnterprise

z/VM

Linux Linux z/VSE

z/VSE

Linux

HiperSockets HiperSockets

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
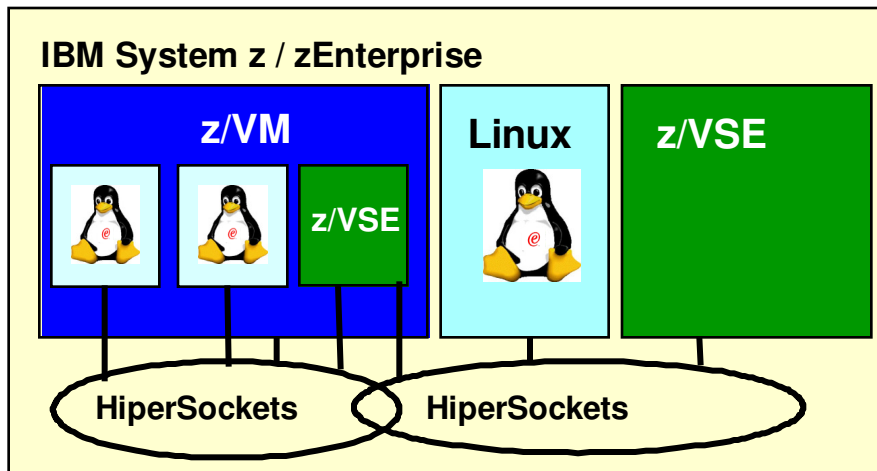
- ▪ Network Virtualization

- ▪ Memory Virtualization

- ▪ Processor Virtualization

- ▪ System Virtualization

- ▪ Disk Virtualization

SAN with 4 Gbps F

Multi-
v
e

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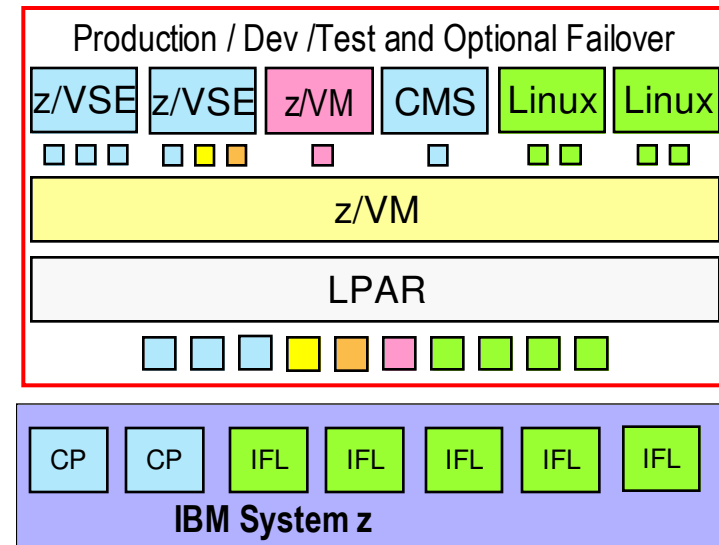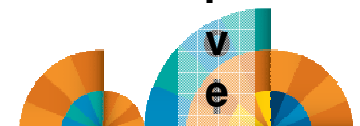
Linux on System z as Central Access Point

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

SOA

z/VSE Environment

+ CICS
+ TCP/IP
+ COBOL

z/VM

IFL Engine (s)

LPAR or z/VM

Standard CP Engine (s)

IBM zEnterprise

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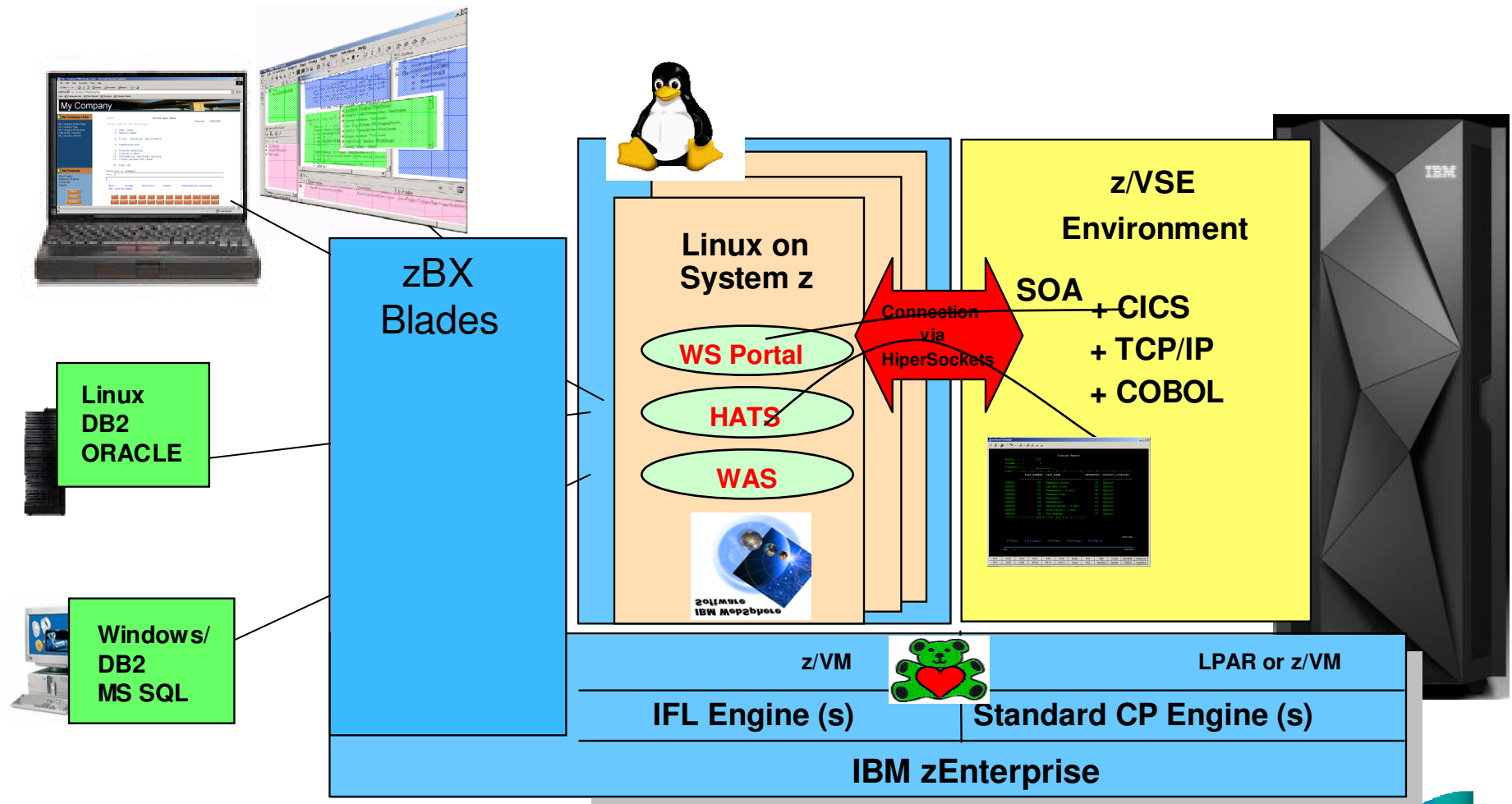
Central Authentication Options – LDAP in Linux or LDAP/RACF in z/VM

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

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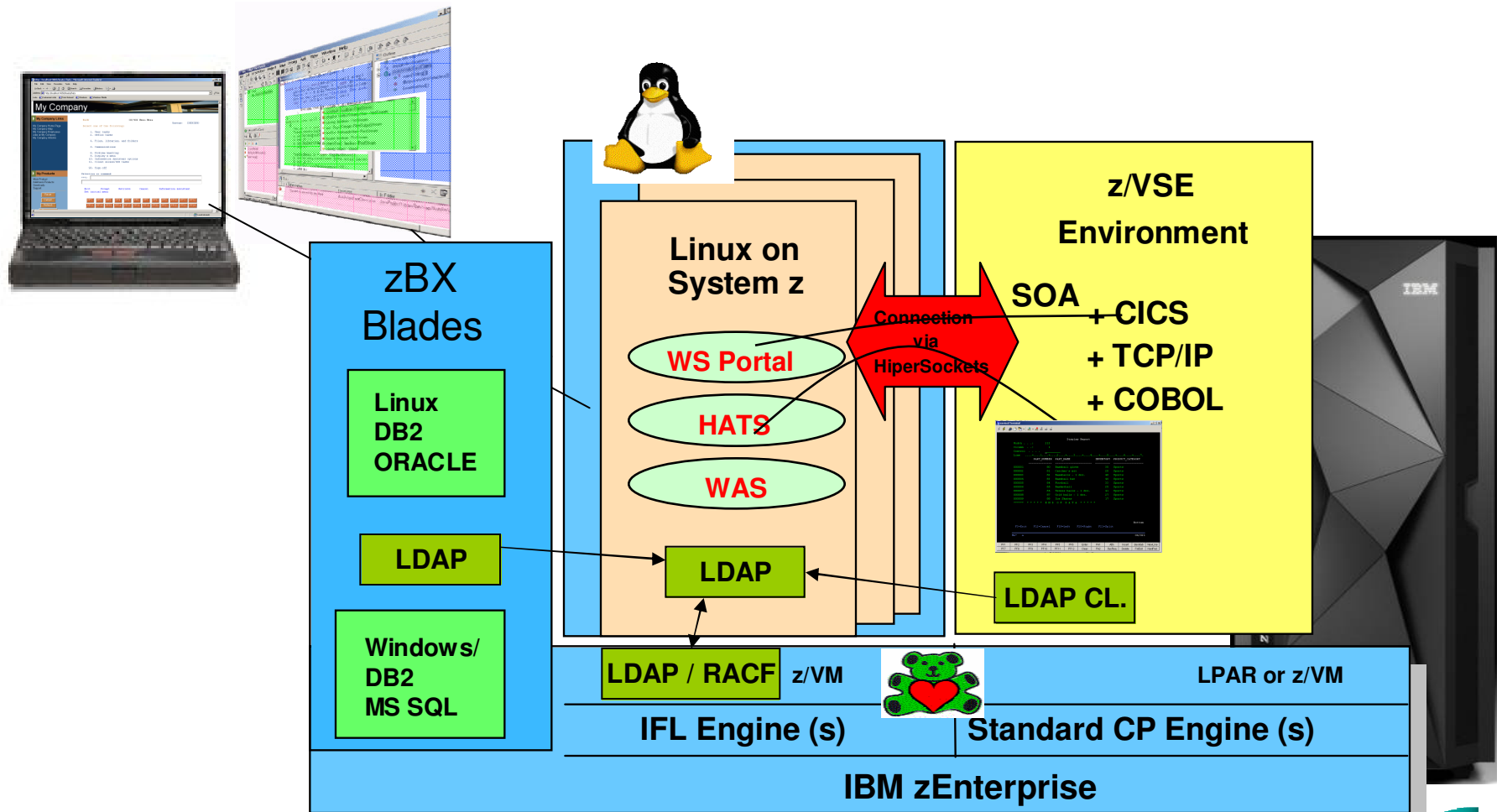
z/VSE Security Components

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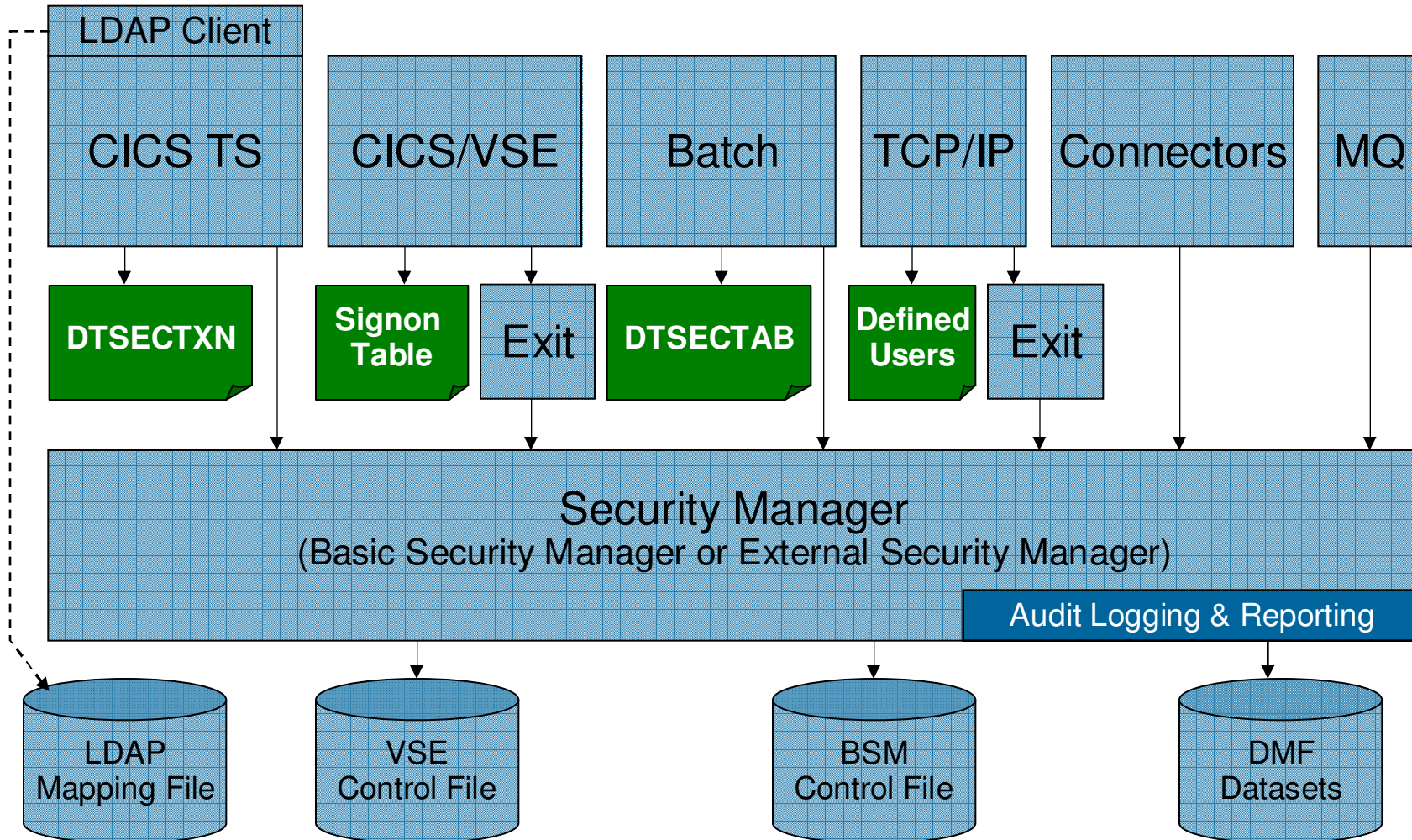
Web Integration with traditional CICS transactions

Browser

CICS/TS

User Appl

ISC

Linux on System z

Hipersockets

CICS/TS

Websphere Application server

CWS

HATS / HOD

CTG – ECI

MQ Series client/server

SOAP client/server

User Appl

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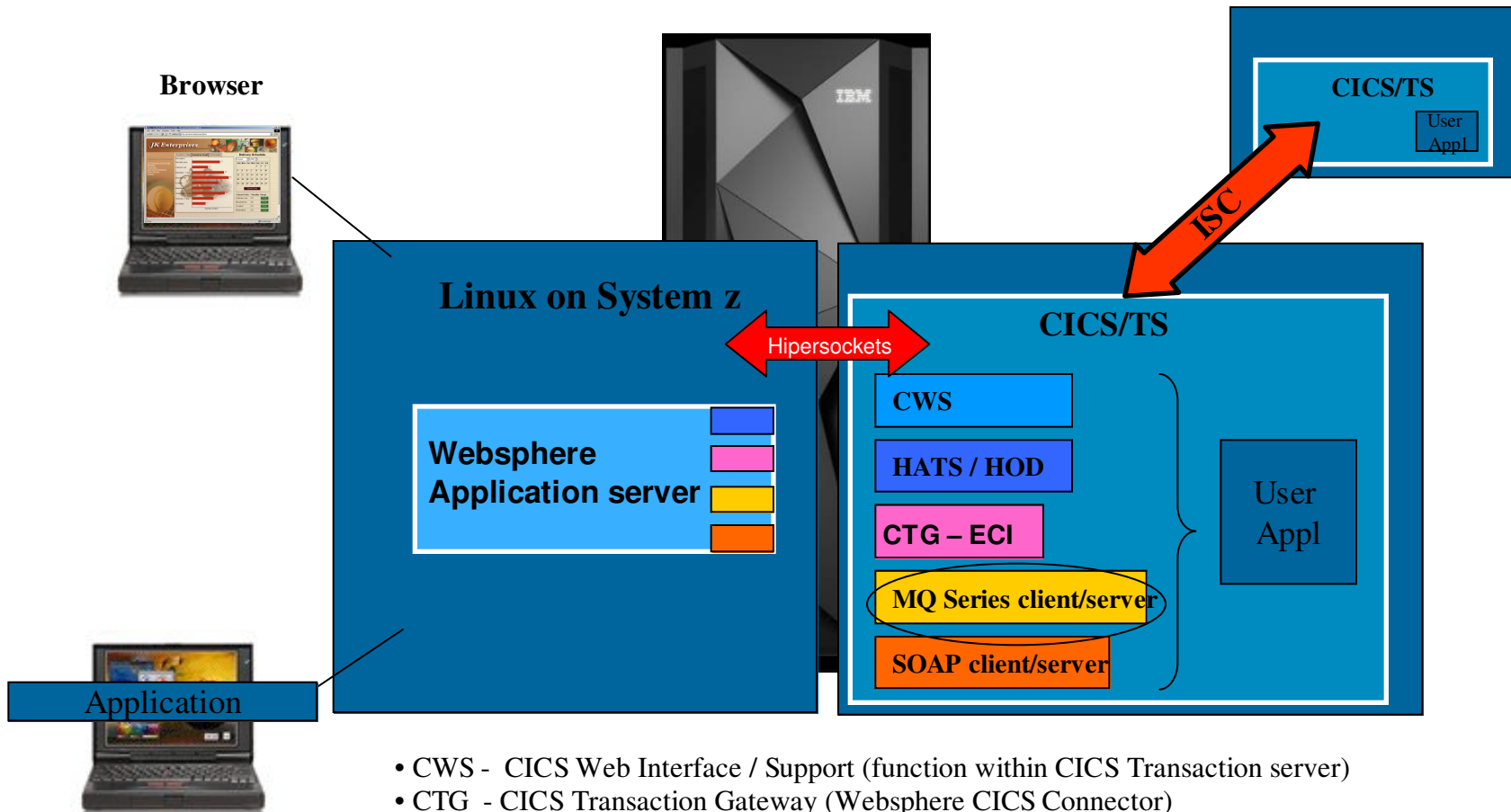
- CWS - CICS Web Interface / Support (function within CICS Transaction server)
- CTG - CICS Transaction Gateway (Websphere CICS Connector)
- HATS – Host Access Transformation Server
- HOD - Host OnDemand (Websphere Host Integrator)
- SOAP - Simple Object Access Protocol (Web Services based with XML data)

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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
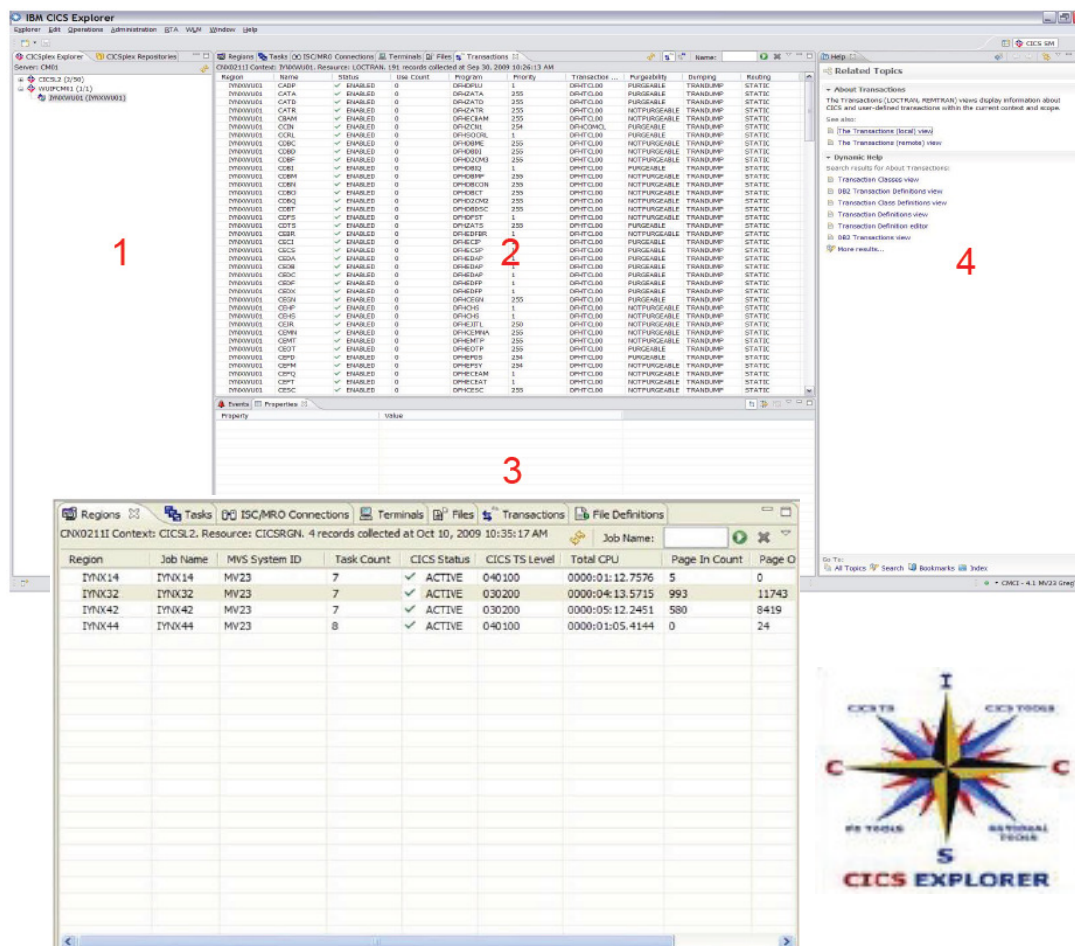
Fulfills Statement of Direction:
"IBM intends to provide CICS Explorer capabilities for CICS TS for VSE/ESA, to deliver additional value."

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New in WMQ for z/VSE V3R0

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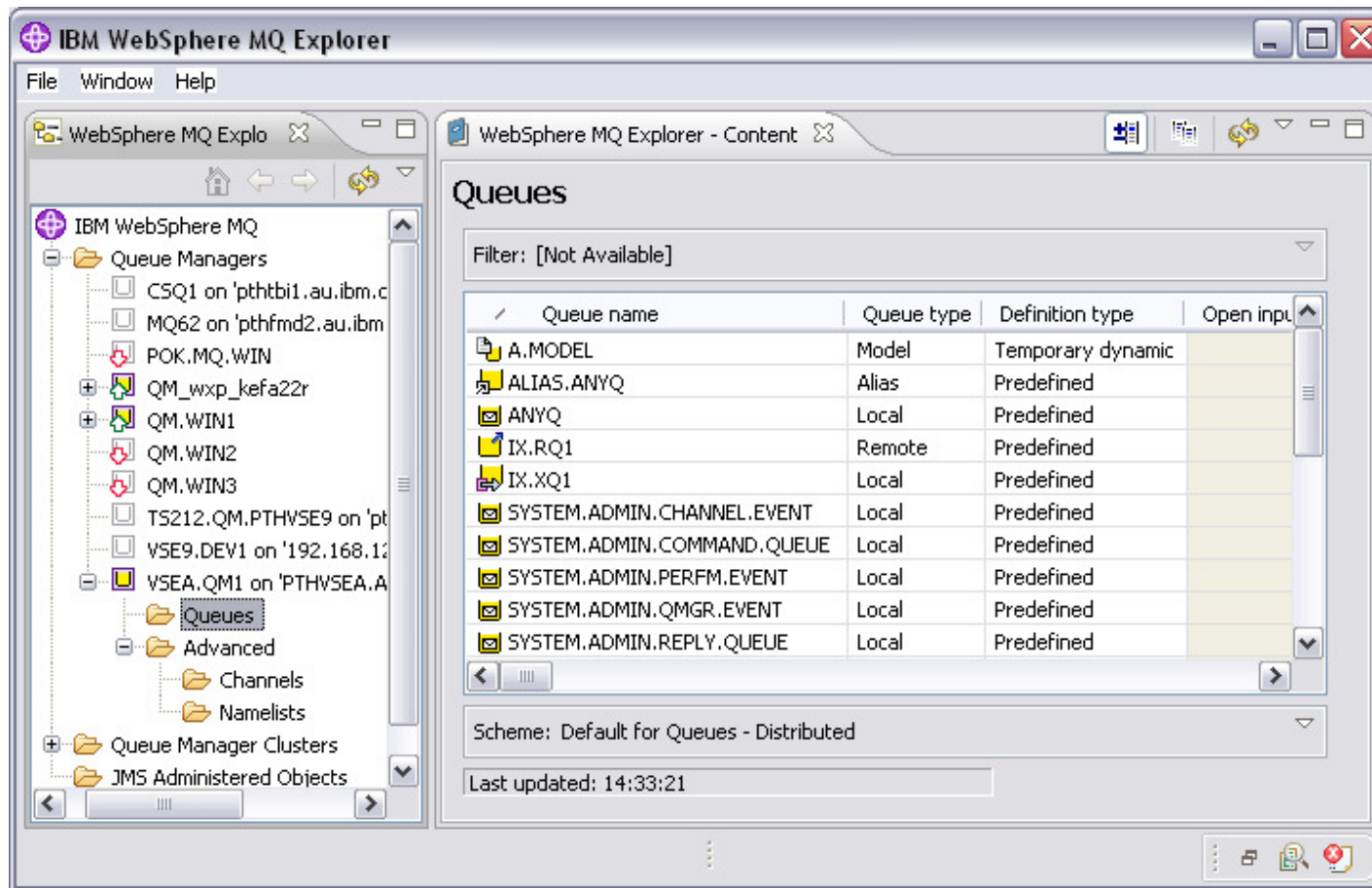
You can use Explorer to administer the z/VSE queue manager, its queues, channels and namelists, including create, delete, modify and display.

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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**

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IBM
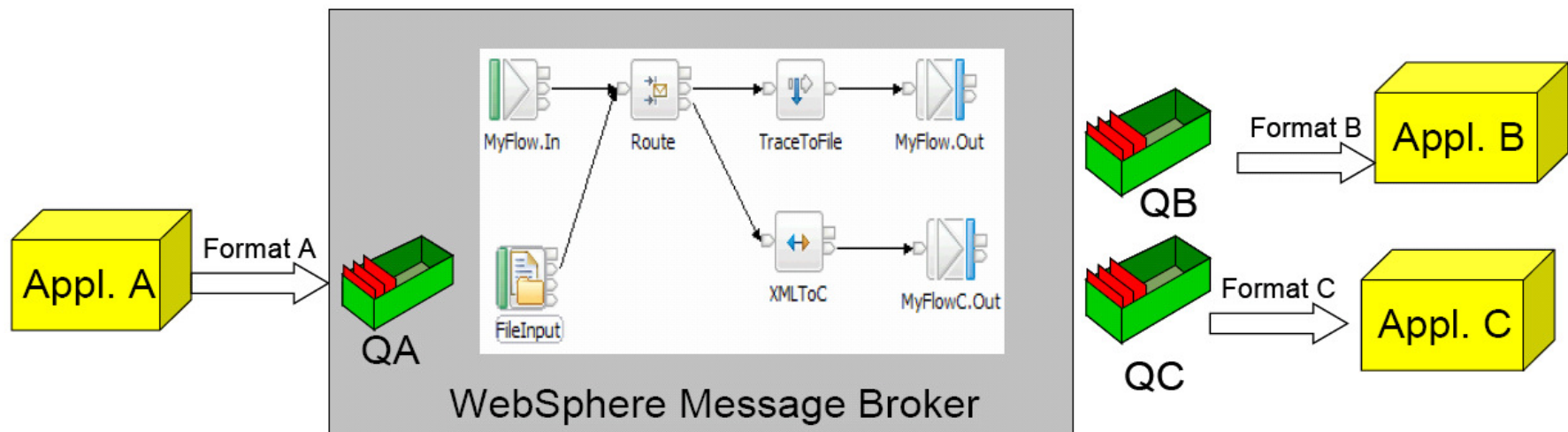
Connectivity to CICS transactions

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

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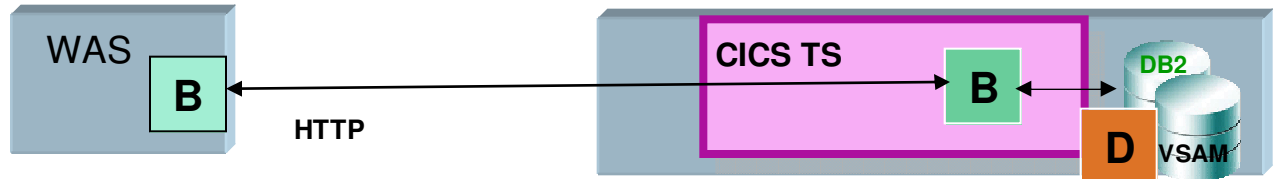
WebSphere
Host Access Transformation Services (HATS)

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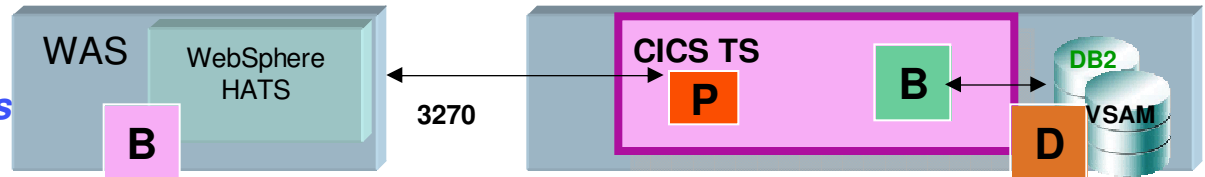
J2C Connector:
CICS Transaction Gateway (CTG)

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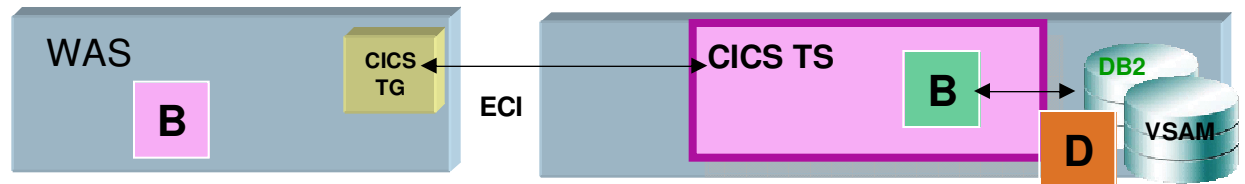
JMS Connector:
MQ to CICS Bridge

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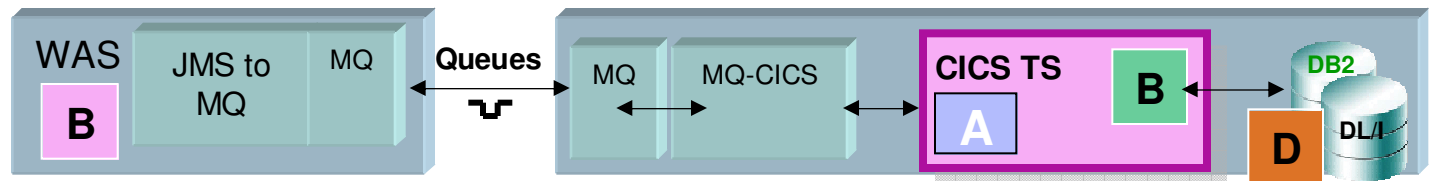
SOA Integration:
Web Services access to CICS

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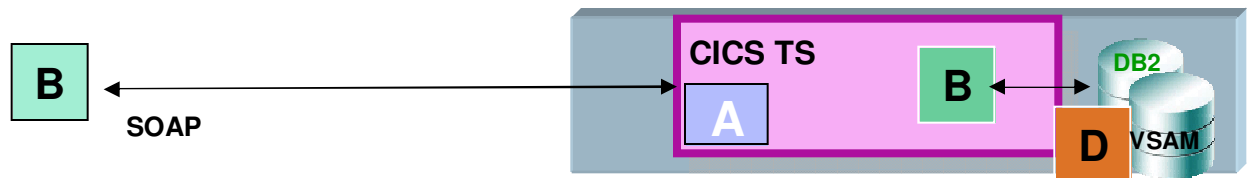
WAS can be on Linux on z or on zBX in an zEnterprise Ensemble. Qualities of Services will vary.

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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

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

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The Two Models of SOA CICS Integration via Web Services

Other/Any

CICS TS **(direct SOA access to CICS)**

Business Function

| Web Service Client | **SOA** → | CICS Web Services | → | Integration logic **I** | → | Business logic **B** | → | Data access **D** | → |

Other/Any

Intermediate (Linux)

CICS TS

CICS Program

| Web Service Client | **SOA** → | Web services end-point | **connector** **CTG** HATS Socket HTTP | → | **A** Business logic **B** | → |

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IBM
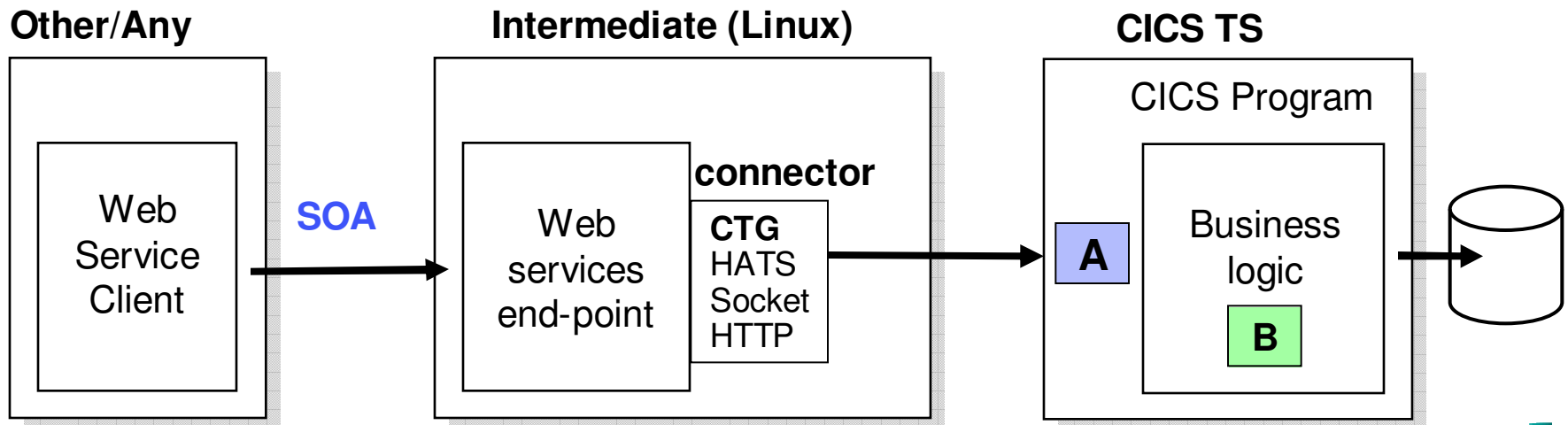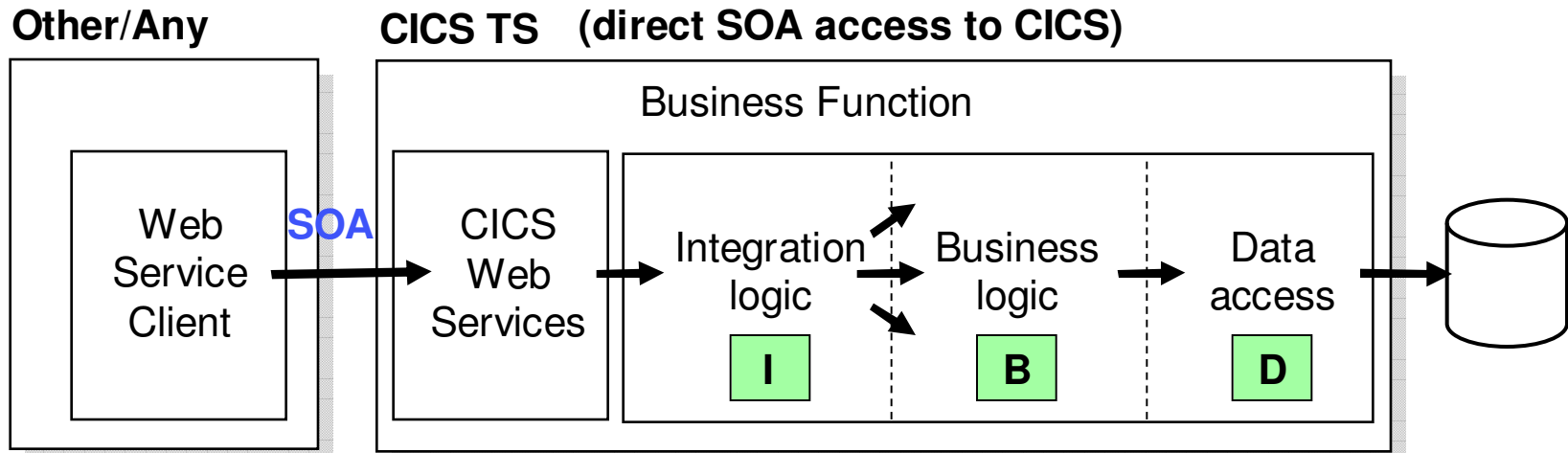
Integration using an Enterprise Service Bus

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

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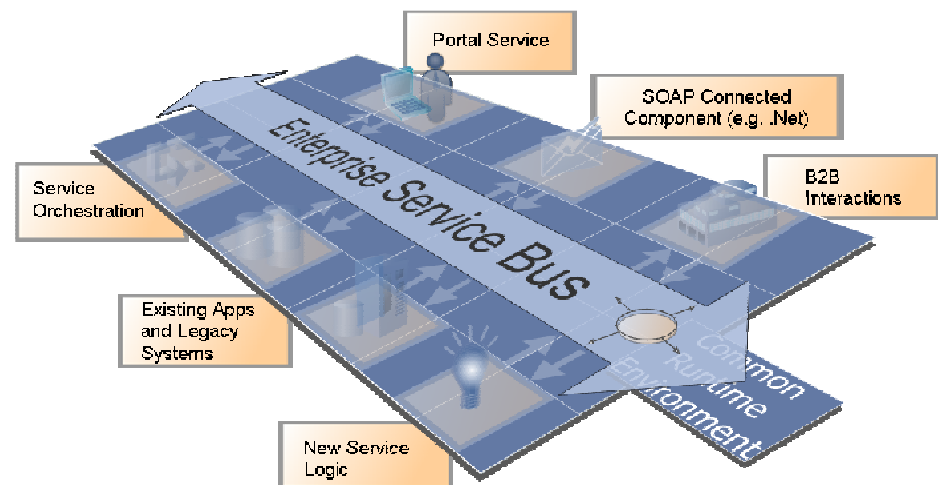
SOA – it is the implementation phase

- Active Projects in several customer sites:
  - Germany
  - Italy
  - Ecuador
  - Philippines

Sample SOA Architecture

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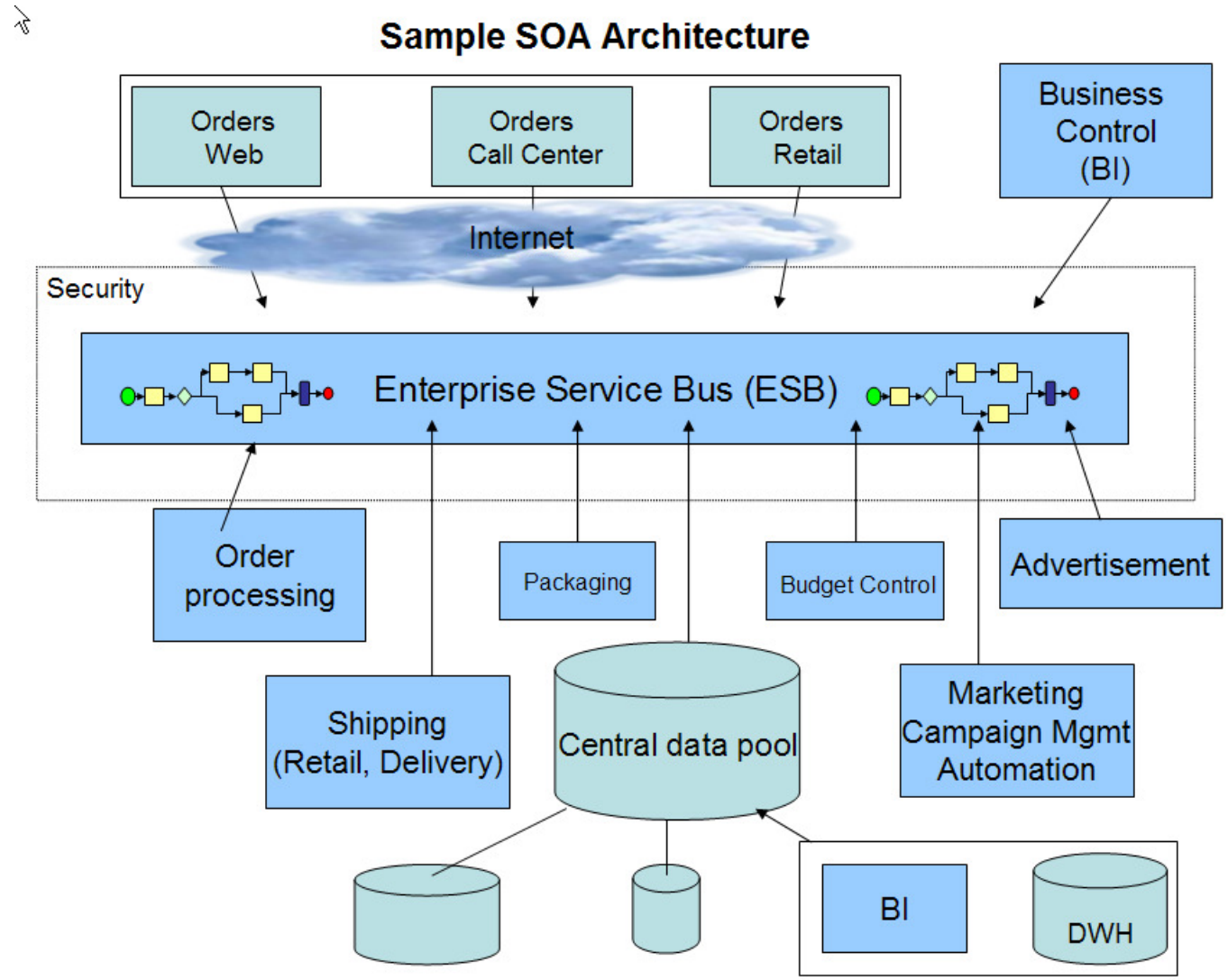
Web Services with z/VSE

SOA and XML data interchange with
CICS transactions in VSE

Microsoft .NET
Websphere
Apache SOAP
AXIS
Java

SOAP Client/Server

HTTP (HTTPS)

SOAP Envelope

z/VSE

CICS TS

XML

XML Parser

SOAP Engine

XML to Commarea proxy

Commarea

★ Transaction

Welcome to the CICS2WS Toolkit!

CICS2WS

WS 2 CICS

Create a Web Service from a CICS Application

Use a Web Service with a CICS Application

CICS2WS Toolkit

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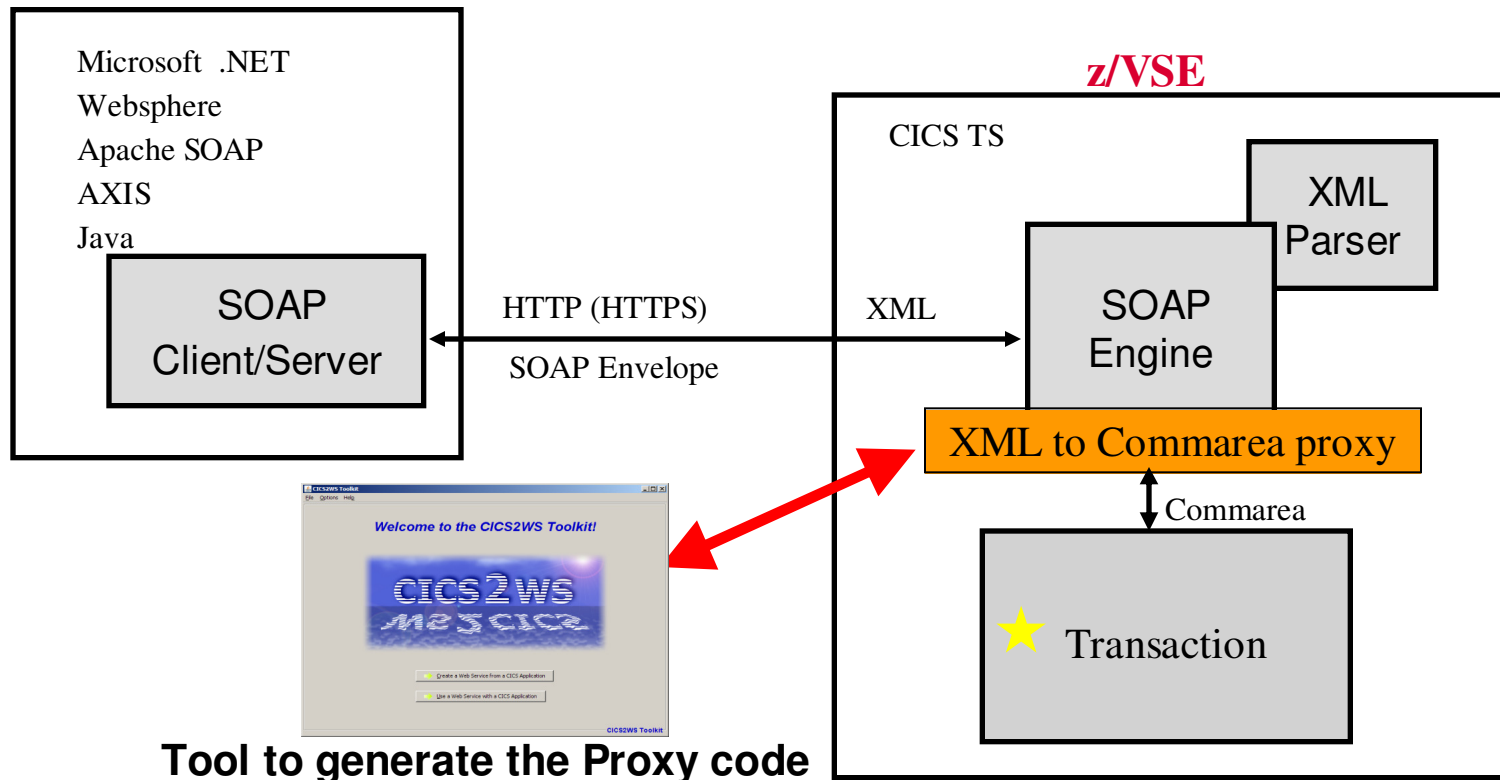
★ Existing VSE Transactions as Web Service

★ Existing Transactions can call a remote Web Service

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

Network simplification with zBX or z/VM

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
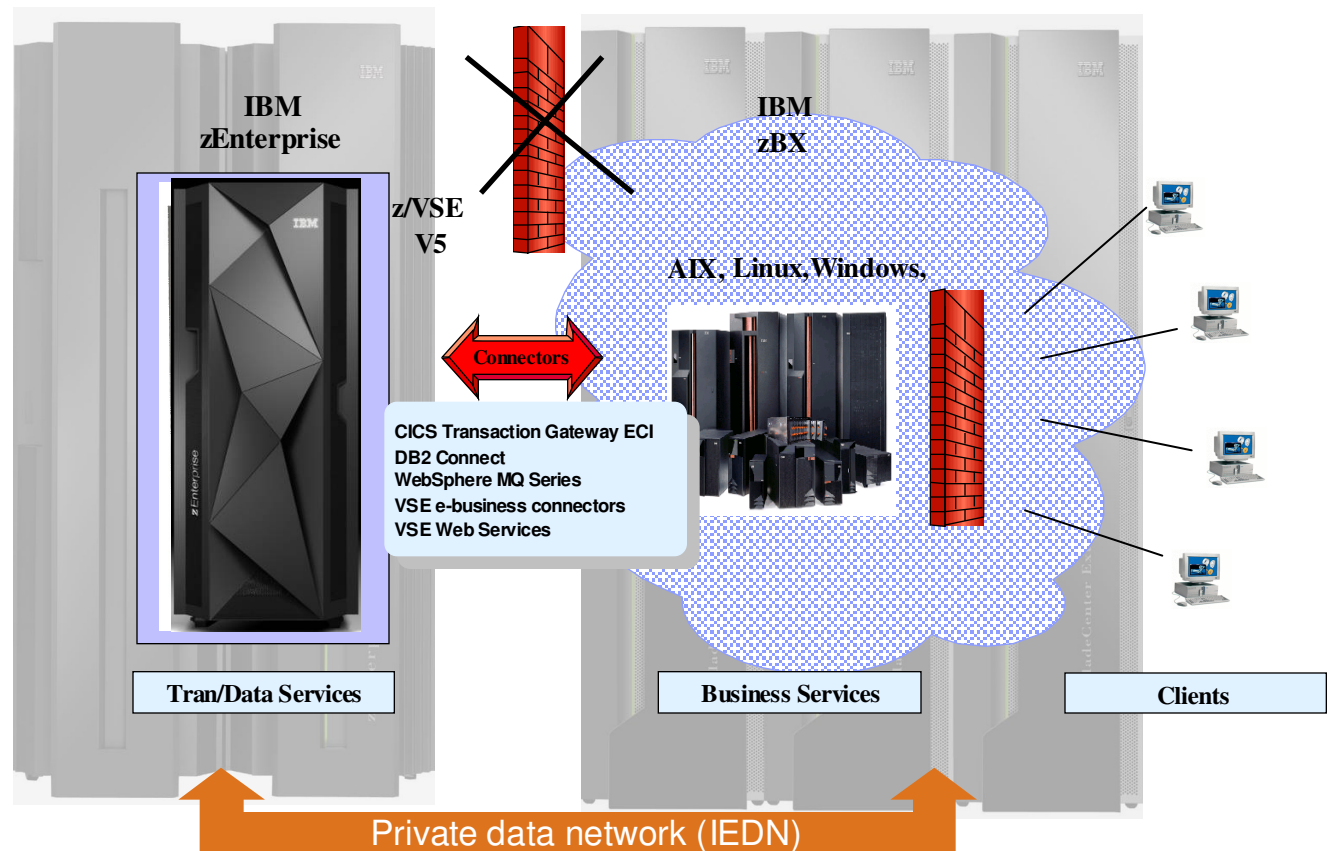
IBM
zEnterprise

z/VSE
V5

IBM
zBX

AIX, Linux, Windows,

Connectors

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

Tran/Data Services

Business Services

Clients

Private data network (IEDN)

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

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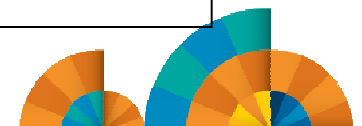
Insurance Company Consolidated 292 Servers to a z10

3560E-24TD	8
3560E-24TD	17
3560E-12D	6
50 Ft UTP Cable	584
10GB Eth Fiber Cable	60

Before

Over 600 Cables

Backbone

Network

The diagram only shows **30** of **292** servers

After

Backbone

Just 10 Cables!
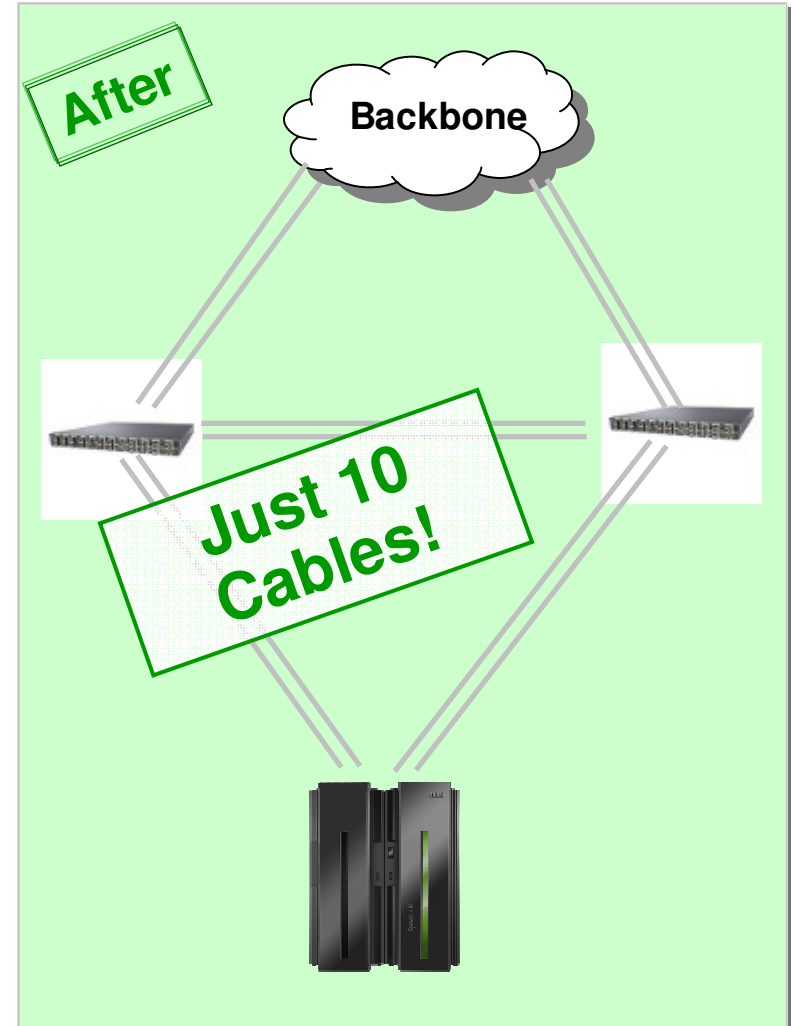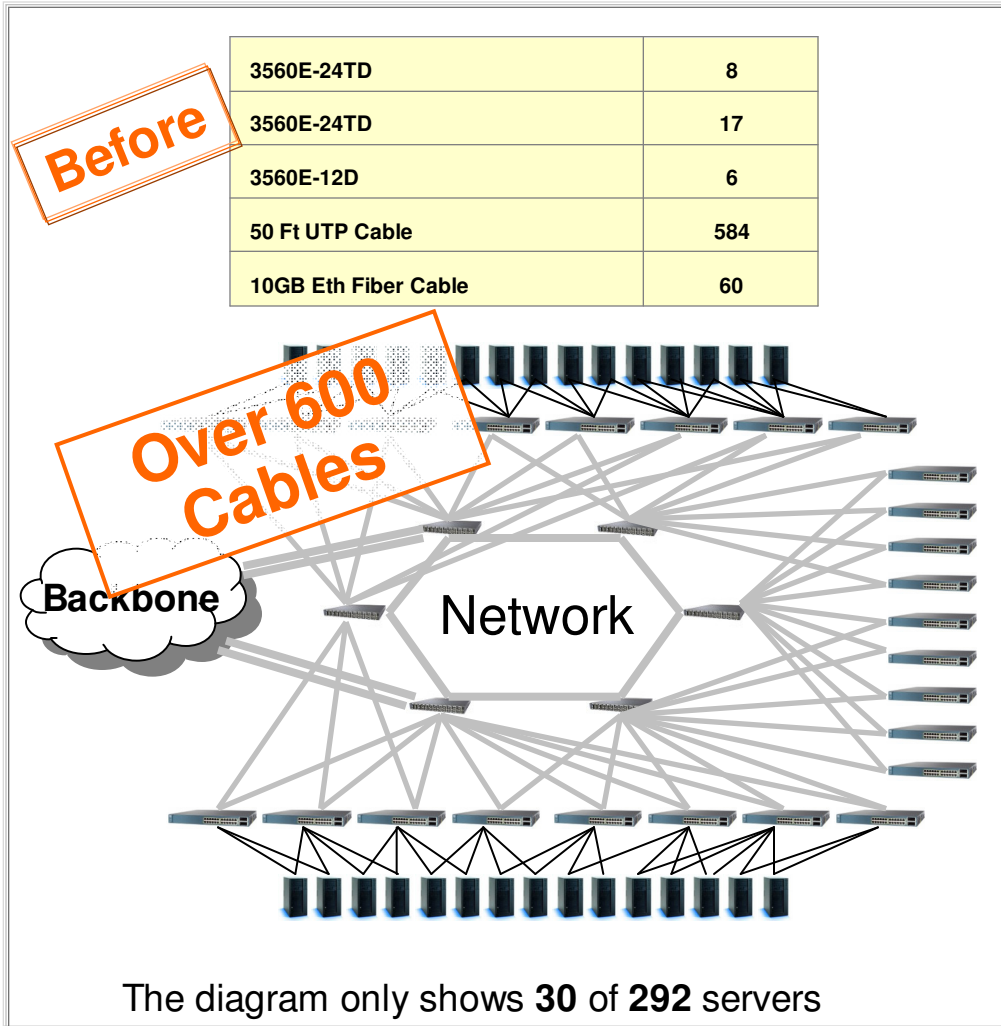
Data is based on real client opportunity and on internal standardized costing tools and methodologies.
Client results will vary by types of workloads, technology level of consolidated servers, utilization factor, and other implementation requirements. Savings will vary by client.

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IBM

Data Warehouse and BI with Linux on System z

Consolidate, Integrate, Evaluate - DB2 Client, VSAM Redirector

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

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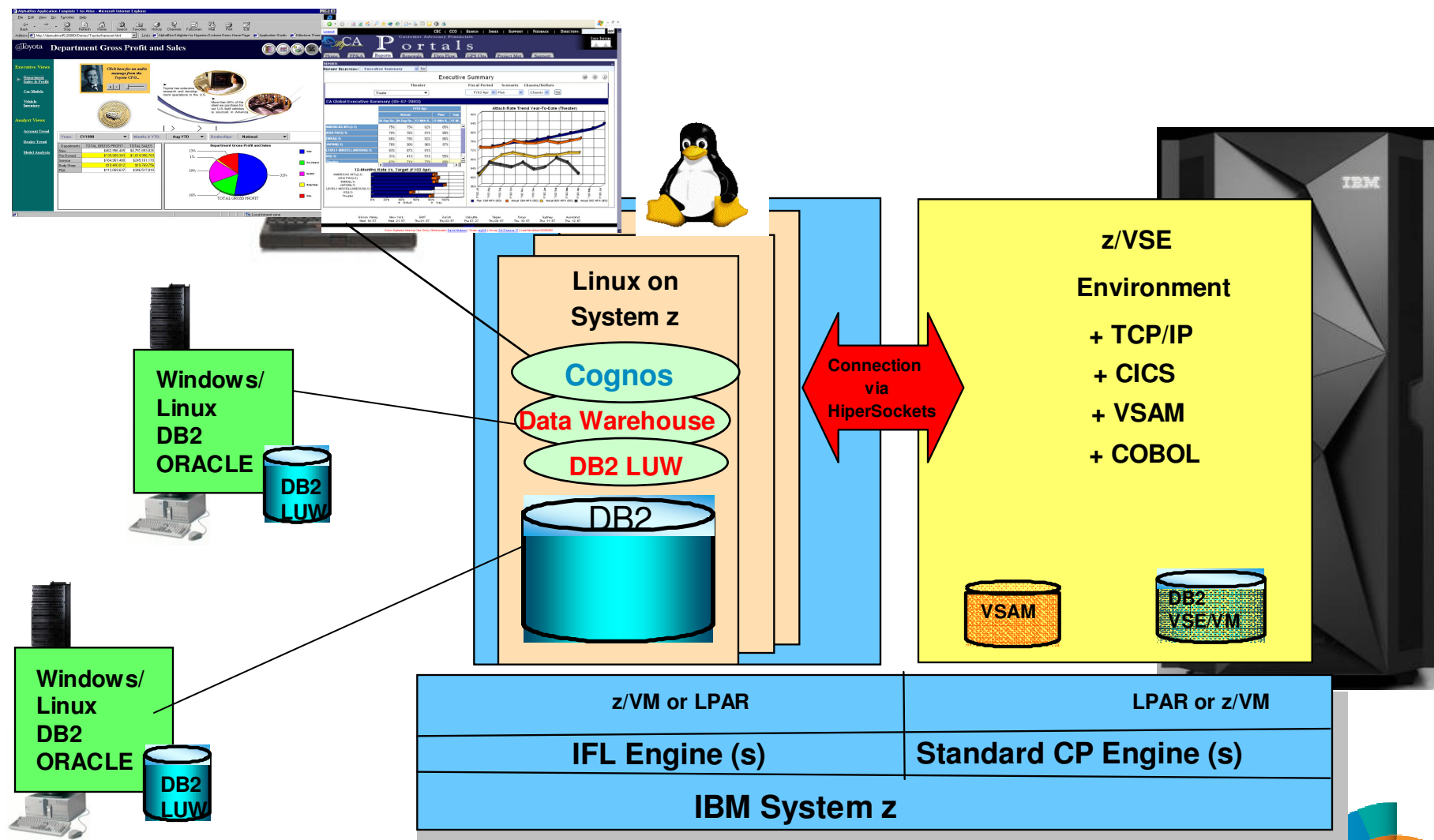
(B)PUSH scenario: VSE/VSAM applications, access remote relational databases

(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

TCP/IP

VSAM Redirector Client

LE/VSE

Batch

CICS

VSAM

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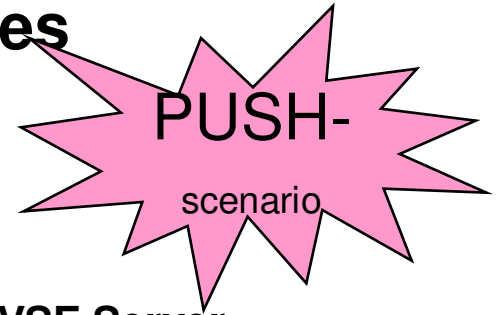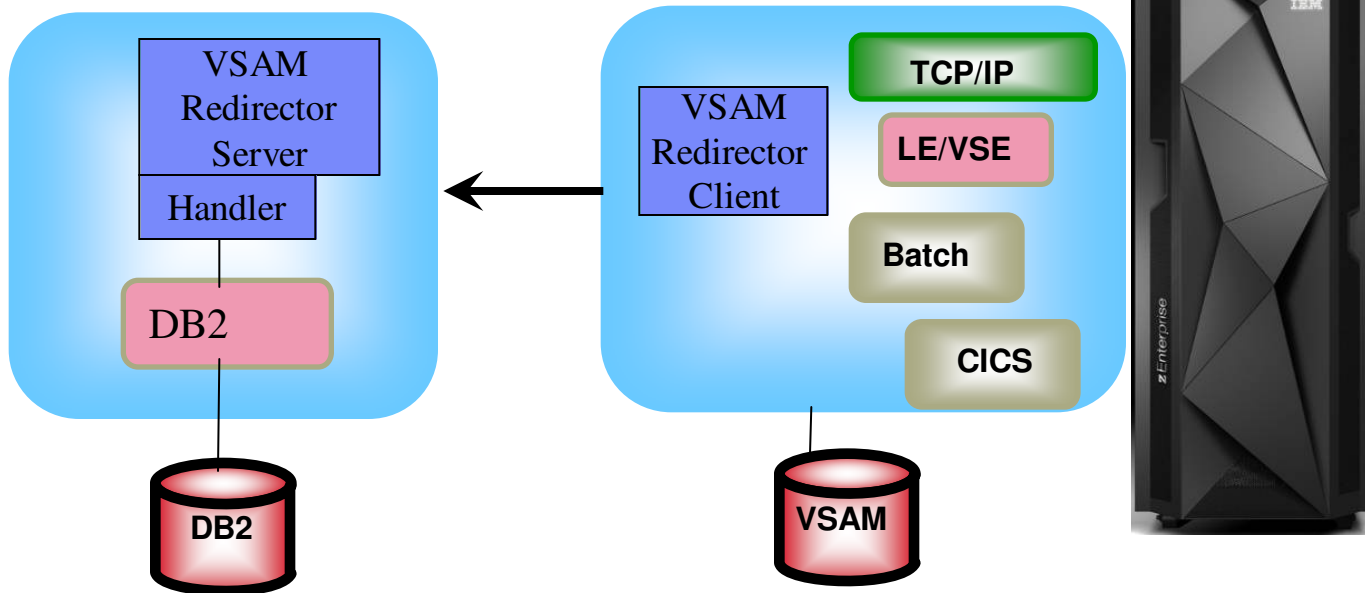
Applications on z/VSE
access 'any' remote relational databases

New in z/VSE 5.11

- 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

DB2 Server

DBCLI Server

JDBC v3+

TCP/IP

z/VSE Server

TCP/IP

DB2 Client — Batch

DBCLI Client — CICS

DB2

MS SQL

Oracle

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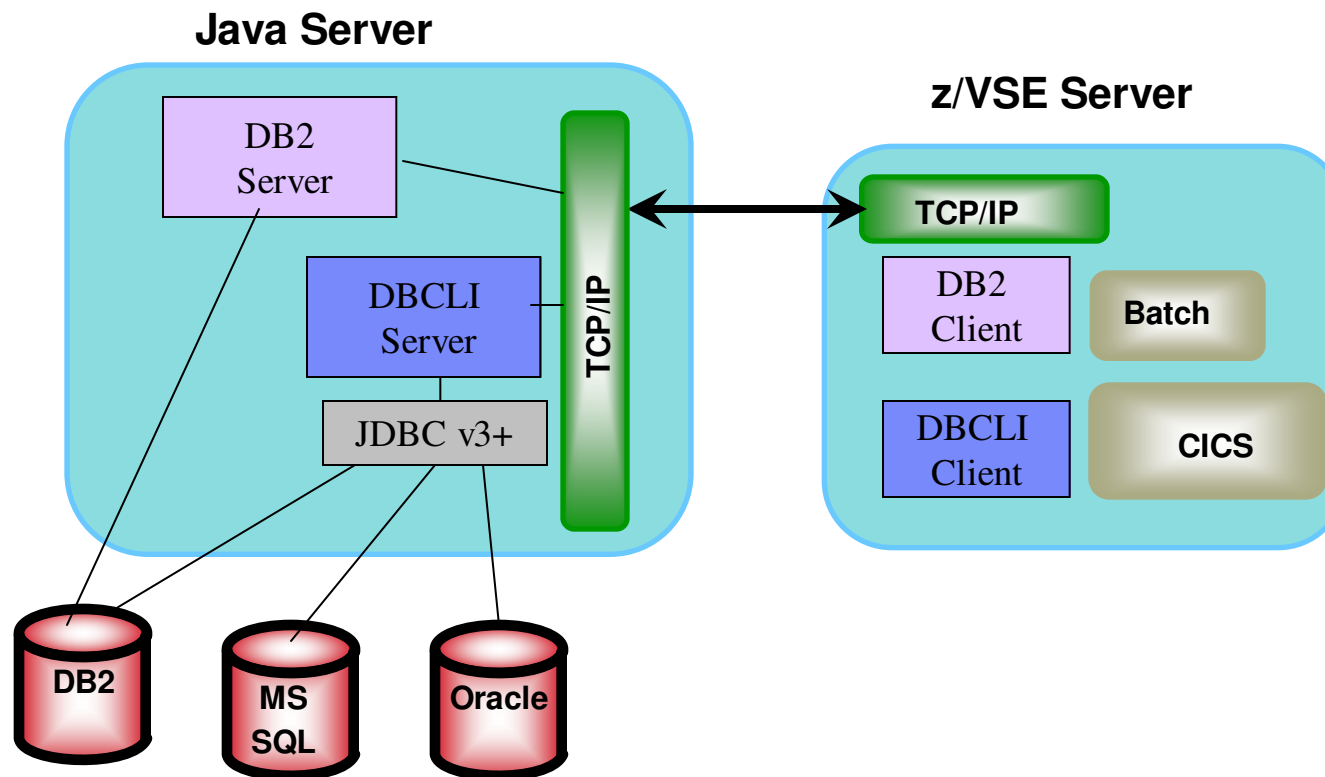
InfoSphere Federation Server on Linux on System z

- 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

SQL

InfoSphere
Federation Server

| Oracle | VSAM IMS Data | DB2 | Software AG Adabas | CA Datacom | MS SQL |

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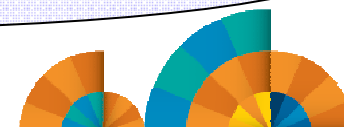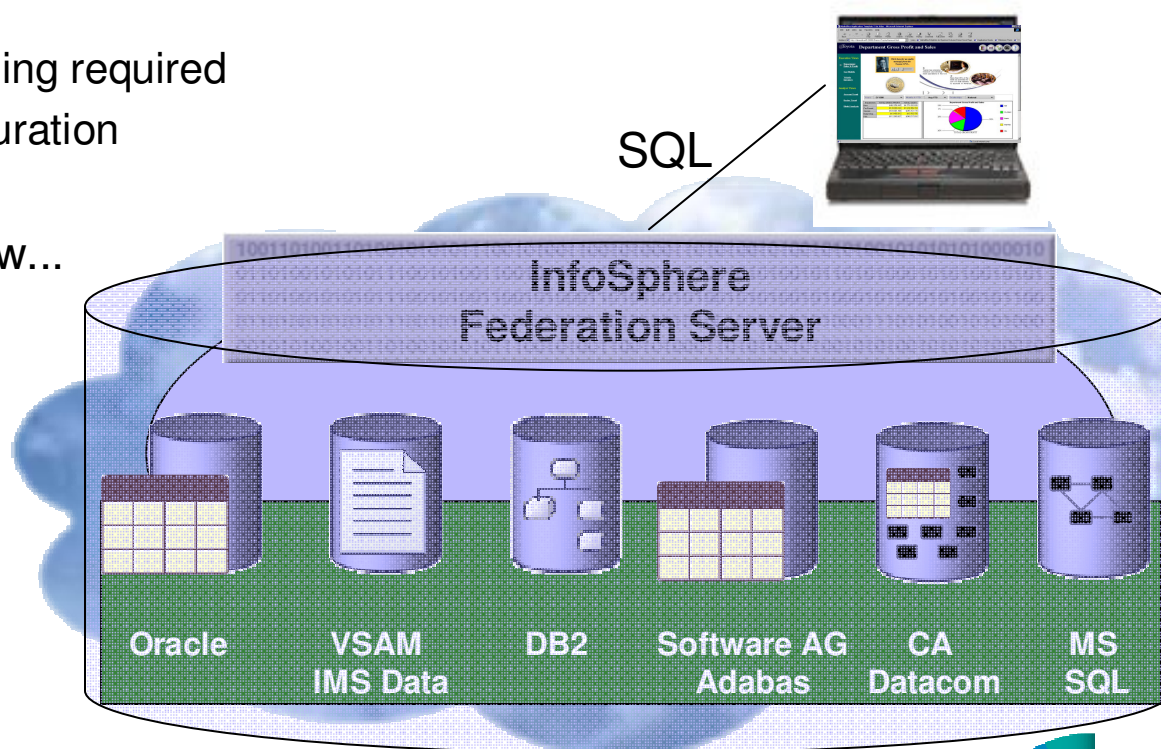
Real time access to VSE resources using the Java–Based Connector (feature included in z/VSE)

z/VSE

Linux on System z
zBX –Intel Linux

web client

Web Application Server

VSEScript

TCP/IP

Java Program

TCP/IP

TCP/IP

Connector
Server

LIBR

Power

ICCF

Console

DL/I

VSAM

Connector Client
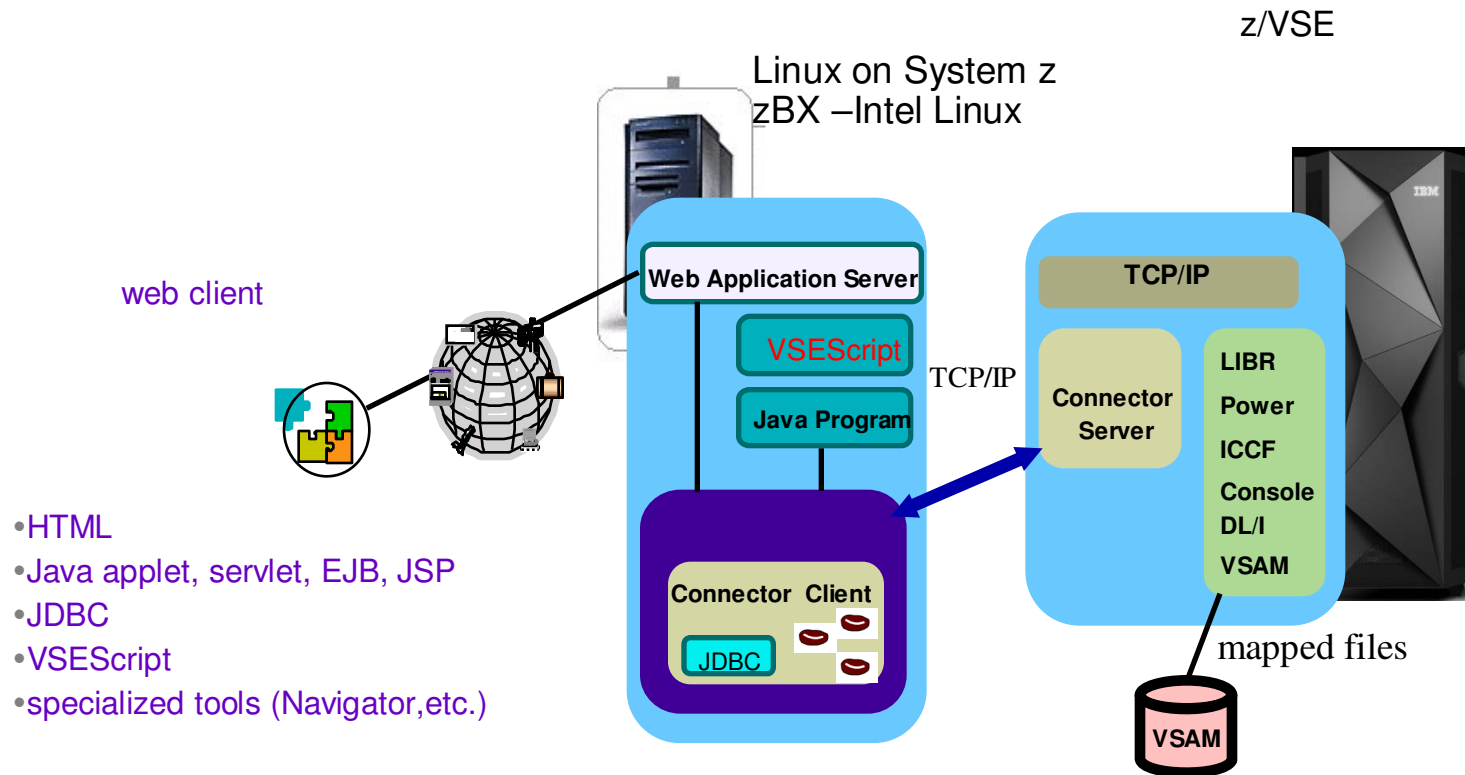
JDBC

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

mapped files

VSAM

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

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Enterprise Backup with Linux on System z

Implement TSM on Linux on System z as central Backup Hub

Linux
DB2
ORACLE

Windows
DB2
MS SQL

Linux on System z

Info on Demand

Linux on System z

TSM Server (Tivoli Storage Manager)

Tivoli

DB2 LUW Data Warehouse

DB2

Storage Pools

DASD

Tapes / VTS

Connection via HiperSockets

System z Production Environment (z/VSE, z/OS)

+ VTAPE

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

z/VM or LPAR

z/VM

IFL Engine(s)

z/VM or LPAR

CP Engine(s)

IBM System z

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Exploitation of IBM System Storage options with z/VSE V5

- **Copy Export function of the TS7700 Virtualization Engine Series**
  - can be used for disaster recovery purposes
- **Multi-Cluster Grid Support of the TS7700 Virtualization Engine Series**
  - enables disaster recovery or high availability solutions
- **FCP-attached SCSI disks can additionally be used with:**
  - IBM Storwize V7000 Midrange Disk System
  - IBM XIV Storage System

DS8000

XIV

Storwize V7000

Midrange size system with great highend features

Highend 99.999 system without sophisticated options

Highend 99.999 system with sophistication, complex 3-site copies, ultra-low latency

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

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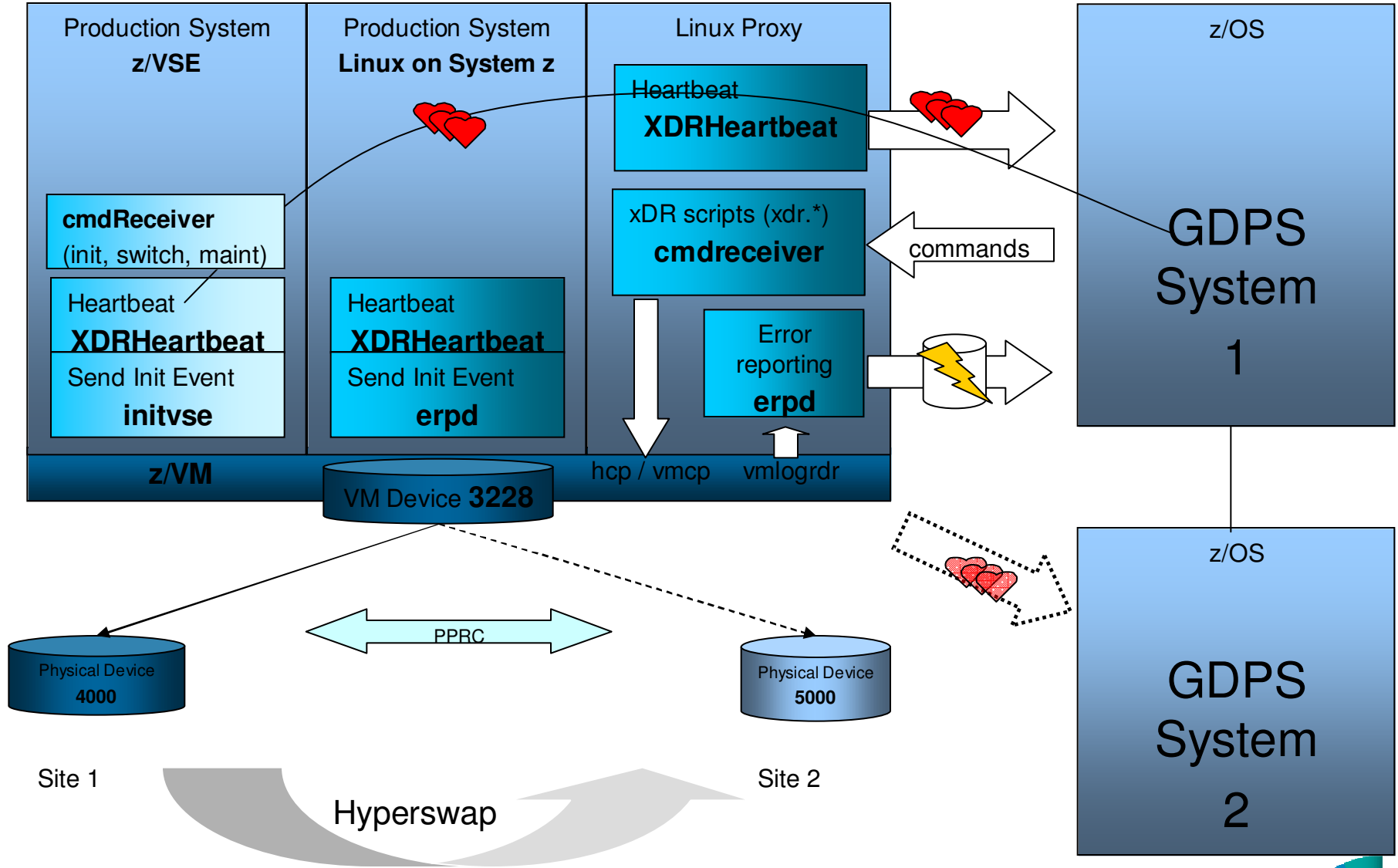
z/VSE Monitoring possibilities
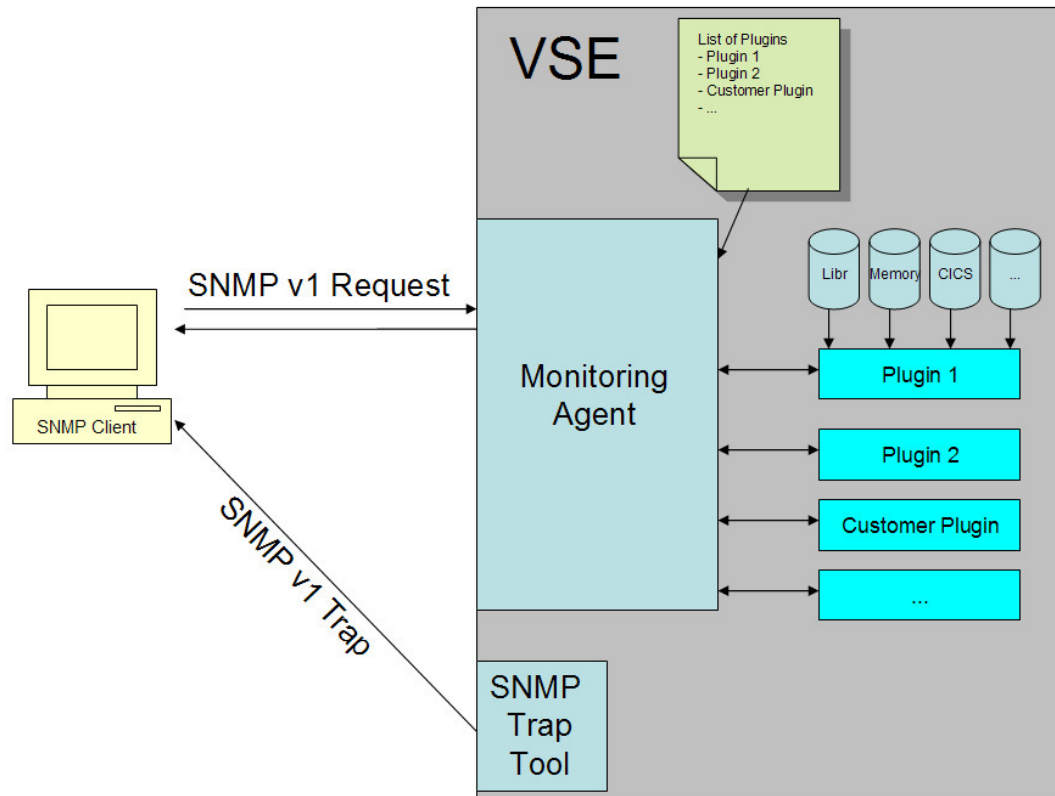
- Monitoring Agent based on SNMP V1
  - Real time monitoring
    - retrieve z/VSE specific system and performance data
  - Event driven monitoring using SNMP Trap tool and API
    - Helps to automate processes in z/VSE with SNMP traps

'Common' development Environment...

Java
C++
Visual ...

COBOL
PL/I
Assembler

Internet

Rational
Developer
Tools

Central
Code Repository

Eclipse helps !

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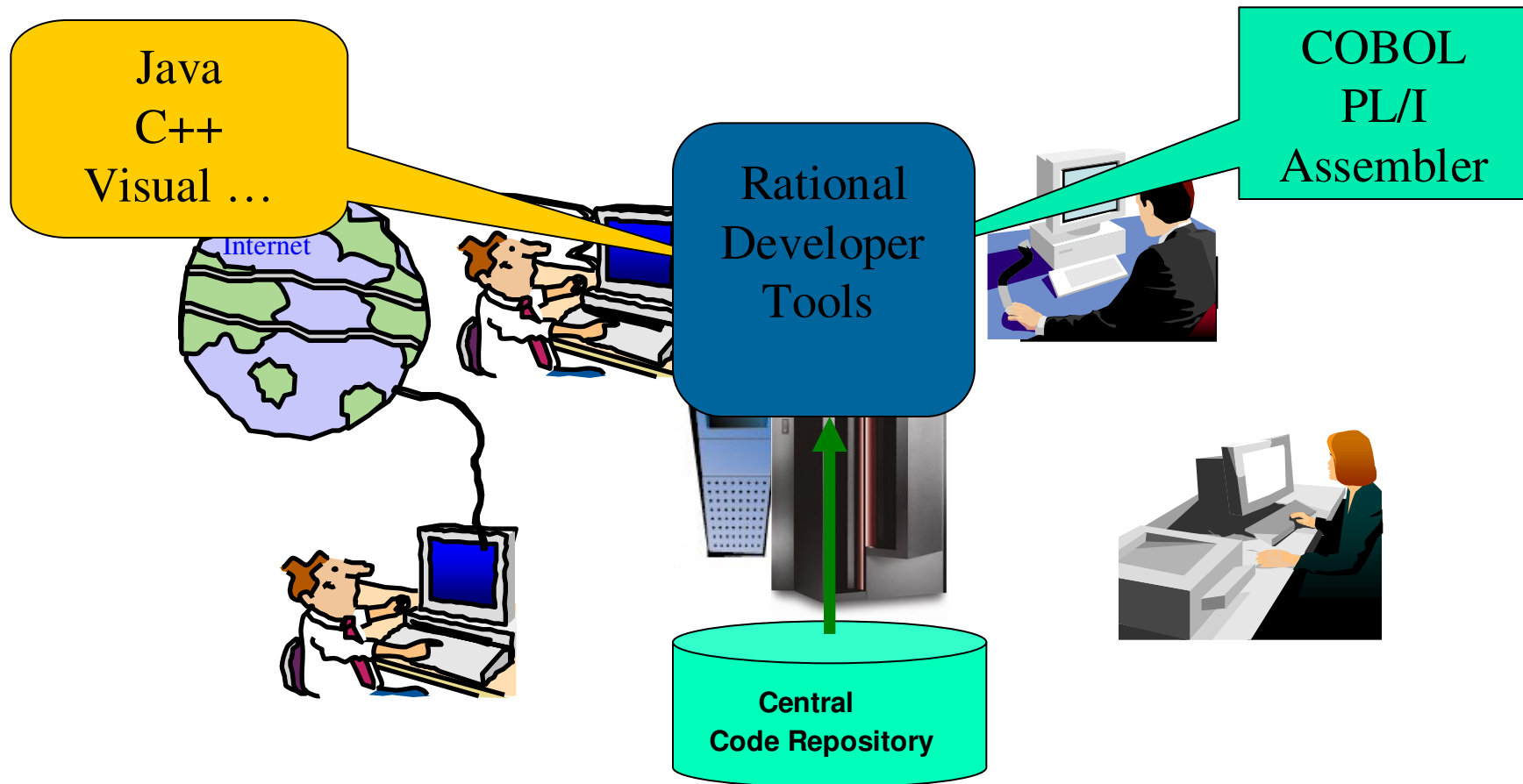
Eclipse based Development Environments for z/VSE

Eclipse – the open Standard for application development

RBD

HATS

RDz

| Rapid AD Tools | Web Tooling | IDE | Modeling Tool |

Standalone Tool

Desktop

Platform APIs / Extension Points

Common Services
- Resource Management
- Project Model
- Team Programming Model
- Debugging
- Extensibility framework

Common Frameworks
- Widget Toolkit
- UI Frameworks
- Editing Frameworks
- Builders, Markers, Help

| CCLT Interface | Repository Interface | Other Interfaces |

Repository (CVS, Subversion, IBM ClearCase*)

●━●━● **Extension points**

| ISV plug-in | **functional extensions to Eclipse**

www.eclipse.org

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

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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

ZSP03505-USEN-00

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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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Customer Example: Supreme Court of Virginia
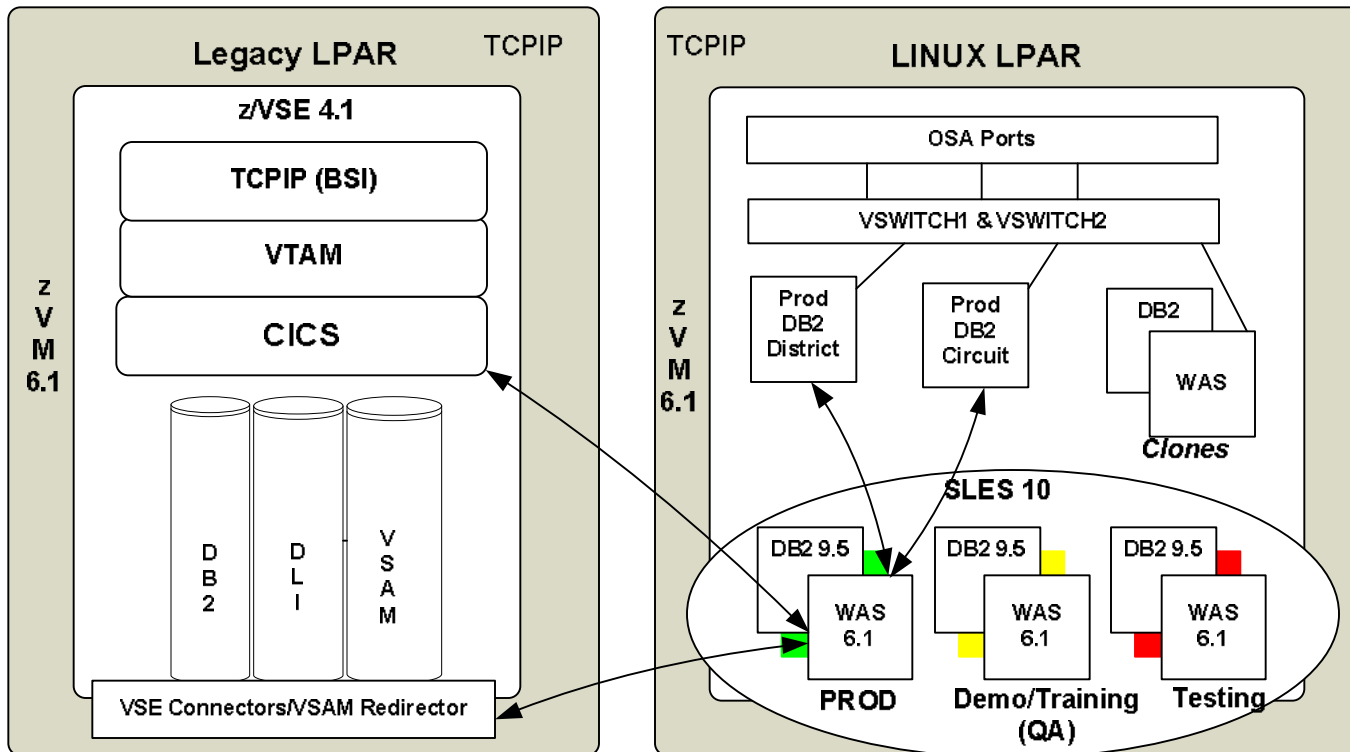
- 1 + 1 z10 BC L02
- 2 + 2 CPs
- 5 + 5 IFLs
- 112 + 112 GB memory
- 2 + 2 z/VM V6.1 LPARs
- 8 + 4 z/VSE V4.1 guests
- 73 + 24 SLES 10 SP2 guests
- WAS V6.1, DB2 V8.2, DB2 V9

- **z10 BC L02 for Court System (internal)**
  - Serves 325 courts, 5.000+ users, 4.2 million new cases in 2009
  - Integrating z/VSE, DB2/UDB and WebSphere applications
  - eMagistrate* system serves 125 locations, 2.800 trans per day
  - *2007 ComputerWorld Honors Program Laureate*
- **z10 BC L02 for Internet**
  - eCommerce application integrating z/VSE and WebSphere appls

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Peter Hahn - **Fashion**

Modische Twinsets
In attraktiven Formen und Farben

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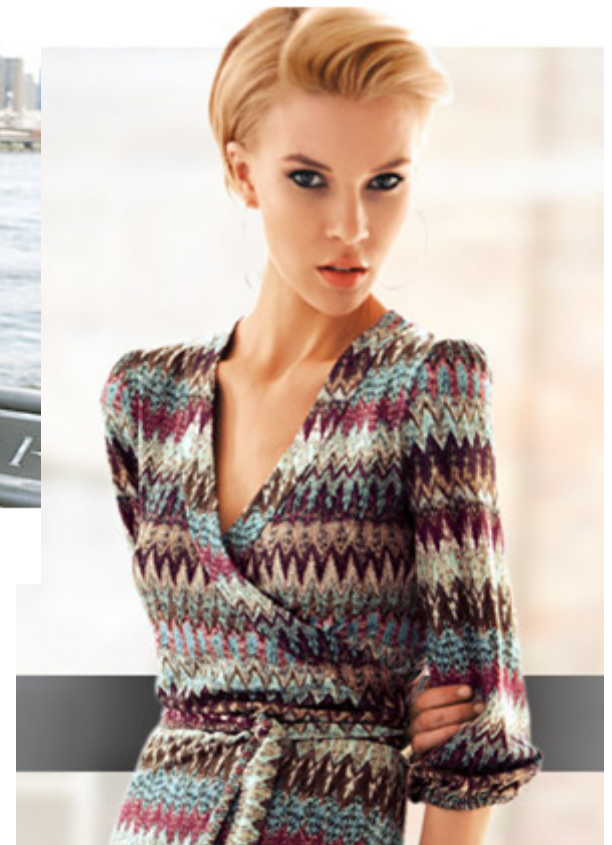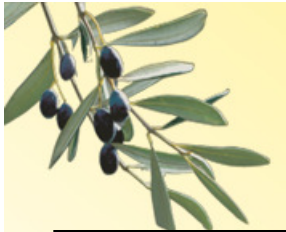
Customer Reference: Fratelli Carli, Italy

z/VM for CP engine						
Tcp/ip VM Vswitch Contr 1	Tcp/ip VM Vswitch Contr 2	Tcp/ip VM	z/VSE Test	z/VSE Hist	z/VSE Prod	z/VSE Remo

z/VM for IFL engine						
Tcp/ip VM Vswitch Contr 1	Tcp/ip VM Vswitch Contr 2	Tcp/ip VM	redhat WP Test DB2 Viper	redhat WP Prod DB2 Viper	redhat ERPRDS v6 Test DB2 Viper	redhat ERPRDS v6 Prod DB2 Viper

HiperSocket Connection

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the leading producers of premium olive oil sold directly to consumers

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Email from batch or cics

AFP / PSF via ipaddress

300 files every day transferred to different operating systems (Zlinux, linux, microsoft)

FTP
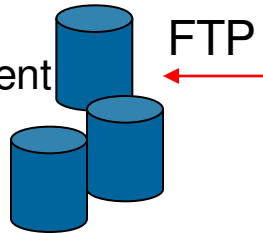
Db2 udb z/linux applications

Vsam redirector Server via hipersocket to z/linux DB2 and via vswitch Osa QDIO to Sql Server

Microsoft Sqlserver

Production Environment

Tcp/ip 1.5

Tcp/ip 1.5
only for
telnet applications
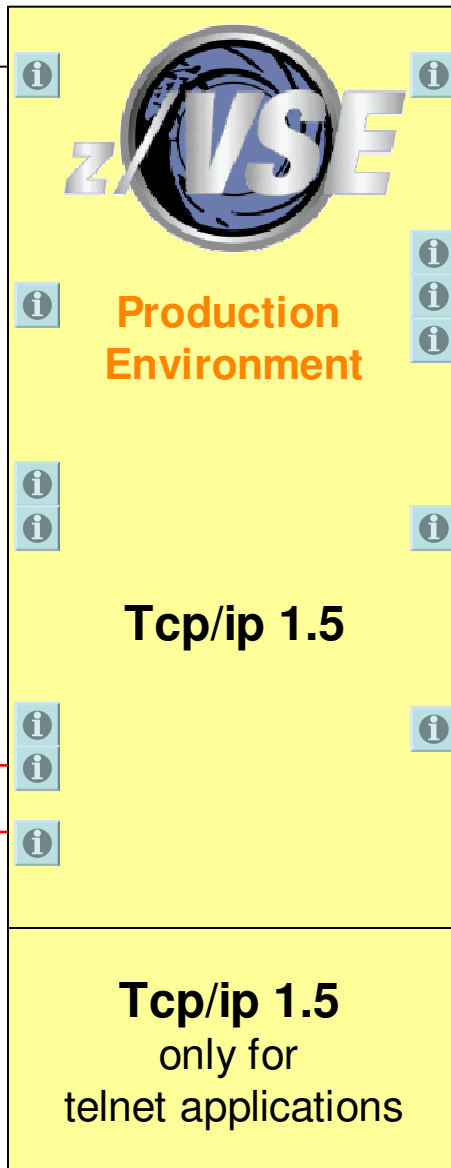
Virtual Tape

CICS TS web
SOA via hipersocket

z/Linux
Java Application
running on Tomcat
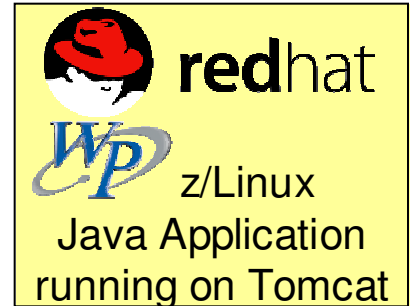
Z/Vse Health checker
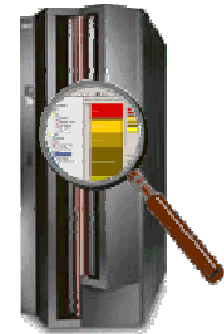
Every day 240,000 cics transactions from 400 telnet connections

the leading producers of premium olive oil sold directly to consumers

Overview - All Tools

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

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Be current: http://www.twitter.com/IBMzVSE
Subscribe to be get on the distribution list for latest news for z/VSE

For more information, please see the z/VSE web site:
http://www.ibm.com/zvse/

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Questions?

Wilhelm Mild

IBM IT Architect

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mildw@de.ibm.com*

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