IBM z Systems solutions to integrate z/VSE data and applications with your IT

Wilhelm Mild
IBM Executive IT Architect

z/VSE 50
50 years of innovation

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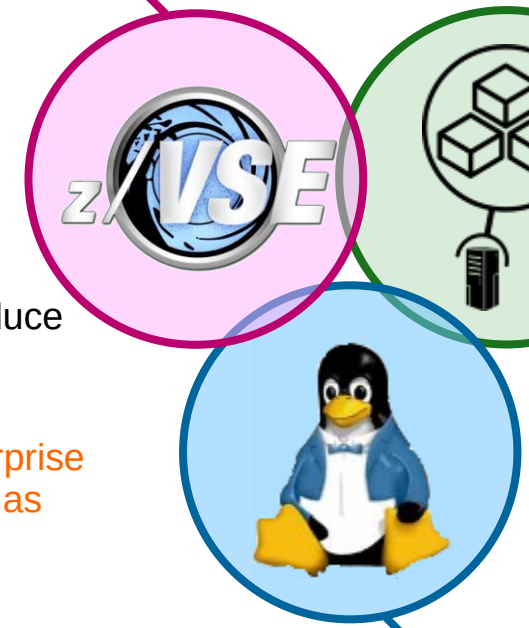
Leveraging the successful z/VSE strategy

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), Mobile
- 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

Orange=new

z/VSE Modernization options

Enhance core VSE applications

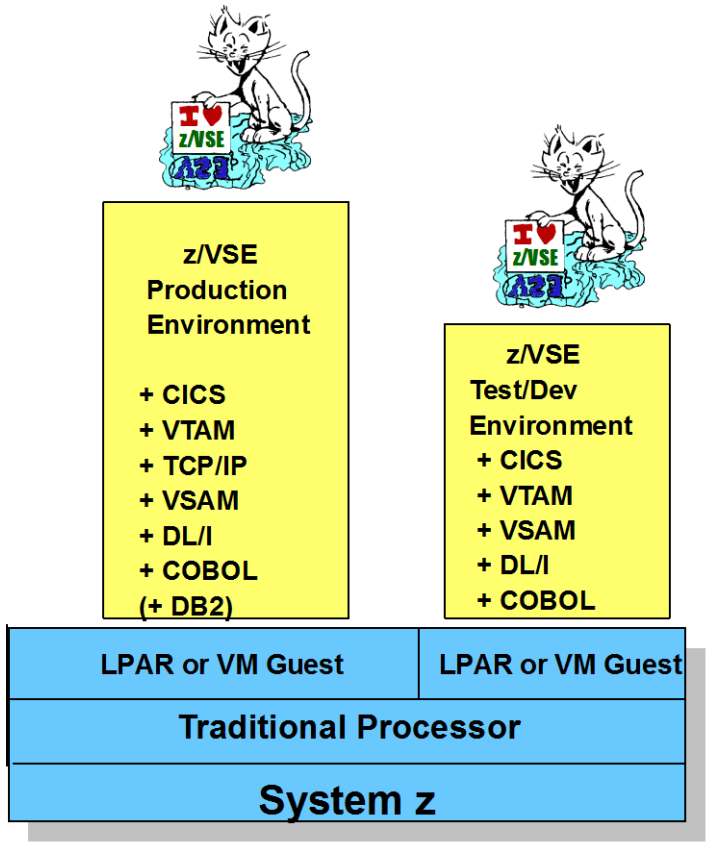
- Mobilize applications for Mobile Services
- Web enable / access
- Integrate into a Portal
- Improve user interface
- Simplify interfaces
- Extend with Java and automation

Integrate new and existing VSE applications

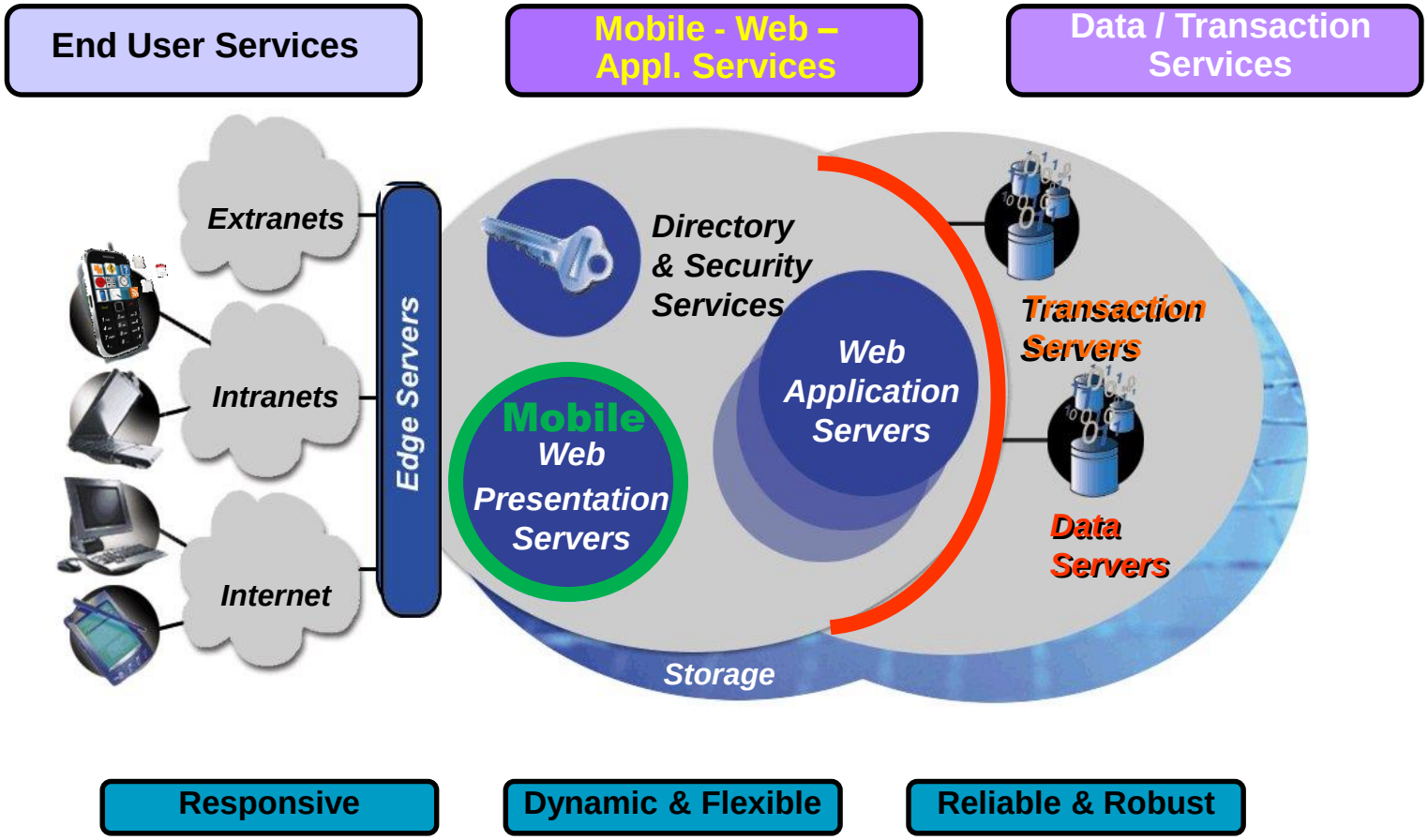
- leverage VSE data – *real-time access to VSAM data*
- Integrate z/VSE data in enterprise data Analytics, like Hadoop, Cognos, SPSS
- leverage VSE logic – *Mobile, Web Services, SOA*

Improve Security/Auditability/Resiliency

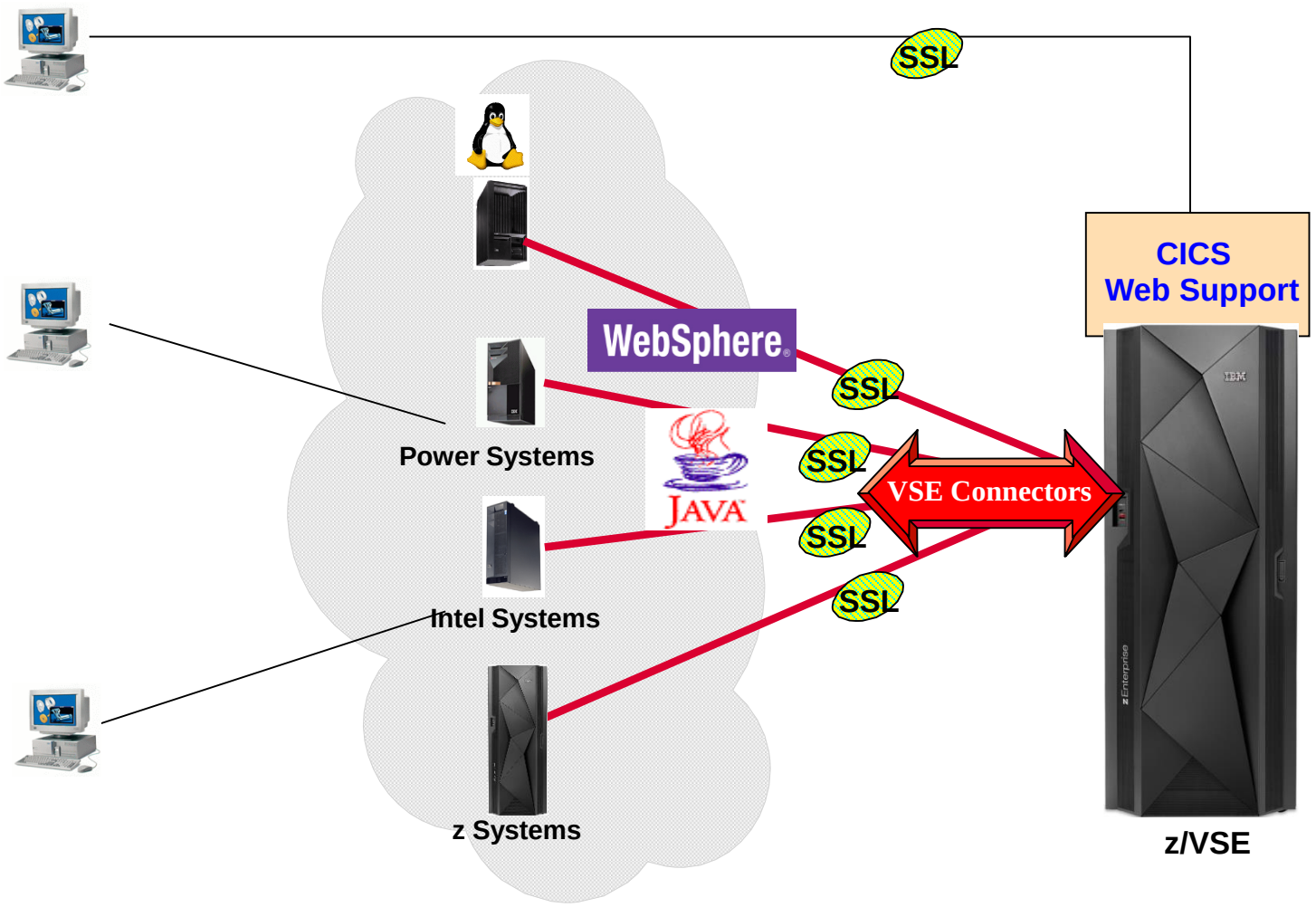
- Integrate in LDAP environments



Infrastructure matters

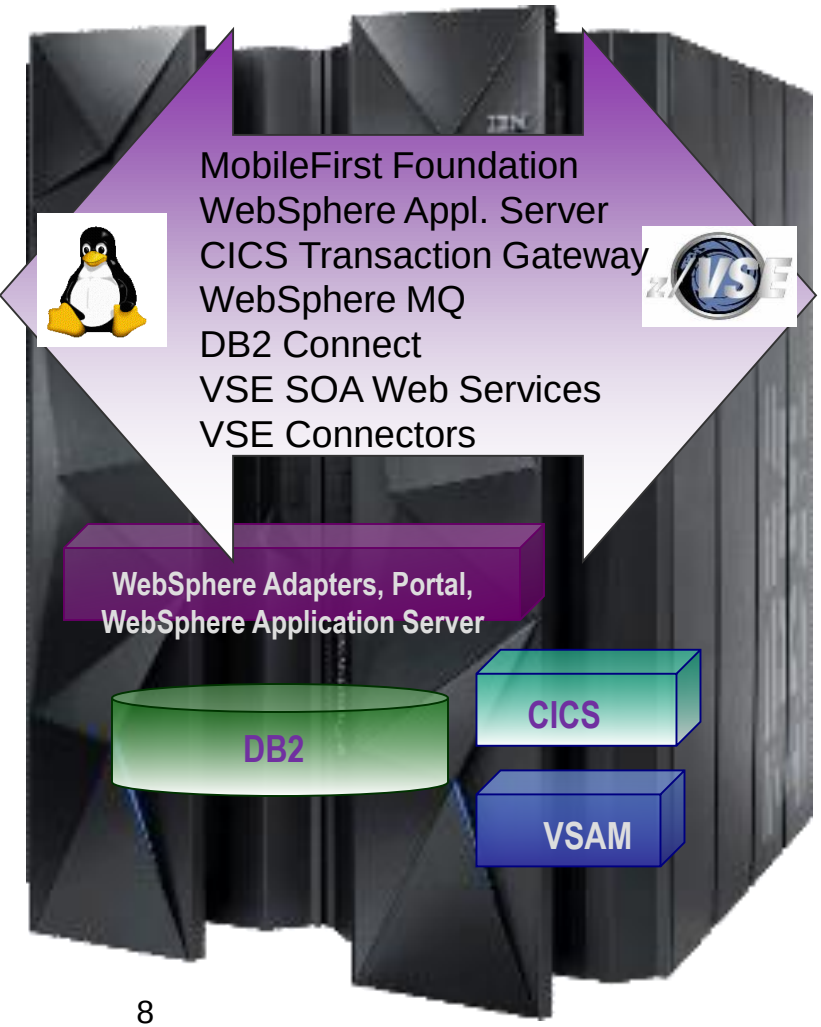


VSE Connectors – flexible and secure



Enterprise solutions in a z/VSE and Linux on z environment

IBM z Systems is an integration platform, with system level awareness across the SW stack, enabling you to work smarter



Benefits include:

- Easier Management
  - ✓ Fewer components to administer
  - ✓ Vertical dynamic scalability
- Stringent Security
  - ✓ Reduced interception opportunity
- Highly Available Infrastructure
- Highly Scalable
- High network Performance
  - ✓ Use of Hipersockets and Linux Fast Path
  - ✓ Reduced network time
  - ✓ No product specific network protocol construction / deconstruction

z/VSE data access for enterprise data services

1. z/VSE Connectors – Data integration

A. PULL scenario - VSE Connector

- access z/VSE data and resources from remote

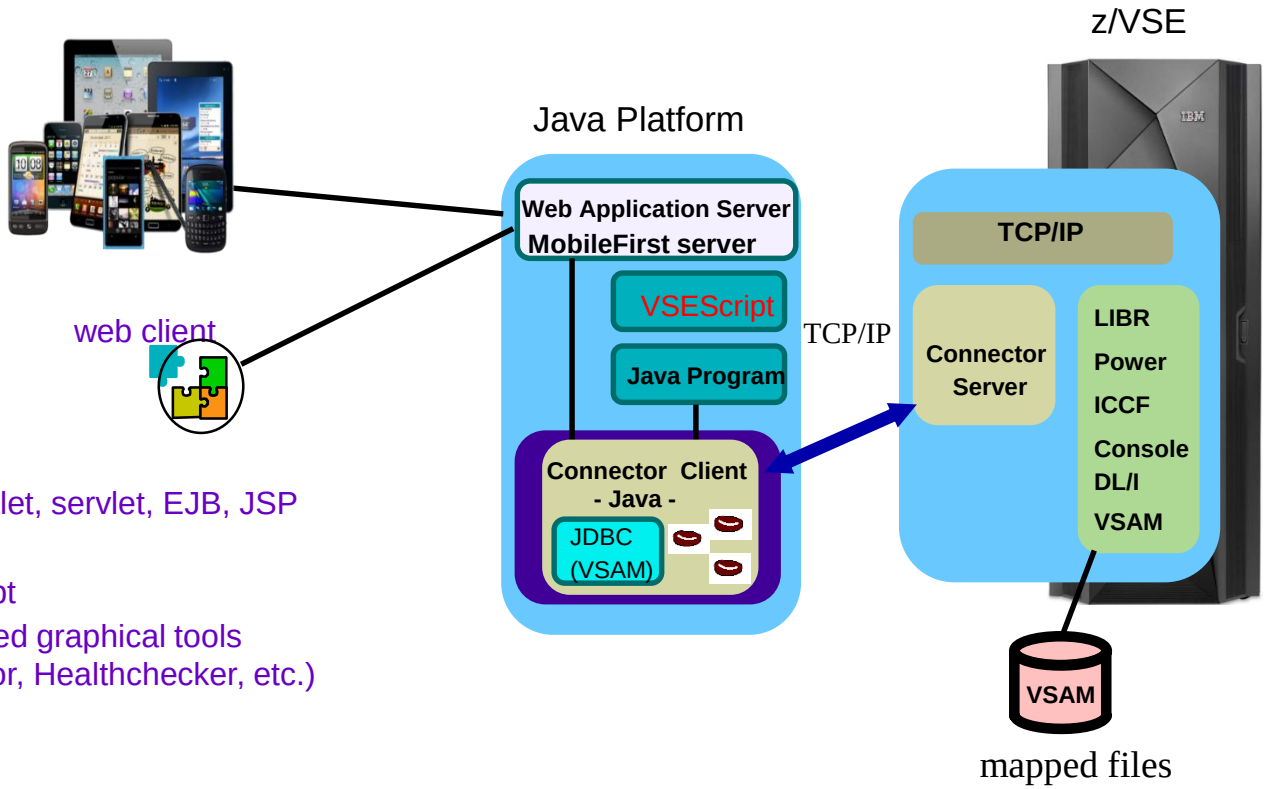
B. PUSH scenario – VSE VSAM Redirector

- VSE applications to interact with remote data

Solutions with the PULL scenario

- Mobile Apps, Web or Java applications access z/VSE data
- Access VSAM data from Linux/UNIX/Windows via Java or JDBC
- Access the data from Office applications via SCRIPTS
- Access DL/I data from Java applications for Mobile or Web Apps.
- Access Librarian members for editing with modern Editors
- Access POWER queues, its members and reports
- Send JOBs from a Java environment and get output back

(A) PULL scenario: Real time access to z/VSE Resources with the Java–Based VSE Connectors

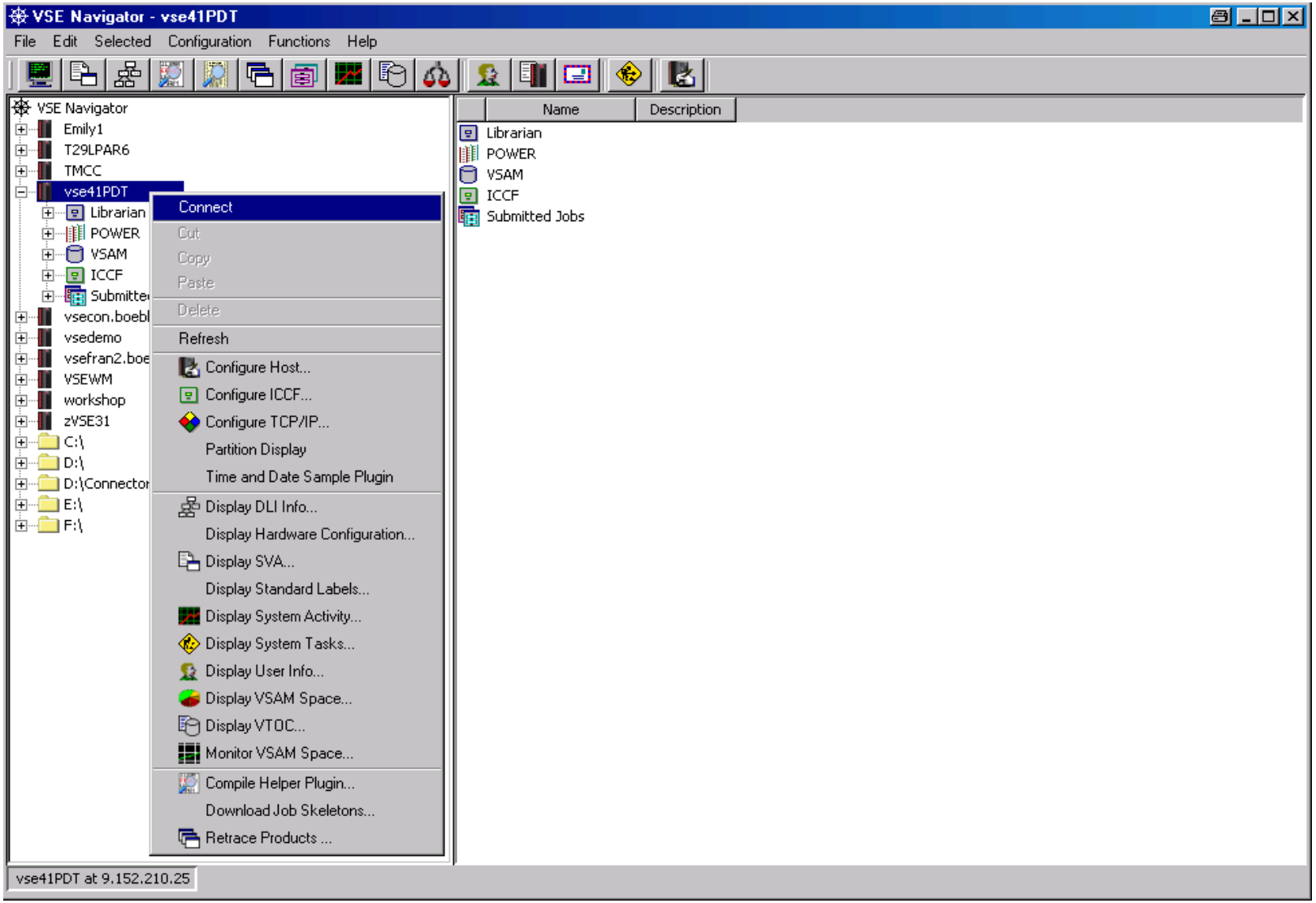


- HTML
- Java applet, servlet, EJB, JSP
- JDBC
- VSEScript
- specialized graphical tools (Navigator, Healthchecker, etc.)

- real time access to VSE resources from remote systems ,
- real time access to VSAM data, Librarian
- monitoring and analyzing possibilities using console or statistic values

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

z/VSE Navigator: Graphical z/VSE System Interface - based on VSE Connectors



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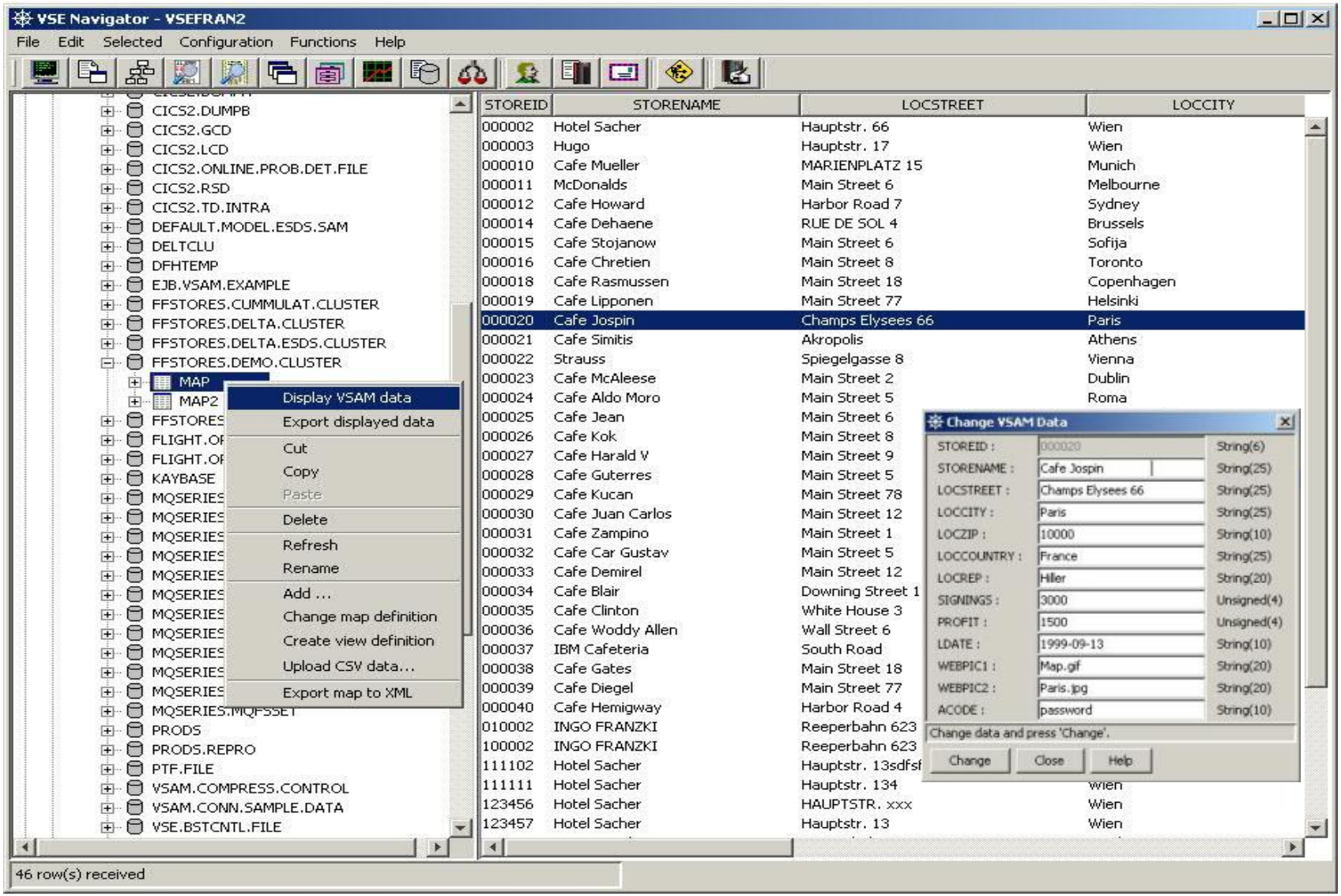
z/VSE Navigator: Graphical z/VSE Interface to VSAM data



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1. Connector Update – Data integration

A. PULL scenario - VSE Connector

A. - access VSE resources from remote

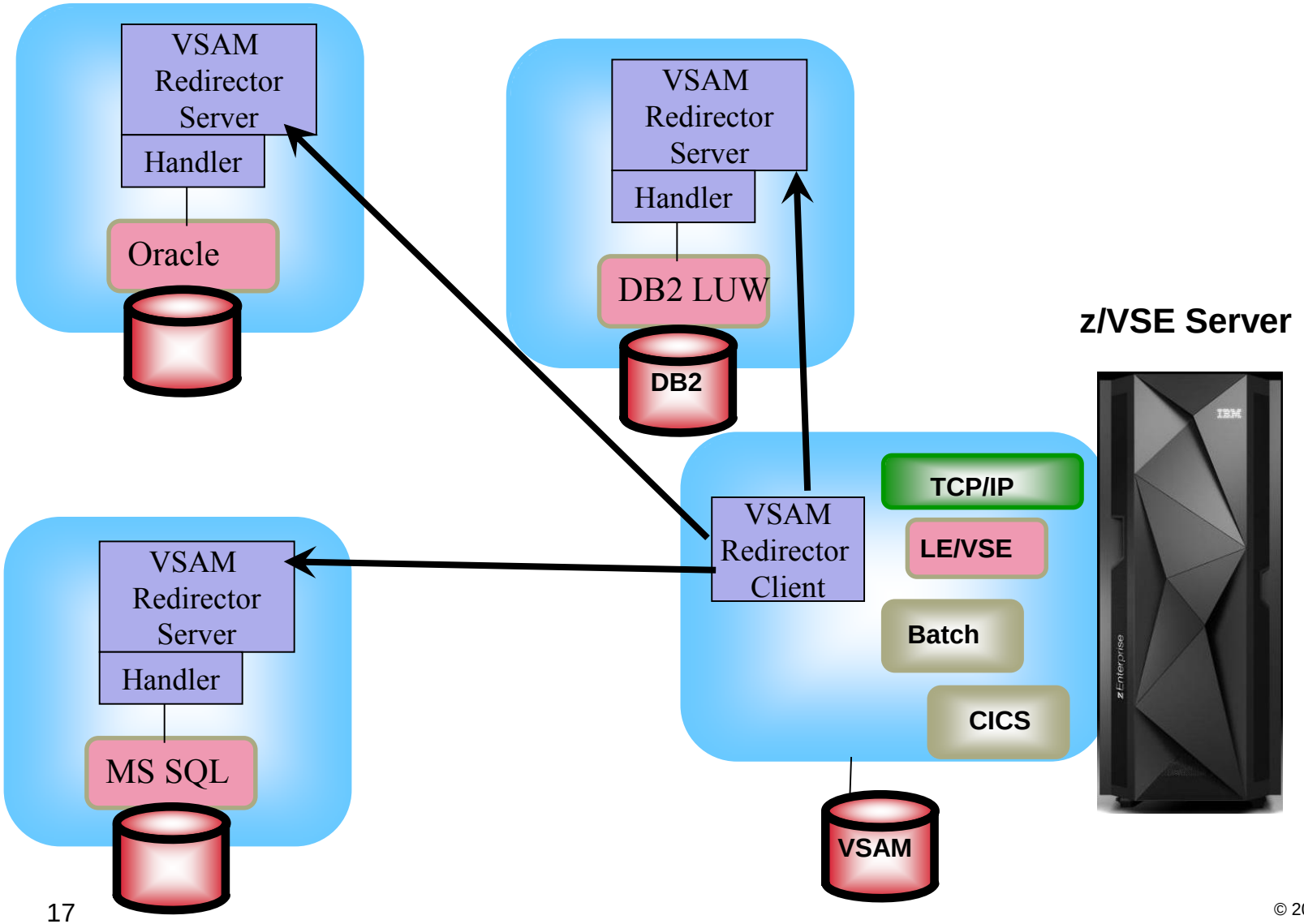
B. PUSH scenario – VSE VSAM Redirector

A. - VSE applications to access remote data

Solutions with PUSH scenario

- Push VSAM data to relational databases
- Synchronize VSAM data with a Data Warehouse
- Collect changes in VSAM files with Redirector Capture
- Enable MQ Series for VSAM applications without application change
- Consolidate data on Linux on z Systems

z/VSE applications, transparently access remote relational databases via VSAM requests



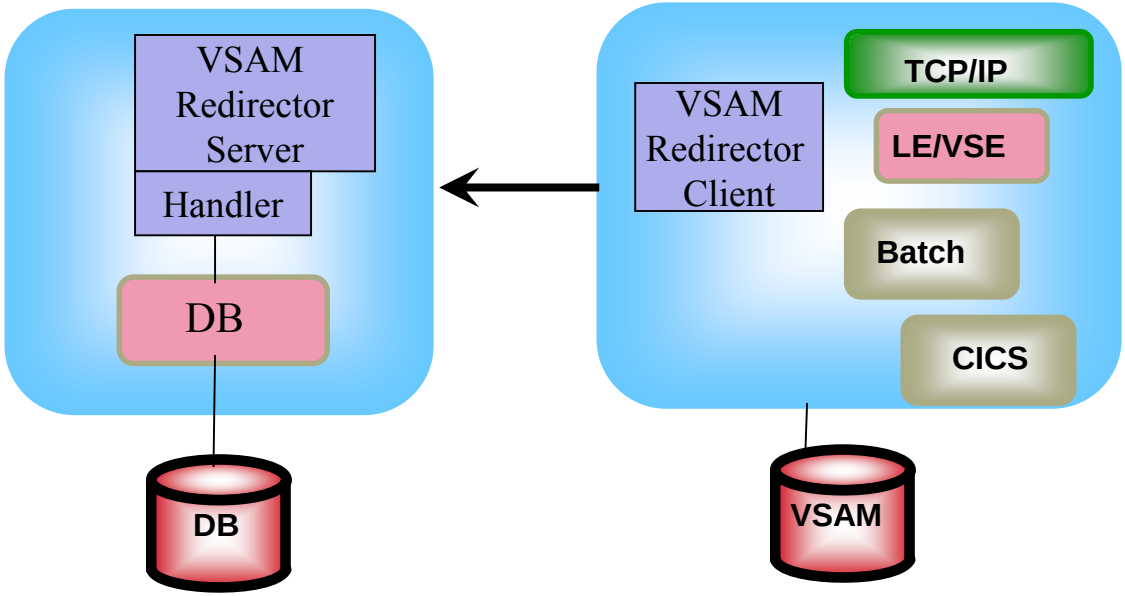
(B)PUSH scenario: VSE/VSAM applications, push / access remote relational databases

(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



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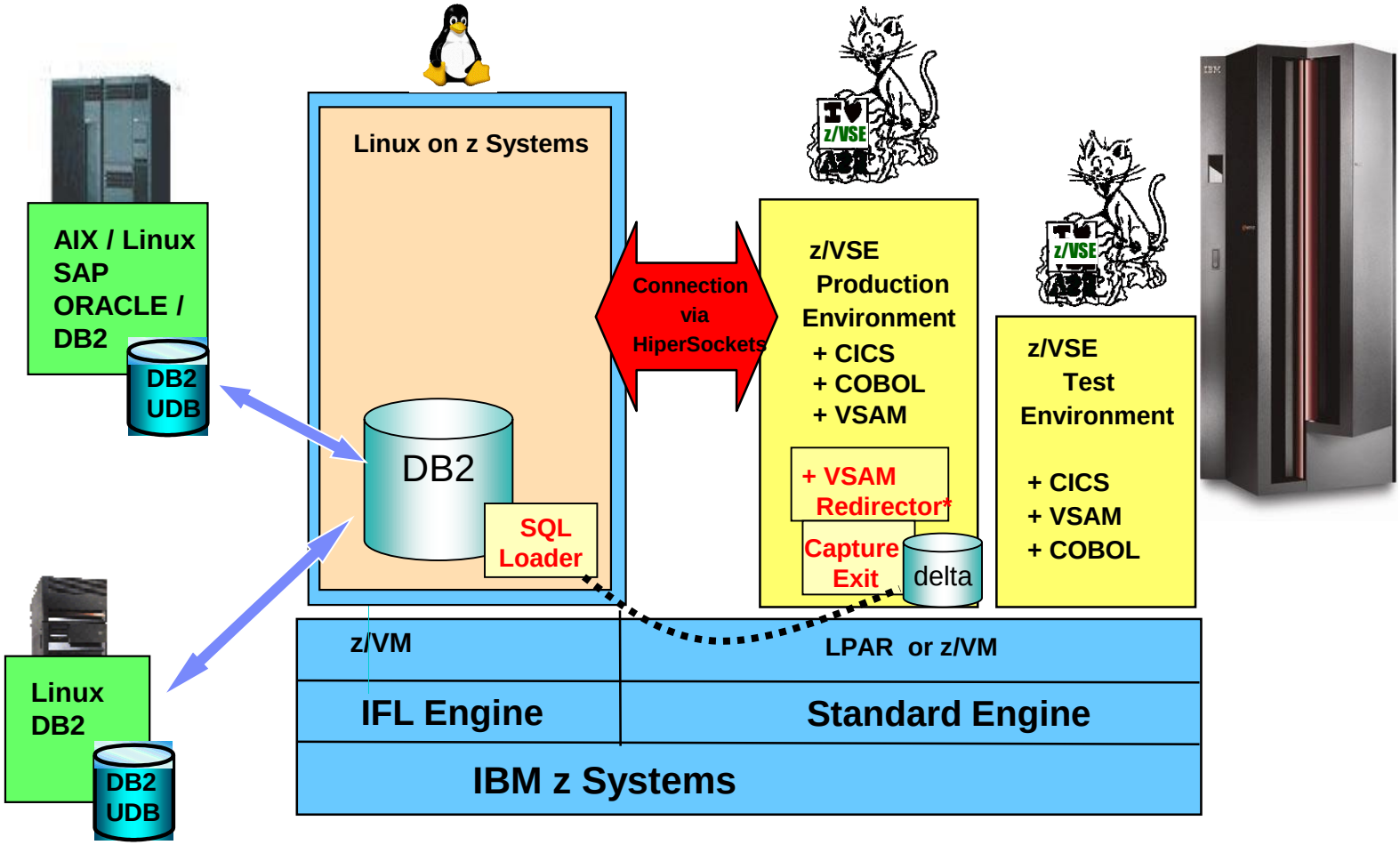
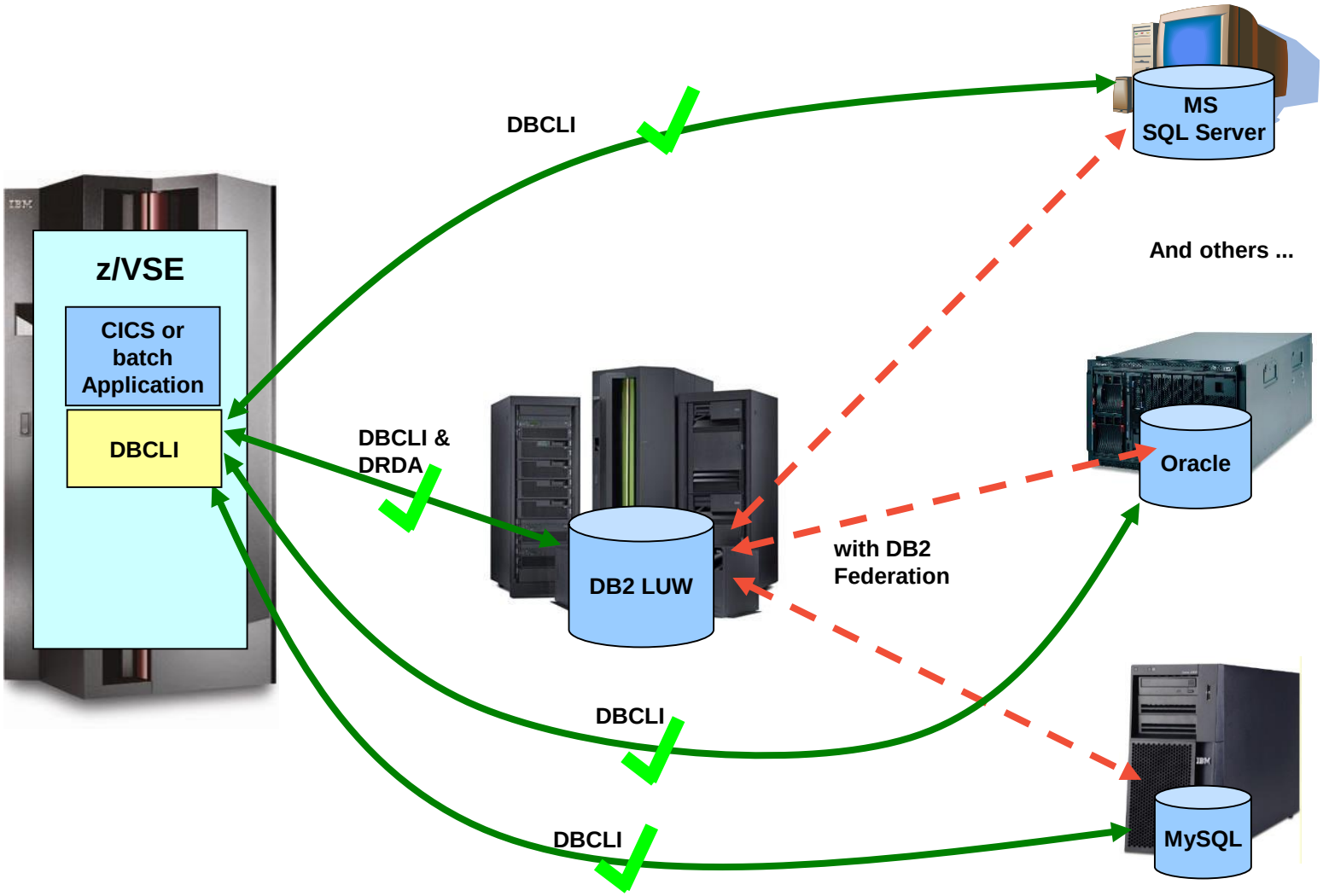
Capture VSAM changes with DB2 LUW on Linux on z Systems

- VSAM Redirector Capture Exit for high performance



(*) VSAM Redirector – Common data store solution – with DB2 on Linux on zSeries Solutions without changes to VSAM programs

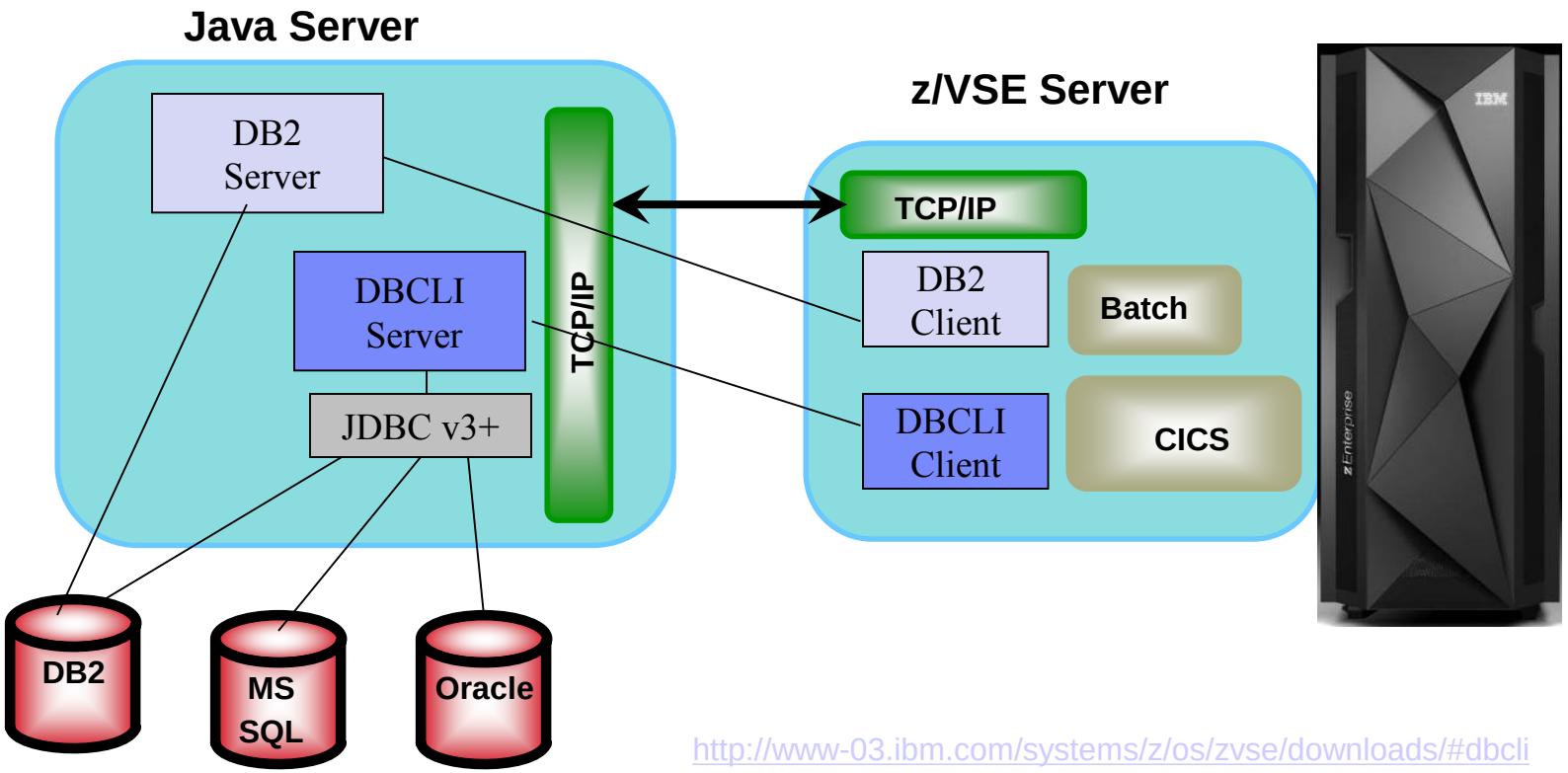
z/VSE applications accessing remote Databases using SQL



Applications on z/VSE can access 'any' remote relational database

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

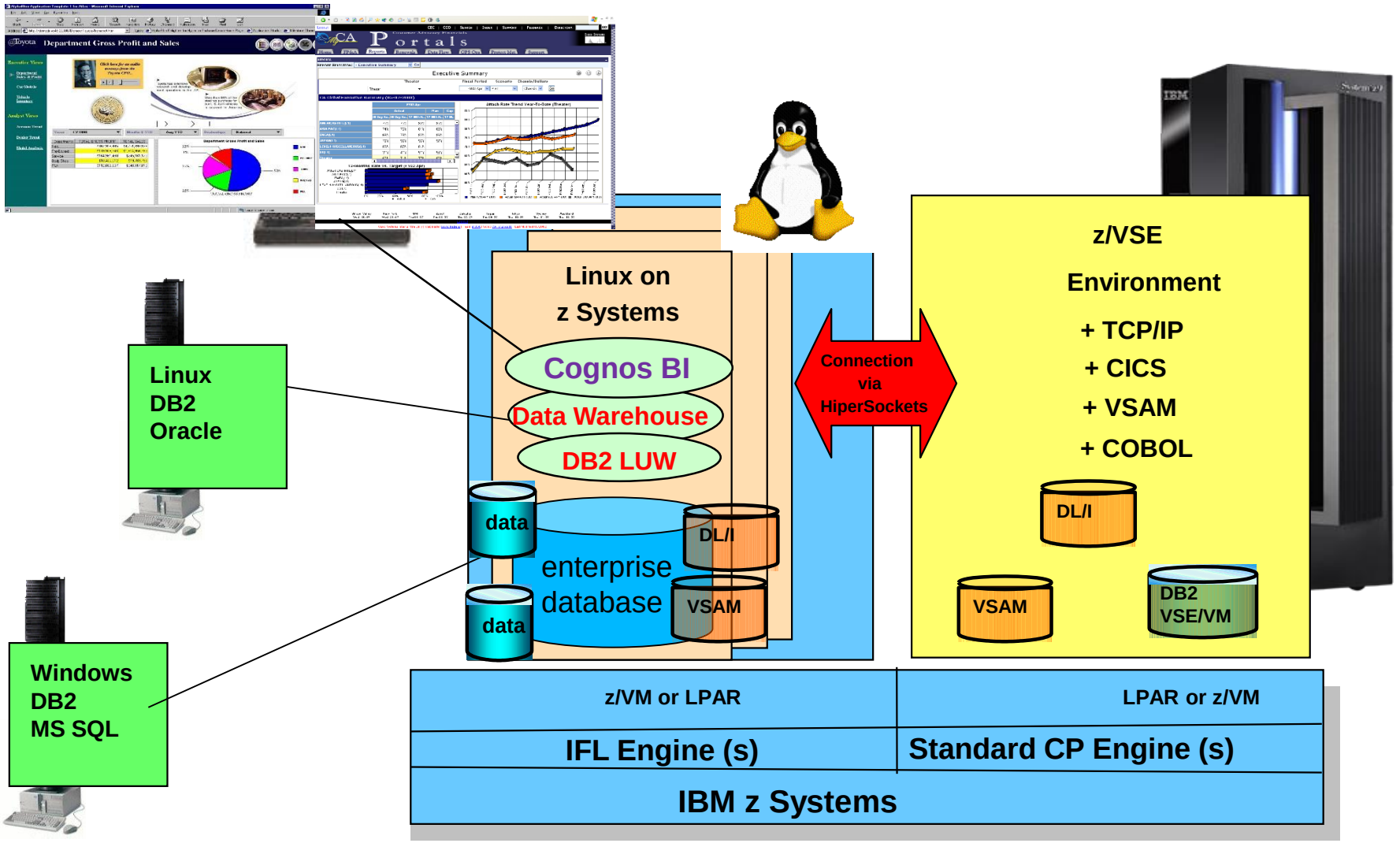


http://www-03.ibm.com/systems/z/os/zvse/downloads/#dbcli

Solutions using VSE Connectors

The No1 Scenario: DB2 LUW for z/VSE Customers

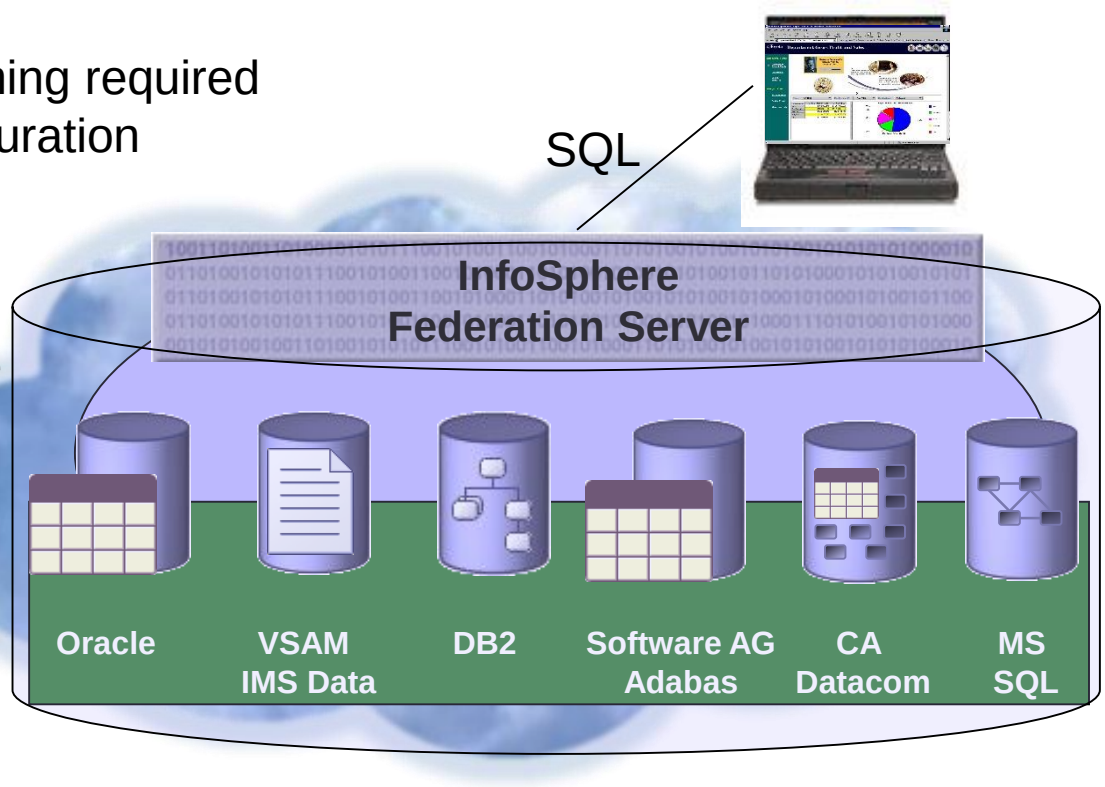
Analytics, Predictive Analytics, Data Warehouse and BI with Linux on z
Consolidate, Integrate, DB2 Client, VSAM Redirector



Include z/VSE data with InfoSphere Federation Server

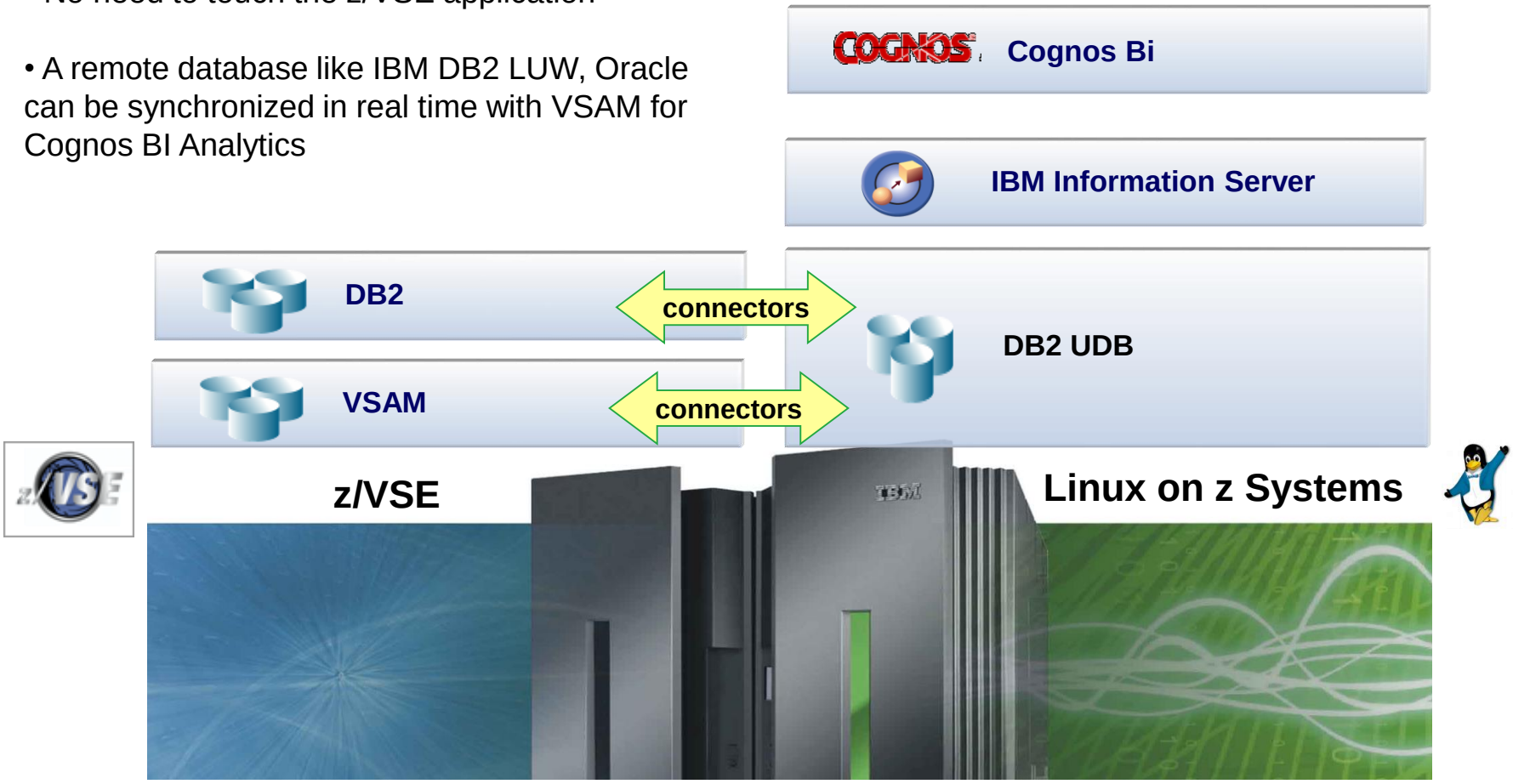
Integrating at the data layer – Federation of data

- 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



Cognos BI with IBM z Systems and z/VSE

- Connectors like *VSAM Redirector* can replicate data into a Cognos database
- No need to touch the z/VSE application
- A remote database like IBM DB2 LUW, Oracle can be synchronized in real time with VSAM for Cognos BI Analytics



BigData using Hadoop technology with z/VSE data: IBM InfoSphere BigInsights for Linux on z Systems

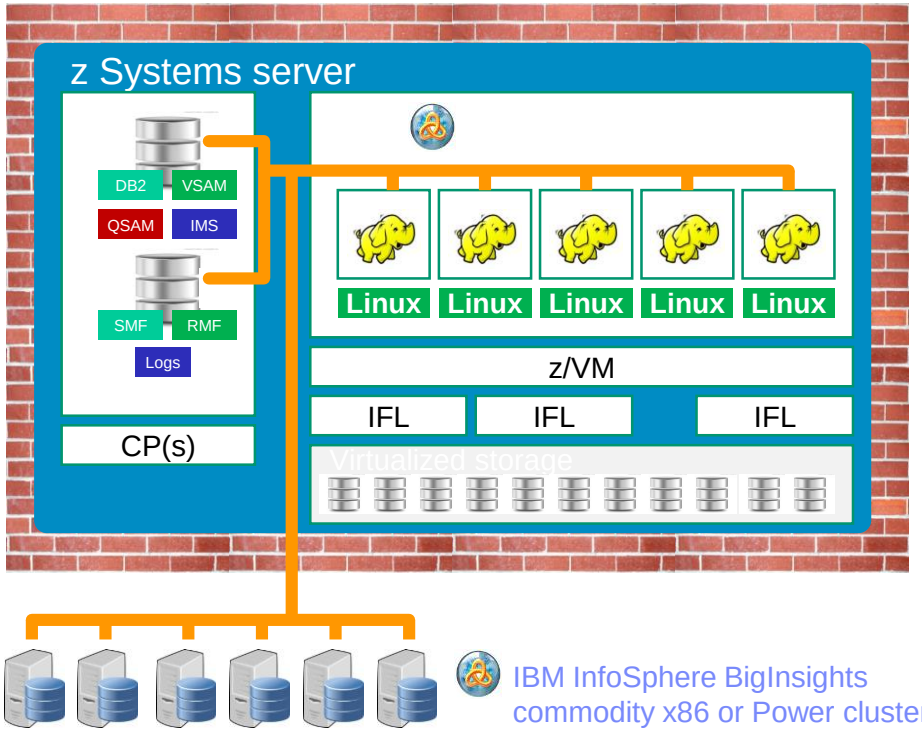
New ways of thinking, transformative economics

- Leverage the power of Apache™ Hadoop® Analytics on z Systems
- Use data from z Systems sources
- Protect sensitive data
- Faster application delivery
- Seamless interoperability

New

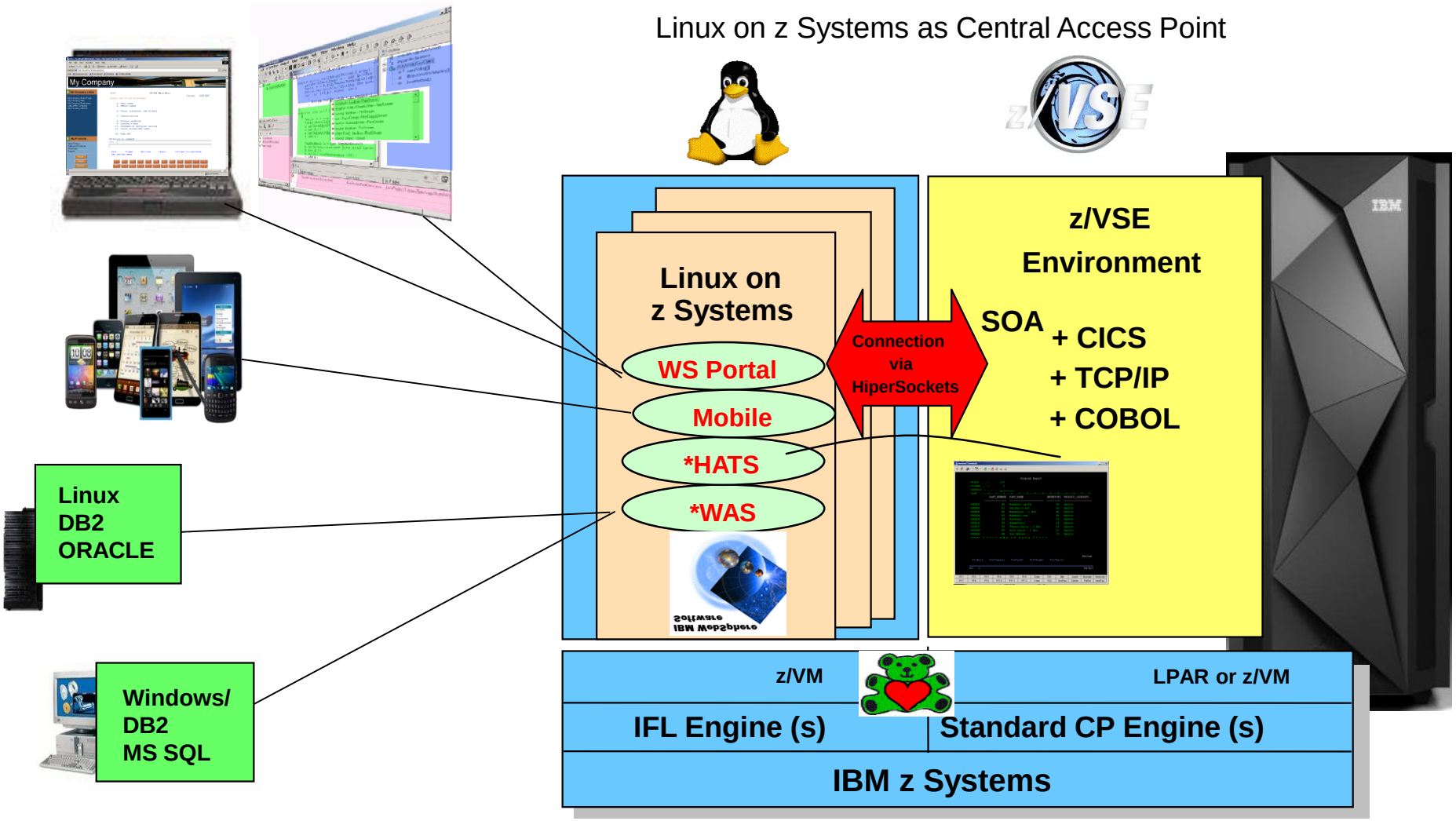
IBM InfoSphere® System z Connector for Hadoop

Fast and seamless data connectivity between a variety of mainframe data sources and IBM InfoSphere BigInsights



ftp://public.dhe.ibm.com/eserver/zseries/zos/vse/pdf3/BigData_with_zVSE.pdf

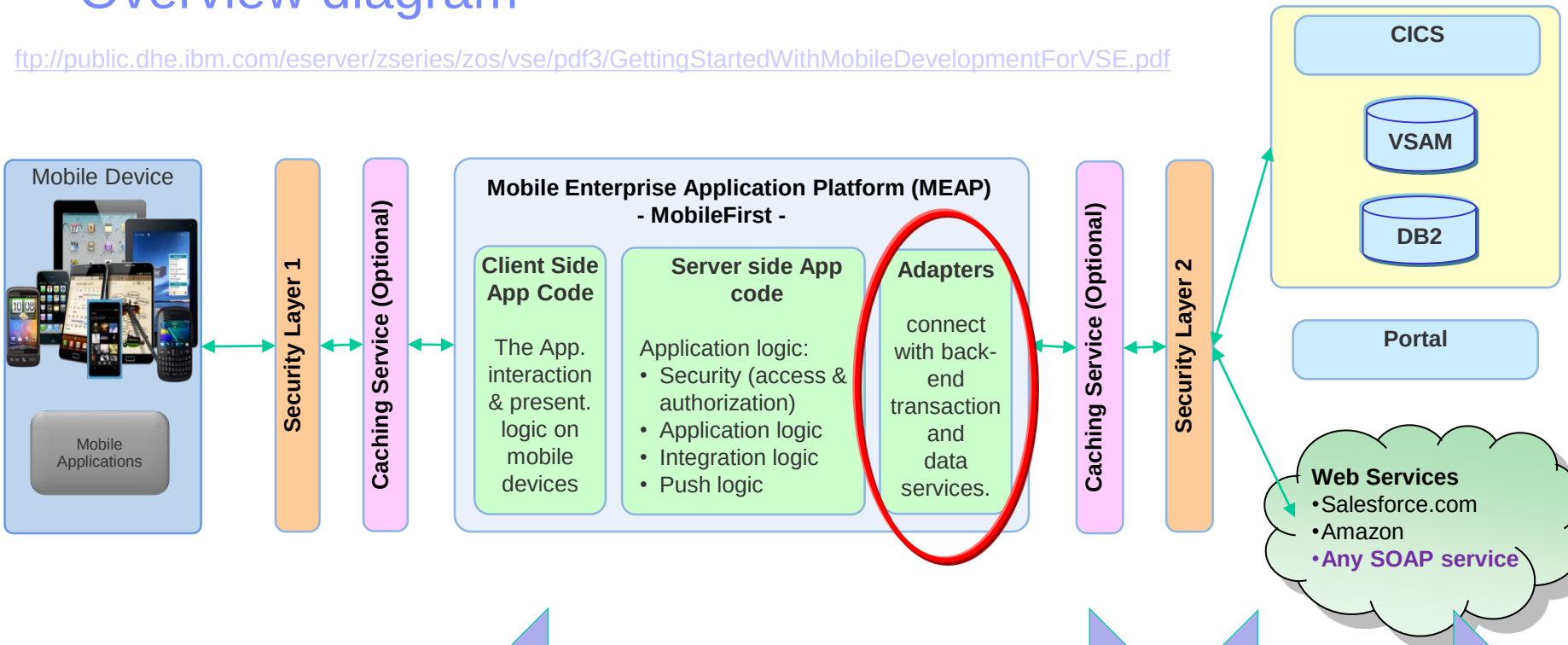
Scenario 2: Mobile enable, Web enable, improve interface for existing applications



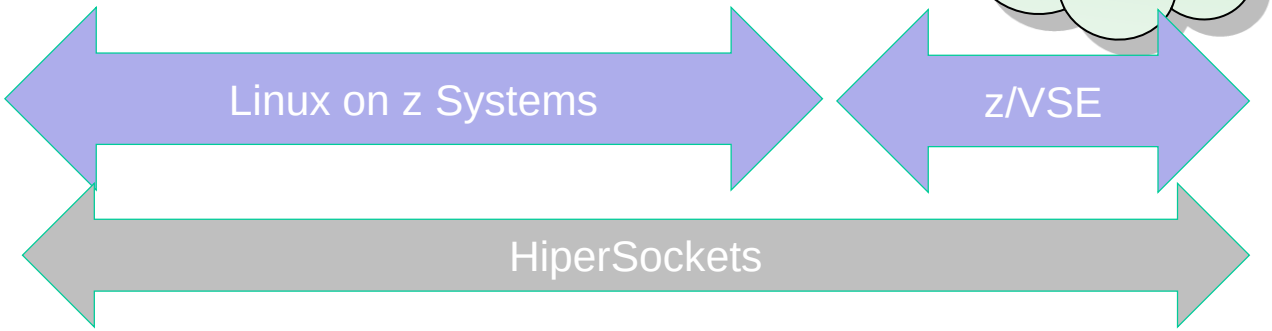
*HATS – Host Access Transformation Services
*WAS - WebSphere Application Server

Mobile application access z/VSE - Overview diagram

ftp://public.dhe.ibm.com/eserver/zseries/zos/vse/pdf3/GettingStartedWithMobileDevelopmentForVSE.pdf

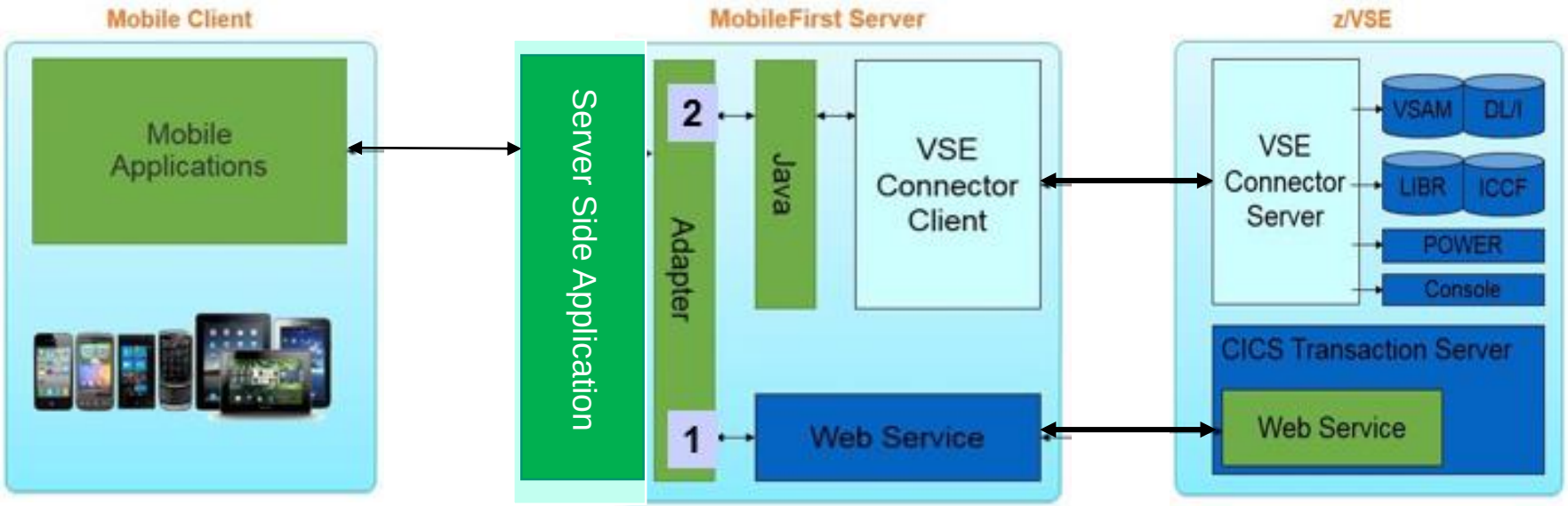


A mobile application needs end-to-end consideration for:
- Transactional integrity
- Data integrity
- Security



Mobile application integration is realized with MobileFirst Adapters

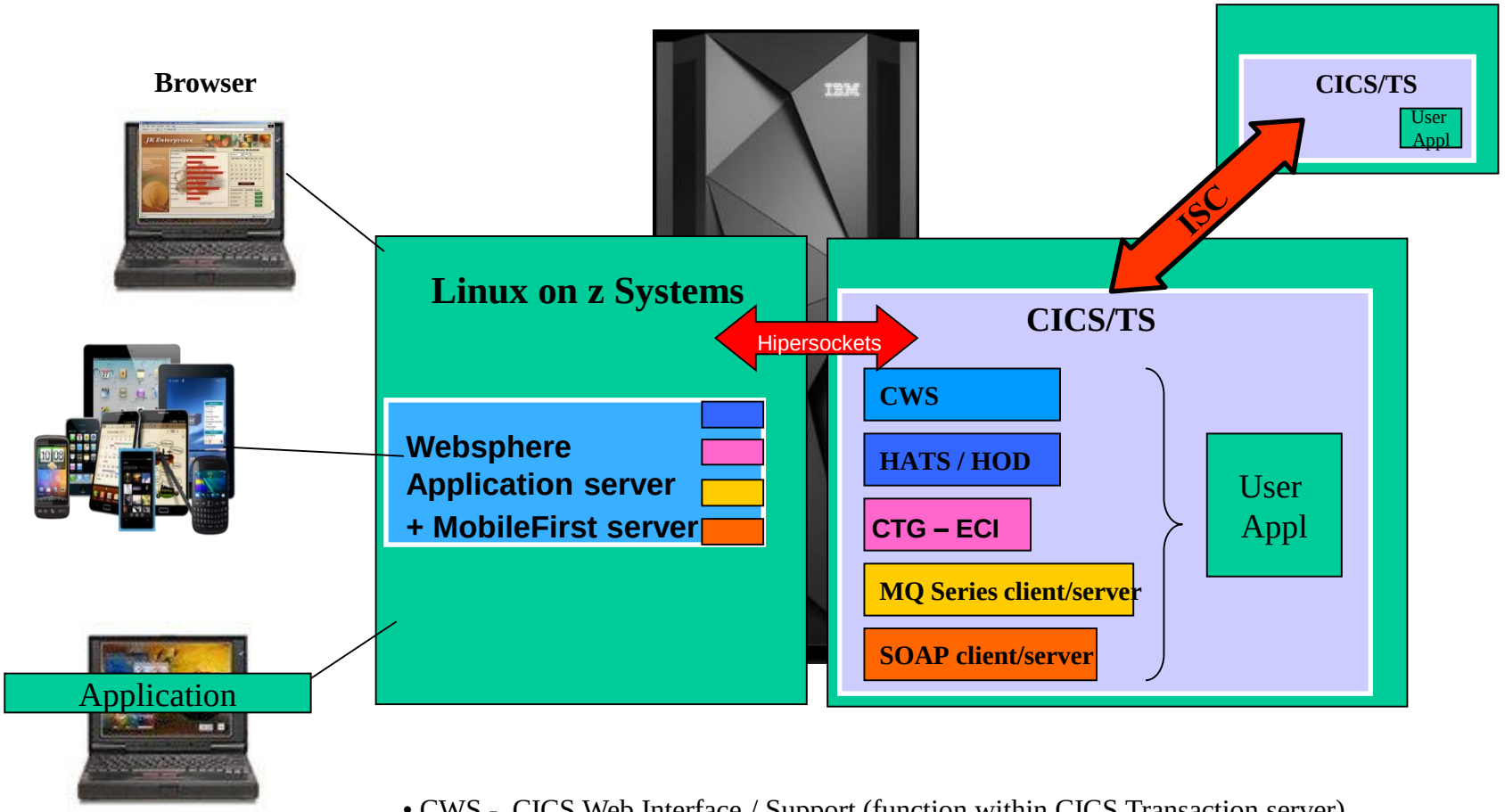
Mobilize z/VSE applications with IBM MobileFirst



To start mobile development with z/VSE, you need to have the following applications:

- The **IBM MobileFirst Platform Studio**
- The **z/VSE Connector Client**
- The **z/VSE Connector Server** (part of z/VSE)
- The **z/VSE Web Services implementation** (part of z/VSE)

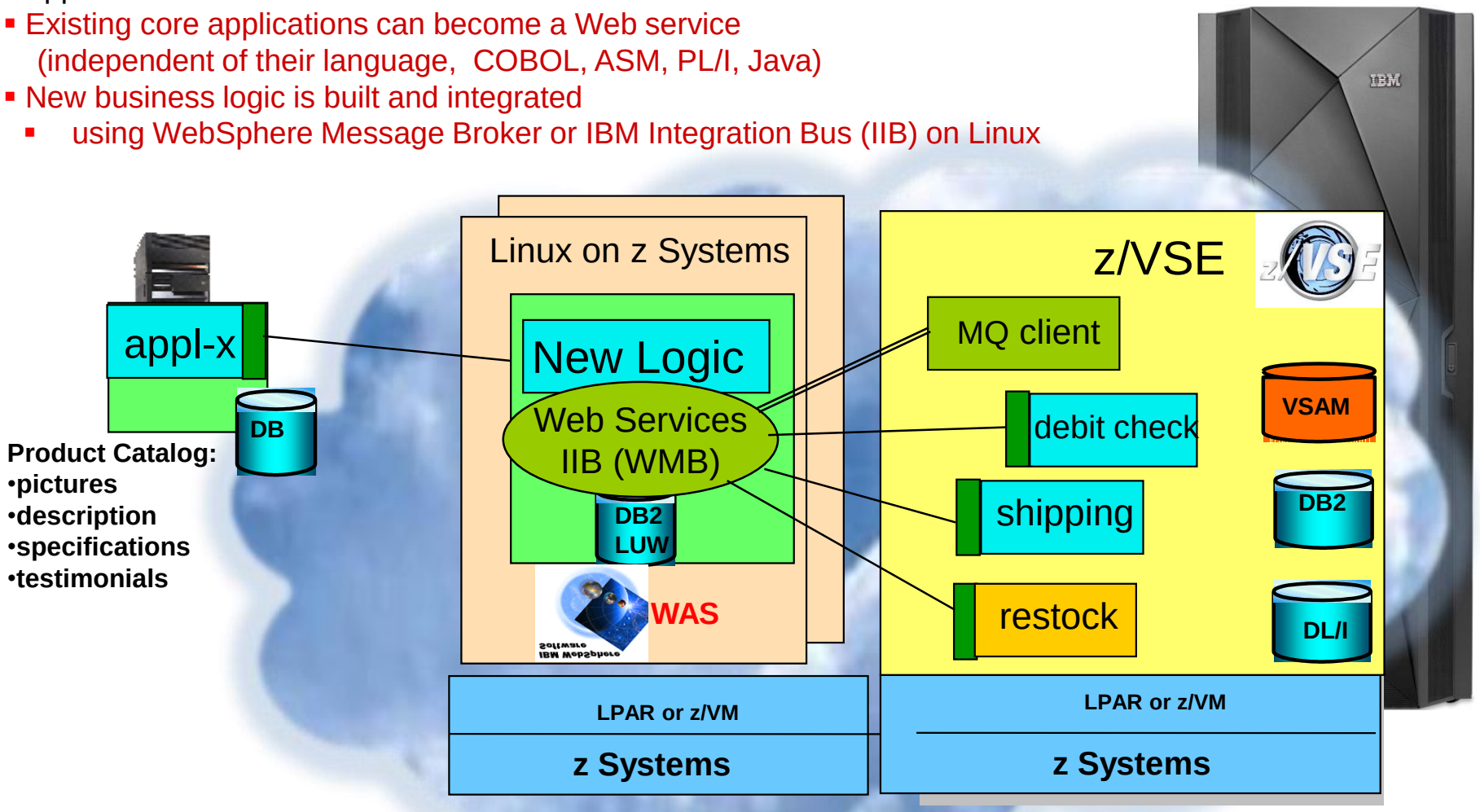
Web Integration with traditional CICS transactions in z/VSE



- 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)

Service Oriented Architecture (SOA) – the way to new solutions

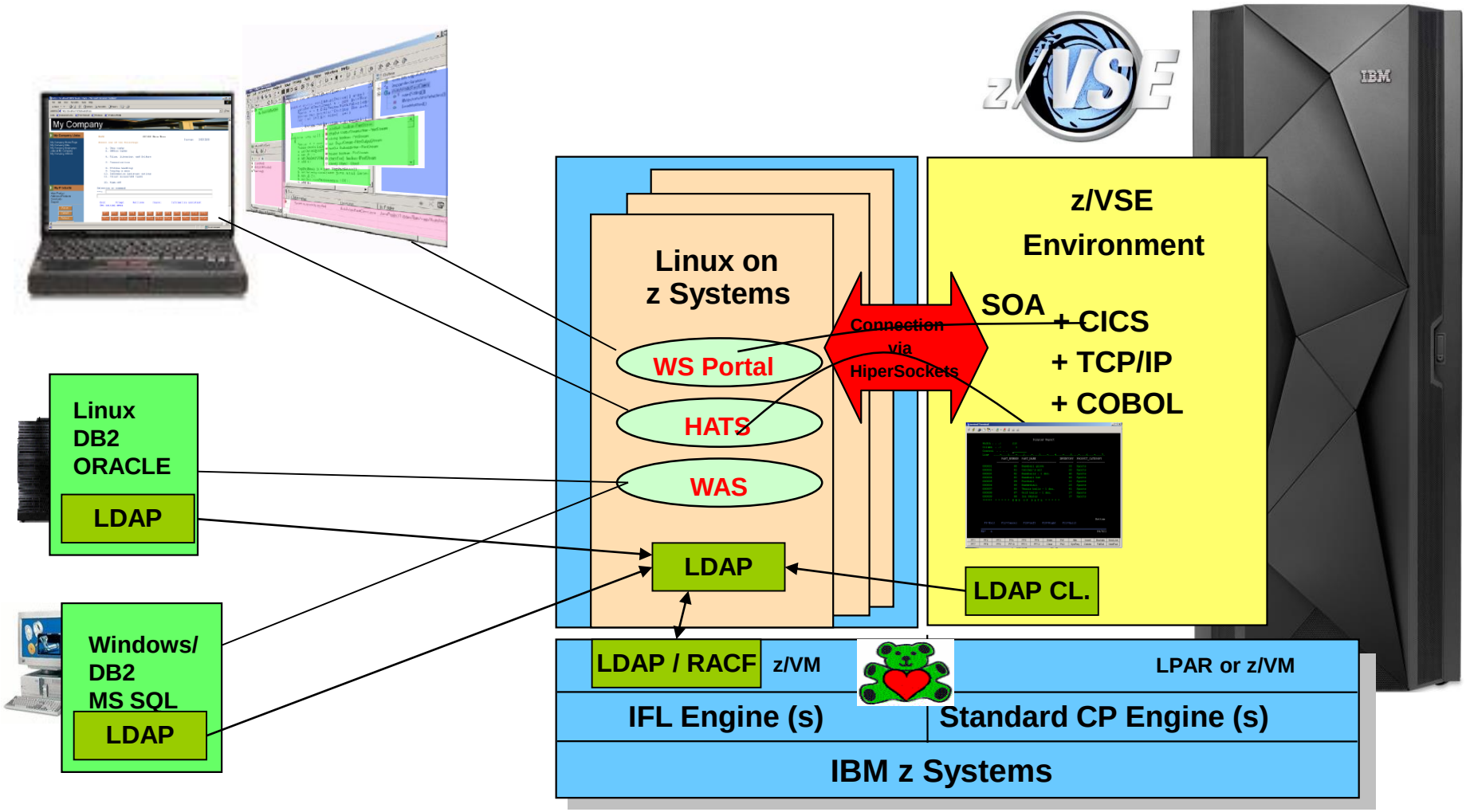
- Applications look the same for all users
- Existing core applications can become a Web service
  (independent of their language, COBOL, ASM, PL/I, Java)
- New business logic is built and integrated
  - using WebSphere Message Broker or IBM Integration Bus (IIB) on Linux



Integration of Processes

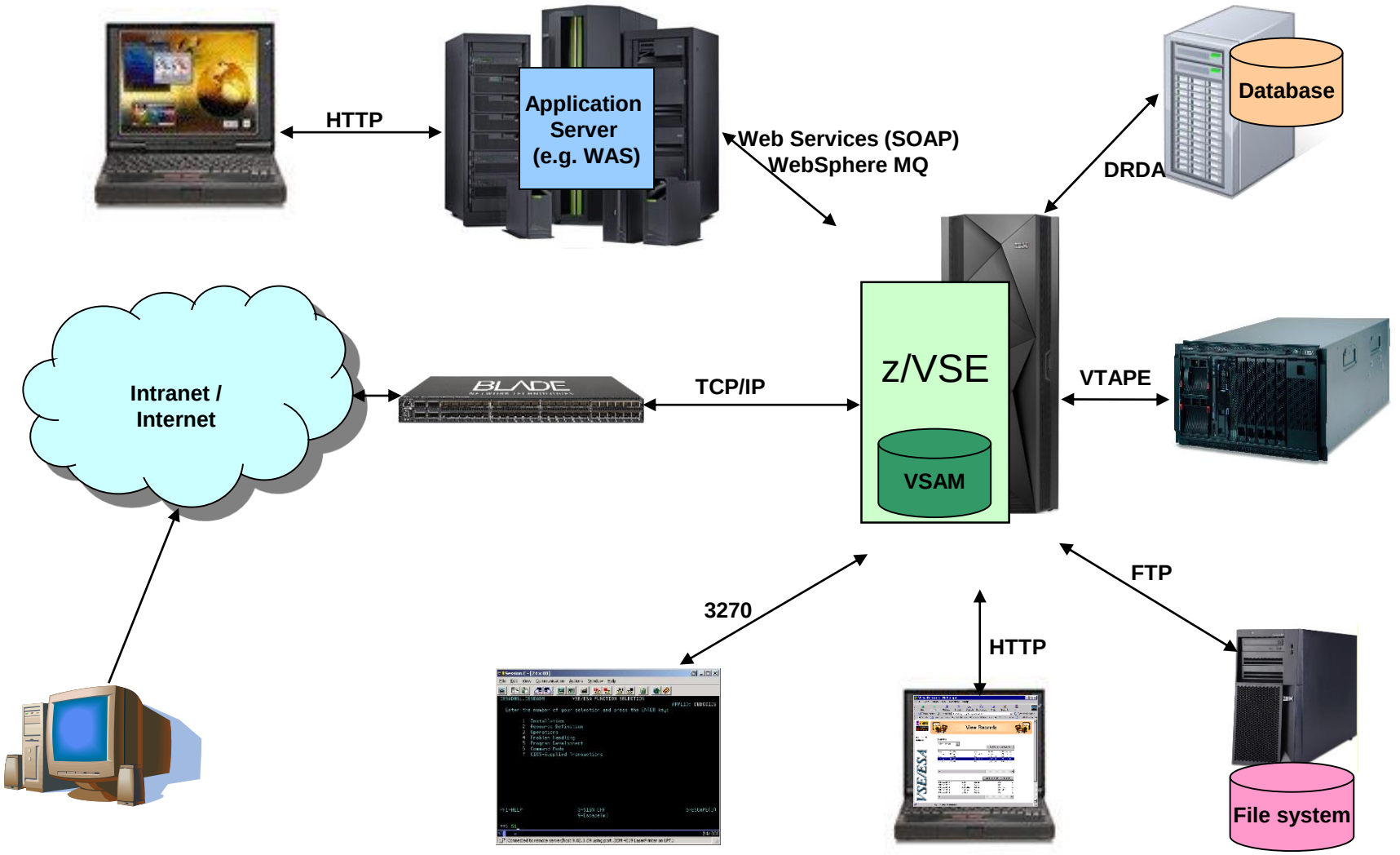
Central Authentication Options for z/VSE with LDAP in Linux on z Systems

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

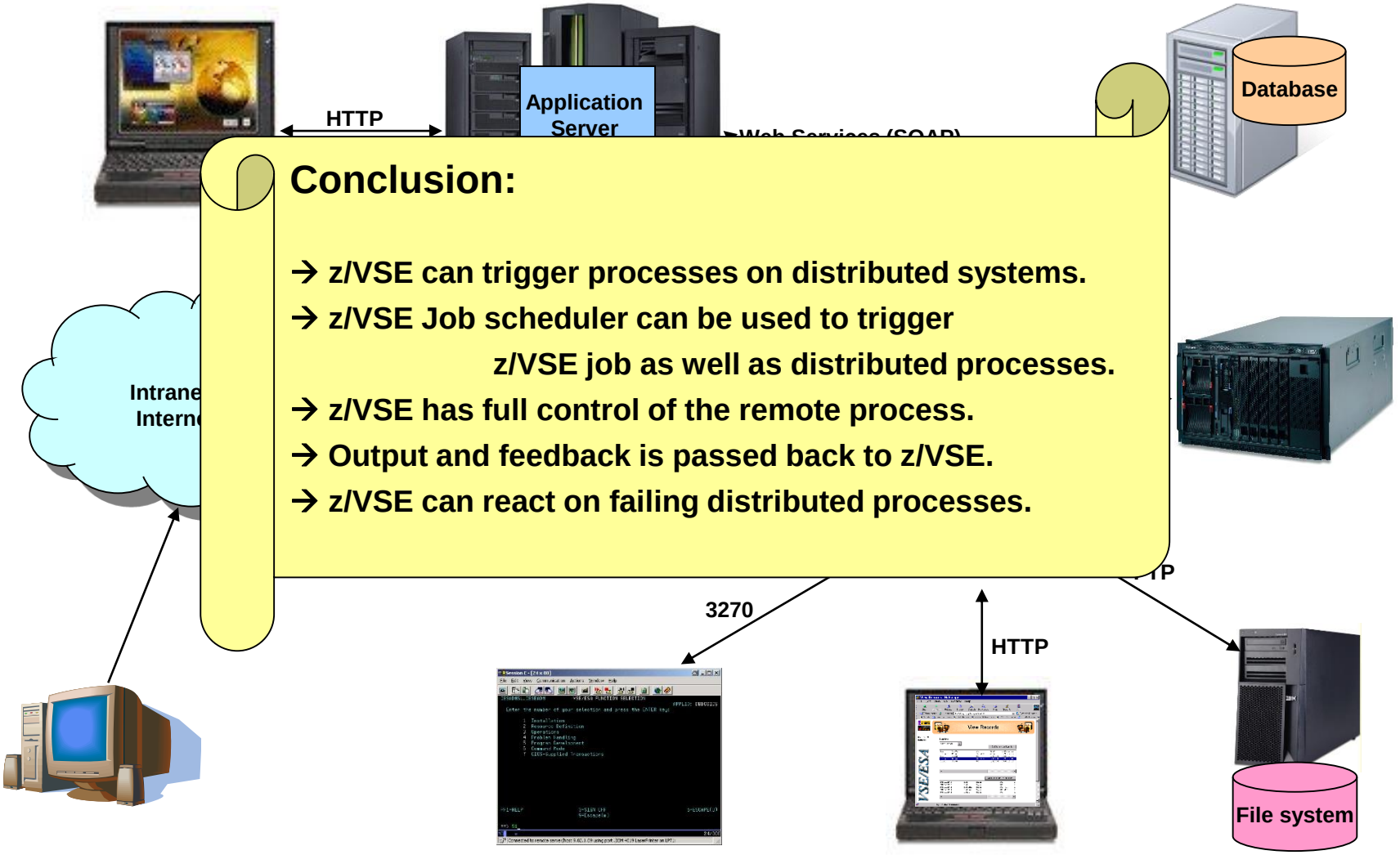


z/VSE process control

z/VSE controls processes in a heterogeneous IT environment



z/VSE controls processes in a heterogeneous IT environment



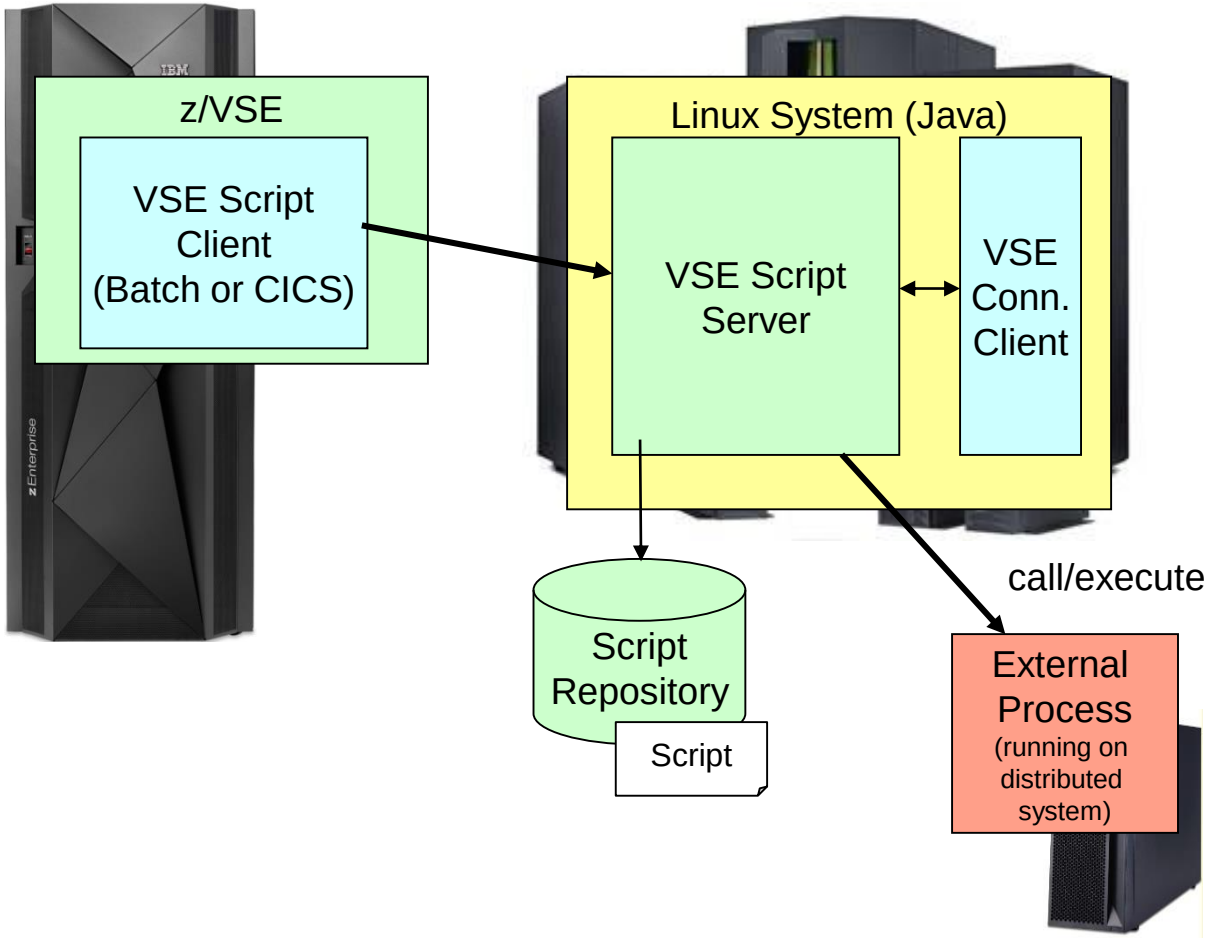
Conclusion:

- → z/VSE can trigger processes on distributed systems.
- → z/VSE Job scheduler can be used to trigger z/VSE job as well as distributed processes.
- → z/VSE has full control of the remote process.
- → Output and feedback is passed back to z/VSE.
- → z/VSE can react on failing distributed processes.

VSE Script Connector – z/VSE executes remote applications - using the Script Server on a Java platform

VSE Script Connector used to:

- Call/Execute processes on distributed systems
- from z/VSE applications or Jobs



Distributed systems trigger actions on z/VSE

Submit a Job into z/VSE

- Using FTP into Reader
- Submit Job via Java Program
- ANT based automation

Issue Console commands

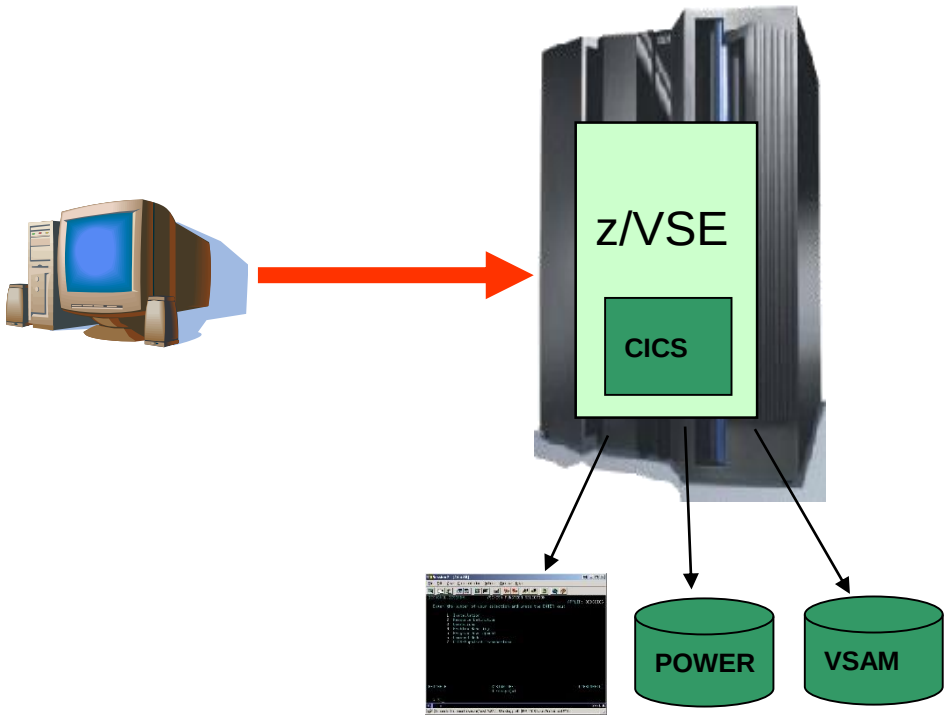
- Issue Commands via Java Program

Trigger programs running on z/VSE

- Web Services (SOAP)
- WebSphere MQ
- CICS Transaction Gateway

Upload data to z/VSE for processing

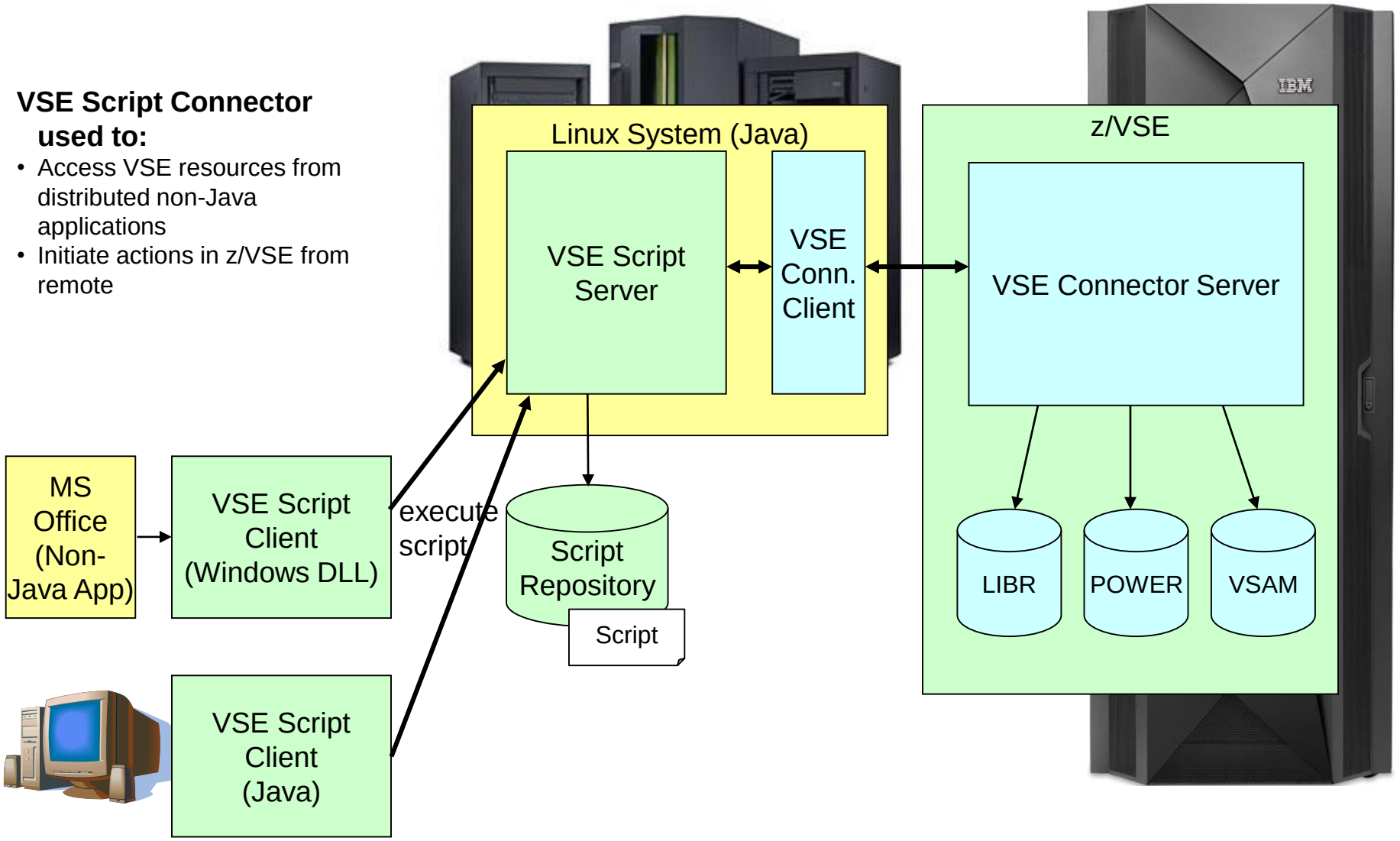
- FTP into VSAM
- Connectors



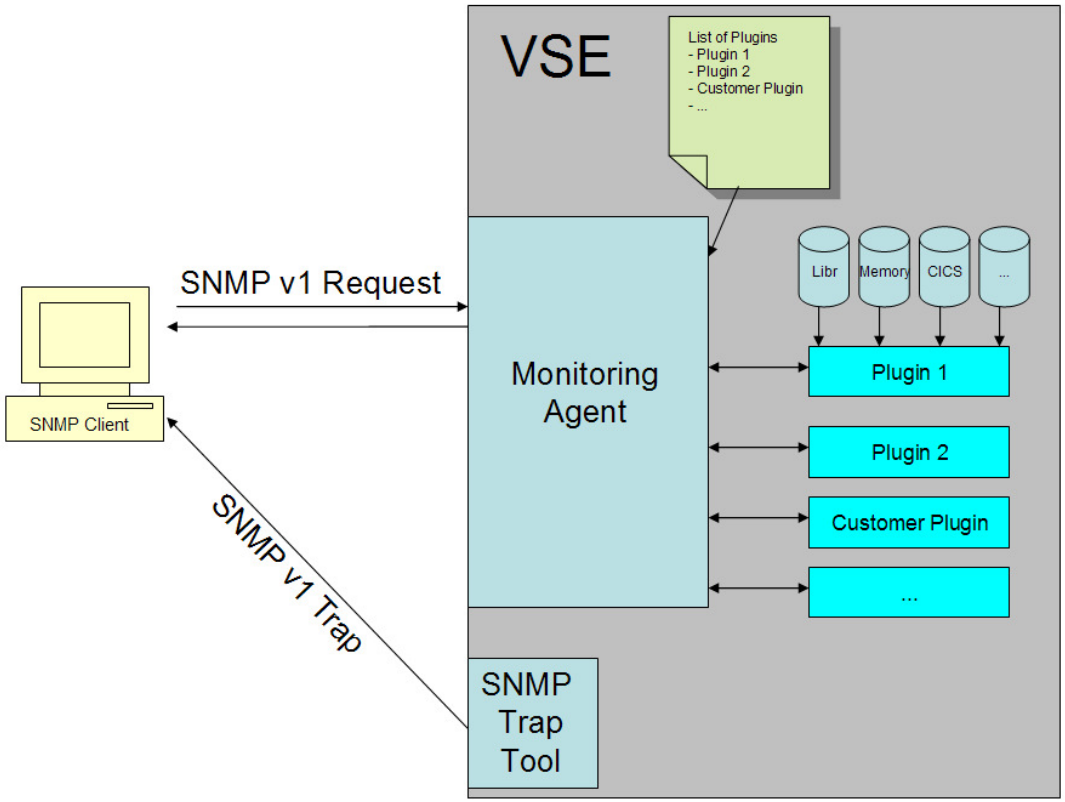
VSE Script Connector – remote platforms initiate z/VSE actions

VSE Script Connector used to:

- Access VSE resources from distributed non-Java applications
- Initiate actions in z/VSE from remote



z/VSE Monitoring interfaces



Monitoring Agent based on SNMP V1

Real time monitoring

retrieve z/VSE specific system and performance data

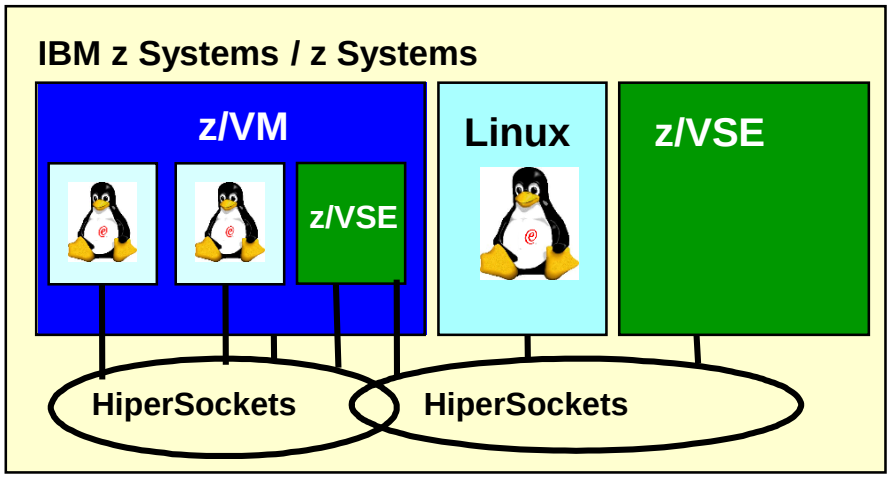
Event driven monitoring using SNMP Traps

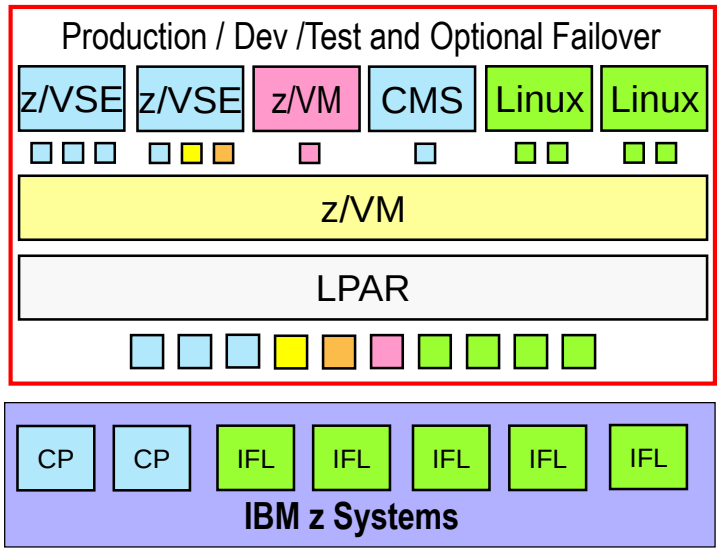
In z/VSE 5.1+ a Trap API was introduced to the Trap Tool

Helps to automate processes in z/VSE with SNMP traps

Global Virtualization – with z Systems and z/VSE

- z/VSE can run on SCSI disks

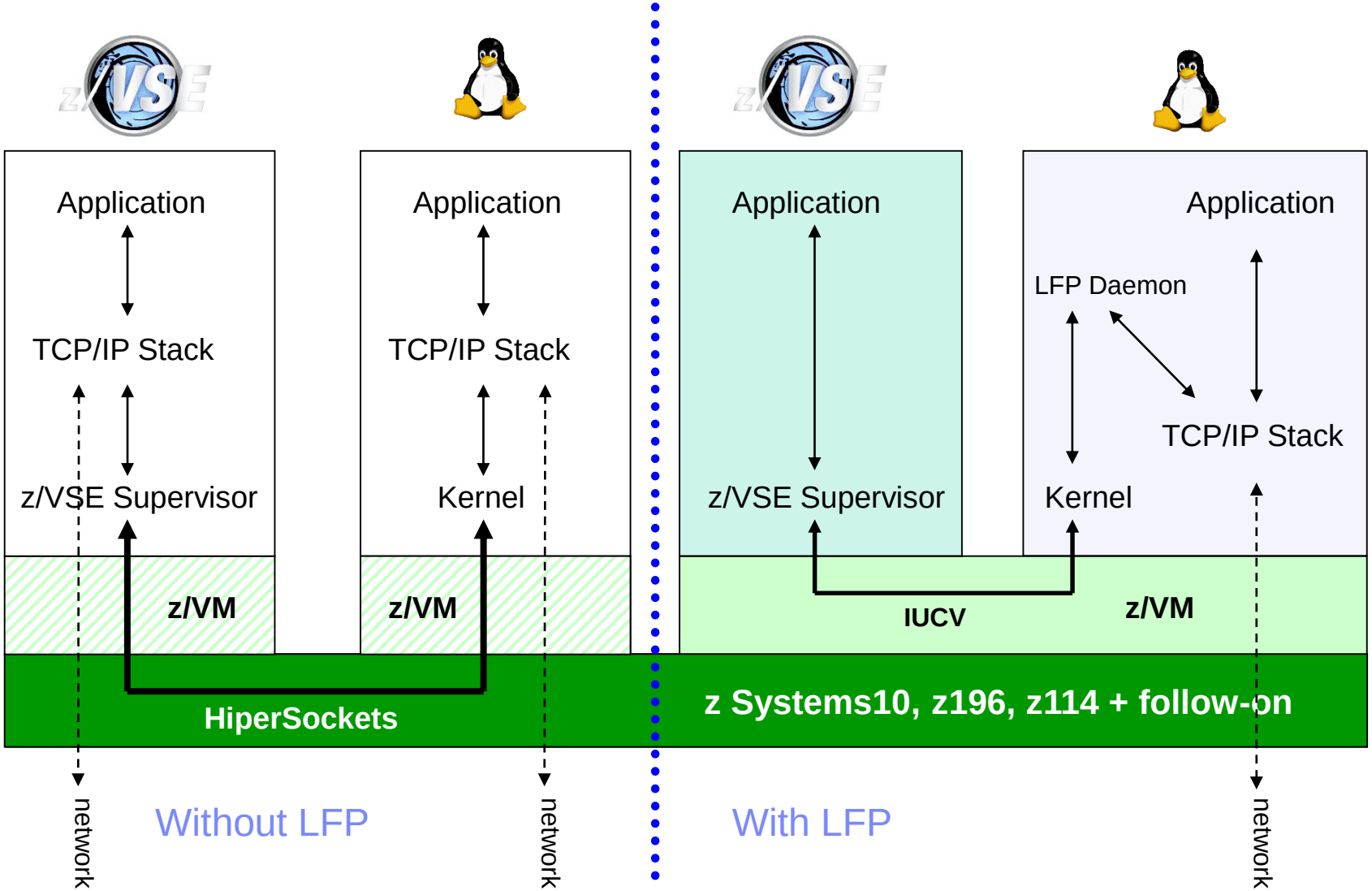




- Network Virtualization
- Memory Virtualization
- Processor Virtualization
- System Virtualization
- Disk Virtualization

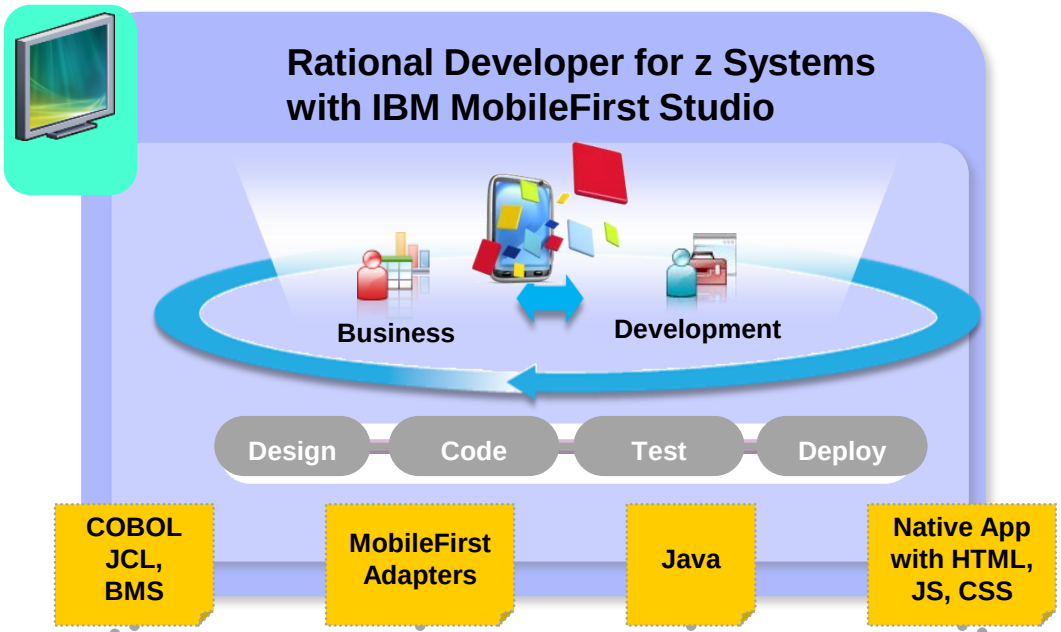
Linux Fast Path in a z/VM-mode LPAR - Supported by z/VSE V4.3 +

Faster communication between z/VSE and Linux applications under z/VM

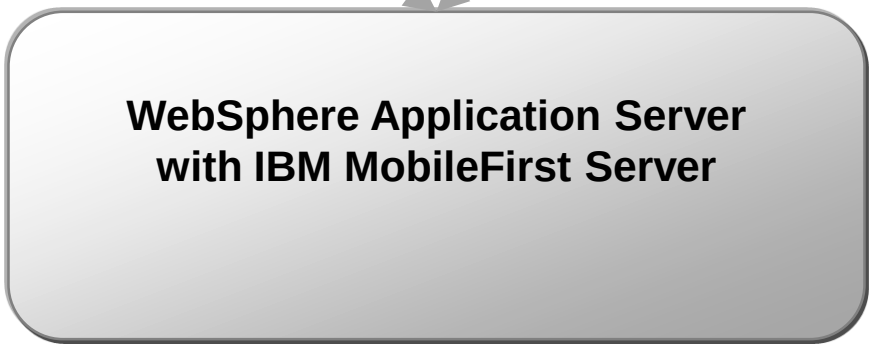


z/VSE Graphical Development tools

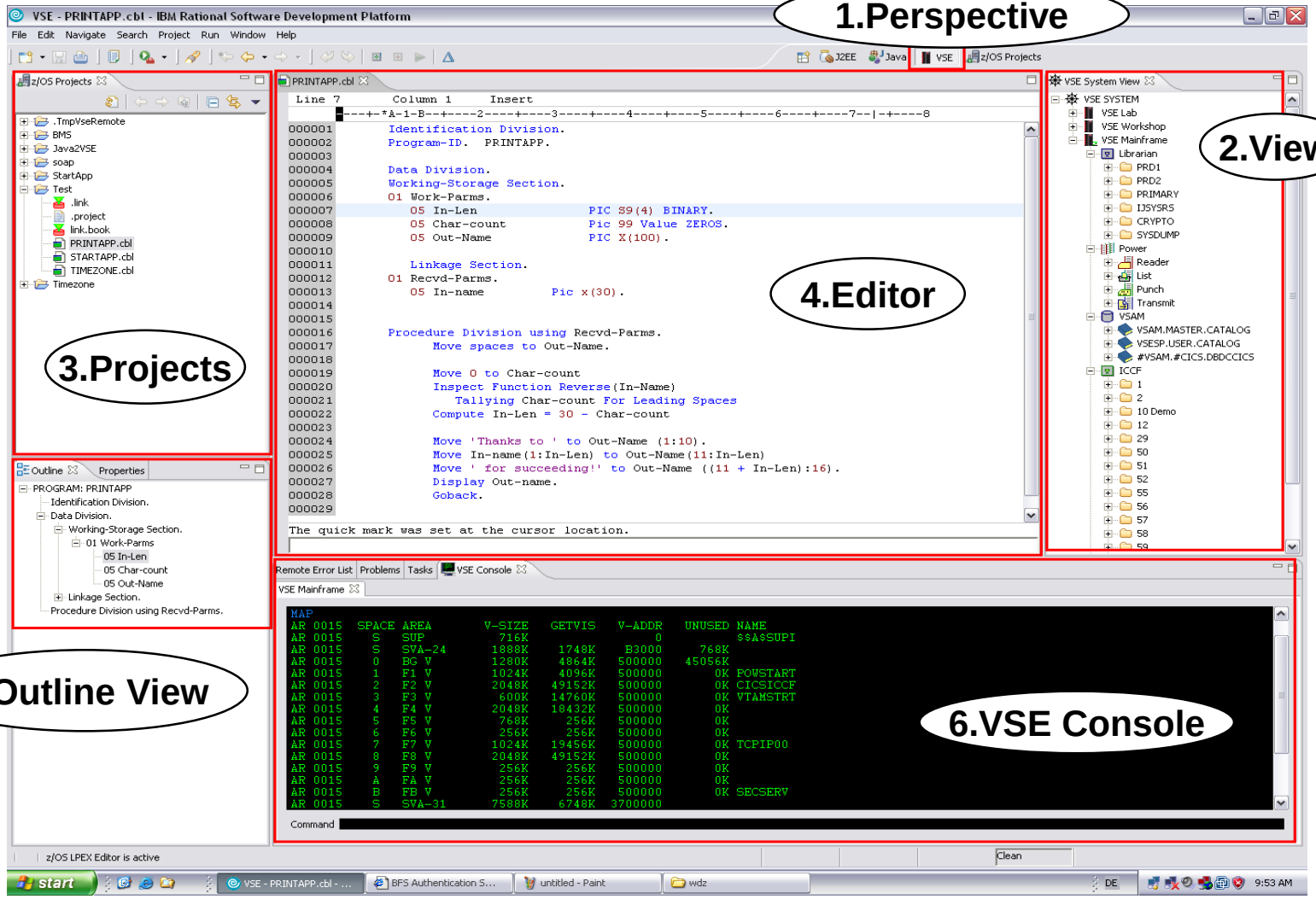
Development for z/VSE with Rational Developer for z Systems - from Mobile to COBOL



- Built on Eclipse
- MobileFirst builds on Common code base across all mobile platforms (iOS, Android, Windows Phone, Blackberry)
- Build, preview, and deploy within the IDE
- Mobile simulator (for unit test)
- End-to-end debug
- Integrate with the back-end COBOL applications, data and transactions from CICS

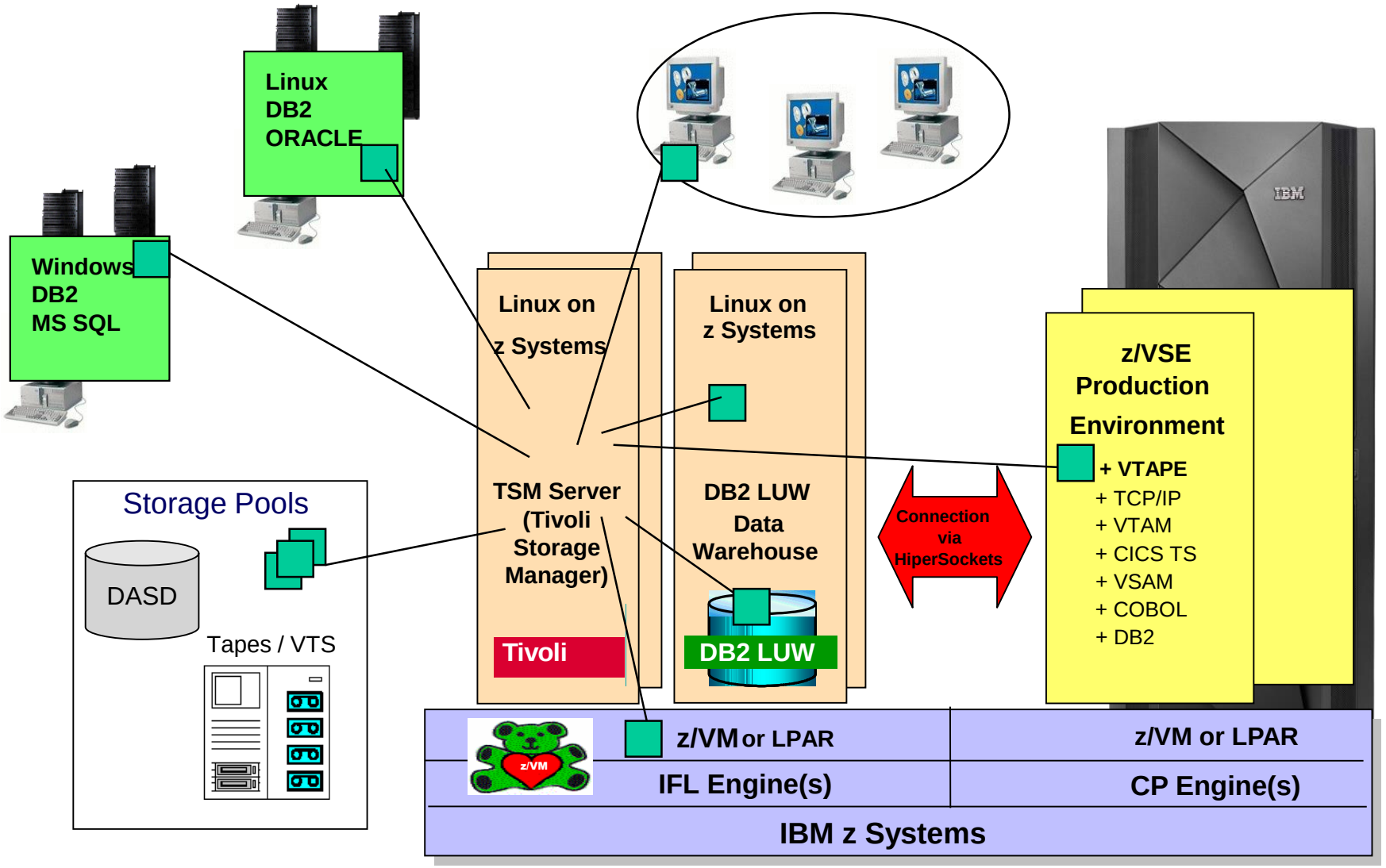


IBM Rational Developer for system z - the z/VSE Perspective



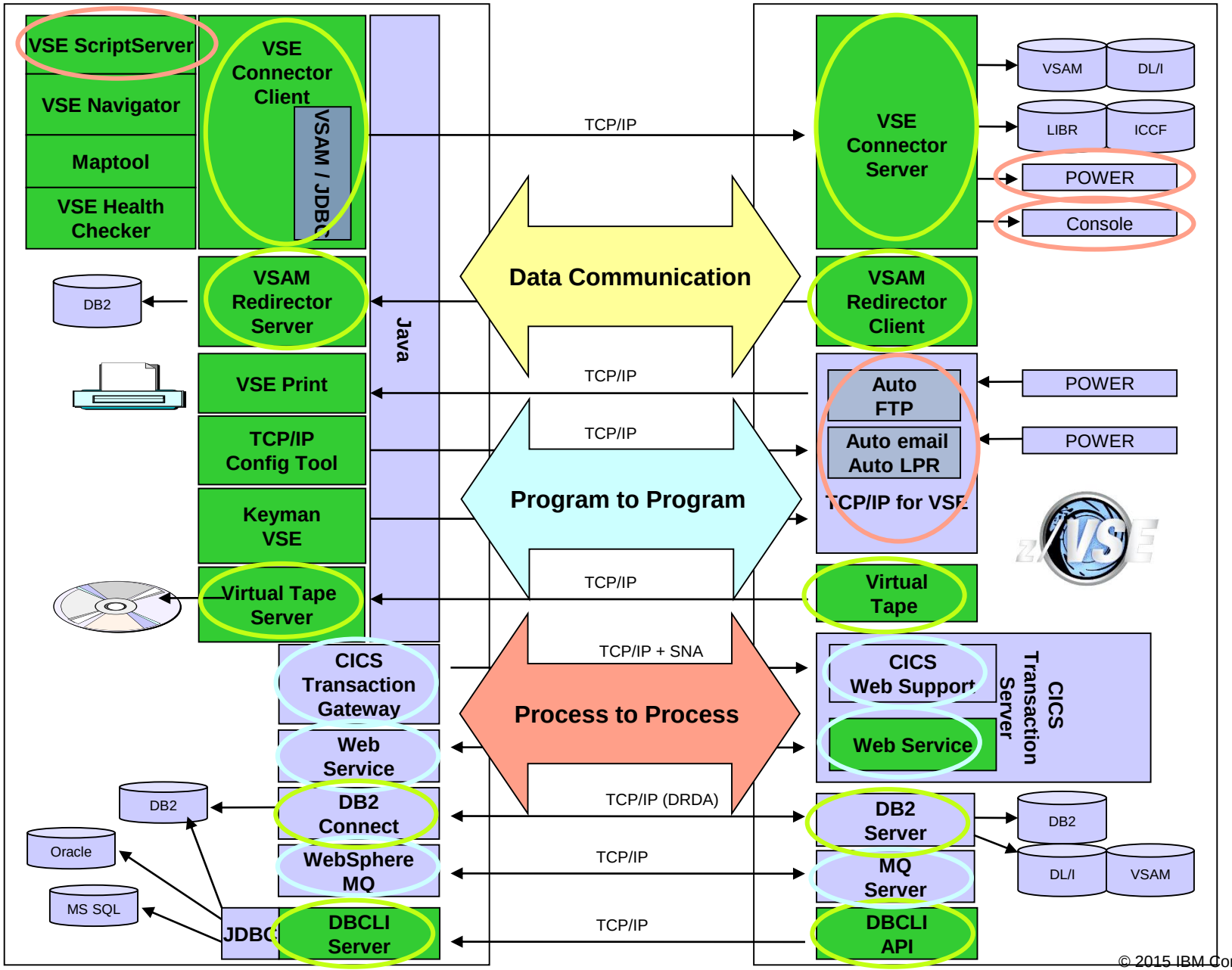
Universal Backup / Restore Concept for z/VSE

Implement TSM on Linux on z Systems as central Backup Hub for the enterprise



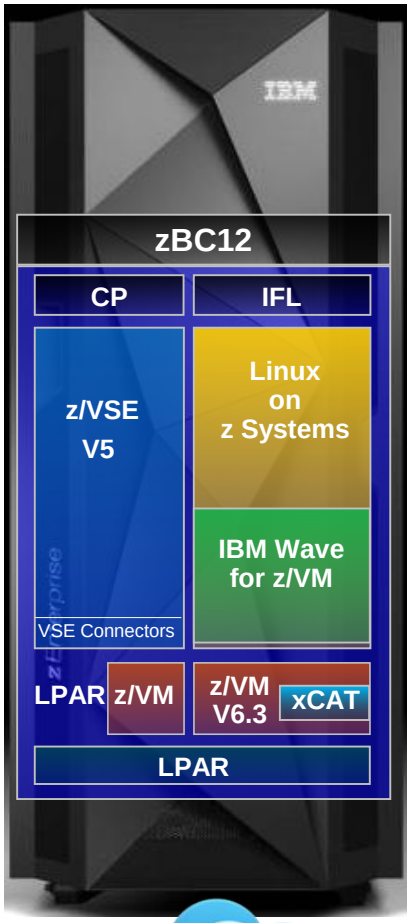
Conclusion: Modernization possibilities for z/VSE processes with z/VSE

- data exchange via FTP
  - ✓ VSAM Redirector (incremental, cumulative, with cleansing)
- VSE Applications need access to remote data
  - ✓ VSAM Redirector
- Synchronization of data on different platforms
  - ✓ VSAM Redirector
- Access z/VSE data and resources from remote platforms
  - ✓ Java-Based Connectors, z/VSE Script
- access VSE applications from remote platforms
  - ✓ CICS Transaction Gateway, Web Services via SOAP
- access remote applications from VSE
  - ✓ SOA: Web Services via SOAP(XML)
- Mobilize existing z/VSE applications
  - ✓ Mobilize with SOAP, z/VSE Connectors data and applications
- BigData solutions with z/VSE data
  - ✓ Hadoop Connector for z/VSE data

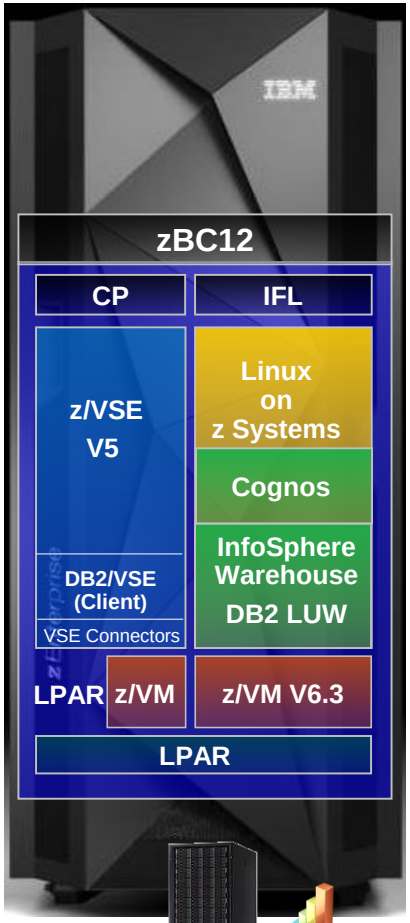


z/VSE & Linux Modernization – CAMS Solution Examples

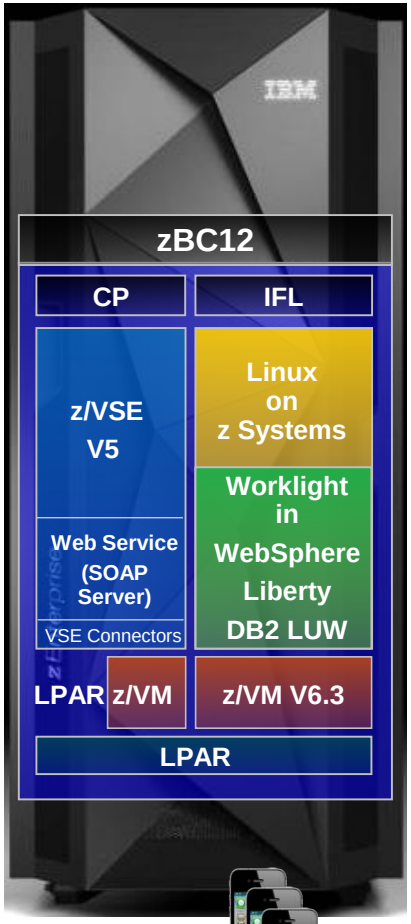
Cloud



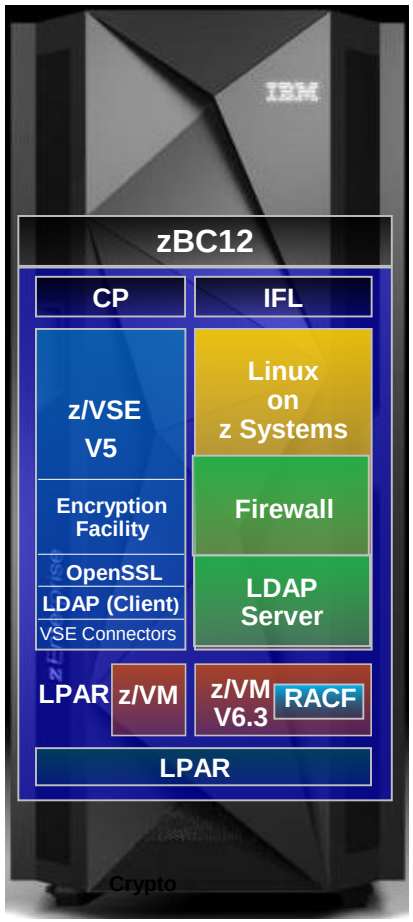
Analytics



Mobile



Security



and many more ....

z/VSE Tools & Connector - Downloads

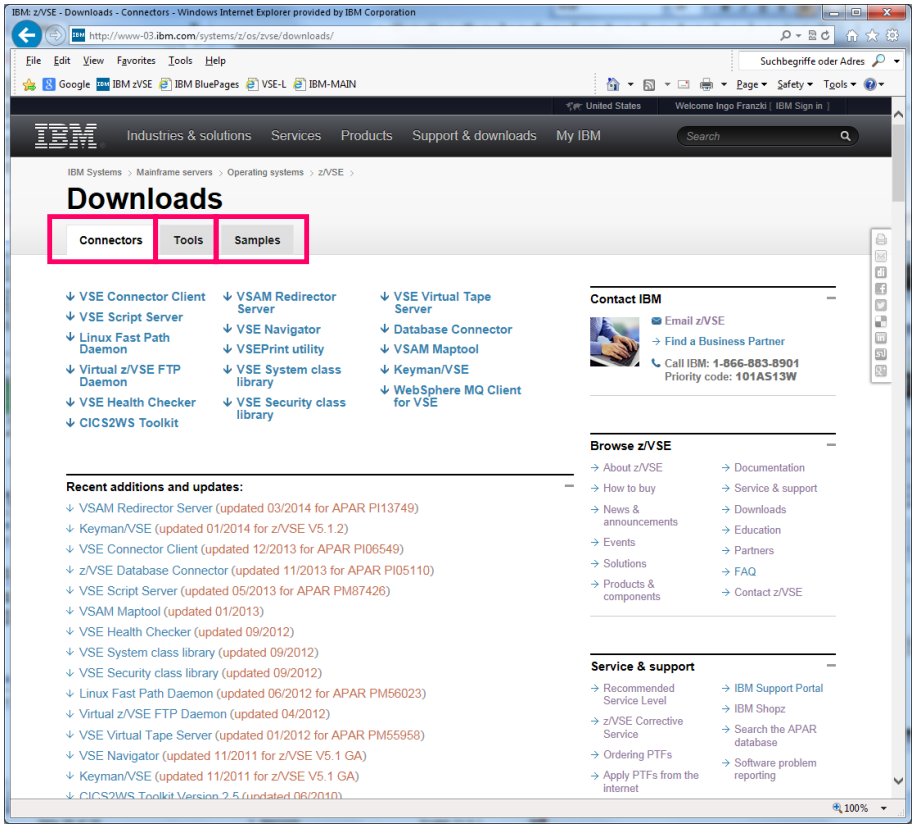
- IBM offers are a huge set of tools available on the z/VSE Homepage

  http://ibm.com/zvse/downloads

- Most tools are 'as is', at no additional charge.

- Connector components (part of z/VSE and officially supported) are also available here

- Information about the Connector Components can be found here:



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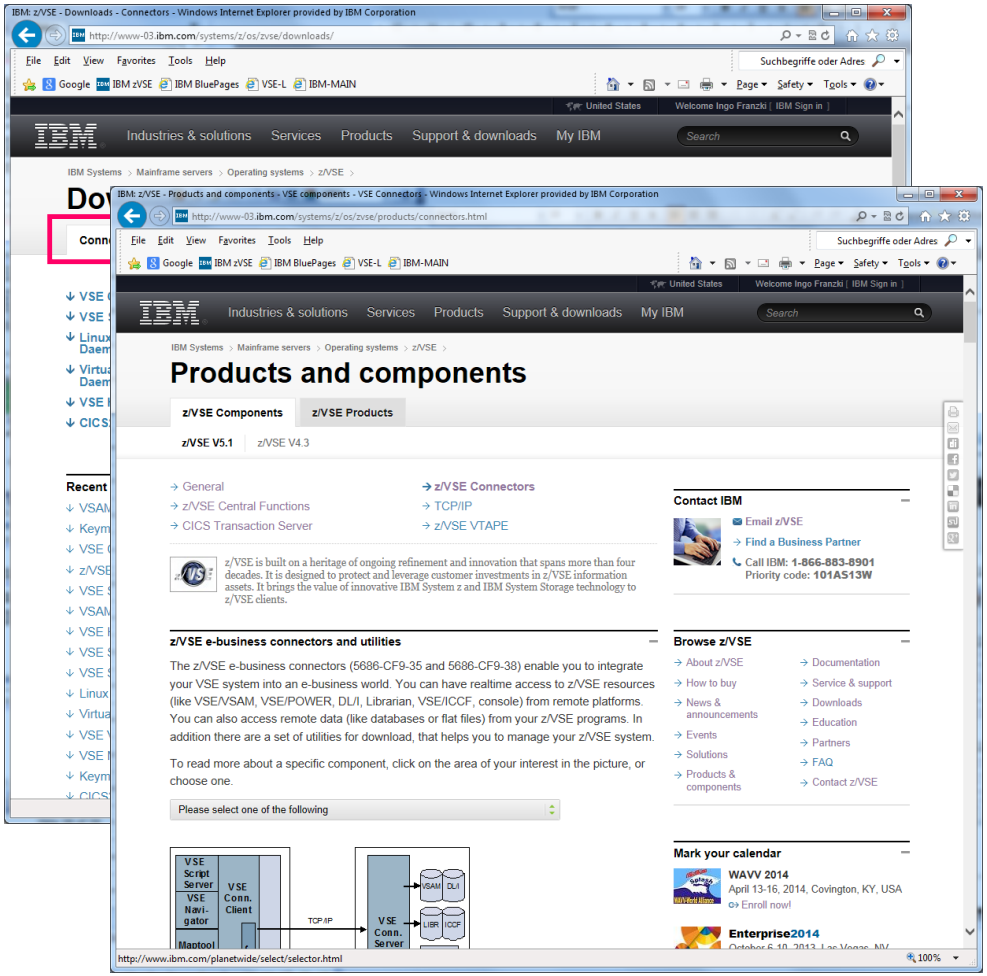
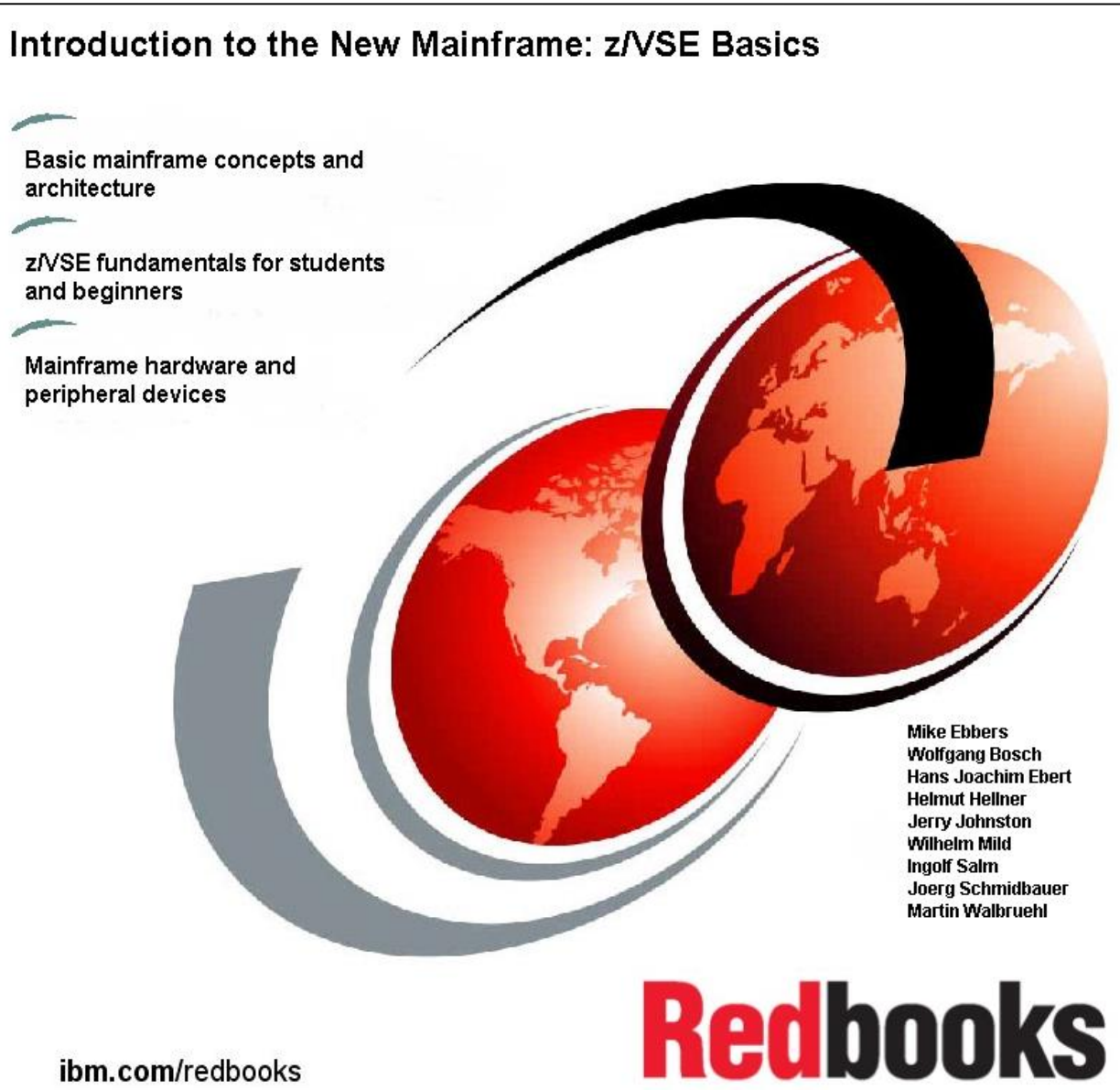


http://ibm.com/zvse/products/connectors.html

z/VSE Redbook

SG24-7436-00



z/VSE Live Virtual Classes

z/VSE @ http://www.ibm.com/zvse/education/

LINUX + z/VM + z/VSE @ http://www.vm.ibm.com/education/lvc/

Read about upcoming LVCs on @ http://twitter.com/IBMzVSE

Join the LVC distribution list by sending a short mail to zvse@de.ibm.com

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