IBM z Systems

z/VSE Strategie – heute und morgen

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IBM Deutschland Reasearch & Development GmbH

46. COURSE-Tagung vom 21. bis 23. Mai 2017 in Diehls Hotel in Koblenz

IBM

lattwein Computersprachen

Agenda

- **Strategy and Roadmap**
- Pricing
- Current and future releases
- Modernization solutions

z/VSE “facelift”

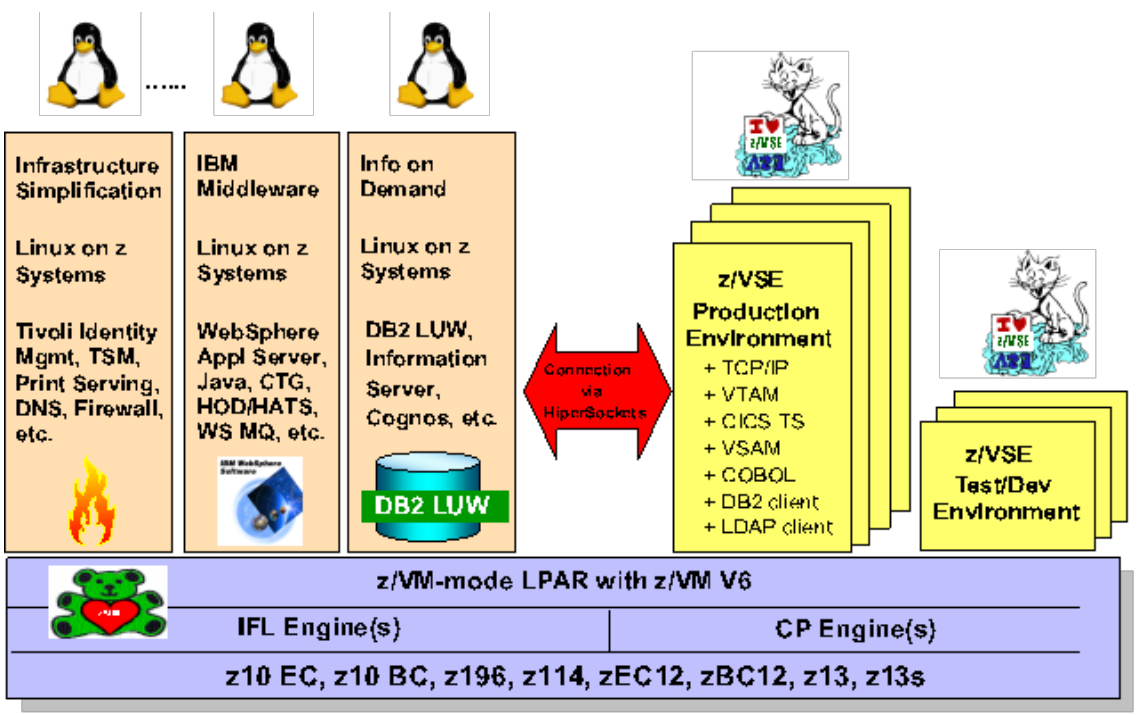
z/VSE Strategy

Protect existing z/VSE investments

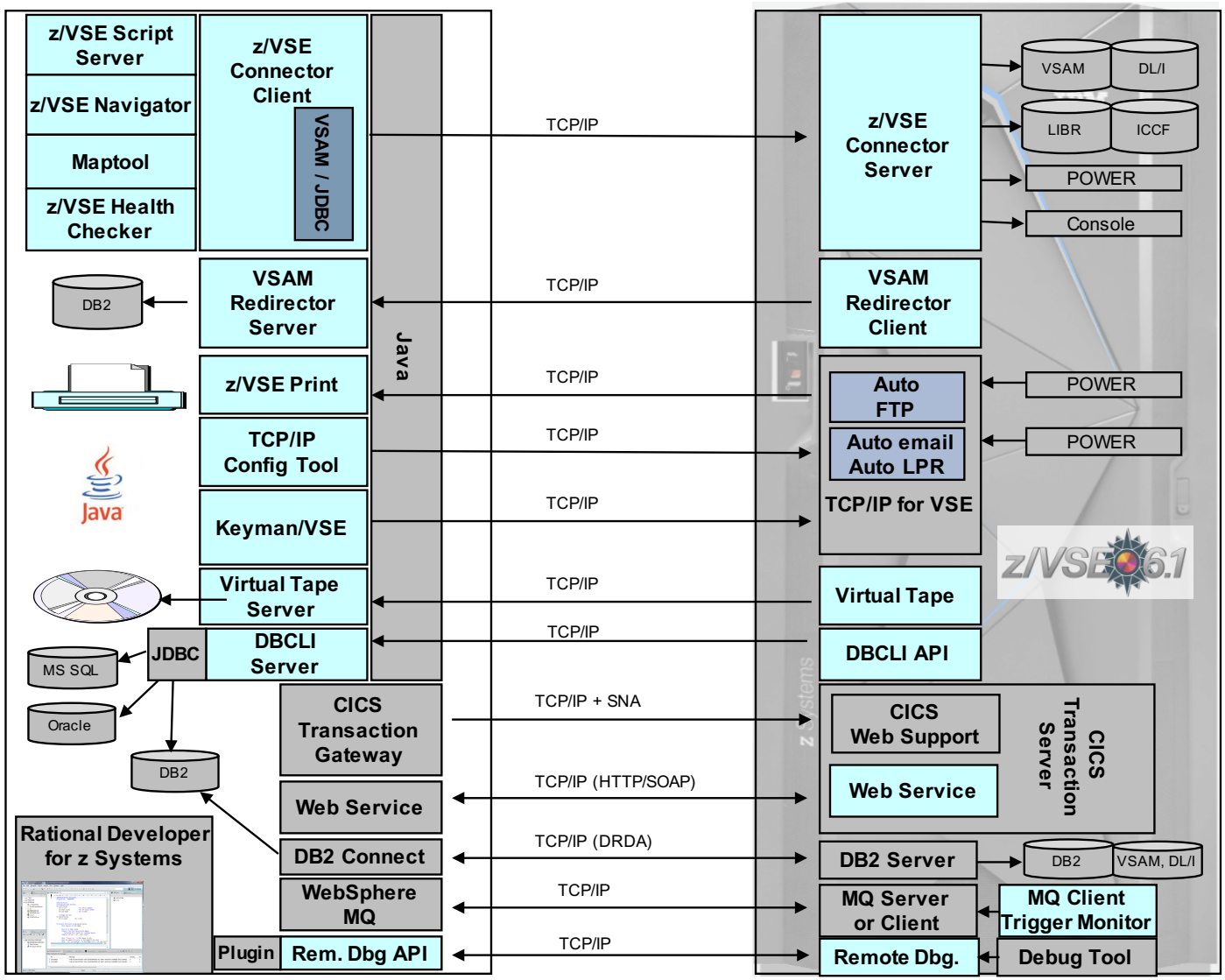
Integrate using middleware and z/VSE connectors

Extend with Linux on IBM z Systems technology & solutions

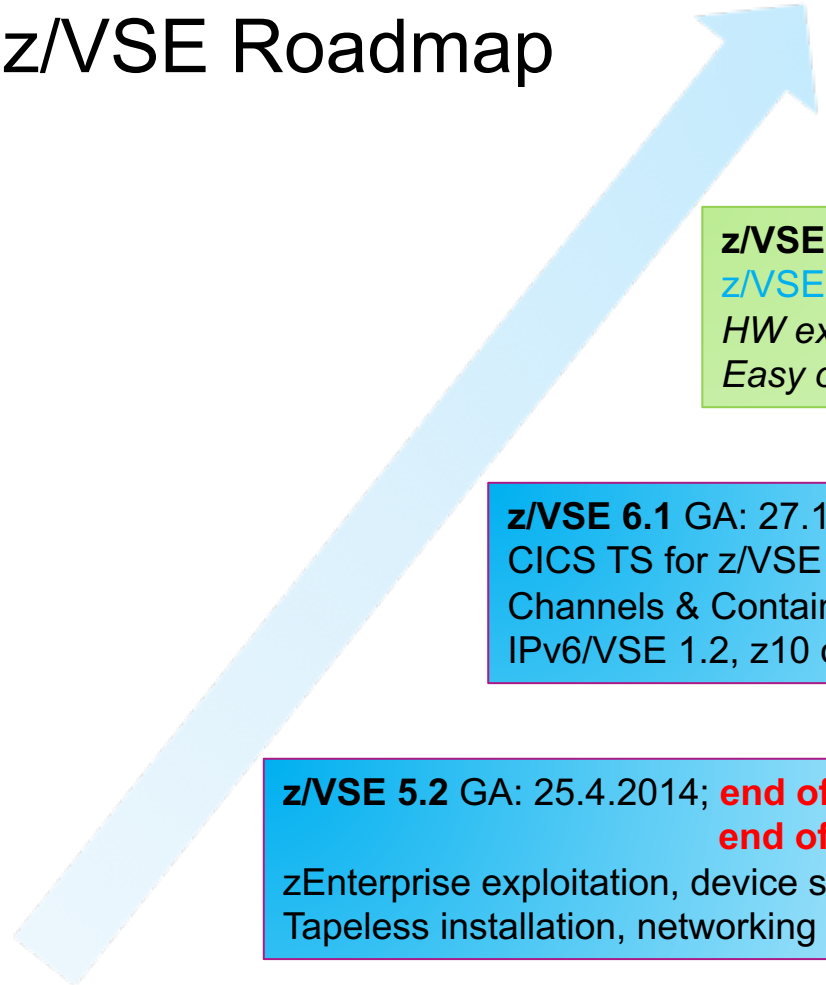
- **Hybrid Environment** leveraging z/VSE, z/VM, and Linux on IBM z Systems



z/VSE Connectors



z/VSE Roadmap



z/VSE 6.2: **Prev. Ann.: 11.4.2017; GA: 4Q 2017**
z/VSE Network Appliance, Migration Pricing Option
HW exploitation, CICS TS & CICS Explorer,
Easy of use, Networking and Security enhancements

z/VSE 6.1 GA: 27.11.2015
CICS TS for z/VSE 2.1: CICS Explorer update,
Channels & Containers; TCP/IP for z/VSE 2.1,
IPv6/VSE 1.2, z10 or higher; z Systems exploitation

z/VSE 5.2 GA: 25.4.2014; **end of marketing: 13.3.2017**
end of service: 31.10.2018
zEnterprise exploitation, device support
Tapeless installation, networking / security enhancements

z/VSE 5.1 GA: 11.2011; **end of service: 30.6.2016**
64 bit virtual, zEnterprise exploitation, z9 or higher
z/VSE 5.1.1 GA: 6.2012: CICS Explorer, LFP in LPAR, database connector
z/VSE 5.1.2 GA: 6.2013: TS1140, 64 bit I/O, openSSL, db connector enhancements

z Systems support (or not)

VSE Release	z900 / z800	z990 / z890 (eos 10.2016)	z9 EC / z9 BC	z10 EC / z10 BC / z196 / z114 / zEC12 / zBC12 / z13 / z13s
z/VSE 6.1	No	No	No	Yes
z/VSE 5.2 (eom 3.2017 eos 10.2018)	No	No	Yes	Yes
z/VSE 5.1 (eos 6.2016)	No	No	Yes	Yes
z/VSE 4.3	Yes	Yes	Yes	Yes
z/VSE 4.2	Yes	Yes	Yes	Yes
z/VSE 4.1	Yes	Yes	Yes	Yes
z/VSE 3.1	Yes	Yes	Yes	Yes
VSE/ESA 2.7	Yes	Yes	Yes	Yes
VSE/ESA 2.6	Yes	Yes	Yes	Yes
VSE/ESA 2.5	Yes	Yes	No	No
VSE/ESA 2.4	Yes	No	No	No
VSE/ESA 2.3	Yes	No	No	No

z/VSE release / Hardware status: http://www-03.ibm.com/systems/z/os/zvse/about/status.html

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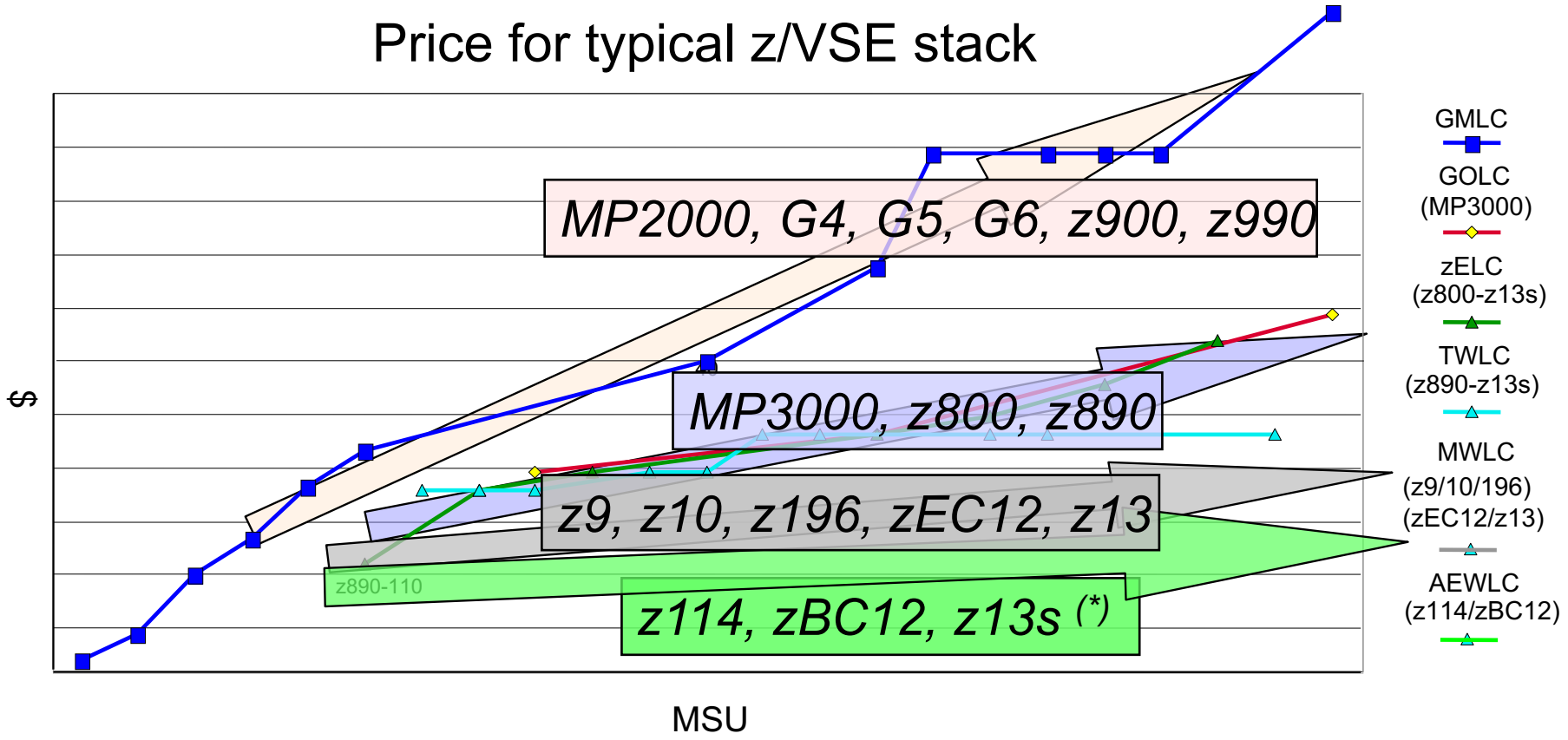
z/VSE Software Pricing Metrics

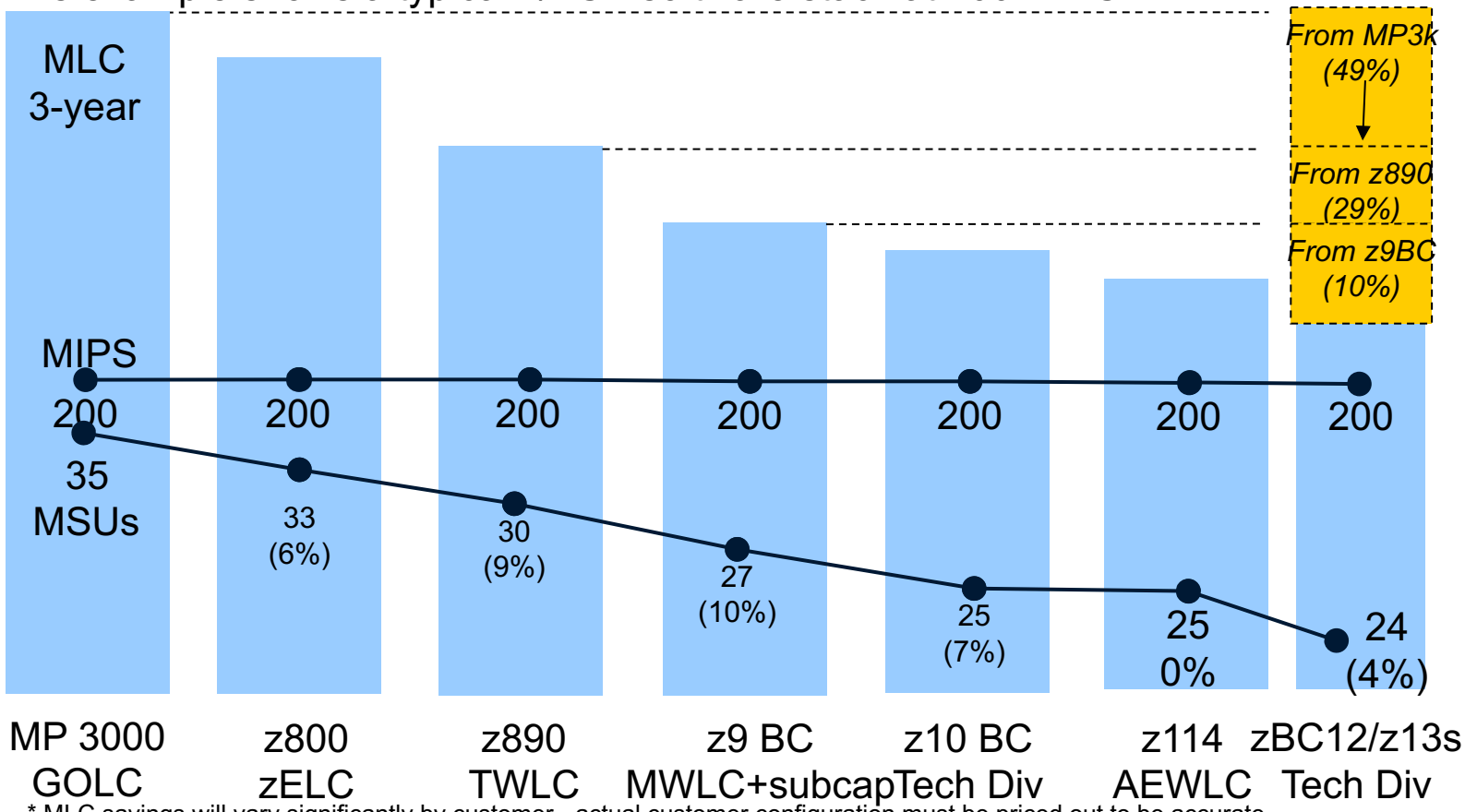


(*) The entry models of these servers, capacity settings A01 or 110, are priced using zELC.

Typical z/VSE stack consists of z/VSE Operating System, LE, CICS TS, VTAM, TCP/IP, DB2

z/VSE MLC Price Performance across Hardware Generations

- This example shows a typical z/VSE software stack at 200 MIPS



* MLC savings will vary significantly by customer - actual customer configuration must be priced out to be accurate.
* A typical z/VSE stack includes z/VSE CF, CICS TS, VTAM, TCP/IP, DB2, Ditto, Cobol, HLASM

AEWLC Technology Transition Offerings

- Technology Update Pricing for z13s (TU4)
  - For stand-alone **z13s** servers
  - AEWLC **pricing reduction till 13%**
  - For more details, see announcement link
- Technology Update Pricing for zBC12 (TU2)
  - For stand-alone **zBC12** servers
  - AEWLC **pricing reduction till 5%**
  - For more details, see announcement link
- For more information about AEWLC see this link

z/VSE, z/VM and Linux on IBM z Systems Growth Offering

- Provide z/VSE customers with a Linux environment to expand into new workloads such as Cognitive and Cloud, Analytics, Mobile, Social, Security
- For z/VSE customers acquiring a z13s* and z/VSE V5 or V6, the customer can receive all of the following components with the z13s* and z/VSE V5 or V6 at the same price as the z13s* and z/VSE V5 or V6 :
  - one IFL*
  - incremental 32 GB memory (incremental to memory ordered for the z13s)
  - z/VM V6 (base & features) for the IFL (up to 10 Value Units)
  - IBM Wave V1 for the IFL (up to 10 Value Units)
  - z/VM S&S and IBM Wave S&S for the IFL for 3 years
- Requirements:
  - z13s F01/A02 or larger
  - Direct sales and Business Partner sales
  - Prior special bid approval required
  - All hardware must be ordered at the same time
  - z/VSE V5 or V6 must be licensed at the same time as the server purchase (or earlier)

* Maintenance is not included in this offering

Multi-Version Measurement (MVM)

- Multi-Version Measurement (MVM) was announced Feb. 14th and the earliest billing effective date is June 1st, 2017. See details here
- MVM allows clients to selectively deploy new software versions for an unlimited duration, providing more flexible control over their program upgrade cycles
- MVM can be use for:
  - Programs reporting **Sub-Capacity**
    - MVM enables the **combining of all the versions MSUs** to calculate the **latest version billable charges on the same machine**
    - **MVM requires SCRT V24.2.0 or SCRT V24.11.0.** Which are planned to be **available April 10th. Report** can be generated **May 2nd and submitted till May 9th.**
  - Programs **not** eligible for **Sub-Capacity**
    - MVM enables to **charge Full Capacity MSUs only** for the **latest** licensed **version** and charges for **any earlier versions** of the program are **waived**
- MVM replaces Single Version Charging (SVC), the Migration Pricing Option (MPO) and the IPLA Migration Grace Period
  - It simply **takes away the time limit**
  - If pre-MVM **time limit expired before May 31st**, 2017, must **request in writing to IBM** that MVM be applied

IBM Sub-Capacity Reporting Tool (SCRT)

IBM Sub-Capacity Reporting Tool (SCRT)
Current Levels

IBM's policy requires SCRT reports to be created using the most current Version of SCRT. However, IBM does not require a specific Release or Modification level. Therefore, you may select the appropriate release and modification level within the current version for your environment. Please note that only the most current version and release are available for download from the website.

Last Updated: April 17, 2017

Minimum Version Required: Version 24

SCRT Environment	V.R.M	Supported Report Types
Download z/OS Java	24.11.1	• Sub-Capacity Reports for z/OS, z/TPF, and z/VSE • Multiplex Reports for z/OS and z/TPF (including Sub-Capacity reporting for z/VSE on machines within a Multiplex) • Support for CMP, zCAP, MWP, and zWPC • Sub-Capacity Reports for independent software vendor (ISV) products
Download Linux	24.11.1	• Sub-Capacity Reports for z/OS, z/TPF, and z/VSE • Multiplex Reports for z/OS and z/TPF (including Sub-Capacity reporting for z/VSE on machines within a Multiplex) • Support for CMP, zCAP, MWP, and zWPC • Sub-Capacity Reports for independent software vendor (ISV) products
Download Windows	24.11.1	• Sub-Capacity Reports for z/OS, z/TPF, and z/VSE • Multiplex Reports for z/OS and z/TPF (including Sub-Capacity reporting for z/VSE on machines within a Multiplex) • Support for CMP, zCAP, MWP, and zWPC • Sub-Capacity Reports for independent software vendor (ISV) products
Download z/OS Classic	24.2.0	• Sub-Capacity Reports for z/OS, z/TPF, and z/VSE • No support for CMP, zCAP, MWP, zWPC, nor ISV products
Download z/VSE Classic	24.2.0	• Sub-Capacity reports for z/VSE only • No support for z/OS nor z/TPF nor ISV products

https://www-03.ibm.com/systems/z/resources/swprice/subcap/scrt/download.html

Sub-Capacity Reporting Tool (SCRT) V24..x

Email von LMSnews am 10.04.2017:

SCRT Version 24 Release 2.0 and SCRT Version 24 Release 11.0 Available

- From IBM, a Sub-Capacity Reporting Tool Update

…
IBM also announces that the Classic Version deliverables of SCRT will no longer be supported after October 2017. Customers currently using an SCRT Classic Version deliverable should begin planning their migration to one of the Java Version deliverables prior to October 2017. z/VSE customers without z/OS will have the choice of the Windows or Linux deliverables.

….

Warm Regards,

From The SCRT Team

Please, plan for migration and try SCRT Java version
IBM is looking forward to getting your feedback!

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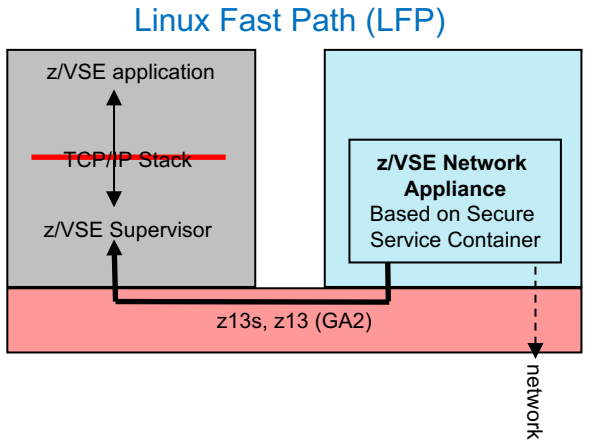
z/VSE 6.1

- **GA since 27-Nov 2015**
  - Latest RSL 31-Dec 2016
- **Hardware Exploitation**
  - Architectural Level Set to IBM System z10 – **runs on z10 or newer**
  - **z13/z13s** exploitation (incl. Crypto Express5S, FICON Express 16S)
  - IBM Storage: Tape: TS11xx, **TS7700**; Disk (DASD,SCSI): **DS88xx**, **FlashSystem V9000**
- **CICS TS for z/VSE 2.1**
  - **CICS Explorer update** capability
  - **Channel & Container support** – lifts 32K Commarea limitation
- **Networking and Security**
  - **IPv6/VSE 1.2**: with **Firewall**, **failover**, **SSL & TLS 1.2**
  - **TCP/IP for z/VSE 2.1**: with **Firewall**, improved **TN3270** and **TLS/SSL** enh.
  - **MQ Client Trigger Monitor**

z/VSE Network Appliance (VNA)

- z/VSE Network Appliance (VNA) is **available since 30-Jun 2016**
- VNA acts as a **router for z/VSE**:
  - TCP/IP application uses Linux Fast Path (LFP) and connects through HiperSockets to VNA
- **Based and deployed on IBM Secure Service Container** (previously known as z Appliance Container Infrastructure - zACI) delivered **with z13s and z13 GA2**
- **Advantages:**
  - No Linux license
  - No TCP/IP stack required on z/VSE
  - No z/VM required to connect to the network
- **Supported on z/VSE 6.1, 5.2 and 5.1**



z/VSE 6.2

- Prev. Announcement April 11th, full Announcement and GA 4Q 2017
- All previous SoDs are planned to be included, and more features…
- Hardware support
  - Delivery of **future upgrades of z/VSE on DVD and electronically only**
  - Architecture Level Set requiring **z196 / z114 or later**
  - **Latest available z** Systems Server and Storage (Tape, ECKD, SCSI) Server **support**
  - Support for the **IBM z13 Vector Facility (SIMD)** for user applications
  - **High Performance FICON (zHPF)** support
  - **FlashCopy Space Efficient (SE) support for Extent Space Efficient (ESE)** volumes with IBM DS8880 R8.1 Storage Family
  - **Elliptic Curve Cryptography (ECC)** support
- Ease of use functionality for SCSI-only systems
  - **Tapeless initial installation using a SCSI installation disk** added
  - **Standalone dump to SCSI device** added

z/VSE 6.2

- CICS Transaction Server for z/VSE V2.2
  - Upgraded **CICS Web Support (CWS) to HTTP 1.1** for improved performance and security and to support the latest web browsers and applications
    - Features include: **persistent connections, pipelining and chunking**
  - **CICS Explorer** enhancements
  - **Channel and container** enhancements
  - Support for **standard date and time stamp** format
  - Support for Language Environment **(LE) MAIN for Assemble applications**
- Security
  - **OpenSSL** (part of z/VSE Cryptographic Services) upgraded to **v1.0.2h** for newer SSL/TLS functions and **enabled for CICS Web Support and EZA interface**
  - **SSL/TLS** support for **remote VTAPEs**
  - **LDAP sign-on** support for **RESET option** (clearing cached password) and **wildcard** support for **CHANGE and DELETE commands**
  - **Basic Security Manager (BSM) enhancement**

z/VSE 6.2

- z/VSE Connectors enhancements
  - **z/VSE SOAP Engine to exploit Channels and Containers**
  - **z/VSE REST Engine with JSON support**
  - **z/VSE database connector DBCLI** enhanced **providing a batch and an interactive interface to perform queries**, without an application. **CICS REXX support added**

- Networking
  - New release of IBM **IPv6/VSE V1.3** with various enhancements
  - New release of IBM **TCP/IP for z/VSE V2.2** with various enhancements
  - **LFP running as a z/VM** guest **allows also to connect to a TCP/IP Stack in an LPAR or** with the **z/VSE Network Appliance**

Need something else?

- You may submit requirements at conferences (GSE, Tech. Univ., VM Workshop, ...)
  - COURSE, May 21st – 23rd in Koblenz, Germany
  - VM Workshop, June 22nd – 24th in Columbus, Ohio, US
  - International GSE, October 23rd – 25th Hamburg, Germany
  - IBM TechU Comes to You, 2017, Worldwide
- z/VSE requirements via the Request for Enhancements (RFE) database:
  - http://www.ibm.com/developerworks/rfe/
  - Please select the following for z/VSE requirements:
    - Brand = Servers and System Software
    - Product = z/VSE
- CICS Transaction Server requirements via the Request for Enhancement (RFE) database:
  - http://www.ibm.com/developerworks/rfe/
  - Please select the following for z/VSE-CICS requirements:
    - Brand = Servers and System Software
    - Product = CICS Transaction Server

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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

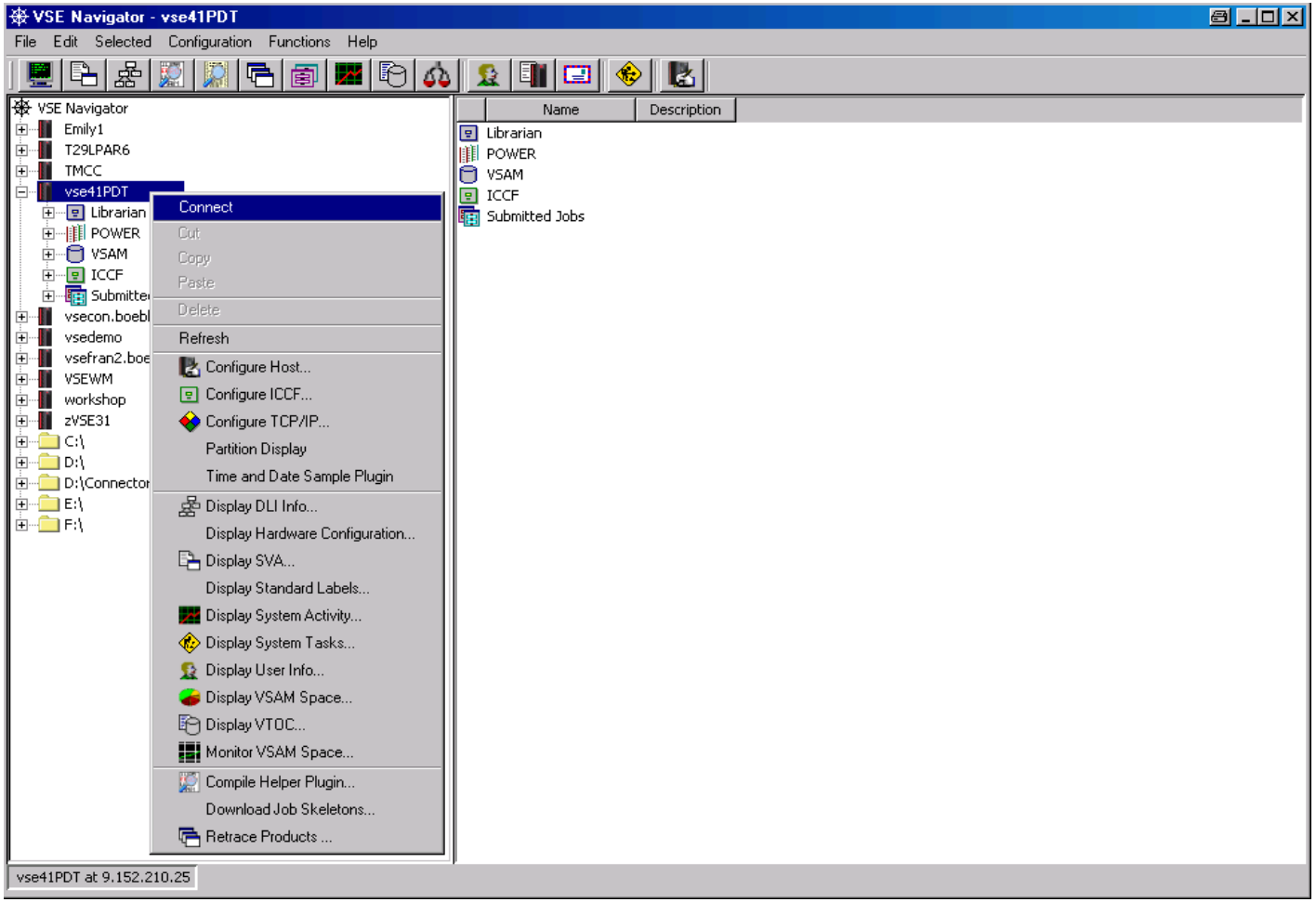
Integrate new and existing VSE applications

- 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

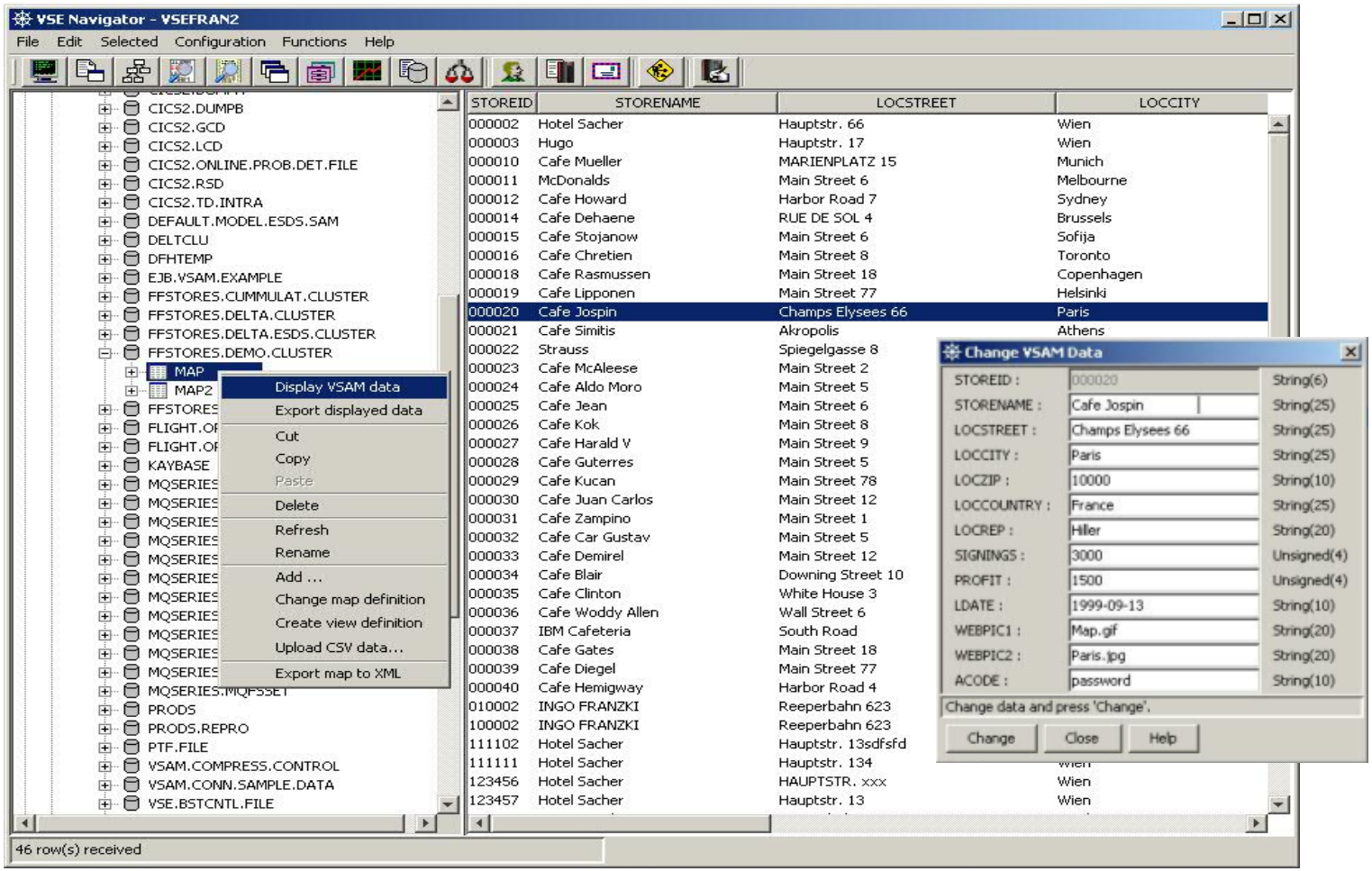
- Integrate in LDAP environments

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



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

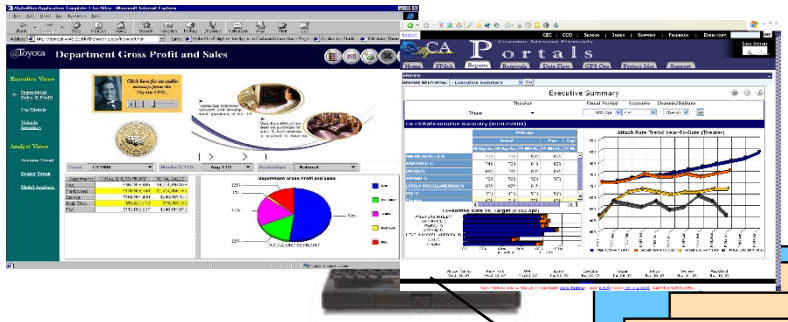
z/VSE Navigator: Graphical z/VSE Interface to VSAM data

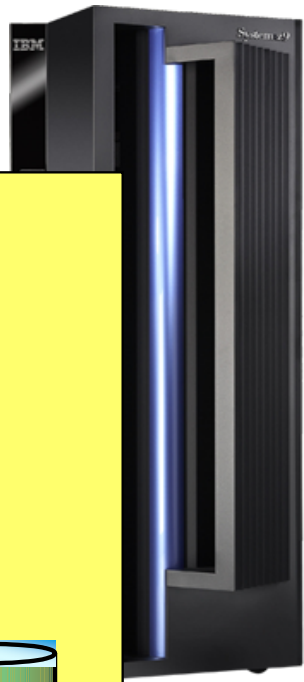


http://www-03.ibm.com/systems/z/os/zvse/downloads/#navi

The No1 Scenario: DB2 LUW and Analytics for z/VSE

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





Linux
DB2
Oracle

Windows
DB2
MS SQL

Linux on
z Systems

Cognos BI

Data Warehouse

DB2 LUW

data

enterprise
database

data

DL/I

VSAM

Connection
via
HiperSockets

z/VSE
Environment

+ TCP/IP

+ CICS

+ VSAM

+ COBOL

DL/I

VSAM

DB2
VSE/VM

z/VM or LPAR

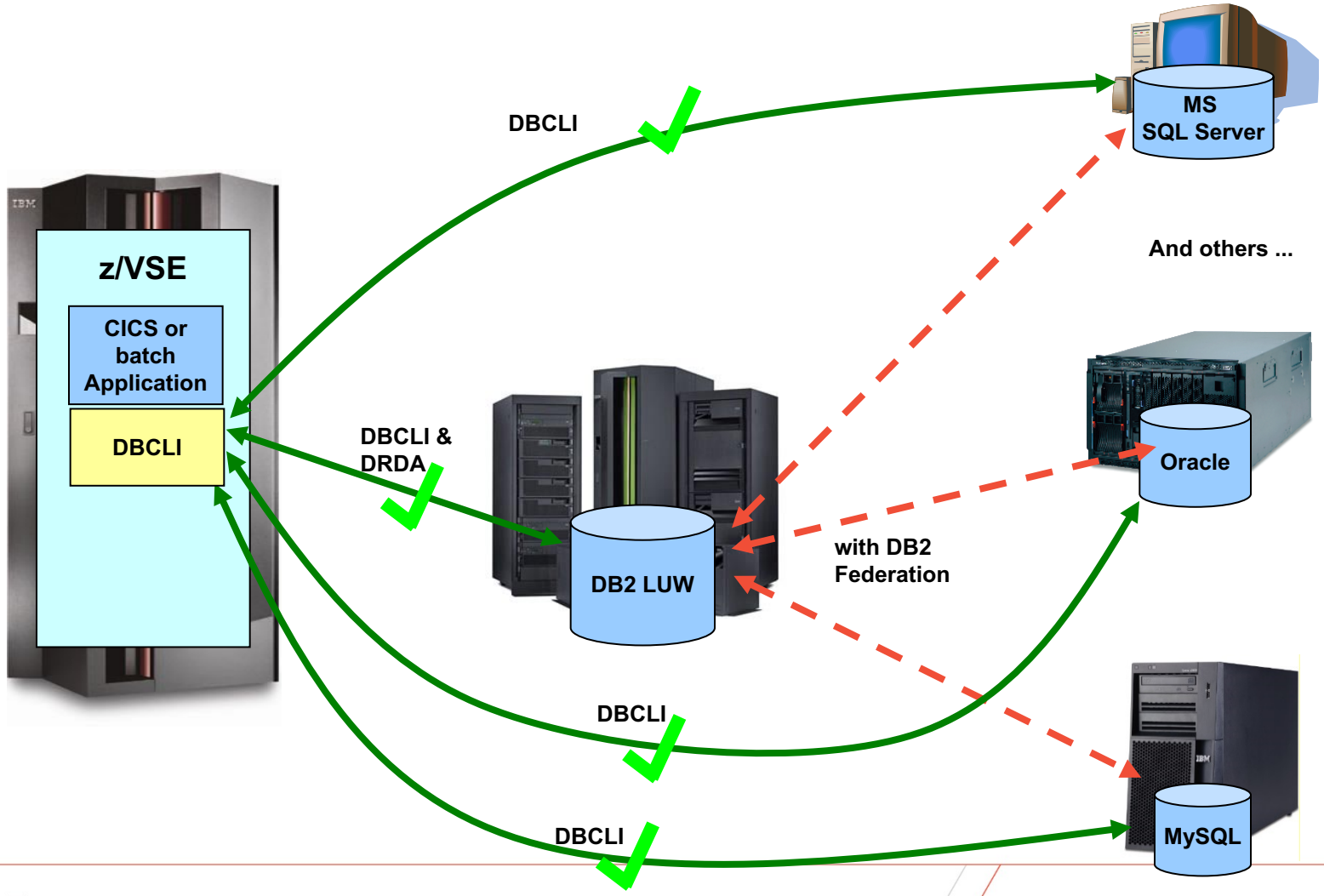
LPAR or z/VM

IFL Engine (s)

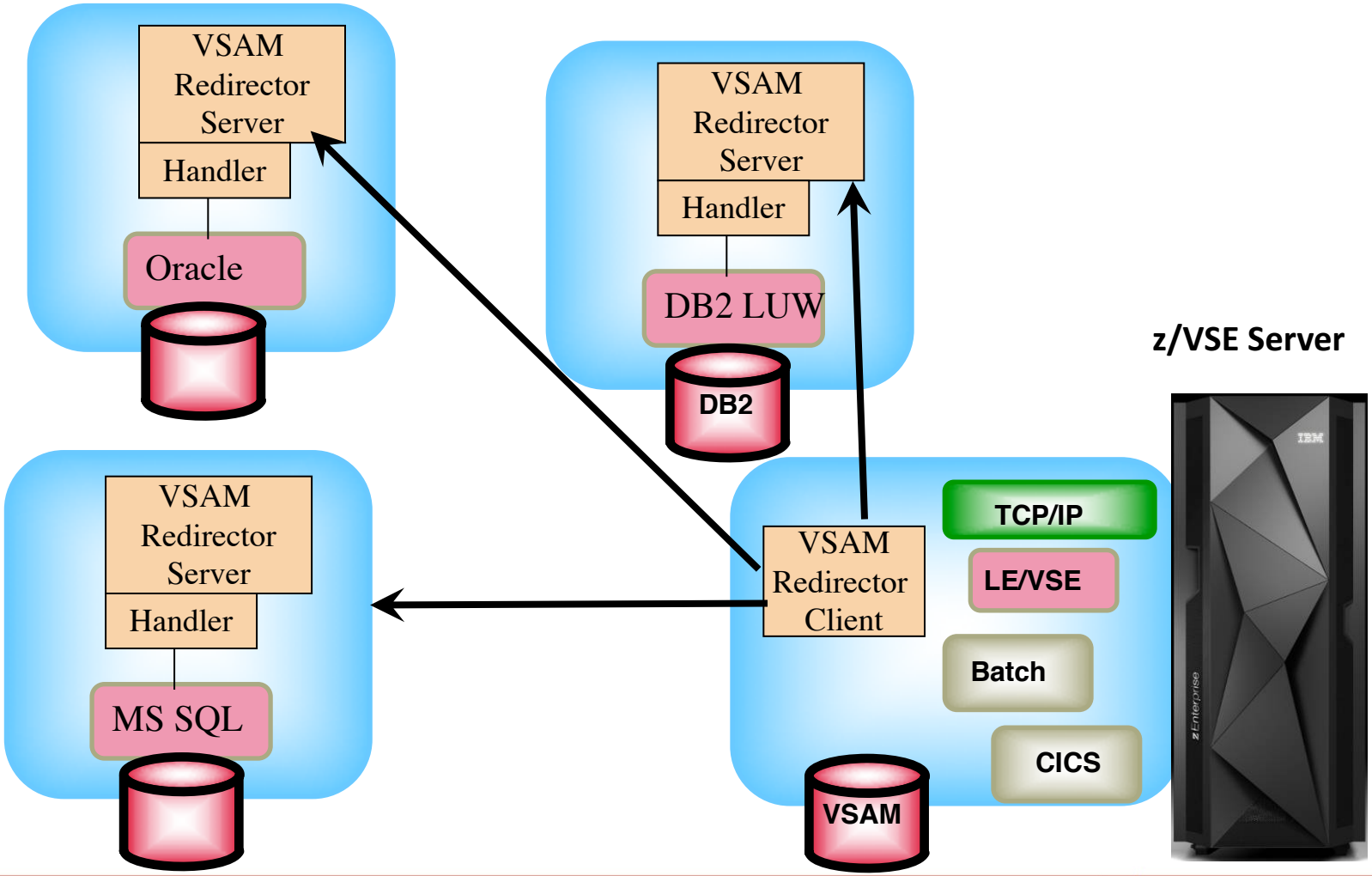
Standard CP Engine (s)

IBM z Systems

z/VSE applications accessing remote Databases using SQL

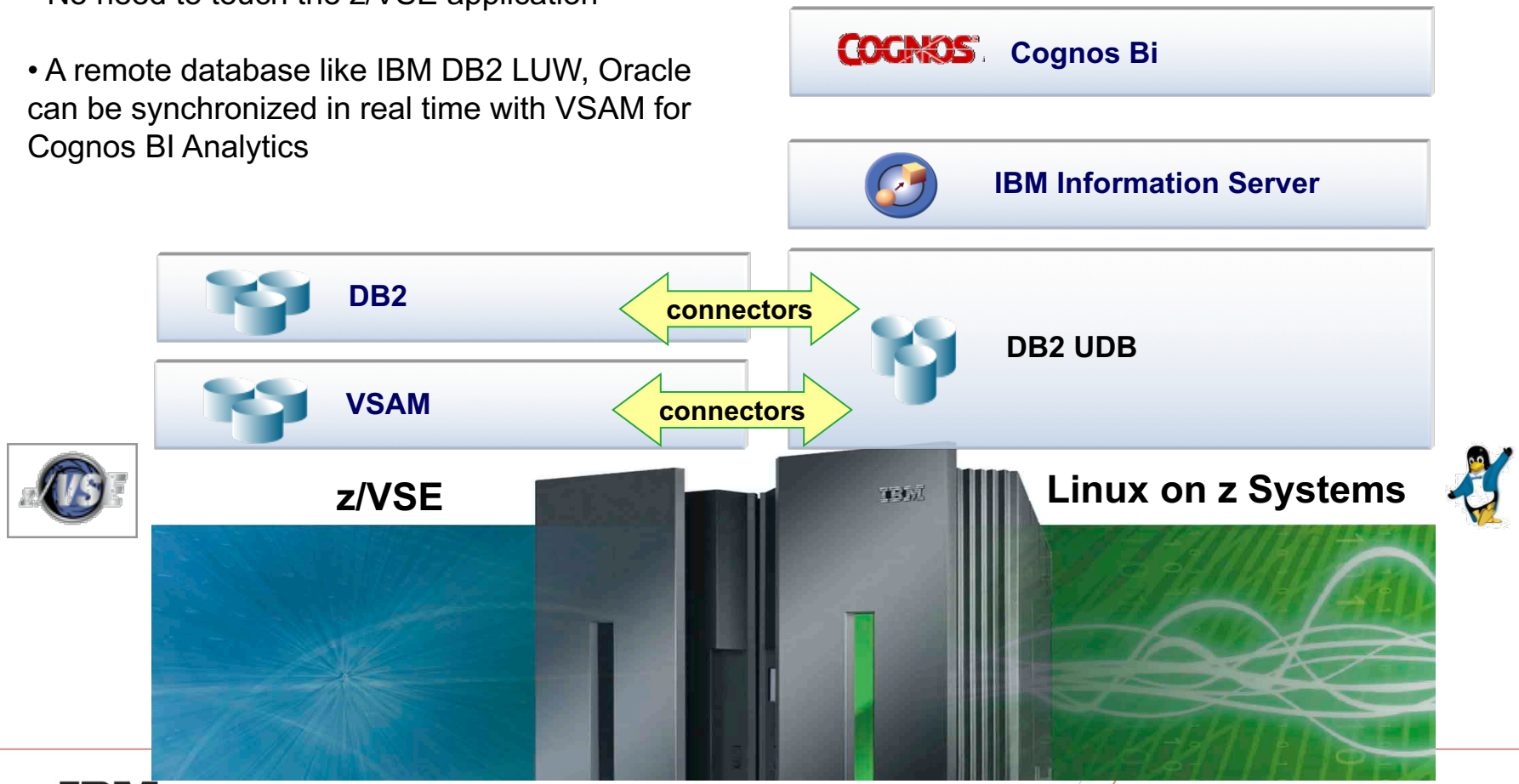


z/VSE applications, transparently access remote relational databases via VSAM requests



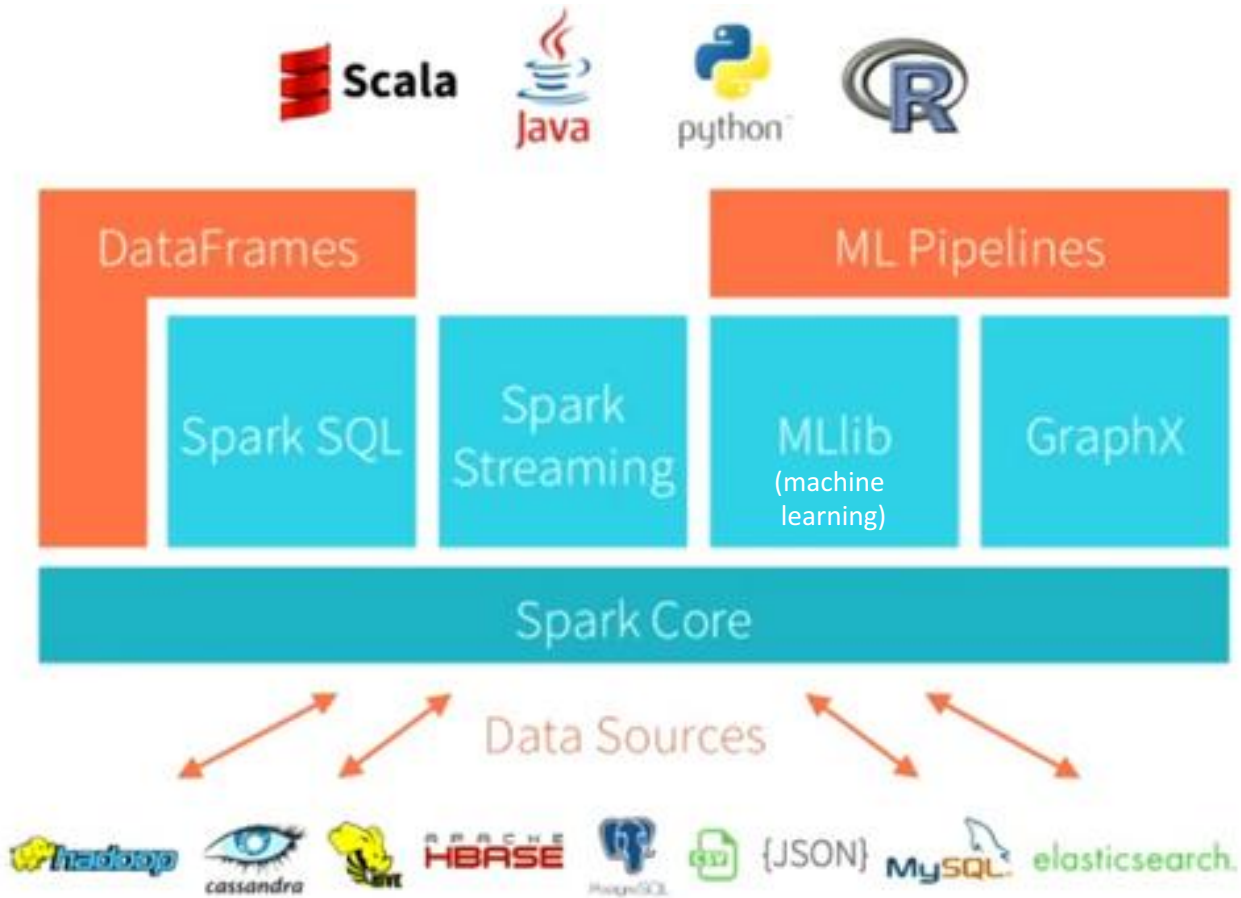
Cognos BI with IBM z Systems and z/VSE

- 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



Apache Spark – compute engine for analytics

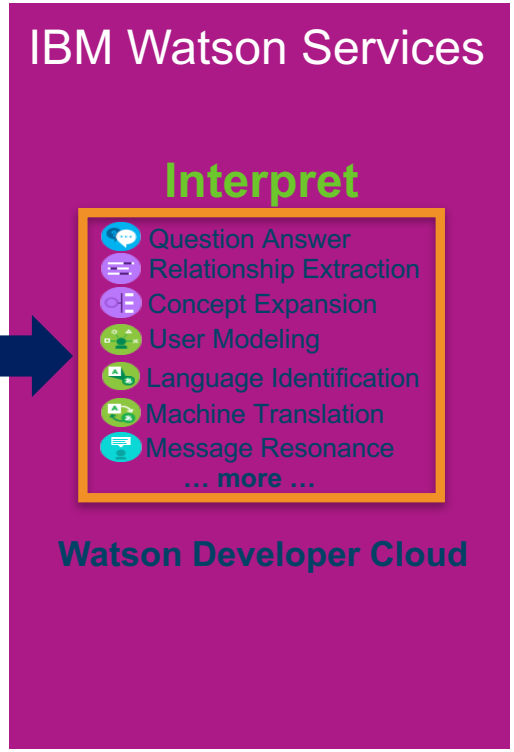
Apache Spark - enables Digital Business



Spark, was developed at U.C. Berkeley's AMPLab in 2009, and contributed to Apache in 2010. Spark is best known for in-memory machine learning through its MLlib component, but it also supports graph, SQL, and streaming analysis with GraphX, Spark SQL, and Spark Streaming, respectively. In the works is SparkR for statistical analysis using the popular R language.

Watson Explorer is running on Linux on z Systems

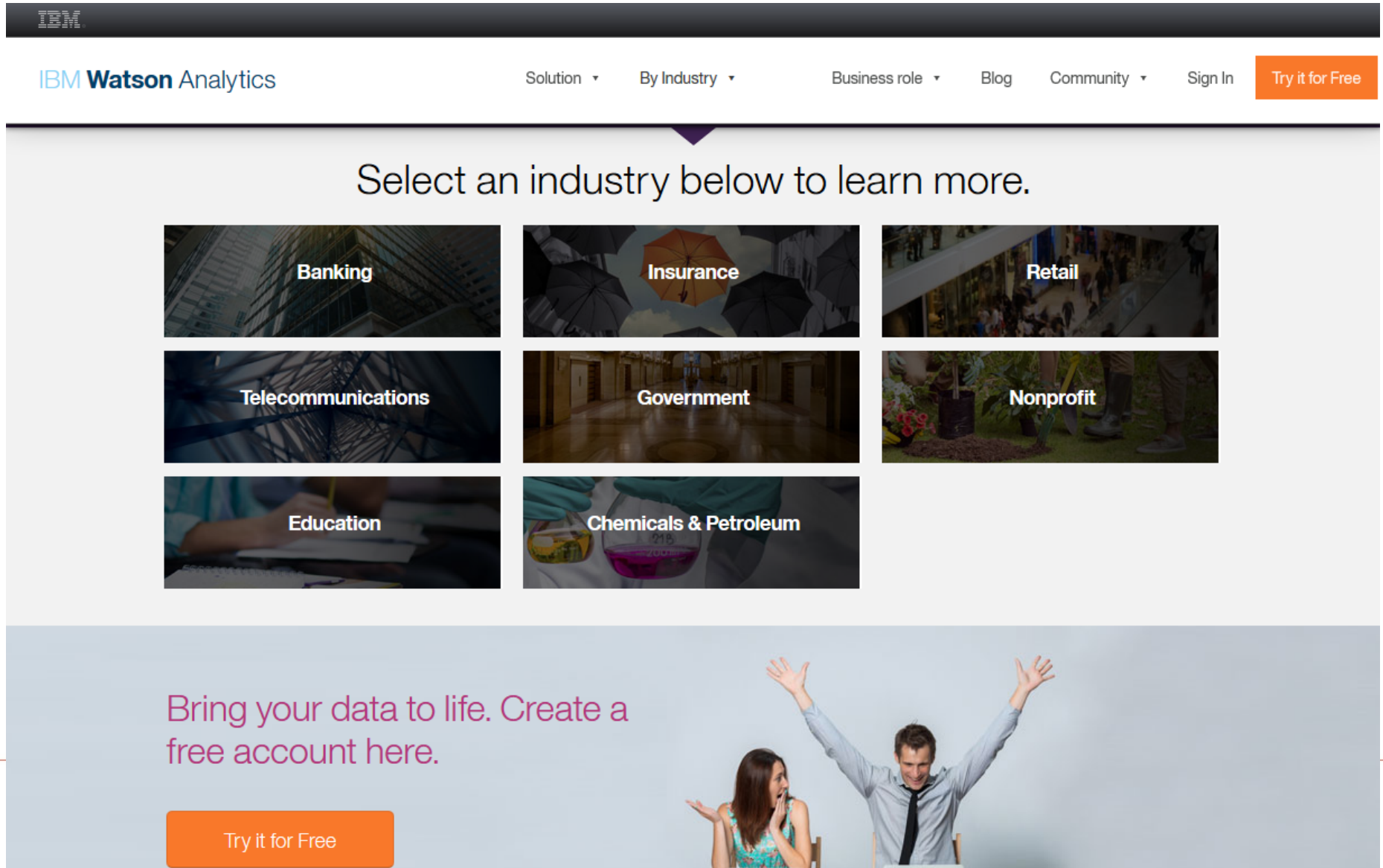
Makes data from enterprise and non-enterprise silos easily accessible



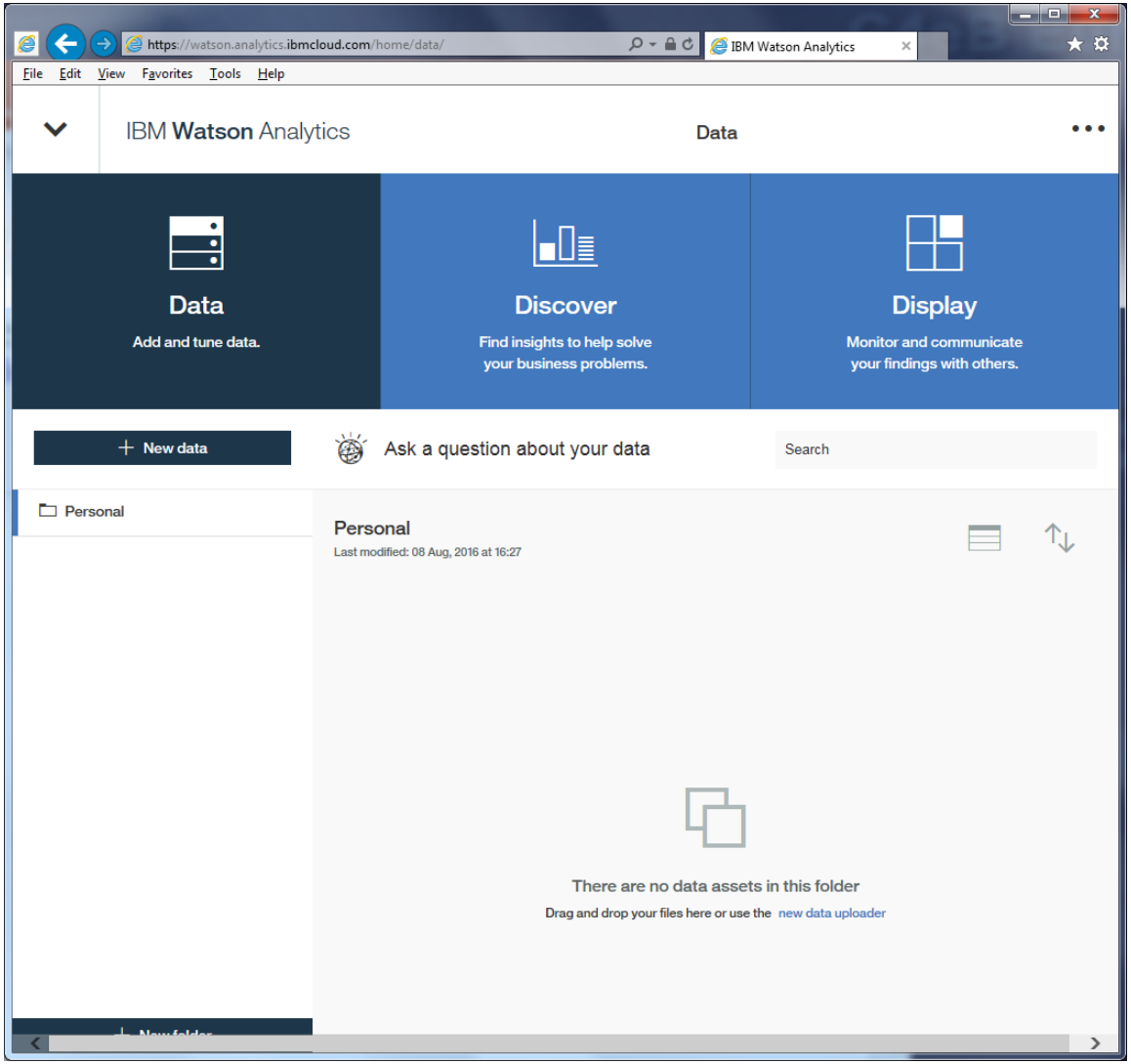
ibm.com/watson/developercloud/services-catalog.html

Cognitive - Experience Watson analytics –made easy

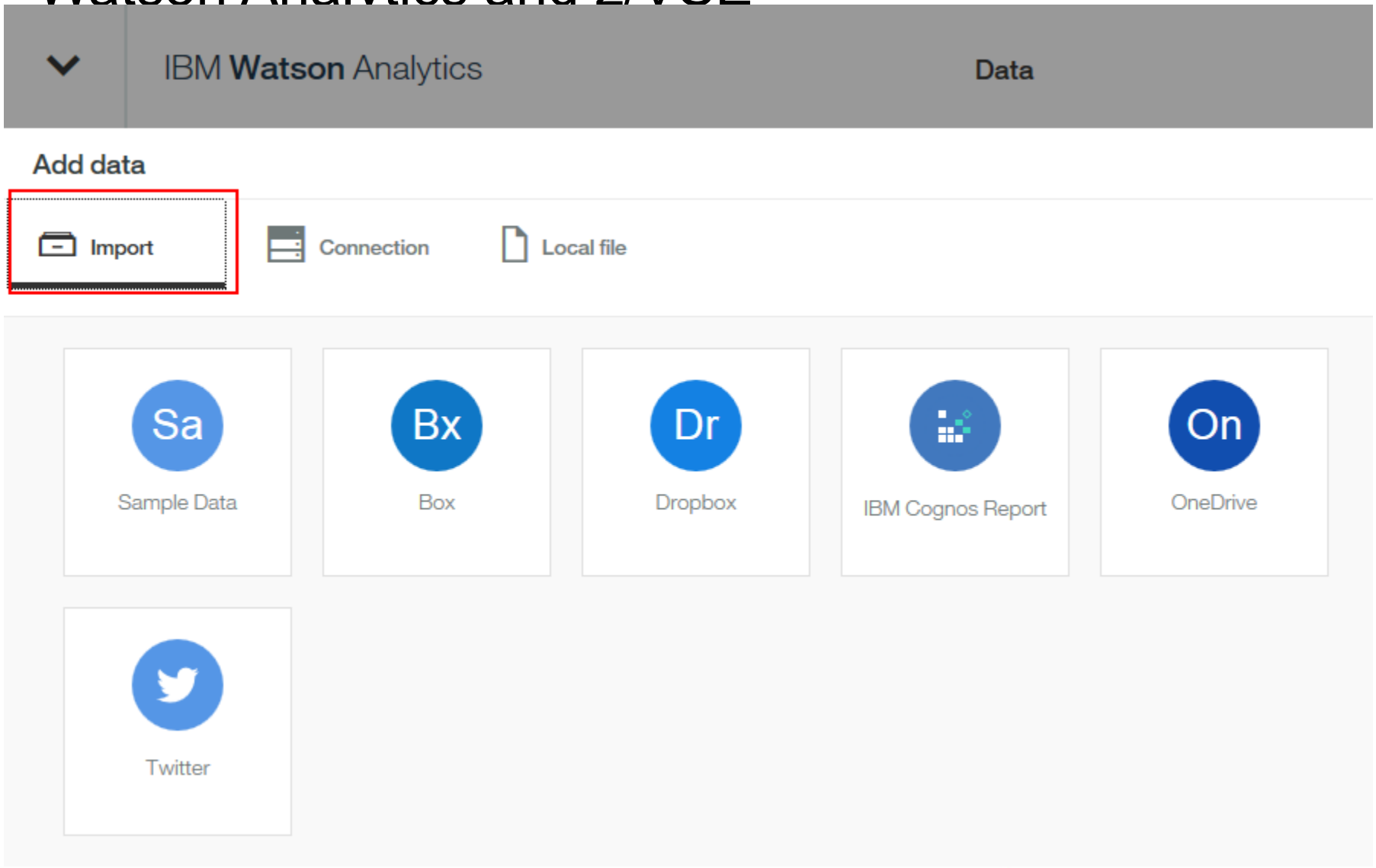
http://www.ibm.com/analytics/watson-analytics/by-industry
https://watson.analytics.ibmcloud.com/home/data



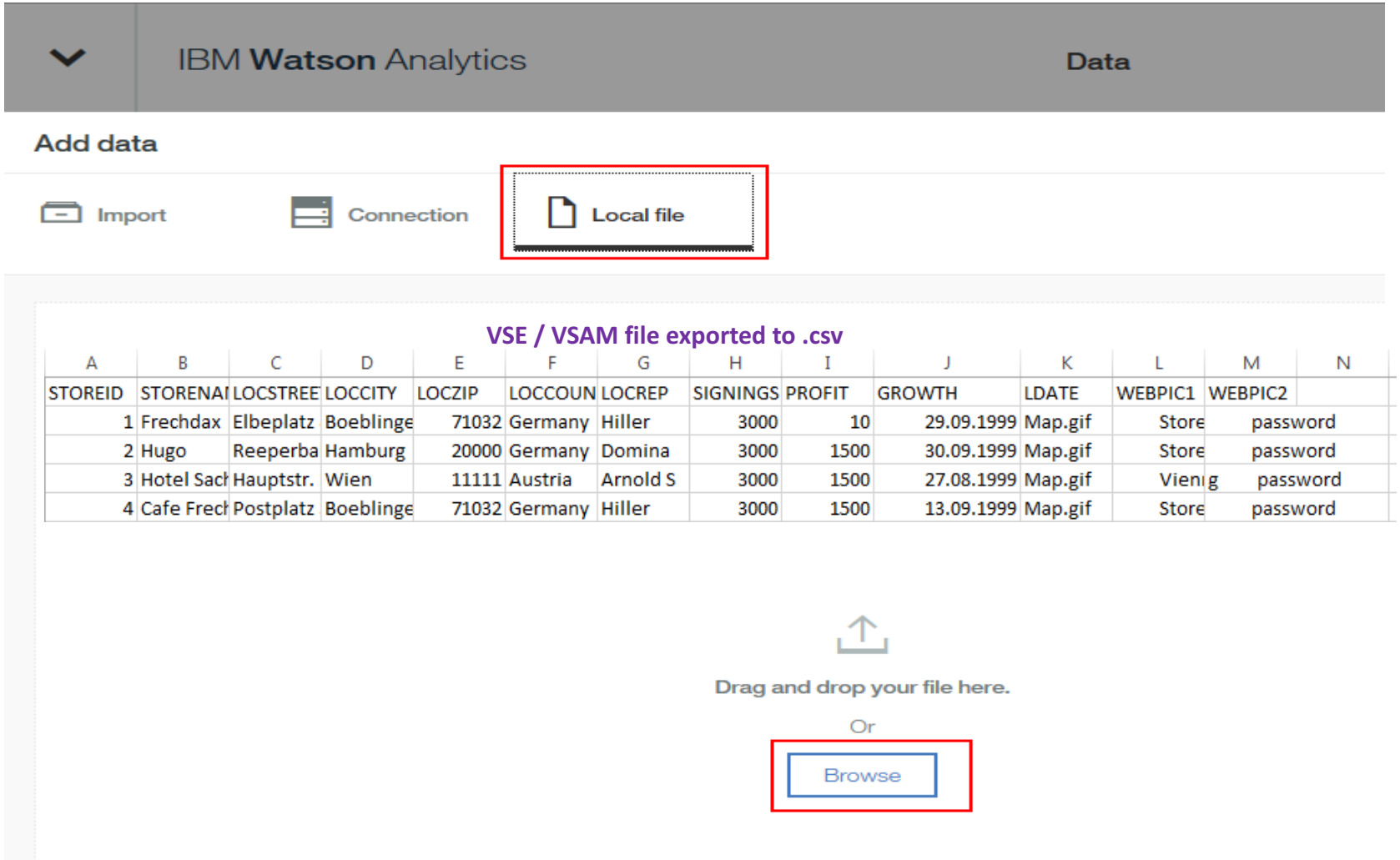
Watson Analytics and z/VSE



Watson Analytics and z/VSE

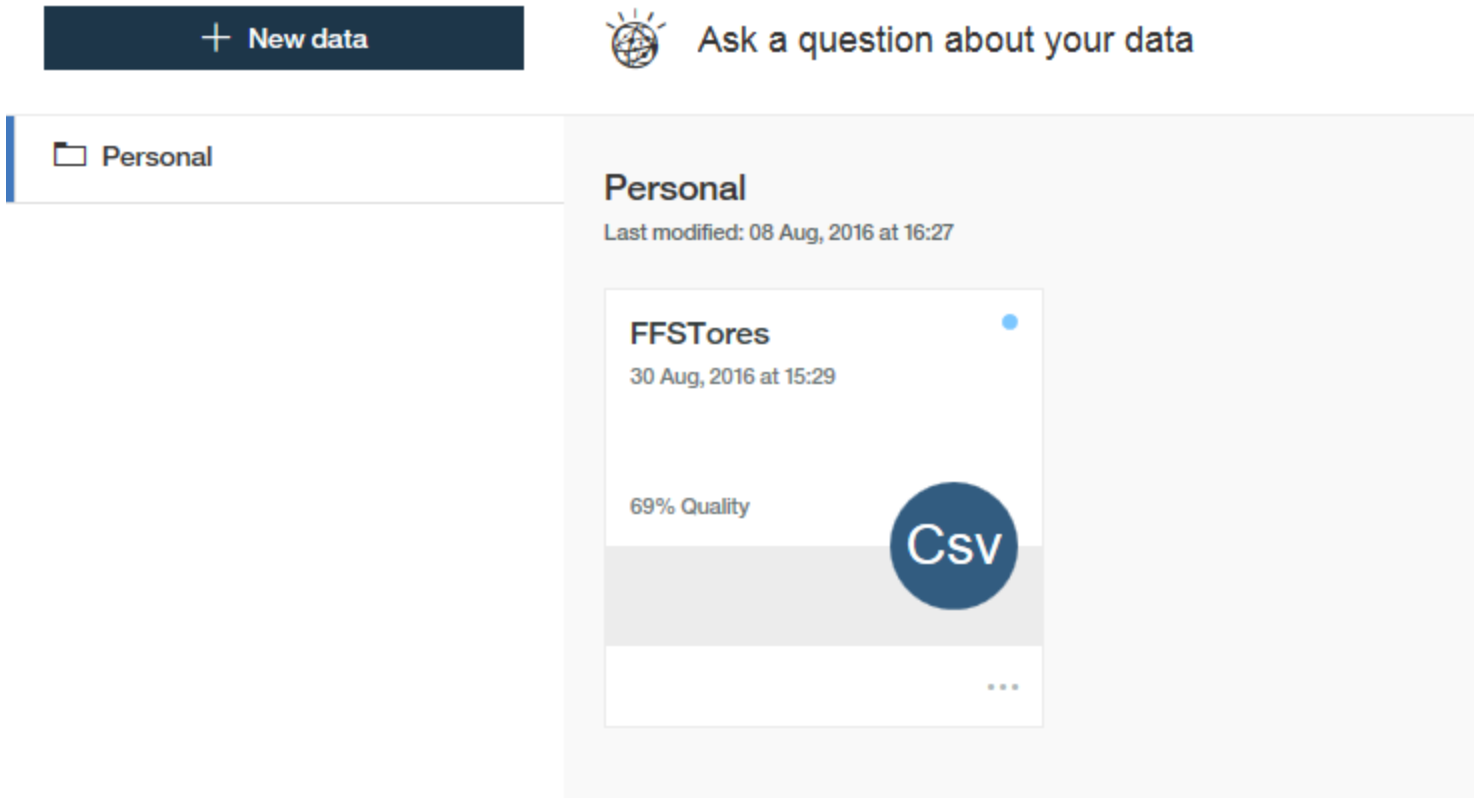


Watson Analytics and z/VSE

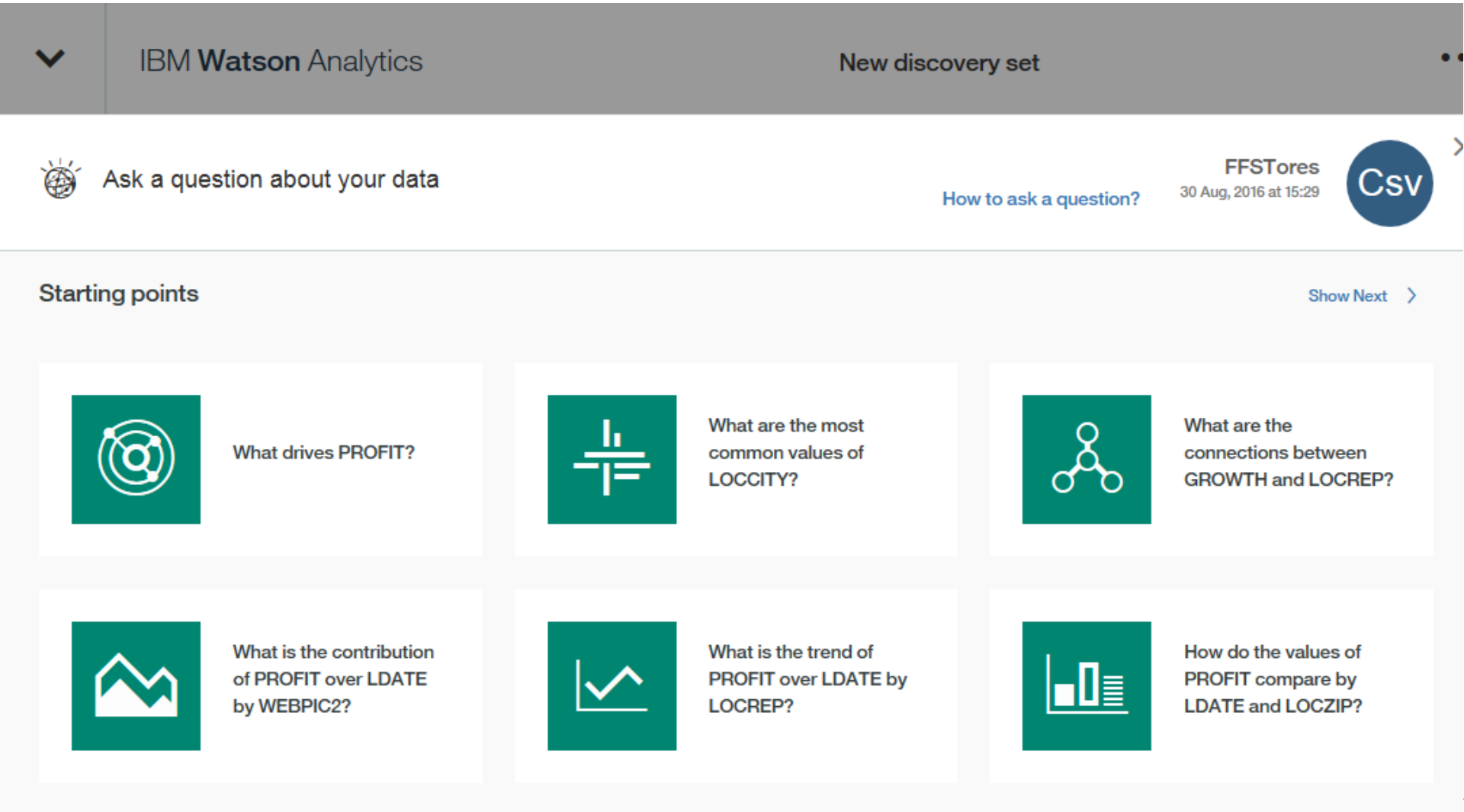


A	B	C	D	E	F	G	H	I	J	K	L	M	N
STOREID	STORENAI	LOCSTREE	LOCCITY	LOCZIP	LOCCOUN	LOCREP	SIGNINGS	PROFIT	GROWTH	LDATE	WEBPIC1	WEBPIC2	
1	Frechdax	Elbeplatz	Boeblinge	71032	Germany	Hiller	3000	10	29.09.1999	Map.gif	Store	password	
2	Hugo	Reeperba	Hamburg	20000	Germany	Domina	3000	1500	30.09.1999	Map.gif	Store	password	
3	Hotel Sach	Hauptstr.	Wien	11111	Austria	Arnold S	3000	1500	27.08.1999	Map.gif	Vieng	password	
4	Cafe Frech	Postplatz	Boeblinge	71032	Germany	Hiller	3000	1500	13.09.1999	Map.gif	Store	password	

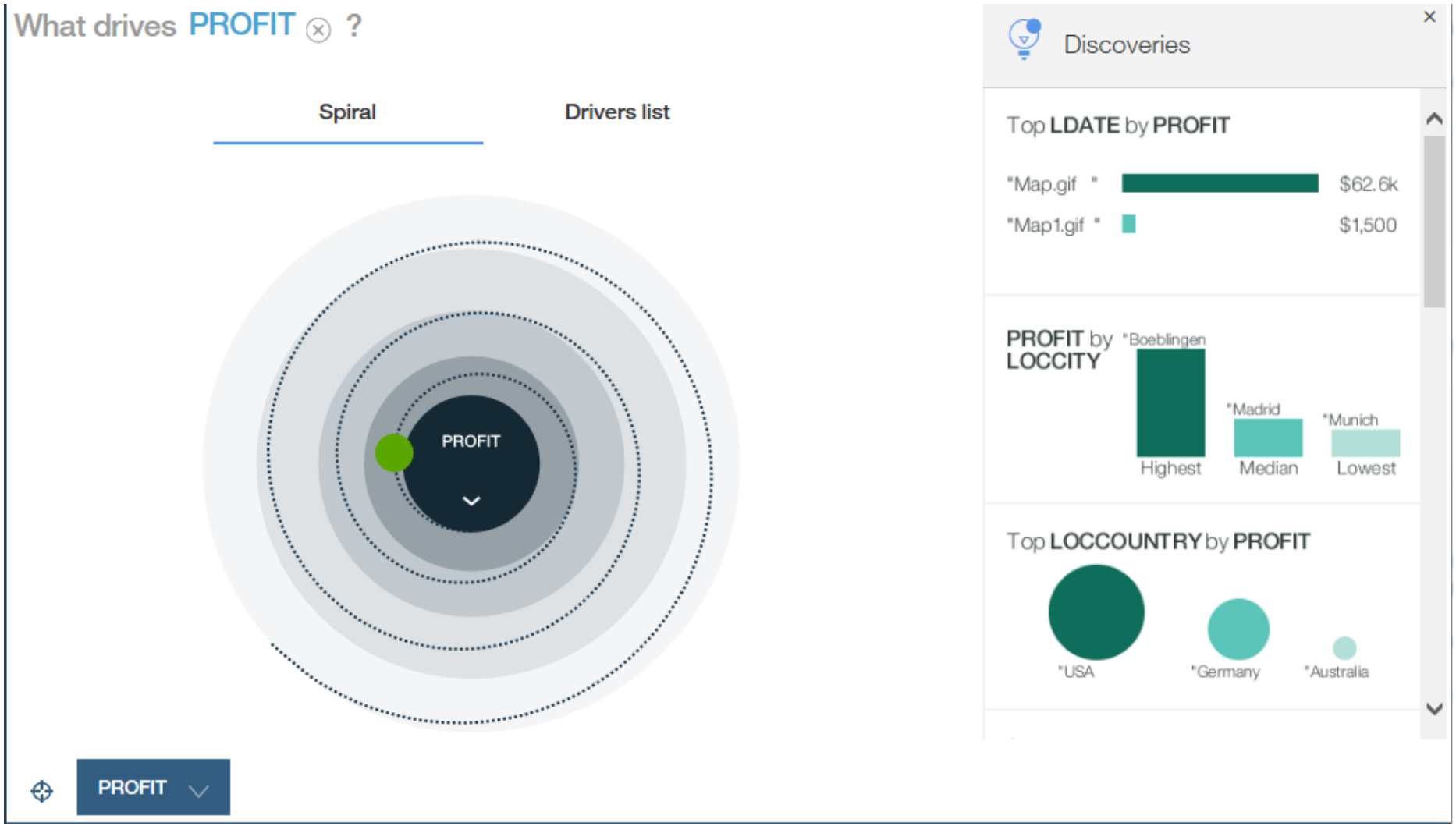
Watson Analytics and z/VSE



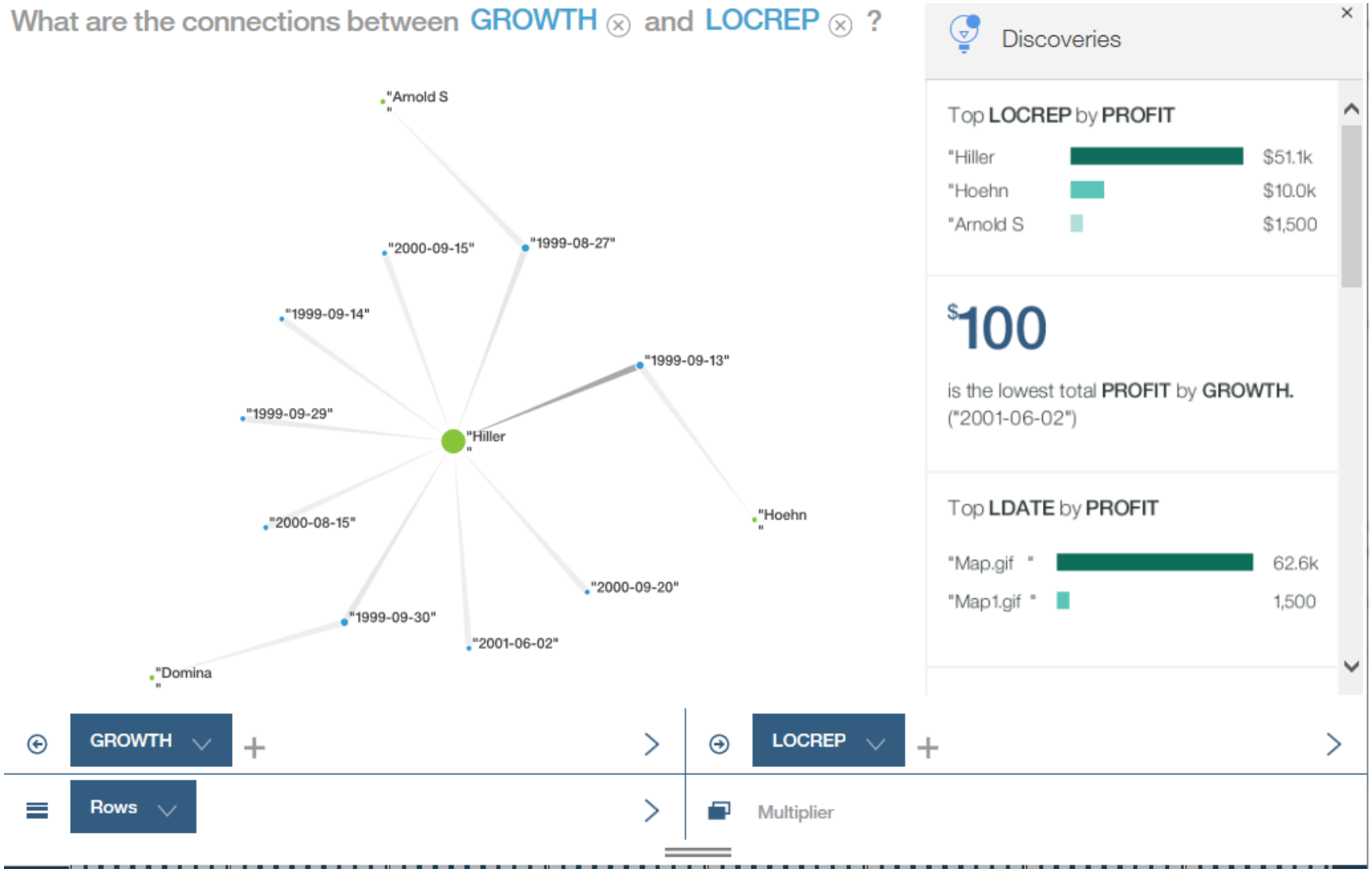
Watson Analytics and z/VSE



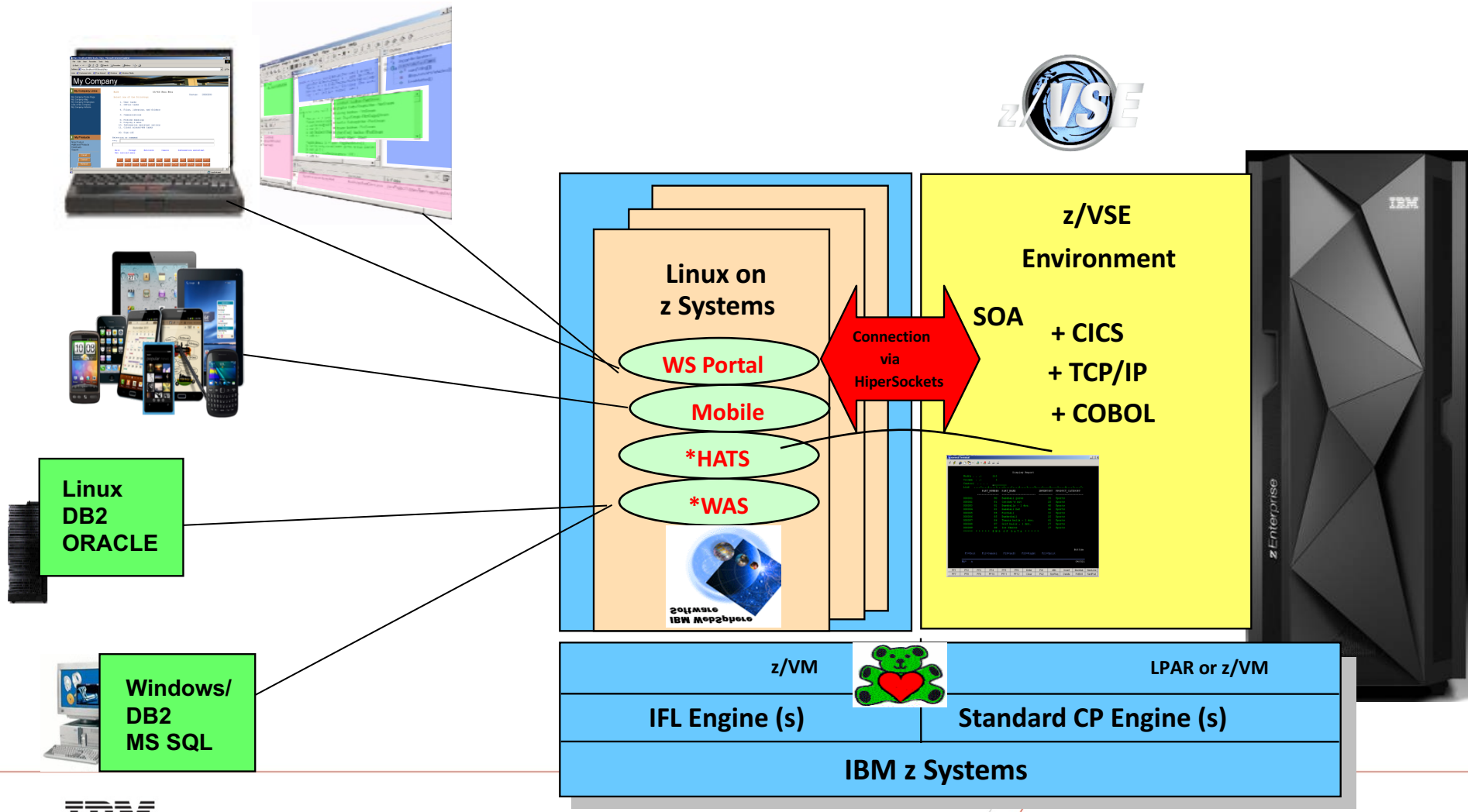
Watson Analytics and z/VSE



Watson Analytics and z/VSE

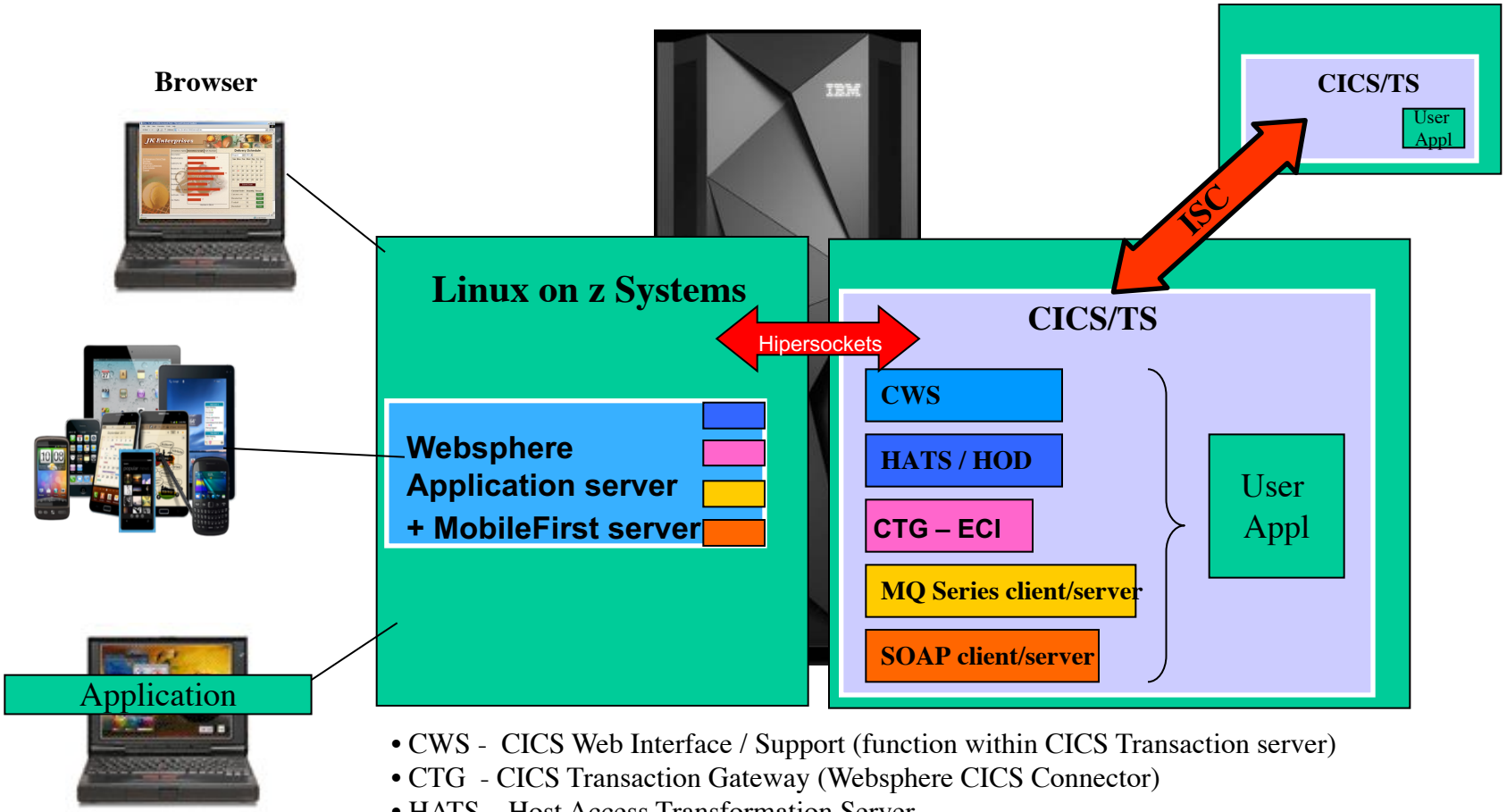


Scenario 2: Web and Mobile enable, improve interface for existing applications



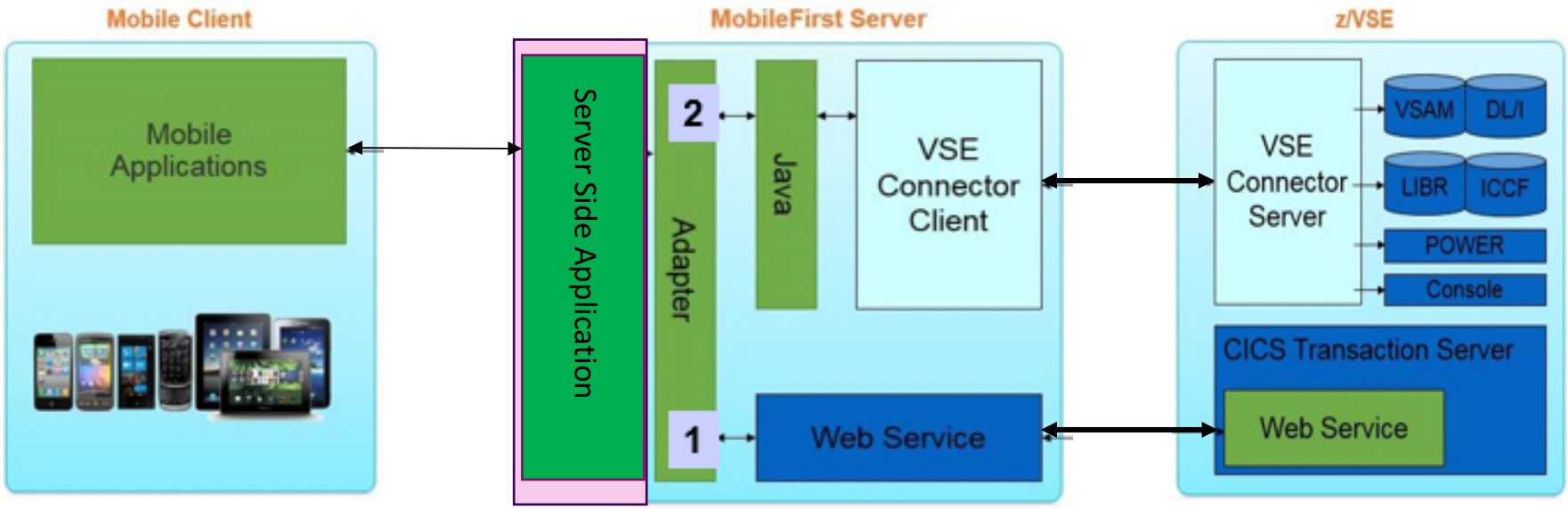
*HATS – Host Access Transformation Services
*WAS - WebSphere Application Server

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)

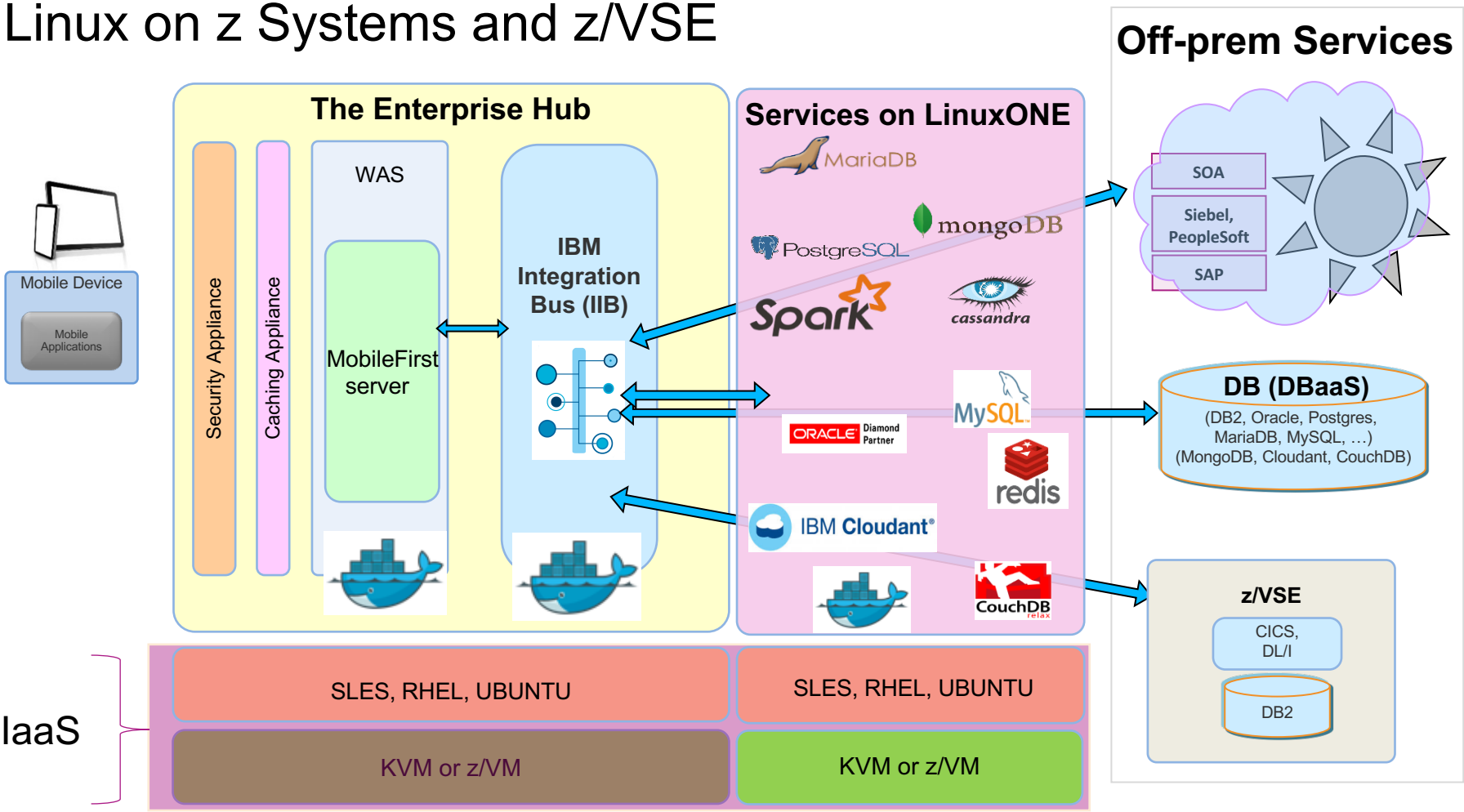
Mobilize z/VSE applications with IBM MobileFirst



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)

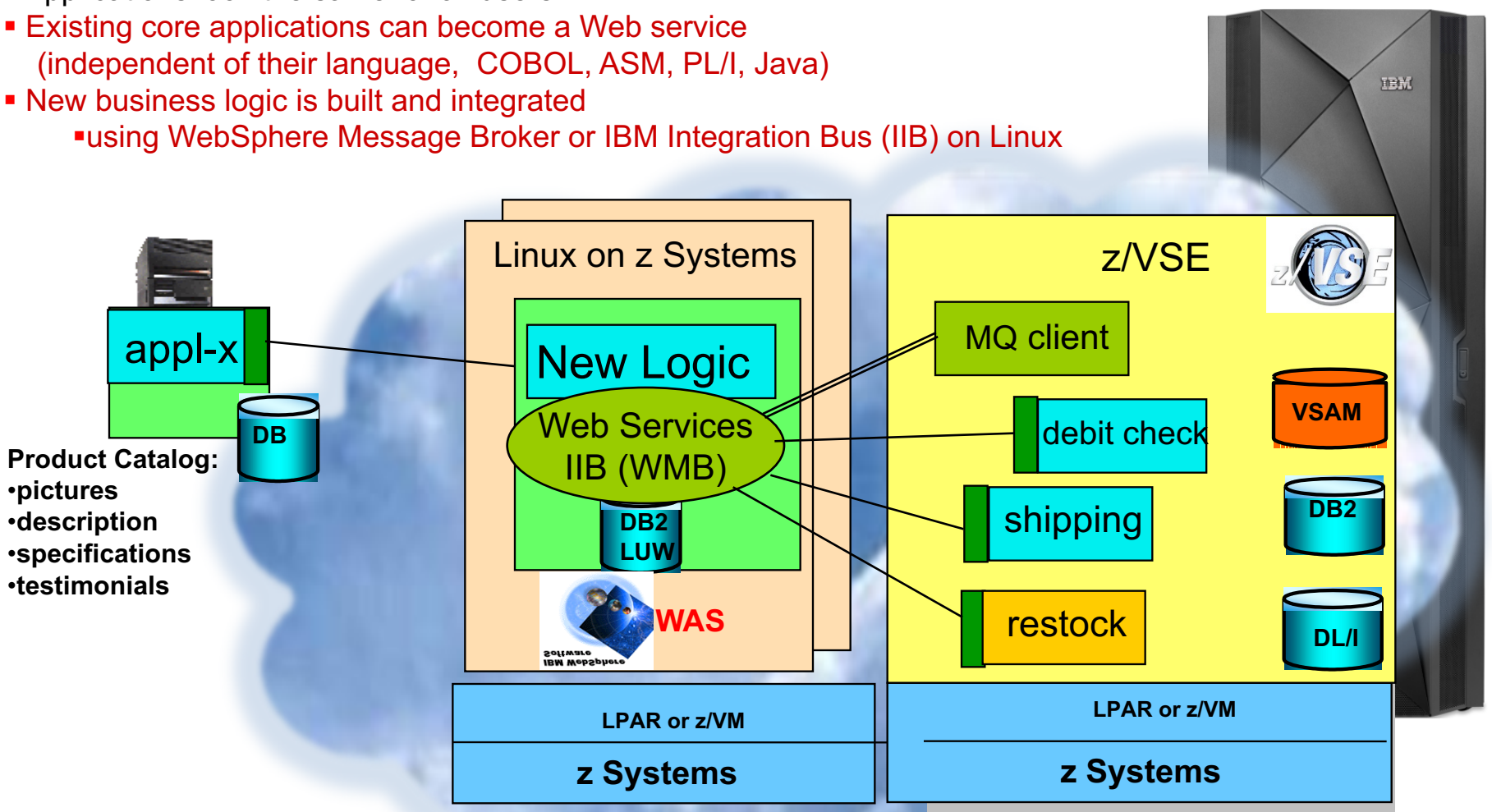
Scenario 3: The Enterprise Hub – SOA and Blockchain! Linux on z Systems and z/VSE



IBM Integration Bus can help you simplify the connectivity between your IT assets, including legacy apps, packaged apps and web services, without requiring coding changes. It provides content and context based routing that helps you manage and simplify business-critical processes. It enables you to integrate Open Source technologies and Hybrid cloud with most of your existing IT assets quickly, simply and at a low cost.

Service Oriented Architecture (SOA)

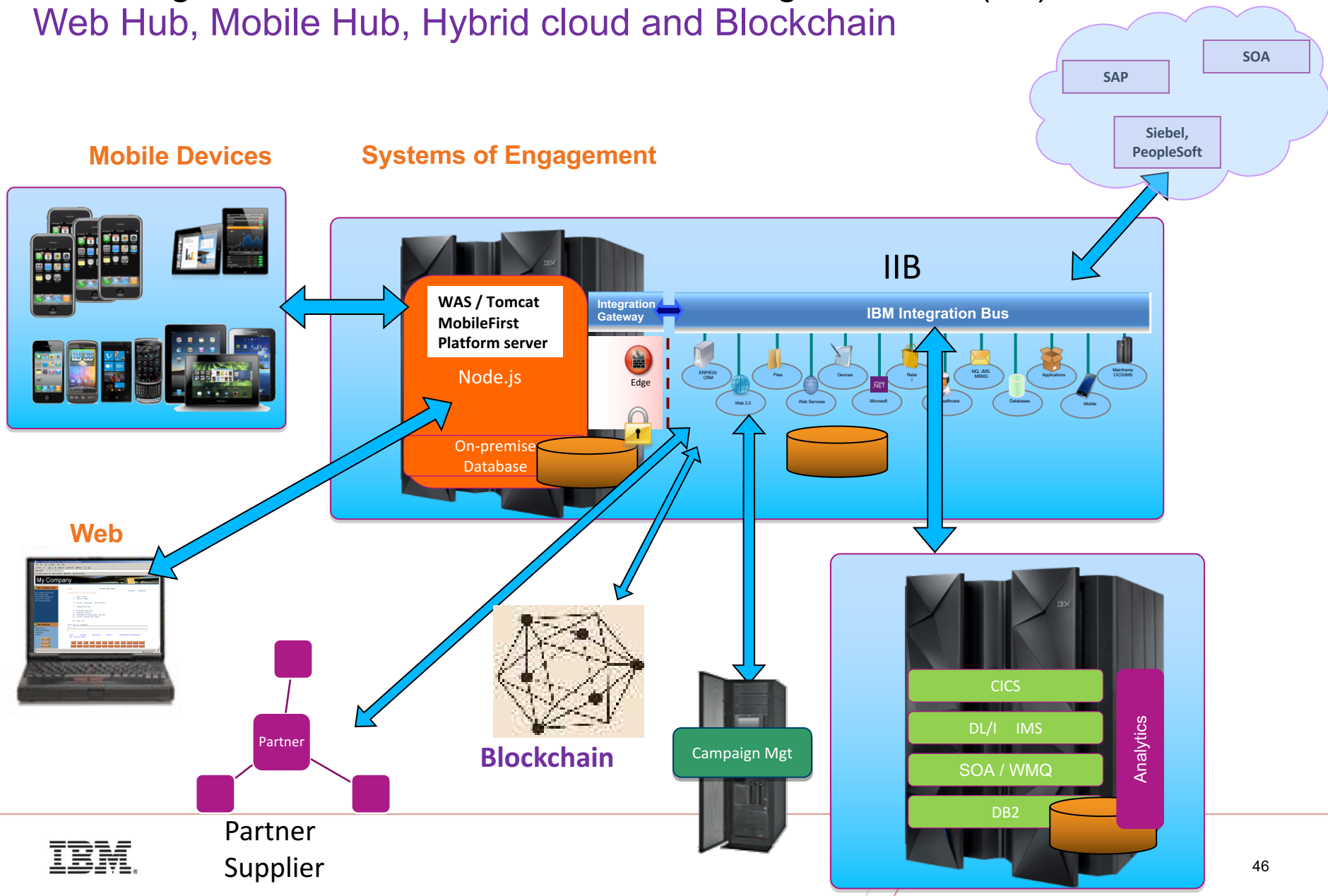
- Applications look the same for all users
- Existing core applications can become a Web service
  (independent of their language, COBOL, ASM, PL/I, Java)
- New business logic is built and integrated
  - using WebSphere Message Broker or IBM Integration Bus (IIB) on Linux



Integration of Processes

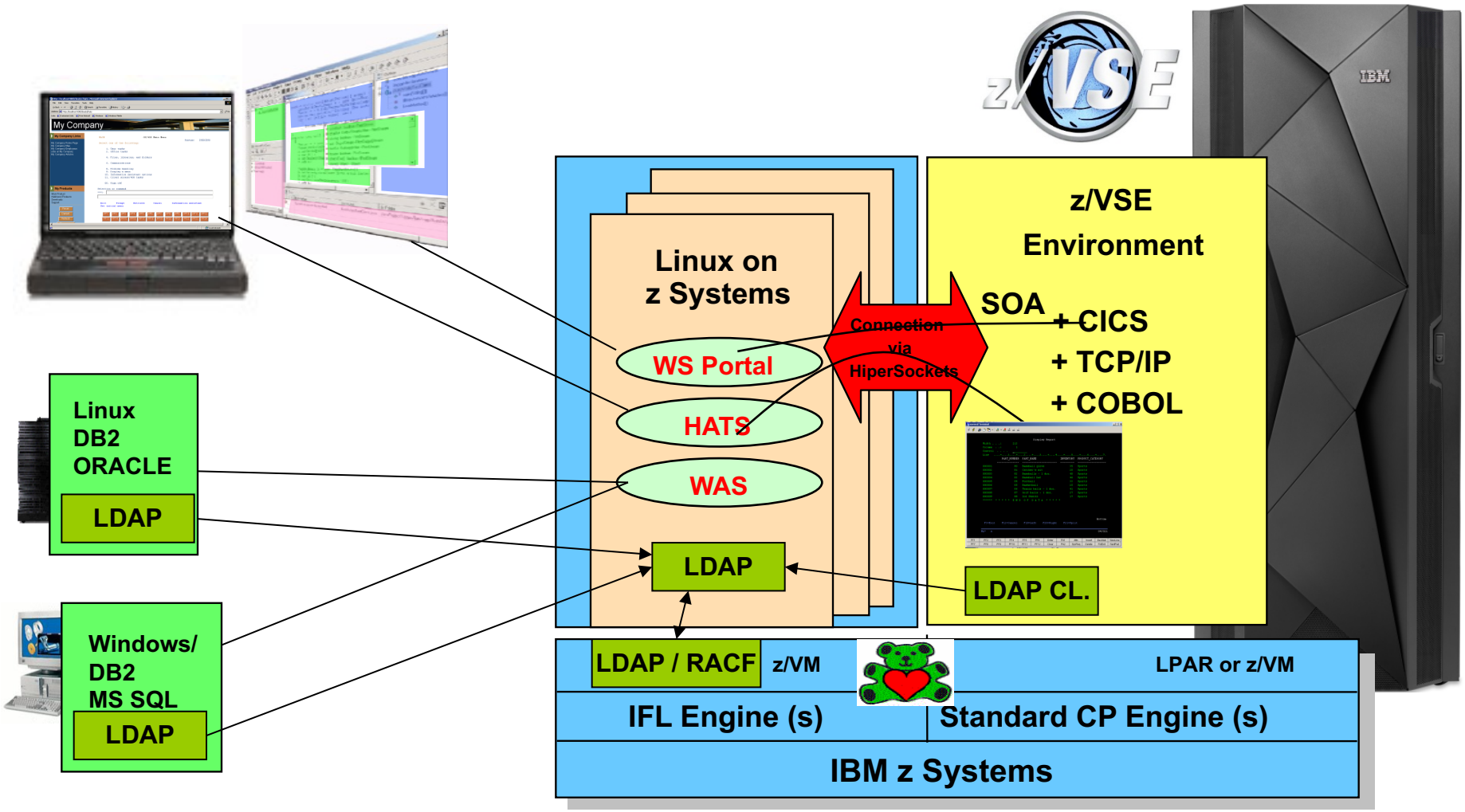
The Integration Hub on Linux – with IBM Integration Bus (IIB)

Web Hub, Mobile Hub, Hybrid cloud and Blockchain

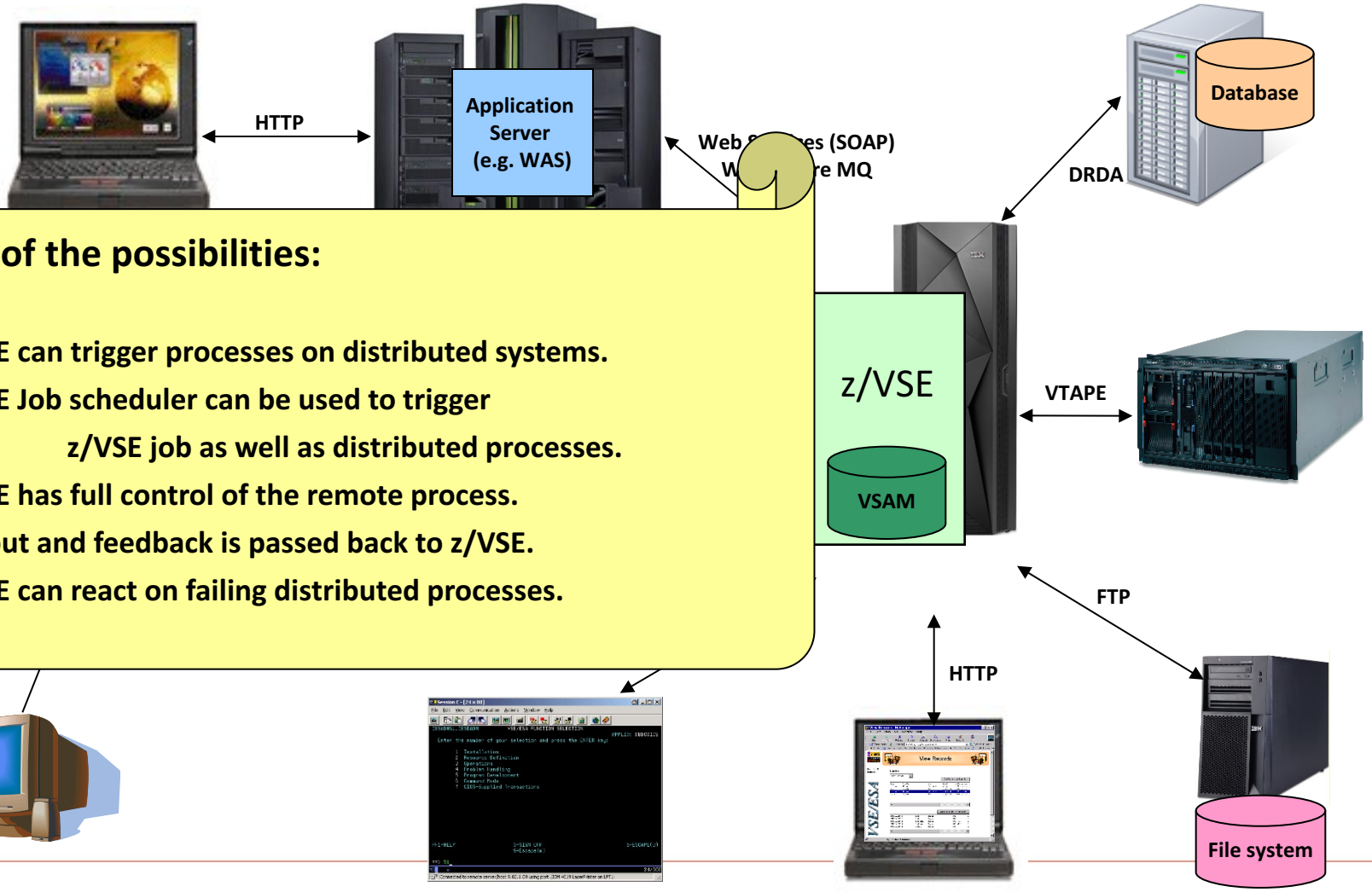


Scenario 4: Security - Central Authentication Options for z/VSE with LDAP in Linux on z Systems

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



Scenario 5: z/VSE controls processes in a heterogeneous IT environment



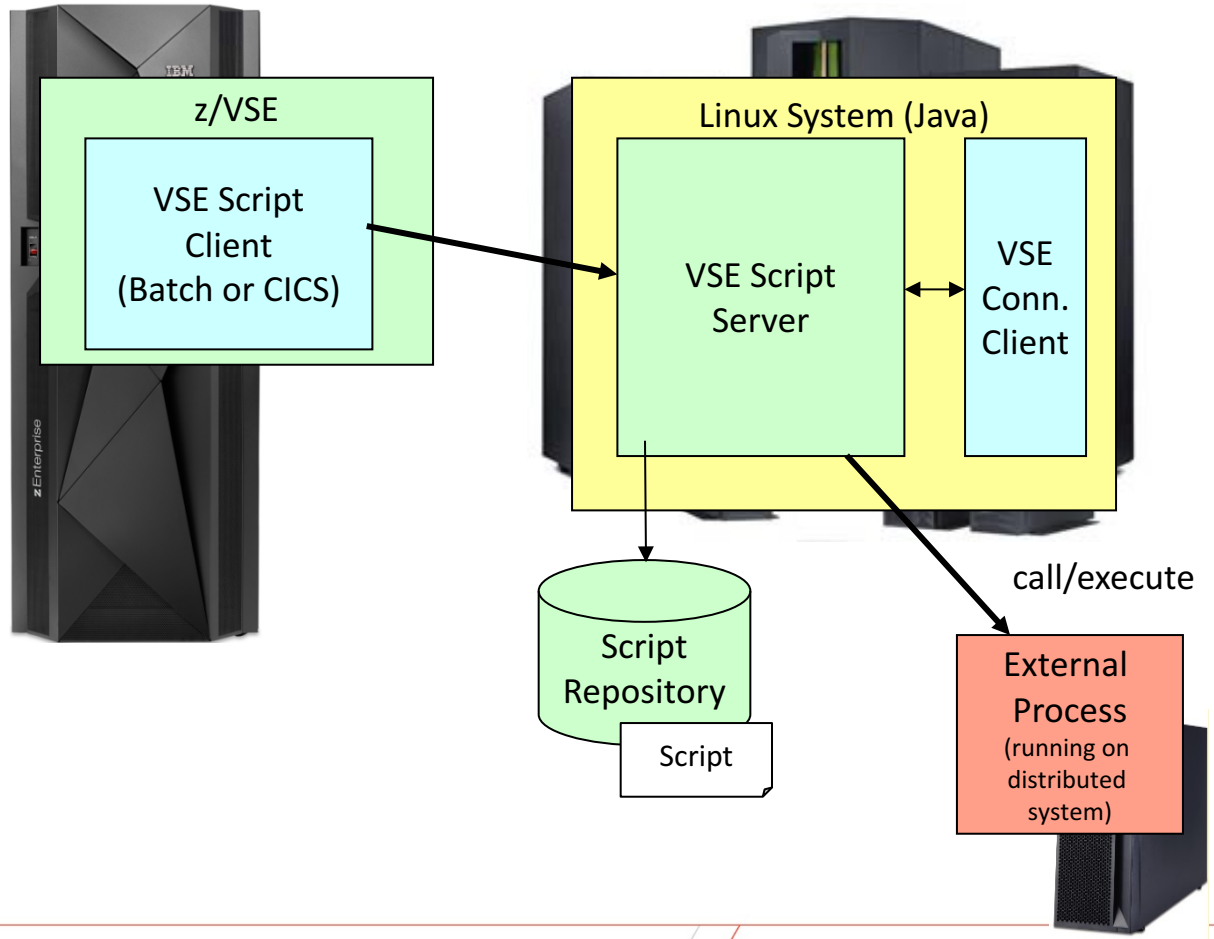
Some of the possibilities:

- → 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

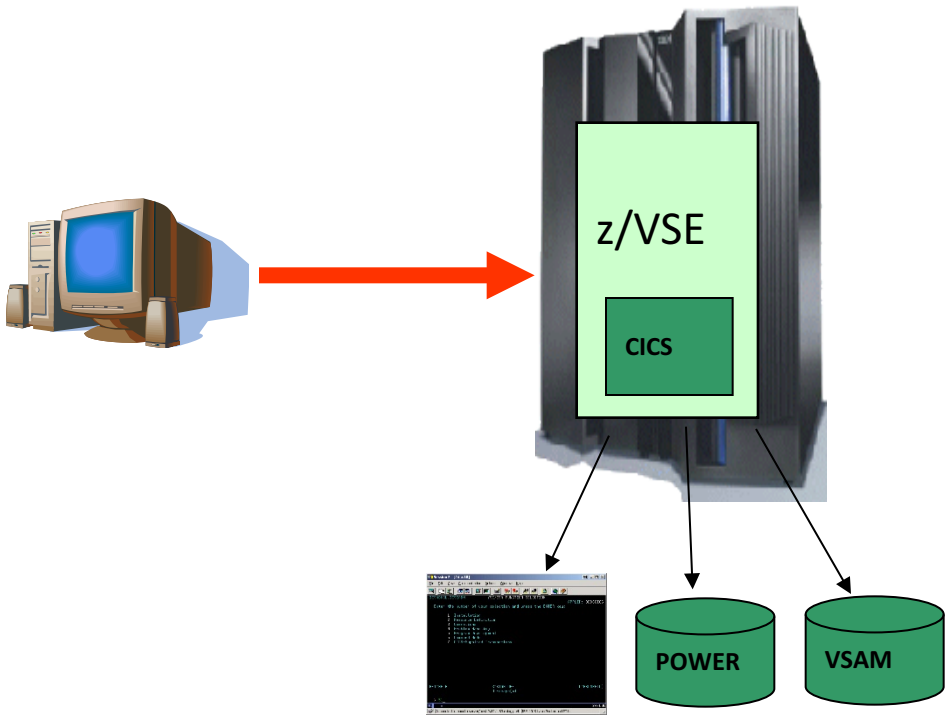
VSE Script Connector used to:

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



Distributed systems trigger actions on z/VSE

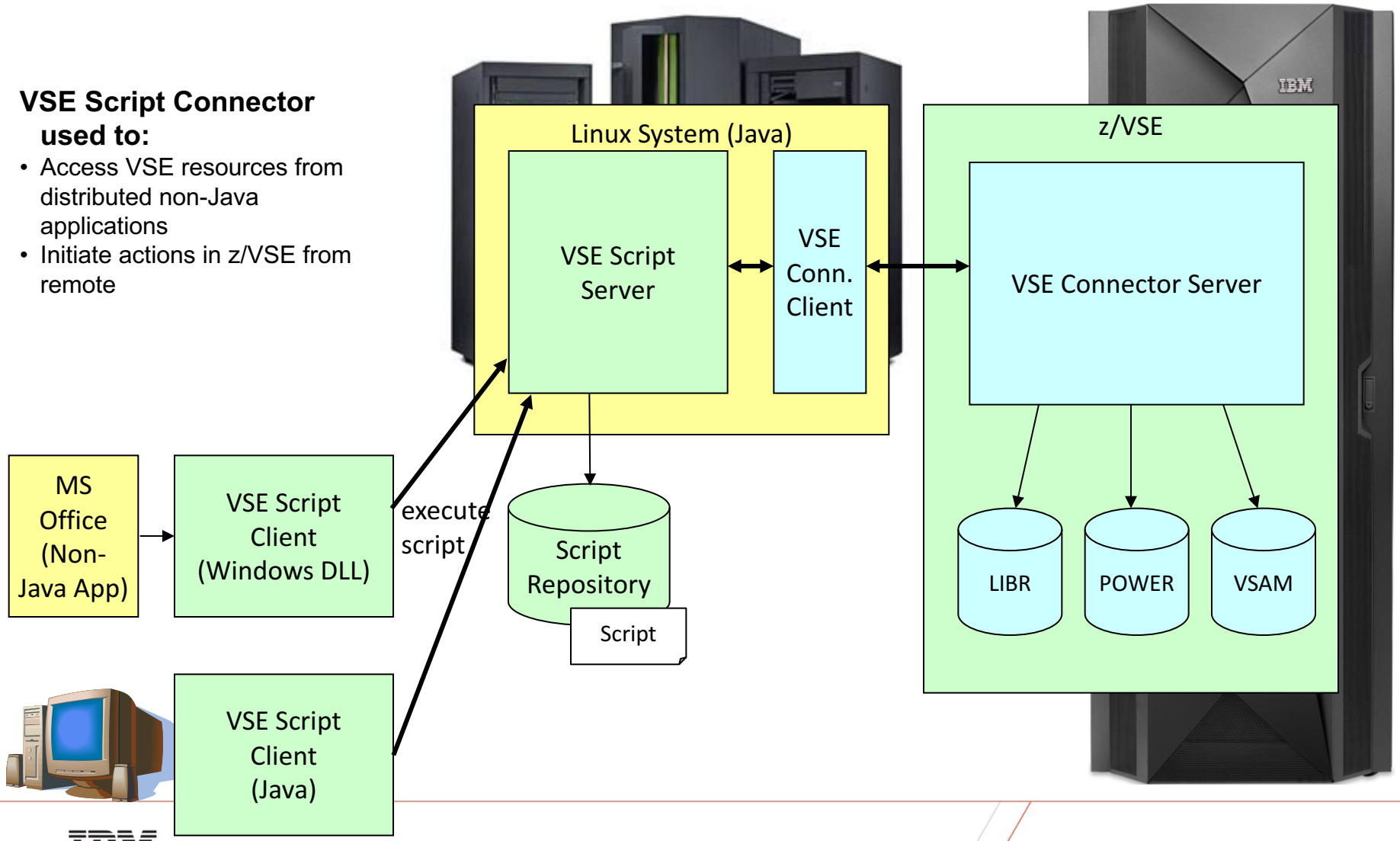
- **Submit a Job into z/VSE**
  - Using FTP into Reader
  - Submit Job via Java Program
  - ANT based automation
- **Issue Console commands**
  - Issue Commands via Java Program
- **Trigger programs running on z/VSE**
  - Web Services (SOAP)
  - CICS Transaction Gateway
- **Upload data to z/VSE for processing**
  - FTP into VSAM
  - Connectors



VSE Script Connector – remote platforms initiate z/VSE actions

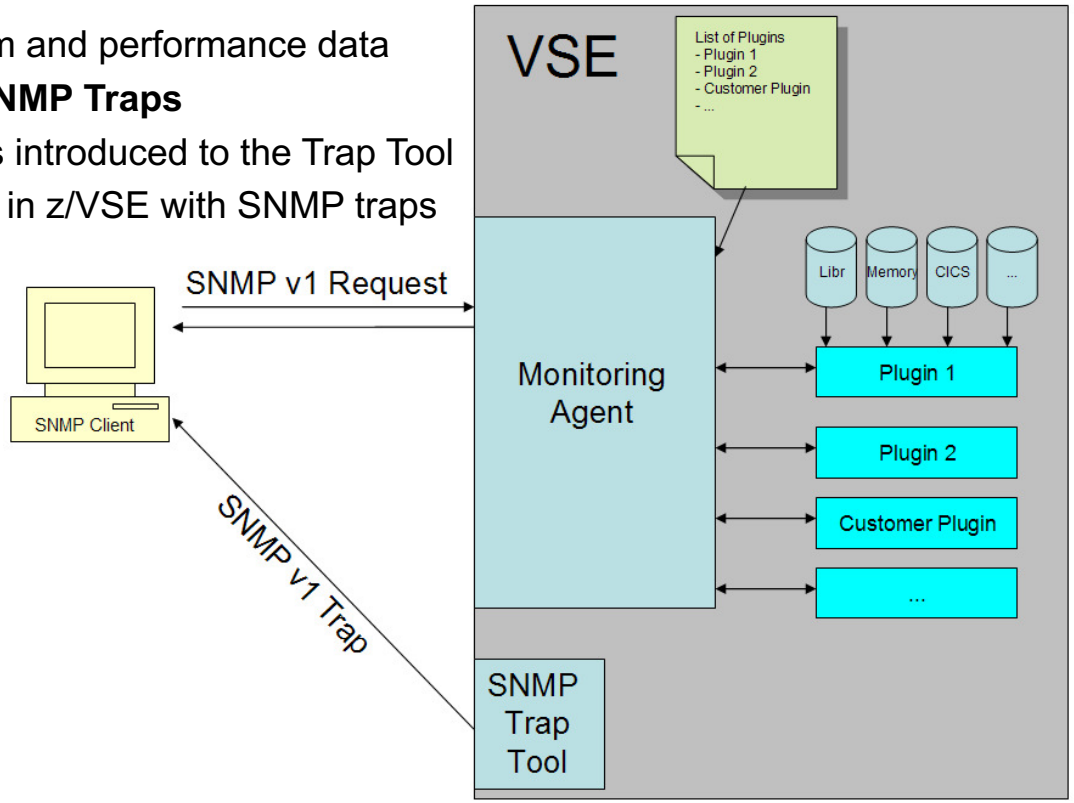
VSE Script Connector used to:

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



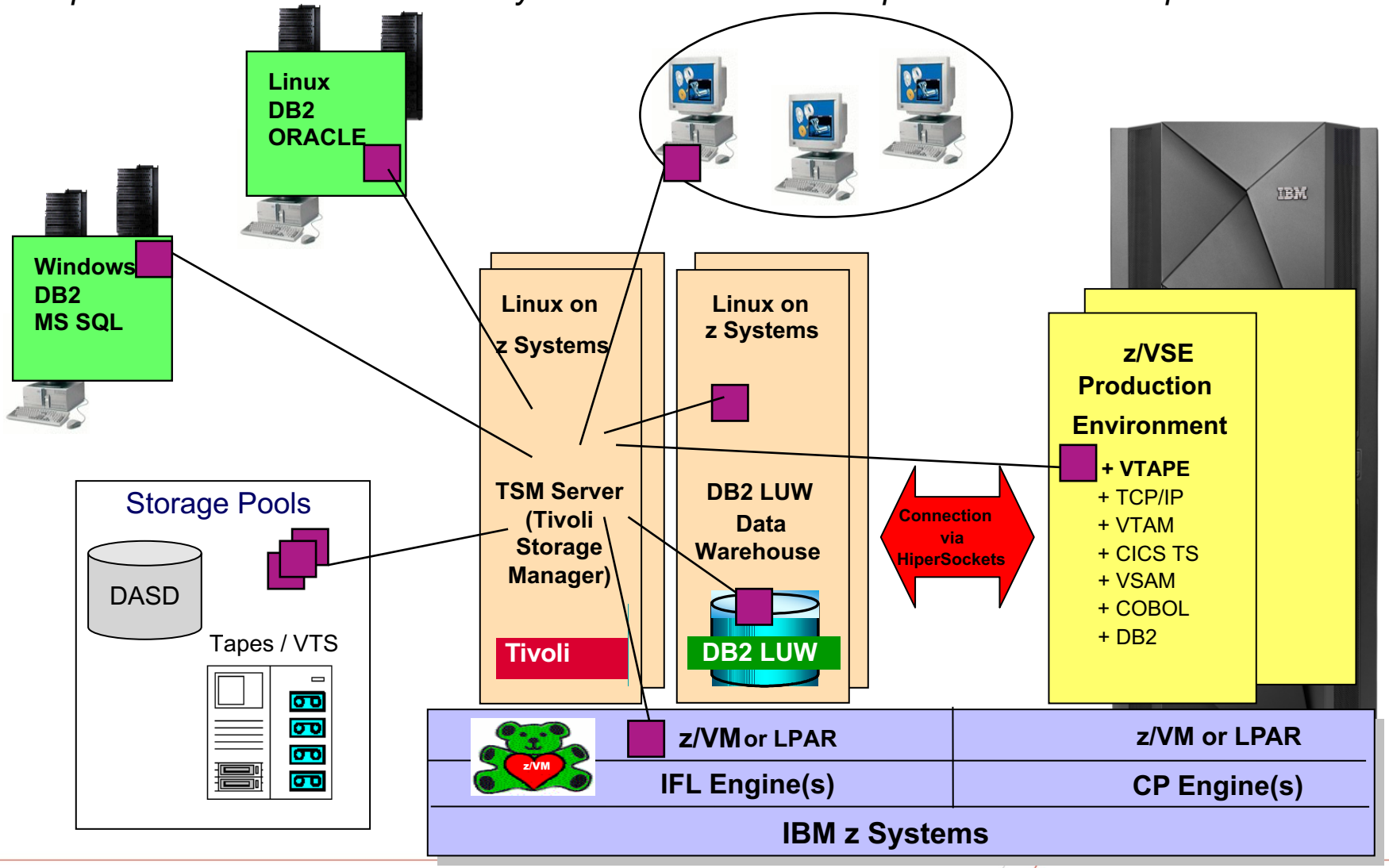
z/VSE Monitoring interfaces

- 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

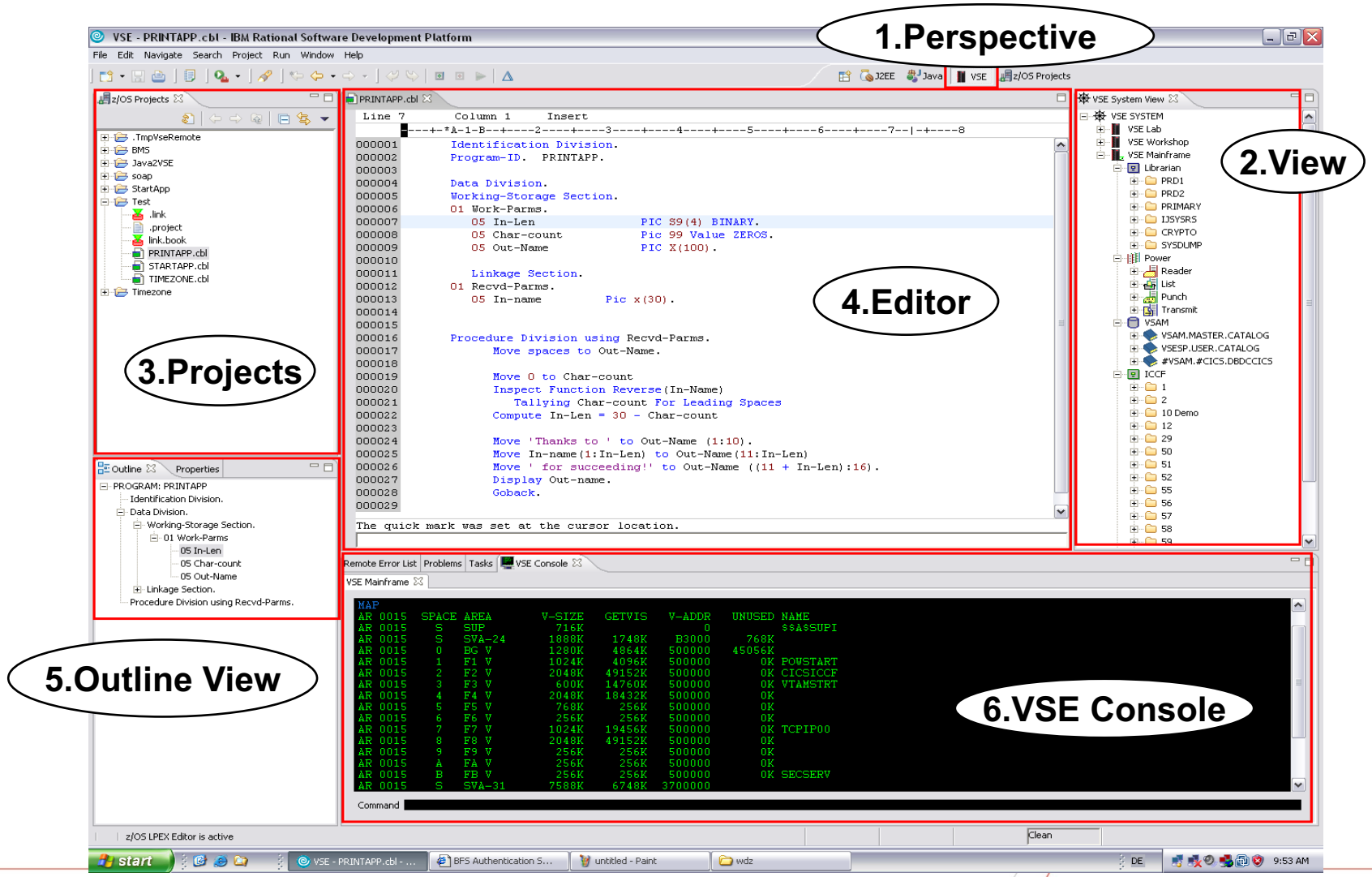


Scenario 6: Universal Backup / Restore for z/VSE

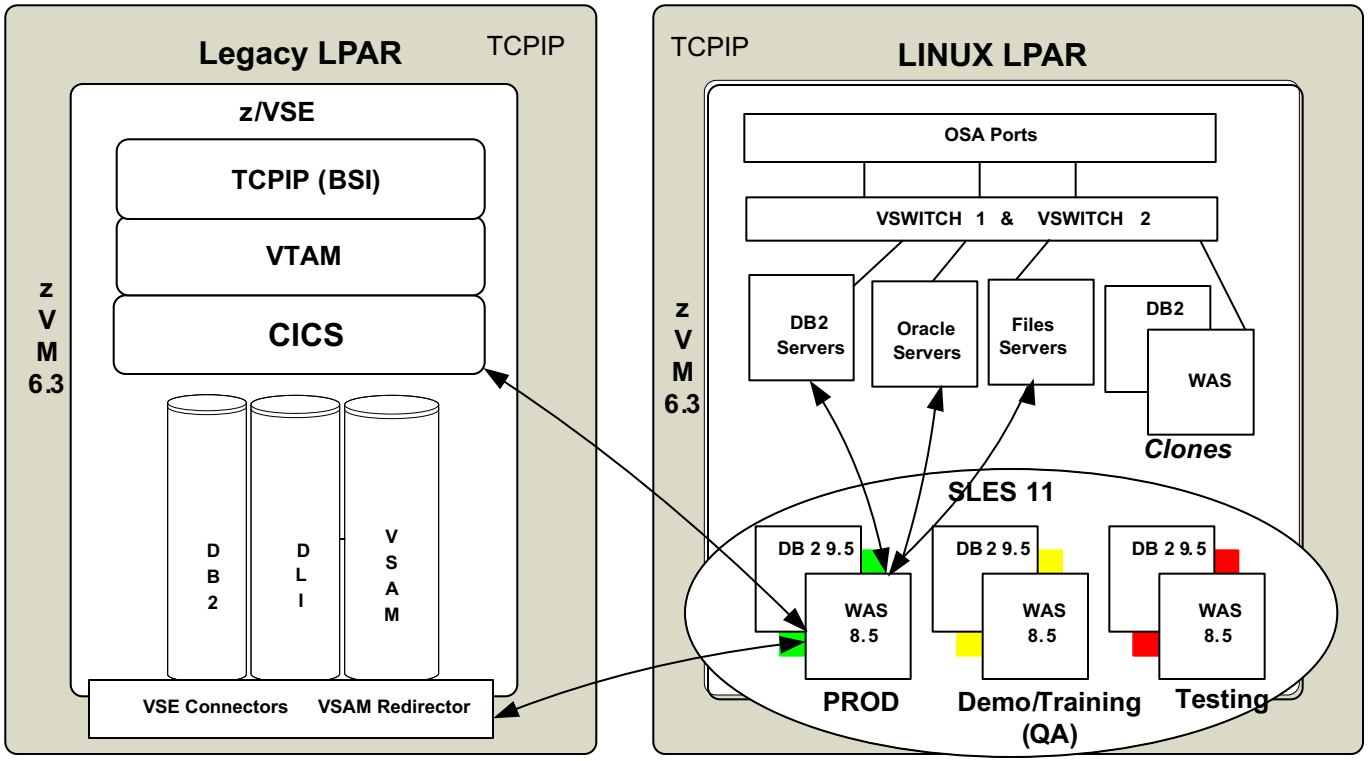
Implement TSM on Linux on z Systems as central Backup Hub for the enterprise



Scenario 7: IBM Rational Developer for system z



Supreme Court of Virginia



- 1 + 1 zBC12 (M01/M02)
- 2 + 1 CPs
- 8 + 8 IFLs
- 240 + 240 GB memory
- 4 z/VM V6.3 LPARs
- 12 z/VSE V4.3 guests
- 156+ SLES 11 guests
- WAS V8.5
- DB2 V9.5
- Oracle on z (10g)

- **2x zBC12 (M01/M02), 1x production, 1x development**
  - Serves 325 courts, 5.000+ users (3.8 million new cases in 2013)
  - Integrating z/VSE, DB2/UDB and WebSphere applications
  - eMagistrate system serves 125 locations, 3100 trans per day
  - eCommerce* applications integrating z/VSE and WebSphere appls

**VJEFS- Virginia Judicial Electronic Filing System*

Winner of the Governor's 2013 Commonwealth Technology Award

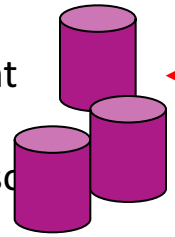
Email from batch or CICS

AFP / PSF via IPaddress

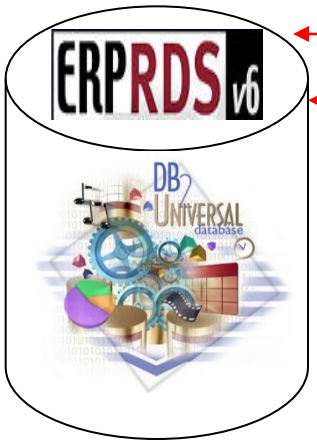
IPM

StreamServe

300 files every day transfered to different operating systems (zLinux, Linux, Microsc

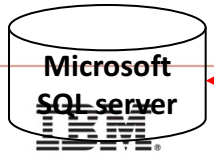


FTP



DB2 client to Linux
DB2 LUW on IFL

VSAM Redirector Server via HiperSockets to zLinux DB2 and via Vswitch OSA QDIO to SQL Server



Production Environment

z/VSE

TCP/IP for Telnet

Virtual

FRATELLI Carli — DAL 1911 —

redhat

WP

zLinux Java application running on Tomcat

CICS TS SOAP via HiperSocket

CICS TS web

www.oliocarli.it

VSE Navigator

z/VSE Health Checker

400,000 CICS transactions every 14 hours from 400 Telnet connections

OlioCarli

the leading producer of premium olive oil sold directly to consumers

z/VSE in the internet

- z/VSE Homepage: www.ibm.com/vse
- Redbook: Introduction to the New Mainframe: IBM z/VSE Basics
  - http://www.redbooks.ibm.com/abstracts/sg247436.html?Open
- Redbook: Migration to CICS TS for z/VSE V2.1
  - http://www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/sg248390.html?Open
- z/VSE Knowledge Center:
  - http://www-01.ibm.com/support/knowledgecenter/SSB27H/zvse_welcome.html
- CICS TS for z/VSE Knowledge Center:
  - http://www-01.ibm.com/support/knowledgecenter/SSB2JE_1.1.1/welcome.html
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  - https://groups.google.com/forum/?fromgroups#!forum/bit.listserv.vse-l

Thank you!

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