



# *The Evolution continues!*

**Building on experience and innovation,  
VSE has matured into VSE/ESA Version 2 Release 7**

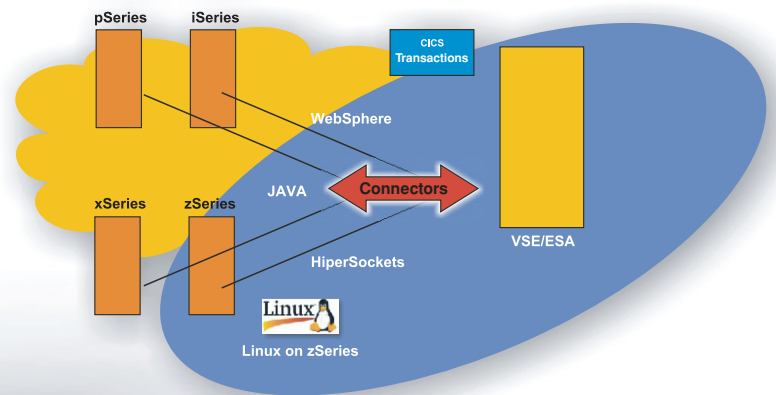


## VSE Objectives

For more than 30 years, VSE has focused on the key objectives of availability, scalability, and security. Affinity between VSE and z/OS is a traditional VSE objective as well. Virtual Storage Extended/Enterprise System Architecture – known as VSE/ESA - has a history of adapting to meet customer needs for new information technologies.

In today's heterogeneous, multiplatform environment, VSE/ESA provides new capabilities to allow integration of VSE and your network. Interoperability, based on open standards, allows you to integrate your VSE with a wide variety of popular platforms, including Linux on zSeries.

## Integration possibilities of VSE/ESA



VSE/ESA V2R7 offers you specific advantages. **These include:**

- *Availability/Scalability/Security*
- *Affinity with z/OS*
- *Interoperability with a variety of open platforms, including Linux on zSeries*

*The evolution continues – prepare your own VSE/ESA system for the age of e-business on demand*

Take advantage of the acknowledged virtues of VSE/ESA - and use Linux to prepare yourself for the modern, open, heterogeneous IT world - on a single IBM @server zSeries server!

- Linux on zSeries can provide the link between your company's traditional and e-business worlds.
- Combine advantages of software on other platforms with VSE/ESA - and protect the many years of investment (in core application code, data, and IT skills, plus business processes and end user training) you have already made!

## History

VSE has a long history of providing robust, cost-effective IT solutions. Because the IBM @server zSeries represents the peak of hardware-based availability, VSE/ESA software is a natural companion in terms of software-based availability. The following products are included in the VSE/ESA product family:

- CICS Transaction Server for VSE/ESA
- DB2 Server for VSE (and VM)
- MQ Series Server for VSE
- VSE/POWER Spooling System
- Communication Servers VTAM and TCP/IP
- Language Environment (LE) Runtime Services for COBOL, PL/I, and C.

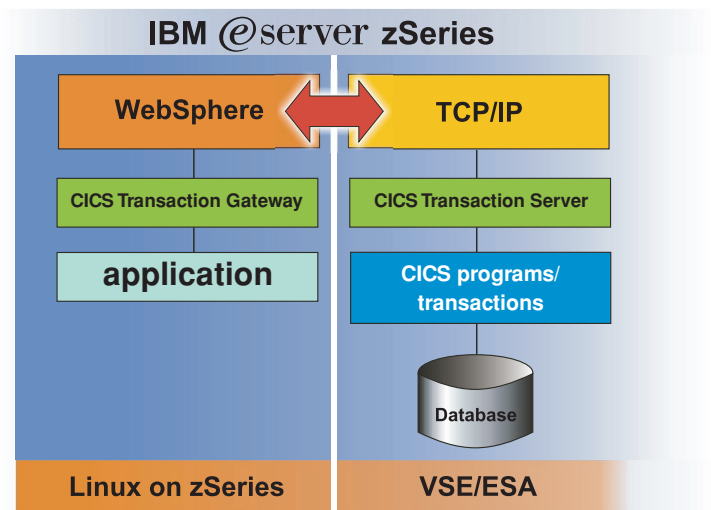
These products have been developed to be dynamically configurable. This is one of the basic requirements in being able to achieve near 24X365 availability.

**Linux**, an open-source, standards-based operating system runs on IBM @server zSeries and is an ideal extension to VSE/ESA. **Linux on zSeries** combines the standards of the “open world” with the strengths it inherits from the zSeries architecture. Strengths include hardware availability and scalability. The connections between Linux on zSeries and traditional operating systems (i.e. VSE) can take place via a “network in a box” (a “virtual network” inside the zSeries server) using IBM’s Hipersockets technology. These Hipersocket connections are fast and secure.

## Scalability

VSE growth possibilities are considerable. The superb scalability of IBM @server zSeries benefits VSE customers. Smaller VSE customers use an IBM @server zSeries 800-0E1 to run production workloads. Very large VSE customers use an IBM @server zSeries 990 2 or 3-way servers or larger.

### Remote access to CICS transactions



## Affinity with z/OS

For industrial-strength transaction processing, CICS Transaction Server sets a world-wide standard of excellence for both VSE/ESA and z/OS platforms. Application programs are compatible between the two. Using CICS Transaction Gateway and CICS Web Support, remote applications can access CICS applications on VSE via internet technologies. As a result, transaction processing can exploit the strengths of heterogeneous systems.

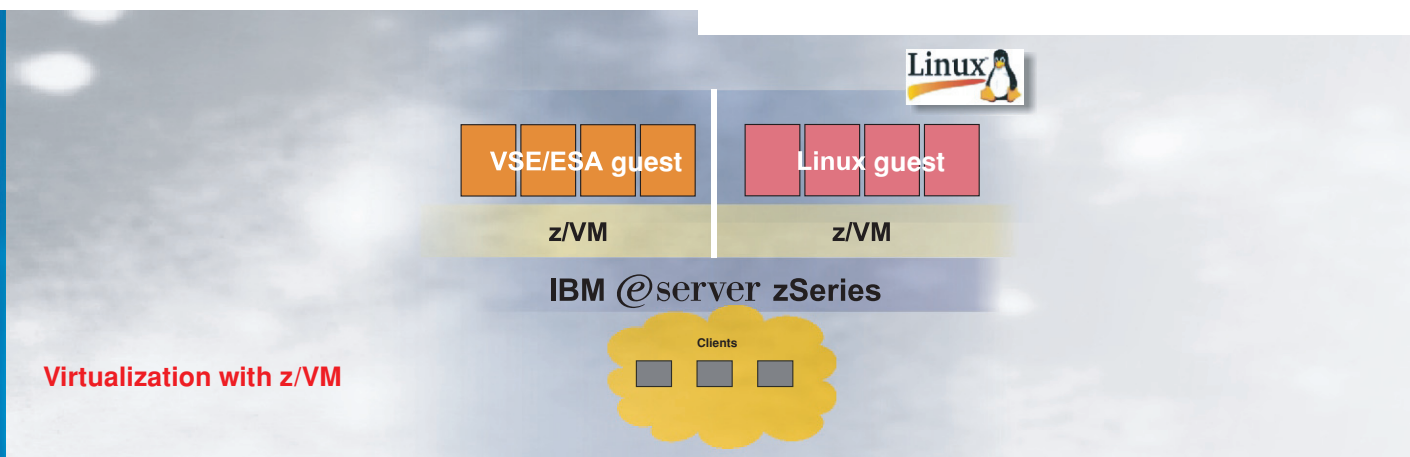
Reviewing the sub-components of VSE/ESA, affinity between VSE/ESA and z/OS is clearly visible. In addition to CICS Transaction Server, TCP/IP, ACF/VTAM, and DB2; z/OS affinity includes common LE run-time environments for COBOL, PL/I, and C application programs.

### *Affinity with z/OS (continued)*

The popular programming language REXX can also be used with VSE/ESA - both in online and batch applications. TCP/IP and ACF/VTAM (Virtual Telecommunications Access Method) communication protocols are supported by both VSE/ESA and z/OS. Data stored in DB2, VSAM, or DL/I databases are supported by both VSE/ESA and z/OS. For message queuing, MQSeries for VSE/ESA is available. To handle print output requirements, a choice can be made between products such as VSE/POWER, Print Service Facility (PSF), and CICS Report Controller. Further print options are available via TCP/IP.

### *Problem Management*

Problem management capabilities demonstrate the maturity of VSE/ESA. High levels of error detection and correction exist for hardware (EREP), batch processing, and especially for CICS Transaction Server. For Performance Management, VSE/ESA offers standard functions such as Job Accounting (the use of resources per Job or Job Step) and Dialog displays of system activities. Equivalent functions are available for CICS Transaction Server in the areas of monitoring and global statistics. Many VSE customers use products from Independent Software Vendors in this area as well.



**Virtualization with z/VM**

### *Systems Management*

To successfully enter the "On Demand" world, one prerequisite is a solid Systems Management basis. VSE/ESA has a range of offerings in this area. For the controlled installation of software updates, right up to complete system upgrades, VSE/ESA has a range of dialog-supported functions. Customers can benefit from 20 years of MSHP experience. MSHP collects all changes in a central repository, from which any invalid updates are immediately rejected.

Many VSE customers use systems management products from Independent Software Vendors.

### *Backup-/Recovery Management*

Company data is one of the most precious assets any company possesses. IT departments must have contingency plans for dealing with the loss of individual files, or even loss of entire databases through natural or man-made disaster. To address customer backup/recovery requirements, VSE provides a selection of utilities and journaling capabilities.

IBM TotalStorage Enterprise Storage Server (ESS) FlashCopy functions and Tape-Robot systems are supported by VSE/ESA.

## Operating in an Open World

VSE/ESA V2R5 was the first release to focus on interoperability between VSE/ESA and other platforms. Using TCP/IP and internet technologies, other platforms can access data and programs on VSE/ESA. Follow-on releases opened up new possibilities to access data on other platforms.

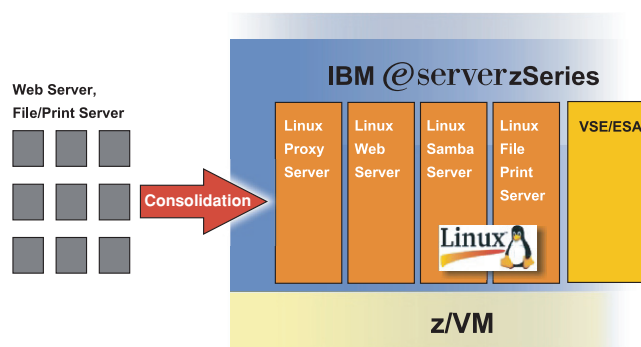
## VSE/ESA V2R7 Functionality

- Receive, create, and send XML documents
- Integration with “open world” using standard SOAP protocols
- Access VSE data from other platforms via Java-based and/or DB2-Based - Connectors.
- Access VSE resources from Office scripts (i.e. Visual Basic , Lotus Script, or Microsoft applications) using VSEScript.
- Systems Programmer access to VSE resources with a “mouse click” using the VSE Navigator tool
- Perform VSE/ESA System Console operations from a PC
- Process virtual tapes (for data interchange with the “open” world)
- Send and receive messages using IBM message queueing (MQSeries) middleware
- Process DB2 UDB data from VSE/VSAM programs, with no VSE program modification
- Transaction-controlled access to CICS applications (CICS Transaction Gateway), and access to 3270-based and HTML-based applications using CWS (CICS Web Support)
- Secure all data exchange using Secured Socket Layer (SSL).
- Improve SSL performance using PCICA hardware assist on zSeries.

## State-of-the-art Virtualization Technology

z/VM lets you take maximum advantage of IBM’s advanced @server zSeries virtualization technology. Using this technology, you can “virtually” allocate resources and capacities, thereby achieving excellent load distribution and improved systems management. These benefits apply to all “guest” systems such as Linux on zSeries and VSE/ESA.

### Consolidation using Linux on zSeries



## Consolidation of existing servers

Linux on zSeries has been tailored to IBM @server zSeries. It offers remarkable possibilities for physical consolidation of existing servers, potentially reducing the cost and time required to manage these systems. You can exploit the advantages of Hipersockets and a “network in a box”: no physical cable connections between servers, much higher bandwidth

Using open connector-solutions, you can integrate VSE/ESA with Linux on zSeries applications.

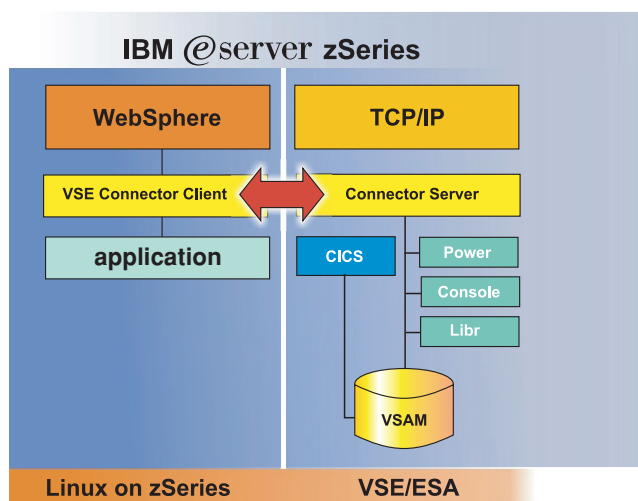
## VSE connectors

VSE customers can take advantage of modern, cost-effective applications available in the "open" world.

"Java-Based" Connectors allow access to VSE resources from the "open" world. VSE data can be integrated into distributed e-business processes. Using no-charge VSE connectors, you can access:

- VSE/Librarian data,
- VSE/POWER spooling system,
- VSE system console
- VSE/VSAM data
- DL/I databases

### Access VSE/ESA resources using Java



VSE connectors provide opportunities for real time access, dynamically building, controlling, and monitoring processes, as well as automating and performing systems management tasks. The VSE Connector client includes a large number of practical examples to enable you to get started quickly.

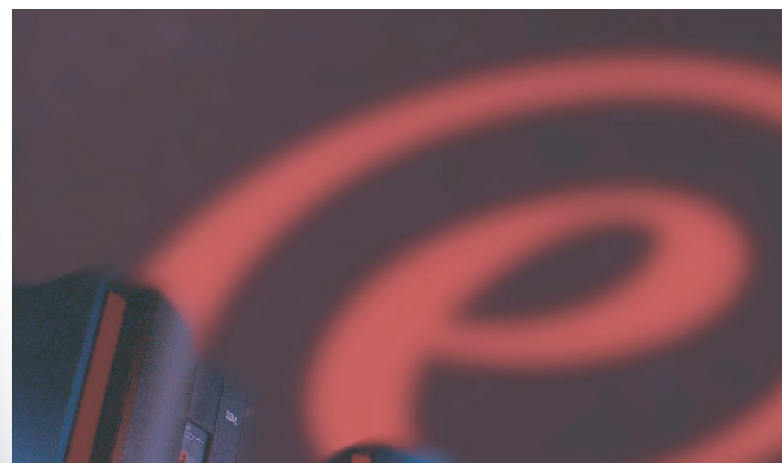
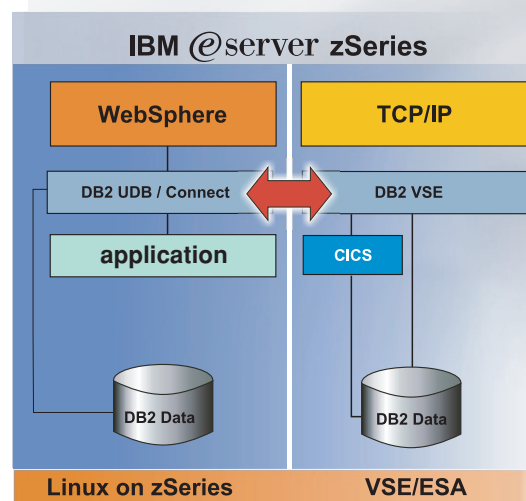
Using the VSEScript function in VSE/ESA V2R7, you can also access VSE system resources from Office products and Script languages such as Lotus Script or Visual Basic. As a result, Office products can access VSE resources.

## DB2 for relational data

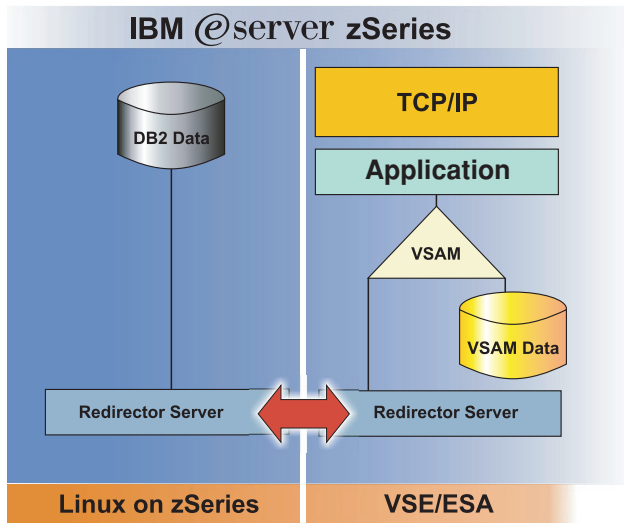
DB2 Universal Database (DB2 UDB) is a scalable, relational database system available on a variety of platforms, including Linux on zSeries. Together with DB2 Server for VSE and VM, data from a variety of platforms can be processed and analysed.

It is also possible to integrate non-relational VSE data into a remote applications using DB2-Based Connectors included in VSE/ESA.

### Data interchange with DB2



## Synchronization using VSAM Redirector



## VSAM Redirector

The redirector function allows you to integrate remote data into VSE/ESA programs. Existing VSE programs do not need any modifications. By diverting VSAM access, it is possible to:

- Synchronize VSE/VSAM data and relational data on another platform.
- Access remote data from existing VSE/VSAM applications
- Reduce processing and network traffic by replacing traditional FTP data transfers, or by implementing smaller, incremental data transfers.

## Web Services and VSE/ESA V2R7

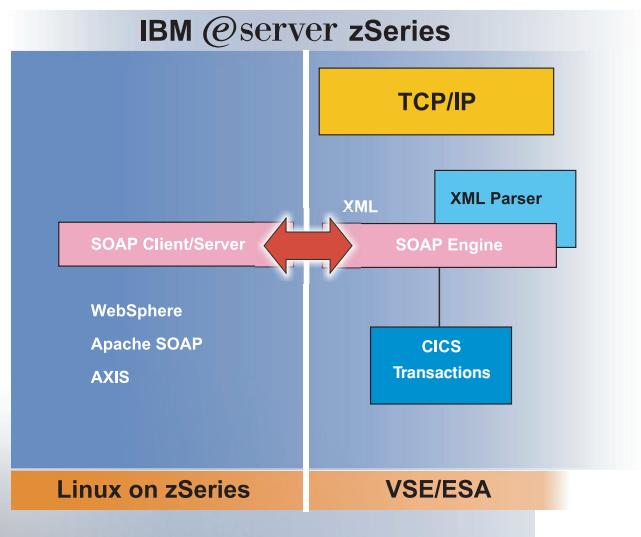
Many of today's leading edge internet technologies use Java as their platform-independent language and XML (eXtensible Mark-up Language) for their platform-independent data representation.

Using Web Services included in VSE/ESA V2R7, it is possible to:

- Call a CICS transaction as a Web Service
- Call a Web Service from a CICS transaction
- Exchange VSE data using the XML format.

Using the built-in XML parser, it is possible to process XML data in VSE/ESA.

## Web Services and SOAP with XML



## Further Information:

### IBM @server zSeries:

[www.ibm.com/servers/de/eserver/zseries](http://www.ibm.com/servers/de/eserver/zseries)

### Linux on zSeries:

[www.ibm.com/servers/eserver/zseries/os/linux](http://www.ibm.com/servers/eserver/zseries/os/linux)

### VSE/ESA:

[www.ibm.com/servers/eserver/zseries/os/vse](http://www.ibm.com/servers/eserver/zseries/os/vse)

### SE/ESA Connectors:

[www.ibm.com/servers/eserver/zseries/os/vse/support/vseconn/z/VM](http://www.ibm.com/servers/eserver/zseries/os/vse/support/vseconn/z/VM)

[www.vm.ibm.com/](http://www.vm.ibm.com/)



IBM Deutschland Entwicklung GmbH  
Schoenaicherstrasse 220  
D-71032 Boeblingen  
Germany

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