

IBM WebSphere Application Server for VSE/ESA Users

WAVV 2002

Ft Mitchell KY
April 12-16, 2002

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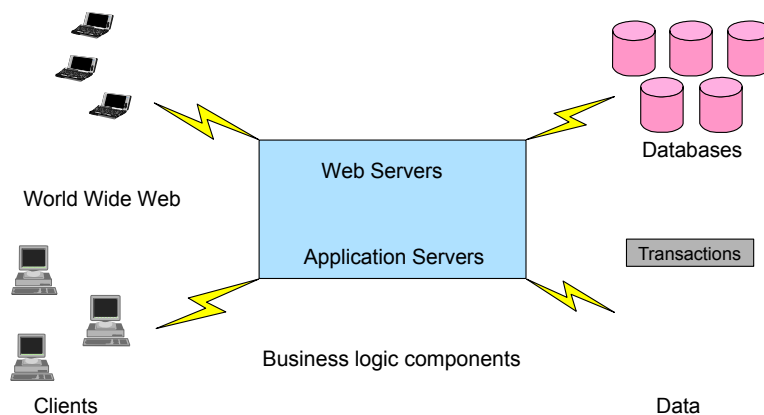
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Agenda

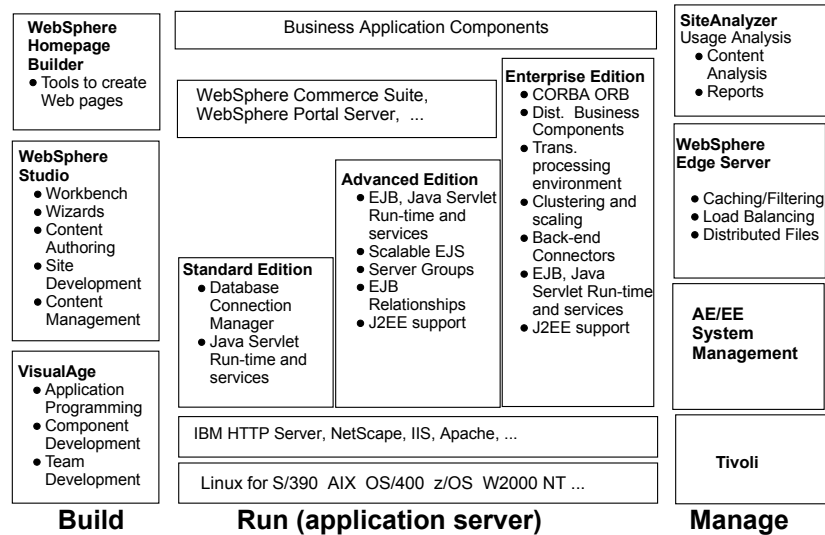
- WebSphere Product Family - Overview
- WebSphere Application Server and Family
- Connectors
- VSE e-business Connectors
- More information

WebSphere Application Model



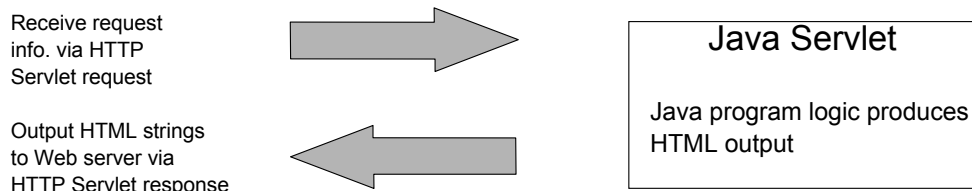
- Web application server manages applications at 2nd tier of a 3-tier model
- Application deployment environment (Web standards)
- Tight enterprise integration and cooperation
 - ▶ Use data from back-end systems (databases, transaction systems)
 - ▶ Provides output to Web browsers on a client
- Infrastructure services (security, scalability, ...)

IBM WebSphere Product Family



Servlet

- A Servlet is a server-based Java program used to create HTML on demand for a Web server.
 - ▶ Small platform independent programs (Java classes) used to extend functionality of the Web server
 - ▶ Provide dynamic Web content to clients
 - ▶ Executed in a Servlet engine
 - Engine places request to Servlet
 - Servlet sends HTML output to client

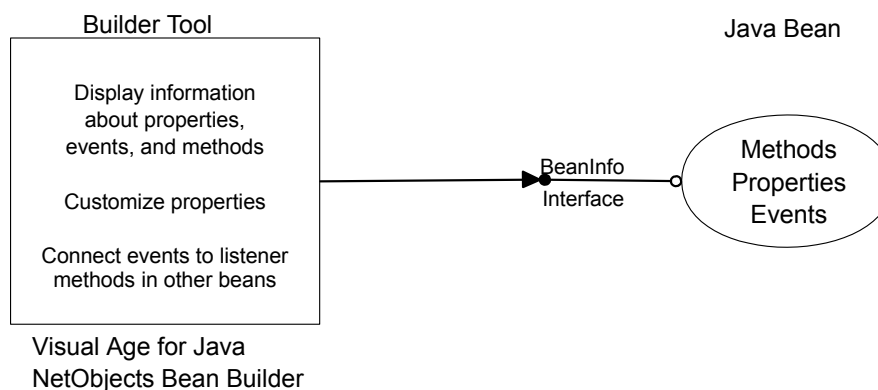


Java Server Pages

- Java Server Pages (JSP) are a JavaSoft specification for dynamic page generation.
 - ▶ HTML source files that include Java extensions (<java> tag) for
 - Dynamic content and increased functionality
 - ▶ Compiled into Servlet before deployment
 - Recompiled only, if page changes
 - ▶ Code is fully functional Java
 - ▶ Code has access to Servlet and the Servlet object model
 - ▶ Embed results from Servlet and beans
 - ▶ Helps to separate HTML coding from business logic

Java Beans

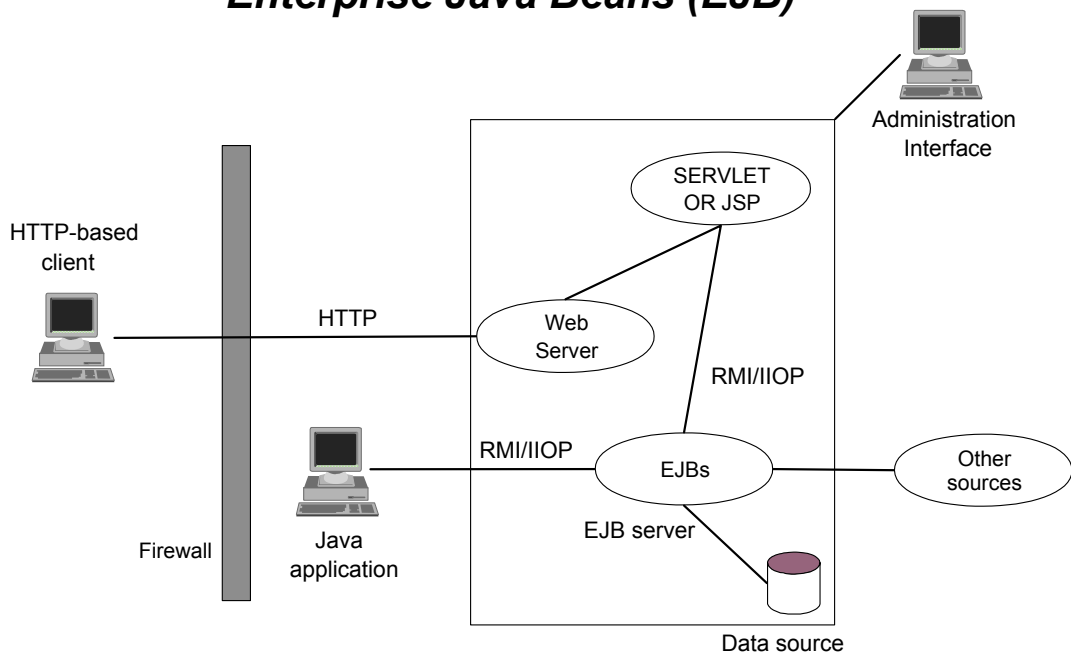
- A Java Bean is a reusable software component that can be manipulated in a builder tool. Java Beans are usually used to represent items on a GUI, and are generally client-side only.
 - ▶ Java classes that conform to certain coding standards
 - ▶ Can be described in terms of properties, methods, and events
 - ▶ May or may not be visual components (e.g. push buttons, sliders, ...)



Enterprise Java Beans (EJB)

- Enterprise Java beans are server-side Java components that are designed for distributed environments.
- A business object
 - ▶ Either a long-lasting entity (like a bank account)
 - ▶ Or a short-lasting session (like a "visit" to the bank)
- It exists within an EJB container, running on an enterprise Java server
 - ▶ WebSphere is such a container, that provide services such as
 - security, naming, directory services
 - persistent storage
- It is accessible remotely or locally

Enterprise Java Beans (EJB)



Java 2 Enterprise Edition (J2EE)

- Defines standard that applies to all aspects of architecturing, developing and deploying multi-tier, server-based applications
- J2EE programming model has 4 types of application components:
 - ▶ Application clients
 - ▶ Applets
 - ▶ Servlets and JavaServer Pages
 - ▶ Enterprise Java Beans
- Standard architecture composed of following elements::
 - ▶ Standard application model for developing multi-tier applications
 - ▶ Standard platform for hosting applications
 - ▶ Compatibility test suite to verify that J2EE complies to standards
 - ▶ Reference implementation provide an operational J2EE definition

WebSphere Studio Family

- Comes in three configurations:
 - ▶ W/S Studio Homepage Builder
 - ▶ W/S Studio Professional Edition
 - ▶ W/S Studio Site Developer Advanced (incl. J2EE support)
- Delivers a complete set of Web deployment tools
- Combines graphical development wizards with tools for Web site design and Java development (Servlet, Java Beans, ...), including
 - ▶ Workbench environment to organize / manage Web development projects
 - ▶ Integrated visual page designer for Web page development (WebSphere Homepage Builder)
 - ▶ Integrated Applet designer based
 - ▶ Integrated remote debug facility of server side logic
 - ▶ Tight integration with Visual Age for Java
 - ▶ and more ...

Visual Age for Java V4

- To create e-business applications (business logic)
- Integrated Development Environment (IDE) for Java
- VAJava closely linked with WebSphere (tight integration with WebSphere Studio)
- Generation of middleware (CICS, MQ, ...) connectors based on
 - ▶ J2EE Connector Architecture or
 - ▶ IBM Common Connector Framework
- Supports deployment for J2EE capable platforms

- "Build with Visual Age for Java, run with WebSphere"
 - ▶ Visually construct Servlet, build JSP's from Java Beans
 - ▶ Use powerful debugging functions
 - ▶ Debug target servers remotely

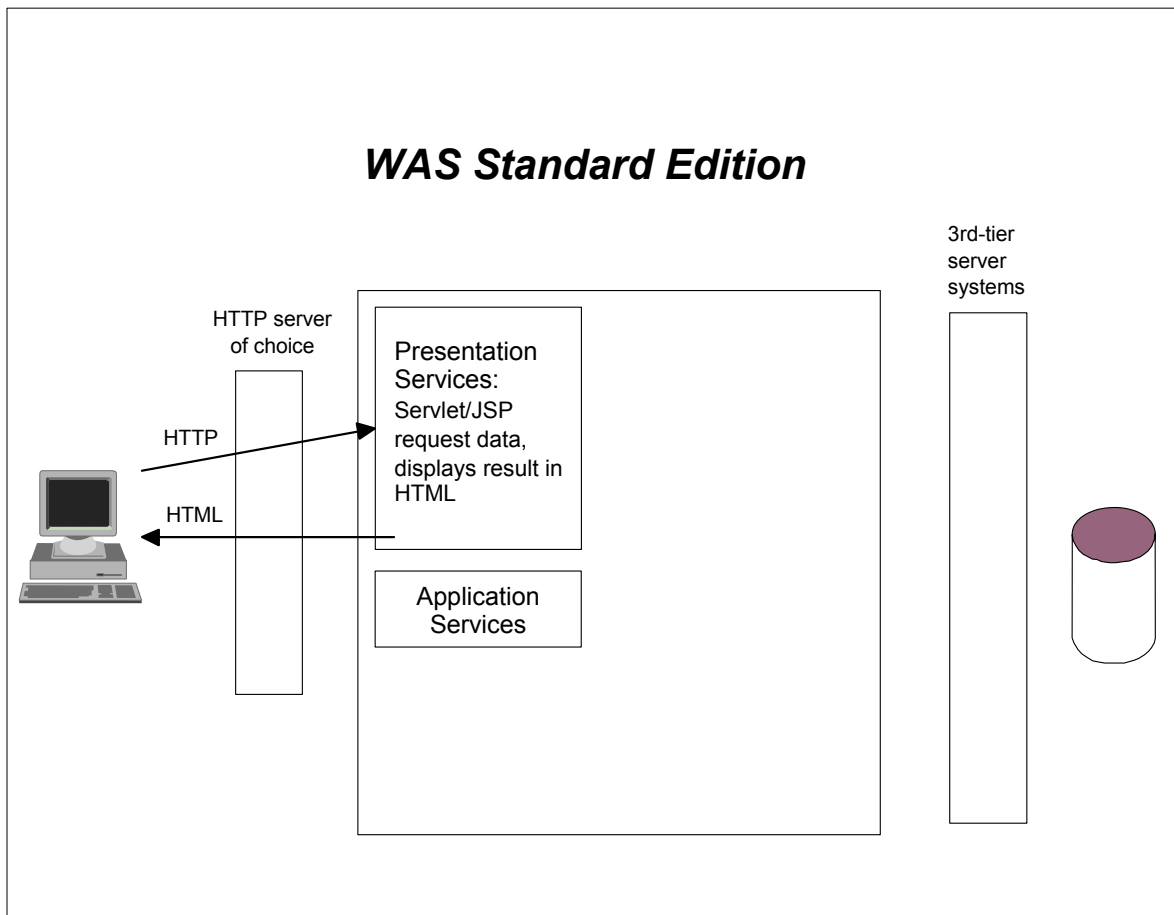
WebSphere Application Server (WAS)

- Most current Version = Version V4 (JDK 1.3)
dependent on operating system platform

- WAS Standard Edition
 - ▶ Web Application Server 3.5 (JDK 1.2.2)
 - HTTPd -- HTML pages, files, JSPs, Java Classes, Servlet, JDBC
 - Security plug-in

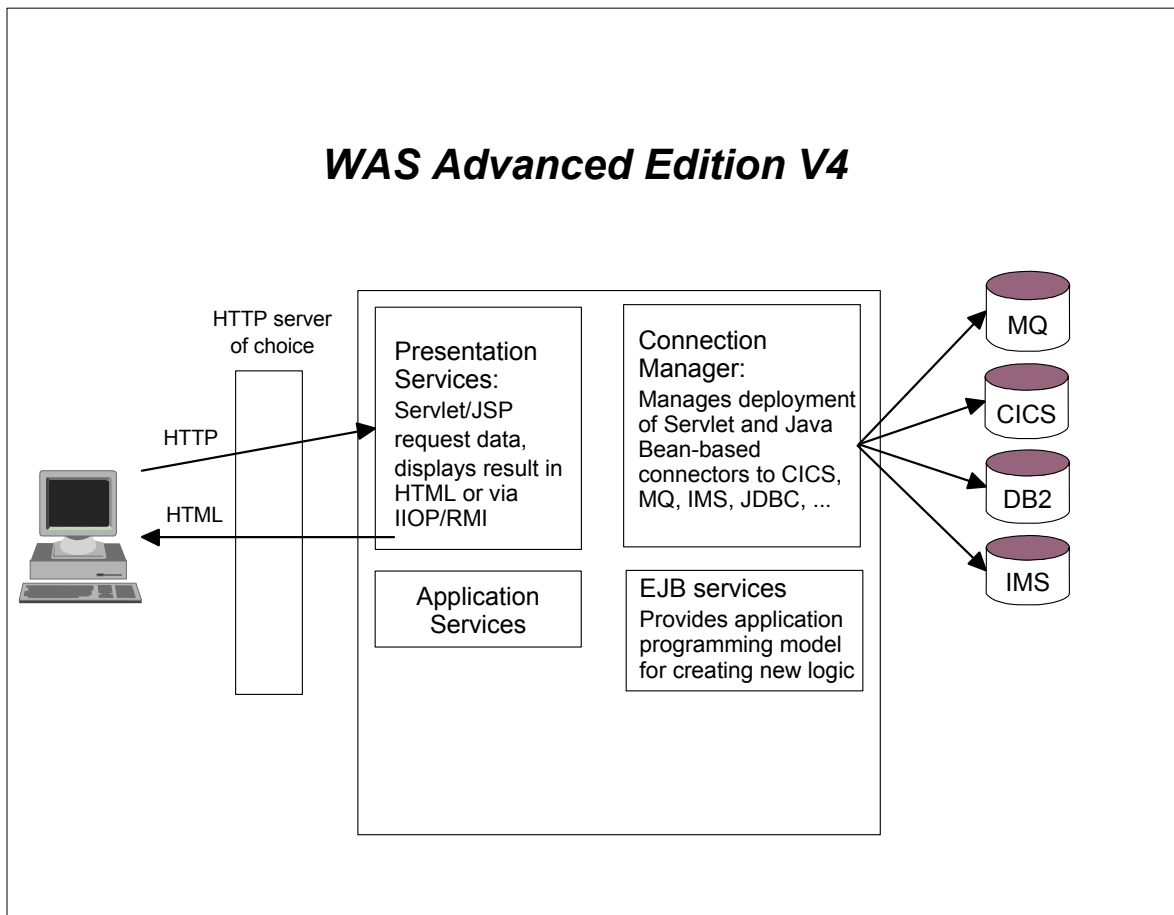
- WAS Advanced Editions V4 add
 - ▶ Web Application Server
 - Plus IOP plug-in
 - EJB server
 - J2EE support

- WAS Enterprise Edition V4 adds
 - ▶ Component Broker -- Workstation and 390
 - ▶ Integration of transactional environment (TXSeries)



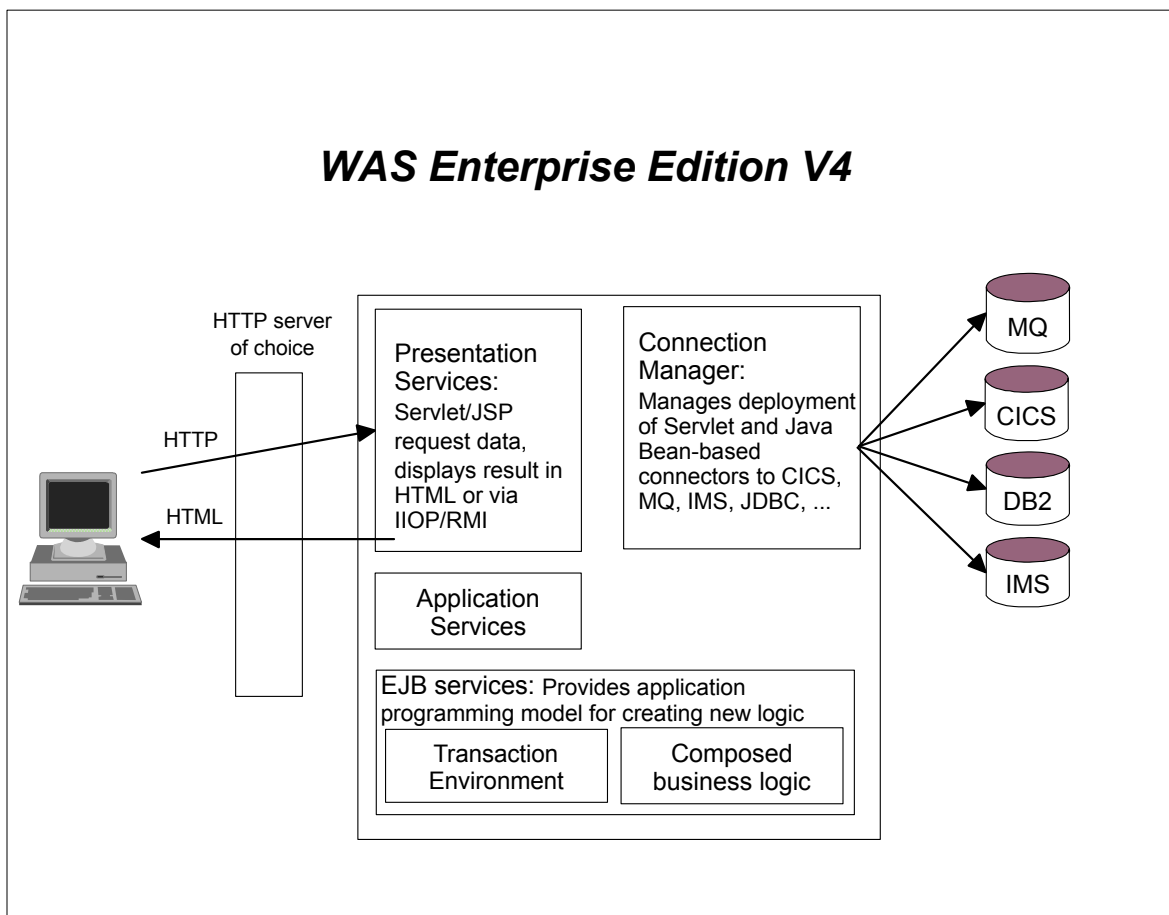
WAS Standard Edition V3.5

- Java-based application environment
- WAS to build, deploy and manage Internet / Intranet Web applications
- IBM HTTP server
 - ▶ Administration GUI
 - ▶ Support for LDAP connectivity
- Plugins for other web servers
- Administration and Monitoring
- Configuration and Management
- Improved integration with VAJava
- Full support of Java Servlet, JavaBeans, JSP, XML
- High speed pooled database access using JDBC for DB2 UDB and Oracle
- Servlet samples



WAS Advanced Editions V4

- Comes in 3 configurations:
 - ▶ Advanced Single Server Edition
 - ▶ Advanced Developer Edition
 - ▶ Advanced Edition
- Provides Standard Edition content
- High Performance Enterprise Java Bean Server
 - ▶ Scalability features for EJBs, Servlet and JSPs
 - EJB, Servlet, JSP code all executes in the same runtime
 - Application-level load balancing
 - Workload management for applications
 - ▶ J2EE support
 - ▶ Java database connectivity
 - ▶ Enhanced support for distributed transactions and transaction processing
 - ▶ Improved security controls and management
- Connection Manager
- Also available on Linux for S/390



WAS Enterprise Edition V4

- Provides Advanced Edition content +
- Enables full e-business transactions over the Web
- Provides high quality middleware runtime services for distributed applications
- Enables integration of new and existing business applications in heterogeneous systems
- Supports sophisticated business transactions
 - ▶ Integrated, mission-critical applications
- J2EE based application environment (including connectors)
- Provides high-end enterprise scalability, manageability, robustness, performance
 - ▶ Transaction environment (CICS, TxSeries)
 - ▶ Supports existing CORBA technology in J2EE server environment
- ▶ Includes MQ Series 5.2 and TXSeries

WebSphere Commerce Suite

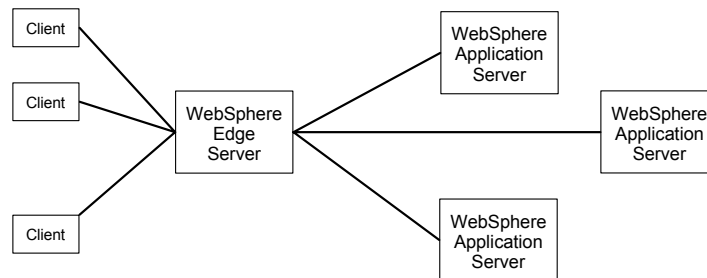
- WebSphere Application Server based
- Provides services to deploy commerce applications and helps to build, maintain and manage stores to sell goods and services on the Web.
- Comes in different configurations (e.g. start, pro, service provider)
- Key components (e.g. Pro Edition V5.1):
 - ▶ Commerce Server - Manages the online store by running a set of processes under WebSphere Application Server
 - ▶ WAS AE - Provides foundation for WCS
 - ▶ Web Server - WCS includes the IBM HTTP Server
 - ▶ Database - Store all product, store and customer data, includes DB2 Universal Database
 - ▶ Payment Server - Handles payments using WebSphere Payment Manager

WebSphere Portal Family

- WebSphere Application Server based
- Provides services to build a single access point to personalized information and applications for employees, business partners and customers
- Comes in 3 configurations/solutions:
 - ▶ W/S Portal Enable
 - provides foundation for personalized portals
 - ▶ W/S Portal Extend
 - adds integrated team room, instant messaging, extended search, web site analysis, ...
 - ▶ W/S Portal Experience
 - adds advanced e-meeting, application sharing, enterprise content management and enhanced security features

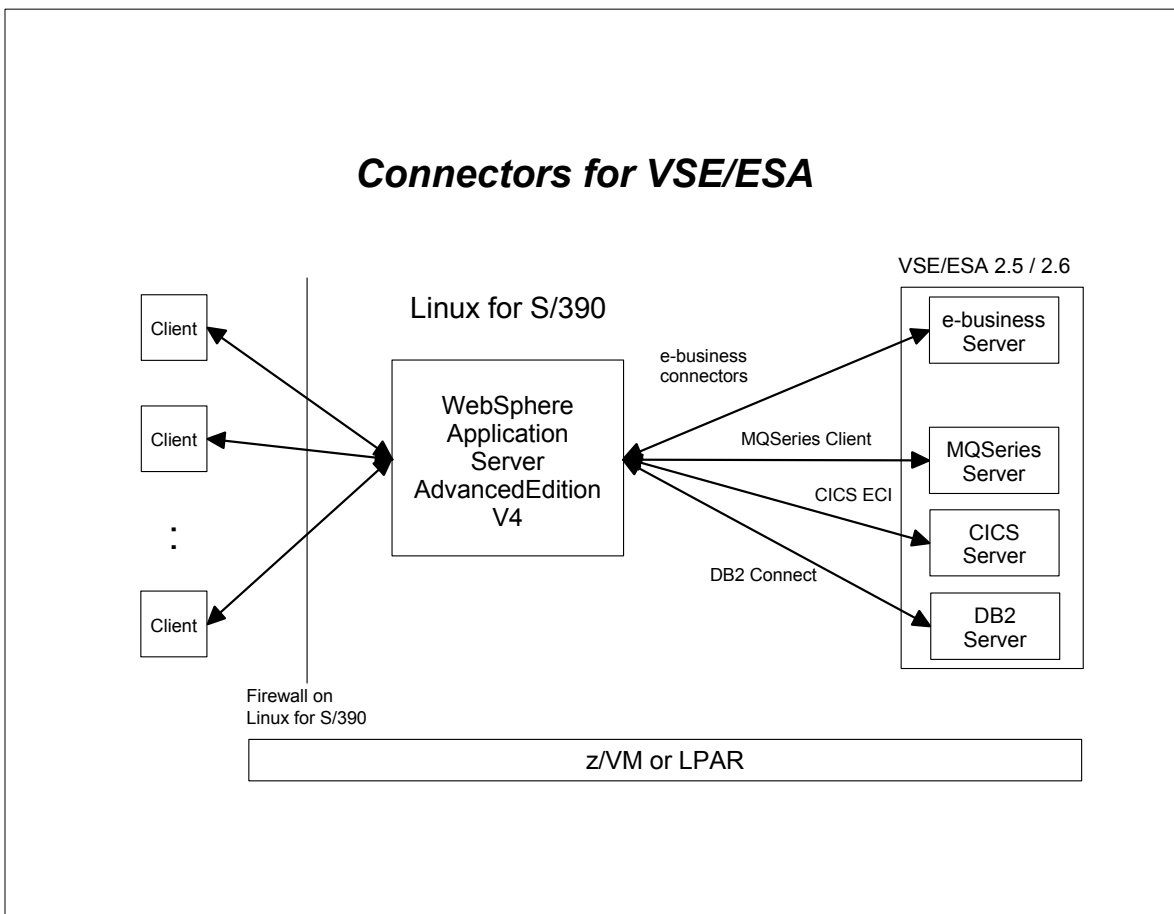
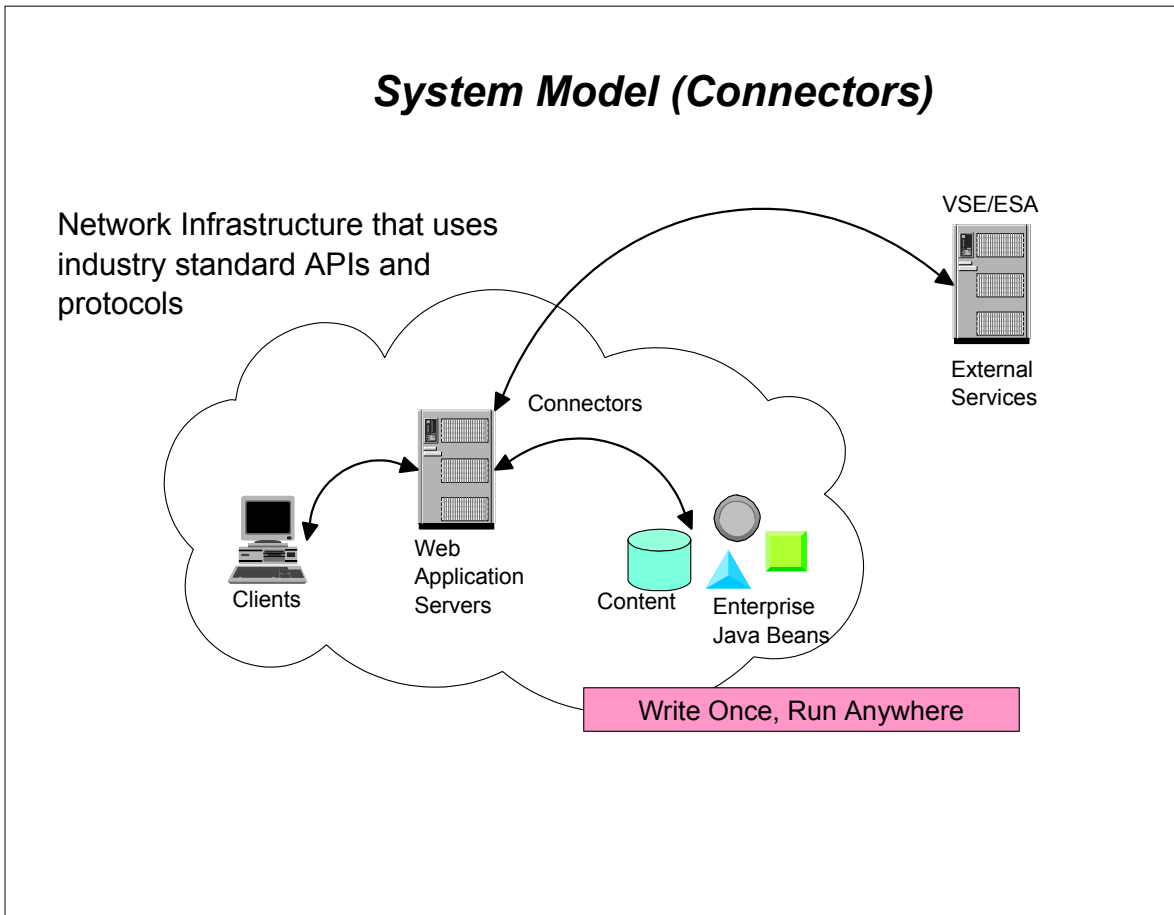
WebSphere Edge Server

- Provides services for web applications in distributed environments placed at network edges
- Tightly integrated with WebSphere family
- Includes
 - ▶ Load balancing
 - ▶ Static and dynamic caching
 - ▶ Application offload
 - ▶ Content distribution
 - ▶ Enhanced security (using Tivoli Secureway Policy Director)
 - ▶ Adds Quality of Service (based on computing and network resources)



WebSphere Site Analyzer

- Provides analysis and reporting for web site traffic
- Includes
 - ▶ Web-based user interface for administration and reporting
 - ▶ Analyzes visitor traffic and provides usage statistics
 - ▶ Data collection from WAS V4, W/S Edge Server, ..
 - ▶ Usage analysis for given groups of visitors
 - ▶ Supports DB2 UDB and Oracle



Connectors for VSE/ESA 2.5/2.6

- DB2 Connect (JDBC)
 - ▶ TCP/IP based connection with DB2 V7
- CICS Transaction Gateway
 - ▶ TCP/IP based for CICS ECI connection
- MQSeries Connector
 - ▶ TCP/IP based connection
- VSE e-business Connectors

VSE e-business Connectors

- Easy access to VSE/ESA resources from other systems
- VSE e-business connectors include
 - ▶ Server code running on VSE/ESA
 - ▶ JAVA beans, Servlet and samples on Java capable clients
 - Such as IBM's WebSphere Application Server (3-tier approach) which may run on Windows 2000, NT, Linux, AIX, z/OS, ...
 - VSE e-business connectors best integrated with WAS Advanced Edition
 - May also be used in 2-tier environments
- VSE/ESA 2.6 provides new VSE e-business connectors.

VSE e-business Connectors ...

- Advantages
 - ▶ Exploitation of non-VSE e-business infrastructure
 - ▶ Always newest e-business components
 - Java, web server, security
 - Platform independent
 - ▶ VSE/ESA resources can be easily integrated into new e-business applications
 - ▶ New VSE e-business connectors
 - ▶ e-business connectors available today (DB2 Connect, MQ Series client, CICS TS Gateway, ...)
 - ▶ Generalized interfaces

VSE e-business Connectors ...

- DB2 based connectors for VSAM and DL/I
 - ▶ Exploitation of DB2 infrastructure (JDBC/ODBC, DB2 Connect, DB2 server, DB2 stored procedures)
 - ▶ Mapping of SQL requests to VSAM and DL/I data
 - ▶ VSE/ESA provides APIs to
 - Access VSAM and DL/I data
 - Do the mapping to VSAM and DL/I data
 - ▶ Sample mappings and applications provided
 - ▶ Communication via DRDA (SNA or TCP/IP based with DB2 V7)

VSE e-business Connectors ...

- External services based VSE connectors
 - ▶ Access to VSE/ESA resources, such as VSE/VSAM files, VSE/POWER, VSE/ICCF, VSE Librarian, VSE consoles, job submission

 - ▶ Access provided via
 - external services running on VSE/ESA
 - Java-based services running on e.g. web application server environments
 - Plug-in capabilities for subsystems and vendors on VSE/ESA and middle tier

 - ▶ Java samples (Applets / Servlet) are provide

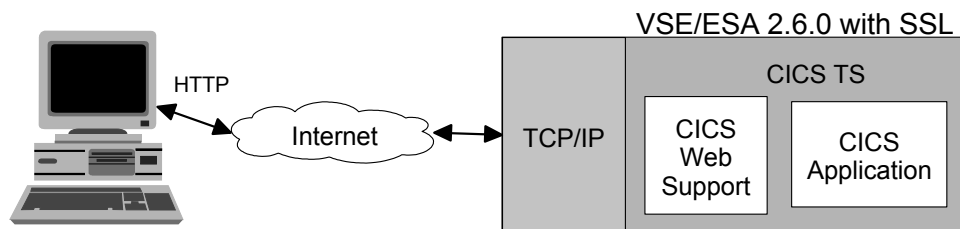
 - ▶ Communication TCP/IP based

VSE e-business Connectors ... (VSE/ESA 2.6)

- New VSE connectors and connector currency
 - ▶ Support for Java 2 (JDK 1.2 and 1.3), including new WebSphere releases
 - ▶ J2EE connectors
 - ▶ JDBC connector to VSAM file
 - ▶ JConVSE = Java-based VSE console
 - Supports monitoring, submit job, PF key, retrieve, ...
 - Can automate VSE jobs based on console messages
 - ▶ VSEPrint
 - Formats output of VSE/POWER job
 - Output transferred via ftp
 - Runs on Java-capable workstation
 - ▶ Support for Linux, Windows 2000, ...
 - ▶ VSAM connectors may now be routed through CICS (avoid share option 4)

Internet Security (VSE/ESA 2.6)

- Secured TCP/IP connections through SSL encryption services includes Data Encryption Standard (DES) and triple-DES Licensed from Connectivity Systems Incorporated (CSI)
- New SSL API can be exploited by customer applications compatible with the OS/390 SSL API
- SSL exploitation by
 - ▶ TCP/IP for VSE/ESA applications such as TN3270 and web server
 - ▶ CICS Web Support (CWS)



VSE/ESA 2.7

- Preview Announcement: 2/2002
- Hardware Support
 - ▶ Supported hardware: MP3000, G5, G6, zSeries (31 bit only)
 - ▶ New processors (z800, ...)
 - ▶ New devices
 - Support of larger than 32K cylinder 3390 volumes on IBM TotalStorage Enterprise Storage Server (ESS)
 - OSA Express including non-QDIO for SNA
 -
- Fast service upgrade from VSE/ESA 2.5, or 2.6

VSE/ESA 2.7...

- Enhanced interoperability
 - ▶ Between VSE/ESA and Linux on zSeries
 - ▶ HiperSockets
 - Uses adapted QDIO protocol (OSA Express)
 - Support high speed communication among
 - Logical partitions (LPARs)
 - Virtual machines under z/VM 4.2 or higher
 - VSE/ESA can communicate with other HiperSockets-capable operating systems (VSE/ESA, z/VM, z/OS, Linux on zSeries)
 - ▶ Cryptographic assist support
 - Support of IBM PCI Crypto Accelerator (PCICA)
 - Provides increased SSL throughput
 - Transparent for SSL exploiters (CWS, e-business connectors, ...)

More Information

- ▶ **VSE/ESA home page**
 - ▶ <http://www.s390.ibm.com/vse/>
- CICS
 - ▶ <http://www.ibm.com/software/ts/cics/products/>
- DB2
 - ▶ <http://www.ibm.com/software/data/>
- MQ
 - ▶ <http://www.ibm.com/software/ts/mqseries/>
- WebSphere
 - ▶ <http://www.ibm.com/software/info1/websphere/index.jsp>

More Information ...

- ▶ Redbook: Getting Started with TCP/IP for VSE/ESA 1.4, SG24-5626
- ▶ Redbook: e-business Solutions for VSE/ESA, SG24-5662
- ▶ Redbook: e-business Connectivity for VSE/ESA, SG24-5950
- ▶ VSE Applications - How e-business Fits, GF22-5137
- WebSphere V4.0 Advanced Edition Handbook - SG24-6176