VSE/ESA 2.4 / 2.5
Update

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Basics

■ Limited Availability: since 12/1998
General Availability: since 6/1999
VSE/ESA 2.4.1: since 11/1999, VSE/ESA 2.4.2: since 6/2000
VSE/ESA 2.5.0: since 9/29/2000

■ VSE/ESA 2.4/2.5 runs on <u>ESA/390 hardware only</u>
  ► Subsystem Storage Protection (SSP) in ESA/390
  ► New cross address space services

■ <u>Turbo Dispatcher only</u>
  ► Standard dispatcher dropped
  ► On all uni- and multiprocessors
  ► Native, as VM/ESA guest or in LPAR

■ New CICS code base:
  ► CICS Transaction Server for VSE/ESA Release 1 (CICS TS)
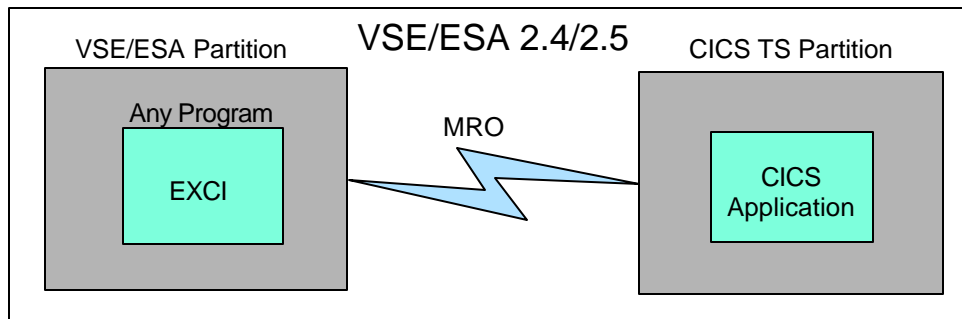
CICS Transaction Server For VSE/ESA

■ Includes

  ► CICS Server (CICS TS)
  ► CICS Universal Client
  ► CICS Transaction Gateway
  ► CICS Web Support (generally available with VSE/ESA 2.5)
  ► 3270 Bridge (generally available with VSE/ESA 2.5)
  ► Report Controller
  ► Data Management Facility (DMF)
  ► CICS/VSE 2.3
  ► and more ...

CICS TS Highlights

- Extensive Virtual Storage Constraint Relief
  - ▶ 24-, 31-bit CICS, read-only, shared and user DSAs

- CICS TS programming interfaces
  - ▶ Extended Application Programming Interfaces (APIs)
  - ▶ Extended System Programming Interfaces (SPIs)
  - ▶ Front-end programming interface (FEPI)

- System Management enhancements
  - ▶ Resource definition online (RDO) for files

- Improved Reliability
  - ▶ Subsystem Storage Protection (SSP)

- Performance
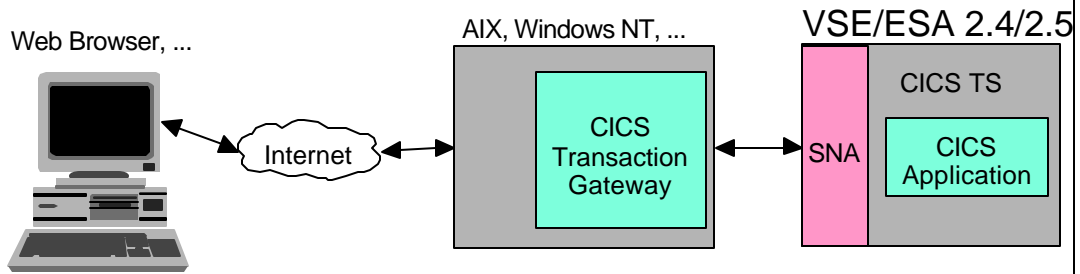 - ▶ (Shared) Data Tables

External Call Interface (EXCI)

- Invoke a program running under CICS TS from any VSE/ESA partition

- EXCI is the S/390 equivalent of the ECI (External Call Interface) function provided by the CICS clients

- Linkage via a CICS MRO link

VSE/ESA 2.4/2.5

VSE/ESA Partition — Any Program — EXCI — MRO — CICS TS Partition — CICS Application
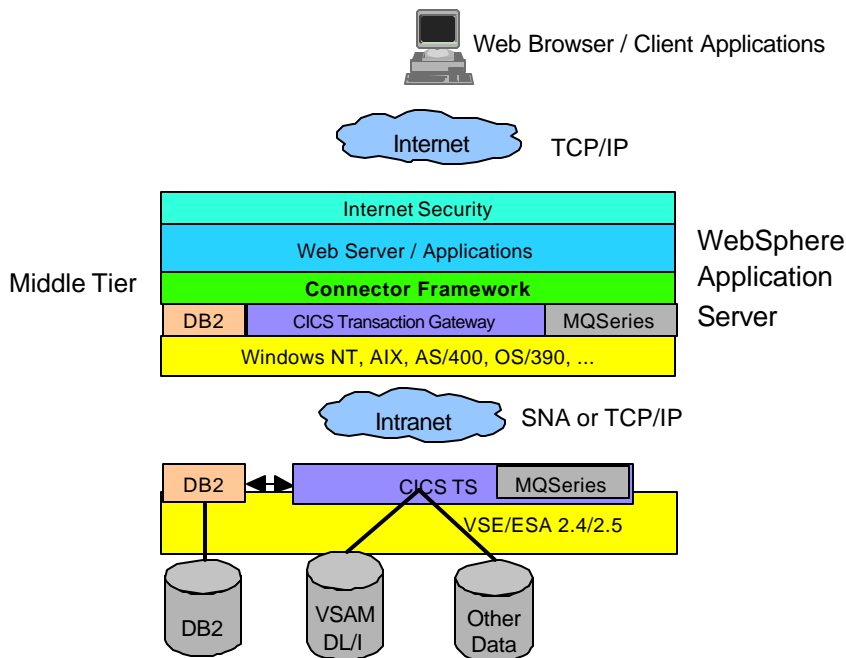
CICS Transaction Gateway

- Access to VSE/ESA resources from /390 and non-390 platforms
  (AIX, Windows NT, OS/2, OS/390, ...)
- Provides Java, C++, C, Cobol, Visual Basic interfaces for access of CICS
  transactions from any middle tier program

- Advantages
  - ▶ Access from e-business/internet/intranet/middle tier solutions
    (e.g. WebSphere Application Server)

Web Browser, ...   AIX, Windows NT, ...   VSE/ESA 2.4/2.5

| Internet | CICS Transaction Gateway | SNA | CICS TS — CICS Application |

WebSphere - VSE Scenario

Web Browser / Client Applications

Internet   TCP/IP

Middle Tier

| Internet Security |
| Web Server / Applications |
| Connector Framework |
| DB2 | CICS Transaction Gateway | MQSeries |
| Windows NT, AIX, AS/400, OS/390, ... |

WebSphere
Application
Server

Intranet   SNA or TCP/IP

| DB2 | CICS TS | MQSeries |
VSE/ESA 2.4/2.5

DB2   VSAM DL/I   Other Data

VSE/ESA 2.4 Highlights

- CICS TS 1.1 does not provide CICS internal security

- Therefore CICS TS 1.1 requires a security manager

  ► Customer has following options:
    – Basic Security Manager (BSM)
      - for no additional charge
        - Provides sign-on and transaction security
    – External Security Manager (ESM) licensed from IBM
      - CA-Top Secret for VSE/ESA 1.3.0
    – External Security Manager from any vendor
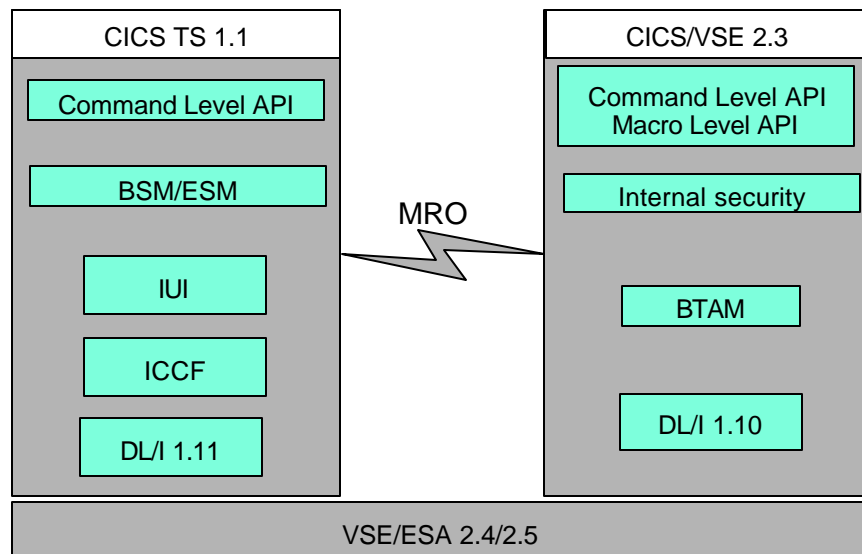
VSE/ESA 2.4 Highlights ...

- New High Level Assembler release

- New DL/I VSE release

- MQSeries 2.1.0 (TCP/IP support, client support)

- DB2 6.1 (stored procedures, DRDA1)

- New DITTO/ESA for VSE/ESA release

- VSE/POWER storage constraint relief

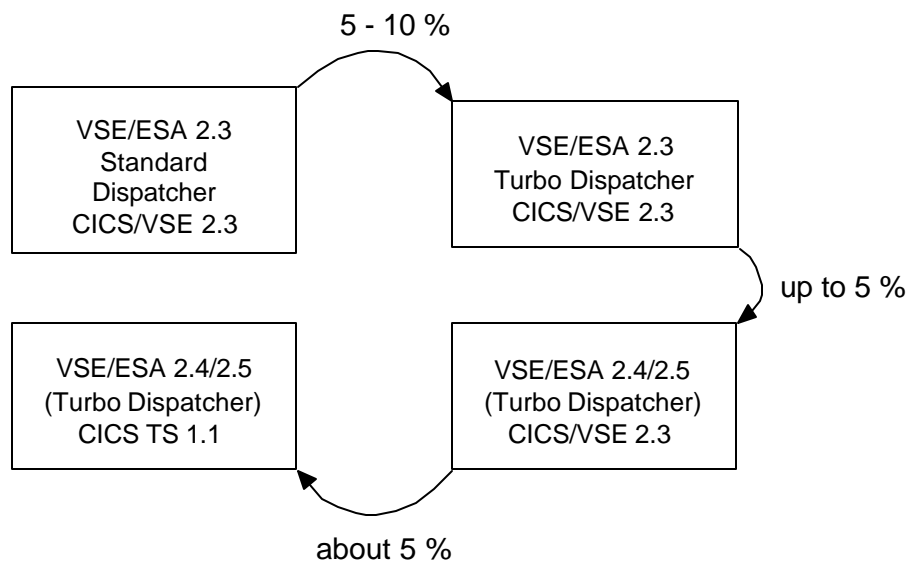- REXX/VSE Socket API (VSE/ESA 2.4.1)

VSE/ESA 2.4 Highlights ...

- VSE/ICCF in CICS TS 1.1 only
- Interactive Interface runs on CICS TS 1.1
- CICS TS 1.1 does not support
  - ► BTAM/ES, RPG II, DOS PL/I and C/370
  - ► Macro level API

- Therefore we provide Coexistence Environments

  - ► 2 CICS and DL/I release levels may be concurrently active

  - ► Customer may run
    - – CICS TS 1.1 and CICS/VSE 2.3 independent
    - – CICS TS 1.1 and CICS/VSE 2.3 connected via MRO

CICS Coexistence Environment

CICS TS 1.1		CICS/VSE 2.3
Command Level API		Command Level API / Macro Level API
BSM/ESM	MRO	Internal security
IUI		BTAM
ICCF		
DL/I 1.11		DL/I 1.10

VSE/ESA 2.4/2.5

VSE/ESA Planning/Installation
CPU Time Requirements

5 - 10 %

| VSE/ESA 2.3 Standard Dispatcher CICS/VSE 2.3 | VSE/ESA 2.3 Turbo Dispatcher CICS/VSE 2.3 |

up to 5 %

| VSE/ESA 2.4/2.5 (Turbo Dispatcher) CICS TS 1.1 | VSE/ESA 2.4/2.5 (Turbo Dispatcher) CICS/VSE 2.3 |

about 5 %

"If you do not exploit new capabilities !!!"

VSE/ESA 2.4 Planning/Installation

- 3 pre-environments available for selection
  - ► Environments A (100 MB), B (250 MB), C (100 MB)
  - ► Environment B provides allocations for 2 CICS TS 1.1 and 1 CICS/VSE 2.3

- Automatic installation for CICS TS 1.1 only
  - ► CICS/VSE 2.3 on extended base tape

- Shared CSD file in coexistence environment possible

- Minimal Interactive Interface support for CICS/VSE 2.3

- No Fast Service Upgrade (FSU) from prior releases

VSE/ESA Security (Access Control)

■ CICS TS 1.1 has no internal security

▶ Therefore VSE/ESA provides RACROUTE services
  as part of the <u>MVS System Authorization Facility (SAF)</u>
  Ported from OS/390

■ CICS TS 1.1 issues RACROUTE (SAF) calls

■ SAF calls an external security manager, which can be

▶ <u>VSE/ESA's Basic Security Manager (BSM)</u>

▶ External Security Manager (ESM)
  – CA-Top Secret for VSE/ESA distributed by IBM
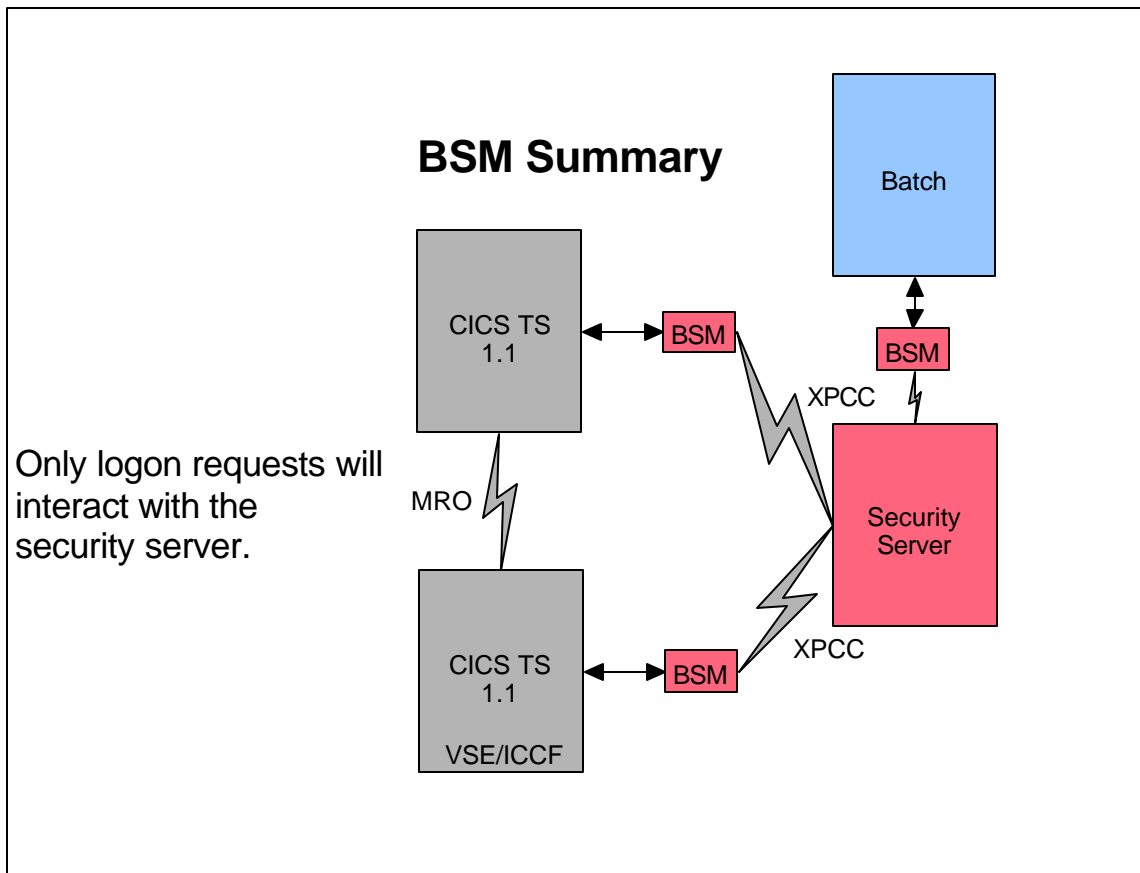 – Any other external security manager

Basic Security Manager (BSM)

■ Most important online security functions provided by BSM

▶ sign-on security

▶ transaction security

■ BSM provides access control to batch resources

■ Logging via ACLR (batch) or console messages (online)

Security Manager Activation

- Security manager comes up before VSE/POWER or other partitions
  - ► The initialization will fail, if other partitions active

- BSM activated as default security manager
  - ► BSM interacts with the Security Server started in FB (default)
    - ⊟ Default may be changed by new SYS SERVPART parameter
    - ⊟ Security server must run in a static partition,
      - • Comes up before VSE/POWER
      - • Security server handles access to VSE control file

- ESM activated dependent on new IPL SYS ESM=... parameter

- DTSECTAB protection active
  for SYS SEC=YES systems until ESM is initialized

Additional Security Enhancements

- Enhanced "Maintain User Profiles" dialog

  - ► Batch utility available to maintain profile information

- VSE/ICCF uses Interactive Interface services
  to get access to control file

- VSE/POWER: access to spool entries for authorized users

  - ► enabled via new SET parameter

BSM Summary

Batch

CICS TS 1.1

BSM

BSM

XPCC

Only logon requests will interact with the security server.

MRO

Security Server

CICS TS 1.1

VSE/ICCF

BSM

XPCC

VSE/ESA 2.4 Summary

- New CICS (CICS TS) code base
  - ▶ Increased affinity between OS/390 and VSE/ESA
  - ▶ Improved reliability and availability
  - ▶ Virtual Storage Constraint Relief

- CICS coexistence for CICS TS and CICS/VSE 2.3

- Basic Security Manager (BSM)

- CA TopSecret for VSE/ESA 1.3.0

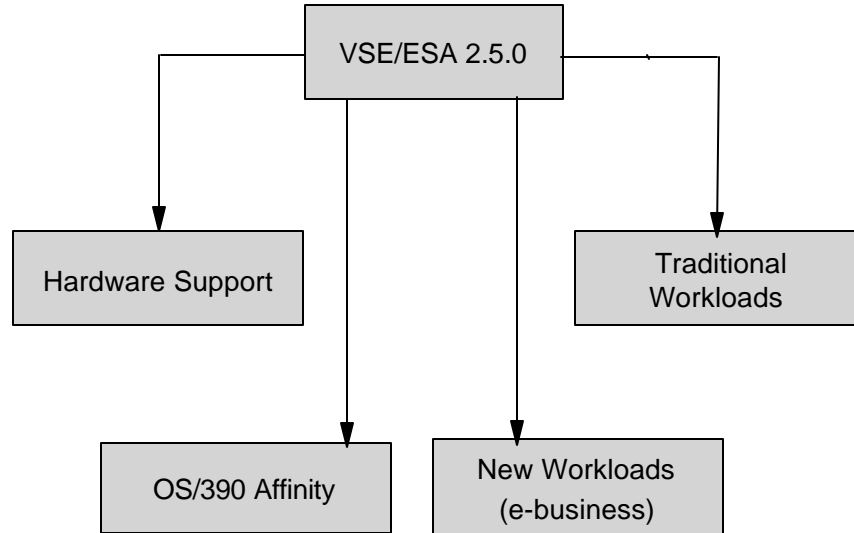- New product releases (MQSeries, DB2, DITTO, HLASM)

VSE/ESA 2.5 - Highlights

- GA: 9/29/2000

- Enhanced interoperability via VSE 'e-business' connectors

- CICS TS Enhancements
  - ► CICS Web Support,3270 bridge

- VSE/ESA base enhancements

  - ► More dynamic classes

  - ► VSAM exploitation of IXFP/SnapShot

  - ► Support of the Enterprise Storage Server (ESS) FlashCopy Feature

  - ► VSAM hashing algorithm
    for faster access to large VSAM LSR buffer pools

- Fast Service Upgrade (FSU) from VSE/ESA 2.4

DB2 Server for VSE and VM 7.1

- Major VSE/ESA related enhancements:

  - ► DRDA over TCP/IP

  - ► DRDA batch application requester support

  - ► Stored procedures application requester support

  - ► Enhanced QMF for VSE

- Installation support for DB2 server

  - ► English version on extended base tape

  - ► Key enabled (trial period)

VSE/ESA 2.5.0 Details

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                    ┌─────────────────┐
                    │  VSE/ESA 2.5.0  │
          ┌─────────┴─────────┬───────┴─────────┐
          ▼                   │                 ▼
  ┌─────────────────┐         │         ┌─────────────────┐
  │ Hardware Support│         │         │   Traditional   │
  └─────────────────┘         │         │    Workloads    │
                              │         └─────────────────┘
          ┌───────────────────┴───┐
          ▼                       ▼
  ┌─────────────────┐   ┌─────────────────┐
  │ OS/390 Affinity │   │  New Workloads  │
  └─────────────────┘   │   (e-business)  │
                        └─────────────────┘
```

Hardware Support

- Enterprise Storage Server (ESS) Flashcopy support

- IXFP SnapShot and ESS Flashcopy for VSAM
  - ▶ Exploitation via Backup/Restore
    - ─ SnapShot for logical volumes
    - ─ Backup on "snapped" volume
    - ─ Reduces backup window (backup can start after SnapShot)

- RVA
  - ▶ IPL support for more than 1024 devices
  - ▶ Max. number of devices to be sensed: 65535

Traditional Workloads

- More than 10 dynamic classes
  - ▶ Today's systems support up to 10 dynamic classes out of 23 characters; VSE/ESA 2.5 supports up to 23 dynamic classes
  - ▶ Required changes in PLOAD, PVARY and PDISPLAY
  - ▶ Job Control adaptations (MAP, PRTY)
  - ▶ Interactive Interface adaptations

- SDAID MP Support

- MSHP enhancements
  - ▶ MSHP PROC support (TYPE=PROC)
  - ▶ MSHP HTML support (TYPE=HTML)

Traditional Workloads *(continued)*

- Librarian
  - ▶ More than 16 VSAM extents
    - – Up to 32 extents (e.g. for PRD1 and PRD2)
  - ▶ LIBR list (print of lower case characters instead of blank)

- VSE/VSAM
  - ▶ Buffer hashing
    - – Faster search over e.g. buffers

- Miscellaneous Enhancements
  - ▶ BAM: 64K tape block size (increased from 32K)

Traditional Workloads *(continued)*

■ Job Control enhancements
  ► STDOPT update and SETPARM SYSTEM from any partition
  ► Label macro processing performance enhancements
  ► Label area capacity planning enhancements (by label macro)

■ Interactive Interface enhancements
  ► Adaptation for CICS Web Support (CWS)
  ► CICS dump dialog improvements
  ► CICS TS DSA display
  ► FSU from VSE/ESA 2.4 to VSE/ESA 2.5
  ► System/tape layout changes

■ VSE/ICCF
  ► GETVIS subpool to be used by ICCF GETVIS requests
  ► Sort ICCF members by size

Traditional Workloads *(continued)*

■ VSE/POWER enhancements
  ► PNET over TCP/IP
  ► Access to active queue entries
    − Even an active entry (DISP=*) may be browsed
    − PDISPLAY lines are extended by a B (browse) column
    − Deletes on browsed queue entries are delayed until browse complete
    − New PDISPLAY TOTAL command (will show delayed deletes)
    − Interactive Interface support
  ► Access in-creation queue entries
    − In-creation queue shown by PDISPLAY CRE command
    − Interactive Interface support
  ► Support more than 10 dynamic classes

Traditional Workloads *(continued)*

- **TCP/IP 1.4 exploitation**
  - ► VSE/POWER PNET over TCP/IP
    - PNET Network Job Entry communication based on TCP/IP
    - Communication between POWER and RSCS 3.2 and later
  - ► REXX over TCP/IP
    - Description on VSE/ESA home page
  - ► TCP/IP High Level Language API (EZA OS/390 interface)
  - ► CICS listener
    - Ported from OS/390
    - TCP/IP application
    - Waits for incoming connection requests from a CICS client
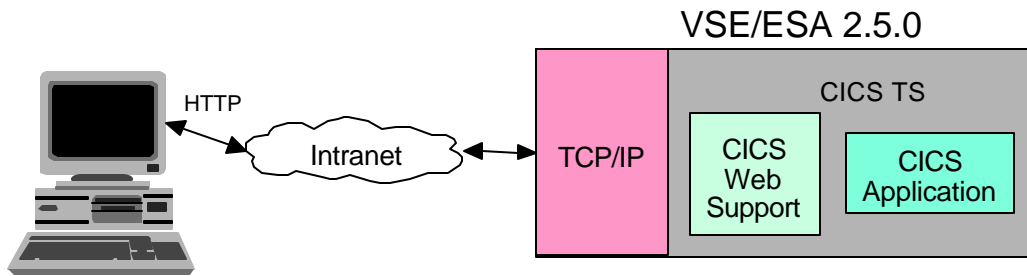 - ► Enhanced TCP/IP socket interfaces for PNET and CWS

New Workloads / OS/390 Affinity

- Online Transaction Processing
  - ► Access to CICS resources from Internet / Intranet
    - ► CICS Web Support (CWS)
    - ► 3270 Bridge

- Basic CICS Transaction Server enhancements
  - ► REXX for CICS
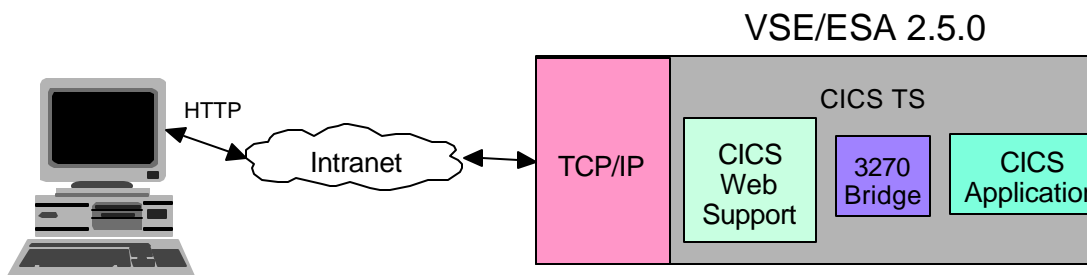
New Workloads / OS/390 Affinity ...

■ CICS Web Support
  ▶ Allows a standard Web Browser to invoke a CICS application
  ▶ Direct connection - no intermediate gateways or servers
  ▶ ASCII to EBCDIC Conversion
  ▶ Ability for existing applications to have their output converted to HTML by CICS

VSE/ESA 2.5.0

		CICS TS	
HTTP	Intranet	TCP/IP	CICS Web Support	CICS Application

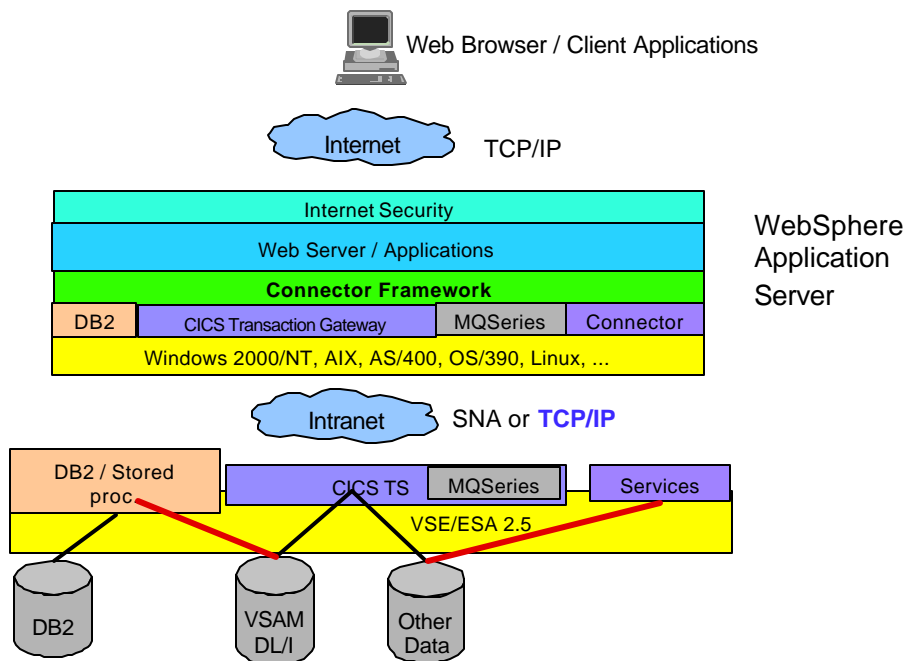# New Workloads / OS/390 Affinity ...

■ 3270 Bridge
  ▶ A way of accessing 3270 transactions from non-3270 devices
  ▶ Advantages
    − Access to existing 3270 transactions, unmodified
    − No rewrite of presentation logic
    − No 3270 emulation needed

VSE/ESA 2.5.0

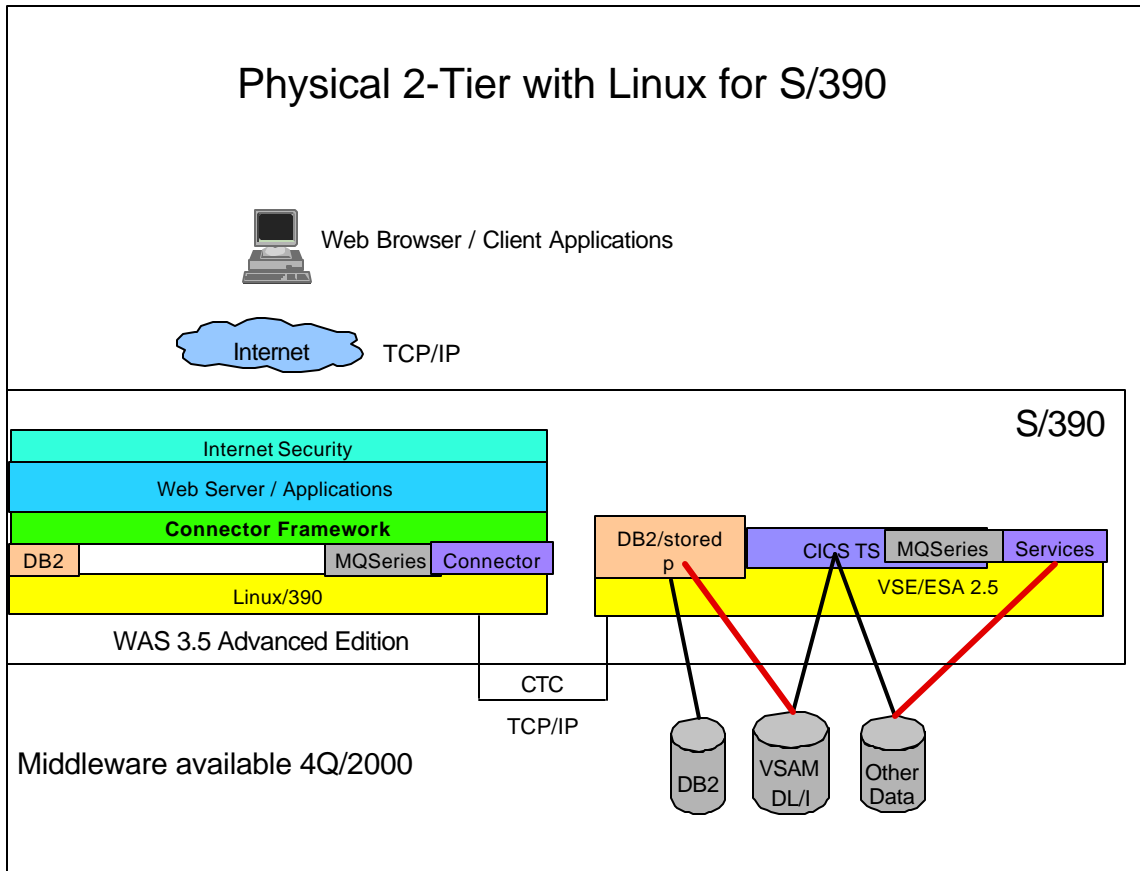|		CICS TS		
HTTP	Intranet	TCP/IP	CICS Web Support	3270 Bridge	CICS Application

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, servlets and samples on Java capable clients
    - ─ Such as IBM's WebSphere Application Server
      which may run on Windows 2000/NT, Linux, AIX, OS/390, ...

- 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
    - ► Existing connectors
      (DB2 Connect, MQ Series client, CICS TS Gateway, ...)
  - ► E-business offerings can be exploited
  - ► Generalized interfaces

WebSphere - Connection with VSE/ESA

Web Browser / Client Applications

Internet   TCP/IP

| Internet Security |
| Web Server / Applications |
| Connector Framework |
| DB2 | CICS Transaction Gateway | MQSeries | Connector |
| Windows 2000/NT, AIX, AS/400, OS/390, Linux, ... |

WebSphere
Application
Server

Intranet   SNA or **TCP/IP**

DB2 / Stored proc   CICS TS   MQSeries   Services

VSE/ESA 2.5

DB2   VSAM DL/I   Other Data

Physical 2-Tier with Linux for S/390

Web Browser / Client Applications

Internet   TCP/IP

S/390

Internet Security

Web Server / Applications

Connector Framework

DB2   MQSeries   Connector

Linux/390

WAS 3.5 Advanced Edition

DB2/stored p   CICS TS   MQSeries   Services

VSE/ESA 2.5

CTC

TCP/IP

Middleware available 4Q/2000

DB2   VSAM DL/I   Other Data

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
  - ► Sample mappings and applications provided
  - ► Communication via DRDA (SNA or TCP/IP based with DB2 V7)

- External services based VSE connectors
  - ► Access to VSE/ESA resources, such as
    VSE/VSAM files, VSE/POWER, VSE/ICCF,
    VSE Librarian, VSE consoles
  - ► Access provided via
    - − external services running on VSE/ESA
    - − Java-based services running on
      e.g. web application server environments
  - ► Java samples are provided
  - ► Communication TCP/IP based

More Information

- IBM e-business connectors
  - http://www.software.ibm.com/webservers/connectors
- Application Framework for e-business
  - http://www.software.ibm.com/ebusiness
- WebSphere
  - http://www.software.ibm.com/webservers
- CICS Gateways
  - http://www.ibm.com/software/ts/cics/products/
- DB2 related connectors (net.data, DB2 Connect, ...)
  - http://www.software.ibm.com/data

- VSE/ESA home page
  (includes links to VSE/ESA and e-business, TCP/IP for VSE/ESA, Turbo Dispatcher, ...)
  - http://www.s390.ibm.com/vse/

More Information ...

- Redbook: Getting Started with TCP/IP for VSE/ESA 1.4, SG24-5626-00

- Redbook: e-business Solutions for VSE/ESA, SG24-5662-00

- Redbook: e-business Connectivity for VSE/ESA, SG24-5950-00

- VSE Applications - How e-business Fits, GF22-5137

- VSE/ESA Turbo Dispatcher Guide and Reference
  - VSE/ESA 2.4, SC33-6797