C12

Revealed! TXSeries V6 - The Next Generation of Distributed CICS

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IBM
TRANSACTION & MESSAGING
TECHNICAL CONFERENCE

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Agenda

- **Introducing TXSeries**
- **Architecture – how does TXSeries work?**
- **Functionality – what does TXSeries provide?**
- **Strategy – what is the roadmap for TXSeries?**
- **Enhancements – what is new in TXSeries v6?**
- **Choices – where does TXSeries offer choice?**

What is TXSeries for Multiplatforms?

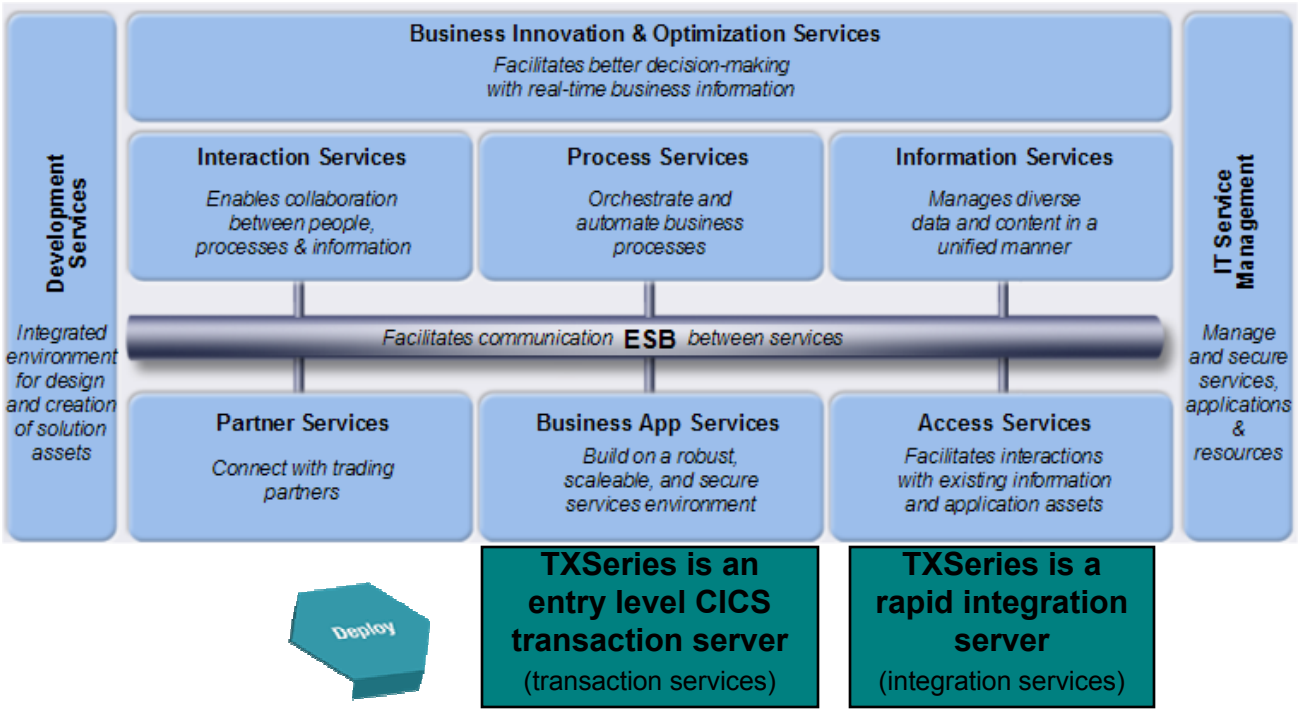
- IBM’s premier **distributed** transaction processing product
- Part of IBM's **CICS family** of products
- Provides business critical **transaction** and **integration** capabilities
- Proven for **more than a decade** to deliver modern, reusable, business critical applications
- Widely used in **support** of IBM mainframe and IBM WebSphere application deployments

What can TXSeries do?

- Use TXSeries to ...
  - **Build** new CICS applications using COBOL, PL/I, C, C++, and Java
  - **Reuse** existing CICS applications and application programming skill sets in your organisation
  - **Extend** CICS applications to the web and web services via the CICS Transaction Gateway and WebSphere Application Server
  - **Access** data and applications in various distributed and enterprise systems including
    - CICS and IMS
    - DB2 and Oracle
    - WebSphere MQ

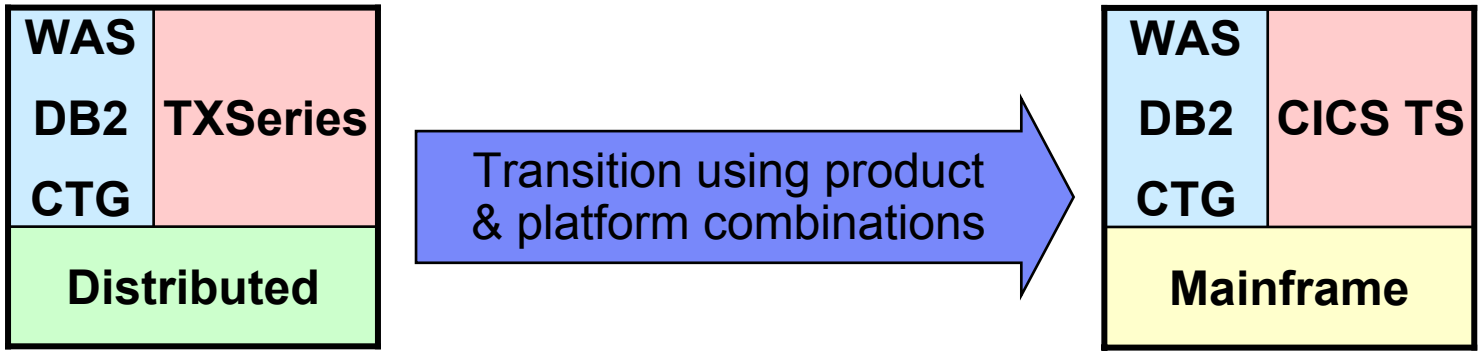
TXSeries as a component of your SOA

- Enabling end to end distributed mixed language solutions through integration with WebSphere and CICS Transaction Server for z/OS
- The JCA interface provided in the CICS TG connects TXSeries to the following WebSphere SOA server products:
  - WebSphere ESB
  - WebSphere Application Server
  - WebSphere Process Server
- TXSeries with WebSphere MQ can connect to:
  - WebSphere Message Broker
  - Any other product that supports native MQSeries transport



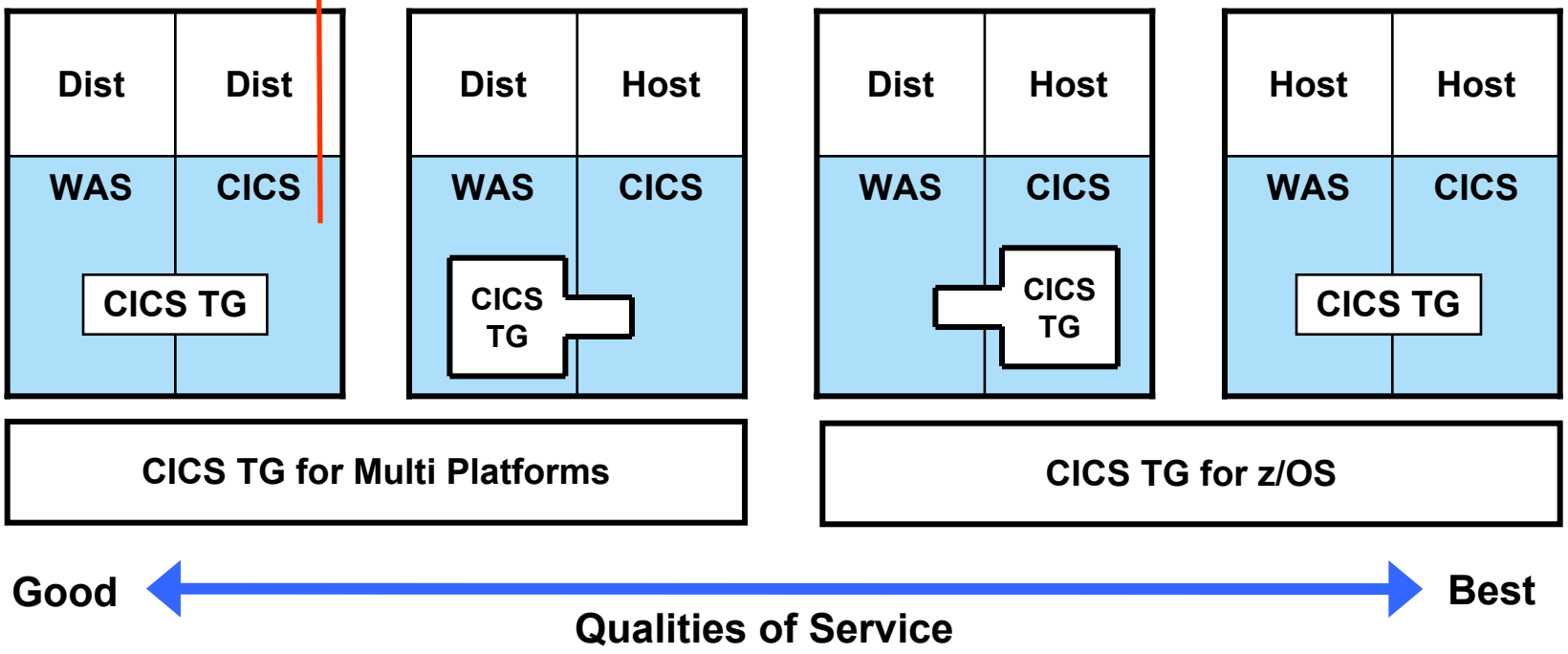
TXSeries Positioning

- Complementary to J2EE and mainframe environments
  - Stand-alone: distributed CICS server for business critical workloads
  - Integration : with WebSphere and CICS TS
- Supports JCA based connectivity to WebSphere, via CICS Transaction Gateway
- Enables end to end distributed mixed language solutions



Scale to CICS Transaction Server as your Business Grows

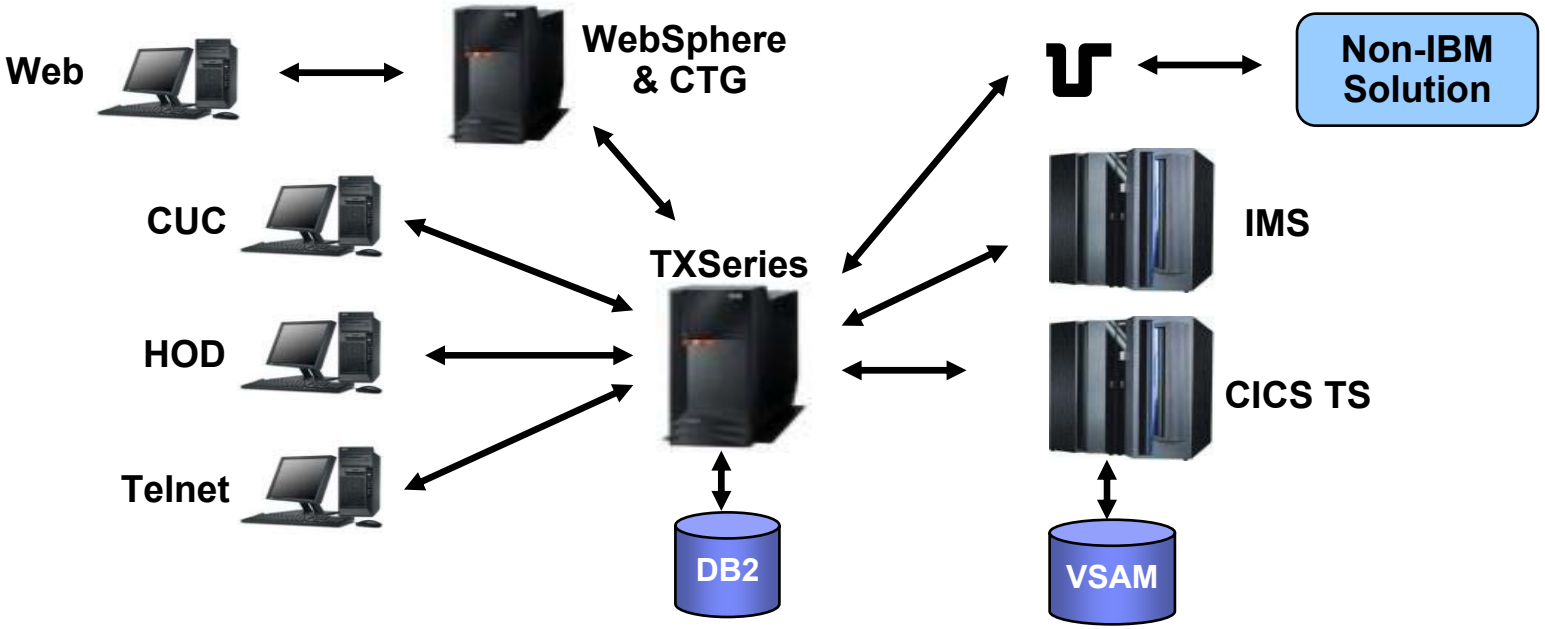
This is where TXSeries is positioned in the cost/QoS continuum



Common Deployment Scenarios

Rapid deployment integration server

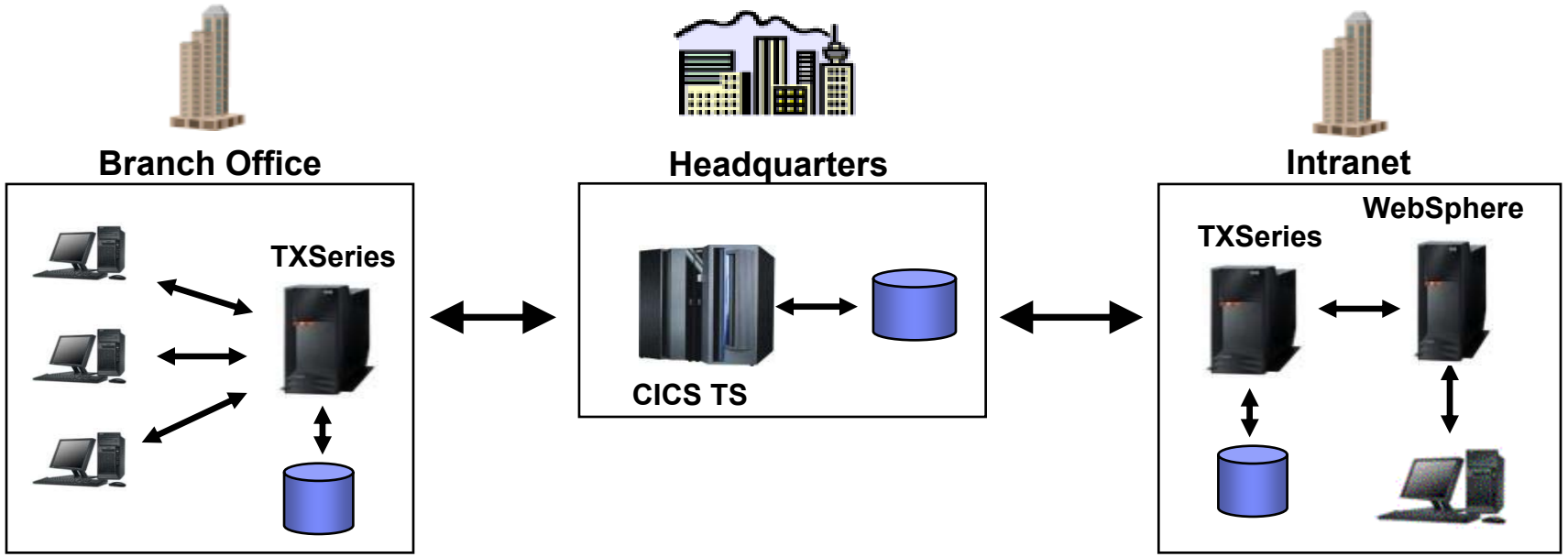
- A consolidating mid-tier terminal server
- An intelligent mid-tier gateway
- A comprehensive mid-tier integration server



Common Deployment Scenarios

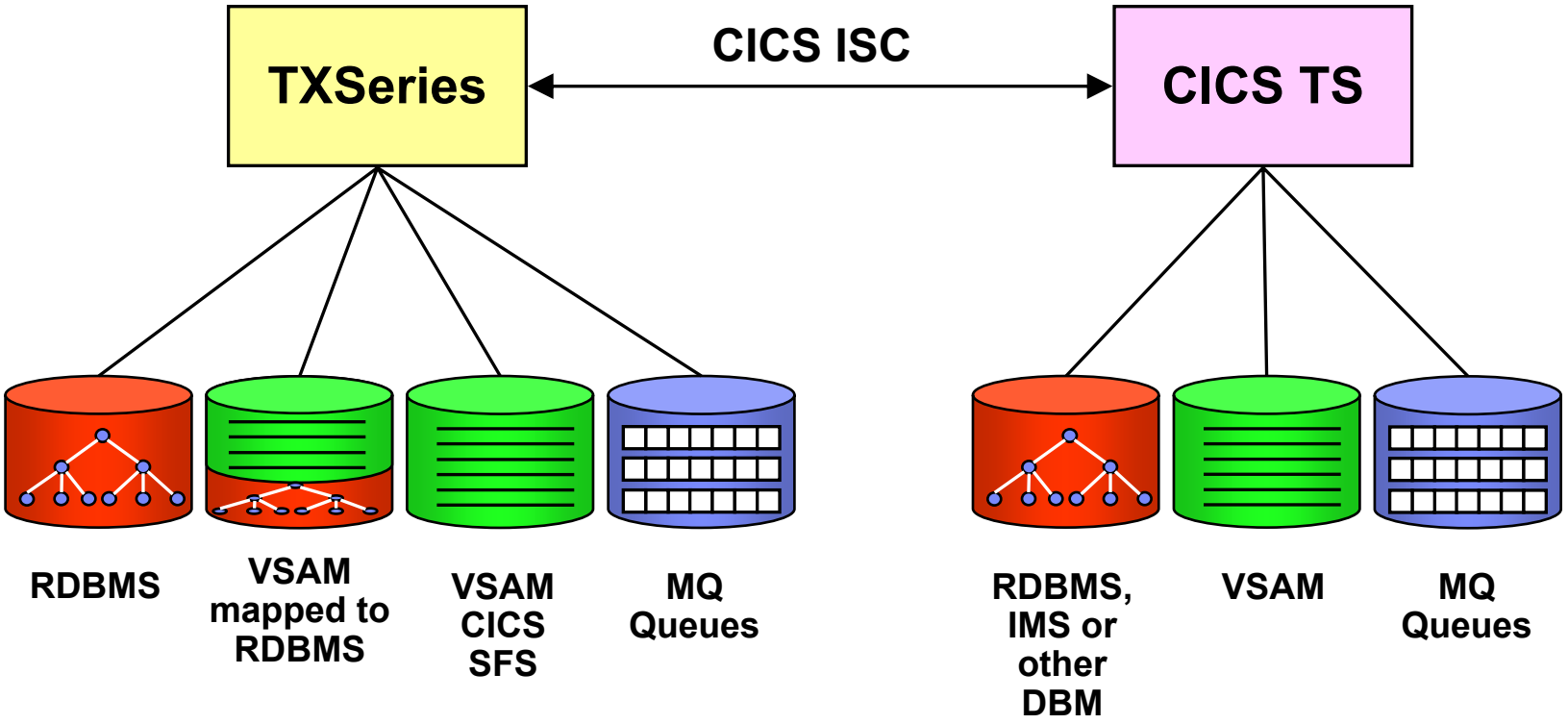
Entry level transaction server

- As a transactional run time for custom application services
- As a composite transaction server connected to WebSphere Application Server
- As a distributed CICS server for local branch-level processing



Maximise Data Integrity

- All data sources can be included in a single unit of work.
- Two-phase commit for data integrity across the network.



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Clients

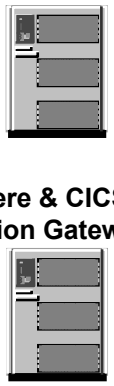
TXSeries CICS

Resources

Clients
- CUC Client Terminal
- Telnet 3270
- Host on Demand
- WebSphere IIOP
- IP Socket

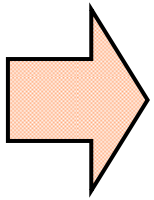
TXSeries CICS

Other CICS Systems



WebSphere & CICS Transaction Gateway

Web Browsers



TXSeries CICS Region

Listeners

Application Servers

RPC

TCP/IP

SNA

IIOP

Named Pipe

Business Logic

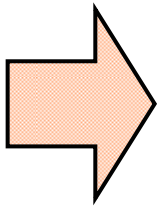
Business Logic

Business Logic

Business Logic

TXSeries CICS Services

TXSeries PPC Gateway



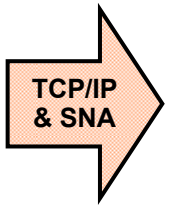
Batch Programs

Resource Managers (XA and non-XA)

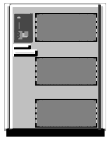
RDBMS

WebSphere MQ

Structured File Server



TCP/IP & SNA



TXSeries CICS & Other CICS & IMS Systems

Architecture

- Applications isolated and independent of work origin
  - Execute in own Application Server process
- Pool of Application Server processes actively managed
  - Control over Minimum and Maximum number of servers
  - Servers constantly monitored
- Transaction scheduling
  - Balances workload over application servers

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CICS Programming Interface

- Approximately same level as CICS for MVS/ESA 4.1 & CICS TS for VSE/ESA
- Java API support (JCICS) as for CICS TS 1.3
- Includes a limited subset of CICS System programming Interface (SPI)
- Programming Languages
  - COBOL (IBM, Acucobol, Micro Focus)
  - C, C++ (IBM, Microsoft, HP, Sun)
  - PL/I, Java
  - Assembler not supported

Data Access

- CICS files and queues supported
- CICS Structured File Server (SFS) used by default for VSAM support
- DB2 or Oracle may be used instead of SFS
- SQL database access via leading RDBM products
- Messaging via WebSphere MQ

- … all via 2 phase commit XA protocols

Communications

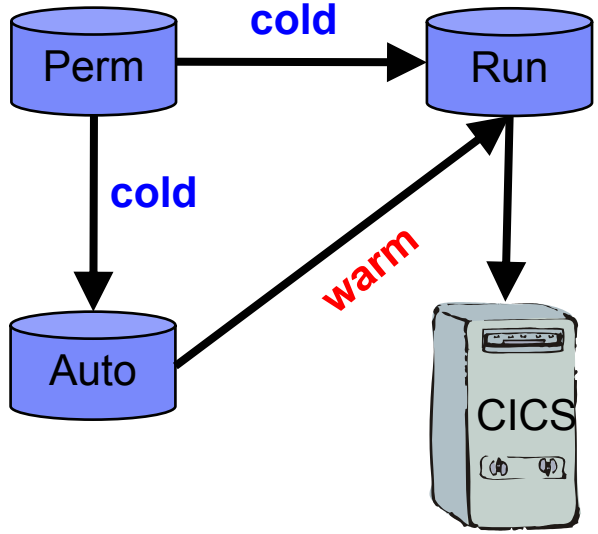
- Full CICS Intersystem Communication support
  - Function Shipping
  - Distributed Program Link
  - Transaction Routing
  - Distributed Transaction Processing
  - Asynchronous Transaction Start
  - Synch Level 2 support over SNA
  - Synch Level 1 and 2 support over TCP/IP (TXSeries CICS to TXSeries CICS only)

Security

- CICS provided
  - Authentication - Password sign-on
  - Authorization - Transaction and resource access
- External Security
  - User Replaceable Module for Authentication and Authorization
  - RACF integration via Lightweight Directory Access Protocol (LDAP)

Resource Management

- Command line interface on all platforms
- User Interface on AIX and Windows
  - Windows - TXSeries Administration Tool
  - AIX - System Management Interface Tool (SMIT)
- RDO is supported, but no CEDA transaction
- Resource definition database
  - Composed of stanza (text) files
  - One stanza per resource type
  - Stanza names are different from CICS TS
- Three databases
  - Permanent, Runtime and Auto



Resource Definition Tables

TXSeries Tables (stanzas)		Equivalent CICS TS Table	
CD	Communications Definitions	TCT	Terminal Control Table (part)
FD	File Definitions	FCT	File Control Table
GD	Gateway Definitions		
GSD	Gateway Server Definitions		
JD	Journal Definitions	JCT	Journal Control Table
LD	Listener Definitions		
MD	Monitoring Definitions	MCT	Monitoring Control Table
OD	Object Definitions		
PD	Program Definitions	PPT	Processing Program Table
RD	Region Definitions	PLT SIT	Program List Table System Initialization Table
SCD	Schema File Definitions		
SSD	Structured File Server Definitions		
TD	Transaction Definitions	PCT XLT	Program Control table Transaction List Table
TDD	Transient Data Definitions	DCT	Destination Control Table
TSD	Temporary Storage Definitions	TST	Temporary Storage Table
UD	User Definitions	SNT	Signon Table
WD	Terminal Definitions	TCT	Terminal Control Table (part)
XAD	XA Product Definitions		

CICS Administration Commands

- CICS Control Program (cicscp) - the simple way
  - Many default values and options
  - Does most things with CICS, SFS, PPCG & telnet servers
  - Can be used interactively or in batch
  - Acts as a wrapper program to underlying commands
  - Has parameters of –i (ignore errors), -v (verbose) –l (create logfile)

- Plenty of other commands - if you need control
  - cicsexport – copy resource definitions from a region
  - cicssdt – SFS diagnostic tool
  - cicsstart – start a CICS region
  - cicssfscreate – create an SFS server

CICS Supplied Transactions

- A number of supplied transactions including
  - CEMT – Master terminal
  - CECI / CECS – Command interpreter
  - CESN / CESF – Signon / Signoff
  - CEBR – TS and TD queue browsing
  - CEDF – CICS debugger
- Plus some TXSeries unique transactions
  - CJDB / CADB / CDCN – Application debuggers
  - CMLV - Message log viewer
  - CALF – VSAM data conversion

Note the absence of CEDA.
RDO is still supported via administration commands

Problem Determination

- Several diagnostic files
  - Two console message files
  - Symptoms Record file for significant errors
  - CSMT.out for CICS messages
- Dumps
  - Transaction, System and Core dumps
- Trace
  - Transaction and System trace
- Monitoring
  - User and System
- Statistics
  - 4 types available (Interval, End of Day, Requested, Unsolicited)

Non Functional Comparison

Feature	CICS TS	TXSeries
Security	Enterprise wide	Application or department wide
Scalability	Unlimited (horizontal and vertical)	Some limitations
Work Load Management	Complex and high volume	Requires machine coupling
Systems Management	CICS Plex wide	Individual Region
High Availability	0 downtime is a reality	4x9's (99.99%) is expensive
Tooling	Choice and flexibility	Less choice
Cost / Quality of Service	Higher / Best	Lower / Good

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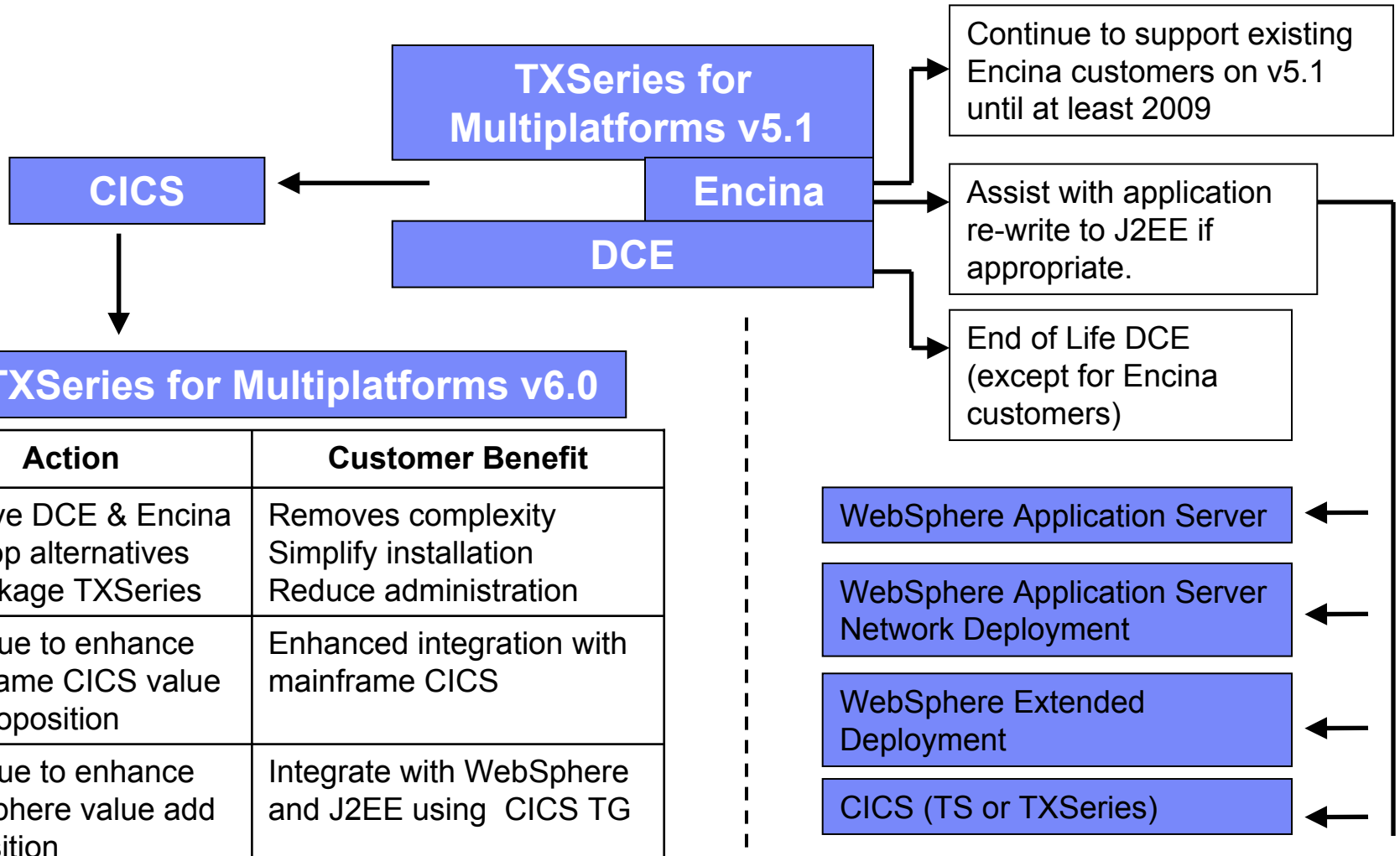
Non-mainframe CICS Strategy

- The future of CICS on distributed platforms is focused around the common CICS for AIX code base
- TXSeries v6.0 for AIX became available on 6th December 2005
- Following customers will be encouraged to migrate to TXSeries v6
  - TXSeries CICS v4 and v5
  - CICS TS for Windows
  - CICS TS for OS/2
- IBM will continue to enhance this common code base for the foreseeable future
- We are taking requirements now – so it is a good time to make requests!

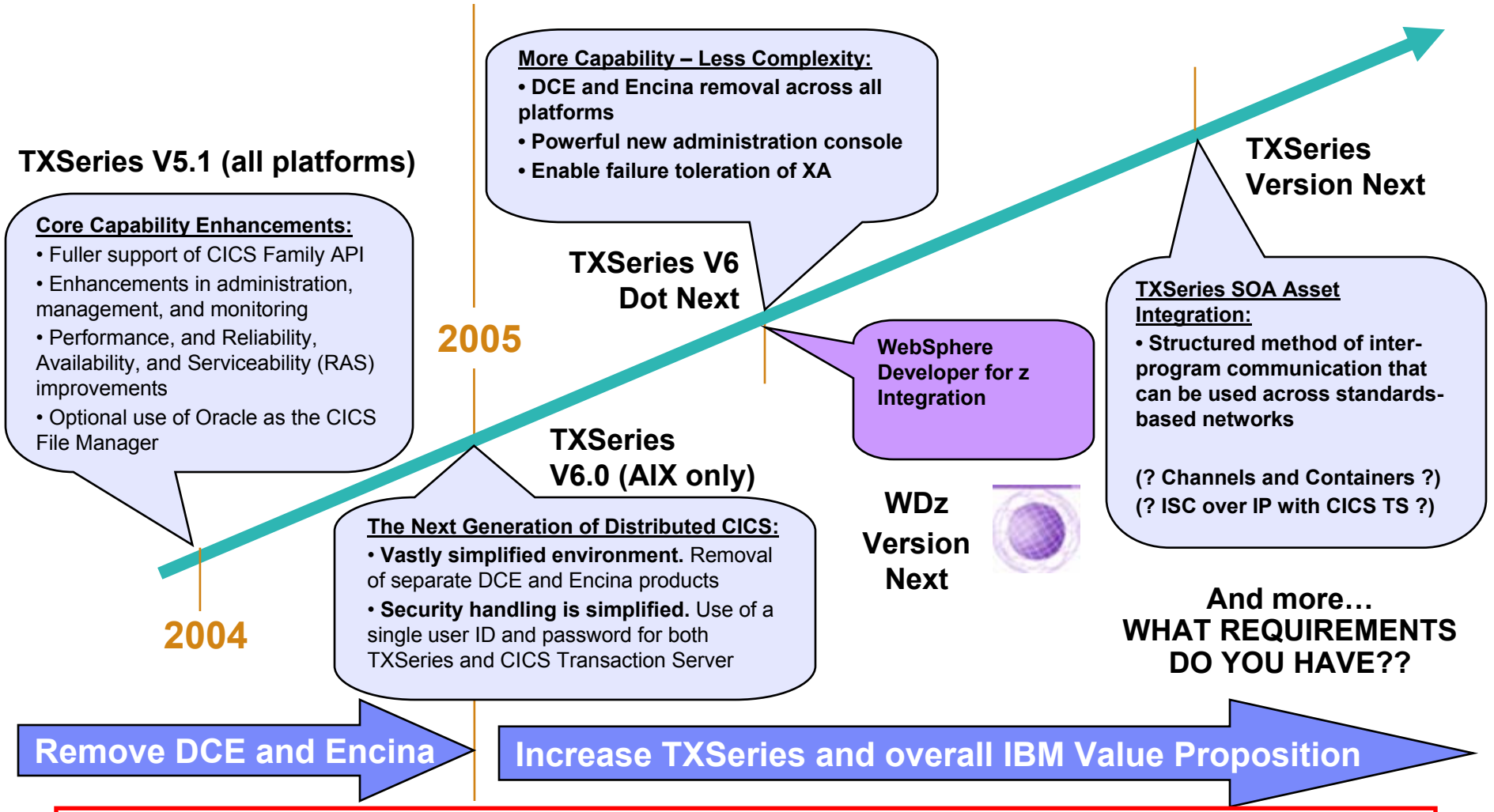
The Encina portion of TXSeries for Multiplatforms will not be significantly enhanced – but will continue to be supported

TXSeries Strategy: Phase 1
Separate then Remove DCE and Encina



Action	Customer Benefit
Remove DCE & Encina Develop alternatives Repackage TXSeries	Removes complexity Simplify installation Reduce administration
Continue to enhance mainframe CICS value add proposition	Enhanced integration with mainframe CICS
Continue to enhance WebSphere value add proposition	Integrate with WebSphere and J2EE using CICS TG

TXSeries Strategy: Phase 2
Increase TXSeries and overall IBM Value Proposition



FUTURE RELEASES/VERSIONS ARE NOT NECESSARILY COMMITTED IBM PLANS

Statement of Direction: Planned enhancements to the CICS family of products

Objectives:

- IBM recently announced a program of major planned enhancements to a number of products in the IBM CICS product portfolio
- The following statement points towards the future areas of enhancements for TXSeries

- TXSeries for Multiplatforms is an entry-level CICS server that for more than a decade has delivered high-performance, CICS-managed transactional services, across a range of distributed platforms.
- To facilitate the ease of integration of existing assets into a modern SOA, IBM has recently removed all dependencies on the separate Distributed Computing Environment (DCE) and Encina products from TXSeries on the AIX platform. **It is planned that this capability will be extended to the remaining platforms later this year.**
- Following that, IBM intends to focus on the integration of TXSeries assets in modern SOAs by delivering a structured method of inter-program communication that can be used across standards-based networks. This will be delivered in line with established CICS design principles to maintain upward compatibility with CICS Transaction Server for z/OS.
- **All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.**

See IBM Software Announcement 206-096, dated 2nd May 2006

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Key Enhancements in TXSeries v6

- Vastly **simplified environment**
  - Separate DCE and Encina products completely removed
  - Equivalent DCE and Encina function now fully integrated
  - CICS processes now communicate using secure shared memory, called CICSIPC
- **Improved security** handling when using TXSeries in conjunction with RACF
  - Via supplied External Authentication Manager sample
- **Simplified installation** through industry-standard Install Shield Multiplatform (ISMP)
  - Via 3 modes: GUI, console or Silent
  - Removed SMIT (AIX) install option

Key Enhancements in TXSeries v6

- **Major revision** to the documentation library
  - To reflect removal of Encina and DCE
- **Improved support**, including IBM Business Partner, Acucorp's open systems COBOL, ACUCOBOL-GT
- **Improved** client access
  - TXSeries client replaced by CICS Universal Client
  - One license supplied on TXSeries CD
  - Local CICS terminal now called cicslterm
- **Updated** supported hardware and software levels
  - See www.ibm.com/software/txseries/support

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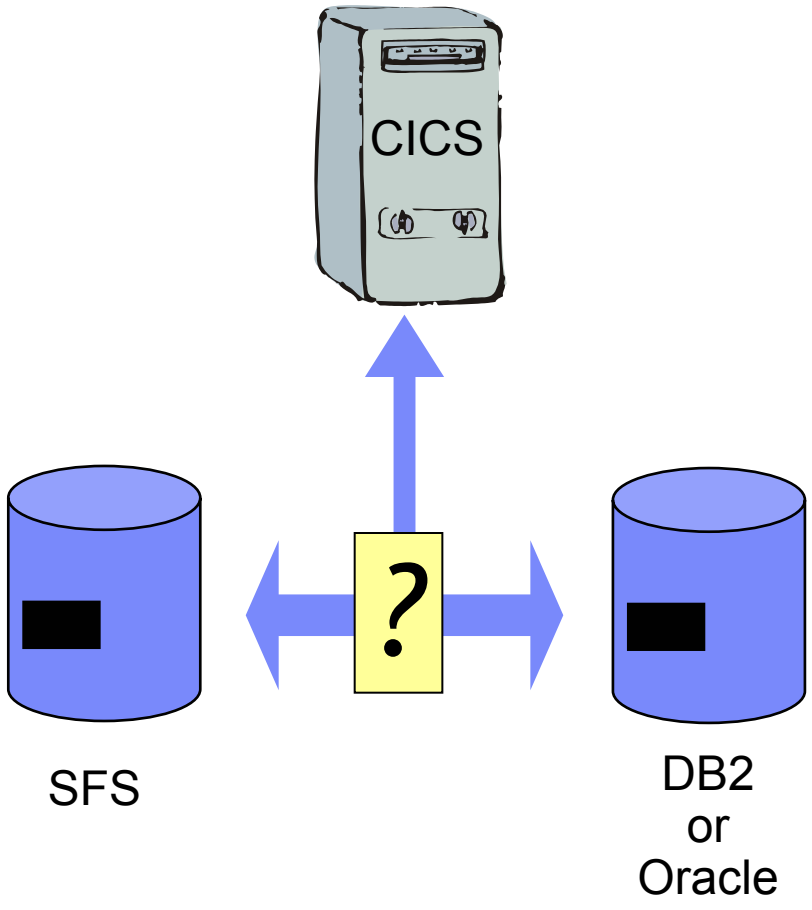
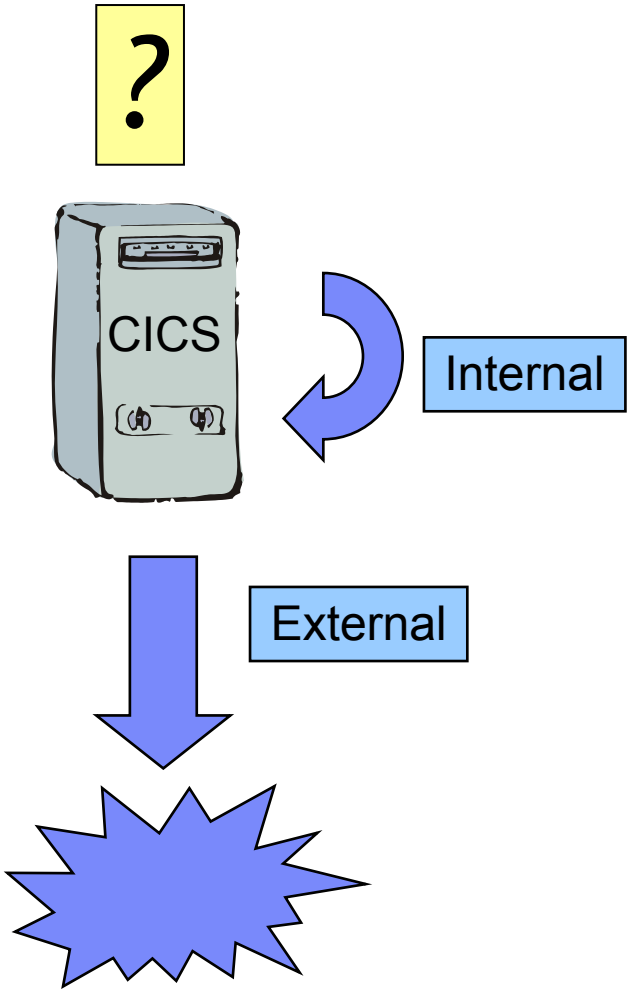
Deployment: Placing VSAM Data



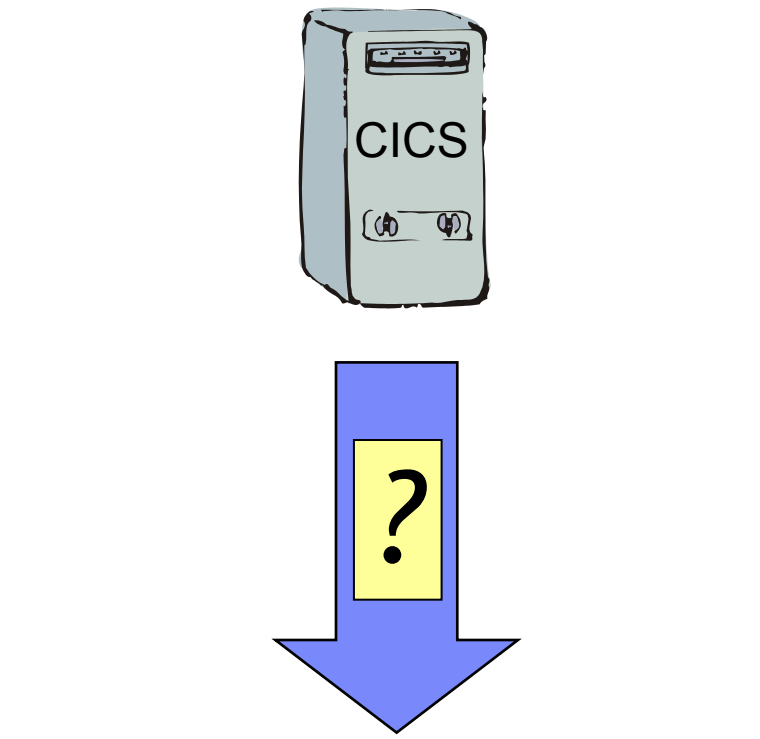
- For VSAM data and queues, CICS can use
  - SFS (part of TXSeries)
  - RDBMS (DB2 or Oracle)
- Use RDBMS if
  - Licenses available
  - Skills exist to Manage, Configure, Tune and Operate
- Use SFS if
  - RDBMS not an option
  - Unrecoverable data widely used

Deployment: Security



- Internal: using CICS supplied Authentication and Authorization
  - Simple to setup and use
  - Secure
- External: using EAM and ESM modules
  - Integrates with RACF
  - Flexible
  - Requires setup and customization

Deployment: Hardware



- Target platform depends on
  - Number of machines required
  - Location of machines
  - OS Features such as security, backup
  - Existing hardware & software
  - Cost

Development: The Same Rules Apply

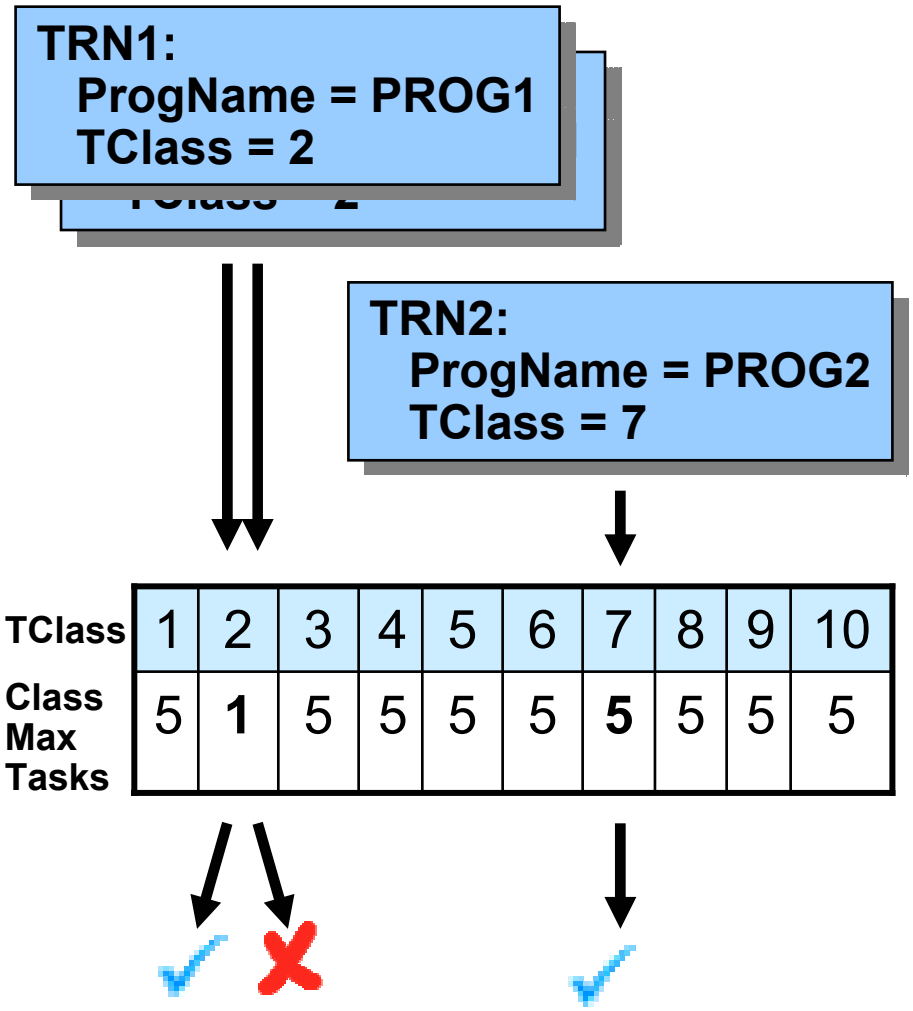
- Application development with TXSeries is no different from CICS TS
  - Separate logic into presentation, business, error handling etc.
  - Use common data structures
  - Keep LUWs **short** and **small**, update close to the syncpoint
  - Null fill commareas before using
  - Avoid conversational programs
  - Minimize terminal traffic
  - Minimize ENQ and DEQ times

… All of this should be familiar to a CICS programmer

Administration: Problem Determination

- TXSeries provides a number of problem determination tools
  - Monitoring
  - Statistics
  - Trace
  - Dump
- Use the appropriate tools for the problem

Administration: Use TClass



- 11 classes defined to CICS
  - 1 to 10 plus “NONE” (the default)
- Limit of concurrent transactions per class for classes 1 to 10
- TClass defined in TD stanza

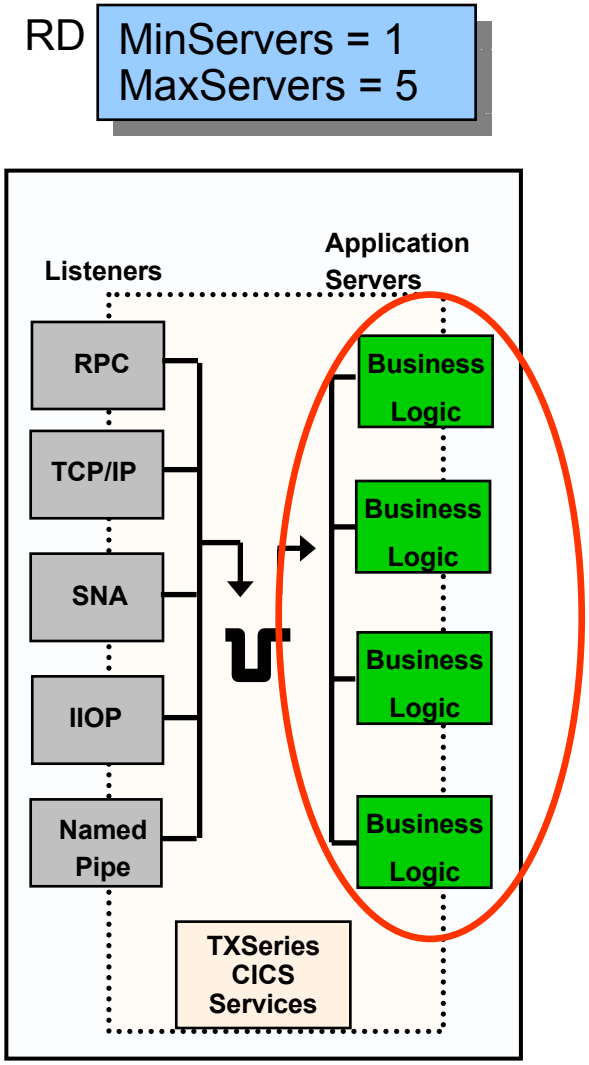
Recommend

- User transactions have a TClass
- CICS transactions use NONE
- MaxServers = sum(ClassMaxTasks)

Example

- 1 instance of TRN2. Limit = 5
  - Allowed to run
- 2 instances of TRN1. Limit =1
  - 1 allowed to run, 1 queued

Administration: Min & Max Servers



- Defined in RD stanza
- Determines maximum number of tasks in system
- Too small?
  - Requests queue for dispatch
- Too large?
  - Idle processes and wasted resources
- Identify correct values through testing, tuning and observations
- To modify
  - Change RD stanza
  - Use CEMT INQ SYS

Summary

- TXSeries is a distributed version of CICS TS
- Supports a number of common deployment and integration scenarios with CICS TS
- Provides some, but not all of the facilities offered by CICS TS
- Version 6 available and further enhancements planned
  - Removes dependencies on Encina and DCE
  - Adds additional new functionality
- Provides a range of choices and options

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