IBM SOA

Process Integrity:
What is it?
How IBM Problem Determination Tools and CICS Tools help?

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Updated: Tuesday, 19 February 2008

Preface

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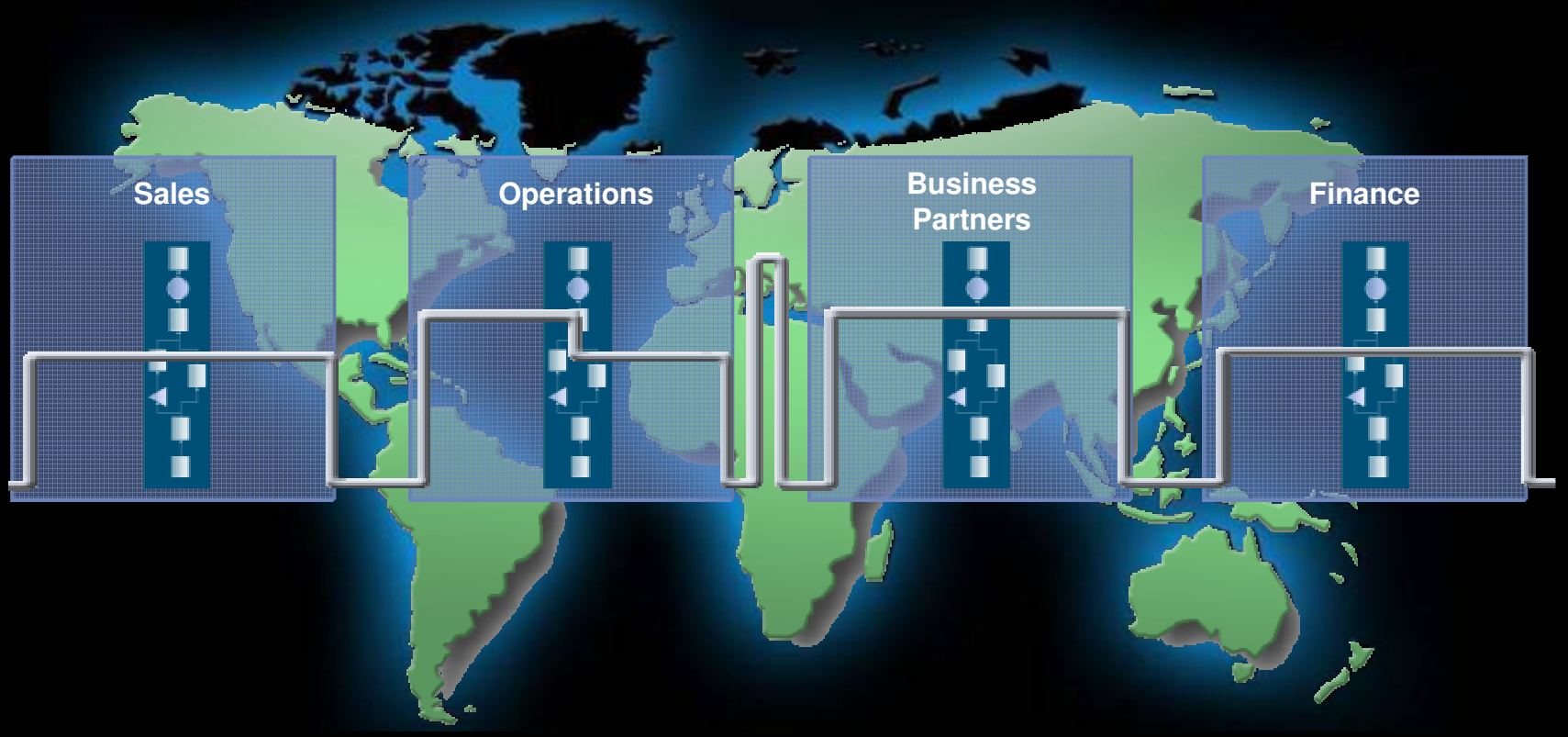
Agenda

- What is Process Integrity?
- How can Tools help?
- Summary

End-to-end Processes Are at the Heart of Every Business

Processes Are Increasingly Distributed as Companies Integrate Globally

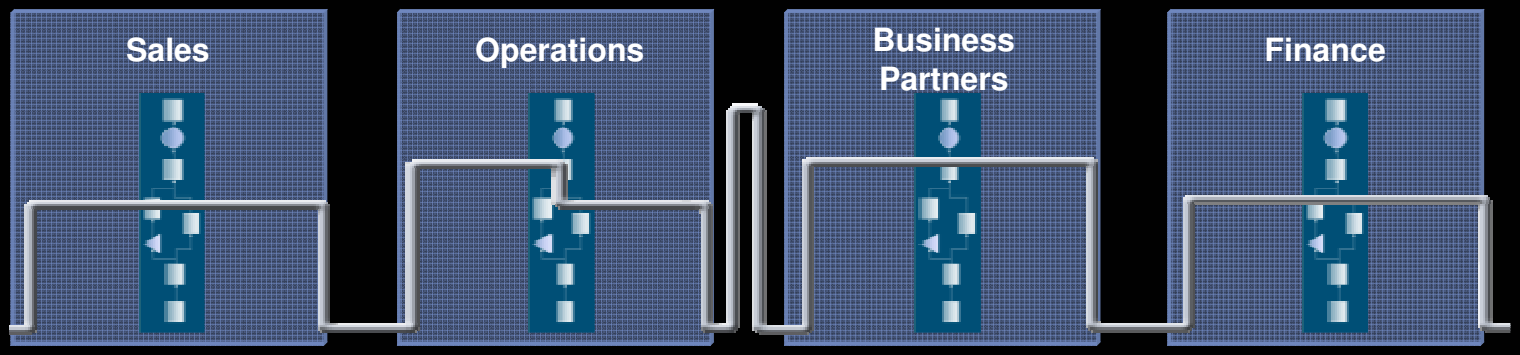
- Business processes in the Globally Integrated Enterprise will often cross multiple geographic, corporate and functional boundaries



Your Business Relies on Consistent Process Execution

What Happens if Critical Business Processes Fail?

- Failure of critical business processes results in lost revenue, decreased customer loyalty, and increased risk
- Critical end-to-end processes require an SOA environment that can provide:
  - *Full transactional support across distributed systems*
  - *Automated compensation and resynchronization*
  - *Recovery at all levels (service bus, application, database, server…)*
  - *Enterprise-class scalability to handle 1000's service calls per minute*

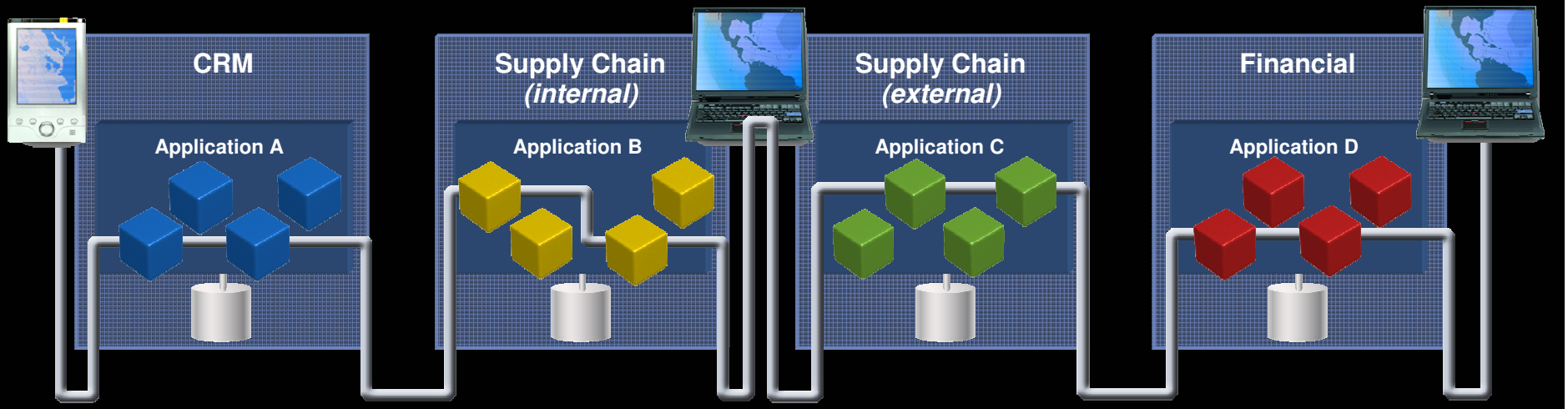


Advanced SOA Requires a More Comprehensive Approach

To Handle More Services, Information, and People

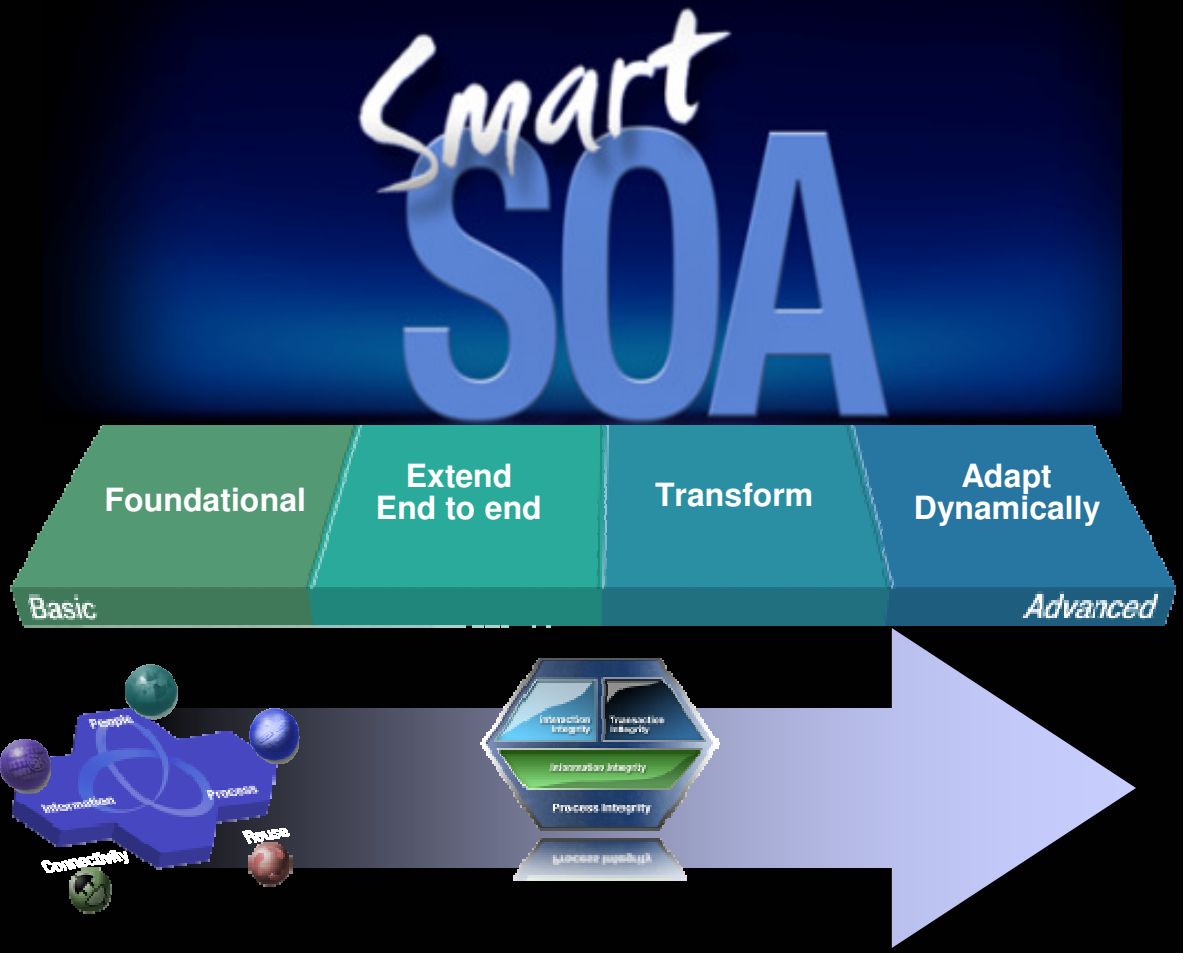
- As SOA becomes more advanced, the ability to maintain robust end-to-end integration and consistency becomes more challenging
- Capabilities for process integrity must be built in to the middleware

IBM's approach to SOA allows you to use the same tools and same architecture as you move along the SOA continuum



Smart SOA Provides Support for Critical End-to-end Processes

Enabling Agility and Reliability for Every Business Need



SOA Entry Points Process Integrity

Process Integrity Takes SOA to the Next Level

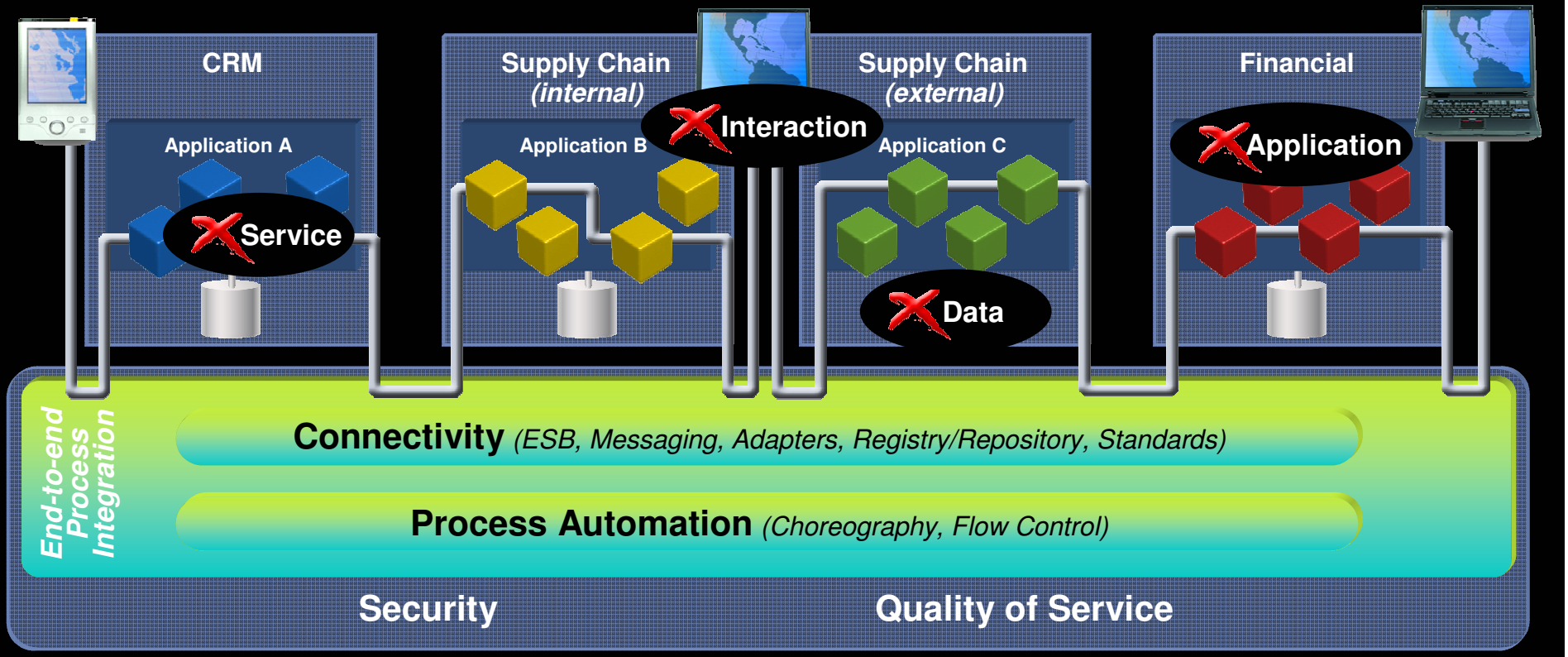
Supporting Integrity of Transactions, Interactions and Information

Process Integrity is the ability to conduct reliable business activity in a secure, scalable SOA environment with seamless synchronization between:
Services ■ *Human Tasks* ■ *Information* ■ *Domains* ■ *Users*

Recovery and Compensation are Key to Process Integrity

Recovery Must be Automated and Predictable… Not an Afterthought

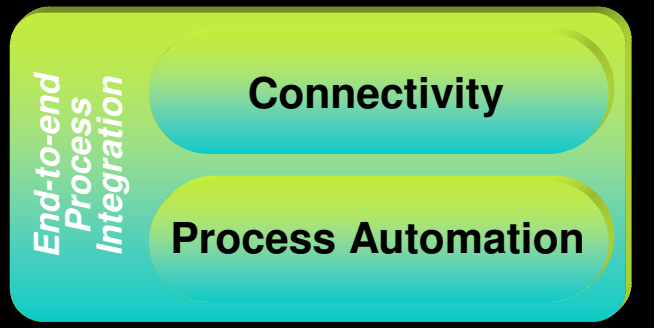
- Business and IT operational outages can occur at any point of the process
- Process Integrity requires the ability to automate and specify consistent, predictable compensation at all levels of the SOA environment



Process Integrity Demands High Quality of Service

Scalability, Availability and Performance are Fundamental

- Maintaining High QoS in End-to-end Processes
  - CICS optimizations accelerate service processing
  - Workload management
  - High transaction availability
  - Virtualization to enable flexible allocation of resources
- Performance Testing and Monitoring
  - Performance testing and problem analysis tools
  - Runtime monitoring to proactively identify performance problems in end-to-end processes
- Key Quality of Service Products on System z:
  - CICS Transaction Server for z/OS
  - IBM Session Manager for z/OS
  - CICS VSAM Recovery for z/OS
  - CICS Interdependency Analyzer for z/OS
  - CICS Performance Analyzer for z/OS
  - Application Performance Analyzer for z/OS
  - Workload Simulator for z/OS
  - OMEGAMON XE FOR CICS, DB2, z/OS etc
  - IBM System z Servers



Quality of Service

System z – An Ideal Hub for Process Integrity

What do clients require in an on-demand, 24x7, always-on world?

- Highly virtualized and energy efficient – ***driving out cost and complexity***
- Comprehensive security and resiliency – ***minimizing risk and downtime***
- Centralized corporate data serving ***– a platform for business analytics***
- A foundation for SOA ***– IT that responds to the business***
- An ecosystem that is flourishing ***– ISVs and academic initiatives***

Enabling QoS for Process Integrity with CICS Transaction Server

Start from the Perspective of Services and Applications

Responding to unforeseen demand

- Extreme scaling and transaction processing
- Enterprise wide workload management
- Multi-region, virtualisation support
- Increased parallelism with the Open Transaction Environment

Service and application availability

- Customizable application health policies and corrective actions
- Optimized throughput and performance
- Integrated management

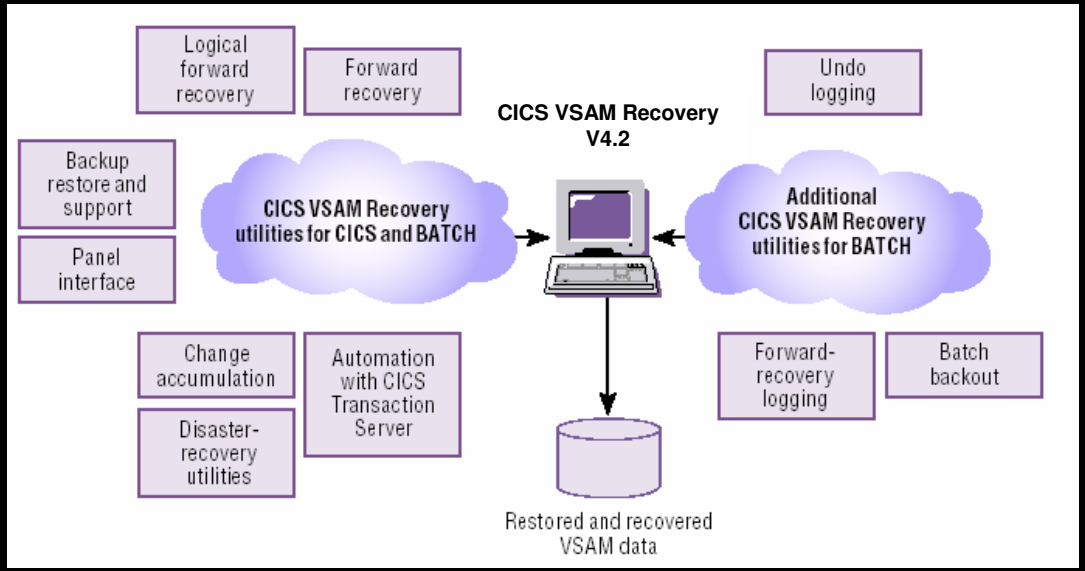
Transactional Integrity with CICS VSAM Recovery for z/OS

Problem

- Business critical VSAM data files used by CICS and batch applications can be damaged or corrupted due to physical or logical loss
  - Disk failure, data deletion, disasters, incorrect updates being applied, etc.

Solution

- CICS VR provides forward recovery for VSAM files updated by CICS and batch applications



Value

- CICS VR recovers CICS and batch VSAM data from physical or logical corruption
  - Helps with rapid error recovery
  - Reduces need for off-line processing to exceed batch window

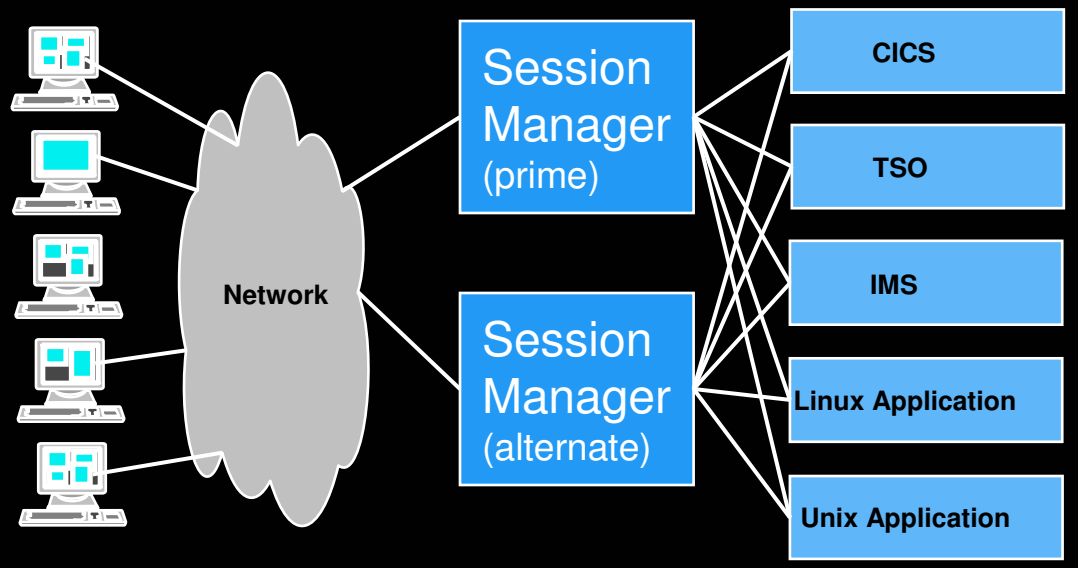
Interaction Integrity with IBM Session Manager for z/OS

Problem

- Users need to move between tasks
  - -Smoothly and quickly
  - -Switching frequently
  - -Keeping track of applications state

Solution

- IBM Session Manager offers highly-available, secure and user-friendly access
  - Multiple z/OS systems from a single 3270 terminal or equivalent
  - Single secure sign-on
  - Controlled access to authorised applications
  - Seamless session recovery



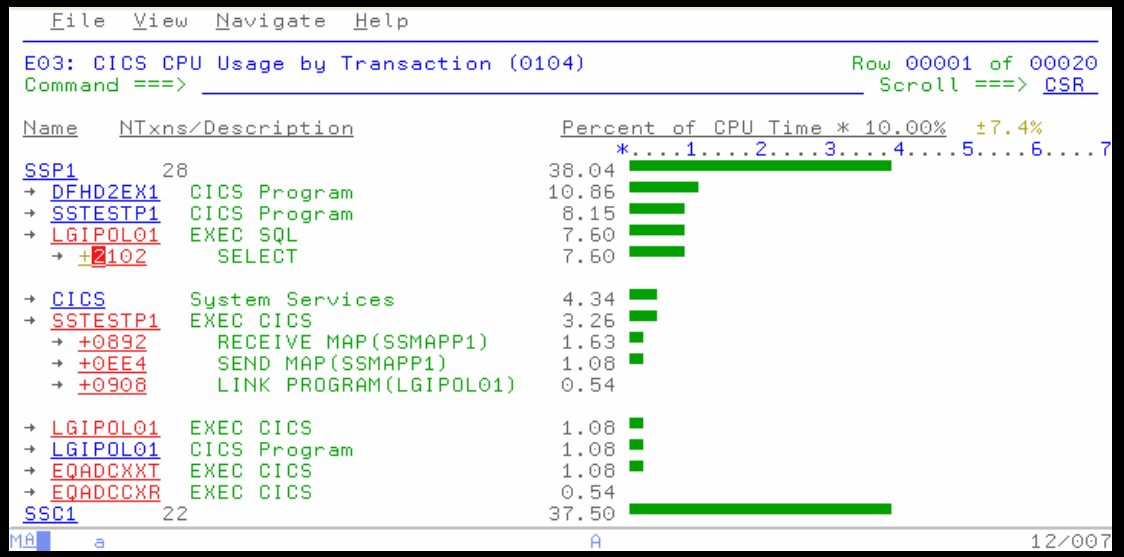
Value

- Users access required applications
  - Without knowing location
  - Reducing system-administration time
  - Fast and near-continuous access to all System z applications
  - Minimizing training requirements

Fine tune overall application performance with APA

Problem

- Performance analysis of complex CICS applications
  - Need to consider entire system - CICS, DB2, IMS, MQ, cross-language, storage media



Solution

- APA identifies constraints and improve the entire applications performance, no matter where the problem resides
- Drill down through CICS transactions and tasks, analyzed TCB activity
- Set baselines and compare with future analysis

Value

- APA assists with application performance resolution
  - Implementing CICS thread safe applications
  - Optimizing other sub-systems
  - Responsive and speedy access to information

Track service-levels with CICS Performance Analyzer for z/OS

Problem

- Need performance reporting
  - Assess the impact of changes
  - Anticipate trends leading to poor CICS performance
  - Take action rapidly
  - Meet demanding service-levels

Solution

- CICS PA is a CICS system and application performance reporting and analysis solution
  - Meets needs of everyone involved in CICS performance analysis, CICS system tuning, planning capacity and service-level management

V1R4M0 CICS Performance Analyzer
Performance Summary

SUMM0001 Printed at 14:58:28 8/15/2005 Data from 10:45:23 2/20/2005 to 11:18:07 2/20/2005 Page 1
Transaction CICS TCB CPU Analysis - Summary

Tran	#Tasks	Avg Response Time	Max Response Time	Avg Dispatch Time	Avg User CPU Time	Avg Suspend Time	Avg DispWait Time	Avg QR CPU Time	Avg MS CPU Time	Avg RO CPU Time	Avg KY8 CPU Time	Avg KY9 CPU Time
ABRW	7	.0506	.2705	.0456	.0050	.0050	.0008	.0013	.0037	.0014	.0000	.0000
ADT1	4	1.2787	5.0652	1.2782	.2160	.0005	.0005	.0007	.0005	.0005	.0000	.2147
CALL												
CATA												
CATR												
CBAM												
CEBR												
CECI												
CEDA												
CEJR												
CEMT												
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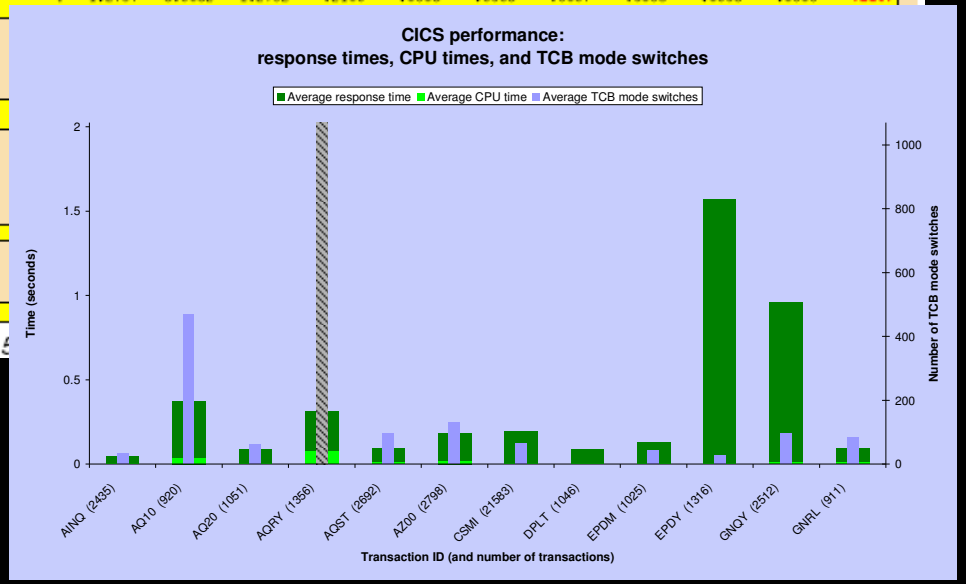
Figure 5



Value

- Improve CICS system performance, lower maintenance costs, and strategically plan IT investments

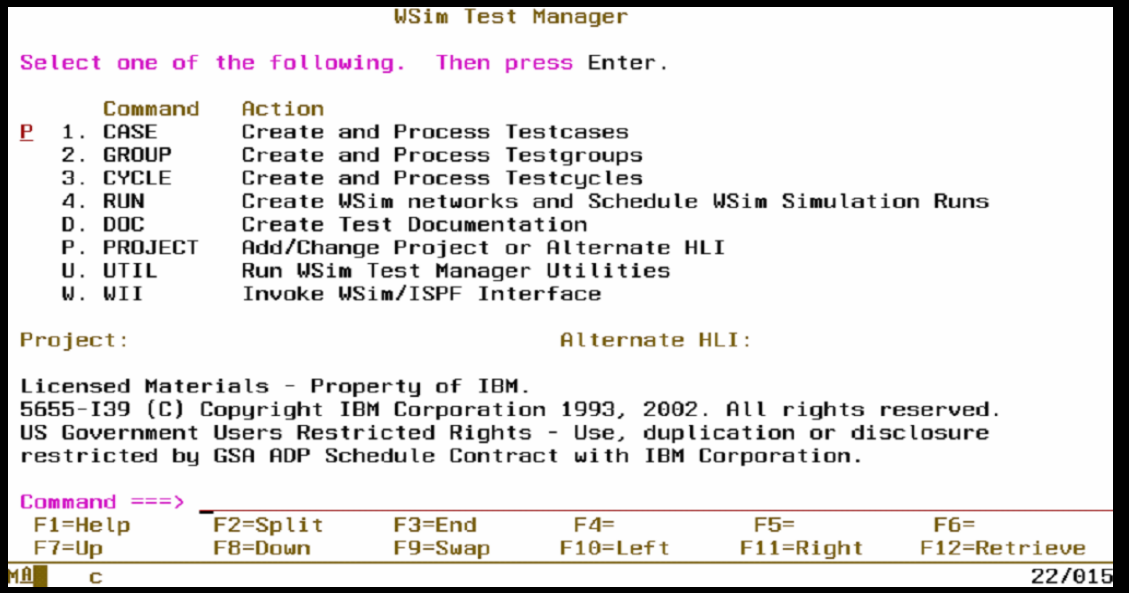
Test application scalability with Workload Simulator for z/OS

Problem

- Need to conduct stress, performance, regression, function and capacity planning tests
- Can’t recruit enough "live users" for load-test

Solution

- Simulate a user-specified network of terminals and the associated network messages
- Test Manager guides the user through the test process



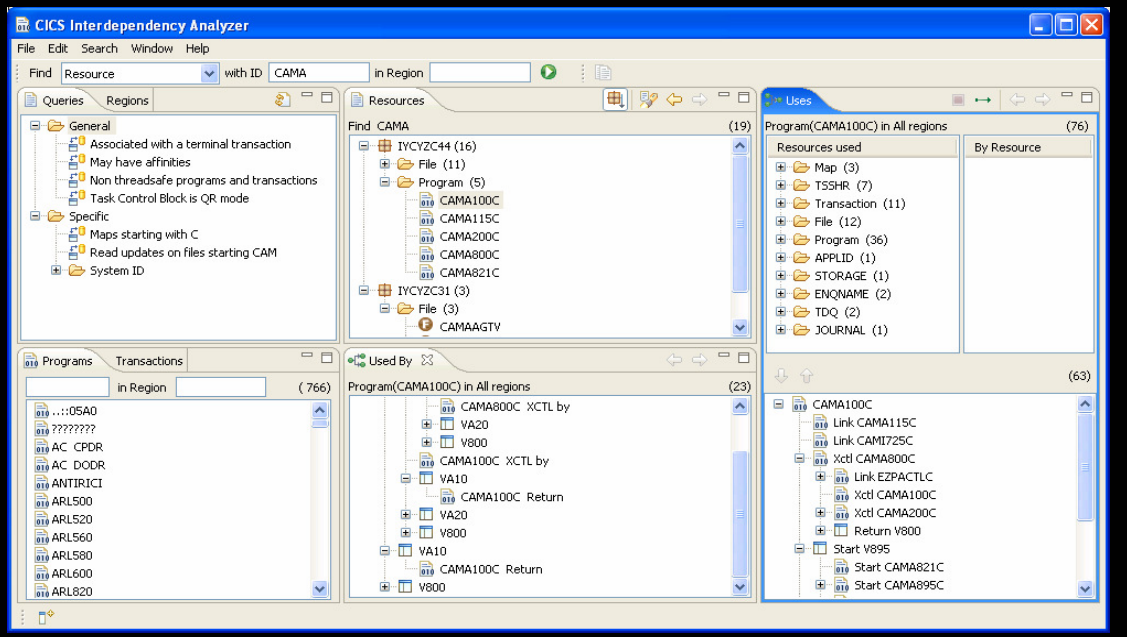
Value

- Anything a real user can do at a terminal, Workload Simulator can do faster, more reliably, and typically for less cost
  - Eliminates need for large amounts of terminal hardware and terminal operator time.

Improve availability with CICS Interdependency Analyzer for z/OS

Problem

- Large retail company needed to improve availability
  - -Allow transactions to run in any CICS region
  - -Examine all complex business applications to eliminate affinities



Solution

- CICS IA automates collection of key relationship data to DB2 database for ease of processing
- Supplied Explorer queries
  - -Seek out affinities and validate removal
  - -Identify Thread-safe performance optimization opportunities

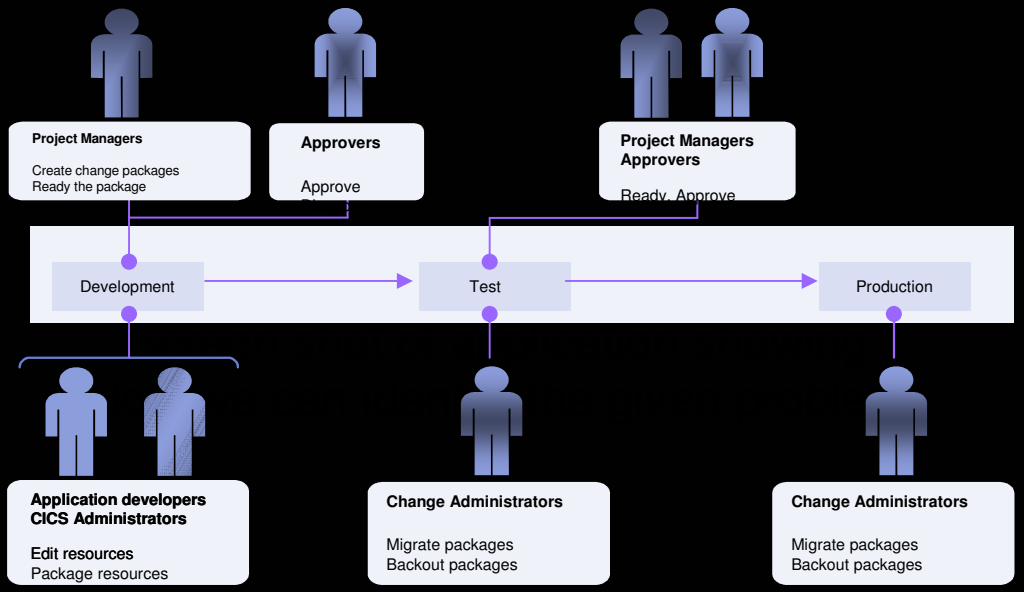
Value

- Reduced risk of problems changing complex applications when under time pressure or without deep CICS skills
- Supports key IBM Service Management (ITIL) processes

Reduce Change risks with CICS Configuration Manager for z/OS

Problem

- Configuring CICS systems
  - Creation, modification, and migration of CICS resource definitions across multiple environments and repositories



Solution

- CICS CM - easy-to-use resource-definition administration and maintenance
  - Comprehensive reporting and optional change-management control facilities
  - Integrates with existing system management processes.

Value

- Simplified and controlled management of CICS application development
  - Aids systems administration, lowers costs
  - Reduces risk of downtime due to user errors
  - Speeds version to version migration

In Summary

- **Process Integrity** ensures reliable execution of critical business processes in SOA
- IBM has long history building mission-critical computing systems - Process Integrity is an integral part of our SOA portfolio
- CICS TS, CICS Tools, and PD Tools support keys aspects of Process Integrity:
  - Transaction Integrity
  - Interaction Integrity
  - Information Integrity
  - Quality of service

TALKING

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Backup

CICS VSAM Recovery for z/OS

- Key features
  - -Change accumulation
  - -Export and Import commands
  - -Batch support including logging
  - -NOTIFY support for IBM and non-IBM backups
  - -Supports backups created by Backup-While-Open (BWO)
  - -Automated recovery
  - -backup process invocation from CICS VR panel interface
  - -Preallocates the target data set prior to restore
  - -Provides authorization management for the panel interface
  - -Provides test-only forward recovery and backout
  - -Disaster recovery report:
  - -Panel Interface usability enhancements including:
- CICS Support
  - -CICS Transaction Server for z/OS, V2 and V3
  - -CICS Transaction Server for OS/390 V1.3

New in CICS VR V4.2

- **CICS TS V3.2 support**
  - **Extended addressability Entry Sequenced Data Sets (ESDSs)**
  - **Backout failure detection operates in a thread-safe mode**
- **Integration with external backup products, including IBM ABARS**
- **Manual control of VSAM Sphere reorganization**
- **Enhanced logging support**
- **Other enhancements including hardware backup support and customer requirements**

IBM Session Manager for z/OS

- Key features
  - -Session recovery across the IBM Parallel Sysplex supports planned and un-planned outages
  - -Secure and user-friendly method of accessing multiple OS/390 or z/OS systems from a single 3270 terminal - SNA and TCP/IP
  - -Password-protected menu gives access all applications in network
  - -Log-off procedures, security checking, audit logging and centralized administration, operations, and monitoring
  - -Benefits to helpdesk and operations personnel - Spy function
  - -Benefits in training staff – Demo function
  - -Centralized user ID admin and the ability to broadcast messages to end users

- Session Manager works with z/OS V1.4, or later, including z/OS.e and supports CICS TS V3.2 without modification

New in Session Manager V2.1

- **High application availability**
- **Near-continuous operations**
- **Workload balancing and shared configurations**
- **User customization**
- **System management menu**
- **Improved administration usability**

Workload Simulator for z/OS

- Key features
  - Drive 3270 performance test workload on System z
  - Broad protocol support
    - SNA, CPI-C (LU 6.2), and enhanced TCP/IP support, Telnet 3270, 3270E, and 5250 clients, Telnet line mode network virtual terminal clients, Simple TCP and UDP clients, File transfer protocol (FTP) clients
  - Multiple client applications that run on top of TCP/IP
  - SNA LU simulation
  - Test manager (WTM) guides the user through the test process.
  - Script-generating utilities
  - Extensive run-time utilities
    - Workload Simulator/ISPF Interface
    - Display monitor utility
    - Run-time reports
    - ITPECHO
  - Powerful post-test analysis utilities
    - Loglist and Log compare utilities
    - Response time utility

CICS Interdependency Analyzer for z/OS

- Key features
  - -Captures CICS application relationships:
    - Resources used by a transaction - Programs, Files, TSQs, TDQs plus DB2, MQ, IMS plus Web services
    - Transactions with affinities and their type / lifetime
    - Unused resources
    - Sequencing of transactions within an application
  - -Relationship data loaded onto a DB2 data base
  - -Query interface and sample queries from CICS transaction and Eclipse-based CICS IA Explorer
- CICS support
  - -CICS Transaction Server for z/OS, V2 and V3
  - -CICS Transaction Server for OS/390 V1.3

New in CICS IA V2.2

- **CICS TS V3.2 support**
- **CICS Version Migration Support**
- **Application performance support**
  - **Thread safety, Affinities**
- **Web service support**
  - **Detect, Identify, Capture**
- **Intuitive new CICS IA Explorer**
  - **Sample queries - rich query editor**
- **Software AG Natural 4GL support**
- **Optimized database schema**

Application Performance Analyzer for z/OS

- Key features
  - -Measure and report resource use in virtually any IBM z/OS® address space
  - -Isolates application performance problems across entire application – subsystems (DB2, IMS, CICS, MQ, USS, WAS), languages, and DASD
  - -Identify constraints
  - -Non-intrusive
  - -Helps with design, development and maintenance
  - -Shares side files with Fault Analyzer and Debug Tool
- IBM Product Support
  - -Supports C/C++, Assembler, COBOL, PL/I, Java and CICS, DB2, IMS, WebSphere MQ and WebSphere Application Server
  - -CICS TS V1 to V3, IMS V7 to V10, DB2 V7 to V9

New in APA V8.1

- **Java Enhancements**
- **Unix System Services support**
- **Report Enhancements**
- **Usability Enhancements**

CICS Performance Analyzer for z/OS

- Key features
  - -Comprehensive Performance Reporting and Analysis for CICS
  - -Including DB2, WebSphere MQ, and MVS System Logger
  - -Extensive Tabular Reports and Extract Data Sets
  - -Historical Database (HDB)
  - -Trending and Capacity Planning
  - -ISPF Dialog to build, maintain, and submit reports and extracts
  - -Comprehensive reporting of CICS Statistics data
- CICS Support
  - -CICS Transaction Server for z/OS, V2 and V3
  - -CICS Transaction Server for OS/390 V1.3

New in CICS PA V2.1

- **CICS TS V3.2 support including:**
  - **Compressed SMF type 110 records**
  - **Higher precision clock fields**
  - **New and updated statistics fields and records**
- **CICS TG V7.1 SMF 111 statistics support**
- **Extended integration with OMEGAMON XE for CICS**
- **New transaction profiling reports**
- **New distribution reports**
- **New and updated sample reports**
- **Additional enhancements delivered via the service channel**
- **Historical Reporting SupportPac CP12**

CICS Configuration Manager for z/OS (CICS CM)

- Key features
  - -Create, Update, Delete, Copy, Replicate CICS resource definitions
  - -Change management through the life-cycle stages, e.g. development, test, production
  - -Create customized reports to identify redundant definitions, show resource relationships and change management history
  - -Audit, back-out and change authorization capabilities
- CICS Support
  - -CICS Transaction Server for z/OS, V2 and V3
  - -CICS Transaction Server for OS/390 V1.3

New in CICS CM V1.2

- **CICS TS V3.2 support PTF**
- **Migration of resource definitions between partitioned environments**
- **Integration with change management solutions**
- **Data take-up utility to speed up initial deployment**
- **Usability and reporting enhancements**
- **Journal Offload Utility**
- **Mixed RLS and non-RLS CSDs**