



IBM service management for CICS with System z tools.

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Introduction

The realities of the 21st century exert conflicting pressures on organizations delivering IT services; line-of-business (LOB) management says “more, more, more,” while financial management says “less, less, less.” This white paper discusses an approach that enables the IT service-management team to satisfy both parties, while delivering high-quality services in an ever-more-complex environment – where failure is unacceptable and regulatory compliance is a necessary fact of IT life.

In addition, this white paper takes a process-oriented approach to managing IBM CICS® systems, the cornerstone of many enterprise application systems and, for a growing number, the hub for their deployment of service oriented architecture (SOA). It starts by describing the business challenges faced by IT management and lists many of the IBM System z™ products that can help address them. It then describes the life cycles of process-oriented scenarios, showing some of the products as they are used in context.

IT service management—business pressures and challenges

The late 20th and early 21st centuries have seen phenomenal growth in the application of IT technology, enabling businesses to grow and change as never before. Rather than diminishing, demand for more IT is increasing, driven by mergers and acquisitions, innovative products or new markets. Added to this, the much-promoted vision that SOA leads to business flexibility is increasing the demand for even more change as the chief executive officer (CEO) and LOB management see SOA as an attractive route to competitive advantage.

SOA does benefit the chief information officer (CIO) by simplifying the infrastructure, converting fixed-function programs into reusable services and moving control logic out of hard-wired applications and into easily configurable business process management (BPM) systems. Such benefits often come with a price in the form of short-term increases in complexity as the new SOA infrastructure and application components are implemented alongside those of existing assets. SOA also increases the pace of change, requiring more from the already overstretched IT team who are responsible for testing and deploying changes to systems, and finding and fixing problems that arise. IT staff in most demand are often those with CICS and System z skills, because these platforms are frequently used as the enterprise “SOA hub,” and so, are the focus for more development activity than they might have seen in recent years.

The chief financial officer (CFO), on the other hand, sees things differently. From this individual’s perspective, cost reduction is often the only way that the CFO and the financial team can contribute to the enterprise’s competitiveness, and so the CFO cuts budgets to encourage the CIO to reduce the total cost of ownership (TCO) of the enterprise’s IT systems. These decreases are often achieved by reducing staffing levels.

There is also a risk that the increased level of activity and reduced staffing can result in a fall in quality, with new releases being deployed without proper care. This rush to market almost inevitably leads to application failure, which can cause companies to lose customer confidence, business and stock value – and in extreme cases can result in business failure. Recent regulatory-compliance legislation such as the U.S. Sarbanes-Oxley Act can impose severe penalties on IT executives who fail to exert adequate controls over the business of IT.

Do more. Consume less. Be compliant – or else. How the CIO and the IT team can satisfy all of these demands simultaneously is the subject of this white paper.

Processes and tools for IT service management

IT service management is the integrated set of activities required to help ensure the cost and quality of IT services valued by an organization. It is the management of critical IT capabilities through effective processes, organization, information and technology, including:

- *Aligning IT with business objectives.*
- *Managing IT services and solutions throughout their life cycles.*
- *Handling service-management processes such as those described in ISO IEC 20000, ITIL and the Process Reference Model for IT.¹*

IT service management represents an evolution from managing IT as a technology to managing IT as a business. As businesses move toward more-flexible environments, IT organizations are faced with the daunting challenge of increasing the quality of services provided to the business, while simultaneously addressing faster rates of change, rising technical complexity, cost pressures and compliance issues. With traditional resource-management and system-management approaches, providing effective support for business and efficient use of IT resources is virtually impossible. IT service management provides for the effective and efficient delivery of IT services in support of changing business needs.

IBM Service Management

IBM has developed thought leadership to improve the “state of the art” in IT service management for the last 25 years, and has supported others in their efforts as well. In addition to the advancement of management disciplines and technologies, IBM recognized early on that acceptance of common practices and standards is vital to achieving improved value from IT. Advances in technologies and management disciplines provide the greatest value after they become part of and extend the body of generally accepted practices and open standards. IBM supports the advancement of practices and open standards such as IT Infrastructure Library® (ITIL®),² Control Objectives for Information Technology (COBIT), ISO IEC 20000 and Carnegie Mellon University’s e-Sourcing Capability Model (e-SCM). The fundamental characteristics of service management require integration and agreement on standards – not only between tools and roles within IT, but also among organizations and even industries.³

IBM Service Management⁴ is a family of solutions including process managers (for processes defined by ITIL) and tools that helps organizations better manage their IT infrastructure and deliver IT services more effectively and efficiently.

For an extended view of IBM’s contribution to the development of ITIL and its relationship to IBM Service Management, see “IBM Service Management: Practical solutions for today based on 25 years of continuous thought leadership,” an IBM white paper by Bill D. Powell (GTW00861-USEN-00), available at ibm.com/systems/optimizeit/pdf/itsm_white_paper.pdf.

Processes

ITIL defines a set of interrelated processes that show best practices for managing customer-facing IT services (see Figure 1). ITIL, Version 3⁵ was released in early 2007 with five new publications focusing on the life cycle of services. The core ITIL service-management processes from Version 2 remain, augmented by other processes and with different categorization. However, this white paper focuses on two major categories defined in ITIL, Version 2 – service support and service delivery.

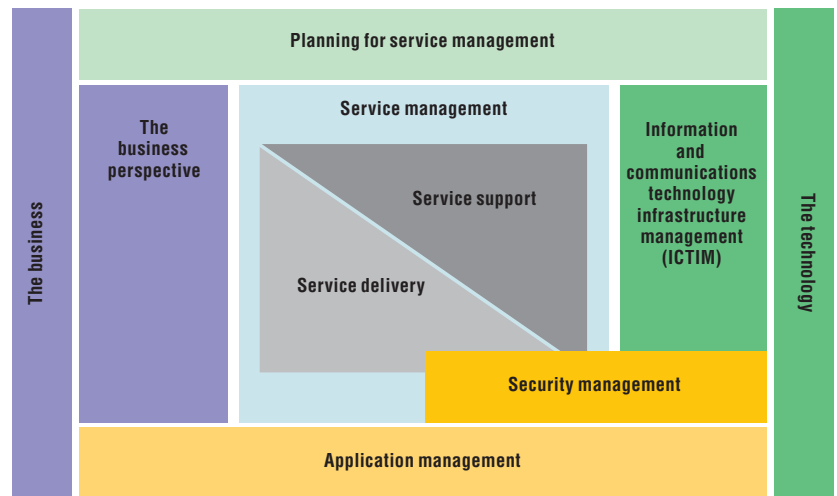


Figure 1. ITIL, Version 2 processes

Service support

ITIL service support focuses on user support, fixing faults in the infrastructure, and managing changes to the infrastructure. It includes the following processes:

- Incident management, *to provide rapid responses to possible service disruptions*
- Problem management, *to identify and resolve the root causes of service disruptions*
- Change management, *to receive a request for change (RFC) submission, and either approve or reject it*
- Release management, *to provide controlled deployment of approved changes within the IT infrastructure*
- Configuration management, *to identify, control and maintain all elements in the IT infrastructure called configuration items*

Service delivery

ITIL service delivery focuses on providing IT services to customers and includes the following processes:

- Service-level management, *the process of negotiating, defining, measuring, managing and improving the quality of IT services at an acceptable cost*
- Availability management, *providing a cost-effective and defined level of availability of the IT services that enables the business to reach its objectives*
- Capacity management, *designed to provide the required capacity for data processing and storage, at the right time and in a cost-effective way*
- IT service-continuity management, *supporting overall business-continuity management (BCM) by helping to ensure that required IT infrastructure and IT services, including support and the service desk, can be restored within specified time limits after a disaster*
- Financial management for IT services, *aiming to assist the internal IT organization with the cost-effective management of the IT resources required for the provision of IT services*

IBM process managers

Although ITIL provides guidance for how its various processes can be implemented, it is not usable until you customize the process to your organization's specific needs. IBM process managers, such as IBM Tivoli® Availability Process Manager, provide actionable processes that enable you to benefit right from the start from IBM's considerable practical experience managing complex IT systems.

IBM process managers include:

- IBM Tivoli Availability Process Manager, *to provide visibility into IT components, applications and their business impact, and to give IT organizations the necessary tools to effectively diagnose and prioritize incidents and problems that can affect critical business services*
- IBM Tivoli Capacity Process Manager, *to implement, enforce and track capacity-management processes and help ensure that they are completed before you make changes or upgrades that could be potentially wasteful or insufficient*
- IBM Tivoli Storage Process Manager, *to provide a set of customizable, ITIL-aligned storage-management processes*
- IBM Tivoli Release Process Manager, *to provide a process-based solution to address the release-management domain*
- IBM Tivoli Change and Configuration Management Database, *to provide an enterprise-ready platform for storing deep, standardized data about configurations and change histories to help integrate people, processes, information and technology*
- IBM Tivoli Unified Process, *to provide detailed documentation of IT service-management processes based on industry best practices*
- IBM Tivoli Unified Process Composer, *to enable you to modify the defined processes to reflect how your IT organization works and to publish the processes internally as Web pages*

Tools

Organizations that run CICS systems constantly experience business pressure to improve CICS platform efficiency, maximize system availability and make the most of their CICS skills, as well as plan for Web services implementation. IBM offers a suite of tools for the System z platform that, together, can support all of the processes within service delivery and service support, as well as related development life-cycle processes.

These System z tools include the CICS tools family, which can help to support application transformation and CICS technology-based SOA implementations, enable easier CICS version-to-version upgrades (especially to IBM CICS Transaction Server for z/OS, Version 3.2), help reduce the complexity and cost of CICS system and application management, improve CICS application and data availability, and support governance initiatives to enable compliance with regulations such as the U.S. Sarbanes-Oxley Act.

CICS Interdependency Analyzer

IBM CICS Interdependency Analyzer for z/OS, Version 2.1 is a runtime tool that automates the detection of runtime relationships within a CICS system, records this data in an IBM DB2® database and provides a friendly GUI (the explorer) to help analyze the collected information, build a relationship road map and use this data in daily operations. The explorer provides an easy way to query data stored in a DB2 database, manage queries and navigate through the resource relationships. With this explorer, developers and other users can perform detailed analysis of resource relationships (such as what transactions run in which regions and what affinities were found for a program), as well as resource comparison (see Figure 2).

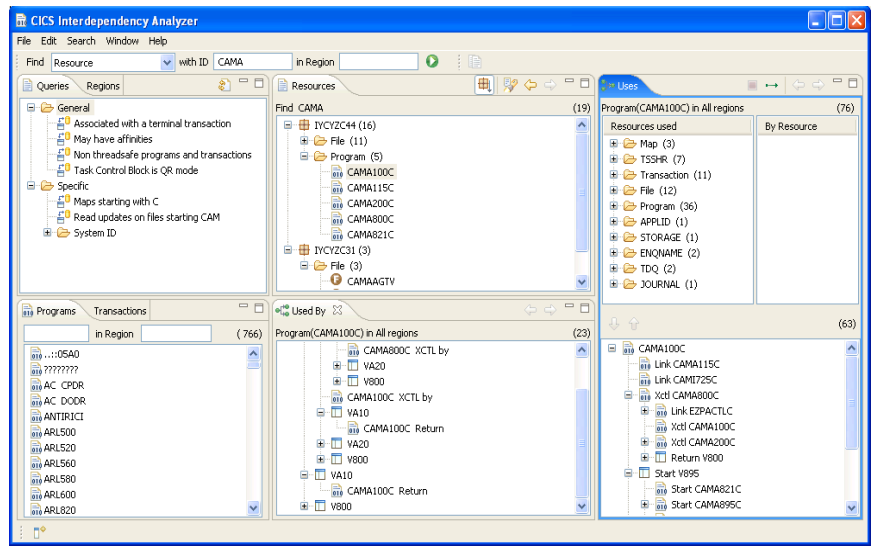


Figure 2. The CICS Interdependency Analyzer explorer

CICS Performance Analyzer

IBM CICS Performance Analyzer for z/OS is an offline reporting tool that provides a comprehensive suite of system-management and measurement reports to help:

- *Improve CICS system-resource usage.*
- *Evaluate the effects of CICS system-tuning efforts.*
- *Improve response times for transactions.*
- *Enable faster resolution of online problems.*
- *Increase the productivity of system and application programmers.*
- *Provide awareness of usage trends, assisting in future growth estimates (see Figure 3).*

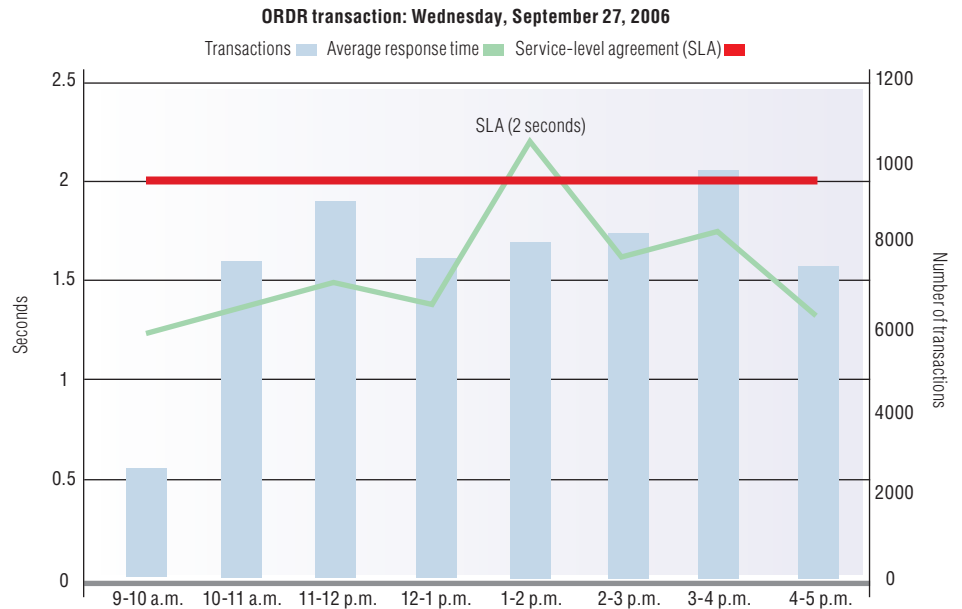


Figure 3. CICS Performance Analyzer trend analysis

CICS Performance Analyzer provides detailed reports about all aspects of CICS systems, as well as the ability to tailor reports to specific analysis requirements with an easy-to-use interface. It can also export data to workstation tools such as Microsoft® Excel, for trend analysis and other functions.

CICS Configuration Manager

Accurate CICS resource definitions are essential to maintain the high availability expected of the CICS environment. With tens, or even hundreds, of CICS regions across a typical enterprise, maintaining these definitions can be challenging. IBM CICS Configuration Manager for z/OS helps simplify CICS resource-definition administration and maintenance, while at the same time offering comprehensive reporting and optional change-management control facilities. It enables the control of all CICS definitions across the enterprise through a single interface and can manipulate definitions seamlessly across CICS system definition (CSD) data-set files and IBM CICSplex® System Manager data repositories. CICS Configuration Manager also enables integration with existing system-management processes, and helps improve auditability and ease CICS version upgrades.

Other CICS tools

IBM Session Manager provides access to multiple systems from a single terminal in TCP/IP and VTAM environments and provides a range of features to enhance user productivity and remote help. IBM CICS Online Transmission Time Optimizer helps improve user productivity and increase network-resource usage through 3270 data-stream optimization.

In addition, IBM CICS VSAM Transparency enables you to move Virtual Storage Access Method (VSAM) data to a DB2 database without having to rewrite the CICS (or batch) applications, thus helping to decrease risk and cost. IBM CICS VSAM Recovery recovers CICS and batch VSAM data from physical or logical corruption. And IBM CICS Batch Application Control makes it easier to manage batch processes that have to coexist and share resources with CICS online transaction systems.

Integrated CICS capabilities

CICS Transaction Server itself provides some important management capabilities, including CICSplex System Manager and IBM z/OS® Workload Manager, which together enable multiple CICS regions to be managed as a single unit, helping to reduce overall complexity while helping to maximize performance. System Management Facilities (SMF) records generated by CICS Transaction Server show the resources used by CICS applications and create accumulated statistics records that can be valuable sources of information for service-management processes, such as capacity and problem management.

CICSplex System Manager is an integrated part of CICS Transaction Server which helps reduce the complexity of CICS system management across a whole range of management tasks. It enables you to manage CICS systems by using its unique single system image (SSI) concept. This concept enables the management of all CICS systems and resources independent of physical location, from a single point of control. Because all interactions are at this logical level, movement of resources has no effect on the interactions made with the management system, helping to simplify day-to-day task management.

Different environments are defined as CICSplexes (for example, test plex or production plex) to which CICS regions belong. Subsets of CICSplexes, referred to as *scopes*, can also be defined to enable logical grouping of CICS regions for management purposes (such as an application-owning region [AOR] set). You can also define business applications using the Business Application Services (BAS) component. When you do this, you can restrict operational interaction to a given business application (such as close files associated with payroll). This capability provides a highly flexible means of identifying the regions and resources to be managed. Interactions with the product are supported through a Web browser interface, a system-management API and batch commands.

CICSplex System Manager supports a range of system-management tasks, including:

- *Resource definition and installation using BAS*
- *Access to operational, monitoring and statistics data, and operational control using operations*
- *Situation detection and resolution through real-time analysis (RTA)*
- *Dynamic workload management*

CICSplex System Manager supports CICS Transaction Server, Version 2.2, 2.3, 3.1 and 3.2.

Other System z tools

IBM Application Performance Analyzer is an application-performance monitor for traditional enterprise applications. It enables you to drill down to the application-source level to pinpoint performance bottlenecks. It supports CICS, IBM IMS™, IBM WebSphere®, DB2 and other z/OS technology-based operating environments. CICS transaction-source drill-down and single-user support in Application Performance Analyzer helps simplify access to multiple CICS regions through multiregion operation (MRO).

IBM Fault Analyzer is an abnormal end-of-task (abend) analysis tool that works in both CICS and non-CICS environments. It has two modes of operation:

- *Runtime analysis*

When a CICS transaction fails, Fault Analyzer produces a report that describes the failure, pinpoints the line of code that caused the failure, formats the variables in use at the time, displays the panel involved, and extracts the message and code details from the appropriate publications, enabling you to more quickly identify the root cause of the failure. The abend details are also saved in a direct access storage device (DASD) file for subsequent analysis or online viewing.

- *SDUMP processing*

If an error in a CICS region causes an SDUMP to be created, Fault Analyzer can analyze it at a system level, showing domain information such as kernel, dispatcher, program manager and transaction manager. The dump information is displayed in a series of panels that have point-and-shoot hotspots, enabling fast and easy navigation from one functional area to another.

IBM Debug Tool Utilities and Advanced Functions is a source-level debugger which works in both CICS and non-CICS environments. Debug Tool Utilities and Advanced Functions enables you to step through an IBM Language Environment[®] application written in COBOL, C/C++, PL/I or Assembler enabled by Language Environment. As you step through the program logic, you can display program variables and application data to understand how the application is behaving. You can also use the comprehensive range of break-points in Debug Tool Utilities and Advanced Functions to run the application at near full speed until an event, such as entry to a specific piece of code, occurs. And you can take advantage of the easy-to-use 3270 interface or use a GUI (available with a separately purchased license of IBM WebSphere Developer Debugger for z/OS or IBM WebSphere Developer for System z) to help deliver code that is more thoroughly tested, and thus has fewer errors.

IBM File Manager for z/OS helps you create, edit, print, and format or reformat data files in the most popular z/OS file formats. You can use this product to manipulate data using COBOL and PL/I record layouts in batch mode and an online facility. File Manager includes support for VSAM, CICS and DB2. IMS data can also be integrated within the WebSphere Developer for System z development tool.

IBM Tivoli OMEGAMON® XE for CICS on z/OS is an integrated solution enabling dynamic, proactive, enterprisewide performance and availability management of both simple and complex CICS Transaction Server systems (see Figure 4). Significant enhancements in CICS Performance Analyzer, Version 2.1 improve its integration with Tivoli OMEGAMON XE for CICS and the value you gain when using the two products together.

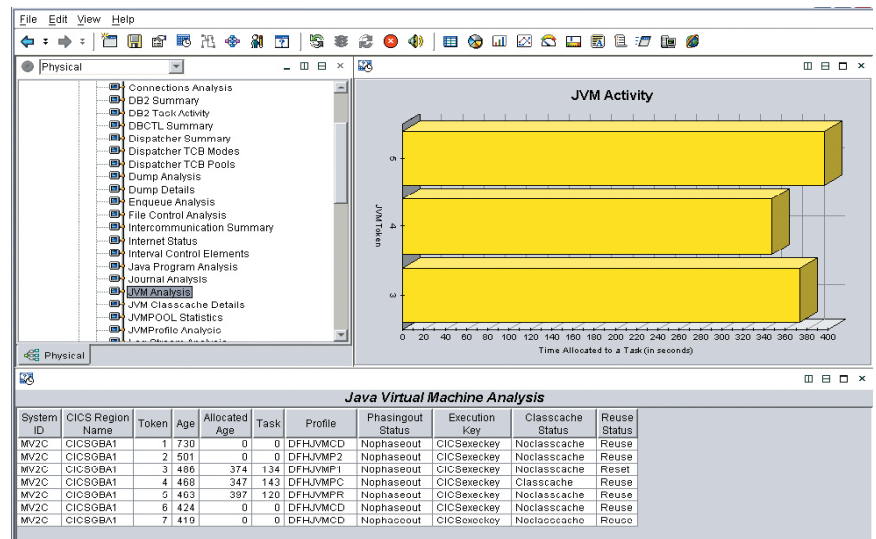


Figure 4. Tivoli OMEGAMON XE for CICS—Java activity

WebSphere Developer for System z includes robust capabilities that help make traditional mainframe development, Web development, and integrated SOA-based composite development faster and more efficient. WebSphere Developer for System z accelerates the development of dynamic Web applications written in Java™, Java 2 Platform, Enterprise Edition (J2EE), COBOL and PL/I, and supports modern user interfaces, full Web-application processing and Web services, and J2EE Connector Architecture (JCA) connectivity to integrate these application styles and processes together. WebSphere Developer for System z supports deployment to multiple runtime environments, including CICS, WebSphere Application Server, IMS, batch, and DB2 using IBM DB2 stored procedures.

With WebSphere Developer for System z, you can make the most of your existing skills to write new applications, and you are able to reuse and transform more existing applications. The productivity of developers who use WebSphere Developer for System z to create, maintain, debug and deploy applications to the z/OS platform is further enhanced by integration with other System z tools such as Debug Tool Utilities and Advanced Functions, Fault Analyzer and File Manager.

IBM WebSphere Studio Application Analyzer provides in-depth insight into dependencies within and among enterprise Java application components, including composite applications that span mainframe and distributed components. The product assists IT personnel with the maintenance, extension, reuse and transformation of existing applications through rapid application understanding and impact analysis.

IBM Workload Simulator for z/OS and OS/390® enables you to conduct stress, performance, regression, function and capacity-planning tests, while helping to eliminate the need for large amounts of terminal hardware and operator time. It provides support for Systems Network Architecture (SNA), CPI-C (LU 6.2) and enhanced TCP/IP support; Telnet 3270, 3270E and 5250 clients; Telnet line-mode network virtual terminal (NVT) clients; TCP and User Datagram Protocol (UDP) clients; FTP clients; and multiple client applications that run on top of TCP/IP.

Using CICS tools to support IT service management

JK Enterprises, a fictitious supplier to retail, small business and worldwide corporate customers, is a medium-sized company with eight data centers and about 200 IT staff. It uses CICS Transaction Server to host many of its critical business applications, with several hundred CICS regions, of which one hundred are in production. It has a mixture of build and buy applications that run in WebSphere Application Server, SAP, Siebel and CICS environments, as well as numerous batch applications.

A strategic business goal of JK Enterprises is to generate more revenue and market share – without increasing its own staff costs – by giving its business partners and customers access to internal order-processing applications. To avoid exposing these new users to the complexities and inconsistencies inherent in existing applications developed over an extended period, JK Enterprises plans to implement an SOA using IBM WebSphere Host Access Transformation Services (HATS).

HATS can enable JK Enterprises to “transform” complex CICS 3270-based application interactions so that they can be accessed as HTML Web pages and as Web services, an approach described in the IBM Redbooks® publication *Host Access Transformation Services on z/OS*.⁶ In addition, JK Enterprises plans to refactor some of its existing CICS application programs to enable them to be accessed directly as Web services or as componentized CICS microflows, using IBM CICS Service Flow Feature.

This white paper follows JK Enterprises through its use of key ITIL service-management processes to show how some of the IBM tools described in the previous section can help the company plan for and implement changes to its CICS systems, identify and resolve some problems with the updated application and then manage the service levels of its updated CICS system.

Capacity management: Planning for a new CICS application release

Using estimates of CICS transaction-usage growth obtained during the planning and design phases, the JK Enterprises system-programming team implemented a capacity-planning exercise using CICS Performance Analyzer and Application Performance Analyzer. This activity is necessary in major development projects to help ensure that the CICS and batch systems can meet the initial demands of the new application, as well as cope with the future demand projected by the JK Enterprises business-planning team. Capacity management is an important ITIL process that helps reduce the risk of future performance problems on the business and thus helps to mitigate possible compliance issues.

Using CICS Performance Analyzer, the system programmers at JK Enterprises determined that it would be beneficial to use the workload-management capabilities of CICSplex System Manager to take full advantage of the available System z capacity. To prepare for implementing CICSplex System Manager, the application-development team used CICS Interdependency Analyzer to identify possible application affinities to specific CICS regions. The team determined that some affinities could be removed during the development process, for example by replacing local VSAM files access with VSAM record-level sharing (RLS) while other, more-complex affinities that would require greater development effort to change were loaded into the CICSplex System Manager routing tables so that related transaction requests would be automatically routed to the same region. Finally, during the quality-assurance phase, JK Enterprises used IBM Workload Simulator to drive a simulated CICS workload in conjunction with CICS Performance Analyzer to monitor the performance of the new system under load and compare performance before and after the system changes.

IT service-continuity management: Preparing for a new CICS application release

Even though the JK Enterprises IT organization had always thought that it ran an efficient organization, when the new system was reviewed as part of the risk-assessment task in the IT service-continuity-management process, the IT service-continuity analyst realized that the business was at risk because forward recovery was not available for critical VSAM files. In the event of catastrophic device failures, updates to these files would be lost, and users would need to reenter some transactions.

Although this task might have been acceptable when the users were internal, to expect external customers and business partners to do this would severely compromise user confidence, not just in the new application but in JK Enterprises itself. The resulting business-service-continuity requirements, a combination of business impact and risk assessment, was sufficient justification to convince the CIO to implement CICS VSAM Transparency for the majority of its VSAM files, to enable JK Enterprises to use DB2 recovery-management capabilities, such as backout and forward recovery, without needing to modify its applications.

However, because some of its VSAM file structures were very complex with large numbers of redefinitions, JK Enterprises decided to use CICS VSAM Recovery as well, to help ensure that these remaining VSAM resources could be forward-recovered following physical or logical data loss. The combined use of CICS VSAM Transparency and CICS VSAM Recovery had the added benefit of helping to reduce the batch window, by helping to eliminate a number of IDCAMS REPRO job steps previously required for step-level backups and dataset reorganization.

The batch window was further reduced when JK Enterprises installed CICS Batch Application Control to automate the sharing of CICS resources, such as VSAM files, with batch applications. This function helped by keeping to a minimum the time that CICS resources needed to be offline, and helping to reduce errors and the need to rerun batch jobs when operators accidentally failed to vary offline all relevant resources.

Configuration management: Understanding the new release

In ITIL terms, the purpose of configuration management is to identify, control, maintain and verify the versions of configuration items and their relationships in a logical model of the infrastructure and services. A *configuration item* is any component of an IT infrastructure, including a documentary item such as a service-level agreement or an RFC, which is (or is to be) under the control of configuration management, and therefore subject to formal change control.⁷

Some prime examples of CICS configuration items are application programs, maps, files, databases and message queues. Making changes to one of these configuration items without understanding its relationships and making appropriate changes to related configuration items is a recipe for failure. For example, in order to provide external access to their systems, JK Enterprises' analysis indicated that it needed to change the layouts of some VSAM file records, DB2 tables and IBM WebSphere MQ messages to reflect the new access paths, order statuses and so on.

Changing file, table and message layouts usually, though not always, requires that you modify the programs that access them, but understanding such relationships in a complex and mature application can be difficult, especially when the original developers might have left the company, the source code might have been lost, or key components were created by other vendors or not documented to company standards.

JK Enterprises recently purchased CICS Interdependency Analyzer for z/OS and had run CICS Interdependency Analyzer for some weeks against its production systems, enabling the company to build a comprehensive database of CICS resource relationships. The development team then used the new Eclipse-based CICS Interdependency Analyzer explorer to understand quickly and easily which transactions, programs and maps would be affected by the changed file formats.

The power of CICS Interdependency Analyzer is such that it could even detect remote relationships, such as when a program in one region links to a program in another region, which in turn accesses a file, table or message queue. Understanding these relationships enabled the development team to make the necessary changes and the quality-assurance team to test all related applications.

Release management: Deploying the new release

After rerunning the CICS Interdependency Analyzer collector in the test regions, the release specialist used the CICS Interdependency Analyzer explorer to highlight the differences before and after the changes, helping to document the new and changed configuration items when creating the release plan and definition.⁸

The release specialist also used CICS Interdependency Analyzer to generate the CICSplex System Manager workload-manager definitions for the new, updated application so that it could be directly added to CICSplex System Manager. Doing this not only saved time, but also helped reduce the chance that errors would be made. The release specialist also used CICS Configuration Manager to control the installation of the new and updated resource definitions into the production system with the assurance that, if necessary, CICS Configuration Manager could back out the definition changes easily if problems occurred when the new release was deployed.

Few people would doubt that application programs should be managed and controlled, but many IT shops ignore this when it comes to the configuration information related to those applications. JK Enterprises, however, recognized that it was potentially at risk from compliance issues and decided to implement CICS Configuration Manager, and, having done so, realized significant benefits.

CICS Configuration Manager automates and manages CICS resource-definition configuration changes and helps ensure that they are made in a controlled and authorized manner, helping to reduce the risk of human error. It enables you to create change packages that include all of the resource-definition changes for a given release so that they can be implemented or backed out in a single operation (see Figure 5). It also provides the capability to convert VSAM file data-set names and program names automatically as the release moves through different phases, for example from development to test and then to production. This capability not only saves time and effort but helps ensure that names comply with enterprise naming conventions.

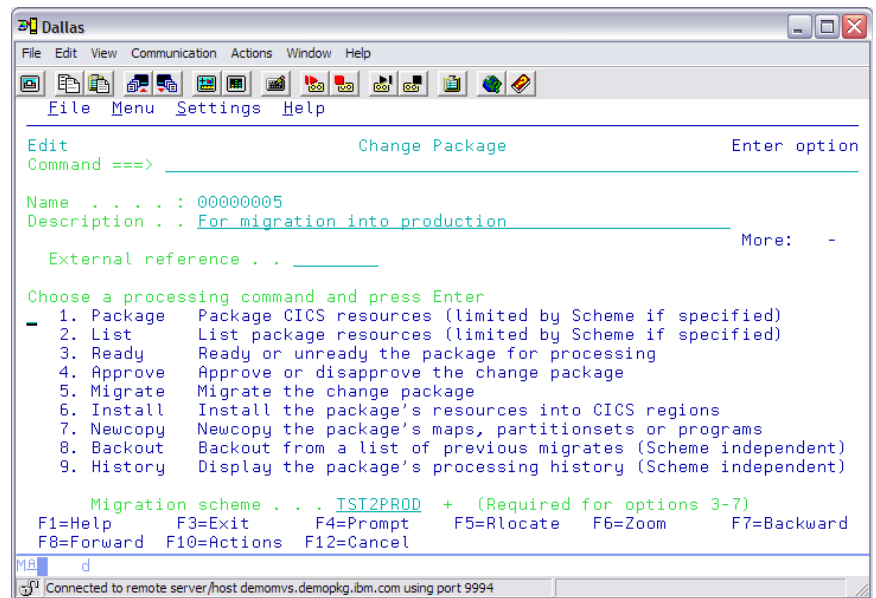


Figure 5. CICS Configuration Manager—change package

Incident management: Addressing issues arising from the new release

JK Enterprises understood that it is very easy for a business to gain a bad reputation for poor-quality Web applications, so it decided to implement its new system in pilot mode with a small subset of its business partners. After the new application had been deployed into production, JK Enterprises informed these partners that the new application was ready to use.

Within a few hours, JK Enterprises' help desk started to receive incident reports from some of the partners in the pilot. The help-desk team was able to review the forward schedule of change⁹ (FSC) that had been created using input from CICS Interdependency Analyzer, and recognized that the applications mentioned in the incident reports were the new ones referred to in the FSC. CICS Interdependency Analyzer and WebSphere Studio Application Analyzer could help the team understand which components were involved in an incident, and as a result, could help reduce the time taken to implement or identify workarounds.

JK Enterprises had for some years been using IBM Session Manager, which enabled its users to access all 3270-based applications in a consistent manner, without needing any knowledge of the VTAM infrastructure. The new Web services and HTML panels created by HATS also routed the company's CICS requests through Session Manager so that the code generated by HATS would not need to be sensitive to CICS region changes. The assigned incident analyst was able to use Session Manager in spy mode to look at the simulated 3270 requests originating from the HATS front end and view the responses from CICS Transaction Server. From these responses, the analyst was able to detect that the CICS application responsible for processing orders for one of JK Enterprises' retail product lines (soft toys) did not accept orders originating from business partners.

The incident analyst was able to advise the business partners of a partial workaround, namely to avoid placing orders for soft toys until the underlying problem was resolved. This action enabled the pilot to continue with only a few partners being affected. Without the insight provided by Session Manager, JK Enterprises might have needed to suspend the pilot entirely until they could identify and resolve the problem.

Problem management: Fixing the new release

After the incidents had been prioritized and assigned to the problem-management process, the problem analyst was able to use the dependency mapping provided by the CICS Interdependency Analyzer explorer to show the underlying CICS relationships for the failing transaction. This process indicated that the failed transaction linked to a program in a remote region – to validate orders for the failing soft-toy product line.

On further investigation using WebSphere Studio Application Analyzer, the problem analyst, working with a member of the application-development team, was able to determine that the transaction was accessing a table that was dynamically loaded from a VSAM control file to determine the users who could order soft toys. When File Manager was used to view the content of the VSAM file, the problem analyst determined that the program was using the previous version of the file, which did not allow for orders to be created by business partners.

The combination of CICS Interdependency Analyzer and WebSphere Studio Application Analyzer helped the problem analyst and the application developer understand the underlying relationships, leading directly to the root cause of the problem.

When the team investigated further, it discovered that the region hosting the failing application was still being configured manually using Resource Definition Online (RDO), unlike most of the other regions, whose resource definitions were controlled by CICS Configuration Manager. The release analyst had accidentally failed to update the CICS file-definition entry to point to the updated version. If CICS Configuration Manager had been used in all of the regions, this entry would have been updated automatically, along with all of the others, helping to greatly reduce the risk that this configuration error would have been made.

Performance-related problems can be especially difficult to locate and diagnose without the right tools, so CICS Performance Analyzer and Application Performance Analyzer can be invaluable by providing subject-matter experts (SMEs) and developers with the detailed CICS and System z performance and usage metrics that help to diagnose the root cause of such problems.

Other problems can result from erroneous application design or code and are harder to find. Products such as Debug Tools Utilities and Advanced Functions and Fault Analyzer can help developers diagnose and find root causes of complex System z problems, whether they occur in a CICS, IMS or batch environment.

Availability and service-level management: Monitoring the new release

After an application is up and running and performing well, the availability-management and service-level-management processes are there to help ensure that the application continues to run smoothly. Again, tools can help. Products such as Tivoli OMEGAMON XE for CICS can continuously monitor availability and performance metrics and alert operations staff when thresholds are exceeded or key applications fail, whereas CICS Performance Analyzer can be used to generate regular performance reports to validate that agreed-to service-level agreements are being met.

Conclusion

The challenge facing IT management today is to do more and to do it better, but with fewer failures, more control and a smaller, and often less highly skilled, team. The old saying “if you want different results you need to do things differently” still applies. The “different” approach recommended here is to combine a formal, process-oriented IT-management system, as defined by IBM Service Management and ITIL, with powerful tools, such as those in the System z tools portfolio. Doing so can help enable your organization to be like JK Enterprises, and do more with less.

For more information

To learn more about software for the IBM System z platform, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/software/os/systemz/

To learn more about IBM CICS Transaction Server for z/OS, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/cics

To learn more about CICS tools, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/cics/tools/

Many of the products in the CICS tools family can be downloaded and used for evaluation for up to 60 days, without commitment to purchase. To learn more and for trial registration and product download, visit:

ibm.com/software/os/zseries/trials/cicstools/

To learn more about IBM problem-determination tools, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/software/awdtools/deployment/

To learn more about IBM Tivoli Unified Process, try this useful tool online or download a copy at no charge by visiting:

ibm.com/software/tivoli/governance/servicemanagement/itup/tool.html

Implementing IT service-management best practices can be a difficult undertaking without first assessing priorities. This no-charge assessment can help your organization identify and prioritize key process areas for improvement. The Web-based assessment takes approximately 30 minutes to complete and can provide you with easy-to-understand reports designed to highlight potential focus areas for process and automation improvement.

To take the assessment, visit:

ibm.com/software/tivoli/governance/servicemanagement/resources/self-assessment-tool.html



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- ¹ Davis, Bill. "IBM Service Management: Practical solutions for today based on 25 years of continuous thought leadership," an IBM white paper (GTW00861-USEN-00).
- ² ITIL is owned by the U.K. government's Office of Government Commerce. To learn more, visit www.ogc.gov.uk/index.asp?id=2261.
- ³ Powell, Bill D. "IBM Service Management: Practical solutions for today based on 25 years of continuous thought leadership," an IBM white paper (GTW00861-USEN-00).
- ⁴ To learn more about IBM service management, visit ibm.com/software/tivoli/governance/servicemanagement/index.html.
- ⁵ To learn more about ITIL, Version 3, visit www.best-management-practice.com/bookstore.asp?FO=1241696.
- ⁶ *Host Access Transformation Services on z/OS*, IBM publication number SG24-6479.
- ⁷ itSMF: A dictionary of IT Service Management terms, acronyms and abbreviations pocketbook. March 2001. ISBN-10: 0952470667. ISBN-13: 978-0952470663.
- ⁸ ITUP defines the Release Plan and Definition as a plan for creating a release, including the definition of the set of changes which are collected within it.
- ⁹ A *schedule of change* is a schedule that contains details of all the changes approved for implementation and their proposed implementation dates.