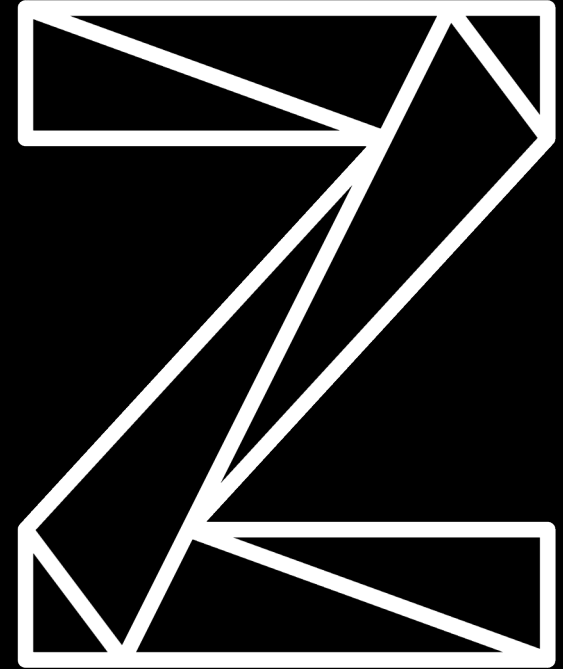


Driving CICS Development, Operations and Management Success with CICS Tools

—

Satish Tanna
Nina Mirski-Fitton



Aim of the Presentation

A quick portfolio summary, followed by a walkthrough covering how key CICS Tools can support you with reducing risk and effort whilst maximising return on investment and efficiency at every stage of an application's lifecycle.

- Creating new or modernizing existing applications
 - Using your IDE of choice
 - Managing resource definitions
 - Understanding relationships with other applications
 - Moving data from VSAM to Db2
- Monitoring and managing applications and CICS systems that are up and running
 - Using z/OS native interfaces
 - Using external analytics platforms
- Troubleshooting:
 - Identifying the problem
 - Rolling back changes
 - Recovering data from natural or logical disaster

CICS Tools Portfolio Overview

CICS VSAM Recovery for z/OS

Keep your systems functional in the event of a disaster by restoring data following either logical or physical damage

CICS VSAM Transparency for z/OS

Migrate VSAM data to Db2 simply and smoothly, without the need for rewrites

CICS Performance Analyzer for z/OS

Understand CICS performance, drive efficiencies, and plan for future workload growth

CICS Interdependency Analyzer for z/OS

Insight into CICS application relationships to make application changes with speed and confidence

CICS Configuration Manager for z/OS

Simply and safely manage complex CICS resource definition changes, with control and auditability

CICS Deployment Assistant for z/OS

Discover, visualize and manage CICS infrastructure to rapidly deploy new regions to meet demand

Part One:

Creating new or modernizing
existing applications

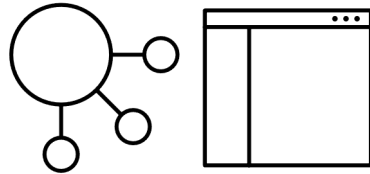
Creating new or modernizing existing applications

Have a choice of IDE and DevOps pipelines when creating new or modernizing existing applications, with integration with SCM



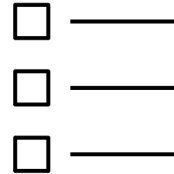
IBM CICS
Configuration
Manager for z/OS

Gain a clear understanding of relationships to other existing applications and resources, and the impact of changes



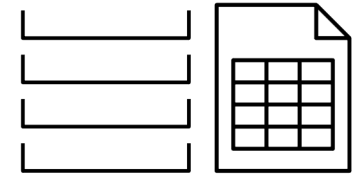
IBM CICS
Interdependency
Analyzer for z/OS

Understand and control resource definitions as the application migrates through different environments



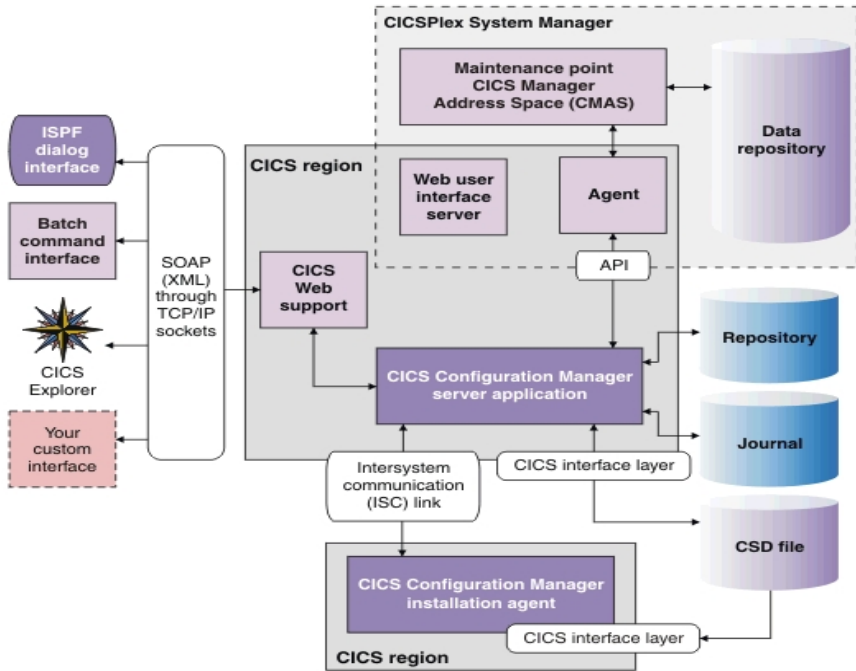
IBM CICS
Configuration
Manager for z/OS

Migrate specific VSAM files to Db2, to enable integration with other applications or dashboards



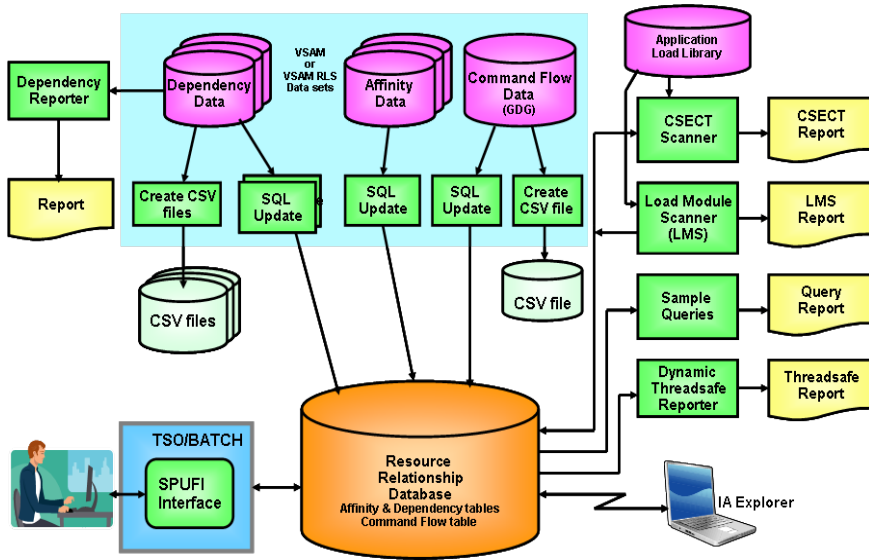
IBM CICS
VSAM Transparency
for z/OS

IBM CICS Configuration Manager for z/OS



- Single point of control for creating and managing CICS resource definitions, whether they reside in CSDs, a CICSplex SM data repository or zFS
- Streamline resource-definition processes for new application development and deployment, and integration with the change-management products
- Edit RDO definitions from CSD files or CICSplex SM data repositories in the same session
- Copy or move definitions across configurations
- Perform actions such as INSTALL and NEWCOPY on multiple definitions, across multiple active CICS regions, in a single step

IBM CICS Interdependency Analyzer for z/OS

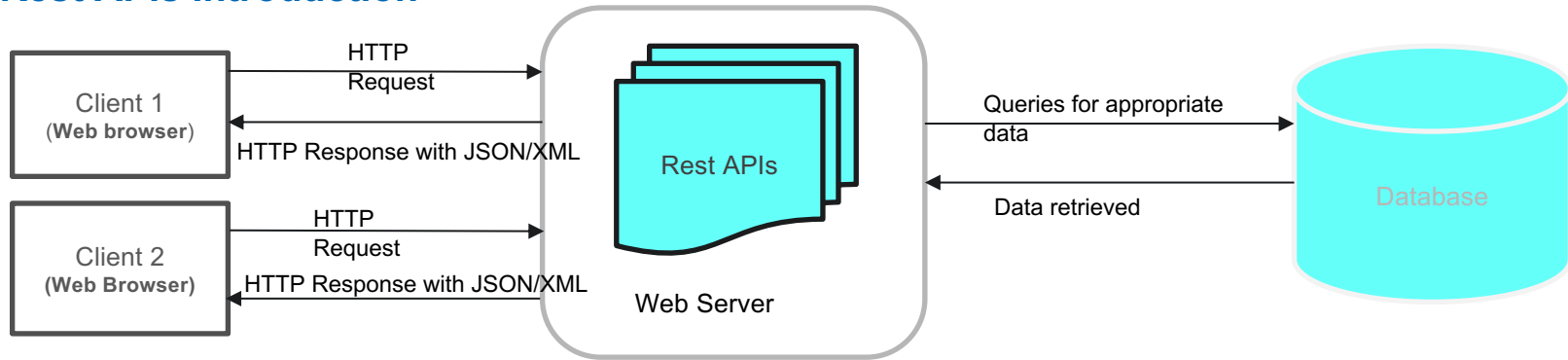


CICS Interdependency Analyzer architecture

- Dynamic discovery tool to understand the relationships, dependencies and flow of CICS Transaction Server applications
- Intuitive plug-in for IBM CICS Explorer
- Ability to see uses and where used relationships
- Faster implementation of IBM CICSplex SM workload management
- Highlighting of service-enablement candidates
- Resource use and dependencies by platform
- REST APIs

REST APIs for CICS IA

Rest APIs Introduction



- REST APIs is an architectural style
- REST APIs are bundled as a Web Application and hosted on a Web Server
- Clients can fire HTTP requests which invokes the REST APIs
- REST API queries the DB for data, processes it, and sends HTTP response containing XML or JSON data.

Advantages of REST APIs in CICS IA

- Enables use of modern UI libraries for better visualization of data.
- REST API architecture enables loose coupling between UI and business logic.
- Enables easy integration with other tools.
- Generation of complex reports is possible by using modern reporting frameworks.
- Enables to create test cases for user applications based on data collected by CICS IA

REST APIs for CICS IA

Existing Eclipse based UI

Threadsafe Report

Program	LIB Dataset Name	APIST	Concurrency	Execution Key	Storage Protect	Reentrant	CICS Release
IVP							
IYDZT328 (CICS TS 5.3)							
> NSM0XCMN	CICSIAD.CIA510.AUTOTEST.LOADLIB	CICSAPI	QUASIRENT	USER	INACTIVE	Y	0700
> NSM0XGUI	CICSIAD.CIA510.AUTOTEST.LOADLIB	CICSAPI	QUASIRENT	USER	INACTIVE	Y	0700
> NSM0XVDS	CICSIAD.CIA510.AUTOTEST.LOADLIB	CICSAPI	QUASIRENT	USER	INACTIVE	Y	0700
> NSM0XWOD	CICSIAD.CIA510.AUTOTEST.LOADLIB	CICSAPI	QUASIRENT	USER	INACTIVE	Y	0700

Command Type	Function	Type	Object	Offset	Use count	Threadsafe	Inhibitor
CICS	LINK	PROGRAM	NSM0XSSM	00000C2A	2	N	N
CICS	LINK	PROGRAM	NSM0XVDS	00000AAC	2	N	N
CICS	LINK	PROGRAM	NSM0XVDS	00000A44	2	N	N
CICS	LINK	PROGRAM	NSM0XVDS	00000B14	3	N	N
CICS	LINK	PROGRAM	NSM0XWOD	00000BB6	2	N	N
CICS	READ	FILE	EXMPCONF	00000894	7	Y	N

REST APIs for CICS IA

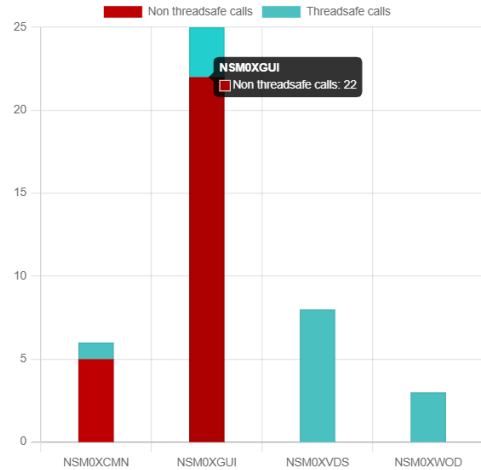
Sample UI (Threadsafe report)

Improved UI using modern UI technologies

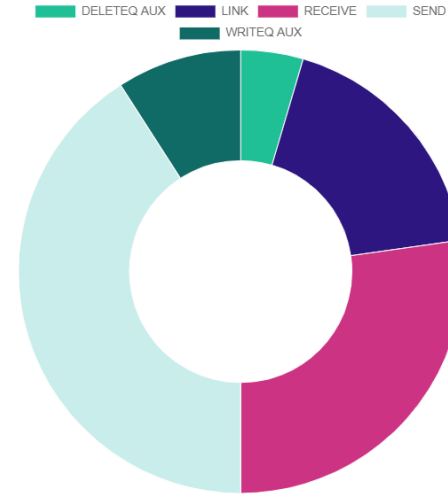
Threadsafe report

powered by CICS Interdependency Analyzer

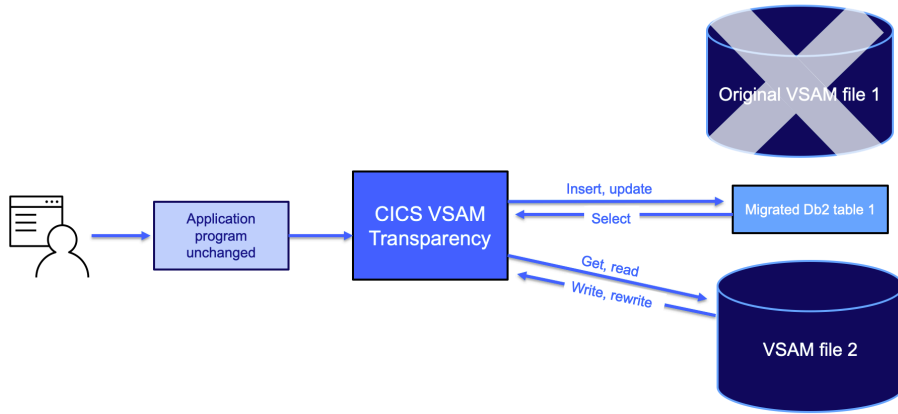
EGUI



Non Thread-safe call details in the program :NSM0XGUI



IBM CICS VSAM Transparency for z/OS



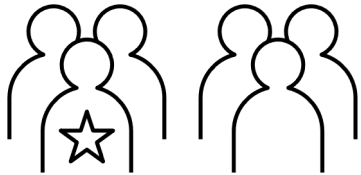
- Move critical CICS and batch VSAM data to Db2 with no program changes
- Integrate your data with new and existing Db2 applications
- Access Db2 data 24x7
- Automate VSAM-to-Db2 mapping
- Low risk: staged migration of individual VSAM files
- Dual-mode testing facility

Part Two:

Monitoring and managing
applications and
CICS Systems

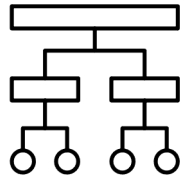
Monitoring and managing applications and CICS systems

Creating, editing and managing CICS definitions wherever they reside
Cold Start analysis



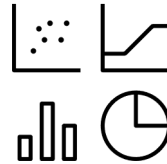
IBM CICS Configuration Manager for z/OS

Visualizing command flow, application structure, and application insights



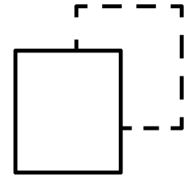
IBM CICS Interdependency Analyzer for z/OS

Performance tuning, trend analysis and capacity planning



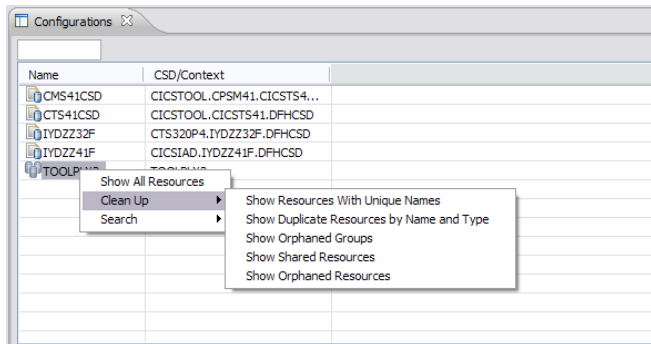
IBM CICS Performance Analyzer for z/OS

Quickly cloning regions for development, test or production regions

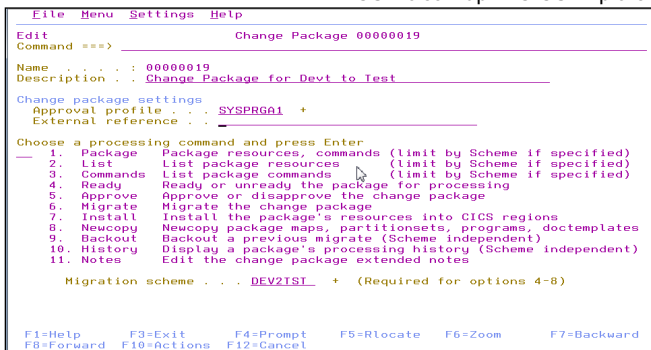


IBM CICS Deployment Assistant for z/OS

IBM CICS Configuration Manager for z/OS



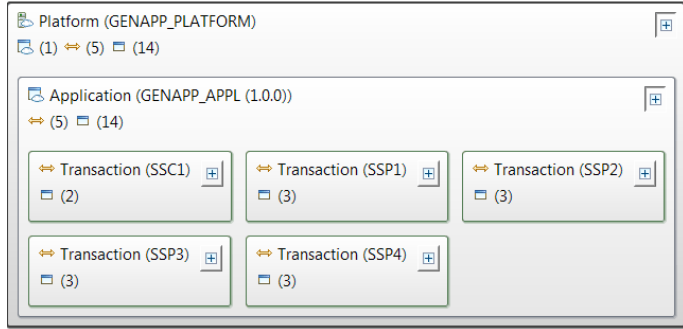
CSD clean-up in CICS Explorer



Create and manage change packages

- Single point of control for creating and managing CICS resource definitions, whether they reside in CSDs, a CICSplex SM® data repository or zFS
- Automate resource definition management by grouping a set of resource definitions into a change package, with defined approval requirements specifying the number and roles of the required approvers for every change package
- Enable authorized users to copy one or more resource definitions across multiple CICS configurations with one command
- Select a set of *transformation rules* for migration schemes, enabling a resource definition to be modified during an upgrade to match its target environment, and search and replacement of definitions within a single CICS configuration
- Gain a detailed understanding of the current definitions in your system, such as which definitions have become redundant or if any have been defined twice, with advanced search and display capabilities to explore resource relationships

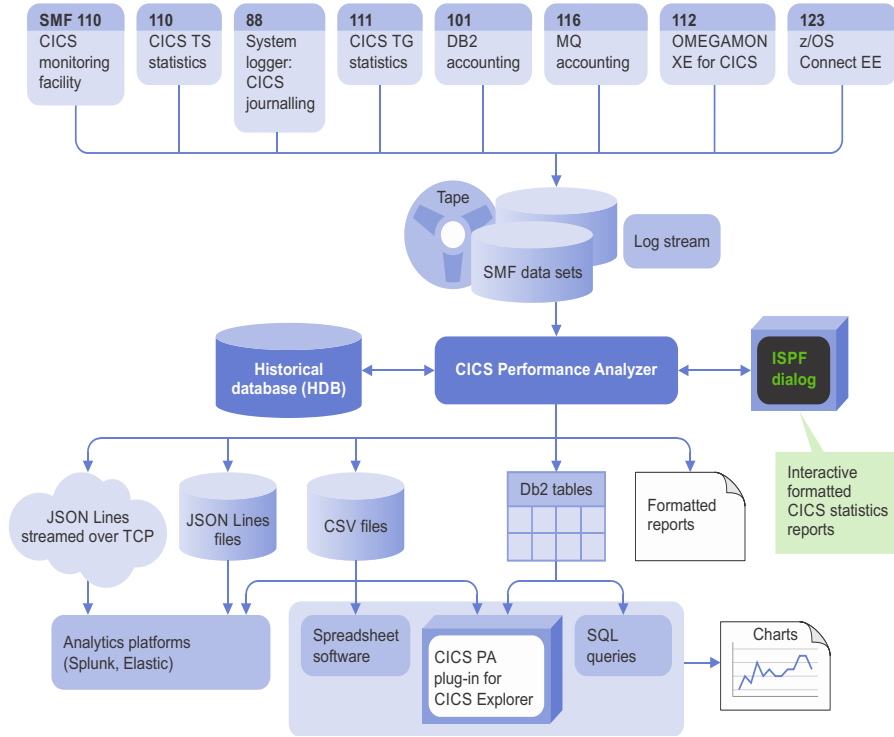
IBM CICS Interdependency Analyzer for z/OS



Graphical visualization of platform and application relationships

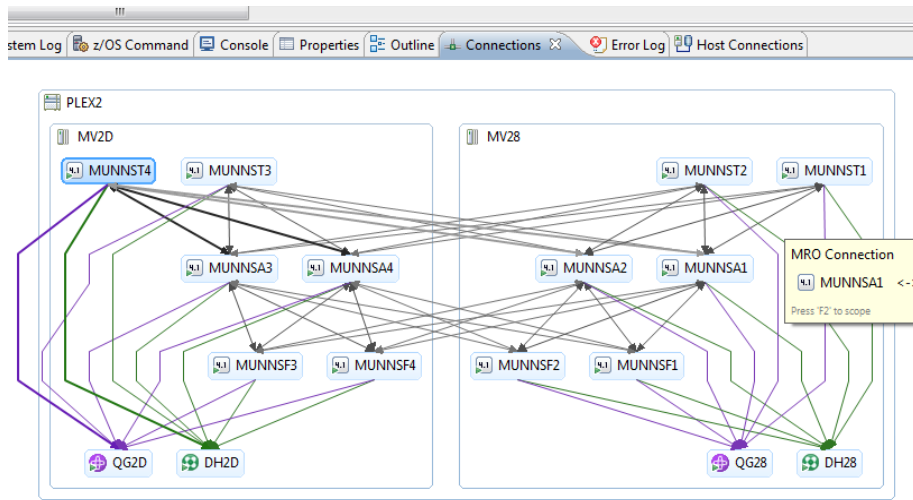
- Dynamic discovery tool to understand the relationships, dependencies and flow of CICS Transaction Server applications
- Advanced program analysis using Command Flow
- Identification of threadsafe and non-threadsafe programs
- Isolation and removal of affinities
- Highlighting of service-enablement candidates
- Resource use and dependencies by platform

IBM CICS Performance Analyzer for z/OS



- Comprehensive CICS Transaction Server performance analysis and reporting
- Over 250 customizable report forms
- Batch reporting for more than 95 CICS Transaction Server and CICS Transaction Gateway (CICS TG) statistics
- Subsystem reporting for Db2, MQ and OMEGAMON, and soon to include z/OS Connect Enterprise Edition
- Transaction tracking and transaction profiling reports
- Trending and capacity planning with historical database – know when to increase resource availability during high demand cycles
- View reports through CICS PA's own interfaces, CICS Explorer or an external analytics platform

IBM CICS Deployment Assistant for z/OS



CICS DA: Scoping the Connections view

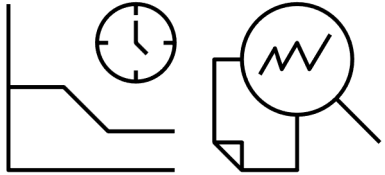
- Support for IBM CICS Transaction Server 5.6
- RESTful API to access model, invoke discovery or initiate cloning of CICS regions
- Discover CICS regions and dependencies, and over 30 entity types
- Export model in CSV format for external reporting
- Provisioning wizards to create new IBM CICSplex System Manager infrastructure
- TCP/IP usage report

Part Three:

Troubleshooting

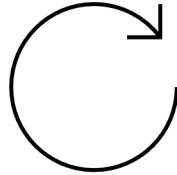
Troubleshooting

Identify when and where the issue occurred with Transaction Profiling and comprehensive offline reports



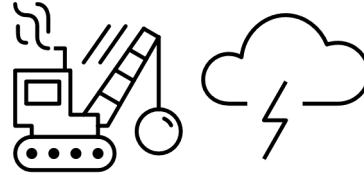
IBM CICS
Performance
Analyzer for z/OS

Identify and roll back changes to resource definitions



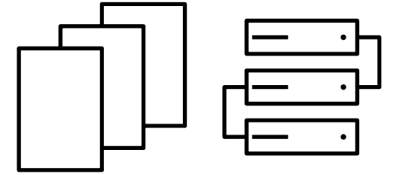
IBM CICS
Configuration
Manager for z/OS

In extreme cases...
Recover CICS data following logical or physical disaster



IBM CICS
VSAM Recovery
for z/OS

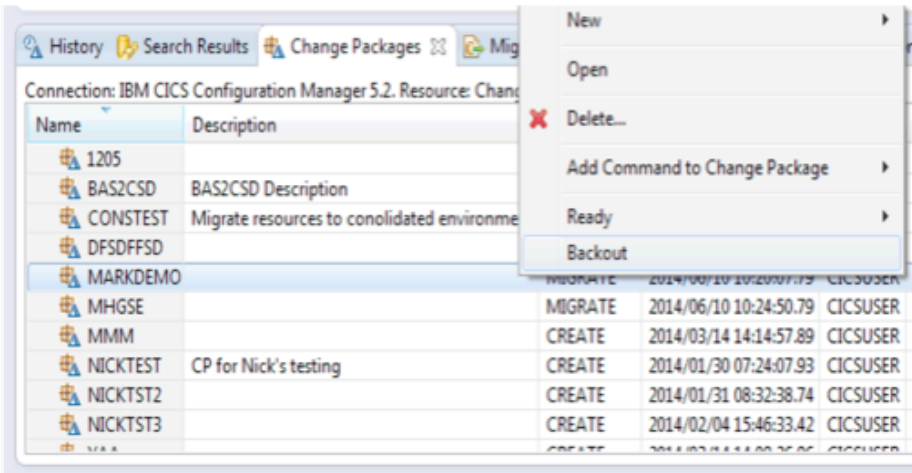
Data replication and backups



IBM CICS
VSAM Recovery
for z/OS

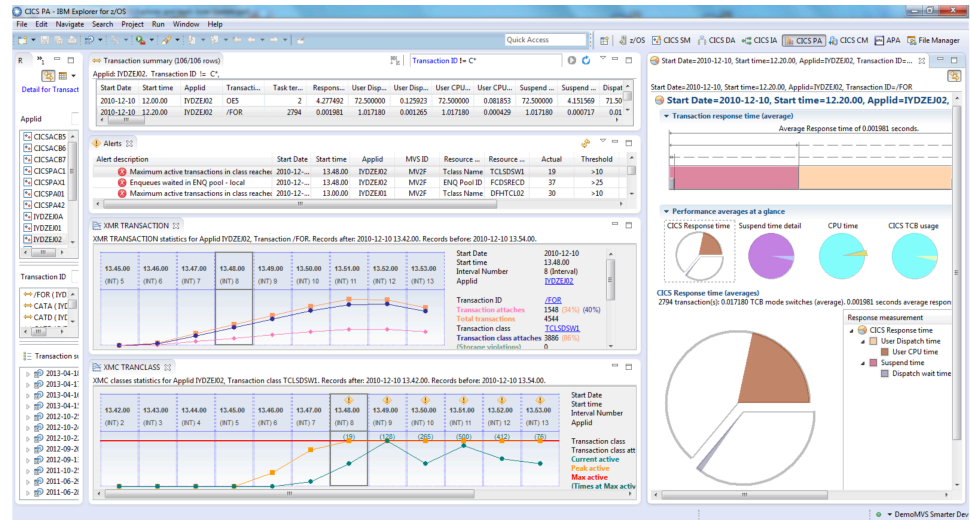
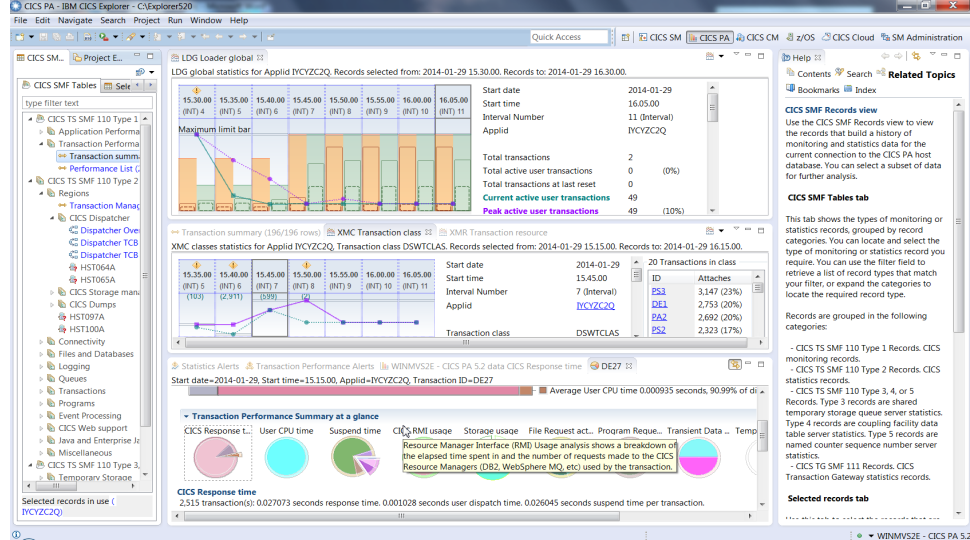
IBM CICS Configuration Manager for z/OS

- Audit trail of changed resources, dates and times, and the list of approvers, along with the ability to produce a range of reports
- Reverse changes, reverting to previous definitions, any number of states back, which enables you to test an upgrade with confidence
- Back out all changes in a single step if required

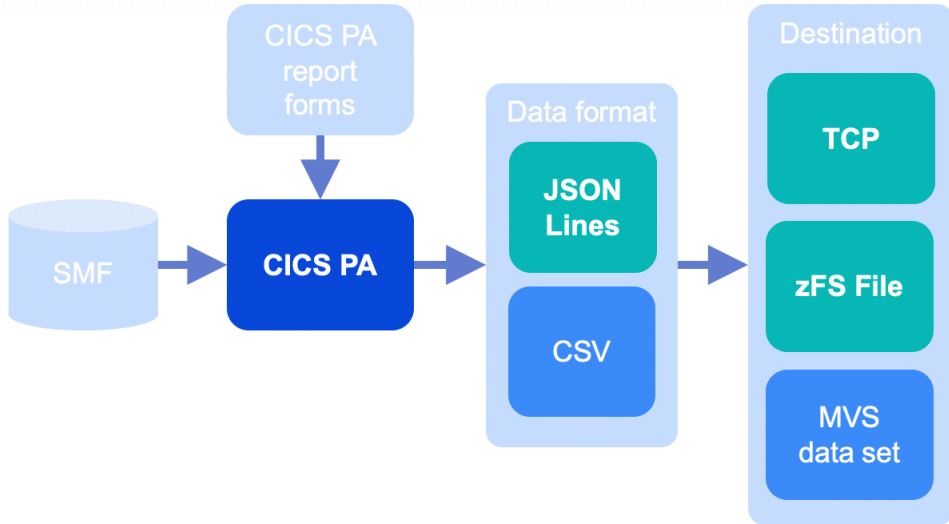


IBM CICS Performance Analyzer for z/OS

- Choice of interfaces for problem resolution: view dashboards in CICS Explorer (see right), or export data to external analytics platforms (more details on the next slide)
- Statistics and performance alerts for early awareness of issues
- Faster problem resolution and elimination of system bottlenecks
- Ability to uncover trends that can lead to poor performance and outages

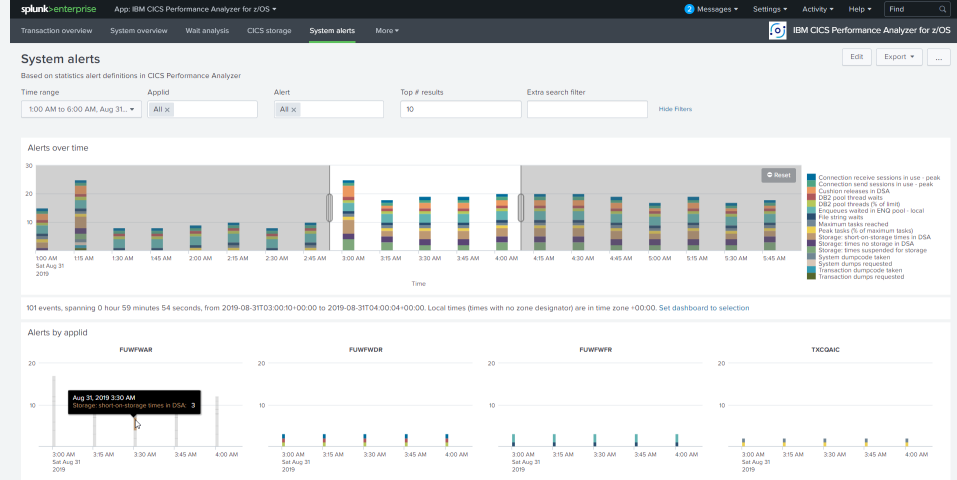
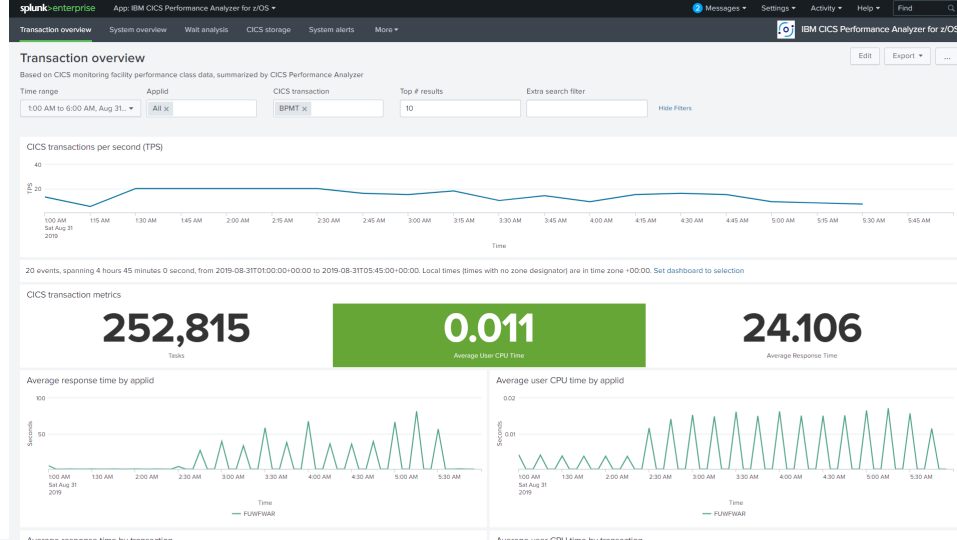


IBM CICS Performance Analyzer for z/OS: Output in JSON Lines format



- New functionality: output data in JSON Lines format by applying APAR PH16158
- Data types output to JSON Lines: form-based performance list & summary data, statistics list & summary data; statistics alerts
- Forward data to any application that can read JSON Lines, e.g. Splunk®
- Sample Splunk application available
- **Summarization is a key strength of CICS PA:** you can forward useful data to analytics platforms at relatively low volumes.
- With CICS PA, you can reduce data volume by:
 - Using report forms with very few fields
 - Using selection criteria to only forward events for selected applids and/or tran codes
 - Forwarding performance list data only for short time periods of special interest rather than continuously
 - Specifying longer reporting intervals for summary report forms

IBM CICS Performance Analyzer for z/OS: Sample Splunk® application



Report Set

- Report Set Extract Performance and Statistics definition enhanced to extract JSON lines to data sets or z/FS files
- Report Set Forwarding category to stream csv and JSON lines to a remote host using Profile Connection Settings (option 0.6)

```
EDIT                               Report Set - JSONFWD                               Row 3 of 18
Command ==> |                                                                Scroll ==> CSR

Description . . . Forwarding to analytics platform

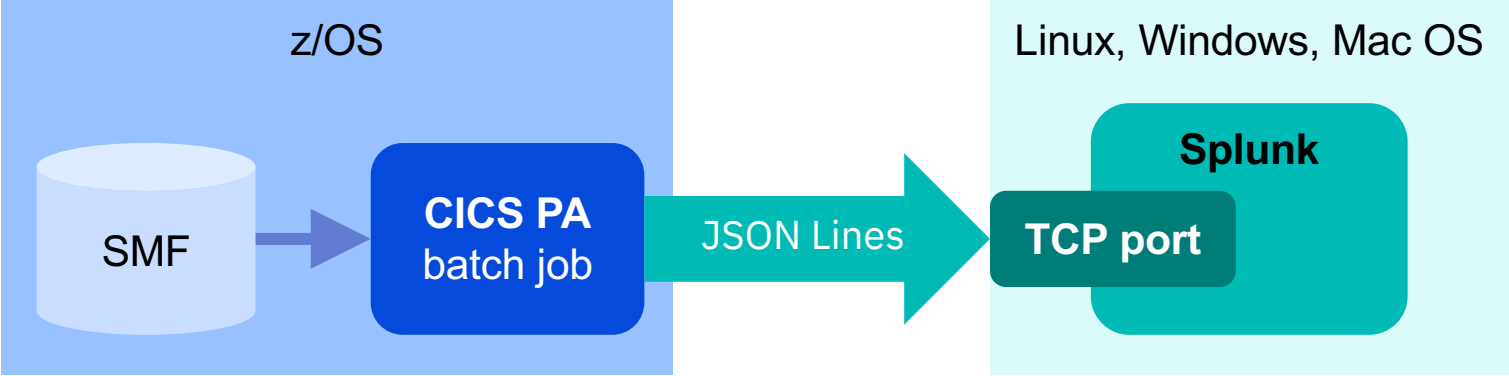
Enter "/" to select action.

** Reports **
+ ___ Performance Reports                               No
+ ___ Exception Reports                               No
+ ___ Transaction Resource Usage Reports              No
+ ___ Statistics Reports                             No
+ ___ Subsystem Reports                              No
+ ___ System Reports                                 No
- ___ Extracts                                       No
  ___ Cross-System Work                             No
  ___ Performance                                   No
  ___ Record Selection                             No
  ___ HDB Load                                       No
  ___ System Logger                                 No
  ___ Statistics                                   No
- ___ Forwarding                                     Yes
  ___ Performance                                   Yes
  ___ Statistics                                   Yes
** End of Reports **
```

Support JSON lines

Forward csv and JSON lines to remote host

Example process



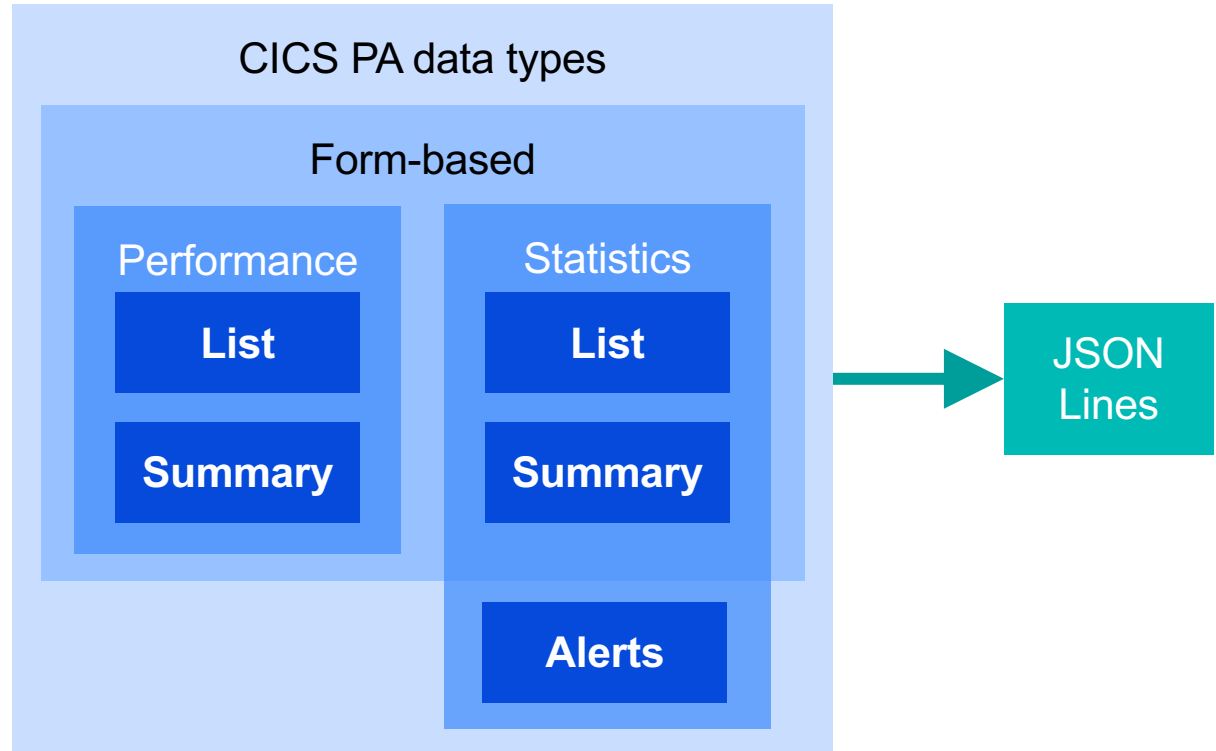
CICS PA data types output to JSON Lines

Form-based:

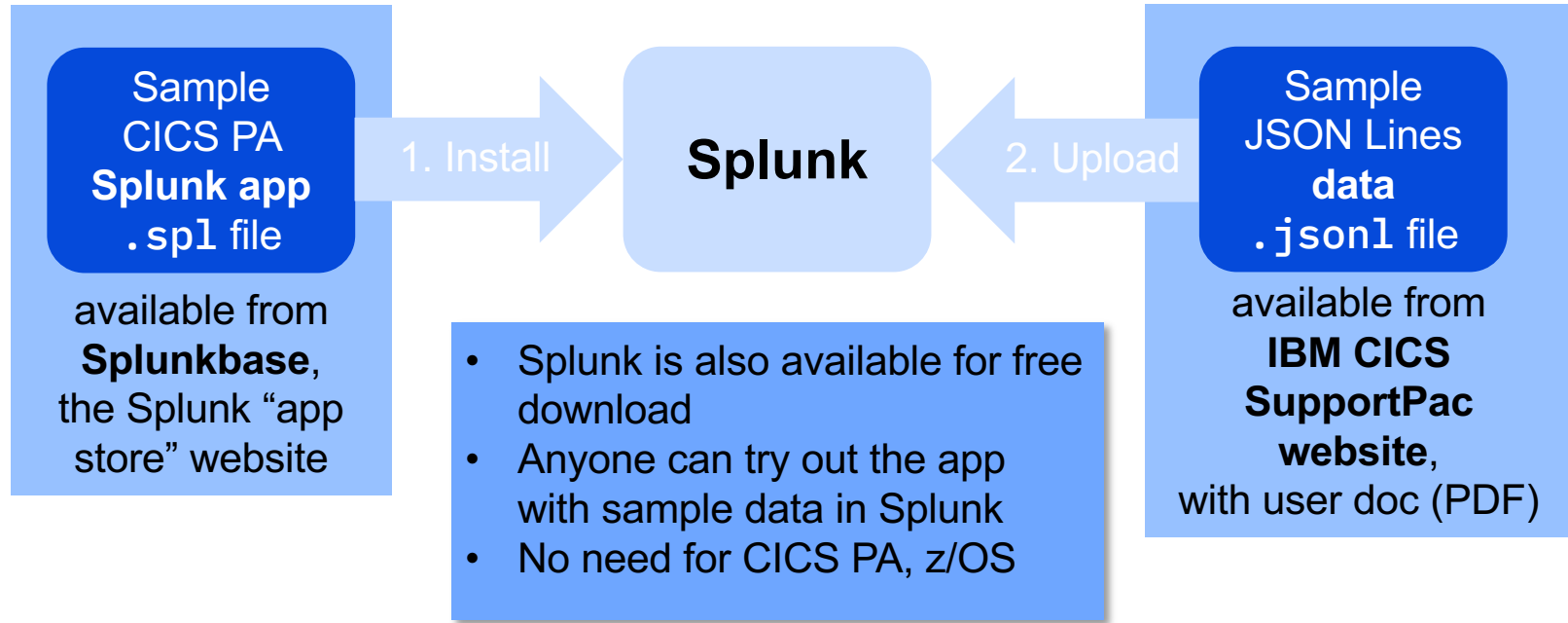
- Performance list
- Performance summary
- Statistics list
- Statistics summary

Other:

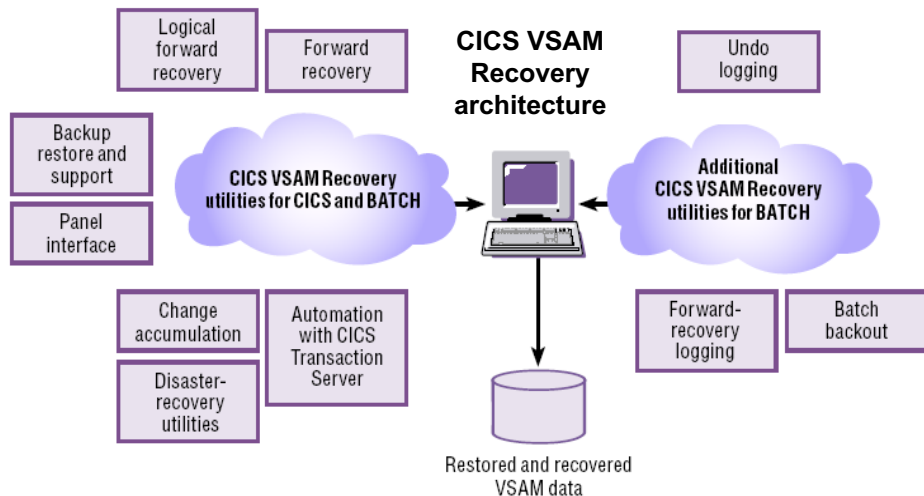
- Statistics alerts



Sample Splunk® app and data: free downloads



IBM CICS VSAM Recovery for z/OS



- Forward recovery for CICS-managed VSAM data
- Forward recovery and back-out for batch VSAM data
- Replication logging for IBM GDPS Active/Active sites
- NOTIFY support for IBM and non-IBM backups
- Support for backups created by Backup-While-Open (BWO)
- Automated recovery

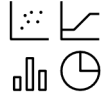
Summary

Creating/modernizing applications



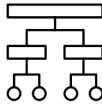
CICS Interdependency Analyzer
CICS Configuration Manager
CICS VSAM Transparency

Monitoring existing applications



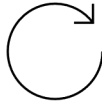
CICS Performance Analyzer

Managing existing applications



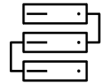
CICS Configuration Manager
CICS Interdependency Analyzer
CICS Deployment Assistant

Troubleshooting



CICS Performance Analyzer
CICS Configuration Manager

Data recovery and replication



CICS VSAM Recovery

Links:

CICS Interdependency Analyzer

<https://www.ibm.com/support/pages/ibm-cics-interdependency-analyzer-zos>

CICS Configuration Manager

<https://www.ibm.com/support/pages/ibm-cics-configuration-manager-zos>

CICS VSAM Transparency

<https://www.ibm.com/support/pages/ibm-cics-vsam-transparency-zos>

CICS Performance Analyzer

<https://www.ibm.com/support/pages/ibm-cics-performance-analyzer-zos>

CICS Deployment Assistant

<https://www.ibm.com/support/knowledgecenter/SSCLNZ/welcome.html>

CICS VSAM Recovery

<https://www.ibm.com/support/pages/ibm-cics-vsam-transparency-zos>

IBM

Financing Available: IBM Global Financing provides numerous payment options to help you acquire the technology you need to grow your business. For more information, visit: ibm.com/financing.

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