IBM

WebSphere. software

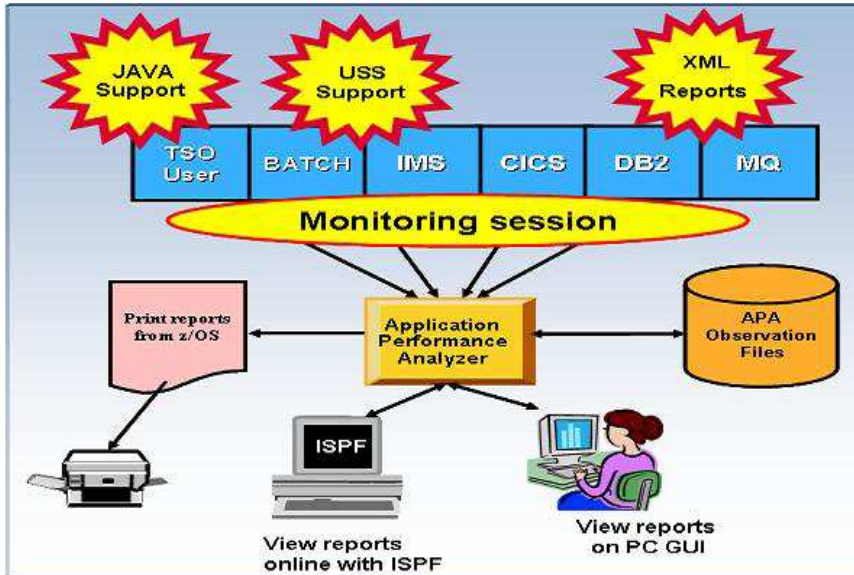# IBM Application Performance Analyzer for z/OS, V13.1

Figure 1: Application Performance Analyzer environment

IBM® Application Performance Analyzer for z/OS®, V13.1 is an application performance-measurement tool designed for use on IBM z/OS systems. The product's key function is to measure and report on how system resources are used by applications running in virtually any z/OS address space such as Time Sharing Option (TSO) and batch.

Application Performance Analyzer can also analyze transactions running under an online subsystem such as IBM IMS™, IBM CICS®, and WebSphere® Application Server, as well as DB2® stored procedures.

Using Application Performance Analyzer helps you maximize the performance of your existing hardware resources and helps you improve the performance of your applications and subsystems.

Application Performance Analyzer software aids application design, development and maintenance cycles. It helps you evaluate application prototypes in the design phase, review the impact of increased data volume or changes in business requirements on performance, and generate historical data and reports to analyze performance trends and evaluate program changes for cost-effectiveness.

Highlights

- *Provides easy-to-use function that facilitates isolation of performance problems in applications*

- *Helps pinpoint performance bottlenecks impacting online transaction-response times*

- *Assists in reducing batch application turnaround time*

- *Supports Assembler, C/C++, COBOL, PL/I, Java, CICS, DB2, IMS, WebSphere MQ, and WebSphere Application Server*

- *Increases application understanding during stress and regression testing*

- *Can be integrated with Fault Analyzer and Debug Tool with source mapping side files*

- *Workstation GUI interface*

In an increasingly complex and competitive business environment with challenging business demands, managers, system programmers, application developers and performance specialists are under pressure to operate their systems at peak level.

Adopting on demand business strategies and implementing Web services, for example, create more-complex, business-critical applications, increasing the risk of you missing your service-level commitments.

To mitigate this risk, you must carefully consider performance and, ultimately, customer satisfaction as part of your business strategy.

Application Performance Analyzer collects samples from the monitored address space and analyzes the system or resource application in the following categories:

- *Control section (CSECT) usage within each load module*

- *Instruction or statement usage within each CSECT*

- *Assembler, COBOL and PL/I statement usage within each module or disassembly for modules without source*

- *Direct access storage device (DASD) statistics*

- *Processor usage*

- *IMS transactions and databases*

- *DB2 databases, including stored procedures, Structured Query Language (SQL), Distributed Data Facility(DDF) and detailed DB2 delay information*

- *CICS transactions and the multiplicity of relationships in those transactions from a performance perspective*

- *IBM WebSphere MQ queue information*

Robust features to help you meet your application-performance objectives

Application Performance Analyzer software includes a number of robust features designed to help you optimize the performance of your application resources.

Online analysis

This feature provides displays of overall system activity, enabling you to check on all jobs running online or to select a specific active job to monitor.

Flexible monitoring

The flexible monitoring capabilities of Application Performance Analyzer offer a wide variety of ways to help ensure that the performance of your applications meets your needs:

- *Specify the number of times that Application Performance Analyzer should monitor a job's performance when that job or program becomes active.*

- *Enable DB2, IMS, CICS and WebSphere MQ applications to be monitored.*

- *Select how long to monitor selected applications — based on when the job ends, the duration of sampling or the number of samples to be taken.*

- *Invoke the monitoring capability from other programs such as IBM Tivoli® OMEGAMON®, IBM Tivoli Enterprise Portal and IBM Application Performance Analyzer Automation Assistant using the Application Performance Analyzer batch command interface.*

- *Compare two observation reports to see the relevant differences, to supplement threshold monitoring.*
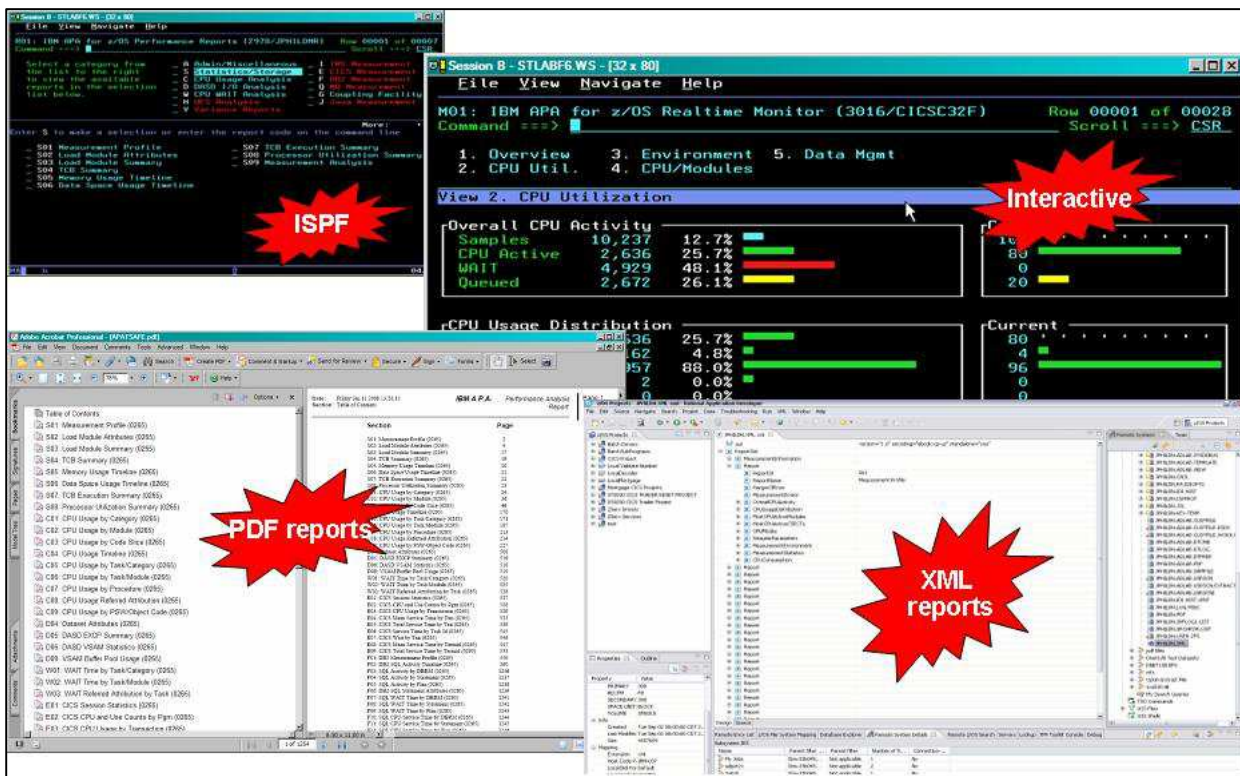

Figure 2: Application Performance Analyzer views and reports

- *Use threshold monitoring to enable an observation request to monitor an application by specifying the processor-usage, execute channel program (EXCP) and job-duration thresholds. For jobs that have had problems, you can use this feature to initiate an observation without any direct involvement to permit analysis after the sampling is complete.*

Reports

Reports generated by Application Performance Analyzer help you to identify key performance bottlenecks that need examination and resolution. This data is available in printed reports that you can choose to create as text files, Adobe® PostScript® files, or XML files, to view on your workstation.

Other monitoring information

As well as providing performance information about your application code, Application Performance Analyzer also delivers other important information. For example, you can use Application Performance Analyzer to track performance issues to a DASD problem.

Processing performance analysis shows processor usage by procedure, referred attribution, wait time by task, category and module, as well as multiple DASD statistics including EXCP, virtual storage access method (VSAM) statistics and input-output wait times.

Support for IBM Parallel Sysplex® Coupling Facility lets you monitor jobs and transactions on any logical partition (LPAR) image in the Parallel Sysplex environment you choose and also report how IBM Workload Manager for z/OS affects application performance.
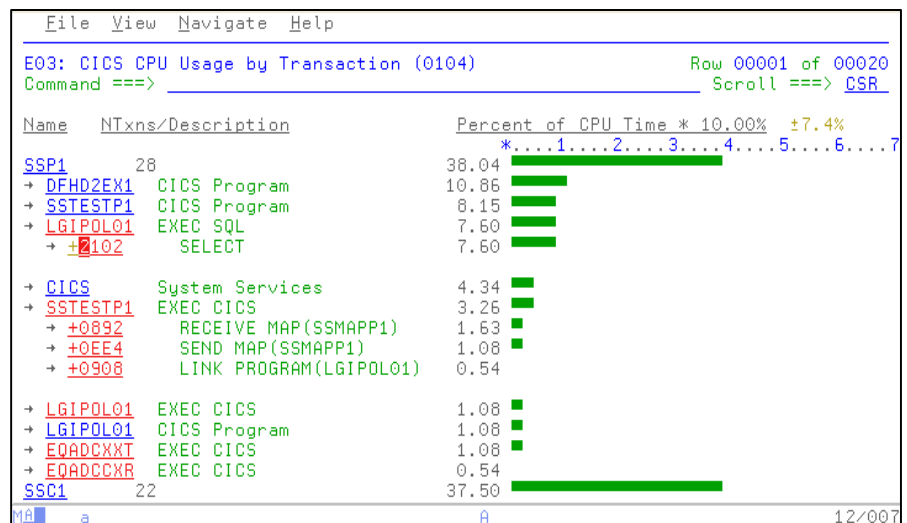
```
 File  View  Navigate  Help
_____
E03: CICS CPU Usage by Transaction (0104)      Row 00001 of 00020
Command ===> _____      Scroll ===> CSR

Name    NTxns/Description         Percent of CPU Time * 10.00%  ±7.4%
                                  *....1....2....3....4....5....6....7
SSP1       28                     38.04  ████████████
→ DFHD2EX1  CICS Program          10.86  ███
→ SSTESTP1  CICS Program           8.15  ██
→ LGIPOL01  EXEC SQL               7.60  ██
  → +2102      SELECT              7.60  ██

→ CICS      System Services        4.34  █
→ SSTESTP1  EXEC CICS              3.26  █
  → +0892      RECEIVE MAP(SSMAPP1) 1.63  ▪
  → +0EE4      SEND MAP(SSMAPP1)    1.08  ▪
  → +0908      LINK PROGRAM(LGIPOL01) 0.54

→ LGIPOL01  EXEC CICS              1.08  ▪
→ LGIPOL01  CICS Program           1.08  ▪
→ EQADCXXT  EXEC CICS              1.08  ▪
→ EQADCCXR  EXEC CICS              0.54
SSC1       22                     37.50  ████████████
MA▪  a                            A              12/007
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Figure 3: Application Performance Analyzer provides detailed information about running CICS transactions

Sixty-four bit memory use is now reported in Application Performance Analyzer.

User Interface

With a single interface, you can monitor applications in test, as well as in production, and in multiple source languages, including Assembler, C/C++, COBOL and PL/I. Optimized code support for COBOL and PL/I is provided to enable you to monitor production applications.

Support for IBM subsystems

Application Performance Analyzer, a single tool, provides application-monitoring support for all of IBM's major subsystems:

CICS

Support for IBM CICS Transaction Server, including V5, enables you to monitor specific CICS transactions using wildcard transaction prefixes or by termed selection. With this support, you can trace transactions during critical situations, rather than waiting to review data collected periodically.

DB2

Support for DB2, including V11, delivers relevant information for performance analysis and tuning, including SQL statements and processor usage by SQL statement as well as for IBM DB2 stored procedures written in Java™. You can also choose to trace all DB2 calls.

IMS

Support for IMS applications, including V13, means you can have IMS application-performance data-on-call time and service-call time for DL/I. You can also choose to trace all IMS calls. Over 20 IMS reports are now provided, helping to improve your ability to analyze the influences of IMS on application performance.

WebSphere MQ

WebSphere MQ support provides information about CPU usage by queue, by request and by transaction in WebSphere MQ. Application Performance Analyzer also provides service time by queue, request and transaction, as well as wait time, for the same categories.

New in V13.1

- Enhancements to started tasks, sampling, exits and intercepts
  - Recognize Language Environment mode switch for CPU attribution.
  - SMS classes for Application Performance Analyzer created files
  - Repeat observations of batch jobs
  - WebSphere measurements automatically measure servant regions and report Java and DB2 activity
  - Preloaded JVMTI agent
  - CICS+ recognizes CICS filtering criteria
  - IEFU84 SMF exit program supports DB2 V10 compressed records
  - Support of the DB2 V10 bind option for DB2 Explain
  - Clear Application Performance Analyzer exits when started task ends
  - Dynamic change of selected CONFIG settings
  - Export file name configuration setting
  - Export and Import a hierarchy of sample files
  - Import operation checks for duplicate sample file names
  - Compatibility support for Enterprise COBOL V5, CICS TS V5.1, DB2 V11, IMS V13, z/OS V2.1, and Adabas V8.2.4
- Enhancements to reporting capability
  - Observation List displays setup filters.
  - Observation List allows sort by owner.
  - Observation List displays status of "ErrMsg" when a non-critical error occurs during sampling.
  - JobId is added to observation details pop-up.
  - Display separate counts for general and special processors in Measurement Profile report.
  - Optionally attribute CPU usage to system modules in CPU Referred Attribution report.
  - Report statistics for multi-volume datasets in DASD I/O Analysis reports.
  - Identify CICS remote files in the DASD EXCP Summary report.
  - New WebSphere report displays CICS distributed program link calls are initiated from the servant regions
  - New WebSphere report correlates WebSphere Application Server activity with DB2 activity.
  - Create XML report files as variable block by default.
  - Support SYSDEBUG source files created by Enterprise PL/I for z/OS V4.
- Enhancements to the listener and plug-in
  - Replace report options view with a dialog.
  - Add report options and report download to individual reports toolbar.
  - Display procedure names in CPU Usage by Procedure report.
  - Allow the user to select the location of the local reports repository.
  - Allow access to local reports for inactive started tasks.
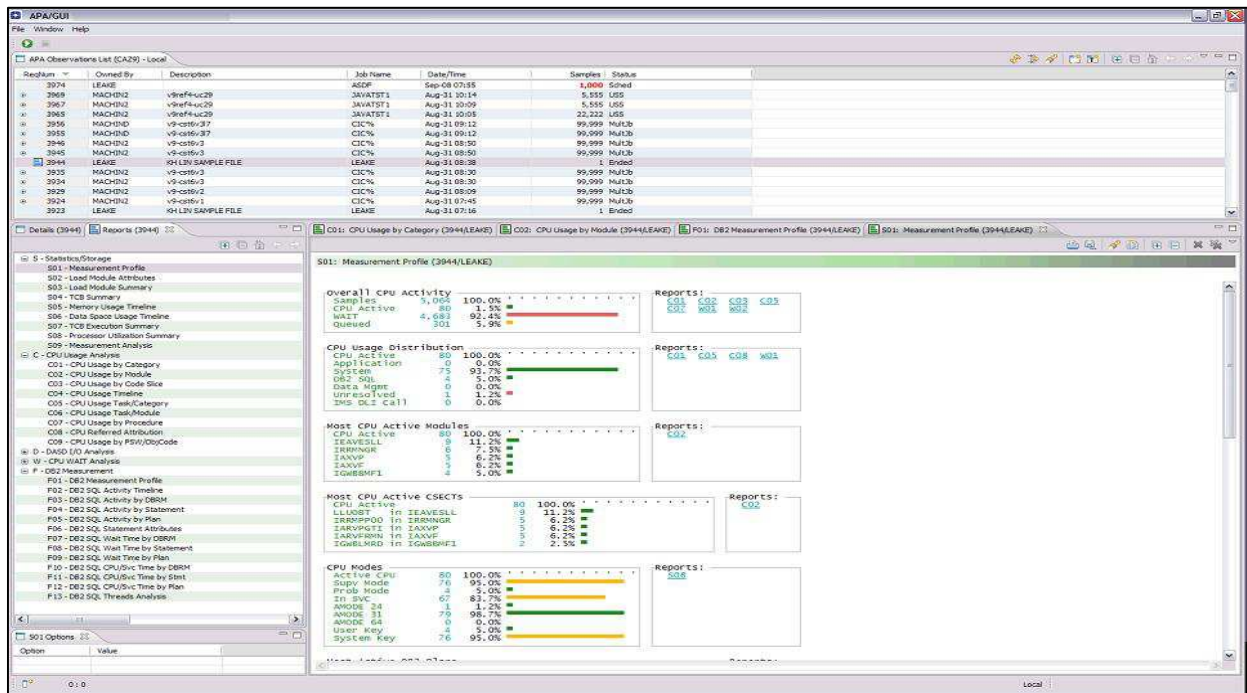 - Support connection to Application Performance Analyzer instances operating on different z/OS systems.
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Figure 4: The GUI provides a workstation interface to request and view reports

IBM Application Performance Analyzer for z/OS, V13.1, at a glance
Hardware requirements
• Any hardware configuration capable of running IBM z/OS
Software requirements
• IBM z/OS, V1.12 (5694-A01) or later
• Depending on the functions used in the product, other related products may be required. See the product Web site, listed below, for more detailed software requirements

Part of a leading-edge family of z/OS tools

Application Performance Analyzer is part of the IBM Problem Determination family of products. These include IBM Application Performance Analyzer for z/OS, IBM Debug Tool for z/OS, IBM Fault Analyzer for z/OS, IBM File Manager for z/OS, and IBM Workload Simulator for OS/390 and z/OS.

Designed to help you maximize your investment in IBM System z® products, these products are a robust suite of integrated development tools that enable you to improve IT operational efficiency and transform applications to achieve greater business flexibility.

The IBM Problem Determination tools help application developers to improve application delivery throughout the application life cycle. You can use these tools to help increase productivity and IT effectiveness across source code debugging, application ABEND analysis, data management and application performance analysis.

The IBM Problem Determination tools do much more than support traditional applications. They include capabilities that enable you to build SOA applications. They are tightly integrated with other tools in the IBM problem determination tools portfolio, as well as other tool sets. The tools also continue to support and make the most of the latest subsystem levels. These capabilities help make IBM problem determination tools an excellent choice for your business.

For more information

To learn more about IBM problem determination tools, contact your IBM representative or
IBM Business Partner, or visit the following Web sites:

IBM Problem Determination Tools family:
ibm.com/software/awdtools/deployment/

IBM Application Performance Analyzer for z/OS:
ibm.com/software/awdtools/apa/

IBM Debug Tool for z/OS:
ibm.com/software/awdtools/debug tool/

IBM Fault Analyzer for z/OS:
ibm.com/software/awdtools/faultanalyzer

IBM File Manager for z/OS:
ibm.com/software/awdtools/filemanager

IBM Workload Simulator for z/OS and OS/390:
ibm.com/software/awdtools/workloadsimulator

TAKE BACK CONTROL WITH WebSphere.