

T H E P O W E R O F K N O W I N G

RTPA™

Real-Time Program Audit™

TRIPLE ADDED
VALUE,
CAPABILITY, AND
PRODUCTIVITY.

The Real-Time Program Audit (RTPA) is a patented and revolutionary software tool for IBM i information technology and enterprise computing.

RTPA produces real-time analytics and a permanent audit log, including comment line documentation, providing irrefutable answers to what is actually happening inside the computer.

Like a video camera, RTPA records all programs executing inside the computer, including the contents of variables and a timestamp, without human presence or intervention.

RTPA documents source programs to simplify and enhance developer and management understanding, protecting the crucial corporate software asset.

RTPA audits both in-house and vendor-supplied IBM i RPG, COBOL and Control Language Program (CLP) source programs.

RTPA Query provides analytics of executing programs and can sequence all program audit output by the moment-in-time the computer actually executed the statement.

Real-time understanding of your technology and business data, right now.



Unlock the mysteries of the entire crucial corporate software asset to executive management



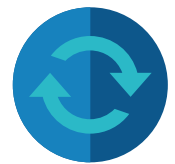
Simplify and speed information technology development; dramatically reduces effort, time and IT costs



Provide "Just give me the answer, now" real-time focused answers without human research and presence



Protect the company from critical knowledge loss when your best people leave or retire



Enable rapid application development, testing, QA, support, maintenance, auditing and greatly reduce errors



"I wish IBM would make this product part of the base OS."

3.835 out of 4



Don Rima, Editor
iSeries Magazine

RTPA™

Real-Time Program Audit™

BENEFITS

1. Enhanced Productivity and Reduced Operating Costs

RTPA enables **cost savings** by greatly speeding the mastery and utilization of large and complex programs, and reducing programmer orientation and training time. IT developers, QA, testers, and others can expect to **simplify** their jobs and **reduce errors, tripling their capability and productivity**. RTPA eliminates the need for complex coding skills and knowledge of the source program and applications by logging exactly what is executing in the program. Speculation and guess work are eliminated, as is the need to recreate error conditions and the use of developer interactive debugging, all of which cost time and money.

2. Advanced Real-Time Analytics and Insights

RTPA enables unattended real-time source program auditing, recording, and data analytics by providing a video camera like recording of exactly what is happening inside the computer, in real time. The ability to see exactly what is happening inside large and complex source programs reduces stress on developers and executive/IT management, and dramatically increases IT staff and system productivity. RTPA **demystifies complex source code and complex applications** for all who utilize it, in all stages of program development, testing and maintenance.

3. Supports Innovation

RTPA dramatically improves the **speed and quality of programming and DevOps activities** such as program development, testing, QA, as well as related implementation, support, and operations using its unique and patented real-time analytics functionality. This **radically simplifies program development** while reducing or eliminating complex time consuming and now needless work such as using interactive debug and guessing.

4. Positive Customer Experience

An enterprise's customer base will immediately benefit from the use of RTPA as **real-time** system errors and problems can be resolved with **enhanced speed**. RTPA provides **the exact problem issue** audit, and provides for real-time analytics and correction. Developers become smarter and more capable by enabling them to identify and address issues affecting customers in real-time, leading to greater customer satisfaction.

5. Enhanced Security and Enterprise Stability

RTPA creates a **secure recording of all source program output**, providing an **immutable source program activity log**. This security-camera like functionality produces a **backup** of all source program activity, protecting your enterprise from system failures, and providing stability and program-knowledge protection in the case of staff turnover.

Minimum IBM i System Requirements

IBM i Power 5 or later, and appropriate IBM ILE Compilers (RPG, CLP, COBOL)

Approximately 300 million bytes of disk storage

The RTPA licensed software is written in IBM i RPG

Note: RTPA is intended for use in development, testing, pilot production, problem analysis and correction. RTPA is not intended for use in normal production processing.

RTPA 60 Day licensed software Evaluation download for \$995

- RTPA licensed program executable software download for RPG, COBOL, CLP and RTPA Query to customer IBM i
- Two interactive GoToMeeting sessions for customer RTPA orientation, training, and education
- Optional GoToMeeting customer IT audit and recommendations by visible experts
- Optional customer in-house education and training via GoToMeeting by visible experts
- Optional RTPA whole product implementation review to improve customer IT environment

Pricing and Ordering Information

The Real-Time Program Audit (RTPA) is a patented software utility productivity tool. See the www.realtimeprogramaudit.com web site for additional information, pricing, terms and conditions, and to license the Real-Time Program Audit software.



More information available in the IBM Global Solutions Directory, from "Harkins & Associates, Inc."

CONTACT:

Harkins & Associates, Inc. 816 Daisy Lane, West Chester PA 19382 USA
www.realtimeprogramaudit.com

Dr. Suzanne A. Harkins, CEO: suzanne.harkins@harkinsaudit.com
Phone (London, UK): +44 747 341 9768

Paul H. Harkins: paul.harkins@harkinsaudit.com
Phone (Philadelphia, USA): +1 610 431 1755

© 2018 by Harkins & Associates, Inc. All rights reserved

RTPA™

Real-Time Program Audit™

HOW THE REAL-TIME PROGRAM AUDIT (RTPA) WORKS

Select the IBM i RPG, COBOL, or CLP program for RTPA auditing

The IBM i developer enters the RTPA command (RTPA for RPG, RTPACO for COBOL, or RTPACL for CLP programs) to enable the source program with RTPA auditing capability (Figure 1).

```

Z$PGM01R          Real-Time Program Audit for RPG (V5R1)          Date: 1/23/18
PHH                Select Program to Audit                       Time: 13:48:48
                                                            Serial: 1034F0C
                                                            Model: 525

Type choices, press F10.
Input Source Member Name. . . NEWEXPSH      Name, generic*, *ALL, F4=List
  File Name . . . . . QRPGLSRC             Name
  Library Name. . . . . Z$AUDIT           Name

Object to Library . . . . . Z$AUDITE       Name
Create As . . . . . *PGM                  *PGM, *MOD      Audit comments Y

Audit File Outq . . . . . *SAME           Name, *SAME     Audit copybooks N

JOBID for pgm compile libl . . *LIBL      *LIBL, JOBID   Audit Timestamp N
  Library Name. . . . .                  Name
                                                            Document Only  N

Audit Compile Listing Stmtms .   to        1-99999
(Only)                          to
                                to
                                to
                                to

F2=Watch Variables  F3=Exit  F5=Refresh  F6=Auditing Options F7=Compile Options
F8=Conditional Auditing F9=Maint. Menu  F10=Submit Exp  F24=More Keys
(C) 2016 Harkins & Associates, Inc.
    
```

Figure 1 – Select RPG source program **NEWEXPSH** in file **QRPGLSRC** in library **Z\$AUDIT**

Press command **10** to submit the program for expansion with RTPA auditing statements

The input RPG source program is compiled (Figure 2) and checked for successful compilation, and the RPG input program compile listing is used, with RTPA expansion options, like audit statement comments and timestamp statements, and RTPA audit statements are added to a COPY of the input source program in file QRPGLSRC in library Z\$AUDITE.

```

302  torder = 1500;
303  iorder = 78.543;
304  // value of iorder has now been computed
305  xorder = torder + 13.45 +
306  // this is a continuation free form statement preceded with +
307  26.2 + iorder;
308  sorder = torder + xorder + iorder + rorder + morder + norder;

Key Field Information
4  CUSTMAST
   CUSTREC1 is the RPG name of the external format CUSTREC.
   CUCUST          PACK      7,0 SIGNED
   CUSTOR          PACK      7,0 SIGNED

2  ORDERDE
   ODETREC
   ODORD#          PACK      7,0 SIGNED
   ODLIN#          PACK      5,0 SIGNED

Global Field References:
IORDER            S(8,3)
TORDER            S(7,0)
XORDER            S(9,2)

partial source program compile listing FTPed to Cloud for audit enablement)
    
```

Figure 2 – Input RPG source program **NEWEXPSH** compile listing
RPG source statements 302 through 308 are illustrated together with compile listing information



RTPA™

Real-Time Program Audit™

The RTPA expanded source program (**Figure 3**) is created in file QRPGLSRC in library Z\$AUDITE (developer work library) and the RTPA audit enabled object program is created in library Z\$AUDITE (work library), ready for testing.

The RTPA enabled RPG program NEWEXPSH object program is created in library Z\$AUDITE.

(Note: RTPA does not change the input source program or the production object program.)

Test RPG expanded source program NEWEXPSH with RTPA audit logging.

Test the RTPA enabled RPG object program NEWEXPSH in library Z\$AUDITE.

CALL Z\$TEST1N (CLP Z\$TEST1N calls RPG object program NEWEXPSH (**Figure 4**).

Pricing and Ordering Information

The Real-Time Program Audit (RTPA) is a patented software utility productivity tool. See the www.realtimeprogramaudit.com web site for additional information, pricing, terms and conditions, and to license the Real-Time Program Audit software.



More information available in the IBM Global Solutions Directory, from "Harkins & Associates, Inc."

HOW THE REAL-TIME PROGRAM AUDIT (RTPA) WORKS

```

0323.00      torder = 1500;
0324.00              Z$SRC# = 16  ;
0325.00              EXSR      Z$GENS;
0326.00              EXCEPT  Z$00016;
0327.00      iorder = 78.543;
0328.00              Z$SRC# = 17  ;
0329.00              EXSR      Z$GENS;
0330.00              EXCEPT  Z$00017;
0331.00      // value of iorder has now been computed
0332.00              Z$SRC# = 18  ;
0333.00              EXSR      Z$GENS;
0334.00      xorder = torder + 13.45 +
0335.00      // this is a continuation free form statement preceded with +
0336.00              26.2 + iorder;
0337.00              EXSR      Z$GETI;
0338.00              EXCEPT  ZF00001;
0339.00      sorder = torder + xorder + iorder + rorder + morder +
norder;
0340.00              Z$SRC# = 19  ;
0341.00              EXSR      Z$GENS;
0342.00              EXCEPT  Z$00019;

(partial source program FTPed from Cloud audit enabled for forensic
accounting)

```

Figure 3 – RTPA expanded RPG source program NEWEXPSH with inserted audit statements in blue

```

302      torder = 1500;
          1500
303      iorder = 78.543;
          78.543
304      // value of iorder has now been computed
305      xorder = torder + 13.45 +
          1618.19      1500
306      // this is a continuation free form statement preceded with +
307              26.2 + iorder;
          78.543
308      sorder = torder + xorder + iorder + rorder + morder + norder;
          93330.496      1500
                                1618.19      78.543
                                    32109.876
                                        34567.098
                                            23456.789

(partial Client Stock Account Summary forensic accounting audit output)

```

Figure 4 – RTPA audit log output of RPG program NEWEXPSH execution with timestamp on right

Every executing RPG source statement is audited with the timestamp, and variable contents (in red).

CONTACT:

Harkins & Associates, Inc. 816 Daisy Lane, West Chester PA 19382 USA
www.realtimeprogramaudit.com

Dr. Suzanne A. Harkins, CEO: suzanne.harkins@harkinsaudit.com
Phone (London, UK): +44 747 341 9768

Paul H. Harkins: paul.harkins@harkinsaudit.com
Phone (Philadelphia, USA): +1 610 431 1755

© 2018 by Harkins & Associates, Inc. All rights reserved