Program Directory for

IBM Application Performance Analyzer for z/OS

V13.01.00

Program Number 5655-Q09

FMID HAD0D10

for Use with
z/OS V1.12.00 or later

Document Date: October 2013

GI13-3002-00

Note

Before using this information and the product it supports, be sure to read the general information under 7.0, “Notices” on page 30.

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Figures

1.0 Introduction

This program directory is intended for system programmers who are responsible for program installation and maintenance. It contains information about the material and procedures associated with the installation of IBM Application Performance Analyzer for z/OS. This publication refers to IBM Application Performance Analyzer for z/OS as Application Performance Analyzer.

The Program Directory contains the following sections:

- 2.0, “Program Materials” on page 4 identifies the basic program materials and documentation for Application Performance Analyzer.
- 3.0, “Program Support” on page 7 describes the IBM support available for Application Performance Analyzer.
- 4.0, “Program and Service Level Information” on page 9 lists the APARs (program level) and PTFs (service level) that have been incorporated into Application Performance Analyzer.
- 5.0, “Installation Requirements and Considerations” on page 11 identifies the resources and considerations that are required for installing and using Application Performance Analyzer.
- 6.0, “Installation Instructions” on page 21 provides detailed installation instructions for Application Performance Analyzer. It also describes the procedures for activating the functions of Application Performance Analyzer, or refers to appropriate publications.

Before installing Application Performance Analyzer, read the *CBPDO Memo To Users* and the *CBPDO Memo To Users Extension* that are supplied with this program in softcopy format and this Program Directory; then keep them for future reference. Section 3.2, “Preventive Service Planning” on page 7 tells you how to find any updates to the information and procedures in this Program Directory.

Application Performance Analyzer is supplied in a Custom-Built Product Delivery Offering (CBPDO, 5751-CS3). The Program Directory that is provided in softcopy format on the CBPDO tape is identical to the hardcopy format if one was included with your order. All service and HOLDDATA for Application Performance Analyzer are included on the CBPDO tape.

Do not use this program directory if you install Application Performance Analyzer with a SystemPac or ServerPac. When you use one of those offerings, use the jobs and documentation supplied with the offering. The offering will point you to specific sections of this program directory as needed.

1.1 Application Performance Analyzer Description

Application Performance Analyzer V13.1 helps developers and systems personnel tune applications and resolve performance constraints. Application Performance Analyzer helps optimize the perfomance of existing z/OS application resources.

- Easy-to-use functions helps isolate application performance problems.

- Helps pinpoint performance bottlenecks affecting online transaction-reponse times.
- Assists in reducing batch application turnaround time.
- Supports C/C++, Assembler, COBOL, PL/I, Java, CICS, DB2, IMS, WebSphere MQ, and WebSphere Application Server.
- Increases application understanding during stress and regression testing.

Version 13 includes the following enhancements.

Enhancements to started task, sampling, exits and intercepts include:

- 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, and CICS and IMS filtering criteria
- 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 added for:
  - Enterprise COBOL V5
  - CICS TS V5.1
  - DB2 V11
  - IMS V13
  - z/OS V2.1
  - Adabas V8.2.4

Enhancements to Reporting capability include:

- 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 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 include:

- 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

The CAZLANGX module was moved from the HLQ.SCAZAUTH library to the Problem Determination Common Component's IPV.SIPMODA library where CAZLANGX exists as an alias. This removes duplication between the two tools. A copy of PDTCC(5655-Q12) is being provided free of charge.

1.2 Application Performance Analyzer FMIDs

Application Performance Analyzer consists of the following FMIDs:

HAD0D10

2.0 Program Materials

An IBM program is identified by a program number. The program number for Application Performance Analyzer is 5655-Q09.

Basic Machine-Readable Materials are materials that are supplied under the base license and feature numbers, and are required for the use of the product.

The program announcement material describes the features supported by Application Performance Analyzer. Ask your IBM representative for this information if you have not already received a copy.

2.1 Basic Machine-Readable Material

The distribution medium for this program is physical media or downloadable files. This program is in SMP/E RELFILE format and is installed by using SMP/E. See 6.0, “Installation Instructions” on page 21 for more information about how to install the program.

You can find information about the physical media for the basic machine-readable materials for Application Performance Analyzer in the *CBPDO Memo To Users Extension*.

Figure 1 describes the program file content for Application Performance Analyzer.

Figure 1. Program File Content

Name	ORG	RECFM	LRECL	BLK SIZE
SMPMCS	SEQ	FB	80	6400
IBM.HAD0D10.F1	PDSE	U	0	6144
IBM.HAD0D10.F2	PDS	FB	80	8800
IBM.HAD0D10.F3	PDS	FB	80	8800
IBM.HAD0D10.F4	PDS	FB	80	8800
IBM.HAD0D10.F5	PDS	FB	80	8800
IBM.HAD0D10.F6	PDS	FB	80	8800
IBM.HAD0D10.F7	PDS	FB	80	8800
IBM.HAD0D10.F8	PDS	VB	1028	27998

2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for Application Performance Analyzer.

2.3 Program Publications

The following sections identify the basic publications for Application Performance Analyzer.

Figure 2 identifies the basic unlicensed publications for Application Performance Analyzer. Those that are in softcopy format Publications can be obtained from the IBM Publications Center website at http://www.ibm.com/shop/publications/order

Figure 2. Basic Material: Unlicensed

Publication Title	Form Number	Media Format
Agreements and License Information	LC27-5975	http://www.ibm.com/software/awdtools/apa/library/
Application Performance Anaylyzer for z/OS Program Directory	GI13-3002	http://www.ibm.com/software/awdtools/apa/library/
Problem Determination Tools Common Component Program Directory	GI10-8969	http://www.ibm.com/software/awdtools/apa/library/

2.3.1 Optional Program Publications

Figure 3 identifies the optional unlicensed program publications for Application Performance Analyzer. One copy of each of these publications is included when you order the optional materials for Application Performance Analyzer. Additional copies can be obtained from the IBM Publications website at URL: http://www.ibm.com/shop/publications/order/. For further assistance contact your IBM representative.

Figure 3. Optional Material: Unlicensed Publications

Publication Title	Form Number
Application Performance Analyzer Messages Guide	SC14-7599
Application Performance Analyzer Customization Guide	SC14-7598
Application Performance Analyzer User's Guide	SC14-7597

2.4 Program Source Materials

No program source materials or viewable program listings are provided for Application Performance Analyzer.

2.5 Publications Useful During Installation

You might want to use the publications listed in Figure 4 during the installation of Application Performance Analyzer.

Figure 4. Publications Useful During Installation

Publication Title	Form Number	Media Format
IBM SMP/E for z/OS User's Guide	SA22-7773	http://www.ibm.com/shop/publications/order/
IBM SMP/E for z/OS Commands	SA22-7771	http://www.ibm.com/shop/publications/order/
IBM SMP/E for z/OS Reference	SA22-7772	http://www.ibm.com/shop/publications/order/
IBM SMP/E for z/OS Messages, Codes, and Diagnosis	GA22-7770	http://www.ibm.com/shop/publications/order/
z/OS UNIX System Services Planning	GA22-7800	http://www.ibm.com/shop/publications/order/
z/OS UNIX System Services User's Guide	SA22-7801	http://www.ibm.com/shop/publications/order/
z/OS UNIX System Services Command Reference	SA22-7802	http://www.ibm.com/shop/publications/order/
z/OS UNIX System Services Messages and Codes	SA22-7807	http://www.ibm.com/shop/publications/order/

3.0 Program Support

This section describes the IBM support available for Application Performance Analyzer.

3.1 Program Services

Contact your IBM representative for specific information about available program services.

3.2 Preventive Service Planning

Before you install Application Performance Analyzer, make sure that you have reviewed the current Preventive Service Planning (PSP) information. Review the PSP Bucket for General Information, Installation Documentation, and the Cross Product Dependencies sections. For the Recommended Service section, instead of reviewing the PSP Bucket, it is recommended you use the IBM.ProductInstall-RequiredService fix category in SMP/E to ensure you have all the recommended service installed. Use the **FIXCAT(IBM.ProductInstall-RequiredService)** operand on the **APPLY CHECK command**. See 6.1.10, “Perform SMP/E APPLY” on page 26 for a sample APPLY command

If you obtained Application Performance Analyzer as part of a CBPDO, HOLDDATA is included.

If the CBPDO for Application Performance Analyzer is older than two weeks by the time you install the product materials, you can obtain the latest PSP Bucket information by going to the following website:

http://www14.software.ibm.com/webapp/set2/psearch/search?domain=psp

You can also use S/390 SoftwareXcel or contact the IBM Support Center to obtain the latest PSP Bucket information.

For program support, access the Software Support Website at http://www-01.ibm.com/software/support/.

PSP Buckets are identified by UPGRADEs, which specify product levels; and SUBSETs, which specify the FMIDs for a product level. The UPGRADE and SUBSET values for Application Performance Analyzer are included in Figure 5

Figure 5. PSP Upgrade and Subset ID

UPGRADE	SUBSET	Description
APAD10	HAD0D10	Application Performance Analyzer Base

3.3 Statement of Support Procedures

Report any problems which you feel might be an error in the product materials to your IBM Support Center. You may be asked to gather and submit additional diagnostics to assist the IBM Support Center in their analysis.

Figure 6 on page 8 identifies the component IDs (COMPID) for Application Performance Analyzer.

Figure 6. Component IDs

FMID	COMPID	Component Name	RETAIN Release
HAD0D10	5655Q0900	APPL PERF ANALYZER	D10

4.0 Program and Service Level Information

This section identifies the program and relevant service levels of Application Performance Analyzer. The program level refers to the APAR fixes that have been incorporated into the program. The service level refers to the PTFs that have been incorporated into the program.

4.1 Program Level Information

The following APAR fixes against previous releases of Application Performance Analyzer have been incorporated into this release. They are listed by FMID.

- FMID HAD0D10

PK09257	PK56958	PK83625
PK09718	PK58411	PK83626
PK10751	PK58412	PK85552
PK10866	PK59236	PK85553
PK12802	PK61517	PK87433
PK13151	PK61518	PK87612
PK14202	PK61880	PK90027
PK17898	PK63259	PK91574
PK18698	PK63260	PK94334
PK20741	PK63950	PK94976
PK24472	PK66662	PK95224
PK26164	PK66663	PK95226
PK29025	PK67298	PK96329
PK31684	PK69392	PK97539
PK32728	PK70702	PK97543
PK34099	PK71247	PM00475
PK35123	PK72946	PM03857
PK35123	PK72954	PM05497
PK35492	PK72955	PM11663
PK36620	PK74827	PM13855
PK37054	PK74828	PM15384
PK38638	PK74840	PM15941
PK38640	PK77204	PM18468
PK40831	PK77205	PM20921
PK44980	PK77261	PM26069
PK44981	PK77731	PM29171
PK48842	PK79760	PM31911
PK50933	PK79760	PM34639
PK53861	PK80910	PM34080
PK53863	PK81932	PM38171
PK55830	PK83624	PM40449

PM43159	PM67931	PM82339
PM46725	PM67043	PM85313
PM50126	PM71986	PM88726
PM55310	PM73601	PM91520
PM57904	PM76649	PM92509
PM65950	PM81140	

4.2 Service Level Information

No PTFs against this release of Application Performance Analyzer have been incorporated into the product package.

Frequently check the Application Performance Analyzer PSP Bucket for HIPER and SPECIAL attention PTFs against all FMIDs that you must install. You can also receive the latest HOLDDATA, then add the **FIXCAT(IBM.PRODUCTINSTALL-REQUIREDSERVICE)** operand on your APPLY CHECK command. This will allow you to review the recommended and critical service that should be installed with your FMIDs.

5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating Application Performance Analyzer. The following terminology is used:

- *Driving system*: the system on which SMP/E is executed to install the program.

  The program might have specific operating system or product level requirements for using processes, such as binder or assembly utilities during the installation.

- *Target system*: the system on which the program is configured and run.

  The program might have specific product level requirements, such as needing access to the library of another product for link-edits. These requirements, either mandatory or optional, might directly affect the element during the installation or in its basic or enhanced operation.

In many cases, you can use a system as both a driving system and a target system. However, you can make a separate IPL-able clone of the running system to use as a target system. The clone must include copies of all system libraries that SMP/E updates, copies of the SMP/E CSI data sets that describe the system libraries, and your PARMLIB and PROCLIB.

Use separate driving and target systems in the following situations:

- When you install a new level of a product that is already installed, the new level of the product will replace the old one. By installing the new level onto a separate target system, you can test the new level and keep the old one in production at the same time.
- When you install a product that shares libraries or load modules with other products, the installation can disrupt the other products. By installing the product onto a separate target system, you can assess these impacts without disrupting your production system.

5.1 Driving System Requirements

This section describes the environment of the driving system required to install Application Performance Analyzer.

5.1.1 Machine Requirements

The driving system can run in any hardware environment that supports the required software.

5.1.2 Programming Requirements

Figure 7. Driving System Software Requirements

Program Number	Product Name	Minimum VRM	Minimum Service Level will satisfy these APARs	Included in the shipped product?
Any **one** of the following:				
5694-A01	z/OS	V01.12.00	N/A	No
5650-ZOS	z/OS	V02.01.00	N/A	No
5655-G44	IBM SMP/E for z/OS	V03.05.00	N/A	No

Note: Installation might require migration to new z/OS releases to be service supported. See http://www-03.ibm.com/systems/z/os/zos/support/zos_eos_dates.html.

Application Performance Analyzer is installed into a file system, either HFS or zFS. Before installing Application Performance Analyzer, you must ensure that the target system file system data sets are available for processing on the driving syst em. OMVS must be active on the driving system and the target system file system data sets must be mounted on the driving system.

If you plan to install Application Performance Analyzer in a zFS file system, this requires that zFS be active on the driving system. Information on activating and using zFS can be found in z/OS Distributed File Service zSeries File System Administration, SC24-5989.

5.2 Target System Requirements

This section describes the environment of the target system required to install and use Application Performance Analyzer.

Application Performance Analyzer installs in the z/OS (Z038) SREL.

5.2.1 Machine Requirements

The target system can run in any hardware environment that supports the required software.

5.2.2 Programming Requirements

5.2.2.1 Installation Requisites

Installation requisites identify products that are required and *must* be present on the system or products that are not required but *should* be present on the system for the successful installation of this product.

Mandatory installation requisites identify products that are required on the system for the successful installation of this product. These products are specified as PREs or REQs.

Figure 8. Target System Mandatory Installation Requisites

Program Number	Product Name	Minimum VRM	Minimum Service Level will satisfy these APARs	Included in the shipped product?
Any **one** of the following:				
5694-A01	z/OS	V1.12.00 or higher	N/A	No
5650-ZOS	z/OS	V2.01.00	N/A	No

Note:

Application Performance Analyzer V13.1 is tested and supported only for use with the currently supported levels of IBM software and hardware.

If your operating system is an unsupported z/OS release (z/OS V1.11 or lower), IBM will undertake to fix any problems that you might encounter when running Application Performance Analyzer V13.1 on that level of unsupported product. However, IBM must be able to reproduce the problem using a supported level of the same product. If the problem can be reproduced and fixed, the fix will be developed and tested using the supported levels of IBM software. If a fix is made available, it is likely to work on the unsupported product level; however, IBM cannot guarantee that the fix will work in this case.

Note: Installation might require migration to new z/OS releases to be service supported. See http://www-03.ibm.com/systems/z/os/zos/support/zos_eos_dates.html.

Conditional installation requisites identify products that are *not* required for successful installation of this product but can resolve such things as certain warning messages at installation time. These products are specified as IF REQs.

Application Performance Analyzer has no conditional installation requisites.

5.2.2.2 Operational Requisites

Operational requisites are products that are required and *must* be present on the system or products that are not required but *should* be present on the system for this product to operate all or part of its functions.

Mandatory operational requisites identify products that are required for this product to operate its basic functions. These products are specified as PREs or REQs.

Application Performance Analyzer has no mandatory operational requisites.

Conditional operational requisites identify products that are *not* required for this product to operate its basic functions but are required at run time for this product to operate specific functions. These products are specified as IF REQs.

Figure 9 (Page 1 of 2). Target System Conditional Operational Requisites

Program Number	**Product Name and Minimum VRM/Service Level**	**Function**
5696-234	High Level Assembler for MVS & VM & VSE V1.6	Debug of Assembler programs
5724-T07	Rational Developer for System z V8.5.x or V9.0.x	Remote debug on workstation
Any **one** of the following:		
5655-M15	CICS TS for z/OS V3.1 or V3.2	CICS support
5655-S97	CICS TS for z/OS V4.1 or V4.2	CICS support
5655-Y04	CICS TS for z/OS V5.1	CICS support
5722-DFJ	CICS TS for z/OS Value Unit Edition V5.1	CICS support
Any **one** of the following:		
5635-DB2	DB2 UDB for z/OS V9	DB2 support
5697-P12	DB2 9 for z/OS Value Unit Edition	DB2 support
5605-DB2	DB2 UDB for z/OS V10	DB2 support
5697-P31	DB2 10 for z/OS Value Unit Edition	DB2 support
5615-DB2	DB2 UDB for z/OS V11	DB2 support
5697-P43	DB2 11 for z/OS Value Unit Edition	DB2 support
Any **one** of the following:		
5635-A02	IMS V11	IMS support
5635-A03	IMS V12	IMS support
5655-DSQ	IMS Database Value Unit Edition, V12	IMS support
5635-A04	IMS V13	IMS support
5655-DSM	IMS Database Value Unit Edition, V13	IMS support
Any **one** of the following:		
5688-216	AD/Cycle C/370 V1.2	Debug of C/370 programs
5655-121	C/C++ for MVS/ESA V3	Debug of C/C++ programs
5694-A01	z/OS V1.12 (or later) C/C++ Element	Debug of C/C++ programs
Any **one** of the following:		
5655-H31	IBM Enterprise PL/I for z/OS V3.9	Debug of PL/I programs

Figure 9 (Page 2 of 2). Target System Conditional Operational Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5655-W67	IBM Enterprise PL/I for z/OS V4.1 or later	Debug of PL/I programs
Any **one** of the following:		
5655-G53	IBM Enterprise COBOL for z/OS V3.4	Debug of COBOL programs
5655-S71	IBM Enterprise COBOL for z/OS V4.1 or later	Debug of COBOL programs
5655-W32	IBM Enterprise COBOL for z/OS V5.1 or later	Debug of COBOL programs
Any **one** of the following:		
5655-V52	File Manager for z/OS V10.1	Tools for working with z/OS data sets, DB2, CICS and IMS data
5655-W47	File Manager for z/OS V11.1	Tools for working with z/OS data sets, DB2, CICS and IMS data
5655-W68	File Manager for z/OS V12.1	Tools for working with z/OS data sets, DB2, CICS and IMS data
5655-Q12	File Manager for z/OS V13.1	Tools for working with z/OS data sets, DB2, CICS and IMS data
Any **one** of the following:		
5655-V51	Fault Analyzer for z/OS V10.1	Application abend analysis
5655-W46	Fault Analyzer for z/OS V11.1	Application abend analysis
5655-W69	Fault Analyzer for z/OS V12.1	Application abend analysis
5655-Q11	Fault Analyzer for z/OS V13.1	Application abend analysis

Figure 10 lists the old releases of requisite products that are no longer in service.

IBM will undertake to fix any problems that you might encounter when running Application Performance Analyzer V13.1 with these unsupported levels. However, IBM must be able to reproduce the problem using a supported level of the same product. If the problem can be reproduced and fixed, the fix will be developed and tested using the supported levels of IBM software. If a fix is made available, it is likely to work on the unsupported product level; however, IBM cannot guarantee that the fix will work in this case.

Figure 10 (Page 1 of 2). Unsupported Old-levels of Requisite Products

Program Number	Product Name and Minimum VRM/Service Level	Function
5694-A01	z/OS V1.11 (or lower)	Target system
5696-234	High Level Assembler for MVS & VM & VSE V1.5	Debug of Assembler programs via the disassembly view
5697-E93	CICS TS for z/OS V2.2 or V2.3	CICS support

Figure 10 (Page 2 of 2). Unsupported Old-levels of Requisite Products

Program Number	Product Name and Minimum VRM/Service Level	Function
5675-DB2	DB2 UDB for z/OS and OS/390 V7	DB2 support
5625-DB2	DB2 UDB for z/OS V8	DB2 support
5655-J38	IMS V9	IMS support
5635-A03	IMS V10	IMS support
5647-A01	OS/390 V2.10 C/C++ Element	Debug of C/C++ programs
5694-A01	z/OS V1.9 to V1.10 C/C++ Element	Debug of C/C++ programs
5740-CB1	OS/VS COBOL V1.2.4	Debug of COBOL programs (with limitations)
5668-958, 5688-023	VS COBOL II V1.3.1, V1.3.2, V1.4	Debug of COBOL programs (with limitations)
5688-197	IBM COBOL for MVS & VM V1	Debug of COBOL programs
5648-A25	COBOL for OS/390 & VM V2.2	Debug of COBOL programs
5655-G53	IBM Enterprise COBOL for z/OS V3.1 through V3.3	Debug of COBOL programs
5668-909, 5668-910	OS PL/I V2.1, V2.2, V2.3	Debug of PL/I programs (with limitations)
5655-B22	IBM VisualAge PL/I for OS/390 V2	Debug of PL/I programs
5688-235	IBM PL/I for MVS and VM V1.1.1	Debug of PL/I programs
5655-H31	Enterprise PL/I for z/OS V3.1 through V3.8	Debug of PL/I programs

5.2.2.3 Toleration/Coexistence Requisites

Toleration/coexistence requisites identify products that must be present on sharing systems. These systems can be other systems in a multisystem environment (not necessarily sysplex), a shared DASD environment (such as test and production), or systems that reuse the same DASD environment at different time intervals.

Application Performance Analyzer has no toleration/coexistence requisites.

5.2.2.4 Incompatibility (Negative) Requisites

Negative requisites identify products that must *not* be installed on the same system as this product.

Application Performance Analyzer has no negative requisites.

5.2.3 DASD Storage Requirements

Application Performance Analyzer libraries can reside on all supported DASD types.

Figure 11 on page 17 lists the total space that is required for each type of library.

Figure 11. Total DASD Space Required by Application Performance Analyzer

Library Type	Total Space Required in 3390 Trks	File System Description
Target	710 Tracks	Target Datasets
Distribution	755 Tracks	Distribution Datasets
File System(s)	25 Tracks	/usr/lpp/apa/v13r1 zFS or HFS file system

Notes:

1. For non-RECFM U data sets, IBM recommends using system-determined block sizes for efficient DASD utilization. For RECFM U data sets, IBM recommends using a block size of 32760, which is most efficient from the performance and DASD utilization perspective.
2. Abbreviations used for data set types are shown as follows.

   U Unique data set, allocated by this product and used by only this product. This table provides all the required information to determine the correct storage for this data set. You do not need to refer to other tables or program directories for the data set size.

   S Shared data set, allocated by this product and used by this product and other products. To determine the correct storage needed for this data set, add the storage size given in this table to those given in other tables (perhaps in other program directories). If the data set already exists, it must have enough free space to accommodate the storage size given in this table.

   E Existing shared data set, used by this product and other products. This data set is *not* allocated by this product. To determine the correct storage for this data set, add the storage size given in this table to those given in other tables (perhaps in other program directories). If the data set already exists, it must have enough free space to accommodate the storage size given in this table.

   If you currently have a previous release of this product installed in these libraries, the installation of this release will delete the old release and reclaim the space that was used by the old release and any service that had been installed. You can determine whether these libraries have enough space by deleting the old release with a dummy function, compressing the libraries, and comparing the space requirements with the free space in the libraries.

   For more information about the names and sizes of the required data sets, see 6.1.7, “Allocate SMP/E Target and Distribution Libraries” on page 24.

3. Abbreviations used for the file system path type are as follows.

   N New path, created by this product.

X Path created by this product, but might already exist from a previous release.
P Previously existing path, created by another product.

4. All target and distribution libraries listed have the following attributes:
   - The default name of the data set can be changed.
   - The default block size of the data set can be changed.
   - The data set can be merged with another data set that has equivalent characteristics.
   - The data set can be either a PDS or a PDSE.
5. All target libraries listed have the following attributes:
   - These data sets can be SMS-managed, but they are not required to be SMS-managed.
   - These data sets are not required to reside on the IPL volume.
   - The values in the "Member Type" column are not necessarily the actual SMP/E element types that are identified in the SMPMCS.
6. All target libraries that are listed and contain load modules have the following attributes:
   - These data sets can be in the LPA, but they are not required to be in the LPA.
   - These data sets can be in the LNKLST.
   - These data sets are not required to be APF-authorized.

The following figures describe the target and distribution libraries and file system paths required to install Application Performance Analyzer. The storage requirements of Application Performance Analyzer must be added to the storage required by other programs that have data in the same library or path.

Note: Use the data in these tables to determine which libraries can be merged into common data sets. In addition, since some ALIAS names may not be unique, ensure that no naming conflicts will be introduced before merging libraries.

Figure 12. Storage Requirements for Application Performance Analyzer Target Libraries - Base

Library DDNAME	Member Type	Target Volume	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks
SCAZLINK	LMOD	ANY	U	PDS	U	0	7	5
SCAZAUTH	LMOD	ANY	U	PDSE	U	0	501	N/A
SCAZEXEC	EXEC	ANY	U	PDS	FB	80	12	2
SCAZDBRM	Data	ANY	U	PDS	FB	80	2	2
SCAZSAMP	Sample	ANY	U	PDS	FB	80	30	5
SCAZMENU	Message	ANY	U	PDS	FB	80	8	4
SCAZPENU	Panel	ANY	U	PDS	FB	80	200	50
SCAZTENU	Table	ANY	U	PDS	FB	80	2	2

Figure 13. Application Performance Analyzer File System Paths

DDNAME	TYPE	Path Name
SCAZPAX	N	/usr/lpp/apa/v13r1/IBM/

Figure 14. Storage Requirements for Application Performance Analyzer Distribution Libraries

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks
ACAZMOD	U	PDSE	U	0	530	N/A
ACAZEXEC	U	PDS	FB	80	12	2
ACAZDBRM	U	PDS	FB	80	2	2
ACAZSAMP	U	PDS	FB	80	30	5
ACAZPAX	U	PDS	VB	1028	20	2
ACAZMENU	U	PDS	FB	80	8	4
ACAZPENU	U	PDS	FB	80	200	50
ACAZTENU	U	PDS	FB	80	2	2

The following figures list data sets that are not used by SMP/E, but are required for Application Performance Analyzer to run.

Figure 15. Storage Requirements for Application Performance Analyzer Non-SMP/E Data Sets

Data Set Name	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks
CHECKPT	U	PS	F	2048	477	0
CAZLANGX[1]	U	PDS	VB	1562	10	10

Note:

1. This data set is required only if you want Application Performance Analyzer to process a side file. CAZLANGX is now being shipped as a alias in the IPV.SIPVMODA library of the Problem Determination Common Components product (5655-Q12). A copy of PDTCC is being provided free of charge. Please see the *Application Performance Analyzer User's Guide* for more information on installation and use.

5.3 FMIDs Deleted

Installing Application Performance Analyzer might result in the deletion of other FMIDs. To see which FMIDs will be deleted, examine the ++VER statement in the SMPMCS of the product.

If you do not want to delete these FMIDs at this time, install Application Performance Analyzer into separate SMP/E target and distribution zones.

Note: These FMIDs are not automatically deleted from the Global Zone. If you want to delete these FMIDs from the Global Zone, use the SMP/E REJECT NOFMID DELETEFMID command. See the SMP/E Commands book for details.

5.4 Special Considerations

Application Performance Analyzer has the following special considerations for the target system:

- SCAZLINK must be in the link list and APF-authorized.
- SCAZAUTH must be APF-authorized.
- You must have a UID of 0 and READ access to the BPX.FILEATTR.APF facility class profile in order to successfully install the PAX file.

6.0 Installation Instructions

This chapter describes the installation method and the step-by-step procedures to install and to activate the functions of Application Performance Analyzer.

Please note the following points:

- If you want to install Application Performance Analyzer into its own SMP/E environment, consult the SMP/E manuals for instructions on creating and initializing the SMPCSI and the SMP/E control data sets.
- You can use the sample jobs that are provided to perform part or all of the installation tasks. The SMP/E jobs assume that all DDDEF entries that are required for SMP/E execution have been defined in appropriate zones.
- You can use the SMP/E dialogs instead of the sample jobs to accomplish the SMP/E installation steps.

6.1 Installing Application Performance Analyzer

6.1.1 SMP/E Considerations for Installing Application Performance Analyzer

Use the SMP/E RECEIVE, APPLY, and ACCEPT commands to install this release of Application Performance Analyzer.

6.1.2 SMP/E Options Subentry Values

The recommended values for certain SMP/E CSI subentries are shown in Figure 16. Using values lower than the recommended values can result in failures in the installation. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. See the SMP/E manuals for instructions on updating the global zone.

Figure 16. SMP/E Options Subentry Values

Subentry	Value	Comment
DSSPACE	300,150,250	Space allocation for SMPTLIB data
PEMAX	SMP/E Default	IBM recommends using the SMP/E default for PEMAX.

6.1.3 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install Application Performance Analyzer:

Figure 17. Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
CAZWEDIT **(Optional)**	MACRO	ISPF Editor macro to aid users in making changes to the sample jobs	IBM.HAD0D10.F4
CAZWSMPE **(Optional)**	SMP/E	Sample job to define and prime a new SMP/E CSI	IBM.HAD0D10.F4
CAZWRECV	RECEIVE	Sample RECEIVE job	IBM.HAD0D10.F4
CAZWALOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HAD0D10.F4
CAZWISMK	MKDIR	Sample job to invoke the supplied CAZWMKDR EXEC to allocate paths	IBM.HAD0D10.F4
CAZWDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HAD0D10.F4
CAZWAPLY	APPLY	Sample APPLY job	IBM.HAD0D10.F4
CAZWACPT	ACCEPT	Sample ACCEPT job	IBM.HAD0D10.F4

You can access the sample installation jobs by performing an SMP/E RECEIVE (refer to 6.1.6, “Perform SMP/E RECEIVE” on page 24) then copy the jobs from the RELFILES to a work data set for editing and submission. See Figure 17 on page 21 to find the appropriate relfile data set.

You can also copy the sample installation jobs from the tape or product files by submitting the following job. Depending on your distribution medium, use either the //TAPEIN or the //FILEIN DD statement and comment out or delete the other statement. Before you submit the job, add a job card and change the lowercase parameters to uppercase values to meet the requirements of your site.

```
//STEP1    EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//*************************************************************
//* Make the //TAPEIN DD statement below active if you install*
//* from a CBPDO tape or if you install from a product tape   *
//* received outside the CBPDO process.                       *
//*************************************************************
//TAPEIN   DD DSN=IBM.HAD0D10.F4,UNIT=tunit,
//         VOL=SER=volser,LABEL=(x,SL),
//         DISP=(OLD,KEEP)
//*************************************************************
//* Make the //FILEIN DD statement below active  for          *
//* downloaded DASD files.                                    *
//*************************************************************
//FILEIN   DD DSN=IBM.HDA0D10.F4,UNIT=SYSALLDA,DISP=SHR,
//         VOL=SER=filevol
//OUT      DD DSNAME=jcl-library-name,
//         DISP=(NEW,CATLG,DELETE),
//         VOL=SER=dasdvol,UNIT=SYSALLDA,
//         SPACE=(TRK,(40,5,5))
```

```
//SYSUT3   DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN    DD *
    COPY INDD=xxxxIN,OUTDD=OUT
/*
```

See the following information to update the statements in the previous sample:

TAPEIN:
- **tunit** is the unit value that matches the product package.
- **volser** is the volume serial that matches the product package.
- **x** is the tape file number that indicates the location of the data set name on the tape. See the documentation that is provided by CBPDO for the location of IBM.fmid.Fy on the tape.

FILEIN:
- **filevol** is the volume serial of the DASD device where the downloaded files reside.

OUT:
- **jcl-library-name** is the name of the output data set where the sample jobs are stored.
- **dasdvol** is the volume serial of the DASD device where the output data set resides.

SYSIN:
- **xxxxIN** is either TAPEIN or FILEIN depending on your input DD statement.

6.1.4 Set up ISPF Editor Macro (Optional)

To aid you in making changes to the SMP/E installation jobs: (CAZWSMPE, CAZWRECV, CAZWALOC, CAZWISMK, CAZWDDEF, CAZWAPLY, and CAZWACPT), An ISPF editor macro called CAZWEDIT is copied to your output data set **jcl-library-name** above. It lets you substitute proper values for all of the required variables in those jobs instead of having you make the changes repeatedly by hand.

Edit macro CAZWEDIT and provide the proper values. Consult the instructions in the macro for more information.

After making the changes, either copy CAZWEDIT to any data set in your TSO logon procedure SYSEXEC concatenation, or issue the commands below to make CAZWEDIT immediately accessible to your current ISPF session:

```
From ISPF option 6, issue:

ALLOCATE FI(SYSUEXEC) DA('jcl-library-name') SHR REU
ALTLIB ACTIVATE USER(EXEC)

Then edit your installation jobs from this ISPF session.
```

Consult the instructions in the macro on how to invoke it.

6.1.5 Allocate and Initialize the SMP/E Data Sets (Optional)

You can install Application Performance Analyzer in the same SMP/E zone as z/OS V1.12.0 (or later), or in a different zone.

- If you install into existing SMP/E data sets, ensure that you have enough space.
- If you plan to install into an existing zone, the cluster should have already been allocated and primed. You can go on to the next step to perform an SMP/E RECEIVE.
- To install into a new zone, edit and submit sample job CAZWSMPE to define and prime a new SMP/E CSI cluster. Consult the instructions in the sample job for more information.

  Expected Return Codes and Messages: You will receive a return code of 0 if the job runs correctly.

6.1.6 Perform SMP/E RECEIVE

If you have obtained Application Performance Analyzer as part of a CBPDO, use the RCVPDO job in the CBPDO RIMLIB data set to receive the Application Performance Analyzer FMIDs, service, and HOLDDATA that are included on the CBPDO package. For more information, see the documentation that is included in the CBPDO.

You can also choose to edit and submit sample job CAXWRECV to perform the SMP/E RECEIVE for Application Performance Analyzer. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if the job runs correctly.

6.1.7 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job CAZWALOC to allocate the SMP/E target and distribution libraries for Application Performance Analyzer. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if the job runs correctly.

6.1.8 Allocate File system Paths

The target system HFS or zFS data set must be mounted on the driving system when running the sample CAZWISMK job since the job will create paths in the HFS or zFS.

Before running the sample job to create the paths in the file system, you must ensure that OMVS is active on the driving system and that the target system's HFS or zFS file system is mounted to the driving system. zFS must be active on the driving system if you are installing Application Performance Analyzer into a file system that is zFS.

If you plan to install Application Performance Analyzer into a new HFS or zFS file system, you must create the mountpoint and mount the new file system to the driving system for Application Performance Analyzer.

The recommended mountpoint is */usr/lpp/apa/v13r1*.

Edit and submit sample job CAZWISMK to allocate the HFS or zFS paths for Application Performance Analyzer. Consult the instructions in the sample job for more information.

If you create a new file system for this product, consider updating the BPXPRMxx PARMLIB member to mount the new file system at IPL time. This action can be helpful if an IPL occurs before the installation is completed.

Expected Return Codes and Messages: You will receive a return code of 0 if the job runs correctly.

6.1.9 Create DDDEF Entries

If you choose to install Application Performance Analyzer V13.1 in the **SAME** Target Zone as prior releases (V12.1 or lower), you must run a Dummy Delete job to delete the prior release before you run the new CAZWDDEF job. Failure to delete the prior release will cause an abend on the APPLY if installed in the same Zone. Otherwise, install Application Performance Analyzer in a new Target Zone and continue to the CAZWDDEF job.

Provided is a partial example of code to accomplish the delete. It is not intended to be run as-is. The prior release in this instance is HAD0C10 (V12.1). If you have other releases you will need to run the dummy delete for all. Once you have successfully deleted the prior version, you can continue to the CAZWDDEF job.

```
++FUNCTION(DUMMY01).
++VER (Z038)
  DELETE(HAD0C10).
//SMPCNTL    DD *
  SET BDY(GLOBAL).
  RECEIVE S(DUMMY01).
  SET BDY(TZONE).
  APPLY S(DUMMY01) REDO.
  SET BDY(DZONE).
  ACCEPT S(DUMMY01) BYPASS(APPLYCHECK) REDO .
  SET BDY(TZONE).
   UCLIN.
   DEL SYSMOD(HAD0C10).
   DEL SYSMOD(DUMMY01).
   ENDUCL.
  SET BDY(DZONE).
   UCLIN.
   DEL SYSMOD(HAD0C10).
   DEL SYSMOD(DUMMY01).
   ENDUCL.
/*
```

Edit and submit sample job CAZWDDEF to create DDDEF entries for the SMP/E target and distribution libraries for Application Performance Analyzer. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if the job runs correctly.

6.1.10 Perform SMP/E APPLY

1. Ensure that you have the latest HOLDDATA; then edit and submit sample job CAZWAPLY to perform an SMP/E APPLY CHECK for Application Performance Analyzer. Consult the instructions in the sample job for more information.

   The latest HOLDDATA is available through several different portals, including http://service.software.ibm.com/holdata/390holddata.html. The latest HOLDDATA may identify HIPER and FIXCAT APARs for the FMIDs you will be installing. An APPLY CHECK will help you determine if any HIPER or FIXCAT APARs are applicable to the FMIDs you are installing. If there are any applicable HIPER or FIXCAT APARs, the APPLY CHECK will also identify fixing PTFs that will resolve the APARs, if a fixing PTF is available.

   You should install the FMIDs regardless of the status of unresolved HIPER or FIXCAT APARs. However, do not deploy the software until the unresolved HIPER and FIXCAT APARs have been analyzed to determine their applicability. That is, before deploying the software either ensure fixing PTFs are applied to resolve all HIPER or FIXCAT APARs, or ensure the problems reported by all HIPER or FIXCAT APARs are not applicable to your environment.

   To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass the PRE, ID, REQ, and IFREQ on the APPLY CHECK. The SMP/E root cause analysis identifies the cause only of *errors* and not of *warnings* (SMP/E treats bypassed PRE, ID, REQ, and IFREQ conditions as warnings, instead of errors).

   Here are sample APPLY commands:

   a. To ensure that all recommended and critical service is installed with the FMIDs, receive the latest HOLDDATA and use the APPLY CHECK command as follows

      ```
      APPLY S(fmid,fmid,...) CHECK
      FORFMID(fmid,fmid,...)
      SOURCEID(RSU*)
      FIXCAT(IBM.ProductInstall-RequiredService)
      GROUPEXTEND .
      ```

      Some HIPER APARs might not have fixing PTFs available yet. You should analyze the symptom flags for the unresolved HIPER APARs to determine if the reported problem is applicable to your environment and if you should bypass the specific ERROR HOLDs in order to continue the installation of the FMIDs.

      This method requires more initial research, but can provide resolution for all HIPERs that have fixing PTFs available and are not in a PE chain. Unresolved PEs or HIPERs might still exist and require the use of BYPASS.

b. To install the FMIDs without regard for unresolved HIPER APARs, you can add the BYPASS(HOLDCLASS(HIPER)) operand to the APPLY CHECK command. This will allow you to install FMIDs even though one or more unresolved HIPER APARs exist. After the FMIDs are installed, use the SMP/E REPORT ERRSYSMODS command to identify unresolved HIPER APARs and any fixing PTFs.

```
APPLY S(fmid,fmid,...) CHECK
FORFMID(fmid,fmid,...)
SOURCEID(RSU*)
FIXCAT(IBM.ProductInstall-RequiredService)
GROUPEXTEND
BYPASS(HOLDCLASS(HIPER)) .
 ..any other parameters documented in the program directory
```

This method is the quicker, but requires subsequent review of the Exception SYSMOD report produced by the REPORT ERRSYSMODS command to investigate any unresolved HIPERs. If you have received the latest HOLDDATA, you can also choose to use the REPORT MISSINGFIX command and specify Fix Category IBM.ProductInstall-RequiredService to investigate missing recommended service.

If you bypass HOLDs during the installation of the FMIDs because fixing PTFs are not yet available, you can be notified when the fixing PTFs are available by using the APAR Status Tracking (AST) function of ServiceLink or the APAR Tracking function of ResourceLink.

2. After you take actions that are indicated by the APPLY CHECK, remove the CHECK operand and run the job again to perform the APPLY.

Note: The GROUPEXTEND operand indicates that SMP/E applies all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.

Expected Return Codes and Messages from APPLY CHECK: You will receive a return code of 0 if this job runs correctly.

Expected Return Codes and Messages from APPLY: You will receive a return code of 0 if this job runs correctly.

6.1.11 Perform Post-installation Tasks for Application Performance Analyzer

After successfully installing Application Performance Analyzer, you need to do the following post-installation tasks:

- Add hlq.SCAZLINK to the link list.
- APF-authorize hlq.SCAZLINK and hlq.SCAZAUTH.
- Modify your TSO/E logon procedure to include Application Performance Analyzer user interface.
- Make the CAZ0 started task available.
- Create the installation-level configuration settings load module CAZCNFG1.
- Customize Application Performance Analyzer for use with DB2 UDB (optional).

Refer to the *Application Performance Analyzer Customization Guide, SC14-7598*, for detailed instructions on how to do the above tasks.

6.1.12 Run the Installation Verification Program (IVP)

After completing the post-installation tasks above, edit and submit sample IVP job CAZIVPJ in hlq.SCAZSAMP to verify that you have successfully installed Application Performance Analyzer.

Refer to the *Application Performance Analyzer Customization Guide, SC14-7598*, for detailed instructions on how to run the IVP.

6.1.13 Perform SMP/E ACCEPT

Edit and submit sample job CAZWACPT to perform an SMP/E ACCEPT CHECK for Application Performance Analyzer. Consult the instructions in the sample job for more information.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass the PRE, ID, REQ, and IFREQ on the ACCEPT CHECK. The SMP/E root cause analysis identifies the cause of only *errors* but not *warnings* (SMP/E treats bypassed PRE, ID, REQ, and IFREQ conditions as warnings rather than errors).

Before you use SMP/E to load new distribution libraries, it is recommended that you set the ACCJCLIN indicator in the distribution zone. In this way, you can save the entries that are produced from JCLIN in the distribution zone whenever a SYSMOD that contains inline JCLIN is accepted. For more information about the ACCJCLIN indicator, see the description of inline JCLIN in the SMP/E Commands book for details.

After you take actions that are indicated by the ACCEPT CHECK, remove the CHECK operand and run the job again to perform the ACCEPT.

Note: The GROUPEXTEND operand indicates that SMP/E accepts all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.

Expected Return Codes and Messages from ACCEPT CHECK: You will receive a return code of 0 if this job runs correctly.

If PTFs that contain replacement modules are accepted, SMP/E ACCEPT processing will link-edit or bind the modules into the distribution libraries. During this processing, the Linkage Editor or Binder might issue messages that indicate unresolved external references, which will result in a return code of 4 during the ACCEPT phase. You can ignore these messages, because the distribution libraries are not executable and the unresolved external references do not affect the executable system libraries.

Expected Return Codes and Messages from ACCEPT: You will receive a return code of 0 if this job runs correctly.

6.1.14 Run REPORT CROSSZONE

The SMP/E REPORT CROSSZONE command identifies requisites for products that are installed in separate zones. This command also creates APPLY and ACCEPT commands in the SMPPUNCH data set. You can use the APPLY and ACCEPT commands to install those cross-zone requisites that the SMP/E REPORT CROSSZONE command identifies.

After you install Application Performance Analyzer, it is recommended that you run REPORT CROSSZONE against the new or updated target and distribution zones. REPORT CROSSZONE requires a global zone with ZONEINDEX entries that describe all the target and distribution libraries to be reported on.

For more information about REPORT CROSSZONE, see the SMP/E manuals.

6.1.15 Cleaning Up Obsolete Data Sets, Paths, and DDDEFs

The following data sets, which were allocated and used by previous releases of this product, are no longer used in this release. You can delete these obsolete data sets after you delete the previous release from your system.

- ACAZZIP
- SCAZZIP

The following file system paths, which were created and used by previous releases of this product, are no longer used in this release. You can delete these obsolete file system paths after you delete the previous release from your system.

- /usr/lpp/apa/v12r1

6.2 Activating Application Performance Analyzer

6.2.1 File System Execution

If you mount the file system in which you have installed Application Performance Analyzer in read-only mode during execution, then you do not have to take further actions to activate Application Performance Analyzer. The recommended mountpoint is /usr/lpp/apa/v13r1.

The publication *Application Performance Analyzer Customization Guide* (SC14-7598) contains the necessary information to customize and use Application Performance Analyzer.

7.0 Notices

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