



**Program Directory for
IBM Application Performance Analyzer for z/OS**

V12.1.0

Program Number 5655-W71

FMID HAD0C10

for use with
z/OS V1.11.0 or later

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GI11-9490-00

Note

Before using this information and the product it supports, be sure to read the general information under 7.0, "Notices" on page 29.

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Contents

1.0 Introduction	1
1.1 Application Performance Analyzer Description	1
1.2 Application Performance Analyzer FMIDs	3
2.0 Program Materials	4
2.1 Basic Machine-Readable Material	4
2.2 Optional Machine-Readable Material	5
2.3 Program Publications	5
2.3.1 Basic Program Publications	5
2.3.2 Optional Program Publications	5
2.4 Program Source Materials	5
2.5 Publications Useful During Installation	6
3.0 Program Support	7
3.1 Program Services	7
3.2 Preventive Service Planning	7
3.3 Statement of Support Procedures	8
4.0 Program and Service Level Information	9
4.1 Program Level Information	9
4.2 Service Level Information	10
5.0 Installation Requirements and Considerations	11
5.1 Driving System Requirements	11
5.1.1 Machine Requirements	11
5.1.2 Programming Requirements	11
5.2 Target System Requirements	12
5.2.1 Machine Requirements	12
5.2.2 Programming Requirements	12
5.2.2.1 Installation Requisites	12
5.2.2.2 Operational Requisites	13
5.2.2.3 Toleration/Coexistence Requisites	16
5.2.2.4 Incompatibility (Negative) Requisites	16
5.2.3 DASD Storage Requirements	16
5.3 FMIDs Deleted	19
5.4 Special Considerations	20
6.0 Installation Instructions	21
6.1 Installing Application Performance Analyzer	21
6.1.1 SMP/E Considerations for Installing Application Performance Analyzer	21
6.1.2 SMP/E Options Subentry Values	21
6.1.3 Sample Jobs	21

6.1.4	Set up ISPF Editor Macro (Optional)	23
6.1.5	Allocate and Initialize the SMP/E Data Sets (Optional)	23
6.1.6	Perform SMP/E RECEIVE	24
6.1.7	Allocate SMP/E Target and Distribution Libraries	24
6.1.8	Allocate File system Paths	24
6.1.9	Create DDDEF Entries	25
6.1.10	Perform SMP/E APPLY	25
6.1.11	Perform Post-installation Tasks for Application Performance Analyzer	26
6.1.12	Run the Installation Verification Program (IVP)	27
6.1.13	Perform SMP/E ACCEPT	27
6.1.14	Run REPORT CROSSZONE	28
6.1.15	Cleaning Up Obsolete Data Sets, Paths, and DDDEFs	28
6.2	Activating Application Performance Analyzer	28
6.2.1	File System Execution	28
7.0	Notices	29
7.1	Trademarks	30
Reader's Comments		31

Figures

1.	Program File Content - Application Performance Analyzer Base	4
2.	Basic Material: Unlicensed Publications	5
3.	Optional Material: Unlicensed Publications	5
4.	Publications Useful During Installation	6
5.	PSP Upgrade and Subset ID	7
6.	Component IDs	8
7.	Driving System Software Requirements	12
8.	Target System Mandatory Installation Requisites	13
9.	Target System Conditional Operational Requisites	14
10.	Unsupported Old-levels of Requisite Products	15
11.	Total DASD Space Required by Application Performance Analyzer	16
12.	Storage Requirements for Application Performance Analyzer Target Libraries -- Base	18
13.	Application Performance Analyzer File System Paths	18
14.	Storage Requirements for Application Performance Analyzer Distribution Libraries	18
15.	Storage Requirements for Application Performance Analyzer Non-SMP/E Data Sets	19
16.	SMP/E Options Subentry Values	21
17.	Sample Installation Jobs	22

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 and optional 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 V12.1 helps developers and systems personnel tune applications and resolve performance constraints. Version 12 includes the following enhancements.

Enhancements to sampling include:

- Improved accuracy of CICS and DASD reports.

- In CICS, DB2+ data extractor intercepts only those DB2 calls involved in the selected transaction or from the selected terminal, including those in collateral DB2 stored procedures.
- In CICS,IMS+ data extractor intercepts DLI calls involved only in the selected transaction or from the selected terminal.
- In IMS, DB2+ data extractor intercepts DB2 calls involved only in the selected transaction, program, or user, including those in collateral DB2 stored procedures.
- Reduced memory requirement.
- New SMF Record exit captures SMF type 120 subtype 9 records for WebSphere activity, and type 101 records for DB2 accounting data.
- New messages for abnormal termination of APA and Listener started tasks.
- Support added for:
 - CICS TS 4.2, including running a single JVM
 - Java 6.0.1
 - IMS 12

Enhancements to the ISPF observation list include:

- Indicate when sample files are about to be auto-deleted.
- Support '+' and '-' commands on ReqNum heading to expand/collapse all observations in the list.
- Support use of '%' when filtering the observation list.

Enhancements to the NEW command include:

- New DDF thread selection criterion based on corrid, authid, and/or workstation.
- New WAS data extractor for measuring activity processed by a selected WebSphere controller address space.
- New WebSphere selection criterion based on request, application, and/or origin.
- New WebSphere selection criterion to filter out image files and specific file extensions.

Enhancements to reporting include:

- Display formatted SQL in DB2 report detail windows.
- Display SQL function for Remote SQL in DB2 reports.
- Display IMS subsystem and trancode/program/user in S01 report and R02 detail window.
- New DB2 Class 3 Wait report.
- New option in S03 to combine duplicate modules.
- Disable expansion of very large wait reports.
- Support new COBOL SYSDEBUG interface.
- New WebSphere activity reports.

- Expand recommendations in S09 report to include:
 - Assess whether VSAM shareoption 4 is appropriate.
 - Consider a VSAM reorg and increase in CI/CA freespace because excessive CI/CA splits were found.
 - Consider additional VSAM buffers because excessive EXCPs were found.
 - Consider additional processors because zAAP on CP or zIIP on CP exists.
 - Running a DB2 Explain when long running SQL found

Enhancements to the listener started task include:

- Restrict TCP/IP stack monitoring to specific IP stacks based on a new configuration option.

Enhancements to the GUI plug-in include:

- Integration with z/OS Explorer credentials and connections.
- Additional preferences to match those available in ISPF.
- Support for mixed case password and password phrases.
- Support for SSL.
- Support for new logging levels of Off and Fatal.
- Display warning/error message text along with the message number.
- In the Observation List, separate the downloaded reports icon from the request number column into a new sortable column.
- New Observation List column displays the number of days left to sample file deletion.
- Sticky notes added in observations and individual reports.
- Email a report.
- Save/browse current view of report as HTML.
- DB2 SQL extract (for input to DB2 or Visual Explain products).
- Support for sample file import/export.
- Produce PDF and XML reports on the user's PC.
- Support for access to source stored in third-party repositories.

1.2 Application Performance Analyzer FMIDs

Application Performance Analyzer consists of the following FMIDs:

HADOC10

2.0 Program Materials

An IBM program is identified by a program number. The program number for Application Performance Analyzer is 5655-W71.

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. Optional Machine-Readable Materials are orderable under separate feature numbers, and are not required for the product to function.

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 - Application Performance Analyzer Base

Name	O R G	R E C M	L R E C L	BLK SIZE
SMPMCS	SEQ	FB	80	6400
IBM.HAD0C10.F1	PDSE	U	0	6144
IBM.HAD0C10.F2	PDS	FB	80	8800
IBM.HAD0C10.F3	PDS	FB	80	8800
IBM.HAD0C10.F4	PDS	FB	80	8800
IBM.HAD0C10.F5	PDS	FB	80	8800
IBM.HAD0C10.F6	PDS	FB	80	8800
IBM.HAD0C10.F7	PDS	FB	80	8800
IBM.HAD0C10.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 and optional publications for Application Performance Analyzer.

2.3.1 Basic Program Publications

Figure 2 identifies the basic unlicensed program publications for Application Performance Analyzer. One copy of each of these publications is included when you order the basic materials for Application Performance Analyzer. Additional copies can be obtained from the IBM Publications Website at URL: <http://www.ibm.com/shop/publications/order/> Contact your IBM representative for further assistance.

<i>Figure 2. Basic Material: Unlicensed Publications</i>	
Publication Title	Form Number
License Information	GI11-9491

2.3.2 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.

<i>Figure 3. Optional Material: Unlicensed Publications</i>		
Publication Title	Form Number	Feature Number
Application Performance Analyzer Messages Guide	SC14-7544	
Application Performance Analyzer Customization Guide	SC14-7546	
Application Performance Analyzer User's Guide	SC14-7545	

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 on page 6 during the installation of Application Performance Analyzer. To order copies, contact your IBM representative or visit the IBM Publications Center at: <http://www.ibm.com/shop/publications/order/>

<i>Figure 4. Publications Useful During Installation</i>	
Publication Title	Form Number
<i>IBM SMP/E for z/OS User's Guide</i>	SA22-7773
<i>IBM SMP/E for z/OS Commands</i>	SA22-7771
<i>IBM SMP/E for z/OS Reference</i>	SA22-7772
<i>IBM SMP/E for z/OS Messages, Codes, and Diagnosis</i>	GA22-7770
<i>z/OS UNIX System Services Planning</i>	GA22-7800
<i>z/OS UNIX System Services User's Guide</i>	SA22-7801
<i>z/OS UNIX System Services Command Reference</i>	SA22-7802
<i>z/OS UNIX System Services Messages and Codes</i>	SA22-7807

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 25 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

<i>Figure 5. PSP Upgrade and Subset ID</i>		
UPGRADE	SUBSET	Description
APAC10	HAD0C10/7	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.

<i>Figure 6. Component IDs</i>			
FMID	COMPID	Component Name	RETAIN Release
HAD0C10	5655W7100	Application Performance Analyzer Base	C10

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 HAD0C10

PK09257	PK44981	PK74827	PK96329
PK09718	PK48842	PK74828	PK97539
PK10751	PK50933	PK74840	PK97543
PK10866	PK53861	PK77204	PM00475
PK12802	PK53863	PK77205	PM03857
PK13151	PK55830	PK77261	PM05497
PK14202	PK56958	PK77731	PM11663
PK17898	PK58411	PK79760	PM13855
PK18698	PK58412	PK79760	PM15384
PK20741	PK59236	PK80910	PM15941
PK24472	PK61517	PK81932	PM18468
PK26164	PK61518	PK83624	PM20921
PK29025	PK61880	PK83625	PM26069
PK31684	PK63259	PK83626	PM29171
PK32728	PK63260	PK85552	PM31911
PK34099	PK63950	PK85553	PM34639
PK35123	PK66662	PK87433	PM34080
PK35123	PK66663	PK87612	PM38171
PK35492	PK67298	PK90027	PM40449
PK36620	PK69392	PK91574	PM43159
PK37054	PK70702	PK94334	PM46725
PK38638	PK71247	PK94976	PM50126
PK38640	PK72946	PK95224	PM55310
PK40831	PK72954	PK95226	PM57904
PK44980	PK72955		

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-REQUIRESERVICE)** 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	V01.11.00	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.

Part of 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 system. 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?
5694-A01	z/OS	V1.11.00 or higher	N/A	No
<p>Note:</p> <p>Application Performance Analyzer V12.1 is tested and supported only for use with the currently supported levels of IBM software and hardware.</p> <p>If your operating system is z/OS V1.8 or V1.9 or V1.10, IBM will undertake to fix any problems that you might encounter when running Application Performance Analyzer V12.1 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.</p>				

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 V7.6 or V8.0	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
Any one of the following:		
5635-DB2	DB2 UDB for z/OS V9	DB2 support
5605-DB2	DB2 UDB for z/OS V10	DB2 support
Any one of the following:		
5635-A01	IMS V10	IMS support
5635-A02	IMS V11	IMS support
5635-A03	IMS V12	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 V1.11 (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
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
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
Any one of the following:		
5655-V51	Fault Analyzer for z/OS V10.1	Application abend analysis

<i>Figure 9 (Page 2 of 2). Target System Conditional Operational Requisites</i>		
Program Number	Product Name and Minimum VRM/Service Level	Function
5655-W46	Fault Analyzer for z/OS V11.1	Application abend analysis
5655-W69	Fault Analyzer for z/OS V12.1	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 Debug Tool for z/OS V12.1 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.

<i>Figure 10 (Page 1 of 2). Unsupported Old-levels of Requisite Products</i>		
Program Number	Product Name and Minimum VRM/Service Level	Function
5694-A01	z/OS V1.9 or V1.10	Target system
5696-234	High Level Assembler for MVS & VM & VSE V1.5	Debug of Assembler programs via the disassembly view
5655-147	CICS TS for OS/390 V1.3	CICS support
5697-E93	CICS TS for z/OS V2.2 or V2.3	CICS support
5675-DB2	DB2 UDB for z/OS and OS/390 V7	DB2 support
5625-DB2	DB2 UDB for z/OS V8	DB2 support
5655-B01	IMS V7	IMS support
5655-C56	IMS V8	IMS support
5655-J38	IMS V9	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)

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

Program Number	Product Name and Minimum VRM/Service Level	Function
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 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
Target	700 Tracks
Distribution	705 Tracks
File System	20 Tracks

Note: text='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 LNKLIST.
- 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	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SCAZLINK	LMOD	ANY	U	PDS	U	0	2	2
SCAZAUTH	LMOD	ANY	U	PDSE	U	0	458	N/A
SCAZEXEC	EXEC	ANY	U	PDS	FB	80	9	2
SCAZDBRM	Data	ANY	U	PDS	FB	80	2	2
SCAZSAMP	Sample	ANY	U	PDS	FB	80	23	3
SCAZMENU	Message	ANY	U	PDS	FB	80	7	3
SCAZPENU	Panel	ANY	U	PDS	FB	80	194	36
SCAZTENU	Table	ANY	U	PDS	FB	80	2	2

Figure 13. Application Performance Analyzer File System Paths

DDNAME	T Y P E	Path Name
SCAZPAX	N	/usr/lpp/apa/v12r1/IBM/

Figure 14 (Page 1 of 2). Storage Requirements for Application Performance Analyzer Distribution Libraries

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
ACAZMOD	U	PDSE	U	0	458	N/A
ACAZEXEC	U	PDS	FB	80	8	2
ACAZDBRM	U	PDS	FB	80	2	2
ACAZSAMP	U	PDS	FB	80	15	5
ACAZPAX	U	PDS	VB	1028	10	2
ACAZMENU	U	PDS	FB	80	7	4
ACAZPENU	U	PDS	FB	80	100	6

Figure 14 (Page 2 of 2). Storage Requirements for Application Performance Analyzer Distribution Libraries

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
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	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
CHECKPT	U	PS	F	2048	477	0
CAZLANGX1	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.						

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.

<i>Figure 16. SMP/E Options Subentry Values</i>		
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	MACRO	ISPF Editor macro to aid users in making changes to the sample jobs (optional)	IBM.HAD0C10.F4
CAZWSMPE	SMP/E	Sample job to define and prime a new SMP/E CSI (optional)	IBM.HAD0C10.F4
CAZWRECV	RECEIVE	Sample RECEIVE job	IBM.HAD0C10.F4
CAZWALOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HAD0C10.F4
CAZWISMK	MKDIR	Sample job to invoke the supplied CAZWMKDR EXEC to allocate HFS paths	IBM.HAD0C10.F4
CAZWDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HAD0C10.F4
CAZWAPLY	APPLY	Sample APPLY job	IBM.HAD0C10.F4
CAZWACPT	ACCEPT	Sample ACCEPT job	IBM.HAD0C10.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=*
//TAPEIN DD DSN=IBM.fmid.Fy,UNIT=tunit,
// VOL=SER=volser,LABEL=(x,SL),
// DISP=(OLD,KEEP)
//FILEIN DD DSN=IBM.fmid.Fy,UNIT=SYSALLDA,DISP=SHR,
// VOL=SER=filevol
//OUT DD DSNAME=jc1-library-name,
// DISP=(NEW,CATLG,DELETE),
// VOL=SER=dasdvol,UNIT=SYSALLDA,
// SPACE=(TRK,(primary,secondary,dir))
//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 V1.11.0 (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 CAZWRECV 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 return codes of 0s if all jobs run 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

Mount the file system data set of the target system on the driving system when you run the sample CAZWISMK job because the job will create paths in the file system.

Before you run the sample job to create the paths in the file system, ensure that OMVS is active on the driving system and that the file system of the target system is mounted to the driving system. If you install Application Performance Analyzer into a zSeries file system (zFS), zFS must be active on the driving system.

If you plan to install Application Performance Analyzer into a new file system, create the mountpoint and mount the new file system to the driving system. For Application Performance Analyzer, the recommended mountpoint is `/usr/lpp/apa/v12r1`.

Edit and submit sample job CAZWISMK to allocate the file system 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

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/holddata/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.

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, SC14-7546*, 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, SC14-7546*, 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/v11r1

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/v12r1.

This concludes the installation of Application Performance Analyzer. See the publication *Customization Guide, SC14-7546*, for the step-by-step procedures to customize the functions of Application Performance Analyzer.

7.0 Notices

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Program Directory for IBM Application Performance Analyzer for z/OS, May 2012

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	Satisfaction					
Ease of product installation	1	2	3	4	5	N
Contents of Program Directory	1	2	3	4	5	N
Installation Verification Programs	1	2	3	4	5	N
Time to install the product	1	2	3	4	5	N
Readability and organization of Program Directory tasks	1	2	3	4	5	N
Necessity of all installation tasks	1	2	3	4	5	N
Accuracy of the definition of the installation tasks	1	2	3	4	5	N
Technical level of the installation tasks	1	2	3	4	5	N
Ease of getting the system into production after installation	1	2	3	4	5	N

How did you order this product?

- CBPDO
- CustomPac
- ServerPac
- Independent
- Other

Is this the first time your organization has installed this product?

- Yes
- No

Were the people who did the installation experienced with the installation of z/OS products?

- Yes

___ No

If yes, how many years? ___

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