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IBM Fault Analyzer for z/OS V4.1, IBM File Manager for z/OS V4.1, and IBM Debug Tool Utilities and Advanced Functions for z/OS V4.1 help increase productivity

Overview

IBM Fault Analyzer for z/OS®, IBM File Manager for z/OS, and IBM Debug Tool Utilities and Advanced Functions for z/OS provide application developers with a powerful portfolio of problem determination tools. These tools help improve productivity and effectiveness during development and test of new and existing applications, and help manage abends in applications.

Fault Analyzer assists the developer in quickly analyzing and fixing application and system failures. It offers the programmer the information required to help determine the cause of failure while further providing assistance in how to resolve the problem. Fault Analyzer V4.1 provides a number of new features to further help application developers in analyzing and resolving problems.

File Manager helps the developer to quickly and easily create, edit, print, and format or reformat data files in the most popular z/OS and OS/390® file formats. It enables your programmers to manipulate data using COBOL and PL/I record layouts in batch and an online facility. File Manager V4.1 provides enhancements in performance, usability, and installation/customization documentation, making it an even more productive tool than before.

Debug Tool Utilities and Advanced Functions for z/OS V4.1 assists the developer in the source-level debugging for compiled applications. Building upon the function in IBM Debug Tool for z/OS V4.1, it provides even more debugging capability, helping to maximize the availability of z/OS and OS/390 applications. Debug Tool Utilities and Advanced Functions V4.1 offers a number of usability enhancements and a new debug utility for IMS™.

Key prerequisites

- One of the following:
  - z/OS V1.1 (5694-A01), or later
  - OS/390 V2.10 (5647-A01), or later
- Debug Tool Utilities and Advanced Functions V4.1 also requires Debug Tool for z/OS V4.1 (5655-L24), or later.
- Depending on the function used with Debug Tool Utilities and Advanced Functions, Fault Analyzer and File Manager, certain levels of other programs may be required. Refer to the **Software requirements** section for details.

Planned availability date

September 26, 2003

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Description

IBM Debug Tool Utilities and Advanced Functions V4.1

Debug Utility for IMS

A new utility is added to help debug IMS applications. This utility enables developers to create IMS-dependent regions that they can use to debug their test applications. These regions would not interfere with other regions. The utility also enables developers to modify runtime options, specify the programs to debug, and the user interface to run. The utility contains the following:

- Interactive System Productivity Facility (ISPF) dialog to browse and update the Language Environment runtime parameters table in IMS

  - Each runtime parameter string is associated with transaction name, program name, logical terminal ID, and user ID

  - Formatted user interface for runtime TEST options

- ISPF dialog to create batch job for private message region

  - Customize load libraries

  - Customize region attributes like transaction class and others

- Use IMS V8 IMSPlex commands

  - UPDATE LE
  - DELETE LE
  - QUERY LE

Language Environment Assembler support

Support has been added to debug Assembler programs on a z/OS or OS/390 system, as long as they are run using the Language Environment runtime.

Usability enhancements

- New editing functions in the Debug Tool setup utility

  - Temporarily disable DD statements ─ this is convenient when you test with different versions of an application

  - A rN command that replicates a DD statement N times

  - An iN command that inserts a blank DD statement N times

- The User's Guide has been updated with an example of how to use the Debug Tool Program Preparation and Setup Utility functions, with step by step instructions and sample programs provided

- An enhanced algorithm for temporary data set names by using TSO prefix and user ID as part of the name qualifiers

IBM Fault Analyzer V4.1

Enterprise PL/I support

Support for programs written in Enterprise PL/I is added.

TSO region size constraint relief

Areas of the interactive report that have previously required a potentially large TSO region for display have been eliminated. The displays affected are for the real-time report, compiler listing, CICS trace table, and associated storage areas.

Installation without need for IPL

In situations where it is not possible to schedule an IPL immediately following the installation of Fault Analyzer, a program is provided to dynamically install the Fault Analyzer SVC.

Report size control

The ability to choose a different storage display concept, based on the total amount of eligible storage involved, is added. This can be used to prevent potentially extremely large reports in situations where, for example, a COBOL program has a very large working storage area.

Flexible report layout

An option to place selected information in different sections of the Fault Analyzer report is added. This provides users with the ability to choose a report layout that permits information to be located more easily.

SVC dump registration

A dump registration process is provided to permit fault entry creation through a new post-dump invocation exit whenever an SVC dump is written. This is primarily intended for CICS system dumps.

CICS system dump analysis enhancements

- Formatted display of hex storage using user-supplied DSECT mapping

- Additional CICS domains added to the analysis formatting

Improved fault entry matching by overtyping

As an alternative method of selecting fault entries for display from the Fault Analyzer ISPF interface, overtyping of existing values is supported.

Associated storage areas for assembler programs

In addition to storage areas being shown in the Fault Analyzer report for COBOL and PL/I programs, storage areas are now being shown for any other program language, such as assembler. If assembler is not available or if assembler with no side file is available, then addressable storage from any general purpose register is shown. If assembler with side file is available, then additional DSECT support has been added.

Elimination of user exit data area field size constraints

Data area fields that previously imposed a limit on the amount of data that could be passed between Fault Analyzer and a user exit have been modified to support a format that is limited only by the amount of virtual storage available.

LANGX listing file utility

Users who choose to keep Fault Analyzer side files instead of compiler listings can use a new utility to produce a readable listing file from a side file.

Interface with File Manager for QSAM records

Support for calling File Manager to edit/browse files from Fault Analyzer interactive analysis

Improved IMS support

- Display of segment search arguments (SSA) is now provided
- IMS support added for CICS transaction abend analysis and CICS system dump analysis

Improved DB2 support

- Access to DB2 tables via subsystem in real-time to prevent connection problems
- DB2 support added for CICS transaction abend analysis and CICS system dump analysis

ISPF packed file support

Fault Analyzer now permits compiler listing files to be in ISPF packed file format.

Improved MVS™ system dump analysis

More information is now available in the Fault Analyzer report when performing re-analysis of an SVC or SYSMDUMP.

Option to reduce prompting during interactive re-analysis

It is now possible to request prompting for only the point-of-failure side file during interactive re-analysis.

Enhanced history file management through IDIUTIL

IDIUTIL now permits deletion of fault history file entries based on the percentage of space used.

User-notes against addresses

From the interactive report, users can now add notes against addresses that might assist with debugging a problem. The notes are saved in the fault entry and are automatically displayed whenever the storage for the associated address is displayed, whether interactively or in batch.

Improved IDISNAP usage

The ability to request fault entry suppression, and to pass a heading, has been added to the IDISNAP interface.

COBOL WORKING-STORAGE from programs not on the DSA Chain: The display of WORKING-STORAGE from COBOL programs that were called, but have returned prior to the point in time when the real-time analysis is performed, is being shown whenever possible.

Support for COBOL TEST(,SEPARATE) option

The COBOL SYSDEBUG file produced when the TEST(,SEPARATE) option is used is automatically located by Fault Analyzer and used to provide source program information.

LANGX support for sequential files

Compiler listings or side files can now be provided to Fault Analyzer in both members of partitioned data sets, or in sequential files.

Option to write synopsis to joblog

An option has been provided that permits the writing of the analysis synopsis to the JES joblog.

Storage display FIND command support

The interactive report dump storage display FIND command can now be used to locate data anywhere in storage, not just on the currently displayed page.

Interactive report RUNCHAIN command

An IPCS-equivalent RUNCHAIN command is now available from within the interactive report for ease of displaying chained data areas.

BIDI support

Customer code page is now respected for hex-interpreted displays.

Miscellaneous report enhancements

- Linkedit map added with AMODE warnings for programs in the event list
- Formatting of real-time or batch re-analysis reports subject to user-specified line width
- Additional CICS transaction trace display options
- Ability to switch between text and hexadecimal display of CICS 3270 screen buffer
- LE run-time options in effect
- CICS transaction analysis display of open files

WebSphere Application Server for z/OS V4 support PTF

Storage information will be collected to assist in the problem determination of WebSphere Application Server for z/OS V4 system faults. This enhancement will be available by December 31, 2003, via PTF to Fault Analyzer V4.1.

IBM File Manager V4.1

Basic enhancements

Improved performance

Performance has been enhanced for the following File Manager functions:

- Data Set Copy Utility

  The Data Set Copy Utility, which can be run either interactively or in batch, is enhanced to increase performance and to provide a new high performance command language.

  - When reading a sequential file during Data Set Copy, File Manager uses improved algorithms for reducing CPU (TCB) and input/output (EXCP) costs. The CPU reduction is most significant when a REXX procedure is not used.

  - File Manager continues to provide the REXX language for highly flexible and powerful control of Data Set Copy processing.

  - A new high performance command language can be used to perform a more limited set of functions at a significantly reduced CPU cost relative to REXX processing. The high performance command language, known as FASTPROC, can be used for

various purposes, such as rearranging the contents of records as they are copied; or for creating and writing, to multiple output data sets, new records based on the input record.

- Find and Change Utility

  The Find and Change Utility, which can be run either interactively or in batch, is enhanced to provide:

  - Two new processing options:

    -- An option to lock the entire partitioned data set (PDS) being searched, thus reducing the overhead of locking each member individually

    -- An option to suppress writing of member statistics to changed PDS members

  - The capability, when run in batch, to process multiple Change commands in a single pass of a PDS, thus reducing the overhead of processing the PDS multiple times

  - New internal algorithms, resulting in reduced CPU requirements

- Editor/Browser

  Various changes have been made to internal algorithms of the File Manager Editor and Browser to improve performance of specific user scenarios. The functions that have seen general improvements include the Find and Change commands. Auxiliary edit startup performance has also been improved.

Enhanced Data Set Compare Utility

The File Manager Data Set Compare Utility has been enhanced to support the following:

- In batch, when comparing data sets using a copybook or template, new command syntax has been added to support selection of the compare fields by field name. When using an existing template, the compare fields selected by this new syntax can extend or override the compare field mapping specified in the template.

- When using keyed synchronization of the data sets being compared:

  - Specification of a key consisting of up to 16 independent segments

  - Data type sensitivity of the segments that make up the key, thus allowing data set synchronization on heterogeneous keys

  - Under ISPF, when comparing data sets using a copybook or template, the ability to specify key segments using the template editor

  - In batch, when comparing data sets using a copybook or template, new syntax to support specification of the key segments by field name

  - Discrimination between changed records (records with matching keys but different data) and insert/delete pairs with different keys

Print Audit Trail Report in batch: The Print Audit Trail Utility has been enhanced to run in batch as well as under ISPF. JCL to run the new batch command, AUD, can either be generated online, or coded in a batch job using the syntax description in the *User's Guide*.

New LOCATE primary command: The Edit/Browse LOCATE primary command has been added. This command scrolls the display to the supplied field name (or column name in File Manager DB2), thus enhancing data accessibility.

New FORMAT primary command: The Edit/Browse FORMAT primary command has been added. This command allows the current display format of an edit or browse session to be changed from the command line. The display format can be changed to any display format available for the session, such as TABL or SNGL (when a template is being used), or CHAR, HEX, or LHEX (except in File Manager DB2). When the current display format is SNGL, entering the FORMAT command without a parameter changes the display format to TABL. When the current display format is not SNGL, entering the FORMAT command without a parameter changes the display format to SNGL (when a template is used). An abbreviated version of each format of the FORMAT command is also provided: FT for FORMAT TABL, FS for FORMAT SNGL, FC for FORMAT CHAR, FH for FORMAT HEX, and FL for FORMAT LHEX. These abbreviated commands can be used as either primary commands or, in Edit sessions, prefix commands.

Improved installation and customization: Installation and customization documentation has been improved.

IMS support enhancements

Enhanced NEXT and PREVIOUS primary commands: The NEXT and PREVIOUS primary commands have been enhanced to allow the user to specify a target segment for a position scroll within a database. The target segment may be across a hierarchical boundary. This improves navigation in the frequent cases where it removes the need for many additional scroll commands. It is particularly useful for users who understand the data stored in each segment type but are not certain of the hierarchical structure of the database records.

TABL mode enhancement for SHOW support: The SHOW SUP ON command now works in TABL mode. This enhancement means that the SHOW setting is consistent across all display modes, and can be set in the user profile, so that the setting remains across browse and edit sessions.

New SCOPE primary command: The SCOPE primary command has been added. This command lets the user change the scope of command operation and segment retrieval from across all database records to within the current database record. This enhances data retrievability by allowing the user to focus on a small number of records.

Other new and enhanced primary and line commands: Other new and enhanced commands (such as the new GE primary command, the enhanced CHILD primary command, and the Snn, S* and SS line commands in some panels) lead to improved navigation and data access.

Value Unit based pricing

Value Unit based pricing will help to align the prices of these products to the principle of the PSLC pricing curve which provides for a lower price per MSU (millions of service units per hour) for larger capacities.

There is also be a price benefit when customers grow their capacity. Additional capacity will be based on the number of Value Units (MSUs) the customer has already installed, for example, additional capacity will not be priced starting at the base with a higher price per unit but on the capacity that is already installed.

Note that Value Units of a given product cannot be exchanged/interchanged/aggregated with Value Units of another product.

IPLA and Subscription and Support considerations

IPLA licenses can be transferred from one machine to another within, but not limited to an enterprise. The customer may aggregate the capacity for all the processors the product is operated on to achieve a more economic price. This will result in a single Proof of Entitlement. It is the customer's responsibility to manage the distribution of Value Units within the limits of the entitlement of the product license.

Subscription and Support must cover the same capacity as the product license entitlement. Subscription and Support will be available in the country in which the agreement is made.

Trademarks

IMS and MVS are trademarks of International Business Machines Corporation in the United States or other countries or both.

z/OS, OS/390, Language Environment, CICS, DB2, and WebSphere are registered trademarks of International Business Machines Corporation in the United States or other countries or both.

Other company, product, and service names may be trademarks or service marks of others.

Education support

Consulting and services

IBM consultants offer training workshops for IBM Debug Tool, IBM Fault Analyzer, and IBM File Manager.

Mentor Workshop: An IBM consultant will train up to 10 people in the use of Debug Tool, Fault Analyzer, and/or File Manager. Your team will get an overview of the product's features and will learn to use it.

Services provided:

- An IBM consultant will review the installation and configuration, and provide recommendations for changes, if any, based on your current application development environment. The consultant can optionally perform installation of the software for the customer, if desired.

- Deliver training and hands-on lab exercises for the software.

The services offerings are quick-start, hands-on training for your developers to promote understanding and acceptance of IBM Debug Tool, IBM Fault Analyzer, and IBM File Manager. Get started today and maximize your staff's productivity by leveraging IBM's experienced consultants.

Offering information

Product information will be available on day of announcement through the Offering Information Web site at:

> **http://www.ibm.com/common/ssi**

Publications

For Debug Tool Utilities and Advanced Functions V4, the Program Directory (GI10-8545) and License Information (GC18-7912) are supplied automatically with the basic machine-readable material. No other hardcopy publications are shipped with the product.

For Fault Analyzer V4, the Program Directory (GI10-8542) and License Information (GC18-7929) are supplied automatically with the basic machine-readable material. No other hardcopy publications are shipped with the product.

For File Manager V4, the Program Directory (GI10-8533) and License Information (GC18-7793) are supplied automatically with the basic machine-readable material. No other hardcopy publications are shipped with the product.

Displayable softcopy publications

All Debug Tool V4 publications are available, free of charge, in displayable softcopy format (BookManager®, PDF) on the IBM Debug Tool Web site:

> **http://www.ibm.com/software/awdtools/debugtool/**

All Fault Analyzer V4 publications are available, free of charge, in displayable softcopy format (BookManager, PDF) on the IBM Fault Analyzer Web site:

> **http://www.ibm.com/software/awdtools/faultanalyzer/**

All File Manager V4 publications are available, free of charge, in displayable softcopy format (BookManager, PDF) on the IBM File Manager Web site:

> **http://www.ibm.com/software/awdtools/filemanager/**

Technical information

Specified operating environment

Hardware requirements: IBM Debug Tool Utilities and Advanced Functions, IBM Fault Analyzer, and IBM File Manager run on any hardware configuration supported by the licensed programs specified below.

Software requirements: Unless otherwise announced by IBM, IBM Debug Tool Utilities and Advanced Functions for z/OS® V4.1, IBM Fault Analyzer for z/OS V4.1, and IBM File Manager for z/OS V4.1 run under the control of, or in conjunction with, the following programs and their subsequent releases, or their equivalents.

Required licensed programs

- One of the following:

  - IBM OS/390® V2.10, or later (5647-A01)
  - IBM z/OS V1, or later (5694-A01)

- Debug Tool Utilities and Advanced Functions V4.1 also requires Debug Tool for z/OS V4.1 (5655-L24), or later

Optional licensed programs

- CICS® Transaction Server for OS/390 V1.3 (5655-147)
- CICS Transaction Server for z/OS V2.2 (5697-E93)
- DB2® UDB for OS/390 V6 (5645-DB2)
- DB2 UDB for z/OS and OS/390 V7 (5675-DB2)
- IMS™ V7 (5655-B01)
- IMS V8 (5655-C56)
- IBM OS/390 V2.10 C/C++ Element (5647-A01)
- IBM z/OS V1 C/C++ Element (5694-A01)
- IBM COBOL for OS/390 & VM V2 (5648-A25)
- IBM Enterprise COBOL for z/OS V3 (5655-G53)
- IBM VisualAge® PL/I for OS/390 V2 (5655-B22)
- IBM Enterprise PL/I for z/OS V3 (5655-H31)

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Planning information

Packaging

The IBM Debug Tool Utilities and Advanced Functions V4.1 (5655-L23) package includes:

- Basic machine-readable material on the customer-selected distribution medium
- Program Directory (GI10-8545)
- License Information (GC18-7912)
- Proof of Entitlement (PoE)

The IBM Fault Analyzer V4.1 (5655-L25) package includes:

- Basic machine-readable material on the customer-selected distribution medium
- Program Directory (GI10-8542)
- License Information (GC18-7929)
- Proof of Entitlement (PoE)

The IBM File Manager V4.1 (5655-L26) package includes:

- Basic machine-readable material on the customer-selected distribution medium
- Program Directory (GI10-8533)
- License Information (GC18-7793)
- Proof of Entitlement (PoE)

Ordering information

The products in this announcement have one charge unit — Value Units.

Value Unit Exhibit VUE007

	MSUs minimum	MSUs maximum	Value Units/ MSU
Base	1	3	1
Tier A	4	45	0.45
Tier B	46	175	0.36
Tier C	176	315	0.27
Tier D	316	+	0.2

Value Units for non MSU-based S/390® processors:

Hardware	Value Units/ machine
MP3000 H30	6
MP3000 H50	8
MP3000 H70	12
ESL Models	2

Ordering z/OS through the Internet

ShopzSeries (formerly SHOPS390) provides an easy way to plan and order your z/OS ServerPac or CBPDO. It will analyze your current installation, determine the correct product migration, and present your new configuration based on z/OS. Additional products can also be added to your order (including determination of whether all product requisites are satisfied). ShopzSeries is available in the U.S. and several countries in Europe. In countries where ShopzSeries is not available yet, contact your IBM representative or Business Partner to handle your order via the traditional IBM ordering process. For more details and availability, visit the ShopzSeries Web site at:

http://www14.software.ibm.com/webapp/ShopzSeries/ShopzSeries.jsp

The products in this announcement have one charge unit —Value Units.

Value Units for IBM 9672 Processors will be based upon the full capacity of these systems. This is applicable to all S/390-based systems that are measured on MSU capacity. Information on MSU capacities can be found in the IBM System/370™, System/390® and zSeries® Machine Exhibit (Z125-3901).

Value Units for zSeries will be based upon full MSU capacity as defined in the Machine Exhibits.

There will be a tool available that provides support for transforming the MSU-based capacities of S/390 systems to new Value Units by calculating the applicable number of Value Units for a given number of MSUs.

Translation from MSUs to Value Units Example

	MSUs	Value Units/ MSU
Base	1-3	1.00
Tier A	4-45	.45
Tier B	46-175	.36
Tier C	176-315	.27
Tier D	316+	.20

Note: For the actual translation from MSUs to Value Units for this product, refer to chart below.

Ordering example: The total number of Value units is calculated according to the following example.

If the customer has installed 1,500 MSUs, the applicable Value Units would be:

Translation from MSUs to Value Units

	MSUs	*	Value units/ MSU	=	Value units
Base	3	*	1.00	=	3.00
Tier A	42	*	.45	=	18.90
Tier B	130	*	.36	=	46.80
Tier C	140	*	.27	=	37.80
Tier D	1,185	*	.20	=	237.00
Total	1,500				343.50

When calculating the total number of Value Units, the sum is to be rounded up to the next integer.

	Feature number
1 Value Unit	0001
250 Value Units	0002

Example: For a product running on machines with 1,500 MSUs requiring 344 Value Units, order feature number 0001, quantity 94 and feature number 0002, quantity 1.

Note: For actual feature numbers, refer to below.

Basic license: To order, specify the program number and the one-time charge (OTC) feature number.

Also specify the feature number of the desired distribution medium. To suppress shipment of media, select the license-only option in CFSW.

The products in this announcement are available with IBM Software On/Off Capacity on Demand (On/Off CoD) charges. If you are running On/Off CoD on your IBM servers, you can now pay for the Value Unit priced software products in this announcement, on a per-day basis during your peak periods. For additional information on On/Off CoD, refer to Software Announcement 203-202, dated August 12, 2003.

Description	Program number	OTC feature number	Medium feature number	Medium
Debug Tool Utilities and Advanced Functions V4	5655-L23		5802	3480 tape
1 Value Unit		0001		
250 Value Units		0002		
On/Off Capacity on Demand Temporary Use Charge				
1 MSU-Day		0003		
250 MSU-Days		0004		
Fault Analyzer V4	5655-L25		5802	3480 tape
1 Value Unit		0001		
250 Value Units		0002		
On/Off Capacity on Demand Temporary Use Charge				
1 MSU-Day		0003		
250 MSU-Days		0004		
File Manager V4	5655-L26		5802	3480 tape
1 Value Unit		0001		
250 Value Units		0002		
On/Off Capacity on Demand Temporary Use Charge				
1 MSU-Day		0003		
250 MSU-Days		0004		

Subscription and Support: To receive voice technical support via telephone during normal business hours, and future releases and versions at no additional charge, Subscription and Support must be ordered. The capacity of Subscription and Support (Value Units) must be the same as the capacity ordered for the product licenses.

To order, specify the support program number.

IBM is also providing Subscription and Support for these products via a separately purchased offering under the terms of the IBM International Agreement for Acquisition of Support (IAAS). This offering:

- Includes and extends the support services provided in the base support to include technical support via telephone during normal business hours.

- Entitles customers to future releases and versions at no additional charge. Note: Customers are not entitled to new products.

Once Subscription and Support is ordered, the charges will renew automatically annually unless cancelled by the customer.

To decline, specify the support program number and the decline no charge feature number listed below.

Description	Program number	Annual support charge feature number	Medium feature number	Medium
Subscription and Support for Debug Tool Utilities and Advanced Functions	5655-J19		6727	Hardcopy pub
1 Value Unit		0001		
250 Value Units		0002		
Decline (no charge)		0003		
1 MSU S&S Registration (no charge)		0006		
250 MSU S&S Registration (no charge)		0007		
Subscription and Support for Fault Analyzer	5697-G59		6233	Hardcopy pub
1 Value Unit		0001		
250 Value Units		0002		
Decline (no charge)		1008		
1 MSU S&S Registration (no charge)		0006		
250 MSU S&S Registration (no charge)		0007		
Subscription and Support for File Manager	5697-G60		6234	Hardcopy pub
1 Value Unit		0001		
250 Value Units		0002		
Decline (no charge)		1008		
1 MSU S&S Registration (no charge)		0006		
250 MSU S&S Registration (no charge)		0007		

Single version charging: To elect single version charging, the customer must notify and identify to IBM the prior program and replacement program and the machine the programs are operating on.

Customized offerings

Product media is shipped only via Customized Offerings (for example, CBPDO, ServerPac, Systempac®). Non-customized items (CDs, diskettes, source media, media kits) will continue to be shipped via the stand-alone product.

Terms and conditions

Sub-capacity charges terms and conditions

IBM @server zSeries software charges at less than full machine capacity for eligible Data Management (DM) and Application Development (AD) Tools apply when z/OS is running in z/Architecture™ (64 bit) mode on a zSeries 900, no other MVS™-based operating system is licensed to that server, and the required information is provided by the customer in accordance with the applicable terms.

Sub-capacity charges for an eligible AD or DM Tool is based on the z/OS product-defined capacity. To obtain charges at less than full machine capacity for eligible AD and DM tools, the customer is required to:

- Determine the MSUs needed for each machine on which the tools will run. Only machines on which the customer has implemented sub-capacity Workstation License Charges (WLC) according to the above terms and conditions, are eligible for charges at less than full machine capacity for the tools.

- Use the product defined capacity for z/OS (as specified on the Sub-Capacity Reports submitted to IBM for sub-capacity WLC) as the sub-capacity (MSUs) for each tool.

- Submit any additional MSUs and/or Value Units required for each product along with the current entitlement in Value Units for each product.

Sub-capacity charges for AD and DM Tools

To be eligible for sub-capacity charges for AD and DM Tools, the machine on which the AD and DM Tools are running must be eligible for WLC sub-capacity charges terms and conditions. The customer must have signed the Attachment for zSeries Workload License Charges-Pre-ILM, Z125-6516, and submitted at least one Sub-Capacity Report to IBM as defined in the attachment.

With sub-capacity charges, the charge for an eligible AD or DM Tool is based on the z/OS product defined capacity. To obtain charges at less than full machine capacity for each eligible AD and DM Tool for each machine, the customer should:

- Determine the MSUs needed for the machine on which the tools will run. In a data sharing environment, determine the aggregate MSUs needed on the machine where the tools run. Use the product defined capacity (MSUs) for z/OS (as specified on the Sub-Capacity Reports submitted to IBM for sub-capacity WLC) as the sub-capacity (MSUs) for each Tool.

- Submit any additional MSUs and/or Value Units required for each product along with the current entitlement in Value Units for each product.

- If the use of sub-capacity pricing terms for AD and DM Tools results in a reduced requirement for Value Units, thus freeing up entitlements, customers can reallocate the entitlement difference by distributing the Value Units across a larger or different set of systems, or reserve them for future growth. There will be no refunds for these freed up Value Units. Subscription and Support volumes and entitlements for existing contracts will continue to be at the same levels as the acquired licenses.

Management of the Value Unit entitlements continues to be a customer responsibility. If one of the following occurs on a machine to which AD or DM Tools are licensed, the customer must determine if additional Value Units and Subscription and Support need to be ordered for those tools to cover the increase:

- The z/OS defined capacity is increased.

- The requirements for WLC sub-capacity charges are no longer met.

Licensing: IBM International Program License Agreement (IPLA). Proofs of Entitlement (PoE) are required for all authorized use.

These products are licensed under the IPLA, and the associated Agreement for Acquisition of Support, and the Addendum for Support (Z125-6312) which provides for support with ongoing access to releases and versions of the program. These programs have a one-time license charge for use of the program and an ongoing recurring charge for the enhanced support that includes telephone assistance (voice support for defects during normal business hours) as well as access to updates, releases, and versions of the program as long as support is in effect. S/390 and zSeries IBM Operational Support Services ─ Support Line is an option for those customers who desire added services.

Limited Warranty applies: Yes

Warranty: This program has warranty for a minimum of one year from acquisition from IBM or authorized Business Partner. The warranty provided to the customer, for at least one year from acquisition, is access to databases (read Web sites) for program information, FAQs, including any known fixes to defects, which the customer can download or obtain otherwise and install at their leisure.

Program technical support: Technical support of a program product will be available for a minimum of three years from the general availability date, as long as your Software Maintenance is in effect. This technical support allows you to obtain assistance (via telephone or electronic means) from IBM for product-specific, task-oriented questions regarding the installation and operation of the program product. Software Maintenance also provides you with access to updates, releases, and versions of the program. Customers will be notified, via announcement letter, of discontinuance of support with

12 months notice. If you require additional technical support from IBM, including an extension of support beyond the discontinuance date, contact your IBM representative or Business Partner. This extension may be available for a fee.

Program support: Enhanced support, called Subscription and Support, includes telephone assistance (voice support for defects during normal business hours) as well as access to updates, releases, and versions of the program as long as support is in effect. The customer will be notified of discontinuance of support with 12 months notice.

Money-back guarantee: If for any reason you are dissatisfied with the program, return it within 30 days from the invoice date, to the party (either IBM or its reseller) from whom you acquired it, for a refund. This applies only to your first acquisition of the program.

Copy and use on home/portable computer: No

Volume orders (IVO): No

Passport Advantage⊕ applies: No

Software Maintenance applies: No

For operating system software, the revised IBM Operational Support Services ─Support Line offering will provide support for those operating systems and associated products that are not available with the newly announced Software Maintenance offering. This will ensure total support coverage for your enterprise needs, including IBM and selected non-IBM products. For complete lists of products supported under both the current and revised Support Line offering, refer to our Web site at:

http://www.ibm.com/services/sl/products

For additional information on the revised IBM Operational Support Services, refer to Services Announcement 601-023, dated July 10, 2001.

IBM Operational Support Services ─ Support Line: Yes

AIX⊕ /UNIX⊕ upgrade protection applies: No

Entitled upgrade for current AIX/UNIX upgrade protection licensees: No

iSeries™ Software Subscription applies: No

Variable charges apply: No

Educational allowance available: Yes, 15% education allowance applies to qualified education institution customers.

Prices

Description	Program number	OTC feature number	OTC
IBM Debug Utilities and Advanced Functions V4	5655-L23		
—1 Value Unit		0001	$ 500
—250 Value Units		0002	125,000
—On/Off Capacity on Demand Temporary Use Charge			
—1 MSU-Day		0003	2
—250 MSU-Days		0004	500
IBM Fault Analyzer V4	5655-L25		
—1 Value Unit		0001	2,325
—250 Value Units		0002	581,250
—On/Off Capacity on Demand Temporary Use Charge			
—1 MSU-Day		0003	10
—250 MSU-Days		0004	2,500
IBM File Manager V4	5655-L26		
—1 Value Unit		0001	1,345
—250 Value Units		0002	336,250
—On/Off Capacity on Demand Temporary Use Charge			
—1 MSU-Day		0003	6
—250 MSU-Days		0004	1,500

OTC = One-time Charge

Description	Program number	Annual charge feature number	Annual charge
IBM Debug Utilities and Advanced Functions Subscription & Support	5655-J19		
—1 Value Unit		0001	$ 75
—250 Value Units		0002	18,750
—Decline (no charge)		0003	0
—1 MSU S&S Registration (no charge)		0006	0
—250 MSU S&S Registration (no charge)		0007	0
IBM Fault Analyzer Subscription & Support	5697-G59		
—1 Value Unit		0001	349
—250 Value Units		0002	87,250
—Decline (no charge)		1008	0
—1 MSU S&S Registration (no charge)		0006	0
—250 MSU S&S Registration (no charge)		0007	0
IBM File Manager Subscription & Support	5697-G60		
—1 Value Unit		0001	202
—250 Value Units		0002	50,500
—Decline (no charge)		1008	0
—1 MSU S&S Registration (no charge)		0006	0
—250 MSU S&S Registration (no charge)		0007	0

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