



# IBM DB2 Sort for z/OS , V1.2; IBM DB2 Utilities Enhancement Tool for z/OS , V2.2; and IBM Tools Base for z/OS , V1.2 help you better manage your DB2 for z/OS environments

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## At a glance

Enhanced IBM® Tools deliver:

- Application management
  - IBM DB2® Sort for z/OS®, V1.2
  - IBM Tools Base for z/OS, V1.2
- Utilities
  - IBM DB2 Utilities Enhancement Tool for z/OS, V2.2

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: LE001).

## Overview

**IBM DB2 Sort for z/OS, V1.2 (5655-W42)**, also referred to as DB2 Sort, is a DB2 Tool that provides high-speed utility sort processing for data stored in DB2 for z/OS databases.

DB2 Sort improves the sort performance of DB2 utilities delivered in the DB2 Utilities Suite through enhanced sort technology and by communicating with DB2 utilities to adjust system resources for optimal sorting. This approach to sorting may result in reduced sort CPU time.

The following DB2 utilities and DB2 Tools can benefit from improved sorting performance by using DB2 Sort:

- DB2 utilities
  - CHECK DATA
  - CHECK INDEX
  - CHECK LOB
  - LOAD
  - REBUILD INDEX
  - REORG TABLESPACE

- RUNSTATS
- DB2 Tools
  - DB2 Utilities Enhancement Tool for z/OS, using the PRESORT option with the DB2 LOAD utility.
  - DB2 High Performance Unload for z/OS for sorts that occur outside of DB2. In order to utilize this capability, users of DB2 High Performance Unload for z/OS, V4.1 should apply all current maintenance.

DB2 Sort can help to improve the performance of utility sort processing, especially in environments with large volumes of data, large table spaces, or large indexes. These environments require a more sophisticated sorting approach than that used by tools used for general sorting purposes.

Sort processing in these environments often involves intensive CPU usage and heavy I/O activity, which in turn requires large amounts of memory and disk space. DB2 Sort meets these demands by optimizing the use of memory, utilizing IBM System z® Integrated Information Processor (zIIP) technology, and optimizing the management of sort work disk space.

Workloads that most likely would benefit from DB2 Sort include:

- Highly transactional workloads that perform many insert, update, and delete operations that require REORG
- Applications such as data warehousing applications that use LOAD and REBUILD INDEX with large volumes of data
- Situations where data volume or inaccurate statistics have resulted in Sort Capacity Exceeded errors

DB2 Sort is not intended to be a replacement for general purpose sorting products that are invoked through the standard z/OS system sort interface.

**IBM DB2 Utilities Enhancement Tool for z/OS, V2.2 (5655-T58)** provides distinct features that enable database administrators (DBAs) to proactively control the execution of the IBM DB2 utilities in their environment. With enhancements to the DB2 LOAD, REORG TABLESPACE, and CHECK DATA utilities, DBAs can enforce the use or disuse of utility syntax parameters, and can control the job return code of their utilities. It also can block and cancel threads on DB2 objects to ensure utilities execute without contention.

DB2 Utilities Enhancement Tool can help your DB2 DBAs, system programmers, and other IT professionals perform these tasks:

- Implement the enhancements for the DB2 LOAD, REORG TABLESPACE, and CHECK DATA utilities
- Block and cancel threads on DB2 objects
- Enforce utility syntax standards
- Change the severity of DB2 messages

**IBM Tools Base for z/OS, V1.2 (5655-V93)**, previously known as IBM IMS™ Tools Base for z/OS, contains common infrastructure used by IBM DB2 and IMS Tools for z/OS. Tools Base offers technologies and common services that are leveraged by IBM tools to provide more uniform post-installation configuration, customization, administration, policy management, access, and autonomies. Tools Base continues to be a no-charge product.

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## Key prerequisites

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Refer to the [Hardware requirements](#) and [Software requirements](#) sections for key prerequisites.

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## Planned availability date

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September 9, 2011

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## Description

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### **IBM DB2 Sort for z/OS, V1.2 (5655-W42)**

IBM DB2 Sort for z/OS, V1.2 is a DB2 Tool that provides high-speed utility sort processing for data that is stored in DB2 for z/OS databases. IBM DB2 Sort for z/OS, V1.2:

- May help to reduce sort CPU time used by DB2 utilities.
- Utilizes zIIP for additional CPU savings. Portions of the DB2 Sort component, when invoked by the DB2 utilities, can be executed on a zIIP if one is available.
- Optimizes memory usage.
- Optimizes sort workspace usage.
- Improves intra-region parallelism.
- Improves performance of parallel sorts.
- Coordinates inter-region resource allocation.

DB2 Sort can help improve sorting performance while optimizing overall system efficiency and memory management. DB2 Sort exploits the advanced facilities of the IBM z/OS operating system and IBM System z server.

DB2 Sort includes the following features:

- Improves performance: DB2 Sort may help to reduce sort CPU time used by DB2 utilities, particularly LOAD, REORG, and REBUILD INDEX.
- Utilizes zIIP: Portions of the DB2 Sort component, when invoked by the DB2 utilities (LOAD, REORG, REBUILD, INDEX, CHECK INDEX, and RUNSTATS), can be executed on a zIIP if one is available. This offload lowers the billable CPU usage associated with sorting.
- Optimizes memory usage: DB2 Sort determines the availability of central storage resources and chooses the appropriate amount of storage to allocate. It employs memory objects and data space to avoid DASD access when possible.
- Optimizes sort work space usage: DB2 Sort allocates sort workspace dynamically only as needed, potentially reducing the amount of disk space required. DB2 Sort also continues to allocate space when necessary, including additional sort work data sets. This capability reduces the likelihood of sort capacity exceeded errors that are caused by insufficient amounts of workspace.
- Improves intra-region parallelism: When multiple sorts are run in parallel, DB2 Sort's effective allocation of resources for each sort can potentially increase the number of sorts that can be run simultaneously and reduce the total amount of sort processing.
- Improves performance of parallel sorts: DB2 Sort synchronizes the processing of simultaneous sorts, reducing the wait times associated with the transfer of records between the utilities and DB2 Sort. This synchronization improves the CPU time and elapsed time of the sort processing.
- Coordinates inter-region resource allocation: DB2 Sort also monitors the use of central storage by DB2 Sort applications across an LPAR. This global view of resource usage enables optimal resource allocation while accommodating the needs of other work that is being performed on the system.

What's new in IBM DB2 Sort for z/OS, V1.2:

- Further reductions in sort CPU time consumed by DB2 utilities

- Extension of use of available zIIP processors to almost every DB2 Sort instance invoked by the DB2 utilities
- Enhanced dynamic allocation of sortwork files, potentially reducing the number of sortwork data sets that can accommodate larger files
- Coordination of inter-region resource allocation, optimizing memory usage across an LPATR

Users of IBM DB2 High Performance Unload for z/OS, V4.1 (5655-AA1) now have an option to choose DB2 Sort for z/OS for sorts that occur outside of DB2. In order to utilize this capability, users of DB2 High Performance Unload for z/OS, V4.1 should apply all current maintenance.

In order to use DB2 Sort with the DB2 High Performance Unload, you must:

- Install DB2 Sort for z/OS, which is an SMP/E-installable product.
- Configure each DB2 subsystem on which DB2 Sort will be used to use DB2 Sort as the primary sort utility. The ZPARM DB2SORT must be set to ENABLE on each DB2 subsystem where DB2 Sort is to be used. In addition, the SCNKLPA and SCNKLNK libraries must be in the LPA or the LNKLST, or must be accessible through a STEPLIB or JOBLIB DD statement.

**Note:** DB2 Sort for z/OS utility is not compatible with third-party utilities. Therefore, only utilities within the IBM DB2 Utilities Suite for z/OS can be used to invoke the DB2 Sort utility.

### **IBM DB2 Utilities Enhancement Tool for z/OS, V2.2 (5655-T58)**

DB2 Utilities Enhancement Tool includes several key components, including three alternative interfaces. The key components are:

- The started task for communicating with DB2 to perform product functions
- The DSNUTILB intercept interface for implementing the enhancements for the DB2 LOAD, REORG TABLESPACES, and CHECK DATA utilities for transparently blocking and cancelling threads on DB2 objects for DB2 utilities at run time, for transparently enforcing DB2 utilities syntax, or for changing job return codes on DB2 messages
- The ISPF interface for displaying information about active DB2 threads, cancelling threads, and performing some product administration tasks
- The batch interface for blocking and cancelling threads on DB2 objects that are needed by applications and programs other than DSNUTILB that you run as part of a batch job
- The supervisor call (SVC) for enabling communication between the product interfaces and the started task

In addition to being able to block and cancel threads on DB2 objects that are needed by other applications and programs that you run in your environment, Version 2.2 of the DB2 Utilities Enhancement Tool continues to add value and provide new features to DB2 utilities. The DSNUTILB intercept and the LOAD utility I/O intercept, developed in Version 2.1, are key technologies leveraged in this new release.

Enhancements have been made in the following areas:

- Implement support for IBM DB2 Sort
- Implement support for hash tables using LOAD PRESORT
- Integrate customization process with IBM Tools Customizer for z/OS
- Add additional utilities to the Utility Syntax Monitor
- Implement Message Monitor

#### **Implement support for IBM DB2 Sort**

IBM DB2 Utilities Enhancement Tool for z/OS supports the use of the new IBM sort utility called *DB2 Sort for z/OS*. When the DB2 utility LOAD is run with the extended syntax that is provided by DB2 Utilities Enhancement Tool, such as PRESORT,

CONSTANT, and VALUEIF, DB2 Utilities Enhancement Tool will sort the data through DB2 Sort rather than another sort utility.

In order to use DB2 Sort with the DB2 Utilities Enhancement Tool, you must:

- Install DB2 Sort for z/OS, which is an SMP/E-installable product.
- Configure each DB2 subsystem on which DB2 Sort will be used to use DB2 Sort as the primary sort utility. The ZPARAM DB2SORT must be set to ENABLE on each DB2 subsystem where DB2 Sort is to be used. In addition, the SCNKLPA and SCNKLNK libraries must be in the LPA or the LNKLST, or must be accessible through a STEPLIB or JOBLIB DD statement.

### ***Implement support for hash tables using LOAD PRESORT***

Currently, DB2 Utilities Enhancement Tool enables users to presort their SYSREC data prior to the LOAD utility using the parameter PRESORT in the utility syntax. Prior to this enhancement, PRESORT could only be used for objects using an index to sort the table data. With the use of this enhancement, users will be able to presort table data using hash keys for those tables that have been defined as ORGANIZE BY HASH and have CCSID EBCDIC.

The following types are supported for the initial implementation of hash key support:

- CHAR
- VARCHAR
- INTEGER
- BIGINT
- SMALLINT
- DATE
- TIME
- TIMESTAMP
- FLOAT EXTERNAL to SINGLE or DOUBLE
- FLOAT(S390) and same length
- DECIMAL EXTERNAL(n,n) to DECIMAL(n,n)
- DECIMAL PACKED to DECIMAL
- DECIMAL ZONED to DECIMAL
- INTEGER EXTERNAL to:
  - SMALLINT
  - INT
  - BIGINT

**Note:** DB2 does not allow the following column data types for hash keys:

- LOB types
- DECFLOAT
- XML
- DISTINCT

In order to use PRESORT on hash keys, you must have DB2 Utilities Enhancement Tool installed on a DB2 for z/OS, V10 subsystem (hash tables are not available on versions of DB2 prior to Version 10).

Because this feature only affects the DSNUTILB intercept function of DB2 Utilities Enhancement Tool, no user interface changes will be seen by the user.

## ***Integrate customization process with IBM Tools Customizer for z/OS***

The IBM Tools Customizer for z/OS (Tools Customizer) function provides users with the capability of customizing DB2 Utilities Enhancement Tool using a common user interface. If new users are customizing DB2 Utilities Enhancement Tool, Tools Customizer will assist them with an intuitive flow of tasks for quickly generating the required JCL with which to customize DB2 Utilities Enhancement Tool.

If existing users have a previous version of DB2 Utilities Enhancement Tool installed, the Tools Customizer process includes a DISCOVERY function that prepopulates the Tools Customizer panels with values that were used in the previous installation of DB2 Utilities Enhancement Tool, enabling existing users to see what values were used with the previous version of DB2 Utilities Enhancement Tool and enable them to change them if they choose.

By using IBM Tools Customizer for z/OS, users will be able to do the following:

- Easily define parameters to customize new installations of DB2 Utilities Enhancement Tool
- Quickly recustomize existing installations of DB2 Utilities Enhancement Tool, V2.2
- Generate required JCL to customize or recustomize installations of DB2 Utilities Enhancement Tool, V2.2

In order to use this feature with the DB2 Utilities Enhancement Tool, you must:

- Acquire IBM Tools Base for z/OS, V1.2 (5655-V93), a no-charge product
- Install IBM Tools Customizer for z/OS
- Apply all current maintenance to IBM Tools Customizer, specifically APAR PM43297

Because this feature only affects the customization of DB2 Utilities Enhancement Tool, no product panels are affected by using IBM Tools Customizer to customize DB2 Utilities Enhancement Tool.

## ***Add additional utilities to the Utility Syntax Monitor***

The following utilities were added to the Utility Monitor:

- COPYTOCOPY
- MERGECOPY
- MODIFY\_RECOVERY
- MODIFY\_STATISTICS
- REPAIR
- REPORT
- STOSPACE
- LISTDEF
- TEMPLATE
- OPTIONS
- DIAGNOSE

Other than having DB2 Utilities Enhancement Tool V2.2 installed, there are no system requirements for using the additional DB2 utilities with the Utility Syntax Monitor.

Because the DSNUTILB intercept is used for implementing the Utility Monitor, no ISPF product panels are affected by the implementation of this enhancement.

## ***Implement Message Monitor***

A new MESSAGE element is introduced to the Utility Monitor Policy Rules to define and specify messages to the Message Monitor. MESSAGE is a child of UTILITY

and can be specified for single utility commands or for all utilities. Messages are parsed by the DSNUTILB intercept at utility run time as they are written to utility job SYSPRINT. Actions are specified by the following attributes of the MESSAGE element:

- RETURN\_CODE changes the final return code passed back from UET to DSNUTILB after the Utilities Enhancement Tool intercept execution of the utility statement.
- JOURNAL controls whether the message text is recorded in the utility monitor journal table.
- SUPPRESS specifies that the message is suppressed for the output.

Other than having DB2 Utilities Enhancement Tool V2.2 installed, there are no system requirements for using Message Monitor.

Because the DSNUTILB intercept is used for implementing the Message Monitor, no ISPF product panels are affected by the implementation of this enhancement.

**IBM Tools Base for z/OS, V1.2 (5655-V93)**, previously known as IBM IMS Tools Base for z/OS, contains common infrastructure used by IBM DB2 and IMS Tools for z/OS. Tools Base offers technologies and common services to provide IBM tools with more uniform post-installation configuration, customization, administration, policy management, access, and autonomies. Tools Base continues to be a no-charge product.

The new release consists of the features, functions, and common services previously provided. Additionally, Tools Base offers:

- IBM Tools Customizer for z/OS, which is leveraged by various IM tools to assist in customization by providing an enhanced, streamlined customization process that includes:
  - A new standard for post-SMP/E customization of DB2 and IMS Tools products
  - A more consistent, usable, and a simpler solution for the configuration of multiple products
  - An ISPF user interface that guides you through the customization process with generated ISPF product panels, assisting you in the following tasks:
    - Customizing and re-customizing of products and product maintenance
    - Discovering previous customizations of a product
    - Customizing with dynamically generated ISPF product panels
    - Entering parameter values required by the products that are being customized
    - Reusing and sharing configuration settings across products via a common XML repository
    - Customizing product templates
    - Displaying the job execution sequence
- Support for IMS V12
- Maintenance rollup

### **Accessibility by people with disabilities**

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

[http://www.ibm.com/able/product\\_accessibility/index.html](http://www.ibm.com/able/product_accessibility/index.html)

### **Section 508 of the US Rehabilitation Act**

The products in this announcement are capable as of their general availability, when used in accordance with IBM's associated documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it.

## Value Unit-based pricing

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Value Unit pricing for eligible IBM System z IBM International Program License Agreement (IPLA) programs enables a lower cost of incremental growth and enterprise aggregation. Each System z IPLA product with Value Unit pricing has a single price per Value Unit and a conversion matrix, called *Value Unit Exhibit*, for converting from some designated measurement to Value Units. Most commonly, Millions of Service Units (MSUs) is the measurement designated by IBM to be converted to Value Units. Some other measurements are engines or messages. Since MSUs are the most common measurement, that measurement will be used for the remainder of this description.

Value Unit pricing offers price benefits for you. For each System z IPLA program with Value Unit pricing, the quantity of that program needed to satisfy applicable IBM terms and conditions is referred to as the *required license capacity*. Each of the various Value Unit Exhibits stipulate that the larger your required license capacity, the fewer Value Units per MSU you will need. Value Unit Exhibits are uniquely identified by a three-digit code and referred to using the nomenclature VUExxx, where xxx is the three-digit code.

Subsequent acquisitions of Value Unit priced programs offer additional price benefits. The quantity of each System z IPLA program that you have acquired is referred to as *entitled license capacity*. If you want to grow your entitled license capacity for a System z IPLA program, the calculation to determine additional needed Value Units is based upon the number of Value Units already acquired.

For each System z IPLA program with Value Unit pricing, you should:

- Determine the required license capacity, in MSUs
- Aggregate the MSUs across the enterprise
- Convert the total MSUs to Value Units, using the applicable Value Unit Exhibit
- Multiply the price per Value Unit by the total number of Value Units to determine the total cost

To simplify conversion from the designated measurement to Value Units or vice-versa, use the Value Unit Converter Tool. For additional information or to obtain a copy of the Value Unit Converter Tool, visit the Value Unit Converter Tool website

<http://ibm.com/zseries/swprice/vuctool>

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

To determine the required license capacity for the System z IPLA program you selected, refer to the [Terms and conditions](#) section.

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## Product positioning

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### Why Data Management Tools for z/OS?

IBM Data Management tools deliver proven capabilities for optimizing the performance and reliability of your data management environments.

- IBM DB2 Tools support and utilize the most current versions of DB2 for z/OS
- IBM IMS Tools deliver the reliability and affordability you need to maximize the value of your IMS environment

Enhanced IBM Tools deliver:

Application Management

IBM DB2 Sort for z/OS



IBM Tools Base for z/OS

Utilities

IBM DB2 Utilities Enhancement Tool for z/OS

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## Program number

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Program number	VRM	Program name
5655-w42	1.2	IBM DB2 Sort for z/OS
5655-T58	2.2	IBM DB2 Utilities Enhancement Tool for z/OS
5655-v93	1.2	IBM Tools Base for z/OS

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## Product identification number

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Program PID number	Subscription and Support PID number
5655-w42	5655-w41
5655-T58	5697-H86
5655-v93	5655-v94

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## Offering Information

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Product information is available via the Offering Information website

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

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## Business Partner information

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If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld® ID and password are required (use IBM ID).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=211-283>

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## Publications

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The IBM Publications Center portal is at

<http://www.ibm.com/shop/publications/order>

The Publications Center is a worldwide central repository for IBM product and marketing material with a catalog of 70,000 items. Extensive search facilities are provided. Payment options for orders are via credit card or customer number. A large number of publications are available online in various file formats. They can all be downloaded free of charge.

One copy of each of the following publications is supplied automatically with the material.

Title	Order number
IBM DB2 Sort for z/OS, v1.2 (5655-w42)	
License Information	GC19-2962
Program Directory	GI10-8827
IBM IPLA Booklet	Z125-3301
Int'l Agmt for Acq of SW Mtc	Z125-6011

IBM DB2 Utilities Enhancement Tool for z/OS, V2.2 (5655-T58)	
License Information	GC19-1223
Program Directory (English)	GI10-8765
IBM IPLA Booklet	Z125-3301
Int'l Agmt for Acq of SW Mtc	Z125-6011

IBM Tools Base for z/OS, V1.2 (5655-V93)	
License Information	GC19-2899
Program Directory (English)	GI10-8819
IBM IPLA Booklet	Z125-3301
Int'l Agmt for Acq of SW Mtc	Z125-6011

The publications for products in this announcement cannot be ordered in hardcopy. All the publications in this announcement are available at

<http://www.ibm.com/software/data/db2imstools>

Publications are available in PDF and BookManager® formats on the next release of the software product libraries, z/OS and Software Products DVD Collection (SK3T-4271), which requires a DVD drive in DVD-9 (single-sided, dual-layer) format.

Title	Order number
IBM DB2 Sort for z/OS, V1.2 (5655-W42) User's Guide	SC19-3418
IBM DB2 Utilities Enhancement Tool for z/OS, V2.2 (5655-T58) User's Guide	SC19-3417
IBM Tools Base for z/OS, V1.2 (5655-V93) Distributed Access Infrastructure User's Guide	SC19-3270
IMS Hardware Data Compression Extended User's Guide	SC19-3268
IMS Tools Common Services User's Guide	SC19-3266
IMS Tools Knowledge Base User's Guide	SC19-3267
Policy Services User's Guide	SC19-3269

The following material is available at

<http://www.ibm.com/software/data/db2imstools>

- Overview brochure: IBM DB2 and IMS Tools Overview (IMD11760-USEN)

Specification sheets, user's guides, and white papers are also available on CD. This CD-ROM can be ordered from the IBM Publications Center Portal at

<http://www.ibm.com/shop/publications/order>

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## Technical information

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### **Specified operating environment**

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#### **Hardware requirements**

The products in this announcement will operate on any System z hardware configuration that supports the required versions of DB2 or IMS.

#### **Software requirements**

##### **Mandatory installation requirements**

The products in this announcement require:

- z/OS V1.11 (5694-A01), or later
- IBM SMP/E for z/OS, V3.5 (5655-G44), or later

## **Mandatory operational requirements**

IBM DB2 Sort for z/OS, V1.2 (5655-W42) and IBM DB2 Utilities Enhancement Tool for z/OS, V2.2 (5655-T58) require IBM Tools Base, V1.2 (5655-V93), a no-charge product at the latest maintenance level, in order to utilize the function delivered by IBM Tools Customizer for z/OS. IBM Tools Customizer for z/OS (FMID HTCZ110) maintenance should be at PM43297 before starting customization.

IBM DB2 Sort for z/OS, V1.2 (5655-W42) and IBM DB2 Utilities Enhancement Tool for z/OS, V2.2 (5655-T58) are designed to operate with:

- DB2 UDB for z/OS, V8.1 (5625-DB2)
- DB2 UDB for z/OS Value Unit Edition V8.1 (5697-N29)
- DB2 Utilities Suite for z/OS, V8.1 (5655-K61) with APARs PM13963 and PM32705 applied if using DB2 Sort
- DB2 9 for z/OS, V9.1 (5635-DB2)
- DB2 9 for z/OS Value Unit Edition V9.1 (5697-P12)
- DB2 Utilities Suite for z/OS, V9.1 (5655-N97) with APARs PM13963 and PM32705 applied if using DB2 Sort
- DB2 10 for z/OS, V10.1 (5605-DB2)
- DB2 10 for z/OS Value Unit Edition V10.1 (5697-P31)
- DB2 Utilities Suite for z/OS, V10.1 (5655-V41) with APAR PM32705 applied if using DB2 Sort

## **Conditional operational requirements**

The components of IBM Tools Base for z/OS, namely, Tools Base IMS Hardware Data Compression Extended for z/OS, Tools Base IMS Tools Generic Exits for z/OS, and Tools Base IMS Tools Online System Interface for z/OS, require IMS Version 10.1, or later.

The program's specifications and specified operating environment information may be found in documentation accompanying the program, if available, such as a readme file, or other information published by IBM, such as an announcement letter. Documentation and other program content may be supplied only in the English language.

## **User group requirements**

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Customer requirements are used extensively to determine how database tools evolve.

DB2 Utilities Enhancement Tool for z/OS, V2.2 satisfies the following user group requirements:

MR0326071901

## **Planning information**

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### ***Packaging***

The programs in this announcement are distributed with the following content:

- Basic machine-readable material
- Program Directory
- IBM International Program License Agreement (IPLA)

## **Security, auditability, and control**

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The announced programs use the security and auditability features of the host operating system software. The customer is responsible for evaluation, selection,

and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

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## Software Services

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IBM Software Services has the breadth, depth, and reach to manage your services needs. You can leverage the deep technical skills of our lab-based, software services team and the business consulting, project management, and infrastructure expertise of our IBM Global Services team. Also, we extend our IBM Software Services reach through IBM Business Partners to provide an extensive portfolio of capabilities. Together, we provide the global reach, intellectual capital, industry insight, and technology leadership to support a wide range of critical business needs.

To learn more about IBM Software Services or to contact a Software Services sales specialist, visit

<http://www.ibm.com/software/sw-services/>

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## Ordering information

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### Charge metric

Program name	PID number	Charge metric
DB2 Sort for z/OS, V1.2	5655-W42	Value Unit
DB2 Utilities Enhancement Tool for z/OS, V2.2	5655-T58	Value Unit
IBM Tools Base for z/OS, V1.2	5655-V93	Unlimited Installs

The programs in this announcement have Value Unit-Based pricing.

Program number	Program name	Value Unit exhibit
5655-W42	DB2 Sort for z/OS	VUE007
5655-T58	DB2 Util Enhancement Tool V2	VUE007

For each System z IPLA program with Value Unit pricing, the quantity of that program needed to satisfy applicable IBM terms and conditions is referred to as the *required license capacity*. Your required license capacity is based upon the following factors:

- The System z IPLA program you select
- The applicable Value Unit Exhibit
- The applicable terms
- Whether your current mainframes are full capacity or sub-capacity

### 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 mainframes without MSU ratings:

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

### Ordering example

The total number of Value Units is calculated according to the following example.

If your required license capacity is 1,500 MSUs for your selected System z IPLA product, 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.

### Ordering products that run on z/OS through the Internet

ShopzSeries 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 US and several countries in Europe. In countries where ShopzSeries is not available yet, contact your IBM representative (or IBM Business Partner) to handle your order via the traditional IBM ordering process. For more details and availability, visit the ShopzSeries website at

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

### Basic license

#### On/Off CoD

The products in this announcement are eligible for On/Off Capacity on Demand (CoD) with a temporary use charge calculated based on MSUs per-day usage.

Translation from MSUs to Value Units

	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

To order, specify the program product number and the appropriate license or charge option. Also, specify the desired distribution medium. To suppress shipment of media, select the license-only option in CFSW.

Program name: DB2 Sort for z/OS, V1.2  
Program PID: 5655-W42

Entitlement Identifier	Description	License Option / Pricing Metric
S016C50	DB2 Sort for z/OS	Basic OTC, Value Units Basic OTC, Per MSU-day TUC
Orderable Supply ID	Language	Distribution medium
S016C52	US English	3590 Tape Cartridge

Program name: DB2 Utilities Enhancement Tool for z/OS, V2.2  
Program PID: 5655-T58

Entitlement Identifier	Description	License Option / Pricing Metric
S01454H	DB2 Util Enhancement Tool V2	Basic OTC, Value Units Basic OTC, Per MSU-day TUC
Orderable Supply ID	Language	Distribution medium
S0166G0	US English	3590 Tape Cartridge

Program name: IBM Tools Base for z/OS, V1.2  
Program PID: 5655-V93

Identifier	Description	Pricing Metric
S015TXP	Tools Base	No Charge, Unlimited Installs
Orderable Supply ID	Language	Distribution medium
S015TXN	US English	3590 Tape Cartridge
S016WZD	US English	3590 Tape Cartridge

Subscription and Support PID: 5655-W41

Entitlement Identifier	Description	License Options/Pricing Metrics
S016C53	DB2 Sort S&S	Basic OTC, per Value Unit SW S&S Reseller One Year No charge, decline SW S&S Per MSU SW S&S registration
Orderable Supply ID	Language	Distribution medium
S016B67	English	Hardcopy publication

Subscription and Support PID: 5697-H86

Entitlement Identifier	Description	License Options/Pricing Metrics
S00XMRX	S&S, DB2 Utils Enhncmt Tool S&S	Basic OTC, per Value Unit SW S&S Reseller One Year No charge, decline SW S&S Per MSU SW S&S registration
Orderable Supply ID	Language	Distribution medium
S00XMRZ	English	Hardcopy publication

Subscription and Support PID: 5655-V94

Entitlement Identifier	Description	License Options/Pricing Metrics
S015TXR	Tools Base S&S	Unlimited Installs SW S&S
Orderable Supply ID	Language	Distribution medium
S015TXT	English	Hardcopy publication

## Subscription and Support

To receive voice technical support via telephone 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 Subscription and Support program number (PID) referenced above and the appropriate license or charge option.

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 Software Maintenance (IAASM). This offering:

- Includes and extends the support services provided in the base support to include technical support via telephone.
- Entitles you to future releases and versions, at no additional charge. Note that you are not entitled to new products.

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

The combined effect of the IPLA license and the Agreement for Acquisition of Software Maintenance gives you rights and support services comparable to those under the traditional ICA S/390® and System z license or its equivalent. To ensure that you continue to enjoy the level of support you are used to in the ICA business model, you must order both the license for the program and the support for the selected programs at the same Value Unit quantities.

### ***Single version charging***

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

## **Customized Offerings**

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Product deliverables are shipped only via CBPDO, ServerPac, and SystemPac®.

CBPDO and ServerPac are offered for Internet delivery in countries where ShopzSeries product ordering is available. Internet delivery reduces software delivery time and allows you to install software without the need to handle tapes. For more details on Internet delivery, refer to the ShopzSeries help information at

<http://www.software.ibm.com/ShopzSeries>

You choose the delivery method when you order the software. IBM recommends Internet delivery. In addition to Internet and DVD, the supported tape delivery options for CBPDO, ServerPac, and SystemPac, include:

- 3590
- 3592

Most products can be ordered in ServerPac and SystemPac the month following their availability on CBPDO. z/OS can be ordered via all three offerings at general availability. Production of software product orders will begin on the planned general availability date.

- CBPDO shipments will begin one week after general availability.
- ServerPac shipments will begin two weeks after general availability
- SystemPac shipments will begin four weeks after general availability due to additional customization, and data input verification.

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## Terms and conditions

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The information provided in this announcement letter is for reference and convenience purposes only. The terms and conditions that govern any transaction with IBM are contained in the applicable contract documents such as the IBM International Program License Agreement, IBM International Passport Advantage® Agreement, and the IBM Agreement for Acquisition of Software Maintenance.

### **Licensing**

IBM International Program License Agreement including the License Information document and Proof of Entitlement (PoE) govern your use of the program. PoEs are required for all authorized use.

### **Agreement for Acquisition of Software Maintenance**

The following agreement applies for Software Subscription and Support (Software Maintenance) and does not require customer signatures:

- IBM Agreement for Acquisition of Software Maintenance (Z125-6011)

These programs are licensed under the IBM Program License Agreement (IPLA) and the associated Agreement for Acquisition of Software Maintenance, which provide 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 annual renewable 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.

IBM System z Operational Support Services - SoftwareXcel is an option if you desire added services.

### **License Information form numbers**

Program name	Program number	License Information
DB2 Sort for z/OS, v1.2	5655-w42	GC19-2962
DB2 Utilities Enhancement Tool for z/OS, v2.2	5655-T58	GC19-1223
IBM Tools Base for z/OS, v1.2	5655-v93	GC19-2899

The programs' License Information will be available for review on the IBM Software License Agreement website

<http://www.ibm.com/software/sla/sladb.nsf>

### **Limited warranty applies**

Yes



**Limited warranty**

IBM warrants that when the program is used in the specified operating environment, it will conform to its specifications. The warranty applies only to the unmodified portion of the program. IBM does not warrant uninterrupted or error-free operation of the program or that IBM will correct all program defects. You are responsible for the results obtained from the use of the program.

IBM provides you with access to IBM databases containing information on known program defects, defect corrections, restrictions, and bypasses at no additional charge. For further information, consult the IBM Software Support Handbook found at

<http://www.ibm.com/support/handbook>

IBM will maintain this information for at least one year after the original licensee acquires the program (warranty period).

**Program support**

Enhanced support, called Subscription and Support, includes telephone assistance, as well as access to updates, releases, and versions of the program as long as support is in effect. You will be notified of discontinuance of support with 12 months' notice.

**Money-back guarantee**

If for any reason you are dissatisfied with the program and you are the original licensee, you may obtain a refund of the amount you paid for it, if within 30 days of your invoice date you return the program and its PoE to the party from whom you obtained it. If you downloaded the program, you may contact the party from whom you acquired it for instructions on how to obtain the refund.

For clarification, note that for programs acquired under any of IBM's On/Off Capacity on Demand (On/Off CoD) software offerings, this term does not apply since these offerings apply to programs already acquired and in use by you.

**Volume orders (IVO)**

No

**Passport Advantage applies**

No

**Software Subscription and Support applies**

No. For operating system software, the revised IBM Operational Support Services - SoftwareXcel offering will provide support for those operating systems and associated products that are not available with the Software Subscription and Support (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 offering, visit

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

**IBM Operational Support Services -- SoftwareXcel**

Yes

**System i Software Maintenance applies**

No

### **Variable charges apply**

No

### **Educational allowance available**

Yes. A 15% education allowance applies to qualified education institution customers.

### **Products eligible for single version charging**

Single version charging applies. Refer to the following table:

Replaced program		Replacement program	
Program number	Program name	Program number	Program name
5655-085	IMS Hardware Data Compression Extended, V1	5655-V93	IBM Tools Base for z/OS, V1.2

### **Sub-capacity terms and conditions**

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For each System z IPLA program with Value Unit pricing, the quantity of that program needed to satisfy applicable IBM terms and conditions is referred to as the *required license capacity*. Your required license capacity is based upon the following factors:

- The System z IPLA program you select
- The applicable Value Unit Exhibit
- The applicable terms
- Whether your current mainframes are full capacity or sub-capacity

For more information on the Value Unit Exhibit for the System z IPLA program you selected, refer to the [Ordering information](#) section.

Program number	Program name	Terms	Parents - any of the following
5655-W42	DB2 Sort for z/OS, V1.2	Reference-based	DB2 V9 (5635-DB2) DB2 V9 VUE (5697-P12) DB2 V10 (5605-DB2) DB2 V10 VUE (5697-P31)
5655-T58	DB2 Utils Enhncmt Tool for z/OS, V2.2	Reference-based	DB2 V9 (5635-DB2) DB2 V9 VUE (5697-P12) DB2 V10 (5605-DB2) DB2 V10 VUE (5697-P31)

### **Full capacity mainframes**

In cases where full capacity is applicable, the following terms apply.

Execution based, z/OS based, full machine based: The required capacity of a System z IPLA program with these terms equals the MSU-rated capacity of the machines where the System z IPLA program executes.

For more information on mainframe MSU-rated capacities, visit

<http://www-1.ibm.com/servers/eserver/zseries/library/swpriceinfo/>

Reference based: The required license capacity of a System z IPLA program with these terms equals the license capacity of the applicable monthly license charge (MLC) program. This MLC program is called the *parent program*.

### **Sub-capacity mainframes**

In cases where sub-capacity is applicable, the following terms apply.

**Execution based:** The required capacity of a System z IPLA sub-capacity program with these terms equals the capacity of the LPARs where the System z IPLA program executes.

**z/OS based:** The required license capacity of a System z IPLA program with these terms equals the license capacity of z/OS on the machines where the System z IPLA program executes.

**Reference based:** The required license capacity of a System z IPLA program with these terms equals the license capacity of the applicable monthly license charge (MLC) program. This MLC program is called the *parent program*.

**Full-machine-based:** The required license capacity of a System z IPLA program with full-machine-based terms equals the MSU-rated capacity of the machines where the System z IPLA program executes.

For more information on mainframe MSU-rated capacities, refer to *The System/370, System/390®, and System z Machine Exhibit (Z125-3901)*, or visit the Mainframes section of the System z Exhibits website

<http://ibm.com/zseries/library/swpriceinfo/>

For more information on sub-capacity System z IPLA terms and conditions, refer to Software Announcement [204-184](#), dated August 10, 2004.

System z IPLA sub-capacity programs with reference-based terms add value to the parent program across the environment, regardless of where in the environment the System z IPLA program executes. An environment is defined as either a single or stand-alone machine or a qualified Parallel Sysplex®. You might have one or more different environments across the enterprise. To determine the required license capacity for each System z IPLA program with referenced-based terms, each environment should be assessed separately. When a System z IPLA sub-capacity program with reference-based terms is used in a qualified Parallel Sysplex environment, the required license capacity of the System z IPLA program must equal the license capacity of the parent program across the Parallel Sysplex. Qualified Parallel Sysplex refers to one:

1. That meets the criteria defined in Hardware Announcement [198-001](#), dated January 13, 1998
2. Where MLC pricing is aggregated across the Sysplex

### **Sub-capacity eligibility**

To be eligible for sub-capacity charging on select System z IPLA programs, you must first implement and comply with all terms of either sub-capacity Workload License Charges (WLC) or sub-capacity Entry Workload License Charges (EWLC). To implement sub-capacity WLC or EWLC, a machine must be System z (or equivalent). On that machine:

- All instances of the OS/390® operating system must be migrated to the z/OS operating systems
- Any licenses for the OS/390 operating system must be discontinued
- All instances of the z/OS operating systems must be running in z/Architecture® (64-bit) mode

For that machine, you must create and submit a Sub-capacity Report to IBM each month. Sub-capacity Reports must be generated using the Sub-capacity Reporting Tool (SCRT). For additional information or to obtain a copy of SCRT, visit the System z Software Pricing website

<http://ibm.com/zseries/swprice>

You must comply with all of the terms of the WLC or EWLC offering, whichever is applicable:

- The complete terms and conditions of sub-capacity WLC are defined in the IBM Customer Agreement - Attachment for System z Workload License Charges (Z125-6516)
- The complete terms and conditions for sub-capacity EWLC are defined in the IBM Customer Agreement - Attachment for IBM eServer™ System z 890 and 800 License Charges (Z125-6587)

Additionally, you must sign and comply with the terms and conditions specified in the amendment to the IPLA contract - *Amendment for IBM System z9® and eServer zSeries® Programs Sub-capacity Pricing* (Z125-6929). Once the amendment is signed, the terms in the amendment replace any and all previous System z IPLA sub-capacity terms and conditions.

### **Sub-capacity utilization determination**

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Sub-capacity utilization is determined based on the utilization of a sub-capacity eligible reference product and machine.

### **On/Off Capacity on Demand (CoD)**

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To be eligible for On/Off CoD pricing, you must be enabled for temporary capacity on the corresponding hardware, and the required contract, Attachment for IBM System z On/Off Capacity on Demand (Z125-7883) must be signed prior to use.

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## **Prices**

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For additional information and current prices, contact your local IBM representative.

Translation from MSUs to value Units

	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

To order, specify the program product number and the appropriate license or charge option. Also, specify the desired distribution medium. To suppress shipment of media, select the license-only option in CFSW.

Program name: DB2 Sort for z/OS, v1.2  
Program PID: 5655-w42

Entitlement Identifier	Description	License Option / Pricing Metric
S016C50	DB2 Sort for z/OS	Basic OTC, Value Units Basic OTC, Per MSU-day TUC
Orderable Supply ID	Language	Distribution medium
S016C52	US English	3590 Tape Cartridge

Program name: DB2 Utilities Enhancement Tool for z/OS, V2.2  
Program PID: 5655-T58

Entitlement Identifier	Description	License Option / Pricing Metric
S01454H	DB2 Util Enhancement Tool V2	Basic OTC, Value Units Basic OTC, Per MSU-day TUC
Orderable Supply ID	Language	Distribution medium
S01454G	US English	3590 Tape Cartridge

Program name: IBM Tools Base for z/OS, V1.2  
Program PID: 5655-V93

Identifier	Description	Pricing Metric
S015TXP	Tools Base	No Charge, Unlimited Installs
Orderable Supply ID	Language	Distribution medium
S015TXN	US English	3590 Tape Cartridge
S016WZD	US English	3590 Tape Cartridge

Subscription and Support PID: 5655-w41

Entitlement Identifier	Description	License Options/Pricing Metrics
S016C53	DB2 Sort S&S	Basic OTC, per Value Unit SW S&S Reseller One Year No charge, decline SW S&S Per MSU SW S&S registration
Orderable Supply ID	Language	Distribution medium
S016B67	English	Hardcopy publication

Subscription and Support PID: 5697-H86

Entitlement Identifier	Description	License Options/Pricing Metrics
S00XMRX	S&S, DB2 Utils Enhncmt Tool S&S Enhncmt Tool S&S	Basic OTC, per Value Unit SW S&S Reseller One Year No charge, decline SW S&S Per MSU SW S&S registration
Orderable Supply ID	Language	Distribution medium
S00XMRZ	English	Hardcopy publication

Subscription and Support PID: 5655-V94

Entitlement Identifier	Description	License Options/Pricing Metrics
S015TXR	Tools Base S&S	Basic ASC, per Value Unit SW S&S No charge, decline SW S&S Per MSU SW S&S registration
Orderable supply ID	Language	Distribution medium
S015TXT	English	Hardcopy publication

## Subscription and Support

To receive voice technical support via telephone 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 Subscription and Support program number (PID) referenced above and the appropriate license or charge option.

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 Software Maintenance (IAASM). This offering:

- Includes and extends the support services provided in the base support to include technical support via telephone.
- Entitles you to future releases and versions, at no additional charge. Note that you are not entitled to new products.

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

The combined effect of the IPLA license and the Agreement for Acquisition of Software Maintenance gives you rights and support services comparable to those under the traditional ICA S/390 and System z license or its equivalent. To ensure that you continue to enjoy the level of support you are used to in the ICA business model, you must order both the license for the program and the support for the selected programs at the same Value Unit quantities.

Information on charges is available at

<http://www.ibm.com/support>

Choose the option entitled Purchase/upgrade tools.

## IBM Global Financing

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IBM Global Financing offers competitive financing to credit-qualified customers to assist them in acquiring IT solutions. Offerings include financing for IT acquisition, including hardware, software, and services, from both IBM and other manufacturers or vendors. Offerings (for all customer segments: small, medium, and large enterprise), rates, terms, and availability can vary by country. Contact your local IBM Global Financing organization or visit

<http://www.ibm.com/financing/us/index.html>

IBM Global Financing offerings are provided through IBM Credit LLC in the United States, and other IBM subsidiaries and divisions worldwide to qualified commercial and government customers. Rates are based on a customer's credit rating, financing terms, offering type, equipment type, and options, and may vary by country. Other restrictions may apply. Rates and offerings are subject to change, extension, or withdrawal without notice.

Financing from IBM Global Financing helps you preserve cash and credit lines, enables more technology acquisition within current budget limits, permits accelerated implementation of economically attractive new technologies, offers payment and term flexibility, and can help match project costs to projected benefits. Financing is available worldwide for credit-qualified customers.

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## Order now

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To order, contact the Americas Call Centers or your local IBM representative, or your IBM Business Partner.

To identify your local IBM representative or IBM Business Partner, call 800-IBM-4YOU (426-4968).

Phone: 800-IBM-CALL (426-2255)  
Fax: 800-2IBM-FAX (242-6329)  
For IBM representative: [callserv@ca.ibm.com](mailto:callserv@ca.ibm.com)  
For IBM Business Partner: [pwswna@us.ibm.com](mailto:pwswna@us.ibm.com)  
Mail: IBM Teleweb Customer Support  
ibm.com® Sales Execution Center, Americas North  
3500 Steeles Ave. East, Tower 3/4  
Markham, Ontario  
Canada  
L3R 2Z1

Reference: LE001

The Americas Call Centers, our national direct marketing organization, can add your name to the mailing list for catalogs of IBM products.

**Note:** Shipments will begin after the planned availability date.

### **Trademarks**

IMS and eServer are trademarks of IBM Corporation in the United States, other countries, or both.

IBM, DB2, z/OS, System z, PartnerWorld, BookManager, S/390, SystemPac, Passport Advantage, System/390, Parallel Sysplex, OS/390, z/Architecture, System z9, zSeries and [ibm.com](http://www.ibm.com) are registered trademarks of IBM Corporation in the United States, other countries, or both.

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

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<http://www.ibm.com/legal/us/en/>

For the most current information regarding IBM products, consult your IBM representative or reseller, or visit the IBM worldwide contacts page

<http://www.ibm.com/planetwide/us/>

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## Corrections

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### **(Corrected on October 31, 2011)**

In the Ordering information section, an additional order supply entitlement identifier was added for 5655-V93.