IBM DB2 V9.1 for z/OS: Realize the business value of your information with innovation that matters

IBM DB2 V9.1 for z/OS (DB2 9) expands the value delivered to your business through innovations in key areas including:

- **pureXML for on demand applications**
- **Unparalleled security and resiliency for business critical innovations**
- **Improved data warehousing capabilities**
- **Enhanced SAP and ERP vendor support**
- **Improved cost of ownership and reduction in administration requirements**

IBM DB2 Query Management Facility (QMF) V9.1, an optional feature of DB2 9, allows full access to data in the enterprise for viewing, analysis, and reporting via a Web browser or workstation client, with an exciting new visual interface. **For ordering, contact:**

Your IBM representative, an IBM Business Partner, or the Americas Call Centers at

**800-IBM-CALL** Reference: LE001

**Overview**

IBM DB2® V9.1 for z/OS® (DB2 9) delivers exciting new innovations, in key areas, to help you realize the business value of your company’s information.

**pureXML for on demand applications**

DB2 9, a hybrid data server that integrates pureXML database technology into our industry leading relational data server, provides unprecedented scalability and performance for both relational and XML data. DB2 9 adds many new data types and SQL improvements. These new features allow you to gain great insight into your business data and enable high volume transaction processing for the next wave of Web applications and service oriented architecture (SOA) initiatives. Data Warehousing and OLTP improvements continue to make your System z™ and DB2 for z/OS environment a highly secure, high performance, and highly scalable enterprise data store that companies continue to bet their business on. The complex business applications of today include both transactions and reporting, so performing both well is imperative.

Some key optimization enhancements improve query and reporting performance and ease of use. A new innovation, the Optimization Service Center*, captures meaningful information about your workload and can improve serviceability by showing insightful optimizer information. Enhanced support for key Business Partners allows you to get more from your data in critical business disciplines like ERP. A brand new user interface for IBM DB2 Query Management Facility*
Unparalleled security and resiliency for business critical information

New technical innovations in operational compliance (both regulatory and internal governance) help teams work more efficiently, within guidelines and with enhanced auditing capabilities. The unique synergy between DB2, System z, and z/OS drives unparalleled improvements and new capabilities. DB2 benefits from large real memory support, faster processors, specialty engines, and better hardware compression. New capabilities include:

- Increased support for zIIP specialty engines. DB2 9 adds remote native SQL procedure enablement to zIIP processing
- Added security and encryption via IPv6 and Secure Socket Layer (SSL)
- Improved I/O
- Enhanced Parallel Sysplex®, improved backup and restore support, and new ways of using Workload Manager (WLM)

DB2 9 provides SAP environments with the highest level of availability, stability, and security

DB2 9 offers innovations that keep your business running even when things go wrong or changes need to be made. These capabilities drive new value in business resiliency through scalability functions, fewer planned or unplanned outages, and improvements to enhance performance, usability, and availability in data sharing environments. The IBM Optimization Service Center can improve your performance by helping tune SQL statements and databases. DB2 9 performance improvements are in areas that include CPU reductions for index processing in load, reorg, runstats, recover, rebuild and check index, better scalability for inserts, updates and delete, improved line of business (LOB) scalability and performance, reduced CPU time for data with varying length and faster sequential access.

For more information about the new Optimization Service Center, refer to Software Announcement 207-040, dated March 6, 2007.

* Optimization Service Center and QMF for Workstation are built on Eclipse, an open source community committed to implementation of a universal development platform.

Key prerequisites

- z/OS V1.7 Base Services, (5694-A01) or later, executing in 64-bit addressing mode.
- Any processor that supports z/Architecture™ with some limitations. Refer to the Technical information section for details.

Planned availability date

March 16, 2007

Description

DB2 9 delivers key enhancements that improve the ability of DB2 to handle today's new, and enterprise on demand applications. Key enhancements delivered in DB2 9 include:

- pureXML for on demand applications
- Unparalleled security, and resiliency for business critical information
- Reduced cost of ownership and administration requirements

DB2 9 builds upon, and extends DB2 traditional strengths in many areas including online schema evolution, Unicode, XML, DB2 Family SQL, utilities, security and compliance, and 64-bit virtual storage. Optimization improvements include performance-boosting innovations, synergy with IBM System z, and query management enhancements driving increased cost savings.

pureXML for on demand applications
• Rich new hybrid data server support for both relational and pure XML storage, with the necessary services to support both data structures.

• Leading-edge standards-based capabilities to enable service oriented architecture (SOA) requirements.

• Database on demand capabilities to ensure that your information design can be changed dynamically, often without database outages.

• Rich new SQL capabilities, including additional data types and built-in functions, expanded SQL commonality with DB2 family, and enriched text handling with functions like caseless comparisons, cultural sort, and index on expression.

• Enhanced support to allow key Business Partners, especially with ERP offerings such as SAP, to continue to push the envelope with capabilities that drive business value to their customers. Specific items include new autonomic features, optimization and availability enhancements, and support for new data types.

• Completely redesigned, cross-platform workstation and Web-based QMF query solution, providing high performance, on demand access to data, reports, and interactive data analysis using a rich desktop application or ordinary Web browser.

Unparalleled security and resiliency for business critical information

• Increased security and regulatory compliance through implementation of roles, network-trusted contexts, and enhanced auditing

• Synergy with IBM System z and z/OS in areas that include XML parsing, zIIP, I/O improvements, encryption, IPV6, and Secure Socket Layer (SSL)

• Query management enhancements to make accessing your data even faster and more accurate; indexing improvements that include index on expression, randomization, and larger index page sizes; optimization improvements that provide better data for the optimizer, improved optimization techniques, and better management with optimization services

Reduced cost of ownership and administration requirements

• Improvements to DB2 enhance performance, usability, and availability in data sharing environments, including fast replacement of one table with another, ability to alter table space and index logging, and improved ability to rebuild an index online.

• Performance-boosting innovations such as load and reorg utility CPU reductions, improved performance for varying length data, and improved logging and insert performance.

• Scalability innovations like table space partitioning by growth, log latch contention reduction, and ability to create and alter STOGROUP SMS constructs.

• Improvements beyond DB2 V8 to help manage business-critical information, with fewer planned or unplanned outages with features like online reorganization with no BUILD2 phase, rename column and index, alter index to change page size, and ability to modify early code without requiring an IPL.

For a technical presentation on selected features of DB2 V9, or later releases, visit the following Web site and select "What's coming"


DB2 9 consists of the base DB2 product with a set of orderable optional features, some of which are available at no additional charge, and others that are billable.

Orderable chargeable features

DB2 QMF V9

With this release, DB2 QMF is a completely redesigned, cross-platform workstation and Web-based solution, providing high performance on demand access to data, reports, and interactive data analysis, using a rich desktop application or ordinary Web browser. Included in DB2 QMF V9 is:

• Support for DB2 9, with XML and enhancements to SQL

• Reengineered Eclipse-based desktop application that extends QMF to numerous workstation
operating systems, including Windows™, Linux™, Solaris, and HP-UX platforms.

- New OLAP query builder, complete with graphical designer, hierarchical and dimension filtering, informational SQL view, and fully interactive results grid.
- New object repository simplifies the storage, access control, and distribution of QMF objects across the enterprise
  - “Offline” schemas and snapshots allow content authors to view filtered, role-specific database resources, such as tables, views, and procedures without physically accessing the underlying database.
  - Independent user interface "perspectives" for QMF administrators, QMF users and visual report designers.
- Redesigned QMF for WebSphere® companion delivers key workstation functionality, using a pure HTML, browser-based client.
  - Extends key QMF functionality to browser-based users across multiple platforms, including report authoring and drag-drop data analysis.
- Completely re-engineered form designer significantly simplifies the development of QMF forms/reports.
- Ability to develop and export query results and reports in a variety of formats including XML, HTML, and PDF.
- Improved table editor provides a means of directly inserting, deleting, and editing data in all supported database types.
- Newly developed data cache provides a means of caching query result sets with user or group-specific expiration rules.

**DB2 QMF Enterprise Edition:** DB2 QMF Enterprise Edition provides the entire DB2 QMF family of technologies, enabling enterprise-wide business information across end-user and database platforms. DB2 QMF Enterprise Edition consists of these components:

- DB2 QMF for TSO/CICS®
- DB2 QMF High Performance Option (HPO)
- DB2 QMF for Workstation
- DB2 QMF for WebSphere

**DB2 QMF Classic Edition:** DB2 QMF Classic Edition supports end users who function entirely from traditional mainframe terminals and emulators (including IBM Host On Demand) to access DB2 databases. This edition consists of DB2 QMF for TSO/CICS.

**Orderable no-charge features**

**z/OS Application Connectivity to DB2 for z/OS** consists of a component known as the DB2 Universal Database® Driver for z/OS, Java™ Edition. It is a pure Java, type 4 JDBC driver designed to deliver high performance and scalable remote connectivity for Java-based enterprise applications on z/OS to a remote DB2 for z/OS database server.

**DB2 Management Clients** feature includes components to assist in the administration of DB2 for z/OS:

- DB2 Administration Server (z/OS installable component)
- z/OS Enablement (z/OS installable component)
- DB2 Connect® Personal Edition Kit (workstation CD), which includes:
  - Control Center
  - Development Center
  - Replication Center

For a technical presentation on selected features of DB2 9, or later releases, visit the following Web site and select “What's coming”

IBM DB2 Accessories Suite for z/OS (DB2 Accessories Suite), a no-charge offering, is available to provide DB2 for z/OS with expanded capabilities in several areas. Included in the suite are:

- IBM Optimization Service Center
- IBM Spatial Support for DB2 for z/OS data (Spatial Support)

For more information, refer to Software Announcement 207-040, dated March 6, 2007.

**IBM Optimization Service Center**

The IBM Optimization Service Center represents an innovative set of capabilities that improve the performance of DB2 SQL queries at both the individual query and full SQL workload level.

- For individual queries, Optimization Service Center can annotate the query, draw an access plan graph, generate query reports, facilitate generation of optimization hints, and suggest statistics needed by SQL Optimizer.
- At your request, Optimization Service Center can send query-related information back to IBM service.
- For SQL workloads, Optimization Service Center can gather workloads from various kinds of sources such as the dynamic statement cache, the catalog tables, the files and directories, the QMF tables, the profile monitoring, and so on.
- SQL queries can be immediately captured by Optimization Service Center or captured at a scheduled time, on a one-time or periodic basis.
- Optimization Service Center can also suggest important statistics to be collected to improve performance for the entire workload.
- Profile monitoring provides a lightweight exception monitoring mechanism, since only those exception statements are pushed out by DB2, and Optimization Service Center fully supports the use and management of profile monitoring.

**IBM Spatial Support for DB2 for z/OS**

Spatial Support contains a set of spatial data types, user-defined functions, and stored procedures for spatial related queries.

- These spatial queries can be invoked for local and remote clients to answer questions based on geographic relationships.
- Relationships such as contains, crosses, equals, intersects, overlaps, touches, within, distance, and envelope intersect can be used in a WHERE clause of the SELECT statement by using predicate functions.
- Spatial Support provides this capability to create spatial indexes on spatial columns, which can improve query performance when using spatial predicate functions.
- Stored procedure interfaces allow the user to manage geographic coordinate systems, spatial indexes, and spatial column usages.
- Spatial Support includes an ODBC program to enable/disable the spatial feature. This program can invoke each of the stored procedures through a set of command line arguments.

**Accessibility by people with disabilities**

A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) containing details on the products accessibility compliance can be requested at


**Section 508 of the U.S. Rehabilitation Act**

IBM DB2 V9.1 for z/OS is capable as of March 16, 2007, 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. A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) can be requested at
Hardware and software support services

SmoothStart™/Installation services

SmoothStart Services, an on-site implementation and training startup service, is designed to accelerate your productive use of your IBM solution. The service is provided by IBM Global Services or your IBM Business Partner, at an additional cost. For additional information, refer to Services Announcement 697-004, dated March 25, 1997, or contact your IBM representative and ask for SmoothStart Services for DB2 9.

IBM Installation Services are provided for DB2 9 by IBM Global Services or your IBM Business Partner, at an additional cost. For additional information, contact your IBM representative and ask for Installation Services for DB2 9 for z/OS.

Business Partner information

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).

BP Attachment for Announcement Letter 207-041


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Education support

IBM Global Services, IT Education Services, provides education to support many IBM offerings. Descriptions of courses for IT professionals and managers are on the IBM IT Education Services Web sites


Refer to the IBM IT Education Services Web site for information on course locations and availability dates.

Call IBM Global Services IT Education Services at 800-IBM-TEACH (426-8322) for catalogs, schedules, and enrollments.

Technical information

Specified operating environment

Hardware requirements: The hardware requirements for DB2® 9 are identified below.

Processors and real storage
DB2 9 operates on any processor that supports z/Architecture™, including zSeries® z800, z890, z900, z990, IBM System z9™, or a comparable processor. The processor must have enough real storage to satisfy the combined requirements of:

- DB2 9
- z/OS®
- Other customer-required applications

The following restrictions apply:

- For z900 systems, microcode level 3G, or later is required.
  For more information about how to determine or upgrade your microcode level, you can search for technotes on this subject in one of the following two places:
  - At the DB2 for z/OS Support site at http://www.ibm.com/software/db2zos/support.html
  - On the Web search page (under "Troubleshooting and support") in the Information Management Software for z/OS Solutions Information Center at http://publib.boulder.ibm.com/infocenter/imzic
- DB2 9 for z/OS may run on other compatible hardware that supports the Long Displacement Facility of the z/Architecture.
- Some workloads might require increased real storage when they run on V9.1 of DB2 for z/OS as compared to V8 of DB2 for z/OS. Sufficient disk storage must be available to satisfy the user's information storage requirements and can consist of any direct-access facility that is supported by the system configuration and the programming system.

Auxiliary storage

DB2 for z/OS is independent of both disk and tape device type. The customer can use any magnetic, optical, or tape device that is supported by the data facilities component of z/OS for the DB2 data sets.

The following DB2 data sets are supported by the following device types:

- Active recovery log data sets: disk
- Archive recovery log data sets: disk or tape
- Image copy data sets: disk or tape
- Bootstrap data sets: disk
- User data sets: disk or tape (if migrated by DFSMShsm™)
- DB2 catalog data sets: disk
- Work data sets (for utilities): disk or tape

If these data sets are on a disk that is shared with other z/OS systems, you should use global resource serialization to prevent concurrent access by more than one z/OS system. The minimum disk space requirement, based on installing DB2 using the panel default values, is approximately 1 GB. Users need additional disk space for their data. If you use dual logging and tape for the log archiving device, you need at least two tape drives.

Data communications devices

DB2 operations can be controlled from the following devices:

- The system console
- Authorized IMS™ Transaction Manager terminals
- Authorized CICS® terminals
- TSO terminals (by authorized users)

For information about the data communication devices supported by IMS Transaction Manager,
CICS, and z/OS, refer to the documentation for these products.

**Function-dependent hardware requirements**

Certain functions of DB2 9 have associated hardware requirements. If you do not use these DB2 functions, the hardware requirements do not apply.

- **DRDA® Data Stream Encryption**: DRDA Data Stream Encryption can use cryptographic hardware in Cryptographic Coprocessor, Cryptographic Accelerator, or Cryptographic instructions.

- **Encryption and decryption functions**: Built-in functions for encryption and decryption require cryptographic hardware in Cryptographic Coprocessor, Cryptographic Accelerator, or Cryptographic instructions.

- **QMF™ functions**: DB2 QMF for TSO/CICS, DB2 QMF High Performance Option (HPO), DB2 QMF for Workstation, and DB2 QMF for WebSphere® are programs in the DB2 QMF family of products and can be obtained through the optional chargeable features of QMF Classic Edition or QMF Enterprise Edition. These programs have hardware requirements as follows:
  - DB2 QMF for TSO/CICS requires a display station that is supported by Graphical Data Display Manager (GDDM®).
  - DB2 QMF High Performance Option (HPO) requires a display station that is supported by ISPF.
  - Hardware requirements for the DB2 QMF for WebSphere and DB2 QMF for Workstation programs can be found in the QMF publication Installing and Managing DB2 QMF for Workstation and DB2 QMF for WebSphere (GC18-9691). The information in this publication is also available on the Web in the Information Management Software for z/OS Solutions Information Center at http://publib.boulder.ibm.com/infocenter/imzic

**Software requirements**: This section lists licensed programs, or specific elements and features of licensed programs, that are required in the DB2 9 environment, at the time of announcement. You can use subsequent versions or releases of the programs, unless stated otherwise. This section also identifies the requirements that are associated with specific DB2 capabilities, as well as optional programs that you can use with DB2 9. Refer to the following Web sites for the most current information, including support for subsequent versions or versions of products listed here:

- For information about the product lifecycle dates for DB2 for z/OS and related products, refer to http://www.ibm.com/software/db2zos/support/plc/index.html
- For information about the operating system availability and withdrawal-of-service dates, refer to http://www.ibm.com/servers/eserver/zseries/zos/support/zos_eos_dates.html
- For a variety of support-related information about DB2 for z/OS, refer to http://www.ibm.com/software/db2zos/support.html

At this site, you can click **Technotes**, specify "V9 migration" in the search field, and click **Go**.

**Operating system and support programs**

DB2 V9.1 for z/OS requires the function that is provided by the following licensed programs or their equivalents, including subsequent versions or releases:

- z/OS V1.7 Base Services (5694-A01) or z/OS.e (5655-G52) and APAR OA16303, with the following base and optional elements:
  - DFSMS V1.7.
  - Language Environment® Base Services.
  - z/OS V1.7 Security Server (RACF®).
  - IRLM V2.2 (delivered with DB2 V9.1 for z/OS). If DB2 for z/OS is installed with IRLM into the same SMP zone as any version of IMS with IRLM V2.1, IRLM V2.1 is deleted during the SMP/E installation of IRLM V2.2.

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Selected functions of DB2 V9.1 for z/OS require z/OS or its components at the V1.8 level. Details are provided in the Requirements for dependent functions of DB2 section of this document.

- z/OS Unicode Services, including APAR OA14231 and APAR OA19072, and appropriate conversion definitions.
- Either V9.1 of the DB2 Utilities Suite for z/OS (5655-N97), or an equivalent alternative function that provides some of the basic operation of a DBMS (including backup, recovery, reorganization, loading, and unloading of data, gathering of statistics, and checking of data, indexes, and large objects).

**Virtual storage requirements**

The amount of space that is needed for the common service area below the 16-MB line is less than 40 KB for each DB2 for z/OS subsystem and less than 24 KB for each IRLM subsystem. High concurrent activity, parallelism, or high contention can require more Common Service Area (CSA). Most of the DB2 common data resides in the extended common service area (ECSA). Most modules, control blocks, and buffers reside in the extended private area above the 16-MB line or above the 2-GB bar.

DB2 V9.1 for z/OS requires 128 GB of 64-bit shared storage for each DB2 subsystem.

**Function-dependent program requirements**

The following functions of DB2 V9.1 for z/OS require specific licensed programs, or features of licensed programs, before they can be used in the context of application execution:

- Applications that are written in high-level programming languages, such as applications or stored procedures that are written in the C language and that use the ODBC or CLI interfaces to DB2, require Language Environment at run time.
- Applications or stored procedures that are written in Java™, such as those that use the JDBC or SQLJ interfaces to DB2, require IBM SDK for z/OS, Java 2 Technology Edition, V1.4 (5655-I56) (SDK1.4.2), at run time.

**Optional program requirements**

The following functions are enabled in conjunction with the specified optional licensed programs, when used together with DB2 for z/OS.

**DRDA connectivity**

DB2 V9.1 for z/OS supports any of the following IBM relational database products:

- In the Linux™, UNIX®, and Windows™ environment, either V9.1 of IBM DB2 for Linux, UNIX, and Windows (with fixpack 1, or later), or V8.1 of DB2 Universal Database® (DB2 UDB) for Linux, UNIX, and Windows (with fixpack 13, or later). (V8.1 with fixpack 13 is equivalent to V8.2 with fixpack 6.) Any of the following editions are supported:
  - DB2 Enterprise Server Edition (ESE) (5765-F41)
  - DB2 Workgroup Server Edition (5765-F35)
  - DB2 Workgroup Server Unlimited Edition (5765-F43)
  - DB2 Universal Database Universal Developer's Edition (5765-F34)
- IBM DB2 Universal Database for iSeries™ OS/400® V5.3 (5722-SS1) (Info APAR II13348), including the following options:
  - DB2 DataPropagator™ for iSeries V8.1 (5722-DP4)
  - DB2 Query Manager and SQL Development Kit for iSeries (5722-ST1)
- IBM DB2 Server for VSE and VM V7.4 (5697-F42)
- Any other DRDA-compliant client or relational DBMS server

**Web connectivity**
The following products provide connectivity to DB2 V9.1 for z/OS from the Web:

- Any of the following editions of WebSphere Application Server:
  - WebSphere Application Server for z/OS V6.1 (5655-N01)
  - WebSphere Application Server for z/OS V5.1 (5724-J08)
  - WebSphere Application Server (5724-J08)
  - WebSphere Application Server for Developers (5724-H89)
  - WebSphere Application Server Network Deployment (5724-H88)
  - WebSphere Application Server — Express (5724-I63)

- DB2 Connect® at one of the following levels: V9.1 (with fixpack 1 or later), or V8.1 (with fixpack 13, or later). (V8.1 with fixpack 13 is equivalent to V8.2 with fixpack 6.) Any of the following editions are supported:
  - DB2 Connect Personal Edition (CPE) (5724-B56)
  - DB2 Connect Enterprise Edition (CEE) (5765-F30)
  - DB2 Connect Unlimited Edition for zSeries (CUE) (5724-B62)
  - DB2 Connect Application Server Edition (CASE) (5724-D54)
  - DB2 Connect Unlimited Edition for iSeries (5724-M15)


Transaction management

The following transaction management products work with DB2 V9.1 for z/OS:

- Information Management System (IMS) (one of the following versions):
  - IMS V9 (5655-J38)
  - IMS V8 (5655-C56)

- Customer Information Control System (CICS) (either of the following versions):
  - CICS Transaction Server for z/OS V3.1 (5655-M15)
  - CICS Transaction Server for z/OS V2.3 (5697-E93)

- WebSphere MQ (any of the following versions):
  - WebSphere MQ for z/OS V6 (5655-L82)
  - WebSphere MQ for z/OS V5.3.1 (5655-F10)
  - WebSphere MQ Extended Security Edition V6.0 (5724-E84)
  - WebSphere MQ Workflow for z/OS V3.6 (5655-BPM)
  - WebSphere MQ Workflow for Multiplatforms V3.6 (5697-FM3)

- Application environments that use DB2 Connect to access DB2 V9.1 for z/OS remotely can use any of the following transaction manager products:
  - WebSphere Application Server
  - CICS Transaction Server
  - IBM TXSeries™ (CICS and Encina®)
  - WebSphere MQ
  - Microsoft™ Transaction Server (MTS)
  - BEA (Tuxedo and WebLogic)
  - Java applications that support Java Transaction API (JTA) and Java 2 Platform, Enterprise Edition (J2EE)

Query support

The following query programs work with DB2 V9.1 for z/OS:
• The DB2 Query Management Facility (QMF) family
• DB2 XML Extenders, which extend the SQL capabilities of native DB2 for z/OS

Data warehouse support
The following products provide warehouse management capabilities for DB2 V9.1 for z/OS:

• IBM WebSphere Data Integration Suite, which consists of the following products:
  – IBM WebSphere DataStage® for z/OS
  – IBM WebSphere DataStage MVS™ Edition
  – IBM WebSphere DataStage Service Oriented Architecture (SOA) Edition
  – IBM WebSphere DataStage TX for z/OS Edition
  – IBM WebSphere QualityStage for z/OS Version
  – IBM WebSphere DataStage Changed Data Capture DB2 z/OS
  – IBM WebSphere DataStage for DB2 Warehouse Manager

Development tools
The following application development tools can be used to build applications for DB2 V9.1 for z/OS:

• DB2 Development Center or IBM Developer Workbench, both of which are included in all editions of DB2, DB2 Connect, and DB2 Software Developer's Kit (SDK).
• WebSphere Studio Enterprise Developer V5.1.2 (5724-B67), which has the following program requirement of its own: IBM SDK for z/OS, Java 2 Technology Edition, V1.4 (5655-I56) (SDK1.4.2). For more information about Java 2 for z/OS, including a link to software prerequisites, visit
• IBM WebSphere Developer for System z™ V7.0 (5724-L44)
• IBM Rational® tools, including those listed here:
  – IBM Rational Application Developer for WebSphere Software V6.0 (5724-J19)
  – IBM Rational Web Developer for WebSphere Software V6.0 (5724-J18)
  – IBM Rational Data Architect V7.0 (5724-L66) or V6.1 (5724-L66)
  – IBM Rational Software Architect V6.0 (5724-I70)
  Visit
  http://www.ibm.com/software/rational
• IBM DB2 Alphablox for Linux, UNIX, and Windows V8.4 (5724-L14)

Programming languages
The following application development programming languages can be used to build applications for DB2 V9.1 for z/OS:

• Building applications by using the DB2 precompiler:
  – Assembler: High Level Assembler, which is part of the System Services element of z/OS. Note that PTF UK14811 is required for DFP support on z/OS V1.7, or later.
  – C/C++: C/C++ (with or without Debug Tool), which are optional features of z/OS.
  – COBOL: Enterprise COBOL for z/OS V3.4 (5655-G53), or later.
  – Fortran: VS Fortran V2.6 (5668-806). Note that data types that are new to DB2 V9.1 for z/OS are not supported.
  – PL/I: IBM Enterprise PL/I for z/OS V3.4 (5655-H31), or later.
• Building applications by using the DB2 coprocessor:
  – C/C++: C/C++ for z/OS, which are optional features of z/OS V1.8. (APAR PK38679 is
required.)

- **COBOL**: Enterprise COBOL for z/OS V3.4 (5655-G53), or later.
- **PL/I**: IBM Enterprise PL/I for z/OS V3.4 (5655-H31), or later.

- **Building applications that are supported with processes other than the precompiler or coprocessor:**
  - **Java**:
    - Applications or stored procedures that are written in Java, such as those that use the JDBC or SQLJ interfaces to DB2 for z/OS, require IBM SDK for z/OS, Java 2 Technology Edition V1.4 (SDK1.4.2). Two editions are available: the 31-bit edition (5655-I56) and the 64-bit edition (5655-M30). However, the 64-bit edition does not support persistent reusable function.
    - Sharing class objects between Java virtual machine (JVM) processes that run in the same address space requires IBM SDK for z/OS, Java 2 Technology Edition V1.4 (SDK1.4.2). Two editions are available: the 31-bit edition (5655-I56) and the 64-bit edition (5655-M30). These are independent products that can coexist on the same z/OS system.
  - **REXX**: IBM TSO Extensions for MVS REXX, which is part of z/OS.
  - **SQL procedural language**:
    - External SQL procedural language: A C language compiler is required on z/OS to develop stored procedures by using the external SQL procedural language. The specific C compiler to use is C/C++ (with or without Debug Tool), which are optional features of z/OS.
    - Native SQL procedural language, which does not require a C compiler.
  - **APL2®**:
    - Mainframe APL2 V2.2 (5688-228) (full APL2)
    - APL2 Application Environment V2.2 (5688-229)

**Operational support**

The following programs can provide operational support for DB2 V9.1 for z/OS:

- DFSMS features, which are part of the Systems Management optional feature of z/OS; specifically:
  - DFSMShsm for archiving
  - DFSMSdss™ for concurrent copy in utilities
- IBM Softcopy Reader or Library Readers, which are included on the CD-ROMs for BookManager® books.
- Information Integrator Replication for z/OS, V8.2 (5655-L88) can be used in DB2 9 for z/OS Compatibility Mode. IBM WebSphere Replication Server V9 (5655-R55) and IBM Data Event Publisher V9 work with the following DB2 for z/OS versions:
  - DB2 V9.1 for z/OS
  - DB2 Universal Database for z/OS V8
  - DB2 for z/OS and OS/390® V7

  To work with a DB2 V9.1 for z/OS source server in new-function mode, you must install IBM WebSphere Replication Server V9 or IBM Data Event Publisher V9, and you must migrate your QCapture control tables because of changes in the DB2 log record format for new-function mode.
- The following IBM tools:
  - IBM DB2 Tools for Database Recovery
  - IBM DB2 Tools for Database Application Management
  - IBM DB2 Tools for Database Administration
  - IBM DB2 Tools for Utilities Management
IBM DB2 Tools for Business Analysis
IBM WebSphere Information Integration Tools
IBM DB2 Tools for Database Performance Management

The minimum levels of two key database performance management tools are IBM Tivoli® OMEGAMON® XE for DB2 Performance Expert on z/OS, V4 (5655-Q07) and IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS, V4 (5655-Q08). Both of these tools require APAR PK36297 for support of new functions that are available in DB2 V9.1 for z/OS. Details about other performance management products can be found on the Web sites that are listed below.

For a current list of products, visit the IBM DB2 and IMS Tools Web page at
http://www.ibm.com/software/data/db2imstools

For recent news about DB2 Tools compatibility with DB2 V9.1 for z/OS, visit the IBM DB2 and IMS Tools Support Web page at
http://www.ibm.com/software/data/db2imstools/support.html

- IBM Tivoli Decision Support for z/OS (5698-A07), V1.7.2 with APAR PK30134, or V1.7.1
- Database Administration and Systems Management Support is provided by the DB2 Management Clients Package, an optional feature of DB2 V9.1 for z/OS, which includes:
  - DB2 Administration Server (DAS) (z/OS installable component)
  - z/OS Enablement (z/OS installable component)
  - DB2 Connect Personal Edition Kit (workstation CD), which includes the following tools and a limited-use license for these tools to access DB2 V9.1 for z/OS:
    - Control Center
    - Replication Center
    - Development Center
    - Command Center
    - IBM Developer Workbench

The DB2 Connect limited-use license is also authorized for use with IBM DB2 for z/OS Optimization Service Center (workstation CD included in 5655-R14, IBM Accessories Suite for DB2 for z/OS).

Requirements for dependent functions of DB2

DB2 V9.1 for z/OS includes the following functions, some of which have requirements of their own, above and beyond what the base DB2 for z/OS product requires. This section identifies the requirements for using these functions, but does not repeat the requirements for DB2 V9.1 for z/OS.

Recommendation: Before using these features, refer to the relevant installation information to ensure that you have all required and recommended products.

- The following program requirements apply to the use of new functions and capabilities that are available in DB2 V9.1 for z/OS utilities:
  - For the new system-level backup and recovery capabilities for the DB2 V9.1 for z/OS BACKUP SYSTEM, RESTORE SYSTEM, and RECOVER utilities:
    - z/OS V1.8
    - DFSMShsm V1.8
    - DFSMSdss V1.8
    - FlashCopy® V2

If you cannot currently satisfy one or more of the preceding program requirements, you can use the V8 level of DB2 functions in the BACKUP SYSTEM and RESTORE SYSTEM utilities if you can satisfy the following program requirements:

- z/OS V1.7
- DFSMShsm V1.7
Use of new functions that are provided in DB2 V9.1 for z/OS (CHECK INDEX, CHECK DATA, and CHECK LOB utilities) requires DFSMSdss V1.7. In addition, FlashCopy V2 is highly recommended (although not technically required) for performance reasons.

The following uses of encryption and decryption functions require z/OS Cryptographic Services Integrated Cryptographic Service Facility (ICSF), which is a component of z/OS:
- Built-in encryption and decryption functions
- All network datastream encryption mechanisms, except when DB2 is the server, and is processing a connection using the encrypted USERID and password mechanism to authenticate the user
- Encryption Facility for z/OS, V1.1 (5655-P97)

The following program requirements and recommendations apply to use of group buffer pool (GBP) batching:
- Coupling Facility (CF) level 12 is required for all group buffer pool batching.
- Coupling Facility (CF) level 13 is recommended if you want to use the castout enhancement or the lock table cleanup enhancement.
- Coupling Facility (CF) level 14 is recommended if you use system-managed duplexing for lock or SCA structures.

Use of MERGE and SELECT from MERGE requires DB2 Connect V9.1. Additional restrictions may apply; refer to product documentation for details.

Use of decimal-float conversion capability requires IBM SDK for z/OS, Java 2 Technology Edition, V1.4 (5655-I56) (SDK1.4.2) at run time.

Use of XML Extender requires:
- z/OS V1.7 Language Environment.
- IBM XML Parser for z/OS, C++ Edition, which is provided with V1.9 of XML Toolkit for z/OS (5655-J51). 5655-J51 requires z/OS V1.6 or later.
- Use of either XMLFile type or the Getting Started material requires the z/OS UNIX System Services (5694-A01) element of z/OS.
- Use of XML support requires z/OS XML System Services (XML z/OS). z/OS XML requires either z/OS V1.8 or z/OS V1.7 with APAR OA16303. In addition, use of XML schemas requires IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V5 (5655-N98) (SDK5).

The following program requirements apply to use of trusted contexts:
- If you use WebSphere Application Server for z/OS, V6.1 (5655-N01) is required.
- RACF SAF User-mapping plug-in Enterprise Identity Mapping (EIM) requires z/OS V1.8.
- For full RACF support of roles (not limited to ownership checks for roles only), RACF Access Control Module (DSNXRACX) requires z/OS V1.8.

IBM Managed System Infrastructure (msys) for Setup DB2 Customization Center is available as a plug-in for msys for Setup. Therefore, msys for Setup DB2 Customization Center requires msys for Setup, which is a base element of z/OS in V1.4, or earlier. If you plan to use msys for setup DB2 Customization Center on z/OS V1.5, or later, you must retain and install the msys for Setup components from z/OS V1.4.

For information about installing and using msys for Setup, refer to Managed System Infrastructure for Setup Installation (SC33-7997), which is available for z/OS V1.4, or earlier.

DB2 QMF for TSO/CICS, DB2 QMF High Performance Option (HPO), DB2 QMF for Workstation, and DB2 QMF for WebSphere are programs in the DB2 QMF family of products and can be obtained through the optional chargeable features of QMF Classic Edition or QMF Enterprise Edition. DB2 QMF for TSO/CICS requires DB2 for z/OS V8 or V9.1, or DB2 for z/OS and OS/390 V7. Program requirements for the QMF for Workstation and QMF for WebSphere programs can be found in the QMF publication Installing and Managing DB2 QMF for Workstation and DB2 QMF for WebSphere (GC18-9691). The information in this
Limited-use license for z/OS Application Connectivity to DB2

The no-charge z/OS Application Connectivity to DB2 feature, a Type 4 JDBC driver, is licensed for installation and use solely on z/OS. You are authorized to use z/OS Application Connectivity to DB2 only to support connectivity of an application running on z/OS (V7, V8, or V9.1), with such application, in addition to being allowed to connect to DB2 for z/OS (V7, V8, or V9.1), also being authorized to connect to V8.2 or V9 of DB2 for Linux, UNIX, and Windows. No other connections from or to any other products or databases are permitted. For any other connectivity, you must obtain a separate license from IBM for the edition of DB2 Connect that is appropriate for your environment. 

Limited-use license for DB2 Connect Personal Edition

A limited-use copy of V9.1 of DB2 Connect Personal Edition is provided in the DB2 Management Clients Package feature of DB2 V9.1 for z/OS. You are authorized to use this copy of DB2 Connect to enable access only to DB2 for z/OS data by the following workstation tools:

- DB2 Control Center
- DB2 Replication Center
- DB2 Development Center
- DB2 Command Center
- IBM Developer Workbench
- DB2 for z/OS Optimization Service Center, which is part of the IBM Accessories Suite for DB2 for z/OS (5655-R14)

For all other remote connections to DB2 for z/OS that are provided through DB2 Connect, you must obtain a separate license for DB2 Connect from IBM.

QMF Enterprise Edition and accompanying program licenses

A license to QMF Enterprise Edition comes with entitlement to licenses to DB2 QMF for Workstation and DB2 QMF for WebSphere. QMF Enterprise Edition comes with the following programs:

- DB2 QMF for TSO/CICS
- DB2 QMF High Performance Option (HPO)
- DB2 QMF for Workstation
- DB2 QMF for WebSphere

The QMF TSO/CICS and QMF HPO programs are installed and run on z/OS and are licensed to you under the terms of the IBM Customer Agreement and its Licensed Program Specification. The QMF for Workstation and QMF for WebSphere programs are licensed under the terms of the IBM International Program License Agreement that accompanies the CD-ROM media for these programs and is displayed for acceptance during installation.

Compatibility: DB2 V9.1 for z/OS is upwardly compatible with earlier releases of DB2 for z/OS and OS/390. Upgrade with full fallback protection is available for customers running on DB2 UDB for z/OS, V8. Thus, existing customers should ensure they are successfully running on DB2 UDB for z/OS, V8 before updating to DB2 V9.1 for z/OS.

User requirements: This announcement satisfies or partially satisfies more than 225 requirements that were submitted to IBM from customers, Business Partners or from one or more of the worldwide user group communities. Groups include Australasian SHARE/GUIDE, COMMON, COMMON Europe, GUIDE International, G.U.I.D.E. Europe, Japan GUIDE/SHARE, Guide Latin American, SHARE EUROPE, and SHARE INCORPORATED. User requirements satisfied include:

- MR1230052054 DSN1COPY CHECK shoul d check the whole objects in one run
- MR1230025727 DATACLAS
- MR1227001811 REORG LOB tablespaces
- MR122203381 SAP FR309: Timely Release of LOB Locks
Report Recovery on DBD01, SYSUTILX, SYSCOPY
Online LOAD replace utility
DB2 DDL and SMS support
DB2 Latches held by a delayed task
CREATE INDEX DEFER YES
Spatial Extenders for DB2 for z/OS
Improve the operationality of Audit Trace function
MODI FY RECOVERY
Compression Dictionary
Possibility to terminate a RECOVER utility, when it is in log apply phase
TEMPLATE enhancement
ONLINE LOAD REPLACE for table and or group of tables
Improve DB2 utility statement MODI FY RECOVERY
Speed up the archive processing
Multi Row Insert for Assembler
DB2 Package Level Tracing
No progress indication during Stop or restart of a DB2 member
SAP FR358: RTS enhancements
DB2 for z/OS DSNDB07, SORT-WORK availability for SQL QUERY even if occupied by big sort activity of one single query.
DB2 Utilities -- Direct datasets to tape if exceeding a size threshold
Need the ability for DBADM authority to perform GRANTS on aliases and views created for others (as per new ZPARM DBADM = YES).
Ability to direct DB2 image copy to tape or disk
Online Schema Evolution: Change column default
Online Schema Evolution: Rename column
db2privilegeto GRANT/DROP views created for another user
Performance Tracing -- Qualify Traces by Corrid and Package
DB2 Visual Explain for z/OS v8 -- enhancement #1
Intelligent automatic database recovery after GRECP status
Allow Delete of Aliases Created for another Authid when zparm DBACRWV=NO
DB2 -- Missing sorting support for national alphabet, wrong sort results for Czech/Slovak/Hungarian/Croatian languages
SAP FR024: DB2 Lock Avoidance for Tablespace Scans
Online LOAD utility
SAP FR099: Rename index
SAP FR348: Automatic buffer pool
DB2 z/OS 8.1 DSN1SDMP doesn't always hit on all SQLCODEs received
Remove the Requirement for a C Compiler When Using SQL Language Stored Procedures
DBACRW parameter
PKLIST to specify a list of collection IDs
SPUFI isolation levels
Analysis of broken pages
Visual Explain/OPTHINT
DB2 SQL support of BIG INTEGER (8 byte) for compatibility with Java BIGINT SQL type
Data Base, DB2, not enough field size
Data Base, DB2
Add LOB file reference method to DB2 OS/390
Parameter DBACRWV=YES should get grant possibilities
If ID has DBA Authority it should be able to drop any objects it created for another ID
OPTHI NT5 warning needed if hint is specified but not used.
MR081035145 DSNJ310I message is ambiguous
MR081053718 Initializing TOTALROWS/TOTALENTRIES on creation
MR0809057255 Thread Display After STO DB2
MR0809042840 DB2 for z/OS Data Set Open Command
MR0728067234 Show Index usage in RTS table
MR0726057237 SYSIBM.INDEXSPACESTATS
MR0722041545 DRDA server time in Universal JDBC Driver trace
MR0719040715 SSI: Enable index compression.
MR0718042551 Eliminate virtual memory constraint on DB2s (CrossLoader, utilities)
MR0715035220 Scheme Evolution
MR0715032200 SAP FR365: Simulating indexes in EXPLAIN
MR0711057033 DBM1 memory utilization
MR0706045154 SSI: Full support for CLOBs (CrossLoader, utilities)
MR0704045154 SSI: Allow special procedures indicated by the customer to disable logging.
MR0702042859 Declared Temp Tables Monitoring
MR0629006250 DB2 RECOVERY utility cannot delete SYSLGRNX entries without SYSCOPY entry, so make that possible
MR0626023620 DB2 for OS/390 REORG Utility Enhancement Request
MR0625062835 Removing sequence numbers in DSNHPC
MR0621045047 Allow check data utility to use non matching foreign key indexes
MR0619040715 DB2 RUNSTATS Utility Should Incorporate Histogram Stats
MR0615035220 Enhance DSN STATEMENT TABLE by total costs
MR0612053753 PDANO300-259 DB2 BUFFERPOOL adjustment using WLM controls
MR0612051715 SAP FR249: Functional indexes
MR0609051553 DB2 Image Copy Datasets with 256KB blocks
MR0608046700 DB2 MODIFY utility
MR0607003573 Reduce restriction of X-Lock on DB2 by MODIFY Utility
MR0606006250 DBACRVW parameter
MR060504502 DB2 RUNSTATS Utility Should Incorporate Histogram Stats
MR0604045020 DSNWZP output format consistent with DSNTIJUZ
MR0603025554 DSNMP output format consistent with DSNTIJUZ
MR0602045946 SAP FR096: IEEE Floating Point Support
MR0518045413 SAP FR273: Reduce Host Variables Impact on Access Path Selection
MR051804494 SAP FR279: Skip uncommitted qualifying rows that are being inserted or deleted
MR0518044852 SAP FR253: FOR BIT DATA Collating Sequence
MR0518044358 SAP FR245: Other Partitioning Schemes
MR0518043722 SAP FR277: Non-Partitioned Tablespace Limit
MR0518043320 SAP FR335: BIG NT
MR0518042939 SAP FR334: Implicit objects creation for DDL
MR0518042632 SAP FR274: Full 64-bit virtual addressing support
MR0517045338 Skipped Locked Rows
MR0517045139 DB2 LOAD utility-Loading into shadow table
MR0517045139 DB2 LOAD utility-Loading into shadow table
MR051046245 Allow EXCLUDE qualification in DSNVQAL for READS
MR0512041756 Structured SQL output
MR0511045556 Alter Audit Report Change
MR0507041657 Amend DB2 trace to allow greater trace granularity and allow exclusion of some trace record
MR0506041729 DBADM can create view/alias for other id but has not DROP/Alter privilege
MR0505003240 CHECK DATA utility performance
MR0504046765 Possibility to implement DASDMAX and TAPEMAX in the DB2 Utility
MR0429033022 Parameter DBACRVW=YES should get grant possibilities
MR0427061847 DB2 z/OS SQL Stored Procedure and DB2 Catalog Enhancement
MR0425051613 Automatic DB2 START DATABASE Issued for LPL/GRECP Objects Found in Startup
MR0425033337 DB2 LOB Tablespace Maintenance
MR0421003838 DB2 Minimize impact of create index defer
MR0414360305 MDY FY utility: new parameter to specify minimum number of Image copy kept'
MR0414033650 DB2CRVW=YES should allow delete and grant
MR0414004335 Enable SQL after deferred index creation
MR0414004334 Load and unloading DB2 for OS/390 data
MR0414003158 Display DDF in status 'suspend'
MR0413045330 Run Unload, Reload, and Log phases in parallel for REORG
MR0413044047 Eliminate BUILD2 phase in Online REORG
MR0411003452 Big NT support on DB2/SE
MR0407045226 SAP FR325: Index compression
MR0405024544 Check IX
MR0405014558 Modify
MR0405012936 COPY
MR0404052738 Remove Restriction on REORG When Compressed
MR0404016516 Utility support for LOAD and UNLOAD of LOBs greater than 32K
MR04040105536 Excessive storage requirements for DB2 DataSharing environment lock structures during group restart
MR0330057319 The limit of 100 user indexes on the catalog needs to be readdressed
MR0330015327 Point of Consistency recovery to 'any' point in time.
MR0329055316 Possibility to create RI (Referential Integrity) between Tables with different CCSIDs
MR0328062238 Remove need for DB2 Image Copy to clean up SYSLOGRNG
MR0326034317 SQL Procedure create/drop security
MR0325043432 Support of parallel DDL/DML statements on the same database/tablespace
MR0325042821 Automatic GRECP recovery after DB2 Group Restart
MR0325022845 Request for improvement of DB2 Locking mechanism
MR0324043945 More granularity for the Recovery Postponed on DB2 Restart
MR0324041537 JDBC Type 4 driver and password change
MR032305117 Request for Collate by language function in DB2 for Z/OS
MR0322054943 Command to display active stored procedures
MR0322024656 File reference variables in SQL for DB2 for Z/OS
MR0322021925  REORG LOB to reclaim space
MR0321053331  Output of command -display thread* is limited
MR031605659  DB2 Online Load utility with Replace functionality
MR0315045118  SAP FR295: Ensure optimal performance for all star
scheme queries with one set of static indexes
MR0315043727  SAP FR317: Reducing log latch contentions
MR0311052534  SYSADM authority needs individual accountability
and must be able to be revoked without a
cascading effect.
MR0308016524  Permanent Tables that do no loging
MR030603916  STOP command issue-zerise DB2
MR0306036336  Bind SPUFI with ISO (UR)
MR0304052121  Improved performance of DB2 Utilities
MR0304021622  DB2 Utility support for Large Block Interface (LBI)
MR0301044612  Utility support for LOAD and UNLOAD of LOBs
greater than 32K
MR022403199  Utilities Panel does not provide for a LIB statement.
MR022105438  Improve IBM DB2 Utility CPU consumption.
MR021037236  RLF
MR021033737 Add a function in MODIFY RECOVERY in order to
allow specification of copies to delete to be
more granular than DATE and AGE.
MR0218055759  TI MESTAMPADD and TIMESTAMPPF functions
MR218027050  Customer needs to run REORG LOB TABLESPACE
with LOG NO
MR021705568  DASD dataset allocations for nonpartitioning
index on a table space can be greater than 2GB
MR0215066642  Change the optimizer to perform subquery to join
transformation within INSERTS
MR0215056540  High Availability Load Resume No Replace for
DB2 z/OS
MR0211054036  SAP FR363: SQL statement to change the schema name
of database objects
MR0203052944  DB2 Group Attach Load Balancing
MR0202065916  Change to DB2 IVP jobs
MR0202064050  MERGE function
MR020105143  Encrypted passwords with DB2
MR0127063245  DBADM cannot grant access to views owned by
other ID
MR0127033159  DBADM privilege to GRANT/DROP views created for
another user
MR012406429  Show all packages used by a thread instead of
just the active package in IFCD 148 via READS
MR012105536  Requirement for DataClass and StorageClass
definitions DB2
MR0121032140  REORG TABLESPACE — unload/reload in parallel
MR0120063432  The support for the Java type long (or Long)
with a DB2 SQL Datatype.
MR0119044331  Need Ability to Pass SMS Classes on CREATE/ALTER
STOGROUP Statement
MR0113044345  Load Discard Messages
MR011106819  Default value on UPDATE
MR011106753  DSNL303I 00D31034
MR0110033725  DBADM privilege to GRANT/DROP views created for
another user
MR0110032143  Possibility to implement DASDMAX and TAPEMIN in
the DB2 Utility
MR0107055615  SAP FR033: Set Operation
MR0107052952  Declared Temp Tables Monitoring
MR010603172  Improve Performance of case Insensitive Search
MR0102062141  Alter Stogroup with new keyword VCAT
MR0102011842  INTERSECT operator
MR00076526  REORG of a LOB TS should explain what has done
MR00076088  Utility support for LOAD and UNLOAD of LOBs greater
than 32K
MR00075680  User LIMIT to amount of SORTWORK space to be USED
by applications
MR00075679  Limit SortWork Usage
MR00074535  RETAIN(R) ACCESS OF ORIGINAL DATA DURING LOAD
REPLACE:
MR00074416_1 Improvement of DB2 subquery performance
MR00073924  Add CREATE VIEW on user tables) privilege
Planning information

Customer responsibilities: Review the sections in this announcement that describe the hardware and software dependencies for DB2 V9.1 for z/OS. Note that DB2 9 supports migration only from V8. Customers not yet running V8 should plan to upgrade to DB2 V8 for z/OS as preparation for an upgrade to DB2 9.

Migration considerations

IBM added many data server capabilities in DB2 V9.1 for z/OS and reduced or removed support for some functions. As you prepare to upgrade your subsystems to DB2 9, you should be aware of the following changes:

- AIV Extender removed.
- Text Extender removed.
- Net Search Extender removed. Note: DB2 9 incorporates substantial text function into the base product. Use the new functions and indexing for text applications.
- Net.Data® removed. WebSphere is the strategic IBM solution for delivering DB2 data to Web applications.
- DB2 QMF Visionary Studio program removed from DB2 QMF Enterprise Edition.
- DB2 Estimator, available via Web download for DB2 V8, will not be provided for DB2 V9 for z/OS.
- Visual Explain for DB2 for z/OS, available via Web download for DB2 V8, will not be provided for DB2 9. Instead, IBM Optimization Service Center for DB2 for z/OS, part of the no-charge IBM DB2 Accessories Suite for z/OS (5655-R14), extends Visual Explain's capability and adds more SQL tuning functions.
- DB2-managed stored procedure support removed. Workload Manager (WLM) managed stored procedure address spaces is the strategic solution for stored procedure support, and migration to WLM-managed stored procedure spaces is required for use of stored procedures in DB2 V9.1 for z/OS.
- Simple table space creation support removed. DB2 V9.1 for z/OS no longer implicitly creates simple table spaces nor allows you to create simple table spaces. However, DB2 V9.1 for z/OS continues to support simple table spaces created in previous versions.
- Online help facility replaced. The previous help support has been replaced by the Information Management Software for z/OS Solutions Information Center (Information Center). The Web-based Information Center is updated periodically during the life of each DB2 version, thus ensuring reader access to the most up-to-date information.
- JDBC/SQLJ Driver for OS/390 and z/OS support removed. All Java application programs, and
Java routines that are currently written to work with JDBC/SQLJ Driver for OS/390 and z/OS, need to be modified to work with IBM DB2 Driver for JDBC and SQLJ (formerly known as the DB2 Universal JDBC Driver). The steps for migrating JDBC and SQLJ applications from the legacy JDBC/SQLJ Driver for OS/390 and z/OS to IBM DB2 Driver for JDBC and SQLJ can be found in the Application Programming Guide and Reference for Java. In addition, all WLM-managed stored procedures address spaces that are set up to execute Java routines must be modified to reference IBM DB2 Driver for JDBC and SQLJ.

- DB2 Precompiler Flagger support was removed in DB2 for z/OS V8, and SQLFLAG is no longer a valid precompiler option.

- Plans and packages should be rebound on current releases to benefit from optimizer enhancements and DB2 9 virtual storage constraint improvements on SQL statement storage. For DB2 9, plans and packages from DB2 V4, or earlier will be automatically rebound when accessed by DB2 9.

- As noted in the Hardware requirements section, DB2 9 for z/OS requires long displacement support in the hardware. Due to greater use of long displacement instructions by DB2 9 than DB2 V8, column-intensive applications may experience shorter CPU time. However, these applications may take longer on systems that emulate long displacement (for example, z800 or z900). For further information on the long displacement facility, refer to z/Architecture Principles of Operations, SA22-7832-04 available at http://www.ibm.com/servers/eserver/zseries/zos/bkserv/r8pdf/zarchpops.html

- To allow you, in a potential future release of DB2, to specify a module name other than DSNHDECP to be used by a DB2 instance, in a manner similar to that used for other DB2 parameters, DB2 9 lays the ground work with these changes:
  - RRS attach provides information on which DB2 subsystems are available on an LPAR and provides the address of the DSNHDECP load module (DSNHDECP is loaded in common storage (ECSA)) being used by a DB2 subsystem.
  - IFCID 160 has been enhanced to provide the fully qualified DSNHDECP load module dataset name used by a DB2 subsystem.
  - The precompiler provides the fully qualified dataset name for the DSNHDECP load module used in a precompilation.
  - GETVARIABLE has been enhanced to provide all of the information that the DECP provides.
  - The fully qualified dataset name for the DB2 subsystem parameter module, DSNHDECP load module, and exits DSN3@ATH, DSN3@SGN, and DSNX@XAC, are displayed as a message on START DB2.

For more detailed information on upgrading to DB2 9, refer to the DB2 V9.1 for z/OS Installation Guide (GC18-9846).

As part of ongoing efforts to deliver the most current technology and to remove those features that no longer provide our customers with strategic benefits, the following features are deprecated in DB2 9. These functions may be dropped in the future; you should not create any new dependencies that rely on them, and if you have existing dependencies on them, you should develop plans to remove those dependencies.

- XML Extender.
- DB2 MQ XML user-defined functions and stored procedures.
- msys for Setup DB2 Customization Center.
- DB2 Management Clients feature, which includes DB2 Administration Server, DB2 Control Center, and DB2 Development Center.
- DDF Private Protocol.
- BookManager format for DB2 for z/OS publications. Books new to the library with DB2 V9 will not be offered in BookManager format, and the BookManager format may be dropped for all publications in the future.

**Direct customer support**: Direct customer support is provided by IBM Operational Support Services — SoftwareXcel Enterprise Edition or SoftwareXcel Basic Edition. These fee services can enhance your productivity by providing voice and electronic access into the IBM support organization. IBM Operational Support Services — SoftwareXcel Enterprise Edition or
SoftwareXcel Basic Edition will help answer questions pertaining to usage, how-to, and suspected software defects for eligible products.

Installation and technical support is provided by IBM Global Services. For more information on services, call 888-426-4343.

Eligible customers can obtain installation and usage assistance from the Industry Support Center through a telephone response line.

**Packaging:** The DB2 UDB for z/OS features are available on 3480 cartridges.

Also included with each base or optional feature is a Program Directory, and under separate cover, one copy of the entitled publications, and other media, such as CD-ROM, as applicable.

### DB2 for z/OS

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<td>DB2 Licensed Library CD-ROM</td>
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### QMF Enterprise Edition

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### DB2 Management Clients

The workstation client functions of DB2 Management Clients Package are shipped on CD-ROM.

<table>
<thead>
<tr>
<th>Title</th>
<th>Order number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 Management Clients Program Directory</td>
<td>G10-8738</td>
</tr>
<tr>
<td>DB2 Connect Personal Edition Pre-packaged Kit</td>
<td>LK3T-7139</td>
</tr>
</tbody>
</table>

### z/OS Application Connectivity to DB2 for z/OS

<table>
<thead>
<tr>
<th>Title</th>
<th>Order number</th>
</tr>
</thead>
<tbody>
<tr>
<td>z/OS Application Connectivity to DB2 for z/OS Program Directory</td>
<td>G10-8739</td>
</tr>
</tbody>
</table>

### Security, auditability, and control

DB2 9 uses the security and auditability features of the host z/OS systems. It also provides facilities for the protection and control of its resources. These facilities include controls for:

- System access
- Data access and control
- Concurrent access
- Data recovery
- Accounting and auditing

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.
Ordering information

Ordering z/OS through the Internet

ShopzSeries provides an easier 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., Canada, 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 Web site at


New licensees

Orders for new licenses can be placed now.

Registered customers can access IBMLink™ for ordering information and charges.

Shipment will not occur before the availability date.

Unless a later date is specified, orders entered before the planned availability date will be assigned a schedule date of one week following availability.

Shipment will begin on the planned availability date.

New users of DB2 V9.1 for z/OS should specify: Type: 5635, Model: DB2.

**Basic license:** To order a basic license, specify the program number and feature number 9001 for asset registration.

Parallel Sysplex® License Charge (PSLC) basic license: To order a basic license, specify the program number and feature 9001 for asset registration. Specify the PSLC Base feature. If applicable, specify the PSLC Level A and PSLC Level B, and PSLC Level C, and PSLC Level D features and quantity.

If there is more than one program copy in a Parallel Sysplex, the charge for all copies is associated to one license by specifying the applicable PSLC license options and quantity represented by the sum of the Service Units in Millions (MSUs) in your Parallel Sysplex. For all other program copies, specify the System Usage Registration No-Charge (SYSUSGREG NC) Identifier on the licenses.

**DB2 for z/OS**

<table>
<thead>
<tr>
<th>Entitlement identifier</th>
<th>Description</th>
<th>License option/pricing metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>S011XS0</td>
<td>DB2 for z/OS</td>
<td>Basic MLC, PSLC below 3 MSU</td>
</tr>
<tr>
<td>S012J7R</td>
<td>QMF Classic Edition</td>
<td>Basic MLC, PSLC AD</td>
</tr>
<tr>
<td>S012J7P</td>
<td>QMF Enterprise Edition</td>
<td>SYSUSGREG NC, PSLC AD</td>
</tr>
<tr>
<td>S012J7T</td>
<td>z/OS Application</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connectivity to DB2 for z/OS</td>
<td></td>
</tr>
</tbody>
</table>

**WLC basic license:** If there is more than one program copy in a Parallel Sysplex, the charge for all copies is associated to one license by specifying the applicable WLC license options and quantity represented by the sum of the Service Units in Millions (MSUs) in your Parallel Sysplex. For all other program copies, specify the Workload Registration Variable WLC Identifier on the licenses.

<table>
<thead>
<tr>
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<th>Description</th>
<th>License option/pricing metric</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Basic MLC, Variable WLC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Workload Registration,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Variable WLC</td>
</tr>
</tbody>
</table>
**Entry Workload License Charge (EWLC) basic license:** To order a basic license, specify the program number and the quantity of MSUs.

<table>
<thead>
<tr>
<th>Entitlement identifier</th>
<th>Description</th>
<th>License option/ pricing metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>S011XS0</td>
<td>DB2 for z/OS</td>
<td>Basic MLC, Entry VLC</td>
</tr>
<tr>
<td>S012J7R</td>
<td>QMF Classic Edition</td>
<td></td>
</tr>
<tr>
<td>S012J7P</td>
<td>QMF Enterprise Edition</td>
<td></td>
</tr>
<tr>
<td>S012J7T</td>
<td>z/OS Application Connectivity to DB2 for z/OS</td>
<td></td>
</tr>
</tbody>
</table>

**S/390® and zSeries Usage License Charge basic license:** Specify the applicable S/390 and zSeries Usage License Charge option.

Charges will be based upon the peak MSUs. Usage reported between thresholds of features 1, 2, or 3 will be rounded up to the next MSU level. Above 1.0 MSU, usage will be rounded to the nearest whole MSU. For example, 2.4 MSUs would round to 2.0 MSUs for pricing, and 2.5 MSUs would round to 3.0 MSUs for pricing.

The customer's pricing will be determined by selecting either:

<table>
<thead>
<tr>
<th>Entitlement identifier</th>
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</thead>
<tbody>
<tr>
<td>S011XS0</td>
<td>DB2 for z/OS</td>
</tr>
<tr>
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<td>QMF Classic Edition</td>
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<tr>
<td>S012J7P</td>
<td>QMF Enterprise Edition</td>
</tr>
<tr>
<td>S012J7T</td>
<td>z/OS Application Connectivity to DB2 for z/OS</td>
</tr>
</tbody>
</table>

Examples for ordering:

- A customer with a measured usage (from the IBM Measured Usage report) of 0.3 MSU would order quantity 1 of the 0.26 to 0.5 MSU base feature.
- A customer with 6.6 MSUs (from the IBM Usage report) would:
  - Be rounded up to 7.0 MSUs
  - Order quantity 1 of the "0.51 to 1.0 MSU" base feature
  - Order quantity 6 of the Level A 1 MSU feature
- A customer with 15 MSUs (from the IBM Usage report) would:
  - Order quantity 1 of the "0.51 to 1.0 MSU" base feature
  - Order quantity 10 of the Level A 1 MSU feature
  - Order quantity 4 of the Level B 1 MSU feature
- A customer with 50 MSUs (from the IBM Usage report) would:
  - Order quantity 1 of the "0.51 to 1.0 MSU" base feature
  - Order quantity 10 of the Level A 1 MSU feature
  - Order quantity 33 of the Level B 1 MSU feature
  - Order quantity 6 of the Level C 1 MSU feature
- A customer with 85 MSUs (from the IBM Usage report) would:
  - Order quantity 1 of the "0.51 to 1.0 MSU" base feature
  - Order quantity 10 of the Level A 1 MSU feature
  - Order quantity 33 of the Level B 1 MSU feature
  - Order quantity 34 of the Level C 1 MSU feature
zSeries Entry License Charge (zELC): To order zELC software, specify the program number and z800 model.

Specify the zELC monthly license option.

<table>
<thead>
<tr>
<th>Entitlement Identifier</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>S011X50</td>
<td>DB2 for z/OS</td>
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<tr>
<td>S012J7R</td>
<td>QMF Classic Edition</td>
</tr>
<tr>
<td>S012J7P</td>
<td>QMF Enterprise Edition</td>
</tr>
<tr>
<td>S012J7T</td>
<td>z/OS Application Connectivity to DB2 for z/OS</td>
</tr>
</tbody>
</table>

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

Basic machine-readable material

<table>
<thead>
<tr>
<th>Orderable supply ID</th>
<th>Language</th>
<th>Distribution medium</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S012ZHN</td>
<td>U.S. English</td>
<td>3480 Tape Cartridge</td>
<td>DB2 V9.1 for z/OS</td>
</tr>
<tr>
<td>S012ZHS</td>
<td>U.S. English</td>
<td>3480 Tape Cartridge</td>
<td>DB2 Mgmt Client PKG</td>
</tr>
<tr>
<td>S012ZHW</td>
<td>U.S. English</td>
<td>3480 Tape Cartridge</td>
<td>QMF Classic Edition</td>
</tr>
<tr>
<td>S012ZJ0</td>
<td>U.S. English</td>
<td>3480 Tape Cartridge</td>
<td>QMF Enterprise Edition</td>
</tr>
<tr>
<td>S012ZJ3</td>
<td>U.S. English</td>
<td>3480 Tape Cartridge</td>
<td>z/OS App Connect to DB2</td>
</tr>
</tbody>
</table>

Customization options: Expedite shipments will be processed to receive 72-hour delivery from the time IBM Software Delivery and Fulfillment (SDF) receives the order. SDF will then ship the order via overnight air transportation.

Unlicensed documentation: Optional machine-readable material: To order, select the feature number for the desired distribution medium.

Unlicensed documentation: A memo and the program directory are shipped with the basic machine-readable material.

The following DB2 9 publications are shipped with the product tapes.

- Installation Guide
- Licensed Program Specifications
- Licensed Library Collection (CD-ROM)

The following optional publications are available for ordering immediately:

<table>
<thead>
<tr>
<th>Title</th>
<th>Order number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 V9.1 for z/OS Administration Guide</td>
<td>SC18-9840</td>
</tr>
<tr>
<td>Application Programming Guide and Reference for Java</td>
<td>SC18-9842</td>
</tr>
<tr>
<td>Application Programming and SQL Guide Codes</td>
<td>SC18-9841</td>
</tr>
<tr>
<td>Command Reference</td>
<td>SC18-9844</td>
</tr>
<tr>
<td>Data Sharing: Planning and Administration</td>
<td>SC18-9845</td>
</tr>
<tr>
<td>Installation Guide</td>
<td>GC18-9846</td>
</tr>
<tr>
<td>Internationalization Guide</td>
<td>SC19-1161</td>
</tr>
<tr>
<td>Introduction to DB2 for z/OS</td>
<td>SC18-9847</td>
</tr>
<tr>
<td>Messages</td>
<td>GC18-9849</td>
</tr>
<tr>
<td>DB2C Guide and Reference</td>
<td>SC18-9850</td>
</tr>
<tr>
<td>Performance Monitoring and Tuning Guide</td>
<td>SC18-9851</td>
</tr>
<tr>
<td>Reference Summary*</td>
<td>SX26-3854</td>
</tr>
<tr>
<td>SQL Reference</td>
<td>SC18-9854</td>
</tr>
<tr>
<td>Utility Guide and Reference</td>
<td>SC18-9855</td>
</tr>
</tbody>
</table>
* Available as hardcopy only.

All of the publications listed above, except What's New (GC18-9856), can be ordered using bill-of-forms number SBOF-7791.

Publications designated as "hardcopy only" can be ordered from the IBM Publications Center at

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

The following DB2 9 publications will be available in softcopy format only; they cannot be ordered in hardcopy.

- RACF Access Control Module
- Reference for Remote DRDA Requesters and Servers

The following QMF publications are delivered in softcopy only. When ordering DB2 9, these QMF publications are included on the publication CD "DB2 9 Licensed Library Collection, LK3T-7195".

- Introducing DB2 QMF
- Installing and Managing DB2 QMF for TSO and CICS
- Using DB2 QMF
- DB2 QMF Reference
- DB2 QMF Messages and Codes
- Developing DB2 QMF Applications
- Installing and Managing DB2 QMF for Workstation and DB2 QMF for WebSphere
- Getting Started with DB2 QMF for Workstations and DB2 QMF for WebSphere
- DB2 QMF High Performance Option User's Guide for TSO and CICS

DB2 9 product information, except the licensed documentation, is viewable from the Information Management Software for z/OS Solutions Information Center at

http://publib.boulder.ibm.com/infocenter/db2zhelp

**Licensed documentation:** The following licensed materials are separately priced with an 8000 feature number, available only to customers with a DB2 9 license. The licensed material can be ordered through the IBM Publications Center. In addition, the Diagnosis Guide and Reference is shipped in a DB2 data set updated during post general availability maintenance updates. (DSN910.SDSNIVPD data set member DSNDR. FTP the data set to the workstation and open it with Adobe Acrobat Reader.)

<table>
<thead>
<tr>
<th>Title</th>
<th>Order number</th>
<th>Entitlement identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 9 for z/OS Diagnostic Guide and Reference</td>
<td>LY37-3218</td>
<td>S013NC3</td>
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<tr>
<td>DB2 9 for z/OS Diagnostic Quick Reference*</td>
<td>LY37-3219</td>
<td>S013NC4</td>
</tr>
</tbody>
</table>

* Available as hardcopy only.

Terms and conditions for use of the machine-readable files are shipped with the files.

As part of ongoing efforts to deliver the most current technology and to remove those features that no longer provide our customers with strategic benefits, the BookManager format for DB2 for z/OS publications will be deprecated in DB2 9. Books that are new to the DB2 9 library will not be offered in the BookManager format. The BookManager format may be dropped in the future; you should not create any new dependencies that rely on DB2 9 BookManager books, and if you have existing dependencies on them, you should develop plans to remove those dependencies.

Subsequent updates (technical newsletters or revisions between releases) to the publications shipped with the product will be distributed to the user of record for as long as a license for this software remains in effect. A separate publication order or subscription is not needed.
Customized offerings

Product deliverables are shipped only via Customized Offerings (for example, CBPDO, ServerPac, SystemPac®). CBPDO and ServerPac are offered for electronic delivery, where ShopzSeries product ordering is available. For more details on electronic delivery, refer to the ShopzSeries help information at

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

Media type for this software product is chosen during the customized offerings ordering process. Based on your customer environment, it is recommended that the highest possible density tape media is selected. Currently offered media types are:

- CBPDOS — 3480, 3480 Compressed, 3490E, 3590, 3592*
- ServerPacs — 3480, 3480 Compressed, 3490E, 3590, 3592*
- SystemPacs — 3480, 3480 Compressed, 3490E, 3590, 3592*

* 3592 is highest density media, which will ship the fewest number of media.

Once a product becomes generally available, it will be included in the next ServerPac and SystemPac monthly update.

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 inclusion in ServerPac.
- SystemPac shipments will begin four weeks after inclusion in SystemPac due to additional customization, and data input verification.

Terms and conditions

**Agreement:** IBM Customer Agreement

**Variable charges apply:** No

**Indexed monthly license charge (IMLC) applies:** No

**Location license applies:** No

**Use limitation applies:** No

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

**Volume orders:** Not applicable.

<table>
<thead>
<tr>
<th>Replaced program number</th>
<th>Replaced program name</th>
<th>Replacement program number</th>
<th>Replacement program name</th>
</tr>
</thead>
<tbody>
<tr>
<td>5740-XYR</td>
<td>DB2 V1</td>
<td>5635-DB2</td>
<td>DB2 V9</td>
</tr>
<tr>
<td>5665-DB2</td>
<td>DB2 V2</td>
<td>5635-DB2</td>
<td>DB2 V9</td>
</tr>
<tr>
<td>5685-DB2</td>
<td>DB2 V3</td>
<td>5635-DB2</td>
<td>DB2 V9</td>
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<td>5695-DB2</td>
<td>DB2 V4</td>
<td>5635-DB2</td>
<td>DB2 V9</td>
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<td>5655-DB2</td>
<td>DB2 V5</td>
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<td>DB2 V8</td>
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<td>DB2 V9</td>
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<td>DB2 V9</td>
<td>To follow on program if any.</td>
<td></td>
</tr>
</tbody>
</table>

**Warranty applies:** Yes

**Licensed program materials availability**
• Restricted materials of IBM: None
• Non-restricted source materials: Some
• Object code only (OCO): Some

Program services

• Support Center applies: Yes. Access available through the IBM Support Center.
• Available until discontinued: 12-months written notice.
• APAR mailing address:
  IBM Corporation
  APAR Processing
  555 Bailey Avenue
  San Jose, CA 95141

Program currency: IBM DB2 V9.1 for z/OS (5635-DB2)
Available until discontinued: 12-months written notice.

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