

DB2 10 FOR Z OS DATABASE ADMINISTRATION CERTIFICATION STUDY GUIDE

DB2 FOR z/OS AND WEBSPHERE INTEGRATION FOR ENTERPRISE JAVA APPLICATIONS DB2 10 FOR z/OS TECHNICAL OVERVIEW DB2 10 FOR z/OS PERFORMANCE TOPICS IBM DB2 FOR Z/OS: THE DATABASE FOR GAINING A COMPETITIVE ADVANTAGE! DB2 10 FOR Z/OS DATABASE ADMINISTRATION MANAGING EVER-INCREASING AMOUNTS OF DATA WITH IBM DB2 FOR z/OS: USING TEMPORAL DATA MANAGEMENT, ARCHIVE TRANSPARENCY, AND THE DB2 ANALYTICS ACCELERATOR DATA STUDIO AND DB2 FOR z/OS STORED PROCEDURES MANAGING EVER-INCREASING AMOUNTS OF DATA WITH IBM DB2 FOR Z/OS DB2 FOR Z/OS AND WEBSPHERE INTEGRATION FOR ENTERPRISE JAVA APPLICATIONS EXTREMELY PURE XML IN DB2 10 FOR z/OS THE OFFICIAL INTRODUCTION TO DB2 FOR Z/OS SECURITY FUNCTIONS OF IBM DB2 10 FOR z/OS DB2 9 FOR z/OS AND STORAGE MANAGEMENT ENHANCING SAP BY USING DB2 9 FOR z/OS DB2 9 FOR z/OS PERFORMANCE TOPICS DB2 UNIVERSAL DATABASE FOR OS/390 V7.1 APPLICATION CERTIFICATION GUIDE BEST PRACTICES FOR DS8000 AND z/OS HYPERSWAP WITH COPY SERVICES MANAGER IBM Db2 13 FOR z/OS AND MORE DB2 ADMINISTRATION SOLUTION PACK FOR Z/OS IBM IMS SOLUTIONS FOR AUTOMATING DATABASE MANAGEMENT PAOLO BRUNI PAOLO BRUNI PAOLO BRUNI JANE MAN SUSAN LAWSON MEHMET CUNEYT GOKSU PAOLO BRUNI MEHMET CUNEYT GOKSU PAOLO BRUNI PAOLO BRUNI SUSAN GRAZIANO SLOAN PAOLO BRUNI PAOLO BRUNI LYDIA PARZIALE PAOLO BRUNI SUSAN LAWSON THOMAS LUTHER 13 Db2 IBM TEAM PROJECT PAOLO BRUNI PAOLO BRUNI

DB2 FOR z/OS AND WEBSPHERE INTEGRATION FOR ENTERPRISE JAVA APPLICATIONS DB2 10 FOR z/OS TECHNICAL OVERVIEW DB2 10

FOR z/OS PERFORMANCE TOPICS IBM DB2 FOR Z/OS: THE DATABASE FOR GAINING A COMPETITIVE ADVANTAGE! DB2 10 FOR Z/OS
 DATABASE ADMINISTRATION MANAGING EVER-INCREASING AMOUNTS OF DATA WITH IBM DB2 FOR z/OS: USING TEMPORAL DATA
 MANAGEMENT, ARCHIVE TRANSPARENCY, AND THE DB2 ANALYTICS ACCELERATOR DATA STUDIO AND DB2 FOR z/OS STORED PROCEDURES
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 FUNCTIONS OF IBM DB2 10 FOR z/OS DB2 9 FOR z/OS AND STORAGE MANAGEMENT ENHANCING SAP BY USING DB2 9 FOR z/OS
 DB2 9 FOR z/OS PERFORMANCE TOPICS DB2 UNIVERSAL DATABASE FOR OS/390 V7.1 APPLICATION CERTIFICATION GUIDE BEST
 PRACTICES FOR DS8000 AND z/OS HYPERSWAP WITH COPY SERVICES MANAGER IBM Db2 13 FOR z/OS AND MORE DB2
 ADMINISTRATION SOLUTION PACK FOR Z/OS IBM IMS SOLUTIONS FOR AUTOMATING DATABASE MANAGEMENT *PAOLO BRUNI PAOLO BRUNI*
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IBM DB2 FOR Z OS IS A HIGH PERFORMANCE DATABASE MANAGEMENT SYSTEM DBMS WITH A STRONG REPUTATION IN TRADITIONAL HIGH
 VOLUME TRANSACTION WORKLOADS THAT ARE BASED ON RELATIONAL TECHNOLOGY IBM WEBSPHERE APPLICATION SERVER IS WEB
 APPLICATION SERVER SOFTWARE THAT RUNS ON MOST PLATFORMS WITH A WEB SERVER AND IS USED TO DEPLOY INTEGRATE EXECUTE AND
 MANAGE JAVA PLATFORM ENTERPRISE EDITION APPLICATIONS IN THIS IBM REDBOOKS PUBLICATION WE DESCRIBE THE APPLICATION
 ARCHITECTURE EVOLUTION FOCUSING ON THE VALUE OF HAVING DB2 FOR Z OS AS THE DATA SERVER AND IBM Z OS AS THE PLATFORM
 FOR TRADITIONAL AND FOR MODERN APPLICATIONS THIS BOOK PROVIDES BACKGROUND TECHNICAL INFORMATION ABOUT DB2 AND WEBSPHERE

FEATURES AND DEMONSTRATES THEIR APPLICABILITY PRESENTING A SCENARIO ABOUT CONFIGURING WEBSHERE VERSION 8.5 ON Z OS AND TYPE 2 AND TYPE 4 CONNECTIVITY INCLUDING THE XA TRANSACTION SUPPORT FOR ACCESSING A DB2 FOR Z OS DATABASE SERVER TAKING INTO ACCOUNT HIGH AVAILABILITY REQUIREMENTS WE ALSO PROVIDE CONSIDERATIONS ABOUT DEVELOPING APPLICATIONS MONITORING PERFORMANCE AND DOCUMENTING ISSUES DB2 DATABASE ADMINISTRATORS WEBSHERE SPECIALISTS AND JAVA APPLICATION DEVELOPERS WILL APPRECIATE THE HOLISTIC APPROACH OF THIS DOCUMENT

IBM DB2 VERSION 10.1 FOR Z OS DB2 10 FOR Z OS OR JUST DB2 10 THROUGHOUT THIS BOOK IS THE FOURTEENTH RELEASE OF DB2 FOR MVSTM IT BRINGS IMPROVED PERFORMANCE AND SYNERGY WITH THE SYSTEM Z HARDWARE AND MORE OPPORTUNITIES TO DRIVE BUSINESS VALUE IN THE FOLLOWING AREAS COST SAVINGS AND COMPLIANCE THROUGH OPTIMIZED INNOVATIONS DB2 10 DELIVERS VALUE IN THIS AREA BY ACHIEVING UP TO 10 CPU SAVINGS FOR TRADITIONAL WORKLOADS AND UP TO 20 CPU SAVINGS FOR NONTRADITIONAL WORKLOADS DEPENDING ON THE ENVIRONMENTS SYNERGY WITH OTHER IBM SYSTEM Z PLATFORM COMPONENTS REDUCES CPU USE BY TAKING ADVANTAGE OF THE LATEST PROCESSOR IMPROVEMENTS AND Z OS ENHANCEMENTS STREAMLINE SECURITY AND REGULATORY COMPLIANCE THROUGH THE SEPARATION OF ROLES BETWEEN SECURITY AND DATA ADMINISTRATORS COLUMN LEVEL SECURITY ACCESS AND ADDED AUDITING CAPABILITIES BUSINESS INSIGHT INNOVATIONS PRODUCTIVITY IMPROVEMENTS ARE PROVIDED BY NEW FUNCTIONS AVAILABLE FOR PUREXML DATA WAREHOUSING AND TRADITIONAL ONLINE TP APPLICATIONS ENHANCED SUPPORT FOR KEY BUSINESS PARTNERS THAT ALLOW YOU TO GET MORE FROM YOUR DATA IN CRITICAL BUSINESS DISCIPLINES LIKE ERP BITEMPORAL SUPPORT FOR APPLICATIONS THAT NEED TO CORRELATE THE VALIDITY OF DATA WITH TIME BUSINESS RESILIENCY INNOVATIONS DATABASE ON DEMAND CAPABILITIES TO ENSURE THAT INFORMATION DESIGN CAN BE CHANGED DYNAMICALLY OFTEN WITHOUT DATABASE OUTAGES DB2 OPERATIONS AND UTILITY IMPROVEMENTS ENHANCING PERFORMANCE USABILITY AND AVAILABILITY BY EXPLOITING DISK STORAGE TECHNOLOGY THE DB2 10 ENVIRONMENT IS AVAILABLE

EITHER FOR BRAND NEW INSTALLATIONS OF DB2 OR FOR MIGRATIONS FROM DB2 9 FOR Z OS OR FROM DB2 UDB FOR Z OS VERSION 8 SUBSYSTEMS THIS IBM REDBOOKS PUBLICATION INTRODUCES THE ENHANCEMENTS MADE AVAILABLE WITH DB2 10 FOR Z OS THE CONTENTS HELP YOU UNDERSTAND THE NEW FUNCTIONS AND PERFORMANCE ENHANCEMENTS START PLANNING FOR EXPLOITING THE KEY NEW CAPABILITIES AND JUSTIFY THE INVESTMENT IN INSTALLING OR MIGRATING OR SKIP MIGRATING TO DB2 10

DB2 10 FOR Z OS CAN REDUCE THE TOTAL DB2 CPU DEMAND FROM 5 20 COMPARED TO DB2 9 WHEN YOU TAKE ADVANTAGE OF ALL THE ENHANCEMENTS MANY CPU REDUCTIONS ARE BUILT IN DIRECTLY TO DB2 REQUIRING NO APPLICATION CHANGES SOME ENHANCEMENTS ARE IMPLEMENTED THROUGH NORMAL DB2 ACTIVITIES THROUGH REBINDING RESTRUCTURING DATABASE DEFINITIONS IMPROVING APPLICATIONS AND UTILITY PROCESSING THE CPU DEMAND REDUCTION FEATURES HAVE THE POTENTIAL TO PROVIDE SIGNIFICANT TOTAL COST OF OWNERSHIP SAVINGS BASED ON THE APPLICATION MIX AND TRANSACTION TYPES IMPROVEMENTS IN OPTIMIZATION REDUCE COSTS BY PROCESSING SQL AUTOMATICALLY WITH MORE EFFICIENT DATA ACCESS PATHS IMPROVEMENTS THROUGH A RANGE LIST INDEX SCAN ACCESS METHOD LIST PREFETCH FOR IN LIST MORE PARALLELISM FOR SELECT AND INDEX INSERT PROCESSING BETTER WORK FILE USAGE BETTER RECORD IDENTIFIER RID POOL OVERFLOW MANAGEMENT IMPROVED SEQUENTIAL DETECTION FASTER LOG I O ACCESS PATH CERTAINTY EVALUATION FOR STATIC SQL AND IMPROVED DISTRIBUTED DATA FACILITY DDF TRANSACTION FLOW ALL PROVIDE MORE EFFICIENCY WITHOUT CHANGES TO APPLICATIONS THESE ENHANCEMENTS CAN REDUCE TOTAL CPU ENTERPRISE COSTS BECAUSE OF IMPROVED EFFICIENCY IN THE DB2 10 FOR Z OS DB2 10 INCLUDES NUMEROUS PERFORMANCE ENHANCEMENTS FOR LARGE OBJECTS LOBS THAT SAVE DISK SPACE FOR SMALL LOBS AND THAT PROVIDE DRAMATICALLY BETTER PERFORMANCE FOR LOB RETRIEVAL INSERTS LOAD AND IMPORT EXPORT USING DB2 UTILITIES DB2 10 CAN ALSO MORE EFFECTIVELY REORG PARTITIONS THAT CONTAIN LOBS THIS IBM REDBOOKS PUBLICATION PROVIDES AN OVERVIEW OF THE PERFORMANCE IMPACT OF DB2 10 FOR Z OS DISCUSSING THE OVERALL PERFORMANCE AND POSSIBLE IMPACTS WHEN MOVING FROM VERSION

TO VERSION WE INCLUDE PERFORMANCE MEASUREMENTS THAT WERE MADE IN THE LABORATORY AND PROVIDE SOME ESTIMATES KEEP IN MIND THAT YOUR RESULTS ARE LIKELY TO VARY AS THE CONDITIONS AND WORK WILL DIFFER IN THIS BOOK WE ASSUME THAT YOU ARE SOMEWHAT FAMILIAR WITH DB2 10 FOR Z OS SEE DB2 10 FOR Z OS TECHNICAL OVERVIEW SG24 7892 00 FOR AN INTRODUCTION TO THE NEW FUNCTIONS

DATA IS BECOMING THE WORLD S NEW NATURAL RESOURCE TRANSFORMING INDUSTRIES AND PROFESSIONS ACROSS THE BOARD SMART INNOVATIVE ORGANIZATIONS KNOW THAT DATA IS THE NEW BASIS OF GAINING A COMPETITIVE ADVANTAGE DB2 FOR Z OS REMAINS THE LEADING DATABASE FOR STORING MISSION CRITICAL DATA THIS BOOK EXPLAINS HOW DB2 FOR Z OS AND SUPPORTING PRODUCTS ENABLE BUSINESSES TO USE THEIR DATA TO GAIN A COMPETITIVE ADVANTAGE

WRITTEN PRIMARILY FOR DATABASE ADMINISTRATORS WHO WORK ON Z OS AND WHO ARE TAKING THE IBM DB2 10 FOR Z OS DATABASE ADMINISTRATION CERTIFICATION EXAM EXAM 612 THIS RESOURCE ALSO APPEALS TO THOSE WHO SIMPLY WANT TO MASTER THE SKILLS NEEDED TO BE AN EFFECTIVE DATABASE ADMINISTRATOR OF Z OS MAINFRAMES THE GUIDE COVERS ALL THE TOPICS ON THE EXAM INCLUDING DATABASE DESIGN AND IMPLEMENTATION OPERATION AND RECOVERING SECURITY AND AUDITING PERFORMANCE AND INSTALLATION AND MIGRATION COMPLETE WITH SAMPLE QUESTIONS AND DETAILED ANSWERS AS WELL AS A FULL LENGTH PRACTICE EXAM THIS STUDY GUIDE SERVES AS AN ESSENTIAL TOOL PROGRAMMERS WILL LEARN HOW TO CREATE MAINTAIN AND ADMINISTER DB2 10 DATABASES ON THE Z OS PLATFORM AND HOW TO IMPLEMENT XML WITH A DB2 10 DATABASE MAKING THEM SUCCESSFUL DATABASE ADMINISTRATORS AFTER THEY PASS CERTIFICATION

IBM DB2 VERSION 11 1 FOR Z OS DB2 11 FOR Z OS OR JUST DB2 11 THROUGHOUT THIS BOOK IS THE FIFTEENTH RELEASE OF DB2 FOR

IBM MVSTM THE DB2 11 ENVIRONMENT IS AVAILABLE EITHER FOR NEW INSTALLATIONS OF DB2 OR FOR MIGRATIONS FROM DB2 10 FOR Z OS SUBSYSTEMS ONLY THIS IBM REDBOOKS PUBLICATION DESCRIBES ENHANCEMENTS THAT ARE AVAILABLE WITH DB2 11 FOR Z OS THE CONTENTS HELP DATABASE ADMINISTRATORS TO UNDERSTAND THE NEW EXTENSIONS AND PERFORMANCE ENHANCEMENTS TO PLAN FOR WAYS TO USE THE KEY NEW CAPABILITIES AND TO JUSTIFY THE INVESTMENT IN INSTALLING OR MIGRATING TO DB2 11 BUSINESSES ARE FACED WITH A GLOBAL AND INCREASINGLY COMPETITIVE BUSINESS ENVIRONMENT AND THEY NEED TO COLLECT AND ANALYZE EVER INCREASING AMOUNTS OF DATA FIGURE 1 GOVERNMENTS ALSO NEED TO COLLECT AND ANALYZE LARGE AMOUNTS OF DATA THE MAIN FOCUS OF THIS BOOK IS TO INTRODUCE RECENT DB2 CAPABILITY THAT CAN BE USED TO ADDRESS CHALLENGES FACING ORGANIZATIONS WITH STORING AND ANALYZING EXPLODING AMOUNTS OF BUSINESS OR ORGANIZATIONAL DATA WHILE MANAGING RISK AND TRYING TO MEET NEW REGULATORY AND COMPLIANCE REQUIREMENTS THIS BOOK DESCRIBES RECENT EXTENSIONS TO DB2 FOR Z OS IN V10 AND V11 THAT CAN HELP ORGANIZATIONS ADDRESS THESE CHALLENGES

STORED PROCEDURES CAN PROVIDE MAJOR BENEFITS IN THE AREAS OF APPLICATION PERFORMANCE CODE RE USE SECURITY AND INTEGRITY DB2 HAS OFFERED EVER IMPROVING SUPPORT FOR DEVELOPING AND OPERATING STORED PROCEDURES THIS IBM REDPAPER™ PUBLICATION IS DEVOTED TO TOOLS THAT CAN BE USED FOR ACCELERATING THE DEVELOPMENT AND DEBUGGING PROCESS IN PARTICULAR TO THE STORED PROCEDURE SUPPORT PROVIDED BY THE LATEST AND FASTEST EVOLVING IBM PRODUCT DATA STUDIO WE DISCUSS TOPICS RELATED TO HANDLING STORED PROCEDURES ACROSS DIFFERENT PLATFORMS WE CONCENTRATE ON HOW TO USE TOOLS FOR DEPLOYMENT OF STORED PROCEDURES ON Z OS BUT MOST CONSIDERATIONS APPLY TO THE OTHER MEMBERS OF THE DB2 FAMILY THIS PAPER IS A MAJOR UPDATE OF PART 6 COOL TOOLS FOR AN EASIER LIFE OF THE IBM REDBOOKS PUBLICATION DB2 9 FOR Z OS STORED PROCEDURES THROUGH THE CALL AND BEYOND SG24 7604

IBM DB2 FOR Z OS IS A HIGH PERFORMANCE DATABASE MANAGEMENT SYSTEM DBMS WITH A STRONG REPUTATION IN TRADITIONAL HIGH VOLUME TRANSACTION WORKLOADS THAT ARE BASED ON RELATIONAL TECHNOLOGY IBM WEBSHERE APPLICATION SERVER IS WEB APPLICATION SERVER SOFTWARE THAT RUNS ON MOST PLATFORMS WITH A WEB SERVER AND IS USED TO DEPLOY INTEGRATE EXECUTE AND MANAGE JAVA PLATFORM ENTERPRISE EDITION APPLICATIONS IN THIS IBM REDBOOKS PUBLICATION WE DESCRIBE THE APPLICATION ARCHITECTURE EVOLUTION FOCUSING ON THE VALUE OF HAVING DB2 FOR Z OS AS THE DATA SERVER AND IBM Z OS AS THE PLATFORM FOR TRADITIONAL AND FOR MODERN APPLICATIONS THIS BOOK PROVIDES BACKGROUND TECHNICAL INFORMATION ABOUT DB2 AND WEBSHERE FEATURES AND DEMONSTRATES THEIR APPLICABILITY PRESENTING A SCENARIO ABOUT CONFIGURING WEBSHERE VERSION 8.5 ON Z OS AND TYPE 2 AND TYPE 4 CONNECTIVITY INCLUDING THE XA TRANSACTION SUPPORT FOR ACCESSING A DB2 FOR Z OS DATABASE SERVER TAKING INTO ACCOUNT HIGH AVAILABILITY REQUIREMENTS WE ALSO PROVIDE CONSIDERATIONS ABOUT DEVELOPING APPLICATIONS MONITORING PERFORMANCE AND DOCUMENTING ISSUES DB2 DATABASE ADMINISTRATORS WEBSHERE SPECIALISTS AND JAVA APPLICATION DEVELOPERS WILL APPRECIATE THE HOLISTIC APPROACH OF THIS DOCUMENT PLEASE NOTE THAT THE ADDITIONAL MATERIAL REFERENCED IN THE TEXT IS NOT AVAILABLE FROM IBM

THE DB2 PUREXML FEATURE OFFERS SOPHISTICATED CAPABILITIES TO STORE PROCESS AND MANAGE XML DATA IN ITS NATIVE HIERARCHICAL FORMAT BY INTEGRATING XML DATA INTACT INTO A RELATIONAL DATABASE STRUCTURE USERS CAN TAKE FULL ADVANTAGE OF DB2'S RELATIONAL DATA MANAGEMENT FEATURES IN THIS IBM REDBOOKS PUBLICATION WE DOCUMENT THE STEPS FOR THE IMPLEMENTATION OF A SIMPLE BUT MEANINGFUL XML APPLICATION SCENARIO WE HAVE CHOSEN TO PROVIDE SAMPLES IN COBOL AND JAVATM LANGUAGE THE PURPOSE IS TO PROVIDE AN EASY PATH TO FOLLOW TO INTEGRATE THE XML DATA TYPE FOR THE TRADITIONAL DB2 FOR Z OS USER WE ALSO ADD CONSIDERATIONS FOR THE DATA ADMINISTRATOR AND SUGGEST BEST PRACTICES FOR EASE OF USE AND BETTER PERFORMANCE

BULL MOST CURRENT COVERAGE DIRECTLY FROM THE IBM LABS THAT DEVELOPED DB2 BULL SPECIFICALLY DESIGNED FOR NEW USERS TO BE THE MOST ACCURATE AND THOROUGH SOURCE TO LEARN AND USE DB2 UDB FOR Z OS BULL THE ONLY BOOK THAT COVERS MATERIAL FOR THE DB2 FUNDAMENTALS CERTIFICATION EXAM FROM A Z OS PERSPECTIVE

IBM DB2 9 AND 10 FOR Z OS HAVE ADDED FUNCTIONS IN THE AREAS OF SECURITY REGULATORY COMPLIANCE AND AUDIT CAPABILITY THAT PROVIDE SOLUTIONS FOR THE MOST COMPELLING REQUIREMENTS DB2 10 ENHANCES THE DB2 9 ROLE BASED SECURITY WITH ADDITIONAL ADMINISTRATIVE AND OTHER FINER GRAINED AUTHORITIES AND PRIVILEGES THIS AUTHORITY GRANULARITY HELPS SEPARATE ADMINISTRATION AND DATA ACCESS THAT PROVIDE ONLY THE MINIMUM APPROPRIATE AUTHORITY THE AUTHORITY PROFILES PROVIDE BETTER SEPARATION OF DUTIES WHILE LIMITING OR ELIMINATING BLANKET AUTHORITY OVER ALL ASPECTS OF A TABLE AND ITS DATA IN ADDITION DB2 10 PROVIDES A SET OF CRITERIA FOR AUDITING FOR THE POSSIBLE ABUSE AND OVERLAPPING OF AUTHORITIES WITHIN A SYSTEM IN DB2 10 IMPROVEMENTS TO SECURITY AND REGULATORY COMPLIANCE FOCUS ON DATA RETENTION AND PROTECTING SENSITIVE DATA FROM PRIVILEGED USERS AND ADMINISTRATORS IMPROVEMENTS ALSO HELP TO SEPARATE SECURITY ADMINISTRATION FROM DATABASE ADMINISTRATION DB2 10 ALSO LETS ADMINISTRATORS ENABLE SECURITY ON A PARTICULAR COLUMN OR PARTICULAR ROW IN THE DATABASE COMPLEMENTING THE PRIVILEGE MODEL THIS IBM REDBOOKS PUBLICATION PROVIDES A DETAILED DESCRIPTION OF DB2 10 SECURITY FUNCTIONS FROM THE IMPLEMENTATION AND USAGE POINT OF VIEW IT IS INTENDED TO BE USED BY DATABASE AUDIT AND SECURITY ADMINISTRATORS

THIS IBM REDBOOKS PUBLICATION CAN HELP YOU TAILOR AND CONFIGURE DFSMS CONSTRUCTS TO BE USED IN AN IBM DB2 9 FOR Z OS ENVIRONMENT IN ADDITION IT PROVIDES A BROAD UNDERSTANDING OF NEW DISK ARCHITECTURES AND THEIR IMPACT IN DB2 DATA SET MANAGEMENT FOR LARGE INSTALLATIONS THIS BOOK ADDRESSES BOTH THE DB2 ADMINISTRATOR AND THE STORAGE ADMINISTRATOR THE DB2

ADMINISTRATOR CAN FIND INFORMATION ABOUT HOW TO USE DFSMS FOR MANAGING DB2 DATA SETS THE STORAGE ADMINISTRATOR CAN FIND INFORMATION ABOUT THE CHARACTERISTICS OF DB2 DATA SETS AND HOW DB2 USES THE DISKS THIS BOOK DESCRIBES OPTIMAL USE OF DISK STORAGE FUNCTIONS IN DB2 FOR Z OS ENVIRONMENTS THAT CAN BEST MAKE PRODUCTIVE USE OF THE SYNERGY WITH I/O SUBSYSTEM ON IBM SYSTEM Z THIS BOOK COVERS THE FOLLOWING TOPICS USING SMS TO MANAGE DB2 CATALOG LOG DATA INDEXES IMAGE COPIES ARCHIVES WORK FILES TAKING ADVANTAGE OF IBM FLASHCOPY FOR DB2 UTILITIES STRIPING COPY POOLS SETTING PAGE SIZES AND USING SLIDING ALLOCATION A DESCRIPTION OF PAV MA MIDAW EF EA EAV ZHPF AND WHY THEY ARE HELPFUL COMPRESSING DATA AND THE USE DISK AND TAPE FOR LARGE DATA SETS BACKUP AND RESTORE AND REMOTE COPY SERVICES

THIS IBM REDBOOKS PUBLICATION PRESENTS MANY OF THE NEW AND IMPROVED FEATURES AND FUNCTIONS OF DB2 V9.1 FOR Z OS AND DB2 CONNECT V9.1 IT EXPLAINS HOW THEY COMPLEMENT AND BENEFIT YOUR SAP NETWEAVER ENVIRONMENT THIS BOOK ALSO SHARES SOME OF OUR EXPERIENCES IN MIGRATING OUR DB2 V8 SAP DATA SHARING ENVIRONMENT TO DB2 9 FOR Z OS WITH A MINIMAL AMOUNT OF OUTAGE THIS BOOK IS WRITTEN FOR SAP AND DB2 ADMINISTRATORS KNOWLEDGE OF THESE PRODUCTS AND OF THE Z OS ENVIRONMENT IS ASSUMED

DB2 9 FOR Z OS IS AN EXCITING NEW VERSION WITH MANY IMPROVEMENTS IN PERFORMANCE AND LITTLE REGRESSION DB2 V9 IMPROVES AVAILABILITY AND SECURITY AS WELL AS ADDS GREATLY TO SQL AND XML FUNCTIONS OPTIMIZATION IMPROVEMENTS INCLUDE MORE SQL FUNCTIONS TO OPTIMIZE IMPROVED STATISTICS FOR THE OPTIMIZER BETTER OPTIMIZATION TECHNIQUES AND A NEW APPROACH TO PROVIDING INFORMATION FOR TUNING V8 SQL PROCEDURES WERE NOT ELIGIBLE TO RUN ON THE IBM SYSTEM Z9 INTEGRATED INFORMATION PROCESSOR ZIIP BUT CHANGING TO USE THE NATIVE SQL PROCEDURES ON DB2 V9 MAKES THE WORK ELIGIBLE FOR ZIIP PROCESSING THE PERFORMANCE OF VARYING LENGTH DATA CAN IMPROVE SUBSTANTIALLY IF THERE ARE LARGE NUMBERS OF VARYING LENGTH COLUMNS SEVERAL

IMPROVEMENTS IN DISK ACCESS CAN REDUCE THE TIME FOR SEQUENTIAL DISK ACCESS AND IMPROVE DATA RATES THE KEY DB2 9 FOR Z OS PERFORMANCE IMPROVEMENTS INCLUDE REDUCED CPU TIME IN MANY UTILITIES DEEP SYNERGY WITH IBM SYSTEM Z HARDWARE AND Z OS SOFTWARE IMPROVED PERFORMANCE AND SCALABILITY FOR INSERTS AND LOBS IMPROVED SQL OPTIMIZATION ZIIP PROCESSING FOR REMOTE NATIVE SQL PROCEDURES INDEX COMPRESSION REDUCED CPU TIME FOR DATA WITH VARYING LENGTHS AND BETTER SEQUENTIAL ACCESS VIRTUAL STORAGE USE BELOW THE 2 GB BAR IS ALSO IMPROVED THIS IBM REDBOOKS PUBLICATION PROVIDES AN OVERVIEW OF THE PERFORMANCE IMPACT OF DB2 9 FOR Z OS ESPECIALLY PERFORMANCE SCALABILITY FOR TRANSACTIONS CPU AND ELAPSED TIME FOR QUERIES AND UTILITIES WE DISCUSS THE OVERALL PERFORMANCE AND POSSIBLE IMPACTS WHEN MOVING FROM VERSION TO VERSION WE INCLUDE PERFORMANCE MEASUREMENTS THAT WERE MADE IN THE LABORATORY AND PROVIDE SOME ESTIMATES KEEP IN MIND THAT YOUR RESULTS ARE LIKELY TO VARY AS THE CONDITIONS AND WORK WILL DIFFER IN THIS BOOK WE ASSUME THAT YOU ARE FAMILIAR WITH DB2 V9 SEE DB2 9 FOR Z OS TECHNICAL OVERVIEW SG24 7330 FOR AN INTRODUCTION TO THE NEW FUNCTIONS

IBM S DEFINITIVE DB2 UDB V7 1 APPLICATION DEVELOPMENT REFERENCE AND EXAM STUDY GUIDE FOR THE OS 390 AND Z OS PLATFORMS AN OFFICIAL IBM SELF STUDY GUIDE FOR THE DB2 UDB V7 1 FAMILY APPLICATION DEVELOPMENT EXAM 514 EXPERT DB2 PROGRAMMING TIPS TECHNIQUES AND GUIDELINES FROM APPLICATION DEVELOPMENT EXPERTS COVERS DATA STRUCTURES SQL STORED PROCEDURES PROGRAMMING LANGUAGE ENVIRONMENTS DEBUGGING TUNING AND MORE CD ROM CONTAINS COMPLETE DB2 APPLICATION DEVELOPMENT SAMPLE EXAM THE DEFINITIVE AUTHORITATIVE GUIDE TO DB2 OS 390 APPLICATION DEVELOPMENT CERTIFICATION COVERS DATA STRUCTURES SQL STORED PROCEDURES PROGRAMMING LANGUAGE ENVIRONMENTS DEBUGGING TUNING AND MUCH MORE INCLUDES A FULL SECTION ON OBJECT RELATIONAL PROGRAMMING AND OTHER ADVANCED TECHNIQUES SAMPLE TEST QUESTIONS HELP YOU PREPARE FOR THE IBM DB2 UDB V7 1 FAMILY APPLICATION DEVELOPMENT EXAM 514 ABOUT THE CD THE CD ROM INCLUDED WITH THIS BOOK CONTAINS A COMPLETE DB2 UDB

v7.1 FAMILY APPLICATION DEVELOPMENT EXAM 514 SAMPLE EXAM IBM DB2 UDB VERSION 7.1 FOR OS/390 AND Z/OS DELIVERS UNPARALLELED PERFORMANCE, SCALABILITY AND RELIABILITY IN TODAY'S ENTERPRISE BUSINESS ENVIRONMENTS. NOW THERE'S A COMPLETE AUTHORITATIVE GUIDE TO DEVELOPING APPLICATIONS WITH DB2 UDB V7.1 IN BOTH OS/390 AND Z/OS ENVIRONMENTS AND PREPARING FOR THE IBM DB2 UDB V7.1 FAMILY APPLICATION DEVELOPMENT EXAM 514. THIS COMPREHENSIVE DAY-TO-DAY GUIDE TO DB2 UDB APPLICATION DEVELOPMENT IS ALSO THE ONLY BOOK THAT DELIVERS THE DEPTH OF KNOWLEDGE PROFESSIONALS NEED TO PASS IBM'S CHALLENGING APPLICATION DEVELOPMENT EXAM FOR THE OS/390 AND Z/OS PLATFORMS. IBM GOLD CONSULTANT SUSAN LAWSON PRESENTS HUNDREDS OF USEFUL TIPS, PRACTICAL TECHNIQUES AND EXPERT GUIDELINES FOR EVERY FACET OF DB2 UDB APPLICATION DEVELOPMENT AND EVERY STAGE OF THE DEVELOPMENT PROCESS FOR BOTH OS/390 AND Z/OS PLATFORMS. COVERAGE INCLUDES FOUNDATIONS FOR EFFECTIVE DB2 DEVELOPMENT INCLUDING AN OVERVIEW OF THE DB2 UDB PRODUCT FAMILY AND DB2 FOR OS/390 DATA STRUCTURES, SQL BASIC CONCEPTS AND CODING TECHNIQUES THROUGH ADVANCED OLAP FEATURES, STAR SCHEMAS AND STAR JOINS, STORED PROCEDURES INCLUDING THE SQL PROCEDURE LANGUAGE AND IBM'S STORED PROCEDURE BUILDER, BEST PRACTICES FOR APPLICATION TESTING, DEBUGGING AND PERFORMANCE TUNING, THE FULL RANGE OF DB2 DEVELOPMENT TOOLS INCLUDING ODBC, CLI, JAVA™, COBOL, C, C++, REXX, CAF, CICS AND RRS/AF, OBJECT RELATIONAL PROGRAMMING INCLUDING USER-DEFINED FUNCTIONS, USER-DEFINED DATA TYPES AND TRIGGERS, IN-DEPTH COVERAGE OF LOCKING AND CONCURRENCY, WHETHER YOU'RE DEVELOPING FOR DB2 UDB V7.1 IN AN OS/390 OR Z/OS ENVIRONMENT, MANAGING DB2 UDB V7.1 APPLICATION DEVELOPMENT, PREPARING FOR DB2 UDB V7.1 FAMILY APPLICATION DEVELOPMENT OR ALL THREE DB2 UDB FOR OS/390, VERSION 7.1 APPLICATION CERTIFICATION GUIDE WILL BE YOUR SINGLE MOST VALUABLE RESOURCE. IBM DB2 SERIES

MANY IBM Z/OS CUSTOMERS REQUIRE THEIR APPLICATIONS TO BE AVAILABLE 24x7. WHETHER THE BUSINESS REQUIREMENTS ARE HIGH AVAILABILITY, HA, DISASTER RECOVERY, DR OR BUSINESS CONTINUITY, IBM HYPERSWAP TECHNOLOGY CAN PROVIDE AN ADEQUATE SOLUTION.

HYPERSWAP IS THE INDUSTRY STANDARD AND IS PROVIDED AS SEVERAL DIFFERENT IMPLEMENTATION OPTIONS TO MEET THE VARIOUS BUSINESS NEEDS OF THE IBM SYSTEM Z AND Z OS CUSTOMER BASE IBM COPY SERVICES MANAGER CSM ENABLES YOU TO MANAGE Z OS HYPERSWAP AND HELPS YOU MANAGE PLANNED AND UNPLANNED ACTIONS IN AN Z OS ENVIRONMENT FROM AN OPEN SYSTEMS ENVIRONMENT THIS IBM REDBOOKS PUBLICATION PROVIDES BEST PRACTICES FOR THE PLANNING IMPLEMENTING INTEGRATING AND MANAGING Z OS HYPERSWAP WITH CSM

IBM DB2 13 FOR Z OS DELIVERS A HOST OF MAJOR NEW ADVANCEMENTS FOR USING MAINTAINING AND ADMINISTERING THIS ENTERPRISE CRITICAL DATABASE PLATFORM IN PARALLEL WITH THE DEVELOPMENT OF THE IBM Z16 HARDWARE AND THE Z OS 2.5 OPERATING SYSTEM DB2 13 LEVERAGES THE LATEST TRANSFORMATIVE INNOVATIONS ON THE IBM Z PLATFORM TO IMPROVE DATABASE PERFORMANCE AVAILABILITY SCALABILITY RELIABILITY AND SECURITY THE INTEGRATION OF DATABASE ARTIFICIAL INTELLIGENCE AI TECHNOLOGY IN DB2 13 INCREASES TOO WHICH HELPS YOU SIMPLIFY MANAGEMENT IMPROVE PERFORMANCE AND EASILY EXTRACT ANALYTICAL INSIGHTS FROM YOUR DATA BY USING THE SQL API THIS IBM REDBOOKS PUBLICATION DESCRIBES THE MANY INNOVATIONS IN DB2 13 AND THE COMPANION PRODUCTS THAT COMPRISE THE DB2 FOR Z OS ECOSYSTEM THE CONTENTS OF THIS BOOK WILL HELP APPLICATION DEVELOPERS DATABASE ADMINISTRATORS AND SOLUTION ARCHITECTS UNDERSTAND THE NEWEST CAPABILITIES OF DB2 FOR Z OS AND RELATED TOOLS AND LEARN HOW TO LEVERAGE THEM TO GET THE GREATEST VALUE FROM YOUR DATABASE IN ADDITION MANY DB2 12 ENHANCEMENTS ARE PROVIDED IN THE CONTINUOUS DELIVERY STREAM THIS PUBLICATION CONTAINS APPENDIXES THAT DESCRIBE THE MOST IMPORTANT OF THE MANY NEW FEATURES THAT WERE DELIVERED AFTER THE INITIAL DB2 12 RELEASE

IBM DB2 TOOLS FOR Z OS SUPPORT AND EXPLOIT THE MOST CURRENT VERSIONS OF DB2 FOR Z OS THESE TOOLS ARE INTEGRAL FOR THE ADMINISTRATION OF THE DB2 FOR Z OS ENVIRONMENT AND OPTIMIZATION OF DATA PERFORMANCE DB2 ADMINISTRATION SOLUTION PACK FOR

Z OS V1 1 5697 DAM OFFERS FEATURES FUNCTIONS AND PROCESSES THAT DATABASE ADMINISTRATORS DBAS CAN USE TO MORE EFFECTIVELY AND EFFICIENTLY MANAGE DB2 ENVIRONMENTS DB2 ADMINISTRATION SOLUTION PACK FOR Z OS IS COMPOSED OF THE FOLLOWING TOOLS IBM DB2 ADMINISTRATION TOOL FOR Z OS IBM DB2 OBJECT COMPARISON TOOL FOR Z OS IBM INFOSPHERE OPTIM CONFIGURATION MANAGER FOR DB2 FOR Z OS IBM DB2 TABLE EDITOR FOR Z OS THIS IBM REDBOOKS PUBLICATION SHOWS HOW THE DELIVERED CAPABILITIES CAN HELP DBAS TO MORE EASILY COMPLETE TASKS ASSOCIATED WITH OBJECT MANAGEMENT CHANGE MANAGEMENT APPLICATION MANAGEMENT AND CONFIGURATION MANAGEMENT

OVER THE LAST FEW YEARS IBM IMSTM AND IMS TOOLS HAVE BEEN MODERNIZING THE INTERFACES TO IMS AND THE IMS TOOLS TO BRING THEM MORE IN LINE WITH THE CURRENT INTERFACE DESIGNS AS THE MAINFRAME SOFTWARE PRODUCTS ARE BECOMING MORE INTEGRATED WITH THE WINDOWS AND MOBILE ENVIRONMENTS A COMMON APPROACH TO INTERFACES IS BECOMING MORE RELEVANT THE TRADITIONAL 3270 INTERFACE WITH ISPF AS THE MAIN INTERFACE IS NO LONGER THE ONLY WAY TO DO SOME OF THESE PROCESSES THERE IS ALSO A NEED TO PROVIDE MORE OF A COMMON LOOKING INTERFACE SO THE TOOLS DO NOT HAVE A PRODUCT SPECIFIC INTERFACE THIS ALLOWS MORE CROSS PRODUCT INTEGRATION ECLIPSE AND WEB BASED INTERFACES BEING USED IN A DEVELOPMENT ENVIRONMENT TOOLING USING THOSE ENVIRONMENTS PROVIDES PRODUCTIVITY IMPROVEMENTS IN THAT THE INTERFACES ARE COMMON AND FAMILIAR IMS AND IMS TOOLS DEVELOPERS ARE MAKING USE OF THOSE ENVIRONMENTS TO PROVIDE TOOLING THAT WILL PERFORM SOME OF THE STANDARD DBA FUNCTIONS THIS BOOK WILL TAKE SOME SELECTED PROCESSES AND SHOW HOW THIS NEW TOOLING CAN BE USED THIS WILL PROVIDE SOME PRODUCTIVITY IMPROVEMENTS AND ALSO PROVIDE A MORE FAMILIAR ENVIRONMENT FOR NEW GENERATIONS DBAS SOME OF THE FUNCTIONS NORMALLY DONE BY DBA OR CONSOLE OPERATORS CAN NOW BE DONE IN THIS ECLIPSE BASED ENVIRONMENT BY THE APPLICATION DEVELOPERS THIS MEANS THAT THE NEED TO REQUEST THESE SERVICES FROM OTHERS CAN BE ELIMINATED THIS IBM REDBOOKS PUBLICATION

EXAMINES SPECIFIC IMS DBA PROCESSES AND HIGHLIGHTS THE NEW IMS AND IMS TOOLS FEATURES WHICH SHOW AN ALTERNATIVE WAY TO ACCOMPLISH THOSE PROCESSES EACH CHAPTER HIGHLIGHTS A DIFFERENT AREA OF THE DBA PROCESSES LIKE PSB CREATION STARTING STOPPING A DATABASE IN AN IMS SYSTEM RECOVERING A DATABASE CLONING A SET OF DATABASES

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