

# A Technical Introduction to DB2 UDB for z/OS Version 8

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# Agenda

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- Business Objectives
- Environment
- Shatter the Limits
- Changed or New Function & Features
- Migration



# Introductory Comment

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There are more new lines of code in DB2 V8 than there were lines of code in V1.



# Business Objectives of DB2 V8

- Expand Prior Product Offering's Capability in:
  - e-Business Enablement
  - Efficient Client/Server Offerings
  - ERP Support
- Provide Industry's Best Continuous Availability Features
- Reduce zSeries Specific Skill Requirements
- Enhance DB2 to support the DB2 Family SQL



# Environment

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- DB2 V7 with Fallback SPE
- No Type 1 Indexes
- zSeries or equivalent processor
- Running in 64-bit mode
- z/OS V1R3 or later
- Unicode Conversion Services



# Shatter the Current Limitations

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- Bigger Buffers in Memory
- Utilize Larger Pools
- Capacity for More Concurrent Locks
- Increase Application Availability
- More Partitions
- Long SQL Statement Support



# Shatter the Current Limitations

- Virtual Storage  $2^{31}$  to  $2^{64}$
- Table Name Size 18 to 128
- Column Name Size 18 to 30
- Partitions 254 to 4096
- SQL Statement Length 32KB to 2MB
- Index Key Size 255 to 2000
- Literals 255 to 32704
- Short Strings 255 to 32704



# Shatter the Current Limitations

- Predicates 255 to 32704
- Tables in a Join 15 to 225
- Active Logs 31 to 93
- Archive Logs 1,000 to 10,000
- Qualifiers (schemes) 8 to 128
- Current SQLID char(8) to varchar(8)
- USER char(8) to varchar(8)
- VIEW 18 to 128
- ALIAS 18 to 128





# Changed or New Functions and Features

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- 64-bit Support:
  - 64-bit Exclusivity
  - Buffer Pools
  - EDM Pool
  - Sort Pool
  - Rid Pool
  - Parse Trees
  - Compression Dictionary



# Changed or New Functions and Features

## Reduction of zSeries Specific Skills:

- Compatibility with z/OS & Multiplatform Versions
- Java preferred application development language
- Common Client Features
- DRDA Java Applets
- ODBC & JDBC Enhancements
- Greater than 18 Character Table Names
- SQL Statements Greater than 32K in Length
- Unicode Catalogue
- Visual Explain, Estimator & Installer Enhancements



# Changed or New Functions and Features

- On Line Schema Evolution
  - Significant enhancements to Alter
    - Character columns increase length, change data type
    - Change type for numeric data columns
    - Add column to an index
    - Change the clustering index
    - Add a partition
    - Rotate partitions
    - Alter an index to have true varying length character data



# Changed or New Functions and Features

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- Support for Long Names/Identifiers
  - Remove the current 8 or 18 byte limit
- Support Long Index Keys
- Support Varying Length Index Keys
- Dependent upon Unicode Conversion Services



# Changed or New Functions and Features

- Changes to the Catalogue
  - Alter the length of many columns
  - Alter indexes to be true varying length
  - Convert most of the catalogue tablespaces to Unicode
- Changes to SQL Statements
  - Parsing in Unicode
  - 2 MB statement size
  - DBRM is Unicode
  - Additional parameter into the pre-compiler



# Changed or New Functions and Features

- Multi-Row Fetch & Insert
  - Array processing
  - One SQL statement affects many rows
- Get Diagnostics
  - Last SQL statement's diagnostic information
    - Number of rows affected
    - SQL code per row
  - Connection type information
    - Product-id
    - Authorization-id



# Changed or New Functions and Features

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- Sequences
- 4096 Partitions for a Single Table
- Materialized Query Tables
- INSERT within SELECT Statement
- Data Partitioned Secondary Indexes
- Indexable on Unlike Data Types
- Additional Built-in Functions
  - Including hyperbolic functions!



# Changed or New Functions and Features

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- Multiple DISTINCT
- Backward Index Scan
- User-defined Functions -- usability & performance
- Parallel Sort
- System Level Point-in-Time Recovery
  - requires z/OS 1.5
- Coupling facility improvements
  - requires z/OS 1.4



# Changed or New Functions and Features

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- On-line REORG Enhancements
- Improved LPL Recovery
- Dynamic Scrollable Cursors
- Enhance the performance of Triggers
- Improve the usability of Data Sharing
- Improve DRDA's performance
- Variable CI size
- Multilevel security with row level granularity
  - requires z/OS 1.5 and Security Server (RACF)



# Migration

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- Pre-Migration Activities
  - DB2 V7
    - No Type 1 Indexes
    - Install fallback SPE
  - zSeries or equivalent processor
  - z/OS V1R3 or later
  - Running in 64-bit mode
  - Unicode Conversion Services



# Migration (continued)

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- Migration to Compatibility Mode
  - Install the base DB2 V8 product
  - Invoke the catalogue maintenance process
    - Performs some “minor” changes to the catalogue
    - Transitions the catalogue for major changes



# Migration (continued)

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- Compatibility Mode (transitional activity)
  - EBCDIC Catalogue
  - Coexist with DB2 V7
  - Can fall back to V7
  - V8 new function forbidden



# Migration (continued)

- Enabling New Function Mode (ENFM)
  - A period of conversions
  - One Catalogue Tablespace at a time
  - Catalogue from EBCDIC to Unicode
  - Many catalogue columns increasing in length
  - At any point in time during this mode
    - a given catalogue might be EBCDIC or Unicode
    - a given catalogue column might be old or new length
  - Cannot coexist with DB2 V7
  - Cannot fall back to V7
  - Most V8 new function forbidden

# Migration (continued)

- New Function Mode (NFM)
  - The conversions are complete
  - Catalogue is Unicode
  - Cannot coexist with DB2 V7
  - Cannot fall back to V7
  - All V8 new functionality is allowed
  
- A new DB2 V8 subsystem starts in NFM



# Summary

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## DB2 UDB for z/OS Version 8

- Became GA on March 26, 2004
- Large and complex release
- Lots of new functions and features
- Significant migration process



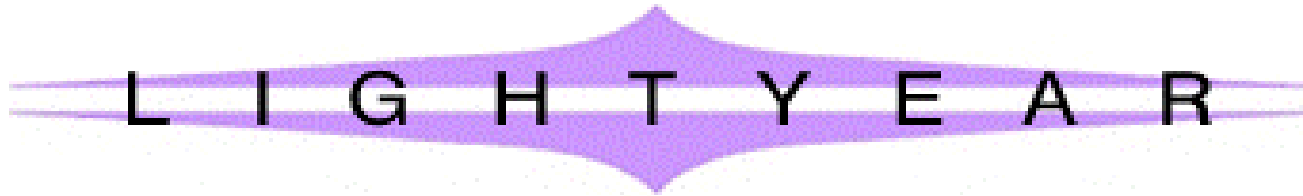
# Next Steps with DB2 V8 and Lightyear

1. We will soon be announcing a series of DB2 V8 workshops - watch our website for details
2. We will be looking for companies to host these **FREE** workshops - watch our website for details
3. Need a presentation at your local DB2 User Group? We'll be happy to participate.
4. Let us know what else we can do to help in your migration to DB2 V8





# Services available from:



Palo Alto - Austin - Calgary - Laguna Beach

Scottsdale - Chicago - St. Louis - Boston

[www.lightyr.com](http://www.lightyr.com)



- Database migration to *DB2*
- *VS/2* and *DL/2* software sales and related services (*sole North American distributor*)
- *CICS*, *DB2*, *IMS*, & *z/OS* software and tools, sales and upgrades
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- *CICS* & *IMS* Web enabling design and implementation
- Database and online system performance analysis and tuning



# Questions ...

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