DB2 for Linux on z Systems
Central Ohio DB2 User Group (CODUG)

Troy Coleman, DB2 Advisor z/OS
Author of Deck: Bernie Schiefer, IBM Fellow Analytics Platform Development

May 13, 2016
Safe Harbor Statement

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History of DB2 for Linux for z Systems

- In 2000, DB2 7.1 was one of the first software programs certified for use on Linux for System Z
- Ever since the IBM DB2 and Linux for System Z teams work together
- Quality, reliability, and performance proven by hundreds of customers
- In 2013 IBM delivered DB2 10.5 for Linux on System Z
- In Q3 2014 DB2 10.5 FP4 was delivered
- In December 2014, DB2 BLU Acceleration became available
- In Q4 2015 DB2 Early Access Program includes Linux on System z
- In December 2015, DB2 10.5 FP7 became available
- In June 2016, DB2 11.1 will become available
Designed for continuity and scalability, the solution provided the foundation Mizuho needed for its Linux environment to develop and deploy new services faster and more reliably.

IBM z Systems technology provides the scalability and stability Mizuho needs to run an active-active system for its Linux environment at half the cost and deliver business continuity for its customers.

Mizuho updated online and mobile applications, keeping user satisfaction high and expanding its online presence by gaining scalability and sustainability.

**Solution components**

**Systems**
- IBM z Systems™ running Linux®
- IBM zEnterprise® EC12
- SUSE Linux Enterprise Server for System z

**Software**
- IBM DB2® for Linux
- IBM DB2® High-Availability Disaster Recovery
- IBM InfoSphere® Data Replication (Q Replication)

“We now deliver innovative financial services and avoid, or instantly recover from, system failures, promoting business continuity and increasing customer satisfaction,”

says Masahiko Kato, division head of IT and system general division 1 at Mizuho.
Choose from 2 Linux for z System Distributions

- IBM is committed to open standards Linux
- DB2 is optimized to run on current SuSE and Red Hat Linux distributions
- Interested in Ubuntu? Let me know.

- Required levels (or later) for DB2 vNext
  - SLES 12
  - RHEL 7.1
DB2 LUW: One Database Platform for All Business Applications

Advanced Application Functionality
- NoSQL
- Spatial
- Analytics
- Hadoop Extensibility
- MongoDB API
- Industry Standard API’s

Advanced Data Functionality
- Oracle Compatibility
- JSON/Graph Store
- Workload Management
- Continual Data Ingest/Access
- Temporal Data
- In Memory BLU Acceleration
- Autonomic Management
- Intelligent Compression
- Pure XML
- Fine grained Security

Enterprise Data Platform for all Business Applications
- Massive scale / 24x7 OLTP Platform
- Multi-tenant Enterprise Platform
- Active / Active 24x7 Massive Data Scale Warehouse

Deployment Options
- Customer Infrastructure Optimised Deployment
- Available for Linux on z Systems

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DB2 for Linux on z Systems

- **DB2 LUW for Linux on z Systems is**
  - “Just” DB2 for LUW
  - 99.9%+ the same code
  - 99.9%+ the same look/feel
  - 99.9%+ the same skills

- **DB2 LUW for Linux on z Systems has the same 98%+ Oracle Compatibility**
  - PL/SQL
  - Datatypes

- **DB2 LUW is not identical to DB2 for z/OS, but**
  - Common client infrastructure
    - SparkSQL DataFrame API
    - JCC/ODBC/CLI
    - Perl/PHP/Python/Ruby …
  - Optim database tooling (Data Server Manager etc.)
  - Exceptionally similar DDL/DML/DCL
z13 Continues the Mainframe Heritage

- 1997 G4: 300MHz
- 1998 G5: 420MHz
- 1999 G6: 550MHz
- 2000 z900: 770MHz
- 2003 z990: 1.2GHz
- 2005 z9 EC: 1.7GHz
- 2008 z10 EC: 4.4GHz
- 2010 z196: 4.4GHz
- 2012 zEC12: 5.2GHz
- 2015 z13: 5.0GHz
- 2012 zEC12: 5.5GHz

MHz:
- 0
- 1000
- 2000
- 3000
- 4000
- 5000
- 6000
IBM z Systems
Designed for digital business

Technology currency and new workload expansion

IBM LinuxONE™
Linux unleashed

New clients and new footprints

z/OS  z/VM  z/VSE  z/TPF  Linux
IBM LinuxONE Announcements: August 2015

IBM LinuxONE Systems

- IBM LinuxONE Emperor™
- IBM LinuxONE Rockhopper™

IBM LinuxONE Solutions

- Mobile
- Analytics
- Cloud
- DevOps

Open Source & ISV Ecosystem

- Distributions
- Hypervisors
- Languages
- Runtimes
- Management
- Database
- Analytics

Supported Versions
- Ubuntu
- KVM
- Ruby
- Node.js
- Chef
- MariaDB
- Docker
- PostgreSQL
- Spark
- SUSE
- Red Hat
- LPAR
- Ruby
- Juju
- Puppet
- MongoDB
- Scala
- Clojure
- ZFS
- OpenStack
- Cassandra
- Erlang
- Java
- OpenJDK
- Vsphere
- Java
- Cloud Manager
- Objective-C
- Ruby
- MySQL
- DB2

IBM LinuxONE Community Cloud

- Open Mainframe Project
- Open Source Contribution

IBM LinuxONE Elastic Pricing
## IBM LinuxONE Rockhopper, Emperor

### Key Client Value Proposition

<table>
<thead>
<tr>
<th>Rockhopper</th>
<th>Emperor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L10, L20</strong></td>
<td><strong>L30, L63, L96, LC9, LE1</strong></td>
</tr>
</tbody>
</table>

**Rockhopper**
- Expands the entry points into the LinuxONE family through new innovations, new partnerships, and a growing ecosystem
- Optimized with enterprise-grade Linux for open source software, enhanced scalability, with business continuity to support cloud
- Resiliency analytics recognizes patterns and prevents outages
- Transformed economics with new elastic pricing usage-based consumption model and investment protection

<table>
<thead>
<tr>
<th>Machine Type 2965</th>
<th>Machine Type 2964</th>
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**Emperor**
- Enterprise-class performance, scale, security, and availability
- Enables customers to run a wide ecosystem of Linux applications on an architecture with a set of unmatched attributes, technologies, design practices, and capabilities
- Resiliency analytics recognizes patterns and prevents outages
- Transformed economics with new elastic pricing usage-based consumption model and investment protection

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
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<tbody>
<tr>
<td><strong>Single frame</strong></td>
</tr>
<tr>
<td>Up to 20 LinuxONE cores</td>
</tr>
<tr>
<td>Processor speed 4.3GHz, SMT2</td>
</tr>
<tr>
<td>40 Logical Partitions (LPARs)</td>
</tr>
<tr>
<td>Up to 4TB total system memory</td>
</tr>
<tr>
<td>RAIM memory design</td>
</tr>
<tr>
<td>Up to 256 Power PC cores in I/O subsystem</td>
</tr>
<tr>
<td>Up to 16 PCIe Gen3 Fanouts @ 16 GBps each</td>
</tr>
<tr>
<td>3 Logical Channel Subsystems (LCSSs)</td>
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<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dual frame</strong></td>
</tr>
<tr>
<td>Up to 141 LinuxONE cores</td>
</tr>
<tr>
<td>2 spare processors + Up to 24 SAPs</td>
</tr>
<tr>
<td>Processor speed 5.0GHz, SMT2</td>
</tr>
<tr>
<td>85 Logical Partitions (LPARs)</td>
</tr>
<tr>
<td>Up to 10TB total system memory</td>
</tr>
<tr>
<td>RAIM memory design</td>
</tr>
<tr>
<td>Up to 640 Power PC cores in I/O subsystem</td>
</tr>
<tr>
<td>Up to 40 PCIe Gen3 Fanouts @ 16 GBps each</td>
</tr>
<tr>
<td>6 Logical Channel Subsystems (LCSSs)</td>
</tr>
</tbody>
</table>
IBM DB2 with BLU Acceleration for Linux on z Systems

What is BLU Acceleration

1. Next generation database
   - Super fast (query performance)
   - Super simple (load-and-go)
   - Super small (storage savings)

2. Seamlessly integrated
   - Built seamlessly into DB2
   - Consistent SQL, language interfaces, administration
   - Dramatic simplification

3. Hardware optimized
   - Memory optimized
   - CPU-optimized
   - I/O optimized
What is DB2 with BLU Acceleration?

- **State-of-art technology for analytic queries in DB2 LUW**
  - Column-Organized Database
    - Data processed based on column instead of traditional row
    - Smaller Data and Faster Processing
  - Dynamic In-Memory Processing
    - Scan, locate and Cache data in memory even if data exceeds memory
  - Parallel Vector Processing
    - Provide multi-core and multiple data parallelism over different processors
  - Actionable Compression
    - Data being processed remains compressed (no need to uncompressed)
    - Deep, massive Compression
  - Data Skipping
    - Skip over the irrelevant data to access only necessary information
  - Easy to use
    - Load and Go – Data is ready for query in record time
    - No significant tuning – `db2set DB2_WORKLOAD=ANALYTICS`
Business challenge
Growing fast, Brazilian credit union system Sicoob must cope with extra transactions at short notice. How could it combat the increased IT complexity that resulted without impacting service quality?

Transformation
Selecting IBM® z Systems™ as its strategic platform, Sicoob migrated and consolidated member databases to IBM DB2® LUW with BLU Acceleration® running in a Linux environment on the mainframe.

Business benefits:

Supports business growth at a larger scale to respond to market changes
Up to 20x faster analytics leads to real-time actions
35% database compression reduces storage costs

Sicoob
Unleashing new growth and operational efficiency with an infrastructure transformation

“IBM solutions help us to ensure consistently excellent service across all of our channels.”
Gustavo Malu Agular 
Leader of Information Technology
Sicoob

Credit Unions System for Brazil (Sicoob) is the largest credit union system in Brazil, offering banking and credit services to more than 2.5 million people. Sicoob’s customers are also its owners, so the financial returns benefit their communities rather than enriching shareholders.
Create

• Single parameter to configure entire database for BLU:
  
  `db2set DB2_WORKLOAD=ANALYTICS`

• Create the database, table spaces, bufferpools, and tables
  • Tip: Useful to define “mem_percent”

  `db2 "create database mydb autoconfigure using
  mem_percent 95 apply db and dbm"
  db2 "create table mytable (c1 integer not null, ...)"

Load your data

• Same as before - no new syntax!

  `db2 "load from file.dat of del replace into mytable"

Go!

• Begin running your workload

  `db2 "select SUM(SALES) from mytable where
  PURCHASEDATE > '20140101' group by CITY"`
DB2 BLU on Performance Test (from 2015)

- **Workload Used:** 2TB POPS database

- **System Used for Evaluation:**
  - zEC12 and z13
    - Dedicated LPAR with 36 IFLs with 192GB RAM
    - SLES 11 SP3
  - System z DASD
    - 120 X 146GB 15K RPM, RAID-5 with 16 X 8GB FC
    - 184GB sized LUNs with 4.7TB total storage

- **Software Details:**
  - DB2 10.1 FP1 and DB2 10.5 FP5 (initial GA of DB2 BLU for zLinux)
  - Key database configuration details
    - Bufferpool: 122GB
    - Shared sort heap threshold: 76GB
    - Sort heap: 15GB
    - Default degree of parallelism: ANY
The POPS Workload

- **POPS = Proof of Performance and Scalability**
  - Derived from a Red Brick benchmark
  - Good representation of a “double star” schema data mart
  - 36 queries including fact-to-fact table joins

- **Schema with row counts:**

- In this performance study we used a 1000-day scale representing approximately 2TB of raw input data
BLU Performance Scales Well With Increased CPU Counts

- Measured on zEC12 with 36 IFLs, 192GB RAM, DS8800 DASD
High Level Summary of Improvement

Baseline: DB2 10.1 on zEC12

DB2 10.1 Row-organized

DB2 10.5 on z13

DB2 10.5 BLU Column-organized

38.9x

34.5x

1.11x

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Detailed Results - DB2 10.1 vs DB2 10.5 (BLU)

- DB2 10.5 with BLU Acceleration (column-organized) is \textbf{34-38x} faster than DB2 10.1 (row-organized) for the same workload/database

<table>
<thead>
<tr>
<th></th>
<th>Average workload elapsed time</th>
<th>BLU Acceleration benefit</th>
<th>z13 uplift</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 10.1 row-organized</td>
<td>6589.97s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB2 10.5 column-organized - zEC12</td>
<td>190.92s</td>
<td>34.5x</td>
<td></td>
</tr>
<tr>
<td>DB2 10.5 column-organized - z13</td>
<td>169.57s</td>
<td></td>
<td>11.2%</td>
</tr>
</tbody>
</table>

- The systems were configured identically and had identical optimizer plans for all queries.

- Average system resource utilization (as reported by nmon)

<table>
<thead>
<tr>
<th></th>
<th>zEC12</th>
<th>z13</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Row</td>
<td>Columnar</td>
</tr>
<tr>
<td>user</td>
<td>15.6%</td>
<td>97.4%</td>
</tr>
<tr>
<td>system</td>
<td>0.9%</td>
<td>0</td>
</tr>
<tr>
<td>wait</td>
<td>22.4%</td>
<td>0</td>
</tr>
</tbody>
</table>
Database Size Comparison

- Column-organized database created with BLU Acceleration is **4.7x smaller** than the same row-organized database

- BLU offers significant storage savings with improved compression and no requirement for secondary indexes

<table>
<thead>
<tr>
<th></th>
<th>Column-organized (BLU) database</th>
<th>Row-organized (static compression) database</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw data size</td>
<td>2000GB</td>
<td>2000GB</td>
</tr>
<tr>
<td>Compressed table size</td>
<td>400GB</td>
<td>1103GB</td>
</tr>
<tr>
<td>Primary index size</td>
<td>0.2GB</td>
<td>258GB</td>
</tr>
<tr>
<td>Secondary index size</td>
<td>N/A</td>
<td>527GB</td>
</tr>
<tr>
<td><strong>Total database size</strong></td>
<td><strong>401GB</strong></td>
<td><strong>1888GB</strong></td>
</tr>
</tbody>
</table>

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# BLU Database Is Query-Ready Faster Than Ever Before

## Load Comparison (in minutes) -- Daily_Forecast Table

<table>
<thead>
<tr>
<th></th>
<th>DB2 10.1</th>
<th>DB2 10.5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Row-organized</td>
<td>Column-organized</td>
</tr>
<tr>
<td><strong>Total load time</strong></td>
<td>23.13</td>
<td>17.23</td>
</tr>
<tr>
<td><strong>Setup phase</strong></td>
<td>0.83</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>Analyze phase</strong></td>
<td>N/A</td>
<td>2.50</td>
</tr>
<tr>
<td><strong>Load phase</strong></td>
<td>10.02</td>
<td>14.63</td>
</tr>
<tr>
<td><strong>Build phase</strong></td>
<td>12.28</td>
<td>0.07</td>
</tr>
<tr>
<td><strong>Collecting statistics</strong></td>
<td>15.88</td>
<td>17.28</td>
</tr>
<tr>
<td><strong>Build time for additional indexes</strong></td>
<td>15.60</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Total time for table to be query-ready</strong></td>
<td>54.61 minutes</td>
<td>34.51 minutes</td>
</tr>
<tr>
<td><strong>Loaded, compressed size</strong></td>
<td>31.5GB</td>
<td>9.3GB</td>
</tr>
</tbody>
</table>

3.4x smaller and loaded 1.58 times faster!
**BLU Database Is Query-Ready Faster Than Ever Before**

<table>
<thead>
<tr>
<th>Load Comparison (in minutes) -- Daily_Sales Table</th>
<th>DB2 10.1 Row-organized</th>
<th>DB2 10.5 Column-organized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total load time</td>
<td>1185.32</td>
<td>461.97</td>
</tr>
<tr>
<td>Setup phase</td>
<td>0.02</td>
<td>0.03</td>
</tr>
<tr>
<td>Analyze phase</td>
<td>N/A</td>
<td>7.83</td>
</tr>
<tr>
<td>Load phase</td>
<td>441.57</td>
<td>453.87</td>
</tr>
<tr>
<td>Build phase</td>
<td>743.73</td>
<td>0.23</td>
</tr>
<tr>
<td>Collecting statistics</td>
<td>332.80</td>
<td>173.15</td>
</tr>
<tr>
<td>Build time for additional indexes</td>
<td>1267.00</td>
<td>N/A</td>
</tr>
<tr>
<td>Total time for table to be query-ready</td>
<td>2785.12 minutes</td>
<td>635.12 minutes</td>
</tr>
<tr>
<td>Loaded, compressed size</td>
<td>1071.6GB</td>
<td>391.7GB</td>
</tr>
</tbody>
</table>

*2.7x smaller and loaded 4.4 times faster!*
DB2 Version 11.1 Highlights (GA: June, 2016)

Core Mission Critical Workloads: Extending DB2 Leadership

Comprehensive Enterprise Security
- Enterprise Encryption
  - Centralized Key Managers (KMIP)

Availability 2nd only to DB2 for zOS
- Simple Fast Deployment
  - Up and running in hours
- Even Greater Availability
  - Zero data loss DR with HADR
  - More online management
- More Platforms Supported
  - Power Linux (LE)
  - Virtualization for RDMA (x86)

Significant Core Database Advances
- Very Large Database Performance
  - Higher user throughput
- Simpler, Faster, More Online Upgrades
  - Faster, no need for offline backup
  - Streamlined HADR upgrade
  - DB2 Version 9.7 direct to 11.1

Warehousing Workloads: Most Consumable, Most Scalable In-Memory Warehousing Platform

Massive Scale Warehousing at In-Memory Performance
- MPP BLU Scalability
  - PB scale in-memory warehousing

Next Gen In-Memory Performance, Function & Workloads
- Faster ELT/ETL performance
- More Query Workloads Optimised
- More Function supported
  - Generated Columns
  - RCAC
  - OLAP + BLU Perf

Enhanced Compatibility
- Multi-Lingual SQL Advances
  - Postgres SQL Support for European Languages
  - Codepage 819
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Comprehensive Enterprise Security

Availability 2nd only to DB2 for zOS

DB2 Version 11.1 Highlights (GA: June, 2016)
Encryption and Enterprise Key Management

- **V11.1 adds support for KMIP 1.1 compliant centralized key managers**
  - Initially validated on IBM Security Key Lifecycle Manager (ISKLM)
  - Example configuration changes

### Local Keystore
- update dbm cfg using keystore_type pkcs12
- update dbm cfg using keystore_location /home/thomas/keystores/localkeystore.p12

### Centralized KMIP Key Manager
- update dbm cfg using keystore_type **kmip**
- update dbm cfg using keystore_location /home/thomas/keystores/isklm.cfg

**Indicates KMIP protocol will be used to interact with key manager**

**Location of configuration file containing host, port and other details of centralized key manager**
Streamlined Upgrade Process

- **Upgrade directly from Version 9.7, 10.1 and 10.5 (3 releases back)**
- **Ability to roll-forward through database version upgrades**
  - Users are no longer required to perform an offline backup of existing databases before or after they upgrade
  - A recovery procedure involving roll-forward through database upgrade now exists
  - Applies to all editions and configurations except Database Partitioning Feature (DPF)
  - Pre-req: must start from DB2 Version 10.5 Fix Pack 7, or later
- **HADR environments can now be upgraded without the need to re-initialize the standby database after performing an upgrade on the primary database**
  - Applies to all editions except pureScale
  - Pre-req: must start from DB2 Version 10.5 Fix Pack 7, or later
UPGRADE without Offline Backup

- No more need to take an offline backup to ensure recoverability across upgrade!

- Example scenario:

Recovery Procedure Overview:

1. Re-install V10.5 FP7 (or higher)
2. Restore online backup (A)
3. Rollforward to a desired point-in-time just before the Error
   - Receive SQL2463N or SQL2464N indicating the start of upgrade
4. Re-install V11
5. Continue Rollforward
DB2 Version 11.1 Highlights (GA: June, 2016)

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  - Centralized Key Managers (KMIP)

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New SQL and DB2 BLU Enhancements

- Extended SQL Support
- Additional Netezza, Oracle & Postgres Compatibility Support
- Massively Parallel Processing (MPP)
- Performance Improvements
- Security Enhancements (RCAC)
- SQL functions optimized for BLU
Tuned for Linux on z13 Mainframe Systems

POPS Workload 2TB w/32 IFLs & 192GB RAM

DB V11.1 uses an optimizing IBM XL Compiler

29.7x faster

Baseline: DB2 10.1 on zEC12

16.7x faster

DB2 11 beta on z13 SMT2

18% faster

DB2 10.5 on z13 SMT2

24.3x faster

DB2 10.5 on z13 SMT1

24% faster

DB2 10.5 on zEC12

9% faster

44% faster

DB2 Row-organized

DB2 BLU Column-organized

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.
Optimized SQL Support for Columnar Tables

- SQL OLAP improvements for deeper in-database analytics with column-organized tables
- Additional Oracle Compatibility Support
  - Wide rows
  - Logical character support (CODEUNITS32)
- DGTT support (except not logged on rollback preserve rows)
  - Parallel insert into not-logged DGTT from BLU source
- IDENTITY and EXPRESSION generated columns
- European Language support (Codepage 819)
- NOT LOGGED INITIALLY support
- Row and Column Access Control (RCAC)
- ROWID Support
- Faster SQL MERGE processing
- Nested Loop Join Support
Columnar Engine Native Sort + OLAP Support

- Access Plan Difference with Native Evaluator support
Summary of DB2 for Linux on z Systems

- **DB2 LUW is a mature full function product**
  - Many years of development/testing/deployment
  - Nearly every capability is available on zLinux

- **DB2 LUW is high performance**
  - Regular testing on latest System hardware (OLTP and BI)

- **DB2 10.5 is production ready and available on zLinux**
  - DB2 10.5 FP7 is available and production ready
    - Including BLU Acceleration

- **DB2 BLU run’s extremely well on z13 / LinuxONE**
  - Fast, Small, Simple

- **DB2 11.1 Announce GA June 2016**
  - Most significant “uplift” in core DB2 binary for z Systems in many years
  - Extend DB2 Leadership Core Mission Critical Workloads
  - Massive Scale Warehouse at In-Memory Performance
The DB2Night Show #177: Sneak Peek Overview of What's New in DB2 LUW V11.1
April 16, 2016, 10:36 pm
Posted by scott in DB2 LUW
Rating: 05 Votes: 3

What's New in DB2 LUW V11.1 - Overview

Special Guests:
Matt Huras,
Chief Architect DB2 LUW
Berni Schiefer,
IBM Fellow

97% of our audience learned something! A new version of DB2 LUW is born! V11.1 will be generally available mid-June 2016. Almost 75% of our HUGE live studio audience indicated that they were very excited about the new features and capabilities becoming available in V11. V11 includes many enhancements for BLU, Analytics, OLTP, pureScale, security, SQL, and more! Please learn from, and enjoy, the replay...

Show Host Scott Hayes Commentary

Matt and Berni really don't need an introduction - most everyone knows them from IDUG or IBM conferences. I really enjoyed hosting them as our guests because you can hear their enthusiasm and excitement in their voices. No doubt, they, and the rest of their LUW team members, have a lot to be proud of in this new version. Personally, I'm thrilled that BLU Column Organized Tables can now be used with DB2 EEE, or MPP (MPP is the current favorite IBM acronym) multi-partitioned databases. It would have been nice if this capability was offered in V10.5, but I gather this markedly improved performance capability is deserving of a new version number.

Matt and Berni would like to clarify the announcement for end of DB2 9.7 and 10.1 support. Support for 9.7 and 10.1 will end on September of 2017, not on 2018 as previously tweeted by some in our DB2 community. Whoops! Okay everyone, hurry up, you've got 15 months! You'll also be happy to learn that there is an upgrade path directly from 9.7 to 11.1.

The goal of this V11.1 Overview show was to paint the big picture of "What's New." We have upcoming shows that take deeper dives into the details of V11.1 new features and functions. Make sure you sign up for those shows! Do it now! The links are right here...

Upcoming Shows - Deep Dives on V11.1 New Features

- 29 April - Guests John Hornbrook and David Kallmuk, IBM Canada
Part 2 - V11.1 Deep Focus on BLU and Analytics
REGISTER NOW

- 13 May - Guests Steve Rees and Karl Romanufa, IBM Canada
Part 3 - V11.1 Deep Focus on OLTP and pureScale
REGISTER NOW

http://www.dbisoftware.com/blog/db2nightshow.php?id=680
Questions?
Thank You