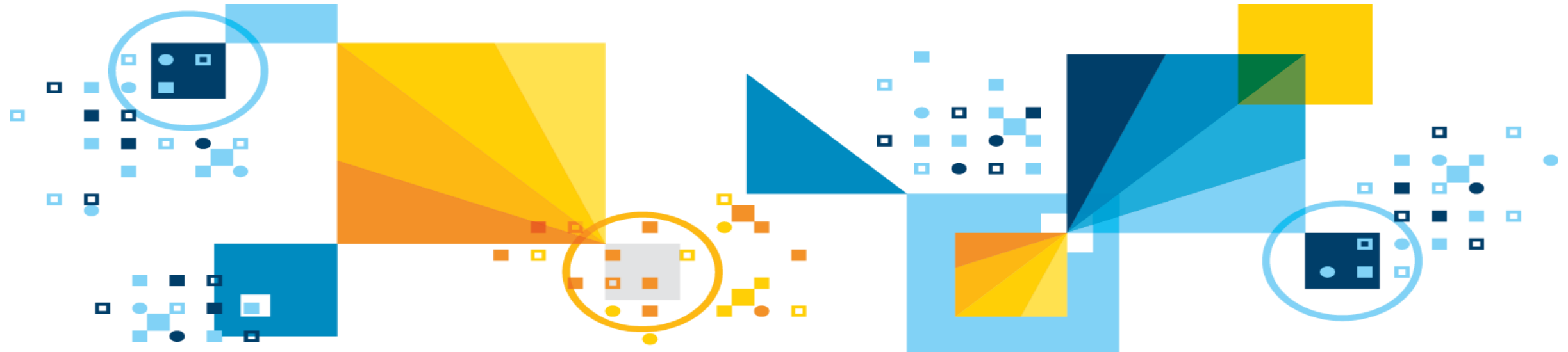


April, 2019

Db2 for z/OS Latest News and Future Directions

Jeff Josten

Distinguished Engineer, Db2 for z/OS Development



Please Note



- IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion.
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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.

Db2 for z/OS Strategy

Db2 for z/OS is investing for leadership in the AI, cloud, and analytics era, extending our Z platform heritage of 24x7 availability, security, scalability and performance, and simplifying and modernizing to maintain Db2 as a top choice for next-gen IT professionals without requiring deep Z skills



AI, ML, Advanced Analytics

*Make Db2 data simple for AI and Analytics.
Embed AI to make Db2 smarter.*

- Db2ZAI
- IDAA integration, HTAP
- Expanded OLAP



Modern Application Development

*Simplification & modernization for
application development*

- Developer experience
- DB2aaS, cloud provisioning
- DevOps, online schema
- Enhanced REST services
- SQL improvements

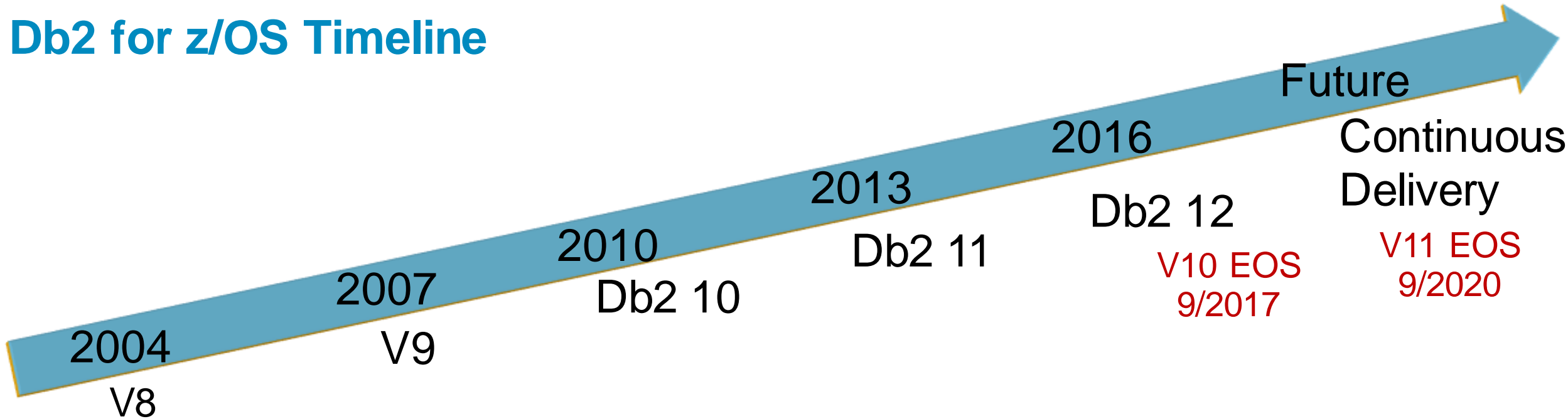


DBMS Technology Leadership

*Leadership in resiliency, availability, security, performance, scalability.
Make the system easier to manage.*

- Z platform optimization
- Admin Simplification
- Online catalog migration
- Enhanced Compression
- In-memory, performance

Db2 for z/OS Timeline



Db2 12 GA October, 2016

Db2 12 adoption rate about the same as V11

Quality metrics, continuous improvement: V12 better than V11 which is better than V10



Db2 12 for z/OS Highlights

Redefining enterprise IT for digital business and the mobile app economy

Scale and speed for the next era of mobile applications

Insert algorithm 2 for fast unclustered inserts

UTS PBR RPN for larger, more flexible partitioned tables

DRDA Fast Load for easier loading of data from distributed clients

Larger active log size



In-Memory database

FTBs for advanced in-memory technology for faster transactions consuming less CPU

Deliver analytical insights faster, expand to more applications

2-10x improvement for modern analytics workloads*

SQL improvements such as SQL pagination, enhanced MERGE, piece-wise DELETE

Native REST services

Easier to manage, higher availability

Db2aaS APIs and automation for self-service provisioning of resources

Automated admin operations such as RUNSTATS

ALTER ADD PART to the middle and more schema and partition flexibility

TRANSFER OWNERSHIP for easier security admin

Dynamic SQL plan stability



The launch pad for Continuous Delivery

* Modern analytics queries evaluated include SQL constructs such as UNION ALL, outer joins, complex expressions (CASE, CAST, scalar functions etc)

Goals: faster delivery, easier to consume for customers

- Quality, stability is priority #1
- Function levels (FLs) are the mechanism to activate new features on V12
 - System level and application level controls
 - FL 500 is base V12 “NFM”. FLs 501, 502, ... beyond that

FL 501 – 1st post-GA delivery

- LISTAGG

FL 502 – April, 2018. APAR PI95511

- Transparent Dataset Encryption: Db2 DBA controls
- Casting numeric to GRAPHIC/VARGRAPHIC

FL 503 – Sept, 2018. APAR PH00506

- Db2 AI for z/OS (Db2ZAI)
- Migration support on DATA CHANGE OPERATION for temporal auditing
- Enablement for replication of system-period temporal tables and generated expression columns

FL 504 – Mar, 2019. APAR PH07672

- Huffman data compression
- New SQL syntax alternatives
- Prevent new deprecated objects
- Passthru of Built-In Functions (OLAP and REGEX) to IDAA

Many other features delivered in this timeframe (v11 & v12) that were not tied to a Function Level

IBM Db2

AI Makes Db2 **Better, Smarter, Faster**

IBM Db2 AI for z/OS

#Db2ZAI

IBM



What is IBM Db2 AI for z/OS (Db2ZAI)?

Db2ZAI V1.1 was introduced in Sept. '18 to empower the Db2 for z/OS optimizer to improve query access paths based on your workload characteristics using machine learning

Learns the patterns from the collected data from workloads in customer's unique operating environment and make better predictions about the optimal access paths for SQL statements

Built on top of the Watson Machine Learning for z/OS (WMLz) stack

- Leveraging all the services without requiring data scientist support
- Db2 generates the training data, deploys and monitors/retrains models with WMLz
- Up to 25% CPU reduction for queries

More info: www.ibm.com/ca-en/marketplace/db2-ai-for-zos



Problem

Db2 produces over 1200 statistics counters, requiring deep technical skills to understand. A Db2 system programmer or a performance analyst often does not have the time or expertise to fully utilize the metrics to tune the Db2 systems or identify early symptoms of performance issues.



Hill

A Db2 system programmer can validate performance impact and understand possible corrective actions from Db2 application changes, maintenance, or system upgrades without needing significant Z expertise or going through numerous performance metrics.

Db2 for z/OS and IBM z14 Hardware Synergy

DBMS Technology Leadership



- Db2 for z/OS is differentiated in the marketplace through hw/sw integration
- z14 includes several new hardware features which benefit Db2 workloads
- Integration points for Db2:
 - Crypto hw acceleration for faster transparent data encryption
 - zHyperLinks for ultra-fast Db2 log write I/O and database read I/O
 - New hardware for improved data compression for Db2 tables
 - More large memory – up to 32TB single server
 - IDAA on IBM Z

Db2 for z/OS News from the Lab blog

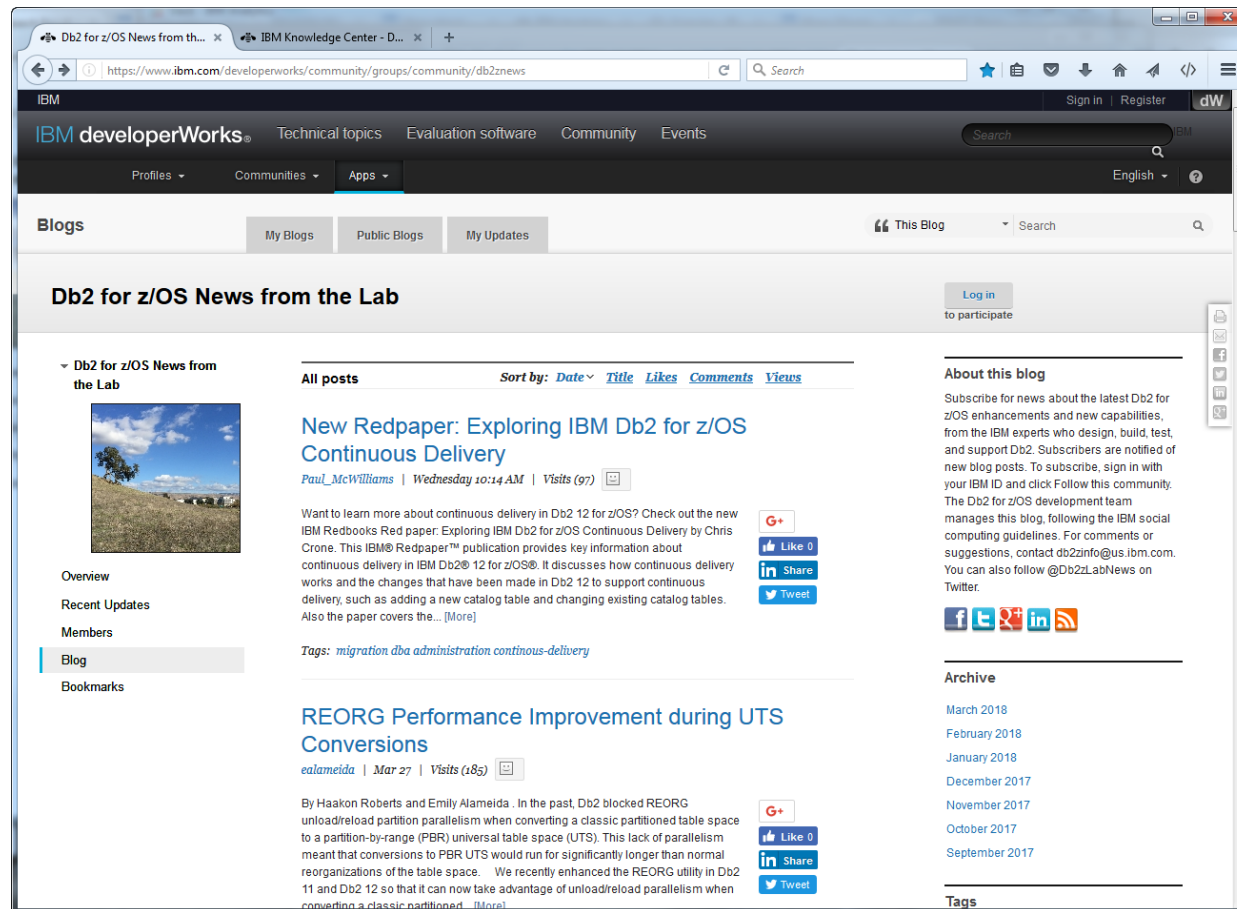
<http://ibm.biz/db2znews>

Get the latest news from the IBMers who design and build Db2!

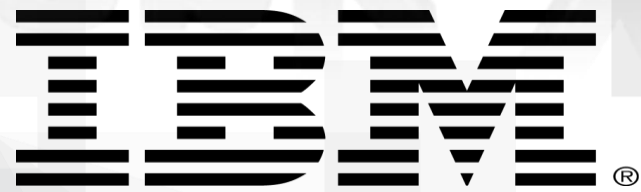
- New capabilities in Db2 12 for z/OS continuous delivery
- Enhancements in Db2 11 for z/OS
- Helpful tips and best practices from Db2 for z/OS development

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