



IBM Software Group

DB2 9 for z/OS V9 migration status update

DB2 Information Management Software



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DB2 for z/OS L2 Performance



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- Bottom line, if it is wrong it is not my fault 😊

Introduction

- Who is migrating ?
- What to expect ?
- V10 skip level migration
- Migration experiences
- Questions and answers

DB2 9 for z/OS climbing sharply

- Largest Customers are migrating
 - 50% of Top 100
 - 40% of Top 200
- How's the quality (comparison to V8)?
 - Lower overall PMR volume
 - Less Severity 1 APARs
 - Lower PE rate
- V8:
 - 100% of the top 100 Customers
 - More than 99% of the top 200 Customers
 - Better quality than V7
 - Withdrawn from market Sept 8, 2009
- V7 out of service June 30, 2008 target is V8



Migration to DB2 9 is easier than V7 to V8

- Migration process enhancements: ENFM shorter, CM*
- Much less performance regression:
 - Earlier improvements
 - Bind stability & tools for avoiding access path issues
- CCSIDs and old product issues resolved in V8
- Simpler virtual storage considerations
- Less impact from incompatible changes
- Almost all vendors are ready today
- Every customer experience is different



Best practices / Recommendations

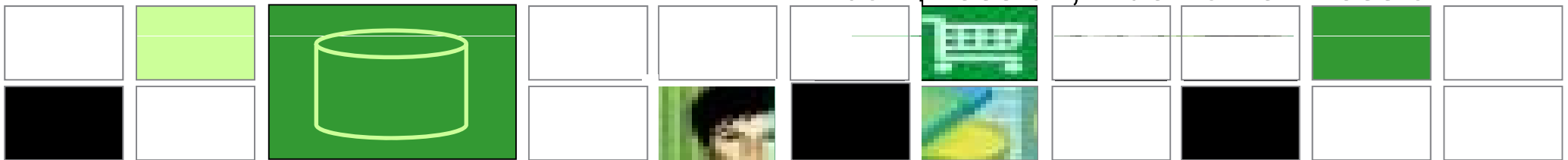
- **Start with latest RSU + Identified Hipers**
- **Leverage CST/RSU process**
 - Apply 2 to 3 preventative service drops annually
 - Exploit Enhanced HOLDDATA to be vigilant on HIPERs and PEs
- **Use the DB2 9 'Package Stability' function for static SQL**
 - Offers access path preserving option. Recovers to prior access path if regression is encountered
 - PK52523 - DB2 Access Path Stability
 - (And PK52522 for V8 in case of fallback)
- **Minimize potential query performance issues**
 - Use Optimization Service Center to capture SQL statements
 - Run Stats Advisor to generate the recommendation for stats collection
 - Run RUNSTATS to ensure critical stats are collected as recommended by the advisor

DB2 9 Most consumable improvements

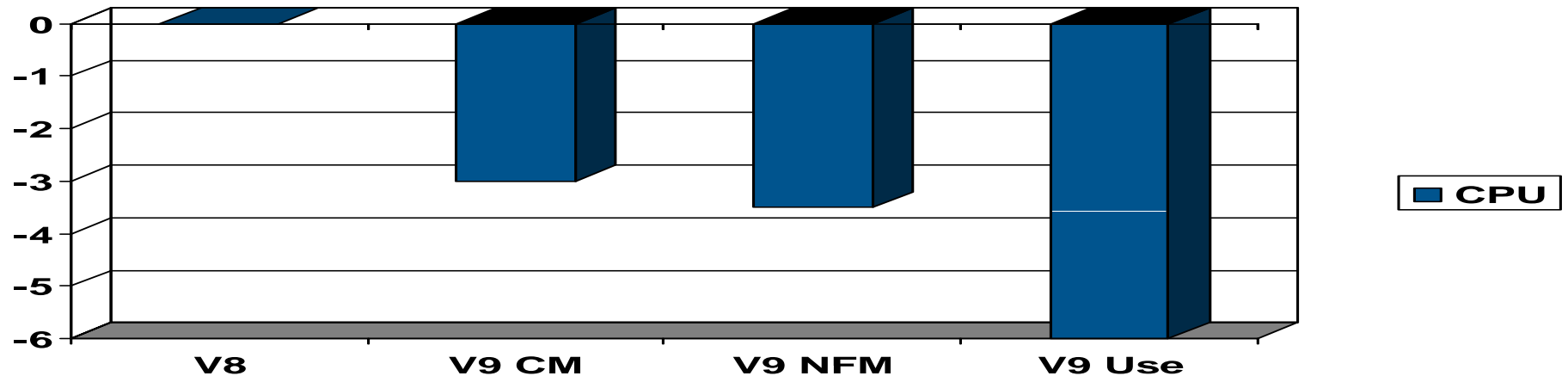
■ **CM very little to no action:**

- Package stability
- Improved RUNSTATS
- Optimization improvements, EDMPOOL VSCR, increased parallel & zIIP
- LOB performance
- DDF VSCR
- Index lookaside
- Changed online REORG
- Archive log striping, compression

- Utility CPU reductions
- Larger prefetch, write & preformat quantities
- Optimization Service Center, Data Studio and Optim Query Tuner
- **NFM**
 - LOB lock avoidance
 - Logging for data sharing
 - Improved index leaf page split
 - Reordered row format, native SQL
 - Index: larger page sizes, compression, index on expression



DB2 9 z10, z9, z890 and z990 performance scenario



In the figure, less is better

- Utilities
- DB design adjustments
- Histogram statistics
- Index improvements
- REBIND
- Application changes
- DSNZPARMS
- Native SQL procedures
- SQL adjustments
- Your situation will vary.
- z800 and z900 expect +5% to +10% CPU

DB2 10 for z/OS: Skip-Level Migration

- May move from V8 to DB2 10,
But just because you can, doesn't mean you always should....

- Key considerations:

- Risk/reward analysis

- What's the risk? Tolerance level?
- How will you do it? What's your mitigation plan? Are ISVs ready?
- What workloads do you need to test and can you test them properly?
- Am I missing out on DB2 9 value in the meantime?

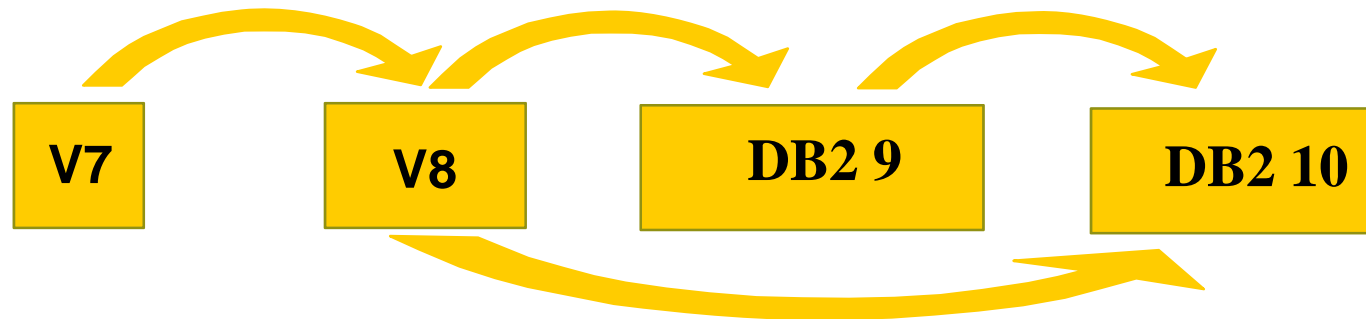
- May not see large migration cost savings

- Expect 20% to 25% cost savings versus two migrations
- Larger migration project, longer migration timeline, more risk
- Applications and ISVs may not be ready



- If you are on V7 or earlier, go to V8
- If you plan to migrate in 2010 or 2011, go to DB2 9
- If you are on V8 for over 2 years, go to DB2 9

Customer migration paths:



- Skip DB2 9 is possible, but most customers will go to DB2 9
 - Estimate save 20% to 25% vs. 2 steps
 - Reasonable timing to skip
 - Value in DB2 9 deferred until V10 NFM
 - When will applications add support for 10? Drop 8?
- Skip versions V5 to 7, V8 to 10, don't get used to it

Questions and Answers



Question #1

- **Q: What are the prereq levels for DB2 Connect when migrating to DB2 9 ?**
- The official answer:
 - DB2 9 (and 10) require DB2 Connect 9 FP1
The recommended level is latest 9.7 fixpack 2 or 3
 - DB2 Connect V8.2 is out of service since April 30, 2009
- From John Campbell:
 - Minimum levels required for DB2 Connect, but should follow CST/RSU levels
 - Full support with V9.1 FP1 but strongly recommend FP7 (RSU0906)
 - Full Support with V9.5 GA but strongly recommend FP4 (RSU0906)
 - V9.5 FP3 introduces Sysplex Failover/Workload balancing and XA support for IBM Data Serving Client
 - Need extended support contract in place for V8.1 FP13 or V8.2 FP6+

Question #2

- **Q: Will there be an impact on my catalog when I start using "plan stability" ?**
- **A:**
 - Yes, your catalog and directory will grow, depending on how many packages will be bound using PLANMGMT, and whether or not BASIC (two copies) or EXTENDED (three copier) is used
 - For the catalog the growth is usually not a big problem, but SPT01 is limited to 64 GB
 - To address that issue, DB2 now allows to compress SPT01 (APAR PK80375 - PTFs UK50986 (V8) and UK50987(V9))
 - Reorg SPT01 to reduce the number of pieces
 - The compression ratio is really good (blanks and zeroes compress rather well :-)

Question #3

- **Q: Will my catalog table spaces grow ?**
- **A:**
 - It depends 😊
 - As always, more info gets stored in the catalog, so the catalog is likely to grow
 - In V9 the catalog TS are 'user-managed' objects, so you can do an ALTER ADDVOLUMES .. to add additional volumes to allow expansion to additional volumes should the catalog grow

Question #4

- **Q: Do I need to run DSN1CHKR prior to migration ?**
- **A:**
 - This is not mandatory, but highly recommended.
 - The V10 catalog restructure will eliminate the use to run DSN1CHKR in the future
 - The same applies to running all the other pre-migrations checks listed in the manual and run the DSNTIJPM job.
 - You can already do the checking in V8 (DSNTIJP9 - APARs PK31841, PK45981, PK61841, PK65772, PK73081, ...)

Question #5

- **Q: Will I need to bigger 32K buffer pools in V9**
- **A:**
 - Yes !
 - In V9 sort uses 32K pages more frequently than in V8 (if row to be sorted > 100 bytes), so to get good performance, you will likely have to increase you 32K BP size
 - As more 32K page sets are used for sort, make sure to have enough 32K page set in your workfile database
 - PK70060 changes the behaviour of workfile allocation. Page sets with SECQTY 0 will be used for sort, SECQTY >0 primarily for DGTT
 - Currently it is allowed to overflow from one type to the other if one is full. PM02528 will introduce a ZPARM to allow you to force separation (no overflowing)
 - Maybe more changes will follow (still under investigation)

Question #6

- **Q: Do I need to take a group wide outage to enable locking protocol 3 ?**
- **A:**
 - Locking protocol 3 was introduced in V9 and is there to allow the new locking protocol for LOB locking to kick in NFM
 - However, after careful evaluation early after GA, locking protocol 3 was "removed"
(Apply APAR PK62027 PTF UK38906)
 - The new locking scheme for LOBs automatically kicks in in NFM (which is a group-wide event) without the need to recycle all members
 - Unless you moved to V9 NFM without this APAR, you should not see locking protocol 3 on your systems

Question #7

- **Q: Can we expect another CPU time increase for our applications when migrating to V9 ?**
- **A:**
 - That is of course always possible, but not very likely, and certainly nothing like we experienced in V8
 - Typically customers see equal or slightly better performance when going to V9 (without exploitation of any of the new features)
 - All access path enhancements are available in V9 CM, so after rebinding, applications may see increased performance
 - Some customers in data sharing may see significant improvement in NFM because of the LRSN spinning reducing, especially when MRI is used

Question #8

- **Q: After going to V9 we see an increase in the number of dynamic prefetch requests and a drop in the number of sequential prefetch requests in our accounting and statistics reports**
- **A:**
 - Congratulations that you actually noticed this !
 - This is expected behaviour. In V9, SPF is only used for a relational scan of the data when determined at bind time. All others rely on on DB2 to detect the sequential pattern and have dynamic prefetch kick in. DPF is more flexible than SPF and should provide better performance (for almost all cases).
 - Note that no rebind is needed to trigger this change

Question #9

- **Q: When do I do RUNSTATS when migrating ? Before, immediately after (day itself), later, or in NFM**
- **A:**
 - Whatever your strategy is as to when to runstats/rebind, you should not rebind on DB2 9 (CM) until RUNSTATS has been run in V9
 - Make sure to execute RUNSTATS with TABLE(ALL) INDEX(ALL) **KEYCARD (not default)**
 - Make sure new ZPARM STATCLUS=ENHANCED (default). It introduces major change to CLUSTERRATIO calculation and also the introduction of a new statistic DATAREPEATFACTOR
 - Use DB2 supplied RUNSTATS utility if ISV utility does not yet support the enhanced statistics collection.

Question #10

- **Any problems with // in V9**
- **A:**
 - As in most areas there have been APARs
 - Usually disable parallelism to bypass the problem while IBM investigates and gets the issue fixed
 - For static , use BIND DEGREE(1)
 - For dynamic:
 - CDSSRDEF = 1
 - Alter the buffer pools VPPSEQT to 0
 - Use RLF - RLFFUNC 3 (I/O //), 4 (CPU//), and 5(Sysplex//)
 - Keep up to date with maintenance
 - See APAR II12836
QUERY PARALLELISM RECOMMENDED MAINTENANCE