IBM System z Technology Summit

Administering and Optimizing Your DB2 9 & DB2 10 for z/OS Environment with Tools

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IBM DB2 Tools: *Are you ready for DB2 10?*

All New with DB2 10!

DB2 Utilities Suite 10 drives down costs with autonomics, page sampling and further offloads processing to zIIPs and FlashCopy. Developed in conjunction with DB2 10 to provide maximum data integrity and exploit all new functions out of the box. Reorg and Runstats enhanced.

DB2 Administration Tool/Object Compare 10.1 extends the value of DB2 10 with new capabilities that allow DBAs to quickly exploit DB2 10 features like schema evolution. Reduces the overhead of many routine tasks.

DB2 Sort 1.1 lowers the cost of DB2 Utility sort processing by exploiting advanced features of System z and z/OS while optimizing overall system efficiency. Significantly reduces batch windows.

Tivoli OMEGAMON XE for DB2 Performance Expert 5.1 extends its insight into distributed workloads and offers a robust infrastructure to support DB2 10 subsystem consolidation, with lower monitoring overhead. The recommended performance monitor of DB2 10!

QMF 10 delivers built-in visualizations and reports that dramatically extend the value to end users. A new metadata layer simplifies the process to understand and create reports.

DB2 High Performance Unload 4.1 support for TCP/IP Pipes and the new internal format as well as a new native XML data unload capability.

3

Roadmap to Exploit DB2 10 for z/OS
Accelerate your ability to leverage compelling DB2 10 features

Administer DB2 Performance Savings

Optimize Dynamic Infrastructure Performance

Drive DB2 Efficiency and Productivity

Recover DB2 Advanced Technology

Accelerate Time to Value

DB2 Administration Tool V10.1

- **Drives immediate DB2 10 out-of-the-box Performance Savings**

- **Exploits DBA-managed Performance Improvements**
  - INCLUDE additional Columns in Indexes to Exploit Index Only Access
  - Converts LOBs to INLINE to boost performance

- **Extends Administration Capabilities**
  - Manages new Security models
  - Reduces Schema change overhead
  - Recovers from Access Path regressions
  - Manages Autonomic Statistics collection

- **Supports Time Travel with Temporal Data – "as of"**
  - Records changes in history – System Time
  - Defines, updates and queries events in past or future – Business Time
  - Browses Temporal Data "as of" a point in time with DB2 Table Editor 4.3

DB2 Admin Tool V10.1 INCLUDE Index non-key Column

- **Benefits**
  - Decrease index maintenance
  - Decrease physical storage
  - Index only access

- **Supports only UNIQUE indexes**

- **Places the object in RBDP (Rebuild Pending)**

- **Supports INCLUDE COLUMN syntax**
  - CREATE INDEX
  - ALTER INDEX

DB2 Admin Tool V10.1 INCLUDE Index non-key Column

```
DB2 Admin --------------- DSNT Redefine Index --------------- Row 1 to 5 of 5
Command ===>                                                  Scroll ===> PAGE

Commands: CONTINUE  ORIGINAL
Line commands: nnn A|D - Sequence & order  R - Remove the column  I - Include
 A - Ascending  D - Descending  RA - Random   U - Update expression/XML pattern
 B - Business Time without overlaps

CREATE INDEX TEAM76     . TD76XA32_LCN        >
         ON TEAM76.TD76TB32_LCN
Unique . . . . . . . YES      Where Not Null . . .       Cluster . . . . . YES
Buffer Pool  . . . . BP16     Close Rule . . . . . YES   Copy Allowed  . . NO
Piece Size . . . . . 2097152  Define . . . . . . . YES   Defer . . . . . .
Partitioned  . . . .          Padded . . . . . . .       Compress  . . . . NO

Select Column Name           Col Type      Length   Scale N ColSeq Ord OldSeq Ord
       *                     *                  *        * *     * *        * *

------ -------------------   ---------- ----------- ------ - ------ --- ------ ---
       LOC_NO                SMALLINT           2        0 N      1 A       1 A
       LOCATION              CHAR              20        0 N
       ADDRESS               VARCHAR           30        0 N
       TOWN                  VARCHAR           30        0 N
   I   POSTCODE              CHAR              10        0 N
***************************** END  OF  DB2  DATA ******************************
```

DB2 Admin Tool V10.1 INCLUDE Index non-key Column

```
DB2 Admin -------------- DSNT Redefine Index -------------- Row 1 to 5 of 5
Command ===>                                         Scroll ===> PAGE

Commands: CONTINUE  ORIGINAL
Line commands: nnn A|D - Sequence & order  R - Remove the column  I - Include
 A - Ascending  D - Descending  RA - Random   U - Update expression/XML pattern
 B - Business Time without overlaps

CREATE INDEX TEAM76    . TD76XA32_LCN          >
          ON TEAM76.TD76TB32_LCN
Unique . . . . . . . . YES      Where Not Null . . .       Cluster . . . . . . YES
Buffer Pool  . . . . . BP16     Close Rule . . . . . YES   Copy Allowed  . . NO
Piece Size . . . . . . 2097152  Define . . . . . . . YES   Defer . . . . . . .
Partitioned  . . . .             Padded . . . . . . .       Compress . . . . . NO

Select Column Name         Col Type       Length  Scale N ColSeq Ord OldSeq Ord
       *                   *                   *      * *      * *      * *
------ ------------------ -------- ----------- ------ - ------ --- ------ ---
       LOC_NO             SMALLINT          2      0 N      1 A      1 A
*      POSTCODE           CHAR             10      0 N     30 I
       LOCATION           CHAR             20      0 N
       ADDRESS            VARCHAR          30      0 N
_      TOWN               VARCHAR          30      0 N
******************************** END OF DB2 DATA ********************************
```

DB2 Admin Tool V10.1 INCLUDE Index non-key Column

```
DB2 Admin --------------- Edit Statement --------------- Columns 00001 00072
Command ===> _                                              Scroll ===> CSR

****** ************************** Top of Data **************************
000001 -- Created by DBA104 on 2011/01/13 at 10:15
000002 -- Generated by apply exec by DBA104 on 2011/01/13 at 10:15
000003 --#ADMIN PROCESS ALTER
000004    ALTER INDEX TEAM76.TD76XA32_LCN
000005       ADD INCLUDE COLUMN (POSTCODE) ;
000006    COMMIT ;
000007 --#ADMIN PROCESS REBUILD
000008 LISTDEF ADBLD1
000009 INCLUDE INDEXSPACES
000010 INDEX "TEAM76"."TD76XA32_LCN";
000011 REBUILD INDEX LIST ADBLD1;
000012 -- End of Apply statements
****** ************************** Bottom of Data **************************
```

DB2 Admin Tool V10.1 INLINE LOB

- **Stores INLINE LOB data in base table space**

- **Benefits**
  - Minimizes I/O
  - Minimizes the management of table space and index space

- **Defines default max length - LOB_INLINE_LENGTH**
  - Default = 0

- **CREATE TABLE, CREATE TYPE, and ALTER TABLE**

DB2 Admin Tool V10.1 INLINE LOB

OMPE

```
_____       ZPSYS    VTS     O2      V510./C DSNT 01/13/11 12:30:36    25
  _
+    Double Byte CCSID       = 65534
+    New Function Mode       =     YES
+    IFCIDS In UNICODE       =     NO      zIIP Support is Present      =      YES
+    Divide Option (DECDIV3) =     NO      Change Data Capture (CHGDC)  =       NO
+    WTO Routing (ROUTCDE)    =     01      Enable DPROP (EDPROP)        =       NO
+    Site Type (SITETYP)      = LOCAL      3990-3 Seq Cache (SEQCACH)   =      SEQ
+    Automatic Rebind (ABIND) =     YES     Automatic Rebind Explain(ABEXP)=    YES
+    CacheDynSql   (CACHEDYN) =     YES     PackageAuthCache (CACHEPAC)  =    5242K
+    CurDegSpeReg (CDSSRDEF)  =     ANY     Describe Sqlda   (DESCSTAT)  =      YES
+    MaxKptDynSql (MAXKEEPD)  =    5000     RelCurW/hold   (RELCURHL)    =      N/A
+    UtilCacheOpt   (SEQPRES) =     YES     ExtSecurity      (EXTSEC)    =      YES
+    Max DBM1 stg for log     =       0     Default WLM Envir  = DSNTWLM
+    Default BP for indexes   =     BP0     Default BP for user data     =      BP0
+    Limit restart backout    =    AUTO     Restart backout limit        =        5
+    Ext query blks DB2 server=     100     Extra query blks DB2 requester =    100
+    Stg for lob - per system =    2048     Stg for lob - per agent      =      10K
+    Rollup Accting For DDF   =      10     Sliding Secondary DB2 Managed =     YES
+    Measured Usage Pricing   =      NO     Amount Of Space Above MVS    =      65M
+    Default Space Table Sp   =       0     Use Vsam Var. CI For DB2 Mgt =      YES
+    Rollup Accting (PTASKROL)=     YES     Default Space Index Sp       =        0
+    LOB Inline Len(QWP1LBIL) =       0     PLAN MGMT SCOPE (QWP4PMSC)   = STATIC
+
+ DSNHDECP Default Values:
```

DB2 Admin Tool V10.1 INLINE LOB

```
DB2 Admin --------------------- DSNT ALTER Table ------------------- 12:40
Command ===>

                                                       More:      +
  DB2 Admin ALTER                        Schema . : TEAM80   >
                                         Name . . : BOOK_BASE_TABLE     >
  Column name  . . BOOK_TEXT       >  (column number 3)
  Column type  . . CLOB              (CHAR,DECIMAL,INTEGER,SMALLINT,etc.)
  Data length  . . 38664
  Inline length . 200_               (0-32680 BLOB or CLOB, 0-16340 DBCLOB)
  Precision  . . .                   (FLOAT and DECIMAL only)
  Scale  . . . . .                   (DECIMAL and TIMESTAMP only)
  Type schema  . .                   (User-defined type schema)
  Type name  . . .                   (User-defined type name)
  WITH TIME ZONE .                   (Yes/No - for TIMESTAMP only)

  Allow Nulls  . . NO    (Yes-Nullable, No-NOT NULL)
  FOR ? DATA . . .       (B - Bit, S - SBCS, M - Mixed, or blank)
  WITH DEFAULT . . YES   (Yes, No, L (SECLABEL) or enter value below)
  Default value  .

  GENERATED  . . .     (A-ALWAYS, D-DFLT, I-ALWAYS AS IDENT, J-DFLT AS IDENT,
                        E-ALWAYS AS UPD TIMESTAMP, F-DFLT AS UPD TIMESTAMP)
  FIELDPROC
```

DB2 Admin Tool V10.1 INLINE LOB

```
DB2 Admin --------------- Edit Statement --------------- Columns 00001 00072
Command ===> _                                              Scroll ===> CSR

****** ************************* Top of Data *******************************
000001 -- Created by DBA104 on 2011/01/13 at 12:46
000002 -- Generated by apply exec by DBA104 on 2011/01/13 at 12:46
000003 --#ADMIN PROCESS CREATE
000004    ALTER TABLE TEAM80.BOOK_BASE_TABLE
000005       ALTER COLUMN BOOK_TEXT
000006          SET INLINE LENGTH 200 ;
000007 -- End of Apply statements
****** *********************** Bottom of Data *****************************
```

DB2 Admin Tool V10.1 Temporal Table

- **Supports Temporal Table**
  - Records a period of time when a row is valid
  - System Time or Business Time

- **Benefits**
  - Helps in managing data based upon time
  - Simplifies search criteria process
  - Satisfies new compliance laws

DB2 Admin Tool V10.1 Temporal Table

- **Application period**
  - Timestamp or Date data
  - Beginning and End times

- **System period**
  - Implemented by creating a temporal table, a history table, and enabling versioning

- **Bi-temporal table – is both a System Period Temporal Table and an Application Temporal Table**

DB2 Admin Tool V10.1 Temporal Table

```
DB2 Admin -------------------- DSNT Alter Table -------------------- 13:53
Command ===>

 Table schema . . : TEAM76    >
 Table name . . . : TD76TB11_PARTTB     >

    AUDIT . . . . . . . . . NONE      (None, Changes, or All)
    DATA CAPTURE  . . . . . NONE      (None/Changes)
    VALIDPROC . . . . . . . NULL      (NULL/Program name)
    RESTRICT ON DROP  . . . NO        (Yes/No)
    VOLATILE  . . . . . . . NO        (Yes/No)
    APPEND  . . . . . . . . NO        (Yes/No)

 ALTER TABLE with any of the above changes OR select one of the options below

                                                          More:    -
 _  DROP FOREIGN KEY              ADD PARTITION
    ADD CHECK constraint          ADD CLONE
    DROP CHECK constraint         DROP CLONE
    ADD UNIQUE constraint         ADD VERSIONING
    DROP UNIQUE constraint        DROP VERSIONING
    ADD PERIOD                    ACTIVATE COLUMN ACCESS CONTROL
    ACTIVATE ROW ACCESS CONTROL   DEACTIVATE COLUMN ACCESS CONTROL
    DEACTIVATE ROW ACCESS CONTROL
```

DB2 Admin Tool V10.1 Temporal Table

```
DB2 Admin --------------- DSNT Tables, Views, and Aliases ------- Row 1 from 2
Command ===> _                                             Scroll ===> PAGE

Commands: GRANT   MIG   ALL
Line commands:
 C - Columns  A - Auth  L - List  X - Indexes  S - Table space  D - Database
 V - Views  T - Tables  P - Plans  Y - Synonyms  SEL - Select prototyping
 ? - Show all line commands

Sel   Name                Schema     T DB Name   TS Name    Cols       Rows Chks C
      *                   *          * *         *              *         *    * *
----- ----------------- -------- -------- -------- -------- ------ ----------- ---- -
      POLICY              IOD07S     T DSN00330 POLICY       8           5    1
      POLICY_HIST         IOD07S     H DSN00331 POLICYRH     8           7    0
****************************** END OF DB2 DATA ******************************
```

DB2 Admin Tool V10.1 Bi-Temporal Table

```
DB2 Admin -- DSNT Columns in Table IOD07S.POLICY        ------- Row 1 to 8 of 8
Command ===> _                                              Scroll ===> PAGE

Line commands:
 T - Tables  X - Indexes  A - Auth  GR - Grant  H - Homonyms  I - Interpret
 UR - Update runstats  LAB - Label  COM - Comment  DI - Distribution stats
 ? - Show all line commands

Select Column Name        Col No Col Type Length Scale  Null Def FP    Col Card
       *                         * *              *      * *    *  *          *
------ ------------------ ------ -------- ------ ------ ---- ---- -- -----------
       CLIENT                  1 CHAR         4      0 N    N   N            1
       TYPE                    2 CHAR         4      0 N    N   N            3
       COPAY                   3 SMALLINT     2      0 N    N   N            2
       EFF_BEG                 4 DATE         4      0 N    N   N            5
       EFF_END                 5 DATE         4      0 N    N   N            5
       SYS_BEG                 6 TIMESTMP    13     12 N    Q   N            2
       SYS_END                 7 TIMESTMP    13     12 N    R   N            1
       TRANS_ID                8 TIMESTMP    13     12 Y    X   N            2
************************************ END OF DB2 DATA ****************************
```

DB2 Table Editor V4.3 - Temporal Table Versioning

```
ETI$EDIT  V4R3    --------- Browse Table Rows  --------- 2011/01/13  17:47:27
Option  ===> _                                          Scroll ===> PAGE
-------------------------------------------------------------------------  >
                                                         Row 1 of 5
  Table ==> POLICY                    >      Creator ==> IOD07S              >


  ------------------------------------------------------------------------

     CLIENT TYPE COPAY   SYS_BEG
     C882   POS      15 2010-11-08-09.12.42.283751061000
     C882   PPO      10 2010-11-08-09.01.29.965116760000
     C882   POS      10 2010-11-08-09.12.42.283751061000
     C882   HMO      15 2010-11-08-09.12.42.283751061000
     C882   HMO      10 2010-11-08-09.12.42.283751061000
******************************** Bottom of Data ********************************

                       CURRENT DATA



Valid Option Commands: (Edit, Find, FORM, ZOOM)
```

DB2 Table Editor V4.3 - Temporal Table Versioning

```
ETI$EDIT  V4R3     ---------- Browse Table Rows  ---------- 2011/01/13  17:48:11
Option   ===> _                                              Scroll ===> PAGE
-------------------------------------------------------------------------- < >
                                                             Row 1 of 5
  Table ==> POLICY                    >        Creator ==> IOD07S            >


  -------------------------------------------------------------------------

    CLIENT TYPE COPAY   SYS_END                                N
    C882   POS       15 9999-12-31-24.00.00.000000000000 Y
    C882   PPO       10 9999-12-31-24.00.00.000000000000 Y
    C882   POS       10 9999-12-31-24.00.00.000000000000 Y
    C882   HMO       15 9999-12-31-24.00.00.000000000000 Y
    C882   HMO       10 9999-12-31-24.00.00.000000000000 Y
**************************** Bottom of Data ****************************

                        CURRENT DATA



Valid Option Commands: (Edit, Find, FORM, ZOOM)
```

DB2 Table Editor V4.3 - Temporal Table Versioning

```
ETI$EDIT  V4R3    --------- Browse Table Rows --------- 2011/01/13  17:50:21
Option  ===> _                                         Scroll ===> PAGE
------------------------------------------------------------------ <  >
                                                  Row 1 of 7
  Table ==> POLICY_HIST          >      Creator ==> IOD07S              >


------------------------------------------------------------------
                                                              N
     CLIENT TYPE COPAY    SYS_END
     C882   PPO        10 2010-11-08-09.01.29.965116760000 Y
     C882   HMO        10 2010-11-08-09.03.31.374399156000 Y
     C882   HMO        15 2010-11-08-09.05.31.408412852000 Y
     C882   HMO        15 2010-11-08-09.09.31.741915622000 Y
     C882   HMO        15 2010-11-08-09.10.26.280157593000 Y
     C882   HMO        15 2010-11-08-09.12.42.283751061000 Y
     C882   HMO        10 2010-11-08-09.12.42.283751061000 Y
************************** Bottom of Data *****************************




Valid Option Commands: (Edit, Find, FORM, ZOOM)
```

END = BEG in Current

History data

Roadmap to Exploit DB2 10 for z/OS
Accelerate your ability to leverage compelling DB2 10 features

Administer DB2 Performance Savings

Optimize Dynamic Infrastructure Performance

Drive DB2 Efficiency and Productivity

Recover DB2 Advanced Technology

Accelerate Time to Value

IBM DB2 Performance Management Tools Solution
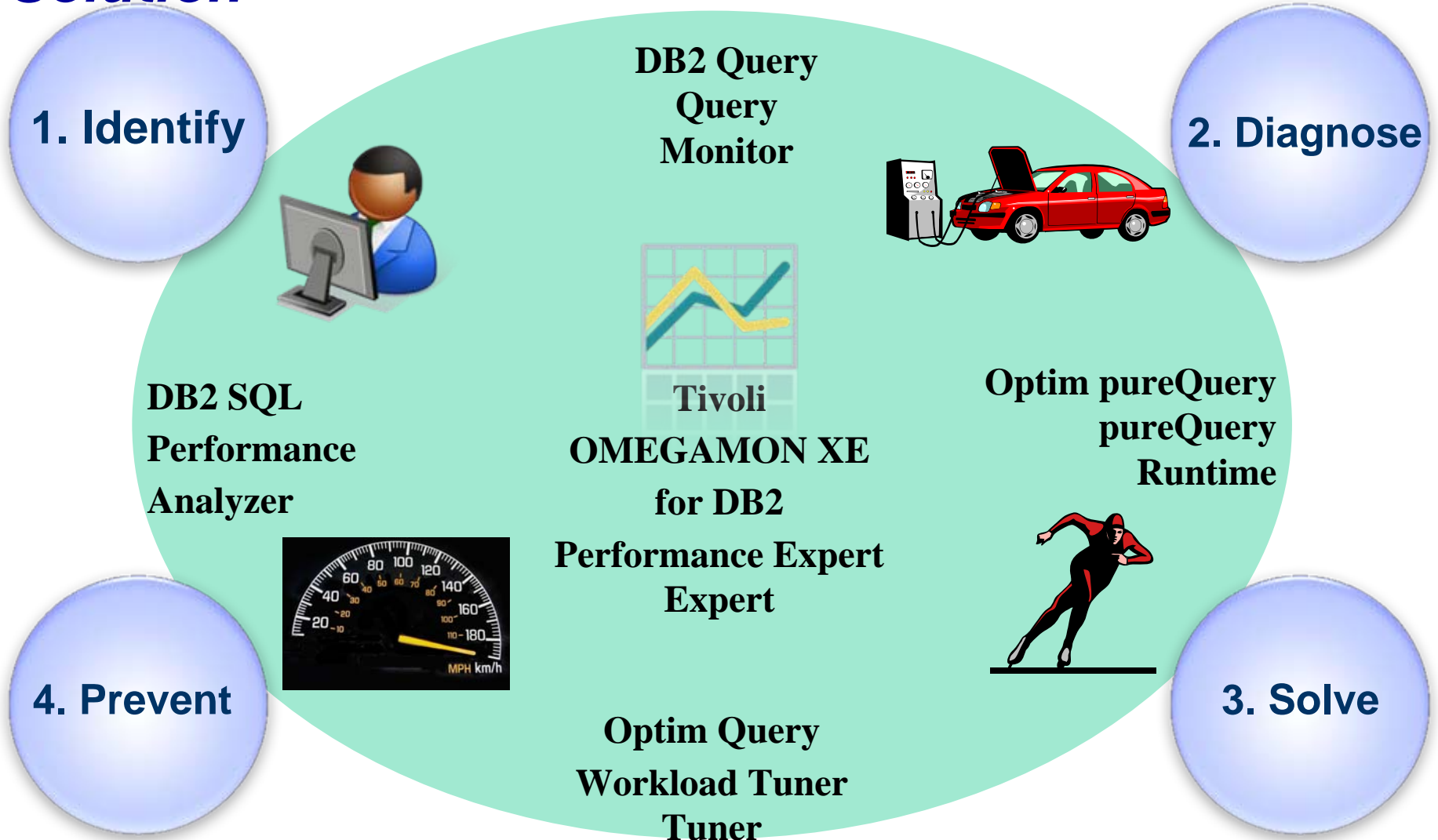
Optimize Dynamic Infrastructure Performance

**OMEGAMON XE for DB2 Performance Expert 5.1 Exploitation**

- **Features Extended Insight**
  - Surface DB2 for z/OS end-to-end response time metrics
    - Provides visibility to **all** the components that make up end-user response time
    - Facilitates platform-agnostic identification of response time bottlenecks
    - Enables near-instantaneous response to and prevention of application slowdowns
  - Leverages Tivoli Enterprise Portal GUI

- **Provides Summary for SQL Reporting**

- **Manages thousands of Threads**

- **Supports new DB2 10 Monitoring Data**

- **Lowers Monitoring Overhead**
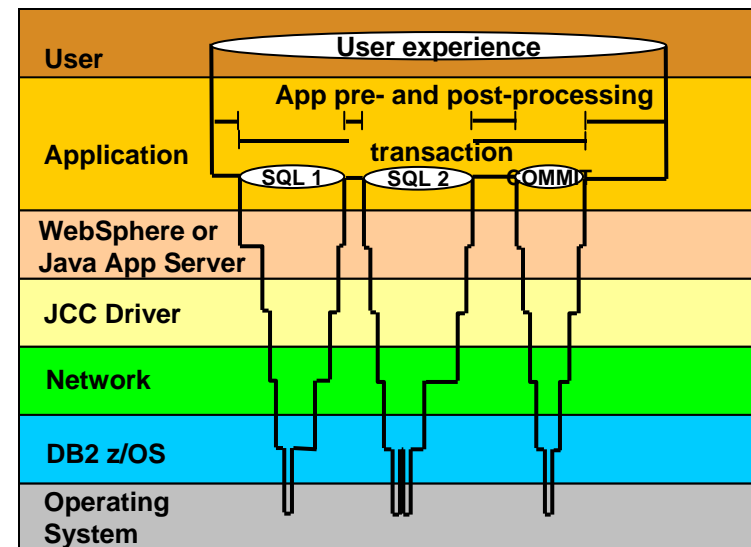
OMEGAMON DB2 PE 5.1 Extended Insight
Zoom into selected workload and see the TOP SQL list

Top SQL statements executed by Java or CLI applications like SAP, Cognos, DataStage or WebSphere
- **Zoom in on a selected SQL**

Detailed End-to-End Response Time

OMEGAMON DB2 PE 5.1 Extended Insight
Select Static or Dynamic SQL and zoom into SQL details

Extended Insight Analysis Dashboard: OMP1D911

⊙ Back

Locate the source of performance problems, determine how those problems affect different parts of the workload, and analyze the performance of individual SQL statements, clients, and partitions.

Response Time Details: 9.152.205.30

| Graph | Grid |

Selected layer: No layer selected ▼   Show Maximum

| SQL Statements | Clients |

Show highest 10 ▼ by Average Data Server Time (sec) ▼

Statement Text ▼	Statement Executions	Average Data Server Time (sec)
SELECT 'PVT_40K' AS WKLID, '...	1	0.504
	1	0.474
	1	0.518
	1	1.393
N/P	1	1.023

☑ Display this list by the selected graph layer

SQL Statement Text

Statement information

SELECT 'PVT_40K' AS WKLID, '100319#13:45:21:250' AS TIME, '1' AS STMTNR, '40000'
AS LENGTH, '0' AS LB, '0' AS TB, 'false' AS TABNEWLINE, COUNT(*) AS COUNT FROM
LGQ#0002 WHERE A=0001000 OR A=0001000 OR...

| All | Tune |

Open Optim Query Tuner to analyze this SQL statement.

Package name:	N/P
Section number:	0
Package name:	N/P
Section number:	0
Package Consistency token:	N/P
Package Version:	N/P
Collection:	N/P

Java class	Java package	Method	Source line number	Build version	Source expression	Method Signature	Application Name	Metadata File

Transfer Volume

Statement Performance

Number of Executions:	1
Average end-to-end elapsed time:	0
Average client time:	0
Average driver time:	0⁸⁸ sec
Average network time:	sec
Average data server time:	0 sec
	3 sec
	ec

Statement Time Distribution (%)

- Client time
- Driver time
- Network time
- Data server ti

97.33% ─── 2.67%

Statement Outcome

Failure rate (with negative SQL code):	0 %
First SQL code:	N/P

Average bytes transferred locally:	0 bytes
Average bytes transferred remotely:	41.369 KB
Average rows returned:	0
Average number of round trips:	1

Tune SQL with Optim Query Workload Tuner

Java class, package and method shown if pureQuery Is installed.

Corporation

Roadmap to Exploit DB2 10 for z/OS
Accelerate your ability to leverage compelling DB2 10 features

Administer DB2 Performance Savings

Optimize Dynamic Infrastructure Performance

➡ **Drive DB2 Efficiency and Productivity**

Recover DB2 Advanced Technology

Accelerate Time to Value

DB2 Automation Tool V3.1

- **Supports Autonomic Statistics**
  - Exploits real-time, sampling driven Statistics collection
  - Invokes RUNSTATS with new Profile option
  - Interfaces with existing Job Schedulers

- **Introduces FlashCopy Image Copy**
  - Reduces Batch-windows
  - Reduces CPU consumption with Storage-based Backups
  - Drives improved Recovery Time Objectives

- **Avoids Unnecessary Reorgs**
  - Sets REORG thresholds based on DB2 10 Best Practices
  - Detects when Indexes are insensitive to Clustering
  - Avoids REORGs for poorly structured Indexes

DB2 Automation Tool V3.1
RUNSTAT Profile

```
AUTOTOOL V3R1 ------------ Runstats Options ------------ 2011/01/21  11:41:58
Option   ===> _                                          Scroll ===> PAGE
  Commands END - Return to the previous screen.
  Press <PF7/PF8> to scroll for additional options.
  Creator: DBA104     Name: AUTONOMIC STATS               User: DBA104
                                                             More:    -

     Numcols                  ==> 1_____   (Number)
     Count . . . . . . . . .==> 10_____   (Number)
     Histogram Numcols        ==> ____   (Number)
            Numquantiles . ==> ____   (Number)
  Save Stats in Repository ==> N (Y - Yes, N - No)
  Profile . . . . . . . . ==> _  (Blank - Not used,
                                   U - Use,
                                   I - use Include npi,
                                   D - Delete,
                                   P - uPdate,
                                   S - Set,
                                   E - set from Existing stats)

Optional Skeletals:       -- BEFORE --     -- AFTER --
 JCL Skeletal . . . . . . ==> _____    ==> _____   (8 Character Name)
 Control Cards Skeletal   ==> _____    ==> _____   (8 Character Name)
 Step End Skeletal . . . ==> _____    ==> _____   (8 Character Name)
```

Define the set of statistics to be collected when running autostats

Autonomic statistics – stored procedures for statistics collection

DB2 Automation Tool V3.1 FLASHCOPY

```
AUTOTOOL V3R1 ----------- Image Copy Options ----------- 2011/01/21  12:43:46
Option   ===> _
  Creator: DBA104      Name: AUTONOMIC STATS                    User: DBA104

  Enter the Image Copy options to associate with this utility profile

                                  Take Image Copy      View/Update Options

  Local Primary  . . . . . . . . ==> N  (Y - Yes,    ==> N  (Y - Yes,
                                         N - No)             N - No)
  Local Backup                   ==> N  (Y - Yes,    ==> N  (Y - Yes,
                                         N - No)             N - No)
  Recovery Site Primary  . . . ==> N  (Y - Yes,    ==> N  (Y - Yes,
                                         N - No)             N - No)
  Recovery Site Backup         ==> N  (Y - Yes,    ==> N  (Y - Yes,
                                         N - No)             N - No)
  FlashCopy                    ==> N  (Y - Yes,    ==> N  (Y - Yes,
                                         N - No)             N - No)
```

DB2 Automation Tool V3.1 FLASHCOPY w/ RECOVER

```
AUTOTOOL V3R1 ----- Recover Utility Profile Options ----- 2011/01/21   12:56:26
Option  ===>  _
                                                                    More:    -

  Exception Rule  . . . . . . . . ==>  A   (A - Accepted, R - Rejected, B - Both)

  Utility ID                      ==>  RECOVER            (16 characters)
  TO method . . . . . . . . . . . ==>  L   (L - Log, C - Copy, E - Error)
  Alter method options            ==>  N   (Y - Yes, N - No)
  Site  . . . . . . . . . . . . . ==>  L   (L - Local, R - Recovery, blank)

 Optional Skeletals:              -- BEFORE --    -- AFTER --
  JCL Skeletal  . . . . . . . . . ==>  _____    ==>  _____    (8 Character Name)
  Control Cards Skeletal          ==>  _____    ==>  _____    (8 Character Name)
  Step End Skeletal . . . . . . . ==>  _____    ==>  _____    (8 Character Name)

  Rebuild Ix Statistics Optns   ==>  N   (Y - Yes, N - No)
  Online Rebuild Index          ==>  N   (Y - Yes, N - No)
    Alter Online Rbld Options   ==>  N   (Y - Yes, N - No)
  Perform LOB Dependency checks ==>  Y   (Y - Yes, N - No)
    Exclude objects that failed Dependency check ==>  Y (Y - Yes, N - No)
                                     Include                 Update
  FlashCopy . . . . . . . . . . . ==>  N (Y - Yes, N - No) ==>  N (Y - Yes, N - No)
```

DB2 Automation Tool V3.1 RECOVER BACKOUT

```
AUTOTOOL V3R1 ------ Recover Utility Log Options ------ 2011/01/21  12:54:05
Option  ===> _
  Commands: END - Return to the previous screen.
            PF7/PF8 - Scroll for additional options.
  Creator: DLC        Name: RECOVER                      User: DBA104
                                                               More:     +
   Object event . . . . . . . . ==> _   (Q - Quiesce, blank)
   Event generation          ==> 00 (00  -1  -2  -3  ...  -9)

   Select point-in-time . . . ==> N  (Y - Yes, N - No)
    Log RBA/LRSN              ==> _____  (blank = current)
    Log timestamp:
   Select RESTOREBEFORE . . . ==> N  (Y - Yes, N - No)
    RESTOREBEFORE Log RBA/LRSN ==> _____  (blank = none)
    RESTOREBEFORE Log timestamp
   Verifyset . . . . . . . . . ==> Y  (Y - Yes, N - No)
   Backout                     ==> N  (Y - Yes, N - No)

   Reuse existing datasets . . ==> N  (Y - Yes, N - No, L - Log only)
   Parallel object restores    ==> N  (Y - Yes, N - No)
   Max nbr of parallel objects ==> 0  (0 = optimal)
   Nbr of dynamic tape drives  ==> 0  (0 = optimal)
```

Read DB2 log backwards

DB2 Automation Tool V3.1 Exceptions CLUSTERSENS and HASHACCESS

```
AUTOTOOL V3R1    ----  Update Exceptions Profile Display --- 2011/01/21 13:03:51
Option  ===>                                               Scroll ===> PAGE
       Commands: END - Save and exit.
Line Commands: A - And  O - Or  S - Select  D - Deselect  R - Repeat
   CONDitions: LT|<|LE|<=|EQ|=|GT|>|GE|>=|NE|¬=|<> "*" indicates DAT stat
---------------------------------------------------------  Row 64 of 196  -+>
Creator: DBA104       Profile: CROSS BRAND             User: DBA104
Share Option: U (U - Update, V - View, N - No)
Description: SEMINAR                      Scroll Right for Column Help
Use Stats From: R (R - Repository,         Update Runstats Options: N (Y - Yes,
                C - Catalog,                                         N - No)
                U - Runstats,       Save Triggers in Repository: N (Y - Yes,
                S - Shadow,                                       N - No)
                H - History)    WTO number of triggered Objects: N (Y - Yes,
                                                                 N - No)
Combine IX/TS Exceptions if evaluating IX triggering a TS: N (Y - Yes, N - No)
-------------------------------------------------------------------------------
S Statistics Type--- *Column----------- Cond --------Exception Value--------
_ REALTIME REORG TS   MASS_DELETES        __ _____
_                     CLUSTERSENS         __ _____
_                     HASHACCESS          __ _____
_                     SCANACCESS          __ _____
  REALTIME REORG IX   REAL TIME STAT
_                     DAYS_SINCE_LAST     __ _____
```

DB2 Automation Tool V3.1 Cancel Readers Preventing Online Drains and Switch

```
AUTOTOOL V3R1 ---------- Online Reorg options ---------- 2011/01/21  13:09:31
Option   ===> _____  Scroll ===> PAGE
  Commands: END - Return to the previous screen.

  Creator: DBA104     Name: ONLINE REORG                     User: DBA104

  Enter the options to associate with this utility profile

    Sharelevel . . . . . . . . . ==> C      (R - Reference, C - Change, N - None)
    Drain Wait                   ==> _____  (blank, 0-1800 seconds)
    Retry  . . . . . . . . . . . ==> ___    (blank, 0-255)
    Retry Delay                  ==> _____  (blank, 1-1800 seconds)
    Timeout  . . . . . . . . . . ==> T      (A - Abend, T - Term, N - None)
    Force                        ==> N      (A - All, R - Readers, N - None)
    AUX  . . . . . . . . . . . . ==> N      (Y - Yes, N - No)
                                 Include                  Update
    Deadline Options         ==> N  (Y - Yes, N - No) ==> N  (Y - Yes, N - No)
    Shrlevel Change Options  ==> Y  (Y - Yes, N - No) ==> N  (Y - Yes, N - No)
```

DB2 Utility Enhancement Tool V2.1

- **Offers a proactive way to cancel threads holding locks**
  - Views and cancels threads through ISPF panels
  - Cancels and blocks threads through:
    - Batch processing
    - DSNUTILB Intercept processing
- **Watches utilities on the DB2 SSIDs you specify**
  - Cancels threads on DB2 objects that match criterion you define
  - Extends utility functionality if using UET parameters
- **Enforces the use or disuse of utility parameters**

DB2 Utility Enhancement Tool V2.1

- **Extends utility syntax for LOAD**
  - **CONSTANT** replace a given value for a particular field in the input records with another specified value being loaded at run-time

  - **VALUEIF** – if a condition is met a new value is used in its place

  - **PRESORT** by table object identifier (OBID) and by clustering index key
    - If no clustering index key is available sorts by the oldest defined index
    - Reduces elapsed time & CPU times

  - **DISCARDTO** – name of a flat file to write discarded data (rather than a DB2 table)

DB2 Utility Enhancement Tool V2.1

- **Enhances the native DB2 CHECK DATA syntax**

  - Supports discarding rows to a flat file

  - Creates and sizes the discard table automatically
    - Unloads from the discard table to a LOAD-format SYSREC file
    - Creates LOAD-format SYSPUNCH file
    - LOAD-format SYSREC / SYSPUNCH file can be used by other utilities
    - Automatically drops discard table

- **Supports the standard DB2 restart of a DB2 utility for which interception is occurring or has occurred.**
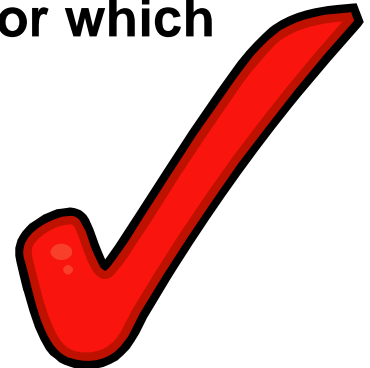
DB2 Sort

- **High speed utility sort**
  - Processes data stored in DB2 for z/OS
  - Improves sort performance
  - Optimizes overall system efficiency

- **DB2 Sort leverages the strengths of the System z platform, DB2 for z/OS and the DB2 Utilities Suite to drive:**
  - Saves elapsed time and CPU significantly
  - Relieves from application constraints of large volumes of data
  - Commits continually to deliver DB2 solutions

Roadmap to Exploit DB2 10 for z/OS
Accelerate your ability to leverage compelling DB2 10 features

Administer DB2 Performance Savings

Optimize Dynamic Infrastructure Performance

Drive DB2 Efficiency and Productivity

Recover DB2 Advanced Technology

Accelerate Time to Value

DB2 Recovery Expert V2.2 – Application Recovery

- **Provides Expert assist for performing many types of DB2 recoveries**
  - Analyzes the requested recovery
  - Provides a selection of possible recovery plans
    - Selecting for you, the needed recovery assets and utilities
  - Assists in selecting recovery points
  - Builds RECOVERY jobs
- **Includes a subset of DB2 Log Analysis services**
  - UNDO/ REDO recoveries
  - Quiet point analysis
- **Supports Drop Recovery**
- **Supports Dependency analysis**

DB2 Recovery Expert V2.2 – System Recovery

- **Provides backup and recovery solutions that leverage sophisticated storage processor capabilities**

- **Includes ability to backup and restore an entire DB2 subsystem almost instantaneously using fast replication storage hardware**

- **Restores individual DB2 objects or groups of DB2 objects from the system level backups**

  - ISPF or GUI

- **Automates disaster recovery process**

  - Gathers resources needed at the local site and copying them to tape for use at the disaster site

  - Supports disaster recovery from both system backups and image copies

DB2 Recovery Expert V2.2 – DB2 10

- **Exploits FlashCopy Image Copy**
  - Takes Consistent Online Image Copies in seconds
  - Reduces CPU and Batch-windows
  - Improves Recovery Times
  - Automates Recovery Jobs
  - Supports natives EMC Storage-based copies

- **Exploits RECOVER BACKOUT for faster recoveries**

DB2 Log Analysis Tool V3.2

- **Reads DB2 logs and DB2 pages directly**

- **Allows Phased components to have more granular specifications for more expensive jobs (I/O,CPU)**
  - Initial run asks to show any changes to database X for Monday
  - Subsequent run asks to show only actual row changes to table Y in database

- **Does NOT <u>require</u> DATA CAPTURE for any tables – does support**

- **Supports extensive filtering capabilities**

- **Creates Robust reports – General / Summary / Detail / Quiet Time / Impact**

DB2 Log Analysis Tool V3.2

- **Outputs archive data so that the reports can be rerun without having to re-read the archive logs**

- **Loads data into DB2 tables for analysis**

- **Supports data sharing transparently**
  - Allows to bypass processing of logs from other members optionally

- **Extracts continuous information based on filter factors**
  - Does not miss any transactions
  - Stores details of uncommitted units of work

- **Views** LOB / XML **data**

DB2 Log Analysis Tool V3.2 – DB2 10

- **Undo and Redo / Reports on Temporal Data**
- **FlashCopy Image Copy**
- **New functions for updating XML columns**
- **XML columns with versioning**
- **INCLUDE column on an index**
- **INLINE LOB**
- **Greater precision for TIMESTAMP**
- **New Timestamp with TIME ZONE data type**
- **All new DB2 10 Log changes**

DB2 V8   DB2 9   DB2 10

Key Questions are WHEN? and HOW?

Roadmap to Exploit DB2 10 for z/OS
Accelerate your ability to leverage compelling DB2 10 features

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Accelerate DB2 10 Time to Value

DB2 Cloning Tool V2.2

- Exploits Storage-based copies to drastically reduce CPU and outages
- Creates Subsystem and Object Clones to test DB2 10 with minimal effort
  - Reduces the number of Data Sharing Members automatically
  - Converts Data Sharing to non-Data Sharing
  - Creates Subsystem Clone from System Level Backup
  - Masks sensitive production data
- Supports native IBM, EMC and Hitachi Storage-based copies

DB2 Query Monitor V2.3

- Tracks SQL Performance before and after Migration

DB2 Path Checker V4.1

- Identifies potential Access Path regressions
- Exports SQL to Optim Query Workload Tuner or Data Studio for tuning
- Saves packages with DB2 9 Plan Management before DB2 10 Migration

DB2 Bind Manager V2.4

- Identifies and Free unused Packages
- Reduces Bind impacts

Exploit DB2 10 for z/OS with IBM DB2 Tools

Accelerate your ability to leverage compelling DB2 10 features with comprehensive Tools support

Data Encryption Tool for IMS and DB2 Databases

DB2 Administration Tool / DB2 Object Compare for z/OS

DB2 Audit Management Expert for z/OS

DB2 Automation Tool for z/OS

DB2 Bind Manager for z/OS

DB2 Change Accumulation Tool for z/OS

DB2 Cloning Tool for z/OS

DB2 High Performance Unload for z/OS

DB2 Log Analysis Tool for z/OS

DB2 Object Restore for z/OS

DB2 Path Checker for z/OS

DB2 Query Management Facility for z/OS

DB2 Query Monitor for z/OS

DB2 Recovery Expert for z/OS

DB2 SQL Performance Analyzer for z/OS

DB2 Table Editor for z/OS

DB2 Utilities Enhancement Tool for z/OS

DB2 Utilities Suite for z/OS

InfoSphere Change Data Capture

InfoSphere Data Event Publisher

InfoSphere Replication Server

InfoSphere Optim Data Growth Solution for z/OS

Optim Development Studio

Optim pureQuery Runtime

Optim Query Workload Tuner

infoSphere Optim Test Data Management Solution for z/OS

Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS

Exploitation PTFs: http://www-01.ibm.com/support/docview.wss?uid=swg21409518

DB2 10 for z/OS
Cut costs.
Improve performance.

IBM DB2 Tools and DB2 10 for z/OS

Exploit out-of-the-box Savings

Extend Productivity

Accelerate Time to Value

Are your Tools ready for DB2 10?

Thank You!