

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.

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!

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.

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 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.

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.

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
- **Plus New Features for DB2 V8, 9 & 10**
 - New “ALT” command to intelligently drive schema changes
 - “NOPAD” option to improve performance with VARCHAR data
 - Recover from Access Path regressions with DB2 9 & 10 Plan Management

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
      POSTCODE          CHAR          10       0 N
I
***** 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
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      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	02	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 Sqllda (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 ==>

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 UNIOUE 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
----->
Table ==> POLICY > Creator ==> I0D07S >
----->
          Row 1 of 5
----->
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 ==> I0D07S >
-----
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
-----
Table ==> POLICY_HIST > Creator ==> I0D07S >
-----
Row 1 of 7
-----
CLIENT TYPE COPAY  SYS_END  IN
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 *****

```

END = BEG in Current

History data

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

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

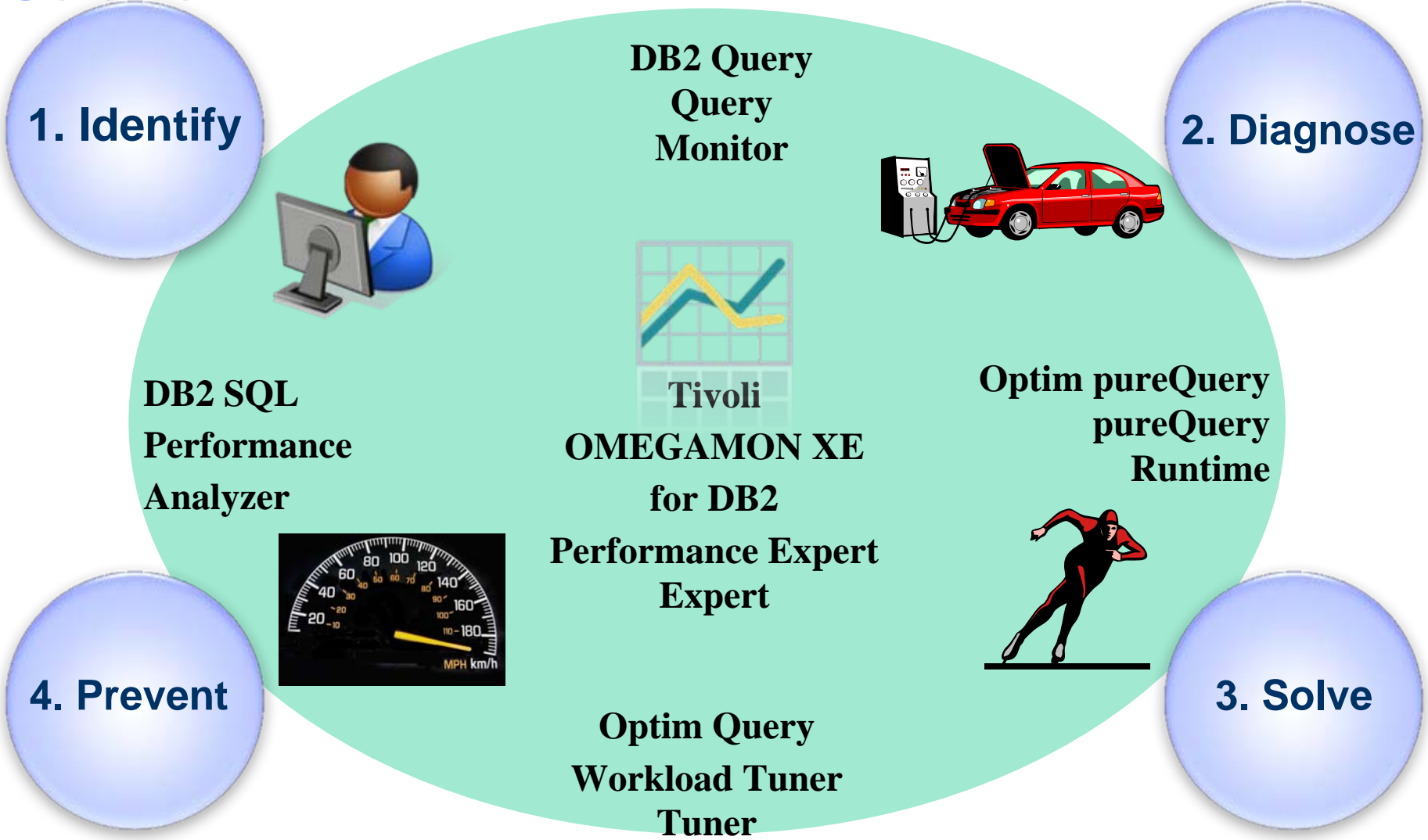
Drive DB2 Efficiency and Productivity

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

Extended Insight

- Surface DB2 for z/OS end-to-end response time metrics
 - 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
- Support DB2 9 & 10

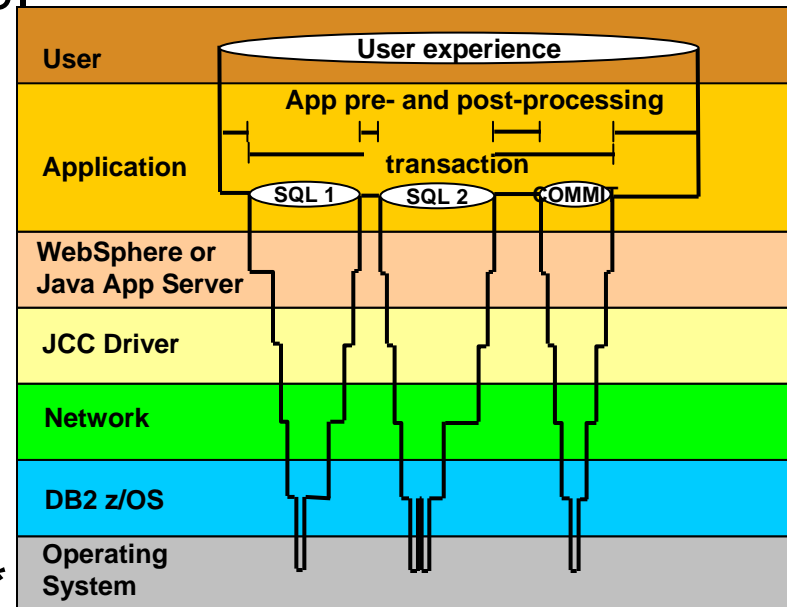
Summary SQL Reporting

Manage thousands of Threads

Support new DB2 10 Monitoring Data

Lower Monitoring Overhead

25% zIIP offload of Near Term History *



OMEGAMON DB2 PE 5.1 Extended Insight

Zoom into selected workload and see the TOP SQL list

Optim Performance Manager TSCHAFFL | Log out | About | ?

Task Manager | Manage Database Connections | Welcome - My Optim Central

Extended Insight Dashboard: OMP1D911

Response Time Details: 9.152.205.30

Top SQL statements executed by Java or CLI applications like SAP, Cognos, DataStage or WebSphere

- Zoom in on a selected SQL

Graph | Grid

Selected layer: Average End-to-End Response Time | 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
SELECT 'PVT_40K' AS WKLID, '...	1	0.474
SELECT 'PVT_40K' AS WKLID, '...	1	0.518
SELECT 'PVT_40K' AS WKLID, '...	1	1.393
N/P	1	1.023

Display this list by the selected graph layer

Detail Area for Average End-to-End Response Time

End-to-End Response Time

Overall average response time per transaction:	0.075 sec
Maximum response time:	15.282 sec
Maximum Time of running transactions	10.688 sec
Number of transactions:	61,245
Statements:	65,344

Detailed End-to-End Response Time

Time Distribution (%)

Transaction Throughput

Statement Throughput

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 WKLDID, '...	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

Statement information

```
SELECT 'PVT_40K' AS WKLDID, '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...
```

Statement Performance

Number of Executions: 1

Average end-to-end elapsed time: 0

Average client time: 0

Average driver time: 0.88 sec

Average data server time: 0.3 sec

Average network time: 0.3 sec

Average total time: 0.3 sec

Open Optim Query Tuner to analyze this SQL statement.

Statement Time Distribution (%)

Statement Outcome

Failure rate (with negative SQL code): 0 %

First SQL code: N/P

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

Average bytes transferred locally: 0 bytes

Average bytes transferred remotely: 41.369 KB

Average rows returned: 0

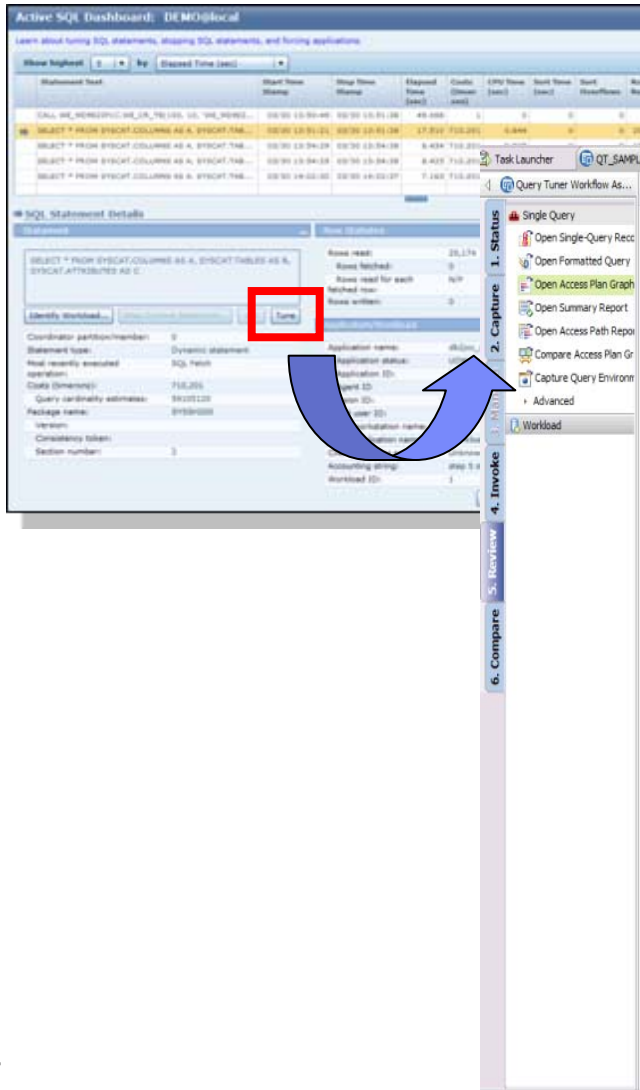
Average number of round trips: 1

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

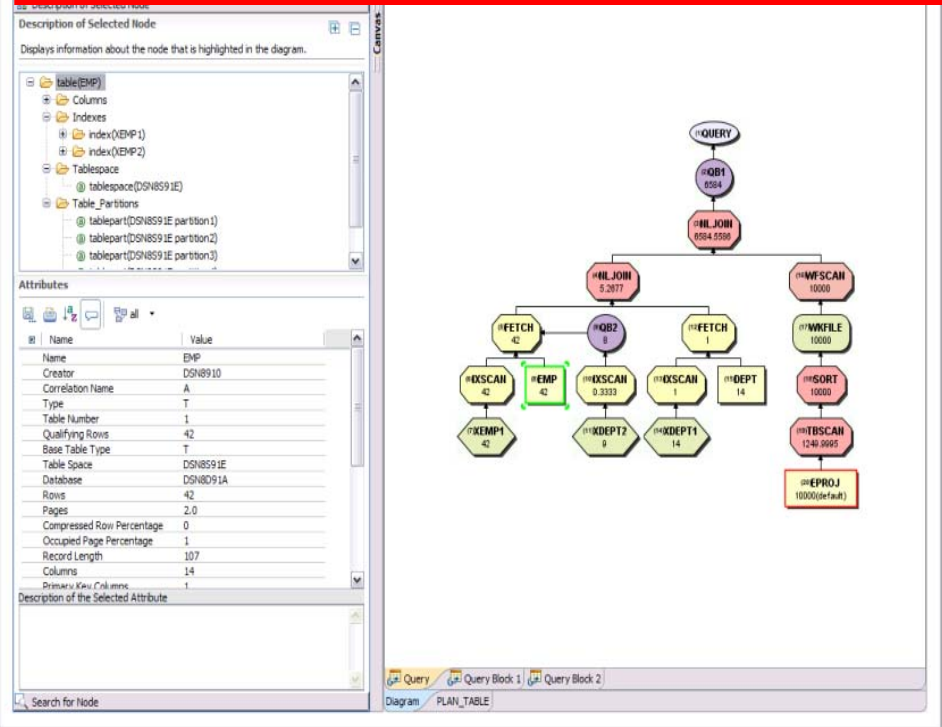
Tune SQL with Optim Query Workload Tuner

SQL Statement Text

Tune queries with *Optim Query Tuner*



- Statistics Advisor**
Generates RUNSTATS statements to improve query performance.
- Index Advisor**
Suggests new indexes that may improve performance
- Query Advisor**
Provides query rewrite advice based on a set of best practice rules
- Access Path Advisor**
Provides advice on how to resolve access path issues



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 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
-----
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 . . . . . ==> I      (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 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**

Jump into DB2 10! The water's fine.



DB2 V8

DB2 9

DB2 10

Key Questions are WHEN? and HOW?

Roadmap to Exploit DB2 10 for z/OS

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Recover DB2 Advanced Technology

 *Accelerate Time to Value*



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>



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

Questions?