



IBM Software Group

Enterprise performance management with Tivoli OMEGAMON XE for DB2 PE

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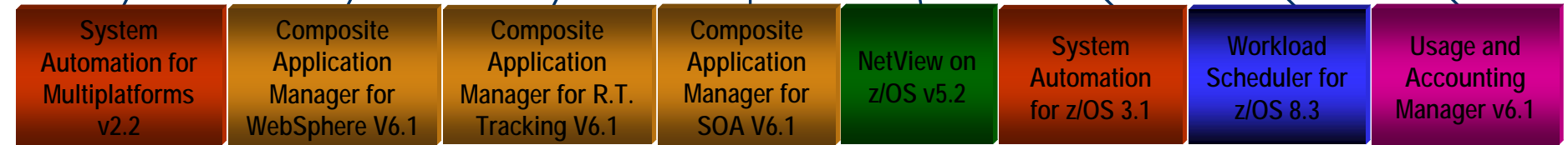
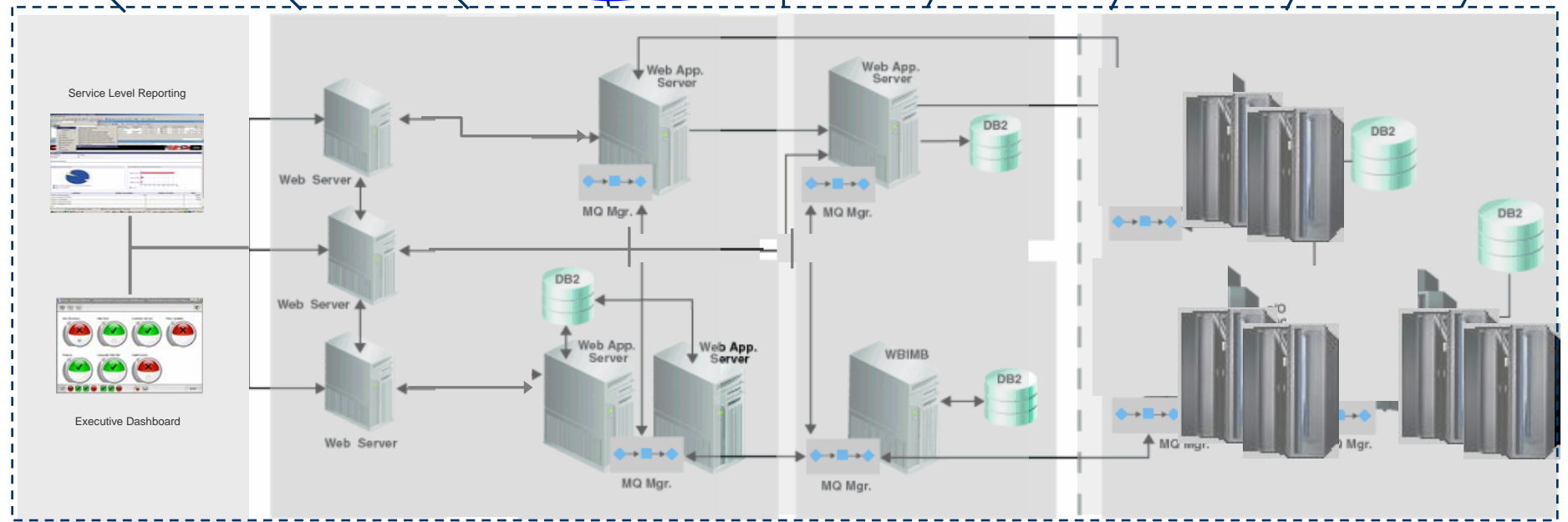
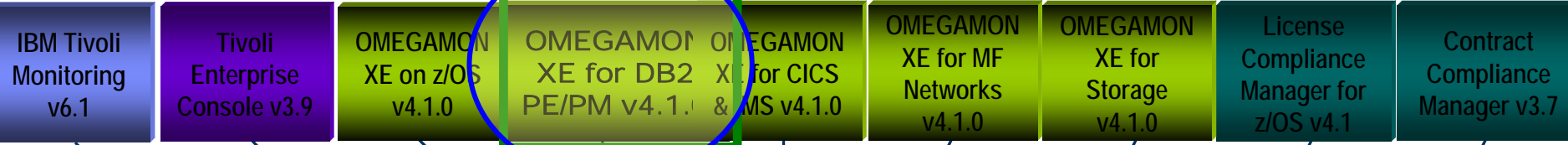
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Agenda

- **Omegamon XE for DB2 Performance Expert on z/OS Overview**
- What is new for PE/PM users
- What is new for Omegamon users
- What is new since GA
- Resources and Next Steps
- Questions

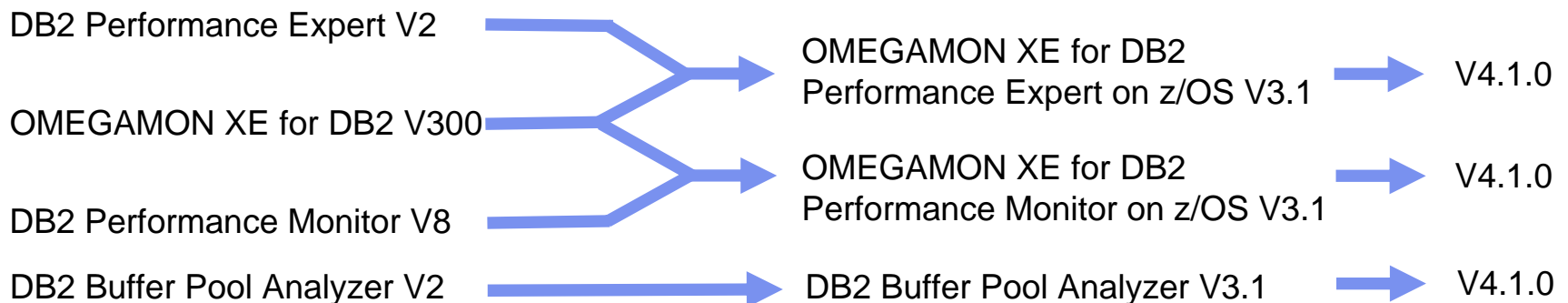
OMEGAMON XE for DB2 PE in the IBM Monitoring Landscape

System z Portfolio



OMEGAMON XE for DB2 PM/PE - Convergence activities

- **Merge the best of both the DB2 PM/PE and OMEGAMON XE DB2 product offerings into a new offering**
 - ▶ Simply spoken, we've combined the DB2 PM/PE reporting and performance warehouse functions with the real-time monitoring strength and integrated OMEGAMON end user capabilities (XE and Classic VTAM)
- **Merge functions of both data collectors into one**
 - ▶ Reduce footprint and system resources
- **Provide new unique functions to both former customer sets**
- **The “Performance Expert“ is a combination of the Performance Monitor and the DB2 Buffer Pool Analyzer, plus additional “expert” functions, i.e. ROT (Rules of Thumb) and expert SQL queries.**



OMPE - Overview

- Real Time Monitoring -Threads
 - ▶ Thread Detail (In-DB2 elapsed, CPU & wait times, locks, SQL statement counts & text, plan & package information)
 - ▶ Monitor Triggers, Procedures, & UDFs
- Real Time Monitoring – DB2
 - ▶ EDM Pool analysis, VP analysis, logging
- Application Trace Facility
 - ▶ Detailed performance tracing
- Choice Of Interfaces (XE, 3270 interface, GUI)

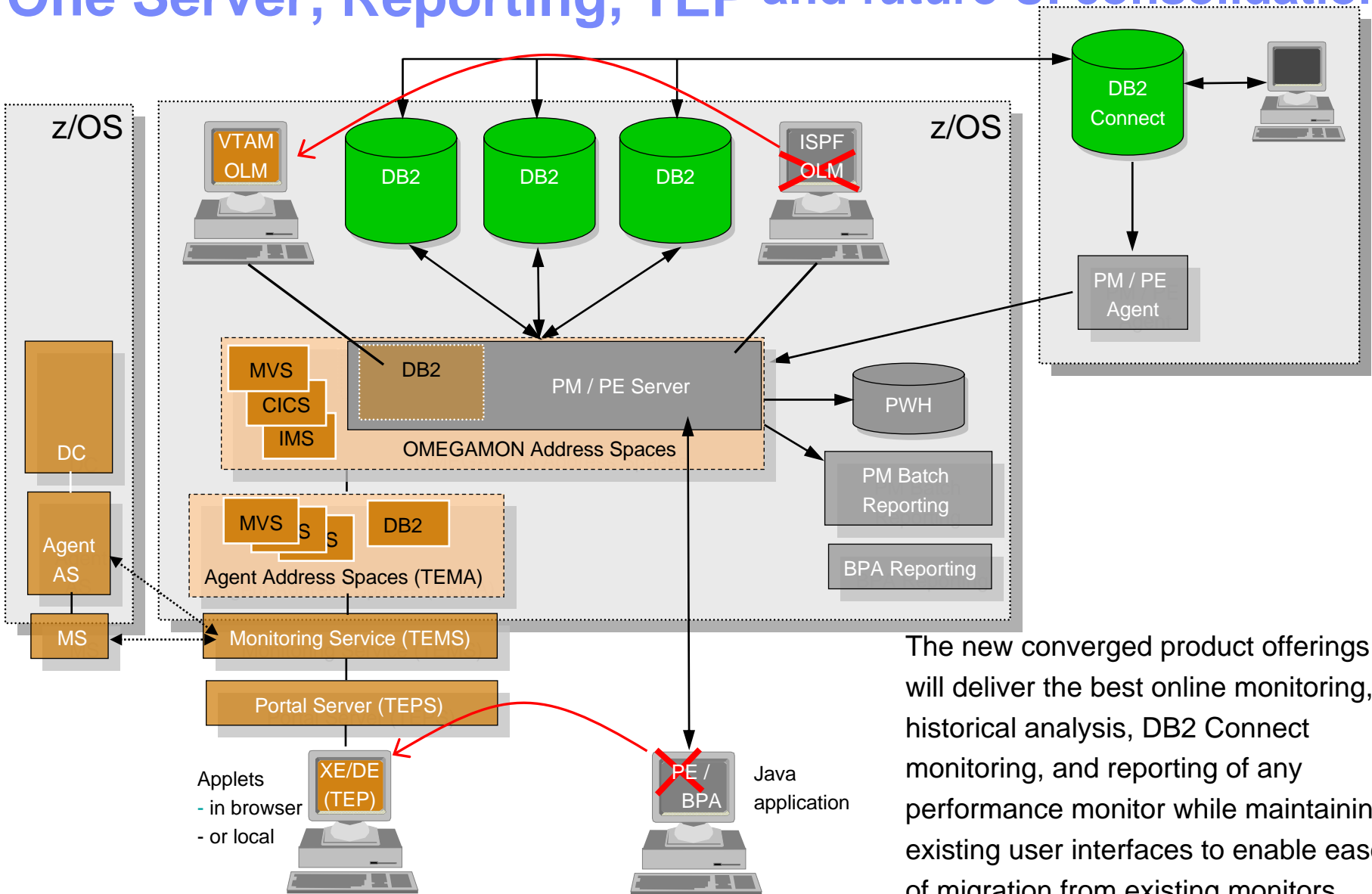
OMPE - Overview

- Object Analysis
 - ▶ I/O & getpage analysis
 - ▶ Correlate activity by object & applications
- Lock Conflict Analysis
- Near-Term Historical
 - ▶ Near-term history online
- Historical Analysis - Batch
 - ▶ Batch reporting from VSAM, DB2 or SMF
- DB2Plex MonitoringView
 - ▶ View CF structures
 - ▶ Global lock analysis
- Automation capabilities

OMPE - Overview

- Performance Warehouse and Performance Database
- DB2 Connect Monitoring
- Buffer Pool Analysis (with PE)
- Snapshot History
- Batch Reporting

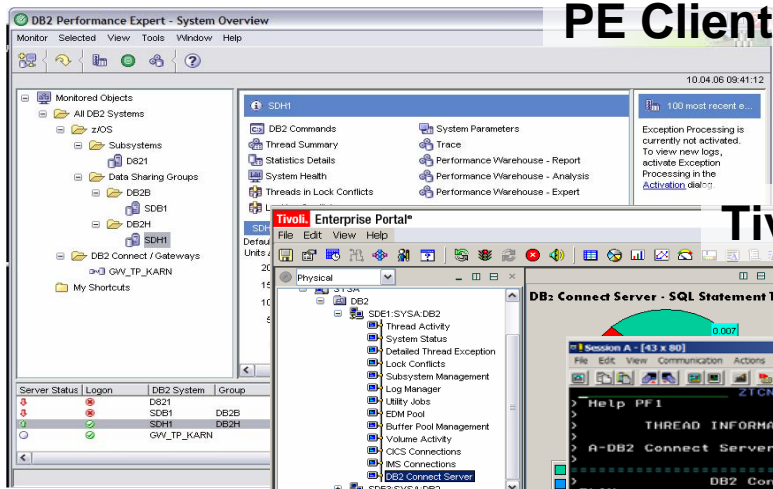
One Server, Reporting, TEP and future UI consolidation



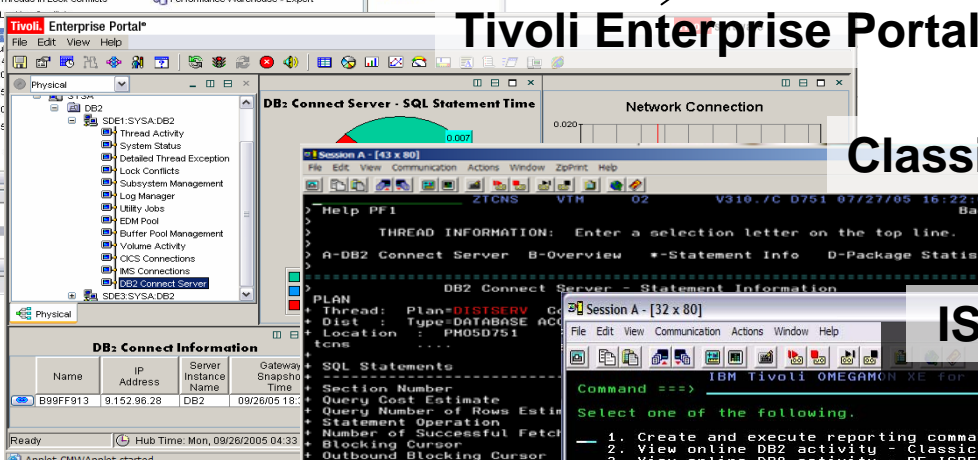
The new converged product offerings will deliver the best online monitoring, historical analysis, DB2 Connect monitoring, and reporting of any performance monitor while maintaining existing user interfaces to enable ease of migration from existing monitors.

Available user interfaces

Web based monitor suite for DB2 health checking and IT-wide monitoring (CICS, IMS, Websphere, etc.)



PE Client



Tivoli Enterprise Portal

Classic Interface



ISPF Online Monitor

Full detailed, fast responding DB2 monitor

No longer enhanced; will go away soon

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- What is new for Omegamon users
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What's new for PE/PM users

- **Classic (or VTAM) Interface**
- **Portal Interface**
- **Near Term History**
- **Object Analysis**
- **Application Trace Facility**
- **CICS and IMS Attach**

Classic Main Menu

OMPE Profile DB2
Version ssid

```

Session C - [32 x 80]
File Edit View Communication Actions Window Help
-----
ZMENU VTM 02 V410./C SDE1 01/18/07 18:30:47 2
> Help/News/Index PF1 Exit PF3 PF Keys PF5
> Type a selection letter at the left end of the top line and press ENTER.
=====
> OMEGAMON II FOR DB2 CLASSIC INTERFACE -- REALTIME MAIN MENU
S SUMMARY ..... Summary of DB2 activity
E EXCEPTIONS ..... Current or potential system problems
T THREAD ACTIVITY ..... Thread activity information
U THREAD ACTIVITY ..... Thread activity information by Package
L LOCKING CONFLICTS .... Locking conflict information
R RESOURCE MANAGERS .... Resource manager, other DB2 subsystem information
A APPLICATION TRACE .... Trace and view application activity
D DISTRIBUTED DATA ..... Distributed database system information
O OBJECT ANALYSIS ..... Object and Volume information
G DB2 CONNECT SERVER .... DB2 Connect/Gateways with connection to DB2
C MVS CONSOLE ..... MVS console to issue commands and view messages
B DB2 CONSOLE ..... DB2 console to issue commands and view messages
M MISCELLANEOUS ..... Address space information, OMEGAMON commands, etc.
P PROFILE ..... Customize OMEGAMON session and exception settings
H HISTORICAL ..... Near-Term History information
I IFCID TRACE ..... Start an IFCID Trace
V SQL PA REPORTS ..... View SQL PA Reports
Z OTHER DB2 ..... Redirect monitoring to another DB2
=====
MA c 01/002
Connected to remote server/host 9.152.87.200 using lu/pool IPV$TCC3 and port 23
    
```



Select letter options to navigate to different displays

Application Monitoring (thread snapshot)

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
ZTDTL VTM 02 V540./C D711 11/30/04 18:56:45 2
> Help PF1 Back PF3
> THREAD INFORMATION: Enter a selection letter on the top line.
> * -THREAD DETAIL B-LOCK COUNTS C-LOCK WAITS D-LOCKS OWNED E-GLOBAL LOCKS
> F-CURRENT SQL G-SQL COUNTS H-DISTRIBUTED I-BUFFER POOL J-GROUP BP
> K-PACKAGES L-RES LIMIT M-PARALLEL TASKS N-UTILITY O-OBJECTS
> P-CANCEL THREAD Q-DB2 CONSOLE R-DSN ACTIVITY S-APPL TRACE T-ENCLAVE
> U-LONG NAMES
=====
>
PLAN
+ Thread: Plan=DISTSERV Connid=SERVER Corrid=DB2BP.EXE Authid=JEN
+ Dist : Type=DATABASE ACCESS, Luwid=G998C451.D404.041130172153=31
+ Location : PM01D711 ,Host Name=dyn-9-152-196-81.boeblingen.de.ibm.
act
+ Thread Activity User Defined Functions
+ DB2 Status = WAIT-REMREQ TCB Time (SQL) = 00:00:00.000
+ MVS Status = Wait for TCB Time = 00:00:00.000
+ Total Elapsed Time = 00:33:20.189 Elapsed Time = 00:00:00.000
+ CPU Utilization = 00.0% Elapsed Time (SQL) = 00:00:00.000
+ Total CPU Time = 00:00:00.000
+ Total Parallel Tasks =
+ Current Parallel Tasks=
+
+ Stored Procedures
+
+ Total CPU = 00:
+ Elapsed time = 00:
+ Elapsed Time (SQL) = 00:
+ Wait for TCB Time = 00:
+ Wait Event Count =
+ Curr Wait TCB Time = 00:
+
+ SavePoints
+
+ Savepoint Requests =
+ Release Savepoints =
+ Rollback Savepoints =
+
+ In-DB2 Times
MA a
Connected to remote server/host tn3270.de.ibm.com using lu/pool FU
    
```

Horizontal navigation within thread detail (*)

Fields in exception are highlighted.

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
ZSQL VTM 02 V540./C D711 11/30/04 18:58:10 2
> Help PF1 Back PF3
> THREAD INFORMATION: Enter a selection letter on the top line.
> A-THREAD DETAIL B-LOCK COUNTS C-LOCK WAITS D-LOCKS OWNED E-GLOBAL LOCKS
> * -CURRENT SQL G-SQL COUNTS H-DISTRIBUTED I-BUFFER POOL J-GROUP BP
> K-PACKAGES L-RES LIMIT M-PARALLEL TASKS N-UTILITY O-OBJECTS
> P-CANCEL THREAD Q-DB2 CONSOLE R-DSN ACTIVITY S-APPL TRACE T-ENCLAVE
> U-LONG NAMES
=====
>
SQL CALL BEING EXECUTED
PLAN
+ Thread: Plan=DISTSERV Connid=SERVER Corrid=DB2BP.EXE Authid=JEN
+ Dist : Type=DATABASE ACCESS, Luwid=G998C451.D404.041130172153=31
+ Location : PM01D711 ,Host Name=dyn-9-152-196-81.boeblingen.de.ibm.
call
+
+ SQL call is active, call information is as follows :
+
+ Thread Status = WAIT-REMREQ SQL Request Type = DYNAMIC
+ Total SQL Reqs = 374 SQL Call Type = FETCH
+ SQL DBRM Name = SQLC2E03 SQL Statement Number = 00210
+ Collection ID = NULLID
+
+ select * from sysibm systables
=====
    
```

Application Monitoring (objects used by thread)

```

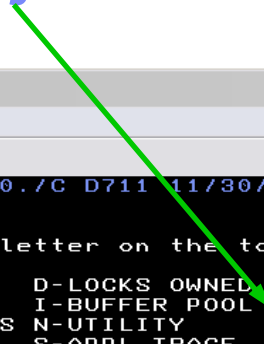
Session A - [43 x 80]
File Edit View Communication Actions Window Help
-----
> Help PF1          ZTOBJ      VTM      02      V540./C D711 11/30/04 19:11:39 2
                                     Back PF3

>
  THREAD INFORMATION:  Enter a selection letter on the top line.

> A-THREAD DETAIL  B-LOCK COUNTS  C-LOCK WAITS      D-LOCKS OWNED  E-GLOBAL LOCKS
> F-CURRENT SQL   G-SQL COUNTS  H-DISTRIBUTED  I-BUFFER POOL  J-GROUP BP
> K-PACKAGES      L-RES LIMIT  M-PARALLEL TASKS  N-UTILITY
> P-CANCEL THREAD Q-DB2 CONSOLE  R-DSN ACTIVITY   S-APPL TRACE   T-ENCLAVE
> U-LONG NAMES

-----
>
  OBJECTS USED BY THREAD

PLAN
+ Thread:  Plan=DISRSRV  Connid=SERVER  Corrid=DB2BP.EXE  Authid=JEN
+ Dist:    Type=DATABASE ACCESS, Luwid=G998C451.D404.041130172153=31
+ Location :  PM01D711      ,Host Name=dyn-9-152-196-81.boeblingen.de.ibm.
tobj
+ Database  Spacenam  Dsn  Volume  Getpage  Sync  Prefetch  I/O  -----
+          -----  -----  -----  -----  Read  Seq      List  Dynamic
+ DSNDB01   DBD01     001  PMOSD2   2         2     0         0     0
+ DSNDB06   DSNADH01  001  PMOSD2   3         2     0         0     0
+ DSNDB06   DSNATX02  001  PMOSD4   12        5     0         0     0
+ DSNDB06   DSNAUH01  001  PMOSD2   2         0     0         0     0
+ DSNDB06   DSNDSX01  001  PMOSD2   4         3     0         0     0
+ DSNDB06   DSNDTX01  001  PMOSD2   6         3     0         0     0
+ DSNDB06   DSNDX01  001  PMOSD4   5         2     0         0     0
+ DSNDB06   DSNTTX01  001  PMOSD3   5         2     0         0     0
+ DSNDB06   SYSDBASE  001  PMOSD1   5086      42    588      0     0
+ DSNDB06   SYSSTATS  001  PMOSD4   3         1     0         0     0
+ DSNDB06   SYSUSER   001  PMOSD2   1         1     0         0     0
-----
  
```



*-OBJECTS

Tivoli Enterprise Portal

- **Tivoli Enterprise Management Agent (TEMA)**
- **Tivoli Enterprise Monitoring Server (TEMS)**
- **Tivoli Enterprise Portal Server (TEPS)**
- **Tivoli Enterprise Portal (TEP)**

Tivoli Enterprise Portal (XE Web browser Interface)

Easy to use
Browser controls

Plug and Play components

Personalized Views

View Zoom

Splitter controls

Intelligent Linking

Persistent customized workspaces

The screenshot displays the Tivoli Enterprise Portal interface for monitoring OS/390 UNIX processes. The interface includes a navigation tree on the left, a main content area with two charts, and a table at the bottom.

UNIX Run Time Chart: A 3D bar chart showing run time for various processes. The x-axis lists processes: BBOSMS, BBOIR, BBONM, BBODMN, BBONMS, BBOSMS, BBOASR1, and BBOASR2. The y-axis represents Run Time from 0 to 6.

CPU Times Chart: A 3D bar chart showing User CPU Time (yellow) and System CPU Time (blue) for the same processes. The y-axis represents Run Time from 0.0 to 3.0.

OS/390 UNIX Processes for WebSphere Table:

MVS Status	Process Status	Execution State	Process ID	Parent Process ID	Leader Session ID	Process Group	Foreground Pro
Normal	Multiple_Tasks_In_Process_+_Pthrea...	Running_not_in_kernel_wait	50462821	1	50462821	50462821	
Normal	Multiple_Tasks_In_Process_+_Pthrea...	Running_not_in_kernel_wait	33685615	1	33685615	33685615	
Normal	Multiple_Tasks_In_Process_+_Pthrea...	Running_not_in_kernel_wait	50462832	1	50462832	50462832	
Normal	Multiple_Tasks_In_Process_+_Pthrea...	Running_not_in_kernel_wait	33685672	1	33685672	33685672	
Swapped_Out	Multiple_Tasks_In_Process_+_Pthrea...	Running_not_in_kernel_wait	16908492	1	16908492	16908492	
Swapped_Out	Multiple_Tasks_In_Process_+_Pthrea...	Running_not_in_kernel_wait	33685727	1	33685727	33685727	
Normal	Multiple_Tasks_In_Process_+_Pthrea...	Running_not_in_kernel_wait	16908519	1	16908519	16908519	
Normal	Multiple_Tasks_In_Process_+_Pthrea...	Running_not_in_kernel_wait	50462998	1	50462998	50462998	

You can detect exceptional situations/events, see details and Expert Advise, and you can Take Action

Tivoli Enterprise Portal Tivoli software

File Edit View Help

Physical

- ENTERPRISE
 - Other Platforms
 - UNIX Systems
 - athens
 - isis
 - puffer
 - sequoia
 - Windows Systems
 - EBXAPP3
 - JNGUY-D
 - NDEOD3
 - Windows NT
 - System
 - NT_Log_Space_Low - Applic

Initial Situation Values

% Usage	Server Name	Timestamp	Log Name	Max Size	Current Size	Record Count	Retention
100	Primary:NDEOD3:NT	06/26/02 18:39:27	Application	524,288	524,288	3,173	7 C:\

Current Situation Values

% Usage	Server Name	Timestamp	Log Name	Max Size	Current Size	Record Count	Retention
100	Primary:NDEOD3:NT	07/01/02 11:20:19	Application	524,288	524,288	3,173	7 C:\

Take Action

Name:

Command:

Arguments...

Expert Advice

One of your event logs is close to full. If you have NT write over the old entries(wrap around), no action is needed. If this message appears too often, consider enlarging the log file or investigate where the log messages come from.

Ready Server Available. NT_Log_Space_Low - Application - ebxapp3:19999 - SYSADMIN

Opening http://ebxapp3:1920///cnp/kdh/lib/classes/candle/knt/resources/help/attr_NTLOGINFD.properties Local intranet

Define a situation together with an automatic action

Situation(s) for - Detailed Thread Exception

Condition

Description

Condition

CPU Utilization \geq 2.0

	Authorization Identifier	CPU Utilization	Package Name
1	EQ 'JEN'	\geq 2.0	EQ 'DYNSEL04'
2			
3			

CPU Utilization The rate of CPU up to four digits.

DB2 CPU Used The total DB2 CPU used up to four digits, in units that represent the percentage of CPU used.

Sampling interval

0 / 0 : 0 : 30

dd hh mm ss

Ready

Situation(s) for - Detailed Thread Exception

Action Selection

System Command Universal Message

System Command

Application &DB2_Thread_Exceptions.Plan_Name has high CPU Utilization &DB2_Thread_Exceptions.CPU_Utilization

Attribute Substitution...

If the condition is true for more than one monitored item:

Only take action on first item

Take action on each item

Where should the Action be executed (performed):

Execute the Action at the Managed System (Agent)

Execute the Action at the Managing System (CMS)

If the condition stays true over multiple intervals:

Don't take action twice in a row (wait until situation goes false then true again)

Take action in each interval

Define a situation together with an automatic action

Detailed Thread Exception - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media Bluetooth On Demand Workpl

Links IBM Bluepages IBM_USER My Folder LEO Dictionary METAGER Google RETAIN On Demand Workpl

Tivoli Enterprise Portal

File Edit View Help

Enterprise

z/OS Systems

DB2plex

CRITICAL

DYNSEL_HIGH_CPU SDE1:SYSA:DB2 04/08/06 23:35:08

WARNING

DYNSELP04_running SDE1:SYSA:DB2 04/08/06 23:34:08

Select workspace link button to view event results.

```

JOB03506 00000090 $HASP373 JEN1EL04 STARTED - INIT 1 - CLASS A - SYS SYSA
JOB03506 00000090 IEE403I JEN1EL04 - STARTED - TIME=23 33 52
STC03503 00000290 APPLICATION DYNSELP1 HAS HIGH CPU UTILIZATION 21
STC03503 00000090 IEE305I APPLICAT COMMAND INVALID
STC02220 00000090 DSNL515I -SDE3 DSNLILNR TCP/IP BIND FAILED FOR PORT 474
474 00000090 5140 WITH
474 00000090 RETURN CODE=1115 AND REASON CODE=744C7247
  
```

OMEGAMON Classic Functions

■ Near Term History

- ▶ Continuous trace collection via OP buffer
 - *ACCTG, STATS, ZPARMS, DynSQL, NEGSQL, Sort, Scan, Locks*
- ▶ Data saved into several VSAM datasets (automatic switched)
- ▶ Soon: SEQ dataset to be processed by Batch Reporter
- ▶ Expensive if DYNSQL and NEGSQL are switched on
- ▶ Recommendation: Only ACCTG, STATS and ZPARMS for first setup, if at all.
- ▶ Can be started dynamically from z/OS console, e.g.
 - *F cccccccc,S H2WLMGR,OPTION=COPTssid*

■ Object Analysis

- ▶ Needs Event manager to be started (can run only once per LPAR)
- ▶ Goes down to control blocks
- ▶ Can be very expensive depending on volume of activities and interval and THREAD=YES
- ▶ Recommendation: Start event manager only with data collector and start OA from Classic “F – Collector Control” or from z/OS Console, e.g.
 - *F cccccccc,S EVENTMGR,START DB2=dbssid,INTERVAL=value,THREAD=YES*

■ Application Trace Facility

- ▶ Invoked from Classic main panel (“A”) or out of Thread Detail display
- ▶ Intended to run only for a limited time frame
- ▶ Mainly used for SQL level tracing with details
- ▶ Data can be reviewed online when trace collection still continues
- ▶ Expensive only when started

History Data – Near-Term Data

- Define interval
- Select interval and view
- Select thread group
- Zoom into single thread

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
-----
ZHARP      VTM      02      V540./C D711 11/30/04 19:59:04 2
> Help PF1      Back PF3      Up PF7      Down PF8
>
> Type a selection letter next to an Interval and press Enter.
>
> A-BY PLAN      B-BY AUTHID      C-BY PLAN,AUTHID      D-BY AUTHID,PLAN
> E-THREAD SUMMARY      F-BY SUBINTERVAL
-----
>
> HARP
+ Report Interval: 5 mins      Start: 11/30 18:55:00.000000
+ Report Filtered: NO      End: 11/30 19:54:59.999999
-----
+
+ Time Thrds Commit Abort DML Dlk/ In-DB2 In-DB2 In-DB2 GetP/
+ TOut Elap Tm CPU Tm Wait Tm Getpage RIO
-----
+
+ 19:50-19:40 No Thread
+ 19:35 1 1
+ 19:30 3 9
+ 19:25 12 16
+ 19:20 7 7
+ 19:15 10 20
+ 19:10-19:00 No Thread
    
```

```

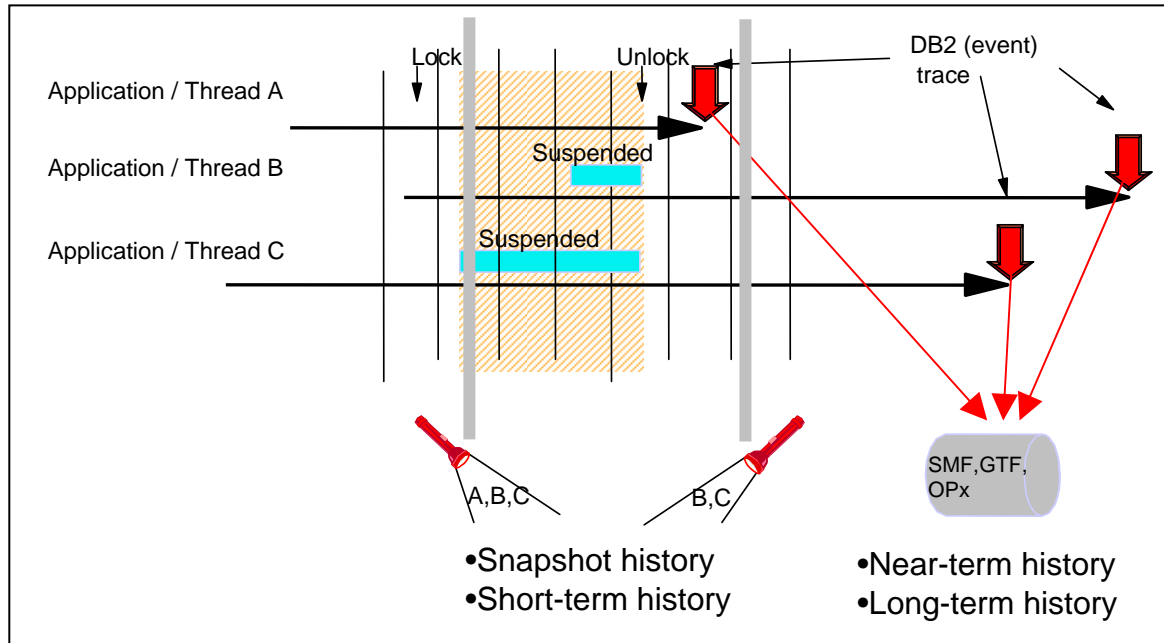
Session A - [43 x 80]
File Edit View Communication Actions Window Help
-----
ZHACTACT VTM      02      V540./C D711 11/30/04 20:00:36 3
> Help PF1      Back PF3      Up PF7      Down PF8
>
> Enter a selection letter on the top line.
>
> *-SUMMARY      B-BUFFER POOL      C-DB2 TIME      D-LOCK/SCAN/SORT
-----
>
> HATH
+ Report Interval: 5 mins      Start: 11/30 19:25:00.000000
+ Report Filtered: NO      End: 11/30 19:29:59.999999
-----
+
+ End Time Plan Authid Elapsed CPU SQL Commit Abrt Pkg Term
+ Time Time Status
-----
+ 19:29:37.079 P PARALCPU JEN 13.21 .332 14 1 0 1
+ 19:29:24.124 * PARALCPU JEN 171.68 24.247 0 6 0 1
+ 19:29:23.378 P PARALCPU JEN 136.01 20.573 750K 1 0 1
+ 19:26:57.791 * PARALCPU JEN 15.86 .969 0 2 0 1
+ 19:26:41.926 P PARALCPU JEN 9.25 .332 14 1 0 1
+ 19:26:32.441 P PARALCPU JEN 122.57 20.678 750K 1 0 1
    
```

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
-----
ZHAGAP VTM      02      V540./C D711 11/30/04 20:00:36 3
> Help PF1      Back PF3      Up PF7      Down PF8
>
> Enter a selection letter on the top line.
>
> *-SUMMARY      B-BUFFER POOL      C-DB2 TIME      D-LOCK/SCAN/SORT
-----
>
> HATH
+ Report Interval: 5 mins      Start: 11/30 19:25:00.000000
+ Report Filtered: NO      End: 11/30 19:29:59.999999
-----
+
+ End Time Plan Authid Elapsed CPU SQL Commit Abrt Pkg Term
+ Time Time Status
-----
+ 19:29:37.079 P PARALCPU JEN 13.21 .332 14 1 0 1
+ 19:29:24.124 * PARALCPU JEN 171.68 24.247 0 6 0 1
+ 19:29:23.378 P PARALCPU JEN 136.01 20.573 750K 1 0 1
+ 19:26:57.791 * PARALCPU JEN 15.86 .969 0 2 0 1
+ 19:26:41.926 P PARALCPU JEN 9.25 .332 14 1 0 1
+ 19:26:32.441 P PARALCPU JEN 122.57 20.678 750K 1 0 1
    
```

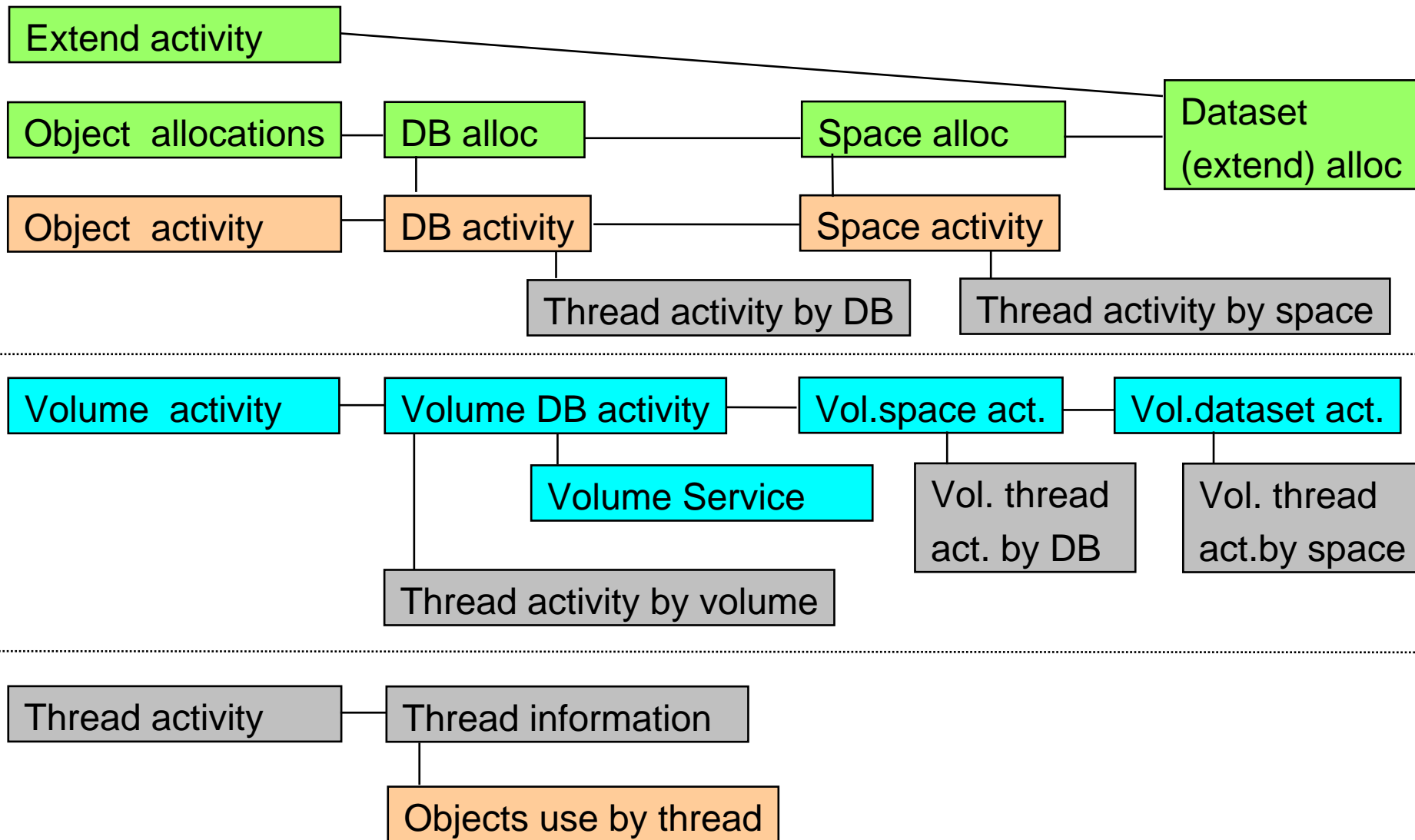
Authid	P	Thrds	Commit	DML	Elap Tm	CPU Tm	Wait Tm	Getpage	RIO
BGB	K02540IF	1	0	0	.0	.01	.0	0	.0
JEN	DSNBIND	3	3	0	192.4	.16	192.0	1414	3.9
	DYNSELP1	3	2	213	444.1	288.52	7.2	84365	63.0
	PARALCPU	5	11	1500K	447.0	59.99	175.8	132318	3.6

Different types of history for different purposes



Type	Used by	Based on
Near-term history	Classic Interface	event traces
Long-term history	Report Facility, Performance Warehouse	event traces
Snapshot history	ISPF Online Monitor, PE Client	snapshot data
Short-Term history	TEP GUI	snapshot data

Object Analysis



Object Analysis

Object allocation sample screen snapshots with Zoom-in

```

Session B - [43 x 80]
File Edit View Communication Actions Window Help
ZOJAS VTM 02 V540./C D711 11/22/04 22:17:16
Help PF1 Back PF3 Up PF7 Down PF8 Sort PF10 Zoom PF11
O.A
OBJECT ANALYSIS: Enter a selection letter on the top line.
*-OBJECT ALLOCATIONS B-OBJECT ACTIVITY C-VOLUME ACTIVITY
D-EXTEND ACTIVITY E-DISPLAY OPTIONS F-COLLECTOR CONTROL
=====
OBJECT ALLOCATION SUMMARY
OJAS
+ Total Databases = 9 Total Spaces = 185 Total Datasets = 195
+ *
+ Database Spaces Tblsp Indxs DSNs Extents Exts/DSN Max Exts
+-----+-----+-----+-----+-----+-----+-----+
+ DB2PDM 40 8 32 40 101 2.5 35
+ DSNATPDB 4 0 0 4 4 1.0 1
+ DSNDB01 12 7 0 12 74 6.1 24
+ DSNDB04 13 0 0 0 106 53.0 91
+ DSNDB06 15 17 98 108 179 1.6 56
+ DSNDB07 22 2 0 2 124 62.0 123
+ HECKDB 5 0 0 5 189 37.8 91
+ OEGDB 1 1 0 1 1 1.0 1
+ PARLDABA 3 1 2 21 80 3.8 15
=====
    
```

```

ZOJA1 VTM 02 V540./C D711 11/22/04 22:35:00
Help PF1 Back PF3 Up PF7 Down PF8 Sort PF10 Zoom PF11
OBJECT ANALYSIS: Enter a selection letter on the top line.
*-DATABASE ALLOC B-DATABASE ACTIVITY C-DISPLAY OPTIONS
=====
DATABASE ALLOCATIONS
OJA1
+ Database = PARLDABA Total Spaces = 3 Total Datasets = 21
+ *
+ Spacenam Type BP Vols DSNs Extents Exts/DSN Max Exts
+-----+-----+-----+-----+-----+-----+-----+
+ TAB1TS PTTT 1 2 10 69 6.9 15
+ XTAB12 INDX 1 1 1 1 1 1.0 1
+ XTBB11 PTIX 1 1 1 1 1 1.0 1
=====
    
```

```

ZOJES VTM 02 V540./C D711 11/22/04 22:34:34
Help PF1 Back PF3 Up PF7 Down PF8 Sort PF10 Zoom PF11
O.D
OBJECT ANALYSIS: Enter a selection letter on the top line.
A-OBJECT ALLOCATIONS B-OBJECT ACTIVITY C-VOLUME ACTIVITY
*-EXTEND ACTIVITY E-DISPLAY OPTIONS F-COLLECTOR CONTROL
=====
DATASET EXTEND ACTIVITY
OJES
+ Database Spacenam DSN Extents
+-----+-----+-----+-----+
+ PARLDABA TAB1T000 0001 14
+ PARLDABA TAB1T000 0002 1
+ PARLDABA TAB1T000 0004 1
+ PARLDABA TAB1T000 0005 1
=====
+ DSN Vols Extents High Fmt Pg High Alloc
+-----+-----+-----+-----+-----+-----+
+ 00000001 1 15 0016 7F 100.00% 48 Trks
+ 00000002 1 15 000E 0F 100.00% 43 Trks
+ 00000003 1 15 0012 FB 100.00% 40 Trks
+ 00000004 1 15 0012 FB 100.00% 40 Trks
+ 00000005 1 15 0012 FB 100.00% 40 Trks
+ 00000006 1 15 0002 1B 0000.00% 4 Trks
+ 00000007 1 15 0002 1B 0000.00% 4 Trks
+ 00000008 1 15 0002 1B 0000.00% 4 Trks
+ 00000009 1 15 0002 1B 0000.00% 4 Trks
+ 00000010 1 15 0002 1B 0000.00% 4 Trks
+ 00000011 1 15 0002 1B 0000.00% 4 Trks
+ 00000012 1 15 0002 1B 0000.00% 4 Trks
+ 00000013 1 15 0002 1B 0000.00% 4 Trks
+ 00000014 1 15 0002 1B 0000.00% 4 Trks
+ 00000015 1 15 0002 1B 0000.00% 4 Trks
+ 00000016 1 15 0002 1B 0000.00% 4 Trks
+ 00000017 1 15 0002 1B 0000.00% 4 Trks
+ 00000018 1 15 0002 1B 0000.00% 4 Trks
+ 00000019 1 15 0002 1B 0000.00% 4 Trks
+ 00000020 1 15 0002 1B 0000.00% 4 Trks
+ 00000021 1 15 0002 1B 0000.00% 4 Trks
+ 00000022 1 15 0002 1B 0000.00% 4 Trks
+ 00000023 1 15 0002 1B 0000.00% 4 Trks
+ 00000024 1 15 0002 1B 0000.00% 4 Trks
+ 00000025 1 15 0002 1B 0000.00% 4 Trks
+ 00000026 1 15 0002 1B 0000.00% 4 Trks
+ 00000027 1 15 0002 1B 0000.00% 4 Trks
+ 00000028 1 15 0002 1B 0000.00% 4 Trks
+ 00000029 1 15 0002 1B 0000.00% 4 Trks
+ 00000030 1 15 0002 1B 0000.00% 4 Trks
+ 00000031 1 15 0002 1B 0000.00% 4 Trks
+ 00000032 1 15 0002 1B 0000.00% 4 Trks
+ 00000033 1 15 0002 1B 0000.00% 4 Trks
+ 00000034 1 15 0002 1B 0000.00% 4 Trks
+ 00000035 1 15 0002 1B 0000.00% 4 Trks
+ 00000036 1 15 0002 1B 0000.00% 4 Trks
+ 00000037 1 15 0002 1B 0000.00% 4 Trks
+ 00000038 1 15 0002 1B 0000.00% 4 Trks
+ 00000039 1 15 0002 1B 0000.00% 4 Trks
+ 00000040 1 15 0002 1B 0000.00% 4 Trks
+ 00000041 1 15 0002 1B 0000.00% 4 Trks
+ 00000042 1 15 0002 1B 0000.00% 4 Trks
+ 00000043 1 15 0002 1B 0000.00% 4 Trks
+ 00000044 1 15 0002 1B 0000.00% 4 Trks
+ 00000045 1 15 0002 1B 0000.00% 4 Trks
+ 00000046 1 15 0002 1B 0000.00% 4 Trks
+ 00000047 1 15 0002 1B 0000.00% 4 Trks
+ 00000048 1 15 0002 1B 0000.00% 4 Trks
+ 00000049 1 15 0002 1B 0000.00% 4 Trks
+ 00000050 1 15 0002 1B 0000.00% 4 Trks
+ 00000051 1 15 0002 1B 0000.00% 4 Trks
+ 00000052 1 15 0002 1B 0000.00% 4 Trks
+ 00000053 1 15 0002 1B 0000.00% 4 Trks
+ 00000054 1 15 0002 1B 0000.00% 4 Trks
+ 00000055 1 15 0002 1B 0000.00% 4 Trks
+ 00000056 1 15 0002 1B 0000.00% 4 Trks
+ 00000057 1 15 0002 1B 0000.00% 4 Trks
+ 00000058 1 15 0002 1B 0000.00% 4 Trks
+ 00000059 1 15 0002 1B 0000.00% 4 Trks
+ 00000060 1 15 0002 1B 0000.00% 4 Trks
+ 00000061 1 15 0002 1B 0000.00% 4 Trks
+ 00000062 1 15 0002 1B 0000.00% 4 Trks
+ 00000063 1 15 0002 1B 0000.00% 4 Trks
+ 00000064 1 15 0002 1B 0000.00% 4 Trks
+ 00000065 1 15 0002 1B 0000.00% 4 Trks
+ 00000066 1 15 0002 1B 0000.00% 4 Trks
+ 00000067 1 15 0002 1B 0000.00% 4 Trks
+ 00000068 1 15 0002 1B 0000.00% 4 Trks
+ 00000069 1 15 0002 1B 0000.00% 4 Trks
+ 00000070 1 15 0002 1B 0000.00% 4 Trks
+ 00000071 1 15 0002 1B 0000.00% 4 Trks
+ 00000072 1 15 0002 1B 0000.00% 4 Trks
+ 00000073 1 15 0002 1B 0000.00% 4 Trks
+ 00000074 1 15 0002 1B 0000.00% 4 Trks
+ 00000075 1 15 0002 1B 0000.00% 4 Trks
+ 00000076 1 15 0002 1B 0000.00% 4 Trks
+ 00000077 1 15 0002 1B 0000.00% 4 Trks
+ 00000078 1 15 0002 1B 0000.00% 4 Trks
+ 00000079 1 15 0002 1B 0000.00% 4 Trks
+ 00000080 1 15 0002 1B 0000.00% 4 Trks
+ 00000081 1 15 0002 1B 0000.00% 4 Trks
+ 00000082 1 15 0002 1B 0000.00% 4 Trks
+ 00000083 1 15 0002 1B 0000.00% 4 Trks
+ 00000084 1 15 0002 1B 0000.00% 4 Trks
+ 00000085 1 15 0002 1B 0000.00% 4 Trks
+ 00000086 1 15 0002 1B 0000.00% 4 Trks
+ 00000087 1 15 0002 1B 0000.00% 4 Trks
+ 00000088 1 15 0002 1B 0000.00% 4 Trks
+ 00000089 1 15 0002 1B 0000.00% 4 Trks
+ 00000090 1 15 0002 1B 0000.00% 4 Trks
+ 00000091 1 15 0002 1B 0000.00% 4 Trks
+ 00000092 1 15 0002 1B 0000.00% 4 Trks
+ 00000093 1 15 0002 1B 0000.00% 4 Trks
+ 00000094 1 15 0002 1B 0000.00% 4 Trks
+ 00000095 1 15 0002 1B 0000.00% 4 Trks
+ 00000096 1 15 0002 1B 0000.00% 4 Trks
+ 00000097 1 15 0002 1B 0000.00% 4 Trks
+ 00000098 1 15 0002 1B 0000.00% 4 Trks
+ 00000099 1 15 0002 1B 0000.00% 4 Trks
+ 00000100 1 15 0002 1B 0000.00% 4 Trks
=====
    
```

Object Analysis

Object activity sample screen snapshots with Zoom-in

```

Session B - [43 x 80]
File Edit View Communication Actions Window Help
Z0J0S VTM 02 V540./C D711 11/22/04 22:37:08
Help PF1 Back PF3 Up PF7 Down PF8 Sort PF10 Zoom PF11
OBJECT ANALYSIS: Enter a selection letter on the top line.
A-OBJECT ALLOCATIONS *-OBJECT ACTIVITY C-VOLUME ACTIVITY
D-EXTEND ACTIVITY E-DISPLAY OPTIONS F-COLLECTOR CONTROL
=====
OBJECT ACTIVITY SUMMARY
OJ0S
+ Interval Time = 24:00:00 Interval Elapsed = 01:52:21
+ Total Getpage = 88830 Total I/O = 33876
+
+ Database % of % of Getp Sync Pre Async Other
+ Database Getp I/O per RIO Getpage Read Fetch Write Write
+-----+-----+-----+-----+-----+-----+-----+-----+
+ DB2PM 17.6% .0% 1307.8 15694 12 0 0 0
+ DSNDDB01 1.4% .1% 13.5 379 26 2 15 0
+ DSNDDB06 1.0% .1% 11.1 934 43 0 8 0
+ DSNDDB07 15.1% .0% 1345.0 13452 0 0 1 0
+ HECKDB .0% .0% 0.0 0 0 0 0 0
+ PARLDABA 65.7% 99.6% 30.5 58362 244 1665 31860 0
=====
    
```

```

Z0J01 VTM 02 V540./C D711 11/22/04 22:41:41
Help PF1 Back PF3 Up PF7 Down PF8 Sort PF10 Zoom PF11
OBJECT ANALYSIS: Enter a selection letter on the top line.
A-DATABASE ALLOCS *-DATABASE ACTIVITY C-THREAD ACTIVITY D-DISPLAY OPTIONS
=====
DATABASE ACTIVITY
OJ01
+ Interval Time = 24:00:00 Interval Elapsed = 01:56:55
+ Total Getpage = 58362 Total I/O = 33769
+
+ Database = PARLDABA
+
+ Spacenam % of % of Getp Sync Pre Async Other
+ Spacenam Getp I/O per RIO Getpage Read Fetch Write Write
+-----+-----+-----+-----+-----+-----+-----+
+ TAB1TS 82.0% 75.4% 29.0 47889 148 1503 23819 0
+ TAB12 1.1% 7.4% 298.7 2987 12 44 2471 0
+ XTBB11 1.8% 17.0% 37.0 7486 84 118 5570 0
=====
    
```

```

V540./C D711 11/22/04 22:44:27
Help PF1 Back PF3 Up PF7 Down PF8 Sort PF10 Zoom PF11
OBJECT ANALYSIS: Enter a selection letter on the top line.
A-DATABASE ALLOCS *-DATABASE ACTIVITY C-THREAD ACTIVITY D-DISPLAY OPTIONS
=====
C-THREAD ACTIVITY
OJ01
+ Interval Time = 24:00:00 Interval Elapsed = 01:59:40
+ Total Getpage = 58362 Total I/O = 25470
+
+ Database = PARLDABA Spacename = TAB1TS
+
+ DSN % of % of Getp Sync Pre Async Other
+ DSN Getp I/O per RIO Getpage Read Fetch Write Write
+-----+-----+-----+-----+-----+-----+-----+
+ 001 23.9% 23.9% 30.1 11463 21 355 5715 0
+ 002 13.9% 14.0% 27.8 6703 32 200 3335 0
+ 003 19.9% 19.9% 29.9 9563 20 200 4763 0
+ 004 19.9% 19.9% 29.9 9563 20 200 4763 0
+ 005 19.9% 19.9% 29.9 9563 20 200 4763 0
+ 006 2.0% 2.0% 26.4 978 7 300 480 0
+ 007 .0% .0% 1.5 14 7 0 0 0
+ 008 .0% .0% 1.5 14 7 0 0 0
+ 009 .0% .0% 1.5 14 7 0 0 0
+ 010 .0% .0% 1.5 14 7 0 0 0
=====
    
```

```

Z0J06 VTM 02 V540./C D711 11/22/04 22:44:27
Help PF1 Back PF3 Up PF7 Down PF8 Sort PF10 Zoom PF11
OBJECT ANALYSIS: Enter a selection letter on the top line.
A-DATABASE ALLOCS *-DATABASE ACTIVITY C-THREAD ACTIVITY D-DISPLAY OPTIONS
=====
THREAD ACTIVITY BY
OJ06
+ Interval Time = 24:00:00 Interval Elapsed = 01:59:40
+ Total Getpage = 58362 Total I/O = 25470
+
+ Database = PARLDABA
+
+ Planname Authid Correlation Getpage Sync Prefetch I/O
+ Planname Authid Correlation Getpage Read Seq List Dynamic
+-----+-----+-----+-----+-----+-----+-----+
+ DSNUTIL JEN JENLOAD 31885 145 0 0 0
+ DSNUTIL JEN JENLOAD 26477 99 1665 0 0
=====
    
```

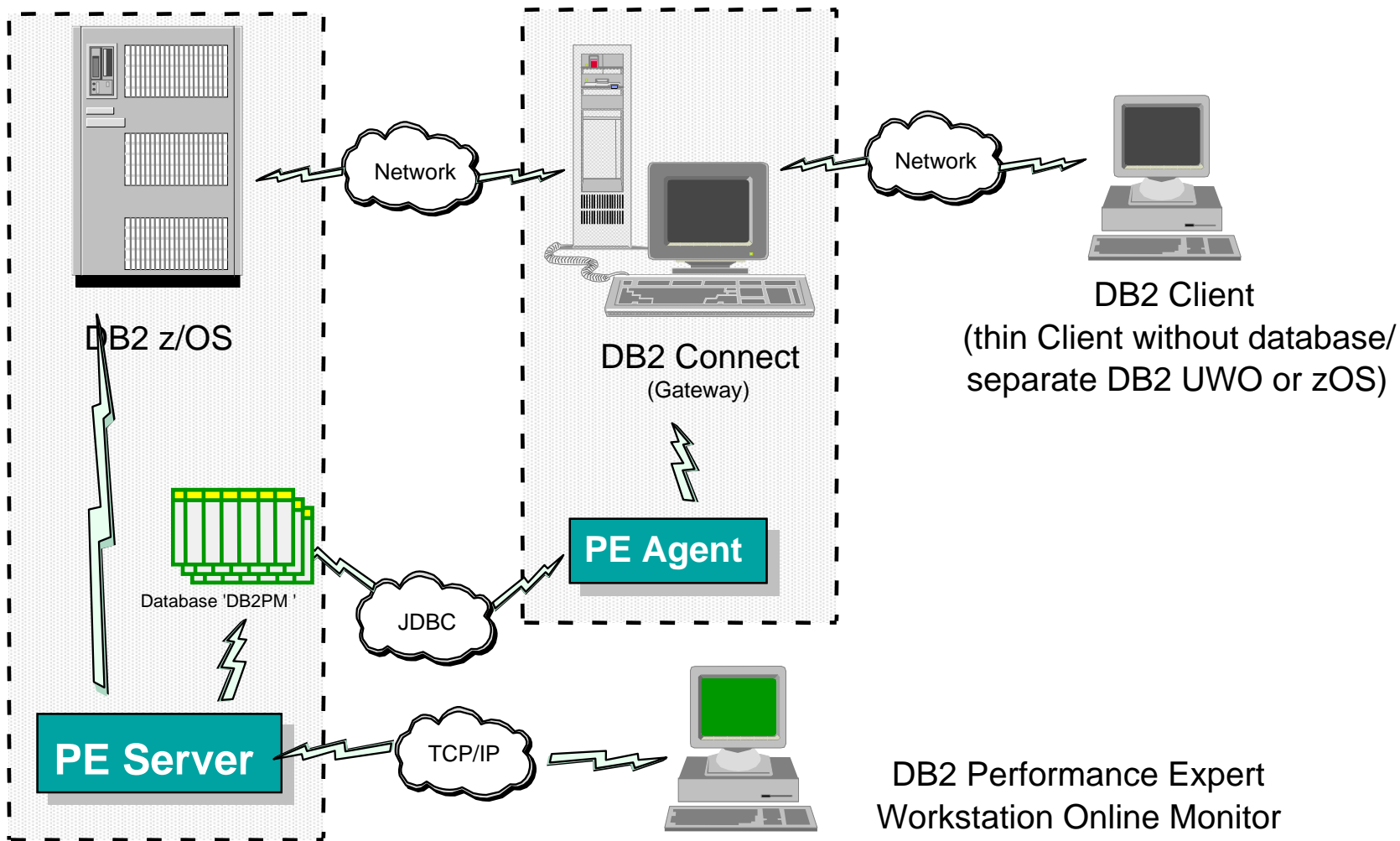
Agenda

- Omegamon XE for DB2 Performance Expert on z/OS Overview
- What is new for PE/PM users
- **What is new for Omegamon users**
- What is new since GA
- Resources
- Questions

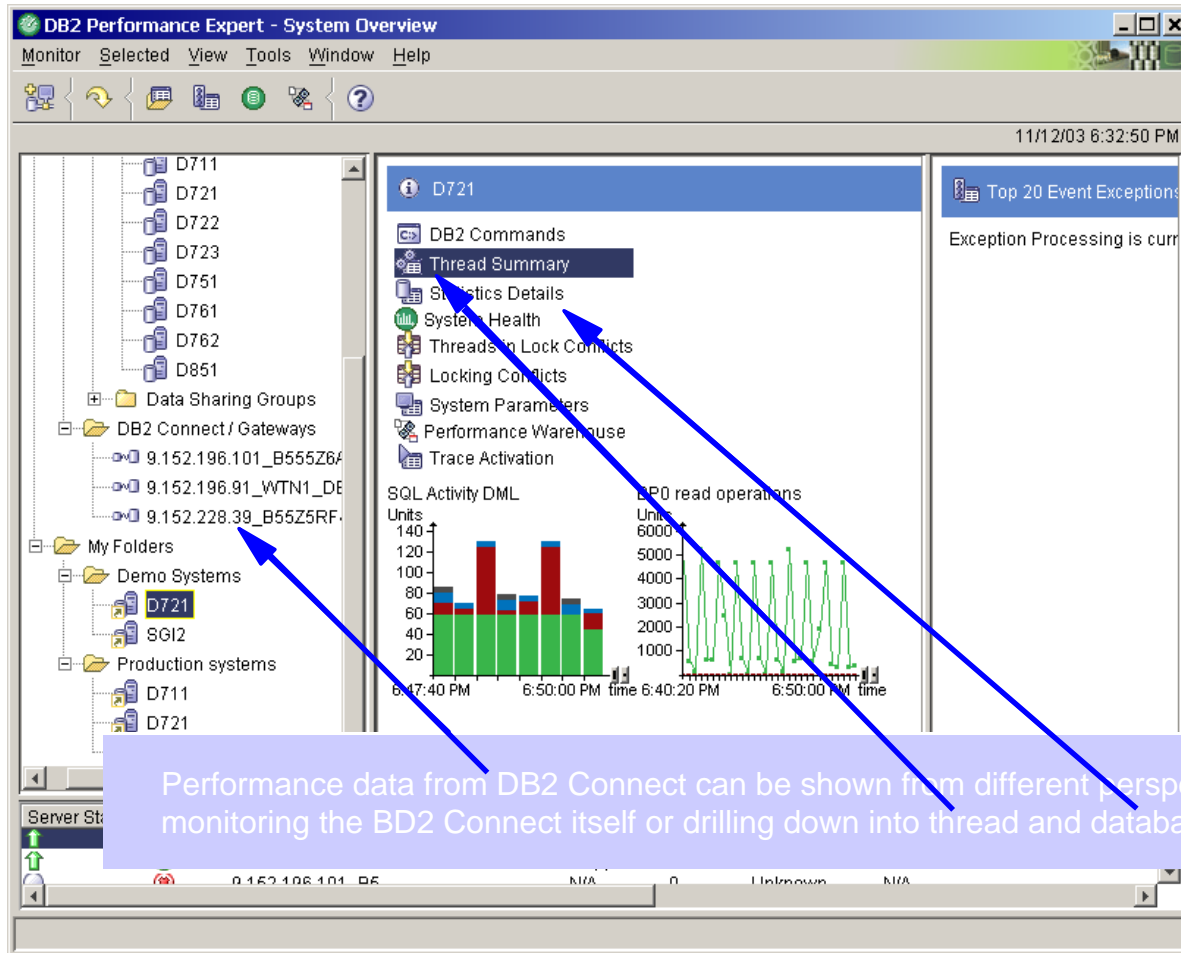
DB2 Connect Monitoring

- **Different views to the DB2 Connect data**
 - ▶ Select Statistics Details (of a selected DB2 subsystem)
 - *Show DB2 Connect/Gateway information connected to the selected DB2 subsystem*
 - ▶ Select Thread Summary + Details
 - *Show DB2 Connect DCS applications information connected to the selected DB2 subsystem*
 - ▶ Select DB2 Connect / Gateways
 - *Show DB2 Connect/Gateway information independent on any selected DB2 subsystem*

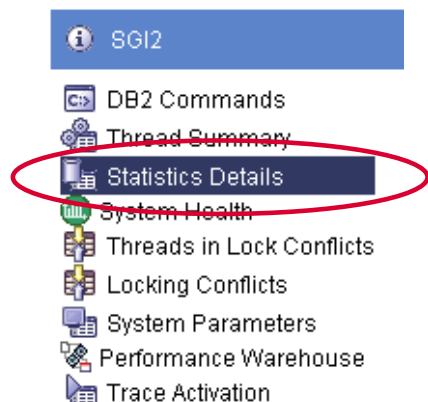
DB2 Connect Monitoring



DB2 Connect Monitoring - Display of data from different places



DB2 Connect Monitoring – Statistics Detail



D721 - Statistic Details

Statistics Details View Tools Window Help

11/12/03 6:32:39 PM Zoom + - 0:00:20

11/12/03 5:22:36 PM 11/12/03 6:34:39 PM

Overview

- EDM Pool
- Buffer Management
- Locking
- Open/Close
- Bind
- Plan / Package / Routine
- Log Manager
- Subsystem
- SQL Activity DML
- Dynamic SQL Statemen
- Query Parallelism
- RID List
- CPU Times
- Miscellaneous
- Nested SQL Activity
- Distributed Data
- Data Sharing Locking
- DB2 Connect Server**

DB2 Connect Server

Name	IP address	Node name	Node Num...	Gateway Snapshot Time
saphir	9.152.195.19	N/P	0	11/12/03 6:36:37 PM
B55Z5RF4	9.152.228.39	N/P	0	11/12/03 6:33:05 PM
B55Z6AH	9.152.196.101	JENNINGE	0	11/12/03 6:34:46 PM

DB2 Connect Monitoring - Statistics Details / DB2

DB2 Connect Server

Name	IP address	Node name	Node Num...	Gateway Snapshot Time	Server ProductVersion ID	Server Instance ...	Time Zone Displace...	Server Version
saphir	9.152.195.19	N/P	0	11/12/03 6:36:37 PM	SQL07028	db2in71	3 600	5
B55Z5RF4	9.152.228.39	N/P	0	11/12/03 6:33:05 PM	SQL07028	DB2	3 600	5
B55Z6AH	9.152.196.101	JENNINGE	0	11/12/03 6:34:46 PM	SQL07026	DB2	3 600	5

Select and drill down into more details

Main DB2 Connect Server: 9.152.196.101-...

DB2 Connect/Gateway S

- Tasks List
- Performance
- Package statistics

DB2 Connect/Gateway Statistics

DB2 Connect Information		Agents	
Name	B55Z6AH	Agents registered	
IP address	9.152.196.101	Agents waiting for token	
Node name	JENNINGE	Maximum agents registered	
Node Number	0	Maximum agents waiting	
Server ProductVersion ID	SQL07026	Committed private memory	1 5
Server Instance Name	DB2	Agents assigned from pool	
Server Version	5	Agents created due to empty pool	
Time Zone Displacement	3 600	Maximum coordinating agents	
Gateway Snapshot Time	11/12/03 6:34:46 PM	Stolen agents	
Connections		Connection switches	
Current connections	0	Total inactive DRDA agents	
		Idle agents	

DB2 Connect Monitoring - Statistics Details / DB2 Connect

Main DB2 Connect Server: 9.152.196.101-...

DB2 Connect/G
Tasks List
 Performance
 Package status

Process name	Process owner name	Gateway process ID	User process ti...	System process time	Overall process time	Memory us
javaw.exe	N/P	2 068	0.00002	0.00000	0.00002	N/P
nlnotes.exe	N/P	1 976	0.00001	0.00000	0.00001	N/P
WinMgmt.exe	N/P	1 120	0.00000	0.00000	0.00000	N/P
java.exe	N/P	2 132	0.00000	0.00000	0.00000	N/P
explorer.exe	N/P	1 552	0.00000	0.00000	0.00000	N/P
nupdate.exe	N/P	668	0.00000	0.00000	0.00000	N/P
svchost.exe	N/P	484	0.00000	0.00000	0.00000	N/P
nwrdaemr.exe	N/P	640	0.00000	0.00000	0.00000	N/P
pcsws.exe	N/P	1 508	0.00000	0.00000	0.00000	N/P
System.exe	N/P	8	0.00000	0.00000	0.00000	N/P
SMSS.exe	N/P	184	0.00000	0.00000	0.00000	N/P
CSRSS.exe	N/P	208	0.00000	0.00000	0.00000	N/P
WINLOGON.exe	N/P	228	0.00000	0.00000	0.00000	N/P
SERVICES.exe	N/P	256	0.00000	0.00000	0.00000	N/P
LSASS.exe	N/P	268	0.00000	0.00000	0.00000	N/P
ibmpmsvc.exe	N/P	364	0.00000	0.00000	0.00000	N/P
svchost.exe	N/P	104	0.00000	0.00000	0.00000	N/P
spoolsv.exe	N/P	536	0.00000	0.00000	0.00000	N/P
trcbboot.exe	N/P	564	0.00000	0.00000	0.00000	N/P
pcs_agnt.exe	N/P	596	0.00000	0.00000	0.00000	N/P
db2syscs.exe	N/P	652	0.00000	0.00000	0.00000	N/P
db2jds.exe	N/P	680	0.00000	0.00000	0.00000	N/P
db2licd.exe	N/P	696	0.00000	0.00000	0.00000	N/P
db2syscs.exe	N/P	700	0.00000	0.00000	0.00000	N/P

DB2 Connect Monitoring - DB2 Connect / Gateway

The screenshot shows the DB2 Connect Gateway monitoring interface. The title bar indicates the application is '9.152.196.101_B555Z6AH_DB2 - Application Details'. The interface includes a menu bar (DCS Databases, View, Tools, Window, Help), a toolbar with navigation icons, and a timeline showing the current time as 11/12/03 7:35:00 PM. A file explorer window on the right shows the 'DB2 Connect / Gateways' folder with three sub-items, the first of which is circled in red: '9.152.196.101_B555Z6AH_DB2'. The main content area is divided into a left sidebar with a tree view (Overview, Statement information, Package statistics) and a main 'Overview' section. The Overview section contains two tables of application and transaction data.

Application Information	
Application handle (agent ID)	40
Application name	db2bp.exe
Application ID	*LOCAL.DB2.031112173605
Authorization ID	JEN
Code page used by application	1 252
Client process ID	2 236
Client operating platform	NT/WIN2000
Client communication protocol	LOCAL
Host coded character set ID	500
Configuration name of client	JENNINGE
Client product/version ID	SQL07026
Inbound communication address	*LOCAL.DB2
DCS application status	UOWWAITINBOUND
Application status change time	11/12/03 7:25:53 PM
User login ID	JEN
Sequence number	0001

Overall transaction data	
Transaction ID	
Number of open cursors	
Application idle time	
Last reset timestamp	
DB2 connect first connect	
Elapsed time DB2CONN execution	
Total host response time	
Unit of work completion status	
Previous UOW completion timestamp	
Unit of work start timestamp	
Unit of work stop timestamp	
Most recent UOW elapsed time	
Number of SQL stmt attempted	
Failed statements operations	
Commit statements attempted	

Trace Data Collection

The screenshot displays the Performance Warehouse (PWH) interface. The 'Trace' tab is selected in the top menu. A table lists trace data collection steps:

Position	Name	Description	Modified
1	Collect Report Data		2004-01-07 16:38:25.728675
2	Report		2004-01-07 16:36:19.938091

The 'CRD Step Properties' dialog box is open, showing the 'General' tab. The 'Option categories' list includes 'Output dataset', 'Data sharing group', 'Data', 'Qualification', 'Stop', and 'Trace'. The 'Current output dataset options' section shows:

- Name: JEN.COLLECT.ACCTG
- Size: 50 megabyte
- Disposition: Overwrite

Green annotations highlight the 'Trace' menu, the 'Process Groups' tree, and the 'Steps' folder within the 'CRD Acctg' process group.

Different views to the PWH processes
Collect trace data step can now be added to a process.

Performance Warehouse (PWH)

Functions

- An fully automated warehouse for accounting and statistic information
- Can contain raw and summarized data from multiple DB2 subsystems
- Database is build, controlled and maintained by OM Server
- PWH Client (PC based GUI) allows to collect data from DB2, define ETL process and generate Reports for it
- Tasks can be scheduled or executed on demand
- Predefined SQL Queries allow to evaluate performance data
- Rules-of-thumb check for potential problems or tuning ways

Performance Warehouse Client

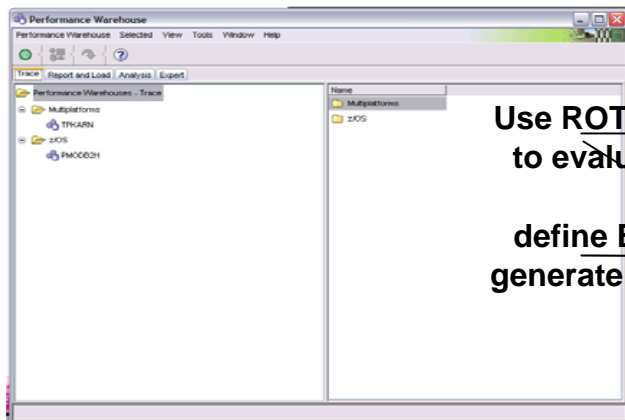
- Java front-end for PWH
- Running under Windows
- Integrated into Performance Expert Client
- Requires DB2 Connect

Input data

- Pre-processed data from Report Facility
- OPx data collected via CRD
- GTF data
- SMF data

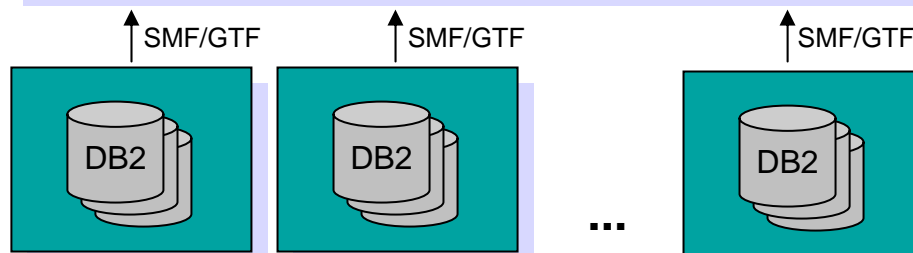
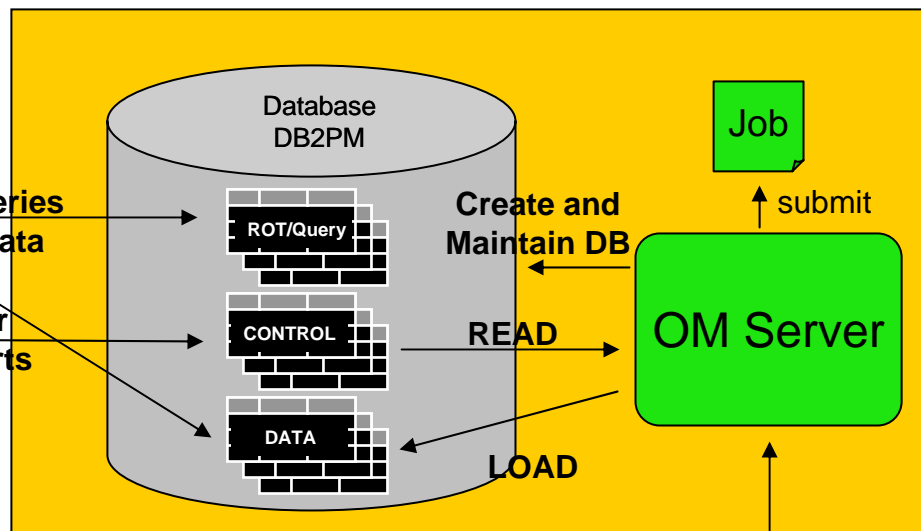
Performance Warehouse Architecture

PWH Client



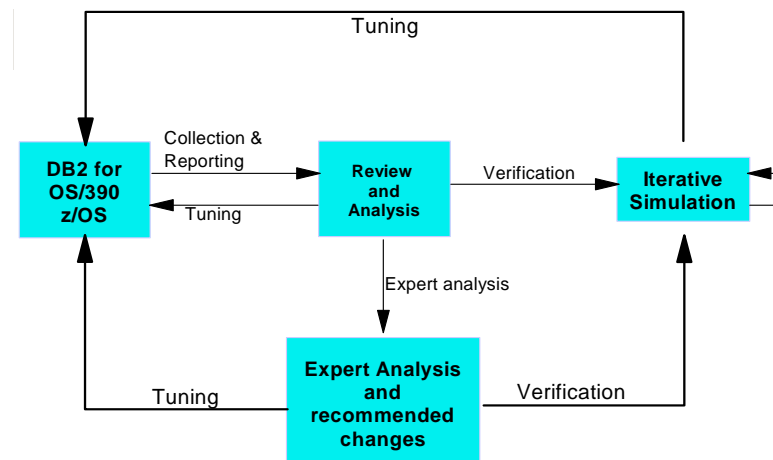
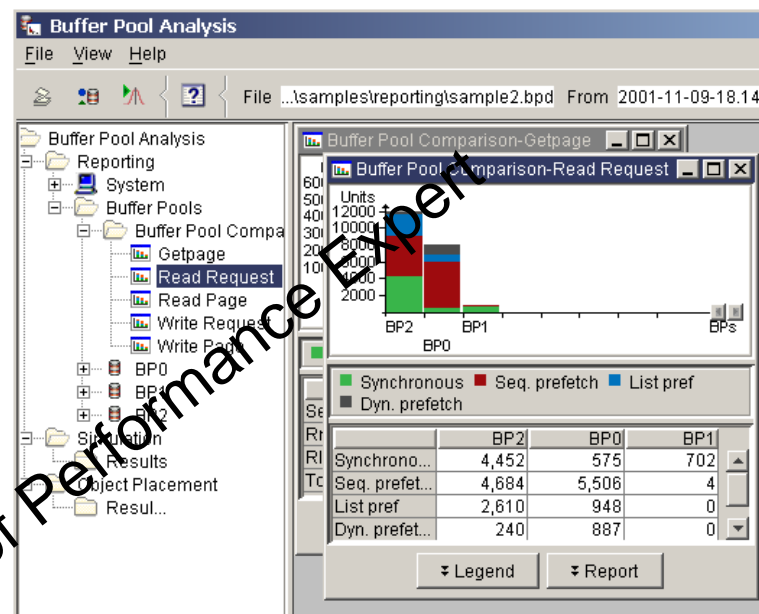
Use ROTs/Queries to evaluate data

define ETL or generate reports



Analysis Support – Buffer Pool Analysis

- **Collects** buffer pool data
 - as summary or detailed data
 - continuously or in sampling mode
 - in Online and Batch
- Generates various **reports and displays** results in multiple formats for BP and GBP (including graphical end-user interface)
- Provides expert knowledge and recommendations
- Recommends **object placements, BP size & thresholds**
- Generates **ALTER statements** for the recommendation
- Provides **simulation** for planned changes
- Makes it easy to tune your buffer pools



Available stand-alone or as part of Performance Expert

Analysis Support – Object Placement /

Buffer Pool Analysis - Object Placement

Use this function to get object placement recommendations and generate appropriate ALTER statements.

3. Object placement: Assign objects to buffer pools (optional). Reset selected Reset all

Object Name	Type	Page	Used	Cat...	Seq. Access [%]	Change Rate [%]	Size ...	Current	Recom...	User...
FIJ1DB01.FIJCCONT	INDEX	4K	YES	---	0	0	1	BP1	BP1	BP1
FIJ1DB01.FIJCENG	INDEX	4K	YES	---	0	0	1	BP1	BP1	BP1
FIJ1DB01.FIJCINVD	INDEX	4K	YES	---	0	0	5	BP1	BP1	BP1
FIJ1DB01.FIJCITEM	INDEX	4K	YES	---	0	0	4	BP1	BP1	BP1
FIJ1DB01.FIJCITMD	INDEX	4K	YES	---	0	0	4	BP1	BP1	BP1
FIJ1DB01.FIJCITMR	INDEX	4K	YES	---	0	0	1	BP1	BP1	BP1
FIJ1DB01.FIJCLOCA	INDEX	4K	YES	---	0	0	13	BP1	BP1	BP1
FIJ1DB01.FIJCPLNO	INDEX	4K	YES	---	0	0	6	BP1	BP1	BP1
FIJ1DB01.FIJCPLPG	INDEX	4K	YES	---	0	0	6	BP1	BP1	BP1
FIJ1DB01.FIJCPROD	INDEX	4K	YES	---	0	0	6	BP1	BP1	BP1
FIJ1DB01.FIJCShPC	INDEX	4K	YES	---	59	59	6	BP1	BP1	BP1
FIJ1DB01.FIJCWIPG	INDEX	4K	YES	---	0	0	6	BP1	BP1	BP1
FIJ1DB01.FIJCWORD	INDEX	4K	YES	---	6	6	6	BP1	BP1	BP1
FIJ1DB01.FIJS0004	TABLESP...	4K	YES	---	17	17	4	BP1	BP1	BP1
FIJ1DB01.FIJS0005	TABLESP...	4K	YES	---	0	0	4	BP1	BP1	BP1
FIJ1DB01.FIJS0009	TABLESP...	4K	YES	---	32	32	4	BP1	BP1	BP1
FIJ1DB01.FIJS0010	TABLESP...	4K	YES	---	2	2	4	BP1	BP1	BP1

Buffer pool data file : SGI2FILE.bpd
in F:\BPODAT\July02

The first step result shows the recommended buffer pools for each object.

The user can overwrite the recommended buffer pool if desired.

Recommended sizing for separate Buffer Pools

This table indicates how the available memory should be distrib

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Total Pages	BP0 pages	BP1 pages	BP2 pages
300	100	100	100
400	100	100	200
500	100	100	300
600	100	100	400
700	200	100	400
800	300	100	400
900	300	100	500
1000	400	100	500
1100	500	100	500
1200	500	100	600
1300	500	100	700
1400	500	100	800
1500	500	100	900
1600	500	100	1000

Simulated behavior of each separate Buffer Pools

This table indicates the behaviour of each buffer pool for

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Buffer Pool Pages	Buffer Pool BP0			Buffer Pool BP1			Buffer Pool BP2		
	Misses	Application Hit Ratio	Global Miss Ratio	Misses	Application Hit Ratio	Global Miss Ratio	Misses	Application Hit Ratio	Global Miss Ratio
100	22931	51.8	12.5	686	86.4	0.4	128569	1.6	70.2
200	11012	76.8	6.0	639	87.3	0.3	113565	13.1	62.0
300	4190	91.2	2.3	639	87.3	0.3	36315	72.2	19.8
400	2667	94.4	1.5	639	87.3	0.3	11791	91.0	6.4
500	1721	96.4	0.9	639	87.3	0.3	10139	92.2	5.5
600	1550	98.7	0.8	639	87.3	0.3	10013	92.3	5.5

Simulated behavior of Buffer Pool BP2

This table indicates the behaviour of an individual simulated buffer pool.

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Buffer Pool Pages	Total Misses	All		Random		Sequential Prefetch		List Prefetch	
		Application Hit Ratio	Misses	% of Total Misses	Misses	% of Total Misses	Misses	% of T Miss	
100	128569	1.6	1925	1.5	126216	98.2	427	0.3	
200	113565	13.1	1918	1.7	111583	98.3	63	0.1	
300	36315	72.2	1901	5.2	34378	94.7	35	0.1	
400	11791	91.0	1868	15.8	9889	83.9	33	0.3	
500	10139	92.2	1854	18.3	8252	81.4	32	0.3	
600	10013	92.3	1834	18.3	8146	81.4	32	0.3	
700	9910	92.4	1815	18.3	8064	81.4	30	0.3	
800	9529	92.7	1798	18.9	7700	80.8	30	0.3	
900	8252	93.7	1785	21.6	6436	78.0	30	0.4	
1000	6527	95.0	1770	27.1	4727	72.4	29	0.4	
1100	5915	95.5	1751	29.6	4134	69.9	29	0.5	
1200	5870	95.5	1735	29.6	4105	69.9	29	0.5	
1300	5827	95.5	1713	29.4	4087	70.1	26	0.4	
1400	5792	95.6	1694	29.2	4074	70.3	23	0.4	
1500	5732	95.6	1664	29.0	4045	70.6	22	0.4	

Reporting ...

- Report facility which
 - Takes SMF, GTF or TSO data sets as input (collected by 'Collect Report Data')
 - Generates a variety of customizable reports and traces:
 - ◆ [Statistics](#)
 - ◆ [Accounting](#)
 - ◆ [Subsystem Parameters](#)
 - ◆ [Locking](#)
 - ◆ [SQL Activity](#)
 - ◆ [I/O Activity](#)
 - ◆ [Utility](#)
 - ◆ [Audit](#)
 - ◆ [Record Trace](#)
 - ◆ [Explain](#)
 - Related data of different IFCIDs belonging to the same object are reported together
 - Additional derivated counters are shown
- are customizable by using of
 - ◆ [Reduce, Include/Exclude, From/to](#)
 - ◆ [Summarizedby, Orderby](#)
 - ◆ [Layout](#)
 - ◆
- differentiate mainly between "reports" and "traces"
- Allows to [tailor online](#) the layout of Accounting and Statistics reports and traces

Reporting ...

There are three different way to build and generate a batch report

- Manual
- Using ISPF Interactive Report Efacility (option 1)
- Performance Warehouse
 - ▶ Interactive using the PE Client GUI
 - ▶ Indirect, e.g. SQL Activity tracing, SQL PA cost & explain report

Agenda

- Omegamon XE for DB2 Performance Expert on z/OS Overview
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- **What is new since GA**
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What's new OMEGAMON XE for DB2 PM/PE

Highlights at a Glance

- ❖ Support for zIIP processor usage that is being introduced on the System z9 platform from a DB2 perspective
- ❖ Integration with SQL PA from OMEGAMON Classic
- ❖ Reinstate CUA on a 'as is basis'
- ❖ ATF: Allow extended collection time and externalize FLUSH parameter
- ❖ Enhanced Thread Overview: Show additional LOCK information and Changed Pages in all Group Buffer Pools.
- ❖ Statistics Spreadsheet output (IFCID 225)
- ❖ IFCID 225 (DBM1 Virtual Storage) - Show current virtual storage usage below and above 2 GB on Classic end user interface
- ❖ Usability improvements in OMEGAMON Classic – Tab key usage on selected panels
- ❖ New DATATYPE option now also for ACCOUNTING FILE

New with V4.1.0

- **Dynamic Workspace Linkage (DWL)**
DB2 -> z/OS, DB2 <-> CICS, DB2 <-> IMS
- **Agent Versioning**
- **NLS support**
French, German, Italian, Spanish, Portuguese, Chinese (simple & traditional), Japanese, Korean
- **DB2 Version 9 day one support**

Prerequisites to support zIIP DB2 instrumentation data

- **zIIP DB2 instrumentation data support**

- **DB2 V8 Exploitation of a new specialty processor (zIIP)**

- (zIIP – System z9 Integrated Information Processor)

- ▶ types of DB2 for z/OS V8 work executing in SRB mode, portions of which can be sent to the zIIP includes:

- *Network Connected Application processing using DRDA over a TCP/IP connection*
 - *Data Warehouse Query processing that utilize star scheme parallel queries*
 - *selected index maintenance in the DB2 Utilities (LOAD, REORG, REBUILD)*

- **Support provided by**

- ▶ IBM Tivoli OMEGAMON XE for DB2 PE/PM APAR: PK25395 / PTF UK15518

- ▶ DB2 Prerequisite APARs (not a SMP/E prerequisite, but if not installed no data will be shown):

- *PK18454 for DDF using DRDA over TCP/IP*
 - *PK19921 for star schema parallel queries*
 - *PK19920 for index maintenance in DB2 Utilities*

DB2 zIIP relevant instrumentation data

- **New zIIP relevant instrumentation provided by DB2 in IFCID 3,147,148,231,239**
 - ▶ zIIP CPU time off loaded on plan and package level (class 1,2,7)
 - ▶ zIIP eligible CPU time (class 1)

This data is displayed in OMEGAMON XE for DB2 PE/PM

- **Relevant fields – for batch reporting**
 - ▶ **zIIP CPU time** (named **IIP CPU TIME**) will be presented for Class 1, Class 2 (plan level), and Class 7 (package level)
 - ▶ The standard **CPU TIME** will be renamed to **CP CPU TIME**.
 - ▶ **zIIP-eligible CPU time** (named **IIPCP CPU**) will be presented for Class 1 only. This zIIP eligible CPU time would reduce the CP CPU TIME if a zIIP is available
- **Relevant fields – for real-time / online monitoring**
 - ▶ zIIP time (named **IIP CPU TIME**) will be shown for Class 2 (threads) and for Class 7 (packages)
 - ▶ The standard **CPU TIME** will be renamed to **CP CPU TIME**.

Dynamic Workspace Links (DWL)

What it is ...

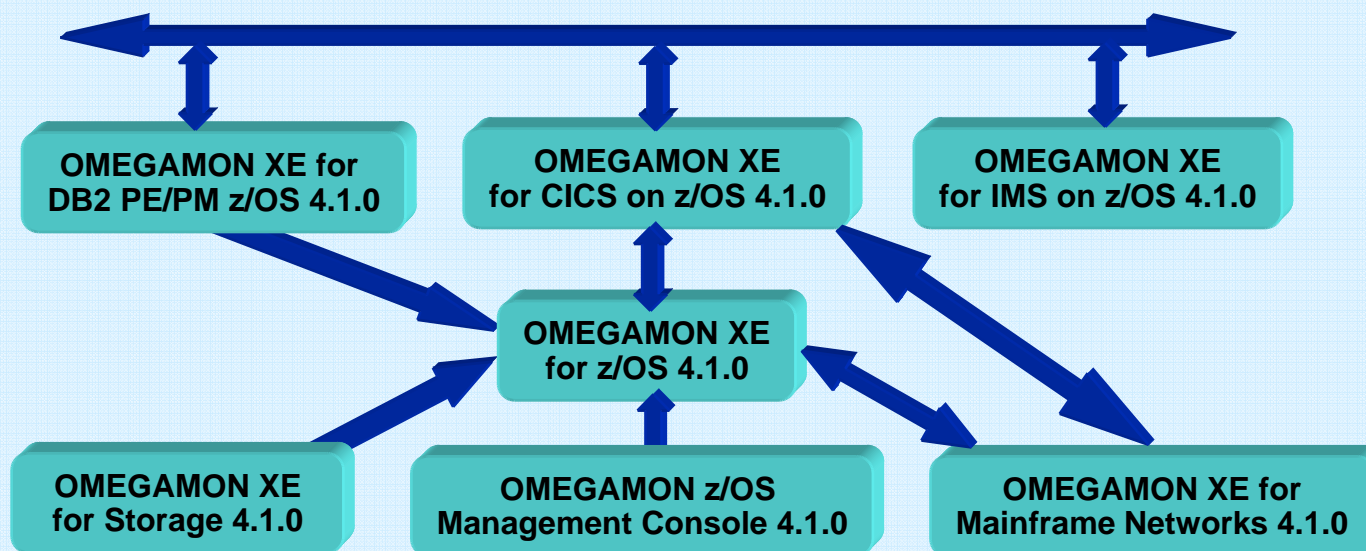
- Cross-product linking between TEP workspaces
- ITM6.1 FP3 delivers DWL (June 2006)
- Extension of existing Link Wizard
- Prior releases provided static links:
 - ▶ Links within current product, only
 - ▶ or Cross-product links but incomplete—finished by end-user
- Allows navigation between OMEGAMON “Silos” from and to systems to subsystems and between subsystems
- Links are presented only when cross-product workspaces are installed
- Enables cross-product diagnosis
- Power of monitoring under a single TEP

Dynamic Workspace Linking Functionality

Problem: How do I quickly find a potential problem that requires multiple monitoring products?

Scenario: Dynamically link in context from CICS transaction to the associated DB2 thread

Solution: Dynamic Workspace Linking
Product provided links & user customized



Batch CRD & subsequent processing

- CRD – Collect Report Data
- customer's usage scenario:

Allow to review terminated thread data via user written ISPF program which retrieves them from DB2 tables (the performance DB)

Solution with OMPE of customersa's usage scenario

Overview

New batch job is available for OMPE V3.1.0 via PTF UK20063/PK33992

Functional overview

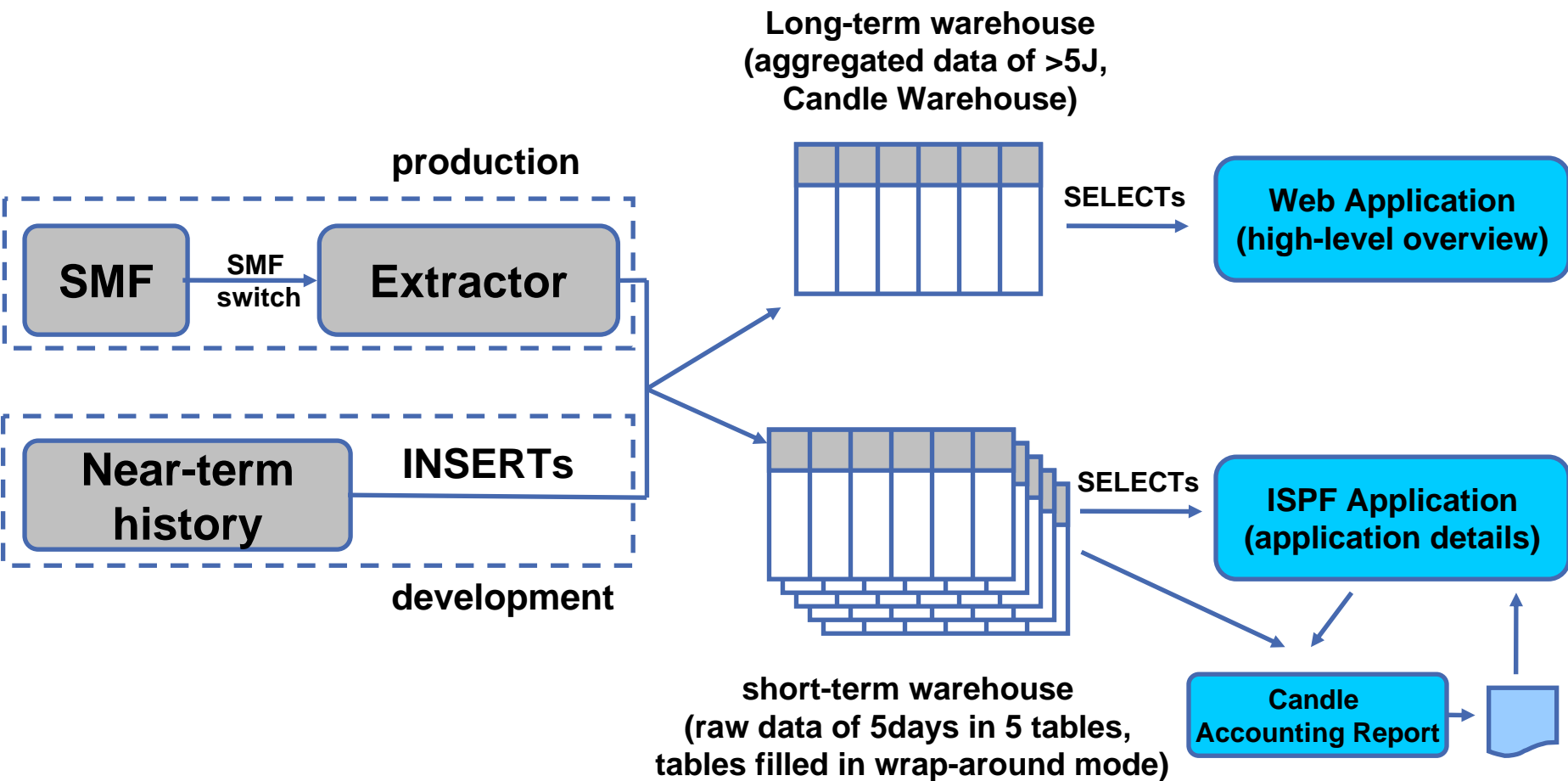
- ▶ Batch job to collect data for further processing in OMPE (report generation, load into PDB/PWH)
- ▶ Allows almost real-time loading of data while collection via job exit
- ▶ Full data sharing group support
- ▶ Cheaper collection than SMF and GTF

Build as

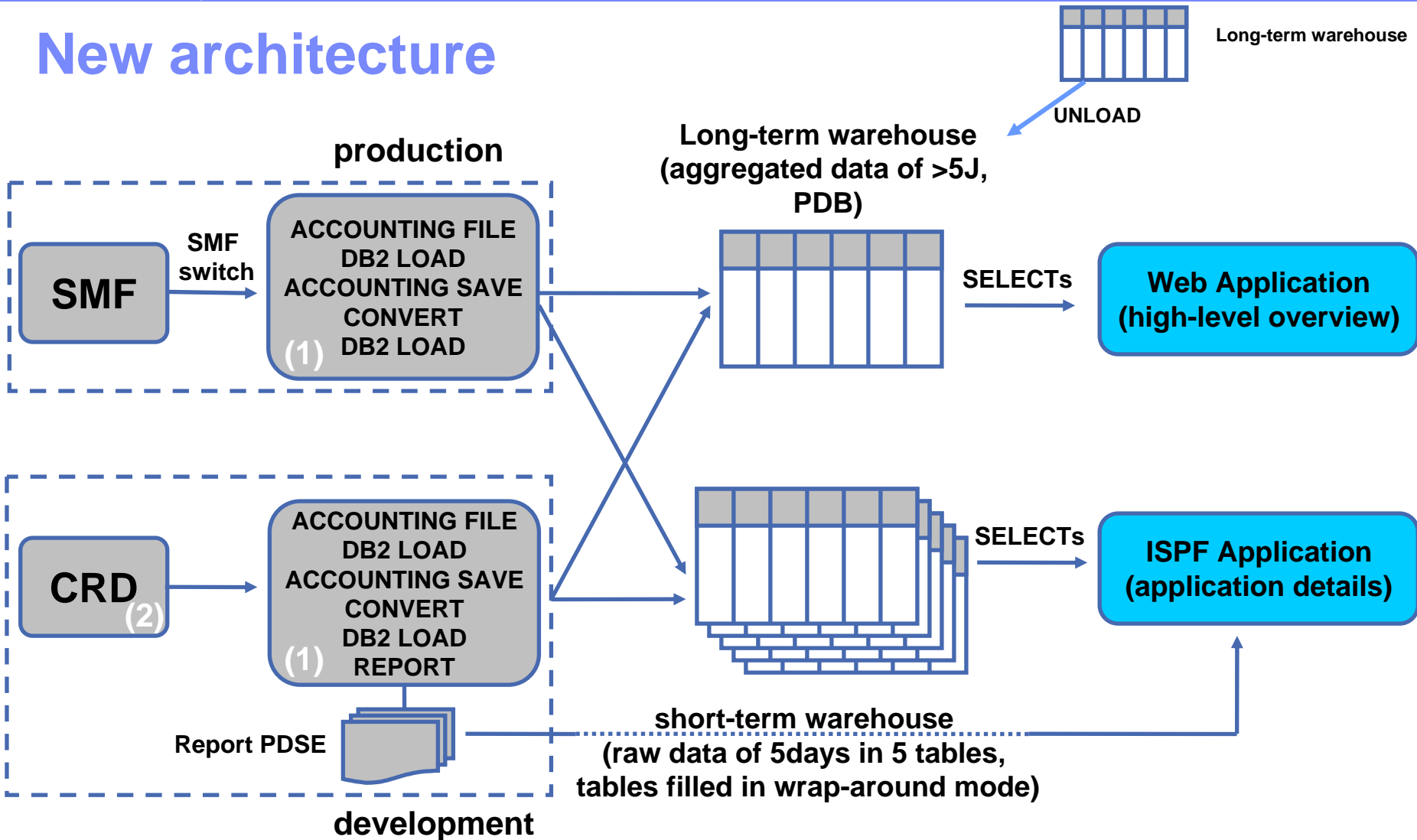
- ▶ Replacement of dropped OMEGAMON Extractor, which could be used to load data via INSERTS directly into candle warehouse while NTH was collecting data
- ▶ alternative to SMF with much more flexibility to load data into OMPEs performance database

Next two slides shows example from a customer who migrated from OMEGAMON for DB2 to OMEGAMON XE for DB2 PE using the new CRD batch job ...

Current architecture



New architecture



- (1) Use Batch process to (a) aggregate data and load it into long-term warehouse and (b) load raw data into short-term warehouse
- (2) Invoke Batch CRD via OPC to collect data

Value Points of Tivoli OMEGAMON XE for DB2 PE on z/OS

- **...is based on IBM OMEGAMON XE structure and can be deployed with the full flexibility of the OMEGAMON XE family**
- **...supports the OMEGAMON Dashboard Edition to manage Business Impact End-to-End**
- **...provides exceptional functionality for DB2 performance monitoring and analysis**
 - ▶ ...offers DB2 Connect Monitoring capability
 - ▶ ...offers integrated trace reporting/display from the real-time monitor (SQL tracing, ATF, Near-Term-History, and Performance Warehouse report process engine)
 - ▶ ...supports Sysplex and DB2 Data sharing in PE client
 - ▶ ...comes with Event Exception logging for detailed DB2 deadlock and timeout analysis
 - ▶ ...allows for automatic take-actions based on rules, exceptions and thresholds
 - ▶ ...offers Trend Analysis and Proactive Tuning
 - ▶ ...links CICS tasks to DB2 threads
- **...is easy to use and offers a fast start with the web-based TEP as a GUI-based central point of control with 'out-of-the-box' predefined workspaces and situations**
- **...provides flexible and extensive customization and filtering capabilities**
- **...saves system resources in standard performance monitoring usage scenarios**
 - ▶ Monitoring and analysis features can be activated on demand and can be tailored to the users' needs to control resource consumption.
- **...offers Day-1-Support for new releases**
- **... and finally two great teams merged into one - strong future investment from IBM**

Tivoli OMEGAMON XE for DB2 PE – Summary of functions

- **Real-time monitoring**
 - ▶ Threads and Statistics monitoring
 - ▶ DB2 Connect monitoring
 - ▶ Data Sharing/Sysplex data (DB2Plex data)
 - ▶ Near-term history
 - ▶ Object Analysis
- **Trace collection (also as part of the PWH process support)**
- **Reporting**
 - ▶ Accounting, Statistics, SQL Activities, Locking, I/O Activity, Audit, Utilities, Record Trace
 - ▶ Executable as separate jobs or via PWH process engine
- **Performance Warehouse with expert analysis support**
- **Buffer Pool Analysis, expert advice, and simulation**

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Resources - Bibliography

Publication title V410	number
-----	-----
Configuration and Customization Messages	GC18-9979
Monitoring Performance from the OMEGAMON Classic Interface	GC18-9980
Monitoring Performance from ISPF	SC18-9988
Monitoring Performance from Expert Client	SC18-9981
Reporting Users Guide	SC18-9982
Report Reference	SC18-9983
Report Command Reference	SC18-9984
Information Roadmap	SC18-9985
IBM DB2 Buffer Pool Analyzer User's Guide	GC18-9834
	SC18-9986
OMEGAMON XE for DB2 Performance Expert on z/OS Program Directory	GI10-8721
OMEGAMON XE for DB2 Performance Expert on z/OS License Information	GC18-9992
OMEGAMON XE for DB2 Performance Expert on z/OS Japanese Program Dir.	GI10-8722
IBM Tivoli Monitoring Services	LCD7-0836
IBM Tivoli Monitoring: Upgrade Road Map for OMEGAMON XE Version 4.1 Monitoring Agents	GC32-1980

Additional Resources

Internet:

IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS V4.1.0

<http://www-306.ibm.com/software/tivoli/products/omegamon-xe-db2-peex-zos/>

IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS V4.1.0

<http://www-306.ibm.com/software/tivoli/products/omegamon-xe-db2-pemon-zos/>

DM Tools Library (complete library of all tools, including additional updates)

<http://www-306.ibm.com/software/data/db2imstools/db2tools-library.html>

IBM Tivoli OMEGAMON (family) product library

<http://publib.boulder.ibm.com/tividd/td/tdprodlist.html#O>

Redbooks:

[A Deep Blue View of DB2 Performance: IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS V3.1.0 \(SG24-7224-00\)](#)

<http://www.redbooks.ibm.com/abstracts/sg247224.html> (April 2006)

DB2 Performance Expert for Multiplatform V2 (SG24-6470)

<http://www.redbooks.ibm.com/abstracts/sg246470.html> (Feb. 2005)

DB2 for z/OS and OS/390 Tools for Performance Management

<http://publib-b.boulder.ibm.com/Redbooks.nsf/RedbookAbstracts/sg246508.html> (Nov.2001)

DB2 for z/OS and OS/390 Version 7 Performance Topics

<http://publib-b.boulder.ibm.com/Redbooks.nsf/RedbookAbstracts/sg246129.html> (July 2001)

Next Steps

- **Contact your IBM Sales Specialist for upgrade information**
- **If you do not know your sales specialist, please contact:**
 - ▶ Sally Touscany; 724-940-6506 or touscany@us.ibm.com

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