IBM Software Group

Enterprise performance management with Tivoli OMEGAMON XE for DB2 PE

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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

IBM Tivoli Monitoring v6.1

Tivoli Enterprise Console v3.9

OMEGAMON XE on z/OS v4.1.0

OMEGAMON XE for DB2 PE/PM v4.1.

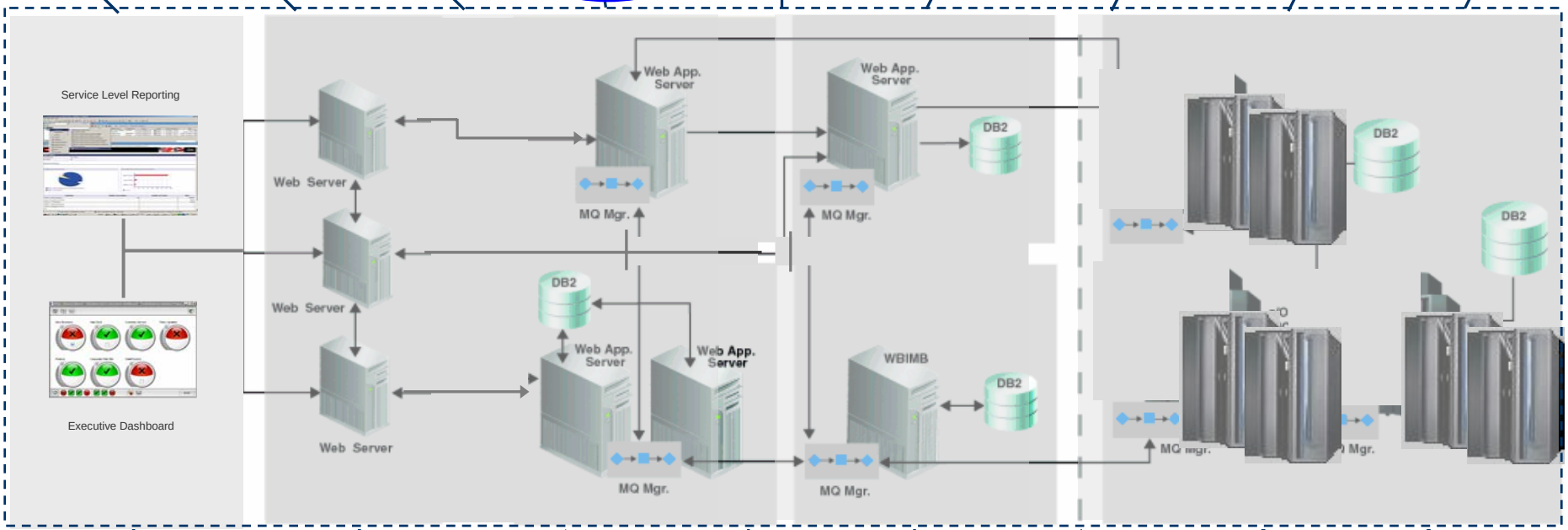
OMEGAMON XE for CICS & IMS v4.1.0

OMEGAMON XE for MF Networks v4.1.0

OMEGAMON XE for Storage v4.1.0

License Compliance Manager for z/OS v4.1

Contract Compliance Manager v3.7



System Automation for Multiplatforms v2.2

Composite Application Manager for WebSphere V6.1

Composite Application Manager for R.T. Tracking V6.1

Composite Application Manager for SOA V6.1

NetView on z/OS v5.2

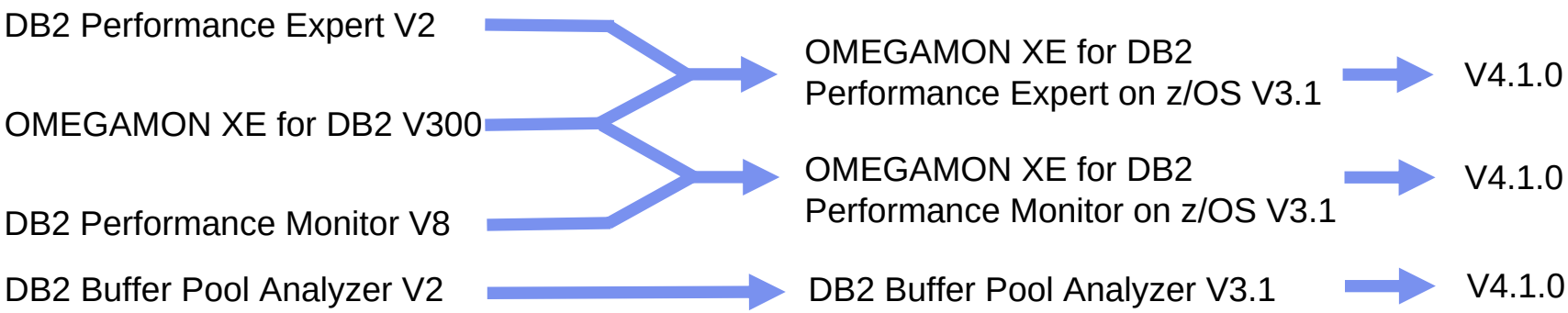
System Automation for z/OS 3.1

Workload Scheduler for z/OS 8.3

Usage and Accounting Manager v6.1

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)

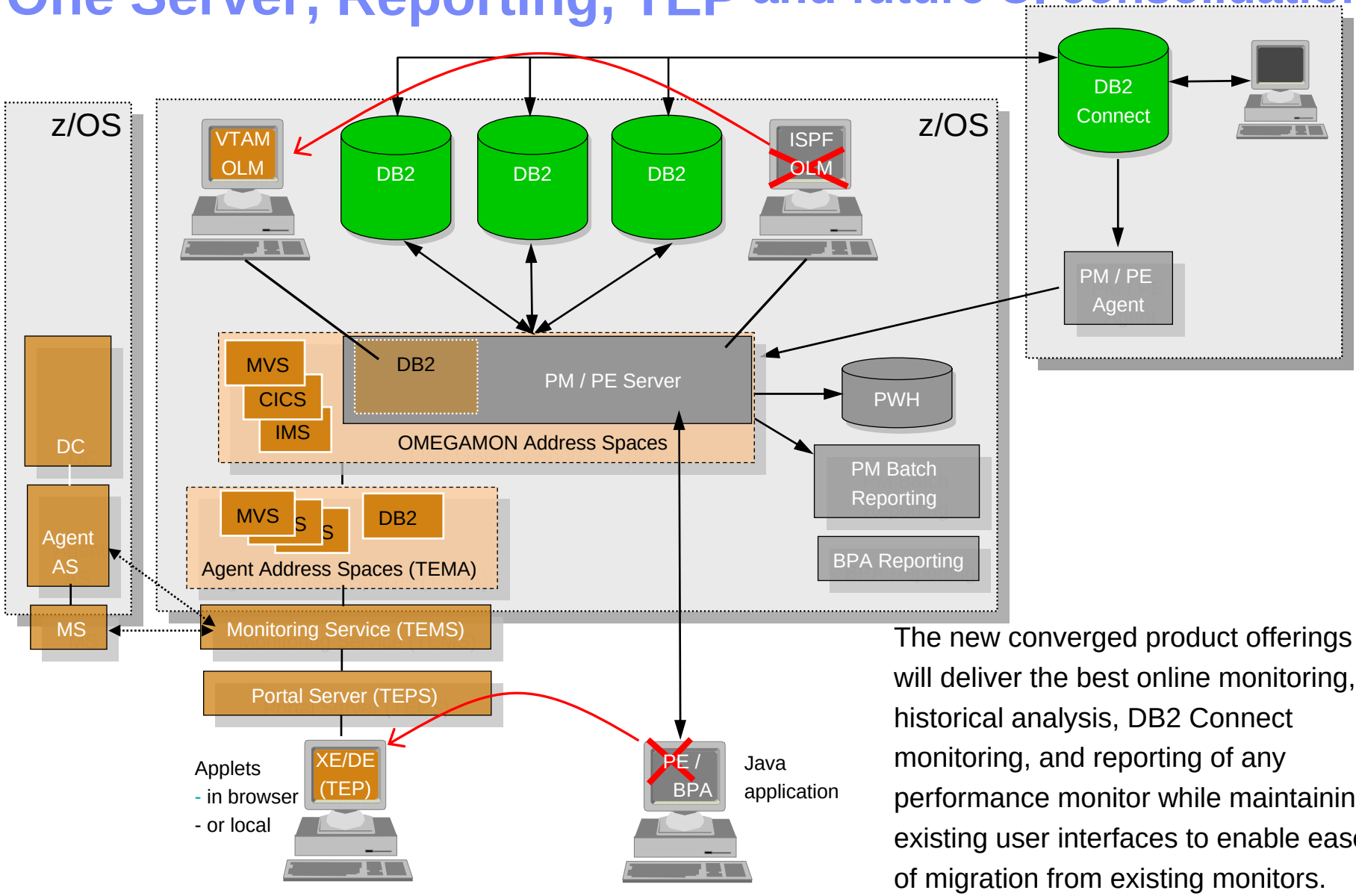
OMPE - Overview

- 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

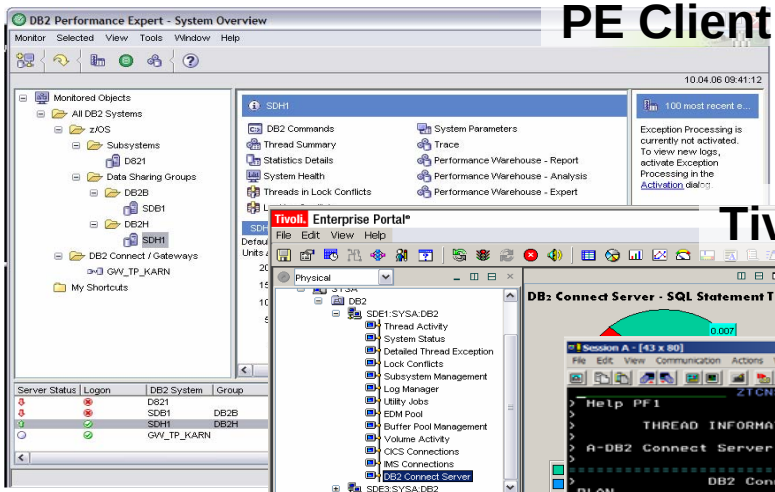


The new converged product offerings will deliver the best online monitoring, historical analysis, DB2 Connect monitoring, and reporting of any performance monitor while maintaining existing user interfaces to enable ease of migration from existing monitors.

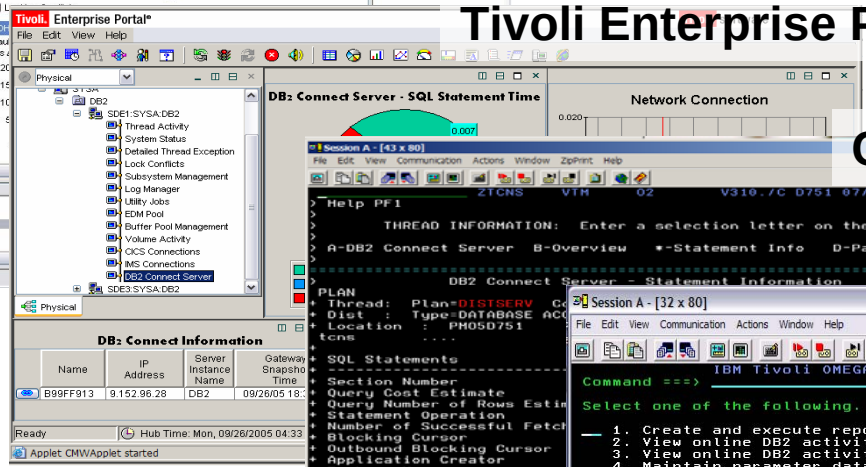
Available user interfaces

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

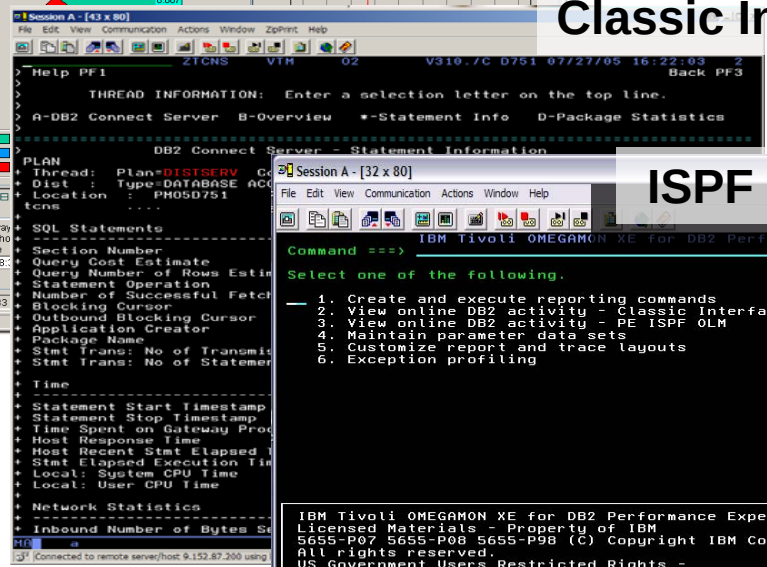
PE Client



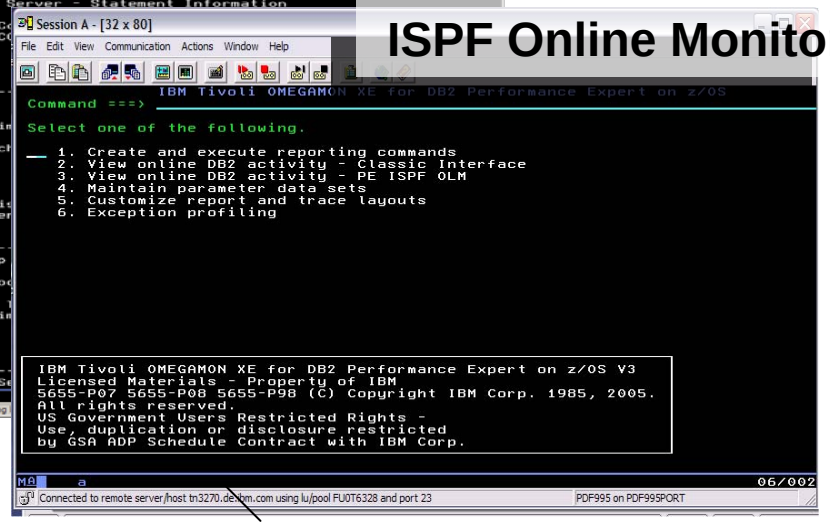
Tivoli Enterprise Portal



Classic Interface



ISPF Online Monitor



Full detailed, fast responding DB2 monitor

No longer enhanced; will go away soon

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- Omegamon XE for DB2 Performance Expert on z/OS Overview
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- What is new for Omegamon users
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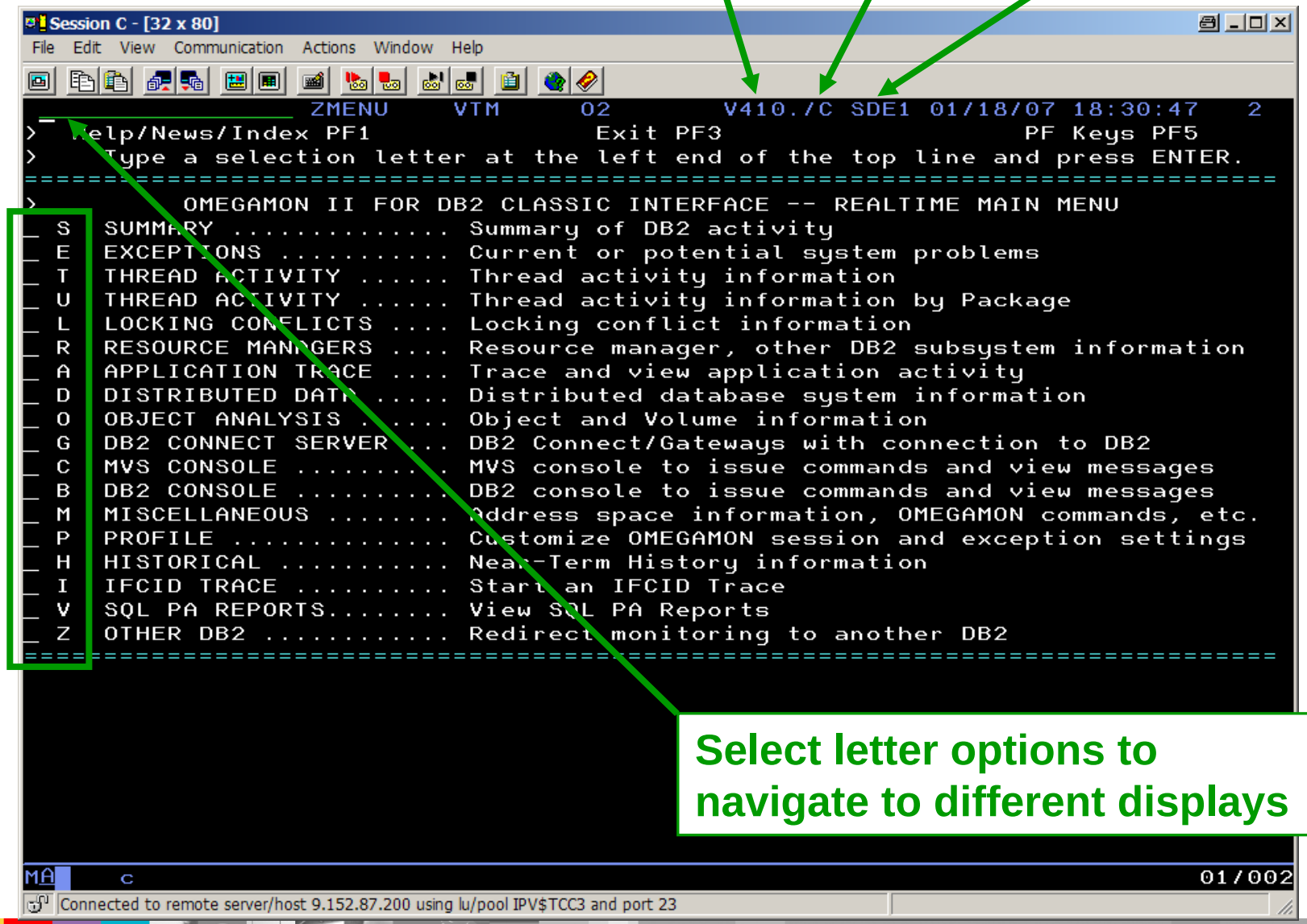
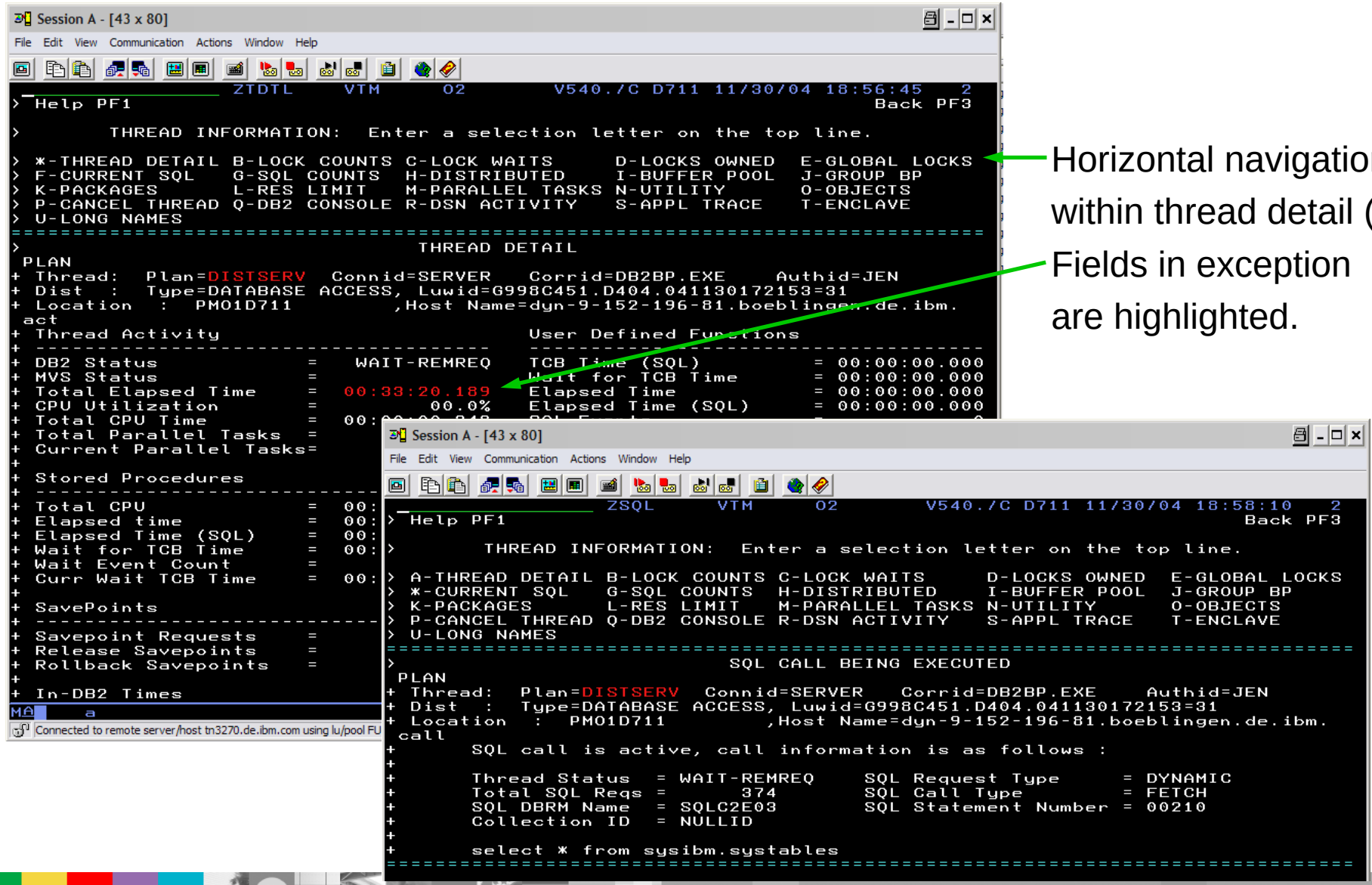
What's new for PE/PM users

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

Classic Main Menu



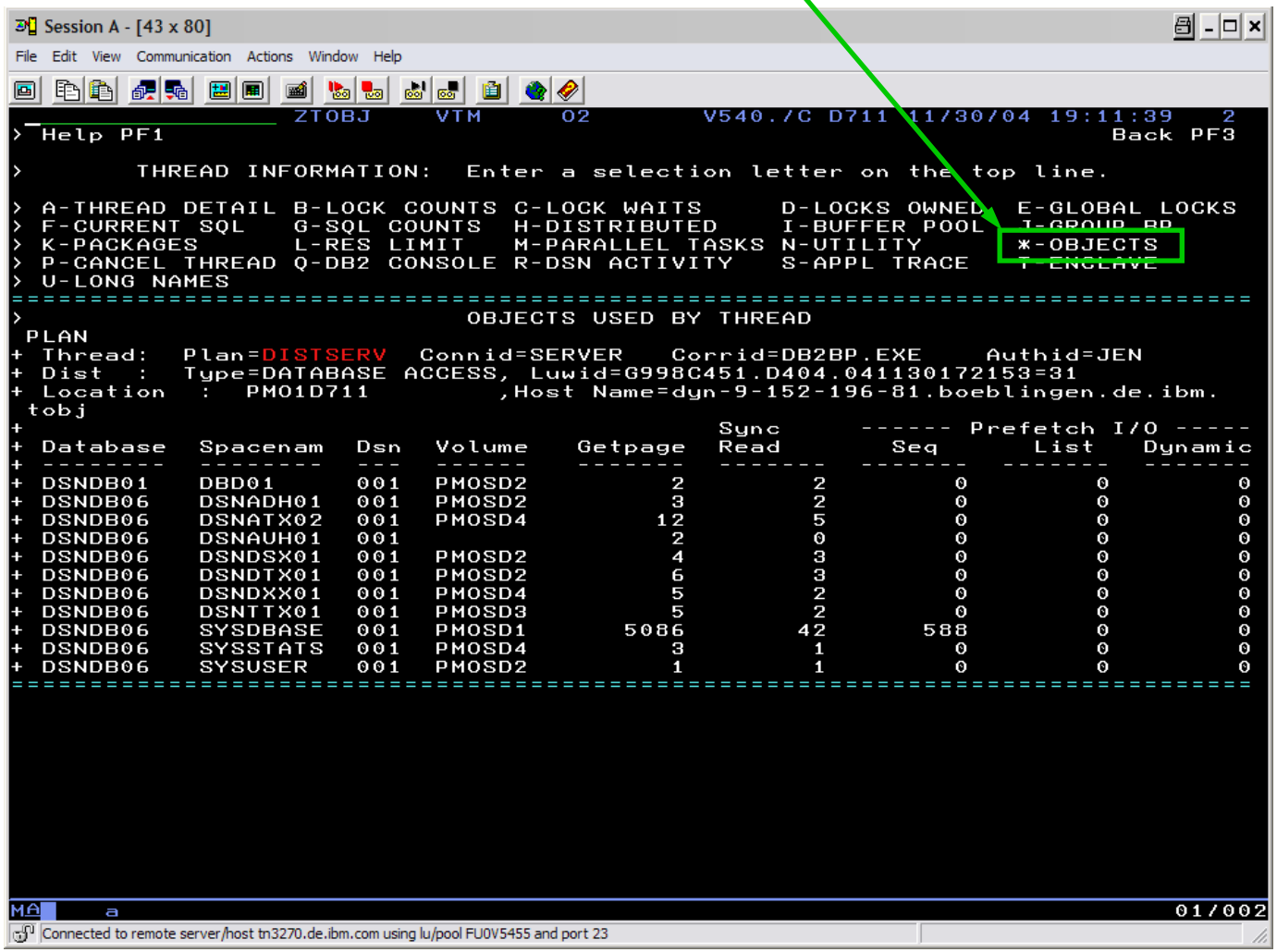
Application Monitoring (thread snapshot)



Horizontal navigation within thread detail (*)

Fields in exception are highlighted.

Application Monitoring (objects used by thread)



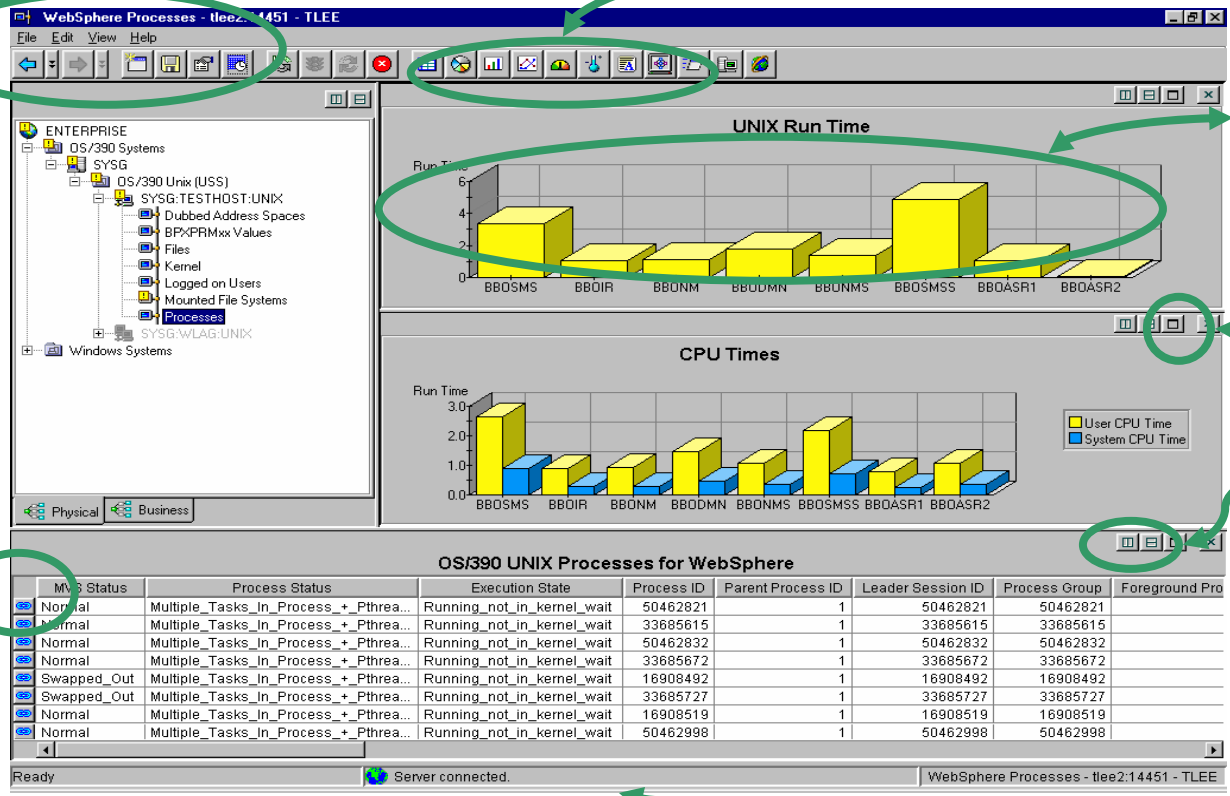
Tivoli Enterprise Portal

- **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

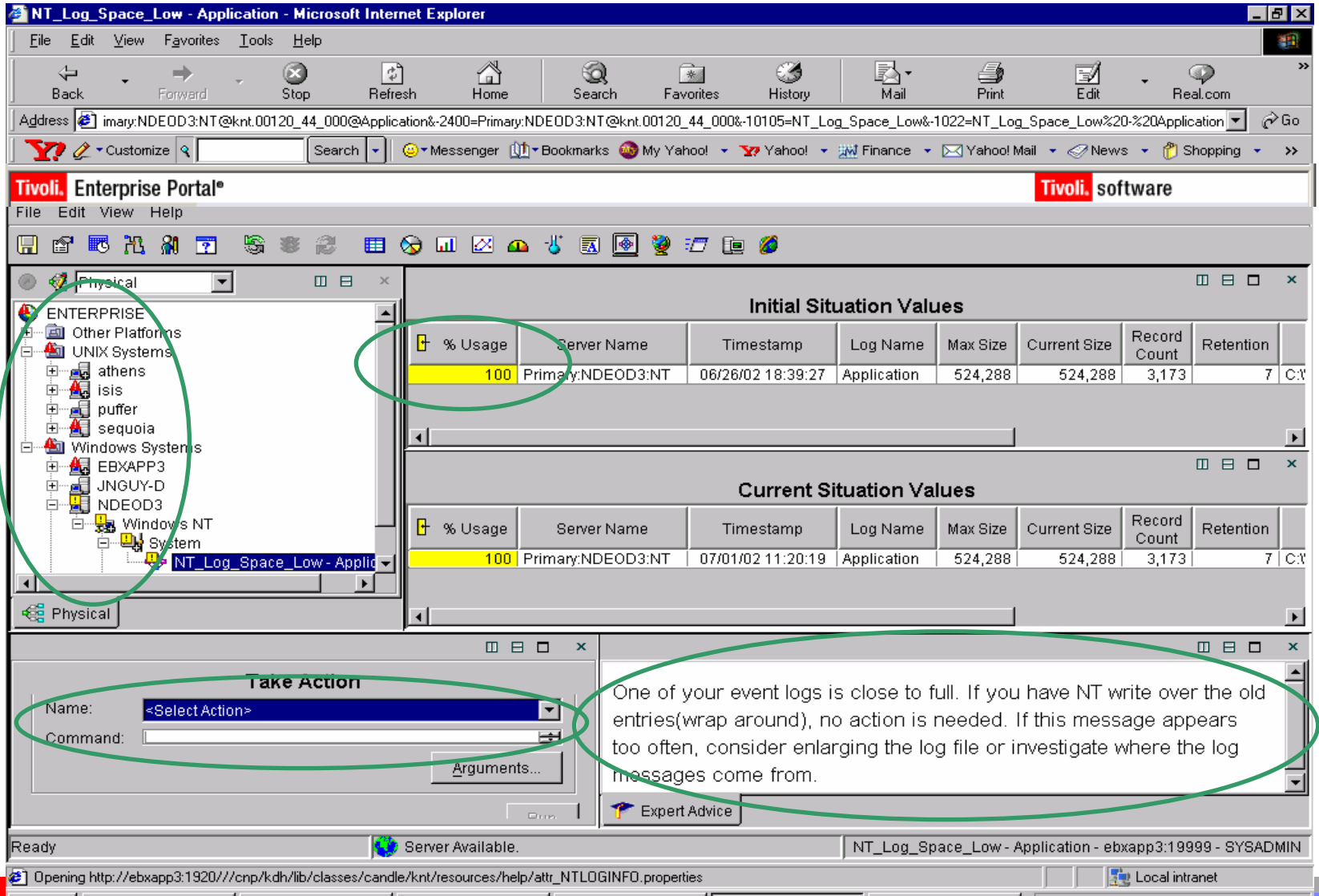
View Zoom

Splitter controls

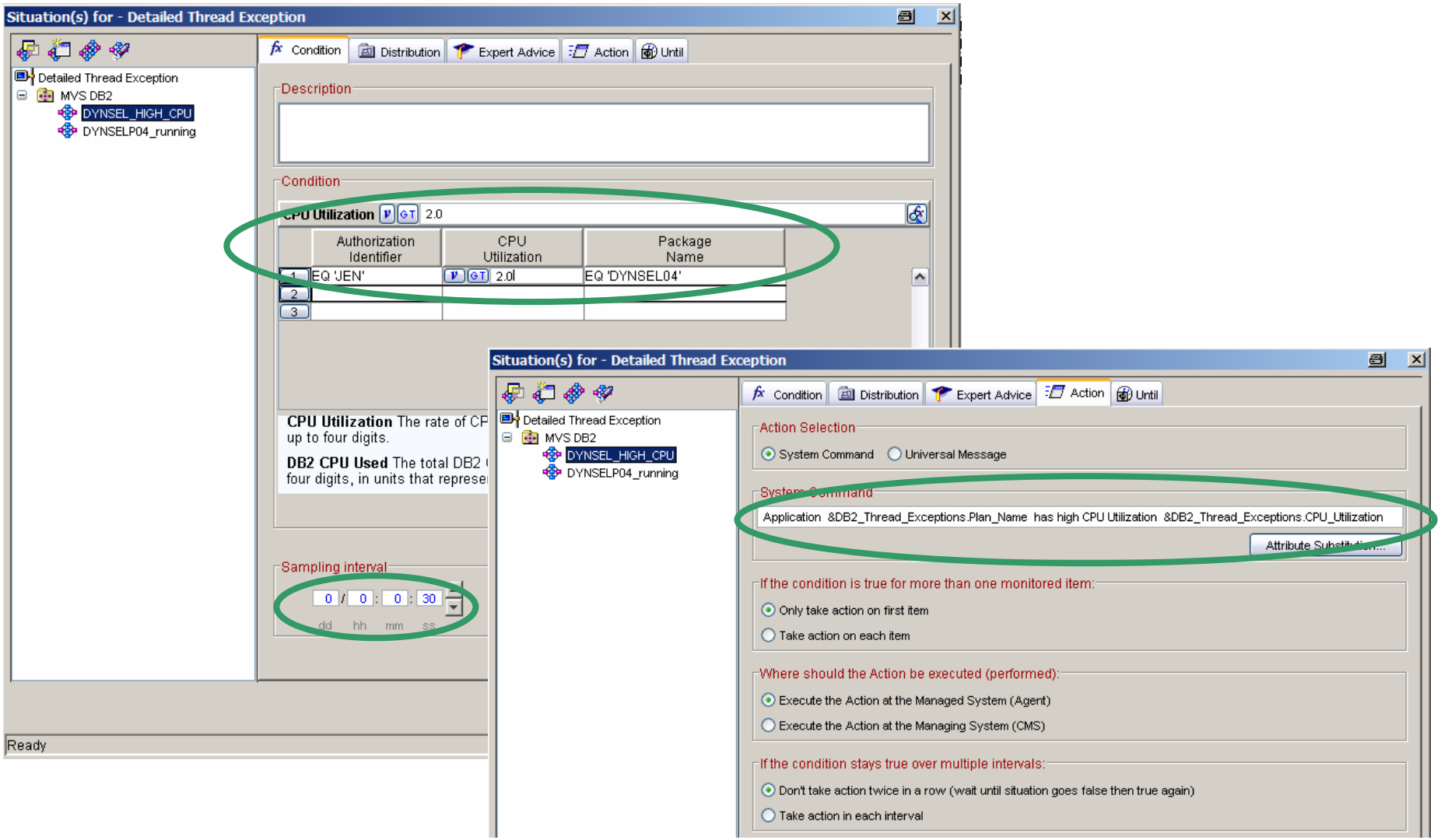
Intelligent Linking

Persistent customized workspaces

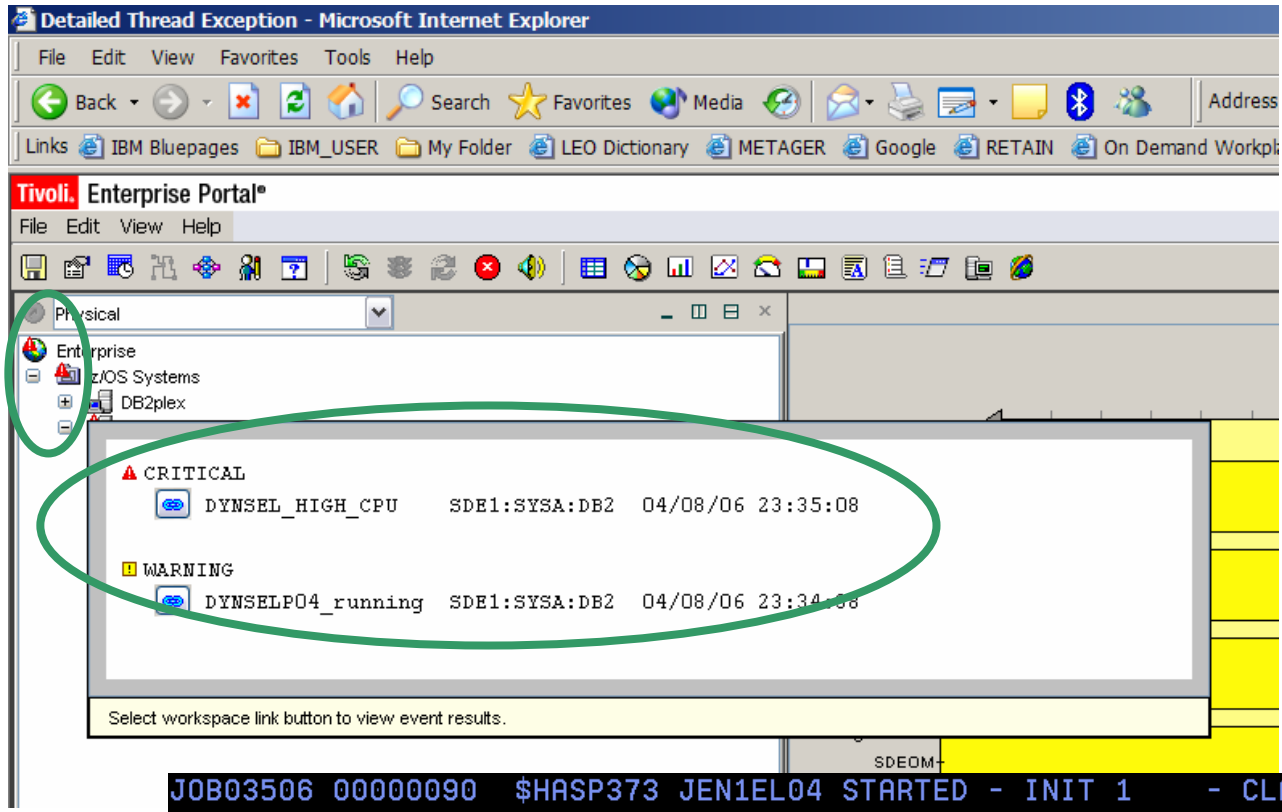
You can detect exceptional situations/events, see details and Expert Advise, and you can Take Action



Define a situation together with an automatic action



Define a situation together with an automatic action

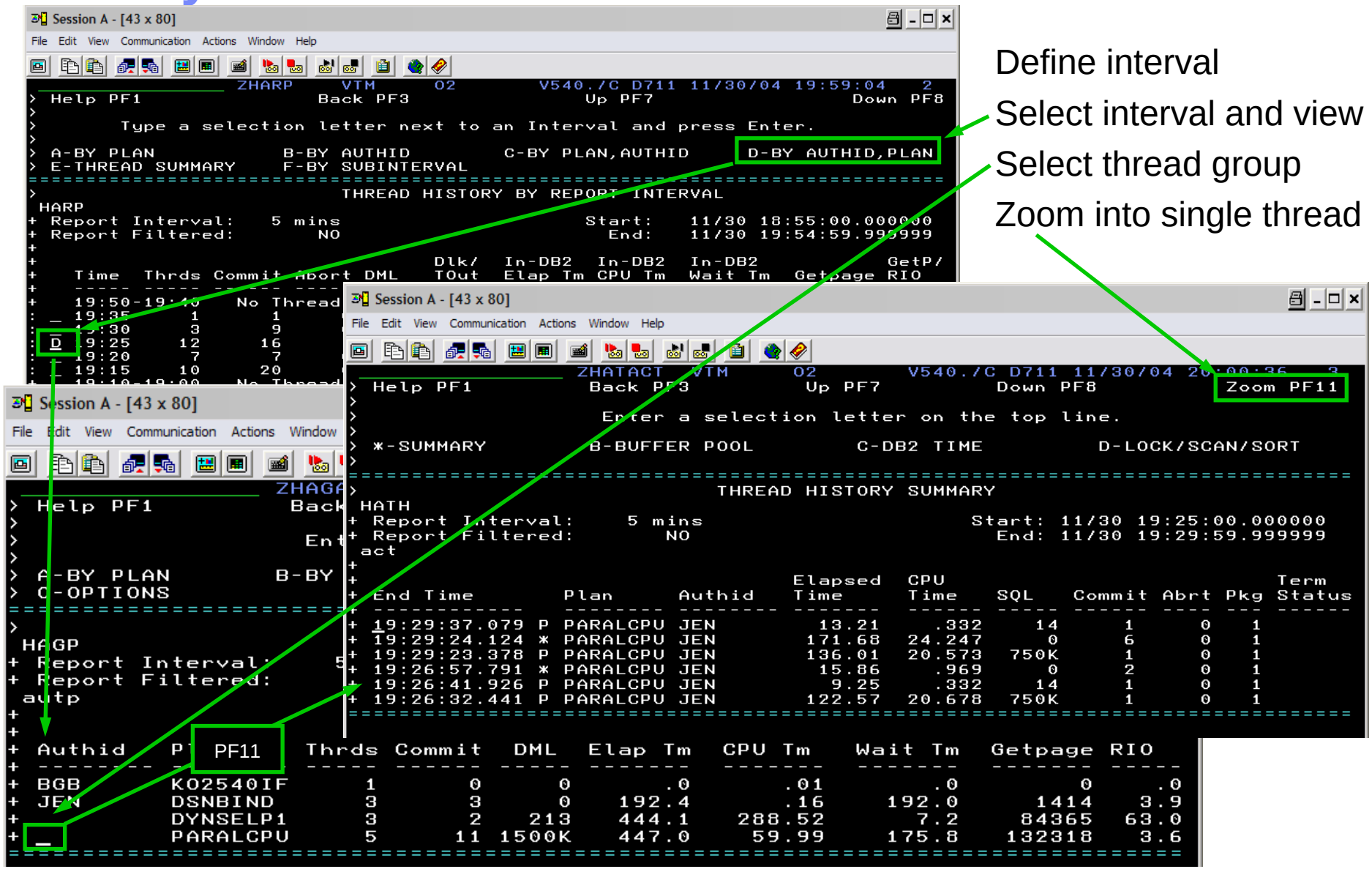



```
JOB03506 00000090  $HASP373 JEN1EL04 STARTED - INIT 1    - CLASS A - SYS SYSA
JOB03506 00000090  IEF403I JEN1EL04 - STARTED - TIME=23.33.52
STC03503 00000290  APPLICATION  DYNSELP1  HAS HIGH CPU UTILIZATION  21
STC03503 00000090  IEE305I APPLICAT COMMAND INVALID
STC02220 00000090  DSNL515I  -SDE3 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



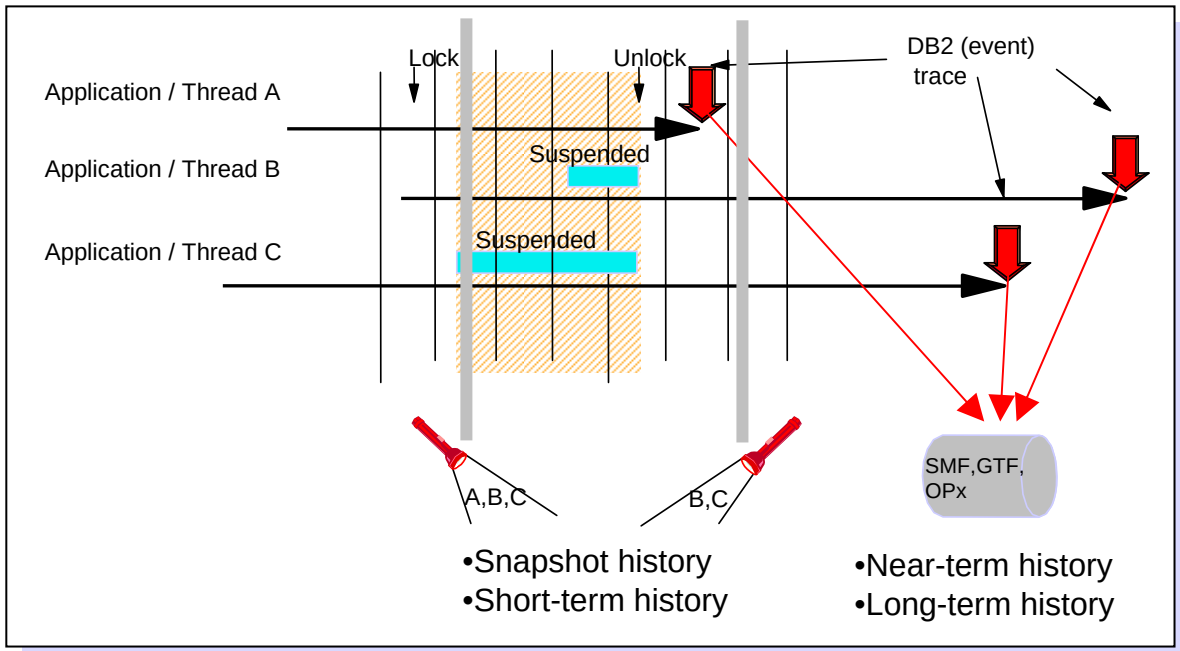
Define interval

Select interval and view

Select thread group

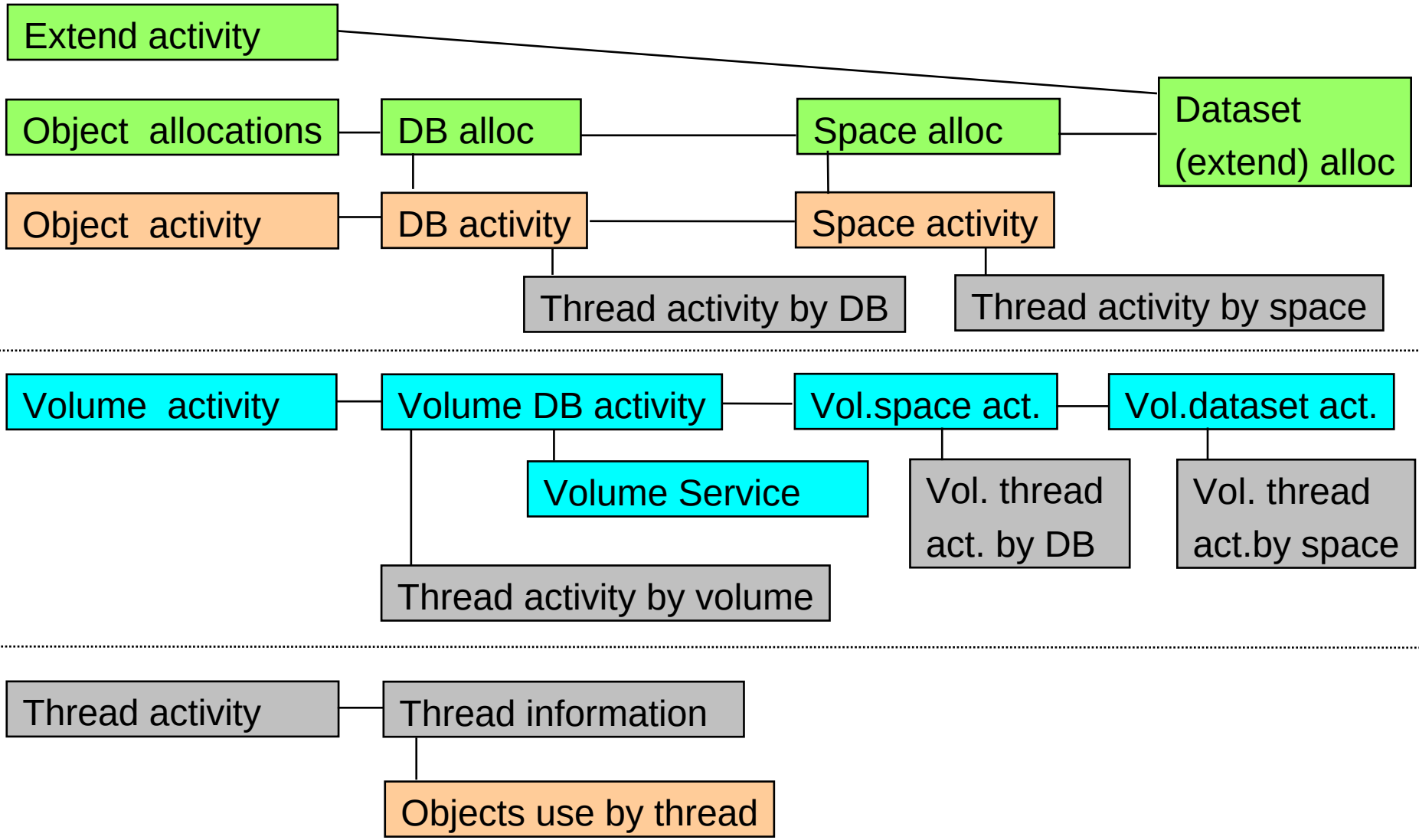
Zoom into single thread

Different types of history for different purposes



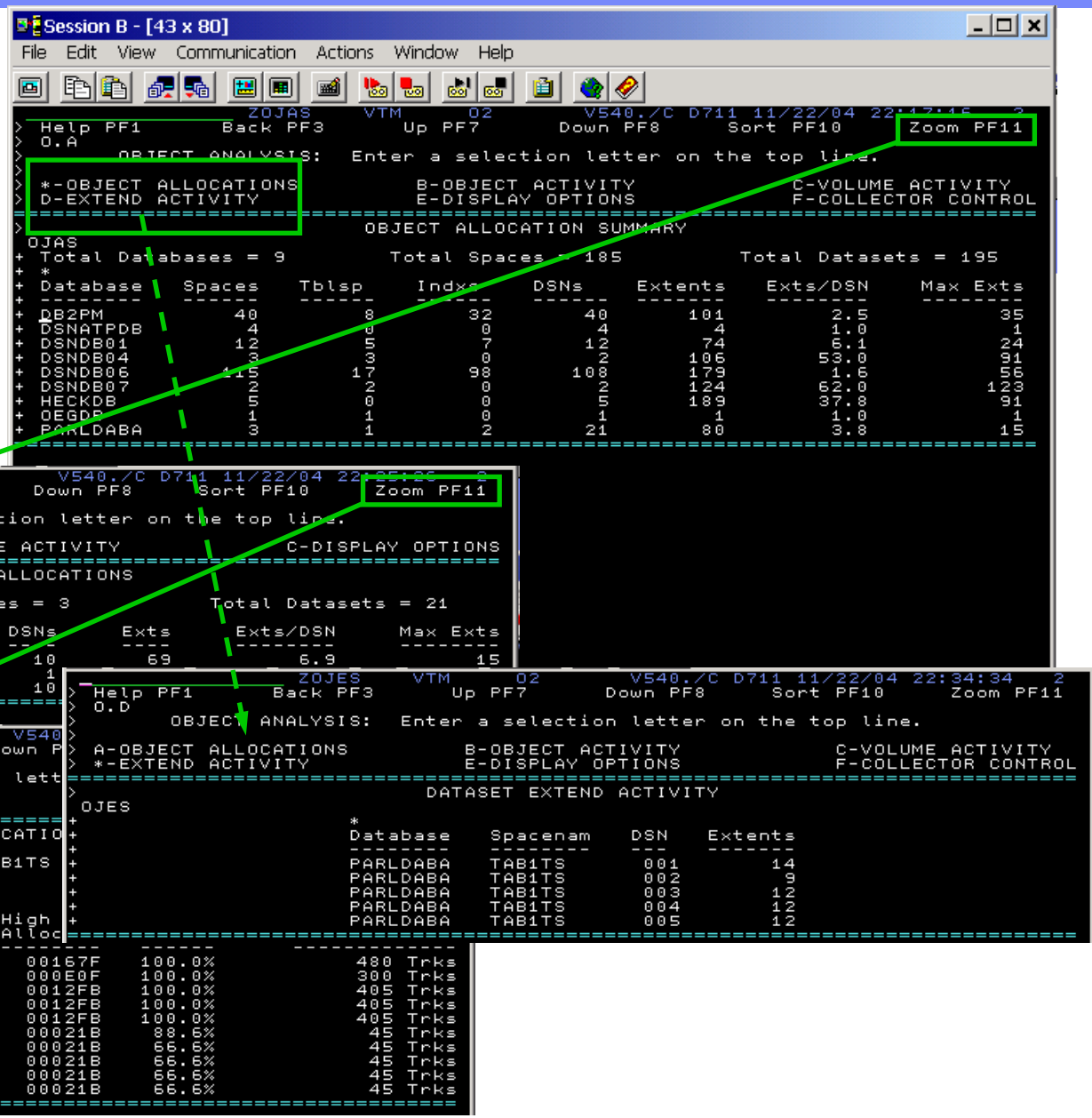
Type	Used by	Based on
Near-term history	Classic Interface	event traces
Long-term history	Report Facility, Performance Warehouse	event traces
Snapshot history	ISPF Online Monitor, PE Client	snapshot data
Short-Term history	TEP GUI	snapshot data

Object Analysis



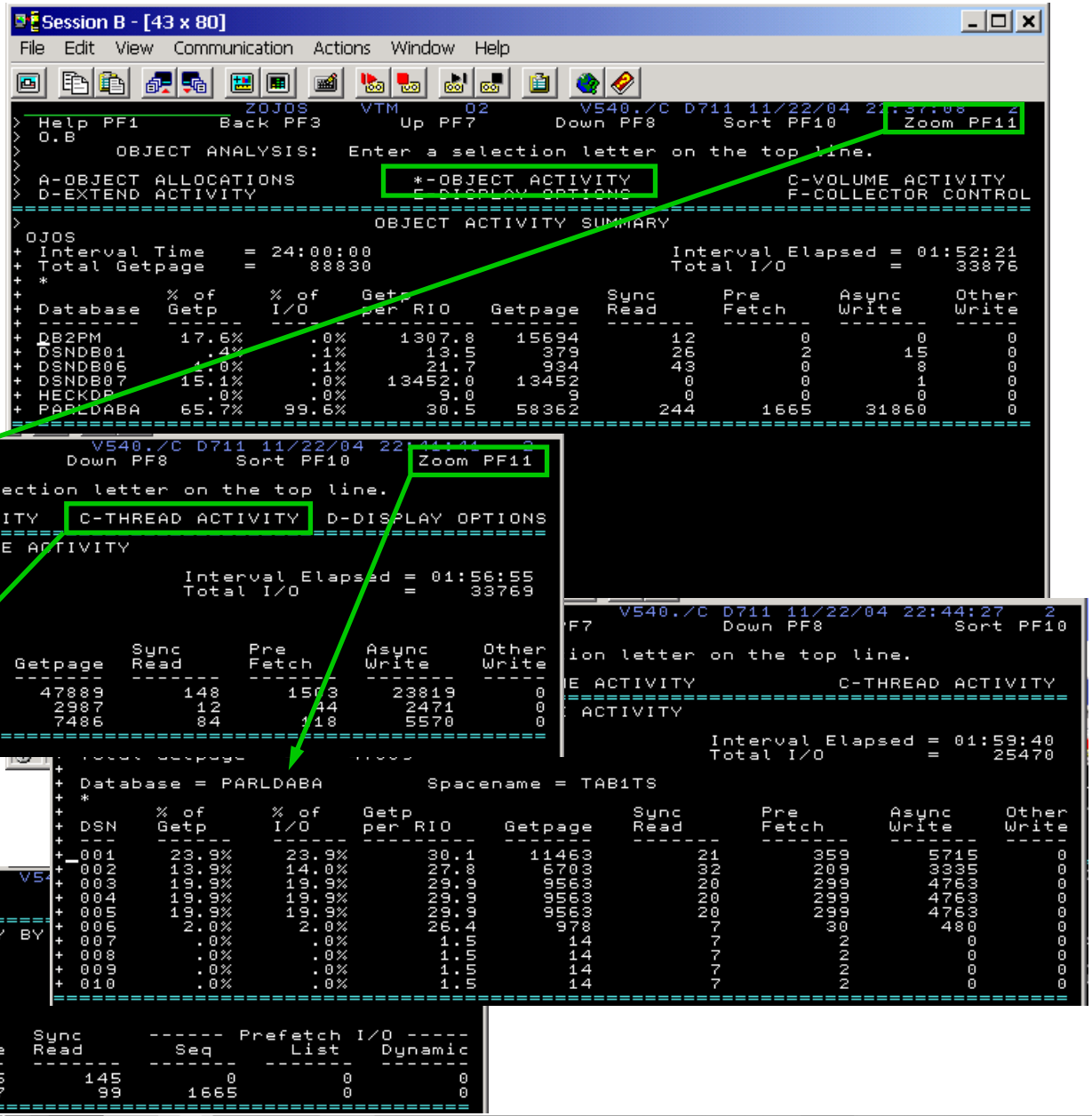
Object Analysis

Object allocation sample screen snapshots with Zoom-in



Object Analysis

Object activity sample screen snapshots with Zoom-in



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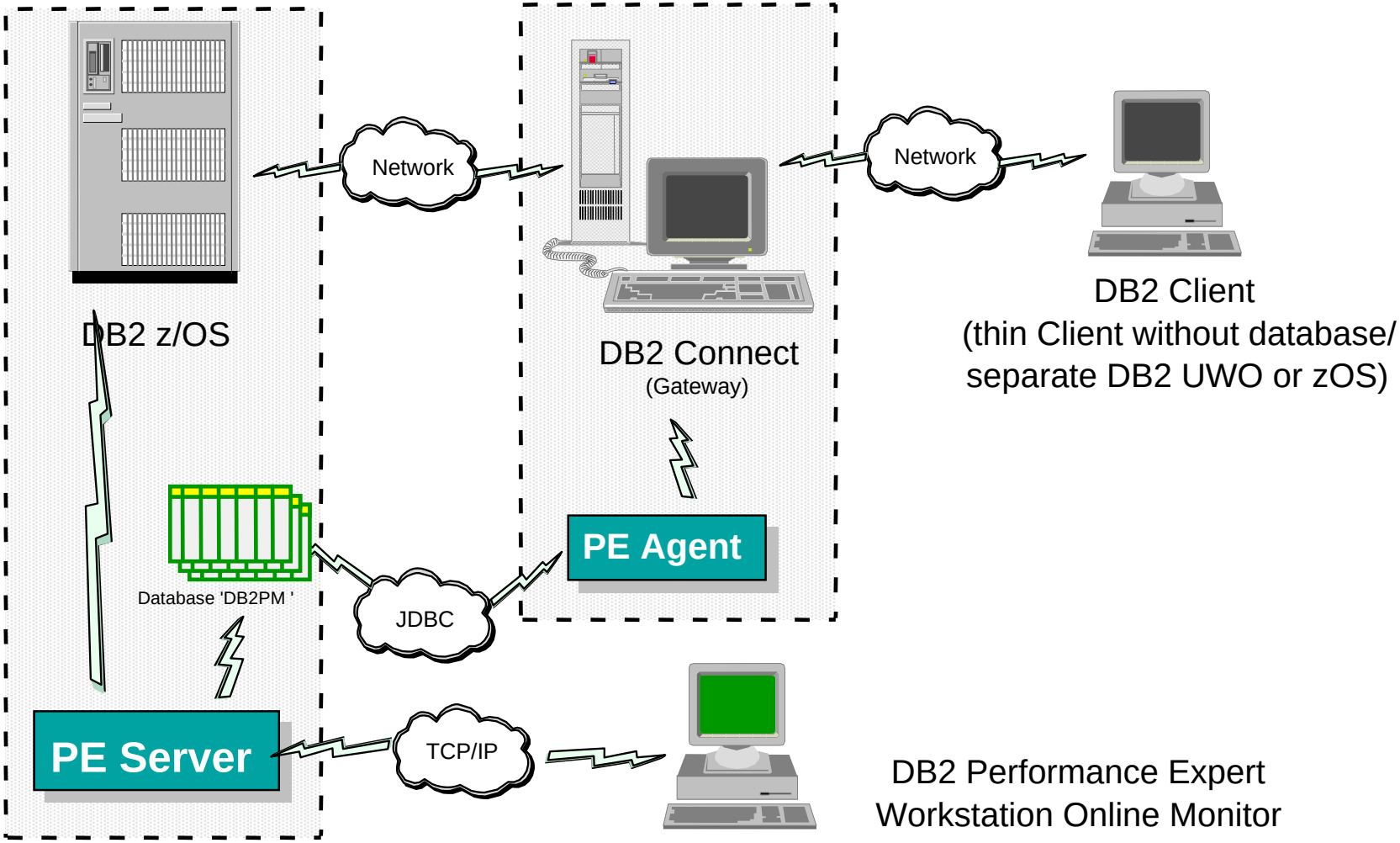
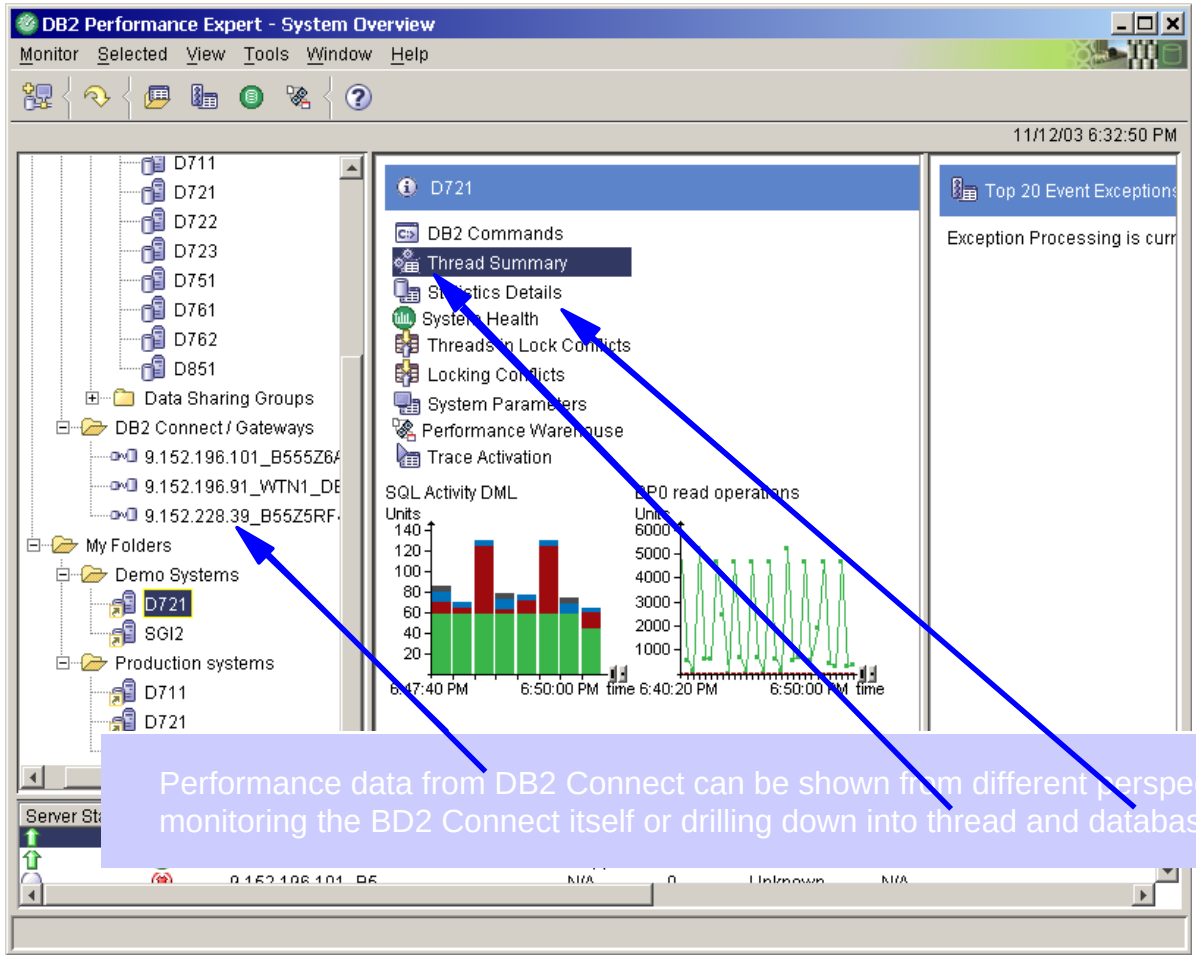
DB2 Connect Monitoring

- **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*

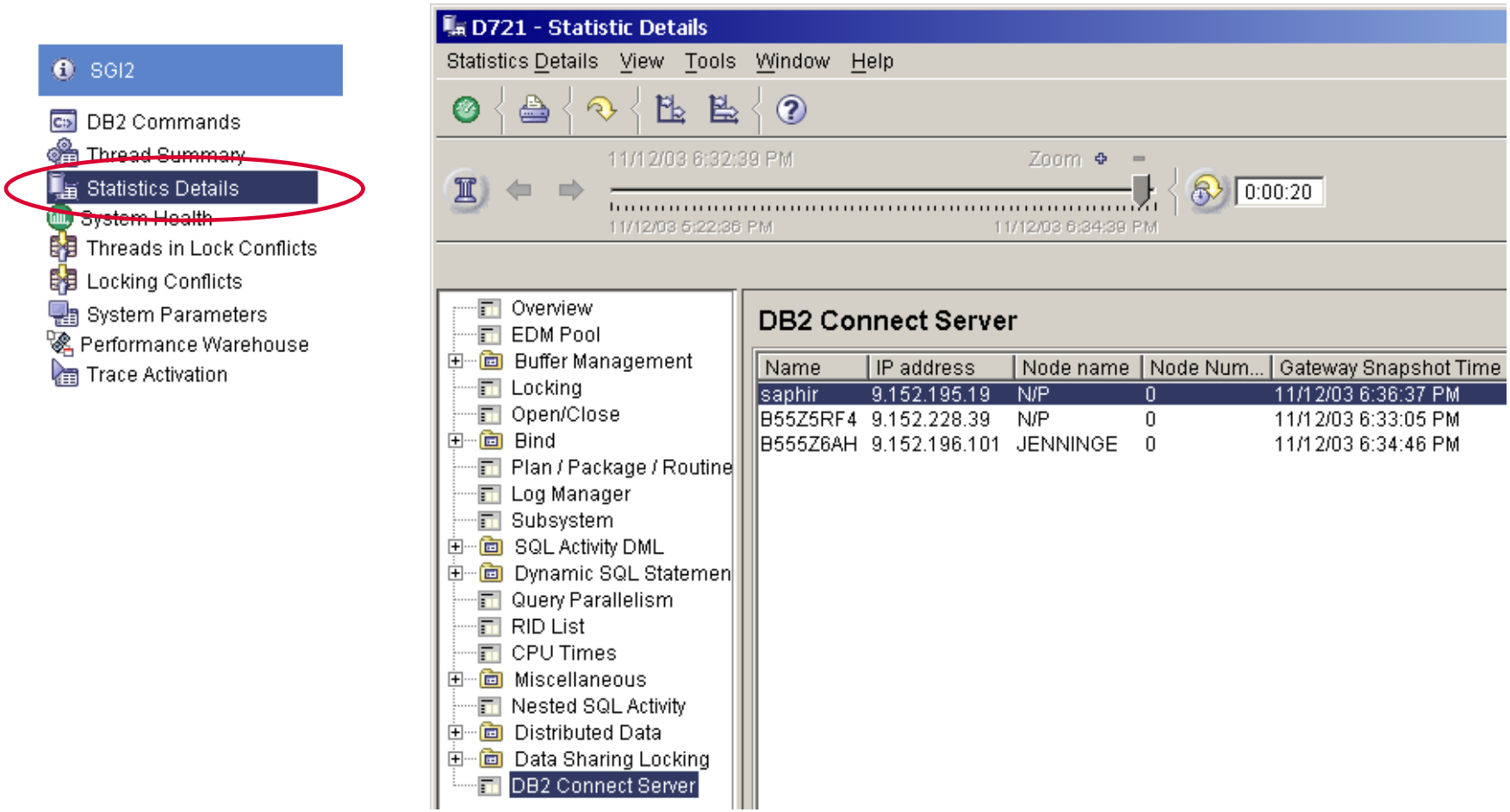
DB2 Connect Monitoring



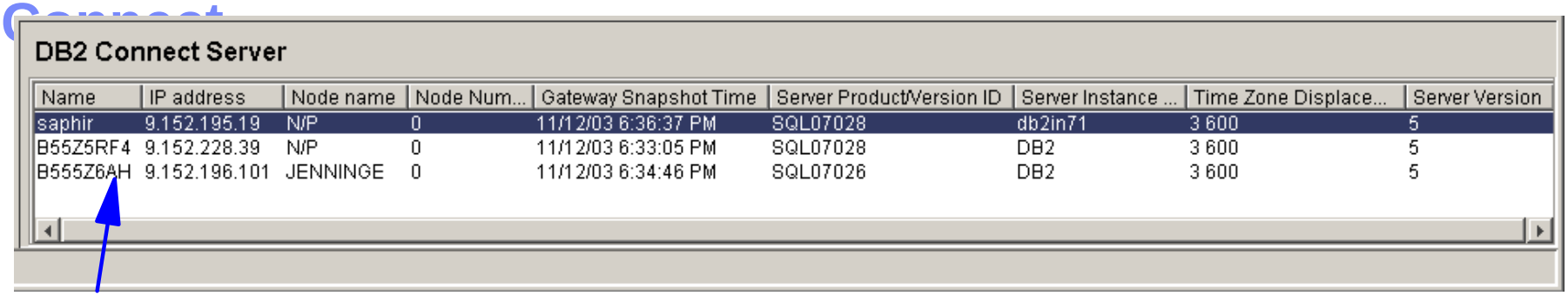
DB2 Connect Monitoring - Display of data from different places



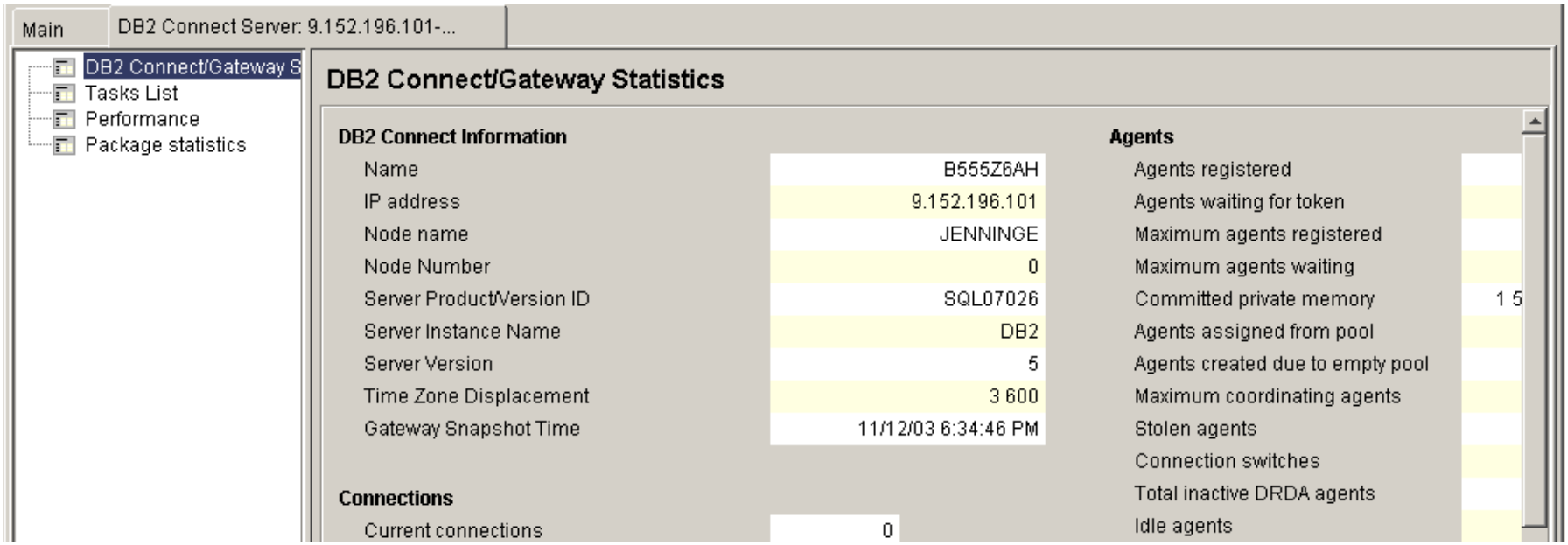
DB2 Connect Monitoring – Statistics Detail



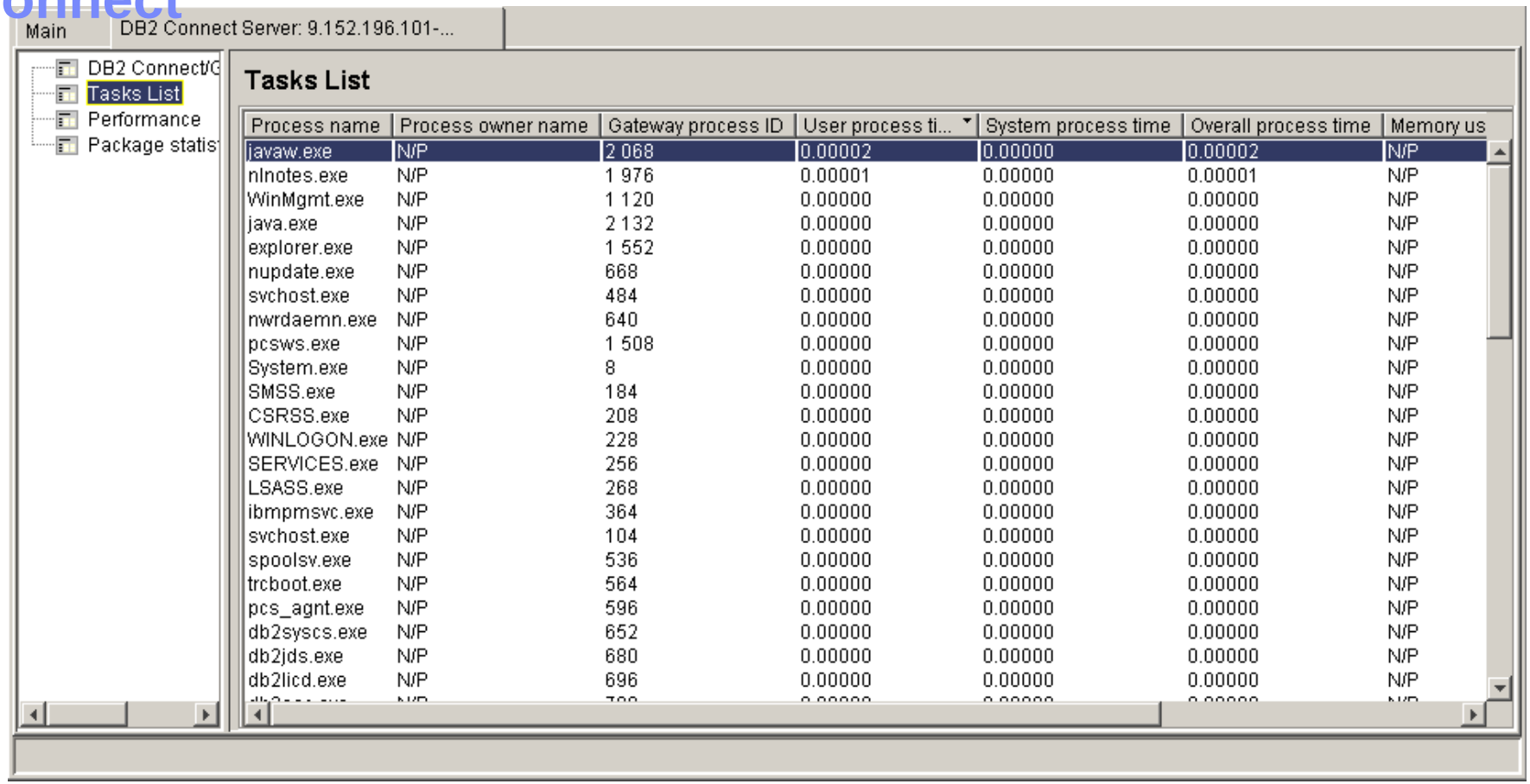
DB2 Connect Monitoring - Statistics Details / DB2 Connect



Select and drill down into more details

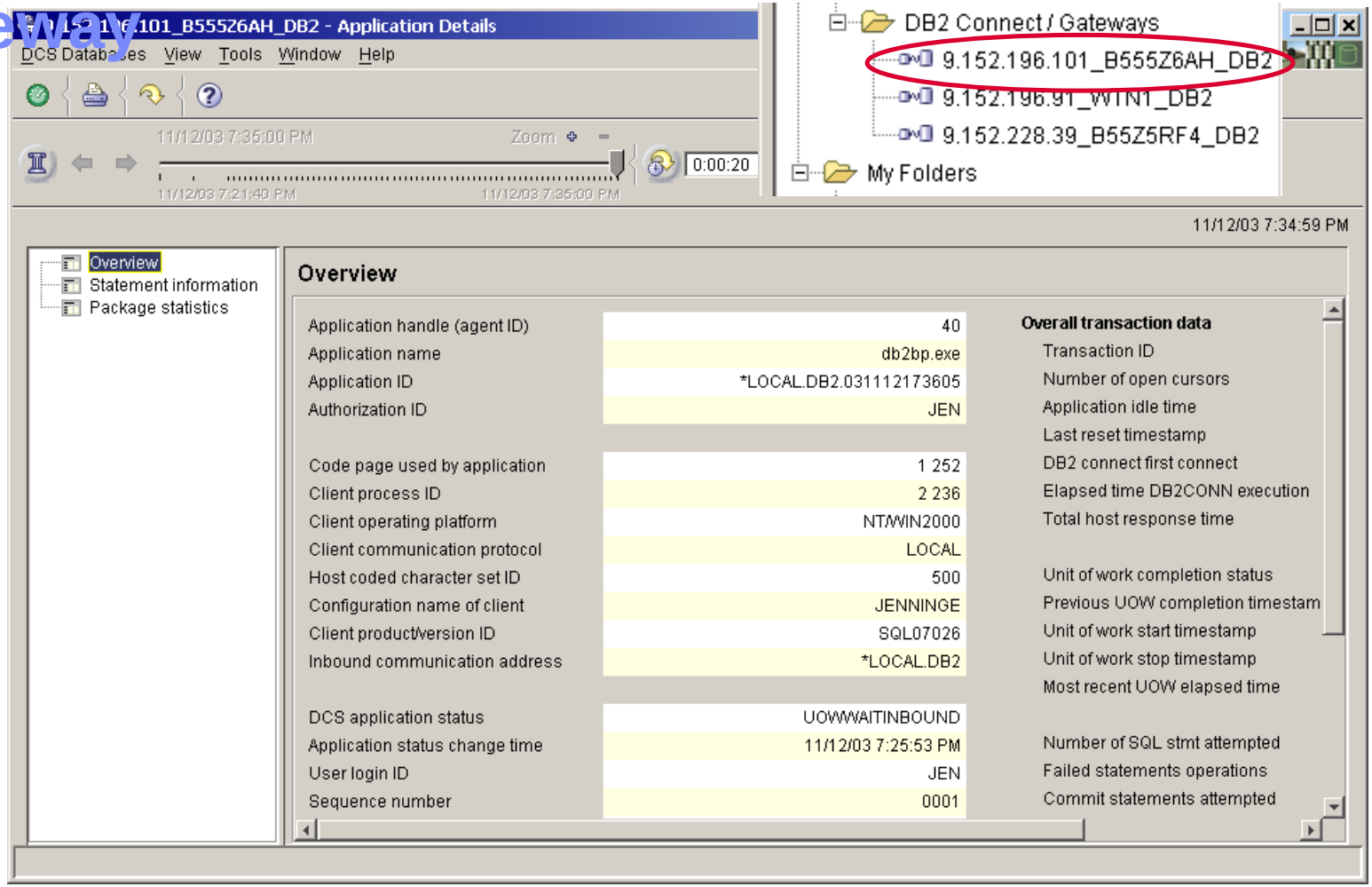


DB2 Connect Monitoring - Statistics Details / DB2 Connect

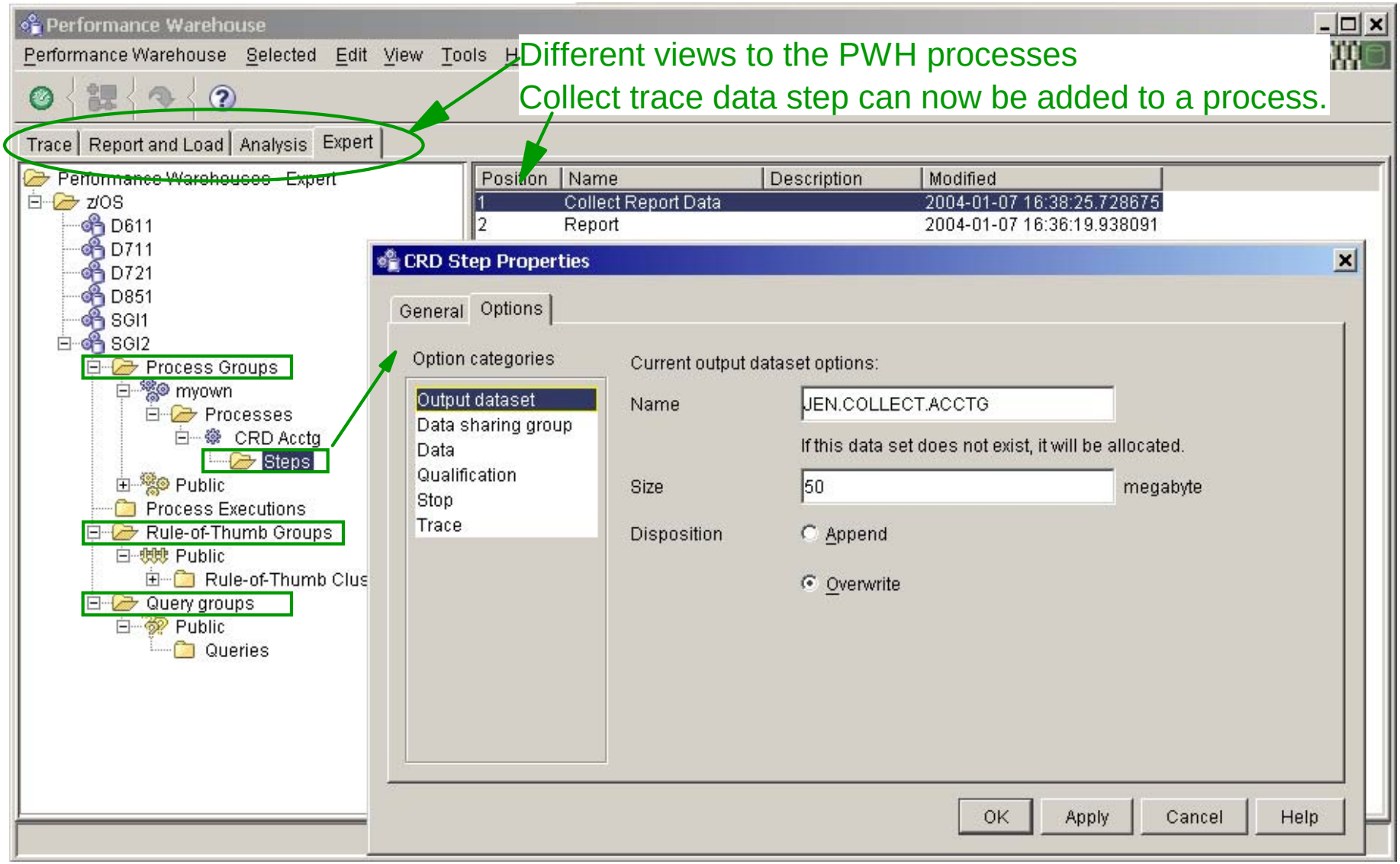


Process name	Process owner name	Gateway process ID	User process ti...	System process time	Overall process time	Memory us
javaw.exe	N/P	2 068	0.00002	0.00000	0.00002	N/P
nlnotes.exe	N/P	1 976	0.00001	0.00000	0.00001	N/P
WinMgmt.exe	N/P	1 120	0.00000	0.00000	0.00000	N/P
java.exe	N/P	2 132	0.00000	0.00000	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
nwrdaemn.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
trcboot.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

DB2 Connect Monitoring - DB2 Connect / Gateway



Trace Data Collection



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

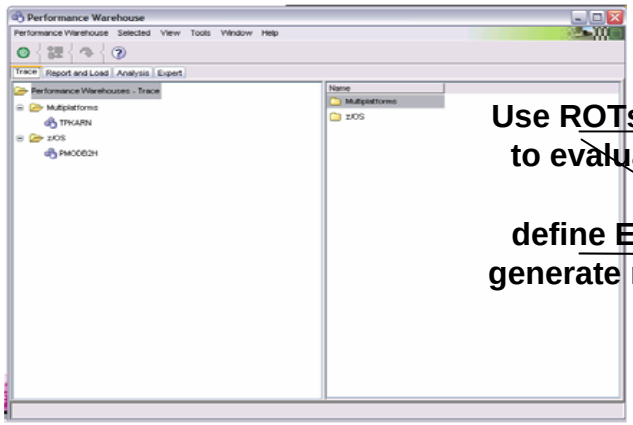
- Java front-end for PWH
- Running under Windows
- Integrated into Performance Expert Client
- Requires DB2 Connect

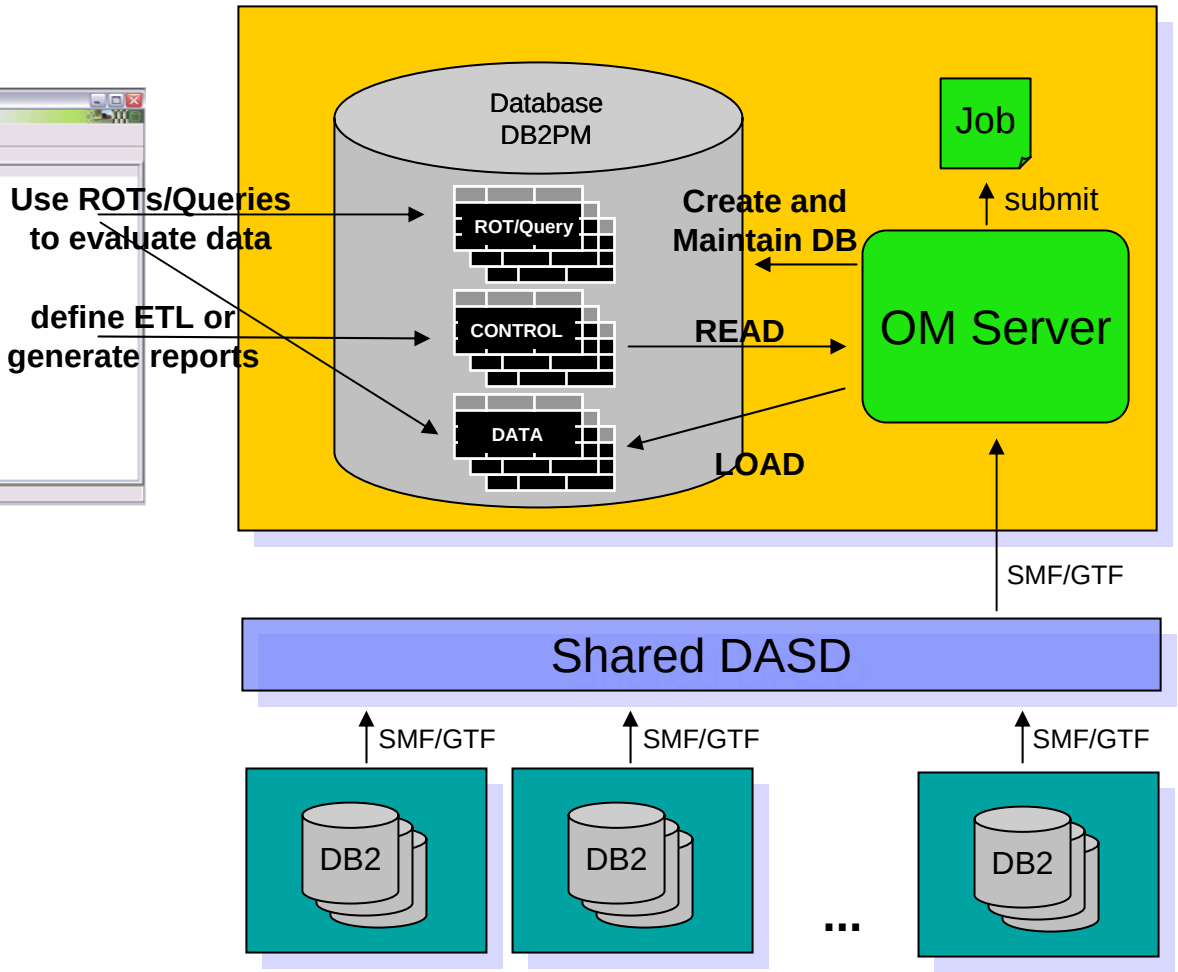
Input data

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

Performance Warehouse Architecture

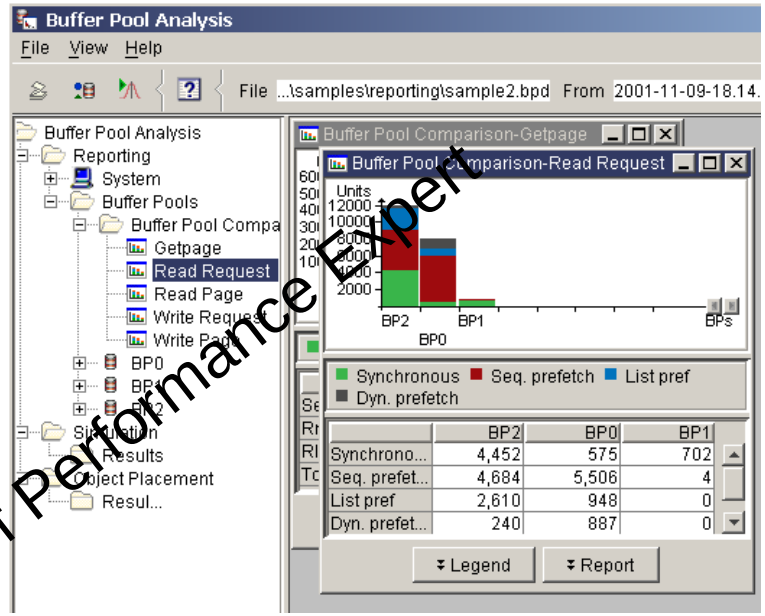
PWH Client

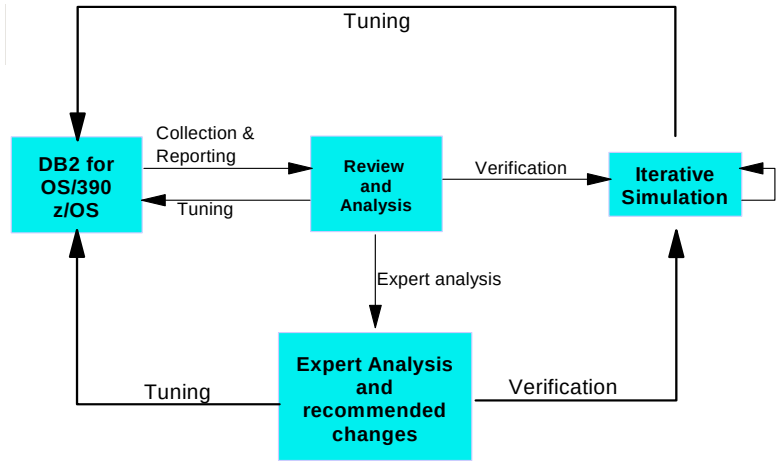




Analysis Support – Buffer Pool Analysis

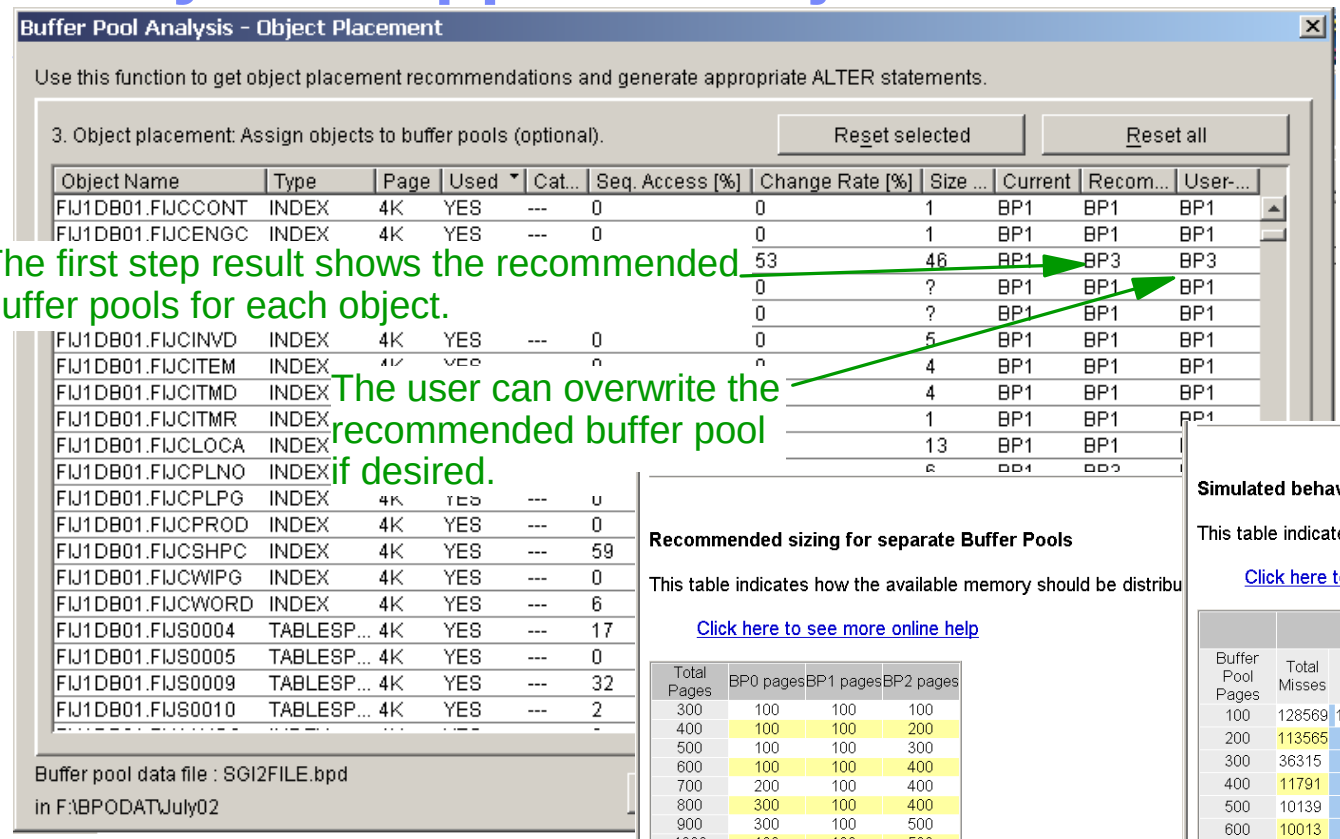
- **Collects** buffer pool data
  - as summary or detailed data
  - continuously or in sampling mode
  - in Online and Batch
- Generates various **reports and displays** results in multiple formats for BP and GBP (including graphical end-user interface)
- Provides expert knowledge and recommendations
- 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 /



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 distribu

Click here to see more online help

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

Simulated behavior of each separate Buffer Pools

This table indicates the behaviour of each buffer pool for

Click here to see more online help

	Buffer Pool BP0			Buffer Pool BP1			Buffer Pool BP2		
Buffer Pool Pages	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	96.7	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.

Click here to see more online help

	All		Random		Sequential Prefetch		List Prefetch	
Buffer Pool Pages	Total Misses	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 **I**nteractive **R**eport **F**acility (option 1)
- Performance Warehouse
  - Interactive using the PE Client GUI
  - Indirect, e.g. SQL Activity tracing, SQL PA cost & explain report

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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 …

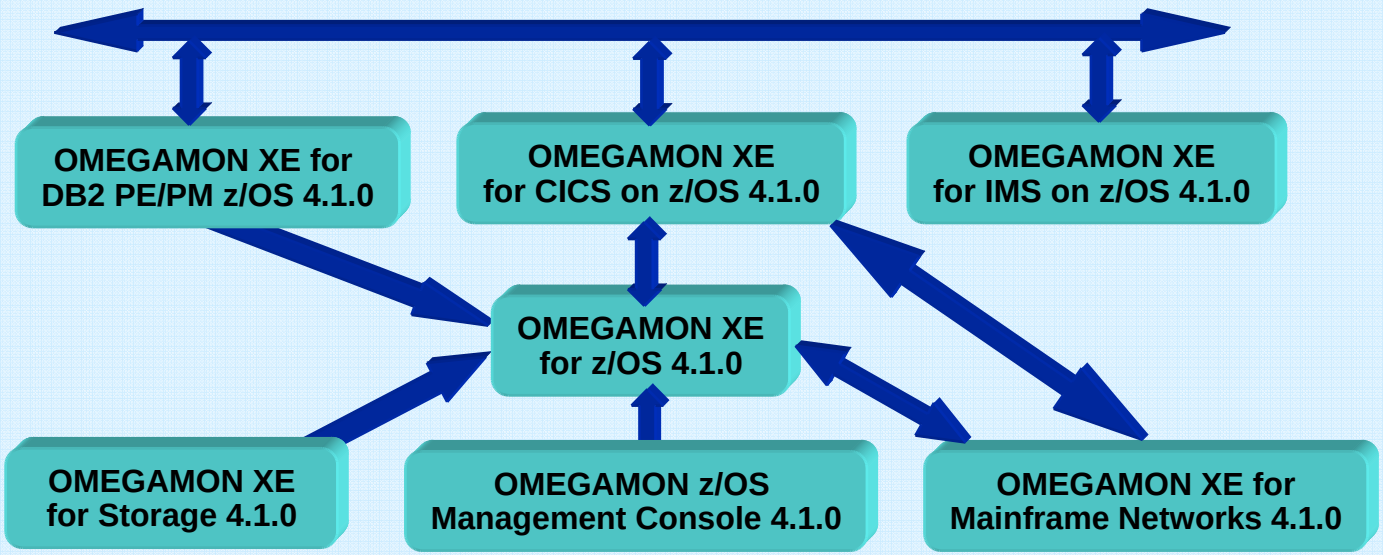
- Cross-product linking between TEP workspaces
- ITM6.1 FP3 delivers DWL (June 2006)
- Extension of existing Link Wizard
- Prior releases provided static links:
  - Links within current product, only
  - or Cross-product links but incomplete—finished by end-user
- Allows navigation between OMEGAMON “Silos”
  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
- customera'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

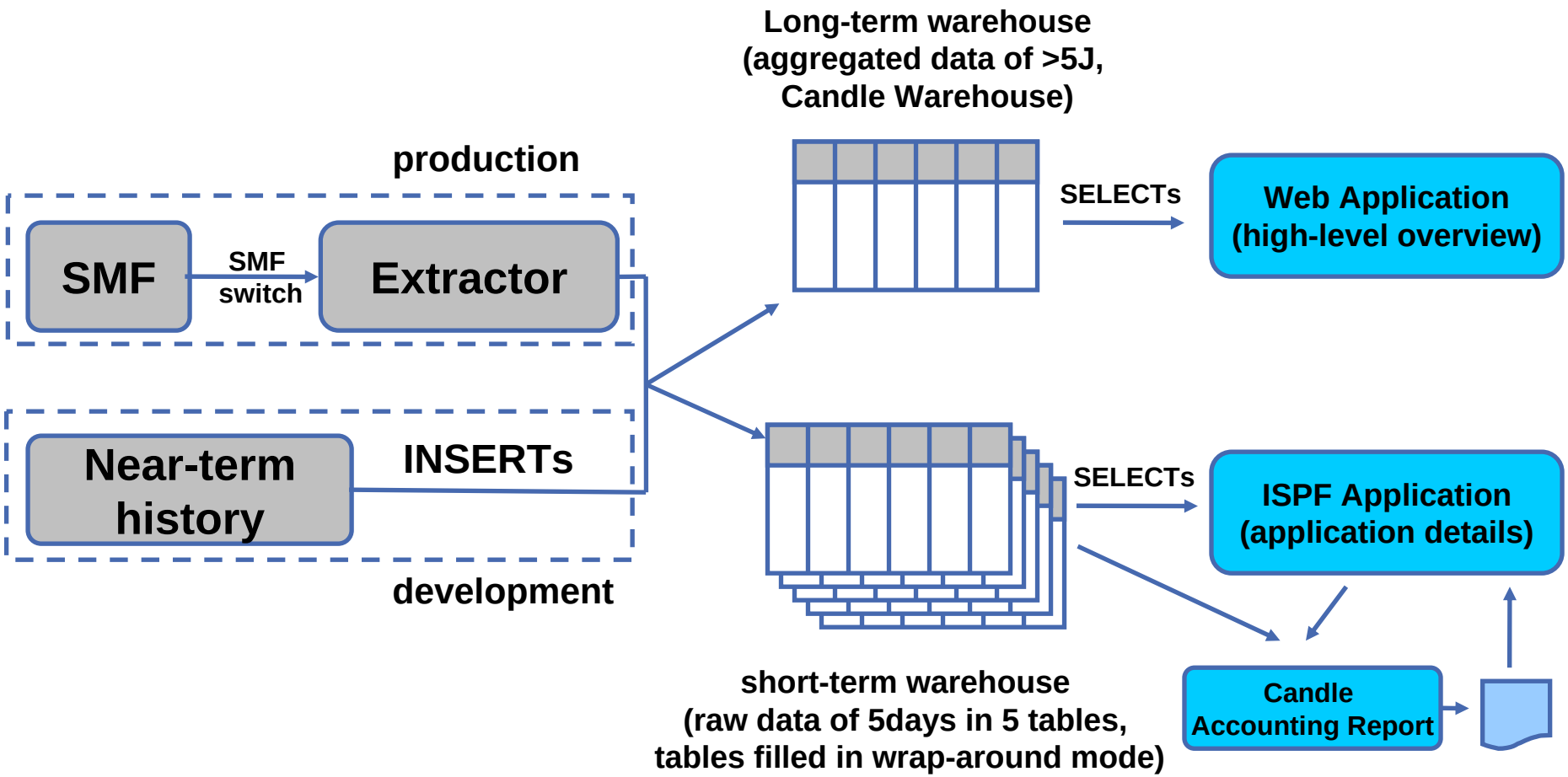
- Batch job to collect data for further processing in OMPE (report generation, load into PDB/PWH)
- Allows almost real-time loading of data while collection via job exit
- Full data sharing group support
- Cheaper collection than SMF and GTF

Build as

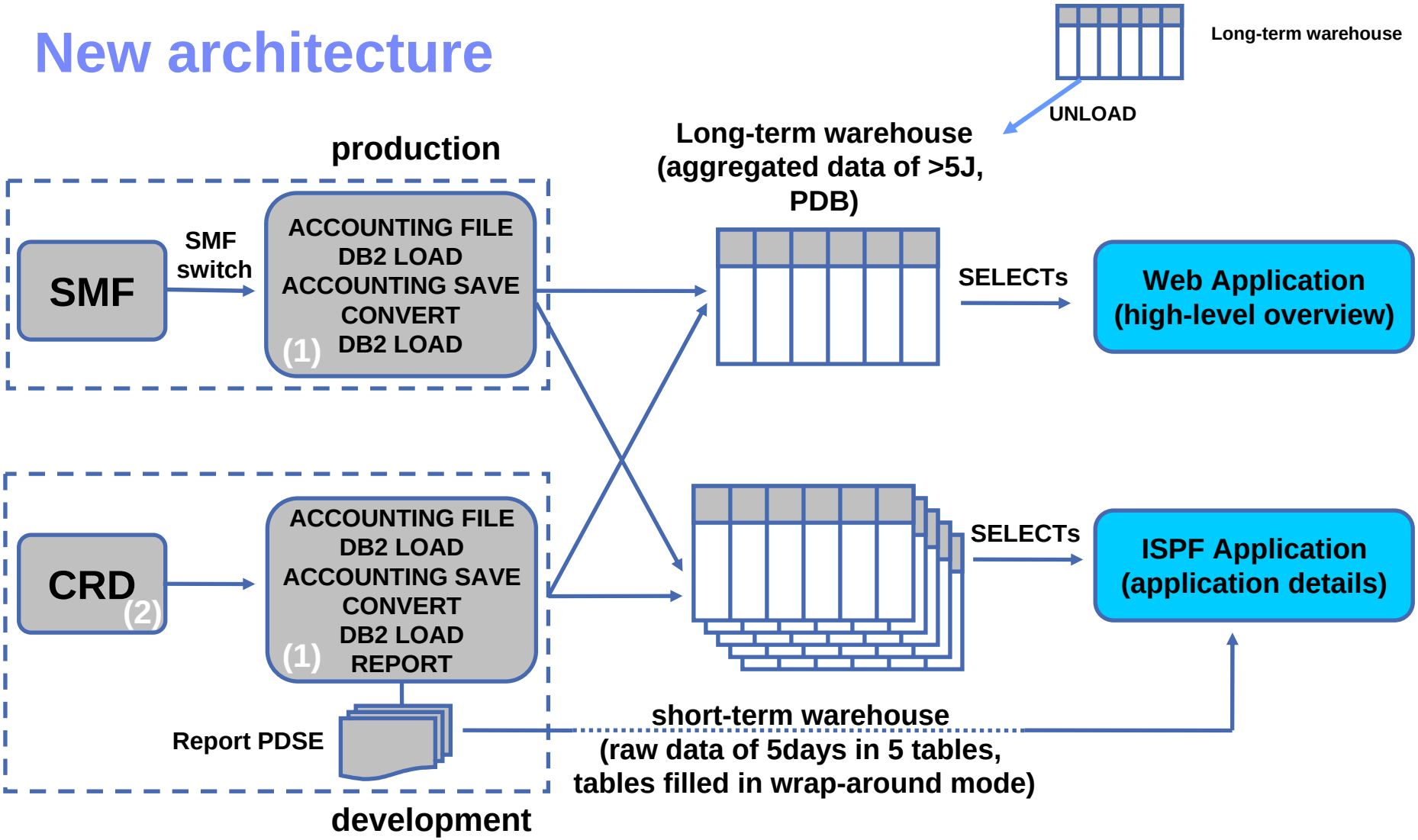
- Replacement of dropped OMEGAMON Extractor, which could be used to load data via INSERTS directly into candle warehouse while NTH was collecting data
- alternative to SMF with much more flexibility to load data into OMPEs performance database

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	GC18-9979
Messages	GC18-9980
Monitoring Performance from the OMEGAMON Classic Interface	SC18-9988
Monitoring Performance from ISPF	SC18-9981
Monitoring Performance from Expert Client	SC18-9982
Reporting Users Guide	SC18-9983
Report Reference	SC18-9984
Report Command Reference	SC18-9985
Information Roadmap	GC18-9834
IBM DB2 Buffer Pool Analyzer User's Guide	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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