



IBM Software Group

OMEGAMON XE for IMS Historical Performance Analysis Options And Best Practices

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@.business on demand.

Agenda

- What are the history collection capabilities of OMEGAMON XE For IMS V4.1?
 - ▶ A look at Epilog history
 - ▶ A look at Transaction Reporting Facility (TRF)
 - ▶ A look at the historical collection facilities of Tivoli Enterprise Portal (the TEP)
 - ▶ Summary, Strategy, and Recommendations



OMEGAMON XE For IMS V4.1

Real Time Components And Facilities

- **Real Time Monitor**
 - ▶ *Subsystems, regions, resources, pools, DBs, Fast path*
 - ▶ *IMS Connect, OTMA*
- **Response Time Analysis (RTA)**
 - ▶ *Transaction Response time by user defined groups*
- **Bottleneck Analysis**
 - ▶ *Workload performance and task analysis*
- **Operator Assist & Integrated Console Facility**
 - ▶ *Consolidation of IMS MTO consoles*
- **Online Transaction Reporting Facility (TRF)**
- **Trace Facilities**
- **Exceptions & Alerts**
- **Plex level information**
 - ▶ *Integrated alert/automation*
 - ▶ *N-way, MSC*



OMEGAMON XE For IMS V4.1 Historical Facilities

- ***EPILOG Historical***
 - ▶ Historical analysis of transaction response, bottlenecks and IMS resources
 - ▶ Stored in VSAM Epilog Data Store (EDS) by group and time interval
- ***TRF Historical***
 - ▶ Detailed transaction & database data – individual transactions
 - ▶ Suitable for performance analysis & chargeback
- ***OMEGAMON XE Tivoli Enterprise Portal Historical***
 - ▶ Snapshot historical



Epilog IMS – Historical Analysis

Correlated Bottleneck, RTA & System Data

- Epilog history provides powerful RTA and bottleneck data correlated with system performance stats
- Epilog allows for grouping similar to online RTA and DEXAN
 - ▶ Configured via separate control cards from real time
 - ▶ Recommendation – create groups similar to online monitoring
- Epilog collector subtask runs within OMEGAMON classic
- Data collected to an Epilog Data Store file (called an EDS)
 - VSAM KSDS - compressed state
 - One EDS file per subsystem
 - ▶ Can optionally write to SMF
- Data retrieved via:
 - ▶ Batch job or TSO Clist



Understanding Response Time Analysis And Bottleneck Analysis Relative To Epilog History

- Response Time Analyzer - RTA
 - ▶ Captures detailed response time data from IMS
 - ▶ Places data into summary buckets
 - ▶ Reports data in user specified groups
 - Groups defined with KOIGBLxx macro
 - ▶ RTA measures queuing and service times within IMS
- Bottleneck Analysis (DEXAN)
 - ▶ Breaks down workload into components
 - ▶ Concentrate on significant component
 - ▶ Group definitions apply to DEXAN as well as RTA
- Epilog history collection enables the collection of RTA and bottleneck analysis data in history
 - ▶ Data is correlated with other key system metrics
 - ▶ Data is stored in EDS VSAM file



RTA May Target Key Applications Using User Definable RTA Groups

```

Actions GoTo View Options Help
----- 04/09/06 13:40:33
KI2PRT      Response Time 1 Analysis for All Groups      IMS: IMSA      +
              Lines 1 to 17 of 17
-----C-----C-----C-----
:           : Interval 00:05 hrs : Interval 00:30 hrs : Interval 01:00 hrs :
: Group Name : Elapsed 00:00:26 : Elapsed 00:05:26 : Elapsed 00:35:26 :
-----o-----o-----o-----
: ALL       :( 542) 0.1s :( 6888) 0.1s :( 47196) 0.1s :
: OTHER     :( 7) 0.0s :( 189) 0.1s :( 1180) 0.1s :
: TRN       :( 188) 18.1s :( 1241) 19.1s :( 9104) 15.1s :
: ABCXY     :           :           :           :
: REGIO     :( 72) 0.1s :( 1177) 0.1s :( 7686) 0.1s :
: ABC       :           :           :           :
: LEDGER    :( 16) 0.2s :           :           :
: FINANCE   :           :           :           :
: DBA       :( 3) 0.0s :           :           :
: AA        :           :           :           :
: BB        :( 107) 0.1s :           :           :
    
```

RTA data by grouping is viewable in 3270

RTA may be viewed real time in 3270 And TEP. RTA data is also available in history via Epilog.

RTA Group Name	RTA Group Number	Input Queue Time (Secs.)	Program Input Queue Time (Secs.)	Processing Time (Secs.)	R0 Time (Secs.)	Output Queue Time (Secs.)	R1 Time (Secs.)	Timestamp
SYSTEM	0	0.0004	0.0000	0.0102	0.0106	0.0860	0.0965	10/04/06 20:06:34
PARTS	1	0.0004	0.0000	0.0078	0.0082	0.1719	0.1799	10/04/06 20:06:34
ADDPARTS	2	0.0004	0.0000	0.0124	0.0128	0.0002	0.0129	10/04/06 20:06:34
DELETE	3	0.0004	0.0000	0.0128	0.0132	0.0002	0.0133	10/04/06 20:06:34

RTA data in the TEP

Use Bottleneck Analysis To Determine Where The Work Is Spending Time

```

GoTo Options Help
----- 10/09/05 13:31:20
KI2PSDX2      Bottlenecks Analysis for Group TRN      IMSA
-----

: Elapsed time . . . : 17:24 MN      Sampl
: Suppress states . . < 0 %      Sampl
: Display COMPETING TRANSACTIONS + Sampl

-----c-----
:      Wait Reason      :      Short Term
:      :      % 0----- 50--
-----0-----c-----

: Using CPU:           : 15.0:--> . . .
: Using CPU in Appl   : 10.70:--> . . .
: Using CPU in IMS    : 4.20:> . . .
: Scheduling Waits:   : 7.9:> . . .
: Wait for MPP        : 7.70:> . . .
: Intent Conflict     : .10:> . . .
: TM Schedule Latch   : 0: . . .
: IMS Activity:       : 10.0:--> . . .
: Other DL/I IWAIT    : 5.60:> . . .
: IWAIT in IMS Disp   : 1.20:> . . .
: IWAIT in Term       : 0: . . .
: LOGL Latch          : .50:> . . .
: DBBP Latch          : .10:> . . .
: ISWITCHed to CTL    : 2.40:> . . .

-----
<Response Time> <Response Time Components>
    
```

Analyze where IMS workload is spending its time. Provide analysis of where to tune.

```

GoTo Options Help
----- 10/09/05 13:31:28
KI2PSDX2      Bottlenecks Analysis for Group TRN      IMSA
-----

: Elapsed time . . . : 17:24 MN      Samples taken (short) . . : 281      :
: Suppress states . . < 0 %      Samples taken (long) . . : 2026     :
: Display COMPETING TRANSACTIONS + Sampling interval . . . : 5 tenths-sec :

-----
                                           Lines 15 to 28 of 29
-----

:      Wait Reason      :      Short Term %      :      Long Term %
:      :      % 0----- 50-----100 : % 0----- 50-----100 :
-----

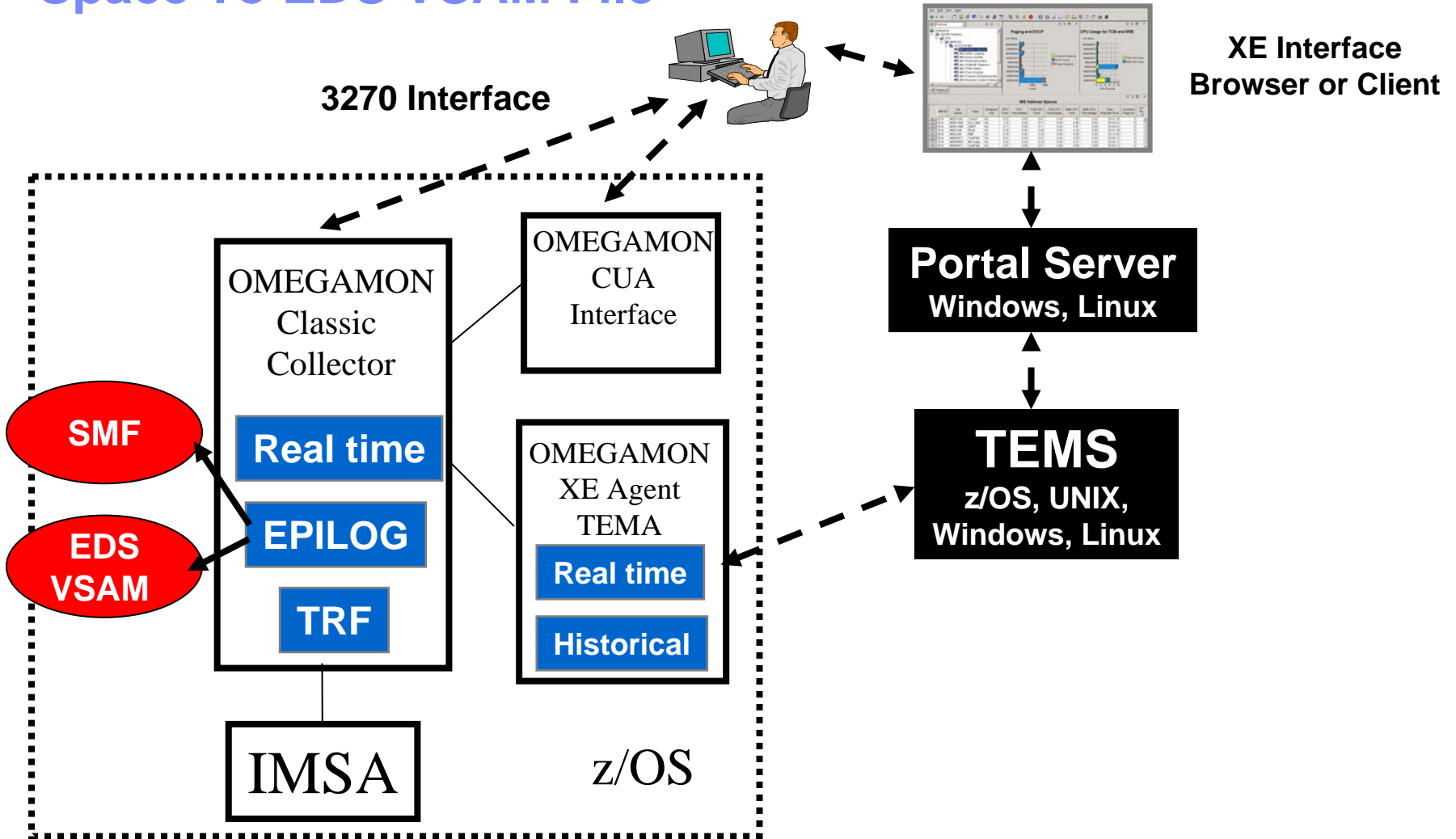
: DC Sys Ckpt Latch   : 0: . . . . . : .20:> . . . . . :
: Database I/O Waits  : .3:> . . . . . : .2:> . . . . . :
: HISTDB              : 30.0:-----> . . . . . : :30.0:----->
: DLB80002            : .30:-----> . . . . . : .:30
: MVS Waits:          : 3.2:> . . . . . : 2.0: . . . . . :
: CPU Wait (DEP)      : 3.20:> . . . . . : 2.00:-----> . . . . . :
: Program Fetch I/O   : 0: . . . . . : 0: . . . . . :
: ESS Waits:          : 26.5:-----> . . . . . : 23.8:-----> . . . . . :
: Commit (Phase 2)    : 2.80:> . . . . . : 2.30:> . . . . . :
: Prepare to Commit   : 4.70:> . . . . . : 5.60:> . . . . . :
: User Sign on DB2    : .10:> . . . . . : .30:> . . . . . :
: Terminate Thread    : 0: . . . . . : 0: . . . . . :
: SQL Call            : 18.70:--> . . . . . : 15.30:--> . . . . . :
: Other Waits:        : : . . . . . : : . . . . . :

-----0-----
<Response Time> <Response Time Components> (Bottlenecks)
    
```

DEXAN data based on RTA groups defined in KOIGBL



Epilog History Written By Classic Collector Address Space To EDS VSAM File



EPILOG Collector Startup Options

- DEXAN and RTA EPILOG data gathered into groups
 - ▶ Recommendation – make groups comparable to real time monitor
- Groups may be LTERM only –OR- combinations of TRANS, PSBs, Classes

```
GROUP(1) TRAN(TR1, TR2, TR3) PSB(PSB1)
```

```
SYMNAME (DEMO GROUP 1)
```

- COLLECTOR Keywords
 - ▶ INTERVAL(RMF)
 - ▶ DEG_CYCLE(500) - Bottleneck sampling interval
 - ▶ NORESC(DEV) - Stop collection of DASD device info
 - DEV for IMS devices
 - DAS for IMS datasets
 - RDN for I/O by database
 - ▶ NOTE – To save collection costs set to "NORESC(DAS,DEV,RDN)



EPILOG DISPLAY Command Basics

DISPLAY

- Display type
 - ▶ DETAIL
 - ▶ GSUM
 - ▶ SUM
 - ▶ Resource
- Workload
 - ▶ Group GRP(1)
- Date/time
 - ▶ SDATE(9/27/06)
 - ▶ EDATE(9/27/06)
- Exceptions
 - ▶ SELECTIF(R1(>2s))
- Misc
 - ▶ Combine

DIS SUM GRP(1) SDATE(9/27/06) SIF(R1(>2S))



An Epilog Example

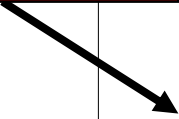
Displaying Time Intervals On An Exception Basis

Investigating a problem that happened yesterday -- erratic response time

```

+=====+
| WORKLOADS:   GROUP(CASH)
| PERIODS:     STARTING ON 01/03/06 AND ENDING ON 01/03/06
| REPORT IF :  RESPONSE TIME 0           IS GREATER THAN 5.00 SECONDS
| MISC OPTIONS: SUMMARY PLOTTIME AVERAGE
|
+-----+
| TRANSACTION GROUP =  CASH
| PERIOD:  08:14 ON 01/03/06 TO 17:14 ON 01/03/06
|
+-----+
|                                COMPETING TRANSACTIONS
+-----+
| DATE  _START_ _END_  _MAIN_REASON(*)_ _TIME(-) | 0S  _04_  _08_  _12_  _16_  _20 |
| 01/03 09:15 09:30 LONG MSG I/O    9.89 S | *****-----> . . . |
|          11:15 11:30 LONG MSG I/O   11.39 S | *****-----> . . . |
|          11:30 11:45 DATA BASE I/O   5.23 S | **-----> . . . |
| D      13:15 13:30 LONG MSG I/O   17.93 S | *****-----> . |
|-----|
| AVERAGE (RESP TIME 0)                6.77 S
+=====+
    
```

'D' to display detail for the time interval



```
dis grp(cash) yday rif(resp(>5)) summ
```

Epilog Shows Historical Bottleneck and RTA Information

```

EPILOG/IMS V560 09/29/06 7:13 Mode: PAGE D1 1 of 2 LAST FRAME
CMD==>
*****
+-----+
| Transaction Group = 1 Symbolic Name = GROUP 01
| Period: 05:59 to 06:14 on 09/28/06 Elap = 14:46 M IVP1
+-----+
|
| RESPONSE TIME DATA
|
+-----+
| Response_Component Avg. Rsp. Time Trans. Count Rate (per min.)
| Input Queue 0.00 S 0 .00
| Pgm Input Queue 0.05 S 56 3.81
| Processing 0.73 S 55 3.74
| Response time 0 0.77 S 55 3.74
| Output Queue 0.00 S 0 .00
| Response time 1 0.00 S 0 .00
+-----+
|
| DEGRADATION DATA
|
+-----+
| Competing_State Time % 0 1 2 3 4 5 6 7 8 9 0
| MVS Waits 0.24 S 14.3 |-----> . . . . . . . . .
| PGM Fetch I/O (0.24) S (14.3) |-----> . . . . . . . . .
R| IMS Waits 0.49 S 28.6 |-----> . . . . . . . . .
| switched to CTL (0.49) S (28.6) |-----> . . . . . . . . .

```

R to zoom in for resource detail for the interval

Epilog Correlates System Information With RTA And Bottleneck Data

Example - Display Combined Pool Statistics

```

EPIDOG/IMS V560 09/25/06 11:19 Mode: PAGE
CMD==> DIS RCMP
*****
+===== IMS Combined Pool Statistics =====+
| Period: 09:47 to 10:02 on 09/24/06           Elap =15:00 M      IVP1 |
+-----+-----+-----+-----+-----+-----+-----+
|   MAIN -- General Work Area Pool (WKAP)       DMBW -- SMB Work Pool   |
|   EPCB -- Extended PCB Pool                   PSBW -- PSB Work Pool   |
+-----+-----+-----+-----+-----+-----+
| Pool | Total | Free | Usage | Number | Largest | Utilization |
|      | Size  | Space | Highwater | Free Blk | Free Blk | Percent      |
+-----+-----+-----+-----+-----+-----+-----+
| MAIN | 49152 | 48968 | 4472  | 1      | 48968   | .4          |
+-----+-----+-----+-----+-----+-----+-----+
| DMBW | 24576 | 24576 | 0     | 1      | 24576   | .0          |
+-----+-----+-----+-----+-----+-----+-----+
| PSBW | 24576 | 14064 | 10512 | 1      | 14064   | 42.8       |
+-----+-----+-----+-----+-----+-----+-----+
| EPCB | 12288 | 10288 | 2000  | 1      | 10288   | 16.3       |
+-----+-----+-----+-----+-----+-----+-----+

```



EPILOG History

Sample Reports Provided For Batch Analysis

```

EDIT          OM.ADCD.RKANSAM(KEIJCTRS) - 01.01          Columns 00001 00072
018000  TITLE(' ') -
018100  TITLE('ANALYSIS OF IMS RESPONSE TIME TRENDS') -
018200  TITLE('YESTERDAY DURING PRIME SHIFT') -
018300  TITLE(' ')
018400
018500  DISPLAY SYSTEM COMBINE AVERAGE STARTTIME(1300) ENDTIME(1500) -
018600  TITLE('REPORT CTR01-2') -
018700  TITLE(' ') -
018800  TITLE('ANALYSIS OF IMS RESPONSE TIME') -
018900  TITLE('AVERAGED OVER YESTERDAY AFTERNOON') -
019000  TITLE('PRIME SHIFT HOURS OF 1:00 P.M. TO 3:00 P.M.') -
019100  TITLE(' ')
019200
019300  DISPLAY SYSTEM REPORTIF(R1T(>3S)) -
019400  TITLE('REPORT CTR01-3') -
019500  TITLE(' ') -
019600  TITLE('>>>> EXCEPTION * EXCEPTION * EXCEPTION <<<<<') -
019700  TITLE(' ') -
019800  TITLE('IMS RESPONSE TIME HAS EXCEEDED') -
019900  TITLE('3 SECONDS DURING 1 OR MORE RMF INTERVALS YESTERDAY') -

```

- Sample reports in *hilev.RKANSAM* library
 - ▶ Members KEIJCTRS, KEIJDBAS, and KEIJSPGS



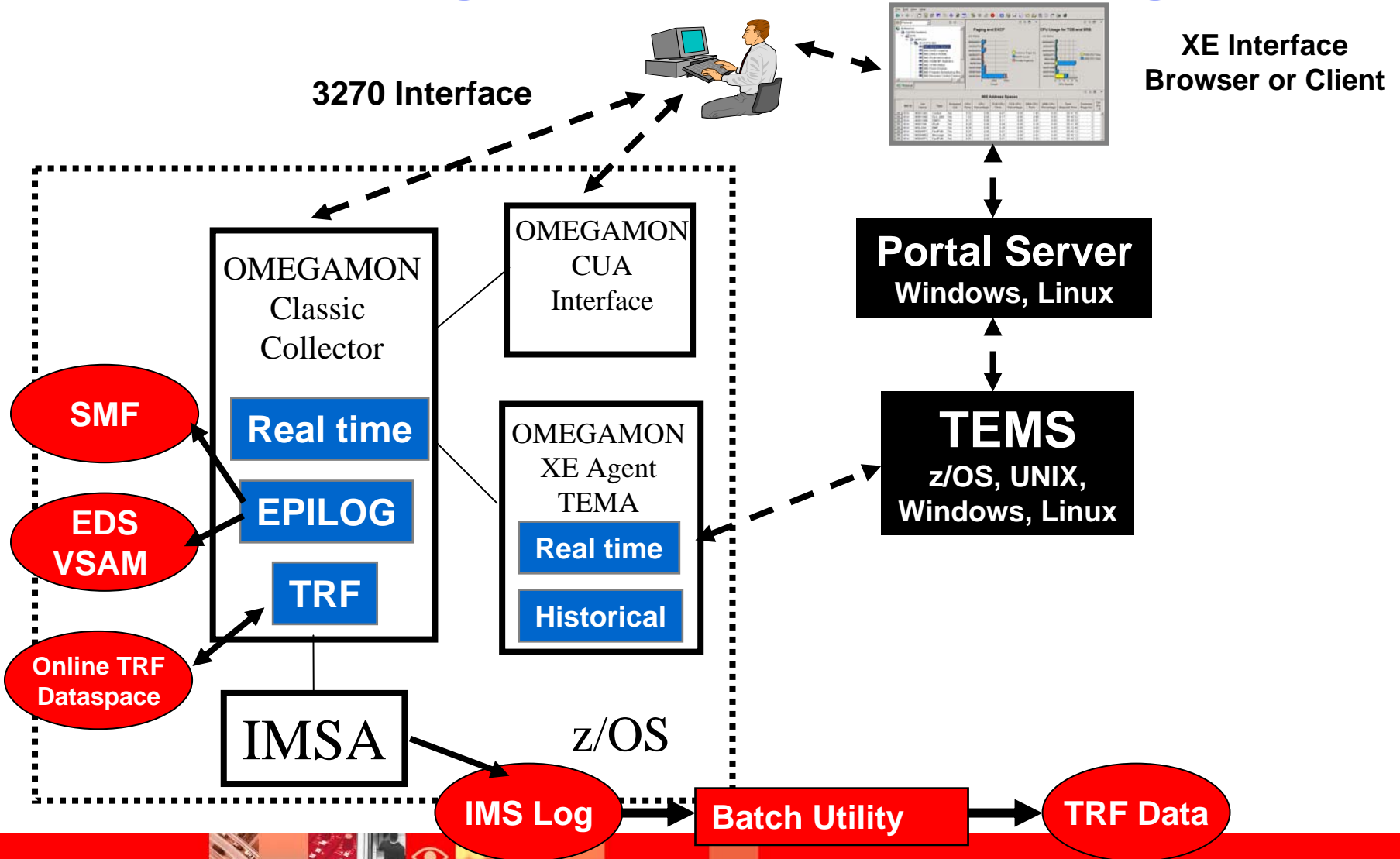
Transaction Reporting Facility - TRF

- TRF gathers IMS performance information including..
 - ▶ CPU Time
 - ▶ Virtual Storage Usage
 - ▶ Elapsed time of DL/I, Fast Path, and DB2 database calls
 - ▶ Message length
 - ▶ Response Time
- TRF has batch and online (viewable via the TEP) capabilities
- TRF has multiple capabilities
 - ▶ Batch collection for chargeback and analysis
 - ▶ TRF trace facility in CUA 3270 interface
 - ▶ Online TRF viewable in the TEP – useful for ‘near term’ analysis and trending IMS performance
 - View by transaction code or by class



TRF History Data

Written To IMS Log – Batch Extraction From Log



TRF Collector Options

- DL1 - ON / OFF - collect DL/I database call data
- FP - ON / OFF - collect FP database call data
- DB2 - ON / OFF - collect DB2 database call data
- BMP - ON / OFF – collect data for BMPs – default is ON
- RECID – IMS log record ID – default 160
- ONLDIS – enable online data viewing – default OFF
- DBD option - Controls detail versus summarization
 - ▶ Detail records (one per call)
 - ▶ Summary records (one per database per transaction)
- TRF May be started automatically at OMEGAMON startup
 - ▶ Parameters in RKANPAR(KI2TRF00)
- NOTE – to save collection costs consider BMP off and FP off



TRF Batch Extractor Utility

Output Record Formats

- MSG record
 - ▶ One per transaction
 - ▶ Transaction information
 - Message lengths and processing times
- MSGOUT record
 - ▶ One per message sent to Alternate PCB
- DATABASE record
 - ▶ One per database call
 - ▶ Created only if TRF active
 - ▶ Created only if database call summarization not requested
- SUMMARY record
 - ▶ One for each database or DB2 subsystem used by a transaction
 - ▶ Created only if TRF active
 - ▶ Created only if database call summarization requested



TRF Sample Reports

Response Time Distribution

1

09:26 Monday, June 7, 2004 8

TRANSACTION REPORTING FACILITY
 TRANSACTION RESPONSE TIME DISTRIBUTION - KI2TRN1

TRAN CODE	TRAN COUNT	IMSID/RESPONSE	<----- DISTRIBUTION, PERCENT AND CUM PERCENT ----->										
EPQ0031T	3	IMSD	LE 0.5	LE 1.0	LE 2.0	LE 3.0	LE 4.0	LE 5.0	LE 10.0	LE 15.0	LE 30.0	LE 60.0	GT 60.0
			AVERAGE MSGSW=	0	TOTAL MSGSW=	0	TOTAL ABENDS=	0	USER 777	ABENDS=	0		
INPUT QUEUE		0.000	3	0	0	0	0	0	0	0	0	0	0
			100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
			100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
PGM INPUT		0.000	3	0	0	0	0	0	0	0	0	0	0
			100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
			100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
PROCESSING		1.100	1	1	1	0	0	0	0	0	0	0	0
			33.33%	33.33%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
			33.33%	66.66%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
RESPONSE 0		1.100	1	1	1	0	0	0	0	0	0	0	0
			33.33%	33.33%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
			33.33%	66.66%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
OUTPUT QUEUE		0.000	3	0	0	0	0	0	0	0	0	0	0
			100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
			100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
RESPONSE 1		1.100	1	1	1	0	0	0	0	0	0	0	0
			33.33%	33.33%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
			33.33%	66.66%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%



TRF Collection Options And Considerations

- If new to TRF consider testing to assess the impact of TRF data collection
 - ▶ Use the ITRF OMEGAMON classic command to turn TRF on and off for testing and analysis
- Review the DBD parameter setting
 - ▶ DBD option controls level of DB summarization
 - 0 means no summarization
 - Default of 5 means first 5 DBs accessed by a tran will create summary records
 - For most scenarios set the DBD option to a level that will encourage DB call summarization
 - ▶ DBD option directly impacts the quantity of data generated by TRF
- Since TRF data volume is larger than EPILOG, give more thought to determining needs for storage, retention, and summarization



OMEGAMON XE For IMS V4.1 And The TEP History Collection And Analysis Options

- Tivoli Enterprise Portal provides several ways to view and analyze historical performance information
 - ▶ Snapshot history – Tivoli Data Warehouse
 - ▶ Online TRF
 - ▶ RTA real time and trend analysis
- Exploit the power of the TEP
 - ▶ Plot and trend key performance metrics as needed



Online TRF Provides A Real Time View Of TRF Performance Data Using The TEP

TRF trend data

Transaction Name	Transaction Count	R0 Time Average Milli	R0 Time Maximum Milli	CPU Time Milli	DLI Time Average Milli	DLI Time Maximum Milli	DLI Calls Average	DLI Calls Maximum	DLI ISRT Count	DLI REPL Count	DLI DLET Count	DLI GU Count	DLI GHU Count	DLI GN Count	DLI GHN Count	DLI GL Count	DLI GNP Count	DLI GHNP Count	DLI GHBT Count
DLETPART	4	0.012	0.013	0.000	0.000	0.000	2.00	2	4	0	0	2	0	2	0	0	0	0	0
ADDPART	4	0.012	0.013	0.000	0.000	0.000	1.75	4	0	0	1	4	1	0	0	0	1	0	0
PART	9	0.007	0.008	0.000	0.000	0.000	2.33	4	4	0	3	7	3	1	0	0	3	0	0

TRF online transaction counts, response time, and DL/I counts

RTA Data May Be Viewed Using The TEP

The screenshot displays the Tivoli Enterprise Portal (TEP) interface for Response Time Analysis (RTA). The top navigation bar shows 'Welcome EWOODS' and 'Tivoli Enterprise Portal'. The left sidebar contains a tree view with 'IMS RTA Group Summary' selected. The main area is split into two charts: 'RTA Group - Queuing Time' (a bar chart) and 'RTA Group - Response Time' (a line chart). Below the charts is a table titled 'Response Time Analysis - Group Summary'.

RTA Group Name	RTA Group Number	Input Queue Time (Secs.)	Program Input Queue Time (Secs.)	Processing Time (Secs.)	R0 Time (Secs.)	Output Queue Time (Secs.)	R1 Time (Secs.)	Timestamp
SYSTEM	0	0.0004	0.0000	0.0102	0.0106	0.0860	0.0965	10/04/06 20:06:34
PARTS	1	0.0004	0.0000	0.0078	0.0082	0.1719	0.1799	10/04/06 20:06:34
ADDPARTS	2	0.0004	0.0000	0.0124	0.0128	0.0002	0.0129	10/04/06 20:06:34
DELETE	3	0.0004	0.0000	0.0128	0.0132	0.0002	0.0133	10/04/06 20:06:34

A red arrow points from a text box labeled 'RTA trend data' to the line chart, which shows R0 Time (Secs.) in pink and R1 Time (Secs.) in green over a time period from 21:03:30 to 21:08:10.

RTA in the TEP provides more precision than RTA data in the 3270 interfaces

RTA trend data



Trending May Be Customized Using TEP Properties

IMS RTA Group Summary - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back

Address

Welcome EW...
Tivoli. Ente...
File Edit Vie...
View: Phy...

Properties - IMS RTA Group Summary

IMS RTA Group Summary

- Views
 - Table Views
 - Bar Chart Views
 - Plot Chart Views
 - RTA Group - Response Time

Preview

RTA Group - Response Time

secs

0.10
0.00

21-03:30 21-03:46 21-04:00 21-04:15 21-04:30 21-04:46 21-05:00 21-05:15 21-05:30 21-05:46 21-06:00 21-06:15 21-06:30 21-06:46 21-07:00 21-07:15 21-07:30 21-07:46 21-08:00 21-08:15

Query Filters Style

Plot Duration

Plot duration is 300 seconds

Plot Chart

OK Cancel Apply Test Help

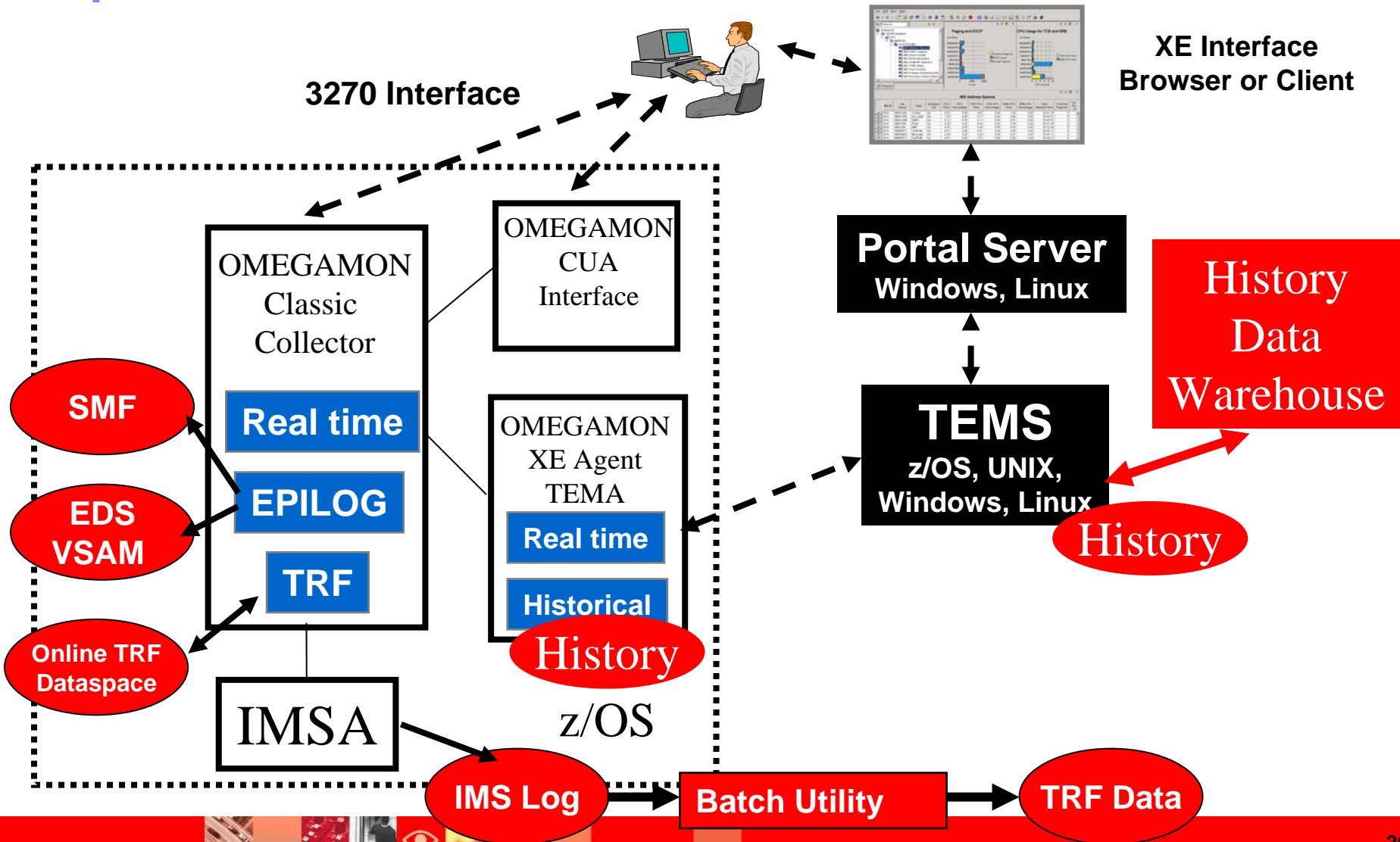
ADD PARTS
DELETE

Log out

21-07:50 21-08:10

Exploit the capability of the TEP to plot response and through put metrics correlated with other performance and resource utilization information

Tivoli Enterprise Portal Adds Additional Historical Capabilities



Snapshot History Collection Controlled Via The TEP

Specify what history data to gather, where, and how much

Group	Collection	Collection Interval	Collection Location	Warehouse Interval	Summarize Yearly	Prune Yearly	Summarize Quarterly	F Qt
Data_Entry_Databases								
Dependent_Regions								
I/O_Devices								
Dependent_Regions_Statistics		15 minutes	TEMA	Off				
Dependent_Region_DLI_Calls_Detail								
Subsystem_Connections								

History data optionally warehoused in relational database

Configuration Controls

Collection Interval: 15 minutes
 Collection Location: TEMA
 Warehouse Interval: Off

Summarization

- Yearly
- Quarterly
- Monthly
- Weekly
- Daily
- Hourly

Pruning

- Yearly keep [] Years
- Quarterly keep []
- Monthly keep []
- Weekly keep []
- Daily keep [] Days
- Hourly keep [] Days
- Detailed data keep [] Days

Buttons: Configure Groups, Unconfigure Groups, Show Default Groups, Start Collection, Stop Collection, Refresh Status, Close, Help

Use The TEP To See IMS Historical Performance Data

Click to select desired time intervals

History data showing recording time. Data is viewable and sortable.

Welcome to Tivoli Enterprise Portal

Recording Time	IMS ID	Job Name	Type	Swapped Out	CPU Time	CPU Percentage	TCB CPU Time	TCB CPU Percentage	SRB CPU Time	SRB CPU Percentage
10/27/06 08:15:00	IVP1	IMS91CR1	Control	No	312.88	0.18	236.61	0.14	76.27	0.04
10/27/06 08:00:00	IVP1	IMS91CR1	Control	No	311.18	0.18	235.32	0.14	75.86	0.04
10/27/06 07:45:00	IVP1	IMS91CR1	Control	No	309.48	0.19	234.04	0.15	75.44	0.04
10/27/06 07:30:00	IVP1	IMS91CR1	Control	No	307.76	0.18	232.74	0.14	75.02	0.04
10/27/06 07:15:00	IVP1	IMS91CR1	Control	No	306.05	0.18	231.45	0.14	74.60	0.04
10/27/06 07:00:00	IVP1	IMS91CR1	Control	No	304.35	0.18	230.16	0.14	74.19	0.04
10/27/06 06:45:00	IVP1	IMS91CR1	Control	No	302.65	0.19	228.88	0.15	73.77	0.04
10/27/06 06:30:00	IVP1	IMS91CR1	Control	No	300.99	0.18	227.62	0.14	73.37	0.04
10/27/06 07:30:00	IVP1	IMS91DL1	DLI_SAS	No	0.66	0.00	0.51	0.00	0.15	0.00
10/27/06 06:45:00	IVP1	IMS91DL1	DLI_SAS	No	0.66	0.00	0.51	0.00	0.15	0.00



OMEGAMON XE For IMS V4.1 Expanded History Support And Flexibility

- OMEGAMON V4.1 added more robust history exploitation in the form of support for the Summarization and Pruning agent
 - ▶ Support has previously been available in other ITM 6.1 based monitoring technologies
- Summarization and Pruning agent functions
 - ▶ Aggregating historical data based on specified intervals
 - ▶ Automating data retention by Pruning the data at the desired time intervals
 - ▶ If summarization is configured for an attribute group, then additional tables that include summarized data will be created
 - ▶ Summarization and pruning typically runs once a day



History Collection Control For Summarization And Pruning

History Collection Configuration

Select a product
OMEGAMON XE for IMS on z/OS V4.1.0

Select Attribute Groups

Group	Collection	Collection Interval	Collection Location	Warehouse Interval	Summarize Yearly	Prune Yearly
Local_CF_IMS_DS_OSAM						
DASD_Logging						
DBCTL_Thread_Calls						
DBCTL_Thread_Details						
DBCTL_Thread_Indoubts						
DBCTL_Thread_Summaries						
Data_Entry_Databases						
Dependent_Regions	Started	1 hour	TEMA	1 day		
I/O_Devices						
Dependent_Regions_Statistics						

Configuration Controls

Collection Interval: 1 hour

Collection Location: TEMA

Warehouse Interval: 1 day

Summarization

- Yearly
- Quarterly
- Monthly
- Weekly
- Daily
- Hourly

Pruning

Frequency	Action	Count	Unit
<input checked="" type="checkbox"/> Yearly	keep	3	Years
<input checked="" type="checkbox"/> Quarterly	keep	3	Years
<input checked="" type="checkbox"/> Monthly	keep	12	Months
<input checked="" type="checkbox"/> Weekly	keep	52	Months
<input checked="" type="checkbox"/> Daily	keep	30	Days
<input checked="" type="checkbox"/> Hourly	keep	72	Days
<input checked="" type="checkbox"/> Detailed data	keep	3	Days

Click to configure, start, stop collection

Show Details

Start Collection Stop Collection Refresh Status

Select desired group of information, collection interval, and destination

To warehouse or not to warehouse
Hourly, Daily, or not at all

Collect at the TEMA or the TEMS

Specify summarization and pruning along with collection interval

Click to configure, start, stop collection

Request Summarized Data In The TEP

Select the Time Span

Real time

Last 24 Hours

Last parameters

Use detailed data
Time Column: Recording Time

Use summarized data
Shift: All shifts
Days: All days

Custom

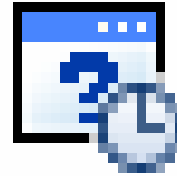
Custom parameters

Use detailed data
Time Column: Recording Time

Use summarized data
Interval: Hours
Shift: All shifts
Days: All days
Start Time: 04/26/2007 01:28 PM End Time: 04/27/2007 01:28 PM

Apply to all views associated with this view's query

OK Cancel Help



e Portal

Time	IMSID	MVSA ID	IMS Restart Time UTC	Checkpoints Taken	Checkpoint ID	MPPs Active	BMPs Active	Applications Scheduled	Transactions Queued
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	7	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	7	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
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00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
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00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0
00:00	IMSA	MVSA	04/24/07 19:34:40	1	2007114193440234	1	0	15	0

Hub Time: Fri, 04/27/2007 12:29 PM Server Available IMS System Information - hqcnt2.demopk.it

Use Data For Trend Analysis

Select attribute

Attribute Group

- IMS System

Attribute Item

- Applications Scheduled
- BMPs Active
- Checkpoints Taken
- Message Ident
- MPPs Active
- Msg Dequeue Delta
- Msg Dequeue Rate
- Msg Dequeue Total
- Msg Enqueue Delta
- Msg Enqueue Rate
- Msg Enqueue Total
- Sample Delta

Select All

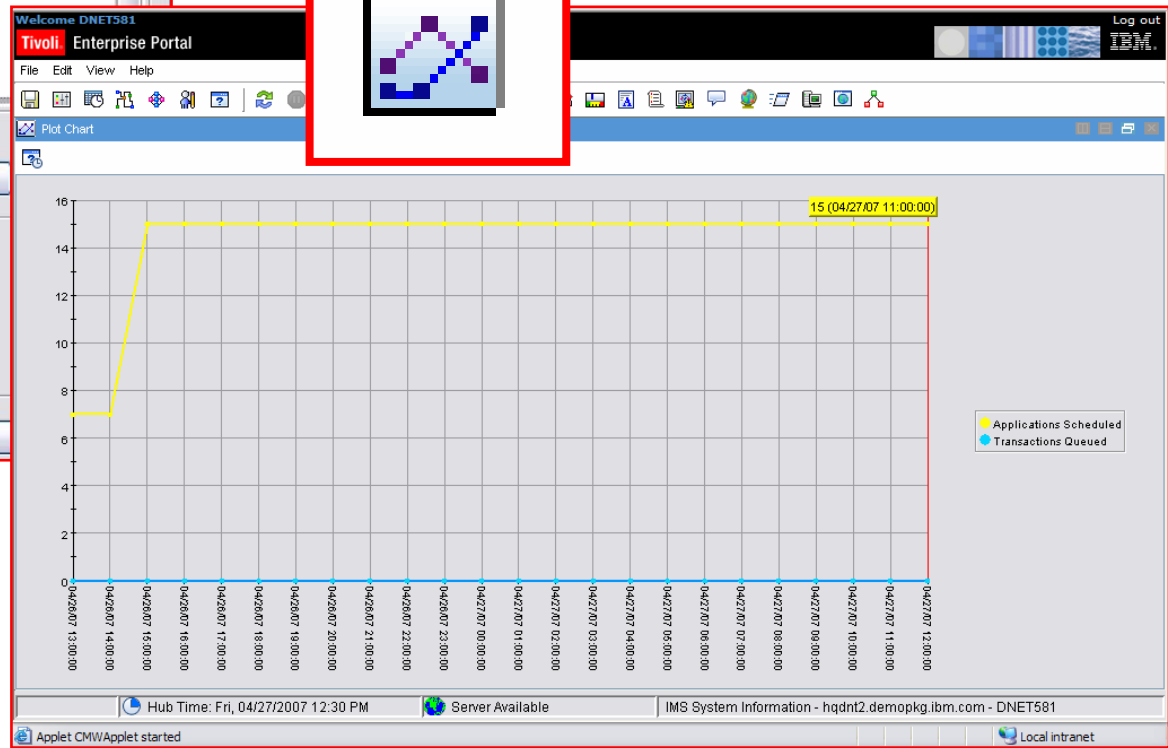
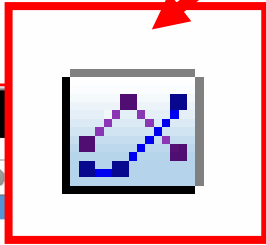
Description

Applications Scheduled
Current number of applications scheduled.

Transactions Queued
Current number of transactions queued.

OK Cancel

Click and drag plot chart icon to plot history data over time



The Value Of Summarization And Pruning

- Summarization And Pruning expands the flexibility of Tivoli Historical data collection
 - ▶ Allows for detail tables for the last 24 hours or so of data
 - ▶ Summarized tables for longer term data
- Summarizing data enables the user to perform historical analysis of the data over longer and more varied periods of time
- Pruning automates the control of the quantity of data collection and retention
- Installation and configuration of Summarization and Pruning is comparable to other agent installations



OMEGAMON XE For IMS V4.1

Historical Collection Options – Epilog Summary

- Epilog history collection value
 - ▶ Collects a broad array of workload, bottleneck, and IMS subsystem performance information
 - ▶ Correlates workload, bottleneck and performance information by time interval
 - ▶ Provides interactive command analysis and batch reporting capabilities
 - Analyze for performance exceptions
 - ▶ Relatively small quantity of data with high analytic value
- Epilog history granularity limited to the level of the collection group and time interval
 - ▶ Useful data for performance analysis but not suitable for chargeback



OMEGAMON XE For IMS V4.1

History Collection Options – TRF Summary

- Transaction Reporting Facility (TRF)
 - ▶ Granular IMS performance data to the level of an individual transaction, database, and/or DB call
 - ▶ Most detailed data collection for detailed transaction analysis
 - ▶ Data suitable for chargeback purposes
 - ▶ Potentially large quantity of data
 - Consider cost of collection, extraction, retention, and analysis
 - ▶ Batch based extraction, retention, and reporting
- Online extensions to TRF
 - ▶ Online TRF
 - Buffer TRF type data and view in the TEP
 - ▶ TRF trace facility
 - Trace call type data to a dataspace and view in CUA interface



OMEGAMON XE For IMS V4.1

History Collection Options – TEP Summary

- Tivoli Enterprise Portal (TEP) And Tivoli Data Warehouse (TDW)
 - ▶ TEP provides history collection and retention facilities integrated with real time viewing, alerting, and analysis
 - ▶ TEP Snapshot History – retention in TDW
 - Time interval based granularity
 - Quantity of data varies based on number of tables, managed systems, and collection frequency
 - Retention may be automated using summarization and pruning option
- Use the TEP for trending and workload analysis
 - ▶ TDW data useful for trend analysis
 - ▶ Online TRF
 - Granularity to the level of the transaction or class
 - ▶ RTA
 - Granularity for the transaction group over a time interval



OMEGAMON XE For IMS V4.1

History Options – Summary And Usage

- Epilog
 - ▶ Correlated workload systems information
 - ▶ Limited granularity
 - ▶ Relatively small quantity of data collected
- Transaction Reporting Facility
 - ▶ Most detailed data collection for transaction analysis
 - ▶ Use for chargeback purposes
 - ▶ Large quantity of data collected
- Tivoli Enterprise Portal - Snapshot History
 - ▶ Limited granularity based on time interval
 - ▶ Quantity of data collected may vary
 - ▶ Retention is automated
 - ▶ Greatest ease of access and use



Relevant OMEGAMON IMS References

- CCR2 article on OMEGAMON IMS History Collection
 - ▶ <http://www-306.ibm.com/software/tivoli/features/ccr2/ccr2-2006-09/omegamon-for-ims.html>
- OMEGAMON XE For IMS history documentation (available for download)
 - ▶ GC32-9361 - Historical Component (EPILOG) User's Guide
 - ▶ SC32-9360 - Historical Component (EPILOG) Reference Manual
 - ▶ SC32-9358 - Transaction Reporting Facility
 - ▶ SC32-9354 - Planning And Configuration Guide
 - ▶ SC32-9409 - Tivoli Monitoring User's Guide



Thank You for Joining Us today!

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