

Agenda

- Introduction to the Tivoli Enterprise Portal
- Introduction to situations and situation benefits
- Recommendations on situation creation and usage
- Types of alerts
- Examples of useful DB2 situations
- Summary and questions



OMEGAMON XE For DB2 PM/PE V4.1

Major Features & Components

Real Time Thread Analysis

- ✓ Thread performance
- ✓ Thread Detail
- ✓ Triggers, Procedures, & UDFs

Real Time – DB2 subsystem

- ✓ Virtual & EDM Pool analysis
 - ✓ Pool performance & snapshot analysis
- ✓ Locking & Logging Analysis
- ✓ Storage Analysis

Application Trace Facility

- ✓ Detailed performance tracing

Choice Of Interfaces

- ✓ (TEP, PE GUI, 3270)

Buffer Pool Analysis (PE only)

DB2 Connect Monitoring

Object Analysis

- ✓ I/O & getpage analysis
- ✓ Correlate by object & App

Locking & Lock Conflicts

Near-Term Historical

- ✓ Near-term history online

Historical Analysis

- ✓ Batch reporting
- ✓ XE Tivoli Warehouse
- ✓ Snapshot History
- ✓ Performance Warehouse

DB2Plex Monitoring View

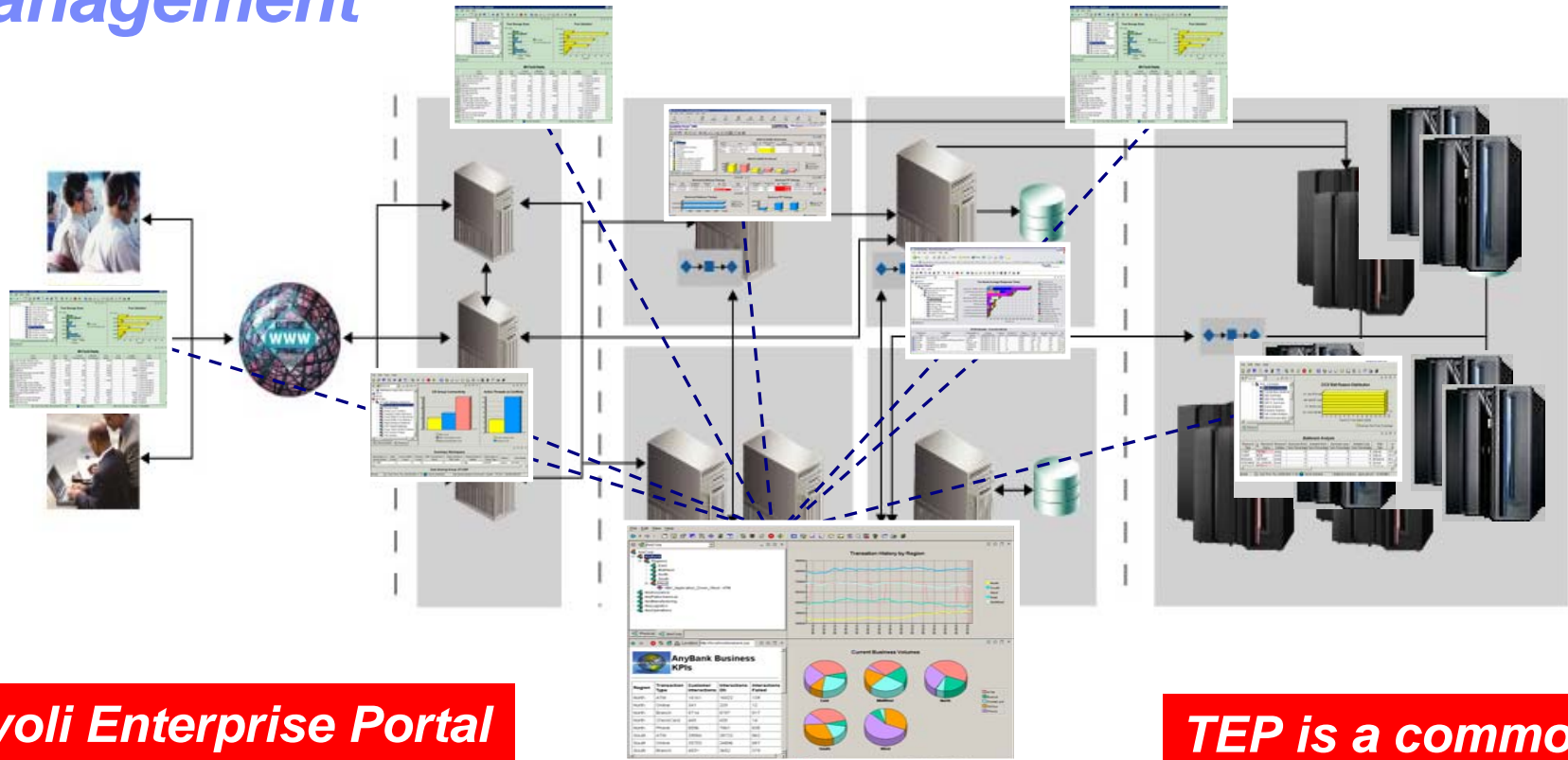
- ✓ CF structure & lock analysis

Automation capabilities

zIIP Engine utilization



Tivoli Enterprise Portal (The TEP) Integrated Performance, Availability, And Systems Management



***Tivoli Enterprise Portal
enables integrated
alert and automation
capabilities***

**Tivoli Enterprise Portal
(TEP)**

***TEP is a common
user interface for
a variety of Tivoli
solutions***



Most Business Applications Incorporate A Variety Of Core Technologies

Tivoli Enterprise Portal

File Edit View Help

View: Demo Business Vi... Graphic View

Application View

- App Server: Application Server
- Middleware: Middleware
- CICS: CICS Status
- Operating System: z/OS Status
- Operating System: z/Linux Status
- Network: Network Performance
- DB2: DB2 Database, Lock Conflicts
- IMS: IMS DB, IMS TM
- Storage: Storage

zLinux

OMEGAMON has detected an issue with a situation alert

Customizable graphic overview

User-definable drill downs for detail

Combine information from multiple sources

About Situations

- Situations are the building blocks of systems management logic in the Tivoli Enterprise Portal (TEP)
- Situations may be used to highlight performance problems within key DB2 subsystem resources
- Situations may be used to identify DB2 subsystem problems that impact DB2 availability
 - ▶ Monitor application availability
 - ▶ Monitor DB2 subsystem availability
 - ▶ Monitor critical resource availability



Situations Allow For Powerful And Flexible Alerts

- OMEGAMON XE situation capabilities allow for more intelligent alerts that integrate and correlate status and information
- Situations may incorporate Boolean logic
- Situations may be correlated with other situations
- Situations may in turn drive automated corrections



Situations – Usage And Benefits

Highlight Performance And Availability Issues

The screenshot shows the Tivoli Enterprise Portal interface. The main window displays a 'Situation Event Console' with a table of alerts. A red arrow points from the 'DB2' folder in the left-hand tree to a specific alert in the table. A red callout box highlights the alert details in a flyover pop-up.

Click to see alert detail

Flyover pop-up shows the name of the 'situation' alert

Severity	Status	Owner	Situation Name	Display Item	Source
Information	Open		Kah_Oper_Requests_Exist_Info		DEMOPLX:DEMOPLX:SA
Information	Open		Kah_Mtr_Health_Status_Info	DEMO_CPU	DEMOPLX:DEMOPLX:SA
Warning	Open		ZVM_Avail_Mean2G_Low		zdemolx.demopkg.ibm
Warning	Open		N3T_Conn_Rnd_Trip_Variance		TCPIP:MVSA
Warning	Open		N3V_Pct_ECDSA_Allocated_Stg		VTAM:MVSA
Warning	Open		Kah_Resource_Health_Warn	DEMO_CBJ	DEMOPLX:DEMOPLX:SA
				CBJ	DEMOPLX:DEMOPLX:SA
					DEMOPLX:MVS:SYSPL
					DEMOPLX:DEMOPLX:SA
					DEMOPLX:DEMOPLX:SA
					TCPIP:MVSA

Status	Name	Display Item	Origin Node	Global Time
Open	Kah_Resource_Health_Crit	DEMO_SRVR	DEMOPLX:DEMOPLX:SA	07/02/07 13:00
Open	Kah_Resource_Health_Crit	SYSPLEX	DEMOPLX:DEMOPLX:SA	07/02/07 13:00
Open	Kah_Resource_Health_Crit	DEMOMN2	DEMOPLX:DEMOPLX:SA	07/02/07 13:00
Open	Kah_Rsrc_Not_Satisfactory_Crit	DEMO_SRVR	DEMOPLX:DEMOPLX:SA	07/02/07 13:00
Open	Kah_Rsrc_Not_Satisfactory_Crit	DEMOMN2	DEMOPLX:DEMOPLX:SA	07/02/07 13:00
Open	Kah Mtr Health Status Crit	DEMOMN2	DEMOPLX:DEMOPLX:SA	07/02/07 13:00

Situations – Usage And Benefits

'Action' To Perform Commands And Corrections

Where command is executed

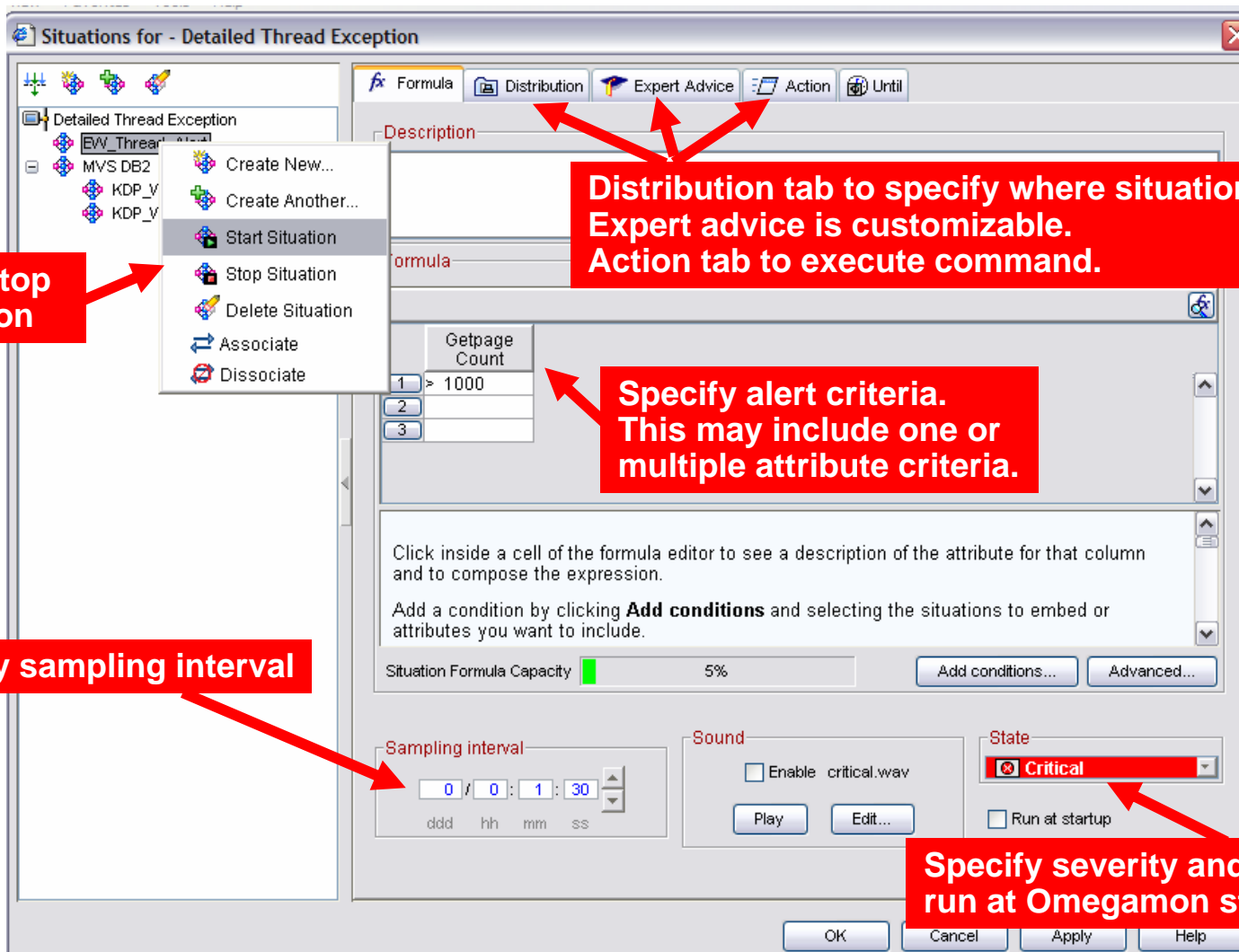
Attribute substitution in the command line

System command may be executed when the situation is true

Examples of actions include:

- DB2 thread kill command
- Issuing messages to the console
- Any valid z/OS console command

A Basic Example Situation Alert On Threads With More Than 'n' Getpages



Start/stop situation

Distribution tab to specify where situation runs. Expert advice is customizable. Action tab to execute command.

Specify alert criteria. This may include one or multiple attribute criteria.

Specify sampling interval

Specify severity and whether to run at Omegamon startup

Example DB2 Thread Alert Situation

Welcome DNET581 Log out

Tivoli Enterprise Portal

File Edit View Help

View: Physical Locks Owned

DB2

- DB1S:MVSA:DB2
- DB2S:MVSA:DB2
- DSNA:MVSA:DB2
 - Thread Activity
 - System Status

CRITICAL

EW_Thread_Alert DSNA:MVSA:DB2 07/02/07 08:36:38

KFVMTM101! Select workspace link button to view situation event results.

Detailed Thread Exceptions

	Elapsed Time	Interval Time	Plan Name		CP CPU Time	DB2 Elapsed Time	CP DB2 CPU Used	In DB2 IIP CPU	Correlation Identifier	Authorization Identifier (Unicode)	Archive Tape Wait	
	00:36:59.400	00:00:00	DISTSERV	WAIT-REMREQ	0.0	00:00:...	00:00:01.025	00:00:00.000	javaw.exe	DNET177	False	▲
	00:39:18.600	00:00:00	DSNJDBC	NOT-IN-DB2	0.0	00:00:...	00:00:00.467	00:00:00.000	BBOS001S	DB2ADM	False	
	01:37:08.400	00:00:00	DSNACLI	SWAPPED-OUT	0.0	00:00:...	00:00:00.023	00:00:00.000	LDAPSRV	SYSSTC	False	
	00:39:18.600	00:00:00	DSNJDBC	NOT-IN-DB2	0.0	00:00:...	00:00:00.037	00:00:00.000	BBOS001S	DB2ADM	False	
	00:39:18.000	00:00:00	DSNJDBC	NOT-IN-DB2	0.0	00:00:...	00:00:00.039	00:00:00.000	BBOS001S	PLS	False	
	00:39:18.000	00:00:00	DSNJDBC	NOT-IN-DB2	0.0	00:00:...	00:00:00.004	00:00:00.000	BBOS001S	PLS	False	▼

DB2 System: DSNA, MVS System: MVSA

Hub Time: Mon, 07/02/2007 08:36 AM Server Available Detailed Thread Exception - hqcnt2.demopkg.ibm.com - DNET581

Fly-over shows what situation has fired

Click on link icon to see alert detail

Situation Detail

Welcome DNET581 Log out

Tivoli Enterprise Portal

File Edit View Help

View: Physical

- DB2
 - DB1S: MVSA: DB2
 - DB2S: MVSA: DB2
 - DSNA: MVSA: DB2
 - Thread Activity
 - System Status
 - Detailed Thread Exception
 - EW_Thread_Alert**
 - Lock Conflicts
 - Utility Jobs
 - EDM Pool
 - Buffer Pool Management

Getpage Count	Originnode	Name	Time	Plan Name	Correlation Identifier	Connection Identifier	DB2ID	MVS System	Int TI
6705	DSNA: MVSA: DB2		07/02/07 08:36:37	DISTSERV	javaw.exe	SERVER	DSNA	MVSA	00
2040	DSNA: MVSA: DB2		07/02/07 08:36:37	DSNJDBC	BBOS001S	RRSAF	DSNA	MVSA	00

What are the details?

Getpage Count	Originnode	Name	Time	Plan Name	Correlation Identifier	Connection Identifier	DB2ID	MVS System	Int TI
6705	DSNA: MVSA: DB2		07/02/07 08:37:11	DISTSERV	javaw.exe	SERVER	DSNA	MVSA	00
2040	DSNA: MVSA: DB2		07/02/07 08:37:11	DSNJDBC	BBOS001S	RRSAF	DSNA	MVSA	00

Take Action

Action:

Name: <Select Action>

Command: <Select Action>

Kill Thread

Message to console

Arguments...

The expert advice is customizable. If the thread exceeds the getpage count, call Ed Woods at 1-888-888-8888

Any expert advice?

Expert Advice

What is the problem?

Any Predefined Actions?



Take Advantage Of Boolean Logic Make Situations More Meaningful And Useful

Description

Formula

	Getpage Count	Plan Name
1	> 2000	== DSNJDBC
2	> 1000	== DISTSERV
3		

Plan Name The identifier of the plan this thread is executing. Valid entry is an alphanumeric text string, with a maximum length of eight characters.

Prefetch Count The number of sequential, prefetch operations during the interval. Valid entry is an integer of up to four digits.

Prefetch Hiperpool Moves The number of pages that a prefetch request finds in a hiperpool and are not satisfied by a prefetch. Valid entry is an integer in the range 0 - 2147483647

Situation Formula Capacity 23%

Sampling interval
0 / 0 : 1 : 30
ddd hh mm ss

Sound
 Enable critical.wav
Play Edit...

State
Critical
 Run at startup

OK Cancel Apply Help

Note formula capacity to see how much logic may be added

Add boolean logic to make situations more robust

Click 'add conditions' to add additional attribute logic



Use Boolean Logic To Reduce The Number Of Required Situations

Situations for - Detailed Thread Exception

Formula

Description

Formula

	Getpage Count	Plan Name
1	> 1000	== 'DISTSERV'
2		

Situations for - Detailed Thread Exception

Formula

Description

Formula

Plan Name == DISTSERV

	Getpage Count	Plan Name
1	> 2000	== DSNJDBC
2	> 1000	== DISTSERV
3		

Instead of multiple redundant situations...

Consider combining the logic where appropriate...

Situations for - Detailed Thread Exception

Formula

Description

Formula

Getpage Count > 2000

	Getpage Count	Plan Name
1	> 2000	== DSNJDBC
2		
3		

- Use boolean logic to reduce the number of required situations
- Reduce monitoring/alerting overhead
- Reduce alert management/maintenance

Use Persistence Option To Smooth Alert Spikes

With a persistence option the situation must be true 'n' times before the alert fires

Click 'Advanced' to specify persistence options

User persistence to eliminate alerts that are spikes or outliers

Situations for - Detailed Thread Exception

Formula Distribution Expert Advice Action Until

Description

Formula

	Getpage Count	Plan Name
1	> 2000	== 'DSNJDBC'
2	> 1000	== 'DISTSERV'
3		

Advanced Situation Options

Situation Persistence Display Item

Situation Persistence

Consecutive true samples: 3

OK Cancel Help

Sampling interval

0 / 0 : 1 : 30

ddd hh mm ss

Sound

Enable critical.wav

Play Edit...

State

Critical

Run at startup

OK Cancel Apply Help

Exploit Managed Systems Lists To Simplify Situation Deployment

Example

Create a managed systems list for Test DB2s, another for Prod DB2s, and another for All DB2s

Managed systems lists are user-definable and customizable.

Managed systems lists simplify the deployment of situations

Situations

General Recommendations And Rules Of Thumb

- Make situations Meaningful, Actionable, and Useful
- Meaningful situations
 - ▶ Situation naming is flexible – make the names understandable
 - ▶ Adopt a situation naming convention
 - Makes it easier to identify customer created versus product provided situations
- Actionable situations
 - ▶ Have appropriate notification
 - A workspace with an alert icon, command/message notification
 - ▶ As a standard have expert advice
 - ▶ Have pre-defined take actions where appropriate
- Useful situations
 - ▶ Eliminate phony alert indicators – tune out the noise
 - ▶ If an alert situation fires it should indicate an actual issue
 - An alert, an owner, and a consequence



Situations May Be Correlated With Other Situations

Correlated Alert Example

Situation Editor

Formula

Description

Formula

	EW_Demo_Thread_Alert	DB2_Lock_Waiter_Time_Critical
1	== True	== True
2		
3		

Click inside a cell of the formula editor to see a description of the and to compose the expression.

Add a condition by clicking **Add conditions** and selecting the situations to embed or attributes you want to include.

When you add a second attribute or situation to

Situation Formula Capacity 8%

Add conditions... Advanced...

Sampling interval

0 / 0 : 15 : 0

ddd hh mm ss

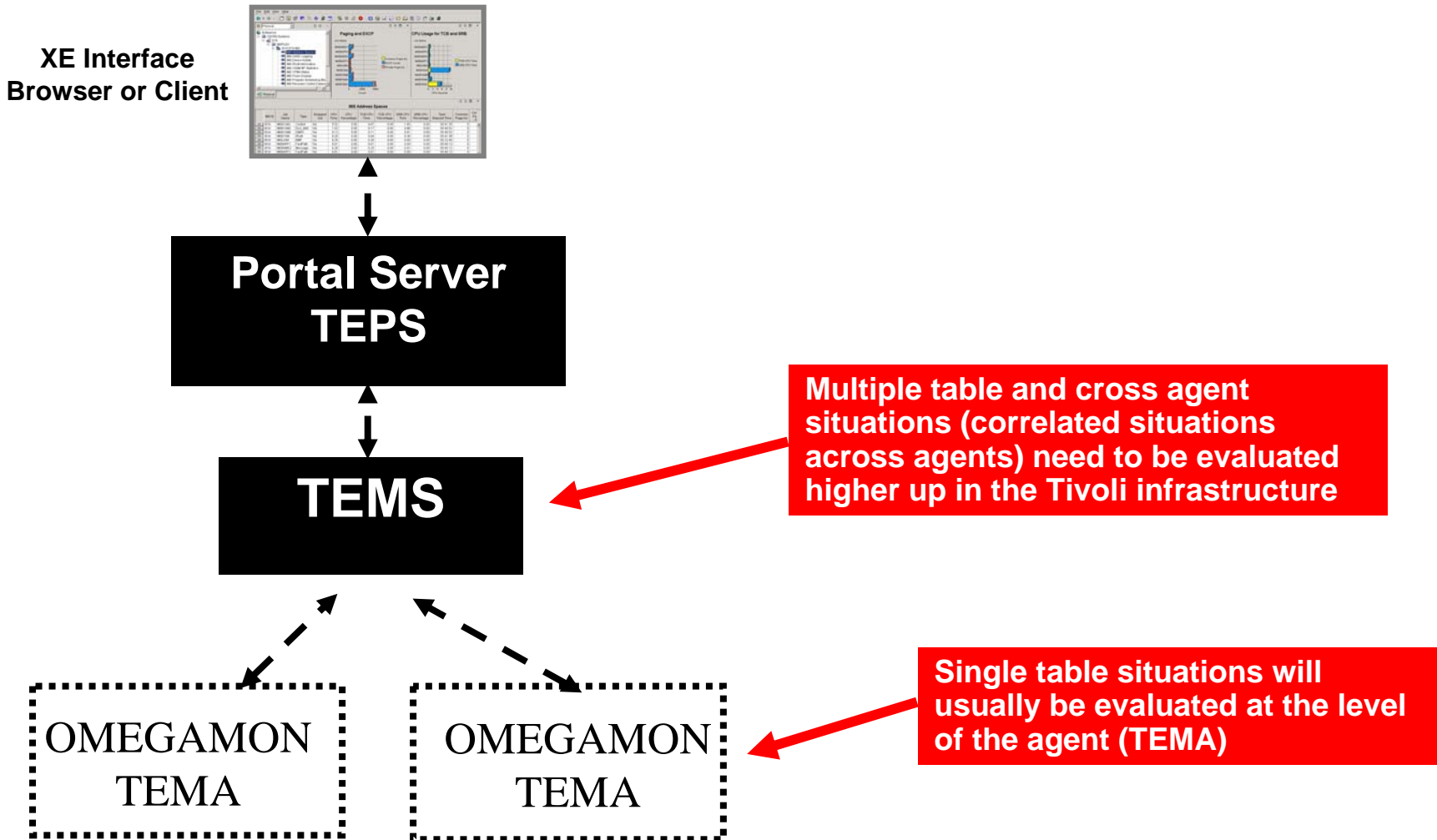
Run at startup

OK Cancel Apply Help

Correlates two situations. Both must be true for this situation to be true.

Select 'Add Conditions' to add additional logic.

Considerations For More Complex Situations



Additional Situation Considerations And Recommendations

- When creating and deploying a set of situations consider
 - ▶ The number of situations being deployed
 - ▶ The number of managed systems (i.e. DB2 subsystems)
 - ▶ Refresh frequency of the situations
- Consider carefully the number of required situations
 - ▶ Use boolean logic to reduce the number of needed situations
 - ▶ Do not automatically make a warning alert to go with each critical alert
 - Create a warning if it will allow time to address an issue before going critical
 - ▶ Use managed system lists to send the right situations to the right managed systems
- Be aware of the situation refresh rates
 - ▶ Multiple situations on the same table with the same refresh rate may be optimized by the infrastructure
 - ▶ Potential to reduce monitoring overhead if done appropriately



Use 'Manage Situations' To Check Situation Status And Sampling Interval

The screenshot shows the Tivoli Enterprise Portal interface. A red box highlights the 'Manage Situations' menu item in the left-hand tree view. A red callout box with white text states: **'Manage Situations' shows what situations are distributed to a managed system and the interval of the situations**. Below this, a window titled 'Manage Situation at Managed System: DSNR.MVSA:DB2' is open, displaying a table of situation details.

Name	Status	Description	Auto Start	Advice	Acti...	Interval
Atest_KDP_DWAT_Critical	Stopped	Wait for remote SQL time exceeds critical limit				0d / 0h : 15m : 0s
DB2_CMD_Lock_Wait_Time_Critical	Stopped	Automatic message when lock elapsed time exceeds 10...				0d / 0h : 2m : 0s
DB2_Lock_Waiter_Time_Critical	Started	Lock waiter elapsed time has exceeded the critical thres...	✓			0d / 0h : 0m : 30s
DB2_Lock_Waiter_Time_Warning	Started	Lock waiter elapsed time has exceeded the warning thre...	✓			0d / 0h : 0m : 30s
DB2_Thread_Wait_Time_Critical	Closed	DB2 thread wait time has exceeded the critical threshold.	✓			0d / 0h : 1m : 30s
DB2_Thread_Wait_Time_Warning	Closed	DB2 thread wait time has exceeded the warning threshold.	✓			0d / 0h : 1m : 30s
Demo_CF_Locks_False_Cont_Crit	Stopped	False Contention				0d / 0h : 1m : 0s
dnet289_lock_conflict	Stopped	detect presence of locking conflicts				0d / 0h : 5m : 0s
DNET546_Conflito_de_Lock_no_DB2	Started		✓			0d / 0h : 0m : 30s
DNET546_Excessivo_Lock_Wait	Stopped	Lock waiter elapsed time has exceeded the warning thre...	✓			0d / 0h : 1m : 0s
dnet956_Lock_Conflict_Exists	Closed	Situation for DB2 Lock Conflict Demo	✓			0d / 0h : 0m : 30s
EW_Thread_Alert	Open					0d / 0h : 1m : 30s
KD5_ETIM_Warning	Stopped	Thread elapsed time exceeds critical threshold				0d / 0h : 15m : 0s
KDP_WTRE_Critical	Started	Time waiting for resource exceeds the critical threshold	✓			0d / 0h : 15m : 0s
KDP_WTRE_Warning	Stopped	Time waiting for resource exceeds the warning threshold				0d / 0h : 15m : 0s

Eliminating The Noise

Time Of Day And Day Of Week Considerations

- Some alerts are sensitive to certain times of day or day of week considerations
 - ▶ This may be due to operational or off-hours processing concerns
 - ▶ Workloads will often vary during the day and during the week
 - ▶ Some issues are critical during prime time and not as critical off-hours
- Options for time of day/processing window challenges
 - ▶ Situations may be coded with time of day information built into the situation logic
 - This may work for a limited number of situations, but may add maintenance and limit the flexibility of the situations
 - ▶ Policies may be used to start/stop situations as needed based upon specified logic
 - Does not require coding in the underlying situations



Using A Policy To Manage Situations

The screenshot displays the Workflow Editor interface. On the left, the 'Workflow components' pane shows various activities, including 'Start/Stop a policy' and 'Start/Stop a situation'. The main workspace, titled 'New_Policy - Grapher View', contains a flowchart with the following steps:

- Wait until Weekday is True**: A clock icon with a blue crosshair.
- Situation is true**: A transition label connecting to the next activity.
- Start situation EW_IMS_Tran_Q_Alert**: A box with a blue crosshair and a green play button.
- Situation started**: A transition label connecting to the final activity.
- Start situation EW_Demo_Thread_Queueing**: A box with a blue crosshair and a green play button, highlighted with a red border.

A red callout box with white text is positioned above the flowchart, stating: **Situations may be started and stopped using a policy**. Two red arrows point from this box to the 'Start situation EW_IMS_Tran_Q_Alert' and 'Start situation EW_Demo_Thread_Queueing' activities.

At the bottom left, the user name 'Edward A. Wood' is displayed, along with checkboxes for 'Modify' and 'Start/Stop'. At the bottom right, there are buttons for 'OK', 'Cancel', 'Apply', and 'Help'.

OMEGAMON XE For DB2 PM/PE V4.1

Product Provided Situations

The image displays three screenshots of the Situation Editor interface, showing a list of product-provided situations. Each screenshot shows a list of situations with a small icon to the left of the text. The situations are organized into three columns.

Screenshot 1 (Left): Shows situations starting with 'KD5_'. The list includes: KD5_ARCM_Warning, KD5_CPU_Time_Warning, KD5_CTHD_Warning, KD5_DWAT_Warning, KD5_ETIM_Warning, KD5_Fail_Stmt_Percent_Warning, KD5_GETP_Warning, KD5_IDBC_Warning, KD5_IDBT_Warning, KD5_In_DB2_IIP_CPU_Time_Warning, KD5_INDB_Warning, KD5_Max_Agent_Overflows_Warning, KD5_Max_Agents_Waiting_Warning, KD5_Process_CPU_Usage_Warning, KD5_RCPU_Warning, KD5_Recent_Stmt_ETIM_Warning, KD5_RIO_Warning, KD5_Stolen_Agents_Warning, KD5_TCPU_Warning, KD5_TRCV_Warning, KD5_TSND_Warning, KD5_WCLM_Warning, KD5_WDLK_Warning, KD5_WGLK_Warning, KD5_WLGQ_Warning, KD5_WSPS_Warning, KD5_WSRV_Warning, KDP_ARCV_Critical, KDP_ARCV_Warning, KDP_BMTH_Critical, KDP_BMTH_Warning, KDP_CICT_Critical, KDP_CICT_Warning, KDP_COMT_Critical, and KDP_COMT_Warning.

Screenshot 2 (Middle): Shows situations starting with 'KDP_'. The list includes: KDP_DDFS_Critical, KDP_DDFS_Warning, KDP_DRCV_Critical, KDP_DRCV_Warning, KDP_DSND_Critical, KDP_DSND_Warning, KDP_EDMU_Critical, KDP_EDMU_Warning, KDP_ENTO_Critical, KDP_ENTO_Warning, KDP_ENTU_Critical, KDP_ENTU_Warning, KDP_ENTW_Critical, KDP_ENTW_Warning, KDP_GTRC_Critical, KDP_GTRC_Warning, KDP_IDBK_Critical, KDP_IDBK_Warning, KDP_IDFR_Critical, KDP_IDFR_Warning, KDP_IMCN_Critical, KDP_IMND_Critical, KDP_INDT_Critical, KDP_INDT_Warning, KDP_LKUS_Critical, KDP_LKUS_Warning, KDP_LOGN_Critical, KDP_MCNV_Critical, KDP_MCNV_Warning, KDP_MDBT_Critical, KDP_MDBT_Warning, KDP_MDBW_Critical, KDP_MDBW_Warning, KDP_PGUP_Critical, and KDP_PGUP_Warning.

Screenshot 3 (Right): Shows situations starting with 'DB2_'. The list includes: DB2_CF_Connections_Warning, DB2_CF_Structure_Use_Critical, DB2_CF_Structure_Use_Warning, DB2_CMD_Connection_Failed, DB2_CMD_Group_BP_READ_Hit_Warn, DB2_CMD_Lock_Wait_Time_Critical, DB2_CMD_Thrd_Wait_Time_Critical, DB2_Group_BP_Read_Hit_Critical, DB2_Group_BP_Read_Hit_Warning, DB2_Lock_Waiter_Time_Critical, DB2_Lock_Waiter_Time_Warning, DB2_Plex_Heartbeat, DB2_Thread_Wait_Time_Critical, and DB2_Thread_Wait_Time_Warning.

Product provided situations provide a starting point and a means of migrating alerts from Omegamon Classic/CUA 3270 interface to the Tivoli Enterprise Portal

Recommendations

Use product provided situations as examples and a starting point

For large deployments create more meaningful situations

Looking At Product Provided Situations

An Example – The ETIM Alert

Situation Editor

Formula | Distribution | Expert Advice | Action | Until

Description

Thread elapsed time exceeds critical threshold

Formula

	Elapsed Time
1	>= 00:10:00.0
2	
3	

Add boolean logic to make situations more robust

Click inside a cell of the formula editor to see a description of the attribute for that column and to compose the expression.

Add a condition by clicking **Add conditions** and selecting the situations to embed or attributes you want to include.

When you add a second attribute or situation to

Situation Formula Capacity 4%

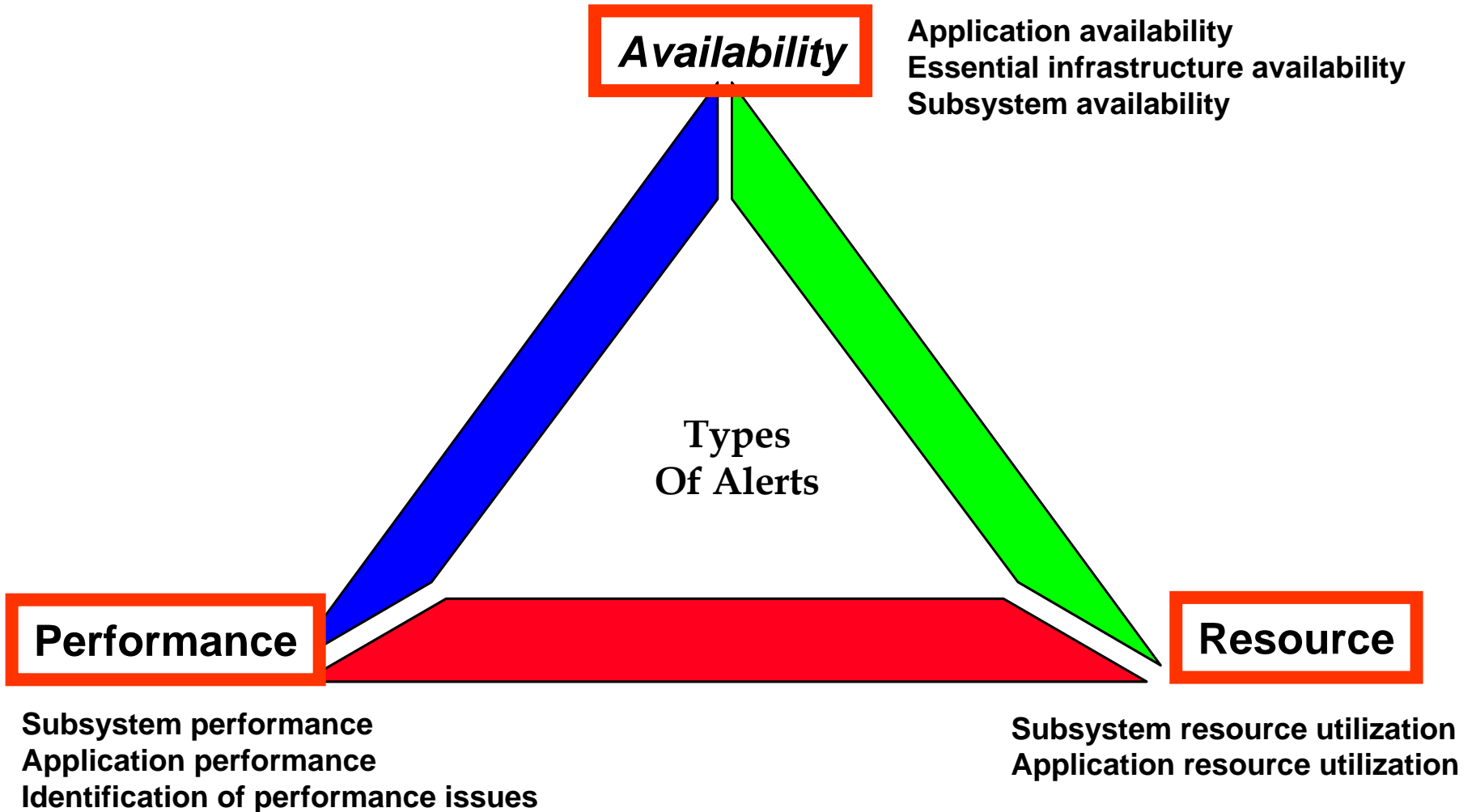
Sampling interval

0 / 0 : 15 : 0

ddd hh mm ss

Run at startup

Categories Of Typical Situation Alerts



What Are The Resources?

Key DB2 Resources That Need To Monitored

- DB2 application threads
 - ▶ Thread activity and delays, long running and problem threads, thread creation bottlenecks and issues, stored procedure activity, distributed thread activity
- DB2 Locking activity
 - ▶ Lock activity, lock contention, data sharing locking (real and false contention)
- DB2 Logging
 - ▶ DB2 logging status, log file activity, logging data volume
- Virtual Pools
 - ▶ VP size and utilization, VP hit ratio, I/O and getpage activity
- EDM Pools
 - ▶ EDM pool structure size and utilization, EDM pool structure activity and DSC 'hit ratio'
- DB2 Subsystem and address spaces
 - ▶ Address status and availability, address space CPU utilization, paging activity



Application Performance Example Situations To Track Problem Or Runaway Threads

Situations for - Detailed Thread Exception

Formula

Description

Formula

	Getpage Count	Plan Name	Authorization Identifier	DB2 Elapsed Time
1	> 200000	== 'DSNJDBC'	== PRODUSER	> 00:16:40.0
2				
3				

Select condition

Condition Type

Attribute Comparison

Situation Comparison

Attribute Group

- DB2 SRM EDM
- DB2 SRM Log Manager
- DB2 SRM Subsystem
- DB2 SRM UTL
- DB2 System States
- DB2 Thread Exceptions
- DP Collector Control Block
- DP Global Vector Table
- Local Time
- Universal Messages
- Universal Time

Attribute Item

- Archive Tape Wait
- Asynchronous Page Reads
- Authorization Identifier
- Authorization Identifier (Unicode)
- Cancel Command
- CICS MVS ID
- Collection (Unicode)
- Collection Identifier
- Commit Count
- Commit Ratio
- Connection Identifier
- Connection Type

State

Critical

Run at startup

Buttons: Select All, Deselect All, Add conditions..., Advanced..., Edit..., Cancel, Apply, Help

Using boolean logic allows the alert to be application sensitive

A single situation can handle multiple application plans/packages if needed

Application Performance Example

Considerations For Thread Reuse Threads

Situations for - Detailed Thread Exception

Formula

Description

Formula

	Plan Name	Read I/O Rate	Thread Status
1	== DEMO	> 10.0	== 'IN-SQL-CALL'
2			
3			

CP CPU Time

The total amount of central processor CPU time that DB2 has used for a thread.

CP DB2 CPU used The total DB2 central processor CPU time for this thread. Valid entry is an integer of up to four digits, in units that represent milliseconds.

DB2 Elapsed Time The elapsed time DB2 has been processing thread. Valid entry is an integer of up to four digits, in units that represent tenths of seconds.

Situation Formula Capacity 17%

Add conditions... Advanced...

Sampling interval: 0 / 0 : 2 : 0 (ddd hh mm ss)

Sound: Enable critical.wav (Play Edit...)

State: **Critical** (Run at startup checked)

OK Cancel Apply Help

Note – the I/O rate will be very workload dependent

In scenarios where thread re-use is in effect, creating a situation based on elapsed or In-DB2 time may not work as desired.

Instead one may create a situation where the thread is in SQL-Call status and a high I/O rate

This situation may be effective where threads are doing heavy pre-fetch I/O

Application Performance Example

Track Stored Procedure Schedule Delays

Situations for - Detailed Thread Exception

Formula Distribution Expert Advice Action Until

Description

Formula

Wait Time Procedure

	Package Name	Wait Time Procedure
1	== DEMOSP	> 20.000
2		
3		

Wait Time Procedure The time thread waiting for a TCB to schedule a stored procedure. Valid entry is an integer of up to four digits.

Wait Time Resource The time thread waiting for a resource. Valid entry is an integer of up to four digits.

Wait Time Service The time thread waiting for DB2 Service. Valid entry is an integer of up to four digits, in units that represent milliseconds.

Situation Formula Capacity Add conditions... Advanced...

Sampling interval / : :

ddd hh mm ss

Sound Enable critical.wav Play Edit...

State Critical Run at startup

OK Cancel Apply Help

Alert on SP scheduling delays.

Use boolean logic to make the alert application specific to commonly used application packages

Application Performance Example

Long Running Applications Not Doing Commits

Situations for - Detailed Thread Exception

Formula Distribution Expert Advice Action Until

Description

Formula

DB2 Elapsed Time			
	Plan Name	Commit Count	DB2 Elapsed Time
1	== DEMO	< 1	> 00:01:40.0
2			
3			

DB2 Elapsed Time The elapsed time DB2 has been processing thread. Valid entry is an integer of up to four digits, in units that represent tenths of seconds.

DB2ID The name of the DB2 system on which this thread is running. Valid entry is an alphanumeric text string, with a maximum length of four characters.

Display CPU Time The total amount of CPU time that DB2 has accumulated for a thread.

Situation Formula Capacity 15% Add conditions... Advanced...

Sampling interval 0:02:00 ddd hh mm ss

Sound Enable critical.wav Play Edit...

State **Critical** Run at startup

OK Cancel Apply Help

For a specific DB2 application that should be doing commits, look for a high DB2 elapsed time, but no commits

Application Performance Example

Application Wait Times

Situations for - Detailed Thread Exception

Formula

Description

Formula

Wait Time Global Lo... > 100

	Plan Name	Wait Time Global Lock
1	== DEMO	> 100.000
2		
3		

Wait Time Global Lock The time thread waiting because of global contention. Valid entry is an integer of up to four digits.

Wait Time Log Queue The time thread waiting for ARCHIVE LOG MODE(QUIESCE). Valid entry is an integer of up to four digits.

Wait Time Procedure The time thread waiting for a TCB to schedule a stored procedure. Valid entry is an integer of up to four digits.

Situation Formula Capacity 11%

Sampling interval 0 : 0 : 2 : 0

Sound Enable critical.wav

State Critical

Run at startup

OK Cancel Apply Help

There are a variety of application wait time counters provided in the TEP.

Lock conflict waits is one of the more common application wait reasons.

Use boolean logic to make the alert application specific (different threshold levels for different applications).

Application Performance/Availability Example

Track Utility Status

Situations for - Utility Jobs

Formula Distribution Expert Advice Action Until

Description

Formula

	Jobname	Stat
1	== DEMJOB ==	Stopped
2		
3		

Stat A for Active, S for stopped. Valid entry is an integer of up to four digits.
Status The utility status. Valid entry is an alphanumeric text string, with a maximum length of 12 characters.
Stmt The statement number. Valid entry is an integer of up to four digits.

Situation Formula Capacity 4%

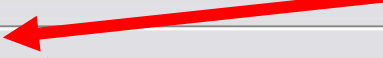
Sampling interval: 0 / 0 : 2 : 0 (ddd hh mm ss)

Sound: Enable critical.wav (Play Edit...)

State: **Critical** (Run at startup checked)

OK Cancel Apply Help

Check for specific utility jobs in a stopped status



Application Availability Example Alert On Thread Creation Waits

Situations for - System Status

System Status
EW_Thread_create_wait

Formula Distribution Expert Advice Action Until

Description

Formula

Users Waiting For T... > 0

	Threads Waiting On Limit	Users Waiting For Threads
1	> 0	
2		> 0
3		

digits.

User Waiting Threads The count of users waiting for threads. Valid entry is an integer of up to four digits.

Wait Tape Mount The state will be true if the DB2 system is waiting on a tape mount to recover from an archive log. Valid entry is an alphanumeric text string, with a maximum length of one character.

Situation Formula Capacity 11% Add conditions... Advanced...

Sampling interval 0 / 0 : 2 : 0
ddd hh mm ss

Sound Enable critical.wav Play Edit...

State Critical Run at startup

OK Cancel Apply Help

DB2 itself may be up, but threads may be queuing at thread creation time

Application Availability Example

Alert On Thread Access Waits From CICS

Situations for - CICS Connections

Formula Distribution Expert Advice Action Until

Description

Formula

Pool Thread Waits > 0

	Pool Thread Waits
1	> 0
2	
3	

Pool Thread Waits The count of pool threads that are waiting because the maximum has been reached. Valid entry is an integer of up to four digits.

Pool Threads Inuse The count of pool threads that are currently active. Valid entry is an integer of up to four digits.

Time The date and time, as set on the monitored system, indicating the instance when the agent collects information.

Situation Formula Capacity 5% Add conditions... Advanced...

Sampling interval: 0 / 0 : 21 : 0 (ddd hh mm ss)

Sound: Enable critical.wav Play Edit...

State: **Critical** Run at startup

OK Cancel Apply Help

Similar to the prior example.
 DB2 is talking to CICS, but due to pool restrictions the application is waiting to talk to DB2

Essential Infrastructure Availability Example

DB2 Connect Gateway Status

Situations for - DB2 Connect Server

Formula

Description

Formula

Server Status ACTIVE

	Server Instance Name	Server Status
1	DEMO	ACTIVE
2		
3		

Server Status Shows whether the server is active or inactive.

Server Version The version of the server returning the information.

Sort Heap Allocated The total number of allocated pages of sort heap space for all sorts at the level chosen and at the time the snapshot was taken.

The amount of memory allocated for each sort can be part of or the entire sort heap size available. Sort heap size is the amount of memory available for each sort as defined in the

Situation Formula Capacity 11%

Sampling interval / : :

ddd hh mm ss

Sound Enable critical.wav

Play Edit...

State Critical

Run at startup

OK Cancel Apply Help

Alert if the DB2 Connect gateway specified has a status other than 'ACTIVE'

This is an availability alert. If the gateway is down, applications will be unable to connect to DB2.

Subsystem Resource Performance Example

Track Performance Of The DSC

Situations for - EDM Pool

EDM Pool
EW_DSC_Load

Formula Distribution Expert Advice Action Until

Description

Formula

Total Percent Dynam... > 20

	Total Percent Dynamic SQL Loads
1	> 20.0
2	
3	

Total Percent Dynamic SQL Loads The percentage of all Dynamic SQL loads from DASD. Valid entry ranges from 0.0 to 100.0.

Total Percent PT Loads The percentage of all Package Table loads from DASD. Valid entry ranges from 0.0 to 100.0.

Total PT Loads The total number of Package Table loads from DASD. Valid entry is an integer of up to four digits.

Situation Formula Capacity 6%

Add conditions... Advanced...

Sampling interval 0 / 0 : 2 : 0
ddd hh mm ss

Sound Enable critical.wav
Play Edit...

State Critical

Run at startup

OK Cancel Apply Help

This may be seen as an inverse hit ratio.

The more that the DSC must be loaded, the poorer the actual DSC hit ratio.

For heavy dynamic SQL environments this may have a large impact on performance

The actual threshold level will vary by the shop and workload

Subsystem Resource Utilization Example

Track The Number Of SP Address Spaces

Situations for - System Status

System Status
EW_DB2_SP_ASIDs

Formula

Description

Formula

ASIDs Running Store... > 20

	Active Stored Procedures	ASIDs Running Stored Procedures
1	> 100	
2		> 20
3		

ASIDs Stored Procedures The number of unique active threads executing stored procedures. Valid entry is an integer of up to four digits.

ASIDs User Functions The number of ASIDs executing user functions. Valid entry is an integer of up to four digits.

Current Thread Count The current number of active threads. Valid entry is an integer of up to four digits.

Situation Formula Capacity 13%

Add conditions... Advanced...

Sampling interval
0 : 0 : 2 : 0
ddd hh mm ss

Sound
 Enable critical.wav
Play Edit...

State
Critical
 Run at startup

OK Cancel Apply Help

Alert if SP activity is going beyond a certain depth, or if the number of SP address spaces exceeds a specified number

If the number of address spaces increases dramatically consider reviewing options such as NUMTCB, etc.

Subsystem Resource Performance/ Utilization Example

Track EDM Pool Usage And Activity

Situations for - EDM Pool

EDM Pool
EW_EDM_Alerts

Formula

Description

Formula

	Delta Failures EDM Full	Delta Percent CT Loads	Delta Percent DBD Loads	Delta Percent PT Loads
1	> 0			
2		> 2.0		
3				> 2.0
4			> 2.0	

Delta Percent PT Loads The percentage of Package Table loads from DASD over last interval. Valid entry ranges from 0.0 to 100.0.

Delta PT Loads The Package Table loads from DASD during the last interval. Valid entry is an integer of up to four digits.

Delta PT Requests The Package Table requests during the last interval. Valid entry is an integer of up to four digits.

Situation Formula Capacity 23%

Sampling interval: 0 / 0 : 2 : 0 (ddd hh mm ss)

Sound: Enable critical.wav

State: **Critical**

Run at startup

OK Cancel Apply Help

Alert If EDM pool is full.

Alert if EDM pool load activity exceeds a specific level.

Subsystem Resource Performance Example Monitor Logging Volume

Formula

Description

Formula

Delta Active Log CIS > 100

	Write Delay NoBuf Rate	Delta Write Active Buffer	Delta Active Log CIS
1	> 0.0		
2		> 100	
3			> 100

Delta Active Log CIS The number of active log CIS created during the last sampling period. Valid entry is an integer of up to four digits.

Delta Archive CIS Offloaded The number of archive log CIS offloads during the last sampling period. Valid entry is an integer of up to four digits.

Delta Archive Read Allocation The number of archive log read allocations during the last sampling period. Valid entry is an integer of up to four digits.

Situation Formula Capacity 19% Add conditions... Advanced...

Sampling interval: / : :

Sound: Enable critical.wav Play Edit...

State: Critical Run at startup

OK Cancel Apply Help

For shops where log volume is a concern

Monitor logging volume and write activity and write rate

Consider using persistence option to filter out spikes

Note – these threshold values are examples. Actual rates are workload and hardware dependent.

Subsystem Resource Performance Example

Lock Contention Rates

Situations for - DSNSG:DB2plex:DSGROUP

Formula

Description

Formula

False Contention Ra...

	Global Contention Rate	False Contention Rate
1	> 10	> 5
2		
3		

False Contention Rate The number of false contentions divided by the number of seconds during the collection interval. Valid value is an integer in the range 0 - 99999999.

Global Contention The total number of contentions competing for the same database resource. Valid value is an integer in the range 0 - 99999999.

Global Contention Rate The number of contentions divided by the number of seconds during the collection interval. Valid value is an integer in the range 0 - 99999999.

Situation Formula Capacity 13%

Add conditions... Advanced...

Sampling interval: 0 / 0 : 15 : 0
ddd hh mm ss

Sound: Enable critical.wav
Play Edit...

State: Critical
 Run at startup

OK Cancel Apply Help

Track global and false lock contention rates.

Note – these numbers are based upon a sampling interval (defined in the OMEGAMON configuration panels).

Subsystem Resource Performance Example Monitor Coupling Facility Structures

Situations for - Group Buffer Pool Structures

Formula

Description

Formula

Structure Status Rebuild-Err

	Structure Name	Structure Size	Structure Status
1	abc == GBP	> 1000	
2	abc == SCA	> 100	
3			== 'Rebuild-Err'

Structure Status The current status of the coupling facility structure.

Valid values are:

ACTIVE	The structure is active
INACTIVE	The structure is inactive

With DR2 V6.1 group buffer pools can be duplexed. For duplexed group

Situation Formula Capacity 28%

Sampling interval: 0 / 0 : 2 : 0 (ddd hh mm ss)

Sound: Enable critical.wav

State: Critical

Run at startup:

OK Cancel Apply Help

Alert if structures exceed a certain size. Alert by structure name or type.

Alert in structures have an error status.

Summary

- Situations are an essential building block of the Tivoli Enterprise Portal
- Situations may be used to highlight performance and availability problems within DB2
- Understanding the dynamics of how situations may be effectively built and deployed drives the relative benefits
- It is recommended to have a situation deployment strategy and methodology



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