



IBM Software Group

Building Business Application Views With Omegamon XE And DE

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Tivoli software



@business on demand.

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Agenda

- **Overview**
- **The Methodology**
- **How To Build An Application View Using OMEGAMON XE/DE**
- **An Example – Step By Step**



Performance And Availability

- Performance
 - ▶ Hardware performance and utilization
 - CPU, Storage, DASD, etc.
 - ▶ Subsystem performance and utilization
 - CICS, DB2, Middleware performance
 - ▶ Application performance
 - Online performance
 - Batch performance
 - ▶ Response time
 - End user response



Performance And Availability - continued

- Availability
 - ▶ Hardware and physical platform availability
 - Example - Physical hardware and operating system status
 - ▶ Software subsystem availability
 - Example – CICS, IMS, DB2, MQ subsystems available
 - ▶ Network availability
 - Network connectivity
 - Network failures and alerts
 - ▶ Business application availability
 - Business views for key applications



Business Application View

- Management of performance and availability from the perspective of key applications
- Application View
 - ▶ Target the critical path performance and availability components of an application
 - Focus on specific components (platforms, databases, transactions, etc.)
 - ▶ Manage performance and availability from an application perspective
 - ▶ Choose mission critical business applications



OMEGAMON Management Triangle

OMEGAMON DE – Dashboard Edition

High level monitoring
Multi-system view
Cross Platform View

Performance
Triangle

3270 Interface

Subsystem details
3270 Interface
Historical details

OMEGAMON XE

Subsystem level monitoring
Browser And GUI interface
Proactive Alerting & Automation



Omegamon DE Dashboard

Integration, Consolidation, Customization, and Flexibility

Omegamon DE - 'Dashboard Edition'

Systems Management Dashboard Overview

A digital dashboard allows for key elements to be combined into a single view

z/OS Performance			
Service Class	Period	Goal Type	G Perc
BATCH	1	Velocio	
BATCH	2	Velocio	
BATHI		ocio	

CICS Region Overview			
System ID	CICS Region Name	CICS Version	R S
SP12	CCCD18	6.2.0	N/
SP12	CCCD19	6.2.0	N/
SP12		2.0	N/

IMS Address Spaces		
Originating System Identifier	MVS System	IM
XEIMS:SP12:MVS	SP12	I71
XEIMS:SP12:MVS	SP12	I71

DB2 Threads	
Originnode	
D710	02/08

MQ Series	
Origin Node	P
MQ12:SP12:MQESA	04
MQ12:SP12:MQESA	03
MQ	04

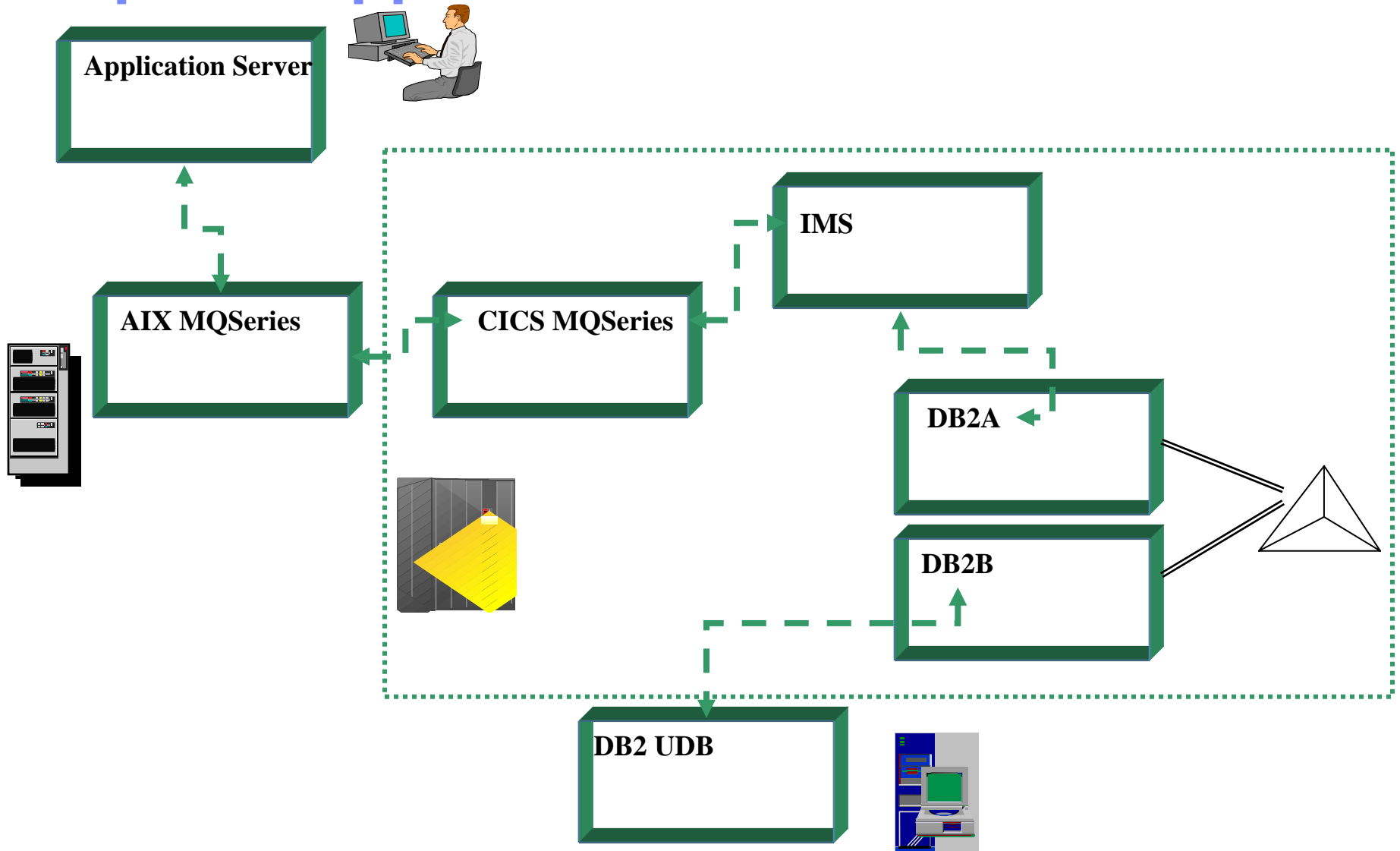
Ready | Hub Time: Tue, 02/08/2005 07:02 PM | Server Available. | Overview - hqdn1.us.ibm.com | EWOOD *ADMIN MODE

The Methodology

- **Building An Application View**
 - ▶ **Map the application**
 - ▶ **Identify the major resources**
 - **Platforms and Processors**
 - **Processes and Address spaces**
 - **Transactions**
 - **Databases**
 - **MQ Q Managers**
 - ▶ **Identify data sources**
 - **OMEGAMON monitoring agents or other sources**
 - ▶ **Build prototype**
 - ▶ **Define alerts and notifications**



Map The Application



Map The Application Building The Background Graphic

- Create a JPEG background to map the application
 - ▶ A picture is worth a thousand words
- Use commonly available tools such as Powerpoint, Paint, or Visio to create the JPEG graphics
- Copy the JPEG to the appropriate USER directory on the Tivoli Enterprise Portal (TEP) server
 - ▶ The custom graphic will then be available for all potential users



Identify The Resources

- **Major platforms and subsystems**
 - ▶ **Windows**
 - ▶ **UNIX**
 - ▶ **z/OS**
 - ▶ **MQ Series**
 - ▶ **CICS**
 - ▶ **IMS**
 - ▶ **DB2 on z/OS**
 - ▶ **DB2 on AIX**



Identify The Resources

- **Major platforms and subsystems**
 - ▶ **Windows – CPU and Processes**
 - ▶ **UNIX – CPU and Processes**
 - ▶ **z/OS – WLM, Address spaces**
 - ▶ **MQ Series – MQ Queues and channels**
 - ▶ **CICS – CICS address spaces, Transactions**
 - ▶ **IMS – IMS address spaces, Transactions**
 - ▶ **DB2 on z/OS – DB2 Threads, Locks, Pools**
 - ▶ **DB2 on AIX – DB2 Threads, Locks, Pools**



Identify The Resources

- **Focus on key resources for the application**
- **Target key resources at each point in the application flow**
- **Use selected resources as key to Application Monitoring design**
 - ▶ **Use to build application graphic view**
 - ▶ **Use to design appropriate alerts**
- **Filter based on specified criteria (see prototype process)**



Identify The Data Sources

- **Major platforms and subsystems**
 - ▶ **Windows – IBM Tivoli Monitoring (ITM) 6.1**
 - ▶ **UNIX – IBM Tivoli Monitoring (ITM) 6.1**
 - ▶ **z/OS – OMEGAMON XE for z/OS**
 - ▶ **MQ Series – OMEGAMON XE for WBI on z/OS**
 - ▶ **IMS – OMEGAMON XE for IMS on z/OS**
 - ▶ **DB2 on z/OS – OMEGAMON XE for DB2 PE/PM**
 - ▶ **DB2 on AIX – IBM Tivoli Monitoring (ITM) 6.1**



Additional Data Sources

- **Console automation**
 - ▶ **z/OS console messages**
 - ▶ **Address space status and error messages**
- **OMEGAMON Universal Agent**
 - ▶ **A variety of data providers**
 - ▶ **Use to fill the gap where no out of the box agent**
 - ▶ **SNMP data providers, File data providers, Socket data providers, and more....**



Build The Prototype

The screenshot displays the IBM Application View interface. The main window, titled "Application Overview", shows a hierarchical diagram of system components. On the left, a tree view lists categories such as CICS, z/OS, MQ/Series, and DB2, with sub-items like "CICS MQ Q Status" and "DB2A". Below this is an "Event Console" with columns for "Status", "Situation Name", and "Display Item".

The central diagram, titled "Application Overview", illustrates the following components and their interactions:

- Application Server** (App Server) on **UNIX OS** (represented by a person at a computer icon).
- AIX MQSeries** (MQ/Series) on **UNIX OS** (represented by a server rack icon).
- CICS MQSeries** (CICS) on **z/OS Performance** (represented by a server rack icon).
- IMS** (IMS) on **z/OS Performance**.
- DB2A** (DB2) on **z/OS Performance**.
- DB2B** (DB2) on **z/OS Performance**.
- DB2 UDB** (DB2 UDB) on **z/OS Performance**.

Interactions are shown with dashed arrows: Application Server connects to AIX MQSeries; AIX MQSeries connects to CICS MQSeries; CICS MQSeries connects to IMS; IMS connects to DB2A; DB2A connects to DB2B; and DB2B connects to DB2 UDB. A 3D pyramid icon is also present on the right side of the diagram.

Build The Prototype

User definable hierarchy

- CICS
 - CICS MQ Q Status
 - CICS Region Status
 - CICS Response Time
- AIX MQ Status
- CICS MQ Status
- DB2
 - DB2A
 - DB2B
 - DB2 CF Status

Add links for drill down detail

Graphics map to application flow

Icons show status

Highlight application alerts

Application View - EWOOD-JJW1211:14000 - SYSADMIN

File Edit View Help

Application Overview

Application Server (App Server)

AIX MQSeries (MQ/ Series)

CICS MQSeries (CICS)

IMS

DB2A (DB2)

DB2B

DB2 UDB (DB2 UDB)

UNIX OS

z/OS Performance

Event Console

Status	Situation Name	Display Item
--------	----------------	--------------

Specifying The Graphic View

The screenshot displays the 'Application View' configuration window. On the left, a tree view shows a hierarchy of components including 'CICS', 'DB2', and 'DB2A'. The main area is divided into a 'Preview' pane and a 'Style' pane. The 'Preview' pane shows a map of the world with a network overlay, labeled 'Header' and 'Footer'. The 'Style' pane has a 'Background' section with a text field containing 'nw eccap view.jpg' and a 'Browse...' button. Below it, a 'Style' section has a text field containing 'shape_black_label_right' and another 'Browse...' button. A 'Graph' tab is visible at the bottom of the style pane. Three callout boxes with arrows point to specific elements: one points to the 'Properties' menu option, another points to the 'nw eccap view.jpg' field, and a third points to the 'shape_black_label_right' field.

Right click and select 'Properties'

User definable graphics to show application view

User definable JPEG backgrounds

Specify a style to get the shapes



User Definable Monitoring Hierarchy

The screenshot displays the Tivoli monitoring interface. The main window, titled 'Application View - EWOOD-JJW1Z11:14000 - SYSADMIN', shows a hierarchical tree of monitoring objects. A callout box with an arrow pointing to the tree says 'Click to edit navigator view'. Another callout box with an arrow pointing to the toolbar icons says 'Click on icons to add and modify the navigation and relationships (create new, add children, etc.)'. A third callout box with an arrow pointing to the 'Edit Navigator View' dialog says 'Use the dialog to build hierarchy Specify how resources inter-relate on the monitoring display'. The 'Edit Navigator View' dialog shows 'Target View: Application View' and 'Source View: Physical', with a tree of objects and a diagram of a pyramid representing relationships.

Click on icons to add and modify the navigation and relationships (create new, add children, etc.)

Click to edit navigator view

Use the dialog to build hierarchy
Specify how resources inter-relate on the monitoring display

Use Link Wizard To Build Custom Links And Drill Downs

The link wizard will allow for building links to provide drill down navigation.

Link from icons or from other areas in the panel.

Note! All times are specific date and time is Friday, Dec 9, 2005 07:28:46 AM. Display calendar for: 1 week.

	12/09/05 07:28:46	0	BP0	4000
	12/09/05 07:28:46	0	BP1	4000
	12/09/05 07:28:46	0	BP2	4000

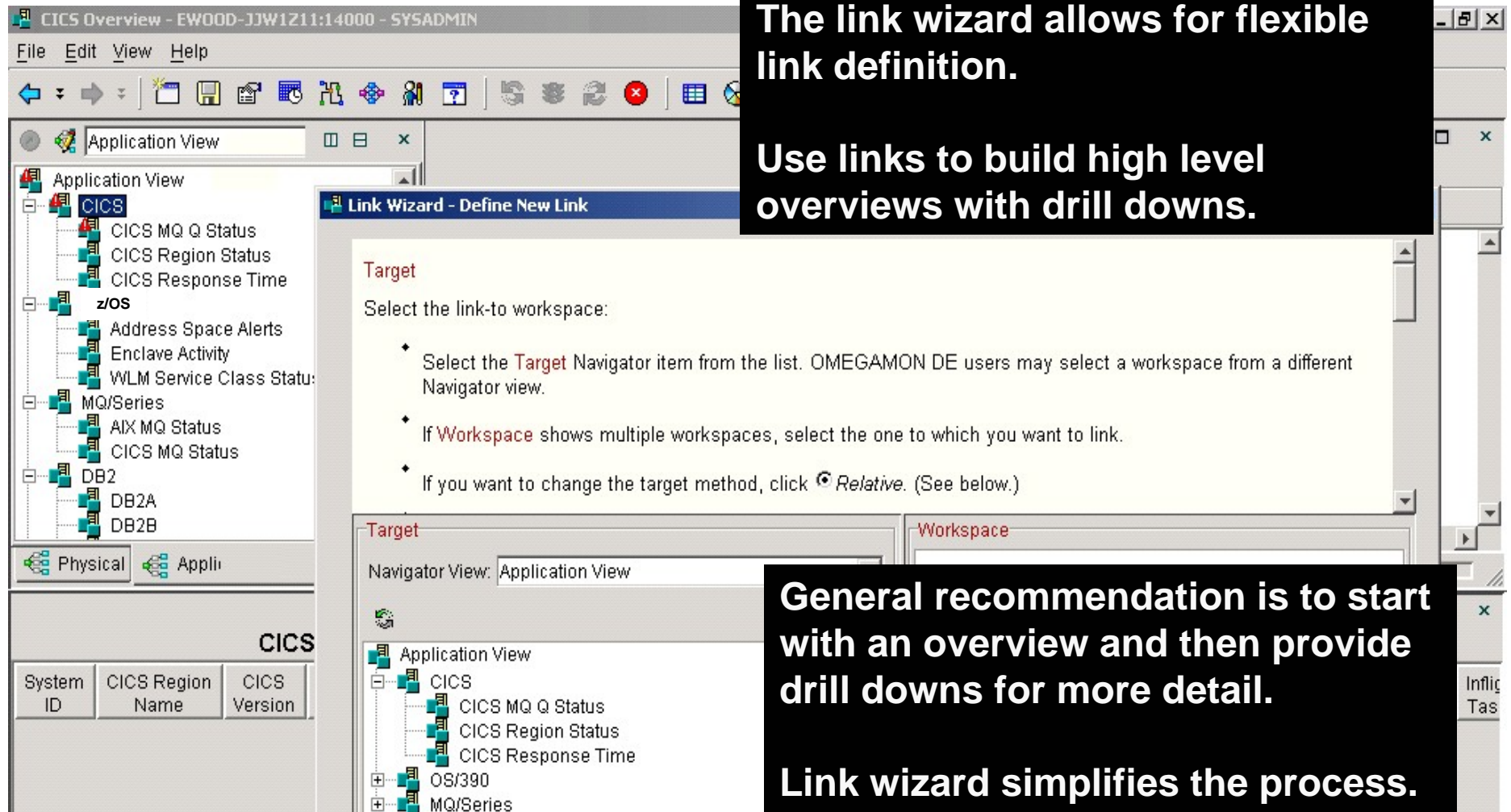
Link from the panel or link from an icon

z/OS Performance

Currently logged in as: [User Name]

Ready | Hub Time: Fri, 12/09/2005 07:21 AM

Link Wizard Provides Flexibility



The link wizard allows for flexible link definition.

Use links to build high level overviews with drill downs.

General recommendation is to start with an overview and then provide drill downs for more detail.

Link wizard simplifies the process.

Target

Select the link-to workspace:

- Select the **Target** Navigator item from the list. OMEGAMON DE users may select a workspace from a different Navigator view.
- If **Workspace** shows multiple workspaces, select the one to which you want to link.
- If you want to change the target method, click *Relative*. (See below.)

Target Navigator View: Application View

Workspace

System ID	CICS Region Name	CICS Version

Build Detailed Drill Downs For Analysis

The screenshot displays the CICS Overview application interface. The main window is titled "CICS Overview" and contains several panels:

- Application View:** A tree view on the left showing a hierarchy of components including CICS, z/OS, MQ/Series, and DB2.
- CICS Overview:** A central panel showing status indicators for CICS Region Status and CICS MQ Q Status, each represented by a green circle.
- CICS Region Overview:** A table at the bottom left with columns: System ID, CICS Region Name, CICS Version, Region Status, CICS SYSIDNT, VTAM Applid, VTAM Generic Applid, and VTAM A Oper.
- CICS MQ Information:** A table at the bottom right with columns: System ID, CICS Region, Adapter, Queue Manager, Connection, Busy, API, and Inflight.
- CICS Transaction Information:** A table at the bottom right with columns: System ID, CICS Region Name, CICS SYSIDNT, Transaction ID, User ID, Terminal ID, Task Number, and Wait Type.

Three callout boxes provide additional context:

- Top Right:** "Add graphics and additional drill downs if desired" (pointing to the status indicators).
- Bottom Left:** "Build detailed displays" (pointing to the CICS Region Overview table).
- Bottom Center:** "Filter information on the displays for the specific application" (pointing to the CICS Region Overview table).
- Bottom Right:** "Use product provided queries or custom queries to specify detail content" (pointing to the CICS MQ Information table).

Filter The Detail Make Displays Application Specific

The screenshot shows the 'CICS Overview' application window. The main display is a 'CICS Region Overview' table. A filter is applied to the 'CICS Region Name' column, showing only the entry 'EQ CICSABC'. The table has columns for System ID, CICS Region Name, CICS Version, Region Status, and CICS SYSIDNT. The filter is set to 'EQ' (Equals).

Filter information on the displays for the specific application

Target key CICS regions or transactions

System ID	CICS Region Name	CICS Version	Region Status	CICS SYSIDNT
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	EQ CICSABC			
3	<input type="checkbox"/>			
4	<input type="checkbox"/>			

MVS Example - Filter The Detail Make Displays Application Specific

The screenshot shows the Tivoli Monitoring interface for OS/390. The left pane displays a tree view with 'OS/390' selected. The main pane shows the 'WLM Service Class' configuration. A 'Filters' section is visible, containing a table with the following data:

	Managed System	Service Class	Period	Goal Type	Goal Percentile	Irr
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
2		EQ ONLHI				
3		<input type="checkbox"/> EQ				
4						

Annotations on the screenshot:

- Filter information on the displays for the specific application**: A black box with white text and an arrow pointing to the 'EQ' filter in the table.
- Target MVS WLM and address space information**: A black box with white text pointing to the 'EQ ONLHI' entry in the table.

DB2 Example - Filter The Detail Make Displays Application Specific

The screenshot shows the 'Properties - DB2 OS/390 Overview' window. The left pane shows a tree view with 'DB2' selected. The main pane displays the 'DB2 Thread Status' view. The 'Preview' section shows a table of thread status information. The 'Filters' section shows a table with checkboxes for filtering threads based on Connection Type, Plan Name, Package Name, Correlation Identifier, and Connection. An arrow points from the 'EQ pkgabc' entry in the filters table to the 'EQ pkgabc' entry in the 'Preview' table.

Filter information on the displays for the specific application

Target DB2 thread information and elapsed times

Thread Type	Connection Type	Plan Name	Package Name	Correlation Identifier	Co
Allied	Unkown	DSNACLI	DSNCLCS	DSNAOCLI	BB

Connection Type	Plan Name	Package Name	Correlation Identifier	Connection
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	EQ pkgabc	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

MQ Example - Filter The Detail Target Specific Queues

The screenshot shows the 'MQ Overview' application window. The left pane displays a tree view of system components, with 'MQ/Series' selected. The main pane shows 'CICS MQ Information' with a table of data. A filter is applied to 'Queue Manager Name' with the value 'EQ'. The table below shows the filtered results.

System ID	CICS Region Name	Adapter Status	Queue Manager Name	Connection Status	Busy TCBS	API Calls	Inflight Tasks
1							
2			EQ MQQueue				
3							
4							

Filter information on the displays for the specific application

Highlight specific queues and queue managers

Queries Control Content Of Dashboard Displays

The screenshot displays the 'Query Editor' window within a Microsoft Internet Explorer browser. The window is titled 'Region Overview - Microsoft Internet Explorer'. The address bar shows 'Address =MOPHYSIC'. The main content area is divided into several sections:

- Left Panel (Tree View):** A hierarchical tree structure under 'Queries'. The 'Region Overview' query is selected and highlighted in blue. A red box highlights the entire tree view.
- Description:** A text field containing 'Default Region Overview Query'.
- Data Source:** A text field containing 'CMS SP12 ip.pipe:#198.210.51.150[9005]'.
- Last Modified:** A section showing 'Last Modified on: 9/2/03 09:51:54' and 'Last Modified by: DEMO1'.
- Specification:** A section with two tabs: 'Specification' and 'Query Results Source'. The 'Query Results Source' tab is active.
- Query Results Source:** A section with two radio buttons: 'Let system assign automatically' (unselected) and 'Let user assign explicitly' (selected).
- Assigned:** A list box containing three entries: 'SP12.CCCDS18', 'SP12.CCCDS19', and 'SP12.CCCDS20'. An arrow points from a text box to this list.
- Available Managed Systems:** An empty list box.

User definable queries allow the creation of consolidate multi-region views. Specify the managed systems to be viewed.

At the bottom of the window, there are 'OK', 'Cancel', and 'Help' buttons. The status bar at the bottom right shows 'SP12.CCCDS18 DEMO1'.

See The Result Multiple CICS Regions In A Single View

File Edit View Help

CICS Region Overview

Origin Node	Transaction Rate	CPU Utilization	AIDs	CICS Region Name	CICS SYSIDNT	CICS TOD Clock	CICS TOD Updated	CICS Version	Enqueue Waits	I/O Rate	ICEs	Largest Contiguous Available LSQA	Le A
SP12.CCCDS18	0	0.0	0	CCCDS18	DS18	09:52:47.14	Yes	6.2.0	0	0.0	4	2396	
SP12.CCCDS19	0	0.0	0	CCCDS19	DS19	09:52:47.13	Yes	6.2.0	0	0.0	2	2392	
SP12.CCCDS20	0	0.0	0	CCCDS20	DS20	09:52:47.30	Yes	6.2.0	0	0.0	4	2300	

See multiple CICS regions from a single view.

- Query customization capability allows for flexible application displays
- Use product provided queries as a starting point
 - ▶ Make copies and modify as needed
- Use to see detail summarized across multiple systems
- Use to modify the format and content of the query

User Definable Information Queries

The screenshot displays the IBM DB2 Query Editor window. The title bar reads "DB2 05/390 Overview - EWOOD-JJW1211:14000 - SYSADMIN". The interface includes a menu bar (File, Edit, View, Help) and a toolbar. On the left, a tree view shows the system hierarchy, with "DB2" expanded to show "DB2A" and "DB2B". The "Query Editor" window is open, showing a list of queries under "Candle Management Server". The query "DB2 Thread Exceptions" is selected, and its details are shown in the right pane. The "Description" field is empty. The "Data Source" is "ODBC OPAS_TEST Driver do Microsoft Access (*.mdb)". The "Last Modified" information shows "Last Modified on: 12/17/03 09:46:04" and "Last Modified by: SYSADMIN". The "Specification" tab is active, showing the "Custom SQL" field with the query: `select * from DB2ThreadExcept;`. A table at the bottom left shows "Thread Type" and "Connec" with values "Allied" and "Unkown".

User definable SQL for the query. Powerful for filtering and sorting.

Add Alerts & Notifications

The screenshot displays the IBM Tivoli Application View interface. On the left, a tree view shows the application hierarchy: Application View > CICS > CICS MQ Q Status > CICS Region Status > CICS Response Time. Below this is the 'Event Console' with a table of alerts:

Status	Situation Name	Disp
Open	NW_CICS_MQ_Alert	

The main area shows an 'Application Overview' diagram. A red triangle icon next to 'CICS' in the 'CICS MQSeries' box indicates an alert. A callout box labeled 'Red highlights alerts' has arrows pointing to the red triangle in the diagram and the 'Open' status in the event console table.

Flyovers Highlight Alert Information

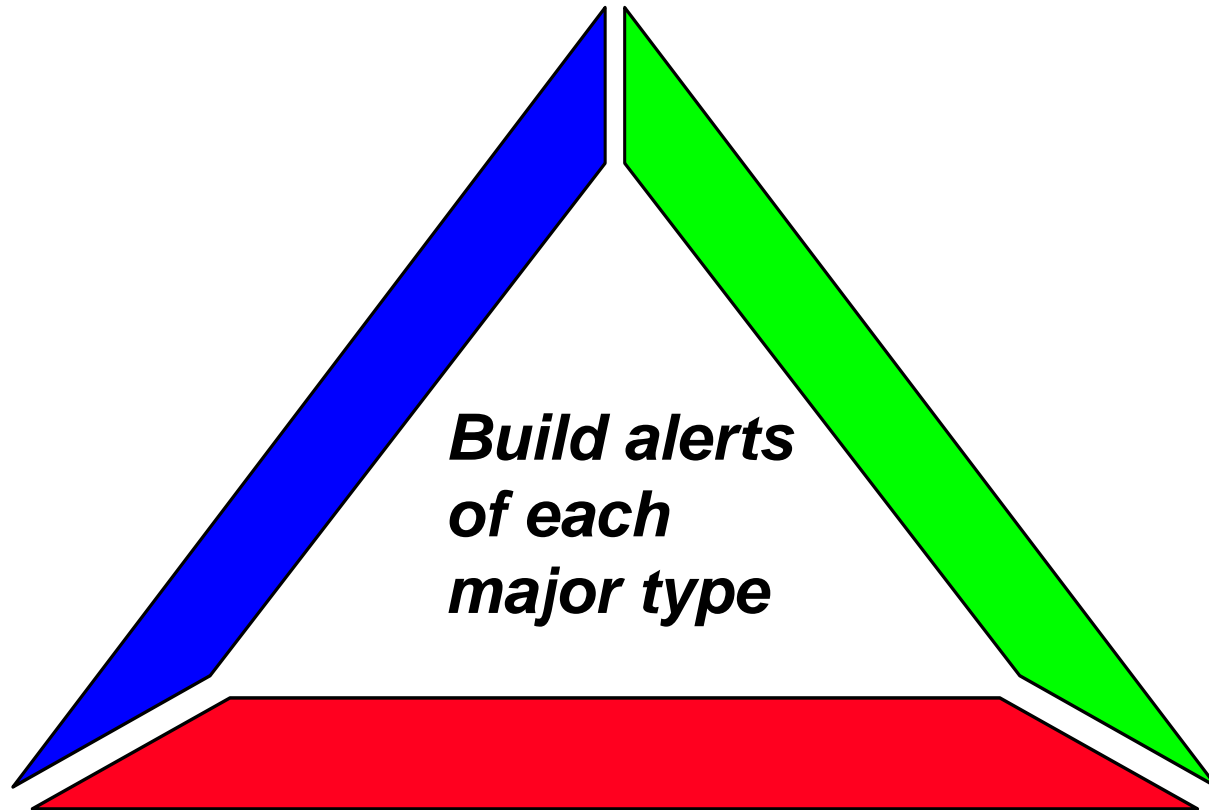
The screenshot displays the Tivoli Application View interface. The main window title is "Application View - EWOOD-JJW1211:14000 - SYSADMIN". The interface includes a menu bar (File, Edit, View, Help), a toolbar with various icons, and a tree view on the left showing a hierarchy of components: CICS, CICS MQ Status, DB2, DB2A, DB2B, and DB2 CE Status. A flyover window is overlaid on the tree view, displaying a critical alert:

CRITICAL
 [Link Icon] NW_CICS_MQ_Alert Primary:EWOOD-JJW1211:NT 12/17/03 14:20:42

Below the alert text, a yellow box contains the instruction: "Select workspace link button to view event results." The flyover is highlighted with a red border. In the background, a diagram shows the system architecture with components: AIX MQSeries (MQ/Series), CICS MQSeries (CICS), and DB2A.

Types Of Alerts

Performance



Availability

Response



Build Alerts To Highlight Application Issues

- **Build a set of meaningful alerts**
- **Use the product provided alerts (situations) as a starting point**
- **Customize situations to use site specific names**
- **Make alert names meaningful**
- **Avoid false alerts – less is more**
- **Use Expert Advice to record actions**
 - ▶ **An alert should result in an action (manual or automatic)**
- **Start basic and make more sophisticated as needed**



OMEGAMON Automation And Alert Capabilities

- Situations
 - ▶ The basis of Omegamon XE alerts
 - ▶ Any monitored attribute may be used in a situation
 - ▶ Combines 'reflex' automation with alerting in easy to use GUI interface
 - ▶ Typically run in the agent address space (Intelligent Remote Agents – IRAs)
- Policies
 - ▶ Combines multiple events (situations, commands, etc) in a single automation policy
 - ▶ Use for correlated alerts and automation
 - ▶ Run in the Management Server



Product Provided Situations

File Edit View Help

Application View Situation Editor

Application View

- CICS
 - CICS MQ Q Status
 - CICS Region Status
 - CICS Response Time
- z/OS
 - Address Space Alerts
 - Enclave Activity
 - WLM Service Class Status
- MQ/Series
 - AIX MQ Status
 - CICS MQ Status
- DB2
 - DB2A
 - DB2B
 - DB2 CF Status

Application View Physical

Event Console

Status	Situation Name
Open	NW_CICS_MQ_Alert

Situations

- 3270 Toolkit
- Candle Management Server
- CICSplex
- IMSplex
- Log Alerts
- Mainframe Networks
- MQ Series
- MVS Console Agent
- MVS DB2
- MVS Sysplex
- MVS System
- NCP
- OMEGACENTER Gateway
- OMEGAMON for CICS
- OMEGAMON for DB2
- OMEGAMON for IMS
- OMEGAMON for MVS
- OMEGAMON for OPR
- OMEGAMON for SMS
- OMEGAMON for VM
- OMEGAMON for VTAM
- OMEGAVIEW
- TCP/IP
- The MVS Sysplex OS
- Tivoli Management Environment
- UDB Agent
- Universal Data Provider
- Universal Database
- Unix
- VTAM
- Windows NT

Situation Editor Assistance

Situation Editor

Situations notify you when certain conditions have been met at the system, and can be used to send a message or command. CandleNet Portal provides a set of predefined situations for each type of Candle agent. You can view the situations and create others in the Situation editor.

- To display a situation, click its name in the tree on the left; -OR- if you do not see the situation and you opened the Situation editor from the Navigator
- To delete a situation, select it and click Delete Situation.

The Situation editor initially shows the situations associated with the selected Navigator item or, if you opened it from the toolbar, the situations for all Candle products. When you click a situation name or create a situation, the right frame opens with the following tabs:

- [Condition](#) See, add and edit the condition being tested.
- [Distribution](#) See and assign the systems on which the situation is running.
- [Comments](#) Write comments or instructions to be read in

Use 'Situations' To Monitor Critical Events

Situation Editor

Condition Distribution Expert Advice Action Until

Description
Average CPU Utilization Warning Situation

Condition

	Average CPU Percent	Average CPU Percent
1	GE 95	LT 100
2		
3		

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

Add an attribute to the condition by clicking Add Attributes and

Add attributes... Advanced...

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

Run at startup

Product Provided and User Defined Situation Alerts

Proactive Alerts And Corrections

Situations isolate problems

Situations may also drive corrective actions

Status	Component
OFFLINE	curley.ca
OFFLINE	db2_hqd
OFFLINE	db2inst_
OFFLINE	db2inst1
OFFLINE	db2inst2
OFFLINE	goodguy
OFFLINE	goodguy
OFFLINE	goodguy
OFFLINE	goodguy
OFFLINE	goodguy
OFFLINE	goodguy
OFFLINE	hqdnt.ca
OFFLINE	hqdnt.ca

Automated Actions

The screenshot shows the 'Enterprise Monitoring Status' application window. The main area is titled 'Situation(s) for - D71GRP:SP12.D71G:DSGROUP'. On the left, there is a tree view under 'ENTERPRISE' with categories like OS/390 System, OS/400 System, Other Platforms, UNIX Systems, and Windows System. Below this is a 'Monitor' table with columns for 'Status' and hostnames.

The central pane shows a list of monitored items, including 'DB2_CF_Structure_Use_Critical', 'DB2_CMD_Connection_Failed', 'DB2_CMD_Group_BP_READ_H...', 'DB2_CMD_Lock_Wait_Time_Cri...', 'DB2_CMD_Thrd_Wait_Time_Cri...', 'DB2_Group_BP_Read_Hit_Crit...', 'DB2_Group_BP_Read_Hit_War...', 'DB2_Lock_Waiter_Time_Critical', 'DB2_Lock_Waiter_Time_Warnir...', 'DB2_TechConference_Getpage...', 'DB2_Thread_Wait_Time_Critica...', 'DB2_Thread_Wait_Time_Warnir...', 'DIT_BATCH_TIME', 'DIT_PRIME_TIME', 'flebe', 'flebe2', 'flebentp', 'FSG_RESP_TIME', 'IMS_IRLM_CF_RLE_Percent_C...', 'IMS_IRLM_CF_RLE_Percent_W...', 'IMS_Lock_Waiter_Time_Critical', 'IMS_Lock_Waiter_Time_Warnir...', 'IMS_MSC_Queue_Count_Critica...', 'IMS_MSC_Queue_Count_Warni...', and 'IMS_MSC_Queue_Status'.

The right pane shows configuration options for an action:

- System Command:** A text box containing 'EXAMPLE CONSOLE CMD' with an 'Attribute Substitution...' button next to it. An arrow points to this text box.
- If the condition is true for more than one monitored item:**
 - Only take action on first item
 - Take action on each item
- Where should the Action be executed (performed):**
 - Execute the Action at the Managed System (by Agent)
 - Execute the Action at the Managed System (by Server)
- If the condition stays true over multiple intervals:**
 - Don't take action twice in a row (wait until situation goes false)
 - Take action in each interval

At the bottom right, a black callout box with white text reads: **Correct problems at machine speed**. Below the configuration pane are buttons for 'OK', 'Apply', 'Cancel', and 'Help'.

Use Expert Advice For Alerts

The screenshot shows the Tivoli Enterprise Console interface. The main window is titled "Application View - EWOOD-JJW1Z11:14000 - SYSADMIN". The left pane shows a tree view of system components, including CICS, z/OS, MQ/Series, and DB2. The right pane displays the "Situation(s) for - CICS MQ Q Status" configuration. The "Expert Advice" tab is selected, showing the following text:

Text or Advice Location

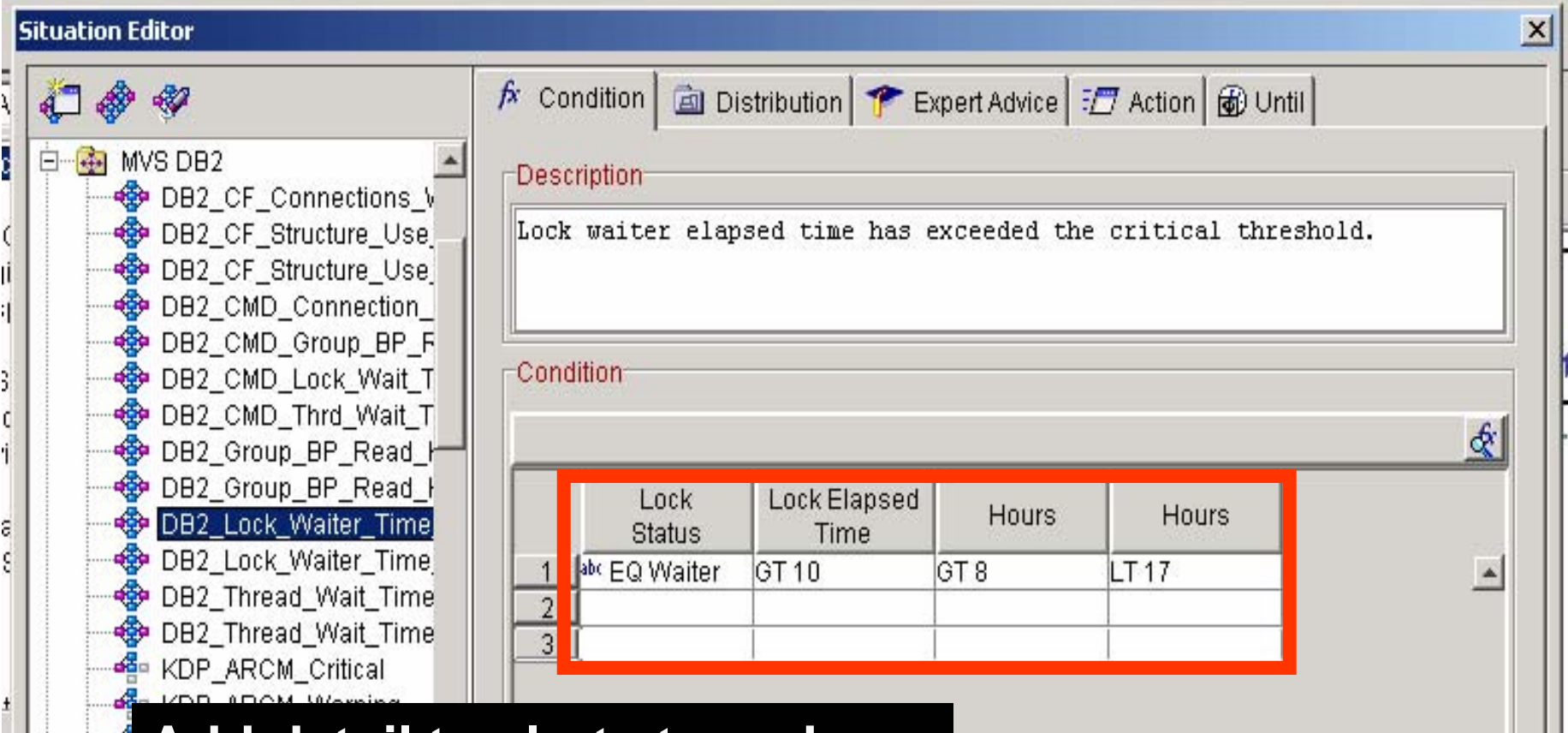
If this alert is true then call Ed Woods at
513-563-3550

Issue the following console commands

```
D A,L|
```

As a standard have Expert Advice for each alert detailing recommended actions

Make Alerts Meaningful



The screenshot shows the 'Situation Editor' window. On the left, a tree view shows the configuration for 'MVS DB2', with 'DB2_Lock_Waiter_Time' selected. The main area has tabs for 'Condition', 'Distribution', 'Expert Advice', 'Action', and 'Until'. The 'Condition' tab is active, showing a 'Description' field with the text 'Lock waiter elapsed time has exceeded the critical threshold.' Below this is a 'Condition' field containing a table:

	Lock Status	Lock Elapsed Time	Hours	Hours
1	abc EQ Waiter	GT 10	GT 8	LT 17
2				
3				

Add detail to alerts to make them more meaningful

Making Alerts Meaningful

Situation(s) for - DSNA:MVSA:DB2

Condition Distribution Expert Advice Action Until

Description

Condition

	DB2 Elapsed Time	Package Name	Authorization Identifier
1	GT 00:01:40.0	abc EQ DISTSERV	
2	GT 00:33:20.0	abc EQ TESTBAT	
3	EQ 00:01:20.0	abc EQ DISTSERV	abc EQ CIO

Authorization Identifier Authid of the thread. Valid entry is an alphanumeric text string, with a maximum length of eight characters.

Cancel Command Command string needed to cancel a thread. Valid entry is an alphanumeric text string, with a maximum length of eight characters.

Add attributes... Advanced...

State
Critical

Run at startup

OK Apply Cancel Help

Specify multiple attributes with And/Or logic

More detailed alerts mean more meaningful & useful alerts. Requires fewer situations to be created.

Policies Support The Ability To Do Correlated Alerts And Commands

The screenshot displays the IBM Tivoli Policy Manager Workflow Editor interface. At the top, the 'Policy Details' section shows 'New Policy' as the policy name, with options for 'Distributed', 'Auto start', 'Save results', 'Correlate by' (set to 'Host Name'), 'Limit restarts', and 'Restart'. The 'Workflow Editor' section shows a 'New_Policy - Grapher View' with a workflow diagram. The workflow starts with a 'Wait until Application_End_User_Alert is True' activity (labeled 'CICS'), which leads to a 'Wait until EW_Demo_CICS_Alert is True' activity (labeled 'CICS'). From there, the flow branches into two paths: one leading to a 'Wait until EW_Lock_Conflict is True' activity (labeled 'DB2'), and another leading to a 'Take action: Console Comm...' activity. The 'Action Settings' dialog box is open, showing 'System Command' selected and 'Console Command' entered in the text field. A red box at the bottom of the workflow diagram contains the text 'Advanced workflow automation integrated within the Dashboard'. Another red box at the bottom right of the dialog box contains the text 'Command'. The bottom left of the screenshot shows the user 'SYSADMIN' and some status indicators.

Performance Automation Situations Versus Policies

- Policies allow for more sophisticated automation
 - ▶ Issue multiple commands and check if commands worked
 - ▶ Situations are single command functions
- Situations typically run in the agent
- Policies run in the TEMS



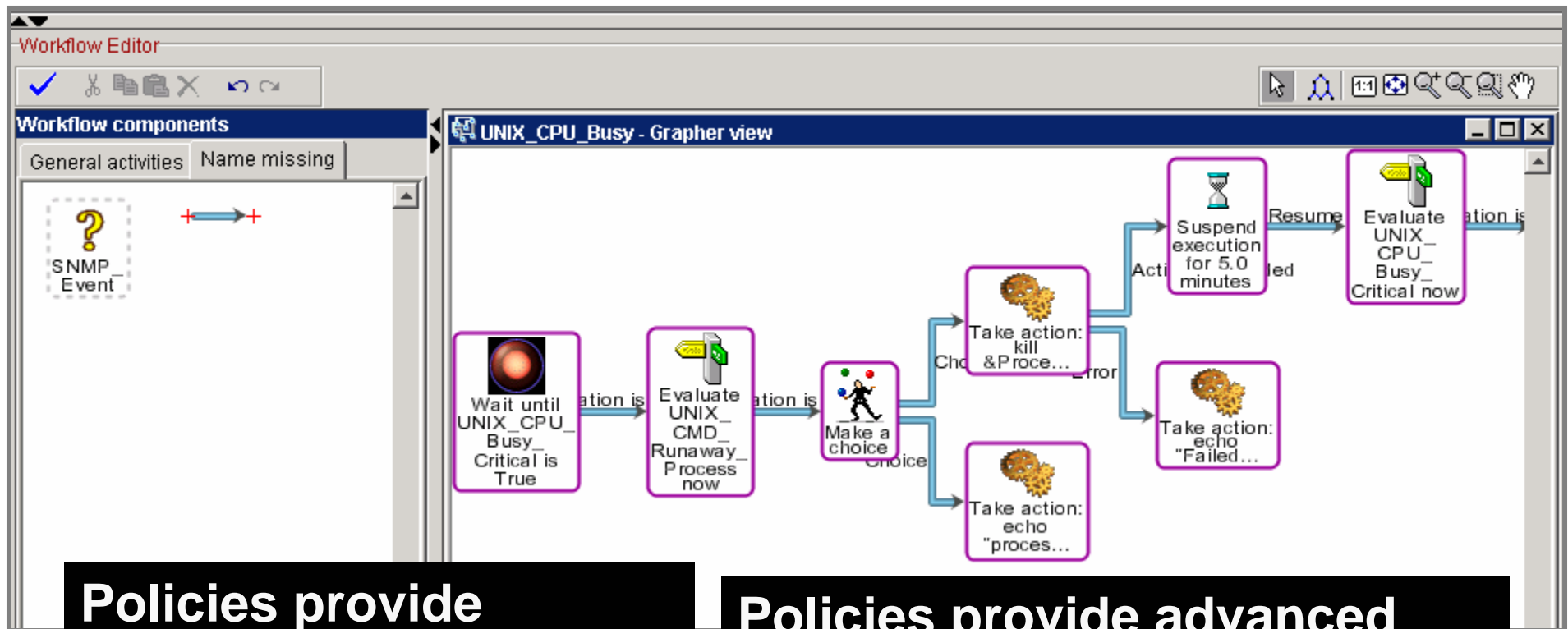
Performance Automation And Policies

- Use Policies for more sophisticated performance automation scenarios
- Automate corrections
- Implement machine speed corrective actions, issue alerts, and allow for later human intervention
- Use for dynamic subsystem management and ‘tweaks’ as the workload changes
 - ▶ Not permanent fixes, but to keep the workload running
- Policies allow for correlated automation of composite applications



Policies & Notification

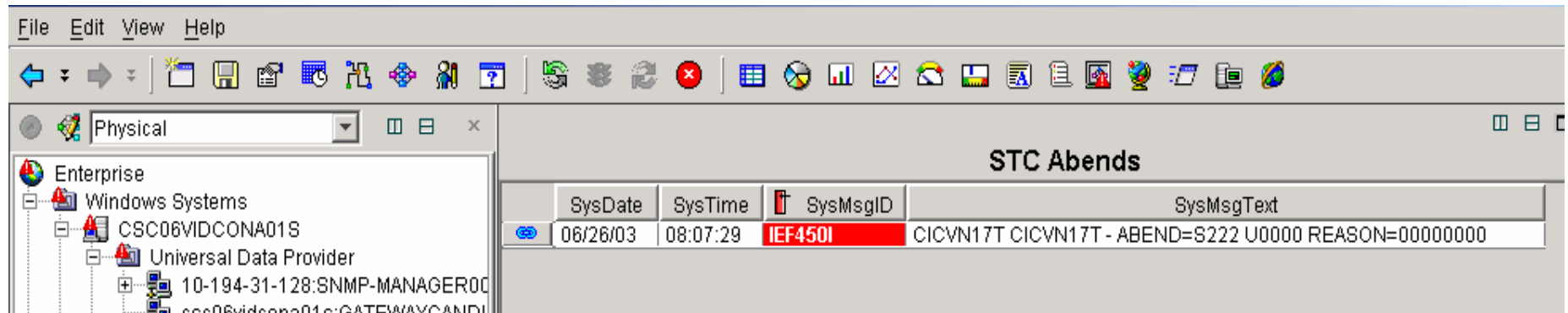
Many Ways To Notify About Events



Policies provide notification capabilities (example – SNMP)

Policies provide advanced automation capabilities

Implement A Console Interface To Dashboard



STC Abends			
SysDate	SysTime	SysMsgID	SysMsgText
06/26/03	08:07:29	IEF450I	CICVN17T CICVN17T - ABEND=S222 U0000 REASON=00000000

- Provides MVS console interface data to Dashboard
- May be used for z/OS availability alerts
- Trap error messages into the application view

Recommendations On Alerts & Notifications

- **As much as possible alerts should have...**
 - ▶ A display option (OMEGAMON XE/DE view)
 - ▶ Expert advice (information on what to do)
 - ▶ An owner (someone to notify)
- **Do not assume someone always looking at the screen**
- **Alerts may be routed via**
 - ▶ SNMP traps
 - ▶ Interfaces to Tivoli
 - ▶ Email, and more....



Implement History Data Warehouse

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

History data stored in relational (SQL Server) database

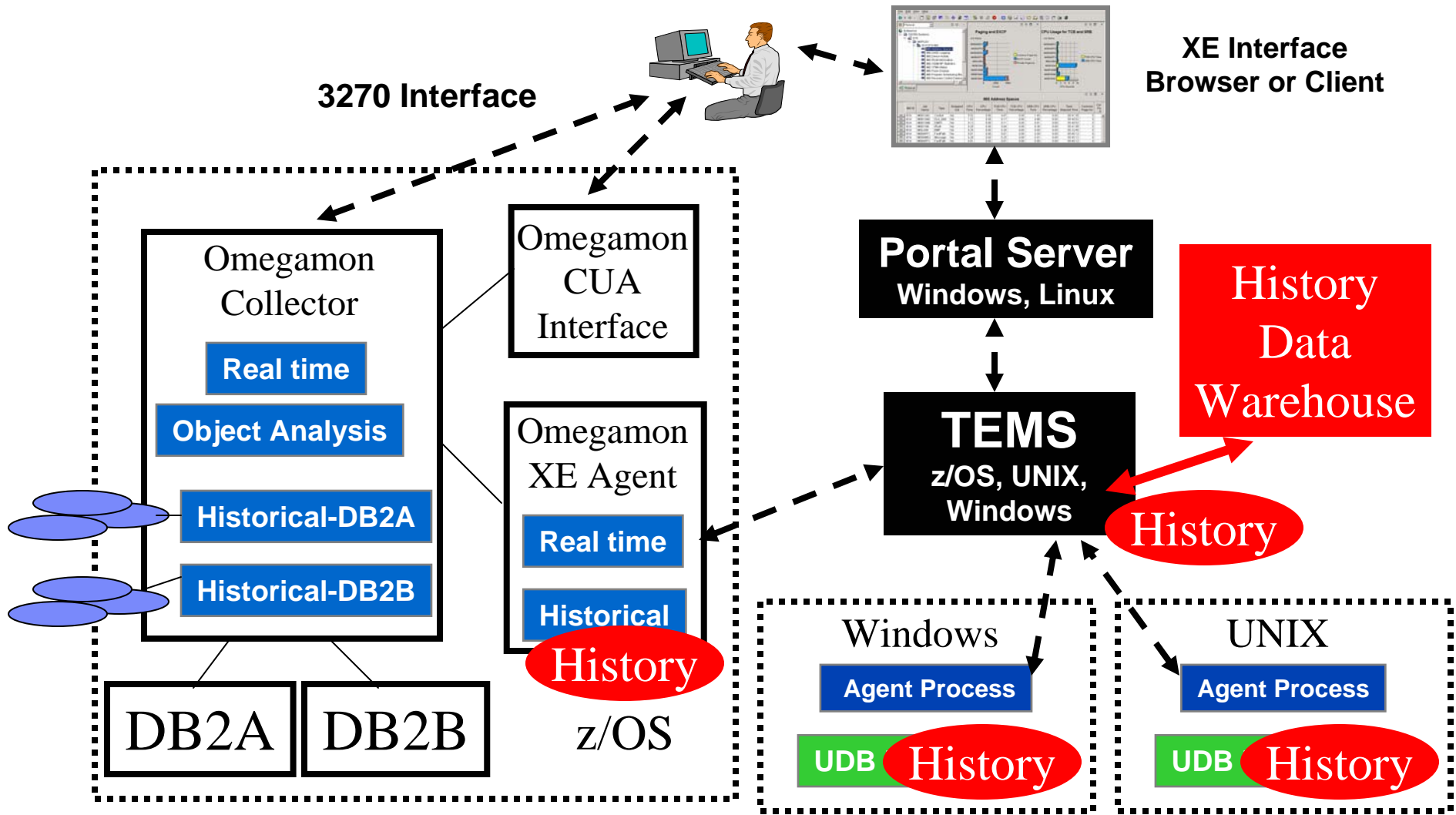
**History of Alerts
Performance history**

The screenshot displays the 'History Collection Configuration' dialog box within the DB2 Overview application. The dialog is titled 'History Collection Configuration' and has two tabs: 'Status' and 'Configuration'. The 'Configuration' tab is active, showing a 'Select a Product' dropdown menu set to 'Omegamon XE for DB2'. Below this is a 'Select Product Group(s)' section with a table listing various product groups and their collection status.

Group	Inte...	Loc...	Warehouse...	Short Term...	File N...
DB2_CICS_Exceptions	OFF				
DB2_CICS_Threads	OFF				
DB2_DDF_CONV	OFF				
DB2_DDF_STAT	OFF				
DB2_IMS_Connections	OFF				
DB2_IMS_Regions	OFF				
DB2_SRM_BPD	OFF				
DB2_SRM_BPM	OFF				
DB2_SRM_EDM	OFF				
DB2_SRM_EDM_Statistics	OFF				
DB2_SRM_Log_Manager	OFF				

Below the table is the 'Configuration Controls' section, which includes three sub-sections: 'Collection Interval' with radio buttons for 5 minutes, 15 minutes (selected), 30 minutes, and 1 hour; 'Collect At' with radio buttons for Agent (selected) and CMS; and 'Warehouse Interval' with radio buttons for 1 hour, 1 day (selected), and OFF. There is also a 'Short Term History' section with a 'Retain for' dropdown set to 1 days. At the bottom of the dialog are buttons for 'Configure Group(s)', 'Unconfigure Group(s)', 'Show Default Groups', 'Done', and 'Help'.

OMEGAMON XE Integrated Historical Support



OMEGAMON XE Historical Interface

Click history icon to request history

Select the Time Span

Set Time Span

- None
- Last Hour
- Last 2 Hours
- Last 4 Hours
- Last 6 Hours
- Last 8 Hours
- Last 12 Hours
- Last 24 Hours
- Custom

Custom Start Time: 04/03/2005 08:26 PM

Custom End Time: 04/03/2005 08:26 PM

Time Column: Recording Time

Apply to all views associated with this view's query

OK Cancel Help

Request a history time interval

Buffer Pool

pool read time	pool write time	avg pool read time	avg pool write time	direct read t
0	0	0	0	

Application Time Information

History Integrated Within Real Time XE GUI Interface

CandleNet Portal® !Candle
Managing what matters most™

File Edit View Help

Physical

Enterprise

- Windows Systems
 - HQDNT2
 - Universal Database - DB2:HQDNT2:UD
 - Application
 - Database
 - System Overview
 - Locking Conflict
 - Buffer Pool
 - Table Space
 - Universal Data Provider - HQDNT2ASFSd
 - Windows - hqdnt2
- OS/390 Systems
 - DEMOPLEX:MVS:SYSPLEX
 - Coupling Facility Policy Data for Sysplex
 - Coupling Facility Structures Data for Sysplex

Application Identification and Status

agent id	appl id	appl status	snapshot time	appl name	auth id	client prdid	db name	execution id	corr token	client
0										

Lock Wait Time

Recording Time	lock wait time	uow lock wait time	avg lock waittime	lock wait start time
04/03/05 15:00:00	0	0	0	
04/03/05 16:00:00	0	0	0	
04/03/05 17:00:00	0	0	0	
04/03/05 18:00:00	0	0	0	
04/03/05 19:00:00	0	0	0	
04/03/05 20:00:00	0	0	0	
04/03/05 21:00:00	0	0	0	

Buffer Pool and Direct I/O Time

pool read time	pool write time	avg pool read time	avg pool write time	direct read time	direct write time
0	0	0	0	0	0

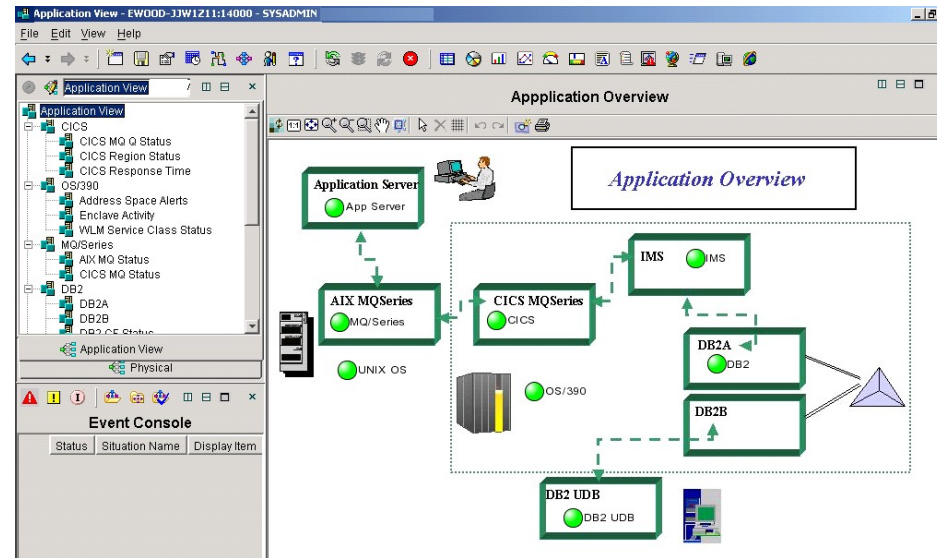
View history data

The Importance Of History In Application Monitoring

- **History of application availability**
 - ▶ Trend application availability over time
- **History of key resource availability**
- **History of events and problems**
 - ▶ Trend events over time
- **Trending of resource utilization over time**
- **After the fact problem isolation**



In Conclusion...



- Integration of tools
- Global 'dashboard' view with drill downs
- Automated corrections
- History and real time
- Improved problem isolation
- Improved productivity with 'plex' view