



IBM Tivoli Composite Application Manager (ITCAM) for Application Diagnostics 7.1

User Scenarios

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* These scenarios are the same scenarios covered in the ITCAM for Application Diagnostics User Guide



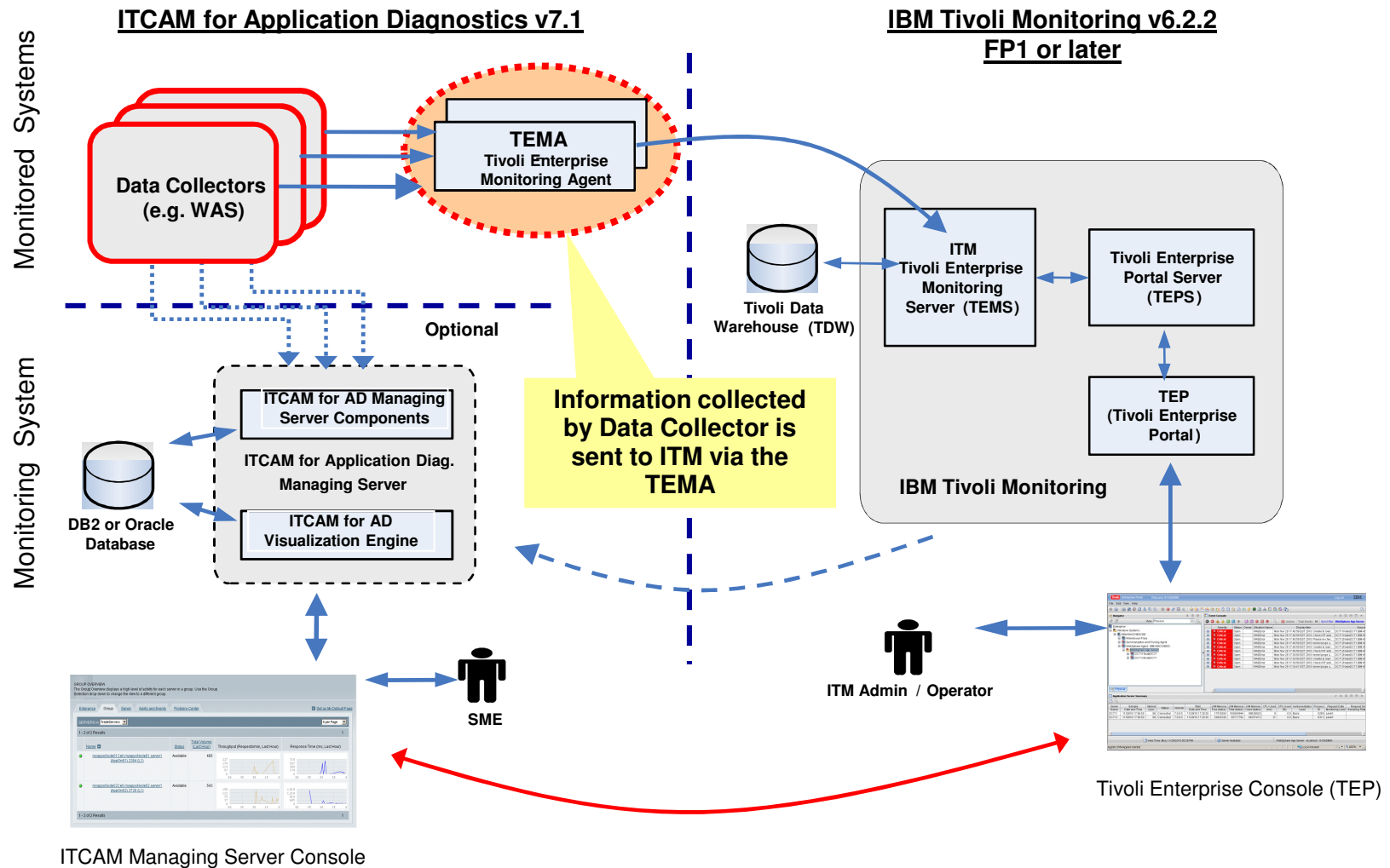
Overview

Description

ITCAM for Application Diagnostics:

- Is a monitoring and diagnostics tool for **WebSphere**, J2EE, and HTTP servers
- Helps **isolate problems** and performance bottlenecks in application code, server resources, and external system dependencies through real time problem determination
- Allows **monitoring at different levels** to avoid unnecessary overhead
- Provides **in depth** application analysis capability
- **Integrates** with other products
 - IBM Tivoli Monitoring
 - ITCAM for Transactions provides response time monitoring
 - Correlates transactions from WebSphere to CICS/IMS backends

Architecture

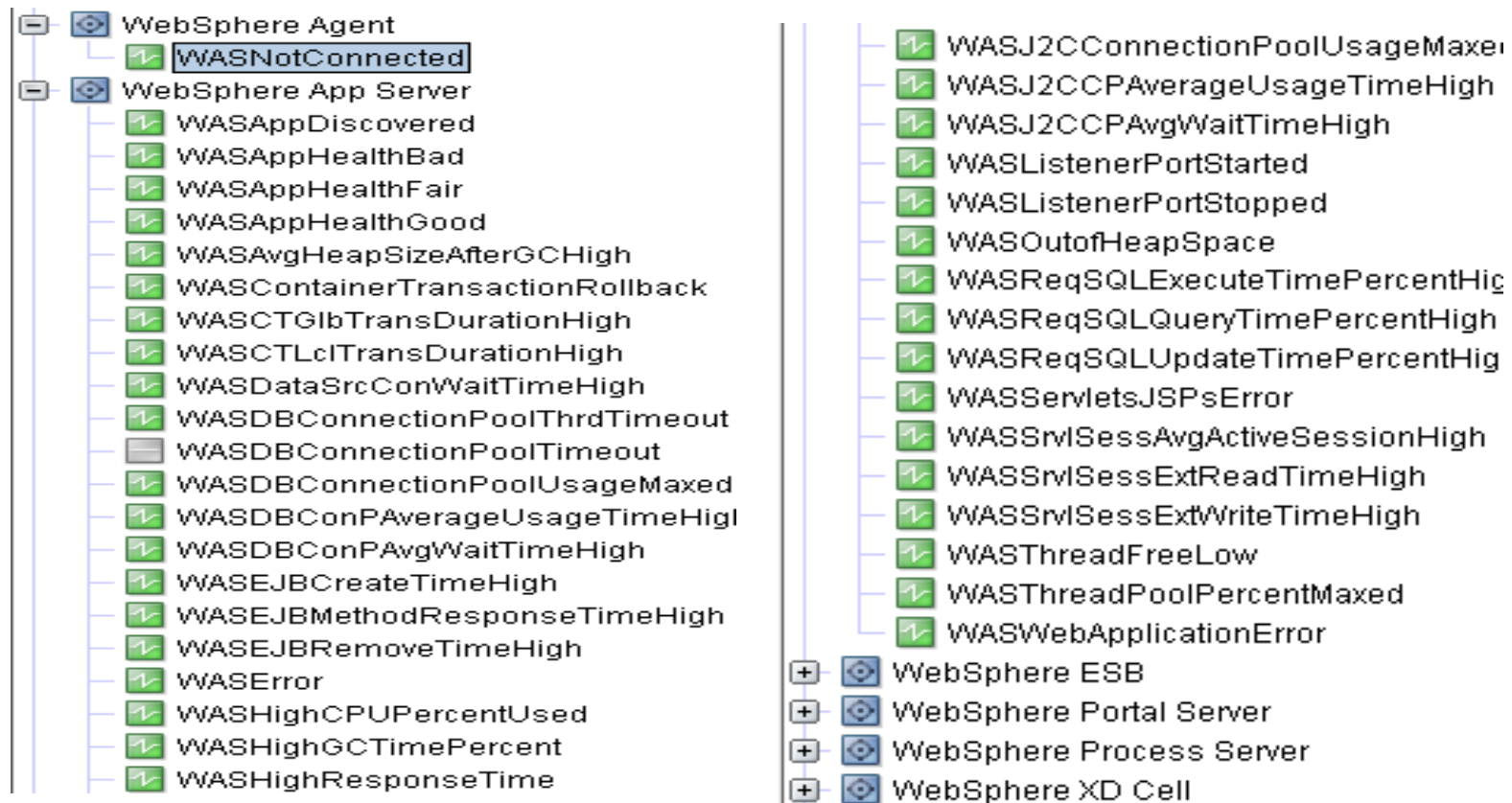




User Scenarios TEP and MSVE

Monitoring your Environment using TEP ...

ITCAM provides many **Pre-defined Situations** to monitor conditions in the environment ... additional situations can be added as needed using the **Situation Editor**.



Monitoring your Environment using TEP ...

- The navigator for the physical view in TEP is organized by **OS Type**, **Servers**, **Agents**, **Workspaces**
- Summary Workspaces show status
- Our scenarios are based on the **WebSphere Agent Summary** workspace being the starting point
- Problems are reflected by **red/yellow** icons on navigator or

Problem

Applications Resources

Kbytes Used	Kbytes Used Delta	Kbytes Free
203763	1414	49376

Scenario 1 - Diagnosing slow response (cause: memory leak)

- A user contacts the help desk and raises a problem ticket for **slow response time** for a given application.



- Support picks up the ticket, navigates to Tivoli Enterprise Portal (TEP), and notices that the **Resources icon** is displaying a Critical symbol.

Scenario 1 - Diagnosing slow response (cause: memory leak) ...

The screenshot shows the WebSphere Agent Summary interface. The 'Application Servers Status Table' displays a server named 'ibm-blade5Node01server1' with a green checkmark under 'Applications' and a red 'X' under 'Resources'. A tooltip for the 'Resources' icon shows the following metrics:

Metric	Value
Application Server Name	server1
JVM CPU %	47.0
GC Active Time (ms)	38604
Number of Problem Situations	2

Below the tooltip, a 'Critical' section lists two problem situations:

Problem Situation	Server	Time	Test
WASHighGCTimePercent	ibm_blade5Node01:IBM_BLADE5:KYNS	10/13/09 10:52:22	serv
WASError	ibm_blade5Node01:IBM_BLADE5:KYNS	10/13/09 05:28:53	Test

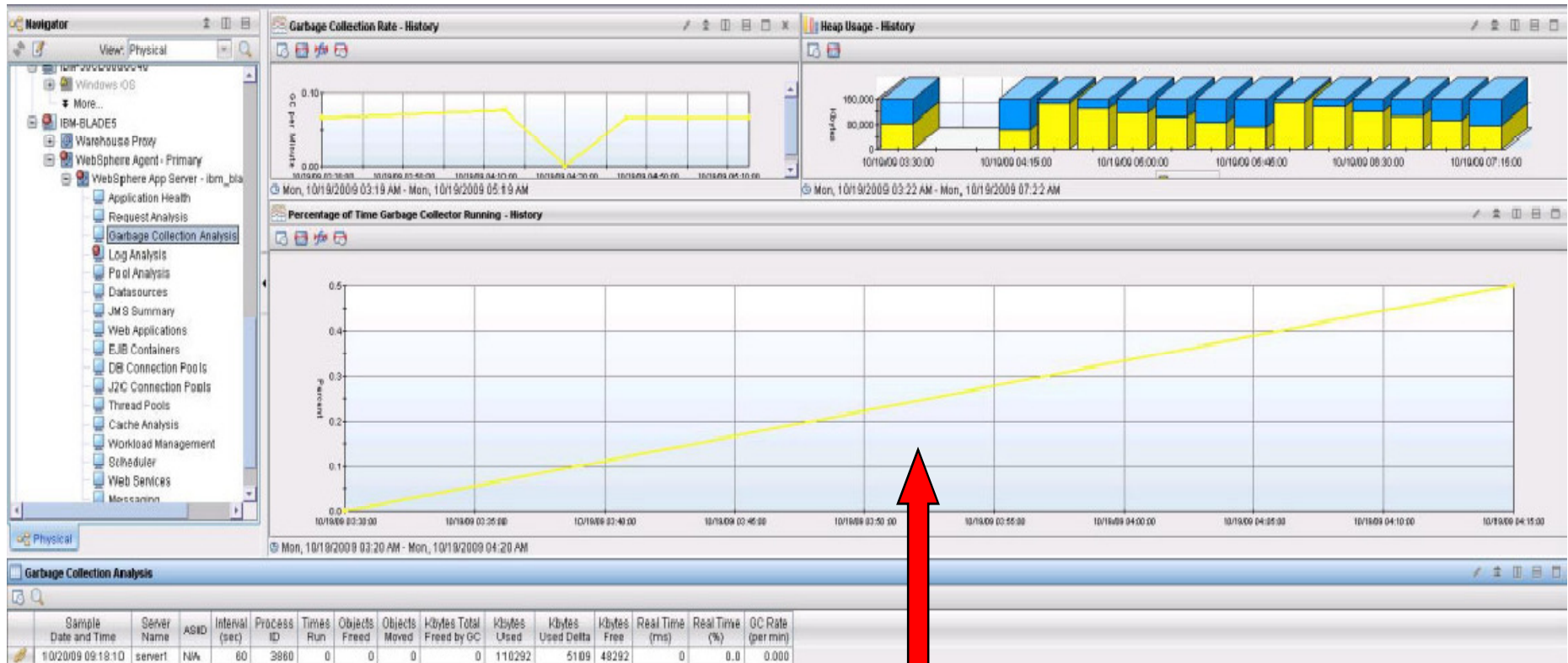
The 'Application Servers Summary' table at the bottom shows the following data:

Sample Date and Time	Server Subnode Name	Status	Process ID	Start Date and Time	Server Name	WAS Configuration Repository Directory Name
10/13/09 10:52:40	ibm-blade5Node01server1	Connected	1996	10/13/09 05:27:20	server1	C:\Program Files\IBM\WebSphereU...

On the **Resources icon flyover**, the GC Active Time (ms) metric is displaying a high value

and the **WASHighGCTimePercent** situation has triggered. This indicates that the JVM garbage collection is taking too long.

Scenario 1 - Diagnosing slow response (cause: memory leak) ...



In the **Garbage Collection Analysis** workspace, the operator observes the **Percentage of Time Garbage Collector Running - History** view which displays the percentage of real time that the garbage collector was running during the current interval for each server region, is showing an **increasing trend**. This suggests that **either the heap size is insufficient** for the demand that applications are putting on it **or else there is a memory leak**.

Scenario 1 - Diagnosing slow response (cause: memory leak) ...

Support routes the problem ticket to the Applications expert for further investigation. The App expert **requires more detailed information** to diagnose the cause of the problem. On the **Garbage Collection Analysis** workspace, he clicks the **Diagnostic Memory Leak link** in the Garbage Collection Analysis workspace. This opens the **Memory Leak Confirmation** report page in **Managing Server Visualization Engine (MSVE)** where he confirms that there is a memory leak.

The screenshot shows the IBM Managing Server Visualization Engine (MSVE) interface. On the left, the 'Garbage Collection Analysis' workspace is visible, with a red circle highlighting the 'Diagnostic Memory Leak' link in the navigation pane. A red arrow points from this link to the 'Memory Leak Confirmation Report' window on the right.

The 'Memory Leak Confirmation Report' window displays the following information:

- MEMORY LEAK CONFIRMATION REPORT**: Select a server and report type to view a confirmation report.
- ADDITIONAL TOOLS**: Memory Leak Diagnosis, Create New Candidate, View Existing Candidates, Change Server's Monitoring Level to L3.
- REPORT CONTROLS**: Group: BVT, Server: ibm-blade5Node01Cell.ibm-blade5Node01.server1(AppSrv01)1996 (L2), Data Range: Last 60 Minutes, Metric 1: Avg. Heap Size after GC, Metric 2: Live Sessions, Metric 3: # of Requests.
- TIME STAMP INFO**: Timestamp: Oct 13, 2009 10:56:54 AM, Graph Start/End Date: Oct 13, 2009 9:56:00 AM to Oct 13, 2009 10:56:00 AM.
- Avg. Heap Size after GC**: Average: 107 MB, Minimum: 95 MB, Maximum: 192 MB.
- OVERVIEW GRAPHS**: Three line graphs showing Avg. Heap Size after GC (MB), Live Sessions, and # of Requests over the last 60 minutes.
- GRAPH DATA**: A table with columns: Minutes Ago, Avg. Heap Size after GC, Live Sessions, and # of Requests.

Minutes Ago	Avg. Heap Size after GC	Live Sessions	# of Requests
1	N/A	2	6
2	N/A	2	6
3	97 MB	2	0
4	97 MB	2	1
5	N/A	2	1
6	97 MB	2	0
7	97 MB	2	1

At the bottom of the MSVE interface, a table shows the following data:

Sample Date and Time	Server Name	ASID	Interval (sec)	Process Run	Times Fixed	Objects Moved	Objects Fixed by GC	Bytes Total Used	kbytes Used Data	kbytes Used Code	Real Time (sec)	Real Time (%)	GC Rate (per min)
10/20/09 03:19:10	semet	N/A	60	3980	0	0	0	116292	5198	43292	0	0.0	0.000

Scenario 1 - Diagnosing slow response (cause: memory leak) ...

Advanced setup

Note: In order to get memory leak information, byte code instrumentation (BCI) must be enabled. To enable memory leak BCI, do the following:

- Edit <DC_HOME>/runtime/<was.node.svr>/custom/**toolkit_custom.properties**
 - Set `com.ibm.tivoli.itcam.toolkit.ai.enablememoryleakdiagnosis=true`
 - Uncomment this line (the path in the line must match your environment)
`am.camtoolkit.gpe.customxml.leak=/opt/IBM/AD710/aix533/yn/wasdc/7.1.0.2/itcamdc/etc/memory_leak_diagnosis.xml`
- **Restart the Data Collector** (WAS JVM) to pick up the changes.

The above setup can be done one time, when the ITCAM Data Collector is first configured.

Update dynamically

When diagnosing memory issues on the MSVE, change to **MOD L3** to activate the definitions above. **Change back to MOD L1 once diagnosis is complete.**

MONITORING SCHEDULE				
1 - 1 of 1 Results				
Group/Server	Platform	Schedule Name	Current Level	Current Sampling
WEBSHERE PLANT SERVERS				
IBM-A5ACD9E6CBENode04Cell.DC711Node.DC711 (DC711)	Windows	--	L3	2%

Scenario 2 - Diagnosing slow response (cause: hung transaction)

The screenshot displays the WebSphere Agent Summary interface. The 'Application Servers Status Table' shows a table with columns for Sample Date and Time, Server Subnode Name, Status, Process ID, Start Date and Time, Server Name, and WAS Cor Repository D. The table contains one entry for server1, which is in a 'Connected' state. A flyover window is open over the server1 icon, displaying the following information:

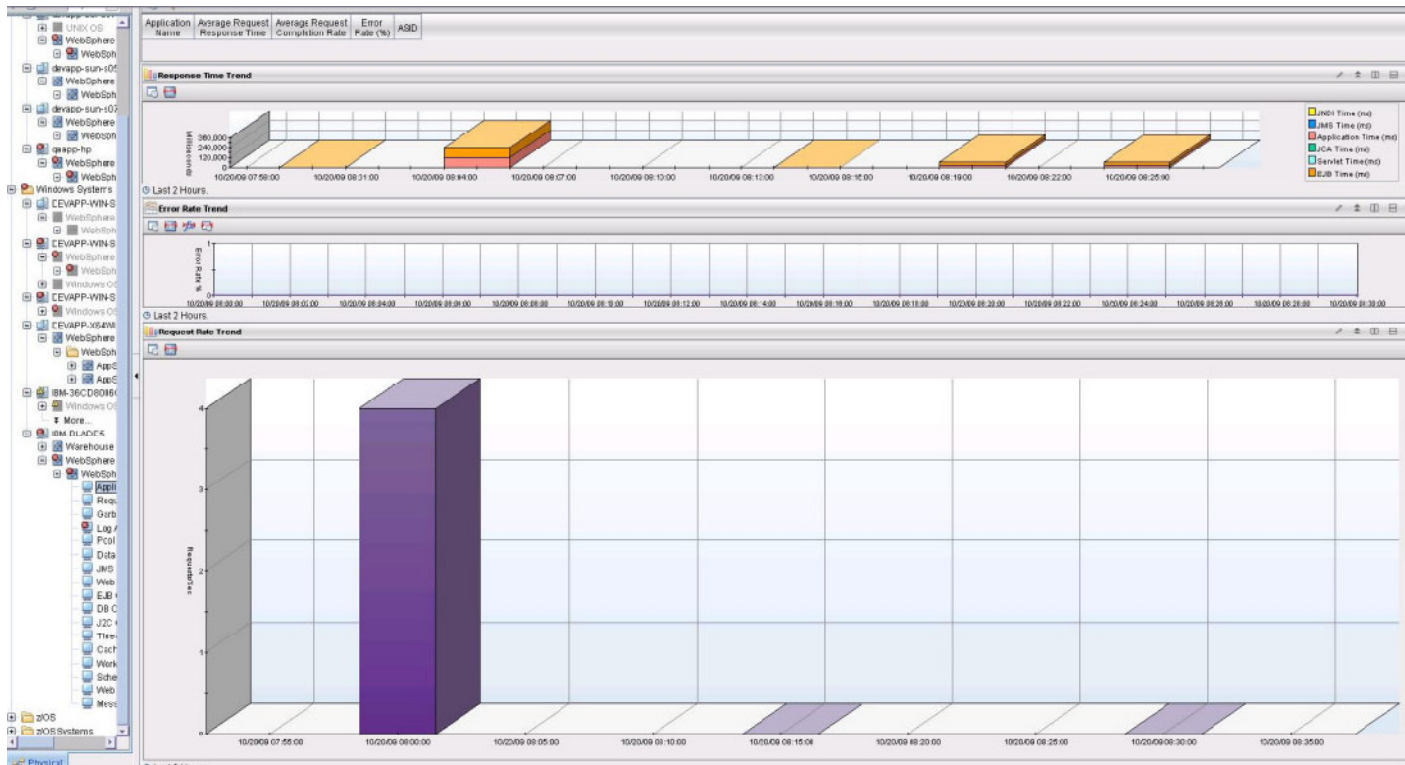
Applications	
Application Server Name	server1
Average Response Time (ms)	26570
Request Rate (Req/Sec)	0
Error Rate (Errors/Sec)	0.0
Number of Problem Situations	1

Below the flyover, a 'Critical' situation is listed: **WASHighResponseTime** for the server `ibm_blade5Node01.IBM_BLADES.KYNS`. A large red arrow points from the flyover to the text below.

Sample Date and Time	Server Subnode Name	Status	Process ID	Start Date and Time	Server Name	WAS Cor Repository D
10/13/09 12:20:40	ibm-blade5Node01server1	Connected	1996	10/13/09 05:27:20	server1	C:\Program Files\IBM\WebSphereApp... ibm-blade5Node01Cell ibm-blade5Node01

- App Support receives an e-mail indicating that a situation triggered in the Tivoli Enterprise Portal (TEP).
- The situation is indicating that response time is slow for an application.
- In the TEP, App Support points to the application icon and sees in the flyover that the **WASHighResponseTime** situation triggered.

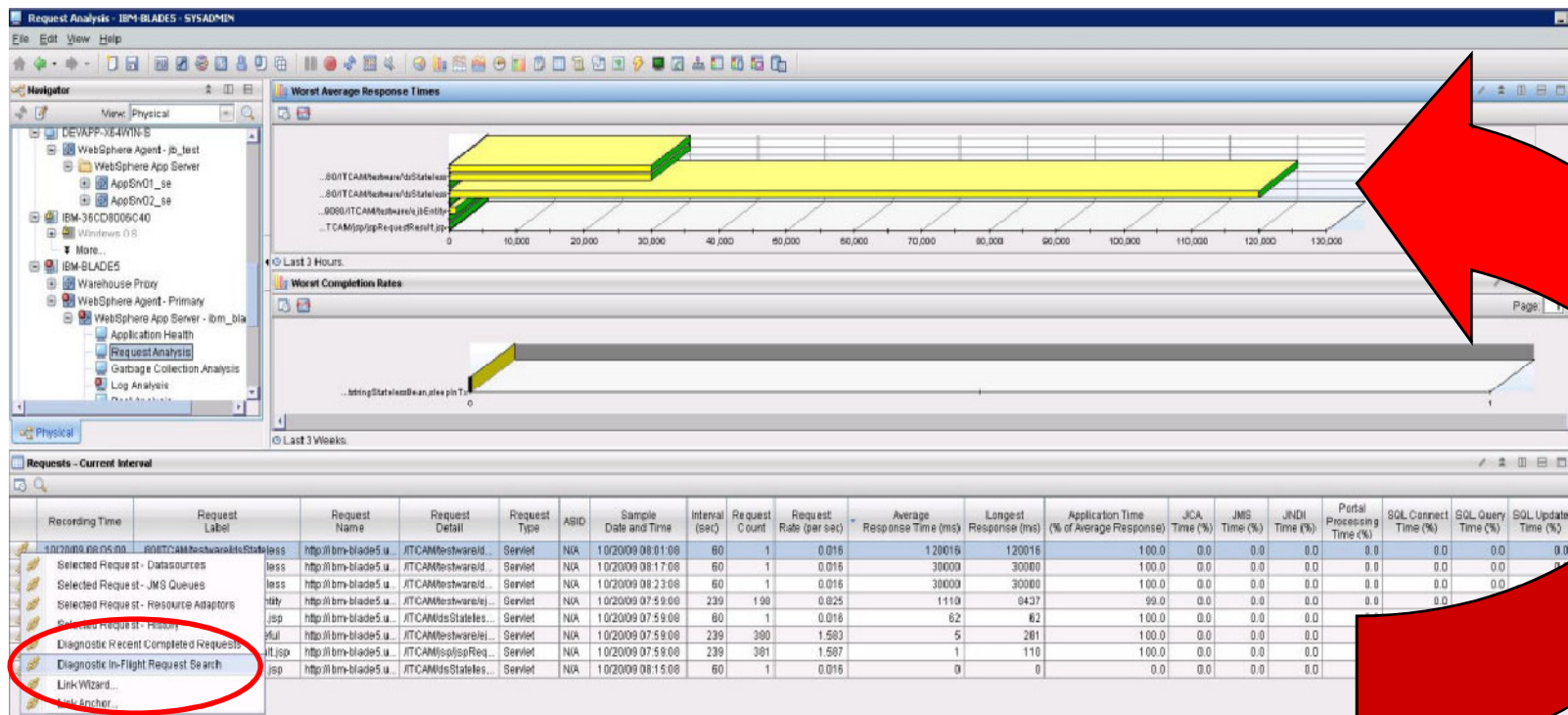
Scenario 2 - Diagnosing slow response (cause: hung transaction) ...



- App Support double-clicks the application icon and the **Application Trend** is displayed.
- The **Application Summary** report workspace displays information about **response time**, **error rate**, and **request rate**.

Scenario 2 - Diagnosing slow response (cause: hung transaction) ...

- For a **more detailed analysis** of requests, App Support navigates to the **Request Analysis** workspace, which displays information about **worst average request response time** and **worst average request completion rate**.



- The response times for some requests are displaying as **high**.
- To see individual hanging transactions, App Support clicks the **Diagnostic In-Flight Request Search** link, which displays the **In-flight Request Search** page in the MSVE.

Scenario 2 - Diagnosing slow response (cause: hung transaction) ...

Diagnostic Link - IBM-BLADE5 - SYSADMIN

In-Flight Request Search

Location: http://devapp-linx-s06.usca.ibm.com:9081/am/efactive?groupid=1&serverid=23.1996&requestfilter=&button_ok=OK

HOME ADMINISTRATION AVAILABILITY PROBLEM DETERMINATION PERFORMANCE ANALYSIS LOGOUT HELP

IN-FLIGHT REQUEST SEARCH
In the Search Request box, type the name of the request for which you are searching. If you leave this box empty, all active requests will display.

SEARCH CRITERIA

Group: BVT

Server: ibm-blade5Node01 Cell.ibm-blade5Node01.server1(AppSrv01).1996 (L2)

Search Request/Transaction: OK

SEARCH RESULTS

Timestamp	Server Name	Start Date/Time	Thread/Task ID	Total Resident Time	Use
Oct 13, 2009 10:58:30 AM	ibm-blade5Node01 Cell.ibm-blade5Node01.server1(AppSrv01).1996 (L2)	Oct 13, 2009 10:58:30 AM	495797520	197364	N

Server Activity Display
System Resources

Click on Thread/Task ID to view Request Detail page

From here, diagnose hanging requests and see the stack trace for that request by clicking the server activity display.

Done

Hub Time: Tue, 10/13/2009 11:00 AM | Hub Time: Tue, 10/13/2009 11:00 AM | Diagnostic Link - IBM-BLADE5 - SYSADMIN | Physical

Scenario 2 - Diagnosing slow response (cause: hung transaction) ...

The screenshot shows the 'Server Activity Display' window in the Diagnostic Link. The 'Active Requests' tab is selected, showing a table of active requests. One request is highlighted with a red circle, indicating a hung transaction. The request details are as follows:

Client Requests	Client Requests Start	Thread ID	Resident Time (ms)	Accumulated CPU(ms)	Idle Time (ms)	Thread Status	Last Known Class	Last
/ICAM/jsp/jspRequestResult.jsp?#=500.0&reqname=JSP&appname	October 13, 2009 10:58:30 AM PDT	495787520	231494	0	231494	Waiting	N/A	N/A

Below the screenshot, there are three bullet points:

- Inflight & Active Request have similar uses
- Recent Requests 100 most recently completed requests
- Can filter Server Activity Display to show only EJB, Servlet, JSP, CICS

Scenario 2 - Diagnosing slow response (cause: hung transaction) ...

Diagnostic Link - IBM-BLADE5 - SYSADMIN

Stack Trace

Location: <http://devapp-lnx-s06.usca.ibm.com:9081/am/ve/sad/stackTrace?threadId=495787520&groupId=1&serverId=23.1996&ts=1255456710174&refresh=#>

HOME ADMINISTRATION AVAILABILITY PROBLEM DETERMINATION PERFORMANCE ANALYSIS LOGOUT HELP

STACK TRACE
The Stack Trace lists the methods that have not completed execution, including the class name and stack depth of each method in the trace.

MENU

- [Select New Thread](#)
- [Request Detail](#)
- Stack Trace**
- [Method/Component Trace](#)
- [Request/Session Object](#)

STACK TRACE PROPERTIES

Snapshot Date	Oct 13, 2009	Application Server Name	server1(AppSrv01)
Snapshot Time	11:01:55 AM PDT	Application Server IP Address	9.52.131.155
Platform CPU % Utilization	0.00%	Total Thread Count	1
User ID	N/A		

STACK TRACE

Depth	Class	Method
0	Class java.lang.Thread	Method sleep
1	Class java.lang.Thread	Method sleep
2	Class com.ibm.jsp._jspRequestResult	Method _jspService
3	Class com.ibm.ws.jsp.runtime.HttpJspBase	Method service
4	Class javax.servlet.http.HttpServlet	Method service
5	Class com.ibm.ws.webcontainer.servlet.ServletWrapper	Method service
6	Class com.ibm.ws.webcontainer.servlet.ServletWrapper	Method handleRequest
7	Class com.ibm.ws.wwebcontainer.servlet.ServletWrapper	Method handleRequest
8	Class com.ibm.wsspi.webcontainer.servlet.GenericServletWrapper	Method handleRequest
9	Class com.ibm.ws.jsp.webcontainerext.AbstractJSPExtensionServletWrapper	Method handleRequest
10	Class com.ibm.ws.webcontainer.servlet.CacheServletWrapper	Method handleRequest
11	Class com.ibm.ws.webcontainer.WebContainer	Method handleRequest
12	Class com.ibm.ws.wwebcontainer.WebContainer	Method handleRequest
13	Class com.ibm.ws.webcontainer.channel.WCChannelLink	Method ready

Hub Time: Tue, 10/13/2009 11:01 AM | Hub Time: Tue, 10/13/2009 11:00 AM | Diagnostic Link - IBM-BLADE5 - SYSADMIN | Physical

Scenario 3 - Diagnosing a WebSphere Application Server shutdown

- The Level 2 operator, receives a **severity 1 ticket** indicating that users cannot access an application.



- The operator navigates to the TEP where the **Applications icon** is displaying a **critical symbol** in the **WebSphere Agent Summary Status workspace**.

Scenario 3 - Diagnosing a WebSphere Application Server shutdown ...

- The flyover on the Application icon shows that a **WasNotConnected** situation triggered.

The screenshot displays the WebSphere Agent Summary interface. The 'Application Servers Status Table' shows the following data:

Application	Resources
rasapp-win-s01Node02server1	✗
rasapp-win-s01Node07server1	✓
rasapp-win-s01Node06server1	✓
rasapp-win-s01Node05server1	✗
rasapp-win-s01Node04server1	✗

The flyover window for 'server1' shows the following details:

Applications	Resources
Application Server Name	server1
Average Response Time (ms)	0
Request Rate (Req/Sec)	0
Error Rate (Errors/Sec)	0.0
Number of Problem Situations	1

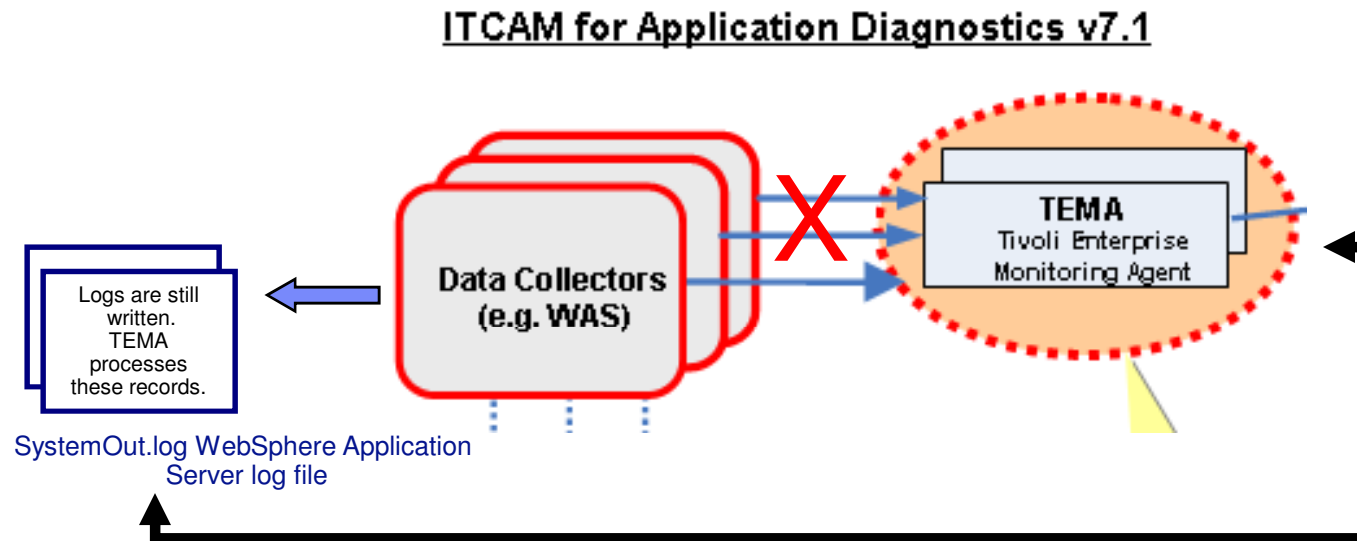
The flyover also indicates a 'Critical' status and a 'WasNotConnected' error with the details: agent:RASAPP-WIN-S01-KYNA 10/13/09 14:3...

The 'Application Servers Summary' table at the bottom shows the following data:

Sample Date and Time	Server Subnode Name	Status	Process ID	Start Date and Time	Server Name	WAS Configuration Repository Directory Name	WAS Cell Name	WAS Node Name	Cluster Name	Cluster Type
10/13/09 14:31:06	rasapp-win-s01Node02server1	Disconnected	4360	10/13/09 13:50:07	server1	C:\IBM\WAS\AppServer602ND\profile...	rasapp-win-s01Node0...	rasapp-win-s01Node02		N/A
10/13/09 14:31:06	rasapp-win-s01Node06server1	Connected	4860	10/13/09 14:02:30	server1	C:\IBM\WAS\AppServer602ND\profile...	rasapp-win-s01Node0...	rasapp-win-s01Node06		N/A
10/13/09 14:31:06	rasapp-win-s01Node05server1	Connected	4692	10/13/09 14:02:30	server1	C:\IBM\WAS\AppServer602ND\profile...	rasapp-win-s01Node0...	rasapp-win-s01Node05		N/A
10/13/09 14:31:06	rasapp-win-s01Node07server1	Connected	4960	10/13/09 14:02:30	server1	C:\IBM\WAS\AppServer602ND\profile...	rasapp-win-s01Node0...	rasapp-win-s01Node07		N/A
10/13/09 14:31:06	rasapp-win-s01Node04server1	Connected	4960	10/13/09 14:02:54	server1	C:\IBM\WAS\AppServer602ND\profile...	rasapp-win-s01Node0...	rasapp-win-s01Node04		N/A

- The application server summary also shows the server status as **“Disconnected”**.

Scenario 3 - Diagnosing a WebSphere Application Server shutdown ...



If a **WebSphere server shutdown** occurs, the connection between the **Data Collector** and **Tivoli Enterprise Monitoring Agent** is **closed**. However, the **Data Collector** and **WebSphere** continue to write to log files and **Tivoli Enterprise Monitoring Agent** processes these records but sets the **PID** value to **-1**.

Scenario 3 - Diagnosing a WebSphere Application Server shutdown ...

The screenshot shows the Log Analysis workspace. The 'DC Message Events' pane displays the following table:

Event Date and Time	Severity	Message ID	Message Description	Thread ID	Thread
1/31/2009 14:23:17	Info	CYNFE000	C:\NPE0001\Generic Probe Engine class loaded	ITCAM_GPE_Footb	Thread: 1
1/31/2009 14:10:01	Info	CYNFE000	C:\NPE0001\Bean Manager registered MBean WebSphere...	Thread: 40	C/N
1/31/2009 14:39:39	Info	CYNFE000	C:\NPE0002\Generic Probe Engine initialized startup class...	ITCAM_GPE_Footb	Thread: 1

The 'Log Analysis' pane displays the following table:

Error Date and Time	Thread ID	Severity	Message ID	Message Text	ASID	Job Name	Process ID	Message Origin
1/31/2009 14:23:11	LUUL	Informational	CHFVU020	The transport channel service was shutdown successfully with no transactions requiring recovery.	N/A	-1		
1/31/2009 14:23:11	COOC	Informational	CHFVU020	The Transport Channel Service has stopped the Chain labeled SOAPAcceptorChain4	N/A	-1		
1/31/2009 14:23:11	COOC	Informational	CHFVU020	The Transport Channel Service has stopped the Chain labeled SOAPAcceptorChain3	N/A	-1		
1/31/2009 14:23:11	COOC	Informational	CHFVU020	The Transport Channel Service has stopped the Chain labeled WCIboundDefault	N/A	-1		
1/31/2009 14:23:11	COOC	Informational	CHFVU020	The Transport Channel Service has stopped the Chain labeled SOAPAcceptorChain1	N/A	-1		
1/31/2009 14:23:11	COOC	Informational	CHFVU020	The Transport Channel Service has stopped the Chain labeled WCIboundAdminSecure	N/A	-1		
1/31/2009 14:23:11	COOC	Informational	CHFVU020	The Transport Channel Service has stopped the Chain labeled WCIboundAdmin	N/A	-1		
1/31/2009 14:23:11	COOC	Informational	CHFVU020	The Transport Channel Service has stopped the Chain labeled SOAPAcceptorChain2	N/A	-1		
1/31/2009 14:23:11	COOC	Informational	CHFVU020	The Transport Channel Service has stopped the Chain labeled WCIboundDefaultSecure	N/A	-1		
1/31/2009 14:23:11	LUUL	Informational	W6N00024	Server server stopped	N/A	-1		

- The operator navigates to the Log Analysis workspace where the WebSphere SystemOut.log is displayed in the Log Analysis and the DC message Events displays aggregated information about the messages from the WebSphere Data Collector.
- The information in this workspace includes the **exception severity of errors**, and the ID and text of the associated message.
- The operator notices that the Process ID value is displayed as **-1**. This value indicates that the Data Collector is **disconnected**.

Scenario 4 - Determining if the WebSphere cluster needs to be load balanced

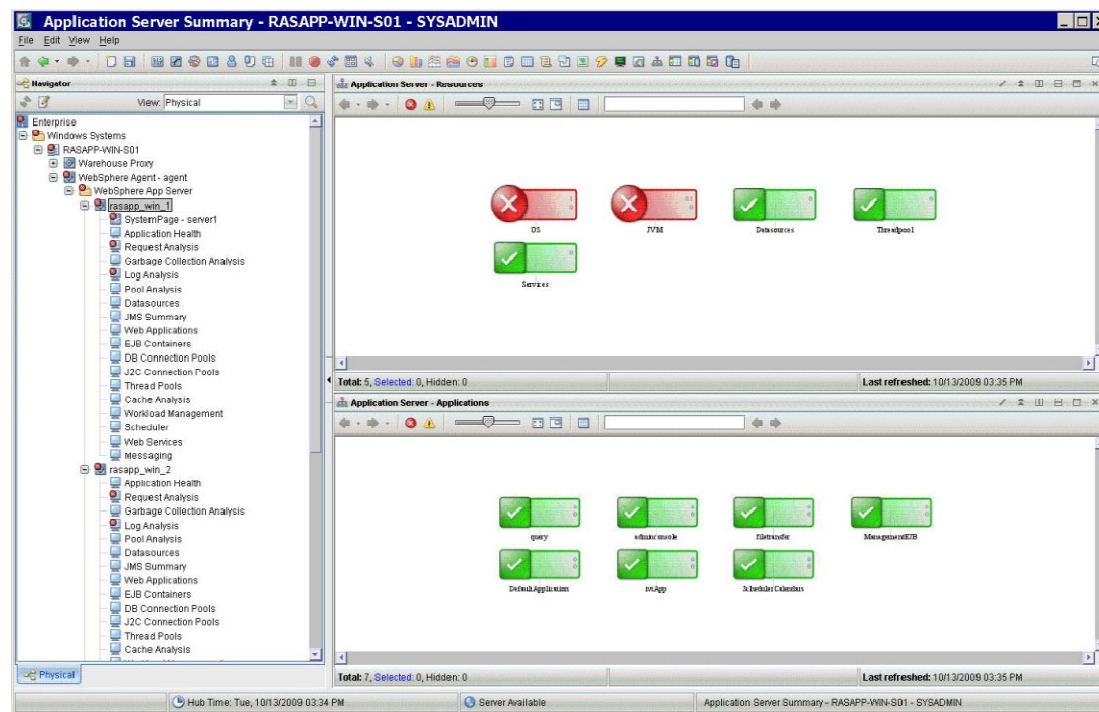
- The Level 2 operator, is getting a number of problem tickets relating to **slow response time** for an application.
- The operator navigates to the TEP and observes that the **Application icon** is displaying a **warning symbol** on the WebSphere Agent Summary workspace.
- The **Resources icon** is displaying the **critical symbol** because the **WASHighCPUPercentUsed** situation triggered.
- **Resource icon flyover** is displaying **high JVM CPU%**.

The screenshot shows the WebSphere Agent Summary workspace. The 'Applications' icon has a yellow warning symbol, and the 'Resources' icon has a red critical symbol. Below the workspace is a table with the following data:

Sample Date and Time	Server Subnode Name	Status	Process ID	Start Date and Time	Server Name	WAS Configuration Repository Directory Name	WAS Cell Name	WAS Node Name	Cluster Name
1/11/2009 12:33:40	ibm-blade3Node01 server1	Connected	1396	1/11/2009 09:27:20	SERVER1	C:\Program Files\ibm\was\configrep\	ibm-blade3Node01 Cell	ibm-blade3Node01	NA

Scenario 4 - Determining if the WebSphere cluster needs to be load balanced ...

- The operator double-clicks the **Resources** icon and sees that the **OS icon** and **JVM icon** are both displaying the **critical symbol**.
- The **OS icon flyover** is displaying **System CPU (ms) as high**. The **JVM icon** is displaying **JVM CPU% as high**.

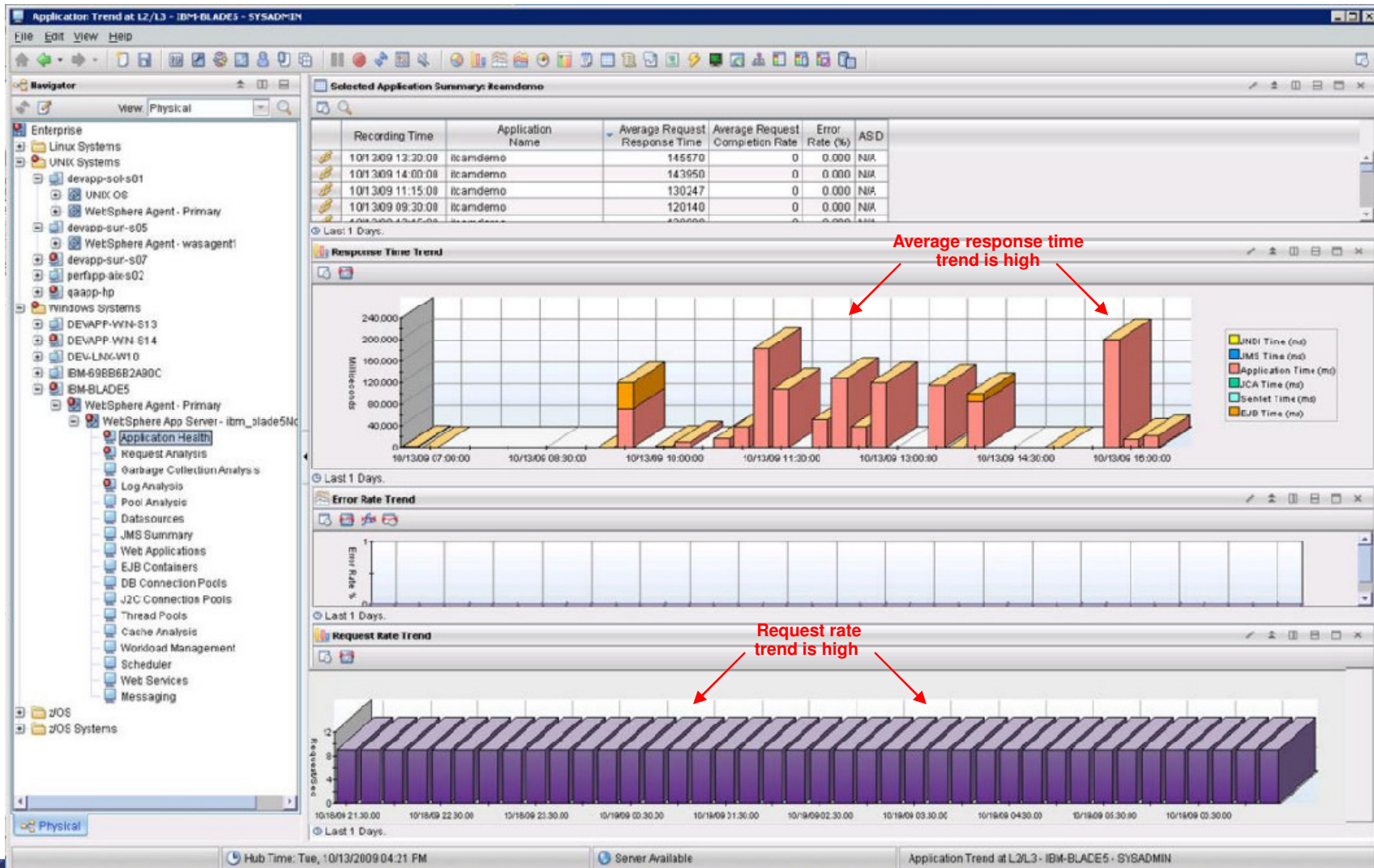


Scenario 4 - Determining if the WebSphere cluster needs to be load balanced ...

- The operator double-clicks the **Application icon**. The **Application Trend at L2/L3 workspace** is displayed.
- The **Selected Application Summary** report displays the application name, average request response time, average request completion rate, and error rate.
- The average request response time is **high**.
- The **Request Rate Trend** chart displays the number of requests that are completed per second for the application. Again, this value is displaying as **high**.



Scenario 4 - Determining if the WebSphere cluster needs to be load balanced ...



Scenario 4 - Determining if the WebSphere cluster needs to be load balanced ...

The operator needs to determine if this problem is recent or on-going by checking the trend.

In the Request Rate Trend chart:

- In the Application Trend at L2/L3 workspace, select the **Specify time span for query icon**. The Select the Time Span window is displayed.
- In the **Custom Parameters** section, enter the required values in the **Start Time and End Time** fields. and click OK.

The screenshot shows the 'Application Trend at L2/L3 - IBM-BLADES - SYSADMIN' interface. The 'Selected Application Summary: itcarnemo' table is visible at the top. Below it, the 'Request Rate Trend' chart is displayed. A 'Select the Time Span' dialog box is open, showing the 'Custom parameters' section with 'Use detailed data' selected. The 'Start Time' is set to 10/01/2009 01:11 AM and the 'End Time' is set to 10/03/2009 10:11 AM. Red arrows indicate the steps described in the text: one points to the 'Specify time span for query icon' in the Request Rate Trend chart, and another points to the 'Start Time' field in the dialog box.

Scenario 4 - Determining if the WebSphere cluster needs to be load balanced ...

- The operator observes that there was an **increase** in client requests a few days ago and that this value has remained high throughout the week.
- Further investigation reveals that **a surge of new customers caused a large increase in new users on the system**. As a result, **the load on the system is high**.
- The operator uses an external ticketing tool to forward the ticket with all details to the Middleware/Application Support SME.
- The system is **over-burdened as a result of a significant increase in new users**, and that the number of servers that are available in the cluster needs to be increased.

Scenario 5 - Determining the cause of connection problems

- The Level 2 operator, receives notification that the **WASJ2CCPAvgWaitTimeHigh** critical situation triggered. This situation indicates that the average wait time until a connection is granted is longer than 2 seconds.

The screenshot shows the WebSphere Agent Summary console. The left pane displays a tree view of the system hierarchy, including Enterprise, Linux Systems, Windows Systems, and WebSphere Agent - ATZ3007. The right pane shows the Application Servers Status Table, which is currently empty. A pop-up window titled 'Resources' is displayed, showing a critical alert for 'WASJ2CCPAvgWaitTimeHigh' on the 'default_server1' server. The alert details include: Application Server Name: server1, JVM CPU %: 0.2, JVM Active Time (ms): 0, and Number of Problem Situations: 1. Below the console, the 'Application Servers Summary' table is visible, showing a single entry for 'default_server1' with a status of 'Connected' and a process ID of 581.

Sample Date and Time	Server Subnode Name	Status	Process ID	Start Date and Time	Server Name	WAS Configuration Riscosity Directory Name	WAS Cell Name	WAS Node Name	Cluster Name
10/29/09 02:24:26	default_server1	Connected	581	10/29/09 02:09:52	server1	iuWAS61/Servers/AppSeset/profiles/...	PLEX1Network	ATZ3007	

- The operator navigates to the J2C Connections Pools workspace which reports information about resource adapters and connectors that adhere to J2EE Connector Architecture (J2C).

Scenario 5 - Determining the cause of connection problems ...

- In the the J2C Connections Pools workspace, **data counters** for this category contain **usage information** about the J2C connection pools that enable enterprise beans to connect to, and interact with, Enterprise Information Systems.
- The operator observes in the **Worst Wait Times view** that some **wait times for connections are above 2 seconds**.
- The **Highest Average Pool Sizes** bar chart shows the largest average number of managed connections for each J2C connection pool. Typically, a connection takes no longer than 2 seconds.

Scenario 5 - Determining the cause of connection problems ...

The screenshot displays the IBM J2C Connection Pools monitoring interface. It features a left-hand navigation pane, three performance charts, and a data table at the bottom.

Highest Average Pool Sizes: A 3D bar chart showing the average pool size for 10 different connection pools. The x-axis is labeled 'Connections' and ranges from 0 to 10. The y-axis is 'Row Number' (1-10). The bars are yellow and show varying heights, with the highest bar at row 5.

Worst Wait Times: A 3D bar chart showing the average wait time in milliseconds for 10 different connection pools. The x-axis is labeled 'Milliseconds' and ranges from 0 to 200,000. The y-axis is 'Row Number' (1-10). The bars are yellow, with the highest bar at row 5.

Highest Allocation Rates: A 3D bar chart showing the average allocation rate in connections per second for 10 different connection pools. The x-axis is labeled 'Connections Allocated / Second' and ranges from 0 to 1. The y-axis is 'Row Number' (1-10). The bars are yellow, with the highest bar at row 5.

J2C Connection Pools Table:

Row Number	Connection Factory Name	Sample Date and Time	Interval (sec)	Maximum Pool Size	Average Pool Size	Average Free Connections	Connections Used	Connection Handles	Average Wait Time (ms)	Concurrent: Waiting / Reads	Average Usage Time (ms)	Pool Used (%)	Percent of Time Pool at Max
1	GCF1	10/29/09 02:25:23	109	0	0.000	3.000	3	0	3.000	0	0.000	0.000	0.000
2	eis/CICSA	10/29/09 02:25:23	109	0	0.000	3.000	3	0	3.000	0	0.000	0.000	0.000
3	eis/DALResourceAdapter	10/29/09 02:25:23	109	10	9.999	3.000	3	10	180 002.000	0	0.000	99.999	99.999
4	jms/TeswareGCF	10/29/09 02:25:23	109	10	4.999	5.000	5	0	3.000	0	0.000	0.000	0.000
5	[Sjmmrany]	10/29/09 02:25:23	109	20	4.999	5.000	5	10	180 002.000	0	0.000	99.999	99.999

At the bottom of the interface, there is a status bar showing: Hub Time: Thu, 10/29/2009 02:14 PM, Server Available, and J2C Connection Pools - TIV13 - SYSADMIN.

Scenario 5 - Determining the cause of connection problems ...

- The operator uses an external ticketing tool to forward the ticket with details to the Middleware/Application Support SME.
- The SME navigates to the **J2C Connections Pools** workspace and **compares the average pools size with the maximum pool size** to establish the **ideal maximum** value.
- The SME establishes that the connection pool size needs to be adjusted, which is outside the scope of ITCAM for Application Diagnostics.



User Scenarios MSVE only

Monitoring your environment without TEP

If TEP is not available, you can still monitor your WebSphere environment using the **Managing Server Visualization Engine (MSVE)**.

Four ways to monitor using the MSVE include:

- System Overview (Enterprise, Group, Server, Portal)
- Alert and Event Management
- Problem Center
- Server Statistics

The screenshot displays the MSVE interface. On the left, a navigation menu is open, showing options: Systems Overview, Server Statistics Overview, Recent Activity Display, System Resources, and SMF Data. A sub-menu is also open, listing Enterprise, Group, Server, and Portal. The main content area is titled 'SERVER STATISTICS OVERVIEW' and includes a 'SERVER SELECTION' section with dropdowns for 'Group' (All Servers) and 'Server' (plex1.nmp163.w7sr00a(default)). Below this is a 'SERVER DETAIL' section with a table of server statistics. The table has columns for Name, Status, Platform, Volume, Volume Δ per Second, JVM/Region CPU Δ (ms), and Total Volume. Two servers are listed: 'andorra16Node01Cell' and 'plex1.nmp163.w7sr00a(default)'. At the bottom, there are navigation buttons for Enterprise, Group, Server, Alerts and Events, Problem Center, and Portal.

Name	Status	Platform	Volume	Volume Δ per Second	JVM/Region CPU Δ (ms)	Total Volume
andorra16Node01Cell andorra16Node01 server1(AppSrv01) 22495 (L3)	Available	xLinux	0	0	0	274
plex1 nmp163 w7sr00a(default)	Available	z/OS	0	0	125	0

Monitoring your environment without TEP ...

Availability – Enterprise, Group, Server, Portal View

GROUP OVERVIEW
 The Group Overview displays a high-level of activity for each server in a group. Use the Group Selection drop-down to change the view to a different group.

Enterprise Group **Server** Alerts and Events Problem Center Portal Set as My Default Page

SERVERS in TradeServers 4 per Page

1 - 2 of 2 Results 1

Name	Status	Total Volume (Last Hour)	Throughput (Requests/min, Last Hour)	Response Time (ms, Last Hour)
myappsNode01Cell.myappsNode01.server1 (AppSrv01).3384 (L1)	Available	465		
myappsNode02Cell.myappsNode02.server1 (AppSrv02).3720 (L1)	Available	543		

1 - 2 of 2 Results 1

- View all groups, servers in group, a specific server, portal servers
- Active or not
- Total Volume plus Response time & Throughput graphs (last hour)

Monitoring your environment without TEP ... Problem Determination - Alerts & Events

ALERTS AND EVENTS
View alerts and events occurring in your enterprise

Enterprise Group Server Alerts and Events Problem Center Set as My Default Page

Show Advanced Filters

Group Server Status

OK

ALERTS AND EVENTS Refresh Show All

1 - 13 of 13 Results

Date/Time	Group	Server	Name	Origin	
Oct 10, 2006 9:12:38 PM	Unassigned Servers	dev-lnx-w39.DITDC1.25394 (L1)	15s Response Time	Trap	Escalate
Oct 10, 2006 9:10:34 PM	Unassigned Servers	dev-lnx-w39.DITDC1.25394 (L1)	misbehaving btn	Trap	Escalate
Oct 10, 2006 9:10:34 PM	Unassigned Servers	dev-lnx-w39.DITDC1.25394 (L1)	shortTrap1	Trap	Escalate
Oct 10, 2006 9:10:34 PM	Unassigned Servers	dev-lnx-w39.DITDC1.25394 (L1)	dupOflongTrap1	Trap	Escalate
Oct 10, 2006 9:10:34 PM	Unassigned Servers	dev-lnx-w39.DITDC1.25394 (L1)	dupOflongTrap1	Trap	Escalate
Oct 10, 2006 9:10:31 PM	Unassigned Servers	dev-lnx-w39.DITDC1.25394 (L1)	misbehaving btn	Trap	Escalate

- **No traps are defined initially**, they have to be set up in order to use them
- **Centralized** place to review all reported alerts from 2 sources
 - ITCAM for Application Diagnostics Trap Action History (MSVE)
 - TEP Console
- Alerts can be **escalated** to **Problem Center** for further diagnosis

Monitoring your environment without TEP ... Problem Determination - Problem Center

Problem Center
View problem occurring in your enterprise

Enterprise Group Server Alerts and Events Problem Center Set as My Default Page

FILTER [Show Advanced Filters](#)

Group: Unassigned Servers Server: Select a Server Status: All

PROBLEMS 5 per Page

1 - 2 of 2 Results 1

Date/Time	Group	Server	Category	Origin	Name	Description	Closing Comment	Status	Delete
Oct 9, 2006 12:00:00 AM	Unassigned Servers	dev-Inx-w39.DITDC1.25394 (L1)	Unknown	Manual	test	test		Open <input type="button" value="v"/>	
Oct 10, 2006 9:12:38 PM	Unassigned Servers	dev-Inx-w39.DITDC1.25394 (L1)	Application Performance	Trap	15s Response Time	15s response time trap triggered		New	

1 - 2 of 2 Results 1

- Includes a **summary** of all the **escalated problems** and their status
- Users can add a problem manually
- Clicking the timestamp of the problem will bring the problem to the Problem Diagnosis Page.

Monitoring your environment without TEP ...

Availability - Server Statistics Overview

SERVER SELECTION

Group: Server:

SERVER DETAIL (Next Refresh in 6 Seconds)

1 - 3 of 3 Results 1

Name	Status	Platform	Volume Δ	JVM/Region CPU Δ (ms)	Total Volume	JVM/Region CPU%	Total CPU%	JVM/Region Memory Usage (MB)	Group Name	IP Address	Uptime
ADCDPL M1L2 P390 CICS2QA3 --	Unavailable	z/OS	0	0	0	0.00	0.00	0	CICS22M1	192.168.3.64	N/A
qaapp-aix-s01_node server1 92992 (L3)	Available	AIX	108	2,240	14,947	1.88	2.62	131	AIX Cluster	192.168.4.8	19:13:53
qaapp-aix-s03_node server3 40288 (L1)	Available	AIX	0	240	0	0.25	5.50	42	AIX Cluster	192.168.4.16	00:12:32

1 - 3 of 3 Results 1

■ Unavailable
 ■ Threshold Exceeded
 ■ Disabled
 Δ = 15 seconds

Monitoring your environment without TEP ...

Availability – Server Statistics Configuration

SERVER STATISTICS CONFIGURATION		
<input checked="" type="checkbox"/> Volume Δ	None ▾ <input type="text"/> request(s)	<input checked="" type="checkbox"/> JVM/Region CPU Δ
<input checked="" type="checkbox"/> Total Volume	None ▾ <input type="text"/> request(s)	<input checked="" type="checkbox"/> JVM/Region CPU%
<input checked="" type="checkbox"/> Group Name		<input checked="" type="checkbox"/> IP Address
<input checked="" type="checkbox"/> Uptime	None ▾ <input type="text"/> hour(s)	<input type="checkbox"/> Average Response Time (1 min)
<input type="checkbox"/> Start Time		<input type="checkbox"/> Data Collector Uptime
<input type="checkbox"/> Paging Rate	None ▾ <input type="text"/> KB/s	<input checked="" type="checkbox"/> JVM/Region (DSA,EDSA) Memory Usage
<input checked="" type="checkbox"/> Total CPU%	None ▾ <input type="text"/> %	<input type="checkbox"/> Δ Normal CP Time
<input checked="" type="checkbox"/> Platform		<input type="checkbox"/> Δ zAAP Time
<input type="checkbox"/> Live Sessions	None ▾ <input type="text"/>	<input type="checkbox"/> Δ zAAP-eligible Time on CP
<input type="checkbox"/> Platform CPU Δ	None ▾ <input type="text"/> ms	<input type="checkbox"/> Δ zAAP-eligible Time
<input type="checkbox"/> Application Server Platform		Auto-Refresh
<input type="button" value="Select All"/> <input type="button" value="Deselect All"/> <input type="button" value="Cancel"/>		

Scenario 1 – Slow Performing Application

A developer has noticed that one of the applications they are testing is **performing slowly**. He asks for a **method trace** of the application during the load testing.

The screenshot shows the Tivoli Composite Application Manager for Application Diagnostics interface. The 'PERFORMANCE ANALYSIS' menu is open, with a red arrow pointing to 'Create Application Reports'. The 'REPORT FILTERING OPTIONS' dialog boxes show the following configurations:

- Dialog 1:** Metric: Throughput per Hour, Request Type: Request/Transaction, Request Name: (empty)
- Dialog 2:** Metric: Throughput per Hour, Request Type: ALL, Request Name: (empty)
- Dialog 3:** Metric: Throughput per Hour, Request Type: ALL, Request Name: Servlet, JSP, Web Service, CCS, OTMA, VTAM, BTAM, APPC, Portal, RMI-RPC

Scenario 1 – Slow Performing Application ...

A developer has noticed that one of the applications they are testing is **performing slowly**. He asks for a **method trace** of the application during the load testing.

The screenshot shows the Tivoli Composite Application Manager for Application Diagnostics interface. The top navigation bar includes: HOME, ADMINISTRATION, AVAILABILITY, PROBLEM DETERMINATION, PERFORMANCE ANALYSIS, LOGOUT, and HELP. A red arrow points to the 'PERFORMANCE ANALYSIS' menu, which is expanded to show options: Create Application Reports, Create Server Reports, View Saved Reports, Method Profiling, and Daily Statistics. A sub-menu is also visible with options: Request/Transaction, Method/Program, SQL, MQI, and Test Results.

Below the navigation bar, there is an 'ENTERPRISE OVERVIEW' section. At the bottom, there are tabs for Enterprise, Group, Server, Alerts and Events, Problem Center, and Portal.

Three overlapping 'REPORT FILTERING OPTIONS' dialog boxes are shown, each with a stick figure pointing to it:

- The first dialog box shows the 'Metric' dropdown set to 'Throughput per Hour'. The 'Request Type' dropdown is open, showing options: Throughput per Second, Throughput per Minute, Throughput per Hour (highlighted), Response Time(ms), and CPU Time(ms).
- The second dialog box shows the 'Request Type' dropdown set to 'ALL'. The 'Request Name' dropdown is open, showing options: ALL (highlighted), EJB, JSP, Servlet, CCS, Web Service, OTMA, VTAM, BTAM, APPC, Portal, and RMI-RCP.
- The third dialog box is partially obscured but shows the same 'Metric' and 'Request Type' options.

Scenario 1 – Slow Performing Application ..

DATE RANGE SETTINGS
Select the date range, advanced filters or graphing option for your report. Each parameter restricts the data in your results displaying

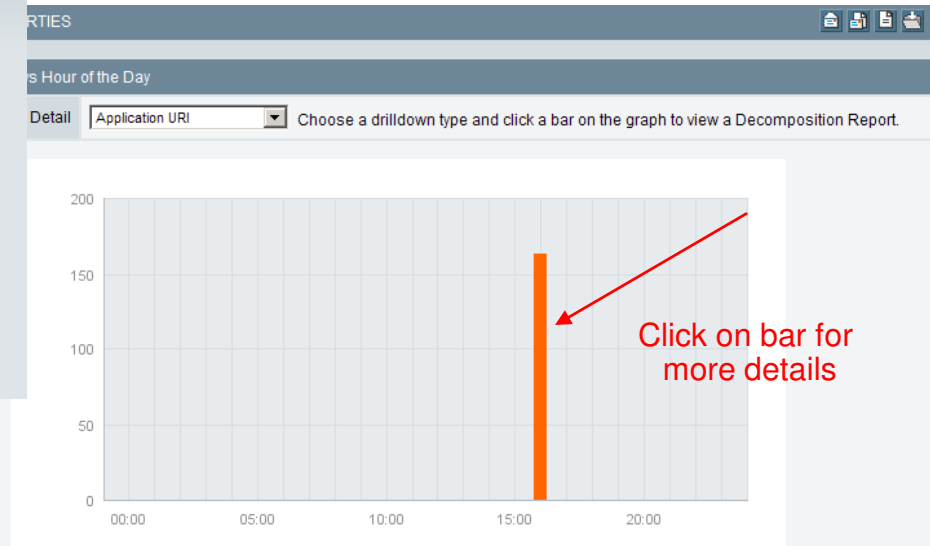
DATE RANGE
Select a preset date range or enter a custom start date and end date.

Preset: or

Start Date: End Date: Jul 20 2011 00:00

ADVANCED
Define your filters: HOUR DAY OF THE WEEK DAY OF THE MONTH MONTH

GRAPHING OPTION
Select an option to represent your data set on your graph's x-axis scale.
X-axis:



Hour	Average of Throughput per hour	Value
00:00		
01:00		
02:00		
03:00		
04:00		
05:00		
06:00	Average of Throughput per hour	164.00
07:00		
08:00		N/A
09:00		N/A
10:00		N/A
11:00		N/A
12:00		N/A
13:00		N/A
14:00		N/A
15:00		N/A
16:00		164.00
17:00		N/A
18:00		N/A

Scenario 1 – Slow Performing Application ...

DECOMPOSITION REPORT
The Decomposition Report provides a breakdown of the Trend Report by the criteria selected. Click on a data point to view more detail.

REPORT PROPERTIES

DECOMPOSITION DATA TABLE

APPLICATION/TRANSACTION URI	THROUGHPUT PER HOUR	SAMPLI
/PlantsByWebSphere/servlet/ImageServlet	138.00	1
/PlantsByWebSphere/servlet/ShoppingServlet	25.00	:
/PlantsByWebSphere/servlet/AccountServlet	1.00	

1 - 3 of 3 Results

Detail Summary Worst Performers Locks

REPORT PROPERTIES

20 per Page

1 - 20 of 293 Results

REQUEST/TRANSACTION NAME	REQUEST/TRANSACTION TYPE	RESPONSE TIME (ms)	CPU TIME (ms)	SERVER NAME	TIMESTAMP	METHOD/COMPONENT RECORDS	USER ID
/PlantsByWebSphere/servlet/ImageServlet?action=getImage&inve	Servlet	0	0.000	IBM-A5ACD9E6CBENode04Cell.DC711Node.DC711(DC711)(L2)	Jul 21, 2011 4:45:07 PM	6	N/A
/PlantsByWebSphere/servlet/ImageServlet?action=getImage&inve	Servlet	0	0.000	IBM-A5ACD9E6CBENode04Cell.DC711Node.DC711(DC711)(L3)	Jul 21, 2011 4:18:06 PM	6	N/A
/PlantsByWebSphere/servlet/ImageServlet?action=getImage&inve	Servlet	0	0.000	IBM-A5ACD9E6CBENode04Cell.DC711Node.DC711(DC711)(L3)	Jul 21, 2011 4:18:07 PM	6	N/A
/PlantsByWebSphere/servlet/ImageServlet?action=getImage&inve	Servlet	0	0.000	IBM-A5ACD9E6CBENode04Cell.DC711Node.DC711(DC711)(L3)	Jul 21, 2011 4:18:07 PM	6	N/A
/PlantsByWebSphere/servlet/ImageServlet?action=getImage&inve	Servlet	0	0.000	IBM-A5ACD9E6CBENode04Cell.DC711Node.DC711(DC711)(L3)	Jul 21, 2011 4:18:06 PM	6	N/A
/PlantsByWebSphere/servlet/ImageServlet?action=getImage&inve	Servlet	15	15.625	IBM-A5ACD9E6CBENode04Cell.DC711Node.DC711(DC711)(L3)	Jul 21, 2011 4:17:46 PM	6	N/A
/PlantsByWebSphere/servlet/ImageServlet?action=getImage&inve	Servlet	63	15.625	IBM-A5ACD9E6CBENode04Cell.DC711Node.DC711(DC711)(L3)	Jul 21, 2011 4:17:45 PM	6	N/A

Click on transaction for more details

Scenario 1 – Slow Performing Application ...

Detail Summary Worst Performers Locks

REPORT PROPERTIES

DETAIL REPORTS DATA TABLE

1 - 20 of 293 Results

REQUEST/TRANSACTION NAME	REQUEST/TRANSACTION TYPE	RESPONSE TIME (ms)
/PlantsByWebSphere/servlet/ImageServlet?action=getimage&inve	Servlet	0
/PlantsByWebSphere/servlet/ImageServlet?action=getimage&inve	Servlet	0
/PlantsByWebSphere/servlet/ImageServlet?action=getimage&inve	Servlet	0
/PlantsByWebSphere/servlet/ImageServlet?action=getimage&inve	Servlet	0
/PlantsByWebSphere/servlet/ImageServlet?action=getimage&inve	Servlet	0
/PlantsByWebSphere/servlet/ImageServlet?action=getimage&inve	Servlet	15
/PlantsByWebSphere/servlet/ImageServlet?action=getimage&inve	Servlet	63

Nesting Summary Drilldown View Flow View Search

Threshold Highlighter

Δ Elapsed Time (ms) >= 5 (ms) Δ CPU Time (ms) >= 5.0 (ms) Apply Reset

COMPLETE FLOW VIEW 1000 per Page

Queue Names Match Queue Names Don't Match ** indicates values that cross thresholds

1 - 6 of 6 Results 1

Depth	Event Type	Event Data	Elapsed Time (ms)	CPU Time (ms)	Δ Elapsed Time (ms)	Δ CPU Time (ms)
0	Servlet Entry	/PlantsByWebSphere/servlet/ImageServlet?action=getimage&inve	0	0	0	0
1	EJB Entry	EJB Name: com.ibm.websphere.samples.plantsbywebsphereejb.CatalogBean Method: getItemImageBytes	0	0	0	0
2	JDBC Entry	Data Source Name: jdbc/PlantsByWebSphereDataSource SQL Statement: SELECT t0.category, t0.cost, t0.description, t0.heading, t0.image, t0.imgbytes, t0.isPublic, t0.maxThreshold, t0.minThreshold, t0.name, t0.notes, t0.pginfno, t0.price, t0.quantity FROM APP.INVENTORY t0 WHERE t0.inventoryId = ?	0	0	0	0
2	JDBC Exit	Data Source Name: jdbc/PlantsByWebSphereDataSource SQL Statement: SELECT t0.category, t0.cost, t0.description, t0.heading, t0.image, t0.imgbytes, t0.isPublic, t0.maxThreshold, t0.minThreshold, t0.name, t0.notes, t0.pginfno, t0.price, t0.quantity FROM APP.INVENTORY t0 WHERE t0.inventoryId = ?	0	0	0	0
1	EJB Exit	EJB Name: com.ibm.websphere.samples.plantsbywebsphereejb.CatalogBean Method: getItemImageBytes	32	0	** 32 **	0
0	Servlet Exit	/PlantsByWebSphere/servlet/ImageServlet?action=getimage&inve	63	15.625	** 31 **	** 15.625 **

Click on transaction for more details

Scenario 1 – Slow Performing Application ...

Alternately, use Method Profiling

- Collect method level statistics at L2 + method profiling, rather than paying higher overhead to obtain method trace at L3
- Metrics: CPU Time and Elapsed Time for each application method

METHOD PROFILE REPORT	
1 - 21 of 21 Results	
Method Name	
com.ibm.websphere.samples.trade.web.TradeScenarioServlet.doGet(javax.servlet.http.Ht	
com.ibm.websphere.samples.trade.web.TradeScenarioServlet.performTask(javax.servlet.	
com.ibm.websphere.samples.trade.web.TradeAppServlet.performTask(javax.servlet.http.H	
com.ibm.websphere.samples.trade.web.TradeAppServlet.doGet(javax.servlet.http.HttpSer	
com.ibm._jsp._tradehome._jspService(javax.servlet.http.HttpServletRequest, javax.servet	
com.ibm._jsp._marketSummary._jspService(javax.servlet.http.HttpServletRequest, javax.s	
com.ibm.websphere.samples.trade.ejb._Trade_Stub.getMarketSummary()	
com.ibm.websphere.samples.trade.ejb.TradeBean.getMarketSummary()	

25 per Page					
< Previous 1 Next >					
	Total CPU Time (ms)	Total Elapsed Time (ms)	Total Hits	Average CPU Time (ms)	Average Elapsed Time (ms)
	167,185	110,018,919	5	33437.00	22003783.80
onse)	44,672	70,742	757	59.01	93.45
	44,625	70,695	757	58.95	93.39
	44,625	70,695	757	58.95	93.39
	28,553	31,151	756	37.77	41.21
	28,353	30,932	756	37.50	40.92
	27,993	30,572	756	37.03	40.44
	16,681	18,297	546	30.55	33.51

Scenario 1 - Slow Performing Application ...

Advanced setup

Note: In order to get method trace information, byte code instrumentation (BCI) must be enabled. To enable method trace BCI, do the following:

- Edit <DC_HOME>/runtime/<was.node.svr>/custom/**toolkit_custom.properties**
 - Set `com.ibm.tivoli.itcam.toolkit.ai.methodentryexittrace=true`
 - Uncomment this line (the path in the line must match your environment)
`am.camtoolkit.gpe.customxml.L3=/opt/IBM/AD710/aix533/yn/wasdc/7.1.0.2/itcamdc/etc/method_entry_exit.xml`
- Restart the Data Collector (WAS JVM) to pick up the changes.

The above setup can be done one time, when the ITCAM Data Collector is first configured.

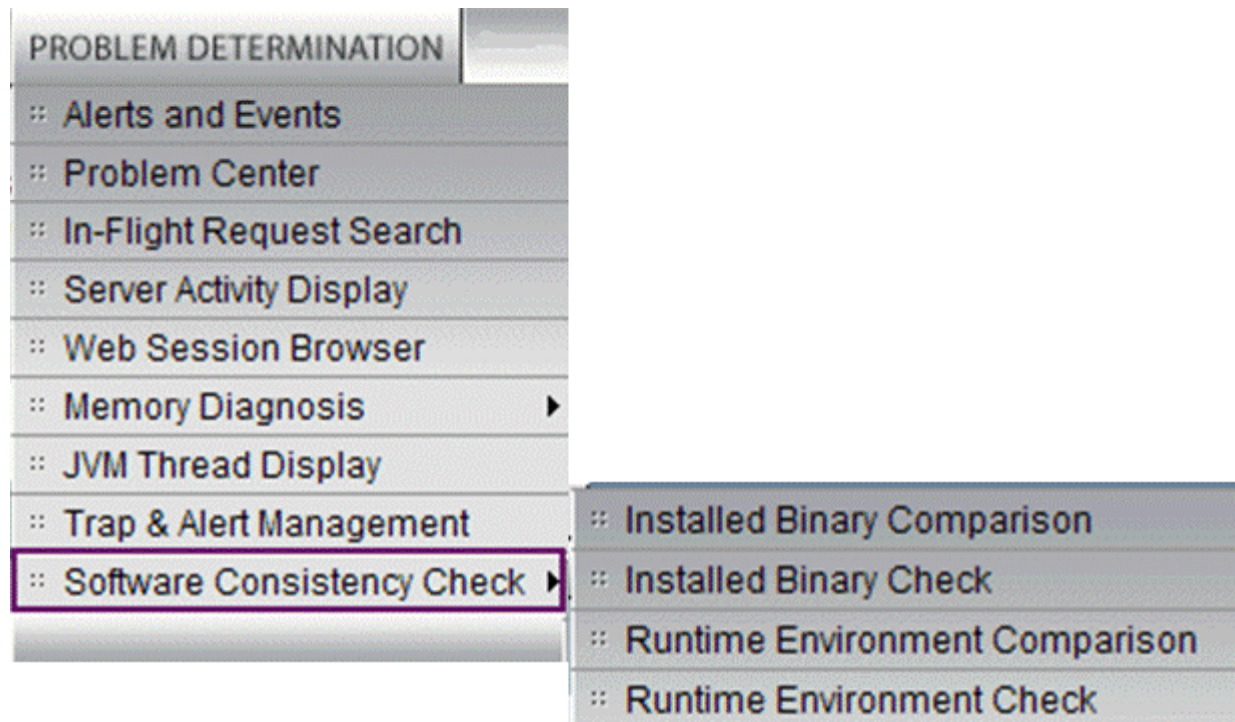
Update dynamically

- To activate method tracing on the MSVE
 - Change to **MOD L3**
 - Change back to **MOD L1 once diagnosis is complete**
- To activate method profiling on the MSVE
 - Change to **MOD L2 + method profiling**
 - Change back to **MOD L1 once diagnosis is complete**

MONITORING SCHEDULE					
1 - 1 of 1 Results					
Group/Server	Platform	Schedule Name	Current Level	Current Sampling	
WEBSHERE PLANT SERVERS					
IBM-A5ACD9E6CBENode04Cell.DC711Node.DC711 (DC711)	Windows	--	L3	2%	
MONITORING SCHEDULE					
1 - 1 of 1 Results					
Group/Server	Platform	Schedule Name	Current Level	Current Sampling	
WEBSHERE PLANT SERVERS					
IBM-A5ACD9E6CBENode04Cell.DC711Node.DC711 (DC711)	Windows	--	L2+MP	2%	

Scenario 2 – Software Consistency Check

The ITCAM Support wants to confirm that the **binaries installed on 2 WebSphere machines** are the same.



Scenario 2 – Software Consistency Check ...

FILE SOURCE		FILE TYPES	
Select All	Deselect All	Select All	Deselect All
<input checked="" type="checkbox"/>	C:\IBMWebSphere70\AppServer\profiles\DC711\installedApps\IBM-A5ACD9E6CBENode04Cell\query.ear	<input checked="" type="checkbox"/>	JAR/ZIP Files
<input checked="" type="checkbox"/>	C:\IBMWebSphere70\AppServer\profiles\DC711\installedApps\IBM-A5ACD9E6CBENode04Cell\SamplesGallery.ear	<input checked="" type="checkbox"/>	Properties Files
<input checked="" type="checkbox"/>	C:\IBMWebSphere70\AppServer\profiles\DC711\installedApps\IBM-A5ACD9E6CBENode04Cell\ivtApp.ear	<input checked="" type="checkbox"/>	Web Files (JSP, HTML, etc.)
<input checked="" type="checkbox"/>	C:\IBMWebSphere70\AppServer\profiles\DC711\installedApps\IBM-A5ACD9E6CBENode04Cell\DefaultApplication.ear	<input checked="" type="checkbox"/>	Class Files
<input checked="" type="checkbox"/>	C:\IBMWebSphere70\AppServer\profiles\DC711\installedApps\IBM-A5ACD9E6CBENode04Cell\PlantsByWebSphere.ear	<input checked="" type="checkbox"/>	Image Files (JPEG, GIF, PNG)
<input checked="" type="checkbox"/>	C:\IBMWebSphere70\AppServer\profiles\DC711\properties		
<input checked="" type="checkbox"/>	C:\IBMWebSphere70\AppServer\properties		
<input checked="" type="checkbox"/>	C:\IBMWebSphere70\AppServer\lib\startup.jar		
<input checked="" type="checkbox"/>	C:\IBMWebSphere70\AppServer\lib\bootstrap.jar		
<input checked="" type="checkbox"/>	C:\IBMWebSp		

Select files and file types to compare

COMPARISON PROPERTIES		Change Comparison
Authoritative Server	IBM-A5ACD9E6CBENode04Cell.DC711Node.DC711(DC711).5008 (L3)	
File Source	query.ear, SamplesGallery.ear, ivtApp.ear, DefaultApplication.ear, PlantsByWebSphere.ear, properties, properties, startup.jar, bootstrap.jar, jsf-nls.jar, Improxy.jar, urlprotocols.jar, batchboot.jar, batch2.jar, tools.jar	
File Types	All	

OVERVIEW					
Server	Full Match	Full Pathname/Size Match	Full Pathname Match	Authoritative Only	Comparison Only
IBM-A5ACD9E6CBENode04Cell.DC711Node.DC711(DC711).5008 (L3)	4839	0	0	0	0

Scenario 2 – Software Consistency Check ...

Runtime Environment Comparison

RUNTIME ENVIRONMENT

- System Runtime Environment
 - Environment Data
- Java Runtime Environment
 - JDK Version
 - Initial Java Heap Size
 - Maximum Java Heap Size
 - Installation Directory
 - Class Path
 - Library Path
- App Server Runtime Environment
 - App Server
 - Startup Directory
 - Listening Port
 - Registered EARs
 - Registered WARs
 - Registered EJBs
 - JDBC Connection Pools

RUNTIME ENVIRONMENT COMPARISON RESULTS
 The Runtime Environment Comparison Results page displays the results. Select a specific environment on the left. View environmental data for a specific comparison server by clicking on the name.

SYSTEM RUNTIME ENVIRONMENT Change Comparison

Server	CPU Speed	# Online/Total	Memory	Operating System Info
eurekaNode01Cell.eurekaNode01.server1 (AppSrv01).2332 (L2)	2992 MHz	1/1	1899 MB	Windows Server 2003 5.2 build 3790 Service Pack 1
miranda.tomcat5.2360 (L1)	2800MHz	2/2	2047 MB	Windows 2003 5.2
portulaNode01Cell.portulaNode01.server1 (AppSrv01).2276 (L2)	2666MHz	2/2	2559 MB	✓

■ Authoritative Server
■ Discrepant Data



Reference Materials

Tivoli Enterprise Portal (TEP)

Pre-defined Workspaces

A description of the WebSphere App Server TEP Workspaces can be found at:

http://publib.boulder.ibm.com/infocenter/tivihelp/v24r1/index.jsp?topic=/com.ibm.itcamfad.doc_7101/itcam_71_was_tema_help/kyn_wksp_overview.html

Primary Workspaces

- **Application Health workspace** The workspace displays the information about the real-time health status of applications monitored by the Tivoli Enterprise Monitoring Agent.
- **Request Analysis workspace** The workspace reports response times and functional decomposition information about requests (including servlets, JSPs, and EJB methods) that completed during the interval.
- **Garbage Collection Analysis workspace** This workspace summarizes all the Java Virtual Machine's (JVM) garbage-collector activity over a user-defined interval.
- **Log Analysis workspace** This workspace reports application server error and exception conditions as recorded in the application server's log file.
- **Pool Analysis workspace** This workspace displays information about the usage of several types of pools associated with each application server, including Web container pools, ORB pools, J2C connection pools, and database connection pools. This workspace helps you detect resource constraints and potential performance congestion.

Tivoli Enterprise Portal (TEP) ...

Primary Workspaces ...

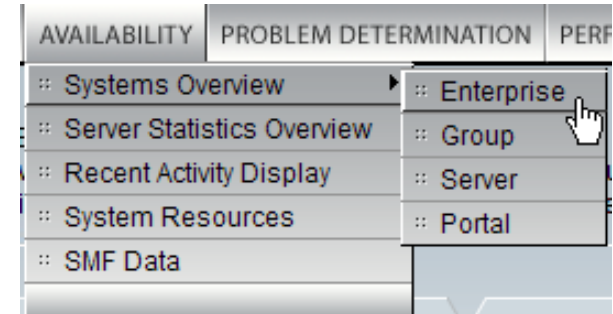
- **Datasources workspace** This workspace displays information about datasource connections.
- **JMS Summary workspace** The JMS Summary workspace displays information about queues being used by your applications using the Java Message Service (JMS) interface.
- **Web Applications workspace** This workspace displays information about the Web applications running in J2EE application servers.
- **EJB Containers workspace** This workspace displays aggregated information about each defined EJB.
- **DB Connection Pools workspace** This workspace displays information about the database connection pools associated with each application server.
- **J2C Connection Pools workspace** This workspace reports information about resource adapters and connectors that adhere to J2C, the WebSphere Application Server implementation of the J2EE Connector Architecture (JCA).
- **Thread Pools workspace** This workspace reports information about the various thread pools that support the applications running in your Java Virtual Machine (JVM).

Tivoli Enterprise Portal (TEP) ...

Primary Workspaces ...

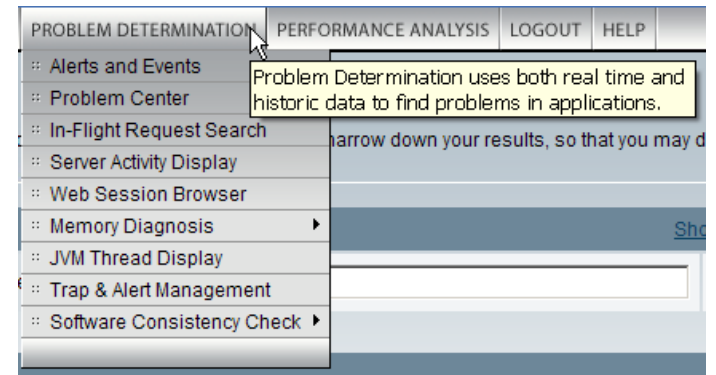
- **Cache Analysis workspace** This workspace reports information about the dynamic cache.
- **Workload Management workspace** This workspace displays information about the Workload Management (WLM) server and about the WLM client that initiates workload requests to that server.
- **Scheduler workspace** The Scheduler workspace contains data for the Scheduler service. The scheduler service schedules and tracks the starting and stopping of applications.
- **Web Services workspace** The Web Services workspace displays information about the data counters of the Web services
- **Messaging Workspace** View of performance counters of the Messaging Engines supported by a server

MSVE - Availability



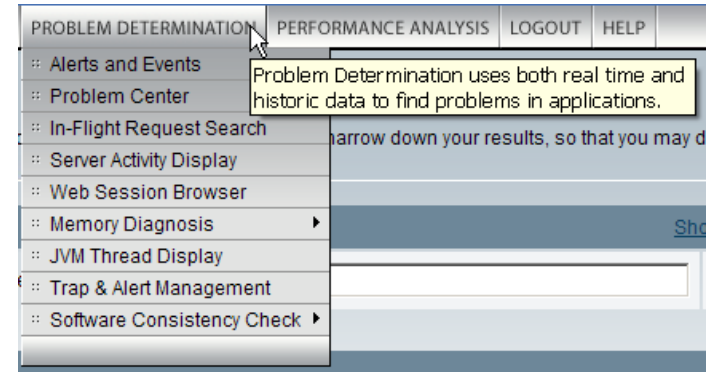
- **Enterprise Overview** displays information for **all groups of servers**.
- **Group Overview** provides a high-level overview of **activity for each server** in the group. The overview includes the response time and throughput for the last hour as well as the current monitoring level for each server.
- **Server Overview** displays comprehensive **server information**, activity and statistics for the selected server.
- **Server Statistics Overview** helps you **compare activity and related platform data across servers** so that you can recognize problems.
- **Recent Activity Display** helps you **investigate potential memory problems relating to garbage collection and the JVM heap size**.
- **System Resources** displays **summary information for all resources on the selected application server**. ITCAM captures the data for this page every five minutes for display.
- **SMF Data** View detailed information on Server, EJBs, Servlet Session Manager, Web applications, and Server Regions. The source of the data comes from the **SMF records published by WebSphere on z/OS**. The Application Monitor intercepts the transfer of the records and makes a copy in real time before writing it to the SMF dataset.

MSVE - Problem Determination



- **Alerts and Events** Monitors **high-priority trap alerts and Tivoli Enterprise Portal (TEP) events for the last 24 hours**. From here, you can escalate events into the Problem Center for diagnosis and tracking.
- **Problem Center** All problems are **escalated** high-priority trap alerts and Tivoli Enterprise Portal (TEP) events. The details of each problem are available for your review.
- **In-Flight Request Search** lets you **search for a request** on your application servers by entering search data such as a URL. You may also view the stack trace, component trace, or method trace for a particular request. View, e-mail, or export the PDF file of the trace to other ITCAM users.
- **Server Activity Display (SAD)** provides **thread data for an application server at a specific point in time, lock contention, or the 100 most recently completed requests**. You may filter the threads by the type or thread status. After pinpointing a hung thread, click the Thread ID link to review its request detail. Click links to view the stack trace, component trace, or method trace. View, e-mail, or export the PDF file of the trace to other ITCAM users.
- **Web Session Browser** retrieves information on **HTTP sessions**. You can search a server, a group, or all servers and groups for a specific session. After activating the search, the system will take a snapshot of the server(s) and return a list of sessions.

MSVE - Problem Determination ...



- Memory Diagnosis** The Memory Diagnosis section helps you discover memory related problems. Memory Analysis lets you create **server activity analysis reports regarding memory**. **Heap Analysis captures the runtime heap of an application server and breaks it down by the class names of the objects residing in the heap at the time of the snapshot** while providing the number of instances and the size of the information. Lastly, **Memory Leak** helps confirm the existence of a memory leak and identifies the most likely memory leak candidates. The **Heap Dump Management** provides a list of all the previously taken heap dumps.
- JVM Thread Display** The JVM Thread Display **shows all the threads running on the JVM**, organized within thread groups. In addition, the JVM Thread Display provides a **Thread Dump** so you can view detailed information about resource consumption in a JVM. In addition, you can click on a thread to view the details for the thread, or to view a stack trace, change the thread priority, or cancel a thread.
- Trap and Alert Management** **Set software traps and alerts** to monitor a group of servers or a selected server. **Notifications are sent immediately** when the system meets the conditions of the trap. Actions include sending an **e-mail or an SNMP message**, **collecting Stack Trace, Component Trace, Method Trace, or Thread Dump**.
- Software Consistency Check** Use the **software consistency check** to troubleshoot atypical servers in an otherwise homogenous server group.

MSVE - Performance Analysis - Application Reports

- The **Request/Transaction Analysis Report** provides a whole picture about the behavior of the application server.
- The **Method/Program Analysis Report** shows you the performance of the methods in the requests that have been processed by the Application Servers.
- The **SQL Analysis Report** provides the information for the SQL calls' performance in the requests that have been processed by the application server.
- The **MQI Analysis Report** provides the information for the MQI calls' performance in the requests that have been processed by the application server.
- The **Top Reports** are a quick and convenient way to run a report for request, method, or SQL data. Top Reports provide the top 100 results records for the selected metric.

REPORT PROPERTIES		
Report Name	Untitled	
Report Type	Top Requests Used Analysis	
Report Period	Sep 8, 2004 12:00 AM to Sep 15, 2004 12:00 AM	
Server Scope	All Servers on All Groups	

TOP REPORTS DATA TABLE		
1 - 20 of 100 Results		20 per page
		1 2 3 4 Next > Last >>
RANK	REQUEST/TRANSACTION NAME	COUNT
1	/trade/scenario	2362
2	/cyanea_one/testware/dsStateful?ttl=30&sqlStatement=1&lookup	270
3	/cyanea_one/testware/method?ttl=30&depth=1&repeat=1&map=Meth	266
4	/cyanea_one/testware/ejbStateless?ttl=30&bccommit=&lookup=St	246
4	/cyanea_one/testware/sql	246
6	/cyanea_one/testware/dsStateless?ttl=30&sqlStatement=1&looku	245
7	/cyanea_one/testware/jsp/jspRequestResult.jsp?ttl=30&map=JSP	244
8	/cyanea_one/testware/ejbStateful	242
9	/cyanea_one/testware/session?ttl=30&oneMeg=false&timeout=fal	241
10	/cyanea_one/testware/object?ttl=30&repeat=1&map=Java+Object+	238
11	/cyanea_one/testware/ejbEntity	236
12	/cyanea_one/testware/jndi?ttl=30&depth=jdbc&map=JNDI+Lookup	235
13	/cyanea_one/testware/threadkill	233
14	/cyanea_one/testware/stack?ttl=30&depth=6&repeat=1&map=Stack	227
15	/cyanea_one/testware/cpu?ttl=30&repeat=20&map=CPU+Consumer	219
16	/cyanea_one/testware/session	218
17	/cyanea_one/testware/ejb	214
18	onMessage	162
19	/cyanea_one/testware/ejbStateless?ttl=1&bccommit=&lookup=Sta	68
20	/cyanea_one/testware/object?ttl=1&repeat=1&map=Java+Object+G	60

1 - 20 of 100 Results 1 2 3 4 Next > Last >>

MSVE - Performance Analysis - Server Reports

- The [System Resource Analysis Report](#) gives you the information of the utilization of the memory, and database connection pools for the application servers. You may also view:

Note: **This feature is not available for the z/OS data collector.**

- The [Server Availability Analysis Report](#) shows the percentage of the server availability. In the group situation, availability is defined as the total amount of time when one or more servers of the group are up divided by the total elapsed time.
- The [Capacity Analysis Report](#) provides you with the necessary information to evaluate the capacity of your system using supply and demand metrics.

Reference Material

Software Base Code

- ITCAM for Application Diagnostics 7.1 for distributed platforms
 - On [Xtreme Leverage](#) or [Passport Advantage](#), search for [ibm tivoli composite application manager diagnostics](#)
- ITCAM for Application Diagnostics 7.1 for z/OS
 - FMID HAAD71C – Common Services
 - FMID HAAD710 – z/OS Data Collector
 - FMID HKYN710 – z/OS TEMA

Miscellaneous

- Missing TEP Data?

If data is missing from the TEP, please review the following URL (which is written for ITCAM for WebSphere 6.1 but applies to ITCAM for Application Diagnostics 7.1 as well):

<http://www.ibm.com/developerworks/wikis/display/tivolimonitoring/Understanding+Tivoli+Enterprise+Management+Agent+Workspaces+in+Tivoli+Enterprise+Portal+Version+6.1>

- TTAPI – ITCAM for Application Diagnostics Integration with ITCAM Transaction Tracking

http://ausgsa.ibm.com/projects/t/ttec/public/ServiceAvailability_and_PerformanceManagement/2009_09_09_GO_ITCAMfWebSphereJ2EE_ITCAMfTrxns_Integration/

- Set up single signon between TEP and MSVE

<http://www.ibm.com/developerworks/wikis/display/tivolimonitoring/Implementing+Single+Sign-on+Between+the+Visualization+Engine+and+Tivoli+Enterprise+Portal>

- **ITCAM for WebSphere 6.1 Tuning and Best Practices**

<http://www.ibm.com/support/docview.wss?&uid=swg27016319>

Other Sources of Information

- **InfoCenter Publications**
 - http://publib.boulder.ibm.com/infocenter/tivihelp/v24r1/index.jsp?topic=/com.ibm.itcamfad.doc_7101/ic-homepage.html
- **L3 Wiki Site**
 - <http://www.ibm.com/developerworks/wikis/display/tivolimonitoring/Tivoli+Composite+Application+Manager+for+WebSphere>
- **IBM Electronic Support Portal (set this up for all products of interest)**
 - <https://www-947.ibm.com/support/entry/myportal>
- **External Wiki - IBM® Tivoli® Distributed Monitoring and Application Mgmt**
 - <http://www.ibm.com/developerworks/wikis/display/tivolimonitoring/home>
- **Internal Wiki - Virtual Community for AABSM**
 - <http://w3.tap.ibm.com/w3ki06/display/CAMVirtCom/Home>
- **System Requirements**
 - <http://www.ibm.com/support/docview.wss?uid=swg21433643>
- **Recommended Fixes**
 - <http://www.ibm.com/support/docview.wss?uid=swg21439390>
- **Must Gather Documentation**
 - <http://www.ibm.com/support/docview.wss?uid=swg21443620>
- **Featured Documents**
 - <http://www.ibm.com/support/docview.wss?rs=4160&uid=swg21443618>