Tivoli. IBM Tivoli Composite Application Manager for Application Diagnostics
Version 7.1.0.1

ITCAM Agent for WebSphere Applications: Configuring and using TTAPI

IBM

Tivoli® IBM Tivoli Composite Application Manager for Application Diagnostics

Version 7.1.0.1

ITCAM Agent for WebSphere Applications: Configuring and using TTAPI

IBM

2010

This 2010 edition applies to ITCAM for Application Diagnostics 7.1.0.1 and all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Figures

Chapter 1. Overview

IBM Tivoli Composite Application Manager for Transactions (ITCAM for Transactions) is an IBM Tivoli Monitoring-based product that provides a unified, end-to-end transaction tracking solution for the IT Operations segment.

ITCAM for Transactions tracks transactions within and among applications. The product determines the time spent by the transaction in each application and, where possible, the time spent communicating between applications. You can use the product to observe transactions across products, providing easier integration between different products through the Tivoli Enterprise Portal interface.

Through the Transaction Tracking Application Programming Interface (TTAPI), ITCAM for Application Diagnostics Data Collectors (DC) on distributed platforms and z/OS can provide request and transaction data to ITCAM for Transactions and allow seamless integration between the ITCAM for Application Diagnostics and ITCAM for Transactions products.

Concepts and components

High-level outline of the components and concepts behind ITCAM for Transactions.

ITCAM for Transactions includes the following functions:

- Comprehensive domain tracking across IBM middleware and mainframe systems.
- Proactive monitoring of business transactions and Internet services.
- Real user Web and client application monitoring.
- An integrated solution built on the IBM Tivoli Monitoring platform ITCAM for Application Diagnostics on distributed platforms.

Key components

Key components and concepts of ITCAM for Transactions.

Key components and concepts of ITCAM for Transactions include:

- *ITCAM for Transaction Tracking*: Consumes data from application server, MQ, CICS, IMS, and custom instrumentation to show topology and isolate problems.
- *Transaction Collector Tivoli Enterprise Monitoring Agent*: Receives raw event data, stores windows of raw data, and aggregates over time. The monitoring agent responds to calls from the Transaction Reporter for aggregate or instance data.
- *Transaction Reporter Tivoli Enterprise Monitoring Agent*: Connects the data gathered by the Transaction Collector and constructs topology using linking and stitching criteria.
- *Transaction Tracking Application Programming Interface (TTAPI)*: A lightweight, low-latency client API through which Data Collectors construct and send tracking events to the Collector Tivoli Enterprise Monitoring Agent.
- *Linking*: Connects events that occur within a tracking domain, for example ARM, MQ, and CICS

- *Stitching*: Rather than using tokens, dynamically connects events that occur between tracking domains, for example MQ to WebSphere Application Server, and IMS™ to CICS, to enable comprehensive domain tracking across IBM middleware & mainframe systems

In ITCAM for Transactions, request data and transactions are reported through the following four workspaces:

- *Servers*: This workspace provides aggregated data for all transactions and requests that occur in a physical computer over a period of time called the Aggregation Period. Transactions and requests can come from WebSphere Application Server, Web Servers, and WebSphere MQ products. The workspace is mainly used to isolate a performance problem to a physical computer.
- *Components*: This workspace provides aggregated data for all transactions and requests that occur in a major software component over a period of time. The main software components in a WebSphere production system may include WebSphere Application Server, WebSphere MQ, Web Server, and so on. Data reported by this workspace is mainly used to isolate a performance problem to a software component.
- *Applications*: This workspace provides aggregated data for all transactions and requests that occur in a major runtime instance within a period of time. For example, for the WebSphere Application Server component, the runtime instance is a WebSphere Application Server process; for WebSphere MQ, it is a queue manager process. The workspace is mainly used to isolate a performance problem to a runtime instance.
- *Transactions*: This workspace provides aggregated data for transaction instances. The aggregation is done over each distinctive Unit of Work (UOW) or request. For example, in a WebSphere Application Server environment, a transaction or UOW is usually identified as a URI for a Servlet or JSP page. Data reported by this workspace can be used to isolate a performance problem to a specific transaction or request.

Within each workspace, the Transactions Topology view provides a visual representation of the connections between servers, components, applications, and transactions that have occurred within a set time frame.

Prerequisites

The following prerequisites must be in place to allow for this integration.

- ITCAM Agent for WebSphere Applications version 7.1.0.1 must be installed.
- ITCAM for Transactions Transaction Tracking Collector and Transaction Reporter must be installed.
- Clock must be accurate and synchronized (using something like Network Time Protocol) across servers.
- CTG/IMS instrumentation must be enabled if CICS and IMS Data Collectors are enabled for ITCAM for Transactions.
- For the WebSphere Application Server instances that GET and PUT messages through the MQI interface, MQ monitoring must be enabled in ITCAM for Application Diagnostics User Interface (Visualization Engine) configuration for the Data Collectors.
- RMI-IIOP instrumentation must be enabled on both client and server sides of the WebSphere instances if both sides have Data Collector configured and enabled.
- Web Service instrumentation must be enabled on both requester and provider sides of the WebSphere Application Server instances if both sides have Data Collectors configured and enabled.

Integrated Requests

Requests supported by this integration.

Integration between ITCAM for Application Diagnostics Agent for WebSphere Applications Data Collector and ITCAM for Transactions supports all composite requests that generate events to Global Publishing Server (GPS). It also supports top-level EJB and Custom Edge requests. In addition, it supports top-level Servlet and JSP requests to integrate with the ITCAM for Transactions Robotic Response Time agent (T6) and (WebSphere Application Server-supported) Web Servers with ARM-enabled plug-ins:

- CICS
- Custom Request
- EJB (including Message Driven Bean)
- IMS
- MQI, including MQ v7 JMS transactions
- RMI/IIOP
- Servlet/JSP
- Web Services

JDBC and JNDI nested requests are also supported.

WebSphere Portal Server is fully supported. Portlet transactions are displayed as single entities.

JMS links are displayed in the Topology View.

In the Topology View, an entity participating in transactions instrumented via both ITCAM for Application Diagnostics and ITCAM for Service Oriented Architecture will be displayed as a single node.

ITCAM for Application Diagnostics supports integration with IBM Optim Performance Manager. If this integration is enabled, the user can drill down from ITCAM for Transaction Tracking workspaces to the Optim Performance Manager extended monitoring console, to conduct end-to-end analysis of DB2 JDBC calls.

Chapter 2. Installation

Follow the standard ITCAM Agent for WebSphere Applications installation procedure to install the Data Collector.

Enabling Integration

How to enable ITCAM for Application Diagnostics and ITCAM for Transactions integration through TTAPI.

To enable Data Collector TTAPI integration, use the Data Collector configuration process. Configure or reconfigure ITCAM Agent for WebSphere Applications Data Collector for the application server instance, and select **Configure Transactions Integration**.

For details, see *IBM Tivoli Composite Application Manager Agent for WebSphere Applications Installation and Configuration Guide*.

For instructions on enabling Data Collector TTAPI integration on z/OS, see *IBM Tivoli Composite Application Manager Agent for WebSphere Applications Installation and Configuration Guide for z/OS*.

Disabling Integration

Disabling TTAPI integration.

To disable Data Collector and TTAPI integration, set the following property in the `DCHOME/runtime/platform.node.server/custom/toolkit_custom.properties` file:

```
com.ibm.tivoli.itcam.dc.ttapi.enable=false
```

To disable integration of the Data Collector with ITCAM for Transactions Web Response Time (T5) agent, set the following property in the `DCHOME/runtime/platform.node.server/custom/toolkit_custom.properties` file:

```
com.ibm.tivoli.itcam.dc.ttapi.wrm.servlet.enabled=false
```

After making these changes, restart the application server instance.

Monitoring JDBC and JNDI nested requests

How to control monitoring JDBC and JNDI nested requests for TTAPI.

JDBC nested request monitoring is enabled by default when the Data Collector monitoring level, set in the Managing Server Visualization Engine, is L2 or L3. If the Data Collector monitoring level is L1, you can enable the JDBC nested request feature in the ITCAM web console by following these steps:

1. Choose **Administration** -> **Server Management** -> **Data Collector Configuration** and select **Enable TTAPI for JDBC**.
2. In the **TTAPI JDBC DISABLED DATA COLLECTORS** panel, select the Data Collectors that you want to enable for JDBC nested requests.
3. Click **Apply**.

JNDI nested requests are monitored by default. To disable collecting JNDI information, set the following property in the DCHOME/runtime/platform.node.server/custom/toolkit_custom.properties file:

```
com.ibm.tivoli.itcam.dc.ttapi.jndi.enabled=false
```

After making these changes, restart the application server instance.

If exceptions (failed requests) occur within a reporting period, they are reported via TTAPI, and the status of the transaction is set to Fail. The user is able to inspect individual exceptions. To limit the amount of JDBC and JNDI exceptions displayed for a top-level transaction, set the following property in the DCHOME/runtime/platform.node.server/custom/toolkit_custom.properties file:

```
com.ibm.tivoli.itcam.dc.ttapi.maxExceptions=number
```

By default, this amount is limited to 10.

Enabling Optim Performance Manager integration

How to enable integration with IBM Optim Performance Manager.

If IBM Optim Performance Manager is installed, you can enable TTAPI integration between ITCAM for Application Diagnostics, ITCAM for Transaction Tracking, and Optim Performance Manager.

Optim Performance Manager provides detailed information about DB2 JDBC calls. If integration is enabled, you can "drill down" from transactions displayed in ITCAM for Transaction Tracking workspaces to Optim Performance Manager console and dashboard to view deep database diagnostics information and detailed SQL statement performance data.

To enable Optim Performance Manager integration, set the following property in the DCHOME/runtime/platform.node.server/custom/toolkit_custom.properties file:

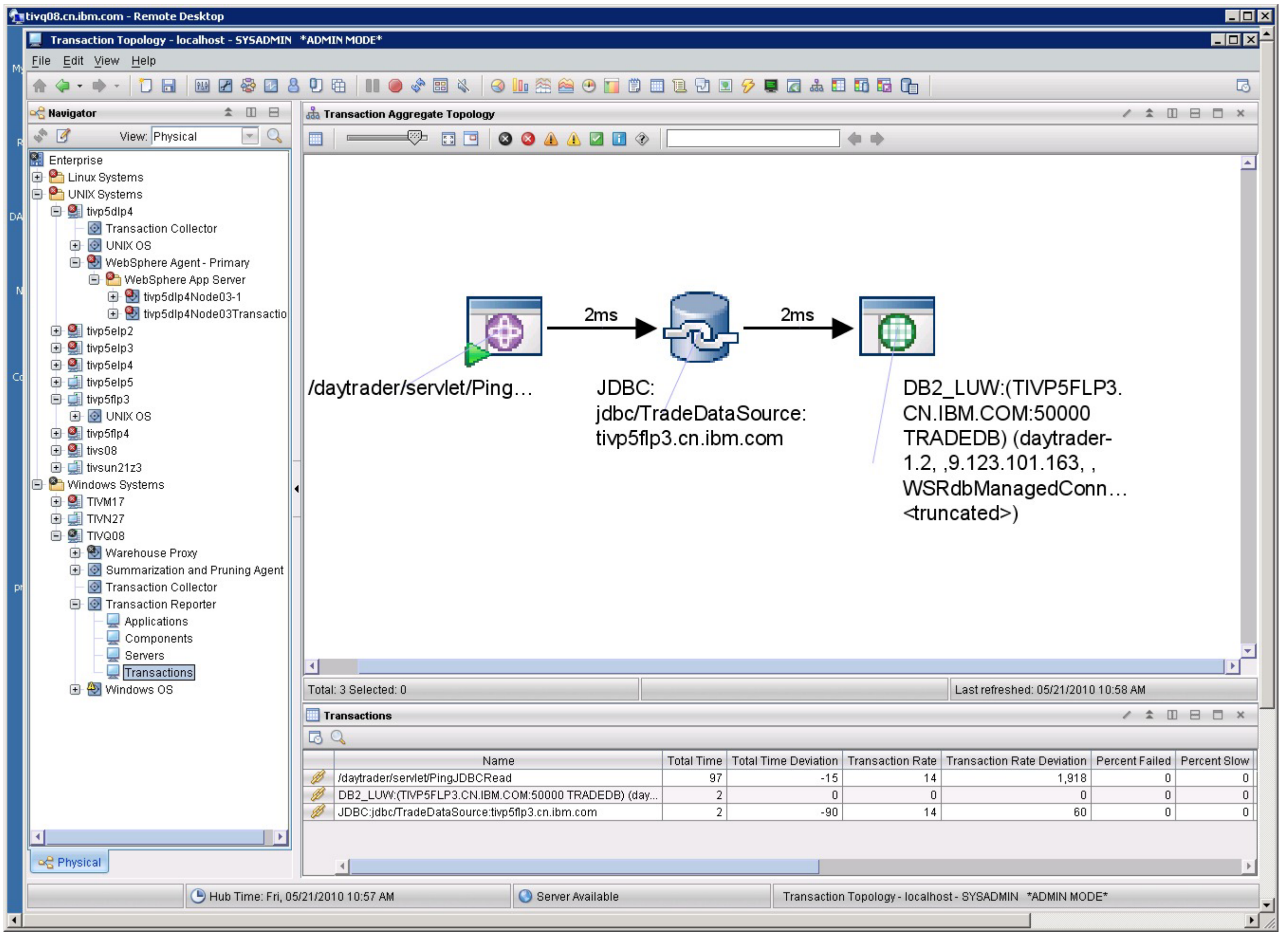
```
com.ibm.tivoli.itcam.dc.ttapi.jdbc.opm.enabled=true
```

If any monitored J2EE application changes the JDBC connection client attributes during an active session, also set the following property:

```
com.ibm.tivoli.itcam.dc.ttapi.jdbc.opm.clientinfo.reset=true
```

To make JDBC nested request information available when a Data Collector is running at MOD level 1, see “Enabling Optim Performance Manager integration.”

When Optim Performance Manager integration is enabled, linkage of JDBC nodes to DB2 LUW nodes will be displayed in topology views, as displayed in Figure 1 on page 7.



Total: 3 Selected: 0

Last refreshed: 05/21/2010 10:58 AM

Name	Total Time	Total Time Deviation	Transaction Rate	Transaction Rate Deviation	Percent Failed	Percent Slow
/daytrader/servlet/PingJDBCRead	97	-15	14	1,918	0	0
DB2_LUW:(TIVP5FLP3.CN.IBM.COM:50000 TRADEDB) (day…	2	0	0	0	0	0
JDBC:jdbc/TradeDataSource:tivp5flp3.cn.ibm.com	2	-90	14	60	0	0

Hub Time: Fri, 05/21/2010 10:57 AM

Server Available

Transaction Topology - localhost - SYSADMIN *ADMIN MODE*

Figure 1. Example topology with Optim integration

Enabling and disabling MQ tracking

You can use TTAPI to track MQ transactions (both MQI and JMS). To do this, you must enable MQ tracking using the Visualization Engine; it is disabled by default.

About this task

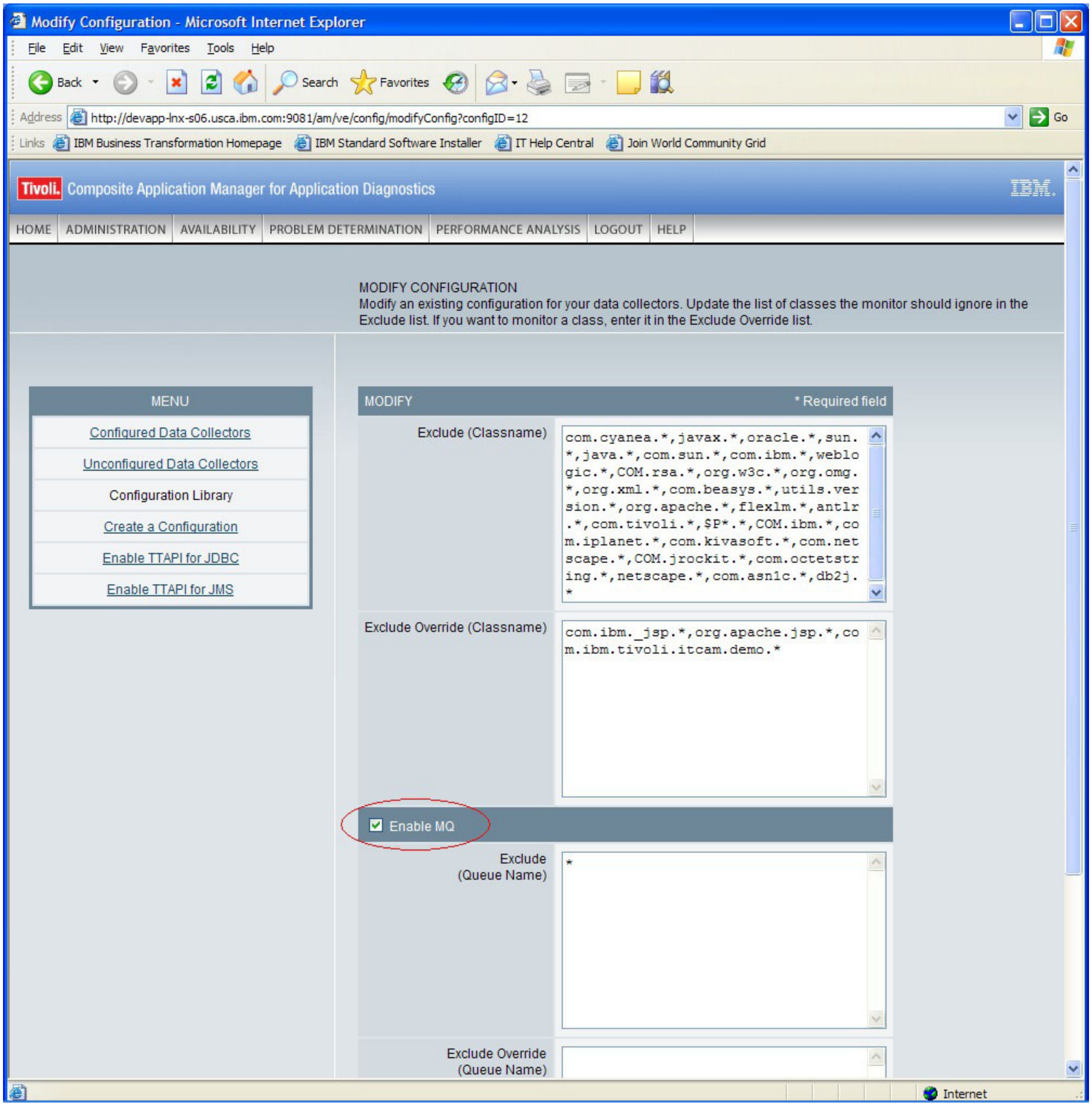
To track MQ requests on application server instances, make sure MQ tracking is enabled in the configuration applied to Data Collectors monitoring each of the instances. For each of the required Data Collector configurations, perform the following procedure.

Tip: For more information on configuring Data Collectors in the Visualization Engine, refer to *ITCAM for Application Diagnostics User Guide*.

Procedure

1. Log on to the Visualization Engine as a user with administrator permissions.
2. From the top navigation, click **Administration > Server Management > Data Collector Configuration**. The Configured Data Collector Overview page opens.
3. Click **Configuration Library** on the left navigation pane. The Data Collector Configuration List page opens.

4. Click the Modify icon next to the configuration you want to modify. The Modify page opens.



Modify Configuration - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://devapp-lnx-s06.usca.ibm.com:9081/am/ve/config/modifyConfig?configID=12
Go
Links IBM Business Transformation Homepage IBM Standard Software Installer IT Help Central Join World Community Grid
Tivoli. Composite Application Manager for Application Diagnostics
IBM.
HOME ADMINISTRATION AVAILABILITY PROBLEM DETERMINATION PERFORMANCE ANALYSIS LOGOUT HELP
MENU
Configured Data Collectors
Unconfigured Data Collectors
Configuration Library
Create a Configuration
Enable TTAPI for JDBC
Enable TTAPI for JMS
Internet

MODIFY CONFIGURATION

Modify an existing configuration for your data collectors. Update the list of classes the monitor should ignore in the Exclude list. If you want to monitor a class, enter it in the Exclude Override list.

MODIFY * Required field

Exclude (Classname): com.cyanea.*,javax.*,oracle.*,sun.*,java.*,com.sun.*,com.ibm.*,weblogic.*,COM.rsa.*,org.w3c.*,org.omg.*,org.xml.*,com.beasys.*,utils.version.*,org.apache.*,flexlm.*,antlr.*,com.tivoli.*,$P*.*,COM.ibm.*,com.iplanet.*,com.kivasoft.*,com.netscape.*,COM.jrockit.*,com.octetstring.*,netscape.*,com.asn1c.*,db2j.*

Exclude Override (Classname): com.ibm._jsp.*,org.apache.jsp.*,com.ibm.tivoli.itcam.demo.*

☑ Enable MQ

Exclude (Queue Name): *

Exclude Override (Queue Name):

Figure 2. Enabling and disabling MQ tracking in the Modify Configuration window

5. You can perform any of the following changes:
   - To enable MQ transaction tracking for all queues, select the **Enable MQ** box and clear the **Exclude** window.
   - To disable MQ tracking for specific queues, enter the queue names in the **Exclude** window. You can use the * wildcard in the queue name; use the comma (,) to separate the queue names.
   - To enable MQ tracking for queues that would be disabled in the **Exclude** window, enter the queue names in the **Exclude Override** window.

- To disable MQ transaction tracking for all queues, clear the **Enable MQ** box.

6. Click **Save** to save your modifications to the configuration. The Configured Data Collector Configuration List displays with the updated information.

Enabling and disabling JDBC tracking at MOD Level 1

You can use TTAPI to track JDBC transactions. However, by default, a Data Collector will not monitor JDBC transactions when it is set to MOD Level 1 by the Managing Server. If you need JDBC tracking on MOD L1, you must enable it.

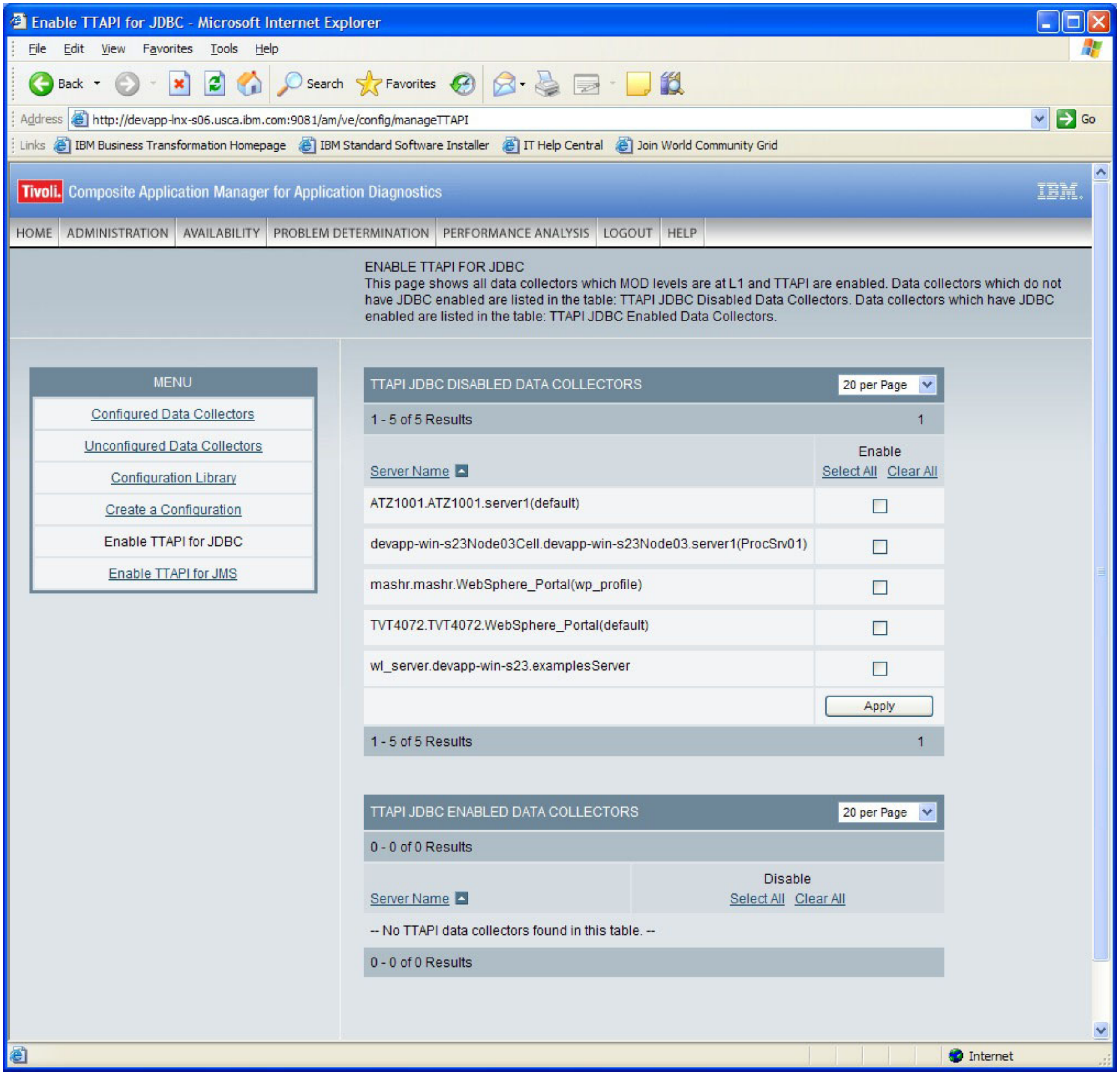
About this task

Use the Visualization Engine to enable JDBC tracking at MOD L1.

Tip: For more information on configuring Data Collectors in the Visualization Engine, refer to *ITCAM for Application Diagnostics User Guide*.

Procedure

1. Log on to the Visualization Engine as a user with administrator permissions.
2. From the top navigation, click **Administration > Server Management > Data Collector Configuration**. The Configured Data Collector Overview page opens.
3. Click **Enable TTAPI for JDBC** on the left navigation pane. The Enable TTAPI for JDBC page opens.


Enable TTAPI for JDBC - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://devapp-lnx-s06.usca.ibm.com:9081/am/ve/config/manageTTAPI
Go
Links IBM Business Transformation Homepage IBM Standard Software Installer IT Help Central Join World Community Grid
Tivoli. Composite Application Manager for Application Diagnostics
IBM.
HOME ADMINISTRATION AVAILABILITY PROBLEM DETERMINATION PERFORMANCE ANALYSIS LOGOUT HELP
MENU
Configured Data Collectors
Unconfigured Data Collectors
Configuration Library
Create a Configuration
Enable TTAPI for JDBC
Enable TTAPI for JMS
Internet

ENABLE TTAPI FOR JDBC

This page shows all data collectors which MOD levels are at L1 and TTAPI are enabled. Data collectors which do not have JDBC enabled are listed in the table: TTAPI JDBC Disabled Data Collectors. Data collectors which have JDBC enabled are listed in the table: TTAPI JDBC Enabled Data Collectors.

TTAPI JDBC DISABLED DATA COLLECTORS — 20 per Page

1 - 5 of 5 Results 1

Server Name	Enable Select All Clear All
ATZ1001.ATZ1001.server1(default)	□
devapp-win-s23Node03Cell.devapp-win-s23Node03.server1(ProcSrv01)	□
mashr.mashr.WebSphere_Portal(wp_profile)	□
TVT4072.TVT4072.WebSphere_Portal(default)	□
wl_server.devapp-win-s23.examplesServer	□
	Apply

1 - 5 of 5 Results 1

TTAPI JDBC ENABLED DATA COLLECTORS — 20 per Page

0 - 0 of 0 Results

Server Name	Disable Select All Clear All

-- No TTAPI data collectors found in this table. --

0 - 0 of 0 Results

Figure 3. Enable TTAPI for JDBC window

4. You can perform any of the following changes:
   - To enable JDBC transaction tracking on MOD L1 for any monitored application servers, select the boxes next to the application server names in the **TTAPI JDBC DISABLED DATA COLLECTORS** table, and click the **Apply** button below this table.
   - To disable JDBC transaction tracking on MOD L1 for any monitored application servers, select the boxes next to the application server names in the **TTAPI JDBC ENABLED DATA COLLECTORS** table, and click the **Apply** button below this table.

Enabling and disabling JMS tracking at MOD Level 1

You can use TTAPI to display topology for JMS transactions. However, by default, a Data Collector will not track JMS topology when it is set to MOD Level 1 by the Managing Server. If you need to view JMS topology on MOD L1, you must enable it.

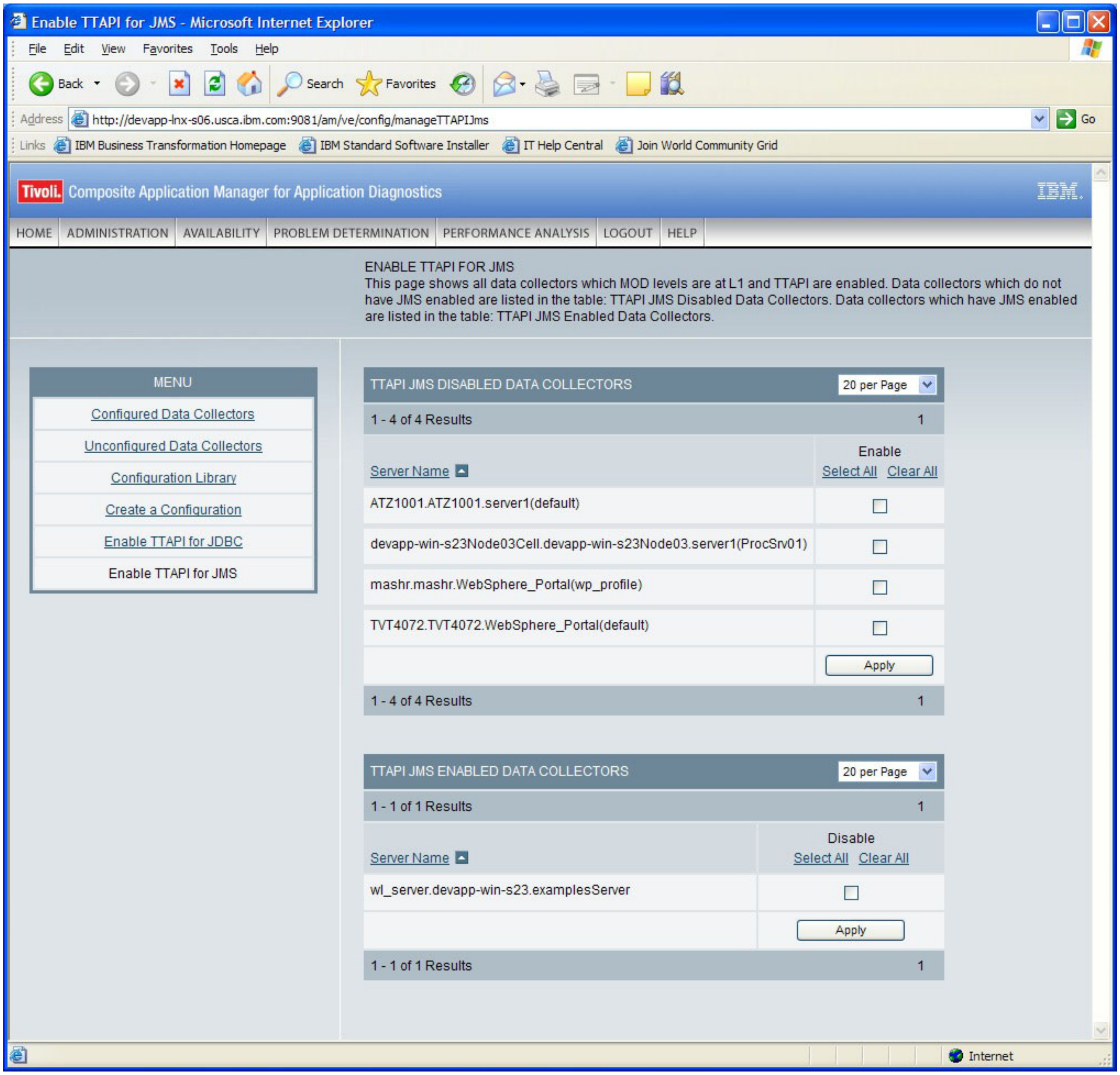
About this task

Use the Visualization Engine to enable JMS tracking at MOD L1. (JMS tracking is enabled by default when the Data Collector is at MOD L2 or MOD L3).

Tip: For more information on configuring Data Collectors in the Visualization Engine, refer to *ITCAM for Application Diagnostics User Guide*.

Procedure

1. Log on to the Visualization Engine as a user with administrator permissions.
2. From the top navigation, click **Administration > Server Management > Data Collector Configuration**. The Configured Data Collector Overview page opens.
3. Click **Enable TTAPI for JMS** on the left navigation pane. The Enable TTAPI for JMS page opens.


Enable TTAPI for JMS - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://devapp-lnx-s06.usca.ibm.com:9081/am/ve/config/manageTTAPIJms Go
Links IBM Business Transformation Homepage IBM Standard Software Installer IT Help Central Join World Community Grid
Tivoli. Composite Application Manager for Application Diagnostics IBM.
HOME ADMINISTRATION AVAILABILITY PROBLEM DETERMINATION PERFORMANCE ANALYSIS LOGOUT HELP
MENU
Configured Data Collectors
Unconfigured Data Collectors
Configuration Library
Create a Configuration
Enable TTAPI for JDBC
Enable TTAPI for JMS
Internet

ENABLE TTAPI FOR JMS

This page shows all data collectors which MOD levels are at L1 and TTAPI are enabled. Data collectors which do not have JMS enabled are listed in the table: TTAPI JMS Disabled Data Collectors. Data collectors which have JMS enabled are listed in the table: TTAPI JMS Enabled Data Collectors.

TTAPI JMS DISABLED DATA COLLECTORS — 20 per Page

1 - 4 of 4 Results — 1

Server Name	Enable Select All Clear All
ATZ1001.ATZ1001.server1(default)	□
devapp-win-s23Node03Cell.devapp-win-s23Node03.server1(ProcSrv01)	□
mashr.mashr.WebSphere_Portal(wp_profile)	□
TVT4072.TVT4072.WebSphere_Portal(default)	□
	Apply

1 - 4 of 4 Results — 1

TTAPI JMS ENABLED DATA COLLECTORS — 20 per Page

1 - 1 of 1 Results — 1

Server Name	Disable Select All Clear All
wl_server.devapp-win-s23.examplesServer	□
	Apply

1 - 1 of 1 Results — 1

Figure 4. Enable TTAPI for JMS window

4. You can perform any of the following changes:
   - To enable JMS transaction tracking on MOD L1 for any monitored application servers, select the boxes next to the application server names in the **TTAPI JMS DISABLED DATA COLLECTORS** table, and click the **Apply** button below this table.
   - To disable JMS transaction tracking on MOD L1 for any monitored application servers, select the boxes next to the application server names in the **TTAPI JMS ENABLED DATA COLLECTORS** table, and click the **Apply** button below this table.

Chapter 3. Integration

This chapter covers the required servers, components, and application workspaces and their integration.

Servers, components, and application workspaces

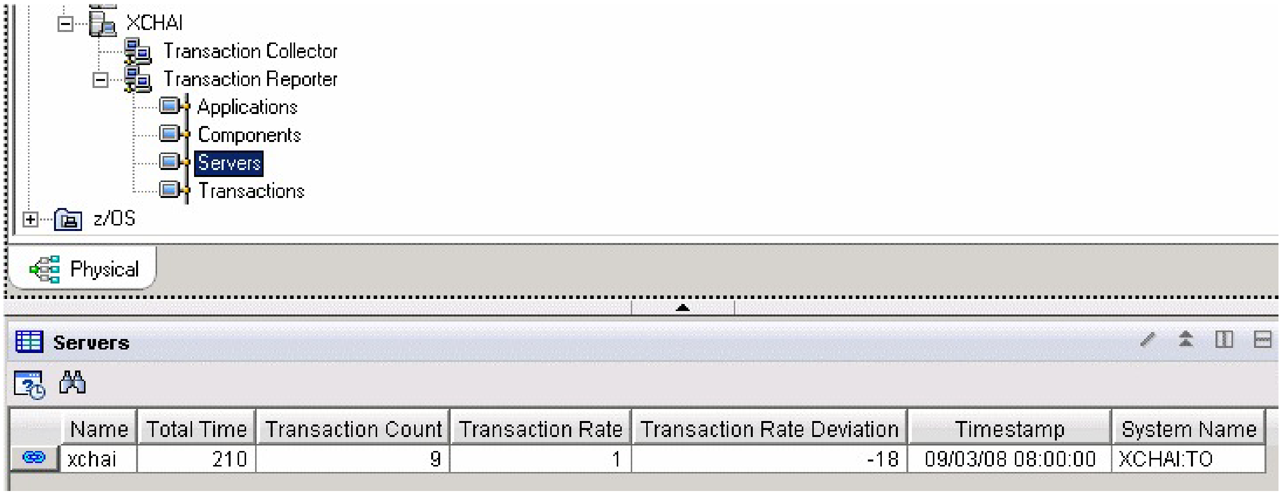
Servers, Components, and Application workspaces display aggregated transactions and request data.

The following table shows the values set by the Data Collector for these workspaces to identify servers, components, and applications.

Table 1.

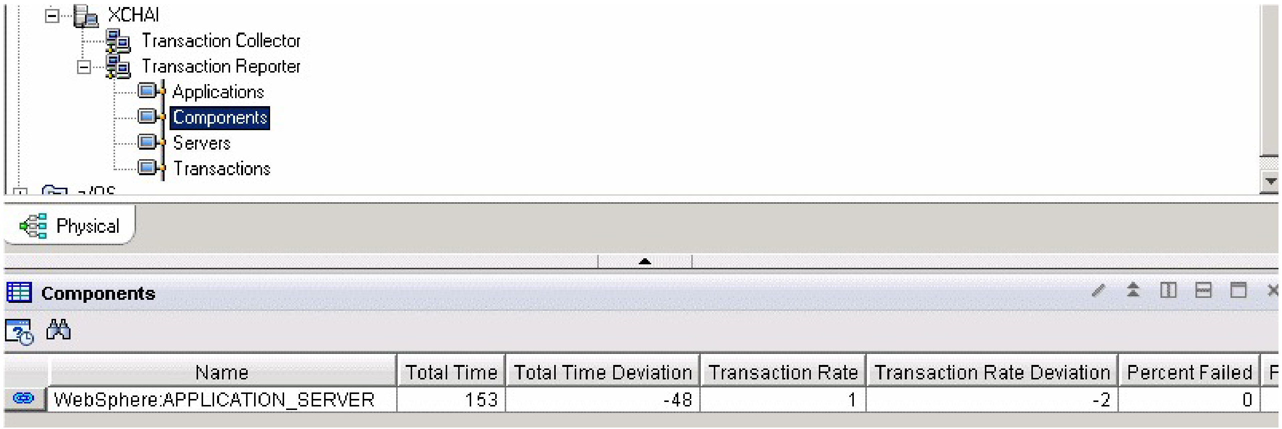
TTEMA TEP Workspace	**Value of Name**	**Notes**
Servers	Short DNS Name	
Components	WebSphere:Application_Server	
Applications	CellName.NodeName.ServerName (ProfileName)	For stand-alone servers, the default value set by Data Collector
	ServerName(ProfileName)	For stand-alone application server instances, if `com.ibm.tivoli.itcam.dc.ttapi.` `appname.shortname=true` is specified in the server-specific `toolkit_custom.properties` file.
	CellName.NodeName.ServerName (ProfileName)^ClusterName (ClusterType) ClusterType can be either **Static** or **Dynamic**	For Network Deployment or Extended Deployment, the default value set by Data Collector
	ServerName(ProfileName) ^ClusterName(ClusterType)	For Network Deployment or Extended Deployment, if `com.ibm.tivoli.itcam.dc.ttapi.` `appname.shortname=true` is specified in the server-specific `toolkit_custom.properties` file.

These values remain the same for all integrated requests. Figure 5 on page 14, Figure 6 on page 14, and Figure 7 on page 15 show the values displayed on the IBM Tivoli Monitoring Tivoli Enterprise Portal interface.



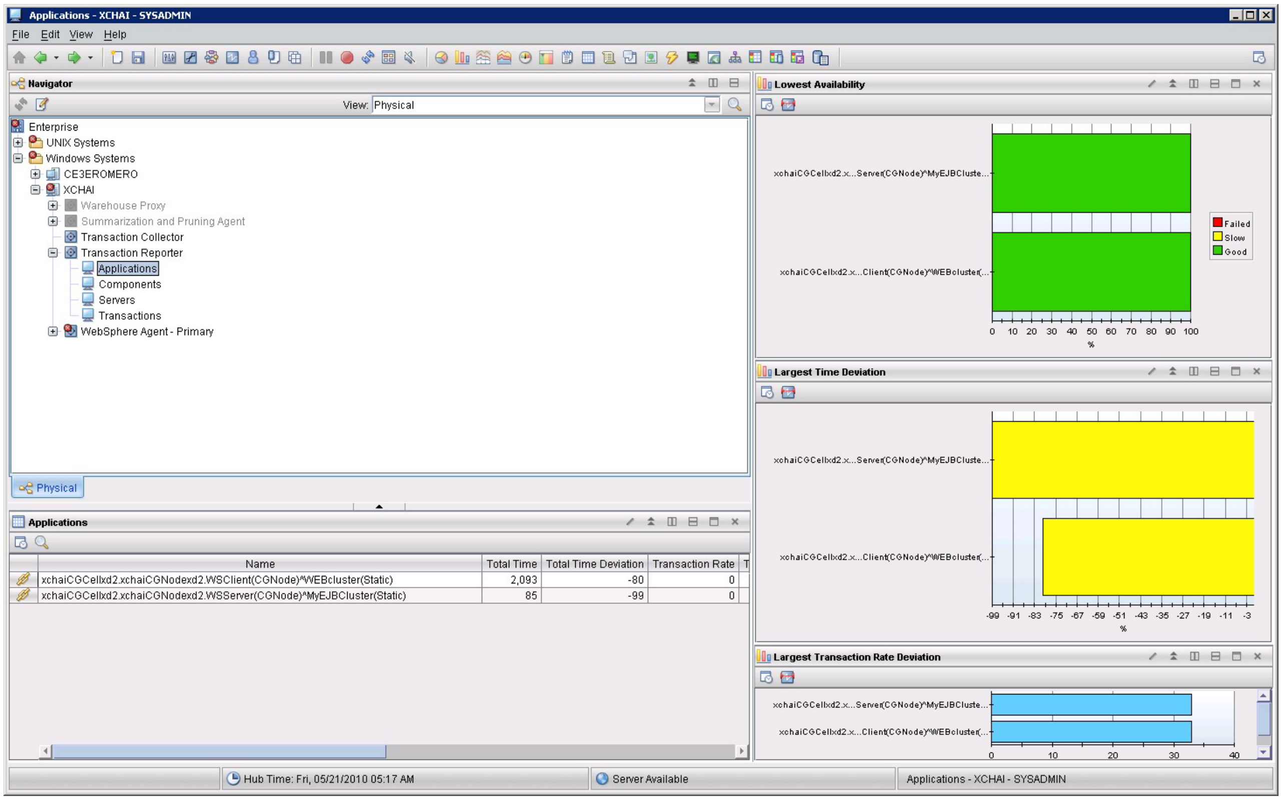
Name	Total Time	Transaction Count	Transaction Rate	Transaction Rate Deviation	Timestamp	System Name
xchai	210	9	1	-18	09/03/08 08:00:00	XCHAI:TO

Figure 5. Servers workspace



Name	Total Time	Total Time Deviation	Transaction Rate	Transaction Rate Deviation	Percent Failed	F
WebSphere:APPLICATION_SERVER	153	-48	1	-2	0	

Figure 6. Components workspace


Applications - XCHAI - SYSADMIN
File Edit View Help
Navigator
View: Physical
Enterprise
UNIX Systems
Windows Systems
CE3EROMERO
XCHAI
Warehouse Proxy
Summarization and Pruning Agent
Transaction Collector
Transaction Reporter
Applications
Components
Servers
Transactions
WebSphere Agent - Primary
Physical
Applications
Lowest Availability
xchaiCGCellxd2.x...Server(CGNode)^MyEJBCluste...
xchaiCGCellxd2.x...Client(CGNode)^WEBcluster(...
Failed
Slow
Good
0 10 20 30 40 50 60 70 80 90 100
%
Largest Time Deviation
xchaiCGCellxd2.x...Server(CGNode)^MyEJBCluste...
xchaiCGCellxd2.x...Client(CGNode)^WEBcluster(...
-99 -91 -83 -75 -67 -59 -51 -43 -35 -27 -19 -11 -3
%
Largest Transaction Rate Deviation
xchaiCGCellxd2.x...Server(CGNode)^MyEJBCluste...
xchaiCGCellxd2.x...Client(CGNode)^WEBcluster(...
0 10 20 30 40
Hub Time: Fri, 05/21/2010 05:17 AM
Server Available
Applications - XCHAI - SYSADMIN

	Name	Total Time	Total Time Deviation	Transaction Rate	T
	xchaiCGCellxd2.xchaiCGNodexd2.WSClient(CGNode)^WEBcluster(Static)	2,093	-80	0	
	xchaiCGCellxd2.xchaiCGNodexd2.WSServer(CGNode)^MyEJBCluster(Static)	85	-99	0	

Figure 7. Applications workspace

Transactions workspace

Use the Transactions workspace to view the aggregated transaction information, and to access additional information in ITCAM for Application Diagnostics.

The Transactions workspace provides a list of transactions fitting certain criteria. Aggregated information is displayed for every transaction name.

To access the link menu for a transaction, right-click the chain icon at the left of the line in the transaction table. Use the link menu to view additional transaction information, including topology and response time statistics.

You can also use the link menu to access detailed information in ITCAM for Application Diagnostics:

- **Request Analysis** displays the Request Analysis workspace.
- **Diagnostics Recent Completed Requests** displays the recent request detail in the Managing Server Visualization Engine. This information is available only if the Deep Dive diagnostics infrastructure (Managing Server) is installed.

  Important: If the Managing Server used for monitoring an application server has been changed, the link to the Visualization Engine may not work. To enable the link again, perform the Forget Topology Take Action in the Transactions workspace. Then ensure that data is still sent from the Data Collector, and wait for four aggregation periods (by default, for 20 minutes). The aggregation period is set in the Translation Reporter configuration.

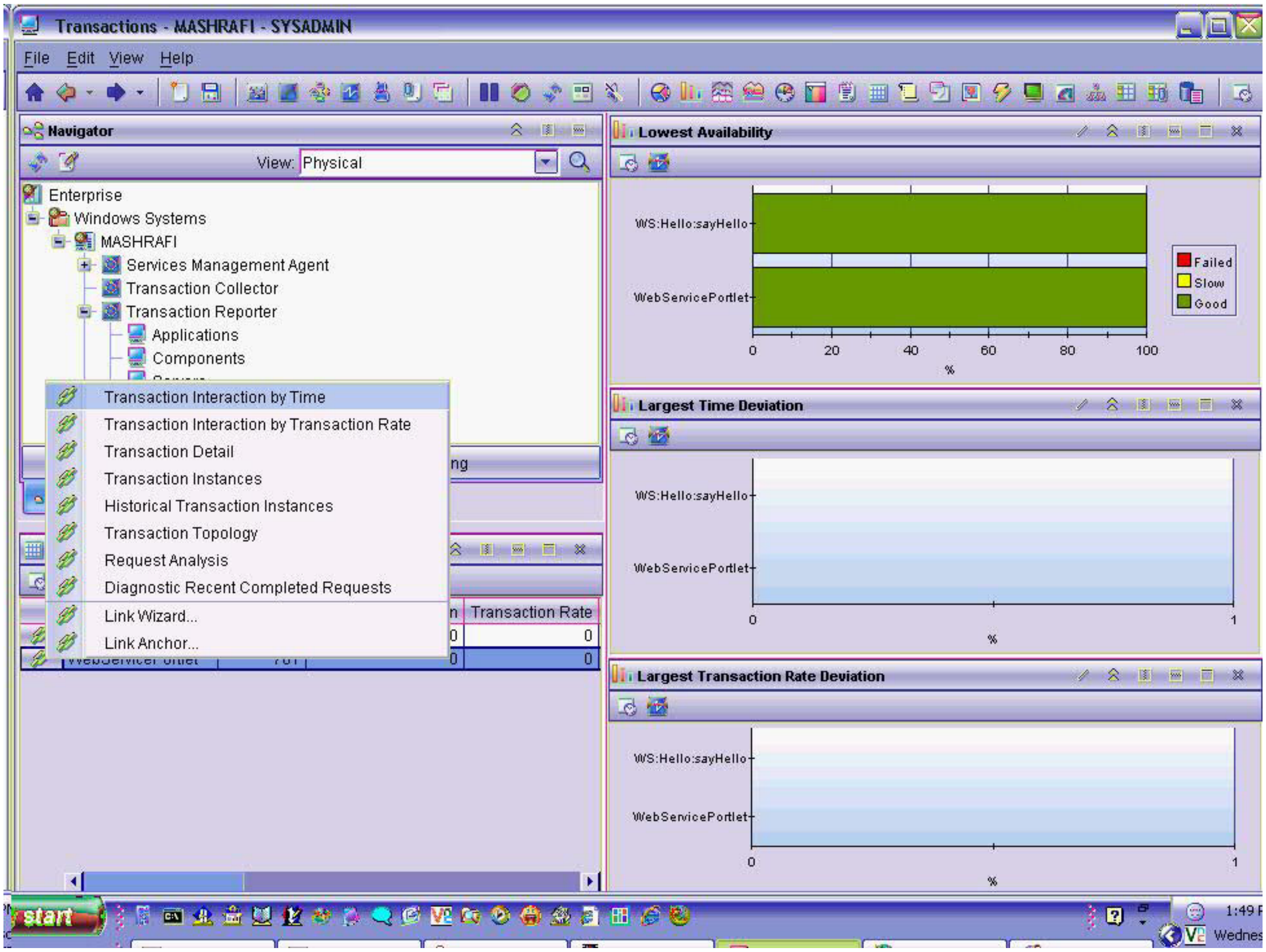


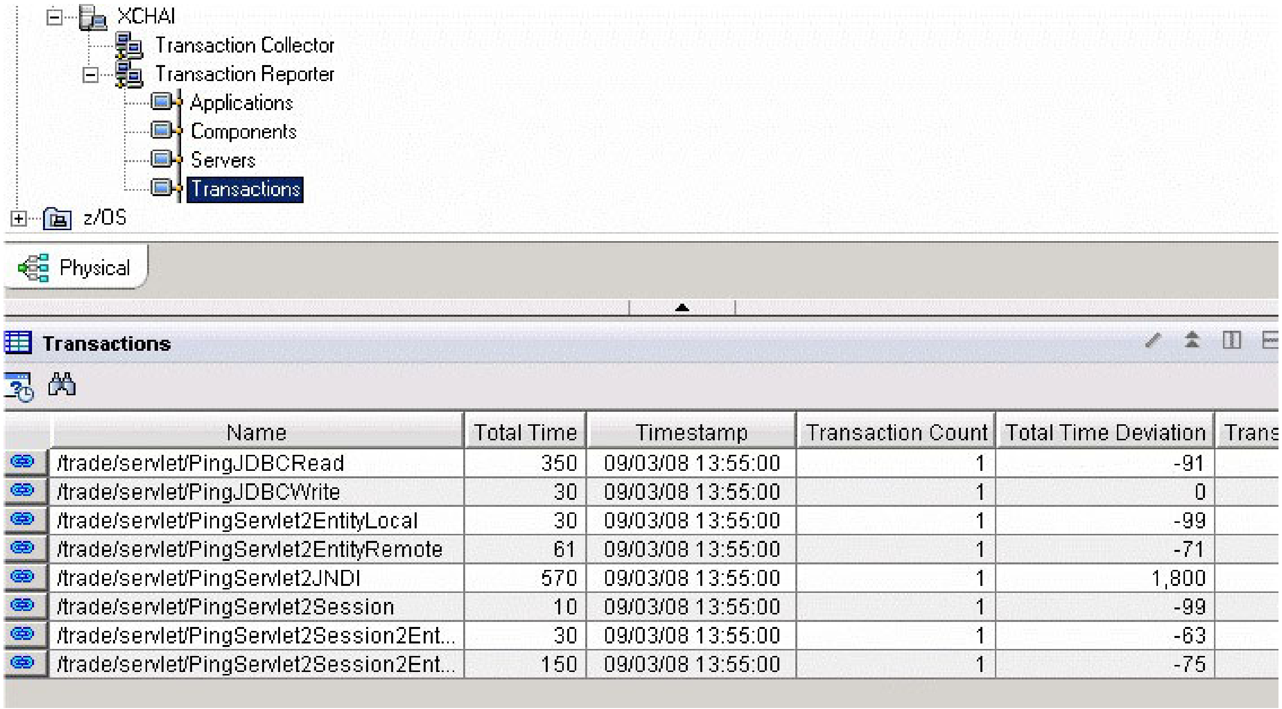
Figure 8. Transactions workspace

Servlet and JSP Request Integration

Details on integrating the monitoring of Servlet and JSP requests.

Table 2.

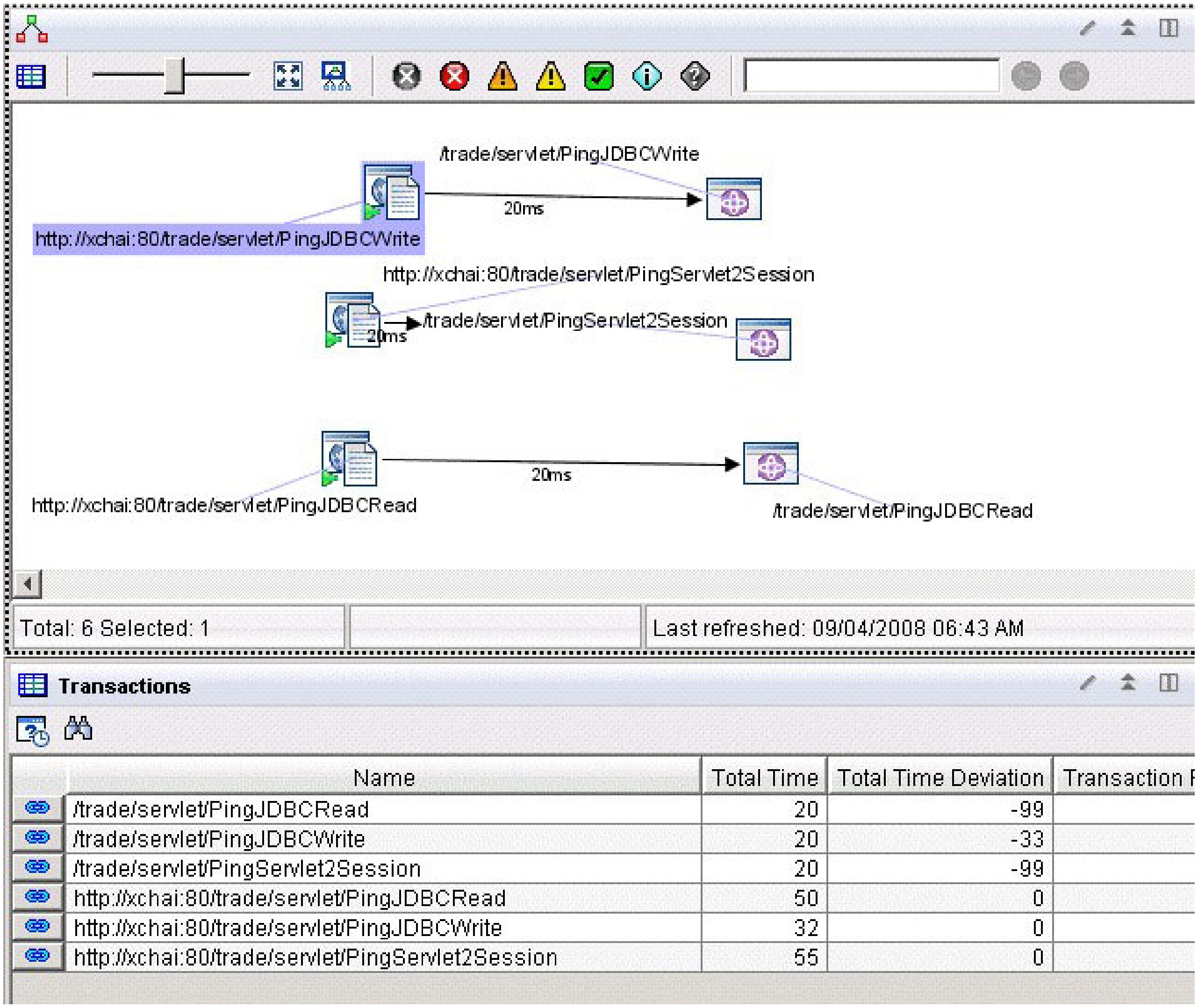
TTEMA TEP Workspace	Value of Name	Notes
Transactions	URI	This is the default value set by Data Collector
	URI + QueryString	If `com.ibm.tivoli.itcam.dc.ttapi.servlet.include.` `querystring=true` is specifed in the server specific `toolkit_custom.properties` file



Name	Total Time	Timestamp	Transaction Count	Total Time Deviation	Trans
/trade/servlet/PingJDBCRead	350	09/03/08 13:55:00	1	-91	
/trade/servlet/PingJDBCWrite	30	09/03/08 13:55:00	1	0	
/trade/servlet/PingServlet2EntityLocal	30	09/03/08 13:55:00	1	-99	
/trade/servlet/PingServlet2EntityRemote	61	09/03/08 13:55:00	1	-71	
/trade/servlet/PingServlet2JNDI	570	09/03/08 13:55:00	1	1,800	
/trade/servlet/PingServlet2Session	10	09/03/08 13:55:00	1	-99	
/trade/servlet/PingServlet2Session2Ent...	30	09/03/08 13:55:00	1	-63	
/trade/servlet/PingServlet2Session2Ent...	150	09/03/08 13:55:00	1	-75	

Figure 9. Servlet and JSP transactions

Figure 10 on page 18 shows the topology of the IBM HTTP Server (with ARM-enabled plugin) and WebSphere Application Server, displayed in the Transactions workspace.


/trade/servlet/PingJDBCWrite
20ms
http://xchai:80/trade/servlet/PingJDBCWrite
http://xchai:80/trade/servlet/PingServlet2Session
20ms
/trade/servlet/PingServlet2Session
20ms
http://xchai:80/trade/servlet/PingJDBCRead
/trade/servlet/PingJDBCRead

Total: 6 Selected: 1

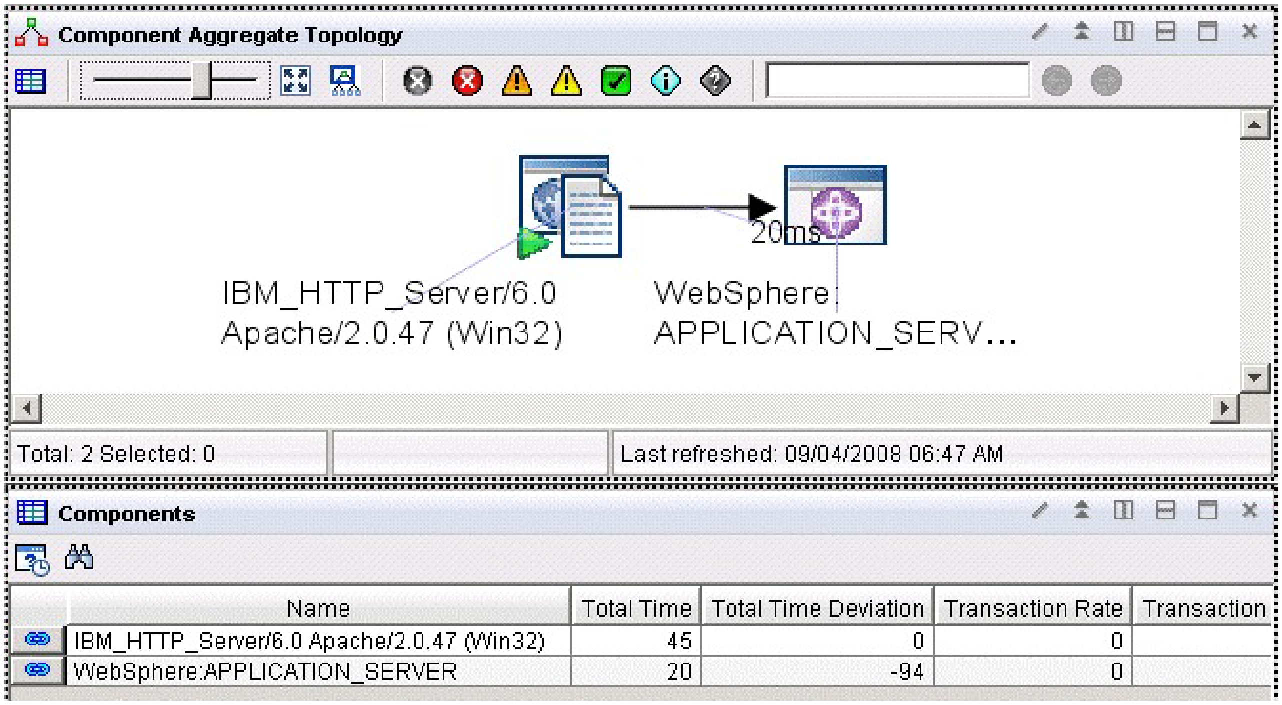
Last refreshed: 09/04/2008 06:43 AM

Transactions

	Name	Total Time	Total Time Deviation	Transaction F
	/trade/servlet/PingJDBCRead	20	-99	
	/trade/servlet/PingJDBCWrite	20	-33	
	/trade/servlet/PingServlet2Session	20	-99	
	http://xchai:80/trade/servlet/PingJDBCRead	50	0	
	http://xchai:80/trade/servlet/PingJDBCWrite	32	0	
	http://xchai:80/trade/servlet/PingServlet2Session	55	0	

Figure 10. Servlet and JSP topology in Transactions workspace

On Figure 11 on page 19, the topology view of the Components workspace shows interaction between the HTTP Server and WebSphere Application Server:



Component Aggregate Topology
20ms
IBM_HTTP_Server/6.0 Apache/2.0.47 (Win32)
WebSphere APPLICATION_SERV...
Components

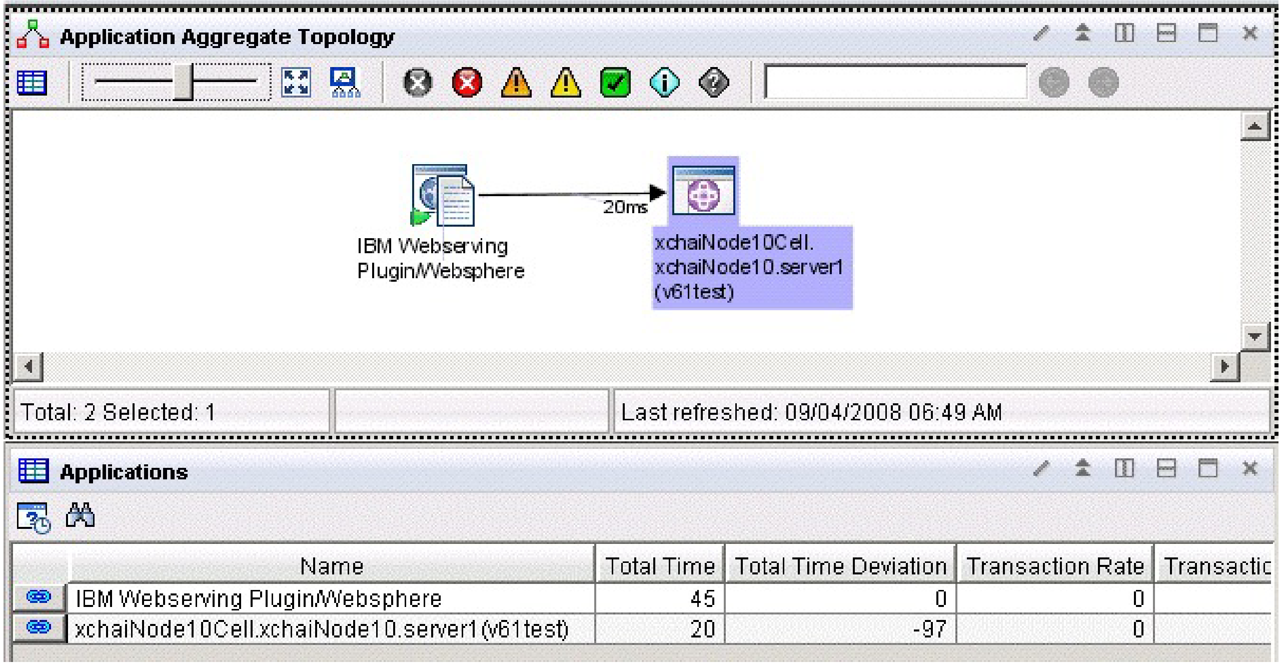
Total: 2 Selected: 0

Last refreshed: 09/04/2008 06:47 AM

Name	Total Time	Total Time Deviation	Transaction Rate	Transaction
IBM_HTTP_Server/6.0 Apache/2.0.47 (Win32)	45	0	0	
WebSphere:APPLICATION_SERVER	20	-94	0	

Figure 11. Servlet and JSP topology on Components workspace

On Figure 12, the topology view of the Applications workspace shows interaction between one instance of the HTTP Server and one instance of WebSphere Application Server:



Application Aggregate Topology
20ms
IBM Webserving Plugin/Websphere
xchaiNode10Cell.
xchaiNode10.server1
(v61test)
Applications

Total: 2 Selected: 1

Last refreshed: 09/04/2008 06:49 AM

Name	Total Time	Total Time Deviation	Transaction Rate	Transactic
IBM Webserving Plugin/Websphere	45	0	0	
xchaiNode10Cell.xchaiNode10.server1 (v61test)	20	-97	0	

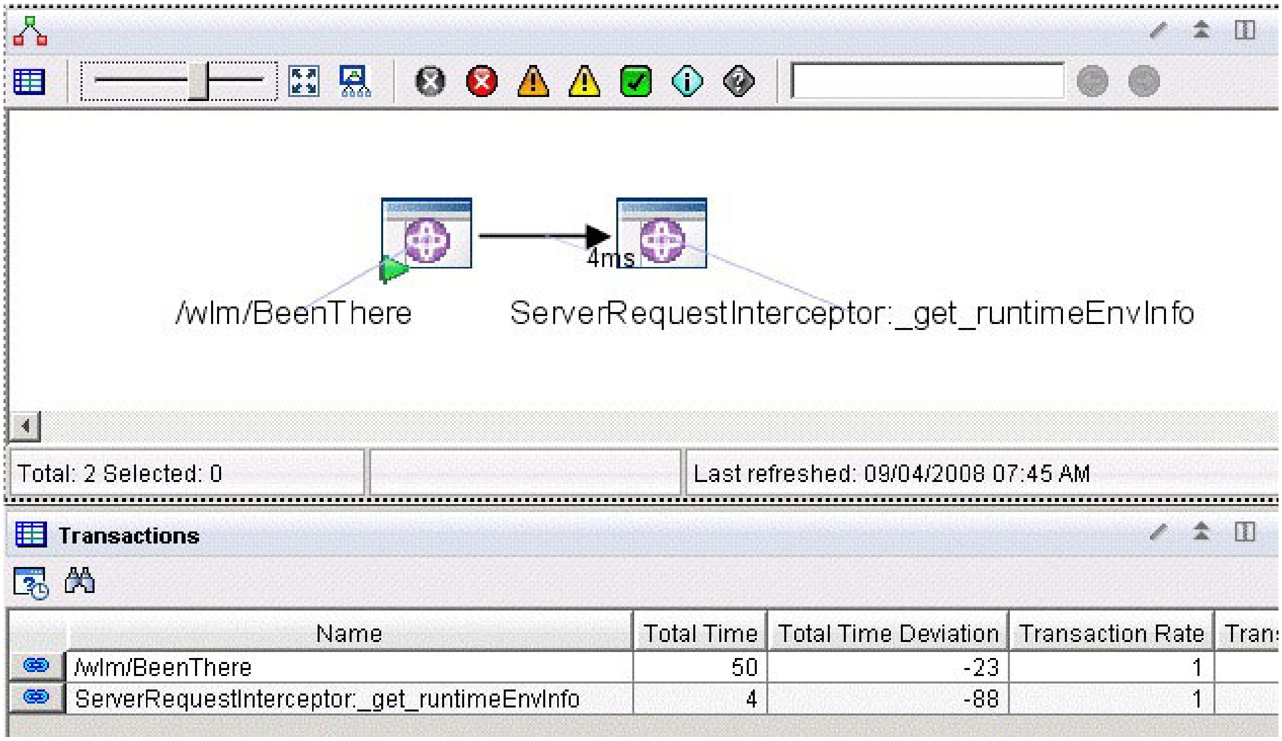
Figure 12. Servlet and JSP topology on Applications workspace

RMI and IIOP Request Integration

Details on integrating the monitoring of RMI and IIOP requests.

Table 3.

TTEMA TEP Workspace	Value of Name	Notes
Transactions	RMI Client: Invoking calling Servlet/JSP URI or ClientRequestInterceptor:MethodName	
	RMI Server: ServerRequestInterceptor:MethodName	



Total: 2 Selected: 0

Last refreshed: 09/04/2008 07:45 AM

Transactions

Name	Total Time	Total Time Deviation	Transaction Rate	Tran:
/wlm/BeenThere	50	-23	1	
ServerRequestInterceptor:_get_runtimeEnvInfo	4	-88	1	

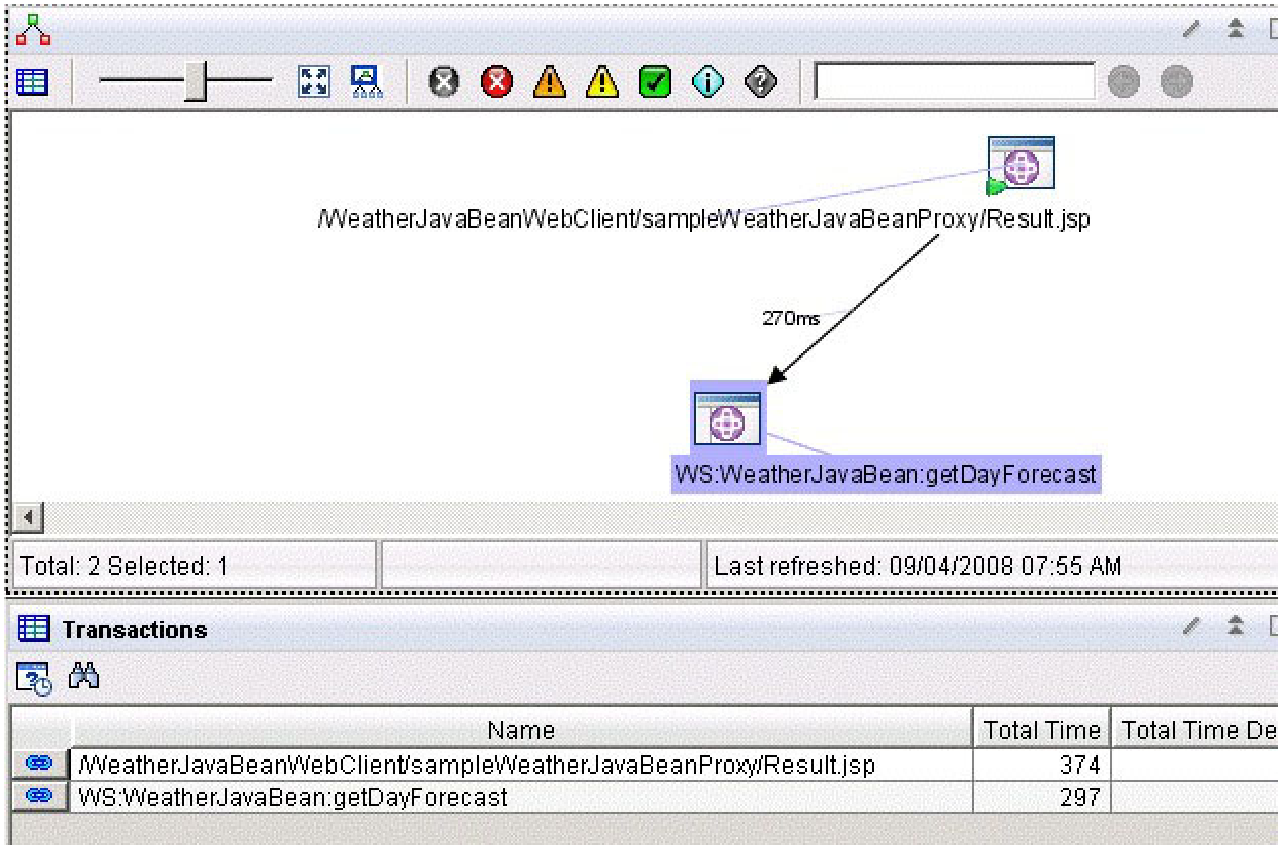
Figure 13. RMI/IIOP topology view in Transactions workspace

Web Services request integration

Details on integrating the monitoring of Web Services requests.

Table 4.

TTEMA TEP Workspace	Value of Name Column	Note
Transactions	Client Side: Invoking Servlet/JPS or WS:WebServicePort:OperationName	
	Server Side: WS:WebServicePort:OperationName	


/WeatherJavaBeanWebClient/sampleWeatherJavaBeanProxy/Result.jsp
270ms
WS:WeatherJavaBean:getDayForecast

Total: 2 Selected: 1

Last refreshed: 09/04/2008 07:55 AM

Transactions

	Name	Total Time	Total Time De
	/WeatherJavaBeanWebClient/sampleWeatherJavaBeanProxy/Result.jsp	374	
	WS:WeatherJavaBean:getDayForecast	297	

Figure 14. Web Services topology view in Transactions workspace

MQI request integration

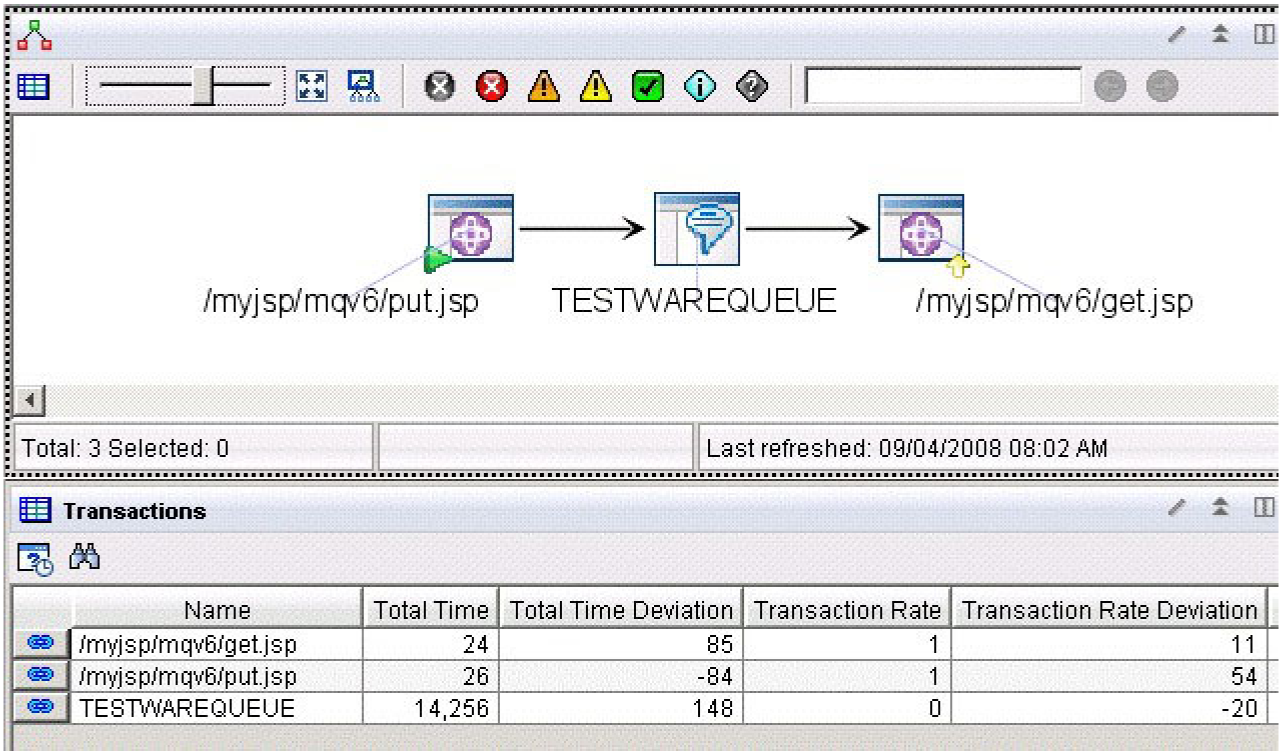
Details on integrating the monitoring of MQI and MQv7 JMS requests.

Table 5.

TTEMA TEP Workspace	Value of Name	Notes
Transactions	PUT/GET: Invoking Servlet/JPS or QueueManagerName:QueueName	

For MQI requests except MQ v7 JMS requests, details are available in the Managing Server Visualization Engine. For MQ v7 JMS requests, details are **not** available in the Visualization Engine.

To track MQI transactions, you must enable MQ tracking using the Visualization Engine. See “Enabling and disabling MQ tracking” on page 7.

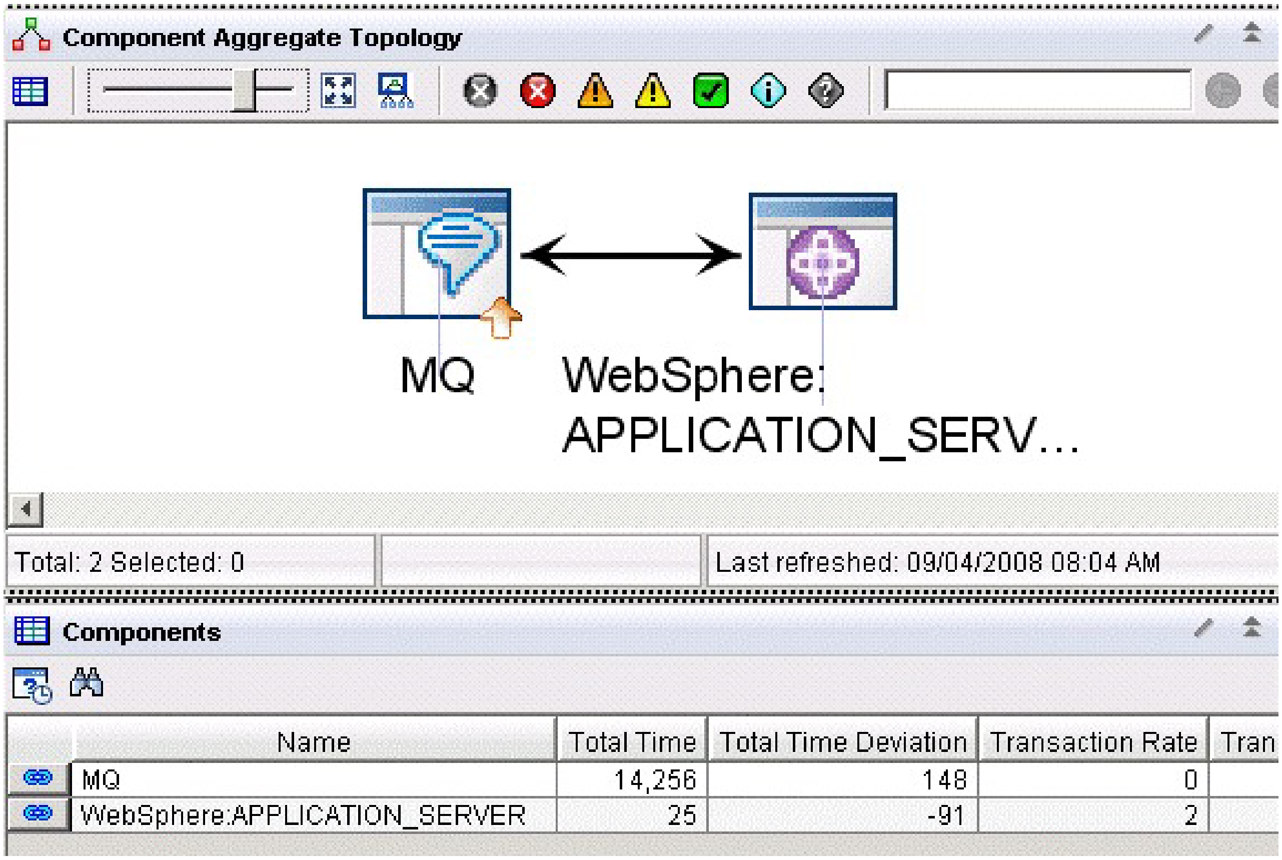


Total: 3 Selected: 0

Last refreshed: 09/04/2008 08:02 AM

Name	Total Time	Total Time Deviation	Transaction Rate	Transaction Rate Deviation
/myjsp/mqv6/get.jsp	24	85	1	11
/myjsp/mqv6/put.jsp	26	-84	1	54
TESTWAREQUEUE	14,256	148	0	-20

Figure 15. MQI topology view in Transactions workspace

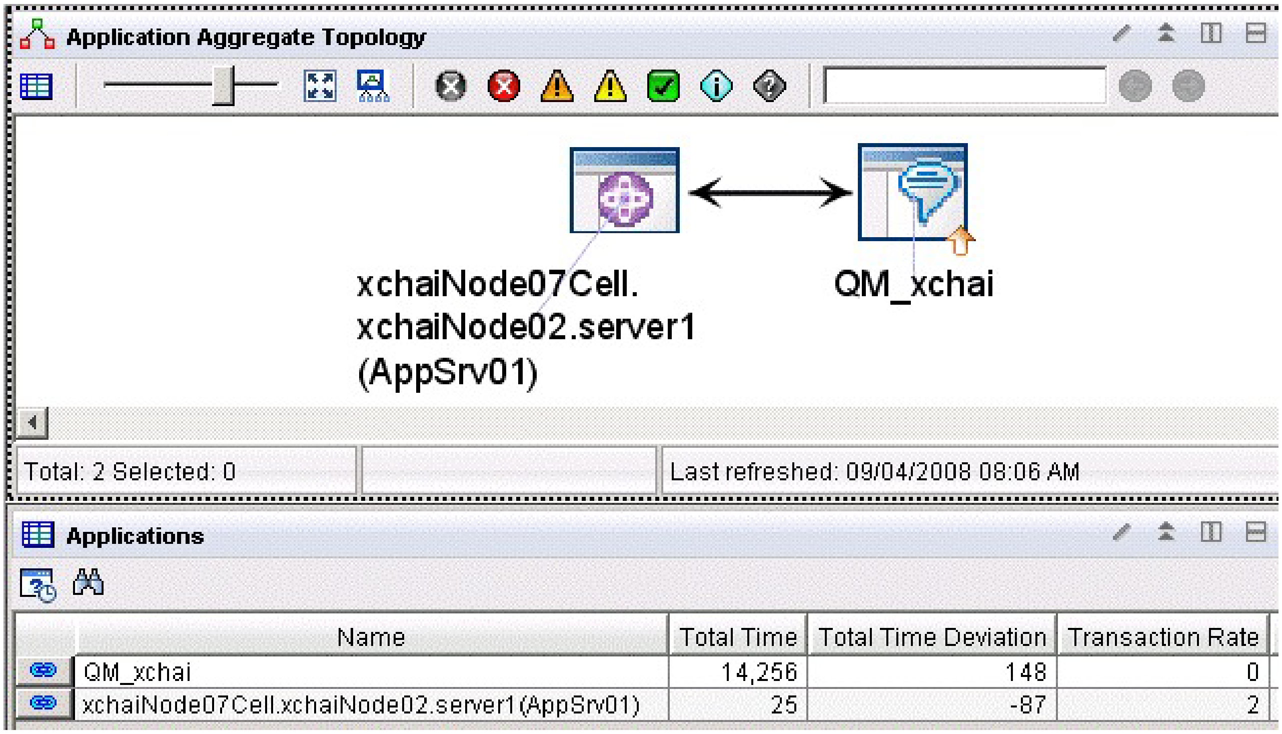


Total: 2 Selected: 0

Last refreshed: 09/04/2008 08:04 AM

	Name	Total Time	Total Time Deviation	Transaction Rate	Tran
	MQ	14,256	148	0	
	WebSphere:APPLICATION_SERVER	25	-91	2	

Figure 16. MQI topology view in Components workspace



	Name	Total Time	Total Time Deviation	Transaction Rate
	QM_xchai	14,256	148	0
	xchaiNode07Cell.xchaiNode02.server1(AppSrv01)	25	-87	2

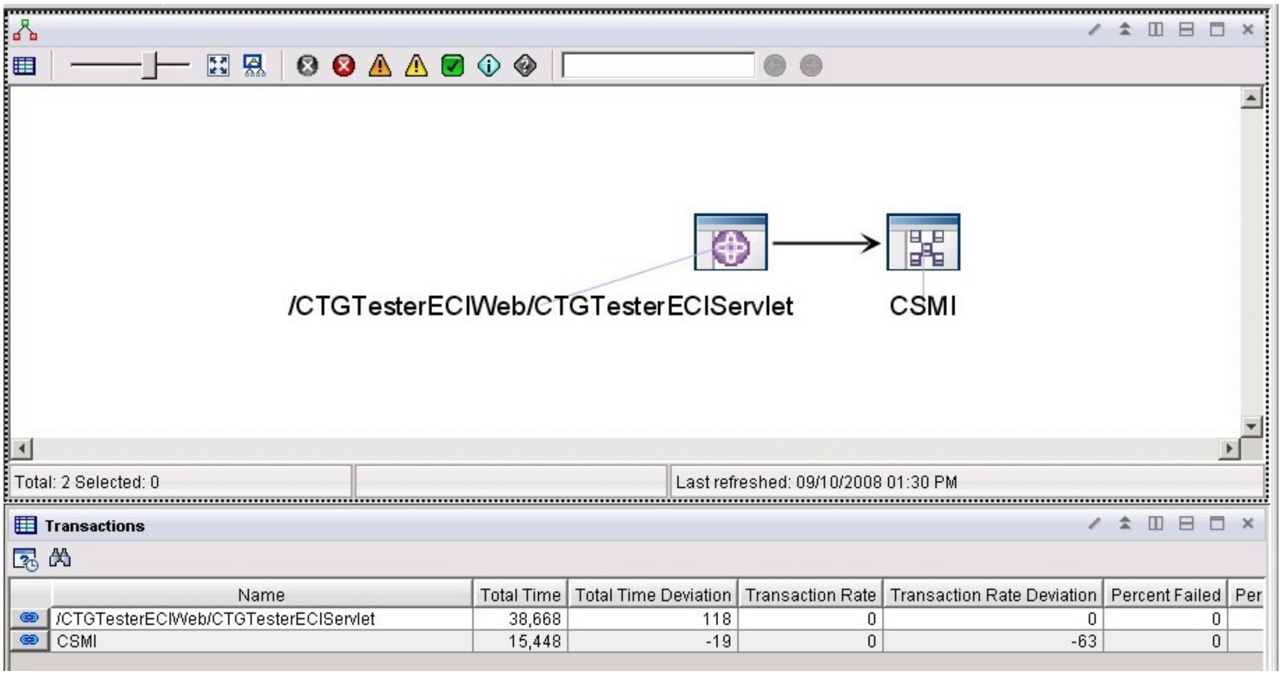
Figure 17. MQI topology view in Applications workspace

CICS integration

Details on integrating the monitoring of CICS requests.

Table 6.

TTEMA TEP Workspace	Value of Name	Notes
Transactions	WebSphere client: The invoking request URI.	Represents processing by CICS components.
	CTG/CICS: “CSMI”	



Total: 2 Selected: 0

Last refreshed: 09/10/2008 01:30 PM

Transactions

Name	Total Time	Total Time Deviation	Transaction Rate	Transaction Rate Deviation	Percent Failed	Per
/CTGTesterECIWeb/CTGTesterECIServlet	38,668	118	0	0	0	
CSMI	15,448	-19	0	-63	0	

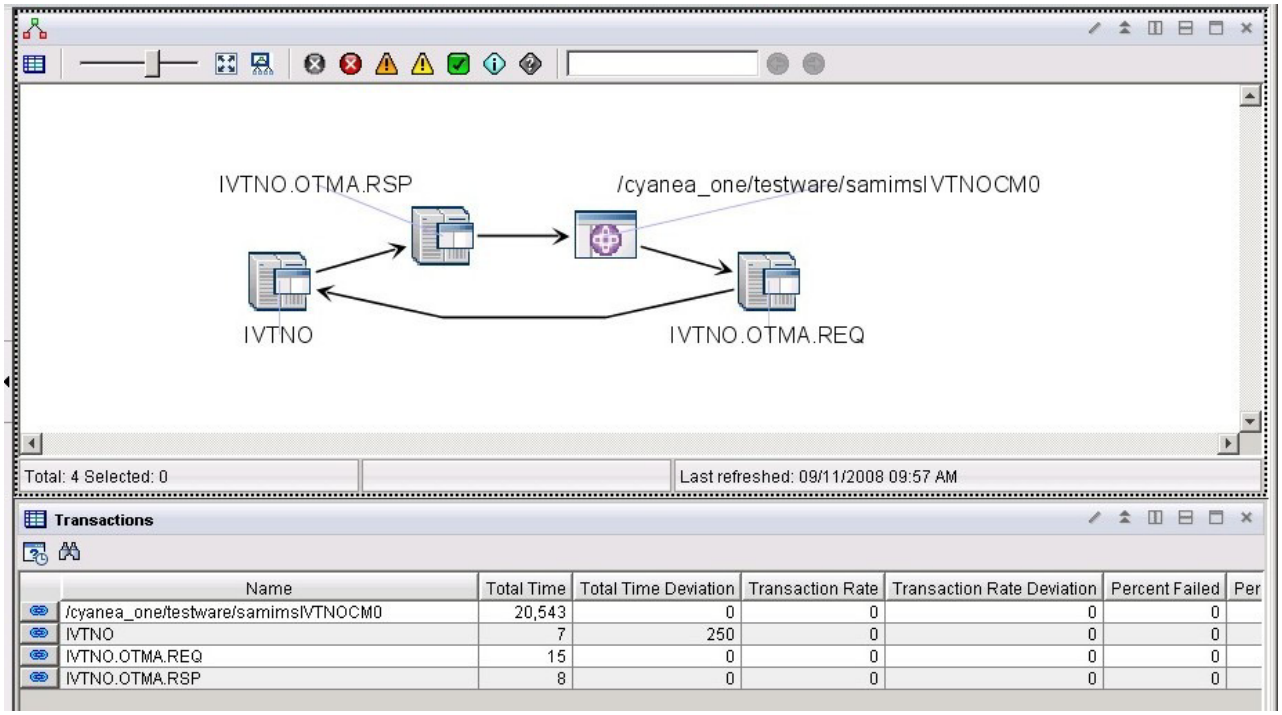
Figure 18. CICS topology view in Transactions workspace

IMS integration

Details on integrating the monitoring of IMS requests.

Table 7.

TTEMA TEP Workspace	Value of Name	Notes
Transactions	WebSphere client: The invoking Servlet or JSP request URI IMS Connect component names.	



Total: 4 Selected: 0

Last refreshed: 09/11/2008 09:57 AM

Transactions

Name	Total Time	Total Time Deviation	Transaction Rate	Transaction Rate Deviation	Percent Failed	Per
/cyanea_one/testware/samimsIVTNOCM0	20,543	0	0	0	0	
IVTNO	7	250	0	0	0	
IVTNO.OTMA.REQ	15	0	0	0	0	
IVTNO.OTMA.RSP	8	0	0	0	0	

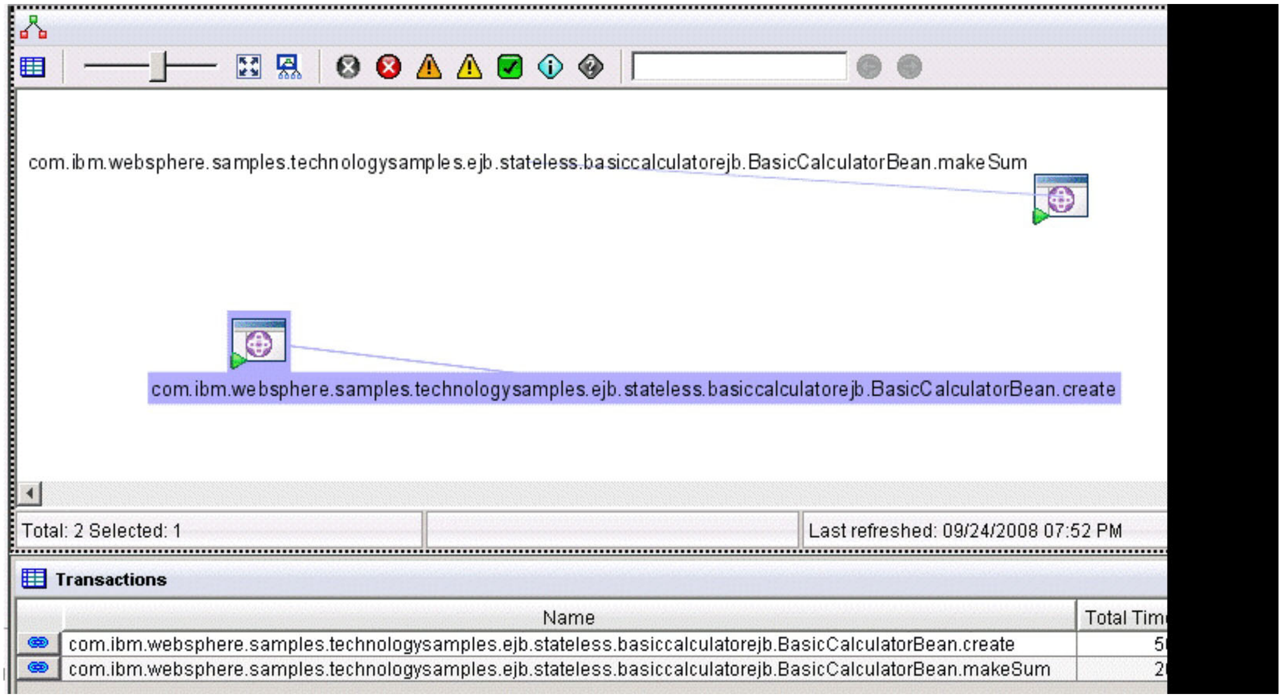
Figure 19. IMS topology view in Transactions workspace

EJB integration

Details on integrating the monitoring of EJB requests.

Table 8.

TTEMA TEP Workspace	Value of Name	Notes
Transactions	EJB ClassName.methodName	Only the top-level EJB request is displayed.


com.ibm.websphere.samples.technologysamples.ejb.stateless.basiccalculatorejb.BasicCalculatorBean.makeSum
com.ibm.websphere.samples.technologysamples.ejb.stateless.basiccalculatorejb.BasicCalculatorBean.create

Total: 2 Selected: 1

Last refreshed: 09/24/2008 07:52 PM

Transactions

	Name	Total Tim
	com.ibm.websphere.samples.technologysamples.ejb.stateless.basiccalculatorejb.BasicCalculatorBean.create	5
	com.ibm.websphere.samples.technologysamples.ejb.stateless.basiccalculatorejb.BasicCalculatorBean.makeSum	2

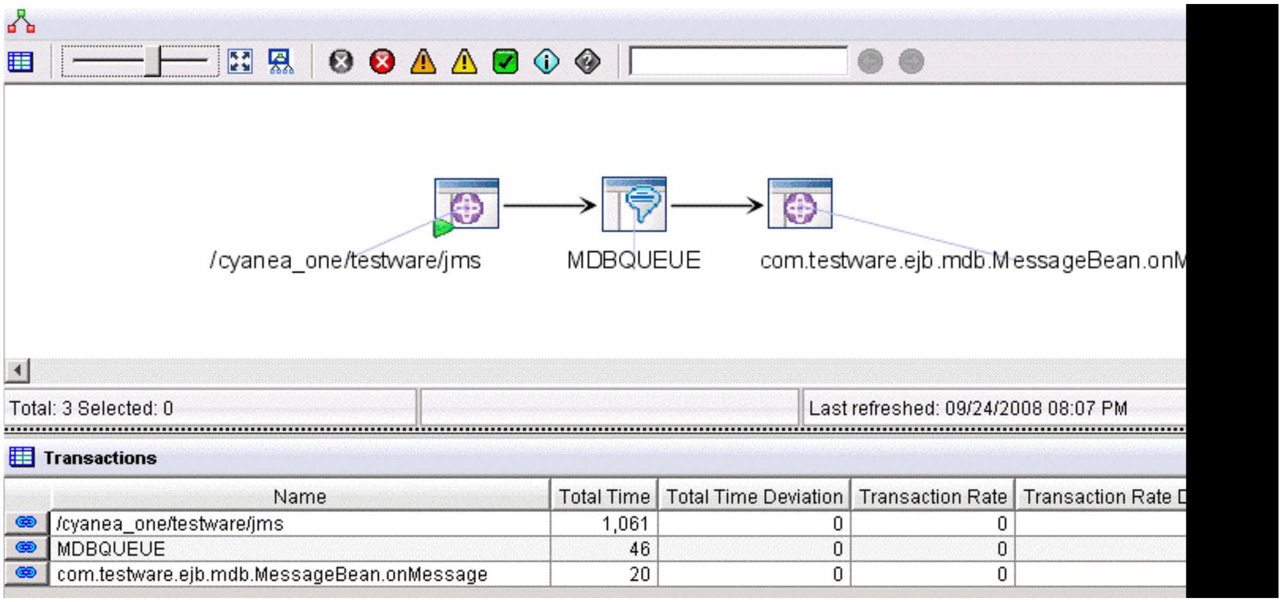
Figure 20. EJB topology view in Transactions workspace

Message Driven Bean integration

Details on integrating the monitoring of Message Driven Bean requests.

Table 9.

TTEMA TEP Workspace	Value of Name	Notes
Transactions	MDB className.onMessage	



Total: 3 Selected: 0

Last refreshed: 09/24/2008 08:07 PM

Transactions

Name	Total Time	Total Time Deviation	Transaction Rate	Transaction Rate D
/cyanea_one/testware/jms	1,061	0	0	
MDBQUEUE	46	0	0	
com.testware.ejb.mdb.MessageBean.onMessage	20	0	0	

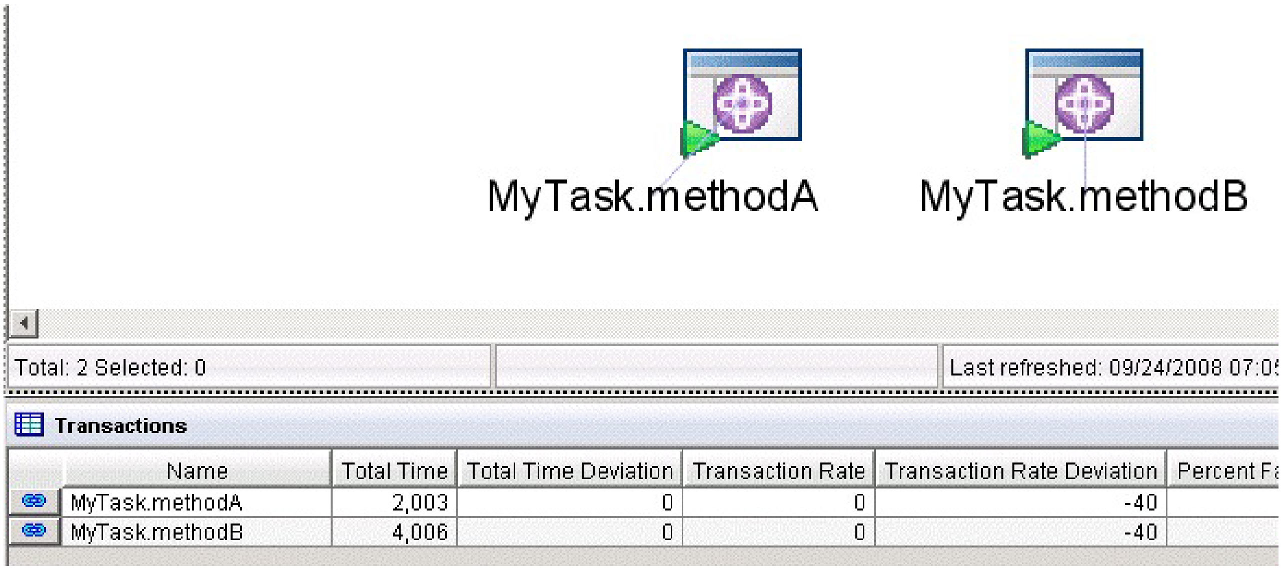
Figure 21. Message Driven Bean topology view in Transactions workspace

Custom request integration

Details on integrating the monitoring of custom requests.

Table 10.

TTEMA TEP Workspace	Value of Name	Notes
Transactions	RequestName defined in custom request configuration XML file.	Only the top-level Custom Request is displayed.



Total: 2 Selected: 0

Last refreshed: 09/24/2008 07:0

Transactions

	Name	Total Time	Total Time Deviation	Transaction Rate	Transaction Rate Deviation	Percent Fa
	MyTask.methodA	2,003	0	0	-40	
	MyTask.methodB	4,006	0	0	-40	

Figure 22. Custom request topology view in Transactions workspace

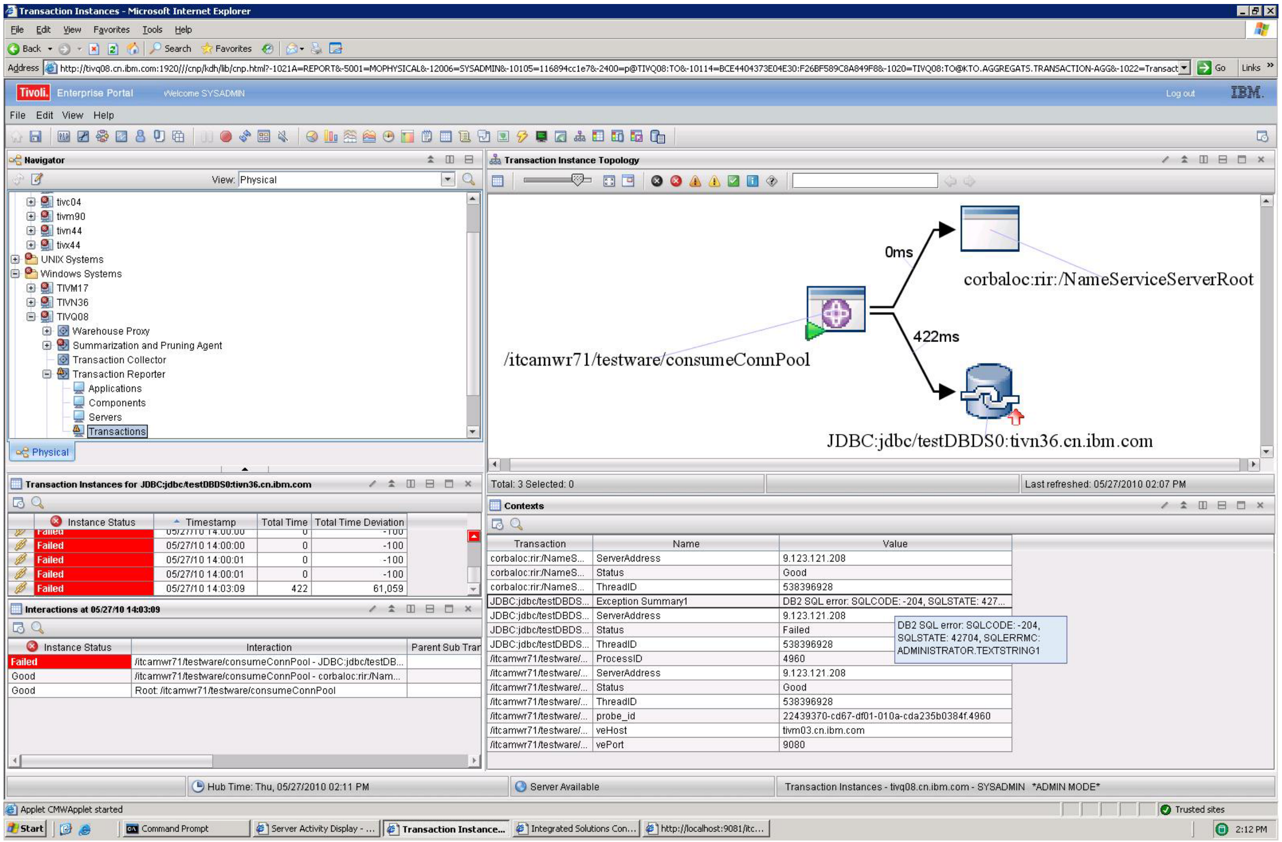
JDBC nested request integration

Details on integrating the monitoring of JDBC nested requests.

Table 11.

TTEMA TEP Workspace	Value of Name	Notes
Transactions	JDBC:dataSourceName JDBC:dataSourceName:hostName	

Attention: the host name is only reported if JDBC type 4 drivers are used. To track JDBC transactions when a Data Collector is at MOD Level 1, you must enable this tracking in the Visualization Engine; see "Enabling and disabling JDBC tracking at MOD Level 1" on page 9. If you do not enable it, JDBC transactions will be tracked for an application server instance only when it is monitored at MOD L2 or MOD L3. The monitoring level can be set in the Visualization Engine; see *ITCAM for Application Diagnostics User Guide*.


Transaction Instances - Microsoft Internet Explorer
Tivoli. Enterprise Portal
Welcome SYSADMIN
Navigator
View: Physical
tivc04
tivm90
tivn44
tivx44
UNIX Systems
Windows Systems
TIVM17
TIVN36
TIVQ08
Warehouse Proxy
Summarization and Pruning Agent
Transaction Collector
Transaction Reporter
Applications
Components
Servers
Transactions
Physical
Transaction Instance Topology
0ms
corbaloc:rir:/NameServiceServerRoot
422ms
/itcamwr71/testware/consumeConnPool
JDBC:jdbc/testDBDS0:tivn36.cn.ibm.com

Transaction Instances for JDBC:jdbc/testDBDS0:tivn36.cn.ibm.com

Instance Status	Timestamp	Total Time	Total Time Deviation
Failed	05/27/10 14:00:00	0	-100
Failed	05/27/10 14:00:00	0	-100
Failed	05/27/10 14:00:01	0	-100
Failed	05/27/10 14:00:01	0	-100
Failed	05/27/10 14:03:09	422	61,059

Interactions at 05/27/10 14:03:09

Instance Status	Interaction	Parent Sub Trar
Failed	/itcamwr71/testware/consumeConnPool - JDBC:jdbc/testDB...	
Good	/itcamwr71/testware/consumeConnPool - corbaloc:rir:/Nam...	
Good	Root: /itcamwr71/testware/consumeConnPool	

Total: 3 Selected: 0

Last refreshed: 05/27/2010 02:07 PM

Contexts

Transaction	Name	Value
corbaloc:rir:/NameS...	ServerAddress	9.123.121.208
corbaloc:rir:/NameS...	Status	Good
corbaloc:rir:/NameS...	ThreadID	538396928
JDBC:jdbc/testDBDS...	Exception Summary1	DB2 SQL error: SQLCODE: -204, SQLSTATE: 427...
JDBC:jdbc/testDBDS...	ServerAddress	9.123.121.208
JDBC:jdbc/testDBDS...	Status	Failed
JDBC:jdbc/testDBDS...	ThreadID	538396928
/itcamwr71/testware/...	ProcessID	4960
/itcamwr71/testware/...	ServerAddress	9.123.121.208
/itcamwr71/testware/...	Status	Good
/itcamwr71/testware/...	ThreadID	538396928
/itcamwr71/testware/...	probe_id	22439370-cd67-df01-010a-cda235b0384f.4960
/itcamwr71/testware/...	veHost	tivm03.cn.ibm.com
/itcamwr71/testware/...	vePort	9080

DB2 SQL error: SQLCODE: -204, SQLSTATE: 42704, SQLERRMC: ADMINISTRATOR.TEXTSTRING1

Hub Time: Thu, 05/27/2010 02:11 PM

Server Available

Transaction Instances - tivq08.cn.ibm.com - SYSADMIN *ADMIN MODE*

Applet CMWApplet started

Figure 23. JDBC nested request view in Transactions workspace

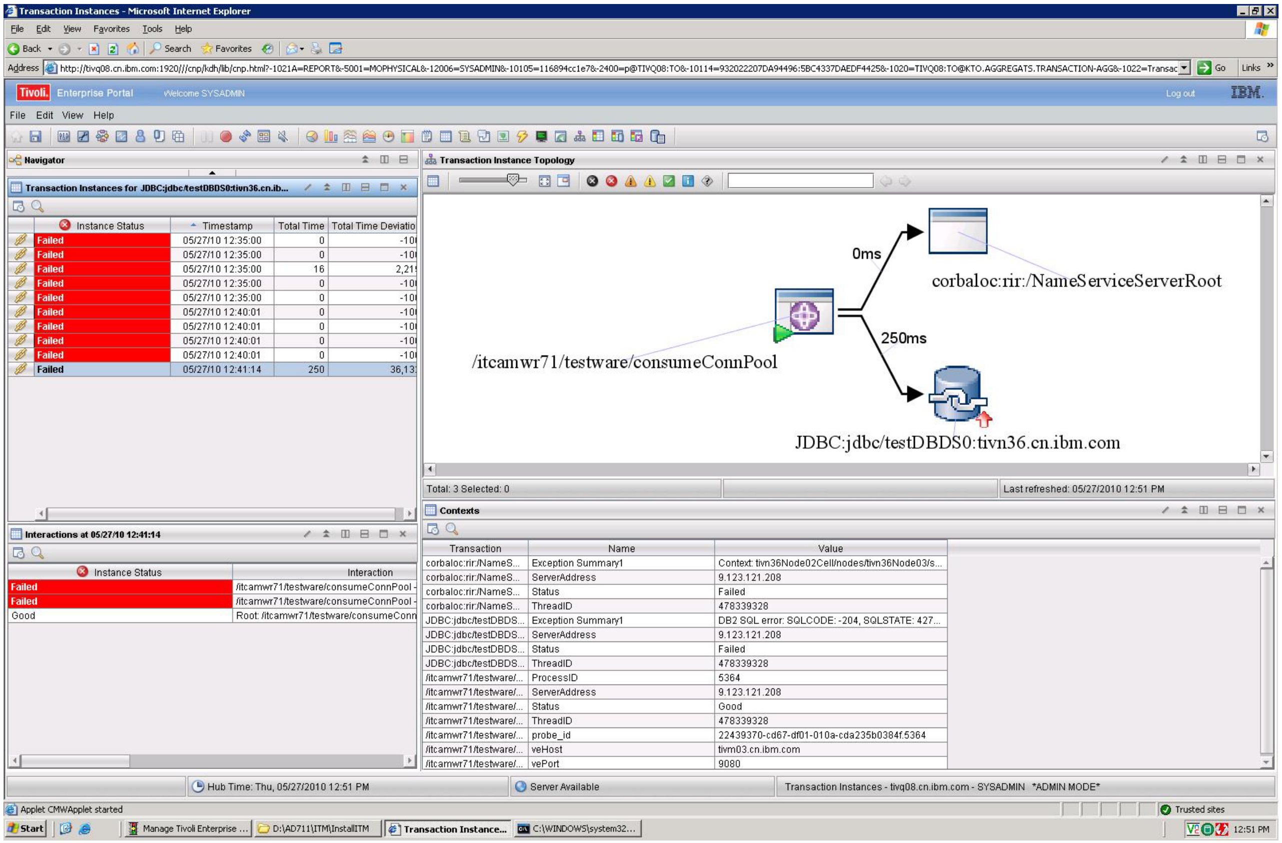
Important: If a JDBC transaction reports any failures within a reporting period, the percentage of failed transactions will be displayed for the transaction. You can view individual successful and failed instances using the Transaction Instances view.

JNDI nested request integration

Details on integrating the monitoring of JNDI nested requests.

Table 12.

TTEMA TEP Workspace	Value of Name	Notes
Transactions	JNDI:transactionName	



Transaction Instances - Microsoft Internet Explorer
Tivoli. Enterprise Portal
Welcome SYSADMIN
Navigator
Transaction Instance Topology
0ms
250ms
corbaloc:rir:/NameServiceServerRoot
/itcamwr71/testware/consumeConnPool
JDBC:jdbc/testDBDS0:tivn36.cn.ibm.com

Transaction Instances for JDBC:jdbc/testDBDS0:tivn36.cn.ib...

Instance Status	Timestamp	Total Time	Total Time Deviatio
Failed	05/27/10 12:35:00	0	-10
Failed	05/27/10 12:35:00	0	-10
Failed	05/27/10 12:35:00	16	2,21
Failed	05/27/10 12:35:00	0	-10
Failed	05/27/10 12:35:00	0	-10
Failed	05/27/10 12:40:01	0	-10
Failed	05/27/10 12:40:01	0	-10
Failed	05/27/10 12:40:01	0	-10
Failed	05/27/10 12:40:01	0	-10
Failed	05/27/10 12:41:14	250	36,13

Interactions at 05/27/10 12:41:14

Instance Status	Interaction
Failed	/itcamwr71/testware/consumeConnPool -
Failed	/itcamwr71/testware/consumeConnPool -
Good	Root: /itcamwr71/testware/consumeConn

Total: 3 Selected: 0

Last refreshed: 05/27/2010 12:51 PM

Contexts

Transaction	Name	Value
corbaloc:rir:/NameS...	Exception Summary1	Context: tivn36Node02Cell/nodes/tivn36Node03/s...
corbaloc:rir:/NameS...	ServerAddress	9.123.121.208
corbaloc:rir:/NameS...	Status	Failed
corbaloc:rir:/NameS...	ThreadID	478339328
JDBC:jdbc/testDBDS...	Exception Summary1	DB2 SQL error: SQLCODE: -204, SQLSTATE: 427...
JDBC:jdbc/testDBDS...	ServerAddress	9.123.121.208
JDBC:jdbc/testDBDS...	Status	Failed
JDBC:jdbc/testDBDS...	ThreadID	478339328
/itcamwr71/testware/...	ProcessID	5364
/itcamwr71/testware/...	ServerAddress	9.123.121.208
/itcamwr71/testware/...	Status	Good
/itcamwr71/testware/...	ThreadID	478339328
/itcamwr71/testware/...	probe_id	22439370-cd67-df01-010a-cda235b0384f.5364
/itcamwr71/testware/...	veHost	tivm03.cn.ibm.com
/itcamwr71/testware/...	vePort	9080

Hub Time: Thu, 05/27/2010 12:51 PM

Server Available

Transaction Instances - tivq08.cn.ibm.com - SYSADMIN *ADMIN MODE*

Applet CMWApplet started

Figure 24. JNDI nested request view in Transactions workspace

Important: If a JNDI transaction reports any failures within a reporting period, the percentage of failed transactions will be displayed for the transaction. You can view individual successful and failed instances using the Transaction Instances view.

JMS messaging topology integration

Details on support for JMS messaging topology.

When JMS tracking is enables (see "Enabling and disabling JMS tracking at MOD Level 1" on page 11), JMS links will be displayed between the following top-level request types:

- EJB, see "EJB integration" on page 26.
- Servlet
- Custom Request

The following JMS providers are supported:

- WebSphere SIBus
- WebSphere MQ
- WebLogic JMS server

JMS topology for WebSphere MQ transactions is not displayed to avoid duplication. If the transaction target is set to MQ, enable MQ tracking to display its topology (see "Enabling and disabling MQ tracking" on page 7). JMS topology will be displayed for queue transactions where the target is set to JMS (in WebSphere Application Server 7, where **appending RFH version 2 headers** is enabled for the queue).

The following JMS messaging scenarios are supported for TTAPI:

- **queue Sender and queue Receiver**. A top-level request invokes the queueSender API to send a message to a queue. A top-level request invokes the queueReceiver API to receive a message from the queue. The application URLs displayed for the sender and receiver are the URLs of the top-level requests.

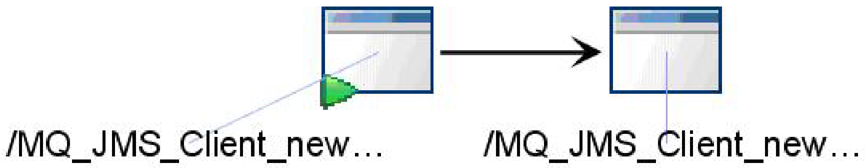


Figure 25. JMS example topology: queue sender and queue receiver

- **Topic Publisher and Topic Subscriber**. A top-level request invokes the TopicPublisher API to send a message to a Topic. One or several top-level requests may invoke the TopicSubscriber API to receive a message from the Topic. The application URLs displayed for the sender and receivers are the URLs of the top-level requests.

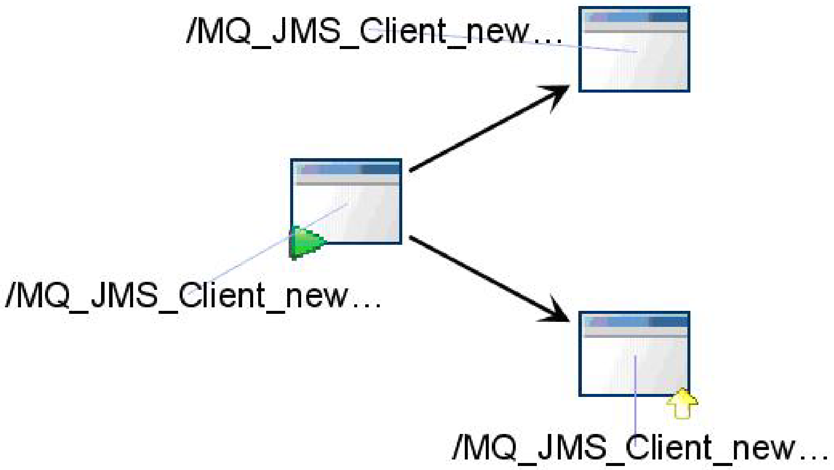


Figure 26. JMS example topology: topic publisher and topic subscriber

- **Message Sender and Message Driven Bean**. A top-level request sends a message to a queue or Topic. A Message Driven Bean that listens to the queue or Topic gets a callback on its onMessage method and receives the message. For the sender, the application URL is displayed; it is the URL of the top-level requests. For the receiver, the Message Driven Bean class name and method name are displayed.

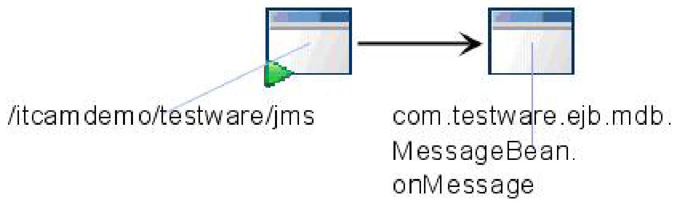


Figure 27. JMS example topology: message sender and message driven bean

Logging and tracing

Details on logging and tracing for Data Collector and Transaction Tracking Application Programming Interface (TTAPI) integration.

Logging and tracing for the Data Collector

How to enable logging and tracing for the Data Collector for the ITCAM for Application Diagnostics and TTAPI integration.

The following entries can be added to the `DCHOME/toolkit/etc/cynlogging.properties` file to trace Data Collector and Transaction Tracking Application Programming Interface integration:

```
# dc and ttapi integration tracing
CYN.trc.shared.datacollector.ttapi.TTAPIUtil.level=DEBUG_MAX
CYN.trc.shared.datacollector.ttapi.TTAPIUtil.logging=true
```

The following entry can be added to the `DCHOME/runtime/<platform.node.server>/custom/toolkit_custom.properties` file to record event information when the writing of the events fail:

```
com.ibm.tivoli.itcam.dc.ttapi.logExceptionEventRecs=true
```

The standard logging locations are:

For Windows® systems:

```
C:\Program Files\IBM\tivoli\common\CYN
```

For Linux® and Unix® systems:

```
/var/ibm/tivoli/common/CYN
```

Logging and tracing for the TTAPI and TEMA

TTAPI and Transaction Collector Tivoli Enterprise Monitoring Agent (TEMA) communication.

TTAPI can use the IBM Tivoli Monitoring standard RAS1 logging package to log error and debug messages at significant points in the process of initializing, shutting down, and sending events to a TTAS and various states in between. Logging can be controlled by the following environment variables:

Table 13.

Environment variable	Description
KBB_RAS1=ALL	Enable logging of all messages.

Table 13. (continued)

Environment variable	Description
KBB_RAS1=ERROR	Enable logging of error messages
KBB_RAS1=	Disable all message logging. This is the default value.
KBB_RAS1_LOG=	Log to standard output.
KBB_RAS1_LOG=. . .	Set the log file name and other parameters. See the information following this table.
KBB_VARPREFIX=%	Set the prefix for variables specified in KBB_RAS1_LOG

KBB_RAS1_LOG uses the following format:

```
KBB_RAS1_LOG=<filename> [INVENTORY=<inventory filename>] [COUNT=<count>]
   [LIMIT=<limit>] [PRESERVE=<preserve>] [MAXFILES=<maxfiles>]
```

where:

<*count*> is the maximum number of log files to create in one invocation of the application.

<*inventory*> is a file in which to record the history of log files across invocations of the application.

<*limit*> is the maximum size per log file.

<*maxfiles*> is the maximum number of log files to create in any number of invocations of the application. This only takes effect when <*inventory*> is specified.

<*preserve*> is the number of log files to preserve when log files wrap over <*count*>.

For WebSphere Application Server, you can set the environment variables for RAS1 tracing through AdminConsole, as shown in the following example:

1. Navigate to**Server > Application Servers** and select the *ServerName*.
2. In the Configuration tab, navigate to **Server Infrastructure > Java and Process Management > Process Definition > Additional Properties: Custom Properties**.
3. Set the following environment variables:

   ```
   KBB_RAS1=ALL
   KBB_RAS1_LOG=c:\itcam71\tt71\ras1.l
   ```

If your server instance belongs to a Network Deployment cell, synchronize your change with NodeAgent.

Appendix. Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. These are the major accessibility features you can use with ITCAM for Application Diagnostics when accessing it via the *IBM® Personal Communications* terminal emulator:

- You can operate all features using the keyboard instead of the mouse.
- You can read text through interaction with assistive technology.
- You can use system settings for font, size, and color for all user interface controls.
- You can magnify what is displayed on your screen.

For more information on viewing PDFs from Adobe®, go to the following Web site: http://www.adobe.com/enterprise/accessibility/main.html

Printed in USA