BRISTOL TECHNOLOGY®

TransactionVision®

TransactionVision User's Guide
Version 5.0.0 SPF

39 Old Ridgebury Road | Danbury, CT 06810 | 203-798-1007

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Bristol Technology Inc.
39 Old Ridgebury Road
Danbury, CT 06810-5113 U.S.A.

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Chapter 1

Getting Started with TransactionVision

TransactionVision is the transaction tracking solution that graphically shows you the interaction between all the components of your system. TransactionVision non-intrusively records individual electronic events generated by a transaction flowing through a computer network. More importantly, TransactionVision's patent-pending "Transaction Constructor" algorithm assembles those events into a single coherent business transaction.

Graphical analysis of business transactions enable you to:

- Find lost transactions
- Monitor and meet service level agreements
- Improve efficiencies of your business processes

TransactionVision Basics

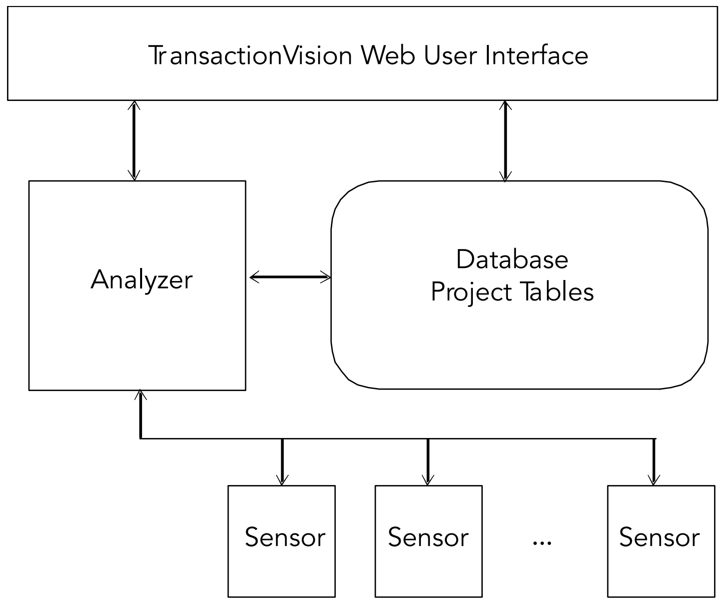
To understand the tasks required to use TransactionVision, you must understand the TransactionVision components, as well as some basic concepts.

Components

TransactionVision consists of three major components:

- Sensors
- Analyzers
- TransactionVision Web User Interface

The following diagram shows the relationship between these components:



Sensors

Sensors collect transactional events from the various applications involved in your distributed transactions. Sensors are lightweight libraries or exit programs that are installed on each computer in your environment. Each Sensor monitors each call made by supporting technologies on that system and compares it against filter conditions. If the call matches the filter conditions, the Sensor generates a TransactionVision event that contains information about the call. It then forwards the event to the Analyzer by placing it on a designated event queue.

TransactionVision provides the following types of Sensors:

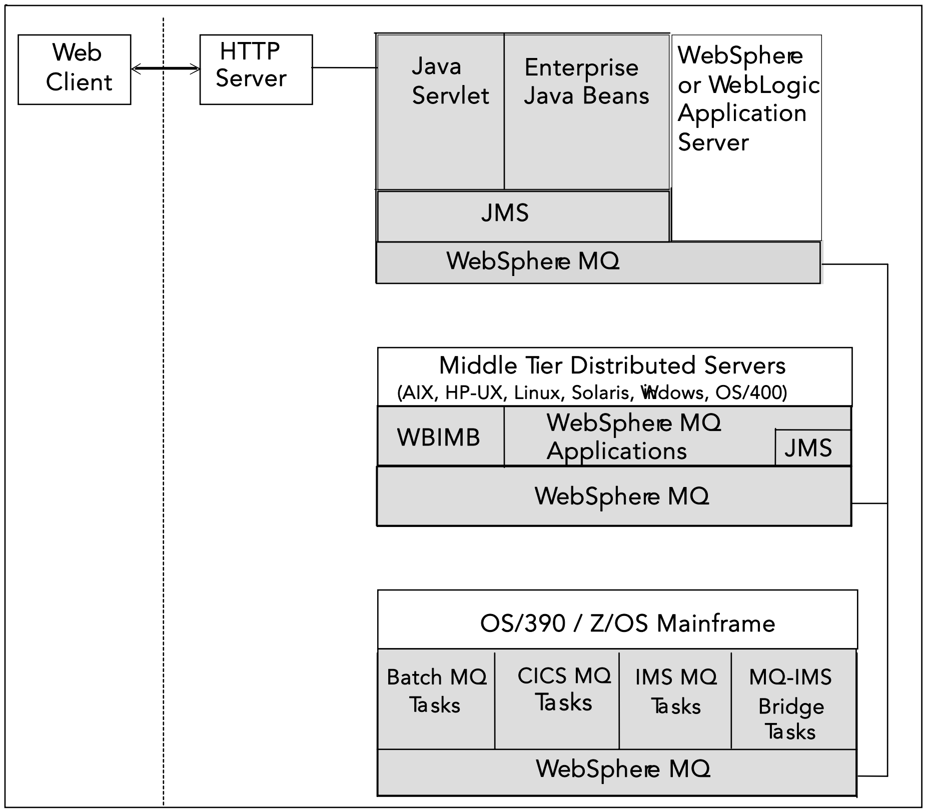
- The **WebSphere MQ Sensor** tracks MQI calls. The following supplemental Sensors are available for WebSphere MQ:
    - The **Proxy Sensor** correlates business transactions into process that are not monitored using the TransactionVision Sensor libraries (for example, events between a sensored application and an application running on a system where no Sensor is installed such as an external partner system)
    - The **WebSphere Business Integration Sensor** distinguishes the various message flows and identifies individual logical transaction paths within WBI.
    - The **MQSeries-IMS Bridge Sensor** tracks MQSeries-IMS bridge messages rather than the WebSphere MQ API calls made by the calling applications.

  - **z/OS WebSphere MQ Sensors** are provided for tracking MQI API calls in the CICS, batch and IMS environments on the IBM z/OS system. In the CICS environment, the API crossing exit provided by the CICS adapter for WebSphere MQ is used to intercept the MQ API. In the batch and IMS environments, the application has to be re-bound with the Sensor to intercept MQ API calls.

- The **Servlet Sensor** tracks servlet methods in a J2EE application server.
- The **JMS Sensor** tracks WebSphere MQ Java Message Service or TIBCO EMS events from standalone Java applications as well as from J2EE application servers.
- The **EJB Sensor** tracks transactions through business logic within a J2EE application server.
- The **CICS Sensor** collects non-WebSphere MQ CICS events to track transactions in a mainframe environment.

For instructions on installing and configuring Sensors, see the *TransactionVision Installation and Configuration Guide.* For more detailed information about TransactionVision Sensors, including which APIs are monitored by each Sensor, see the *TransactionVision Administrator's Guide*.

In the following diagram, shaded areas represent the parts of a web application for which TransactionVision can track events:



Analyzers

The Analyzer is a service that communicates with Sensors via WebSphere MQ or JMS services. It generates and delivers configuration messages to Sensors by placing them on a designated configuration queue. Configuration messages specify Sensor configuration information such as the name of the event queue where the Sensor should place event messages and data collection filter definitions for the project.

The Analyzer also retrieves events placed on an event queue by Sensors and processes them for display and analysis by the web user interface. It performs the unmarshalling, correlation, analysis, and data management functions.

Each TransactionVision project is assigned a single host running the Analyzer. Projects enable you to easily group and manipulate communication links, data collection filters, database schemas, and Analyzers as one entity. When you start a project, the Analyzer on the host assigned to the project is started automatically.

For instructions on configuring and managing the Analyzer, see the *TransactionVision Administrator's Guide.*

TransactionVision Web User Interface

The TransactionVision web user interface is an enterprise application for IBM WebSphere or BEA WebLogic that provides the TransactionVision graphical interface. Users and administrators login to the web user interface via a web browser; all interaction is provided through HTML pages. The web user interface communicates with the Analyzer to provide data collection configuration information such as communication links and data collection filters. It also connects to project database schemas display project analysis and report results.

TransactionVision Terms and Concepts

To use TransactionVision effectively, you must be familiar with the following terms and concepts:

- Projects
- Analysis views
- Transaction types
- Queries
- Reports
- Transaction classification
- Event times

Projects

Event collection projects enable you to easily group and manipulate communication links, data collection filters, database schemas, and Analyzers as one entity. An event collection project is used by an Analyzer to define the communication links, the data collection filters, and the database schema that data will be written into. A project is assigned to a single Analyzer host for event analysis. For more information about creating and managing projects, see the *TransactionVision Administrator's Guide*.

Analysis Views

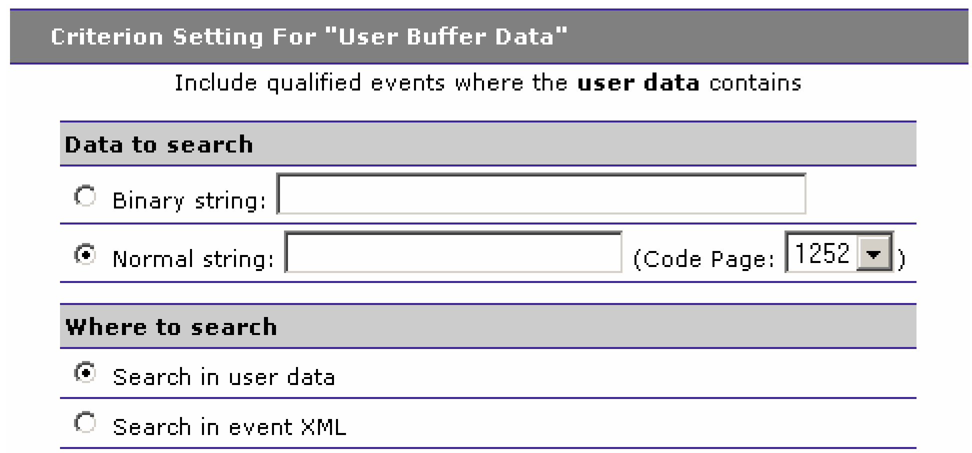
TransactionVision provides four different views of event data in a project:

- Component Topology Analysis, which shows the interaction between all components such as message queues, programs, and hosts
- Transaction Analysis, which shows the flow of transactions across all programs in your system
- Event Analysis, which shows a sequential list of all events in your project database

- Event Details, which shows detailed contents of each event message, such as parameter values and message data buffer contents.

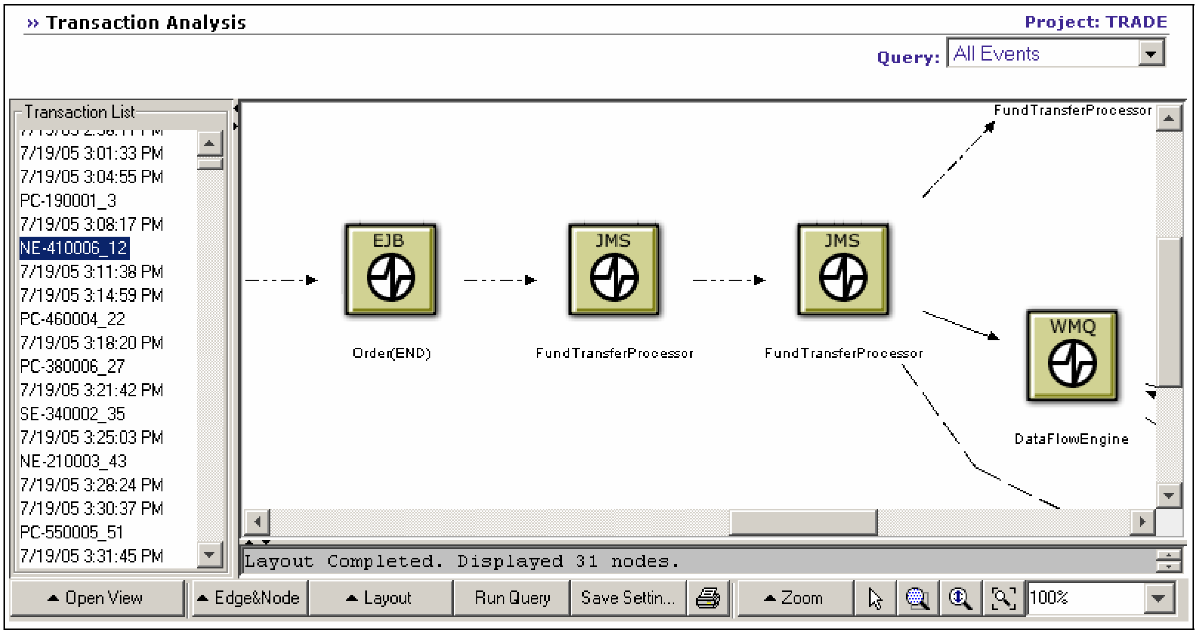
Component Topology Analysis

The Component Topology Analysis view graphically displays the interaction between all components of your e-business system, including message queues, programs, and hosts. Because the web user interface builds this view from data collected during program execution, it is an accurate and complete representation of how information flows throughout your system. The thickness of the lines between components can be set to indicate performance characteristics of your system. Color-coding makes error conditions easy to pinpoint at a glance. You can customize the appearance of the Component Topology Analysis and print it as a map of your entire e-business system. For instructions on using this view, see Chapter 3, “Using the Component Topology Analysis View.”



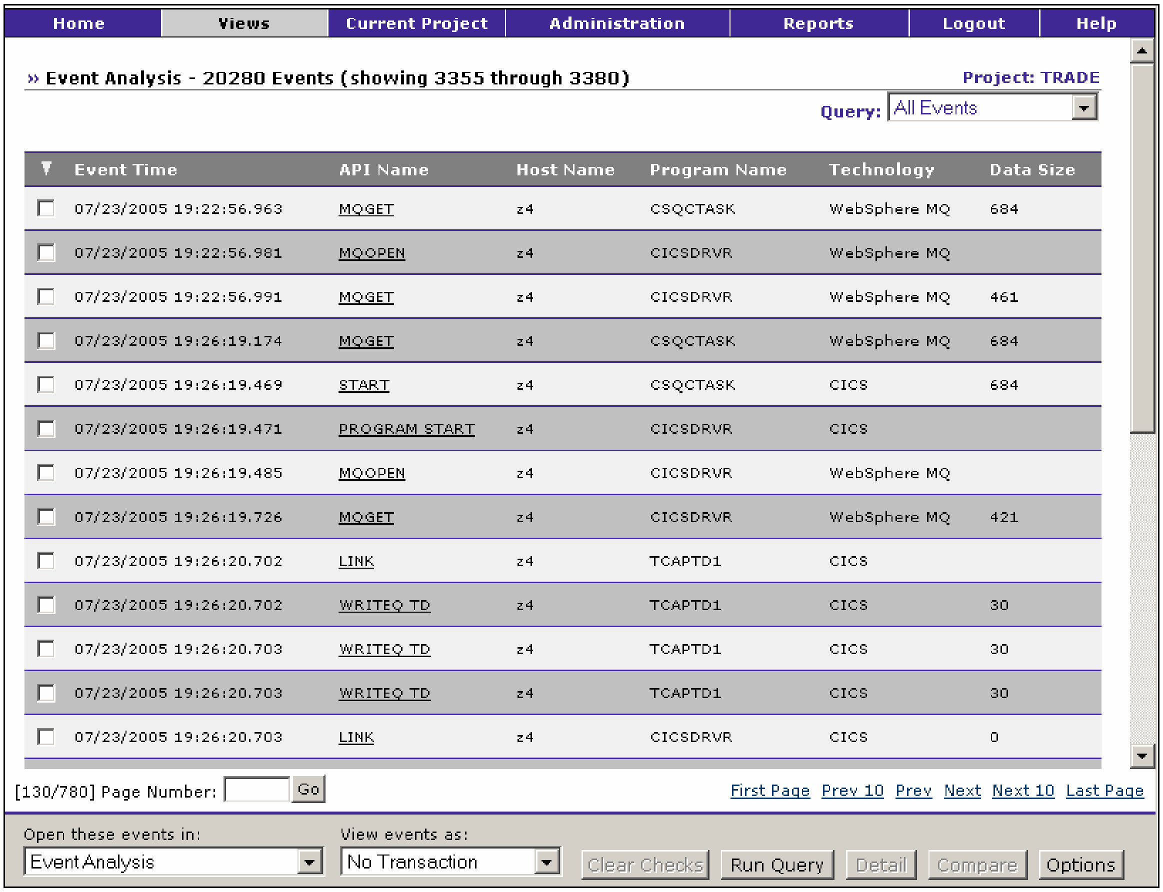
Transaction Analysis

The Transaction Analysis view correlates events across multiple programs, hosts, and operating systems into transactions. Events are correlated into local transactions, which are further correlated into business transactions. For instructions on using this view, see Chapter 4, “Using the Transaction Analysis View.”



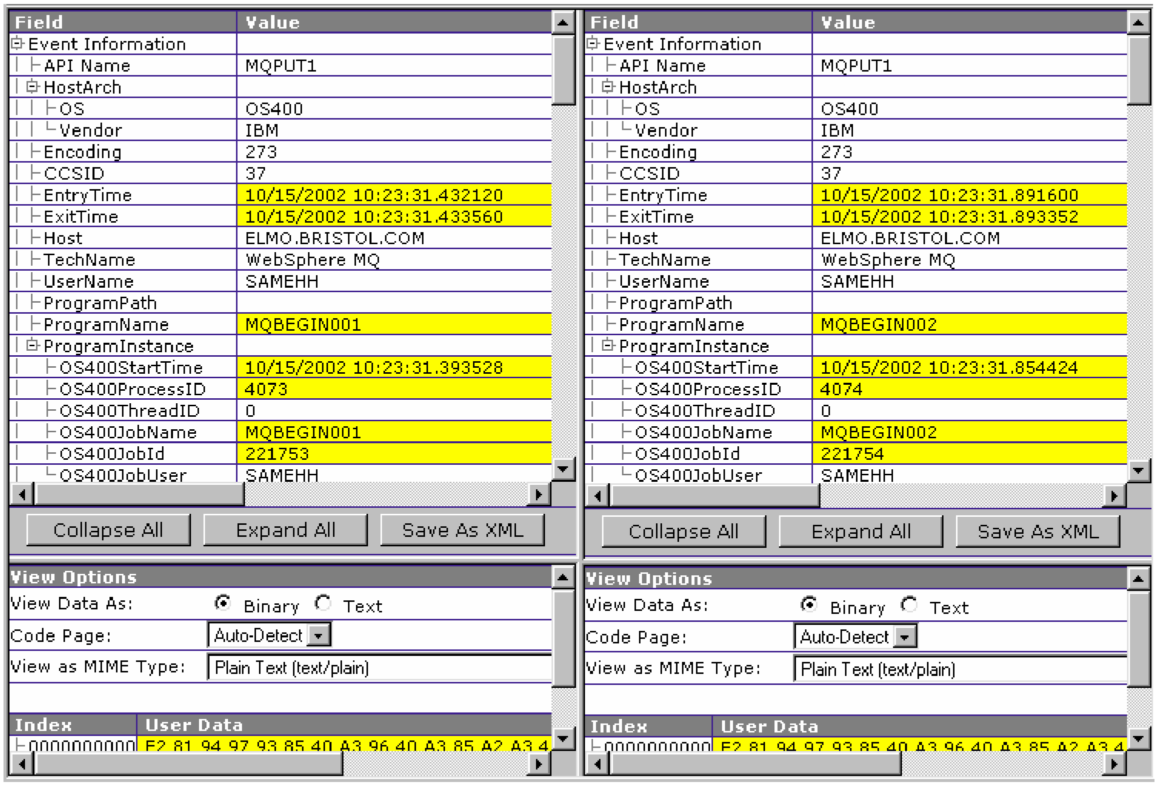
Event Analysis

The Event Analysis view displays all events in the event database in chronological order. Color coding makes it easy to spot events with a warning or error return code at a glance. You can limit the events shown to only the events that make up the local or business transaction associated with the currently selected event. For instructions on using this view, see Chapter 5, “Using the Event Analysis View.”



Event Details

The Event Details view provides additional information about any event in the Event Analysis view. The Event Details view interprets and displays all of the arguments and data structure contents associated with the event.. You may also use the Event Details view to compare data structure contents of any two events. For instructions on using this view, see Chapter 6, "Using the Event Details View."



Transaction Types

A **local transaction** groups related events within a single thread of execution. A local transaction includes any number of operations performed during the time span of a single unit of work. Operations performed within one unit of work are either committed or are backed out together, so that the effects of a number of operations all are either made permanent (committed) or reversed (backed out) as one atomic group.

A local transaction consists of a set of events that meet all of the following criteria:

- Belong to the same program instance
- Sorted in chronological order
- Confined by a pair of events that signal commitment or back out of a unit of work

TransactionVision tracks **business transactions** by relating local transactions in different processes or threads (for example, relating an MQPUT in one process to the MQGET in a different process). When communication occurs between different local transactions, they are considered part of the same business transaction. For example, when a client process sends a message to a server process, it will do so in the context of a local transaction, and the server receiving the message will similarly do so within a second local transaction. The operations performed within these two local transactions, both the communication operations that allow the two processes to exchange data as well as any other computational operations within these local transactions, are part of the same business transaction.

For instructions on viewing local and business transactions, see Chapter 4, “Using the Transaction Analysis View,” and Chapter 5, “Using the Event Analysis View.”

Queries

Queries control which collected events are actually displayed by TransactionVision. Queries enable you to zero in on specific events from the project database. For example, you may specify that you only want to see MQPUT events with a particular message ID. For instructions on creating and editing queries, see Chapter 2, “Configuring Queries.”

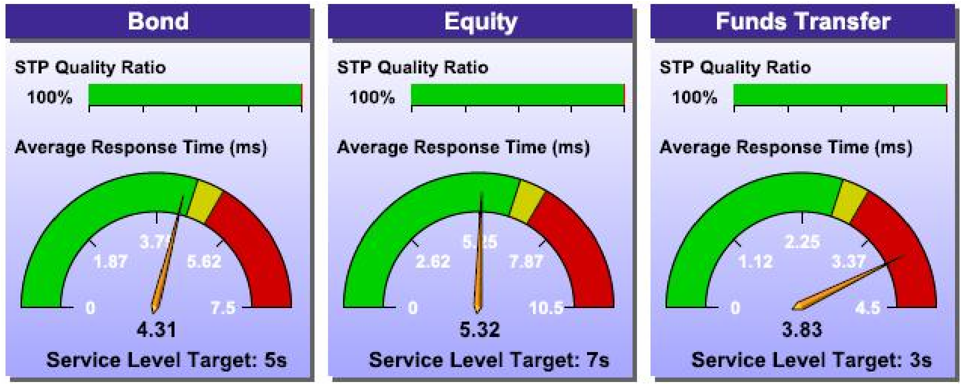
Reports

Reports provide vertically focused business reporting to specific industries, as well as custom business reports and analysis developed to suit your specific requirements. For instructions on using the standard reports installed with TransactionVision, see Chapter 7, “Using Reports.” For information on creating your own custom reports, see the *TransactionVision Programmer’s Guide*.

Transaction Classification

While TransactionVision correlates related local transactions into business transactions, organizations can further customize transaction information by defining transaction classes. If classification rules are defined, TransactionVision automatically assigns each business transaction to a transaction class. When you run TransactionVision reports, you may view report information for any or all transaction classes.

For example, the Trade project distributed with TransactionVision categorizes business transactions based on the following types of trades: Stock, Bond, and Equity. The following scorecard report shows performance gauges for three transaction classes as well as all unclassified transactions. Unclassified transactions are business transactions that do not meet the classification rules for any transaction class.



TransactionVision provides a default classification bean that enables you to defines transaction classes without writing a single line of code by performing the following steps before collecting events:

1. Enable the default classification bean.
2. Define classification rules for each class in an XML file.
3. Insert each class and its attributes into a database table.

For instructions on performing these steps or writing a custom classification bean, see the *TransactionVision Programmer's Guide*.

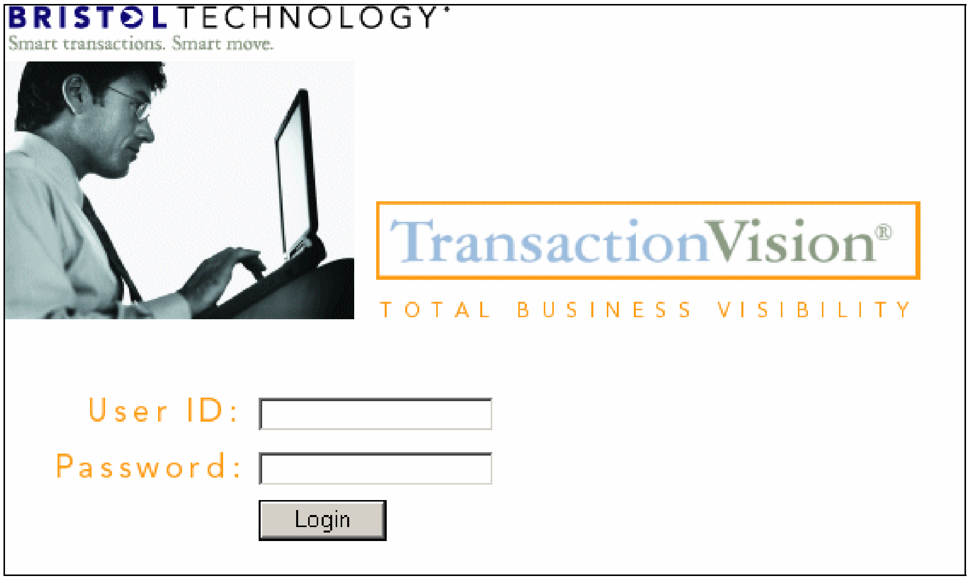
The Transaction Analysis view and reports support the display of transaction class names in double-byte code pages.

Event Times

For non-blocking events, the **primary** event time is the event entry time and the **secondary** event time is the event exit time. For blocking events such as MQGET and JMS receive, the primary event time is the entry exit time and the secondary event time is the event entry time. This enables TransactionVision to display events in the proper sequence. On the Event Analysis view, TransactionVision sorts events by primary event time.

Starting TransactionVision for Analysis

The TransactionVision web user interface runs in web browser. To start TransactionVision for analysis, start your browser and open the URL provided by the administrator who installed TransactionVision in your environment. The TransactionVision login page appears.



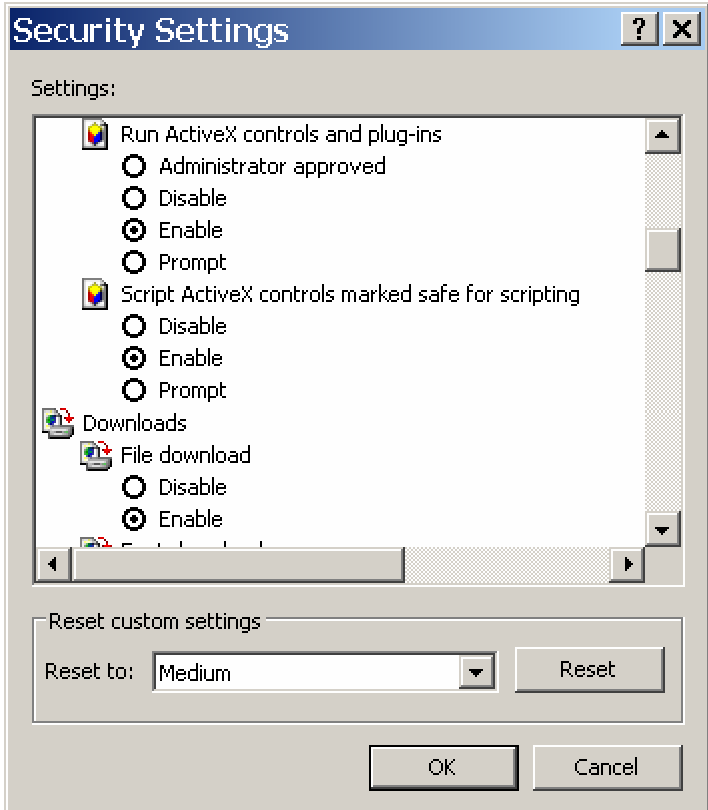
1. Type your user name in the Login field. If you are unsure of your user name, contact the administrator who installed TransactionVision in your environment.
2. Press the Tab key and type your password in the Password field. If you are unsure of your password, contact the administrator who installed TransactionVision in your environment.
3. Click Login to display your TransactionVision home page. If the same user ID is logged in from a different IP address, TransactionVision displays a warning. Click Yes to continue logging in.

Browser Security Settings

For the TransactionVision user interface to function properly, you must configure your browser security settings to enable it to run the Java and Flash plug-ins used by TransactionVision.

To verify or change browser security settings in IE6, perform the following steps:

1. In your browser window, choose Tools > Internet Options. The Internet Options dialog opens.
2. On the Security tab of the Internet Options dialog, click the icon for the zone for the server running TransactionVision and click Custom Level. The Security Settings dialog opens.



3. Scroll to the Run ActiveX controls and plug-ins setting and click the Enable radio button.
4. Click OK.

Important! If the server running TransactionVision is in the Internet zone, you may wish to add it to the Trusted Sites zones instead. By default, the Trusted Sites zone has all the necessary security settings for TransactionVision to function properly, and you do not have to enable ActiveX controls and plug-ins for the entire Internet zone.

Automatic Login

Automatic login may be enabled with cookie files. See the *TransactionVision Administrator's Guide* for instructions on enabling this automatic login method. If this automatic login method is enabled, a Remember Login? checkbox also appears on the Login page. Check it to save your user name and password so that you will not have to enter them the next time you login.

Important! To use automatic login, cookies must be enabled for your web browser. Also, you must logout from your TransactionVision session by closing your browser window rather than clicking Logout.

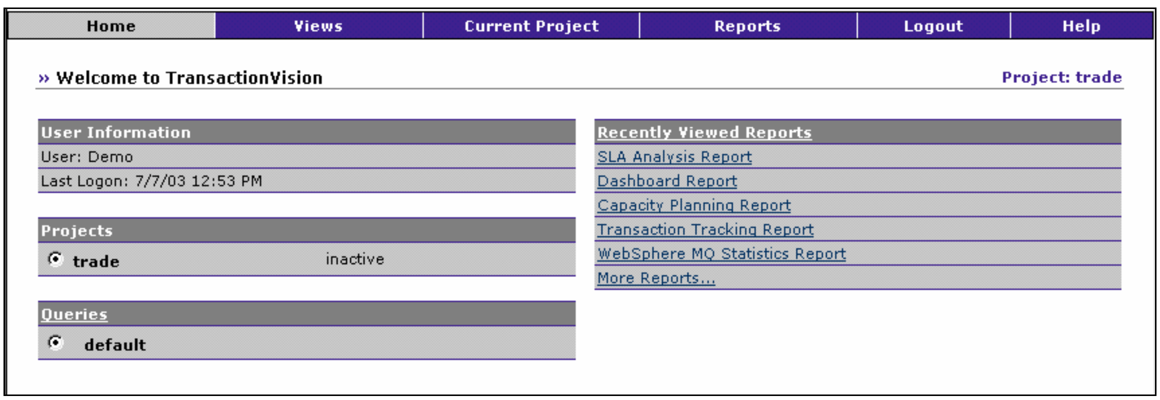
Session Timeout

A session is your interaction with TransactionVision from the time you log into the TransactionVision WebSphere application until you logout, either by clicking the Logout button or closing the TransactionVision browser window.

For security purposes, the TransactionVision sessions expire if there is no activity on TransactionVision pages for a certain amount of time. When a session expires, TransactionVision logs you out. One minute before logging you out, TransactionVision displays a message notifying you that the current session is about to expire and asking whether to continue working with TransactionVision. Click Yes to continue working; click No or do nothing to end your session. For instructions on setting the session timeout period, see the *TransactionVision Administrator's Guide*.

The TransactionVision Home Page

When you login to TransactionVision, the TransactionVision home page is displayed.



Menus

All TransactionVision user and administrator operations can be performed by selecting the appropriate menu item. The following menus are available:

Menu	Description
Home	Displays your TransactionVision home page.
Views	Provides access to the Component Topology Analysis, Transaction Analysis, and Event Analysis views. See Chapters 3 through 5 of this guide for instructions on using these views.

Menu	Description
Current Project	Provides project status information as well as information about scheduled jobs, communication links, data collection filters, and queries used by the project. For instructions on using queries, see Chapter 2 of this guide. For information about scheduled jobs, data collection filters and communication links, see the *TransactionVision Administrator's Guide*.
Administration	Provides commands for managing projects, jobs, Analyzers, communication link templates, database schemas, and aliases. For more information about these topics, see the *TransactionVision Administrator's Guide*. This menu is only visible if you have access rights to perform administrative operations. For more information about user access rights, see the *TransactionVision Administrator's Guide*.
Reports	Displays the Reports page, which provides links to all reports for which you have the correct access rights. For instructions on using the standard reports installed with TransactionVision, see Chapter 7 of this guide. For information about creating custom reports, see the *TransactionVision Programmer's Guide*.
Logout	Ends your current TransactionVision session and displays the Login page.
Help	Provides access to online help, documentation, version information, and links to support information on Bristol's web site.

User Information

The User Information area lists the user name you are logged on as. It also lists the date and time of your last logon.

Projects

The Projects area lists all TransactionVision projects that you have access rights to use for analysis. For each project, the project name, status, and optional description are listed.

Click the circle to the left of a project name to make it the active project for your session. When you display the Component Layout Analysis, Transaction Analysis, or Event Analysis views, the views are created with data from the active project.

Click the Projects link to display more detailed information about the active project.

Queries

The Queries area lists all available queries for the active project. For each query, the query name and optional description is listed.

Click the circle to the left of a query name to make it the active query for your project. When you display the Component Layout Analysis, Transaction Analysis, or Event Analysis views, the views are created with data from the active project that meets the active query criteria.

Click the Queries link to display more detailed information about available queries.

Recently Viewed Reports

The Recently Viewed Reports area lists TransactionVision the reports most recently viewed by the current user. Click a report name to access it. Click the Recently Viewed Reports link to display a list of all available reports and saved results for each.

Quitting TransactionVision

To end your TransactionVision session, either click Logout, close the TransactionVision browser window, or open a web page from a different URL.

Quick Tour

To get a better idea of how TransactionVision helps you identify problems, let's look at some examples of how you might use TransactionVision.

These examples use the Trade sample shipped as part of the TransactionVision web user interface package. On your TransactionVision home page, select Trade as your current project.

Important! If this project does not appear on your TransactionVision home page, see the *TransactionVision Administrator's Guide* for instructions on installing and importing it.

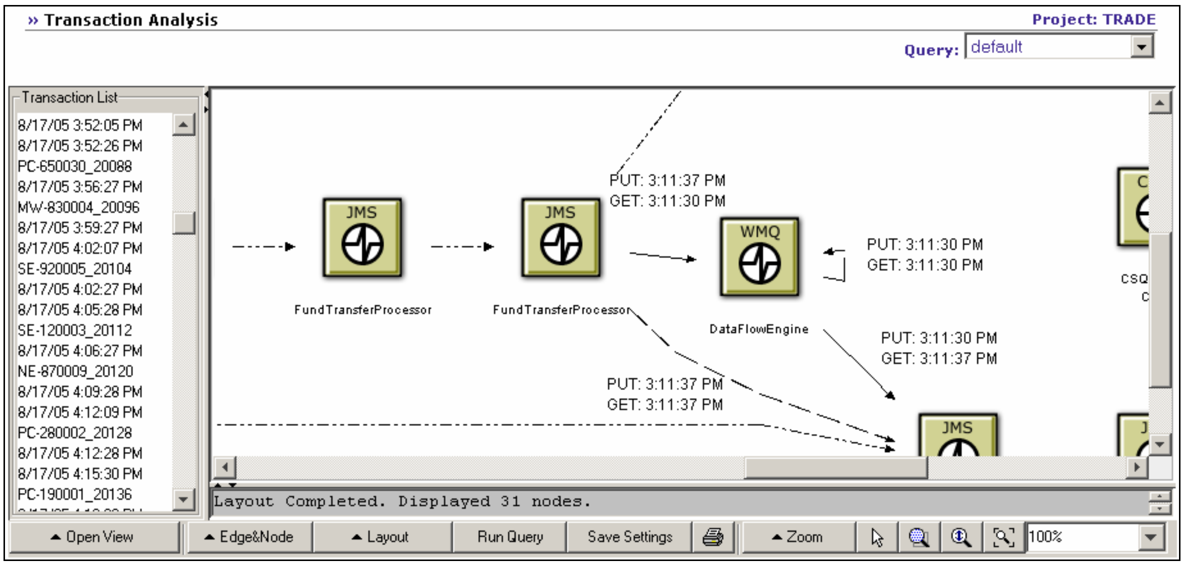
Tracking Messages with TransactionVision

Based on the information collected by TransactionVision, you can pinpoint exactly where a message is at any point in time. This information includes criteria such as which application has the message, which host it is running on, or even which queue is currently holding the messages.

Choose the Views > Transaction Analysis menu item to open the Transaction Analysis view.

This view shows the progress of the business transaction involving a single message. Each icon represents a local transaction. The icon label shows the name of the program performing the transaction and the time in milliseconds required to complete the local transaction.

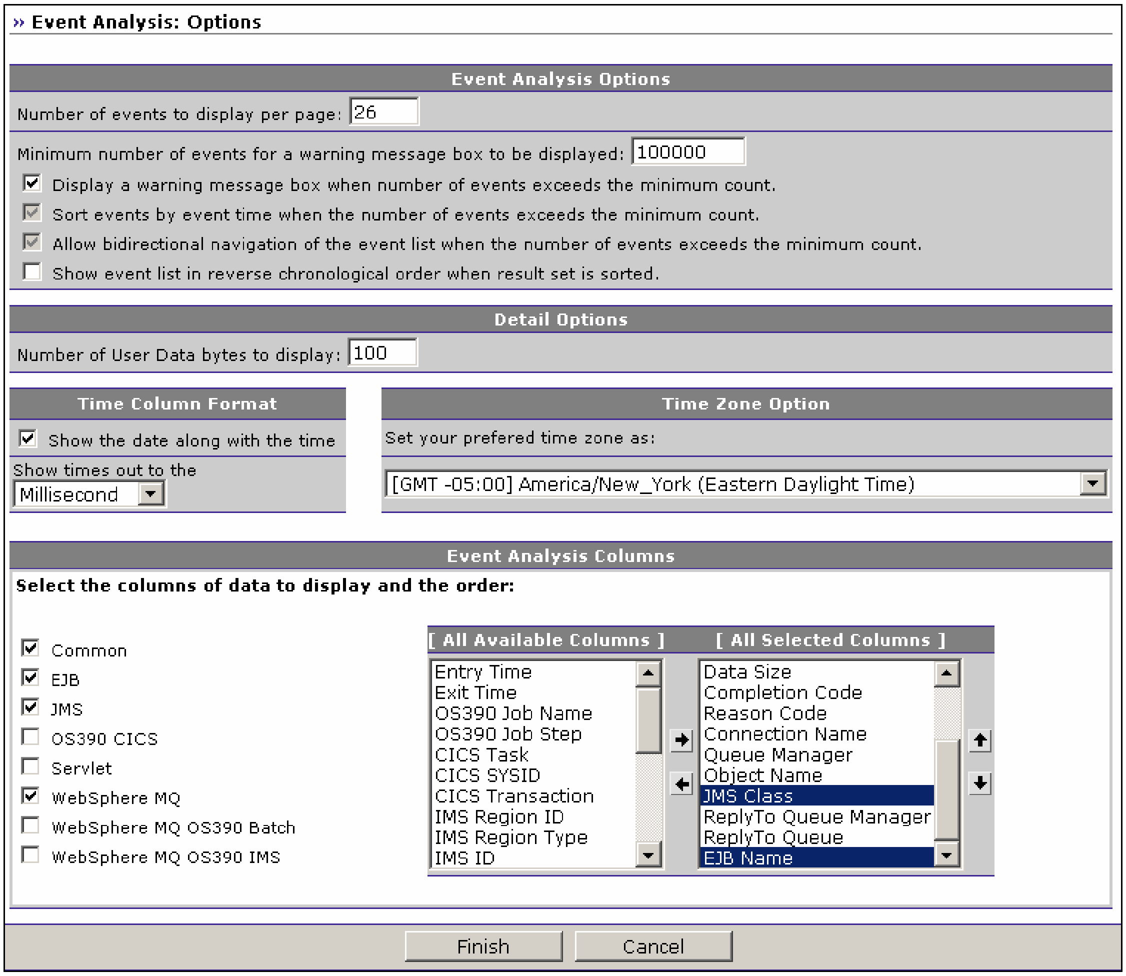
The edge label shows the sequence of local transactions within the business transaction. Choose the Edge&Node > Show Transaction Times menu item to add the exit time for the MQPUT/MQPUT1 and MQGET calls between the local transactions to the edge label, as shown in the following example:



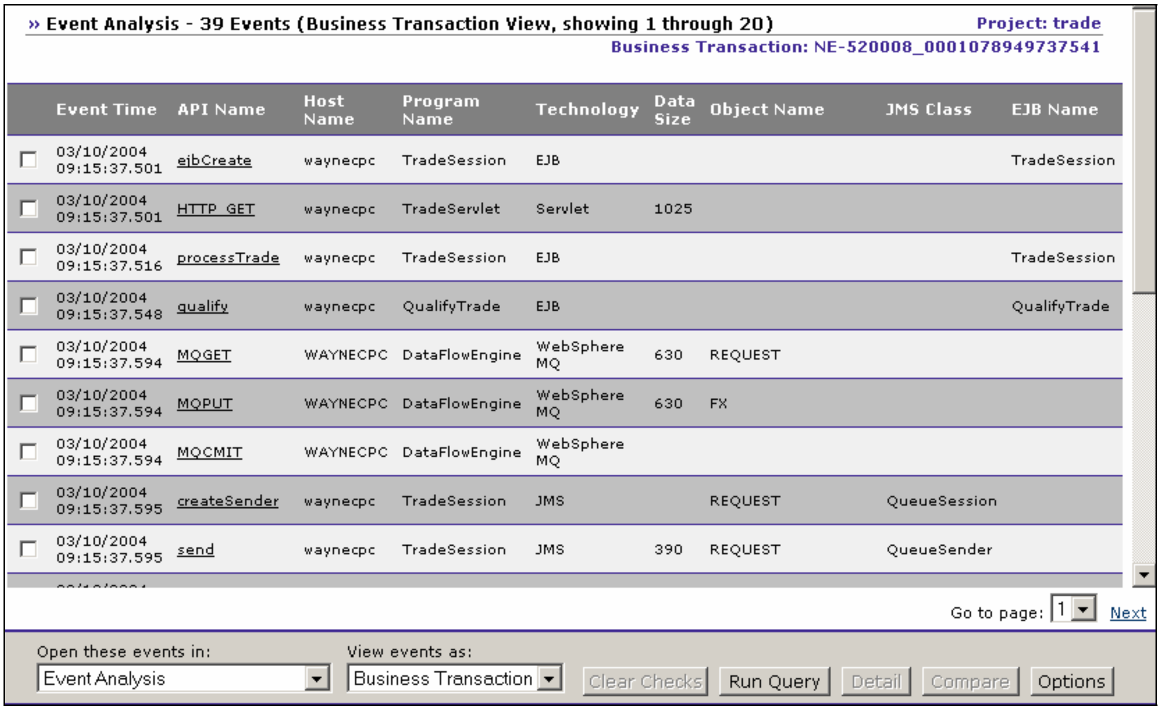
With this view, you can identify the program and technology controlling a message at any time.

To view additional information, such as which queue the message is on at any time, choose the Open View > Event Analysis View. The Event Analysis view shows more detailed information about the individual events in this business transaction.

To view the JMS class and EJB name, click Options to display the Event Analysis Options page:

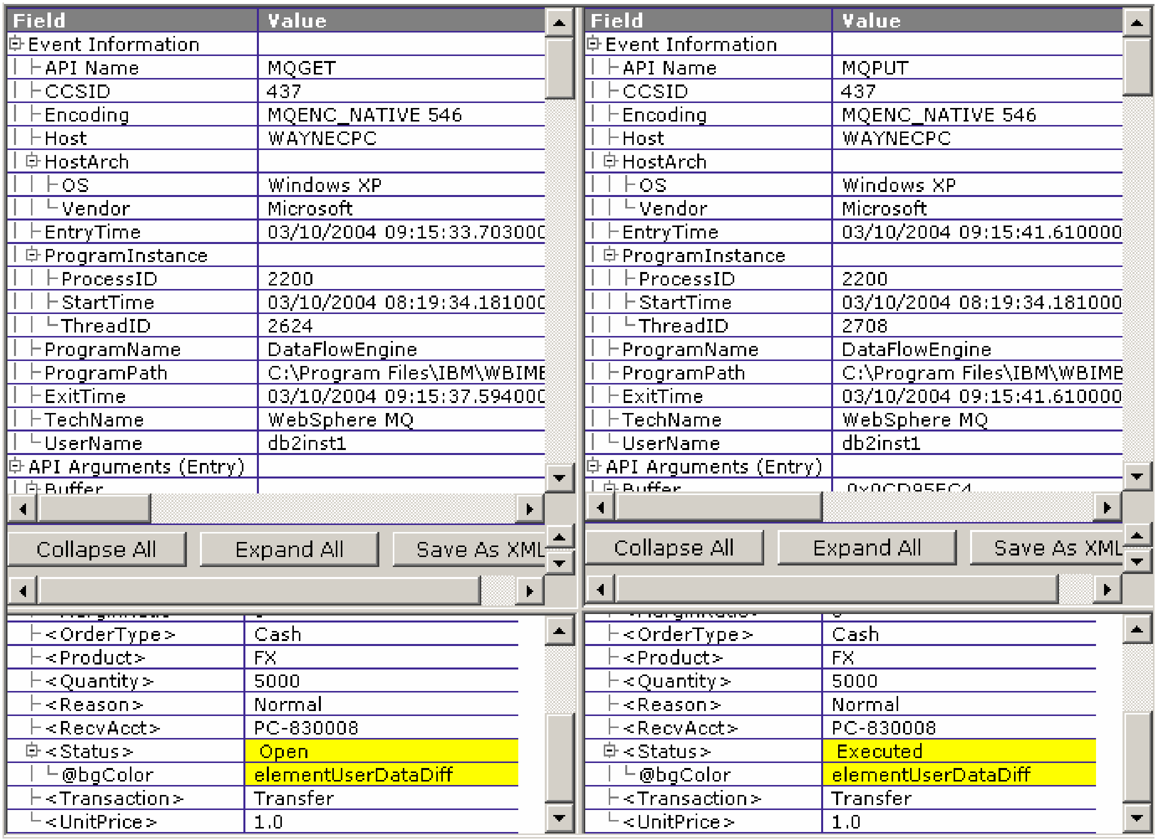


Select JMS Class and EJB Name in the [All Available Columns] list and click the right arrow to move them to the [All Selected Columns] list, and then click Finish. The Event Analysis view should look like the following:



With this view, you can trace the API calls made by each program in this transaction.

To see changes made to the message data during processing, check the boxes next to the first MQGET event and the last MQPUT event for DataFlowEngine, then click Compare. The Event Details view opens to provide a side-by-side comparison of these events:



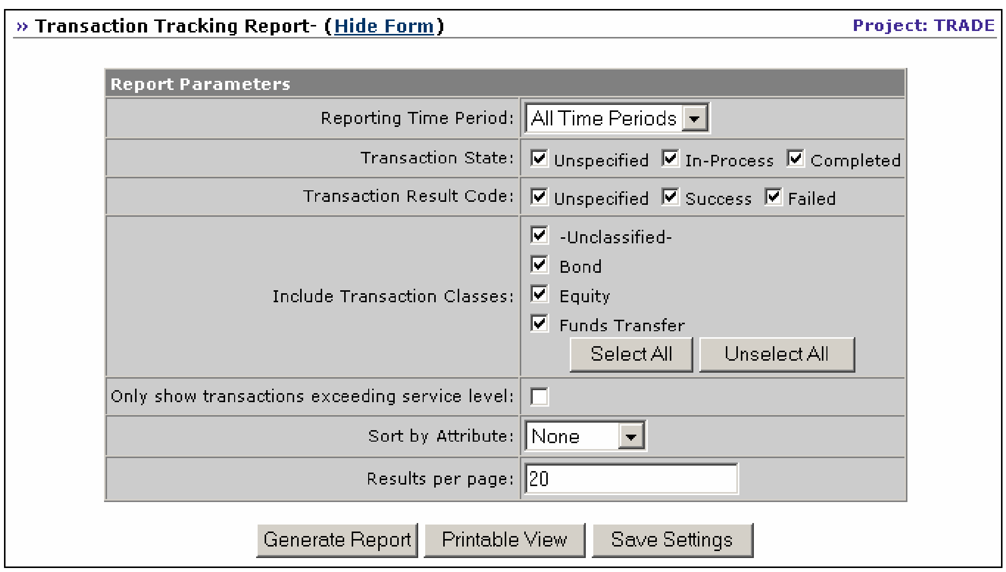
Note that the message data for the final MQPUT shows a status of "Executed."

In this example, we traced a complete and successful business transaction; you can use the same steps with a failed or incomplete business transaction to find problems quickly. There are number of ways to identify failed transactions:

- In the Component Topology Analysis view, choose Edge & Node > Edge Color Coding > Errors and Warnings to cause TransactionVision to display error and warning event paths in red.
- Create a query to view only events with a WebSphere MQ completion code, servlet status code, or JMS status code indicating a failure or warning. Use this query with the Event Analysis view to identify errors.

Another way to analyze transactions is to use a transaction analysis report. Click Reports to display the Reports page:

Under Reports, click Where are my transactions? TransactionVision displays the Transaction Tracking Report.



Specify all time periods and click Generate Report. TransactionVision creates a report showing information about all transactions that meet the report parameters:

Transaction Tracking Report
(8550 transactions, showing 1-20)

Tx Class	Start Time	Response Time	Completion State	Result State	Label	SLAState
-Unclassified-	07/19/2005 13:59:56.835	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:00:53.085	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:03:01.902	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:04:15.571	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:10:59.788	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:14:22.857	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:17:45.068	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:21:08.092	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:24:30.354	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:27:53.034	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:31:15.498	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:34:38.086	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:37:59.727	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:41:21.441	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:44:43.166	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:48:05.454	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:51:27.629	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:54:49.317	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:58:11.116	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 15:01:33.384	0.00	Unknown	Unknown		None

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To view more detailed information about a particular transaction, click its Transaction Class link. The Transaction Details page opens. This page provides three tables of information:

- Summary: Provides the Business Transaction ID as well as other information specified in the transaction definition.
- Transaction Flow: Provides information about the local transactions that make up the business transaction. This table also shows message flows and control flows that originate with each local transaction.

Summary			
Class:	Bond	Start Time:	07/19/2005 15:24:53.443
Response Time:	93.145 sec	SLA:	5.000 sec
State:	Completed	Result:	Success
SLAState:	Violated		

Transaction Flow

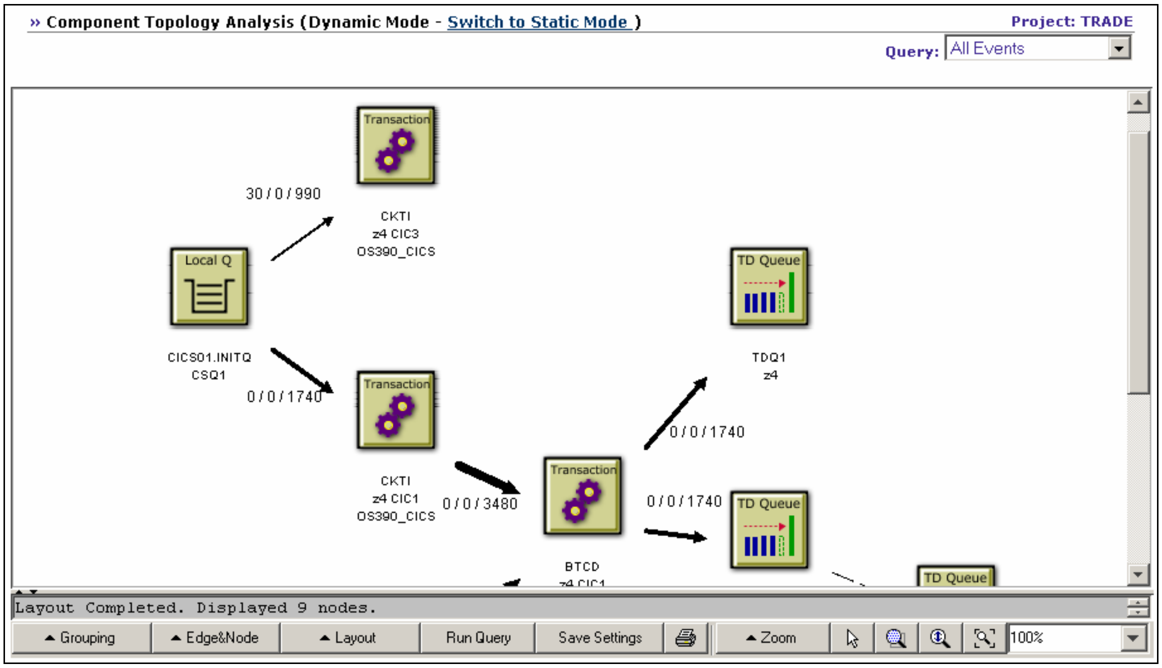
ID		Application	Start Time	Elapsed Time (sec)	Latency (sec)
1		**CKTI on z4 - CICS**	**14:17:45.071**	**~0.000**	
2		BTCD on z4 - CICS	+0.002	0.078	
		- TDQ1	+0.077	~0.000	
		- TDQ2	+0.000	~0.000	
		- TDQ3	+0.001	~0.000	
		- BondTradeProcessor on poojajpc - Message Driven (ID = 9)	+0.052	0.003	4028.575
3		**Websphere MQ Broker on poojajpc - WMQ**	**15:24:43.900**	**0.020**	
		- queue://TRADING/BOND Listener on poojajpc - JMS (ID = 4)	+2.143	0.001	7.462
		- TradeSession on poojajpc - Session (ID = 6)	+2.143	2.139	7.419
4		**queue://TRADING/BOND Listener on poojajpc - JMS**	**15:24:53.505**	**~0.000**	
		- Websphere MQ Broker on poojajpc - WMQ (ID = 3)	+0.000	~0.000	7.462
9		|- BondTradeProcessor on poojajpc - Message Driven	+0.000	0.172	
10		Order on poojajpc - Entity	+0.016	0.062	
11		|- Order on poojajpc - Entity	+0.078	~0.000	
		- Websphere MQ Broker on poojajpc - WMQ (ID = 5)	+0.031	~0.000	7.417
		- BTCD on z4 - CICS (ID = 2)	+0.047	0.016	4028.575
5		**Websphere MQ Broker on poojajpc - WMQ**	**15:24:43.972**	**0.002**	
		- TradeSession on poojajpc - Session (ID = 6)	+2.241	0.001	7.417
		- BondTradeProcessor on poojajpc - Message Driven (ID = 9)	+2.241	2.241	7.417
6		**TradeSession on poojajpc - Session**	**15:24:53.443**	**0.062**	
		- Websphere MQ Broker on poojajpc - WMQ (ID = 5)	+0.187	~0.000	7.417
7		TradeServlet on poojajpc - Servlet	+0.187	92.927	

To view more information for a particular message, click the message flow icon. TransactionVision displays the all events in the message message flow in the Event Analysis view.

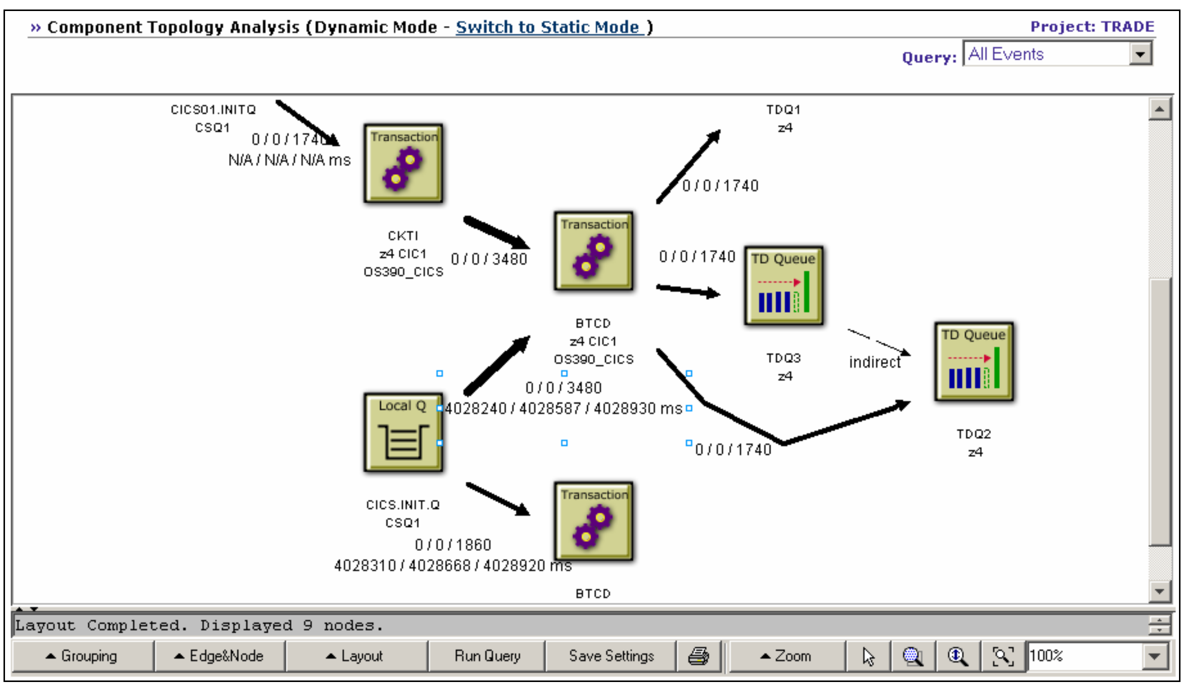
Performance Analysis

You can also use TransactionVision analysis views to analyze the transaction performance for your system. To get started, return to your TransactionVision home page and select the default query for the trade project.

Next, choose Views > Component Topology Analysis, click Switch to Dynamic Mode and set the zoom level to 100%. To identify potential performance bottlenecks, choose Edge & Node > Edge Widths > Message Call Count.

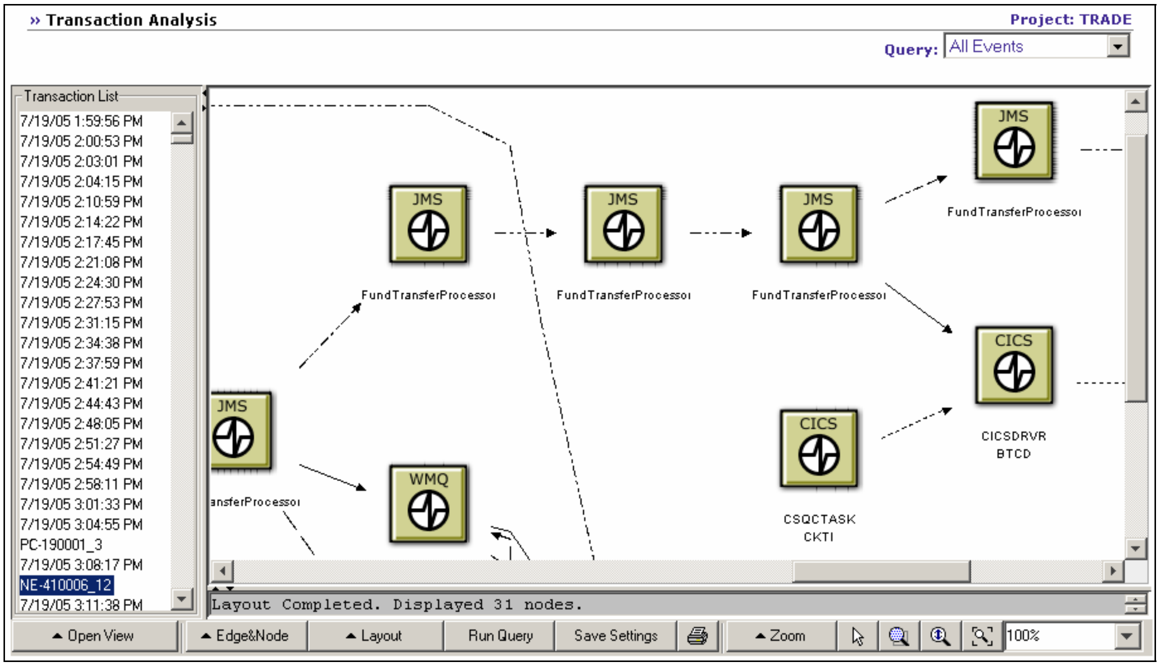


In this view, edge widths reflect the number of put and get calls between components. Choose Edge & Node > Min/Avg/Max Latency Times to add performance information to the edge labels:

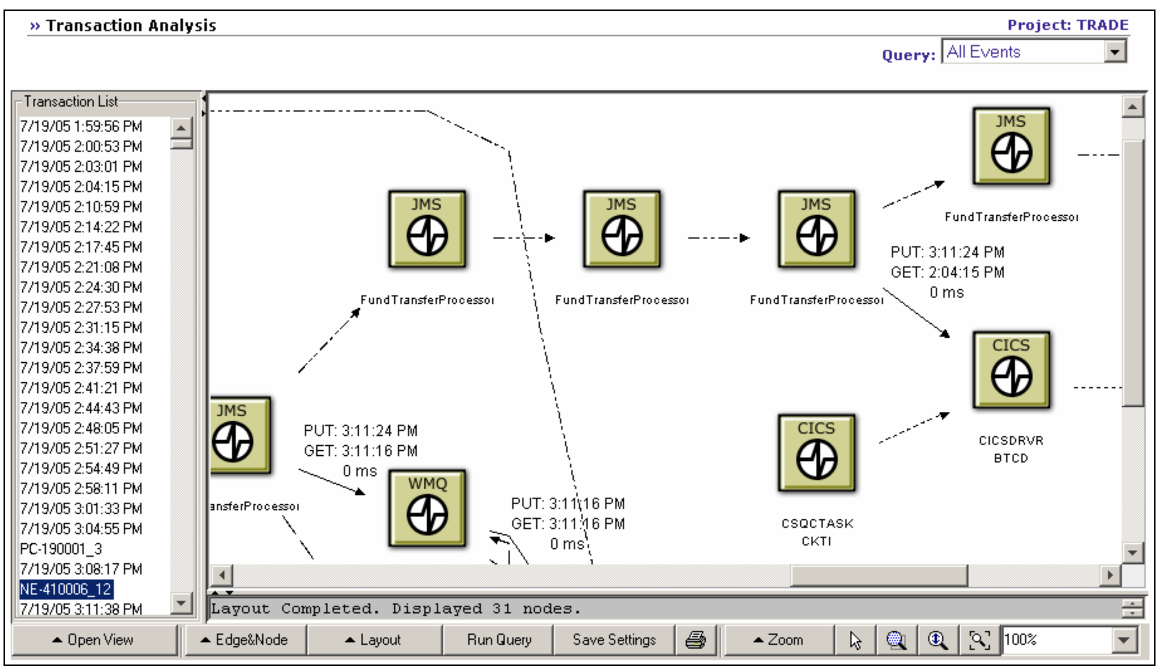


Use this information to identify areas where latency may be too high.

You can also use the Transaction Analysis view to analyze performance of individual local and business transactions. Choose Views > Transaction Analysis to open this view:

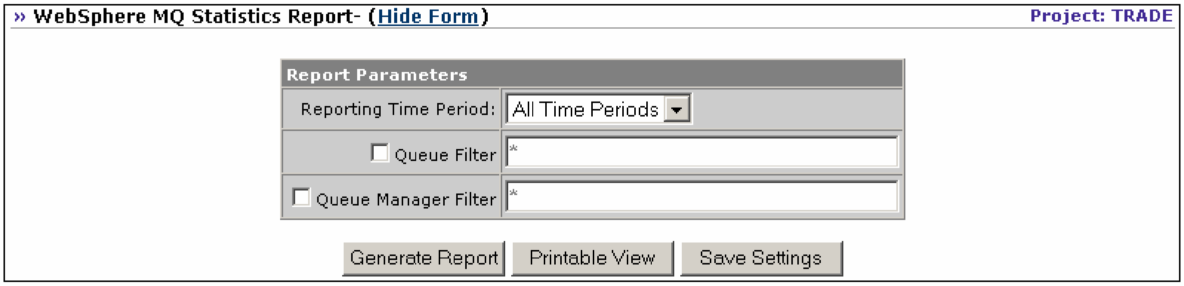


To view performance information, choose Edge & Node > Show Transaction Times to show the times for the put and get calls between local transactions. Choose Edge & Node > Show Latency to show the number of milliseconds between the exit times of the put and get calls between the local transactions.

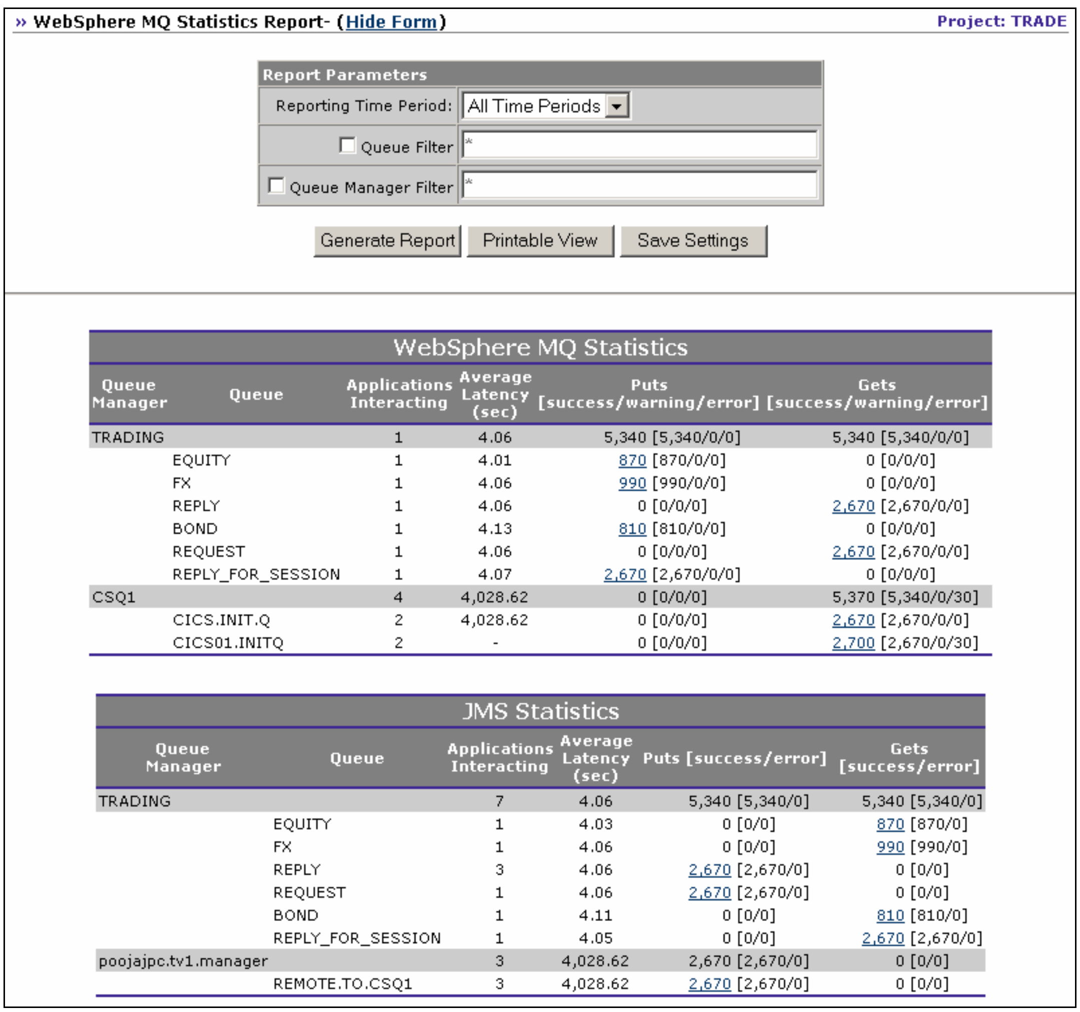


Hint: If you cannot read the edge labels easily, select them and move them above or below the edges.

You can also use reports to monitor and analyze performance. To analyze performance of WebSphere MQ components, click Reports to display the Reports page and click the How are my WebSphere MQ components performing? link. TransactionVision displays the WebSphere MQ Statistics Report page.



Choose All Time Periods and click Generate Report. TransactionVision displays a table showing the number of applications interacting, average latency, and number of put, get, and open calls for each queue.



WebSphere MQ Statistics

Queue Manager	Queue	Applications Interacting	Average Latency (sec)	Puts [success/warning/error]	Gets [success/warning/error]
TRADING		1	4.06	5,340 [5,340/0/0]	5,340 [5,340/0/0]
	EQUITY	1	4.01	870 [870/0/0]	0 [0/0/0]
	FX	1	4.06	990 [990/0/0]	0 [0/0/0]
	REPLY	1	4.06	0 [0/0/0]	2,670 [2,670/0/0]
	BOND	1	4.13	810 [810/0/0]	0 [0/0/0]
	REQUEST	1	4.06	0 [0/0/0]	2,670 [2,670/0/0]
	REPLY_FOR_SESSION	1	4.07	2,670 [2,670/0/0]	0 [0/0/0]
CSQ1		4	4,028.62	0 [0/0/0]	5,370 [5,340/0/30]
	CICS.INIT.Q	2	4,028.62	0 [0/0/0]	2,670 [2,670/0/0]
	CICS01.INITQ	2	-	0 [0/0/0]	2,700 [2,670/0/30]

JMS Statistics

Queue Manager	Queue	Applications Interacting	Average Latency (sec)	Puts [success/error]	Gets [success/error]
TRADING		7	4.06	5,340 [5,340/0]	5,340 [5,340/0]
	EQUITY	1	4.03	0 [0/0]	870 [870/0]
	FX	1	4.06	0 [0/0]	990 [990/0]
	REPLY	3	4.06	2,670 [2,670/0]	0 [0/0]
	REQUEST	1	4.06	2,670 [2,670/0]	0 [0/0]
	BOND	1	4.11	0 [0/0]	810 [810/0]
	REPLY_FOR_SESSION	1	4.05	0 [0/0]	2,670 [2,670/0]
poojajpc.tv1.manager		3	4,028.62	2,670 [2,670/0]	0 [0/0]
	REMOTE.TO.CSQ1	3	4,028.62	2,670 [2,670/0]	0 [0/0]

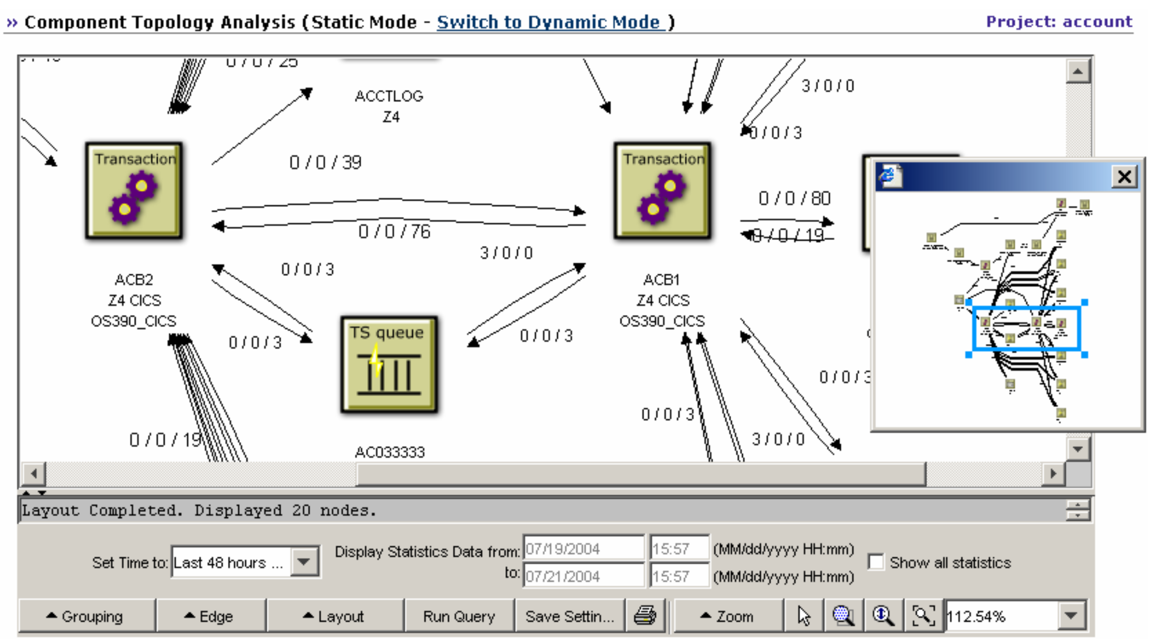
Similarly, you can click the How are my Application Server components performing? link on the Reports page to run the Application Server Statistics Report. This report shows the call count and average latency for each EJB method and servlet.

To view performance information for your entire system, return to the Reports page and click How is my IT infrastructure performing? Click Generate Report to generate a report showing an overview of performance for transactions, application servers, WebSphere MQ components, and JMS components.

CICS Transactions

In addition to the trade sample, TransactionVision provides a sample called account. This sample has add, display, delete, and update commands to a CICS VSAM file through 3270 terminal input and query commands to the VSAM file from a transaction invoked by the WebSphere MQ-CICS bridge in response to WebSphere MQ messages on the bridge request queue.

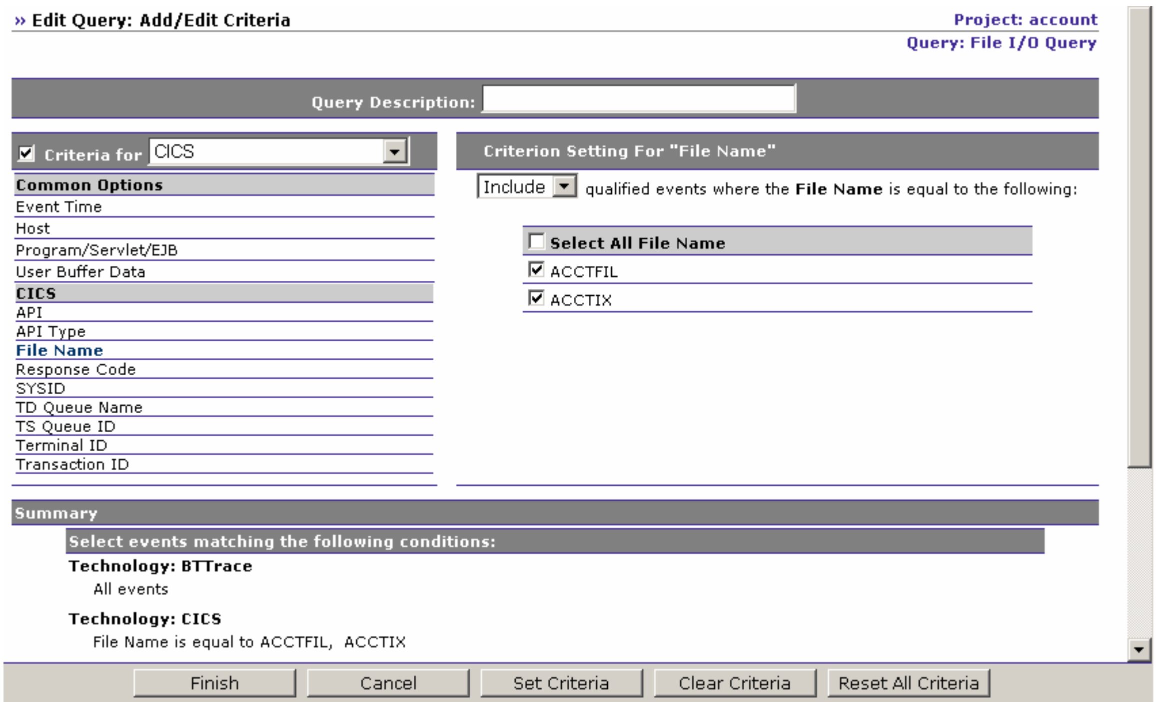
On your TransactionVision home page, select account as your current project and choose Views > Component Topology Analysis to display the Component Topology Analysis for this project:



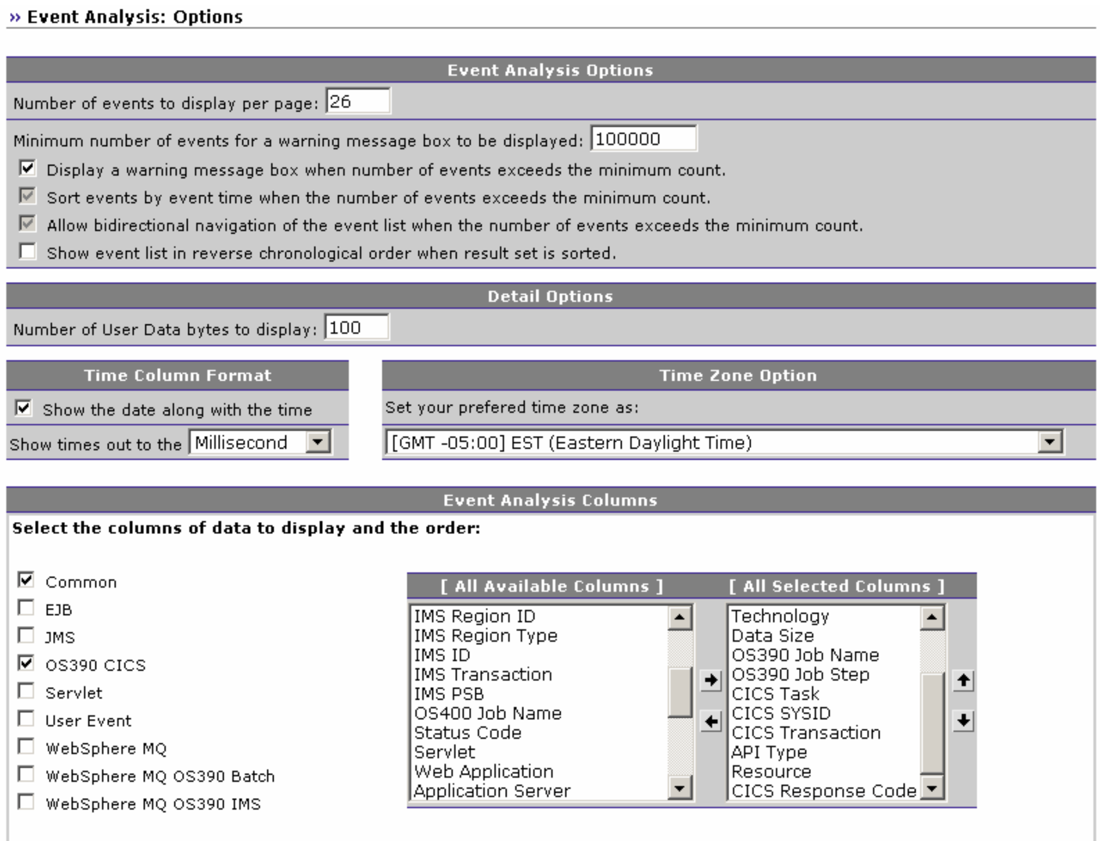
This view shows icons specific to CICS events, such as transactions rather than applications, temporary storage (TS) and transient data (TD) queues, and files.

In a CICS environment, you may want to use a query to limit displayed events to file I/O events. To modify your current query, choose Current Project > Queries. TransactionVision displays the current query.

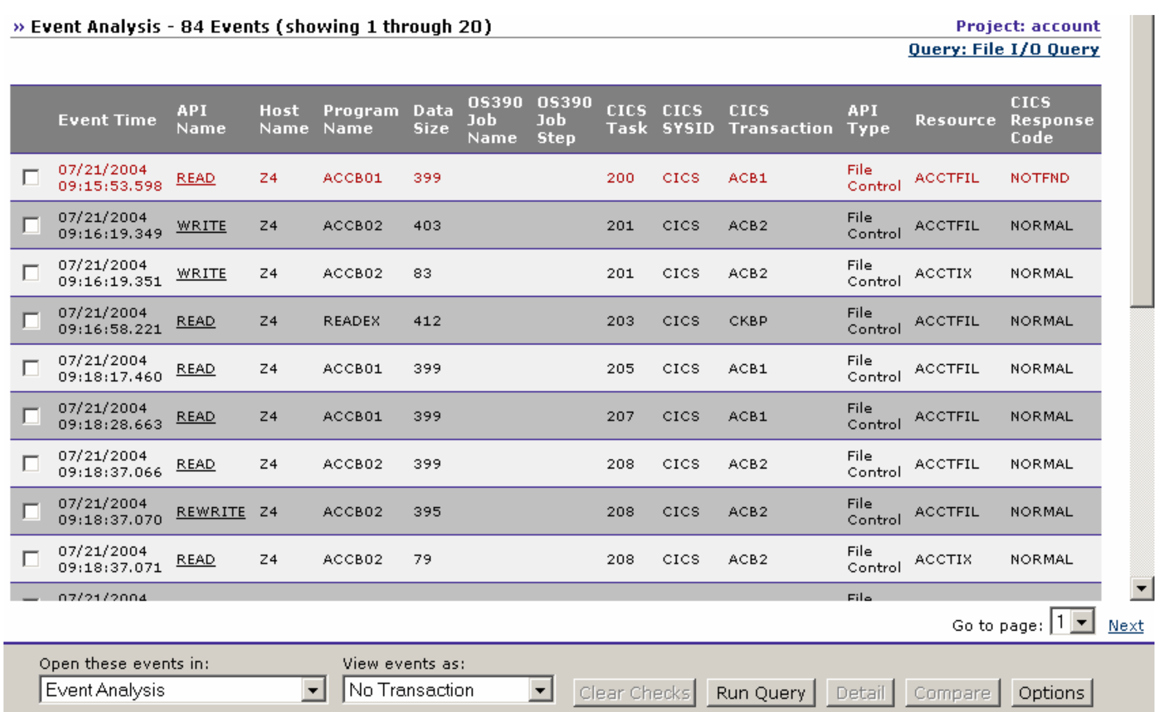
To modify the query, click Edit Query. In the Criteria for drop-down list, choose CICS. Under the CICS options, click File Name. Check the ACCTFIL and ACCTIX filenames and click Finish.



To view information about CICS events in the Event Analysis view, you'll need to modify the Event Analysis options. First, choose Views > Event Analysis to display the Event Analysis view. Click Options to open the Event Analysis Options page.

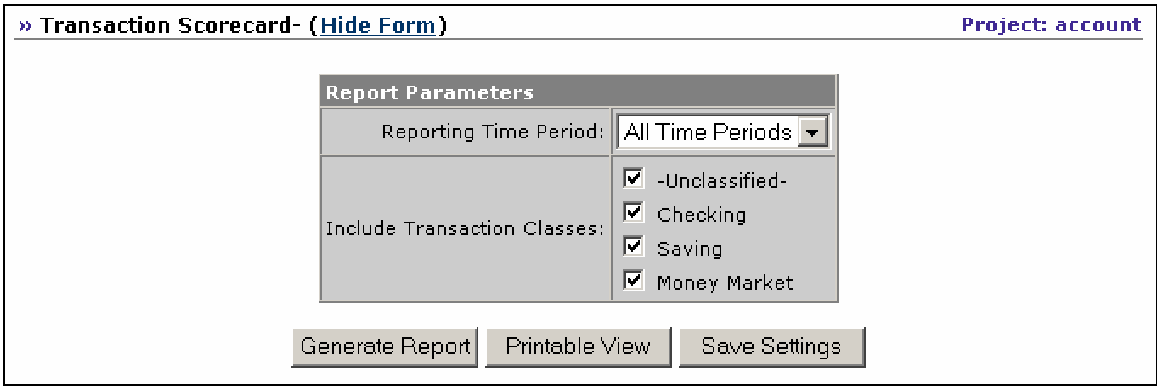


In the Event Analysis Columns area, check Common and OS390 CICS, and then click Finish. The Event Analysis view then displays columns specific to CICS events.

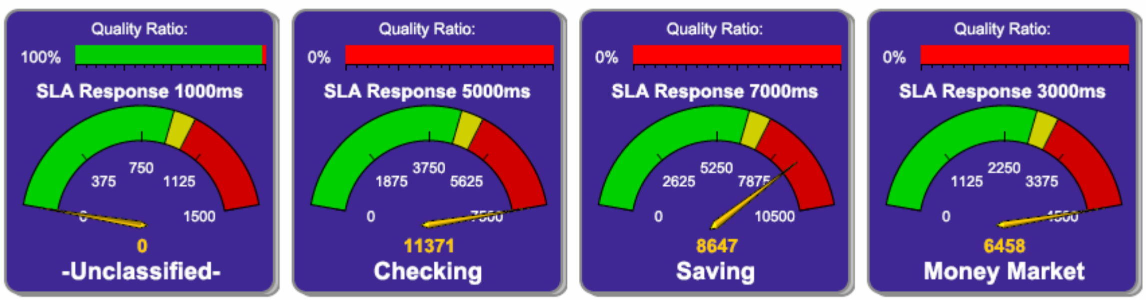


Event Time	API Name	Host Name	Program Name	Data Size	OS390 Job Name	OS390 Job Step	CICS Task	CICS SYSID	CICS Transaction	API Type	Resource	CICS Response Code
07/21/2004 09:15:53.598	READ	Z4	ACCB01	399			200	CICS	ACB1	File Control	ACCTFIL	NOTFND
07/21/2004 09:16:19.349	WRITE	Z4	ACCB02	403			201	CICS	ACB2	File Control	ACCTFIL	NORMAL
07/21/2004 09:16:19.351	WRITE	Z4	ACCB02	83			201	CICS	ACB2	File Control	ACCTIX	NORMAL
07/21/2004 09:16:58.221	READ	Z4	READEX	412			203	CICS	CKBP	File Control	ACCTFIL	NORMAL
07/21/2004 09:18:17.460	READ	Z4	ACCB01	399			205	CICS	ACB1	File Control	ACCTFIL	NORMAL
07/21/2004 09:18:28.663	READ	Z4	ACCB01	399			207	CICS	ACB1	File Control	ACCTFIL	NORMAL
07/21/2004 09:18:37.066	READ	Z4	ACCB02	399			208	CICS	ACB2	File Control	ACCTFIL	NORMAL
07/21/2004 09:18:37.070	REWRITE	Z4	ACCB02	395			208	CICS	ACB2	File Control	ACCTFIL	NORMAL
07/21/2004 09:18:37.071	READ	Z4	ACCB02	79			208	CICS	ACB2	File Control	ACCTIX	NORMAL
07/21/2004										File		

You can also use TransactionVision reports to monitor the performance of CICS transactions. Choose Reports to display the TransactionVision Reports page, and click How did my transactions perform previously? TransactionVision displays the Transaction Scorecard settings:



Click Generate Report to create a report showing average transaction performance for all transaction classes over all time periods recorded in the project:



Additional TransactionVision Resources

Documentation Roadmap

This guide provides instructions for managing user accounts and communication links, configuring projects and data collection filters, and managing services and schemas. In addition to this guide, the following documents are provided with TransactionVision:

- The *TransactionVision Planning Guide* provides information to help you plan the TransactionVision implementation in your environment.
- The *TransactionVisionWeb Application Installation and Configuration Guide* provides instructions for installing and configuring the TransactionVision web user interface. This file is also available from the TransactionVision Help menu.

- The *TransactionVision Sensor Installation and Configuration Guide* provides instructions for installing and configuring TransactionVision Sensors. This file is also available from the TransactionVision Help menu.
- The *TransactionVision Analyzer Installation and Configuration Guide* provides instructions for installing and configuring the Analyzer, as well as configuring your database to work with TransactionVision. This file is also available from the TransactionVision Help menu.
- The *TransactionVision Administration Guide* provides instructions managing user accounts and communication links, configuring projects and data collection filters, and managing services and schemas. This file is also available from the TransactionVision Help menu.
- The *TransactionVision Programmer's Guide* provides information for creating custom beans and reports for use with TransactionVision.
- The *TransactionVision Security Guide* provides an overview of the security features and setup procedures of TransactionVision. These features and procedures ensure that data collected by TransactionVision is secure and accessible to the appropriate people.

Contacting Bristol Support

If you encounter a problem installing or configuring TransactionVision, contact Bristol Support by any of the following methods:

- TransactionVision: Choose the Help > Bristol Support menu item. From the submenu, you may open the Bristol Support home page, open the TransactionVision knowledgebase, or open a problem report form.
- Web: http://www.bristol.com/support
- Email: support@bristol.com
- Phone: **203-798-1007** Press 3

Chapter 2

Configuring Queries

Queries control which events in the project database are actually displayed in the TransactionVision views. Query conditions such as Hosts, Queue Managers, Programs, Time, and APIs enable you to restrict displayed events to those you need to identify for analysis or to resolve a problem. Only events that meet the selected filter conditions are displayed by TransactionVision.

Queries are created within each project definition, and are not shared between projects. You may create any number of queries for a project, but only one query may be active at any time.

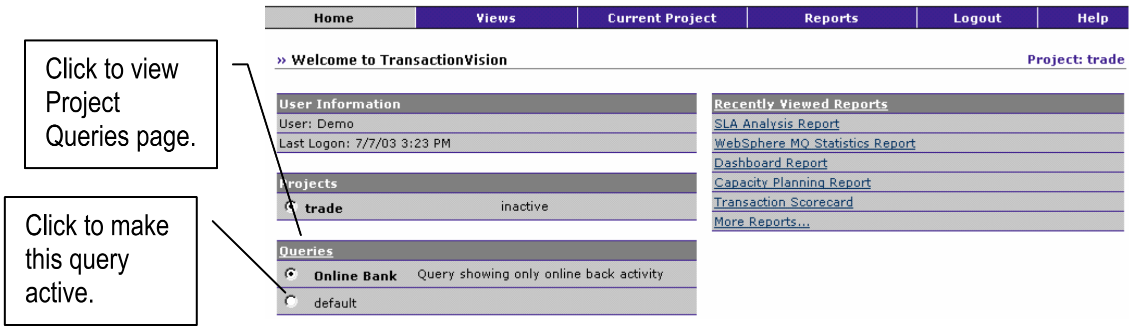
Standard Queries

When you create a new project, two queries are automatically created: one that includes all events and one that includes all events that includes all events from the last 24 hours.

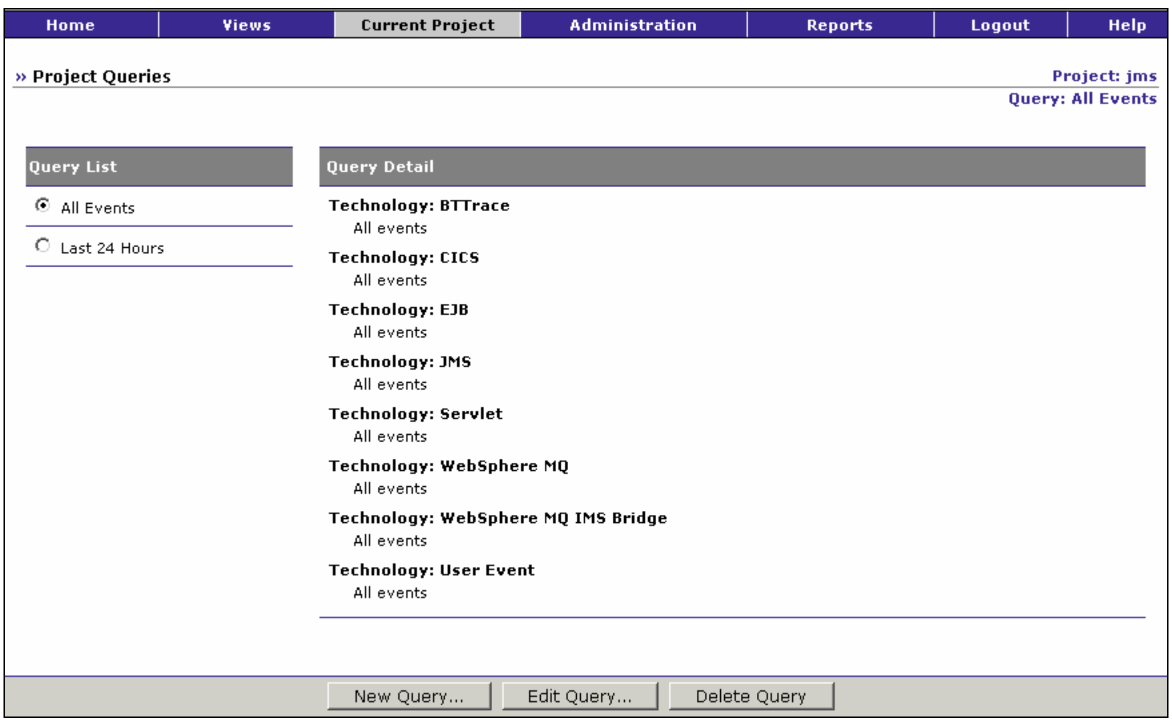
You may add any number addition queries. However, only one query may be active for the project at any time.

Choose an Active Query

Your home page lists the queries already created for the current project. This list shows the query name and optional description. Click the radio button to the left of the query name to make it the active query for your project. The next time you display the Component Topology Analysis, Transaction Analysis, or Event Analysis view, only events that match all query conditions are used to create the view.



If you need more information about query definitions before choosing one, click the Queries link or choose the Current Project > Queries menu item. The Project Queries page appears.

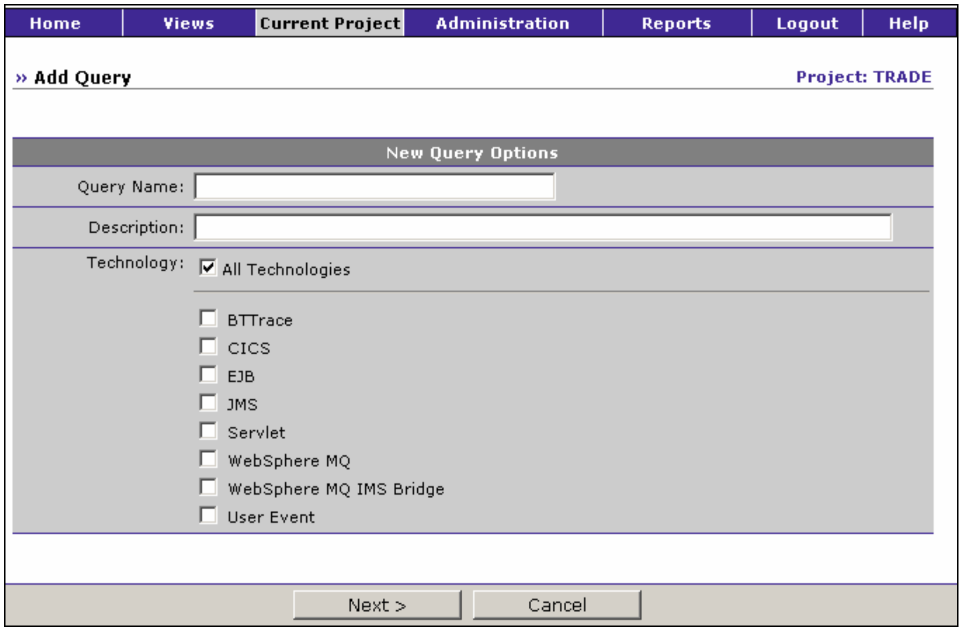


This view displays the query conditions for each query. Click the radio button next to a query name to make it the active query.

Add a New Query

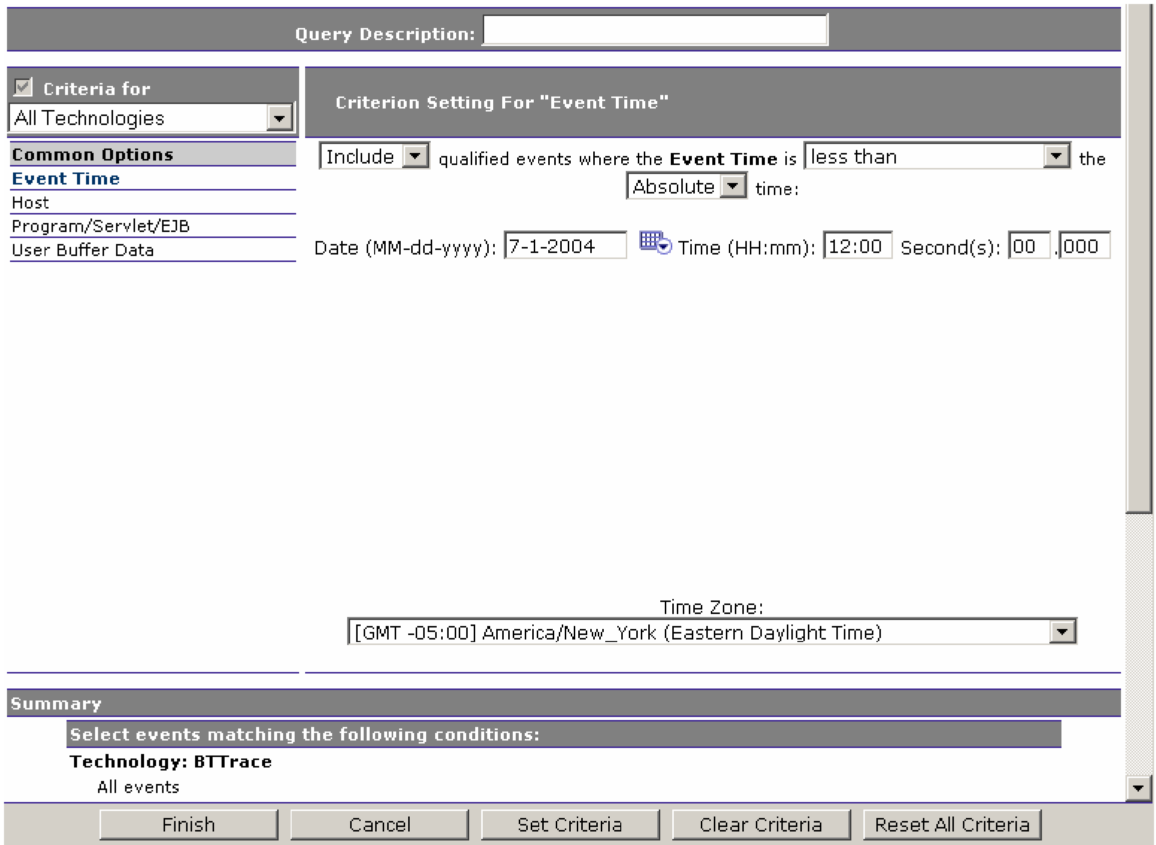
To add a new query to a project, perform the following steps:

1. On the Project Queries page, click New Query... to display the Add Query page.



2. Enter the query name. This name is used in the list of queries on your TransactionVision home page and the Project Queries page. It is also displayed on the Component Topology Analysis, Transaction Analysis, and Event Analysis views.
3. Enter a brief description of the query (optional). This description is included in the list of queries on your TransactionVision home page.
4. Check each technology you want to include in your query, or check All Technologies to include events for all technologies. This option provides a quick way to create a query for all events for a specific technology. However, you may still specify additional criteria for each technology you select, or you specify criteria for other technologies.
5. Click Next> to display the Add/Edit Criteria page.

   The left side of the page lists all query conditions that you may change. The right side shows the setting for the currently selected criteria.



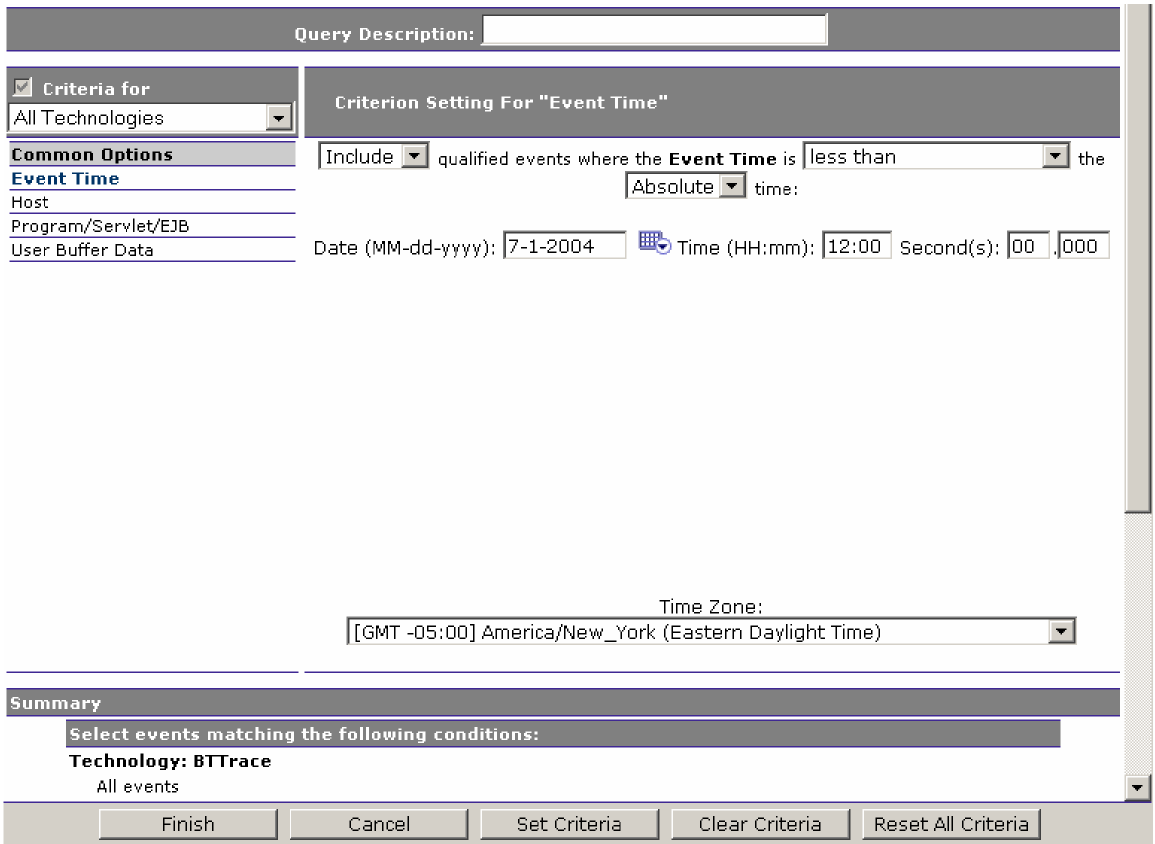
5. Click the criteria category name on the left side for the condition that you wish to change from the default value and make desired changes on the right side of the page. See "Query Conditions" later in this chapter for instructions on setting criteria for each condition.
6. Click Set Criteria to save your settings for the current category. To clear changes for the current category, click Clear Criteria. To reset all categories to the default criteria, click Reset All Criteria.
7. On the top left corner, there is a technology drop-down box to switch between groups of different technologies. Note that there is a checkbox on the left side of the box, which indicates whether querying on the given technology is enabled or not. Clicking on this checkbox will toggle the status.
8. When all query criteria are set, click Finish.

Edit a Query

Perform the following steps to edit a query for a project:

1. On the Project Queries page, select the query you wish to edit and click Edit Query... to display the Add/Edit Criteria page.

The left side of the page lists all filter conditions that you may change. The right side shows the setting for the currently selected criteria.



2. Click the criteria category name on the left side for the condition that you wish to change and make desired changes on the right side of the page. See “Query Conditions” later in this chapter for instructions on setting criteria for each condition.
3. Click Set Criteria to save your settings for the current category. To clear changes for the current category, click Clear Criteria. To reset all categories to the default criteria, click Reset All Criteria.
4. On the top left corner, there is a technology drop-down box to switch between groups of different technologies. Note that there is a checkbox on the left side of the box, which indicates whether querying on the given technology is enabled or not. Clicking on this checkbox will toggle the status.
5. When all query criteria are set, click Finish.

Deleting a Query

To delete a query, select it on the Project Queries page and click Delete Query.

Optimizing Query Performance

To improve the performance of queries and views, include only those technologies that your query uses. For example, if your query only includes WebSphere MQ criteria, say a WebSphere MQ object, then disable all other technologies except WebSphere MQ to make your query faster. To disable a technology, clear the checkbox, next to the combo box, on the left side of the query page.

For most criteria, TransactionVision uses a database lookup table, which stores a set of predefined key values along with event IDs. However, it uses a linear search for the User Buffer Data, WebSphere MQ WBI Broker, and WebSphere MQ WBI Message Flow Name criteria. Although linear searching enhances query capabilities, it reduces query performance. If you include these criteria in your query, query performance will be degraded. To minimize the impact on query performance, try not to use these criteria together in the same query.

Another drawback of linear searches is that the resulting views would not know the number of events that match the query conditions. This results in limited page navigation capabilities in the TransactionVision web interface since the number of events and result pages is unknown. For example, after running a query that contains a query condition for event User Buffer data, the Event Analysis view would show page forward and backward options, but would not provide the number of events, the number of event pages, or controls to navigate to a particular page.

Query Conditions

The left side of the Add/Edit Criteria page lists all the criteria categories for queries. Only events that match the criteria for each category are displayed in the TransactionVision views.

Criteria For

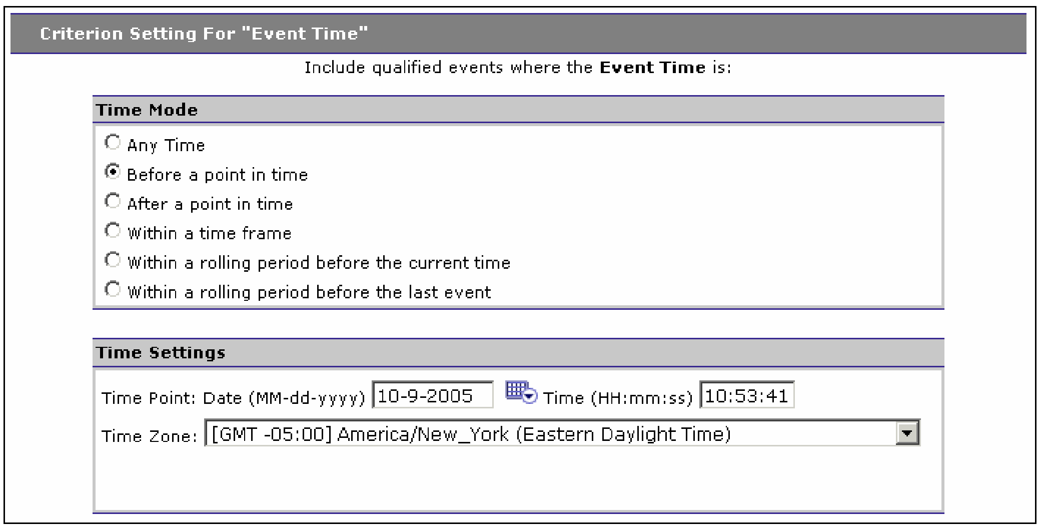
Select the technology for which you wish to specify query criteria from the drop-down list. You may specify criteria that apply to all technologies, or you may specify criteria specific to the CICS, BTTrace, EJB, JMS, Servlet, WebSphere MQ, WebSphere MQ IMS Bridge, or user defined events.

Check the “Criteria for” box for the selected technology to include events for the selected technology in your query results, or clear the box to exclude events for the selected technology from your query results. For example, to include only JMS events, clear the checkbox for all other technologies.

Common Options:

The common options apply to all technologies. However, if you specify a criteria for All Technologies, you may specify a different criteria for an individual technology. The setting for the individual technology overrides the setting for all technologies. For example, suppose you select All Hosts for All Technologies, but on the Host page for the JMS technology, you may select only the host Host1. JMS events originating on Host1 and other technology events originating on any host all match the query criteria.

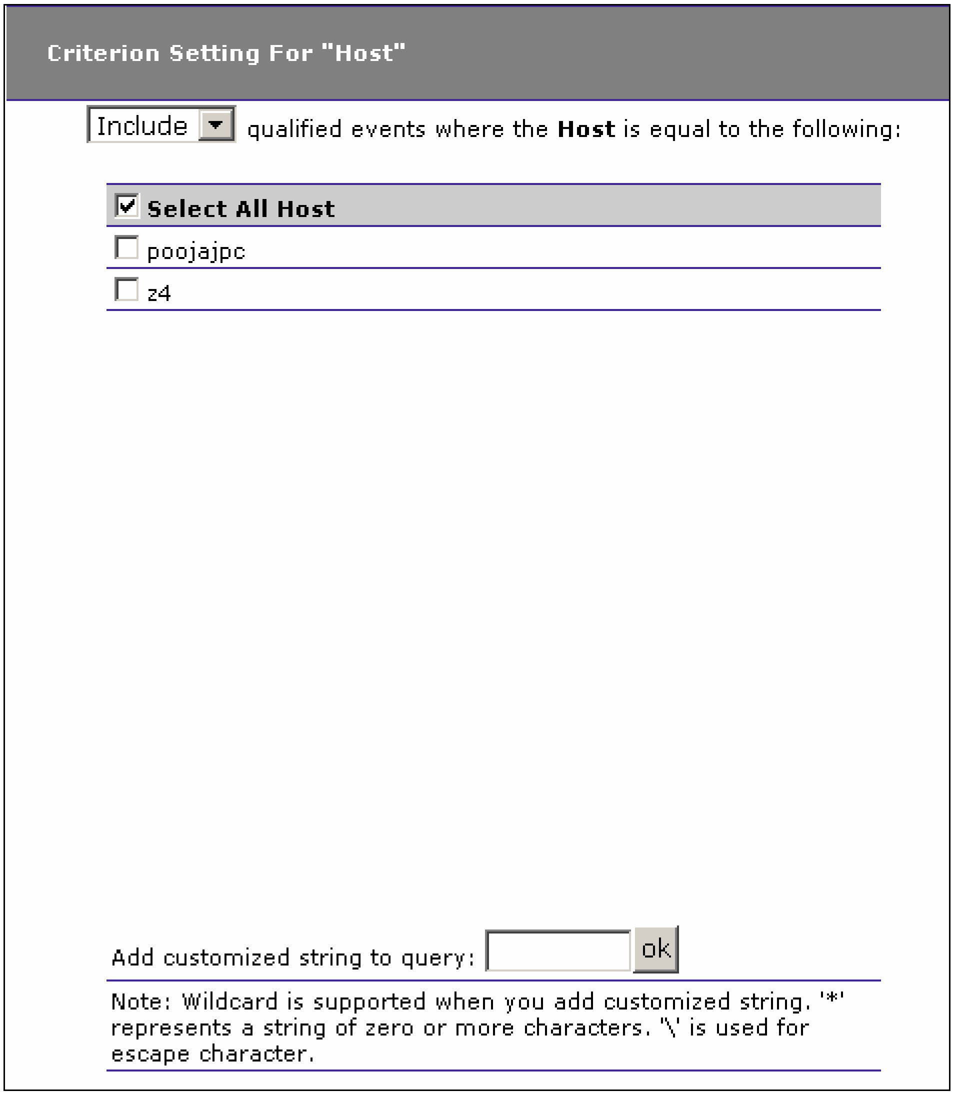
Event Time



When you create a new query, the default event time is events from the last 24 hours, relative to the last collected event. For example, if the time and date of last event in the project is 07:56 on 7-22-2005, the query will include events collected since 07:56 on 7-21-2005.

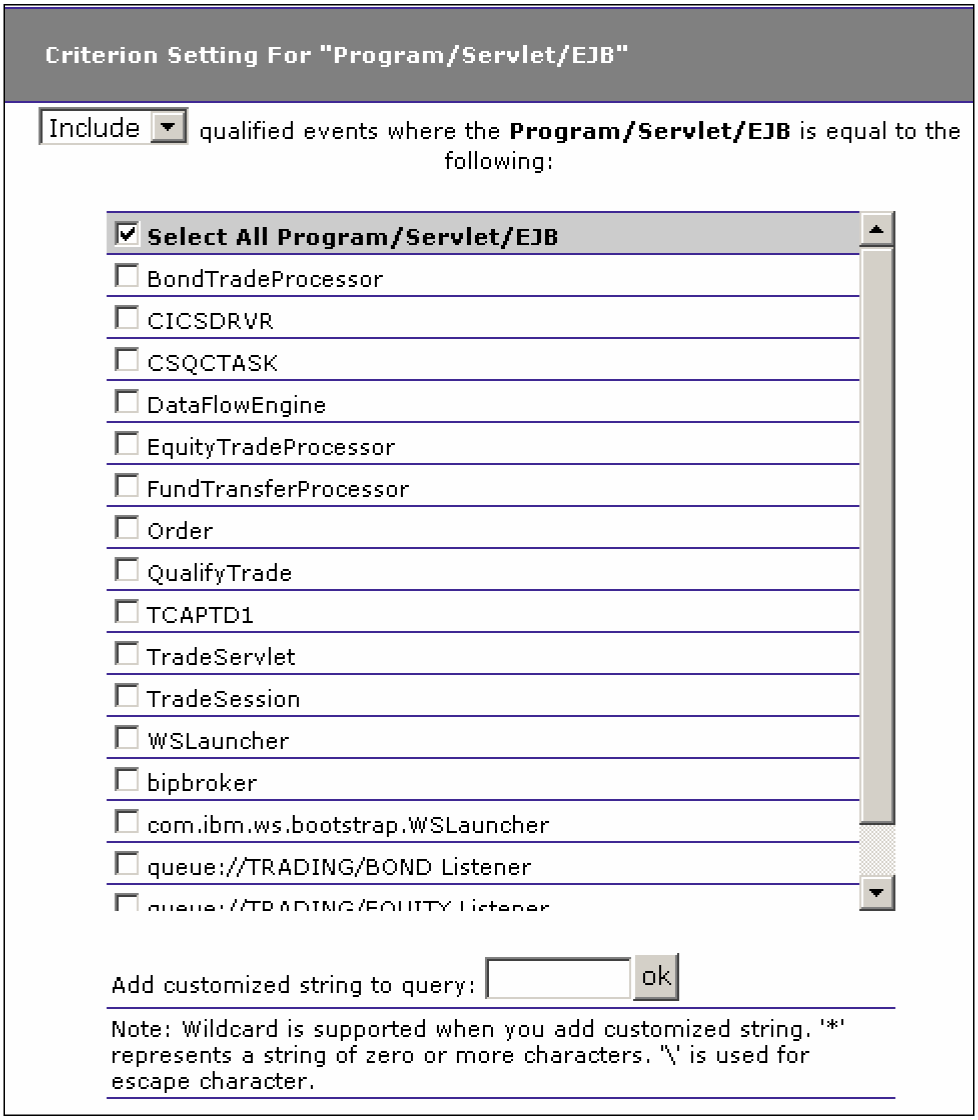
1. Select the time mode. The Any Time mode means there is no condition on event time. Other modes require a time setting.
2. For time modes other than Any Time, specify the time settings. Depending on the time mode, time settings may require you to specify a start and end time, a start time, an end time, or a rolling time period.

Host



1. Select whether to Include or Exclude selected hosts in the query criteria.
2. Check the box next to each host you want to include specifically in the query criteria, or check the box next to Select All Host to include all hosts in the query criteria. The host list is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

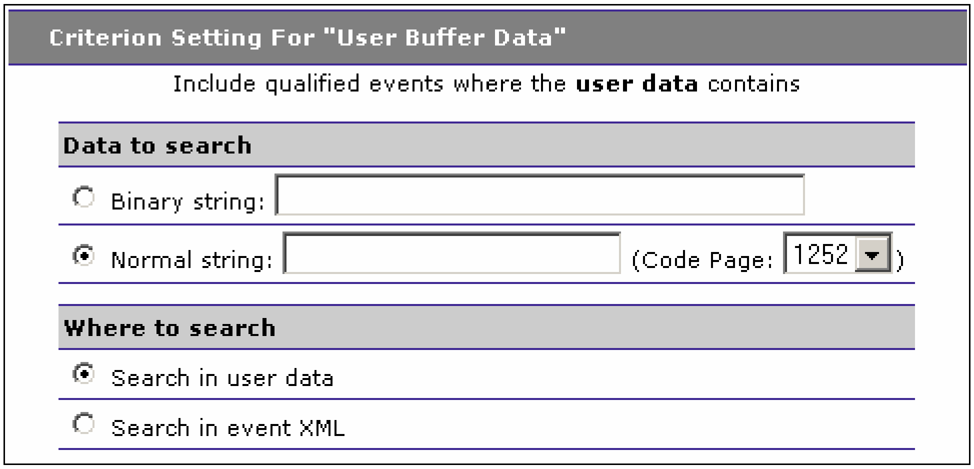
Program/Servlet/EJB



1. Select whether to include or exclude events from selected programs, servlets, or EJBs.
2. Check the box next to each program, servlet, or EJB you want to include specifically in the query criteria, or check the box next to Select All Program/Servlet/EJB to include all programs, servlets, and EJBs in the query criteria. The program/servlet/EJB list is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

User Buffer Data

Important! The TransactionVision Analyzer can be configured to use an XML Event Compression bean, which can reduce the size of the resulting event database. However, if this bean is in use by the Analyzer, it is not possible to query on the user buffer data.



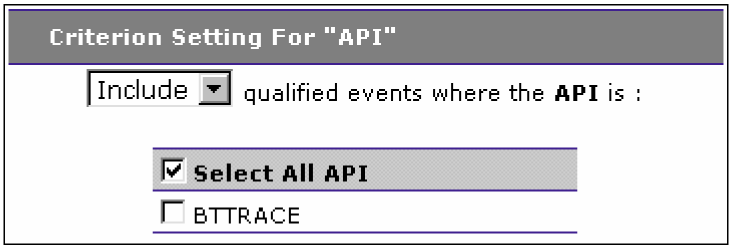
1. Click the appropriate radio button to indicate whether the specified user data is in binary string or normal string format and enter the buffer data. For normal string format, select the correct code page. To query on a double-byte character set (DBCS) string, you may either type in the DBCS text string or enter the binary representation of the text.
2. Specify where to search. If you have non-XML based user data in events, select Search in user data. If you have XML user data and have enabled the DefaultModifierBean in the Analyzer, select Search in event XML to search for strings in that XML data.

Important! TransactionVision uses a linear search for the User Buffer Data criteria. Although linear searching enhances query capabilities, it reduces query performance. If you include this criteria in your query, query performance will be degraded. To minimize the impact on query performance, try not to use this criteria together with the other linear search criteria (WebSphere MQ WBI Broker and WebSphere MQ WBI Message Flow Name) in the same query.

BTTrace Criteria:

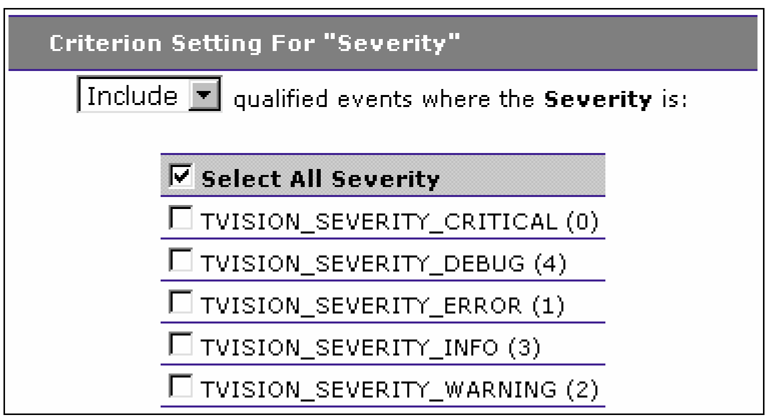
The following options are only available when BTTrace is the current “Criteria For:” technology.

API



1. Select whether to Include or Exclude events for selected BTTRACE APIs. Applications may use the BTTRACE function provided by the Sensor library to send user-defined trace messages to the Analyzer.
2. Check the box next to each API you want to include specifically in the query criteria, or check the box next to Select All API to include all BTTRACE APIs in the query criteria. For more information about BTTRACE APIs, see the *TransactionVision Administrator's Guide*.

Severity

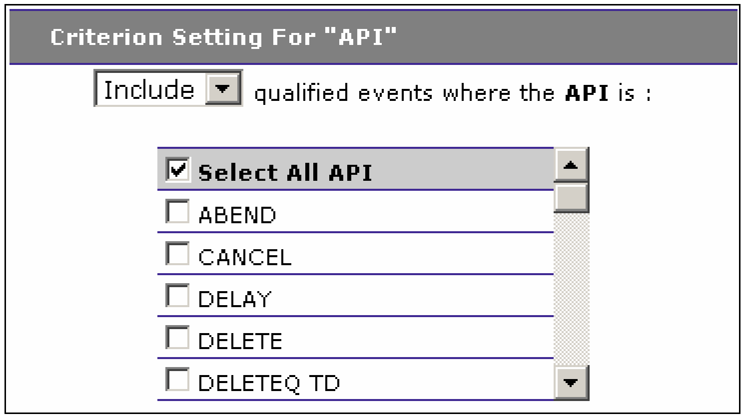


1. Select whether to Include or Exclude events for selected BTTRACE severity levels. Applications may use the BTTRACE function provided by the Sensor library to send user-defined trace messages to the Analyzer.
2. Check the box next to each severity you want to include specifically in the query criteria, or check the box next to Select All Severity to include all BTTRACE severity levels in the query criteria. For more information about BTTRACE severity levels, see the *TransactionVision Administrator's Guide*.

CICS Criteria:

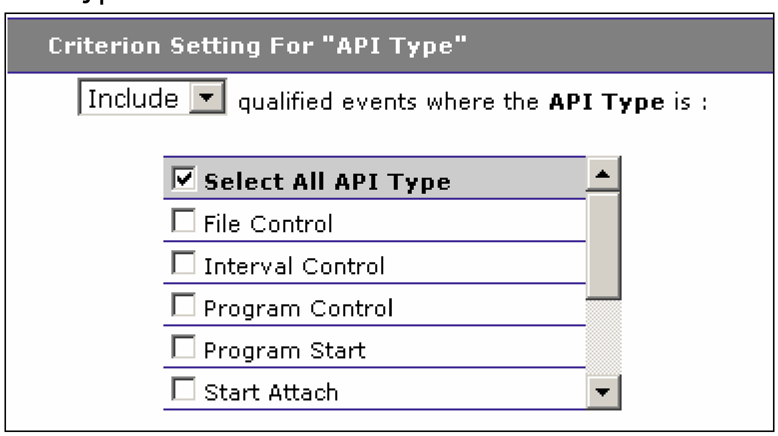
The following options are only available when CICS is the current "Criteria for" technology.

API



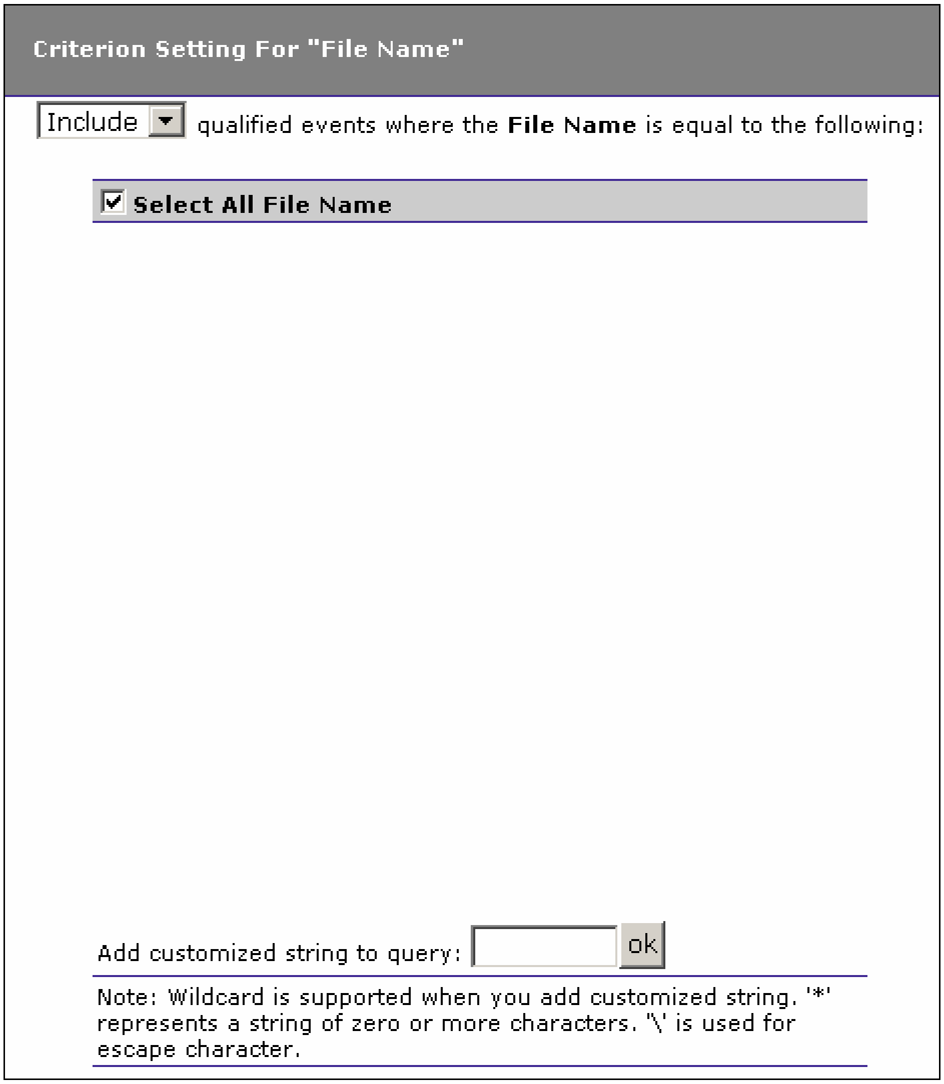
1. Select whether to Include or Exclude events for selected APIs.
2. Check the box next to each API you want to include specifically in the query criteria, or check the box next to Select All API to include all APIs in the query criteria.

API Type



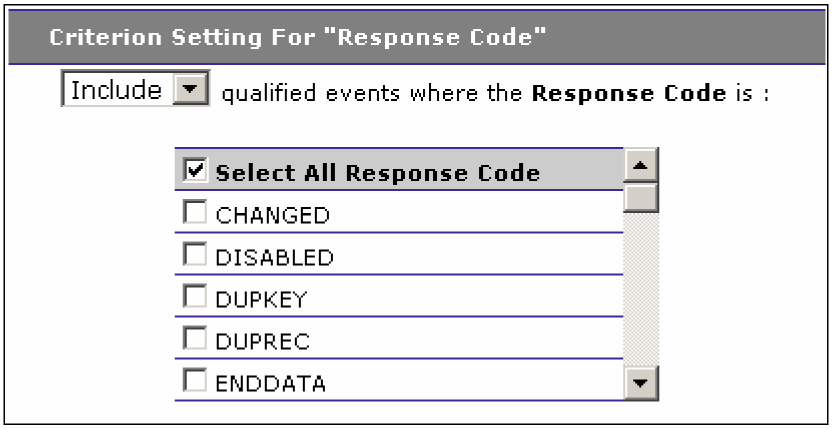
1. Select whether to Include or Exclude events for selected API types.
2. Check the box next to each API type you want to include specifically in the query criteria, or check the box next to Select All API Type to include all API types in the query criteria.

File Name



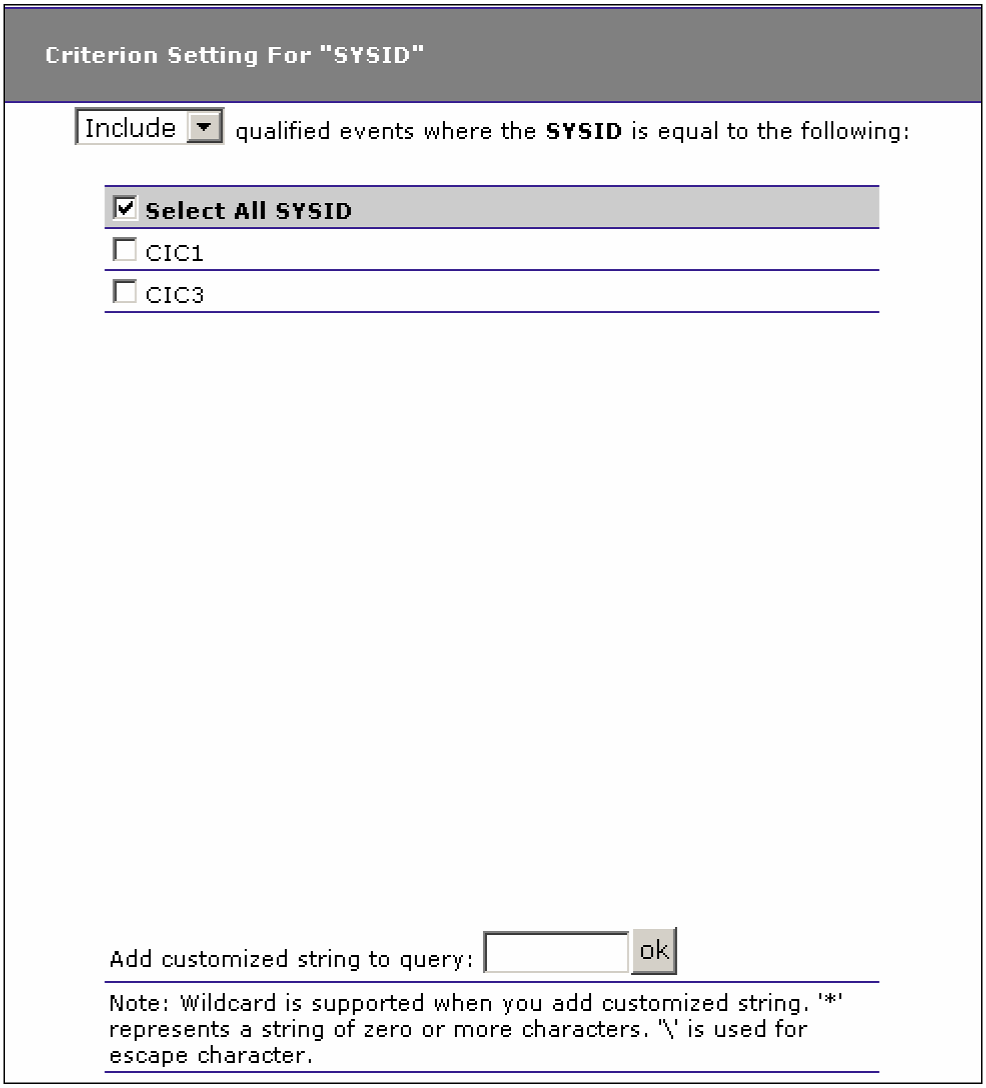
1. Select whether to Include or Exclude events for selected file names.
2. Check the box next to each file name you want to include specifically in the query criteria, or check the box next to Select All File Name to include all file names in the query criteria. The list of file names is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Response Code



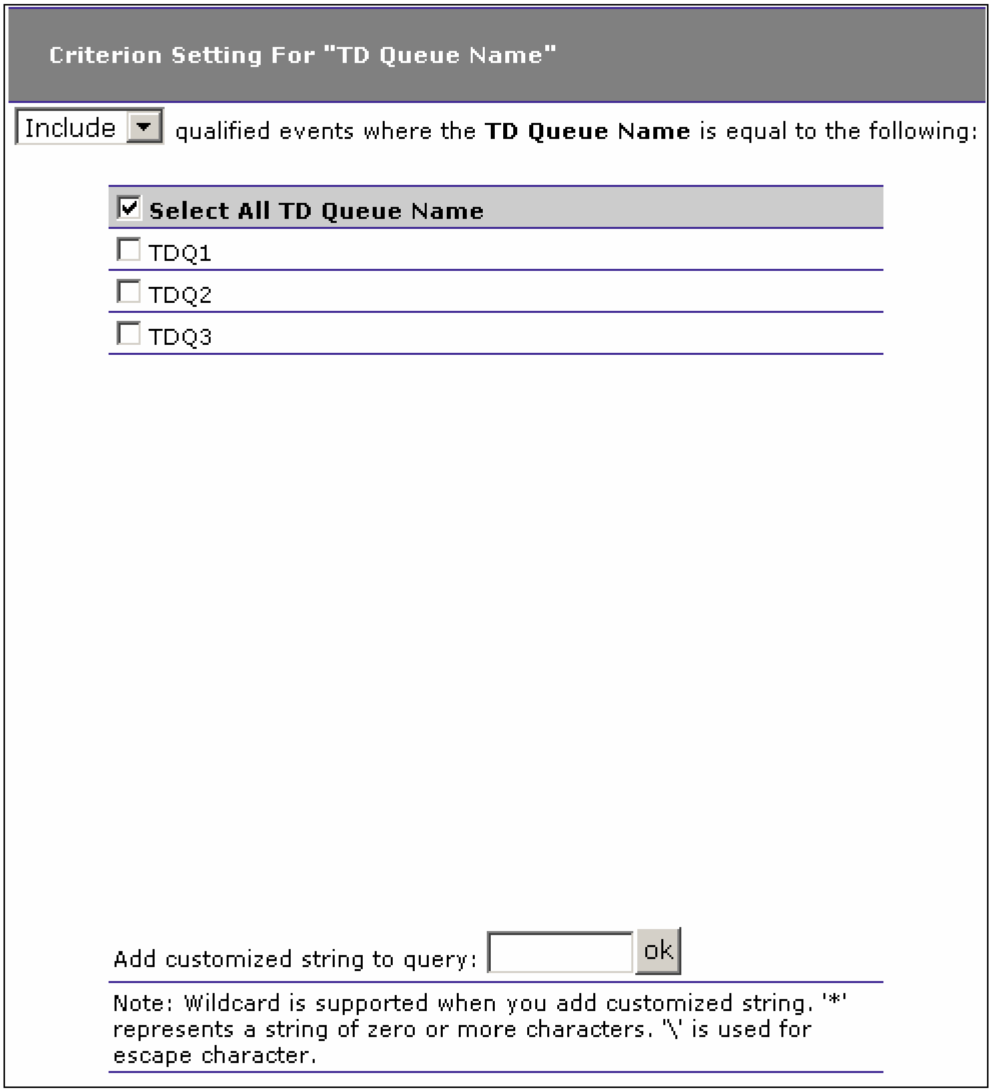
1. Select whether to Include or Exclude events for selected response codes.
2. Check the box next to each response code you want to include specifically in the query criteria, or check the box next to Select All Response Code to include all response codes in the query criteria.

SYSID



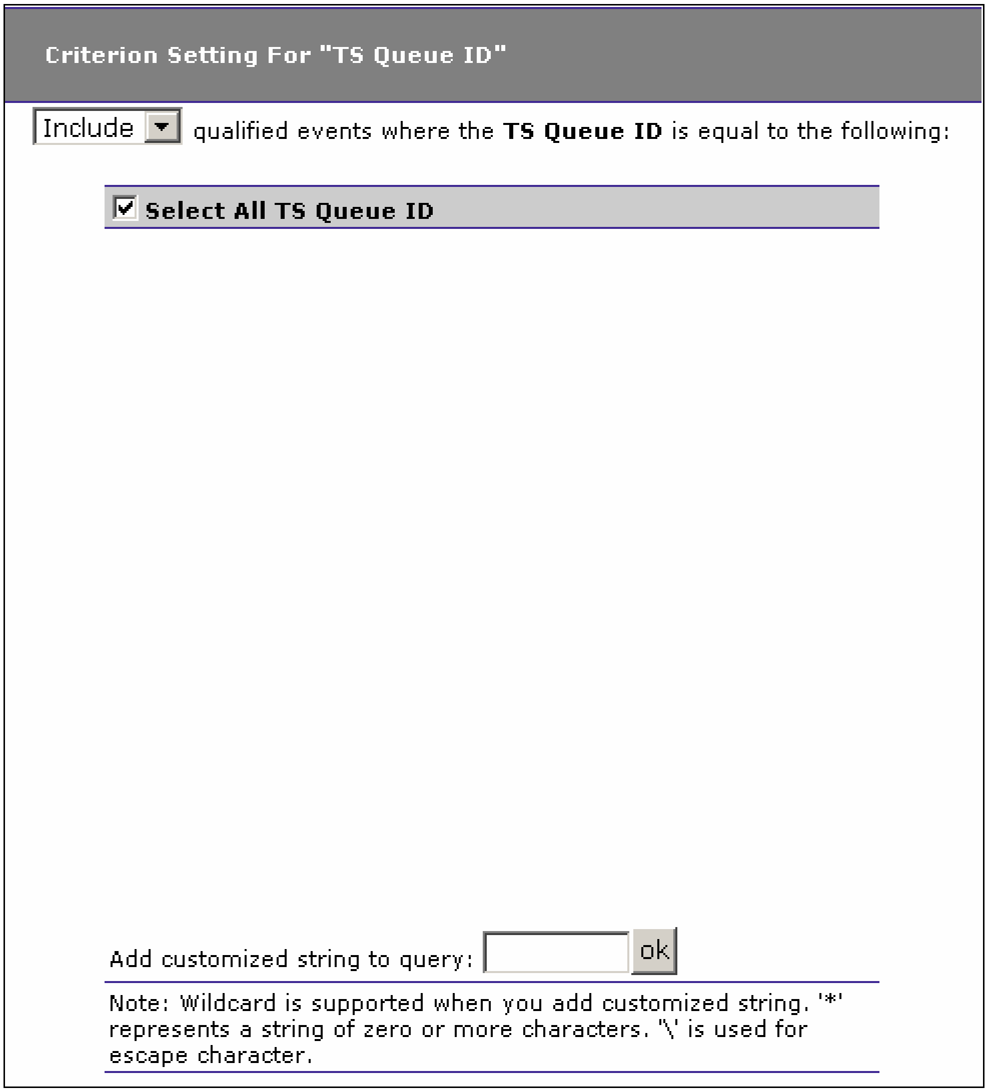
1. Select whether to Include or Exclude events for selected SYSID values.
2. Check the box next to each SYSID you want to include specifically in the query criteria, or check the box next to Select All SYSID to include all SYSID values in the query criteria. The list of SYSID values is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

TD Queue Name



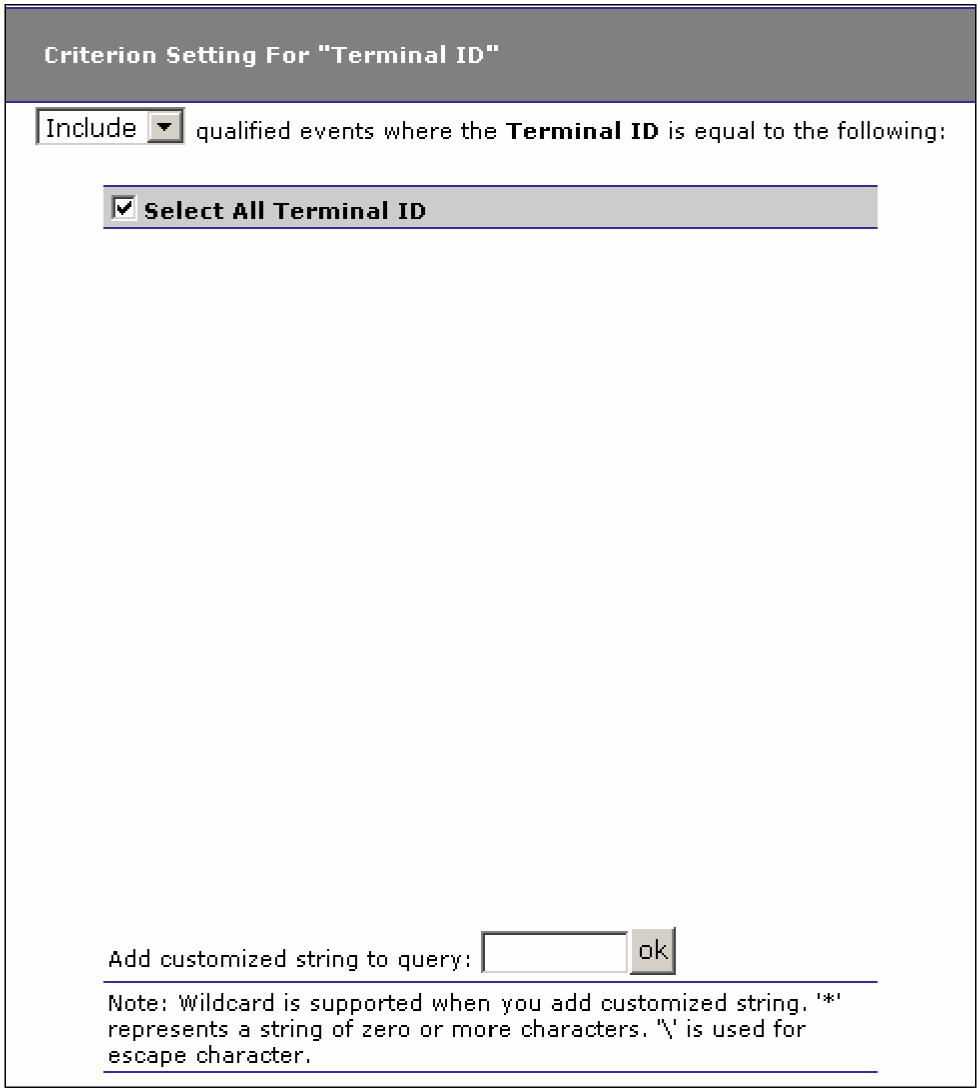
1. Select whether to Include or Exclude events for selected transient data (TD) queue names.
2. Check the box next to each TD queue name you want to include specifically in the query criteria, or check the box next to Select All TD Queue Name to include all TD queue names in the query criteria. The list of TD queue names is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

TS Queue ID



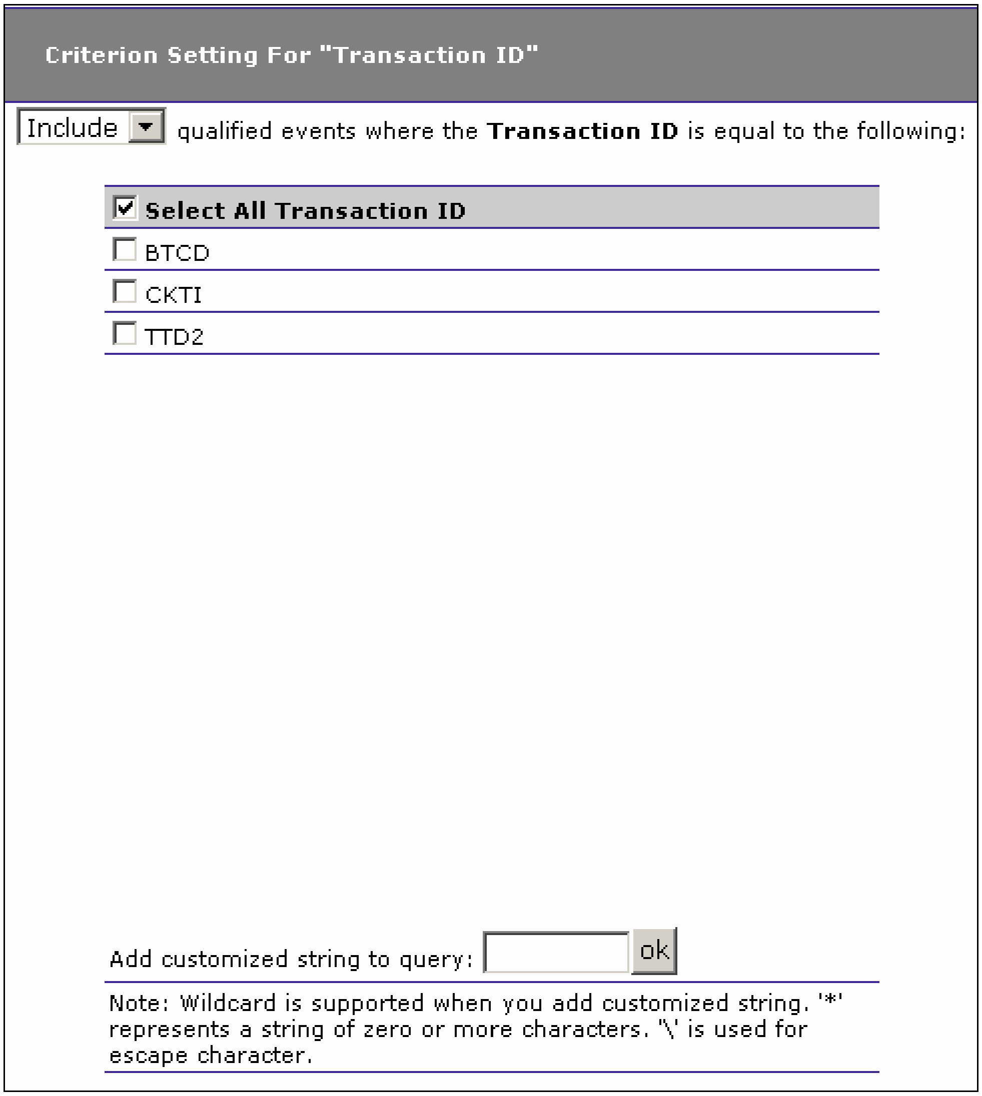
1. Select whether to Include or Exclude events for selected temporary storage (TS) queue IDs.
2. Check the box next to each TS queue ID you want to include specifically in the query criteria, or check the box next to Select All TS Queue ID to include all TS queue IDs in the query criteria. The list of TS queue IDs is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Terminal ID



1. Select whether to Include or Exclude events for selected terminal IDs.
2. Check the box next to each terminal ID you want to include specifically in the query criteria, or check the box next to Select All Terminal ID to include all terminal IDs in the query criteria. The list of terminal IDs is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Transaction ID

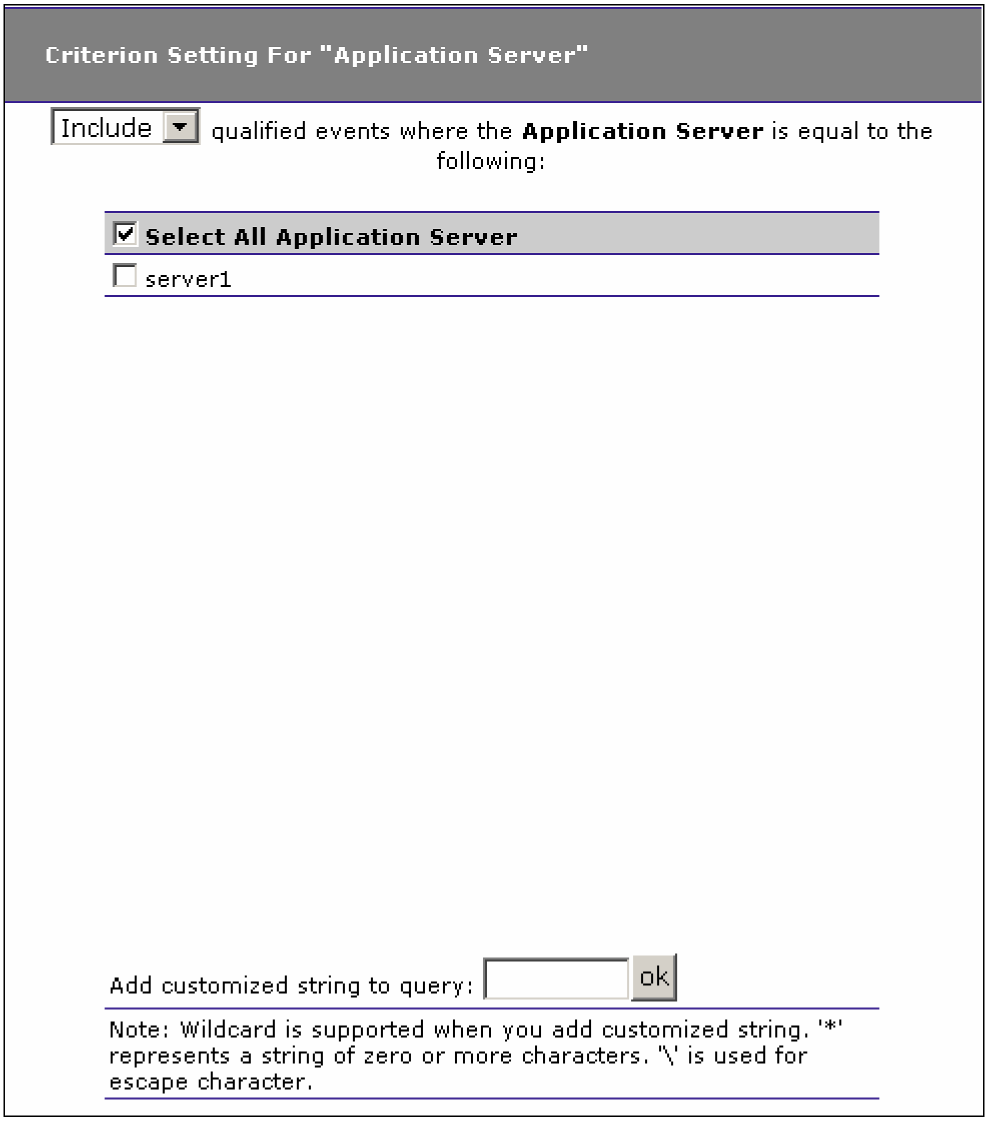


1. Select whether to Include or Exclude events for selected transaction IDs.
2. Check the box next to each transaction ID you want to include specifically in the query criteria, or check the box next to Select All Transaction ID to include all transaction IDs in the query criteria. The list of transaction IDs is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

EJB Criteria:

The following options are only available when EJB is the current “Criteria For:” technology.

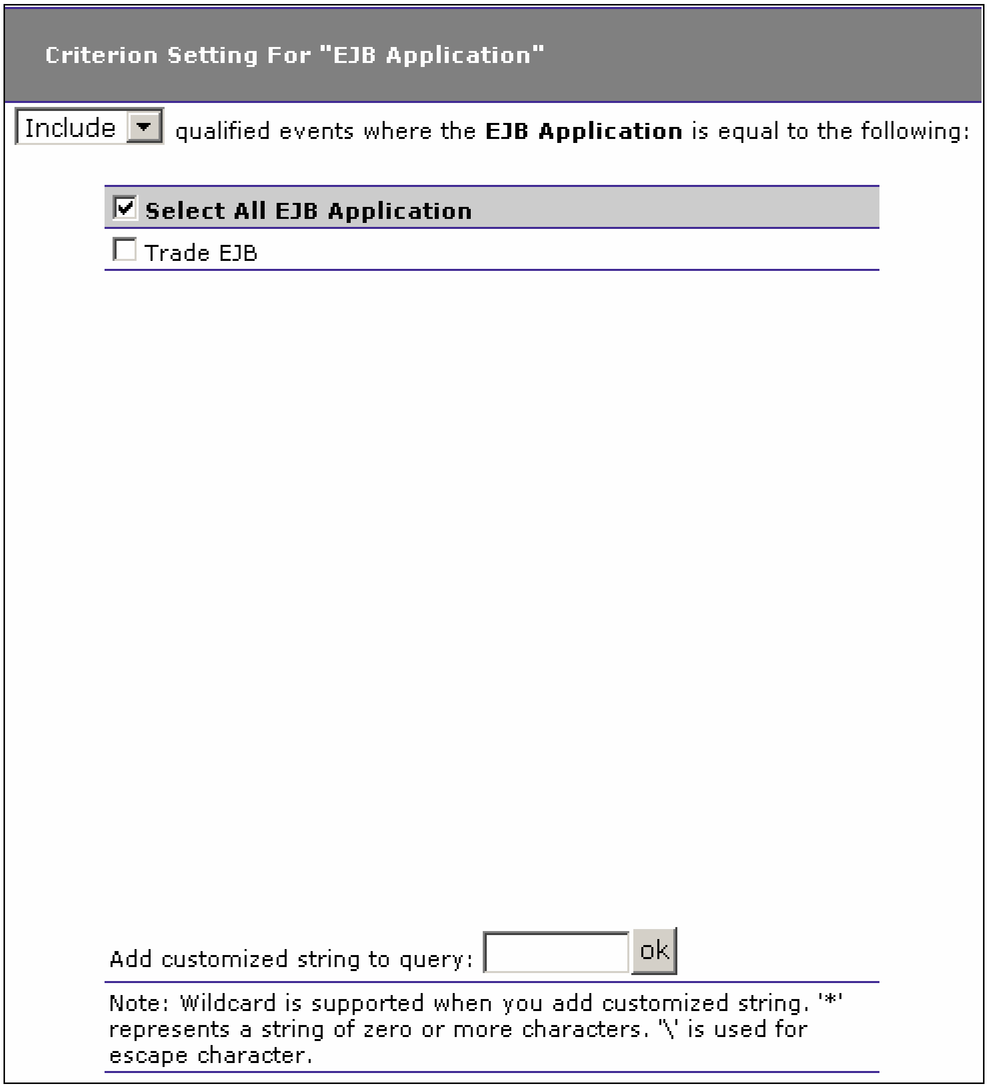
Application Server



1. Select whether to Include or Exclude events for selected application servers.
2. Check the box next to each application server you want to include specifically in the query criteria, or check the box next to Select All Application Server to include all application servers in the query criteria. The list of application servers is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query

using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

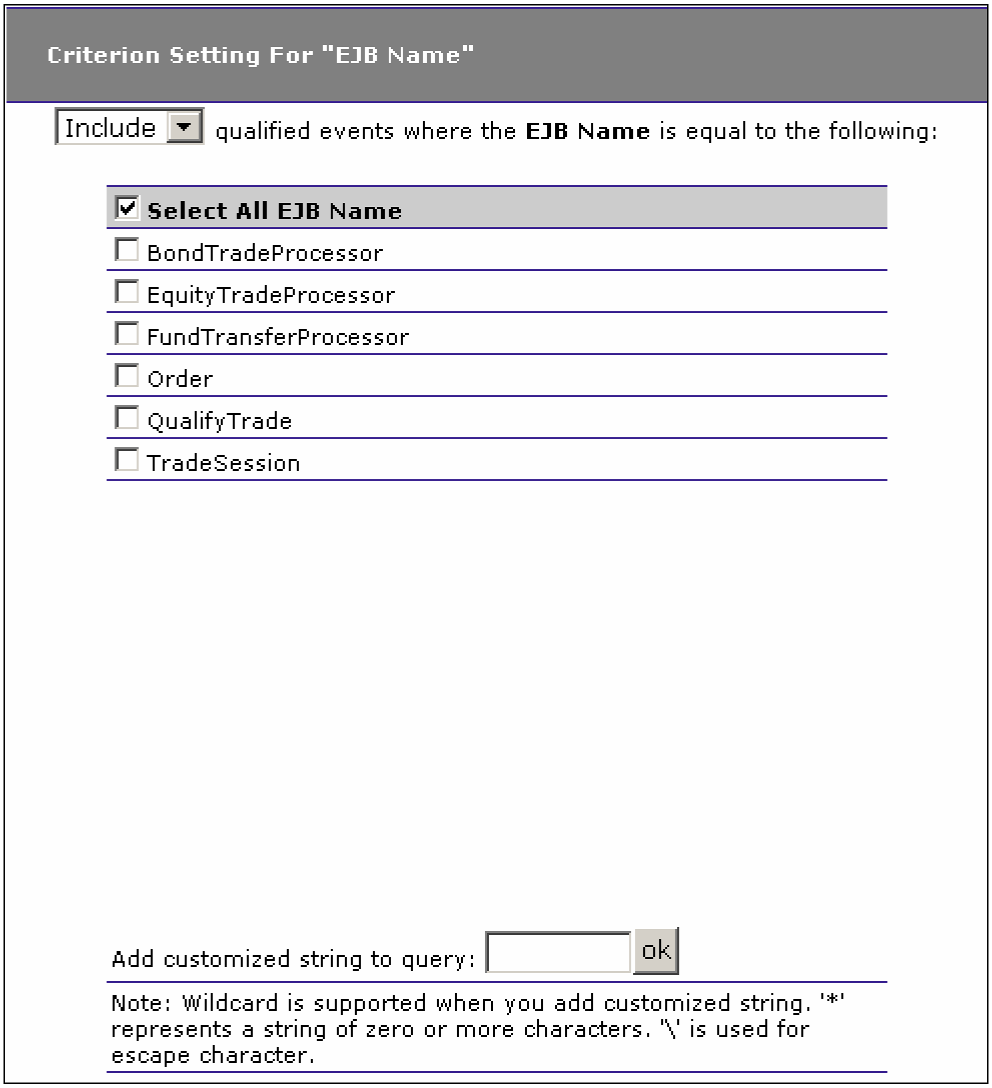
EJB Application



1. Select whether to Include or Exclude events for selected EJB applications.
2. Check the box next to each EJB application you want to include specifically in the query criteria, or check the box next to Select All EJB Application to include all EJB applications in the query criteria. The list of EJB applications is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query

using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

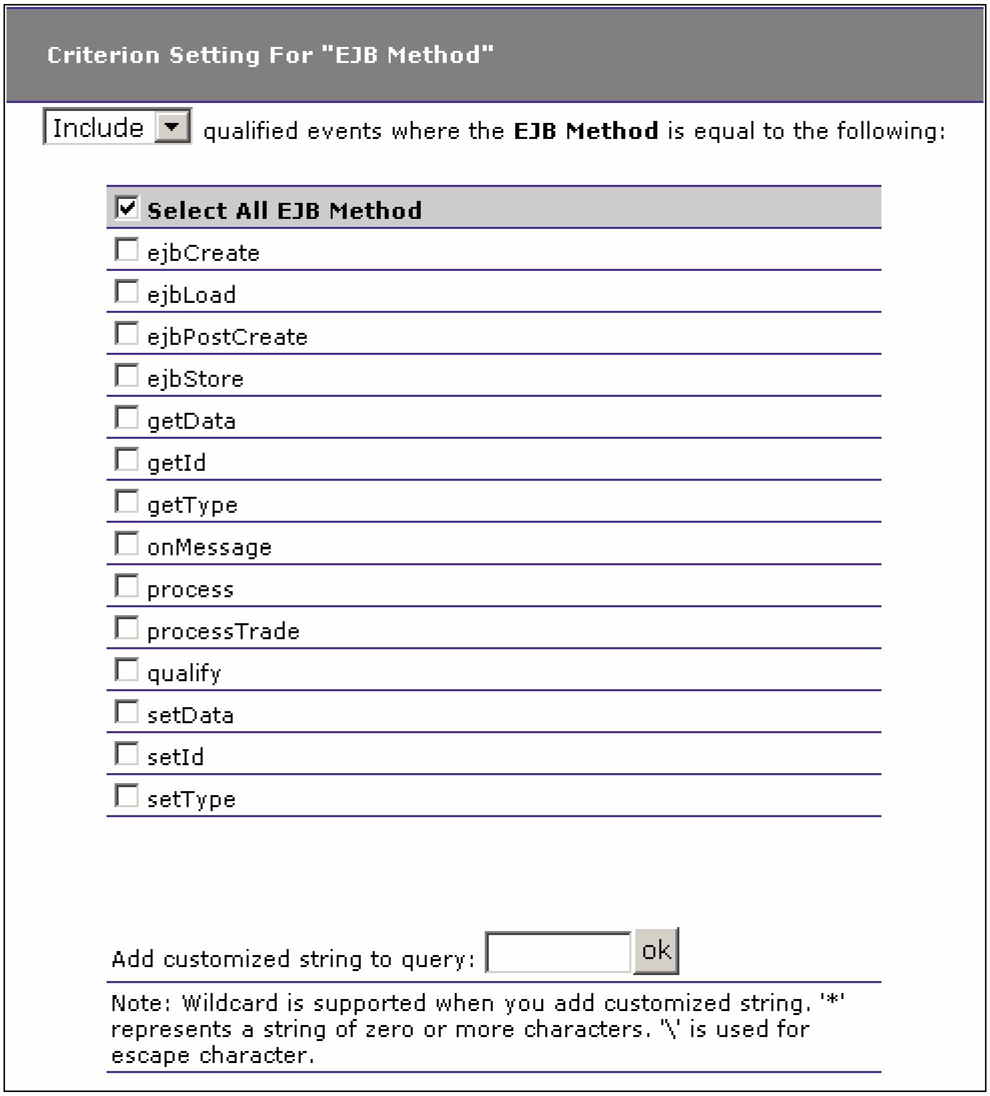
EJB Name



1. Select whether to Include or Exclude events for selected EJB names.
2. Check the box next to each EJB name you want to include specifically in the query criteria, or check the box next to Select All EJB Name to include all EJB names in the query criteria. The list of EJB names is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query

using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

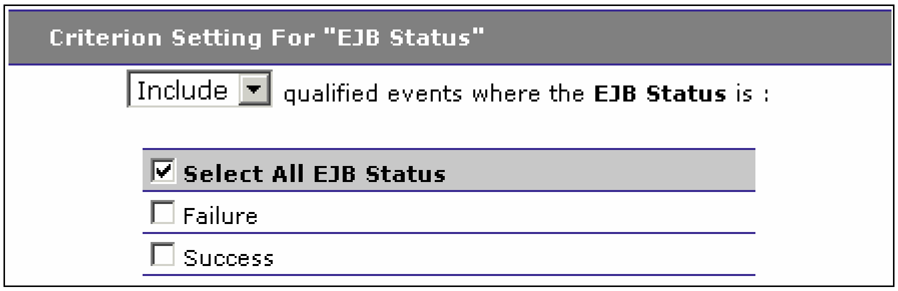
EJB Method



1. Select whether to Include or Exclude events for selected EJB methods.
2. Check the box next to each EJB method you want to include specifically in the query criteria, or check the box next to Select All EJB Method to include all EJB methods in the query criteria. The list of EJB methods is generated from events collected in the project database.

3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

EJB Status

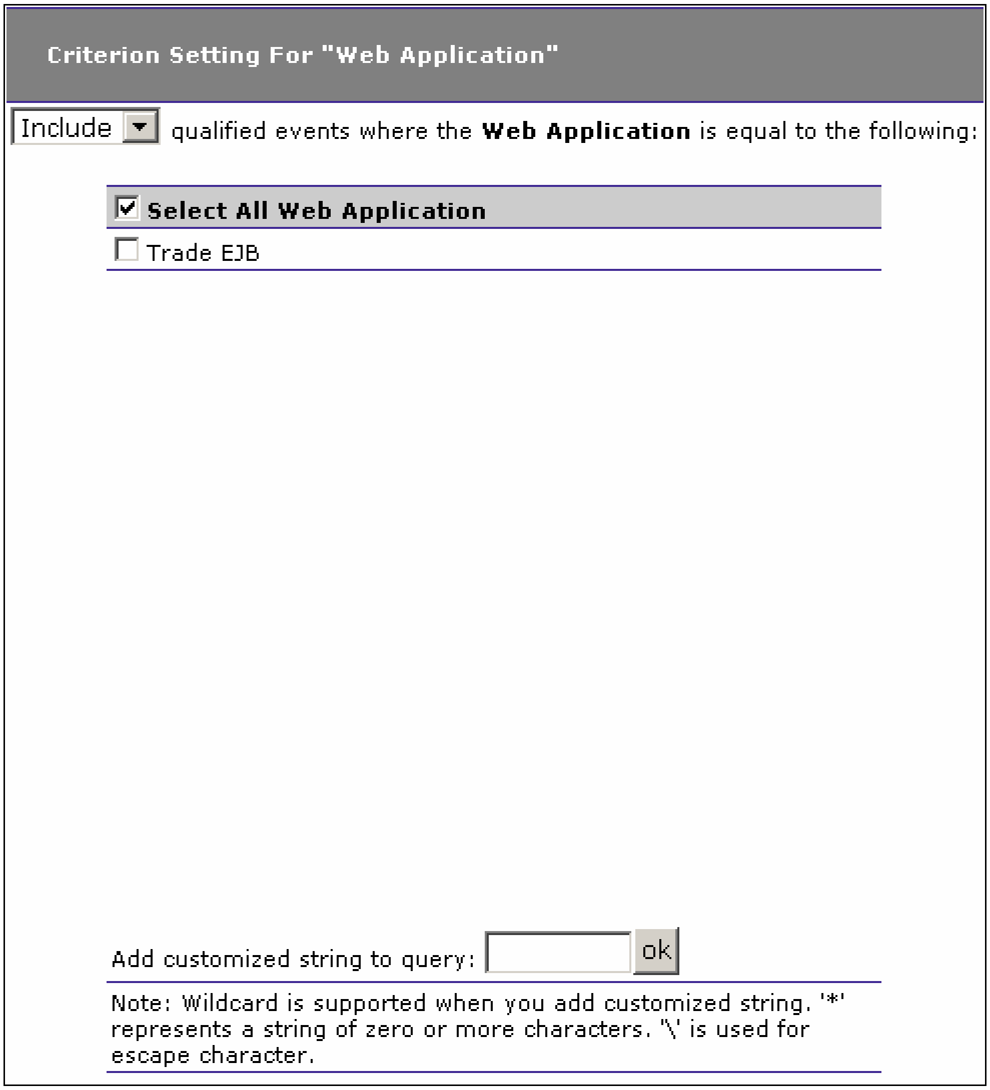


1. Select whether to Include or Exclude events for selected EJB status.
2. Check Failure to include only failed EJB events, or check Success to include only successful EJB events. Check Select All EJB Status to include successful and failed EJB events in the query criteria.

JMS Criteria:

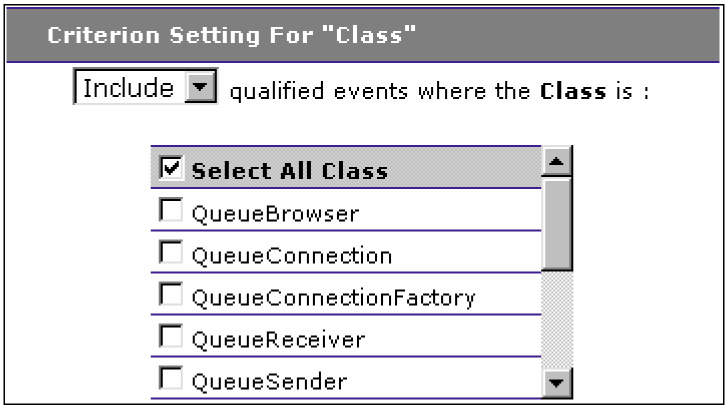
The following options are only available when JMS is the current “Criteria For:” technology.

Web Application



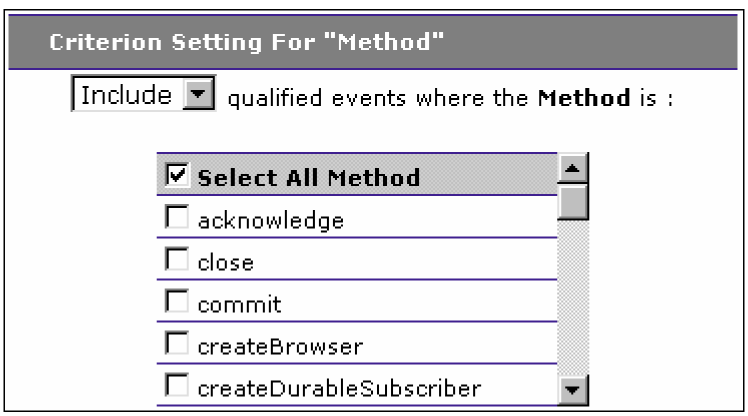
1. Select whether to Include or exclude Events for selected web applications.
2. Check the box next to each web application you want to include specifically in the query criteria, or check the box next to Select All Web Application to include all web applications in the query criteria. The list of web applications is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Class



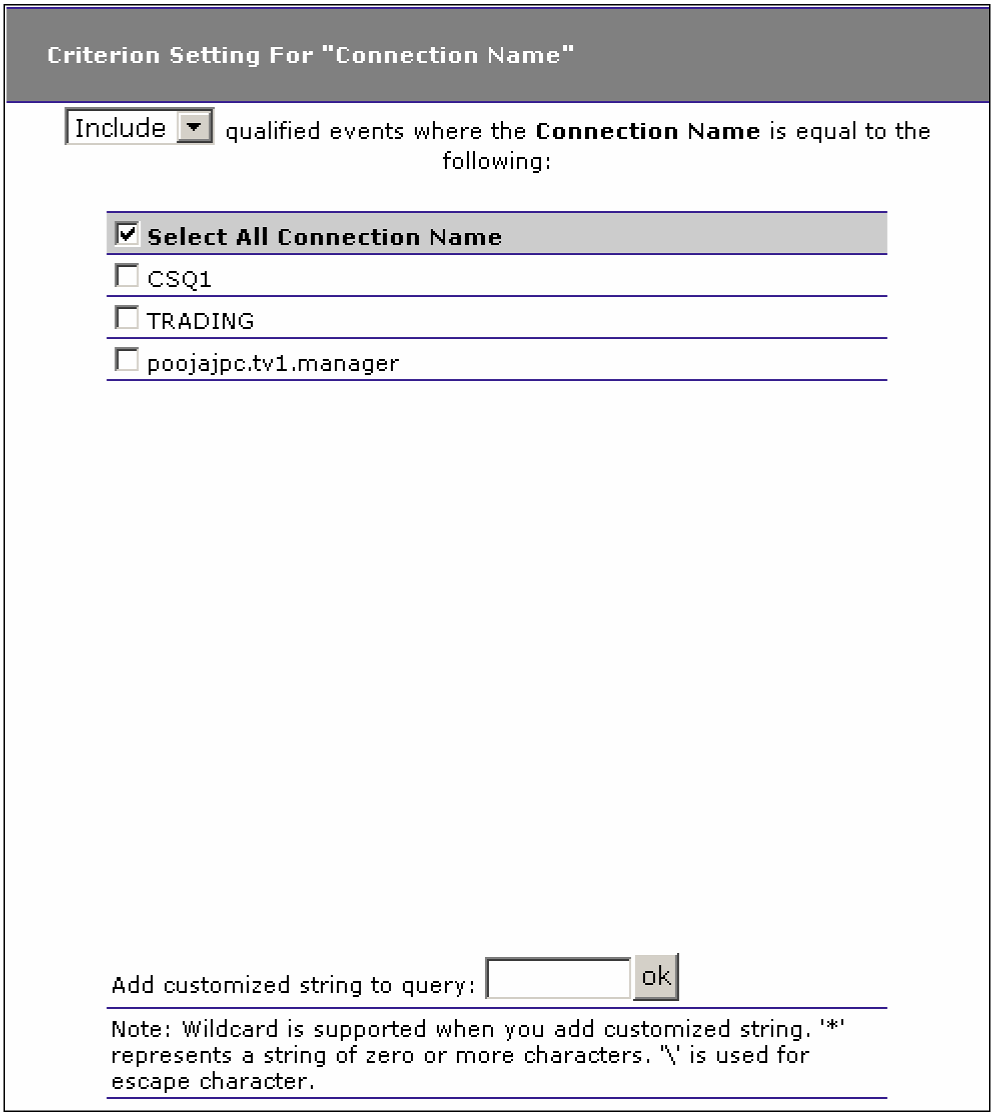
1. Select whether to Include or Exclude events for selected JMS classes.
2. Check the box next to each JMS class you want to include specifically in the query criteria, or check the box next to Select All Class to include all classes in the query criteria. The list of classes is generated from events collected in the project database.

Method



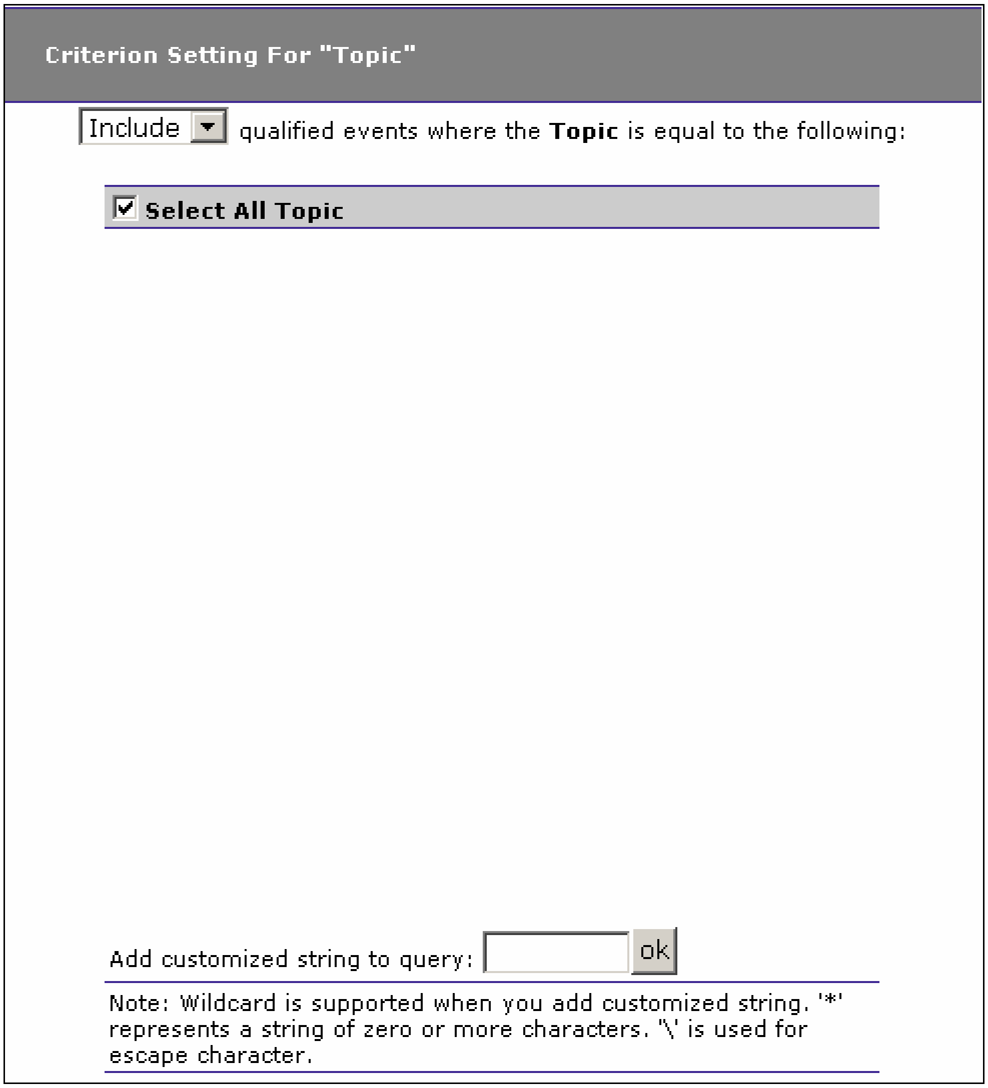
1. Select whether to Include or Exclude events for selected JMS methods.
2. Check the box next to each JMS method you want to include specifically in the query criteria, or check the box next to Select All Method to include all methods in the query criteria. The list of methods is generated from events collected in the project database.

Connection Name



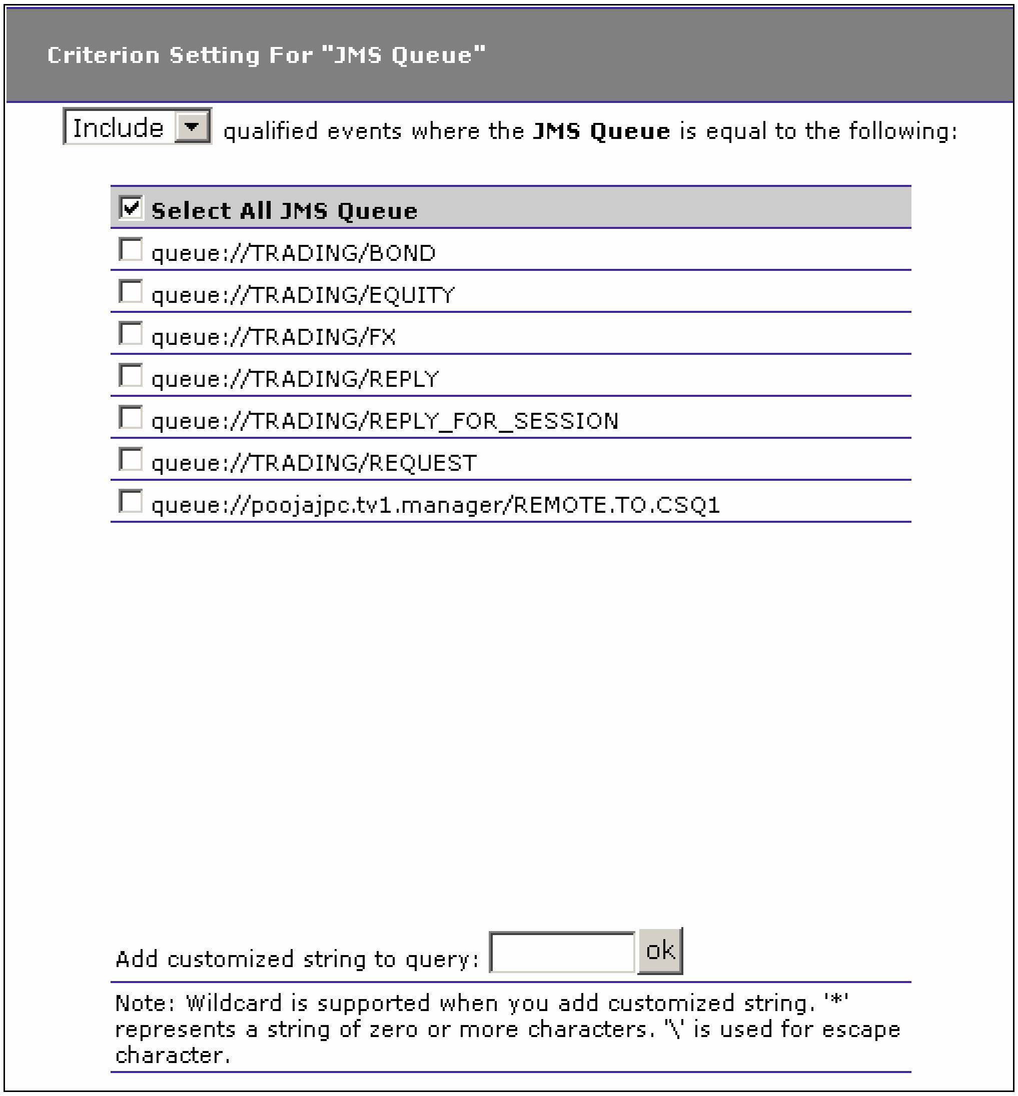
1. Select whether to Include or Exclude events for selected connection names.
2. Check the box next to each connection name you want to include specifically in the query criteria, or check the box next to Select All Connection Name to include all connection names in the query criteria. The list of connection names is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Topic



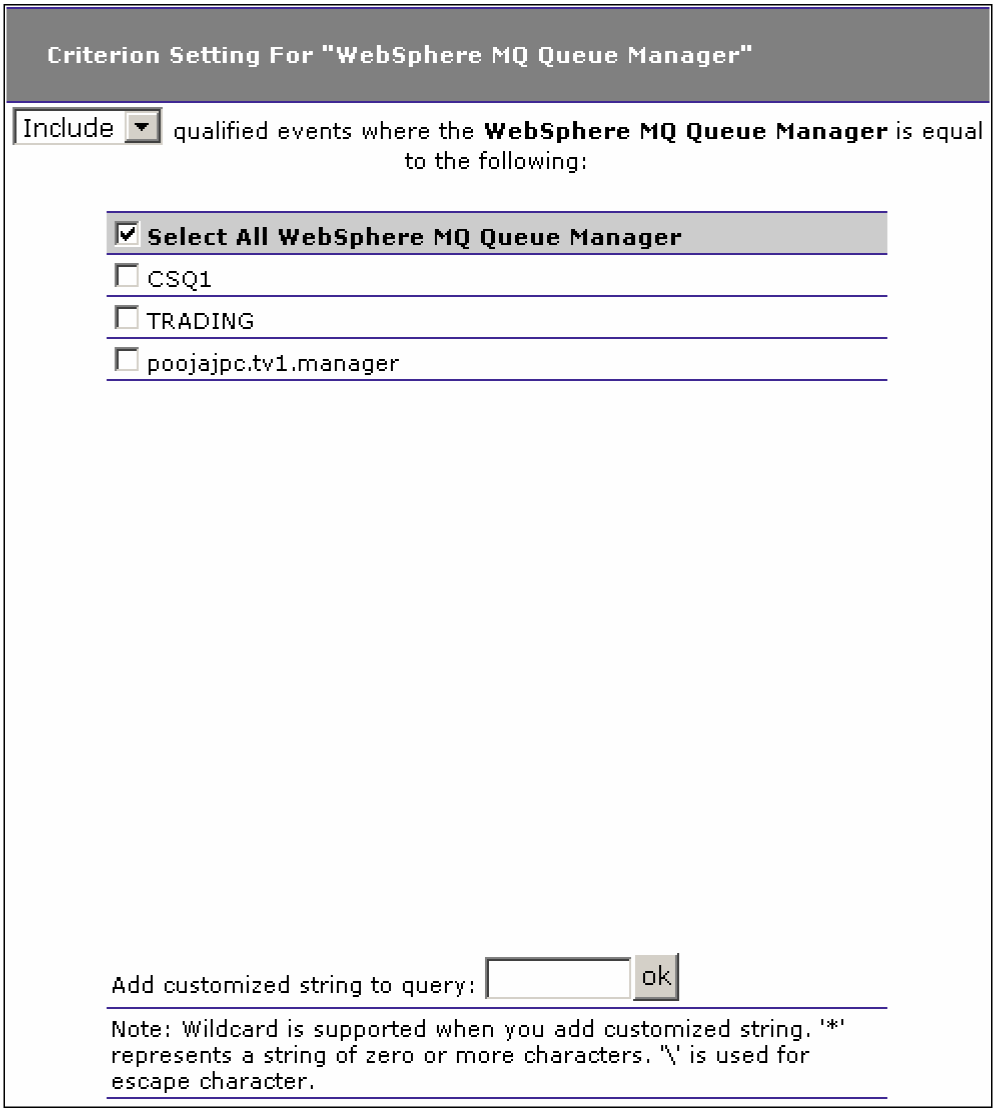
1. Select whether to Include or Exclude events for selected topics.
2. Check the box next to each topic you want to include specifically in the query criteria, or check the box next to Select All Topic to include all topics in the query criteria. The list of topics is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

JMS Queue



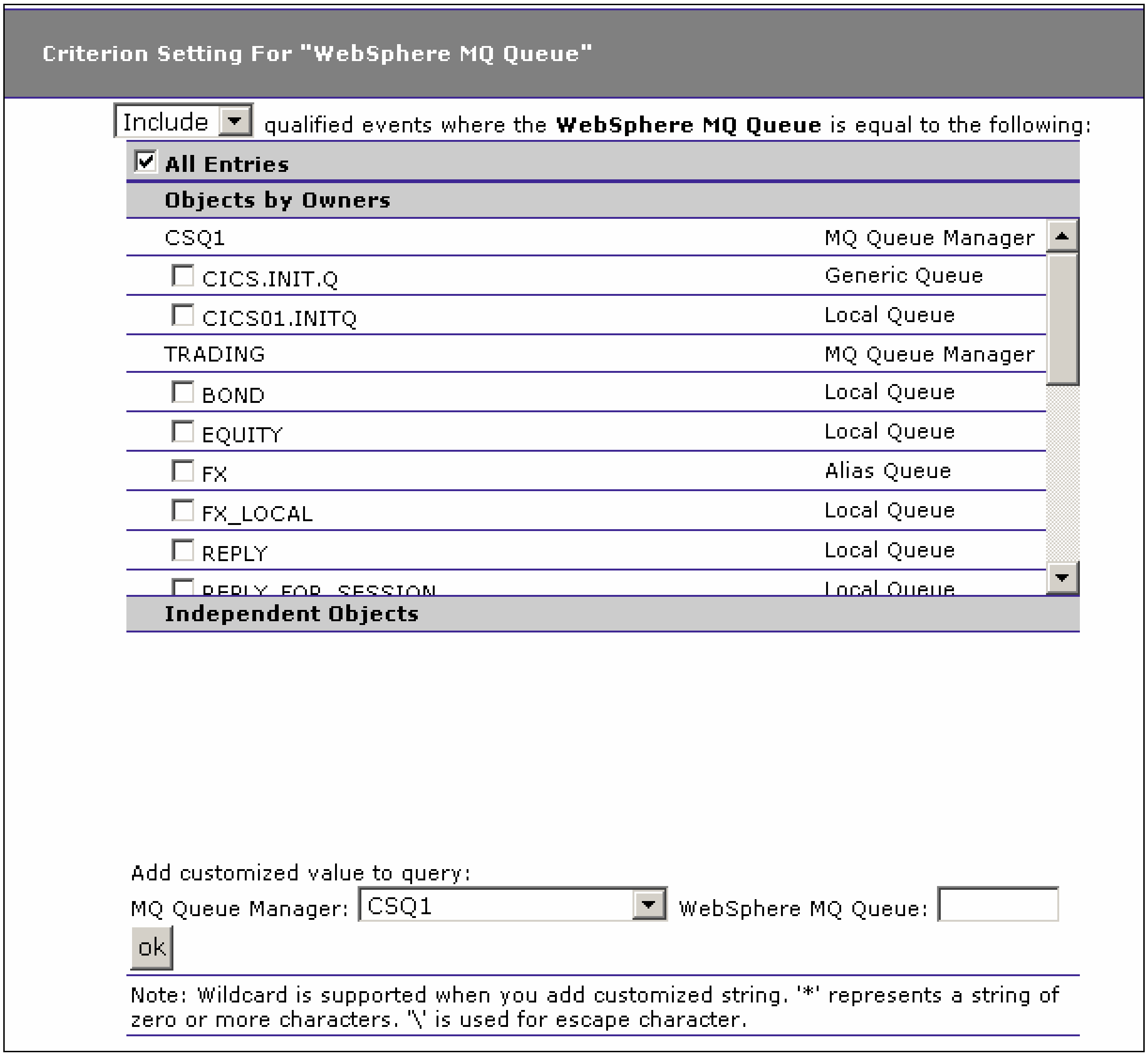
1. Select whether to Include or Exclude events for selected queues.
2. Check the box next to each queue you want to include specifically in the query criteria, or check the box next to Select All JMS Queue to include all queues in the query criteria. The list of queues is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

WebSphere MQ Queue Manager



1. Select whether to Include or Exclude events for selected queue managers.
2. Check the box next to each queue you want to include specifically in the query criteria, or check the box next to Select All WebSphere MQ Queue Manager to include all queue managers in the query criteria. The list of queue managers is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

WebSphere MQ Queue



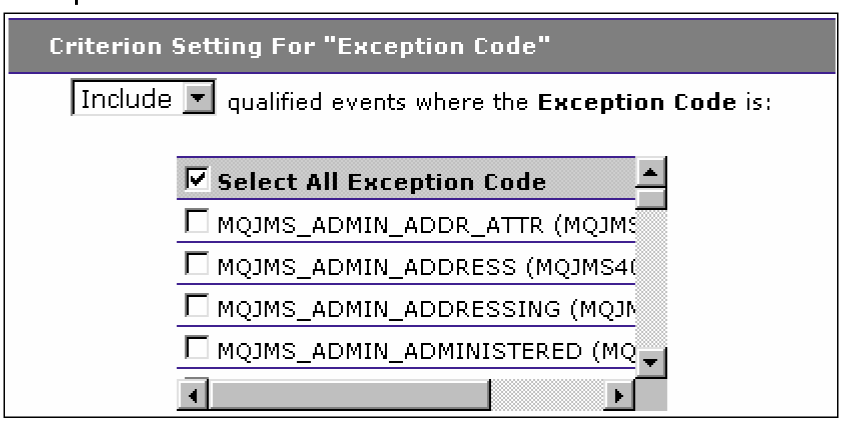
1. Select whether to Include or Exclude events for selected WebSphere MQ queues.
2. Check the box next to each queue you want to include specifically in the query criteria, or check the box next to Select All WebSphere MQ Queue to include all queues in the query criteria. The list of queues is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character

represents zero or more characters, and the \ character represents an escape.

Data Length

1. Select whether to Include or Exclude events for selected data lengths.
2. Select the matching criteria for the selected data length. Choices include less than, less than or equal to, equal to, not equal to, greater than or equal to, or greater than.
3. Enter the desired data length in bytes.

Exception Code

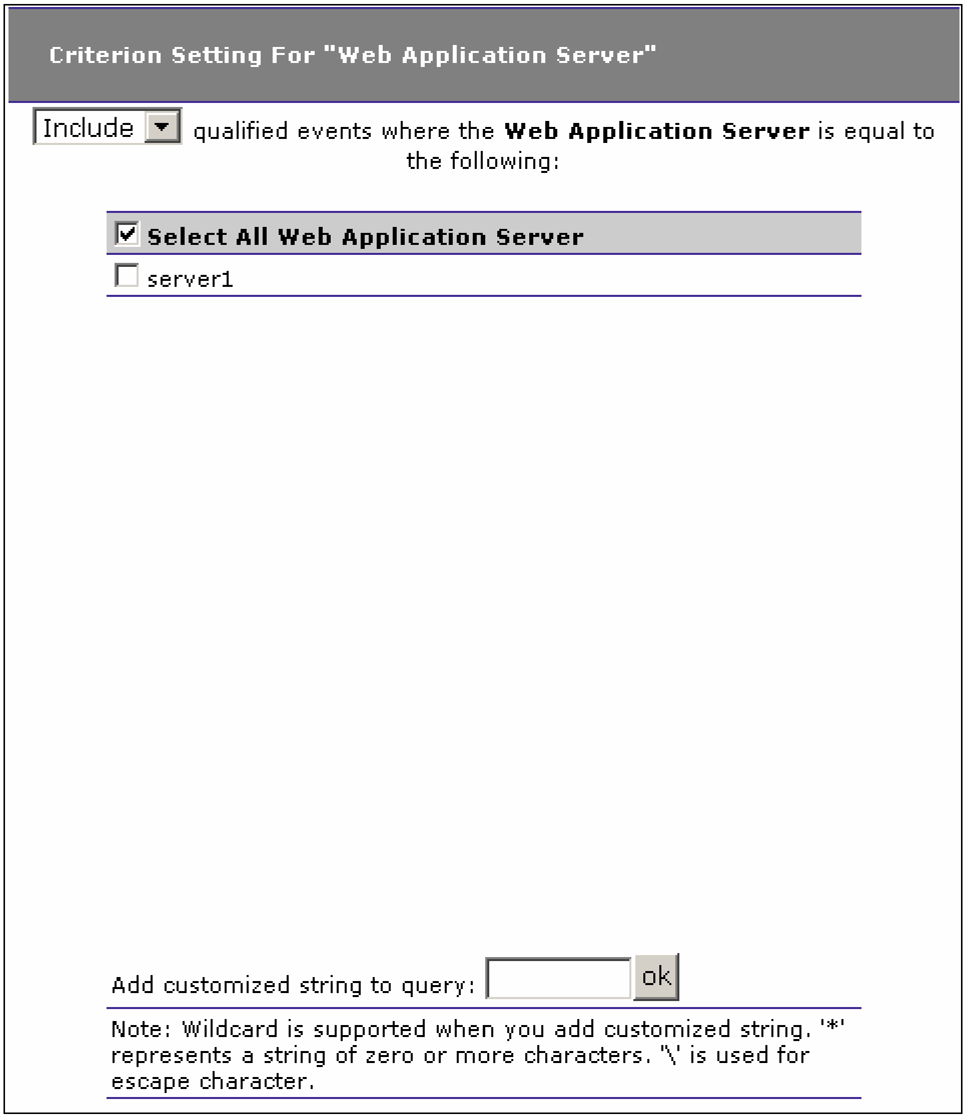


1. Select whether to Include or Exclude events for selected exception codes.
2. Check the box next to each exception code you want to include specifically in the query criteria, or check the box next to Select All Exception Code to include all exception codes in the query criteria. The list of exception codes is generated from events collected in the project database.

Servlet Criteria:

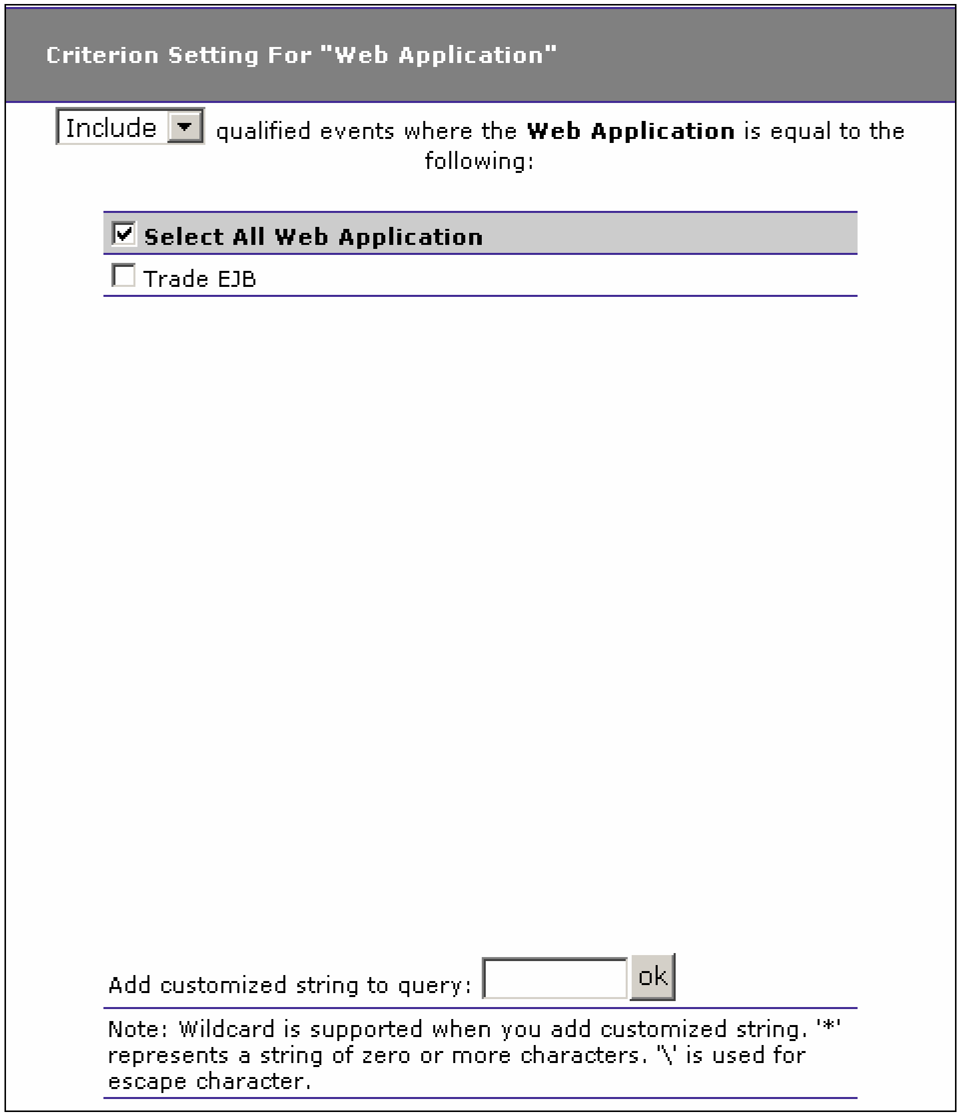
The following options are only available when Servlet is the current “Criteria For:” technology.

Web Application Server



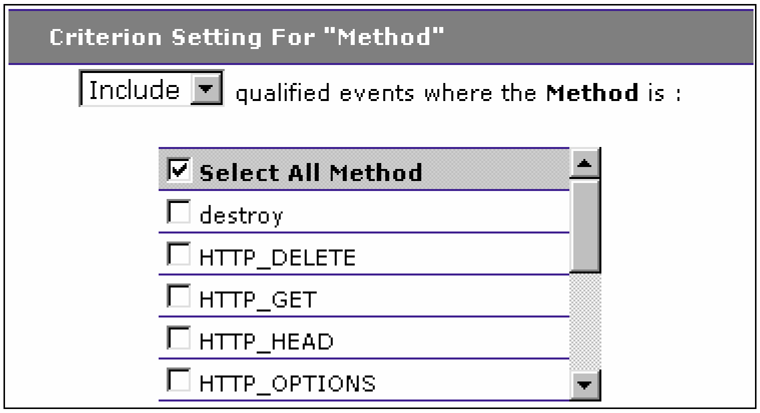
1. Select whether to Include or Exclude events for selected application servers.
2. Check the box next to each application server you want to include specifically in the query criteria, or check the box next to Select All Application Server to include all application servers in the query criteria. The list of application servers is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Web Application



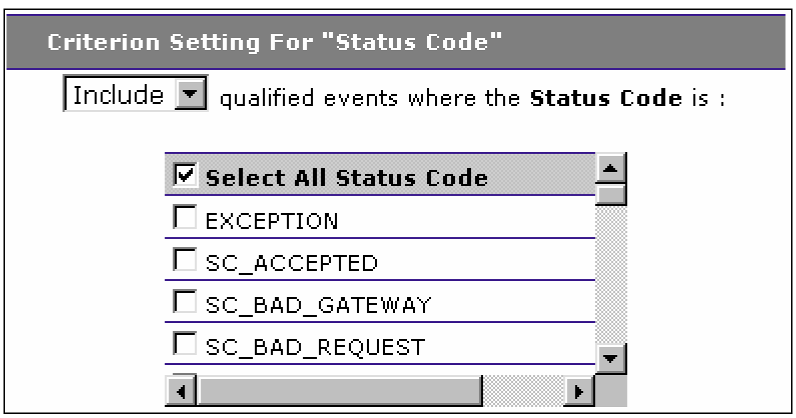
1. Select whether to Include or Exclude events for selected web applications.
2. Check the box next to each web application you want to include specifically in the query criteria, or check the box next to Select All Web Application to include all web applications in the query criteria. The list of web applications is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Method



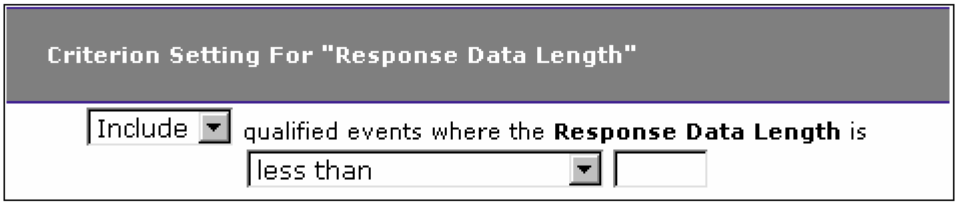
1. Select whether to Include or Exclude events for selected servlet methods.
2. Check the box next to each servlet method you want to include specifically in the query criteria, or check the box next to Select All Servlet Method to include all servlet methods in the query criteria. The list of servlet methods is generated from events collected in the project database.

Status Code



1. Select whether to Include or Exclude events for selected status codes.
2. Check the box next to each status code you want to include specifically in the query criteria, or check the box next to Select All Status Code to include all status codes in the query criteria. The list of status codes is generated from events collected in the project database.

Response Data Length

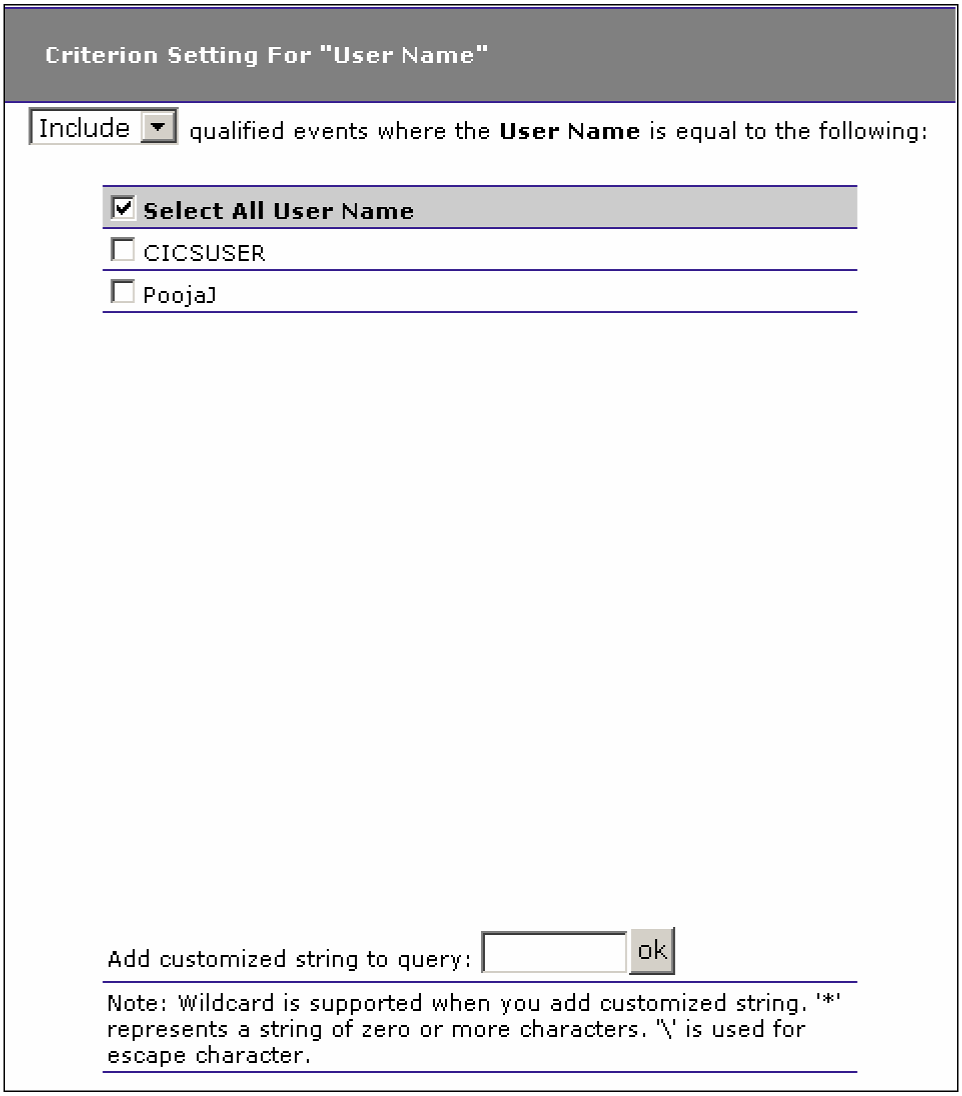


1. Select whether to Include or Exclude events for selected data response lengths.
2. Select the matching criteria for the selected data length. Choices include less than, less than or equal to, equal to, not equal to, greater than or equal to, or greater than.
3. Enter the desired data length in bytes.

WebSphere MQ Options

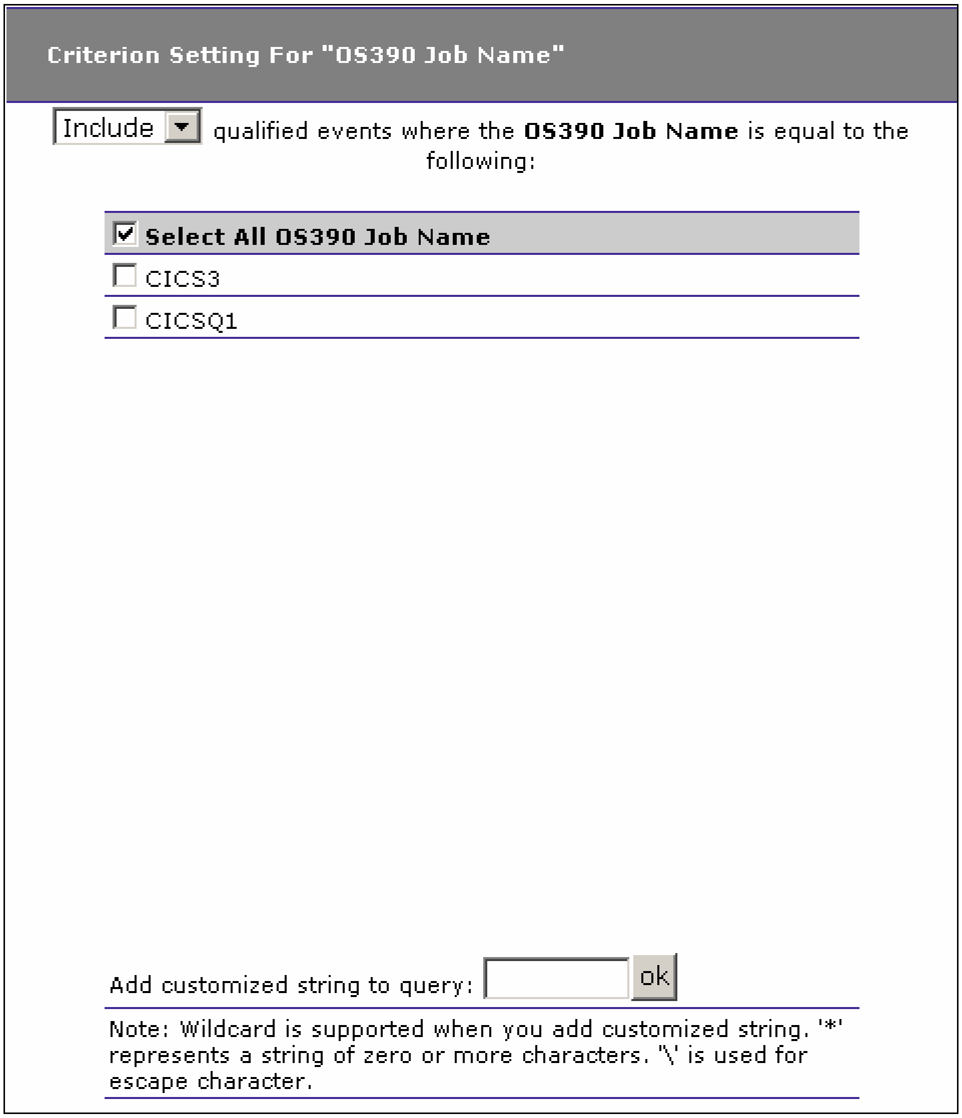
The following options are only available when WebSphere MQ is the current “Criteria For:” technology.

User Name



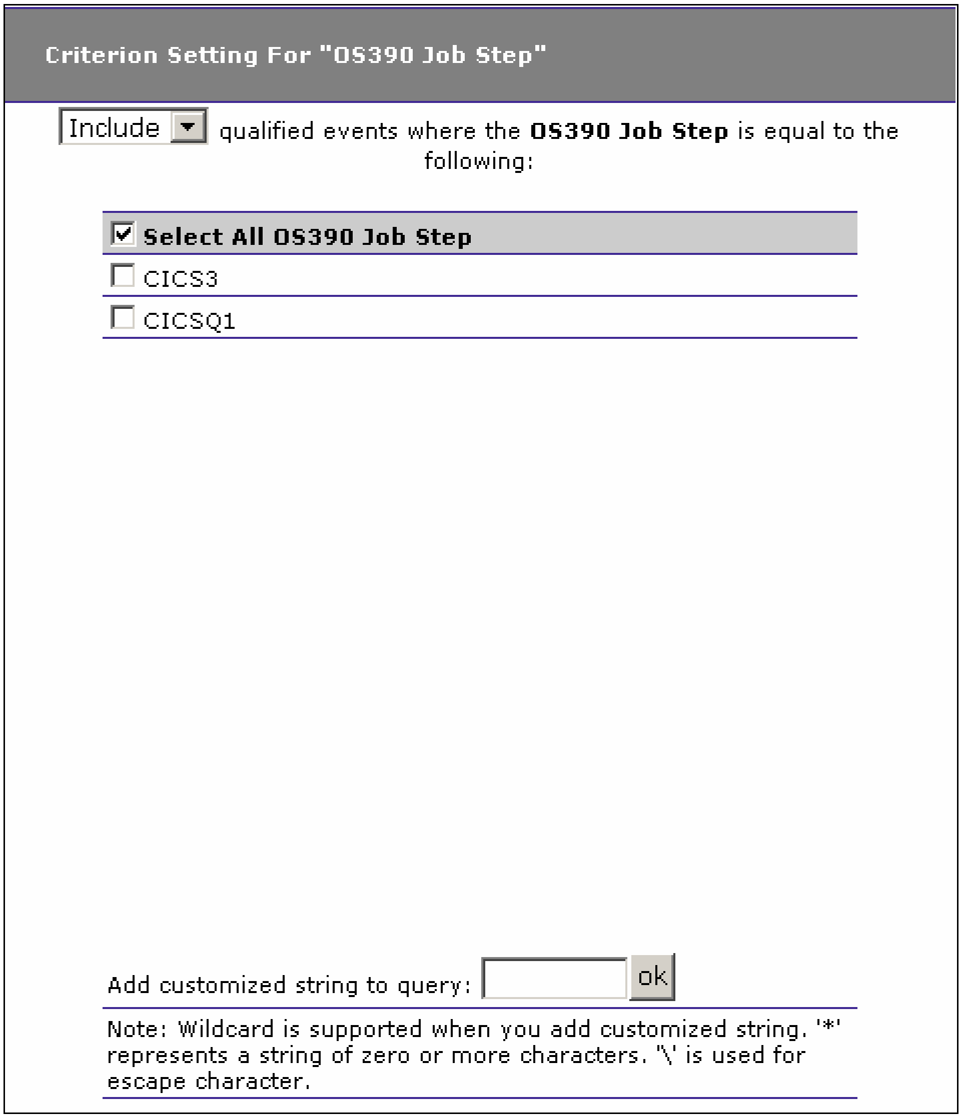
1. Select whether to Include or Exclude events with selected user names.
2. Check the box next to each user name you want to include specifically in the query criteria, or check the box next to Select All User Name to include all user names in the query criteria. The user name list is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

OS/390 Job Name



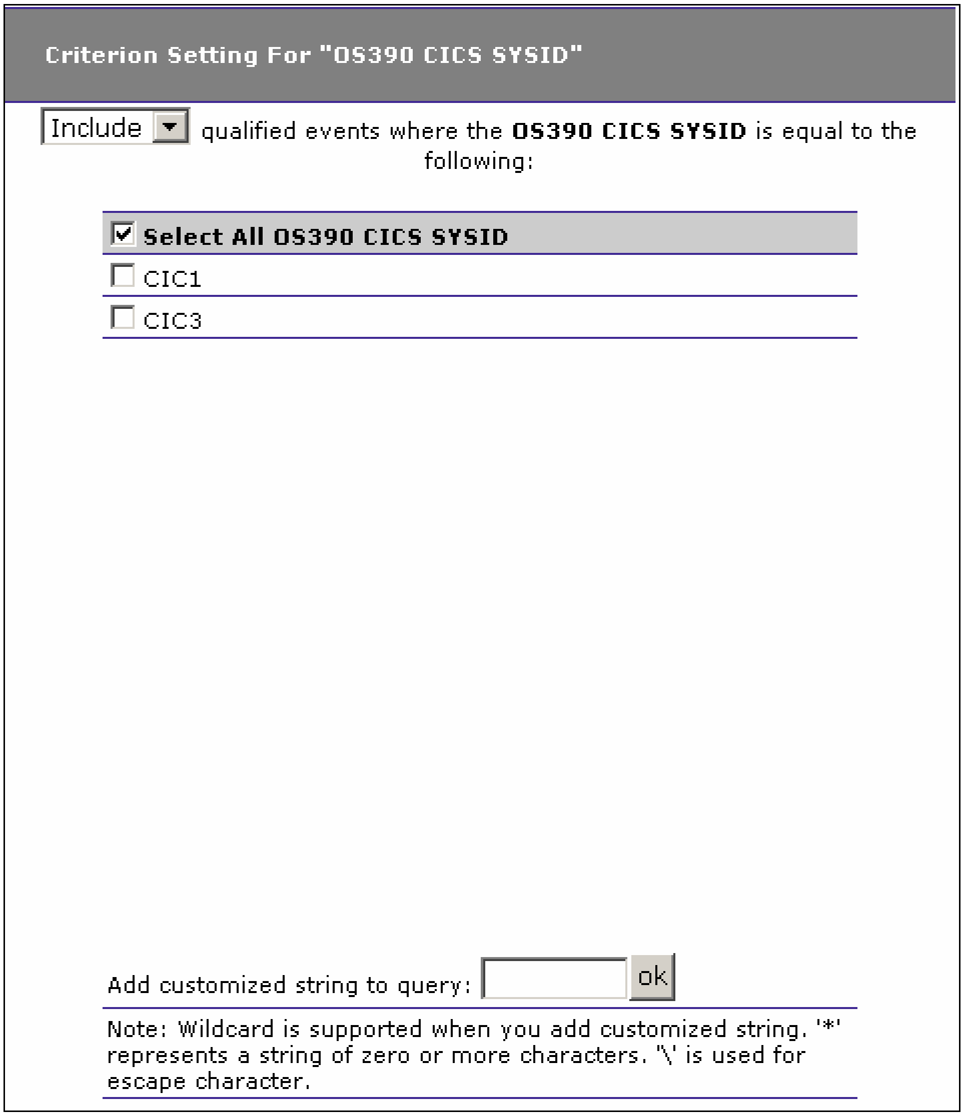
1. Select whether to Include or Exclude events for selected z/OS job names.
2. Check the box next to each job name you want to include specifically in the query criteria, or check the box next to Select All OS390 Job Name to include all job names in the query criteria. The list of job names is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

OS/390 Job Step



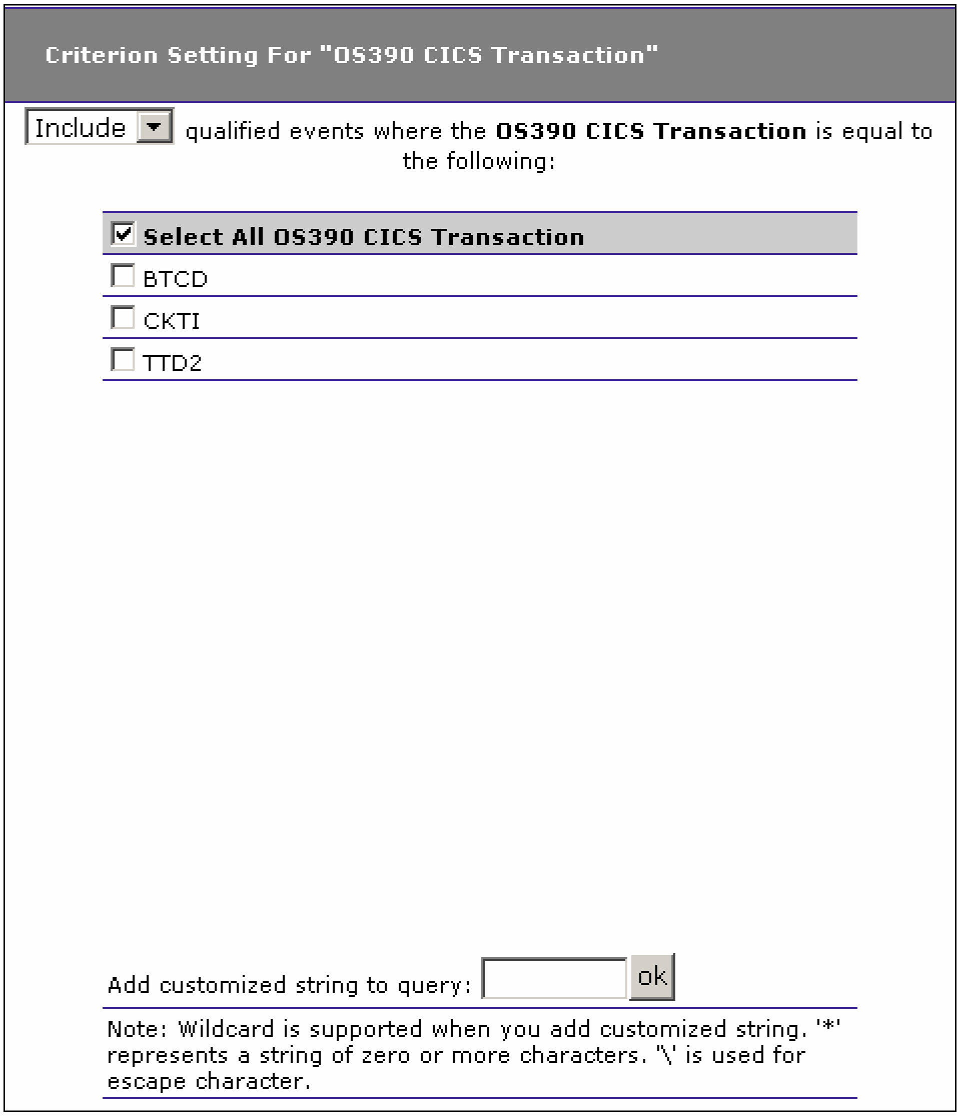
1. Select whether to Include or Exclude events for selected z/OS job steps.
2. Check the box next to each job step you want to include specifically in the query criteria, or check the box next to Select All OS390 Job Step to include all job steps in the query criteria. The list of job steps is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

OS/390 CICS SYSID



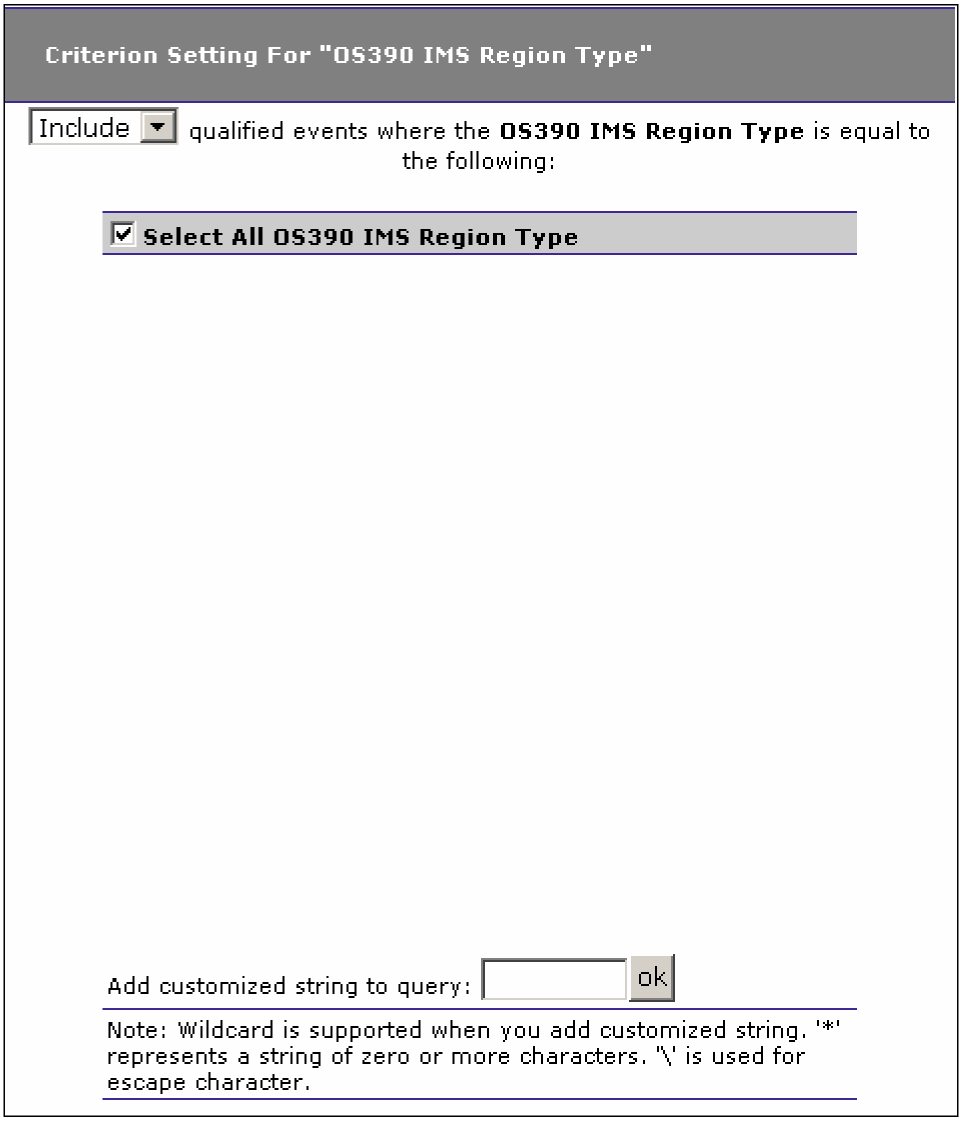
1. Select whether to Include or Exclude events for selected z/OS CICS SYSIDs.
2. Check the box next to each CICS SYSID you want to include specifically in the query, or check the box next to Select All OS390 CICS SYSID to include all CICS SYSIDs the query criteria. The list of CICS SYSIDs is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

OS/390 CICS Transaction



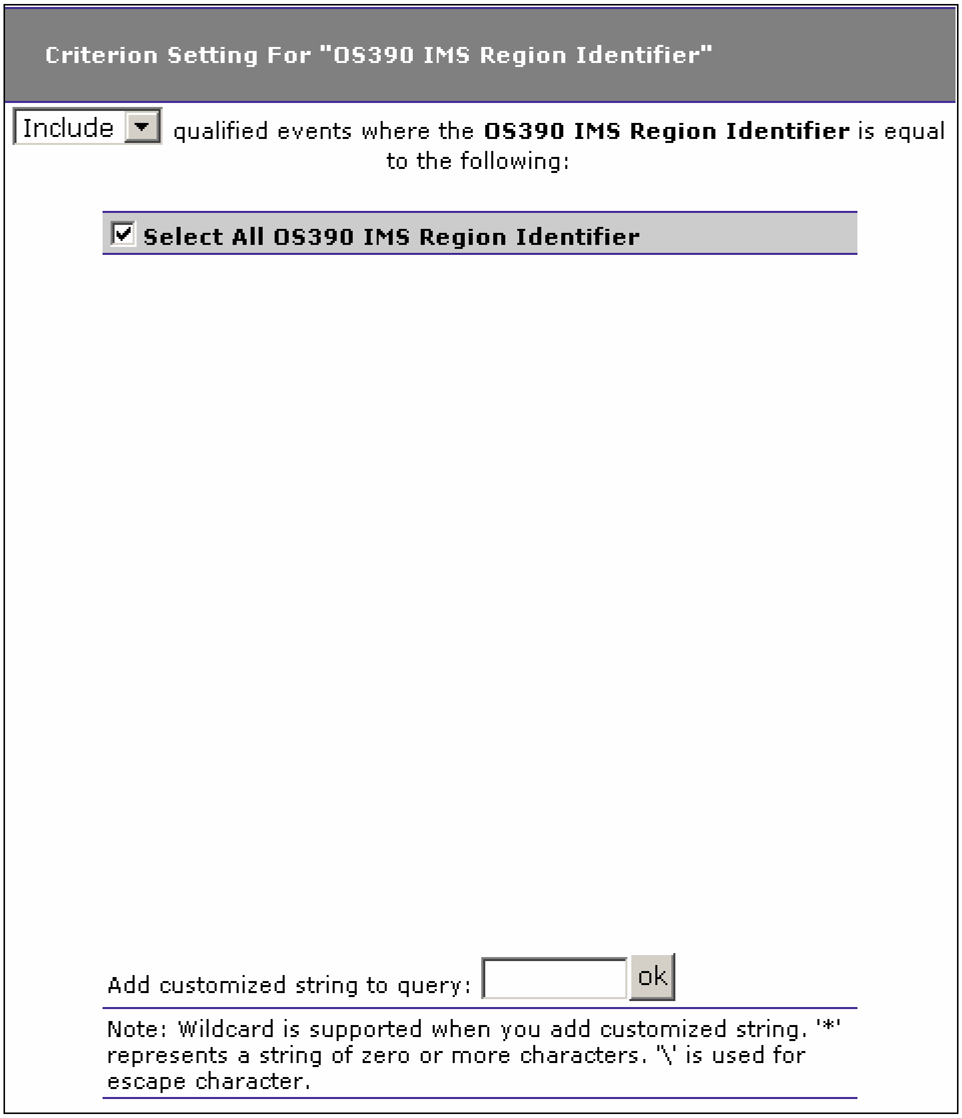
1. Select whether to Include or Exclude events for selected z/OS CICS transactions.
2. Check the box next to each CICS transaction you want to include specifically in the criteria, or check the box next to Select All OS390 CICS Transaction to include all CICS transactions in the query criteria. The list of CICS transactions is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

OS/390 IMS Region Type



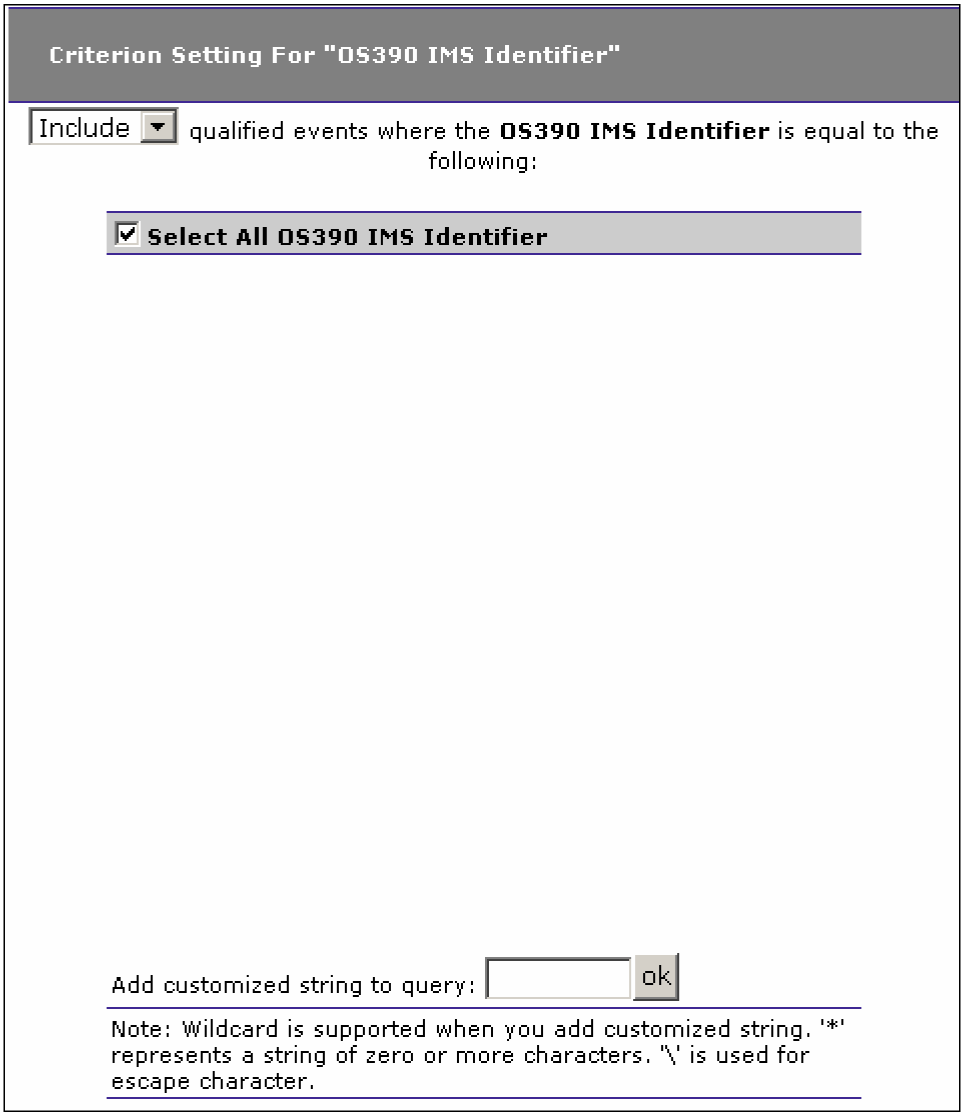
1. Select whether to Include or Exclude events for selected z/OS IMS region types.
2. Check the box next to each IMS region type you want to include specifically in the query criteria, or check the box next to Select All OS390 IMS Region Type to include all IMS region types in the query criteria. The list of IMS region types is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

OS/390 IMS Region Identifier



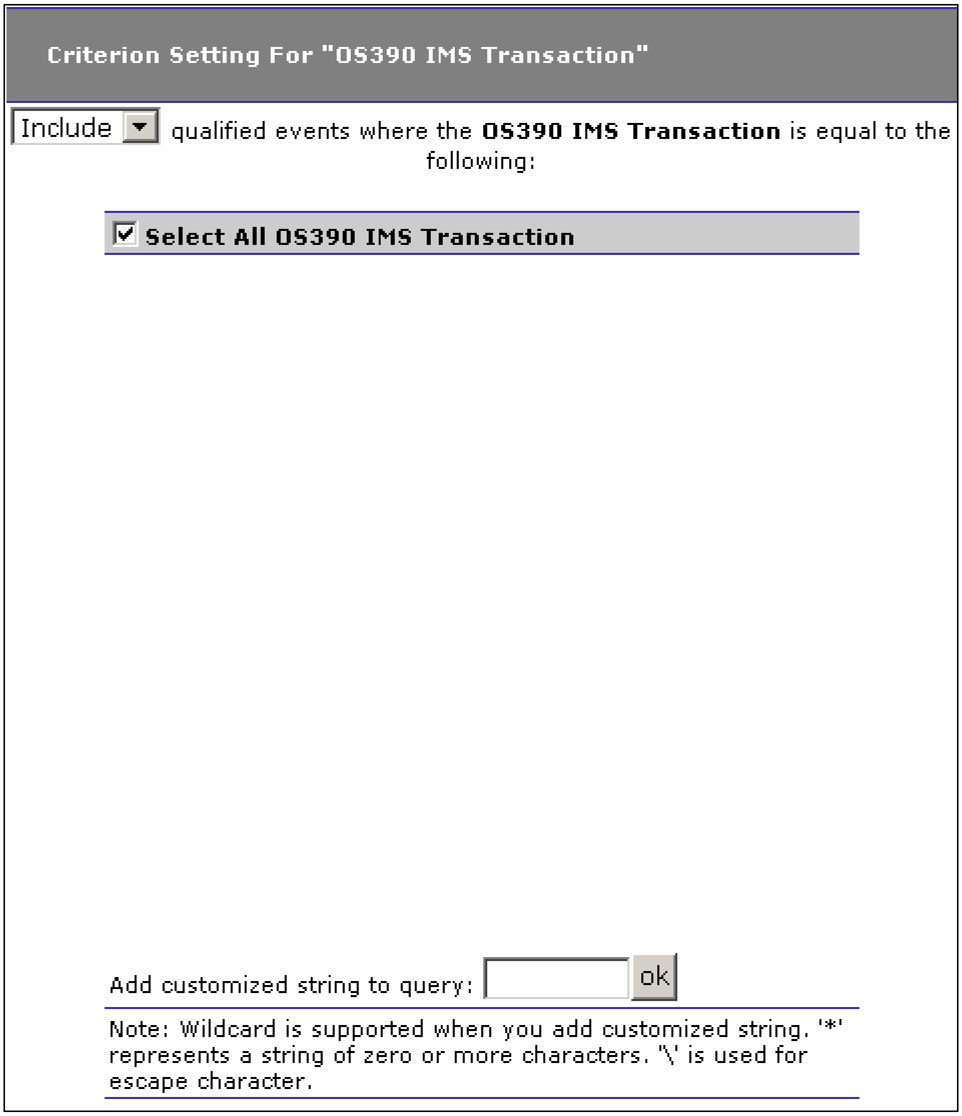
1. Select whether to Include or Exclude events for selected z/OS IMS region identifiers.
2. Check the box next to each IMS region identifier you want to include specifically in the query criteria, or check the box next to Select All OS390 IMS Region Identifier to include all IMS region identifiers in the query criteria. The list of IMS region identifiers is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

OS/390 IMS Identifier



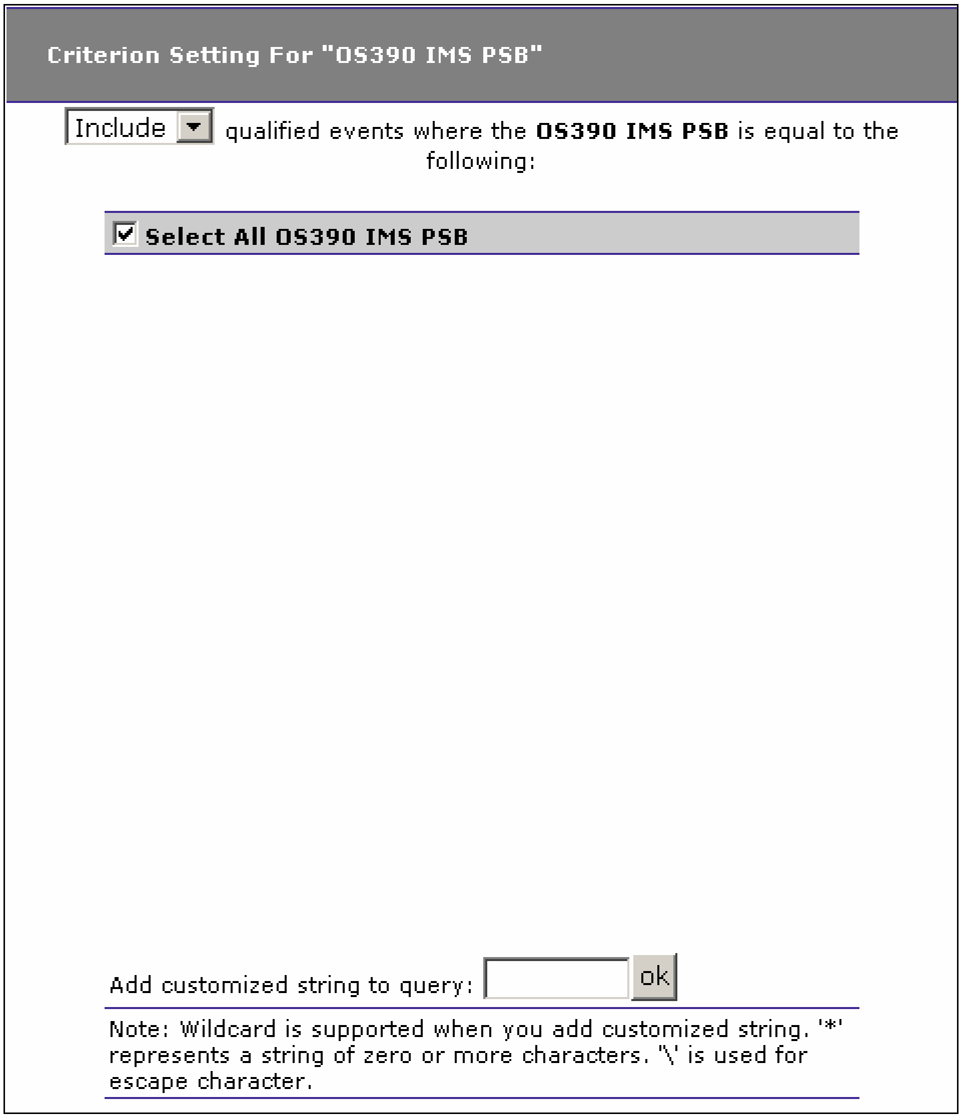
1. Select whether to Include or Exclude events for selected z/OS IMS identifiers.
2. Check the box next to each IMS identifier you want to include specifically in the query criteria, or check the box next to Select All OS390 IMS Identifier to include all IMS identifiers in the query criteria. The list of IMS identifiers is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

OS/390 IMS Transaction



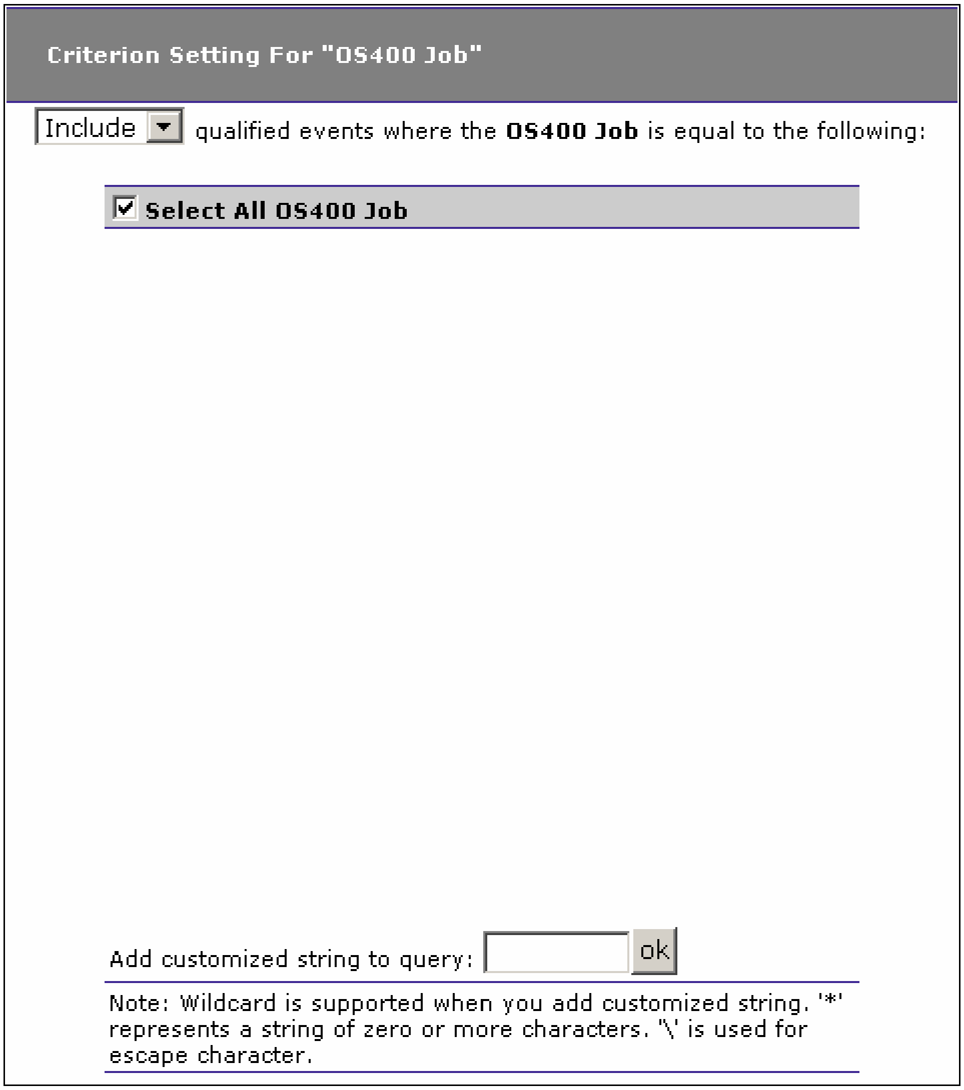
1. Select whether to Include or Exclude events for selected z/OS IMS transactions.
2. Check the box next to each IMS transaction you want to include specifically in the query criteria, or check the box next to Select All OS390 IMS Transaction to include all IMS transactions in the query criteria. The list of IMS transactions is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

OS/390 IMS PSB



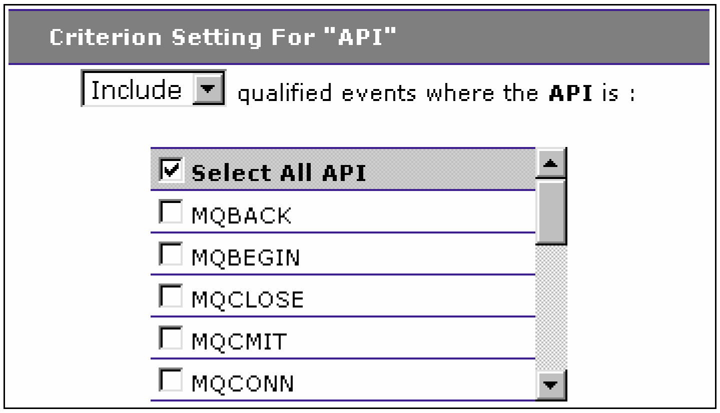
1. Select whether to Include or Exclude events for selected z/OS IMS PSBs.
2. Check the box next to each IMS PSB you want to include specifically in the query criteria, or check the box next to Select All OS390 IMS PSB to include all IMS PSBs in the query criteria. The list of IMS PSBs is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

OS/400 Job Name



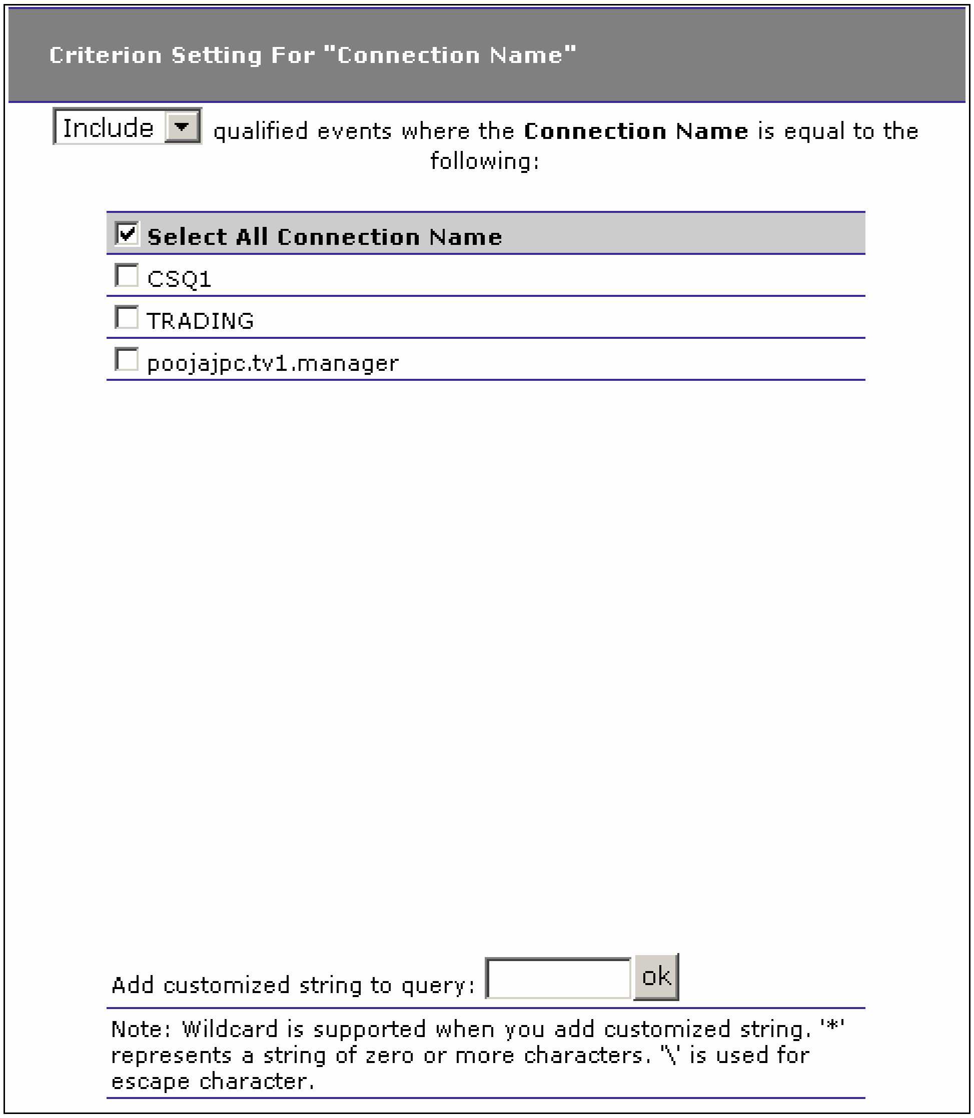
1. Select whether to Include or Exclude events for selected OS/400 job names.
2. Check the box next to each job name you want to include specifically in the query criteria, or check the box next to Select All OS400 Job to include all job names in the query criteria. The list of OS/400 job names is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

WebSphere MQ API



1. Select whether to Include or Exclude events for selected WebSphere MQ APIs.
2. Check the box next to each API you want to include specifically in the query criteria, or check the box next to Select All API to include all WebSphere MQ APIs in the query criteria.

Connection Name



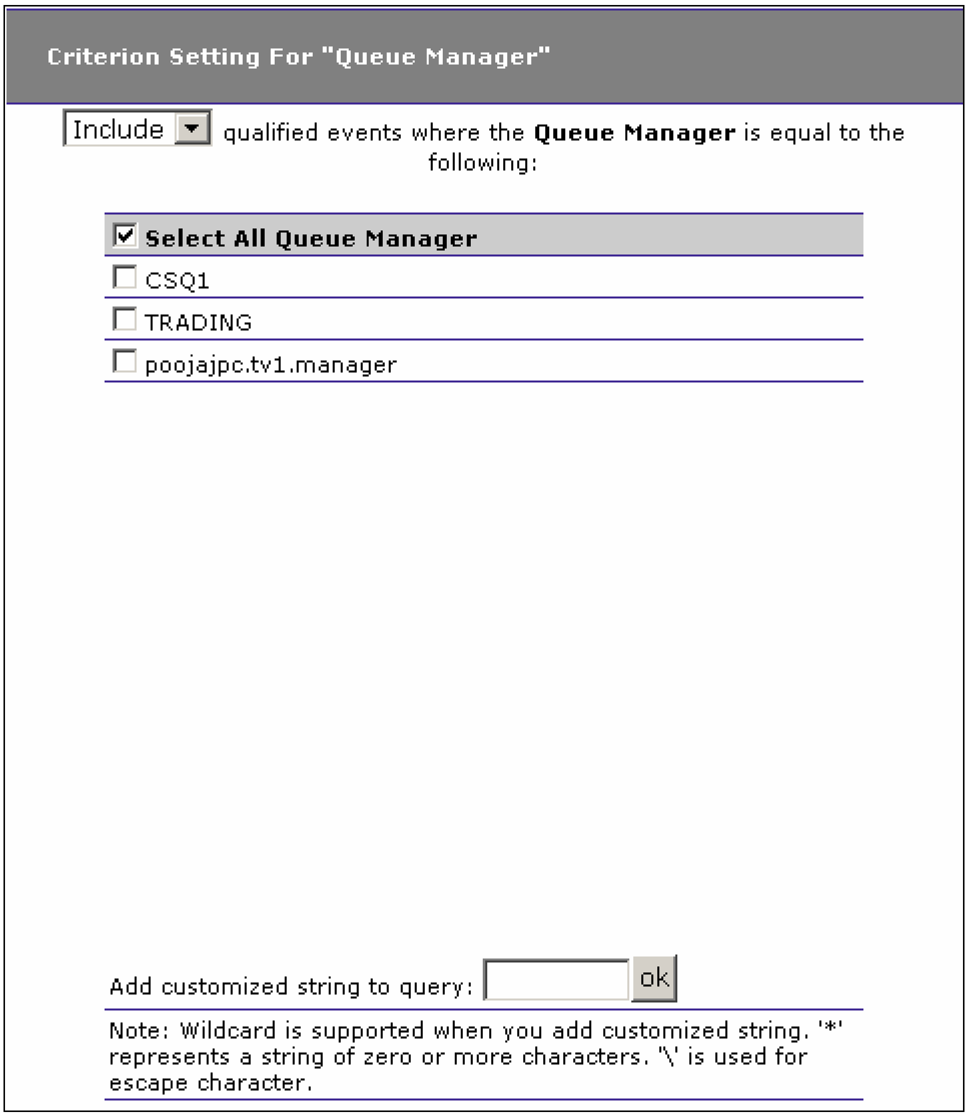
The connection name and queue manager are typically the same, except in the case where a queue on one queue manager is opened using a connection (specified with the hConn parameter) to a different queue manager. For example, suppose a program opens queue QM1.Q using a connection to queue manager QM1, then later opens QM1.Q using a connection to queue manager QM2. This event shows QM1.Q as the object name, QM1 as the queue manager, and QM2 as the connection name.

1. Select whether to Include or Exclude events for the selected WebSphere MQ connections.
2. Check the box next to each connection you want to include specifically in the query criteria, or check the box next to Select All Connection Name to include all connections in the query

criteria. The list of connection names is generated from events collected in the project database.

3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Queue Manager

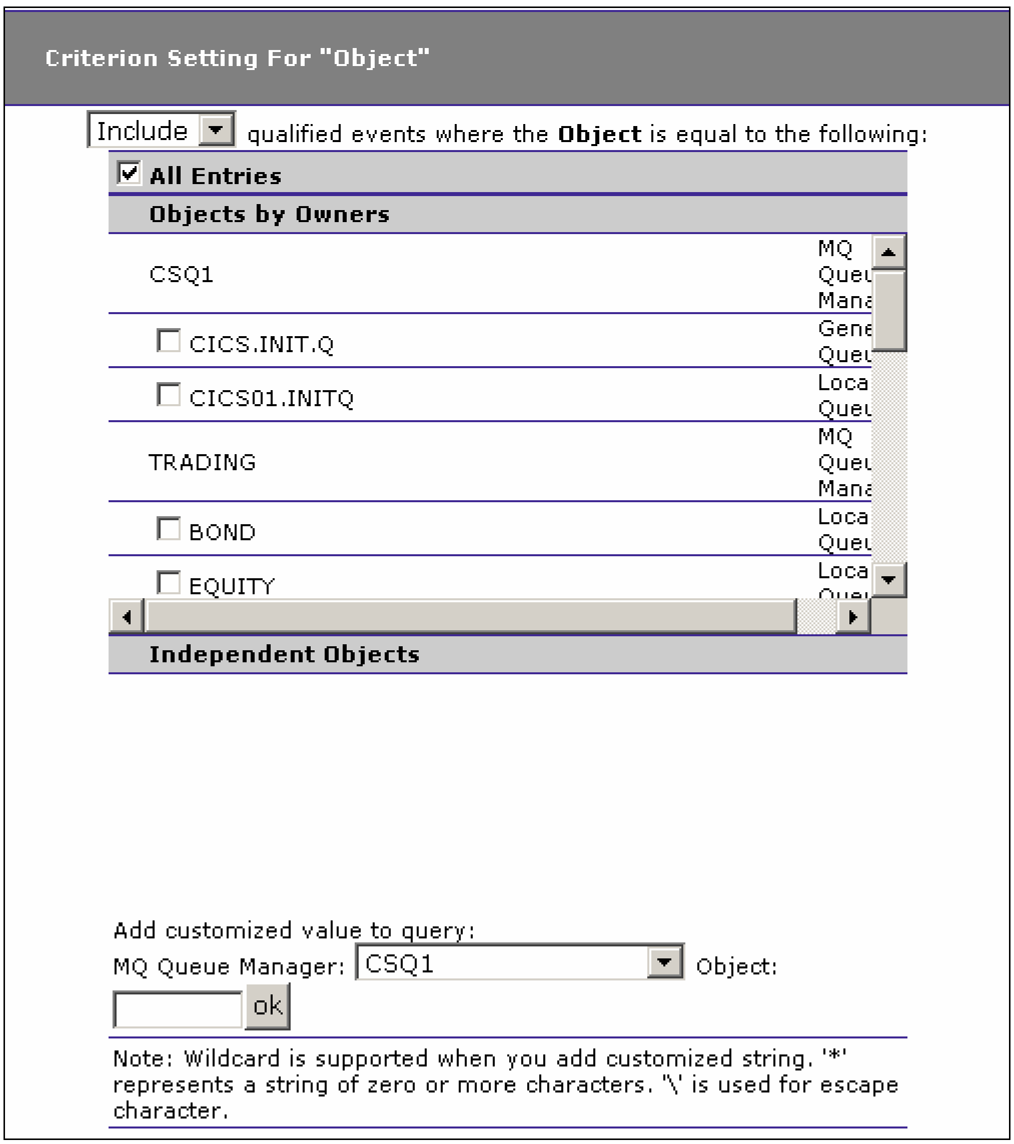


1. Select whether to Include or Exclude events for selected WebSphere MQ queue managers.
2. Check the box next to each queue manager you want to include specifically in the query criteria, or check the box next to Select

All Queue Manager to include all WebSphere MQ queue managers in the query criteria. The list of queue managers is generated from events collected in the project database.

3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

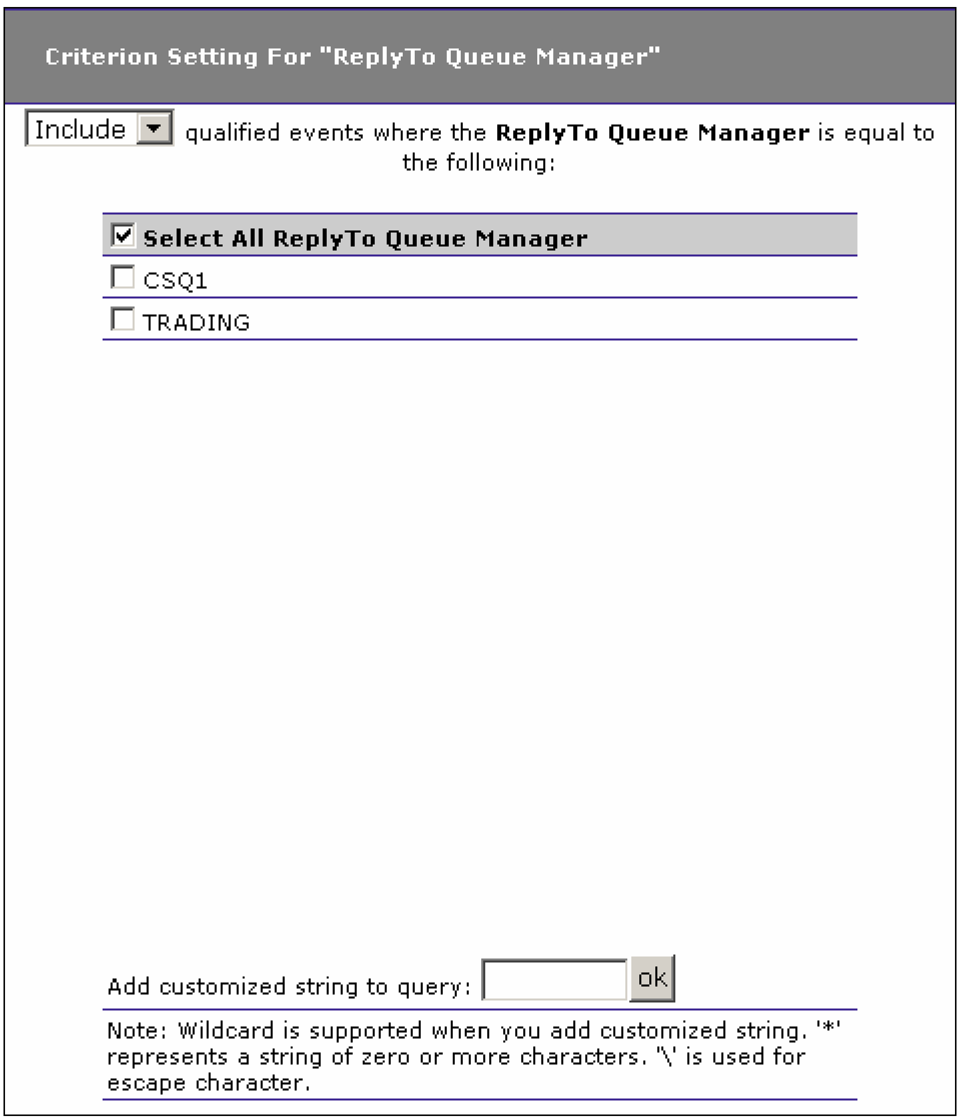
Object



1. Select whether to Include or Exclude events for the selected WebSphere MQ objects.

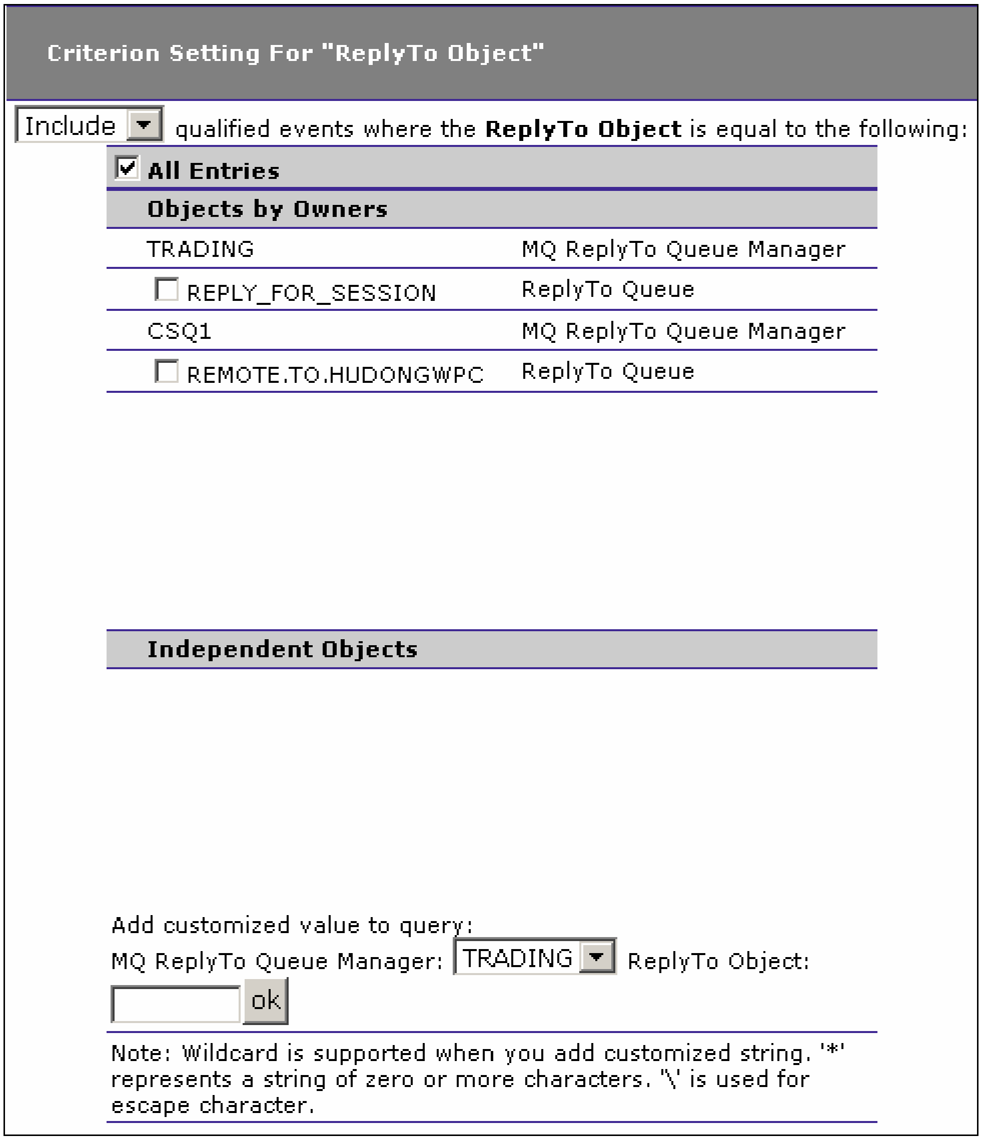
2. Check the box next to each object you want to include specifically in the query criteria, or check the box next to All WebSphere MQ Objects to include all objects in the query criteria. The list of objects is generated from events collected in the project database. They are grouped according to the queue managers they are associated with.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Reply To Queue Manager



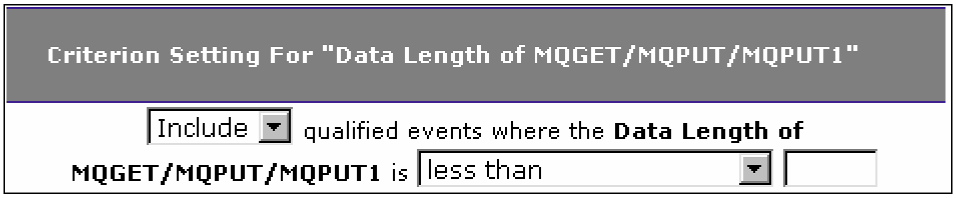
1. Select whether to Include or Exclude events where the selected WebSphere MQ queue managers match the Reply To field.
2. Check the box next to each queue manager you want to include specifically in the query criteria, or check the box next to Select All Queue Manager to include all WebSphere MQ queue managers in the query criteria. The list of queue managers is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Reply To Object



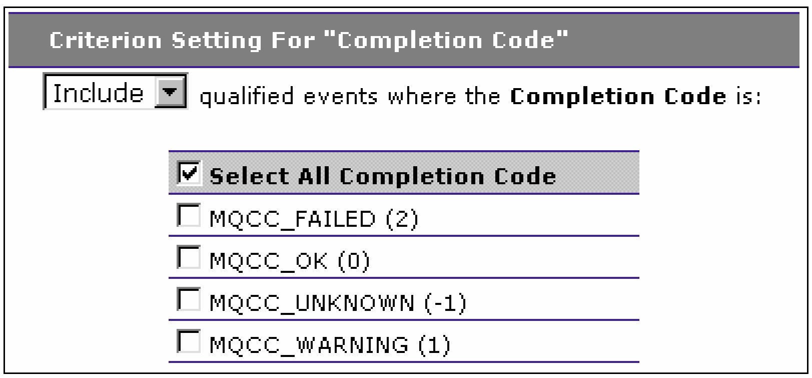
1. Select whether to Include or Exclude events where the selected WebSphere MQ objects match the Reply To field.
2. Check the box next to each object you want to include specifically in the query criteria, or check the box next to All Entries to include all WebSphere MQ objects in the query criteria. The list of objects is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Data Length of MQGET/MQPUT/MQPUT1



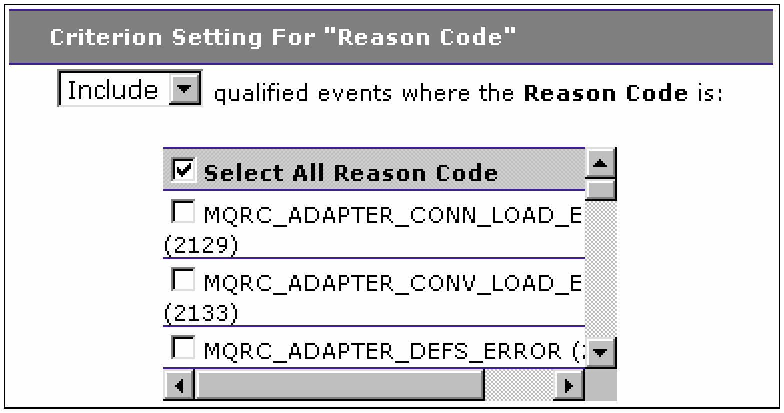
1. Select whether to Include or Exclude events for the selected data length.
2. Select the matching criteria for the selected data length. Choices include less than, less than or equal to, equal to, not equal to, greater than or equal to, or greater than.
3. Enter the desired data length in bytes.

Completion Code



1. Select whether to Include or Exclude events for selected WebSphere MQ API completion codes.
2. Check the box next to each API completion code you want to include specifically in the query criteria, or check the box next to Select All Completion Code to include all completion codes in the query criteria.

Reason Code

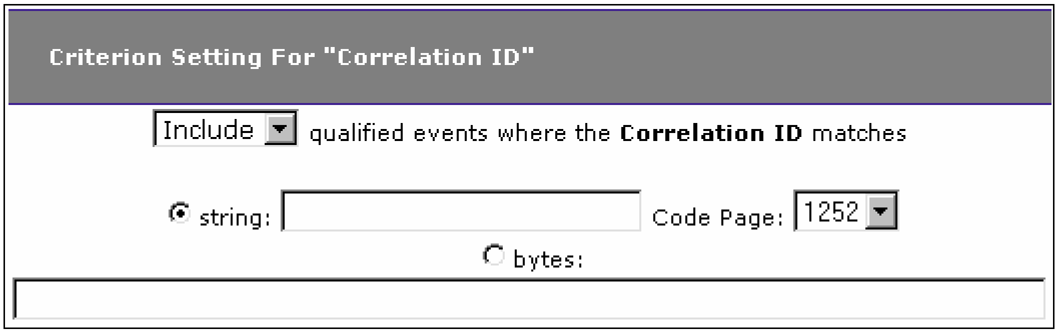


1. Select whether to Include or Exclude events for selected WebSphere MQ API reason codes.
2. Check the box next to each API reason code you want to include specifically in the query criteria, or check the box next to Select All Reason Code to include all reason codes in the query criteria.

Message ID

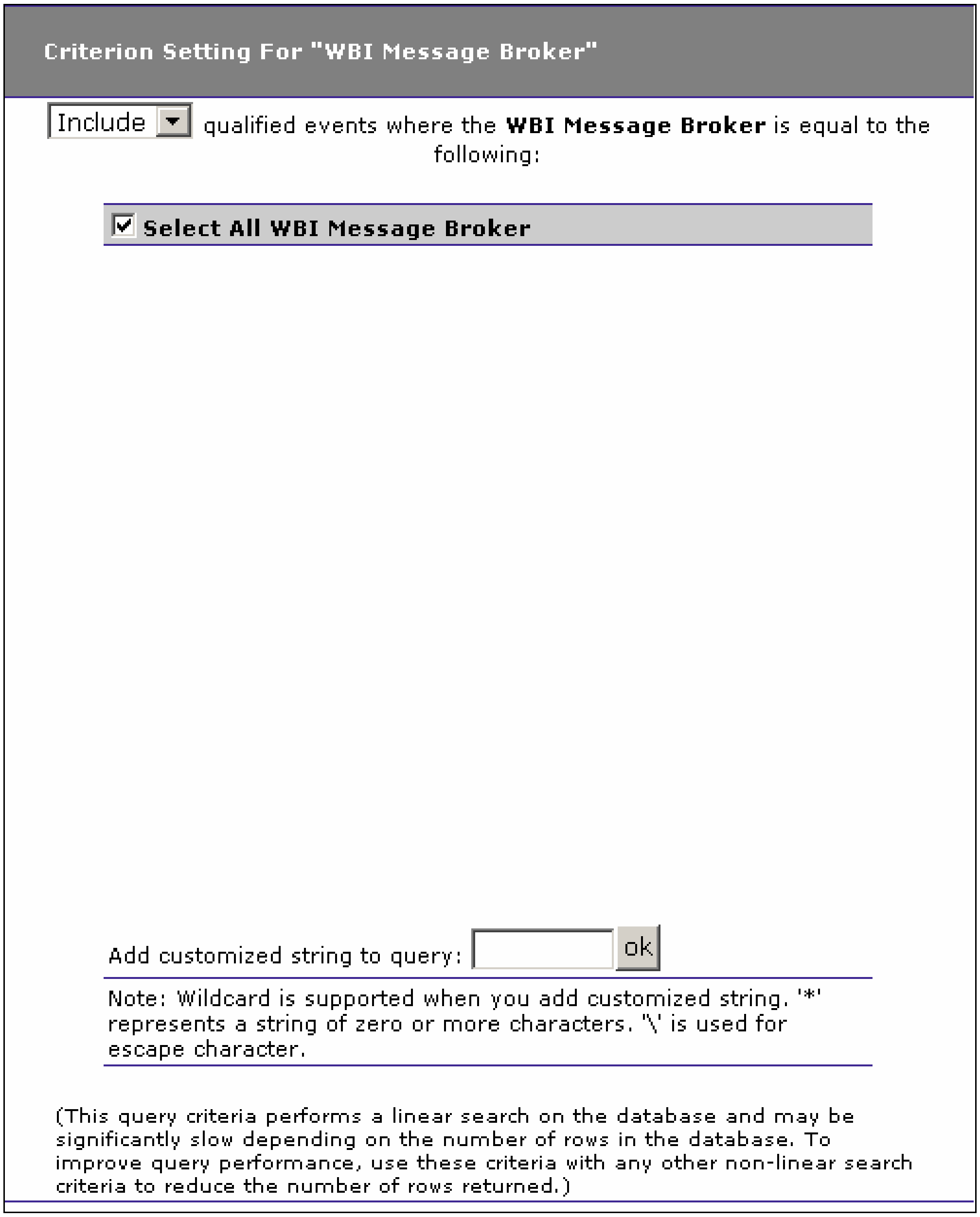
1. Select whether to Include or Exclude events with the selected WebSphere MQ message ID.
2. Click the appropriate radio button to indicate whether the specified message ID is in string or binary format and enter the message ID. For string format, select the correct code page.

Correlation ID



1. Select whether to Include or Exclude events with the selected WebSphere MQ correlation ID.
2. Click the appropriate radio button to indicate whether the specified correlation ID is in string or binary format and enter the correlation ID. For string format, select the correct code page.

WBI Message Broker

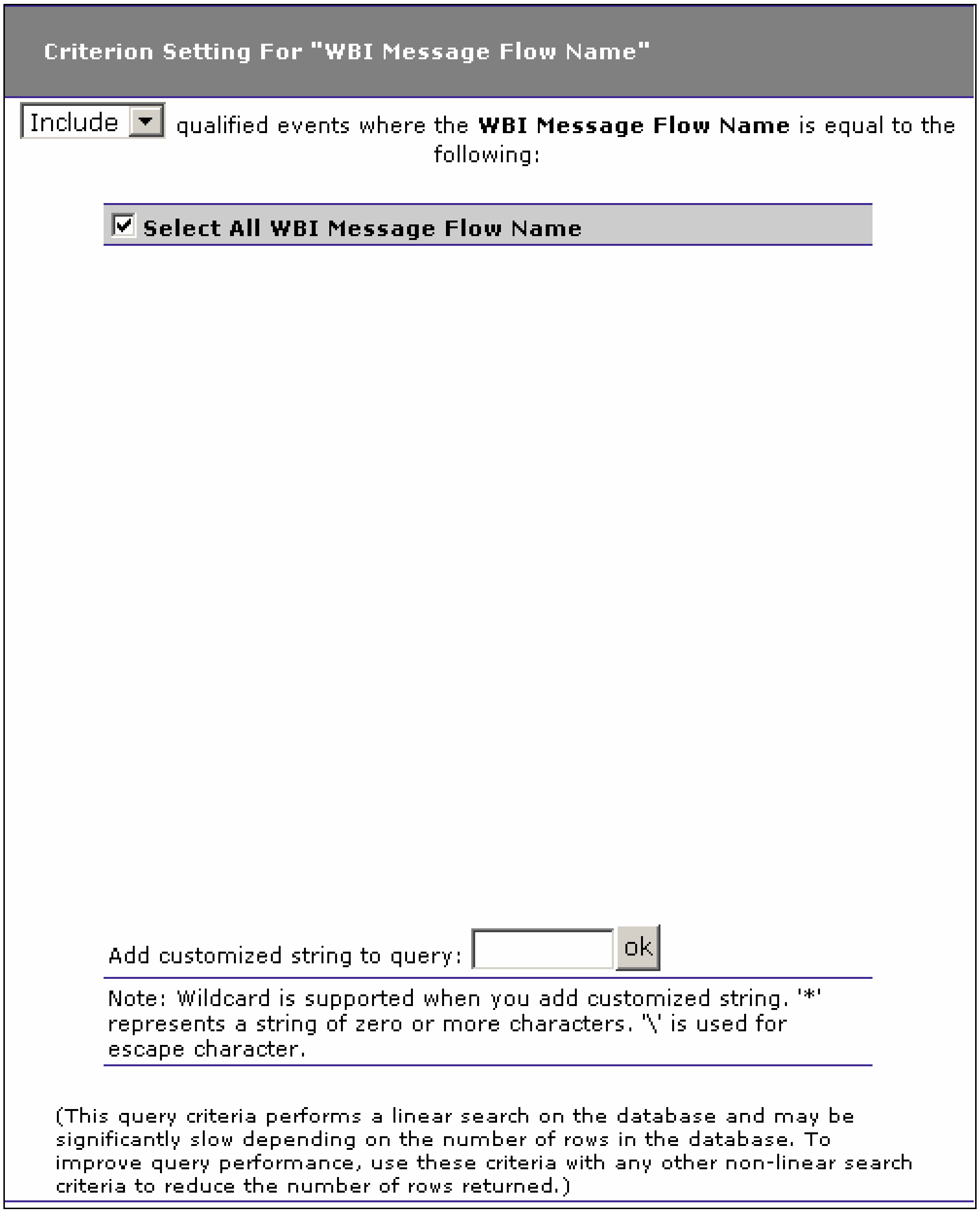


1. Select whether to Include or Exclude events for selected WebSphere Business Integration (WBI) message brokers.
2. Check the box next to each WBI message broker you want to include specifically in the query criteria, or check the box next to Select All WBI Message Broker to include all WBI message brokers in the query criteria. The list of WBI message brokers is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query

using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Important! TransactionVision uses a linear search for the WBI Message Broker criteria. Although linear searching enhances query capabilities, it reduces query performance. If you include this criteria in your query, query performance will be degraded. To minimize the impact on query performance, try not to use this criteria together with the other linear search criteria (User Buffer Data and WebSphere MQ WBI Message Flow Name) in the same query.

WBI Message Flow Name



1. Select whether to Include or Exclude events for selected WebSphere Business Integration (WBI) message flow names.
2. Check the box next to each WBI message flow name you want to include specifically in the query criteria, or check the box next to Select All WBI Message Flow Name to include all WBI message flow names in the query criteria. The list of WBI message flow names is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query

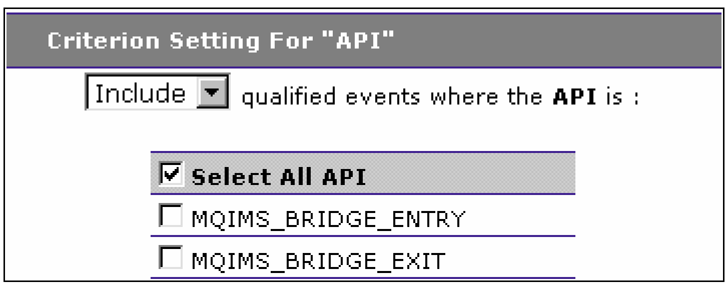
using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Important! TransactionVision uses a linear search for the WBI Message Flow Name criteria. Although linear searching enhances query capabilities, it reduces query performance. If you include this criteria in your query, query performance will be degraded. To minimize the impact on query performance, try not to use this criteria together with the other linear search criteria (WebSphere MQ WBI Broker and User Buffer Data) in the same query.

WebSphere MQ IMS Bridge Criteria

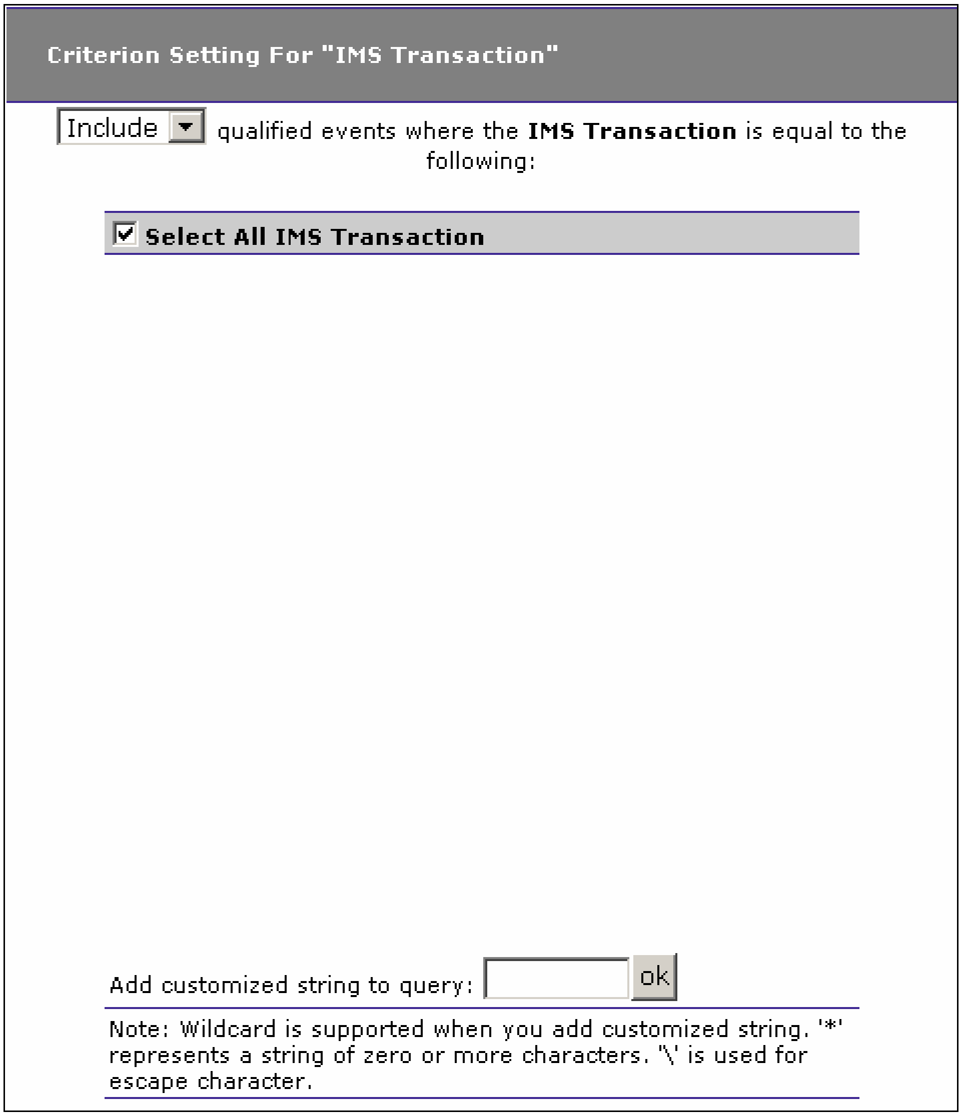
The following options are only available when WebSphere MQ IMS Bridge is the current “Criteria For:” technology.

API



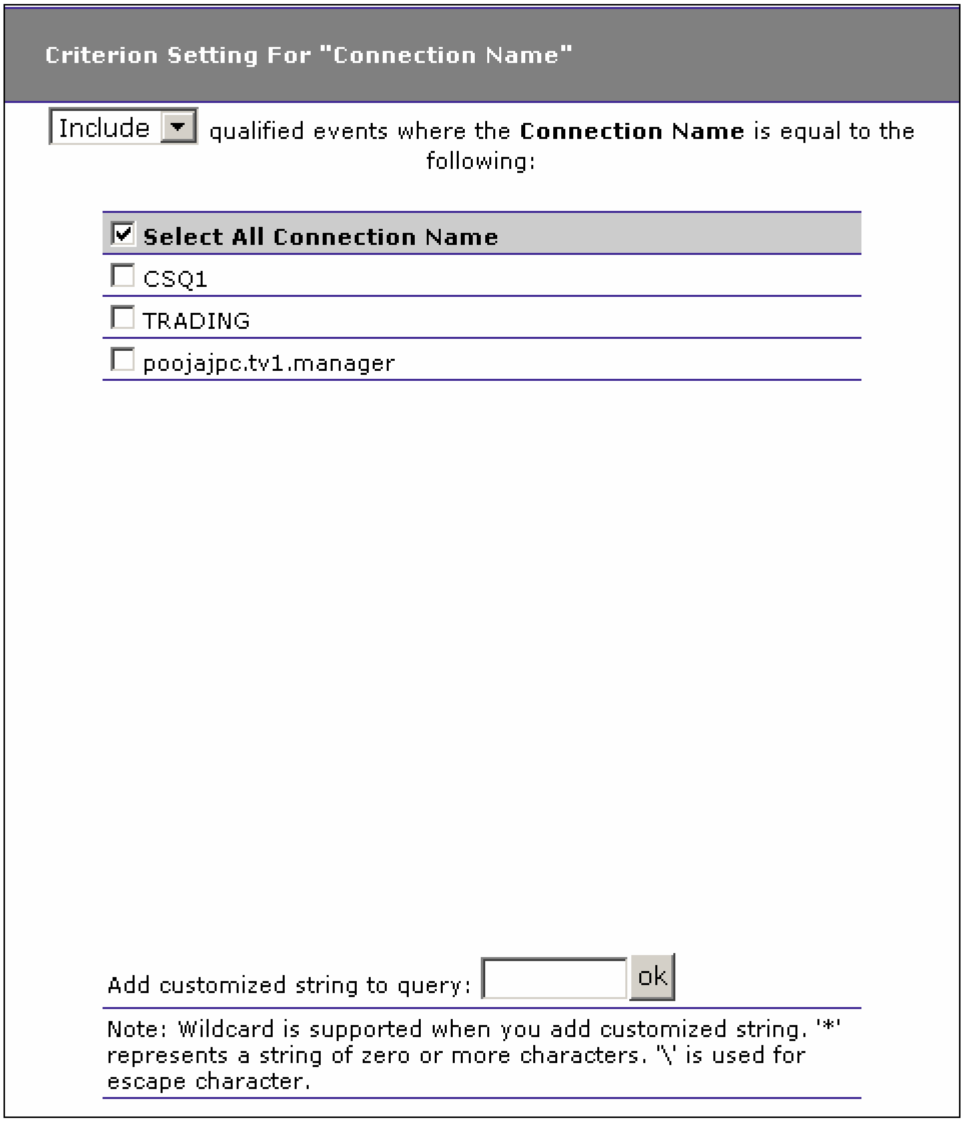
1. Select whether to Include or Exclude events for selected WebSphere MQ IMS Bridge APIs.
2. Check the box next to each API you want to include specifically in the query criteria, or check the box next to Select All API to include all APIs in the query criteria. The list of APIs is generated from events collected in the project database.

IMS Transaction



1. Select whether to Include or Exclude events for selected IMS transactions.
2. Check the box next to each transaction you want to include specifically in the query criteria, or check the box next to Select All IMS Transaction to include all transactions in the query criteria. The list of transactions is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

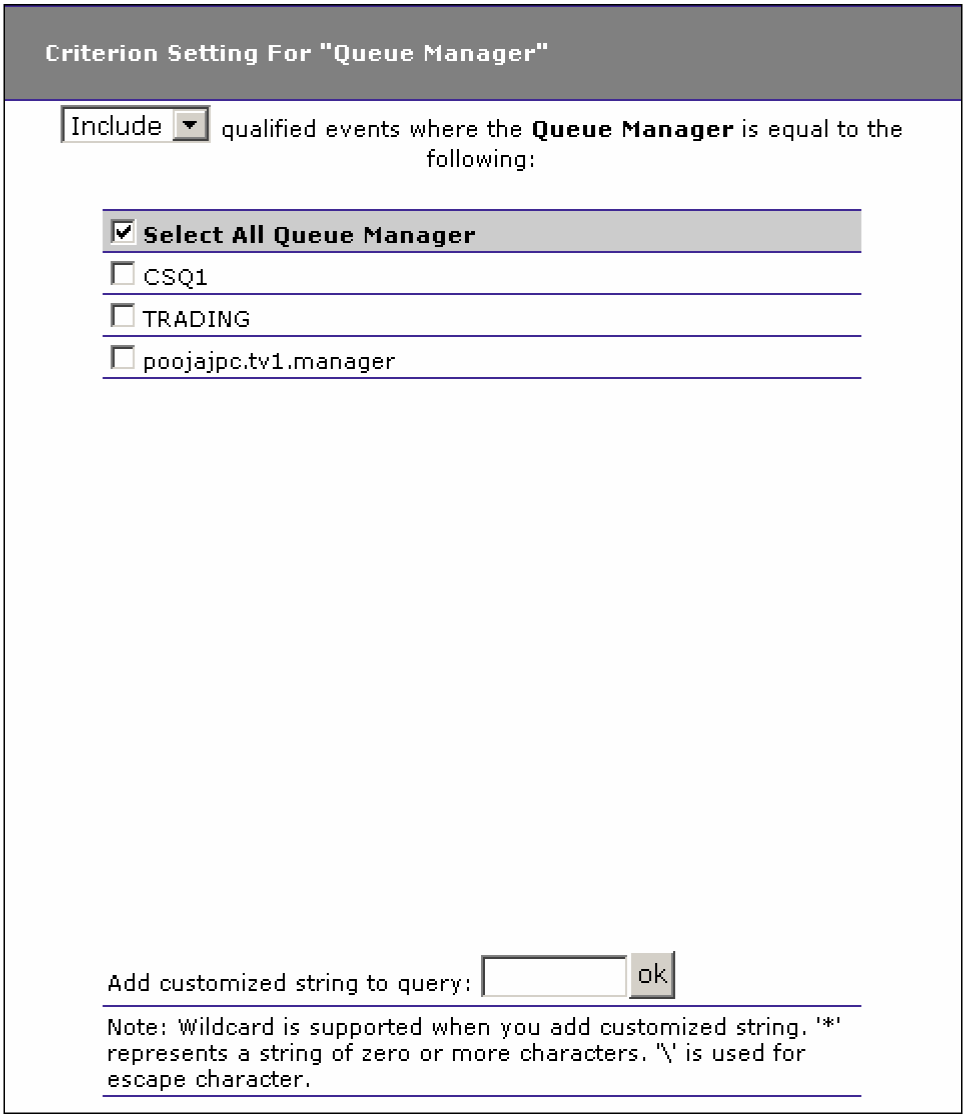
Connection Name



1. Select whether to Include or Exclude events for selected connection names.
2. Check the box next to each connection name you want to include specifically in the query criteria, or check the box next to Select All Connection Name to include all connection names in the query criteria. The list of connection names is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character

represents zero or more characters, and the \ character represents an escape.

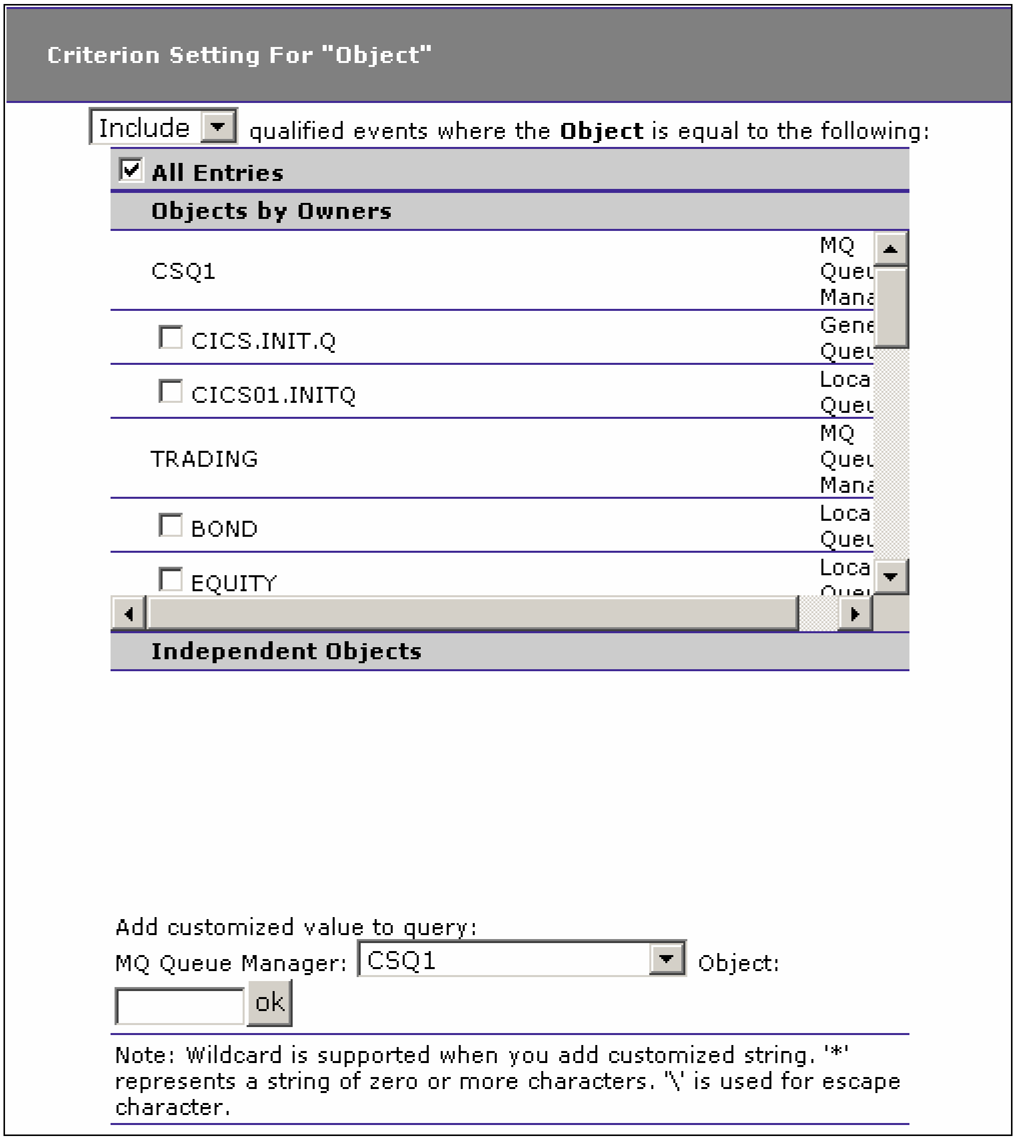
Queue Manager



1. Select whether to Include or Exclude events for selected queue managers.
2. Check the box next to each queue manager you want to include specifically in the query criteria, or check the box next to Select All Queue Manager to include all queue managers in the query criteria. The list of queue managers is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query

field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

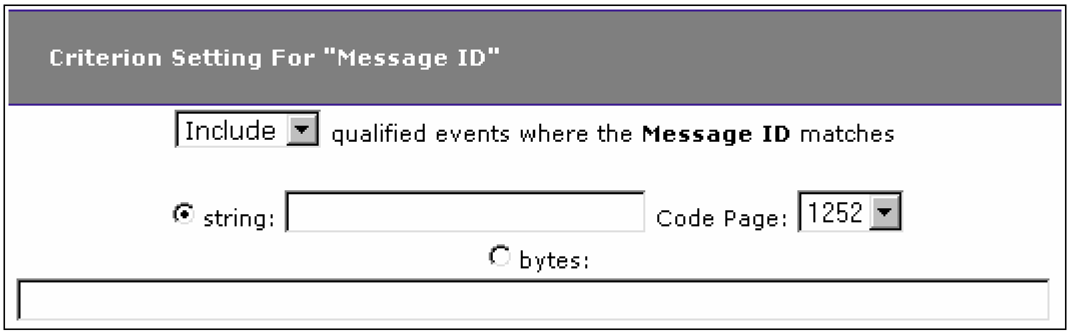
Object



1. Select whether to Include or Exclude events for selected objects.
2. Check the box next to each object you want to include specifically in the query criteria, or check the box next to All WebSphere MQ Objects to include all objects in the query criteria. The list of objects is generated from events collected in the project database. They are grouped according to the queue managers they are associated with.

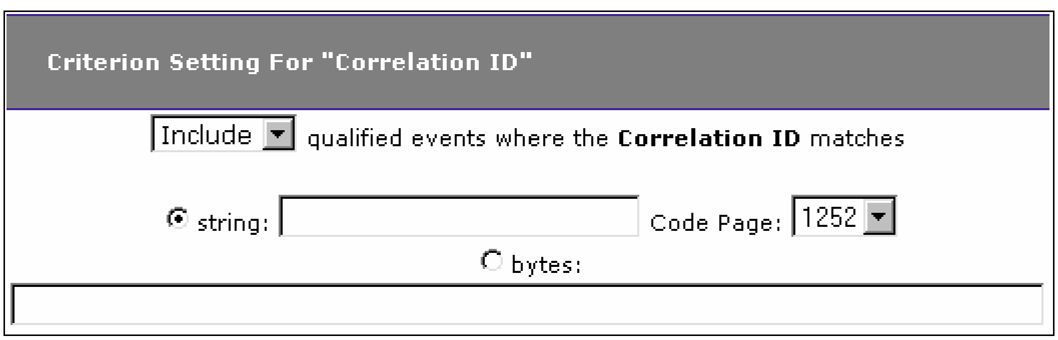
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

Message ID



1. Select whether to Include or Exclude events with the selected message ID.
2. Click the appropriate radio button to indicate whether the specified message ID is in string or binary format and enter the message ID. For string format, select the correct code page.

Correlation ID

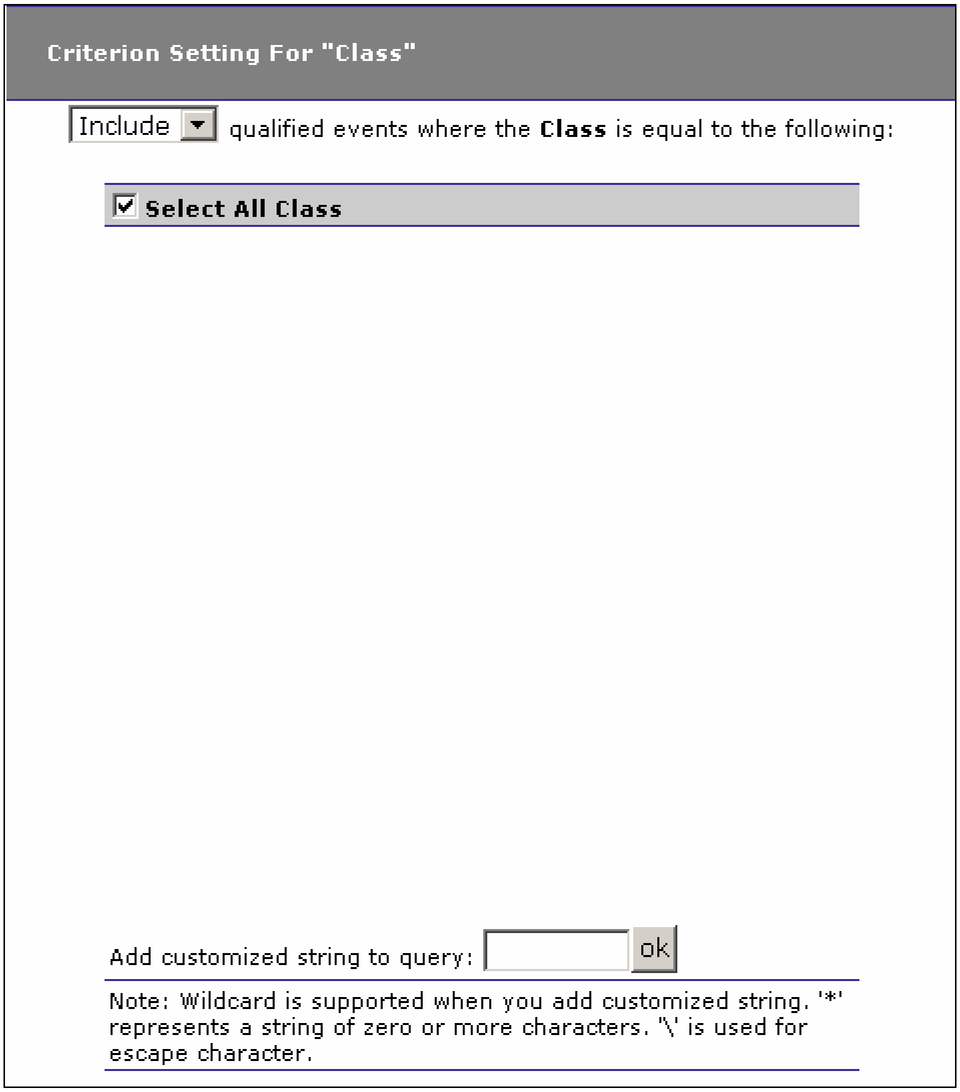


1. Select whether to Include or Exclude events with the selected correlation ID.
2. Click the appropriate radio button to indicate whether the specified correlation ID is in string or binary format and enter the correlation ID. For string format, select the correct code page.

User Events

The following options are only available when User Event is the current “Criteria For:” technology. For information about implementing user events in your application, see the *TransactionVision Programmer's Guide*.

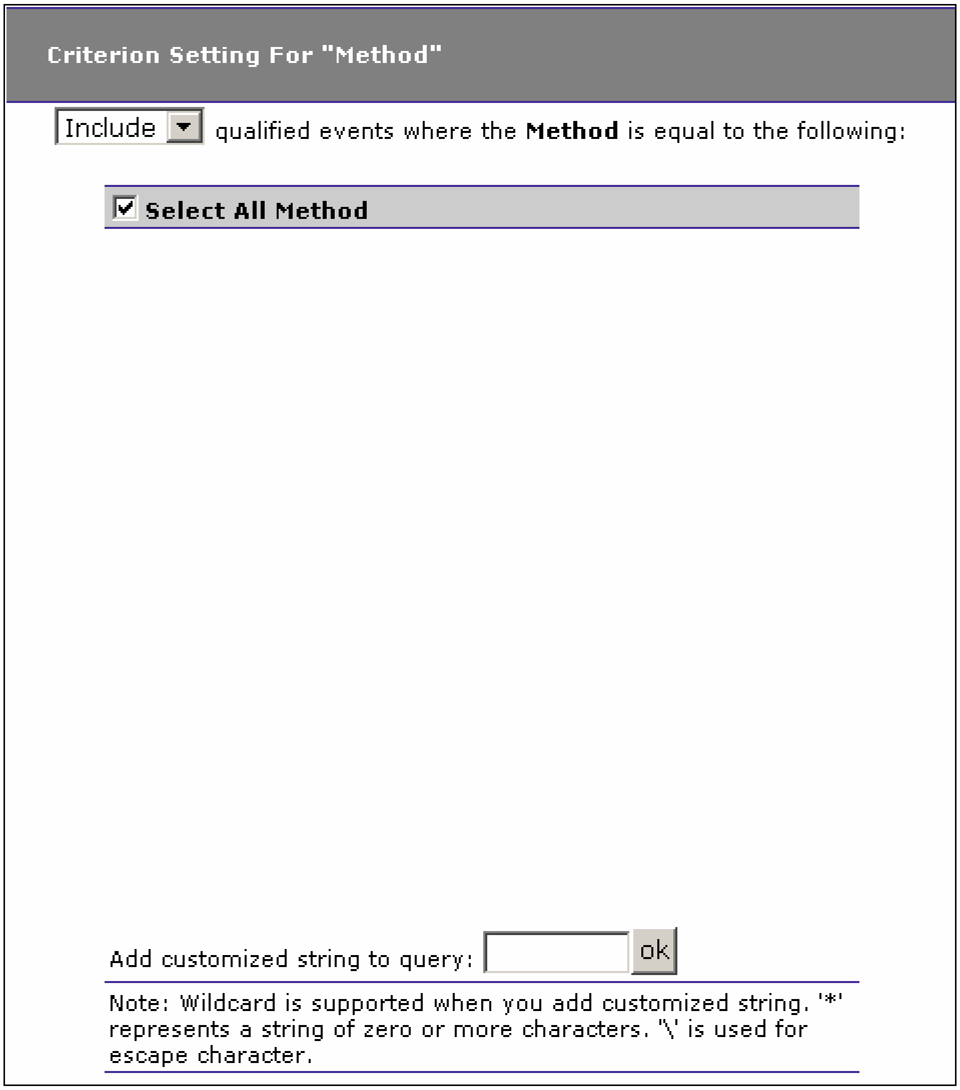
Class



1. Select whether to Include or Exclude user events associated with the selected class.
2. Check the box next to each class you want to include specifically in the query criteria, or check the box next to Select All Class to include all classes in the query criteria. The list of classes is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character

represents zero or more characters, and the \ character represents an escape.

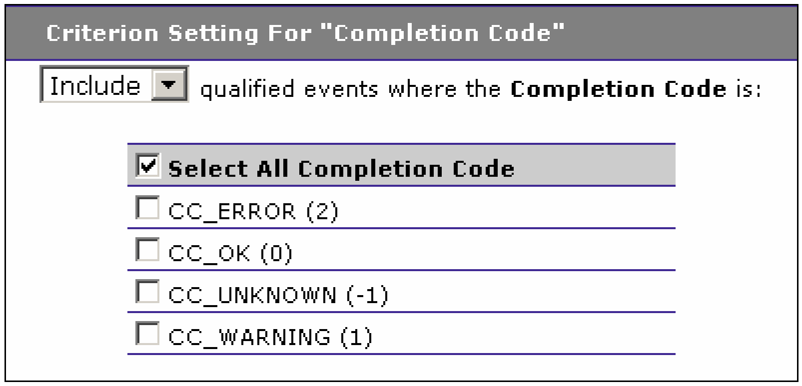
Method



1. Select whether to Include or Exclude user events with the selected method.
2. Check the box next to each method you want to include specifically in the query criteria, or check the box next to Select All Method to include all classes in the query criteria. The list of methods is generated from events collected in the project database.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character

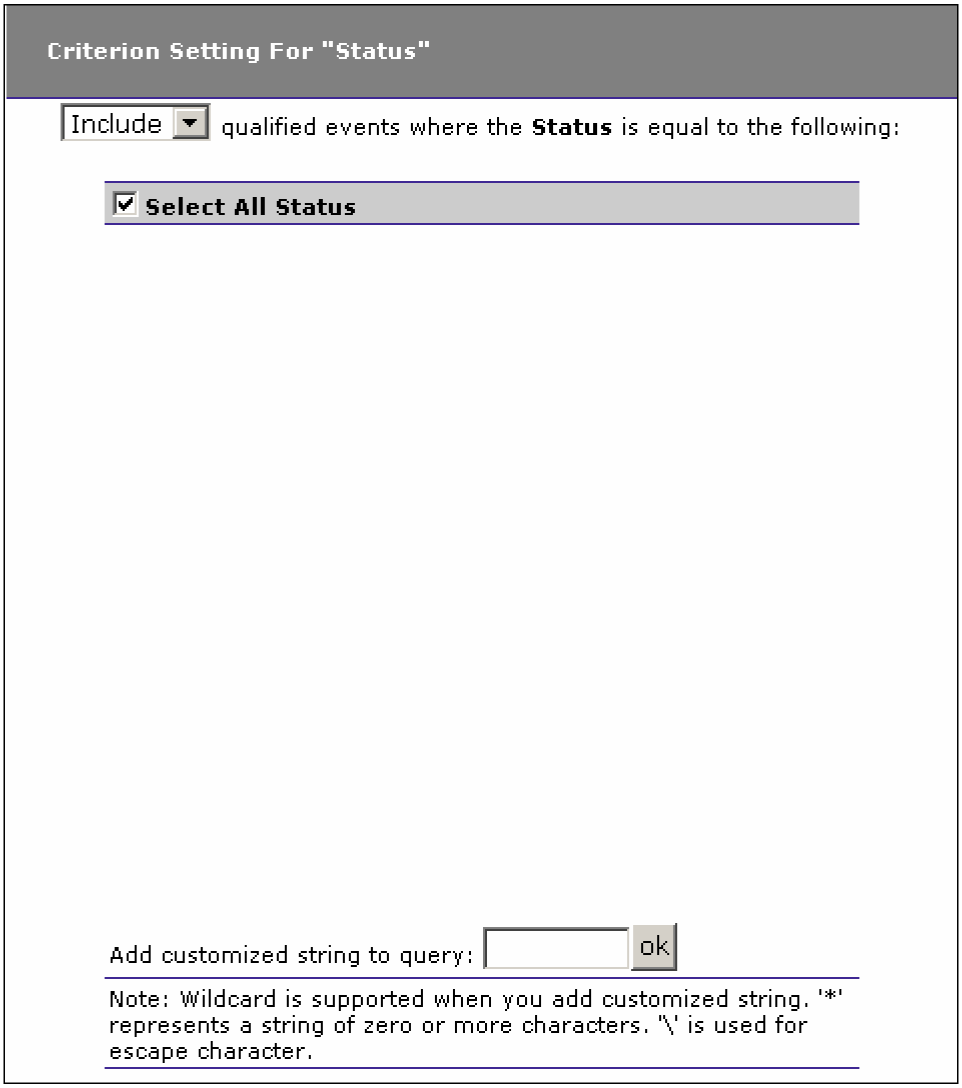
represents zero or more characters, and the \ character represents an escape.

Completion Code



1. Select whether to Include or Exclude user events with the selected completion code.
2. Check the box next to each completion code you want to include specifically in the query criteria, or check the box next to Select All Completion Code to include all classes in the query criteria.

Status



1. Select whether to Include or Exclude user events with the selected status.
2. Check the box next to each status you want to include specifically in the query criteria, or check the box next to Select All Status to include all status values in the query criteria.
3. In addition to selecting individual entries, you may specify a custom query string using wildcard characters. To specify a query using wildcards, enter it in the Add customized string to query field and click OK. In a customized query, the * character represents zero or more characters, and the \ character represents an escape.

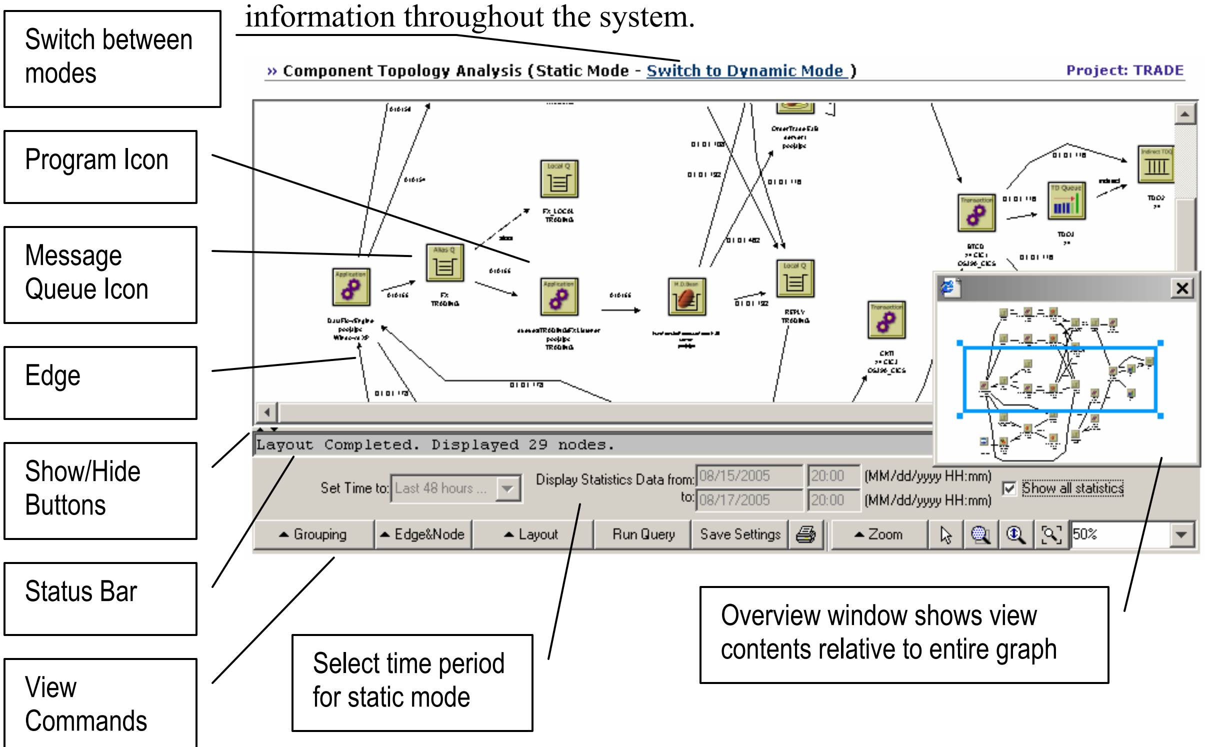
Data Size

1. Select whether to Include or Exclude events for the selected data size.
2. Select the matching criteria for the selected data size. Choices include less than, less than or equal to, equal to, not equal to, greater than or equal to, or greater than.
3. Enter the desired data size in bytes.

Chapter 3

Using the Component Topology Analysis View

The Component Topology Analysis view shows the interaction between all system components for which Sensors collect event information. The Analyzer correlates events across host, program, and thread boundaries. These correlated events are used to draw a visual map of the flow of information throughout the system.



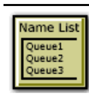
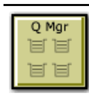
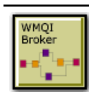
View commands enable you to customize the appearance of the Component Topology Analysis and print it as a map of your entire transaction-based system.

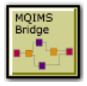
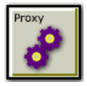
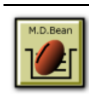
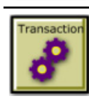
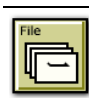
View Components

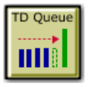
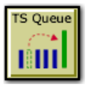
The Component Topology Analysis consists of **resource icons** that represent system components and **edges**, which are connecting lines that show the interaction between resource icons.

Resource Icons

Depending on your system, the following resource icons may appear in the Component Topology Analysis:

Icon	Description
	WebSphere MQ cluster node relating multiple queue instances in a clustering environment
	WebSphere MQ distribution list
	WebSphere MQ message queue
	WebSphere MQ remote queue
	WebSphere MQ alias queue
	WebSphere MQ dead letter queue
	WebSphere MQ namelist
	Program
	Process object
	WebSphere MQ queue manager
	WebSphere MQ local queue
	WebSphere MQ model queue
	WebSphere MQ Integrator broker

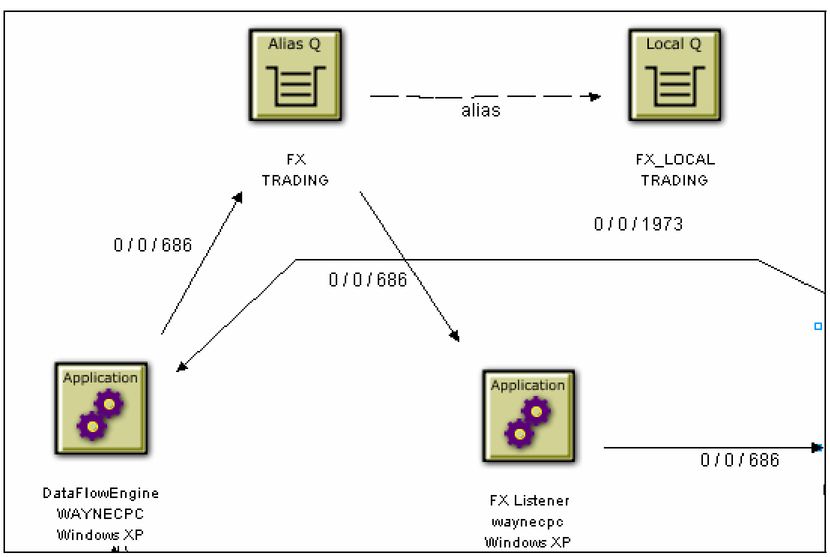
Icon	Description
	WebSphere MQ IMS Bridge node. If you do not have a custom bean to add queue and queue manager information for IMS Bridge events, an "unknown queue" node is shown for each IMS Bridge node associated with the MQIMS_BRIDGE_ENTRY event. For more information about the TransactionVision IMS Bridge Sensor, see the *TransactionVision Installation and Configuration Guide*.
	Proxy object. Proxy objects involve applications that are not monitored by a TransactionVision Sensor. See the *TransactionVision Installation and Configuration Guide* for information about the proxy Sensor and proxy objects.
	Internet.
	JMS queue
	JMS topic
	Java server page
	Java servlet
	Web application
	WebSphere web application server
	EJB session bean
	EJB entity bean
	EJB message-driven bean
	CICS transaction. Note that TransactionVision automatically filters out all CICS transactions that begin with "C" because they are internal CICS transactions. One exception is CKBP, which denotes a WebSphere MQ-CICS bridge transaction. All CICS DPL programs invoked through MQ-CICS bridge have this transaction name.
	CICS file

Icon	Description
	CICS Transient Data (TD) queue
	CICS indirect TD queue. Similar to a TD queue, the indirect TD queue is an alias to other TD queues.
	CICS temporary storage (TS) queue. Used for temporarily passing data, users can create and destroy TS queues on the fly.
	A user defined system resource object that participates in one or more user events included by the query. All user defined objects shared the same icon with the label "Resource". For information about implementing user events, see the *TransactionVision Programming Guide*.

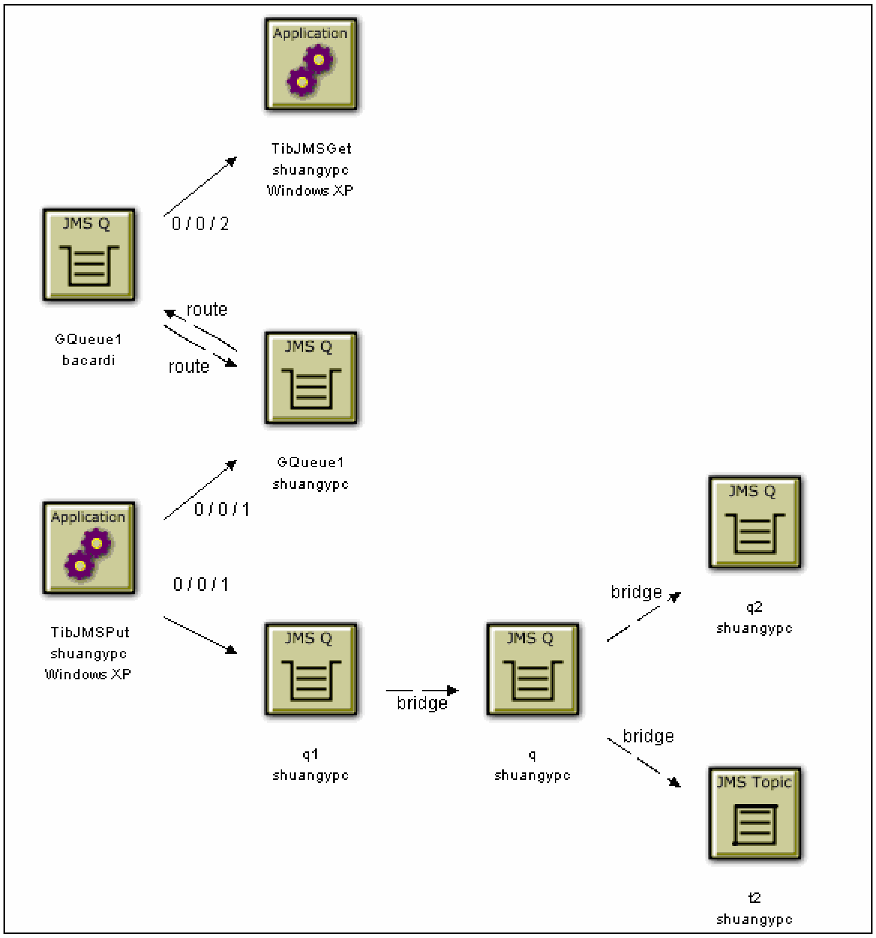
Edges

The connecting lines, called edges, show the relationship between the resource icons. For WebSphere MQ, JMS, and CICS events, solid edges represent message flows. For servlet and EJB events, solid edges represent control flow.

Dashed edges represent a relationship between icons, such as between a remote, alias, or model queue and the local queue it is associated with. In the following example, the DataFlowEngine and FX Listener programs write to and read from the FX queue, respectively. The FX queue is an alias queue for the local FX_LOCAL queue.

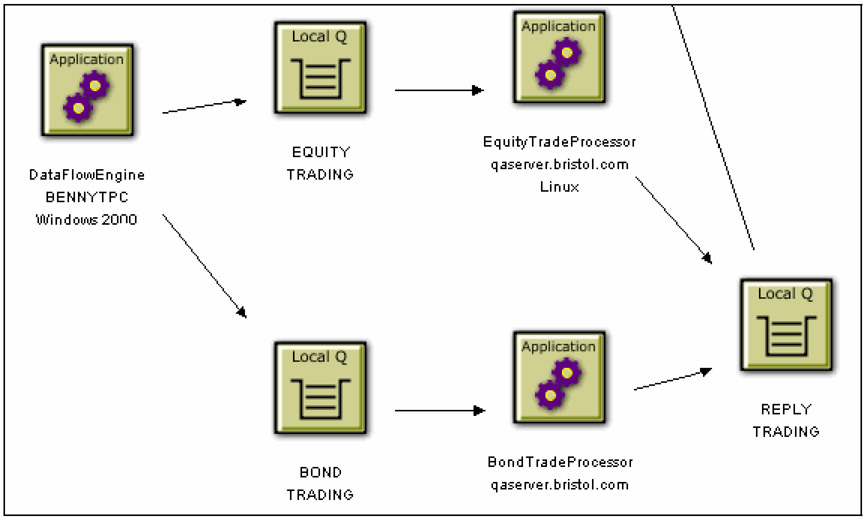


For TIBCO EMS queue objects, edges represent route and bridge relationships between objects, as in the following example:



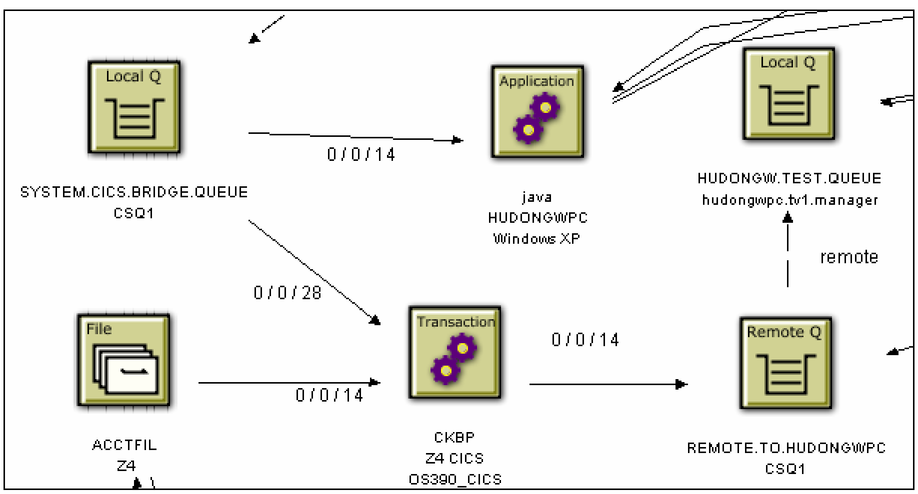
WebSphere MQ and JMS Events

For WebSphere MQ and JMS events, an edge represents message flow. For example, the following diagram shows that the DataFlowEngine application puts messages on the EQUITY and BOND queues of the TRADING queue manager. The EquityTradeProcessor and BondTradeProcessor programs retrieve messages from the EQUITY and BOND queues, respectively, and put a message on REPLY.



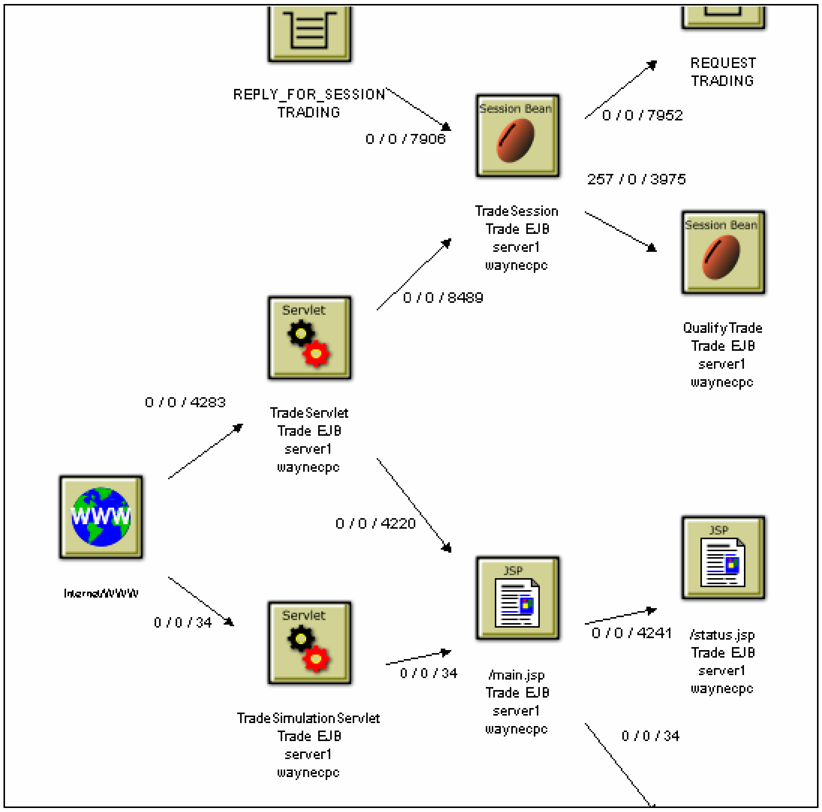
CICS Events

Like WebSphere MQ and JMS events, edges represent message flow for CICS events. For example, in the following diagram, the CKPB CICS transaction reads from the SYSTEM.CICS.BRIDGE.QUEUE queue and the ACCTFIL file. It then writes to the REMOTE.TO.HUGONGWPC queue, which is a remote queue for HUDONG..TEST.QUEUE.



Servlet and EJB Events

For servlet and EJB events, edges represent coltrol flow. In the following example, theWeb page calls the TradeServlet and TradeSimulationServlets. TradeServlet calls the TradeSession EJB, while TradeSimulationServlet calls a Java server page.

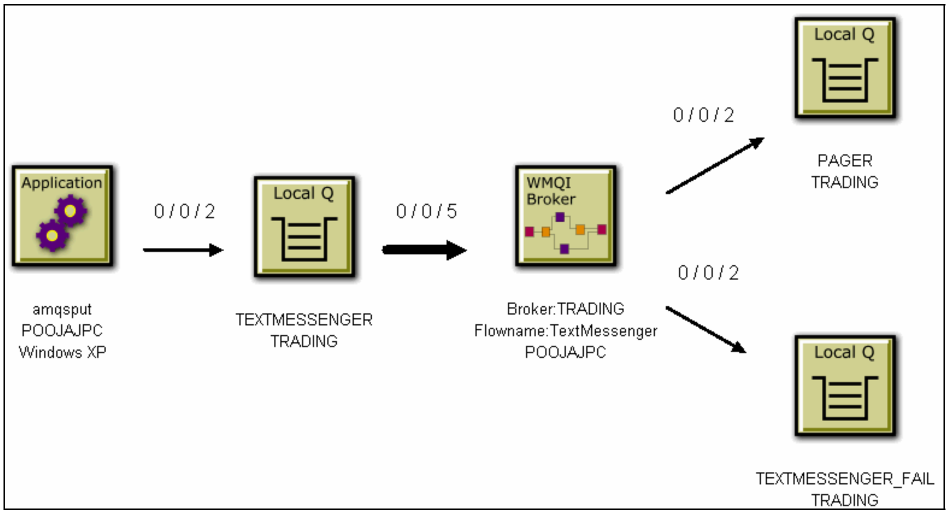


WebSphere Business Integration Message Broker (WMIMB) Events

In the following example, the component label of the broker node shows the WBI broker name and the corresponding message flow name instead of listing the name of the broker process.

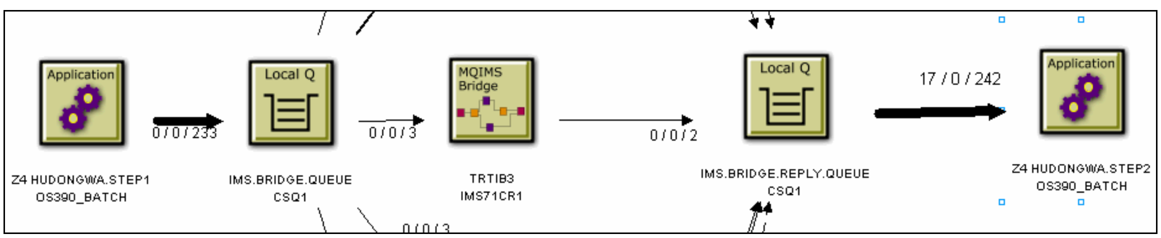
The following table shows the node label meanings for WBI brokers with respect to the various distributed program grouping criteria in the Component Topology Analysis:

Grouping Criteria	Node Label
Individual Thread	Broker and Message Flow name
Individual Process	Broker name
Program Name/Host Combination	Fixed string "WBI Broker"
Program Name	Fixed string "WBI Broker"
Host	N/A



WebSphere MQ-IMS Bridge Events

The following example shows a batch job HUDONGWA with a job step, STEP1 putting messages onto a MQ-IMS bridge input queue. On receiving these messages on the input queue, the WebSphere MQ-IMS bridge invokes an IMS transaction TRTIB3 in the IMS job IMS71CR1. That transaction places reply messages on the IMS.BRIDGE.REPLY.QUEUE, which is read by the job step STEP2 of the job HUDONGWA.



Stand-alone Java Applications

When monitoring JMS events from stand-alone Java applications, the Component Layout view displays the top level class name as the program name. The top level class name is the outmost name in the stack trace. For example, the class name in the following stack trace is taken from the last line in the following example:

```
at java.lang.Thread.dumpStack(Thread.java:993)
at Test.<init>(Test.java:29)
at Test.main(Test.java:62)
```

However, this class doesn’t necessarily contain the `public static void main(String[] args)`. Instead, it might be a class derived from `java.lang.Thread`, which runs in other threads than the main thread.

If the correct program name is not displayed, set the `com.bristol.tvision.programname` system property in the command line when running the stand-alone application. For example, to set the program name to MyProgram, start it as follows:

```
java -Dcom.bristol.tvision.programname=MyProgram ...
```

View Modes

TransactionVision provides two modes for the Component Topology Analysis view: dynamic and static.

Dynamic Mode

In dynamic mode, the Component Topology graph is created by comparing each event in the project to the current query and correlating events that match the query. This mode enables you to structure your query to view very specific information, but it can be time-consuming to perform the analysis and display the graph.

Static Mode

Rather than evaluating all project events against a query, the static graph is created from statistics gathered during event collection. This enables the Analyzer to draw the graph much faster than in dynamic mode. However, it limits the granularity of event data because the static view can only distinguish between the program level, not the program instance level used in the dynamic view. The static view also limits queries to statistics occurring within a specified time range.

During event collection, statistics for the static mode display are stored in a statistics cache. Periodically, this cache is written to the database, making the results available for viewing the Component Topology Analysis. Entries in the `<TVISION_HOME>/config/services/StatisticsCache.properties` file controls the operation of the cache.

- The `timeslice_interval` property specifies the period of time during which all events belonging to the same program and WebSphere MQ object are condensed into a single statistic. Note that your time slice interval is the smallest increment of time in which you can view your data in static mode.
- The `flush_interval` property specifies how often the statistics cache is written to the database.

For more information about these properties, see the *TransactionVision Analyzer Installation and Configuration Guide*.

Open the Component Topology Analysis

To open the Component Topology Analysis, choose the Views > Component Topology Analysis menu item. You may also open the Component Topology Analysis from the Event Analysis and Transaction Analysis views with the following command menu selections:

View	Menu Selection
Event Analysis	Open these events in: Component Topology Analysis
Transaction Analysis	Switch View > Component Topology Analysis View

TransactionVision displays a Static Component Topology Analysis for the current project and query.

Tip! If your browser is unable to display the view or if the view displays, but icons do not appear correctly, your browser security settings may not be set so that TransactionVision can function properly. For instructions on setting minimum security settings for TransactionVision, see “Browser Security Settings on page 12.

Switching Between Modes

By default, the Component Topology graph is created in static mode. Click Switch to Dynamic Mode to display the Dynamic Component Topology graph. To change from dynamic mode to static mode, click Switch to Static Mode on the Dynamic Component Topology graph.

To use a different query in dynamic mode, select the query from the query menu in the upper right corner of the display. Select New Query from the query menu to create a new query, or select Edit Query to modify the current query. For more information about creating or modifying queries, see Chapter 2.

Moving Components

To move any component in the graph, select the component in the view area and drag it to the desired location. TransactionVision automatically adjusts all edges to and from the component.

Opening Multiple Views

You may open new browser windows open multiple Component Topology Analysis windows at once and use different queries to display different information. The following table shows the browser commands to open a new window in Internet Explorer and Netscape:

Browser	Menu Selection
Internet Explorer	File > New > Window

Browser	Menu Selection
Netscape	File > New Navigator Window

If you open a Component Layout Analysis view in a new browser window, any changes you make in one window are reflected in the other window when it is refreshed. If you start a new browser instance and log into TransactionVision in the new browser, however, a new TransactionVision session is started. If you use multiple sessions, changes you make in one session affect that session only.

Show/Hide the Status Bar

Use the Show/Hide arrow buttons to show, hide, or resize the status message pane.

To hide the status bar, click the down arrow button. To show a hidden status bar, click the up arrow button. To resize the status bar, point the cursor to either arrow button so that the cursor changes to a double arrow and drag.

Closing the View

The Component Topology Analysis view closes when you select a different view or page from the TransactionVision menus.

Refresh the View

To refresh the Component Topology Analysis view with events collected since it was opened or last refreshed, click the Run Query view command.

Change Static View Time Period

The static view is based on one of the following time queries:

- All statistics (default)
- Statistics from a predefined time period
- Statistics from a custom time period

View All Statistics

To use all events, check the Show all statistics checkbox and click Run Query.

View Statistics from a Predefined Time Period

To use events from a predefined time period, perform the following steps:

1. Clear the Show all statistics checkbox, if it is checked.

2. Select one of the following predefined time periods in the Set Time to field:
   - Today
   - Yesterday
   - Past Week
   - This Month
   - Last 48 hours of data

   The date and time fields are automatically populated with the corresponding information. These fields are also disabled.
3. Click Run Query.

View Statistics for a Custom Time Period

To use events from a custom time period, perform the following steps:

1. Clear the Show all statistics checkbox, if it is checked.
2. Select Custom time in the Set Time to field.
3. Enter the desired start and end dates and times in the Display Statics Data from and to fields.

   Note that your time slice interval set in `StatisticsCache.properties` is the smallest increment of time in which you can view your data in static mode. For example, if your time slice is set to one day, you will not be able to view these statistics on an hourly basis. If you set a specify a custom time period smaller than the time slice, this view shows all events in the time slice associated with the custom time period. For example, if your time slice is set to one day and you specify a custom time period of one hour, the resulting view will show all events for the entire day. If your custom time period spans multiple time slices, the resulting view shows all events from the time slices spanned by the custom time period.
4. Click Run Query.

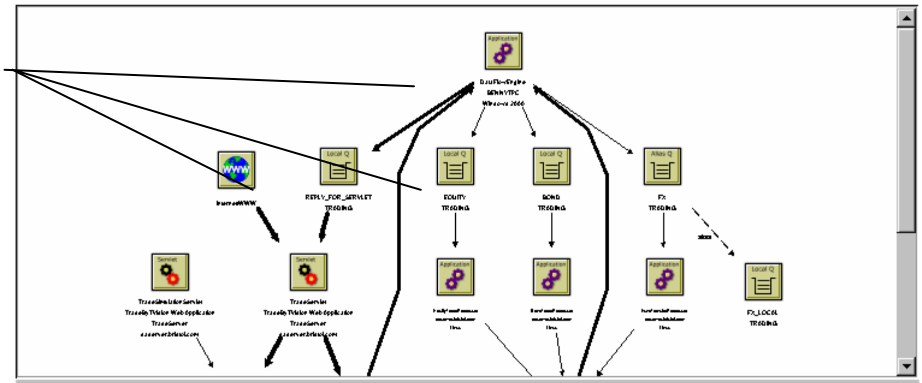
Modify Edges

You may customize the width and color coding of edge widths, or set other edge properties.

Edge Widths

Edge width properties may reflect information about the interaction between components. By default, edge widths are fixed, but you can modify them so that edge thickness represents either the total number of message calls (MQGET and MQPUT/MQPUT1 calls for WebSphere MQ events or send and receive calls for JMS events), the number of successful message calls, or the message data byte count. Setting edge widths enables you to see at a glance logic and performance bottlenecks in your system, as in the following example:

Edge width indicates the number of successful message calls.



To set edge width properties, choose one of the following menu items from the Edge & Node > Edge Widths menu:

Menu Item	Description
Message Call Count	Edge width indicates the total number of message calls (MQGET, MQPUT, and MQPUT1 calls for WebSphere MQ events or send and receive calls for JMS events) between components.
Successful Message Call Count	Edge width indicates the number of successful message calls between components.
Message Data Byte Count	Edge width indicates the number of message data bytes transferred between components.
Fixed width	All edge widths are a fixed width (default).

Edge Color Coding

You may color code edges to indicate warning and error messages, enabling you to see them easily. To set edge color coding, choose one of the following from the Edge & Node > Edge Color Coding menu:

Menu Item	Description
Errors and Warnings	Edges representing error and warning events are color coded are shown in red.
None	Edges representing error and warning events are not color coded (default).

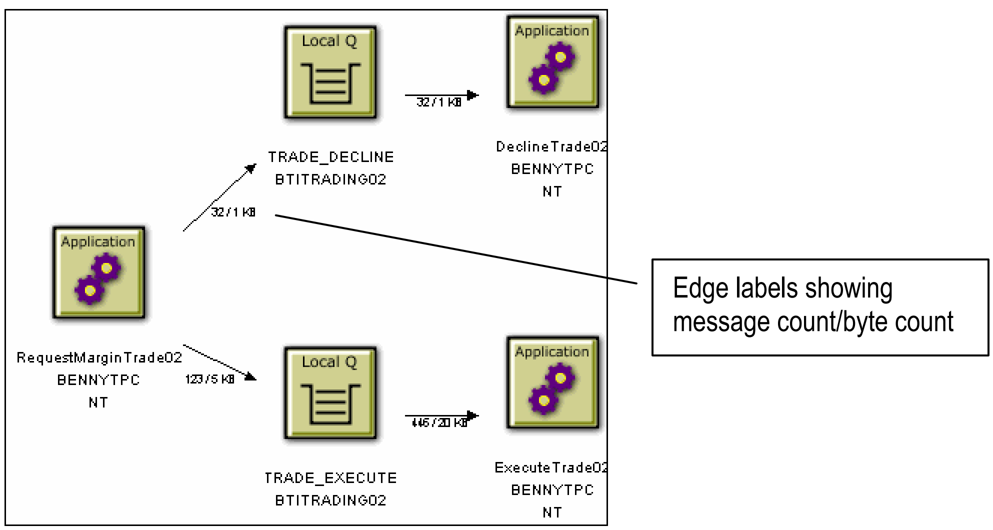
Modify Edge Labels

You may configure edge labels to provide more information about the events they represent. Edge labels may include any (or none) of the following information:

- Message and byte count
- Error, warning, and success count
- Latency times
- Edge Label
- EJB methods

Message Count/Byte Count

Choose the Edge & Node > Message Count/Byte Count menu item to turn on/off edge labels indicating the total number of successful message calls between the resources, along with the number of bytes transferred. Note that MQIMS_BRIDGE_ENTRY and MQIMS_BRIDGE_EXIT calls are not included in the message count/byte count.



To specify whether unit of measure for the byte count, choose one of the following from the Edge & Node > Show Byte Counts menu:

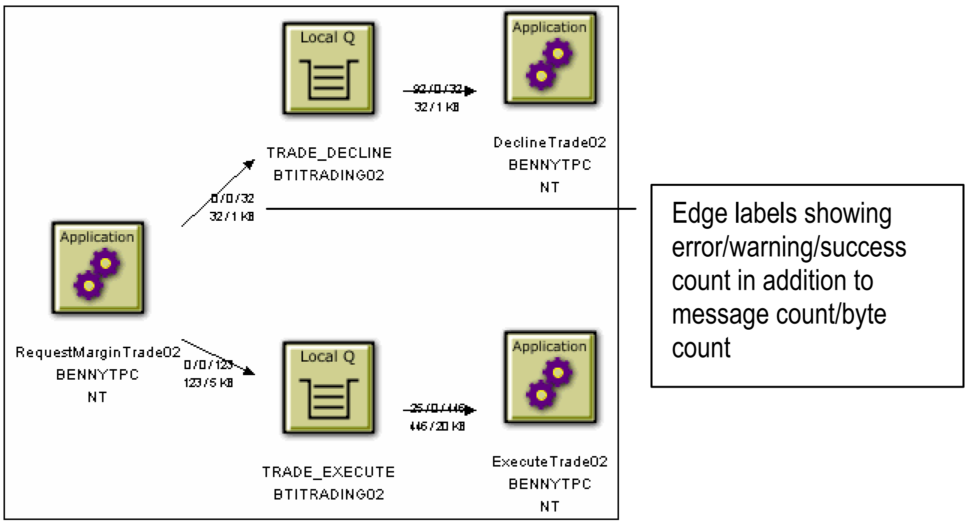
- In MegaBytes
- In KiloBytes
- In Bytes

This menu item is only enabled if the message count/byte count is displayed.

Error, Warning, and Success Count

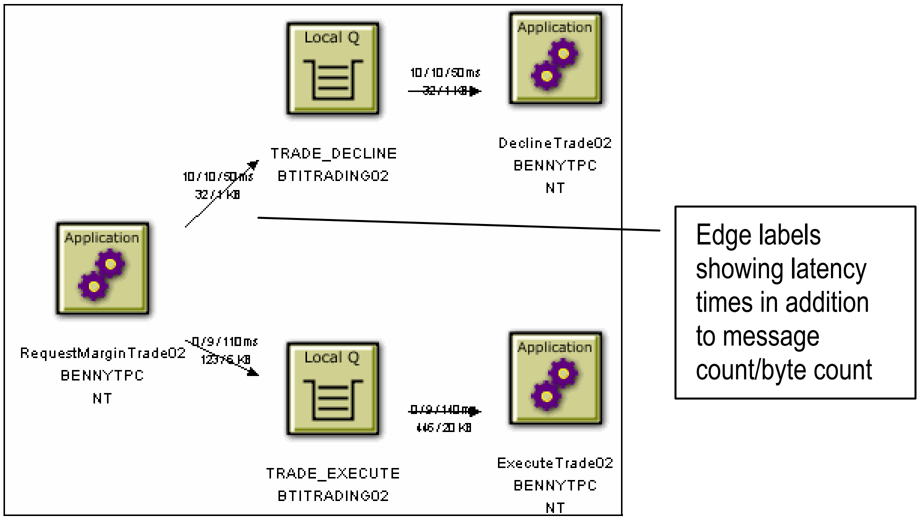
Choose the Edge & Node > Error/Warning/Success Count menu item to turn on/off edge labels indicating the number of error events, warning events, and successful events between components. Events include the following:

- All WebSphere MQ MQGET, MQPUT, MQPUT1, MQINQ, MQSET, MQOPEN, MQIMS_BRIDGE_ENTRY, and MQIMS_BRIDGE_EXIT calls.
- All JMS receive, receiveNoWait, OnMessage, OnException, createReceiver, createSubscriber, createBrowser, publish, send, createSender, createPublisher, and nextElement calls.
- All servlet HTTP_PUT, HTTP_GET, and HTTP_POST requests.



Latency Times

Choose the Edge & Node > Min/Avg/Max Latency Times menu item to turn on/off edge labels showing minimum, average, and maximum transaction times for each connection. Use this information to identify potential performance bottlenecks. Transaction times are defined as the time from when a message is put onto the queue and when it was pulled off that queue. For transactions involving a proxy object, TransactionVision shows a latency of N/A.

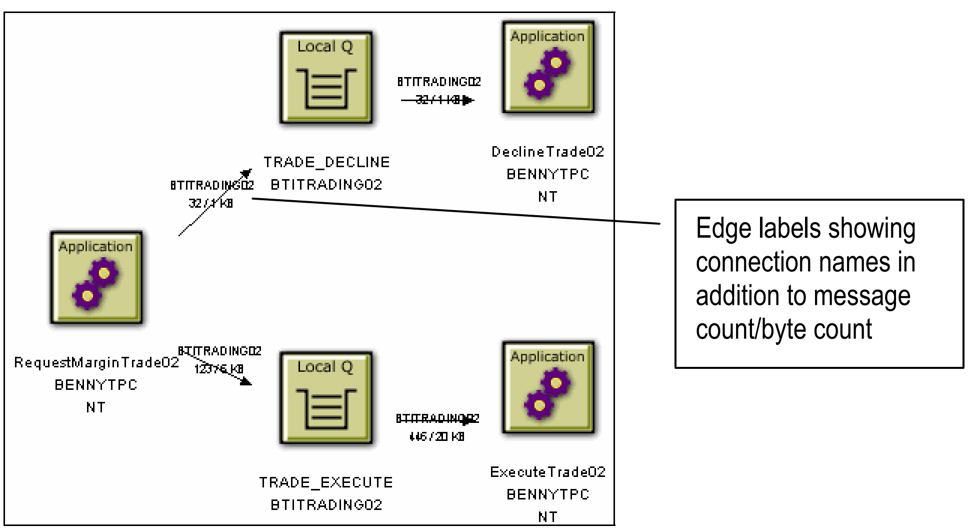


Important! For EJB and servlet events, the time on the edge pointing to a bean represents the time spent in that bean's or servlet's methods; not a latency time.

By default, latency times are calculated using a resolution of 1/100 seconds. To modify the latency resolution, change the value of the `latency_resolution` attribute in the `Analyzer.properties` file. For more information about this file, see the *TransactionVision Analyzer Installation and Configuration Guide*.

Edge Label

Choose the Edge & Node > Edge Label menu item to turn on/off edge labels showing the connection associated with the edge.



EJB Methods

Choose the Edge & Node > EJB Methods > Show Standard EJB Methods menu item to turn on/off the inclusion of standard EJB methods in the edge labels showing the error/warning/success count.

Choose the Edge & Node > EJB Methods > Show Access Methods menu item to turn on/off the inclusion of access methods in the edge labels showing the error/warning/success count.

Choose the Edge & Node > EJB Methods > Show Bean Relationships menu item to turn on/off edges showing EJB relationships.

Modify Node Labels

If an alias list is associated with the current project, you may choose to display user-defined node name instead of or in addition to system model object names.

Choose the Edge & Node > Node Label > Use Alias Name menu item to display only the user-defined alias, if defined, for all objects.

Choose the Edge & Node > Node Label > Use Real Name menu item to display only the system model object name for all objects.

Choose the Edge & Node > Node Label > Use Both Names menu item to display the user-defined alias, if defined, along with the system model object name for all objects.

See the *TransactionVision Administration Guide* for instructions on defining alias names and assigning alias lists to projects.

Modify Component Groupings

Changing component groupings changes the granularity of the information displayed in the view, depending on the level of information you need. For example, viewing each process thread as a separate component provides very fine granularity, but can make it difficult to spot an information flow problem between programs.

Note that proxy objects do not support grouping by thread, process, transaction name, transaction ID, TCB, and PCB. Selecting these grouping criteria have no affect on proxy objects. For more information about proxy objects and the proxy Sensor, see the *TransactionVision Sensor Installation and Configuration Guide*.

Queues and Queue Managers

Choose one of the following from the Grouping > Queue Grouping Criteria menu:

- MQSeries Object/Queue Manager Combination to show each object/queue manager combination as a separate component.
- Queue Manager to show all objects on a single queue manager as a single component.

You may also select Show Model Queue Resolution to turn model queue resolution on/off. A model queue is a template of a queue definition that is used when creating a dynamic queue. When you call MQOPEN on a model queue, the queue manager creates a temporary or permanent local dynamic queue using the attributes of the model queue. Select this menu item to show model queues in the Component Topology Analysis.

The edges between a model queue node and its model queue definition, remote queue definition, alias queue definition, or cluster queue node representation are displayed as dashed lines because they represent a relationship rather than a message flow.

Distributed Platforms

For UNIX and Windows NT hosts, choose one of the following from the Grouping > Distributed Program Grouping Criteria menu:

- Individual Thread to show each thread as a separate component. This option does **not** apply to servlets or EJBs.
- Individual Process to show all threads of a single process as a single component.This option does **not** apply to servlets or EJBs.
- Program Name to show each program name on all hosts as a single component.
- Host to show all programs on a single host as a single component.
- Program Name/Host Combination to show the default component grouping.

OS/390 CICS

For OS/390 CICS hosts, choose one of the following from the Grouping > OS/390 CICS Program Grouping Criteria menu:

- Individual Transaction (Task) to show each transaction ID as a separate component.
- Transaction ID/Region/Host Combination to show the default component grouping.

- Transaction ID/Host Combination to show the transaction and host combination for all regions as a single component.
- Region/Host Combination to show all transaction IDs for a single region on a host as a single component.
- Host to show all transaction IDs for all regions on a single host as a single component.

OS/390 Batch

For OS/390 Batch hosts, choose one of the following from the Grouping > OS/390 Batch Program Grouping Criteria menu:

- Individual TCB to show each TCB as a separate component.
- Individual Job Step to show each job step as a separate component.
- Individual Job to show each job as a separate component.
- Host to show all TCBs on a single host as a single component.
- Host/Job Name/Step Name Combination to show the job name, job step, and host combination as a single component.
- Host/Job Name Combination to show all jobs on a host as a single component.

IMS

For OS/390 IMS hosts, choose one of the following from the Grouping > OS/390 IMS Program Grouping Criteria menu:

- Individual PSB Name to show each PSB as a separate component.
- IMS Transaction Name to each show transaction as a separate component.
- IMS Region Identifier to show each region as a separate component.
- IMS Identifier to show each IMS identifier as a separate component.
- Job Name to show each job name as a separate component.
- IMS Type to show each IMS type as a separate component.

IMS Bridge

Choose one of the following from the Grouping > OS/390 IMS Bridge Grouping Criteria menu:

- Transaction Name to show each transaction name as a separate component.
- Job Name to show each job name as a separate component.

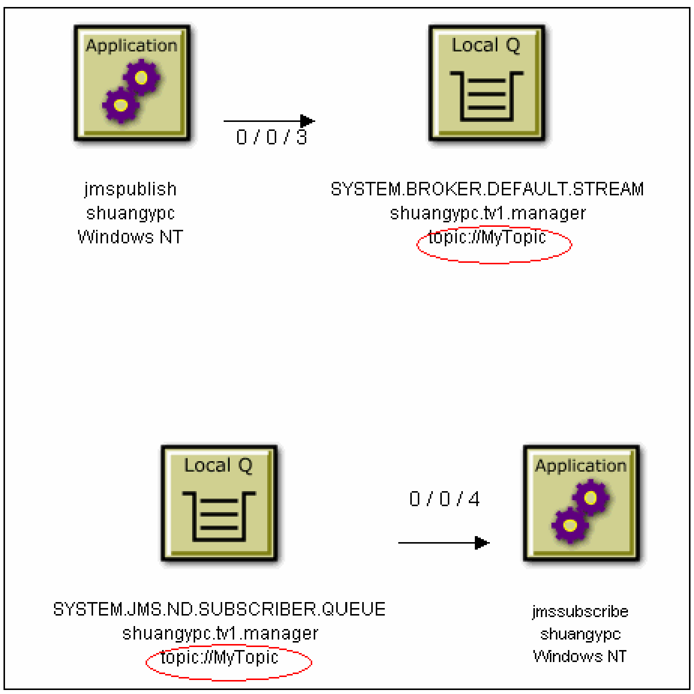
Servlet/JSP/EJB

For Servlet/JMS/EJB events, choose one of the following from the Grouping > Servlet/JSP Grouping Criteria menu:

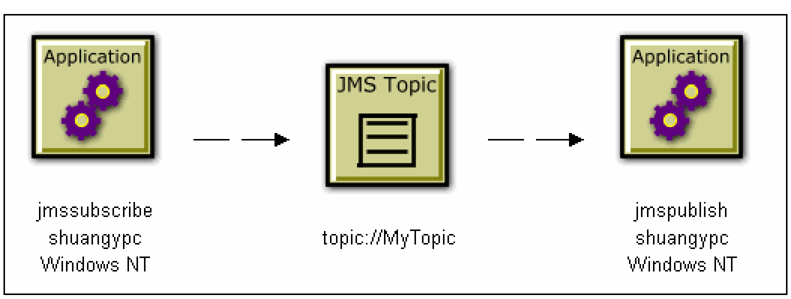
- Servlet/JSP/EJB to show servlet, JSP, and EJB icons.
- Web Application to show web application icons.
- Application Server to show WebSphere Application Server icons.
- Host to show all programs on a single host as a single component.

Show Publish-Subscribe Topic

By default, TransactionVision is unable to correlate publish-subscribe events unless you monitor the publish-subscribe broker. Therefore, TransactionVision identifies the following events as two separate transactions:



However, if you have enabled publish-subscribe topic correlation, TransactionVision is able to correlate these publish-subscribe topics into a single transaction as follows:



For instructions on enabling TransactionVision to correlate publish-subscribe topics, see the *TransactionVision Sensor Installation and Configuration Guide*. If correlation is enabled, choose Grouping > Show Publish-Subscribe Topic to show the correlation.

Group Method Calls On The Same EJB

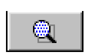
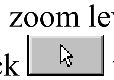
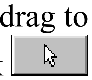
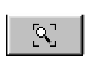
To group similar method calls on the same EJB as a single edge, choose Grouping > Group Method Calls On the Same EJB. Otherwise, an edge is drawn on the graph to represent each method call between EJB beans.

Change Default Settings

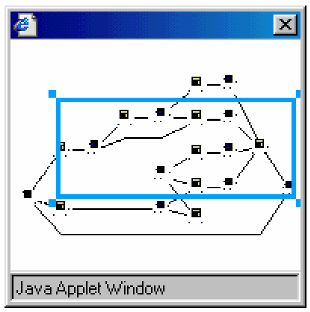
As you use the Component Layout View, you may change settings such as program and queue grouping criteria, edge labels and appearance, and graph layout. To make the current settings the default for the your user ID, click Save Settings.

Zoom In or Out

By default, TransactionVision sizes the Component Topology Analysis graph to fit in the view window. There are several ways to adjust the zoom level:

- Choose the Zoom > Zoom > Zoom In menu item to increase the zoom level.
- Choose the Zoom > Zoom > Zoom Out menu item to decrease the zoom level.
- Click  or choose Zoom > Selective Zoom to change to selective zoom mode. The cursor changes to the selective zoom cursor. Click on the view area and then drag the cursor to select an area to zoom. TransactionVision adjusts the zoom level so that the selected area fills the view area. Click  to return to selection mode.
- Click  or choose Zoom > Interactive Zoom to change to interactive zoom mode. The cursor changes to the interactive zoom cursor. Click in the view area and drag the cursor to the top or left to decrease the zoom level or drag to the bottom or right to increase the zoom level. Click  to return to selection mode.
- Click  or choose Zoom > Zoom > Fit Window to adjust the zoom level so that the entire graph appears in the view window.
- Enter a custom zoom percentage or choose a predefined zoom percentage from the zoom percentage list.

- Choose the Zoom > Show Overview Window menu item to open a small secondary window that contains a read-only view of the view window. The entire graph is shown within this window, and a highlighted selection box surrounds the region that is displayed in the active window. The highlighted rectangle allows you to change the view by changing the focal point and zoom level of the active graph window. It is provided as a mechanism to help you see where you are in a graph.



  - To resize the selection box, click one of the corner handles and drag your cursor to the desired size. Note that the selection box maintains a constant aspect ratio to match the size of the active view window.
  - To move the selection box, click inside the selection box and drag your cursor to the desired location.
  - To create a new selection box, click outside of the current selection box and drag your cursor to the desired size.

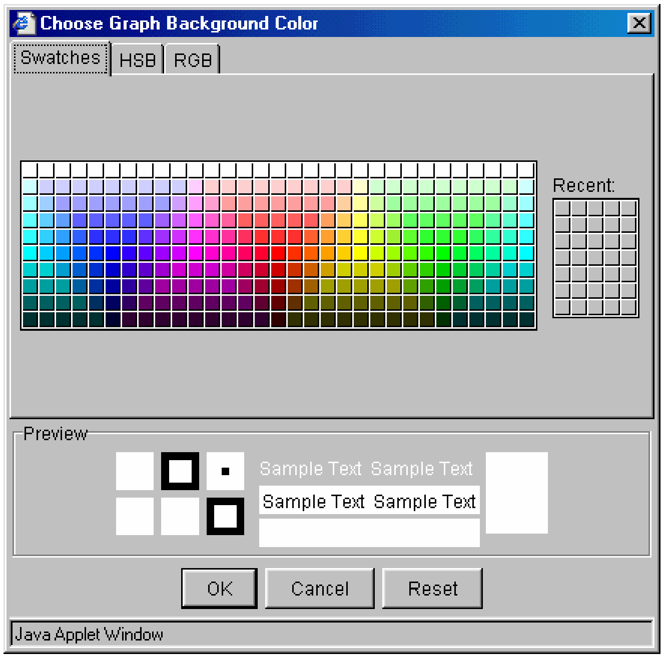
Important! Note that any time the Component Topology Analysis view is refreshed, the zoom level reverts to Fit Window.

Set Background Color

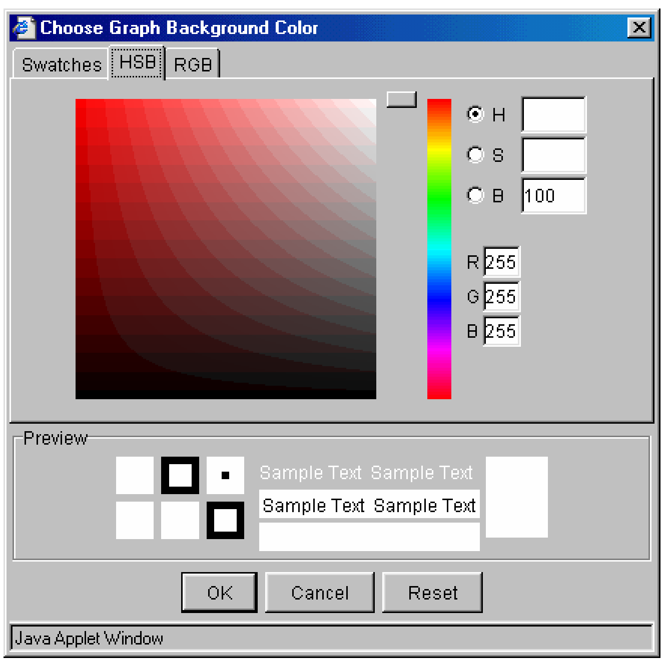
One way to customize the Component Topology Analysis is to specify a background color. To specify a background color, choose the Layout > Background Color menu item. The Choose Graph Background Color dialog appears.

There are three ways to select a background color:

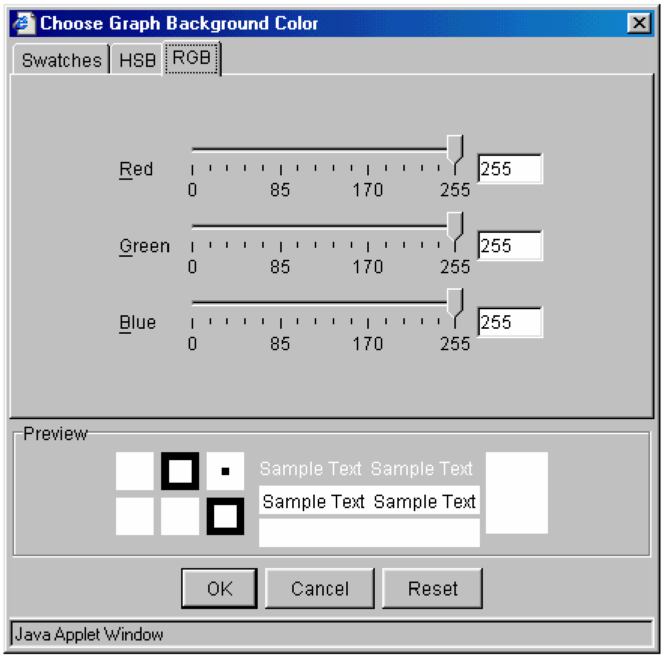
- On the Swatches page, click the desired color. The preview area shows what your choice will look like.



- On the HSB page, click the desired color in the color area. Use the sliding bar to adjust the hue, saturation, and brightness levels individually.

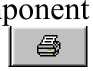


- On the RGB page, enter specific values for red, green, and blue, or click the desired value on the scale.



Click OK to make your changes active, Cancel to close the dialog without activating your changes, or Reset to reset the background color to the default.

Print Graphs

To print the Component Topology Analysis graph using the current print setup, choose the  > Print Graph... menu item. TransactionVision invokes the standard printing mechanism for your platform.

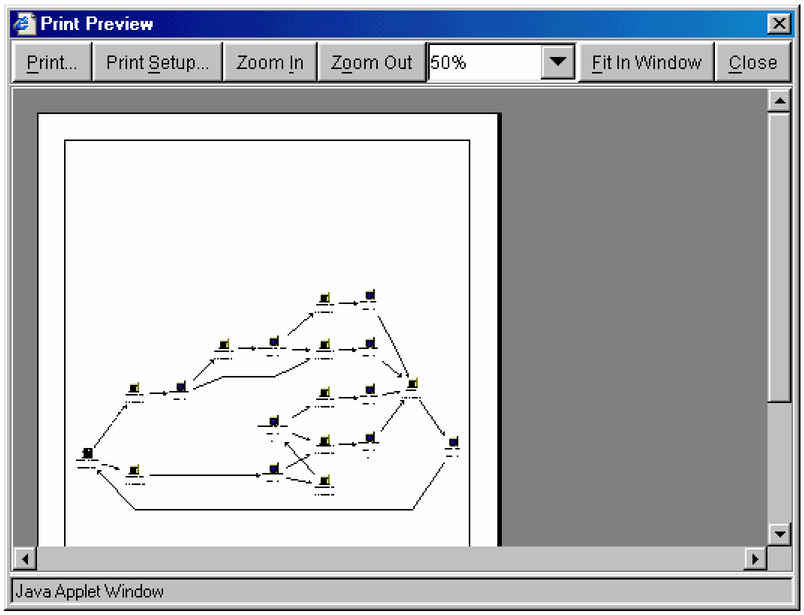
Important! Setting the page orientation to landscape on the Windows Print dialog has no effect. Instead, use the TransactionVision Page Setup dialog to set page orientation if you wish to print in landscape mode. For more information about this dialog, see page 131.

When you print a graph, a Java warning appears asking permission to print. This message is generated by the Java security feature to prevent unauthorized use of printers. The first time you print in a session, it appears multiple times; it appears once after the first time you print. To disable this message, add the following lines in the `.java.policy` file in your home directory on the client computer:

```
grant {
  permission java.lang.RuntimePermission “queuePrintJob”;
};
```

Print Preview

To display a print preview, choose the  > Print Preview... menu item.The Print Preview window opens. It is a secondary window that displays a preview of the printed graph. The Print Preview window allows you to preview graph images before you print them so you can see in advance how changes in print setup options affect your printed images.



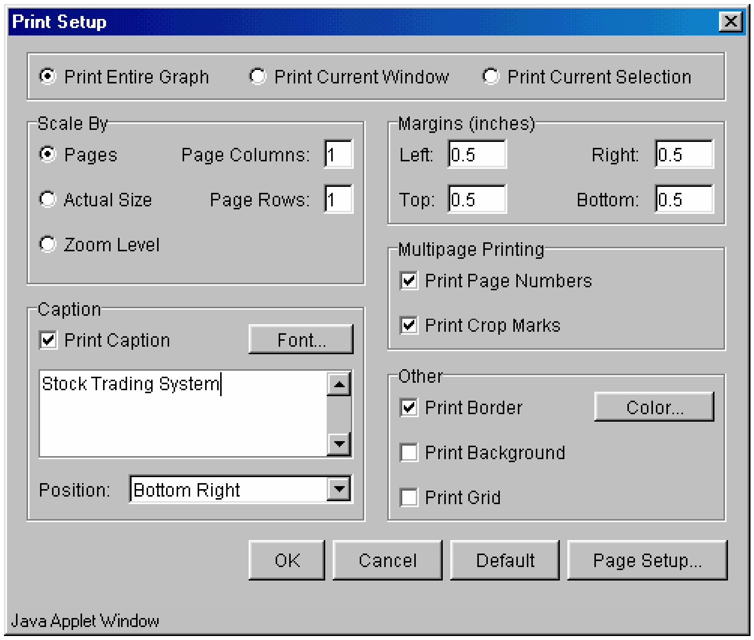
In the print preview window, you can zoom in on a preview image by moving the mouse over it and clicking.

You may also use the following buttons to control the appearance of the print preview:

Button	Description
Print...	Invokes the standard printing mechanism for your platform.
Print Setup...	Opens the Print Setup dialog for setting printing options.
Zoom In	Increases the zoom level for the preview image.
Zoom Out	Decreases the zoom level for the preview image.
Zoom Percentage	Shows the current zoom percentage. You may select a pre-defined zoom percentage from the list or enter a custom zoom percentage.
Fit in Window	Scales the preview image to display the complete image in the preview window.
Close	Closes the Print Preview window.

Print Setup

To customize the look of your printed graph, choose the > Print Setup... menu item.The Print Setup dialog opens.



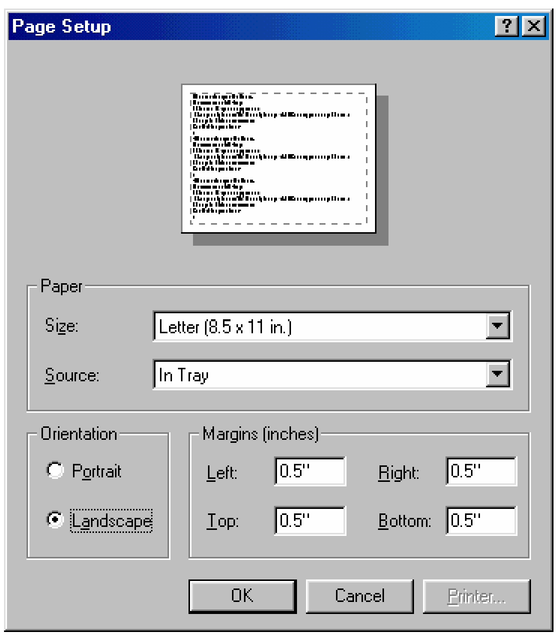
This dialog offers options for tailoring the look of your printed Component Topology Analysis or Transaction Analysis view. Set the following options, then click OK to apply your changes, Cancel to close the dialog without applying your changes, Default to revert to default values, or Page Setup... to display the Page Setup dialog for selecting paper size, orientation, and margins.

Option	Description
Print	Select the part of the graph you want to print. You may print the entire graph, only the part of the graph currently visible in the view window, or only the selected graph components.
Scale By	Set options related to page size. Select Pages and specify the number of page rows and columns to scale the image to fit the specified page size. The image is not scaled if Actual Size is selected. Choose Zoom Level to scale the image to the zoom level specified in the view.
Print Caption	Select to print the page caption in the Caption field.
Caption	Enter text for the page caption. You must select Print Caption to enable caption printing. To select the font for the caption, click Font... to display the Choose Font dialog.
Position	Select the position on the page for the caption to be printed.

Option	Description
Margins	Set the distances in inches between the edge of the paper and the edge of the graph. Set margins for the top, bottom, left, and right edges.
Print Page Numbers	Select to print page numbers on each page when printing multiple pages. Page numbers are printed just outside the crop marks.
Print Crop Marks	Select to print crop marks when printing multiple pages. Crop marks are the lines drawn on the margins of pages that connect to other pages.
Print Border	Select to print a border around the graph. Click Color... to open the Choose Color dialog for setting the border color.
Print Background	Select to print the background color. To set the background color, choose the Layout > Background Color... menu item on the Component Topology or Transaction Analysis view.
Print Grid	Select to print a background grid.

Page Setup

Click Page Setup... on the Print Setup dialog to open the Page Setup dialog.

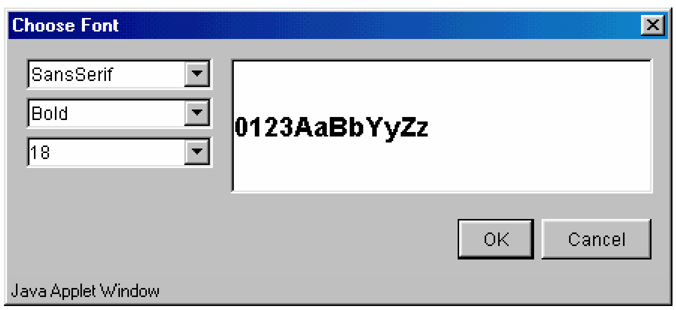


Use this screen to set up page options for printing Component Topology or Transaction Analysis graphs. Set the following options, then click OK to activate your changes or Cancel to close the dialog without activating your changes.

Option	Description
Paper Size:	Select a page style from the list.
Paper Source:	Select a source from the list.
Margins:	Set the distance between the text and the edge of the printed page (in inches). Set margins for the top, bottom, left, and right edges.
Orientation:	Select whether to use Portrait or Landscape for setting up the page. Portrait is default (the height of the page is greater than the width). For Landscape, the width of the page is greater than the height.
Sample:	Displays a preview of the selected settings.

Caption Font

Click Font... on the Print Setup dialog to open the Choose Font dialog.



Use this dialog to select the font to use for the caption when printing a Component Topology or Transaction Analysis graph.

Select a font family, text attributes, and font size from the drop-down lists. The sample window shows how text on the graphic will look.

Click OK to make your changes active or Cancel to close the dialog without activating your changes.

Border Color

Click Color... on the Print Setup dialog to open the Choose Color dialog. Use this dialog to set the border color for printed Component Topology Analysis and Transaction Analysis graphs.

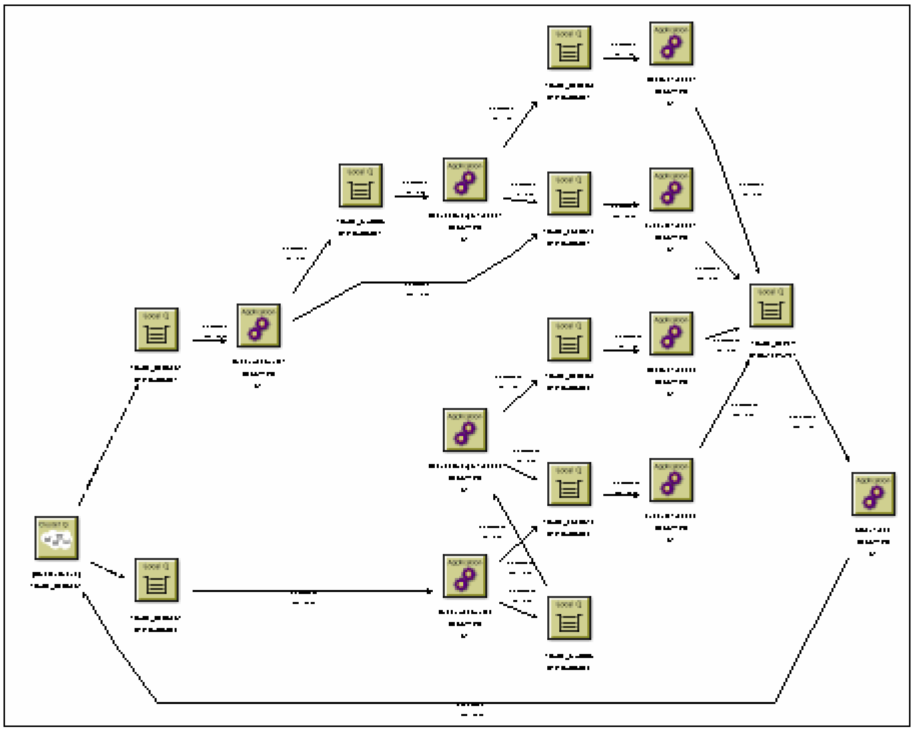
Set the border color in the same way you set the background color for the graph. For more information, see “Set Background Color" on page 126.

Modify Layouts and Properties

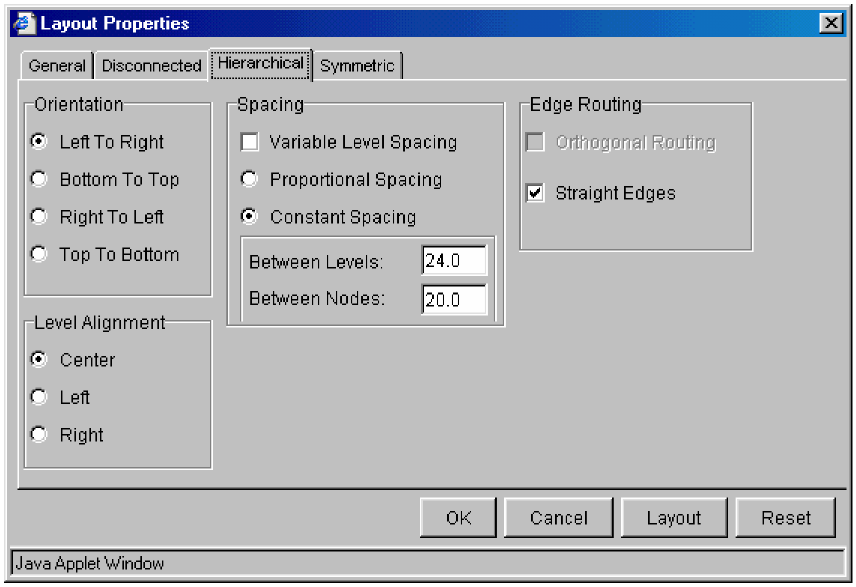
By default, the Component Topology Analysis is arranged in a hierarchical layout organized according to the flow of messages through your system. While this layout is typically the best choice for e-business systems and therefore recommended, you may choose to display the Component Topology Analysis in a symmetric layout. Note that using a different layout may make it more difficult to follow the flow of messages throughout your system.

Hierarchical Layout

To select the hierarchical layout (if it is not the current layout), choose the Layout > Hierarchical Style menu item. Components are arranged in a hierarchical organization based on the flow of messages through your system, as in the following example.



To modify layout properties, choose the Layout > Layout Properties menu item. Make desired changes on the Hierarchical page, then click OK.



Orientation

By default, components are arranged from left to right, but you can change the orientation from top to bottom, bottom to top, or right to left.

Left To Right	Positions components so that the roots of the graph are near the left of the page, and the leaves of the graph are near the right. The levels are vertical.
Top To Bottom	Positions components so that the roots of the graph are near the top of the page, and the leaves of the graph are near the bottom. The levels are horizontal.
Right To Left	Positions components so that the roots of the graph are near the right of the page, and the leaves of the graph are near the left. The levels are vertical.
Bottom To Top	Positions components so that the roots of the graph are near the bottom of the page, and the leaves of the graph are near the top. The levels are horizontal.

Level Alignment

Level alignment refers to the alignment of components on the same level. It is similar to text alignment within a paragraph. If Orientation is horizontal (Top To Bottom or Bottom To Top), you can set the Level Alignment as either Top, Center or Bottom. If Orientation is vertical (Left To Right or Right To Left), you can set the Level Alignment as either Left, Center or Right.

Spacing

The concept of frames is used to control the margins around components. These options allow you to set the spacing between levels of components and between component within the same level in a graph by adjusting the frames that surround them.

Variable Level Spacing	When enabled, variable level spacing considers the density of edges between adjacent levels when adjusting the level spac ing. For example, if too many edges cross at the same point between levels, then the level spacing is automatically increased. Consequently, not all levels would have the same spacing. Variable level spacing is usually used in combina tion with orthogonal edge routing.
Proportional Spac ing	Sets the spacing around each node to a fractional value (between 0 and 1) based on the node size.
Constant Spacing	Allows the spacing around each node to be a constant value, independent of the size of the node.
Between Levels	This field allows you to set the spacing between each level in the graph. In left-to-right and right-to-left views, levels run vertically. In top-to-bottom and bottom-to-top views, levels run horizontally.
Between Nodes	This field allows you to set the spacing between adjacent components within a level.

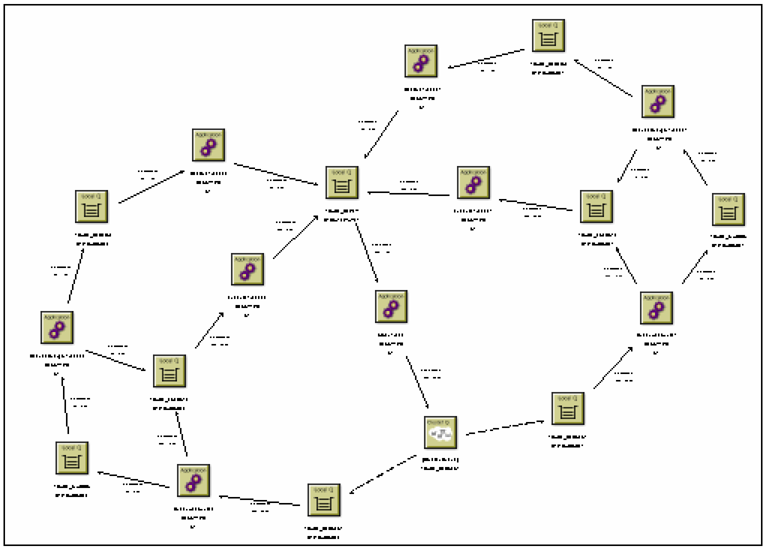
Edge Routing

These options allow you to tailor edge routing.

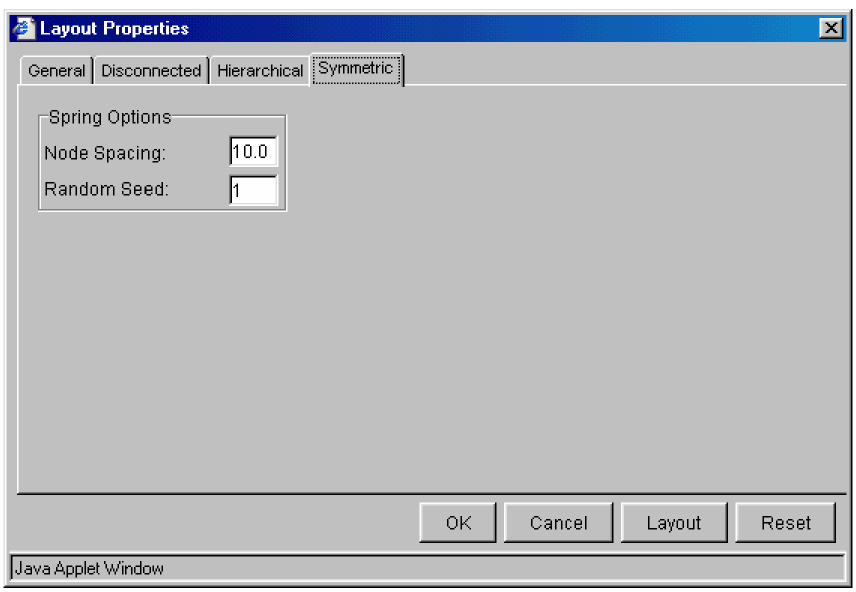
Option	Description
Orthogonal Routing	When enabled, each edge is drawn as a sequence of line segments that run parallel to the x- and y-axes. Edges have bend points of 90 degrees only. The orthogonal routing style works best in combination with variable level spacing and ports.
Straight Edges	When enabled, this setting merges the incoming edges of a node into a single fork-like structure. Clearer drawings result provided the graph is not too dense. This feature is only available when orthogonal routing is enabled.

Symmetric Layout

To select the symmetric layout (if it is not the current layout), choose the Layout > Symmetric Style from the shortcut menu. The symmetric layout distributes components evenly with very few edge crossings, as in the following example.



To modify symmetric layout properties, choose the Layout > Layout Properties menu item. Make desired changes on the Symmetric page, then click OK.



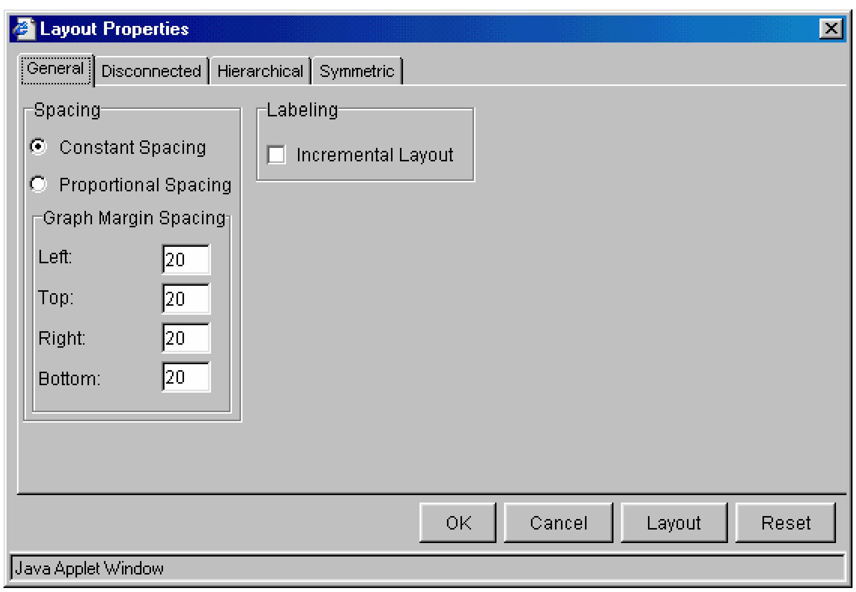
Spring Options

These controls allows you to set the options relating to the spring model of the graph.

Node Spacing	This value is used in determining the white space between components. It specifies the length of each edge as a function of the width and height of the components to which the edge connects. A node spacing of zero specifies that edge lengths be just long enough to keep components from touching (i.e., no white space between components). The larger the node spacing value, the greater the amount of white space between components.
Random Seed	The initial layout of the graph is keyed to a random number sequence. The value set in this field is used to generate the random number sequence to set initial coordinates for each components. Each different non-negative value can produce a different layout. This field is active when Incremental Layout is not checked.

General Properties

The General page of the Properties dialog enables you to specify settings that are independent of the layout style. To modify general layout properties, choose the Layout > Layout Properties menu item. Make desired changes on the General page, then click OK.



Spacing Model

The concept of frames is used to control the margins around physical objects. These options control which model is used in determining the amount of white space around the perimeter of objects in the graph. Two spacing models are available, the Proportional Spacing model and the Constant Spacing model. Additional layout-specific spacing options are available, some of which are affected by the spacing model selected here.

Proportional Spacing	When enabled, proportional spacing is used to determine the amount of white space around the perimeter of an object based on the area of the object. For example, if a component's width and height increase, the white space between the component and an adjacent component also increases. The margins of the graph can be controlled through the Graph Margin Spacing fields below. You can set independent proportional spacings for the left, right, bottom, and top sides of the graph. Note that additional spacing controls are available on the other dialog pages.
Constant Spacing	When enabled, a constant space is allocated between like objects in a graph. For example, in hierarchical layout a fixed distance is set between each pair of adjacent components within a level, regardless of the width and height of the nodes. The margins of the graph can be controlled through the Graph Margin Spacing fields below. You can set independent constant spacing values for the left, right, bottom, and top sides of the graph. Note that additional spacing controls are available on the other dialog pages.

Graph Margin Spacing

This group of fields affects the margins for graphs. Separate frame values are stored for the Constant Spacing and Proportional Spacing models, but only one spacing model is in effect at any given time.

Labeling

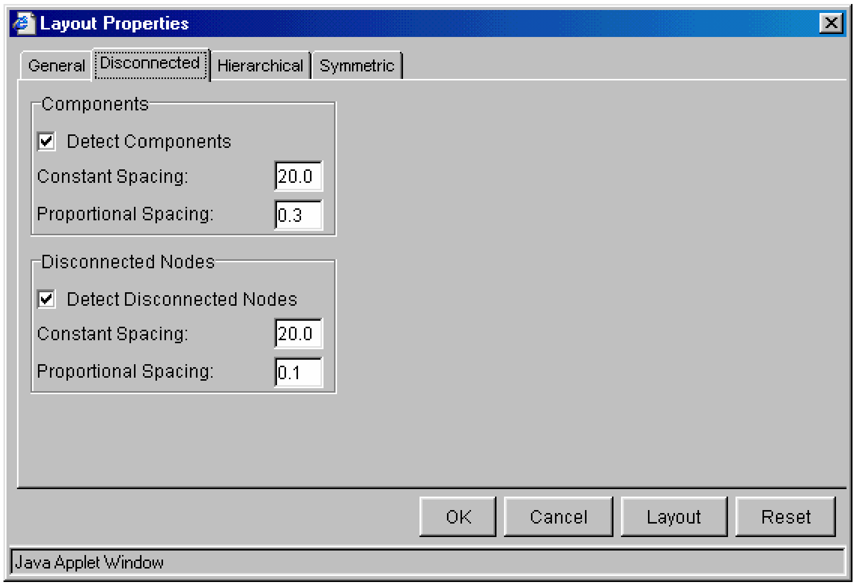
This option allows you to tailor the automatic positioning of edge labels.

Select Incremental Layout to maintain the relative positioning of labels from a graph's previous layout whenever the graph is modified. Incremental Layout results in graphs that maintain the same overall form when changes are made.

Disconnected Properties

The generic term "disconnected objects" is used to refer to both disconnected components and connected subgraphs, unless otherwise noted. A disconnected component is one which has no edges connected to it. A connected subgraph is a graph in which there is an undirected path between each pair of components. In other words, each component can be reached from all other components by following the edges that connect them, regardless of edge direction. If there is no such path between any two components, then either the components belong to different connected components or one of the components is a disconnected node.

To modify disconnected layout properties, choose the Layout > Layout Properties menu item. Make desired changes on the Disconnected page, then click OK. These options only have effect if more than one disconnected object exists within the graph.



These settings allow you to edit the proportional and constant spacing between disconnected objects of a graph.

Constant Spacing	Specify the minimum amount of white space between adja cent rows and columns.
Proportional Spac ing	Specify a factional value. The margin around disconnected objects is calculated as the product of this fractional value and half the height of the node.

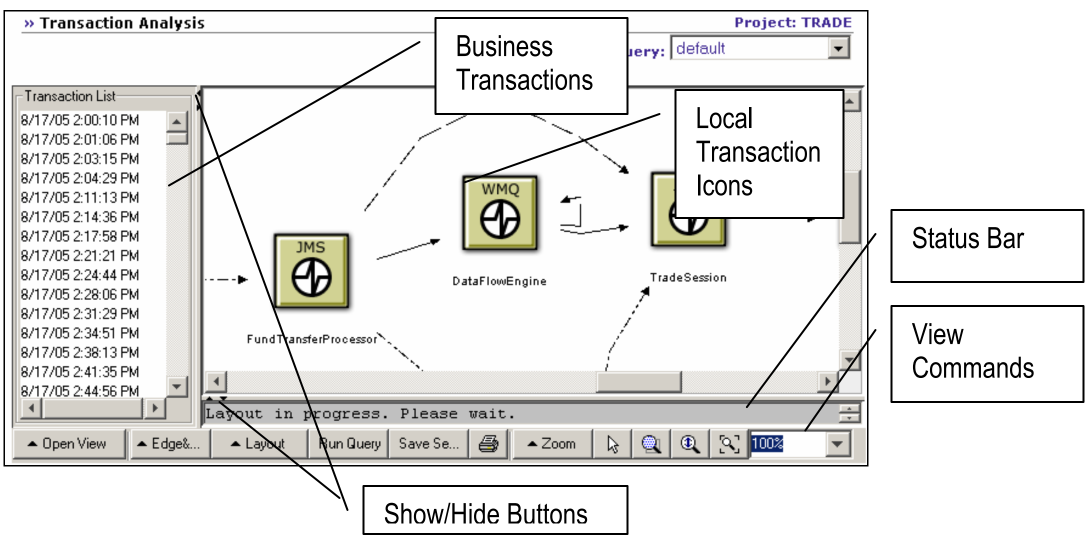
Chapter 4

Using the Transaction Analysis View

The Transaction Analysis correlates events across multiple programs, hosts, and operating systems into local transactions, then correlates local transactions in to business transactions.

Transaction Analysis View Components

The following diagram shows an example Transaction Analysis view:



Business Transactions

The pane on the left lists all business transactions that match the current query for the project. By default, the name of a business transaction is the transaction start time. However, you may write a custom Java bean to redefine transaction names into something more meaningful. For information about writing custom Java beans, see the *TransactionVision Programmer's Guide*.

TransactionVision tracks business transactions by relating local transactions in different processes or threads (for example, relating an MQPUT in one process to the MQGET in a different process). When communication occurs between different local transactions, they are considered part of the same business transaction. For example, when a client process sends a message to a server process, it will do so in the context of a local transaction, and the server receiving the message will similarly do so within a second local transaction. The operations performed within these two local transactions, both the communication operations that allow the two processes to exchange data as well as any other computational operations within these local transactions, are part of the same business transaction.

Local Transaction Icons

The graph on the right shows a visual representation of the selected business transaction. The icons represent the local transactions that make up the selected business transaction. Each icon indicates the technology for the local transaction. The icon label shows the name of the program executing the transaction. For IMS Bridge events, each MQIMS_BRIDGE_ENTRY and MQIMS_BRIDGE_EXIT event is shown as a local transaction.

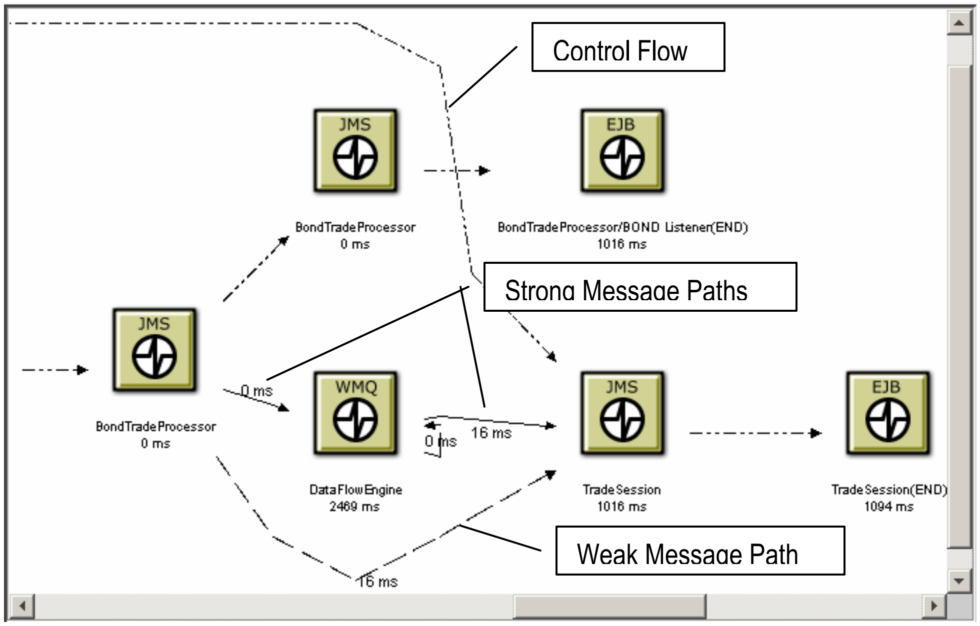
A local transaction groups related events within a single thread of execution. For the WebSphere MQ, JMS, EJB, and CICS technologies, a local transaction includes any number of operations performed during the time span of a single unit of work. Operations performed within one unit of work are either committed or are backed out together, so that the effects of a number of operations all are either made permanent (committed) or reversed (backed out) as one atomic group. For servlet events, a local transaction is a servlet call.

Edges

The connecting lines, called edges, show the relationship between the local transactions. Each edge represents a pair of put/get connections.

- A solid edge indicates a message path; it represents a flow of data. An example is a link between a transaction making an MQPUT call, which puts a message on a queue, to a transaction making an MQGET call, which takes that message out of the queue. The data transfer occurs in the direction of the arrow.
- A dashed edge indicates a weak message path. For IMS_BRIDGE_EXIT events, the edges between them and MQGET events are shown as a weak message path.
- A dotted line indicates a control flow. It represents a call sequence. For example, a servlet making several JMS calls will use a dotted

line to represent a control flow. The transfer of control occurs in the direction of the arrow.



Weak Message Path

In a weak message path, the following criteria are used to match MQPUT/MQPUT1 events with corresponding MQGET events in a business transaction:

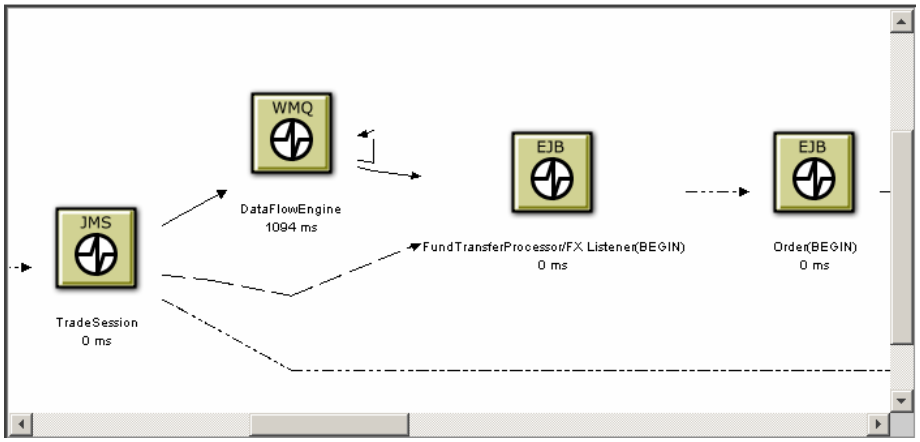
- Message ID
- Correlation ID
- Put date and time
- Application and type
- User identifier

While these criteria correctly match most events, it is possible that they may result in an incorrect match. For example, if the message ID and correlation ID are reused and two messages are put onto different queues within the same 100th of a second, a single MQGET event could match both MQPUT/MQPUT1 events.

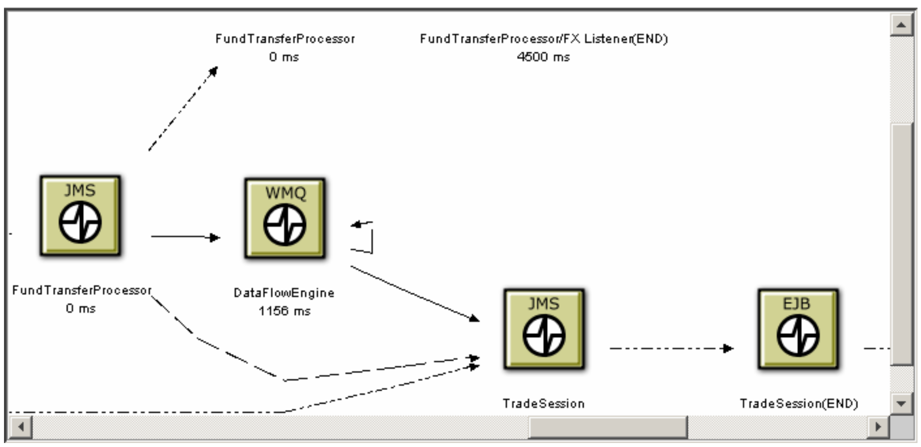
Strong Message Paths

Strong message paths are those paths where the resolved queue manager and WebSphere MQ object name match on the message path, along with all of the criteria for weak message paths. These additional criteria further enhance the confidence of the relationship between local transactions within the business transaction.

In the following business transaction, in the first local WebSphere MQ transaction, the DataFlowEngine program gets a message from the REQUEST queue and puts it on the FX queue:

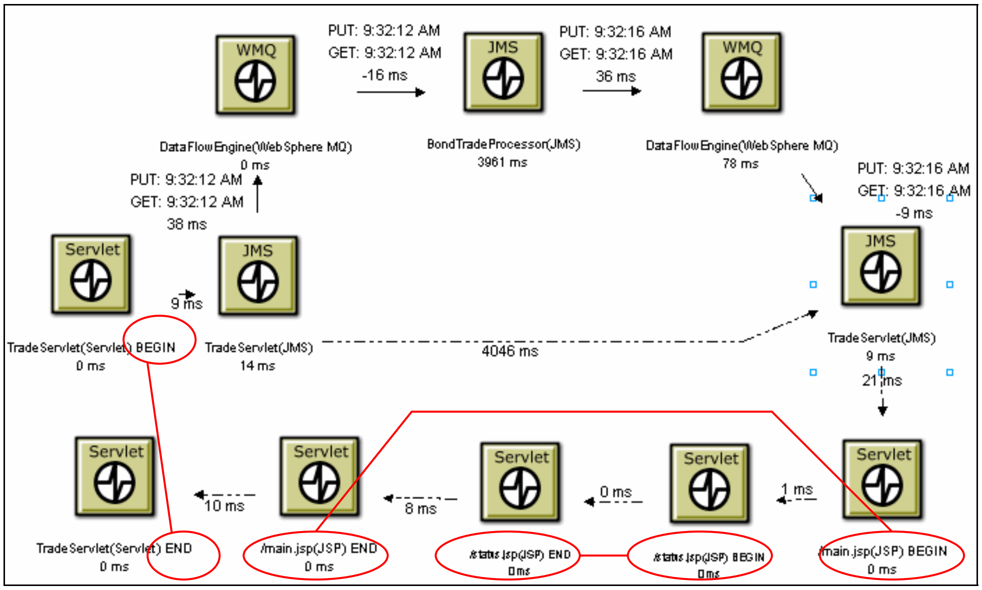


Later in the business transaction, DataFlowEngine gets a message from the REPLY queue and puts it on the REPLY_FOR_SESSION queue:



Control Flow

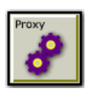
When TransactionVision creates the Transaction Analysis view, its goal is to show the control flow between servlets and EJBs in a linear fashion, then show the WebSphere MQ message flows around it. This view enables you to see the flow of the business process. Time values enable you to see exactly how long it takes for a servlet to complete. In the following example, the Begin and End points of the Java server pages and servlets represent the primary and secondary times of the HTTP events.



View Commands

View commands enable you to show the current transaction in the Event Analysis or Component Topology Analysis view, modify the view appearance, or print the view graph.

Proxy Paths

The proxy icon 

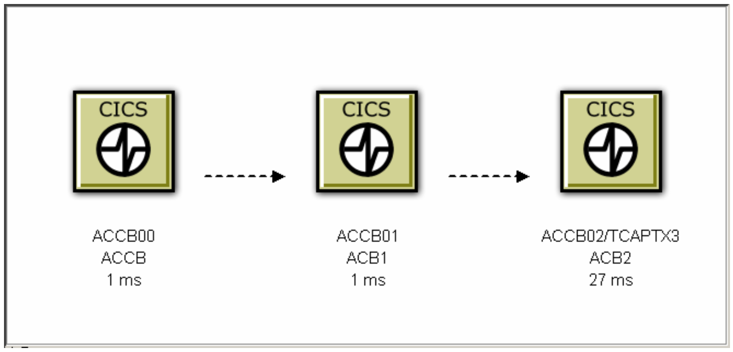
represents a proxy path rather than a transaction message path. The time shown in the icon label represents the time from the end of the MQPUT event to the beginning of the corresponding MQGET event. Proxy paths involve applications that are not monitored by a TransactionVision Sensor.

For more information about proxy objects and the proxy Sensor, see the *TransactionVision Sensor Installation and Configuration Guide*.

CICS Transactions

In addition to the program name and completion time, the Transaction Analysis view also displays the CICS transaction name for CICS transactions.

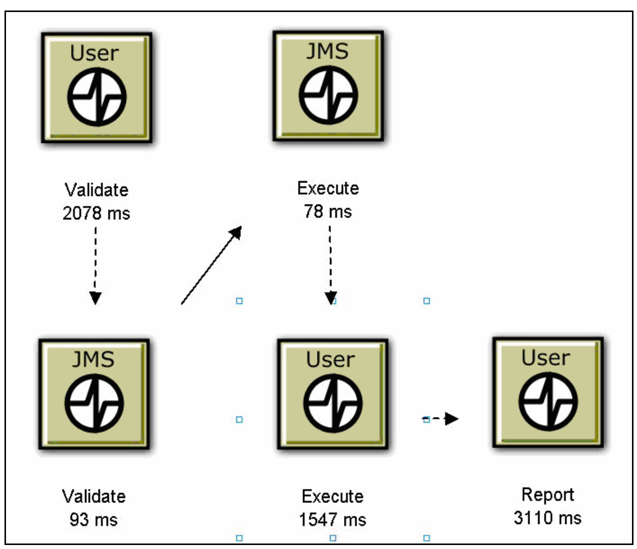
In the following example, note the program name for the third local transaction. In this transaction, the ACCB02 links to TCAPTX3.



Important! TransactionVision filters out transactions that begin with a C character because they are internal CICS transactions. One exception is CKBP, which denotes a WebSphere MQ-CICS bridge transaction. All CICS DPL programs invoked through MQ-CICS bridge have this transaction name.

User Events

Local transactions containing user events are represented by the User icon. The following shows the Transaction Analysis view displaying a business transaction involving both JMS and user event local transactions. For information about implementing user events in you application, see the *TransactionVision Programmer's Guide*.



Queries and the Transaction Analysis View

Query conditions reduce the number of events displayed by restricting the hosts, queue managers, programs, times, and APIs associated with displayed events. For example, you can set query conditions to view only those transactions that include events for a specific technology, program, host, time period, or queue. For instructions on using queries, see Chapter 2, “Configuring Queries.”

Open and Close the Transaction Analysis

To open the Transaction Analysis, choose the Views > Transaction Analysis menu item. You may also open the Transaction Analysis from the Event Analysis view with the Open these events in: Transaction Analysis view command menu selection.

TransactionVision displays a Transaction Analysis view for the current project and query. To use a different query, select the query from the query menu in the upper right corner of the display. Select New Query from the query menu to create a new query, or select Edit Query to modify the current query. For more information about creating or modifying queries, see Chapter 2.

Tip! If your browser is unable to display the view or if the view displays, but icons do not appear correctly, your browser security settings may not be set so that TransactionVision can function properly. For instructions on setting minimum security settings for TransactionVision, see “ Browser Security Settings".

Moving Icons

To move any icon in the graph, select the icon in the view area and drag it to the desired location. TransactionVision automatically adjusts all edges to and from the icon.

Opening Multiple Views

You may open new browser windows open multiple Transaction Analysis windows at once and use different queries to display different information. The following table shows the browser commands to open a new window in Internet Explorer and Netscape:

Browser	Menu Selection
Internet Explorer	File > New > Window
Netscape	File > New Navigator Window

If you open a Transaction Analysis view in a new browser window, any changes you make in one window are reflected in the other window when it is refreshed. If you start a new browser instance and log into TransactionVision in the new browser, however, a new TransactionVision session is started. If you use multiple sessions, changes you make in one session affect that session only.

Show/Hide the Status Bar and Business Transaction List

Use the Show/Hide arrow buttons to show, hide, or resize the business transaction list and status message panes.

To hide the status bar, click the down arrow button. To show a hidden status bar, click the up arrow button. To resize the status bar, point the cursor to either arrow button so that the cursor changes to a double arrow and drag.

To hide the business transaction list, click the left arrow button. To show a hidden business transaction list, click the right arrow button. To resize the business transaction list, point the cursor to either arrow button so that the cursor changes to double arrow and drag.

Closing the View

The Transaction Analysis view closes when you select a different view or page from the TransactionVision menus.

Refresh the View

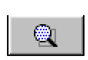
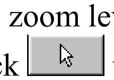
To refresh a view with transactions completed since the view was opened, click the Run Query view command.

Change Default Settings

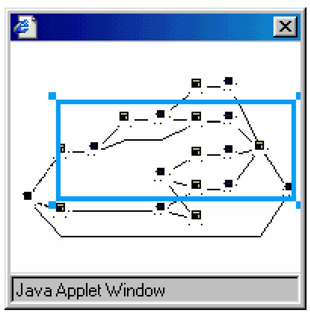
As you use the Transaction Analysis view, you may change settings such as edge labels and graph layout. To make the current settings the default for the your user name, click Save Settings.

Zoom In or Out

By default, TransactionVision sizes the Transaction Analysis graph to fit in the view window. There are several ways to adjust the zoom level:

- Choose the Zoom > Zoom > Zoom In menu item to increase the zoom level.
- Choose the Zoom > Zoom > Zoom Out menu item to decrease the zoom level.
- Click  or choose Zoom > Selective Zoom to change to selective zoom mode. The cursor changes to the selective zoom cursor. Click on the view area and then drag the cursor to select an area to zoom. TransactionVision adjusts the zoom level so that the selected area fills the view area. Click  to return to selection mode.

- Click  or choose Zoom > Interactive Zoom to change to interactive zoom mode. The cursor changes to the interactive zoom cursor. Click in the view area and drag the cursor to the top or left to decrease the zoom level or drag to the bottom or right to increase the zoom level. Click  to return to selection mode.
- Click  or choose Zoom > Zoom > Fit Window to adjust the zoom level so that the entire graph appears in the view window.
- Enter a custom zoom percentage or choose a predefined zoom percentage from the zoom percentage list.
- Choose the Zoom > Show Overview Window menu item to open a small secondary window that contains a read-only view of the view window. The entire graph is shown within this window, and a highlighted selection box surrounds the region that is displayed in the active window. The highlighted rectangle allows you to change the view by changing the focal point and zoom level of the active graph window. It is provided as a mechanism to help you see where you are in a graph.



- To resize the selection box, click one of the corner handles and drag your cursor to the desired size. Note that the selection box maintains a constant aspect ratio to match the size of the active view window.
- To move the selection box, click inside the selection box and drag your cursor to the desired location.
- To create a new selection box, click outside of the current selection box and drag your cursor to the desired size.

Show/Hide Weak Message Paths

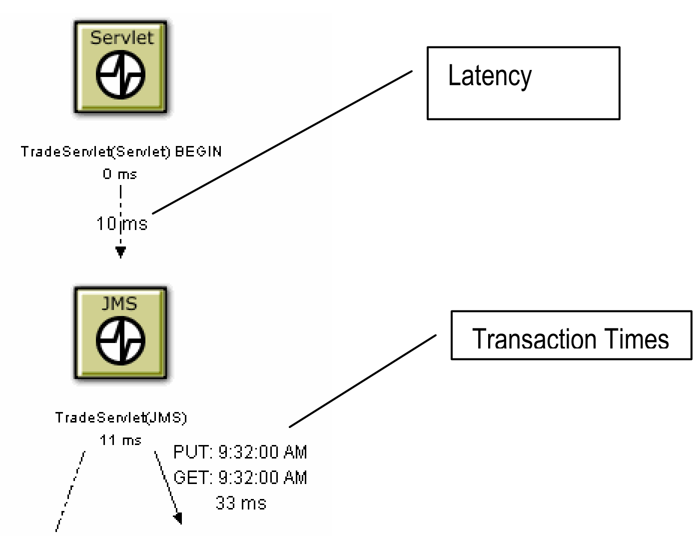
Choose the Edge > Show Weak Link command to show or hide weak message paths in the Transaction Analysis view.

Modify Edge Labels

You may configure edge labels to provide additional information about transaction. Edge labels may include any (or none) of the following information:

Label	Command	Description
Transaction Times	Edge & Node > Show Transaction Times	Displays edge labels showing the exit time for the put and get calls between the local transactions.
Latency	Edge & Node > Show Latency	Displays an edge label showing number of milliseconds between the exit times of the put and get calls between the local transactions. By default, latency times are calculated with a resolution of 1/100 seconds. To change the resolution, modify the value of the `latency_resolution` attribute in the Analyzer.properties file. See the *TransactionVision Analyzer Installation and Configuration Guide* for more information about this file.

To enable or disable any of the edge labels in the Transaction Analysis view, choose the corresponding command. The following diagram shows a Transaction Analysis graph with transaction time and latency labels enabled:



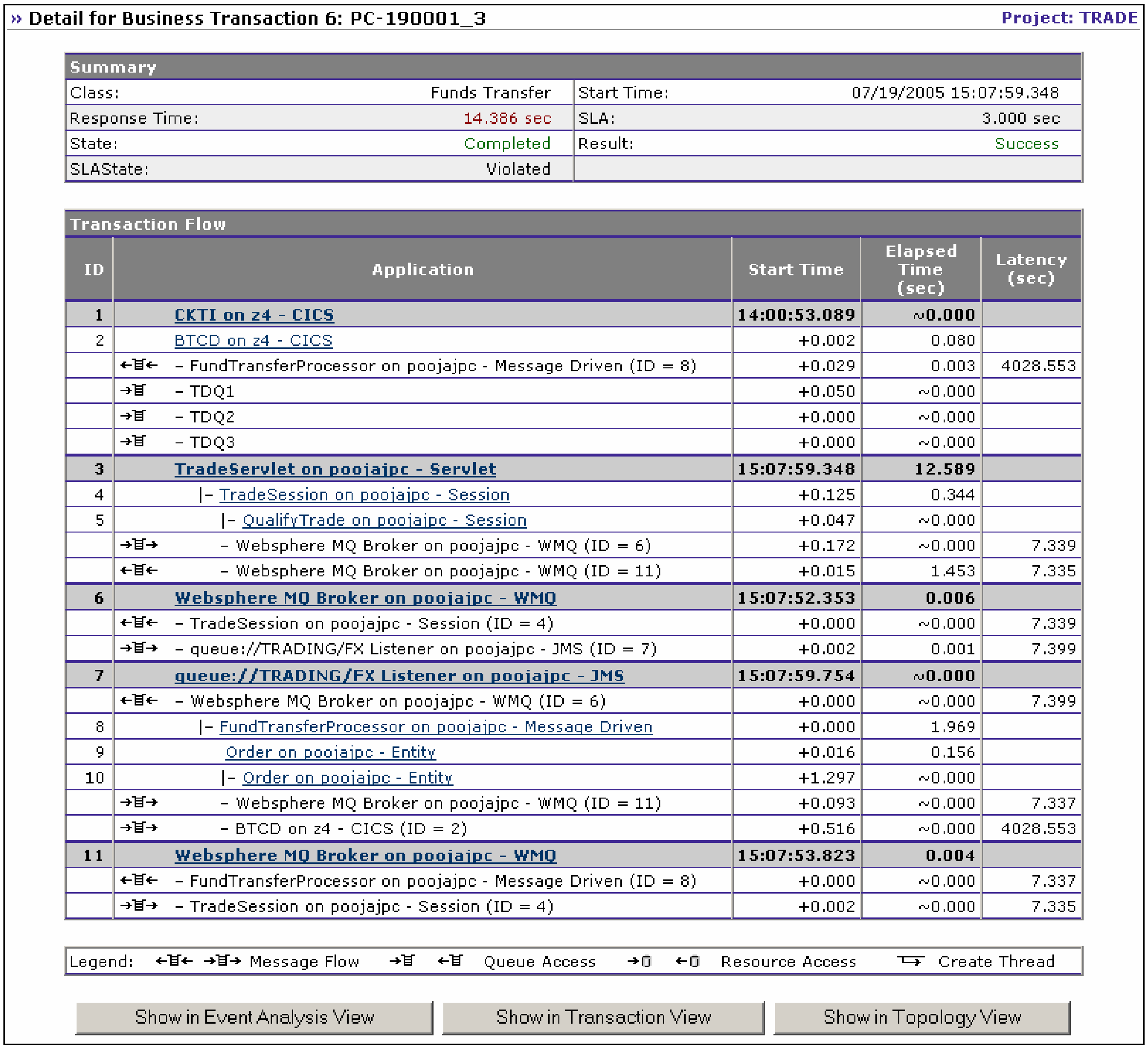
Display a Business Transaction in Other Views

When performing analysis with TransactionVision, you may want to see the same events in different views. To create a new view containing events from the current business transaction, choose one of the following menu items:

- Open View > Component Topology Analysis View creates a new Component Topology Analysis view containing only events from the selected business transaction. The view is labelled with the business transaction ID shown in the Transaction Analysis view. For more information about using the Component Topology Analysis view, see Chapter 3.
- Open View > Event Analysis View creates a new Event Analysis view containing only events from the selected business transaction. The view is labelled with the business transaction ID shown in the Transaction Analysis view. For more information about using the Event Analysis view, see Chapter 5.
- Open View > Transaction Detail View opens the Transaction Details view for the selected transaction.

Using the Transaction Details View

The Transaction Details page provides the following information for the selected transaction:



» Detail for Business Transaction 6: PC-190001_3 Project: TRADE

Summary			
Class:	Funds Transfer	Start Time:	07/19/2005 15:07:59.348
Response Time:	14.386 sec	SLA:	3.000 sec
State:	Completed	Result:	Success
SLAState:	Violated		

Transaction Flow

ID		Application	Start Time	Elapsed Time (sec)	Latency (sec)
1		CKTI on z4 - CICS	14:00:53.089	~0.000	
2		BTCD on z4 - CICS	+0.002	0.080	
	←⊟←	- FundTransferProcessor on poojajpc - Message Driven (ID = 8)	+0.029	0.003	4028.553
	→⊟	- TDQ1	+0.050	~0.000	
	→⊟	- TDQ2	+0.000	~0.000	
	→⊟	- TDQ3	+0.000	~0.000	
3		TradeServlet on poojajpc - Servlet	15:07:59.348	12.589	
4		|- TradeSession on poojajpc - Session	+0.125	0.344	
5		|- QualifyTrade on poojajpc - Session	+0.047	~0.000	
	→⊟→	- Websphere MQ Broker on poojajpc - WMQ (ID = 6)	+0.172	~0.000	7.339
	←⊟←	- Websphere MQ Broker on poojajpc - WMQ (ID = 11)	+0.015	1.453	7.335
6		Websphere MQ Broker on poojajpc - WMQ	15:07:52.353	0.006	
	←⊟←	- TradeSession on poojajpc - Session (ID = 4)	+0.000	~0.000	7.339
	→⊟→	- queue://TRADING/FX Listener on poojajpc - JMS (ID = 7)	+0.002	0.001	7.399
7		queue://TRADING/FX Listener on poojajpc - JMS	15:07:59.754	~0.000	
	←⊟←	- Websphere MQ Broker on poojajpc - WMQ (ID = 6)	+0.000	~0.000	7.399
8		|- FundTransferProcessor on poojajpc - Message Driven	+0.000	1.969	
9		Order on poojajpc - Entity	+0.016	0.156	
10		|- Order on poojajpc - Entity	+1.297	~0.000	
	→⊟→	- Websphere MQ Broker on poojajpc - WMQ (ID = 11)	+0.093	~0.000	7.337
	→⊟→	- BTCD on z4 - CICS (ID = 2)	+0.516	~0.000	4028.553
11		Websphere MQ Broker on poojajpc - WMQ	15:07:53.823	0.004	
	←⊟←	- FundTransferProcessor on poojajpc - Message Driven (ID = 8)	+0.000	~0.000	7.337
	→⊟→	- TradeSession on poojajpc - Session (ID = 4)	+0.002	~0.000	7.335

Legend: ←⊟← →⊟→ Message Flow →⊟ ←⊟ Queue Access →▯ ←▯ Resource Access Create Thread

Show in Event Analysis View | Show in Transaction View | Show in Topology View

- The **Summary** shows the class, response time, status, start time, result, and the value for any custom attributes (SLAState and SLA in this example).
- The **Transaction Flow** shows the local transaction ID, application name, start time, and processing time for each local transaction within the selected business transaction. An icon indicates whether the local transaction starts a message flow, accesses a queue, accesses a resource, or creates a thread.

  If a message flow starts from the application in a local transaction, a sub-row appears. The direction of the arrows in the message flow icon in the sub-row indicates whether a message flow starts or ends from the application. Arrows pointing right indicate a message flow start; arrows pointing left indicate a message flow end. The message flow icon is followed by the name of the application where the message flow starts or ends. Both the queue icon and the application name link to the local transaction where the message flow ends. Click this link to navigate to the local transaction where the message flow ends.

A sub-row without an icon indicates that a control flow starts from the application. The sub-row specifies the name of the application where the control flow ends. Click the application name in the sub-row to navigate to the local transaction where the control flow ends.

Note that processing time for each program does not include the CICS TASK_START and TASK_END events, because these events do not contain a program name. Therefore, the processing time in this report differs slightly from the execution times in the Transaction Analysis view.

To display the Event Details view for an event message in the Transaction Details page, click the message link in the Transaction Flow table or the latency link in the Message Flow table. The Event Details view opens in a separate browser window. For a message flow, separate panes show a side-by-side comparison of the departure and arrival user data buffer. For a control flow, only the event details for the event that corresponds to the destination event in the control flow are shown. For more information about the Event Details view, see Chapter 6, "Using the Event Details View."

To display the current business transaction in the Transaction Analysis view, click Show in Transaction View on the Transaction Details page. The Transaction Analysis View opens in a separate browser window. For more information about the Transaction Analysis view, see Chapter 4, "Using the Transaction Analysis View."

Note that the current query is **not** applied to the Transaction Analysis view. All business transactions are listed in the left pane, with the selected transaction highlighted.

To display the current business transaction in the Event Analysis view, click Show in Event Analysis View on the Transaction Details page. The Event Analysis View opens in a separate browser window. For more information about the Event Analysis view, see Chapter 5, "Using the Event Analysis View."

To display the current business transaction in the Component Topology Analysis view, click Show in Topology View on the Transaction Details page. The Component Topology Analysis View opens in a separate browser window. For more information about the Transaction Analysis view, see Chapter 3, "Using the Component Topology Analysis View."

Print Graphs

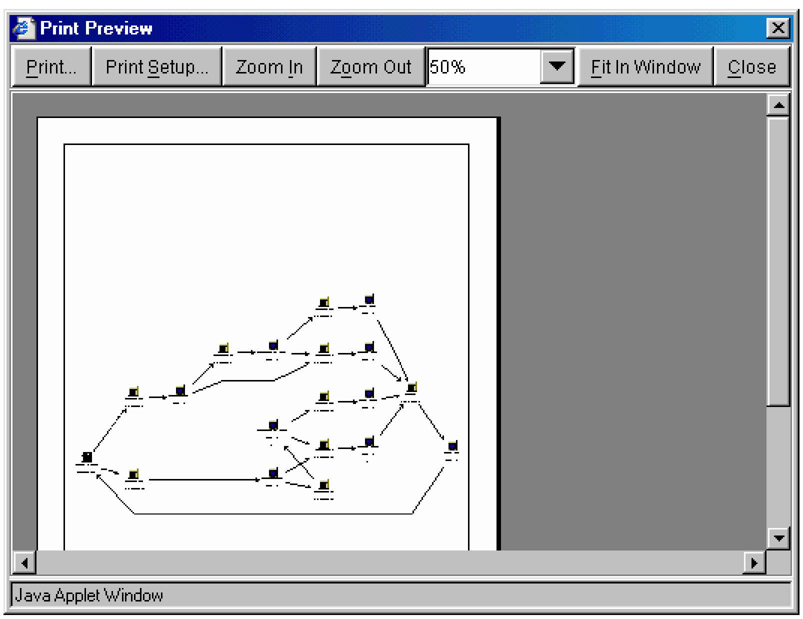
To print the Transaction Analysis graph using the current print setup, choose the > Print Graph... menu item. TransactionVision invokes the standard printing mechanism for your platform.

Important! When you print a graph, a Java warning appears asking permission to print. This message is generated by the Java security feature to prevent unauthorized use of printers. The first time you print in a session, it appears multiple times; it appears once after the first time you print. To disable this message, add the following lines in the `.java.policy` file in your home directory on the client computer:

```
grant {
  permission java.lang.RuntimePermission “queuePrintJob”;
};
```

Print Preview

To display a print preview, choose the > Print Preview... menu item.The Print Preview window opens. It is a secondary window that displays a preview of the printed graph. The Print Preview window allows you to preview graph images before you print them so you can see in advance how changes in print setup options affect your printed images.



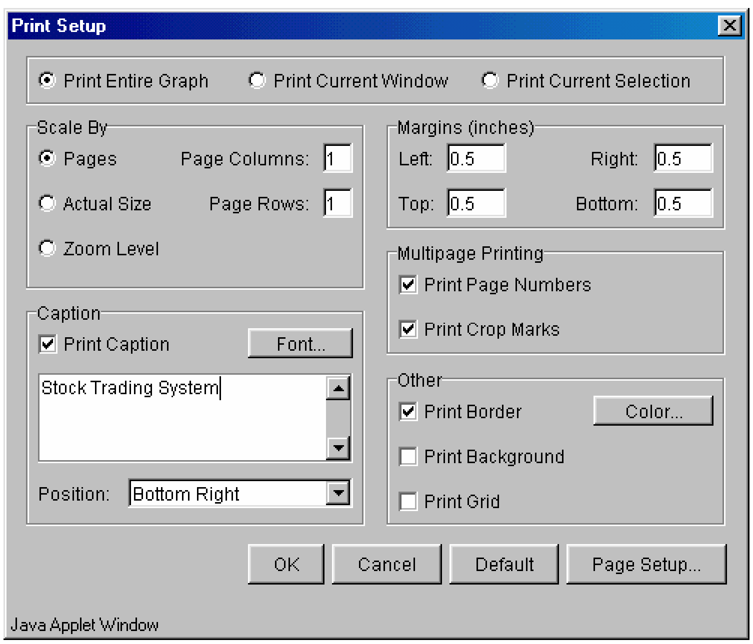
In the print preview window, you can zoom in on a preview image by moving the mouse over it and clicking.

You may also use the following buttons to control the appearance of the print preview:

Button	Description
Print...	Invokes the standard printing mechanism for your platform.
Print Setup...	Opens the Print Setup dialog for setting printing options.
Zoom In	Increases the zoom level for the preview image.
Zoom Out	Decreases the zoom level for the preview image.
Zoom Percentage	Shows the current zoom percentage. You may select a pre-defined zoom percentage from the list or enter a custom zoom percentage.
Fit in Window	Scales the preview image to display the complete image in the preview window.
Close	Closes the Print Preview window.

Print Setup

To customize the look of your printed graph, choose the  > Print Setup... menu item.The Print Setup dialog opens.

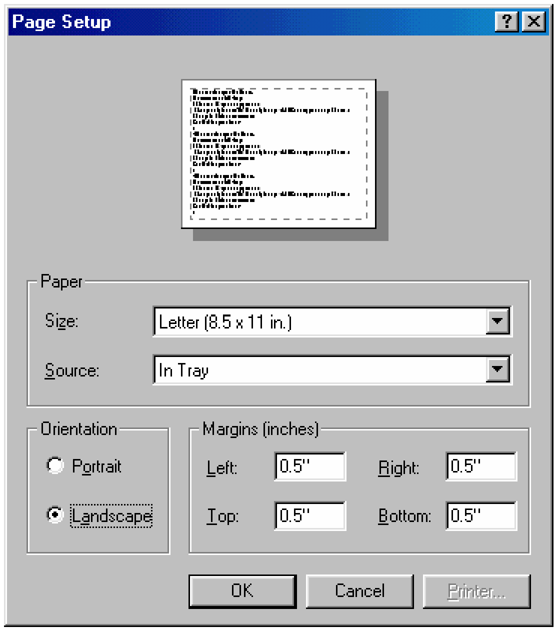


This dialog offers options for tailoring the look of your printed Component Topology Analysis or Transaction Analysis view. Set the following options, then click OK to apply your changes, Cancel to close the dialog without applying your changes, Default to revert to default values, or Page Setup... to display the Page Setup dialog for selecting paper size, orientation, and margins.

Option	Description
Print	Select the part of the graph you want to print. You may print the entire graph, only the part of the graph currently visible in the view window, or only the selected graph components.
Scale By	Set options related to page size. Select Pages and specify the number of page rows and columns to scale the image to fit the specified page size. The image is not scaled if Actual Size is selected. Choose Zoom Level to scale the image to the zoom level specified in the view.
Print Caption	Select to print the page caption in the Caption field.
Caption	Enter text for the page caption. You must select Print Caption to enable caption printing. To select the font for the caption, click Font... to display the Choose Font dialog.
Position	Select the position on the page for the caption to be printed.
Margins	Set the distances in inches between the edge of the paper and the edge of the graph. Set margins for the top, bottom, left, and right edges.
Print Page Numbers	Select to print page numbers on each page when printing multi-ple pages. Page numbers are printed just outside the crop marks.
Print Crop Marks	Select to print crop marks when printing multiple pages. Crop marks are the lines drawn on the margins of pages that connect to other pages.
Print Border	Select to print a border around the graph. Click Color... to open the Choose Color dialog for setting the border color.
Print Background	Select to print the background color. To set the background color, choose the Layout > Background Color... menu item on the Component Topology or Transaction Analysis view.
Print Grid	Select to print a background grid.

Page Setup

Click Page Setup... on the Print Setup dialog to open the Page Setup dialog.

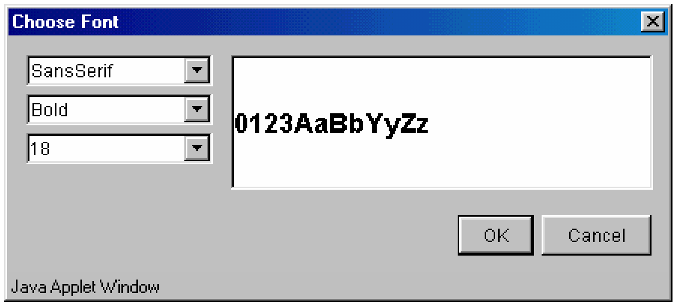


Use this screen to set up page options for printing Component Topology or Transaction Analysis graphs. Set the following options, then click OK to activate your changes or Cancel to close the dialog without activating your changes.

Option	Description
Paper Size:	Select a page style from the list.
Paper Source:	Select a source from the list.
Margins:	Set the distance between the text and the edge of the printed page (in inches). Set margins for the top, bottom, left, and right edges.
Orientation:	Select whether to use Portrait or Landscape for setting up the page. Portrait is default (the height of the page is greater than the width). For Landscape, the width of the page is greater than the height.
Sample:	Displays a preview of the selected settings.

Caption Font

Click Font... on the Print Setup dialog to open the Choose Font dialog.



Use this dialog to select the font to use for the caption when printing a Component Topology or Transaction Analysis graph.

Select a font family, text attributes, and font size from the drop-down lists. The sample window shows how text on the graphic will look.

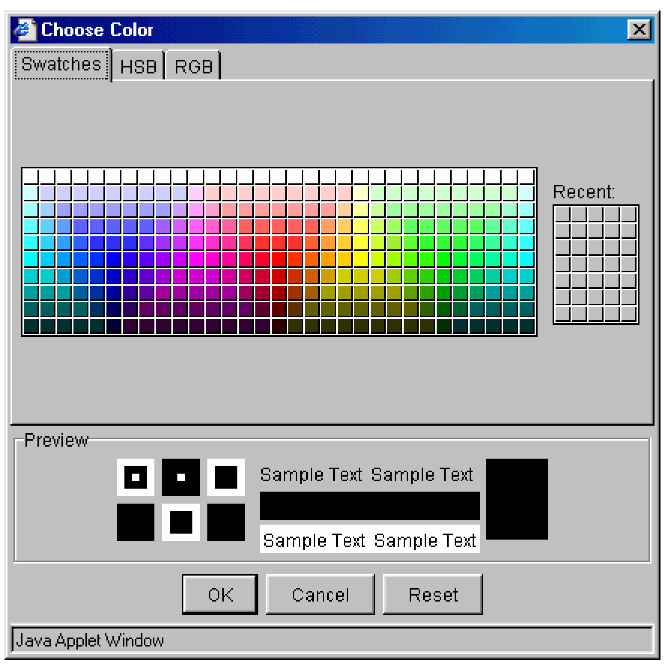
Click OK to make your changes active or Cancel to close the dialog without activating your changes.

Border Color

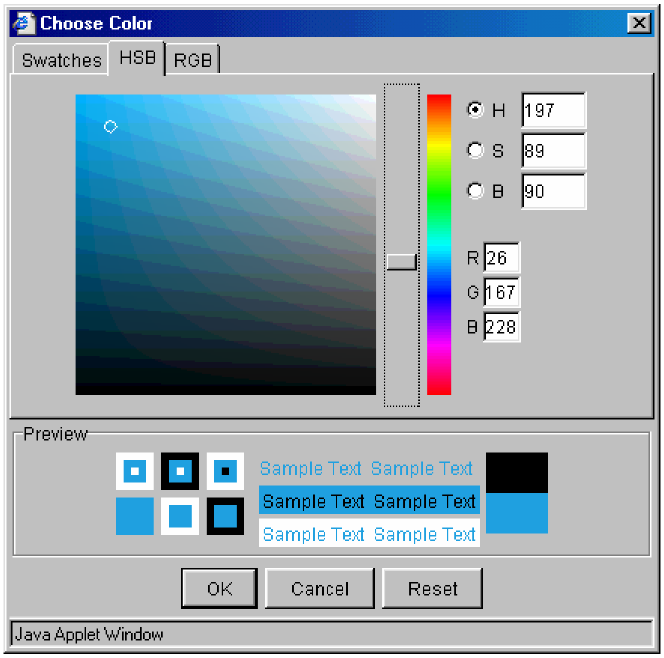
Click Color... on the Print Setup dialog to open the Choose Color dialog. Use this dialog to set the border color for printed Component Topology Analysis and Transaction Analysis graphs.

There are three ways to select the border color:

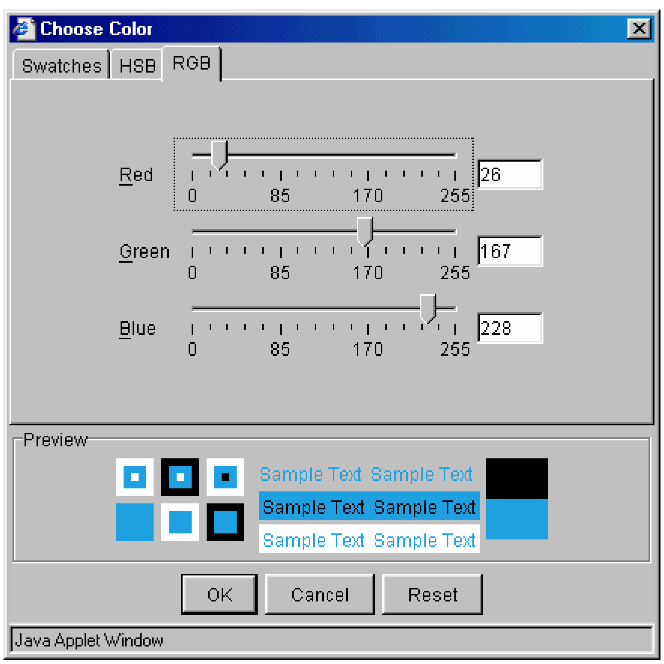
- On the Swatches page, click the desired color. The preview area shows what your choice will look like.



- On the HSB page, click the desired color in the color area. Use the sliding bar to adjust the hue, saturation, and brightness levels individually.



- On the RGB page, enter specific values for red, green, and blue, or click the desired value on the scale.



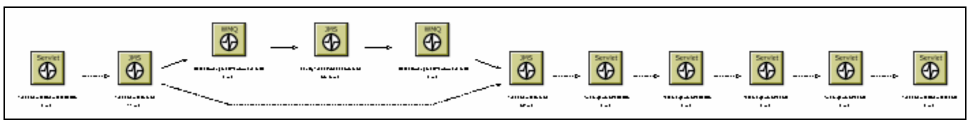
Click OK to make your changes active, Cancel to close the dialog without activating your changes, or Reset to reset the border color to the default.

Modify Layouts and Properties

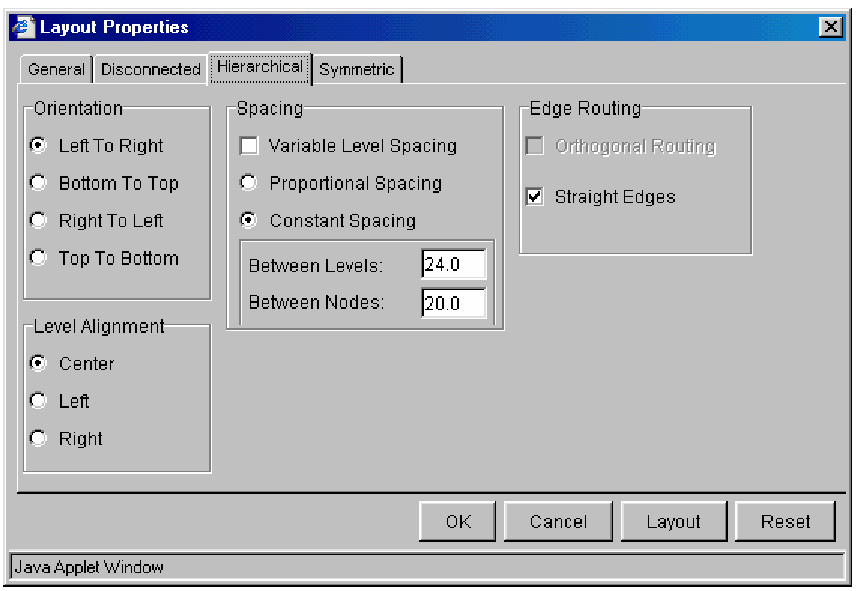
By default, the Transaction Analysis is arranged in a hierarchical layout. While this layout is typically the best choice for e-business systems and therefore recommended, you may choose to display the Component Topology Analysis in a symmetric layout. Note that using a different layout may make it more difficult to follow the flow of messages throughout your system.

Hierarchical Layout

To select the hierarchical layout (if it is not the current layout), choose the Layout > Hierarchical Style menu item. Components are arranged in a hierarchical organization, as in the following example.



To modify layout properties, choose the Layout > Layout Properties menu item. Make desired changes on the Hierarchical page, then click Apply or OK.



Orientation

By default, components are arranged from left to right, but you can change the orientation from top to bottom, bottom to top, or right to left.

Left To Right	Positions icons so that the roots of the graph are near the left of the page, and the leaves of the graph are near the right. The levels are vertical.

Top To Bottom	Positions icons so that the roots of the graph are near the top of the page, and the leaves of the graph are near the bottom. The levels are horizontal.
Right To Left	Positions icons so that the roots of the graph are near the right of the page, and the leaves of the graph are near the left. The levels are vertical.
Bottom To Top	Positions icons so that the roots of the graph are near the bot tom of the page, and the leaves of the graph are near the top. The levels are horizontal.

Level Alignment

Level alignment refers to the alignment of icons on the same level. It is similar to text alignment within a paragraph. If Orientation is horizontal (Top To Bottom or Bottom To Top), you can set the Level Alignment as either Top, Center or Bottom. If Orientation is vertical (Left To Right or Right To Left), you can set the Level Alignment as either Left, Center or Right.

Spacing

The concept of frames is used to control the margins around icons. These options allow you to set the spacing between levels of icons and between icons within the same level in a graph by adjusting the frames that surround them.

Variable Level Spacing	When enabled, variable level spacing considers the density of edges between adjacent levels when adjusting the level spac ing. For example, if too many edges cross at the same point between levels, then the level spacing is automatically increased. Consequently, not all levels would have the same spacing. Variable level spacing is usually used in combina tion with orthogonal edge routing.
Proportional Spac ing	Sets the spacing around each node to a fractional value (between 0 and 1) based on the node size.
Constant Spacing	Allows the spacing around each node to be a constant value, independent of the size of the node.
Between Levels	This field allows you to set the spacing between each level in the graph. In left-to-right and right-to-left views, levels run vertically. In top-to-bottom and bottom-to-top views, levels run horizontally.
Between Nodes	This field allows you to set the spacing between adjacent components within a level.

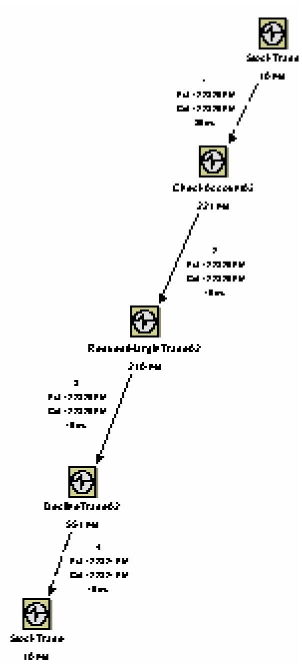
Edge Routing

These options allow you to tailor edge routing.

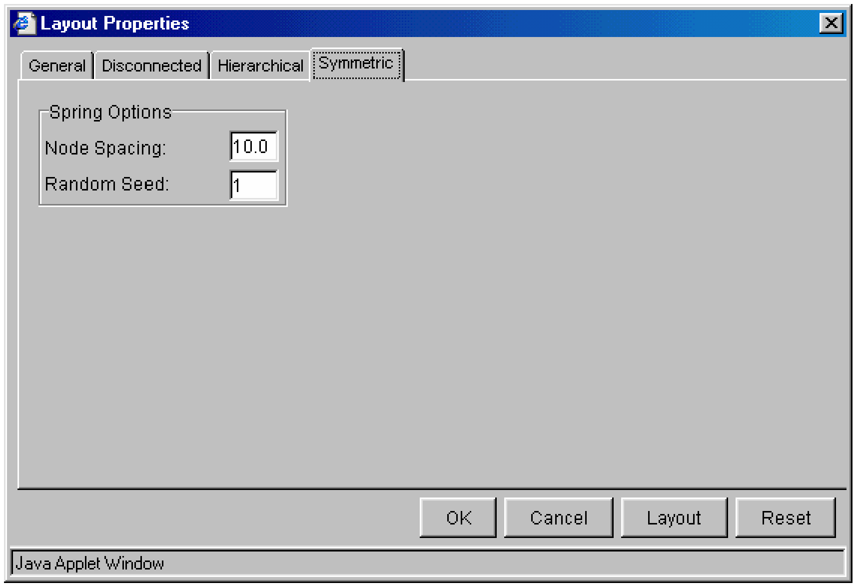
Option	Description
Orthogonal Routing	When enabled, each edge is drawn as a sequence of line segments that run parallel to the x- and y-axes. Edges have bend points of 90 degrees only. The orthogonal routing style works best in combination with variable level spacing and ports.
Edge Spacing	This field sets the spacing between row and column edges. Layout ensures that the distance between edges is at least this value.
Straight Edges	When enabled, this setting merges the incoming edges of a node into a single fork-like structure. Clearer drawings result provided the graph is not too dense. This feature is only available when orthogonal routing is enabled.

Symmetric Layout

To select the symmetric layout (if it is not the current layout), choose the Layout > Symmetric Style from the shortcut menu. The symmetric layout distributes components evenly with very few edge crossings, as in the following example.



To modify symmetric layout properties, choose the Layout > Layout Properties menu item. Make desired changes on the Symmetric page, then click Apply or OK.



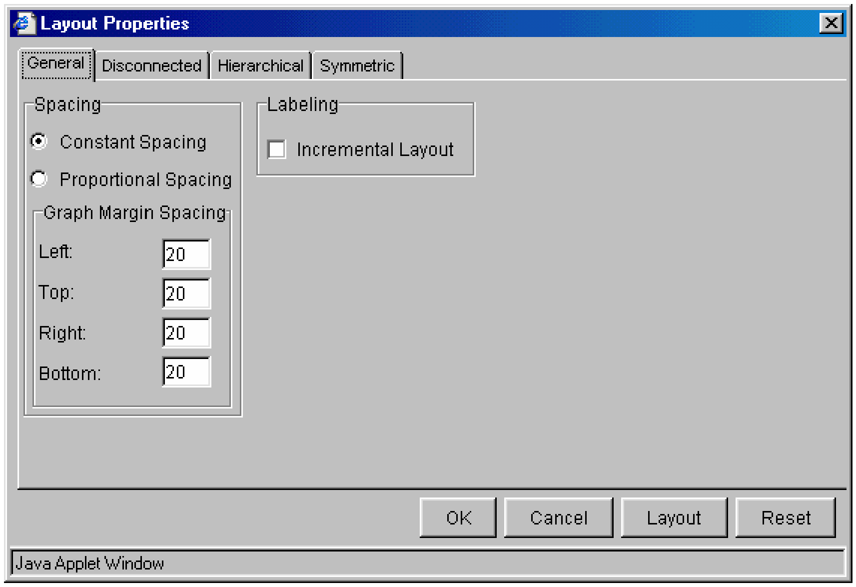
Spring Options

These controls allows you to set the options relating to the spring model of the graph.

Node Spacing	This value is used in determining the white space between icons. It specifies the length of each edge as a function of the width and height of the icons to which the edge connects. A node spacing of zero specifies that edge lengths be just long enough to keep icons from touching (i.e., no white space between icons). The larger the node spacing value, the greater the amount of white space between icons.
Random Seed	The initial layout of the graph is keyed to a random number sequence. The value set in this field is used to generate the random number sequence to set initial coordinates for each icon. Each different non-negative value can produce a differ ent layout. This field is active when Incremental Layout is not checked.

General Properties

The General page of the Properties dialog enables you to specify settings that are independent of the layout style. To modify general layout properties, choose the Layout > Layout Properties menu item. Make desired changes on the General page, then click Apply or OK.



Spacing Model

The concept of frames is used to control the margins around physical objects. These options control which model is used in determining the amount of white space around the perimeter of objects in the graph. Two spacing models are available, the Proportional Spacing model and the Constant Spacing model. Additional layout-specific spacing options are available, some of which are affected by the spacing model selected here.

Proportional Spacing	When enabled, proportional spacing is used to determine the amount of white space around the perimeter of an object based on the area of the object. For example, if a component's width and height increase, the white space between the component and an adjacent component also increases. The margins of the graph can be controlled through the Graph Margin Spacing fields below. You can set independent proportional spacings for the left, right, bottom, and top sides of the graph. Note that additional spacing controls are available on the other dialog pages.
Constant Spacing	When enabled, a constant space is allocated between like objects in a graph. For example, in hierarchical layout a fixed distance is set between each pair of adjacent components within a level, regardless of the width and height of the nodes. The margins of the graph can be controlled through the Graph Margin Spacing fields below. You can set independent constant spacing values for the left, right, bottom, and top sides of the graph. Note that additional spacing controls are available on the other dialog pages.

Graph Margin Percent

This group of fields affects the margins for graphs. Separate frame values are stored for the Constant Spacing and Proportional Spacing models, but only one spacing model is in effect at any given time.

Labeling

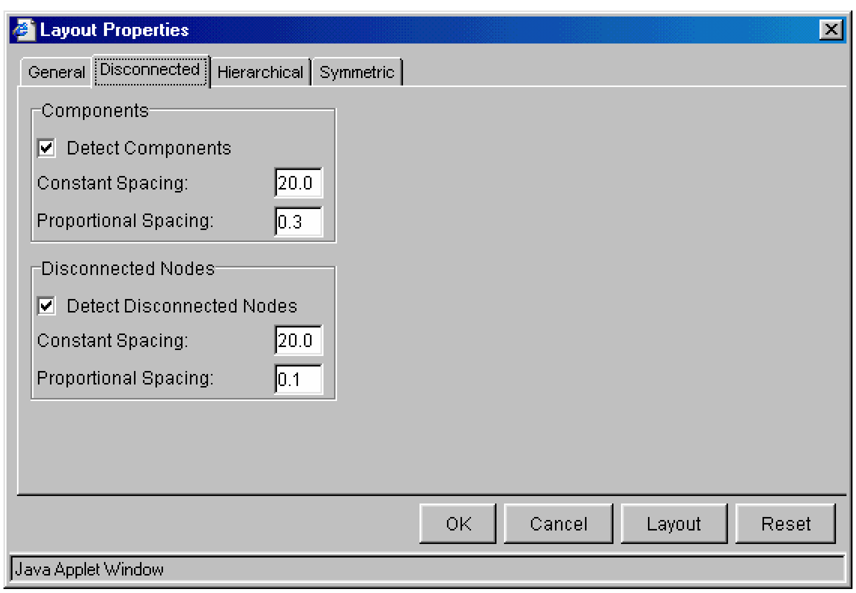
This option allows you to tailor the automatic positioning of edge labels.

Select Incremental Layout to maintain the relative positioning of labels from a graph's previous layout whenever the graph is modified. Incremental Layout results in graphs that maintain the same overall form when changes are made.

Disconnected Properties

The generic term "disconnected objects" is used to refer to both disconnected icons and connected subgraphs, unless otherwise noted. A disconnected icon is one which has no edges connected to it. A connected subgraph is a graph in which there is an undirected path between each pair of icons. In other words, each icon can be reached from all other icons by following the edges that connect them, regardless of edge direction. If there is no such path between any two icons, then either the icons belong to different connected icons or one of the icons is a disconnected node.

To modify disconnected layout properties, choose the Layout > Layout Properties menu item. Make desired changes on the Disconnected page, then click Apply or OK. These options only have effect if more than one disconnected object exists within the graph.



These settings allow you to edit the proportional and constant spacing between disconnected objects of a graph.

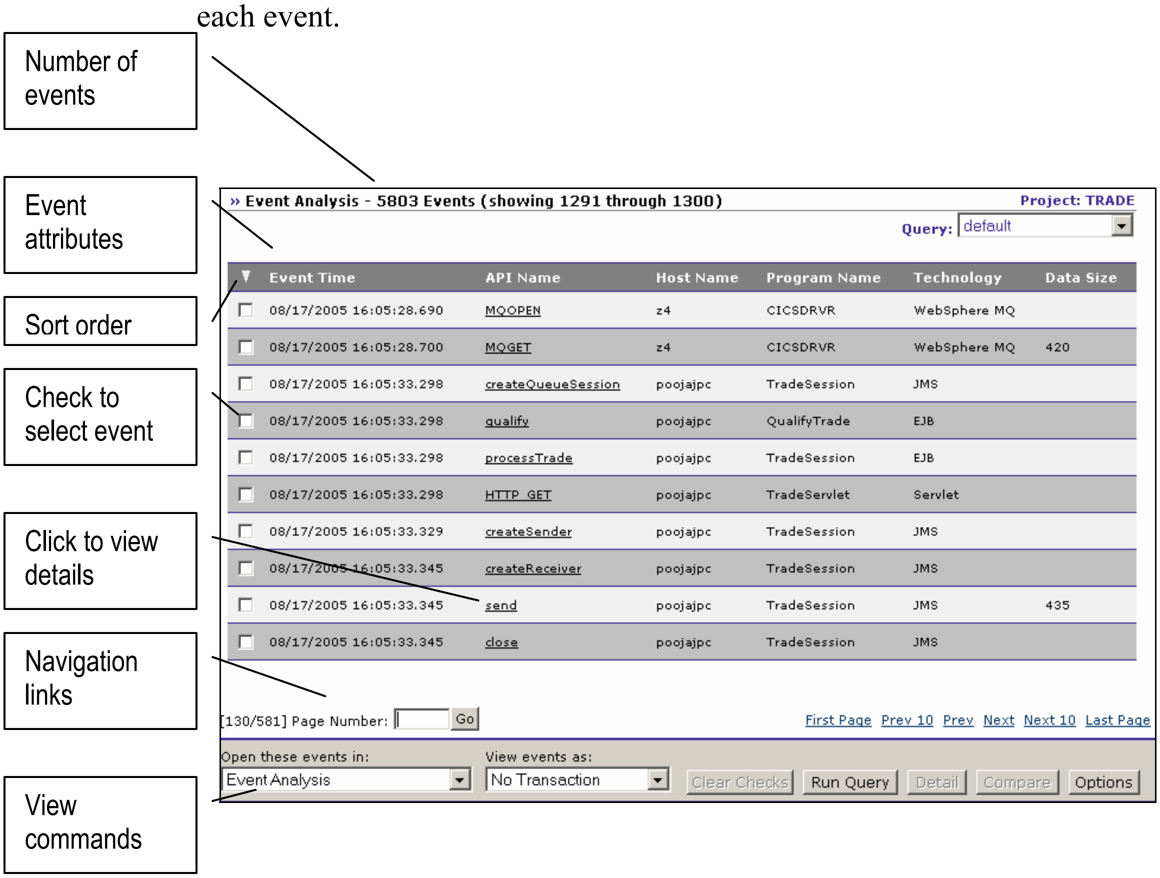
Constant Spacing	Specify the minimum amount of white space between adja cent rows and columns.
Proportional Spac ing	Specify a factional value. The margin around disconnected objects is calculated as the product of this fractional value and half the height of the node.

Chapter 5

Using the Event Analysis View

Event Analysis Overview

The Event Analysis view shows all the events in the project that meet query conditions. By default, this view displays a number of attributes for each event.



Event Attributes

The following table lists the available attribute columns:

Column	Description
API Code	The WebSphere MQ or JMS API name or the HTTP request or EJB methods name.
API Type	For CICS events, the API type (File Control, Interval Control, Program Control, Program Start, Start Attach, Task End, Task Start, Temporary Storage, and Transient Data).
Application Server	For servlet events, the name of the WebSphere MQ application server associated with the event. For WebSphere Application Server 5.0 Express Edition, the application server name default is server1; other names are an alias for this server name.
CICS Response Code	For CICS events, the CICS response code associated with the event.
CICS SYSID	The z/OS CICS SYSID associated with the event.
CICS Task	The z/OS CICS task associated with the event.
CICS Transaction	The z/OS CICS transaction ID associated with the event.
Completion Code	The completion code in the WebSphere MQ API call return from the WebSphere MQ library.
Connection Name	For all technologies, the connection name represents the connection the event is using. For WebSphere MQ, the connection name and queue manager are typically the same, except in the case where you open a queue on one queue manager using a connection (specified with the hConn parameter) to a different queue manager over a transmission queue. For example, suppose your program opens queue QM1.Q using a connection to queue manager QM1, then later opens QM1.Q using a connection to queue manager QM2. This event shows QM1.Q as the object name, QM1 as the queue manager, and QM2 as the connection name.
Data Size	For WebSphere MQ events, The size in bytes of the user data buffer for MQGET, MQPUT, and MQPUT1 calls. For JMS events, the size of JMS user data in send and receive calls. For Servlet events, the size of the returning HTML page.
EJB Name	For EJB events, the EJB name associated with the event. If the Program Name column is displayed, the EJB name also appears as the program name.
Entry Time	The time stamp of when the event initiated.

Column	Description
Event Time	The time used to order the event chronologically. It may be either the value of the event entry time or the event exit time, depending on the API. For some event types such as those that receive messages, the important time is not when the event was first called, but when it returned (when the message was received). For those events, the event time is the event exit time; for all other events, the event time is the event entry time.
Exit Time	The time stamp of when the event finished.
Host Name	The host running the application that called the WebSphere MQ or JMS API or the host the WebSphere application server is running on.
IMS ID	The z/OS IMS identifier associated with the event.
IMS PSB	The z/OS IMS PSB name associated with the event.
IMS Region ID	The z/OS IMS region identifier associated with the event.
IMS Region Type	The z/OS IMS region type associated with the event.
IMS Transaction	The z/OS IMS transaction name associated with the event.
JMS Class	For JMS events, the JMS class associated with the event.
JMS Exception Code	For JMS events, the exception code associated with the event.
JMS Queue	For JMS events, the name of the JMS queue associated with the event.
JMS Topic	For JMS events, the name of the topic associated with the event.
Object Name	The WebSphere MQ object (queue, distribution list, namelist, etc.) associated with the event.
OS390 Job Name	The z/OS Batch job name associated with the event.
OS390 Job Step	The z/OS Batch step name associated with the event.
OS400 Job Name	The OS/400 job name associated with the event.
Program Name	The name of the program making the event.
Queue Manager	The WebSphere MQ queue manager associated with the WebSphere MQ event. The queue may not be always be the same as the connection name. For example, it will be different when you are putting to a queue on a different queue manager from your connection over a transmission queue.
Reason Code	The reason code in the WebSphere MQ API call return from the WebSphere MQ library.

Column	Description
Reply To Queue	The WebSphere MQ queue in the Reply To field.
Reply To Queue Manager	The WebSphere MQ queue manager in the Reply To field.
Resource	For CICS events, the resources used by CICS transactions. Currently, these resources are file name, transient data (TD) queue name, and temporary storage (TS) queue name.
Servlet	For servlet events, the name of the servlet associated with the event.
Status Code	For servlet events, the status code associated with the event. **Note:** The TransactionVision servlet Sensor is unable to get the response status code and any headers in the response object for servlet events generated from an HTTP_HEAD request. Therefore, the status code value for HTTP_HEAD events is always N/A.
Technology	The technology used by the event. Currently, WebSphere MQ, JMS, Servlet, and EJB technologies are supported.
Web Application	For servlet events, the name of the web application associated with the event.
User Event Class	For user events, the class associated with the event. For information about implementing user events in your application, see the *TransactionVision Programmer's Guide.*
User Event Completion Code	For user events, the completion code associated with the event. For information about implementing user events in your application, see the *TransactionVision Programmer's Guide.*
User Event Status	For user events, the status associated with the event. For information about implementing user events in your application, see the *TransactionVision Programmer's Guide.*
User Event Object	For user events, the object associated with the event. For information about implementing user events in your application, see the *TransactionVision Programmer's Guide.*

By default, some columns (for example, those pertaining only to z/OS events) are hidden. See "Set View Options" on page 176 for instructions on showing and hiding attribute columns.

Color-Coded Completion Codes

Events with a warning or error completion code are displayed in a different color from other events, making them easy to spot.

Sort Order

If the events are sorted, an arrow to the left of the first attribute column heading indicates the sort order. A down arrow indicates that events are sorted in chronological order. An up arrow indicates reverse chronological order. If the events are not sorted, no arrow is displayed.

For information about sorting, see “Sorting and Navigating Large Numbers of Events” on page 172. For instructions on setting the sort order, see “Sort and Navigation Options” on page 177.

Navigation

TransactionVision displays events in pages according to the number of events per page specified in the Event List Options dialog. See “Set View Options” on page 176 for instructions on using this dialog.

If your Event Analysis view contains more than one page of events, use the following navigation links, located below the events, to navigate between pages:

Link	Description
Page Number	Type the page number of the page you wish to display. The numbers to the left of this field indicate the current page number and the total number of pages. For example, [130/731] indicates that the current page is page 130 of 731 total pages.
First Page	Displays the first page of events. This navigation link only appears after page 10 or greater has been displayed.
Prev 10	Goes back 10 pages. This navigation link only appears after page 10 or greater has been displayed.
Prev	Displays the previous page of events. This navigation link does not appear on page 1.
Next	Displays the next page of events.
Next 10	Goes forward 10 pages.
Last Page	Displays the last page of events.

Important! If a large number of events match your query (greater than 100,000 by default), you may optionally disable bi-directional scrolling for faster display. If you disable bi-directional scrolling, the Prev 10 and Prev links will not appear. See “Sorting and Navigating Large Numbers of Events” on page 172 for more information.

Queries and Event Analysis

Query conditions reduce the number of events displayed by restricting the hosts, queue managers, programs, times, and APIs associated with displayed events. For instructions on using queries, see Chapter 2, “Configuring Queries.”

View Commands

View commands enable you to show selected events in the Transaction Analysis or Component Topology Analysis view, view only events in the same local or business transaction, view event details, or set display options for the view.

Open and Close the Event Analysis

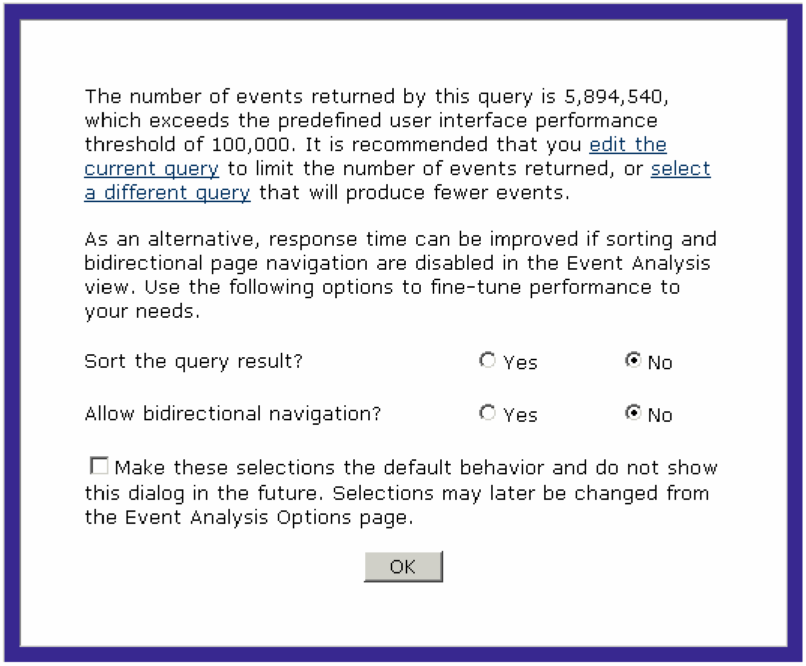
To open the Event Analysis, choose the Views > Event Analysis menu item. You may also open the Event Analysis from the Transaction Analysis view with the Switch View > Event Analysis view command menu selection.

TransactionVision displays an Event Analysis view for the current project and query. To use a different query, select the query from the query menu in the upper right corner of the display. Select New Query from the query menu to create a new query, or select Edit Query to modify the current query. For more information about creating or modifying queries, see Chapter 2.

Sorting and Navigating Large Numbers of Events

Sorting large numbers of events in the Event Analysis view may take quite a bit of time. Enabling bi-directional navigation (so that you can scroll to previous as well as following pages in the view) for large numbers of events also slows performance. To improve performance in the Event List view, you may choose not to sort results and/or enable bi-directional navigation for query results that exceed a certain threshold.

By default, TransactionVision displays the following dialog if the number of events that match the current query is greater than 100,000:



To change the default number of events for this message to be displayed, change the value on the Event Analysis Options page; see “Sort and Navigation Options” on page 177 for instructions.

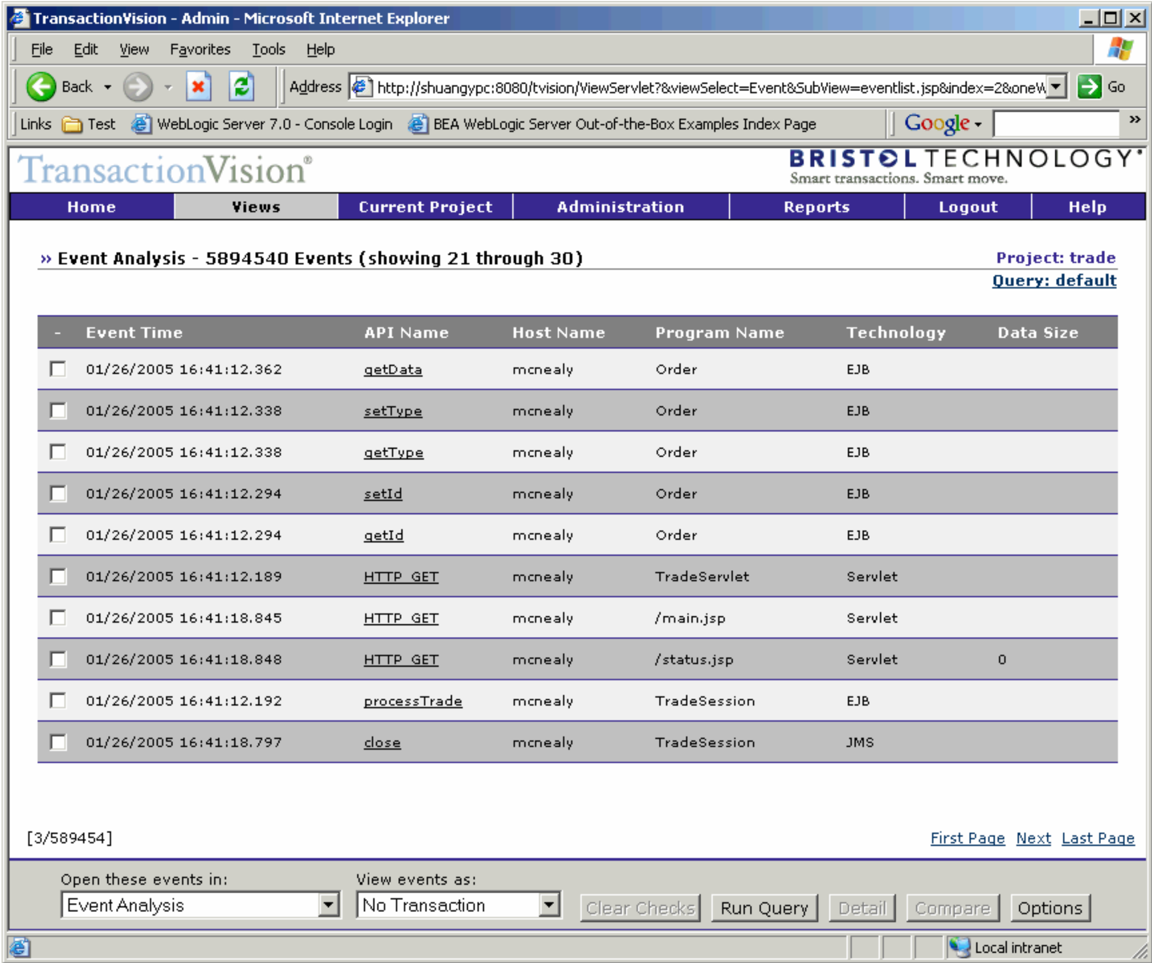
The recommended action in response to this message is to modify your query to produce fewer events. If you do not wish to modify the query, you may improve response time by disabling sorting of events in this view and/or disabling bi-directional navigation.

Sorting Query Results

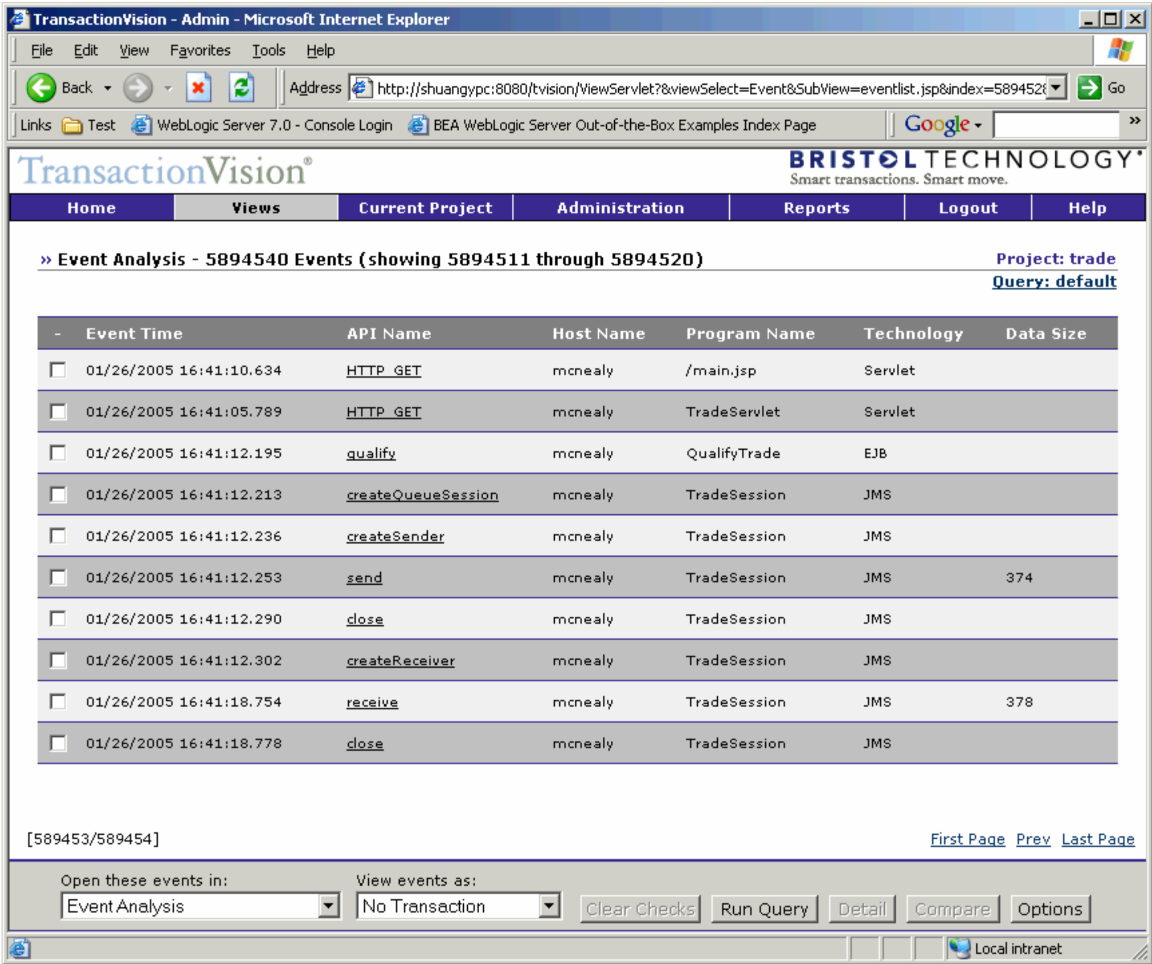
To sort events in the Event List view, click Yes in response to Sort the query result? For faster display, click No.

Allowing Bi-directional Navigation

To enable bi-directional navigation, click Yes in response to Allow bi-directional navigation? For faster display, click No. If you do not allow bi-directional navigation, the Previous links are not available at the bottom of the view as in the following example; only forward navigation is allowed.



When the last page is displayed, the Next link is no longer displayed, as in the following example:



Changing Default Settings

Once you specify whether to sort the query result and allow bi-directional scrolling, you may choose to make your selection the new default behavior. If you check the box to make this selection the default behavior, the Sort dialog will not appear in the future.

You may also set sorting and navigation defaults on the Event Analysis Options dialog. See “ Set View Options” on page 176 for instructions.

Selecting and Deselecting Events

To perform operations such as viewing only events in the same business or local transaction or displaying event details, you must select an event. To select an event, click your cursor in the checkbox to the left of the event. You may select two events; if you select a third event, the first selected event is automatically deselected so that only the two most recent events clicked are selected.

To deselect an event, click the checkbox again to clear the checkmark. To deselect all selected events (useful if selected events are not near each other in the Event Analysis view), click Clear Checks.

Closing the View

The Event Analysis view closes when you select a different view or page from the TransactionVision menus.

Refresh the View

To refresh a view with events collected since the view was opened, click the Run Query view command.

View Related Events

By default, the Event Analysis displays all events in the project that match the current query conditions.

Business Transaction

To display only events in the same business transaction as an event, click the checkbox next to the event to select it and choose the View events as > Business Transaction menu item.

Local Transaction

To display only events in the same local transaction as an event, select the event and choose the View events as > Local Transaction menu item.

No Transaction

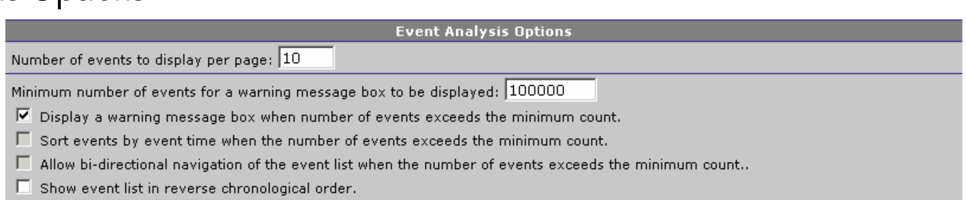
To view all events after viewing only events in a local or business transaction, choose the View events as > No Transaction menu item.

Set View Options

To customize the appearance of the Event Analysis, click Options. The Options page appears.

Set the following options, then click Finish to activate your changes or Cancel to close the dialog without activating your changes:

Event Analysis Options

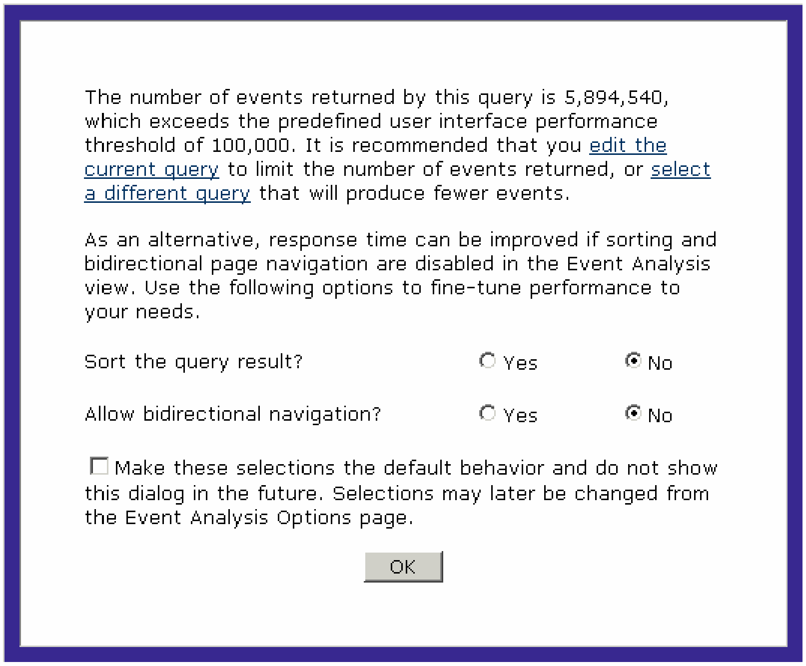


Events Per Page

The Number of events to display per page option sets the number of events that TransactionVision will display per page.

Sort and Navigation Options

Set the default behavior for sorting events and navigating in the Event Analysis view. These options are useful for improving performance when large numbers of events match the query. By default, TransactionVision displays the following dialog when the number of events matching the query exceeds 100,000:



To change the threshold number at which the dialog is displayed, set the desired value for the Minimum number of events for a warning message box to be displayed option.

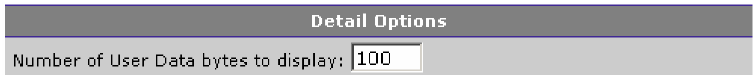
To display the dialog each time the number of events in this view exceeds the threshold, check Display a warning message box when number of events exceeds the minimum count. If this option is not checked, TransactionVision uses the default behavior set by the user in the dialog. The user's default is displayed on the Options page.

To sort events chronologically when the number of events exceeds the threshold, check Sort events by event time when the number of events exceeds the minimum count. If this option is not checked, TransactionVision does not sort the events in the Event Analysis view. Disabling sorting improves performance for large numbers of events.

To allow bi-directional navigation when the number of events exceeds the threshold, check Allow bi-directional navigation of the event list when the number of events exceeds the minimum count. If this option is not checked, the Prev and Prev 10 navigational links are not shown in the Event Analysis view. Disabling bi-directional navigation improves performance for large numbers of events.

To show most recent events first in the Event Analysis view, check Show event list in reverse chronological order. By default, events are shown in chronological order if they are sorted. This option is not available if sorting is disabled.

Detail Options



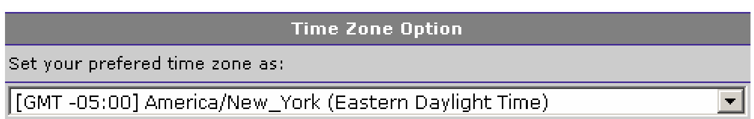
Enter the number of bytes of user buffer data to display in the Event Details view.

Time Column Format

Click the Show the date along with the time checkbox to turn on/off the display of the date in addition to the time in the Entry Time and Exit Time columns.

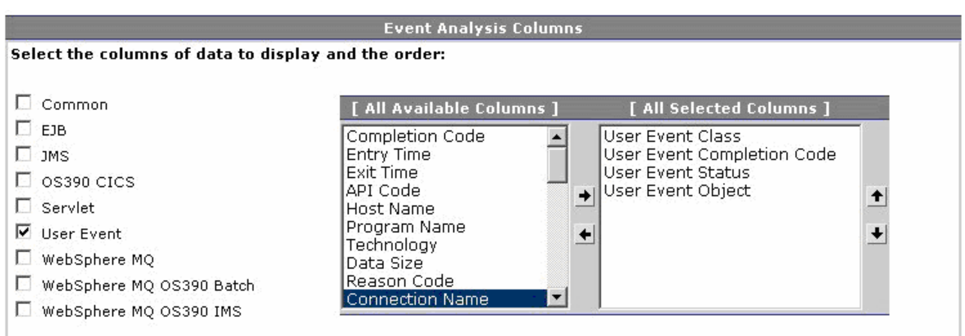
Select whether times in the Entry Time and Exit Time columns should be displayed in millisecond or microsecond format. Note that only events generated on the z/OS and UNIX platforms are recorded with microsecond precision.

Time Zone Options



Select the desired time zone for the Entry Time and Exit Time columns. The timestamp for all events is recorded in Greenwich Mean Time, but all times are displayed in local time for the selected time zone.

Event Analysis Columns



To show all columns associated with one or more technologies, check the checkbox for the desired technology. The associated columns, shown in the following table, are automatically moved to the All Selected Columns list. Clearing a checkbox automatically moves associated columns to the All Available Columns list.

Technology	Columns
Common	Entry Time, Exit Time, API Code, Host, Program, Technology
EJB	EJB Name
JMS	JMS Class, JMS Queue, JMS Topic, JMS Exception Code
OS390 CICS	OS390 Job Name, OS390 Job Step, CICS Task, CICS SYSID, CICS Transaction, API Type, Resource, CICS Response Code
Servlet	Servlet, Status Code, Web Application, Application Server
User Event	User Event Class, User Event Completion Code, User Event Status, User Event Object
WebSphere MQ	Completion Code, Reason Code, Connection Name, Queue Manager, MQ Object, Reply To Queue Manager, Reply To Queue
WebSphere MQ OS390 Batch	OS390 Job Name, OS390 Job Step
WebSphere MQ OS390 IMS	IMS Region ID, IMS Region Type, IMS ID, IMS Transaction, IMS PSB

To show a hidden column, select the column name in the All Available Columns list and click the right arrow. To hide a visible column, select the column name in the All Selected Columns list and click the left arrow. The All Selected Columns list must contain at least one column.

To change the order of the columns in the Event Analysis, select a column name in the All Selected Columns list and click the up and down arrows.

View Event Details

To view event details for a single event in the Event Analysis, click the API name in the event list entry or select the event and click Details. To view event details side-by-side for two events, select them and click Compare.The Event Details view opens, displaying detailed information about the event. See Chapter 6, “Using the Event Detail View,” for more information about this view.

Menu Item	Description
Component Topology Analysis	Creates a Component Topology Analysis view. If you are currently viewing events as a local or business transaction, only components related to those transaction events are shown in the Component Topology Analysis. If you are currently viewing no transactions, the Component Topology Analysis reflects all events in the project that meet the current query conditions. For more information about using the Component Topology Analysis view, see Chapter 3, "Using the Component Topology Analysis View."
Transaction Analysis	Creates a new Transaction Analysis view. If you are currently viewing events as a business transaction, that business transaction is selected and displayed in the Transaction Analysis view. Otherwise, the first business transaction in the project is selected and displayed. For more information about using the Transaction Analysis view, see Chapter 4, "Using the Transaction Analysis View."

Chapter 6
Using the Event Detail View

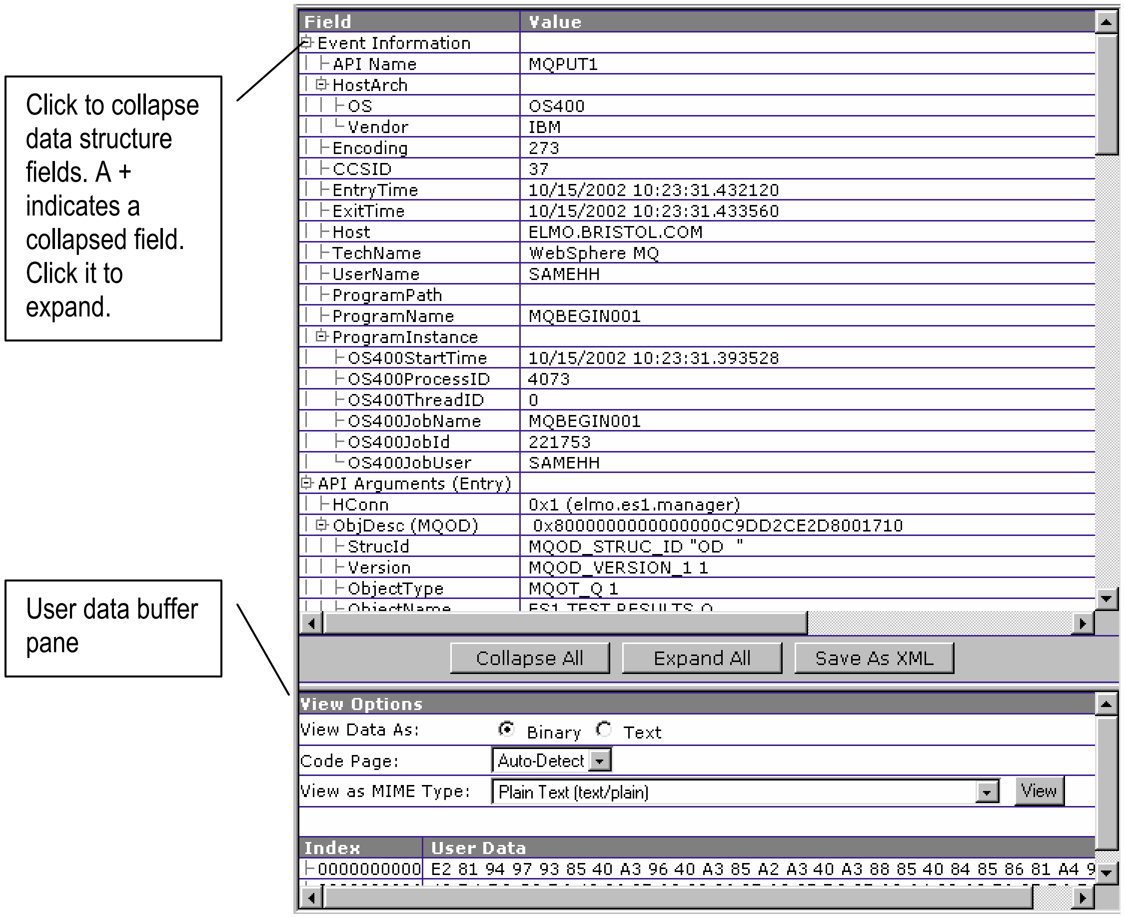
The Event Details view provides additional information about any event in the Transaction Analysis or the Event Analysis. The Event Details view interprets and displays all of the information in the MQMD header information, the dead letter queue header, and the user data buffer associated with the event.

Open and Close the Event Details View

To view details about an event, select the event in the Event Analysis and click Detail. The Event Details window opens. This is a secondary window that displays the contents of the event data structure fields. If the event is for any of the following calls, the window displays the contents of the user data buffer for the event in a separate pane below the other fields:

- WebSphere MQ MQPUT, MQPUT1, or MQGET calls. Note that for IBM z/OS Batch events, the WebSphere MQ connection handle seen by the user application and the one reported by the Analyzer are always different. The user application sees the SPC pointer, while the Analyzer reports the real connection handle.
- JMS send or receive calls.
- Servlet HTTP_POST or HTTP_GET requests. When a servlet includes other servlets to compose its contents, the user data for each included servlet shows the portion of contents it generated. The user data for the parent servlet shows all the contents generated by all included servlets, plus its own data.

Important! Note that if the data collection filter assigned to the project specifies to collect the API Names Only data range, TransactionVision is unable to display details for events recorded with that filter. See the *TransactionVision Administrator's Guide* for more information about data collection filters.



Expand and Collapse Details

TransactionVision displays event details in a hierarchy, enabling you to view different levels of detail.

To expand a single node, click . To expand all nodes, click Expand All.

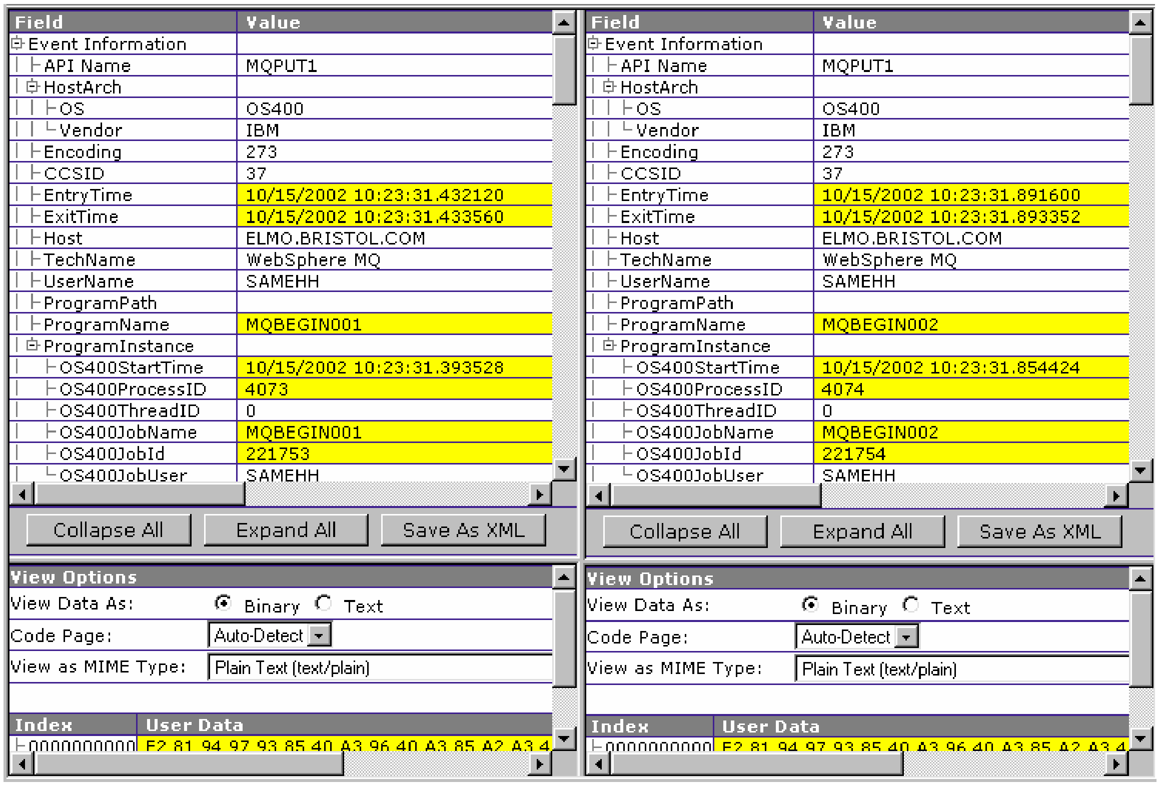
To collapse the details below a single node, click . To collapse all nodes, click Collapse All.

Save Copy of Event Details

To save a copy of the current event as an XML document, click Save as XML. This option is only available for Internet Explorer.

Compare Two Events

To compare values for two events, select them both in the Event Analysis view and click Compare. The details appear in a secondary window that displays the contents of the event data structure fields for both events side-by-side. If the events are both for the same call type (for example, both for MQGET events or both JMS send events), any fields with different values are highlighted in yellow. Note that any two EJB events are comparable, too. The difference will be highlighted and the event detail tree nodes is sorted under the same level.



Scroll lock is automatically set for the left and right panes. Scrolling in one window automatically scrolls the other window so you can compare fields easily.

Set Data Buffer Display Options

You may set the following options for the user data buffer contents:

Option	Description
View Data As:	Select whether to display the contents of the user data buffer in binary or text format.
Code Page:	Applies code page conversions to event data. Choose Auto-Detect or select from available string code conversions.

Option	Description
View MIME Type:	Select a MIME type to view or save the contents of the user data buffer as and click **View**. TransactionVision displays the contents of the user data buffer as a file of the selected type. You may save this file if you wish.

Chapter 7
Using Reports

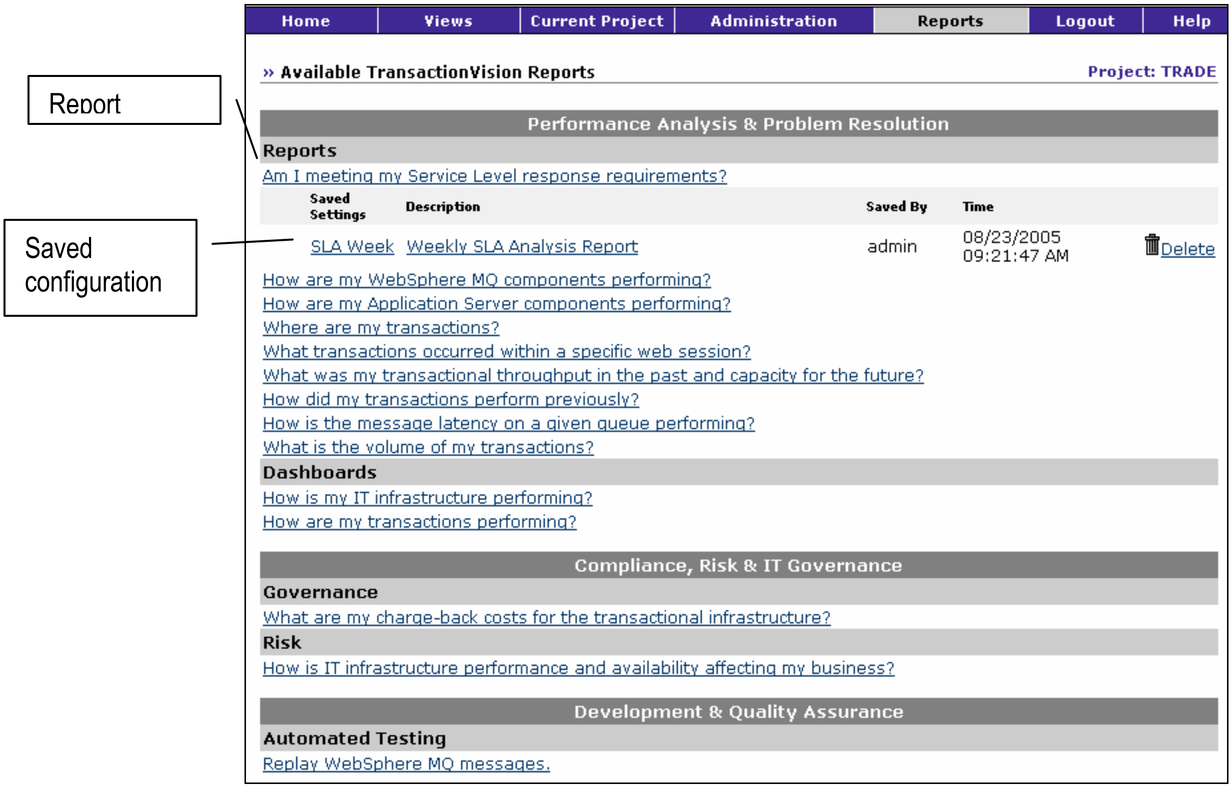
Reports provide vertically focused business reporting to specific industries, as well as custom business reports and analysis developed to suit your specific requirements.

This chapter provides instructions on using the standard reports installed with TransactionVision. For information on creating your own custom reports, see the *TransactionVision Programmer's Guide*.

Viewing Reports

To view a list of available reports, click Reports. The Available TransactionVision Reports page appears.

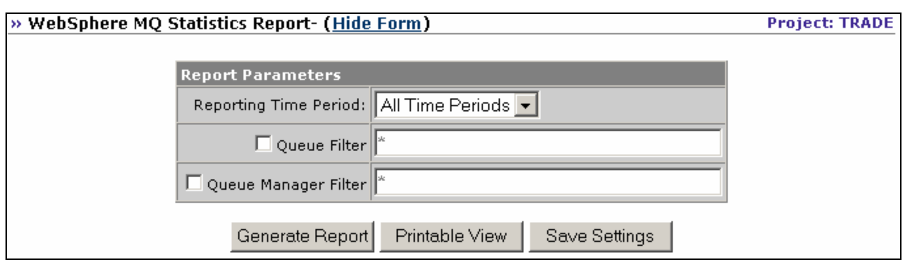
This page lists all available reports. For each report, it also lists any saved configurations. You can save a report configuration after running a report. Saving a configuration enables you run a report using the saved configuration settings, rather than setting configuration options each time you run the report. This feature is useful for reports that you run with the same configuration options on a regular basis, such as a daily performance report.



Running a Report

To run a report, perform the following steps:

1. Click the link for the report. TransactionVision displays a report configuration dialog similar to the following:



2. Select the reporting time period from the list of predefined time periods.

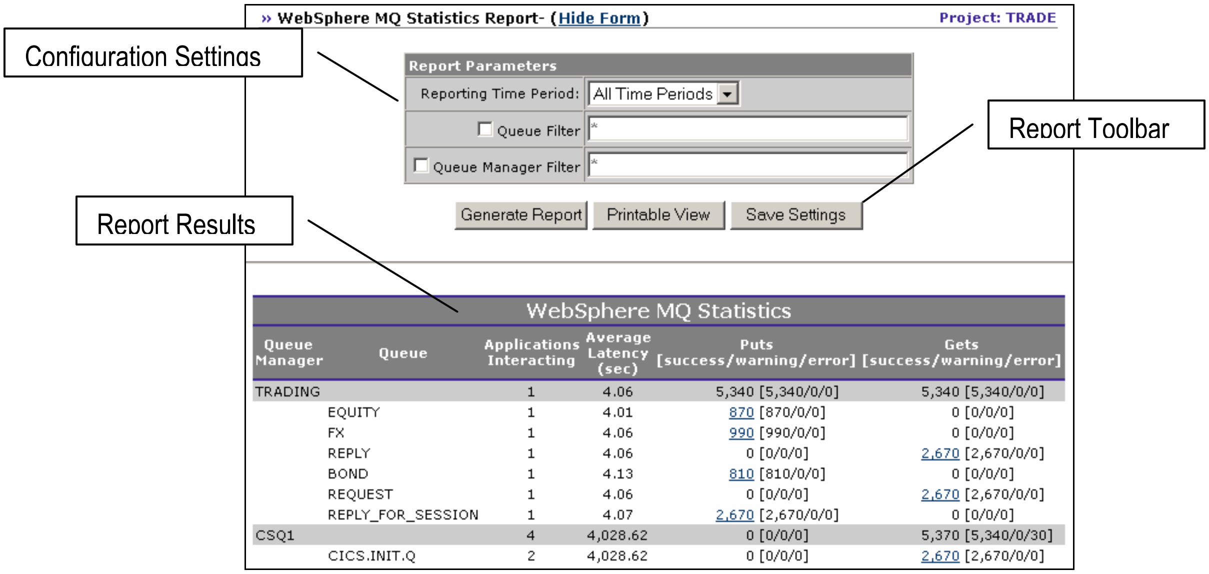
   - To specify a custom time period, choose Date Range and specify the start and end dates and times. The default start and end dates are based on the dates and times of events in the project. Click the calendar icon to select a date from a calendar control.

   - To include all statistics for the entire project, choose All Time Periods.

3. Different reports may have additional configuration settings; see the section for the specific report you are running for information about its configuration settings.
4. For custom reports written with the Actuate reporting tool, specify the desired output format: HTML, PDF, or Excel. For information about integrating Actuate reports, see the *TransactionVision Programmer's Guide*.

   Important! If you add Actuate reports to TransactionVision, note that the Actuate report engine requires an X connection to run. Your web server should be started in an environment where DISPLAY is set to a valid X server. By default, it will try to connect to the default display, "0:0". If X is not available or permission does not exist for the user to access X on the server machine, then you must set the DISPLAY environment variable to a valid X server.
5. Click Create Report. TransactionVision runs the report, then displays the results page as in the following example. The results page contains the following components:
   - The report configuration dialog
   - A report toolbar for updating the report with different configuration settings, generating a print preview of the report results, and saving configuration settings
   - The chart or table showing report results

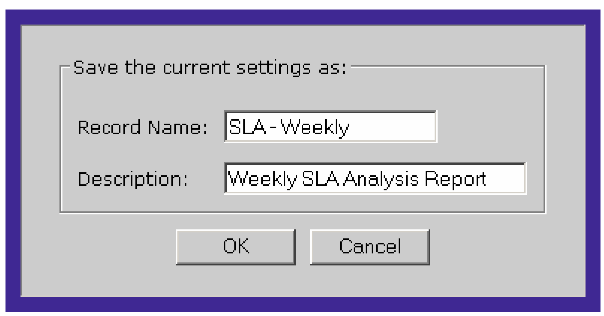
Important! To hide the report configuration dialog and report toolbar, click Hide Form in the report title. To show a hidden report configuration dialog and report toolbar, click Show Form.



Saving Configuration Settings

To save the current configuration settings after running a report, perform the following steps:

1. Click Save Settings. TransactionVision displays the following dialog:



2. Enter a name and description for the configuration. This information appears on the Available TransactionVision Reports page.
3. Click OK. TransactionVision saves the configuration settings for a particular project, so the saved settings will only be visible when that project is active. A saved report is also visible to any other users who have access to this report, so users can share the results of their reports with others.

Running a Report with Saved Configuration Settings

If you have already saved a report configuration and want to run it again with the same settings, click the link for the saved configuration on the Available TransactionVision Reports page. TransactionVision runs the report using the saved configuration settings and displays the results page.

Deleting Saved Configuration Settings

To delete saved configuration settings, click the Delete button to the right of the saved configuration on the Available TransactionVision Reports page. Only the user that saved a configuration may delete it.

Updating a Report

After running a report, you may wish to run it again with different configuration settings. To update a report, perform the following steps:

1. On the report results page, change configuration settings as desired.
2. Click Generate Report. TransactionVision runs the report with the new configuration settings and displays the results.

Printing Report Results

Use your browser's print mechanism to print report results. However, printing the report results page prints the configuration settings and report toolbar in addition to the report results. To print only the report results, perform the following steps:

1. On the report results page, click Printable View. TransactionVision opens a new page showing only the report results.
2. Choose the browser's File > Print menu item to print the page.

Changing Chart Types

Many TransactionVision reports use the PopChart control to display results in a chart. By default, TransactionVision uses the Macromedia Flash Player to display these charts. If the Flash Player is not installed or is older than version 6, you are automatically directed to the Macromedia web site to install the latest version.

If you prefer to use the Adobe SVG viewer instead of Flash to display charts, edit the file <TVISION_HOME>/config/ui/PopChart.properties, setting the popChartOutput property to SVG instead of Flash.

Enabling International Character Display

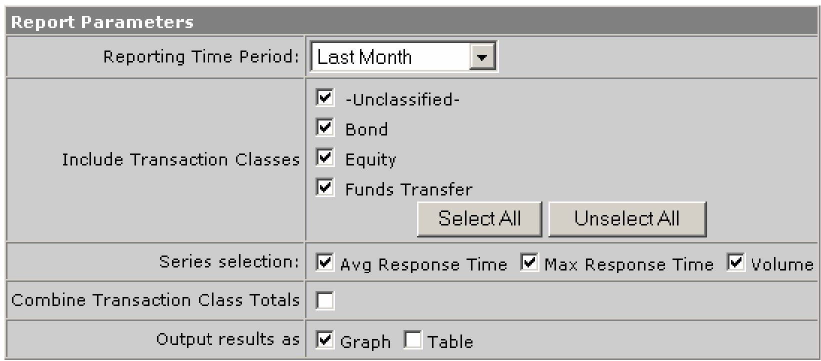
Both Actuate and PopChart based reports can display transaction class names in double-byte code pages. For PopChart reports, you must copy the PopChart report configuration file from its localized directory to the root directory for reports to display double-byte character sets correctly. For exmple, `$TVISION_HOME/config/popchart/chart_root/ja` contains all the PopChart configuration files necessary to generate reports of Japanese text content. Copy all of these files to `$TVISION_HOME/config/popchart/chart_root` **before** starting the TransactionVision Web User Interface.

Service Level Analysis Report

- The Service Level Analysis report provides transaction response time and availability service level analysis for the current project.

To run the Service Level Analysis report, perform the following steps:

1. Click the Am I meeting my Service Level Agreement response requirements? link on the Reports page.



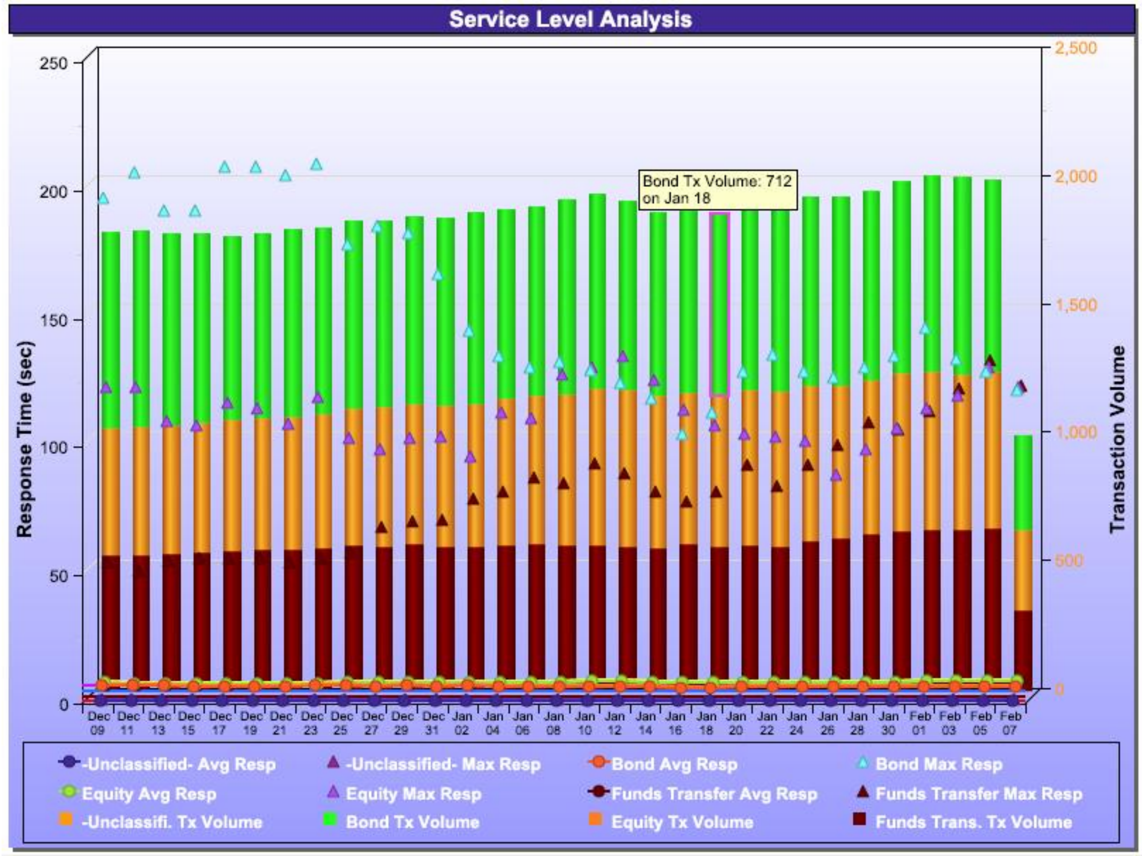
2. Select the reporting time period from the list of predefined time periods. To specify a custom time period, choose Date Range and specify the start and end dates and times. Click the calendar icon to select a date from a calendar control. To include all statistics for the entire project, choose All Time Periods.
3. Check the transaction classes you wish to include in the report. To select all transaction classes, click Select All. To deselect all transaction classes, click Unselect All. For information about defining classes, see the *TransactionVision Programmer's Guide*.
4. By default, the report plots three elements over time for each transaction class:
   - Average response time
   - Maximum transaction response time
   - Transaction volume

   Select each element you wish to include in your report; deselect any element you do not with to include.
5. Check whether to show combined totals for all selected transaction classes instead of totals for each selected class.
6. Select whether to display results in a graph, a table, or both.
7. Click Generate Report. TransactionVision displays the results in a chart similar to the example on the following page and/or a table, depending on your report settings.

For each transaction class, vertical bars represent transaction volume, triangles represent the transaction with the maximum response time, and circles represent the average response time.

8. To view more information about a data item in the chart, move your cursor over the data item. TransactionVision displays a tool-tip that shows the legend and value of the data item.
9. For more detailed information about transactions in the report, do either of the following:
   - Click a section of a vertical bar to run the Transaction Tracking report on all the transactions it represents.
   - Click a triangle to show the Transaction Details view of the Transaction Tracking report for the specific transaction it represents.

   For more information about the Transaction Tracking report, see page 198.
10. To zoom in on the results chart, point your cursor to the area of the chart you wish to zoom and do either of the following:
    - Right-click and choose Zoom In from the shortcut menu.
    - Hold the CTRL key and click the chart.



WebSphere MQ Statistics Report

This report shows statistics on the activity of your WebSphere MQ infrastructure. For each queue manager, it reports the following activity for each queue, for both WebSphere MQ and JMS:

- Applications interacting with the queue
- Average latency in seconds
- Total number of WebSphere MQ Get and Put or JMS send/receive events
- Number of successful, warning, or failed WebSphere MQ Get and Put or JMS send/receive events

To run the WebSphere MQ Statistics report, perform the following steps:

1. Click the How are my WebSphere MQ components performing? link on the Reports page.

2. Select the reporting time period from the list of predefined time periods. To specify a custom time period, choose Date Range and specify the start and end dates and times. Click the calendar icon to select a date from a calendar control. To include all statistics for the entire project, choose All Time Periods.
3. If desired, specify queue and/or queue manager filters. By default, TransactionVision includes all queues and queue managers in the project in the report. To restrict the report to specified queues or queue managers, check the queue filter and or queue manager filter checkbox and enter the names of the queues and/or queue managers to include in the report. Separate multiple queues or queue managers with commas. You may include the * wildcard character as the prefix or suffix to an object name; for example, TRADE* to restrict the report to queue names with the prefix TRADE.
4. Click Generate Report. TransactionVision shows the results in a table similar to the following example:

WebSphere MQ Statistics

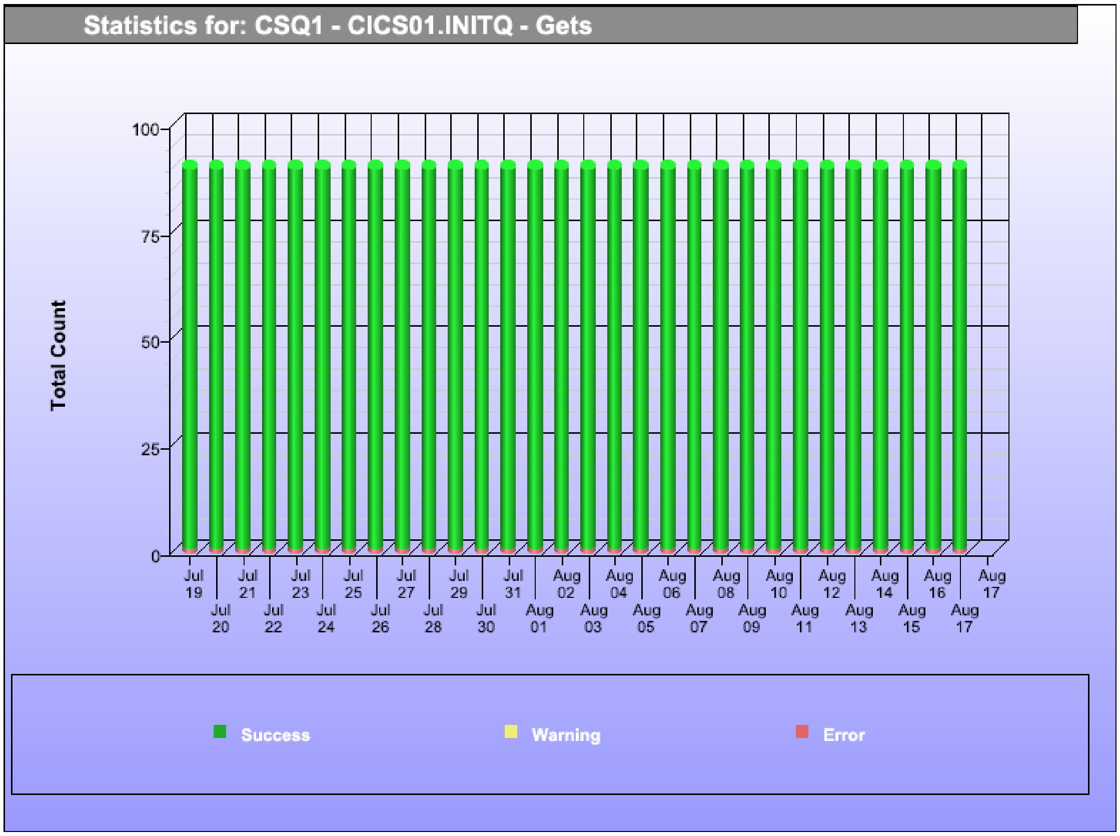
Queue Manager	Queue	Applications Interacting	Average Latency (sec)	Puts [success/warning/error]	Gets [success/warning/error]
TRADING		1	4.06	5,340 [5,340/0/0]	5,340 [5,340/0/0]
	EQUITY	1	4.01	870 [870/0/0]	0 [0/0/0]
	FX	1	4.06	990 [990/0/0]	0 [0/0/0]
	REPLY	1	4.06	0 [0/0/0]	2,670 [2,670/0/0]
	BOND	1	4.13	810 [810/0/0]	0 [0/0/0]
	REQUEST	1	4.06	0 [0/0/0]	2,670 [2,670/0/0]
	REPLY_FOR_SESSION	1	4.07	2,670 [2,670/0/0]	0 [0/0/0]
CSQ1		4	4,028.62	0 [0/0/0]	5,370 [5,340/0/30]
	CICS.INIT.Q	2	4,028.62	0 [0/0/0]	2,670 [2,670/0/0]
	CICS01.INITQ	2	-	0 [0/0/0]	2,700 [2,670/0/30]

JMS Statistics

Queue Manager	Queue	Applications Interacting	Average Latency (sec)	Puts [success/error]	Gets [success/error]
TRADING		7	4.06	5,340 [5,340/0]	5,340 [5,340/0]
	EQUITY	1	4.03	0 [0/0]	870 [870/0]
	FX	1	4.06	0 [0/0]	990 [990/0]
	REPLY	3	4.06	2,670 [2,670/0]	0 [0/0]
	REQUEST	1	4.06	2,670 [2,670/0]	0 [0/0]
	BOND	1	4.11	0 [0/0]	810 [810/0]
	REPLY_FOR_SESSION	1	4.05	0 [0/0]	2,670 [2,670/0]
poojajpc.tv1.manager		3	4,028.62	2,670 [2,670/0]	0 [0/0]
	REMOTE.TO.CSQ1	3	4,028.62	2,670 [2,670/0]	0 [0/0]

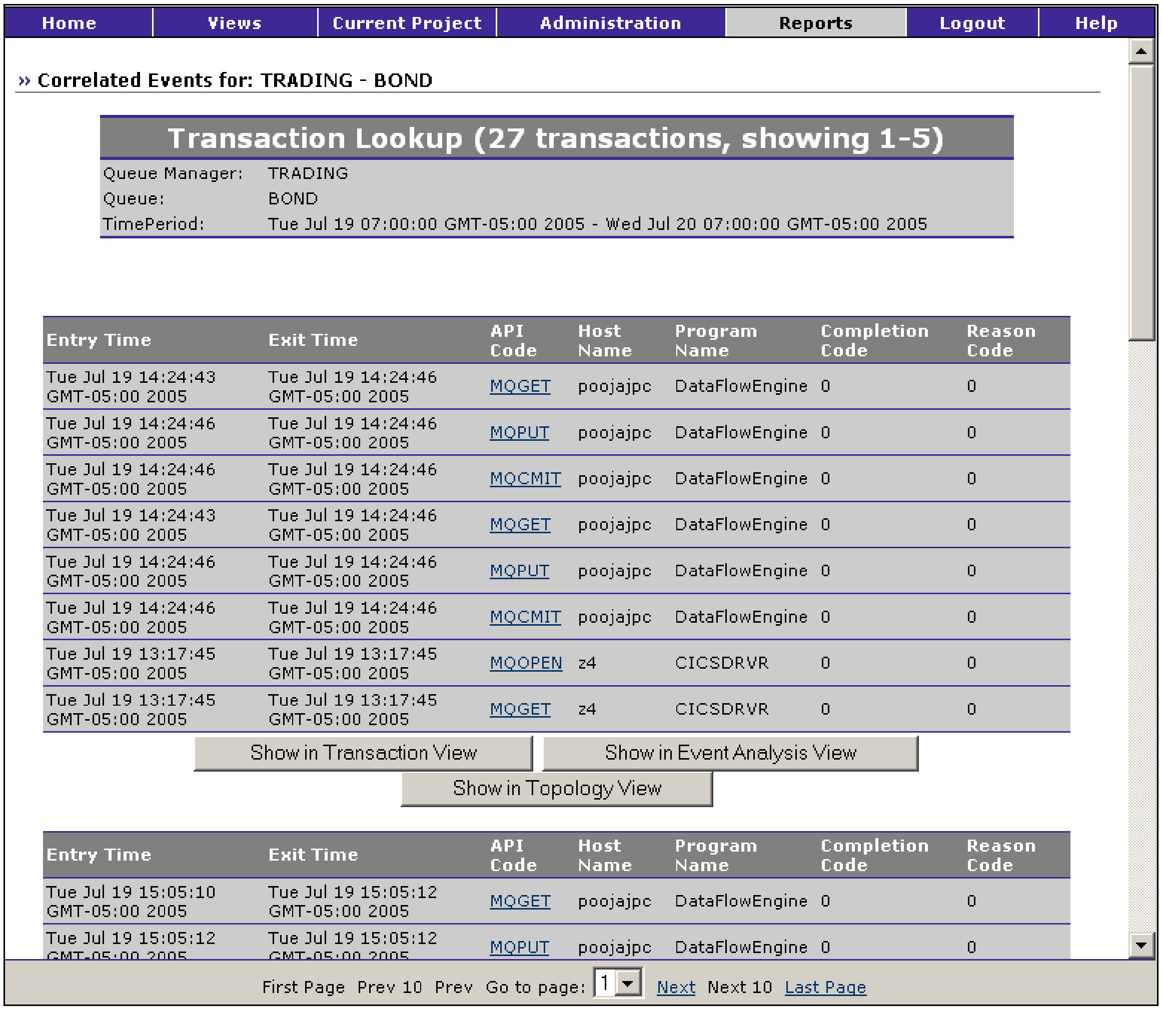
5. Click the event count link for a queue to view a chart and table showing additional information about the WebSphere MQ Put or Get events for that queue. TransactionVision displays the results in a new window.

» Overview of: CSQ1 - CICS01.INITQ - Gets



From	To	Total	Success	Warning	Error
Jul 19	Jul 20	90	89	0	1
Jul 20	Jul 21	90	89	0	1
Jul 21	Jul 22	90	89	0	1
Jul 22	Jul 23	90	89	0	1

6. Move your cursor over the Total Count bar in the chart to display a tooltip showing its value.
7. Click the Total link in the table or the Total Count bar in the chart to view transaction details for all the transactions for a given day. TransactionVision displays the results in a new window.



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» Correlated Events for: TRADING - BOND

Transaction Lookup (27 transactions, showing 1-5)

Queue Manager:	TRADING
Queue:	BOND
TimePeriod:	Tue Jul 19 07:00:00 GMT-05:00 2005 - Wed Jul 20 07:00:00 GMT-05:00 2005

Entry Time	Exit Time	API Code	Host Name	Program Name	Completion Code	Reason Code
Tue Jul 19 14:24:43 GMT-05:00 2005	Tue Jul 19 14:24:46 GMT-05:00 2005	MQGET	poojajpc	DataFlowEngine	0	0
Tue Jul 19 14:24:46 GMT-05:00 2005	Tue Jul 19 14:24:46 GMT-05:00 2005	MQPUT	poojajpc	DataFlowEngine	0	0
Tue Jul 19 14:24:46 GMT-05:00 2005	Tue Jul 19 14:24:46 GMT-05:00 2005	MQCMIT	poojajpc	DataFlowEngine	0	0
Tue Jul 19 14:24:43 GMT-05:00 2005	Tue Jul 19 14:24:46 GMT-05:00 2005	MQGET	poojajpc	DataFlowEngine	0	0
Tue Jul 19 14:24:46 GMT-05:00 2005	Tue Jul 19 14:24:46 GMT-05:00 2005	MQPUT	poojajpc	DataFlowEngine	0	0
Tue Jul 19 14:24:46 GMT-05:00 2005	Tue Jul 19 14:24:46 GMT-05:00 2005	MQCMIT	poojajpc	DataFlowEngine	0	0
Tue Jul 19 13:17:45 GMT-05:00 2005	Tue Jul 19 13:17:45 GMT-05:00 2005	MQOPEN	z4	CICSDRVR	0	0
Tue Jul 19 13:17:45 GMT-05:00 2005	Tue Jul 19 13:17:45 GMT-05:00 2005	MQGET	z4	CICSDRVR	0	0

Show in Transaction View | Show in Event Analysis View

Show in Topology View

Entry Time	Exit Time	API Code	Host Name	Program Name	Completion Code	Reason Code
Tue Jul 19 15:05:10 GMT-05:00 2005	Tue Jul 19 15:05:12 GMT-05:00 2005	MQGET	poojajpc	DataFlowEngine	0	0
Tue Jul 19 15:05:12 GMT-05:00 2005	Tue Jul 19 15:05:12 GMT-05:00 2005	MQPUT	poojajpc	DataFlowEngine	0	0

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8. To view more information, do any of the following:
   - Click an API Code link to view the Event Detail view for that API.
   - Click Show in Transaction View to display a transaction in the Transaction Analysis view.
   - Click Show in Event Analysis View to display the transaction events in the Event Analysis view.
   - Click Show in Topology View to view the flow of events within the transaction in the Component Topology Analysis view.

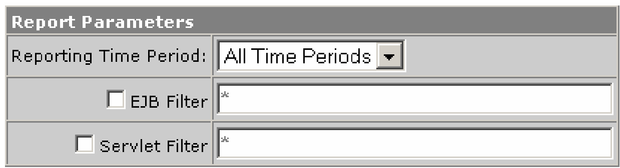
Application Server Statistics Report

This report shows statistics on the activity of your EJBs and Servlets. It breaks down activity by EJB and EJB method, and by Servlet, showing the following for each:

- Successful call count
- Error call count
- Average latency

To run the Application Server Performance report, perform the following steps:

1. Click the How are my Application Server components performing? link on the Reports page.

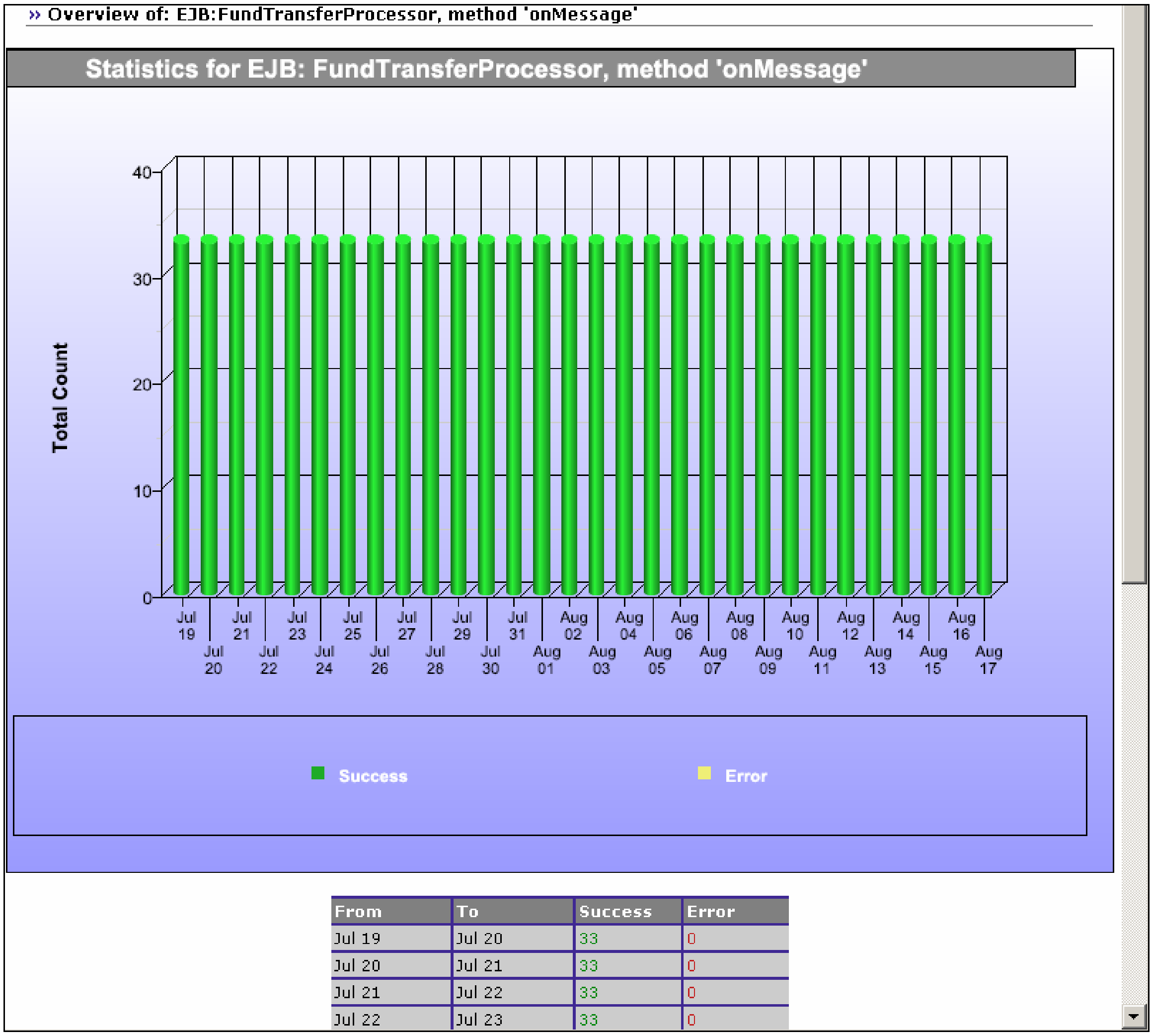


2. Select the reporting time period from the list of predefined time periods. To specify a custom time period, choose Date Range and specify the start and end dates and times. Click the calendar icon to select a date from a calendar control. To include all statistics for the entire project, choose All Time Periods.
3. If desired, specify EJB and/or servlet filters. By default, TransactionVision includes all EJB and servlet names in the project in the report. To restrict the report to specified EJBs or servlets, check the EJB filter and or servlet filter checkbox and enter the EJB and/or servlet names to include in the report. Separate multipleentries with commas. You may include the * wildcard character as the prefix or suffix to a name; for example, TRADE* to restrict the report to names with the prefix TRADE.
4. Click Generate Report. TransactionVision displays results similar to the following example:

EJB Statistics				
EJB	EJB Method	Success Call count	Error Call count	Average Method time (sec)
BondTradeProcessor				
	onMessage	1,620	0	0.18
EquityTradeProcessor				
	onMessage	1,740	0	0.28
FundTransferProcessor				
	onMessage	990	0	0.28
Order				
	ejbCreate	2,670	0	0.03
	ejbLoad	2,670	0	0.01
	ejbPostCreate	2,670	0	0.03
	ejbStore	5,340	0	0
	getData	5,340	0	0
	getId	10,680	0	0
	getType	5,340	0	0
	process	2,670	0	0
	setData	2,670	0	0
	setId	2,670	0	0
	setType	2,670	0	0
QualifyTrade				
	ejbCreate	30	0	0
	qualify	2,670	330	0
TradeSession				
	ejbCreate	30	0	0.07
	processTrade	3,000	0	0.26

Servlet Statistics			
Servlet	Success Call count	Error Call count	Average Method time (sec)
TradeServlet	3,000	0	60.57

5. Click the Success Call count link to view a chart and table showing additional information about an EJB method or servlet. TransactionVision displays the results in a separate window.



From	To	Success	Error
Jul 19	Jul 20	33	0
Jul 20	Jul 21	33	0
Jul 21	Jul 22	33	0
Jul 22	Jul 23	33	0

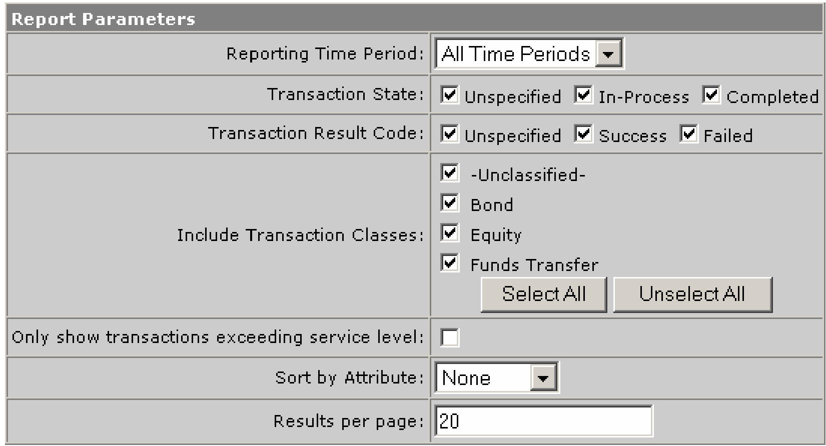
6. Move your cursor over the Total Count bar in the chart to display a tooltip showing its value.

Transaction Tracking Report

The Transaction Tracking report enables you to list transactions and drill down into individual transactions to analyze their behavior. A number of filtering criteria enable you to limit the displayed results to only those transactions with a certain completion state, result state, or those transactions that have exceeded the service level. Individual transactions can be further examined to display additional details.

To run the Transaction Tracking report, perform the following steps:

1. Click the Where are my transactions link on the Reports page.



2. Select the reporting time period from the list of predefined time periods. To specify a custom time period, choose Date Range and specify the start and end dates and times. Click the calendar icon to select a date from a calendar control. To include all statistics for the entire project, choose All Time Periods.
3. Select the transaction states you wish to include in the report. Only transactions with the selected state will be included in the report results.
4. Select the transaction result codes you wish to include in the report. Only transactions with the selected result codes will be included in the report results.
5. Check the transaction classes you wish to include in the report. To select all transaction classes, click Select All. To deselect all transaction classes, click Unselect All. For information about defining classes, see the *TransactionVision Programmer's Guide*.
6. Specify whether to show only transactions that exceed service level agreements.
7. Select a custom attribute to sort results by, if desired. Custom attribute colums are available if you have added rules to the transaction definition file `$TVISION_HOME/config/services/TransactionDefinition.xml` to configure the Analyzer to extract and store the other information about transactions (such as session ID, customer ID, etc.). For more information on adding rules to the transaction definition file, see the *TransactionVision Programmer's Guide*.
8. Specify whether to show results in descending or ascending order by transaction start time. The default order is ascending.

9. Specify the number of transactions to show per page of results. If the number of transactions that match the setting exceeds this number, TransactionVision generates multiple pages of results.
10. Click Generate Report. TransactionVision displays results similar to the following example:

Transaction Tracking Report
(8550 transactions, showing 1-20)

Tx Class	Start Time	Response Time	Completion State	Result State	Label	SLAState
-Unclassified-	07/19/2005 13:59:56.835	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:00:53.085	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:03:01.902	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:04:15.571	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:10:59.788	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:14:22.857	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:17:45.068	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:21:08.092	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:24:30.354	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:27:53.034	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:31:15.498	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:34:38.086	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:37:59.727	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:41:21.441	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:44:43.166	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:48:05.454	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:51:27.629	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:54:49.317	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 14:58:11.116	0.00	Unknown	Unknown		None
-Unclassified-	07/19/2005 15:01:33.384	0.00	Unknown	Unknown		None

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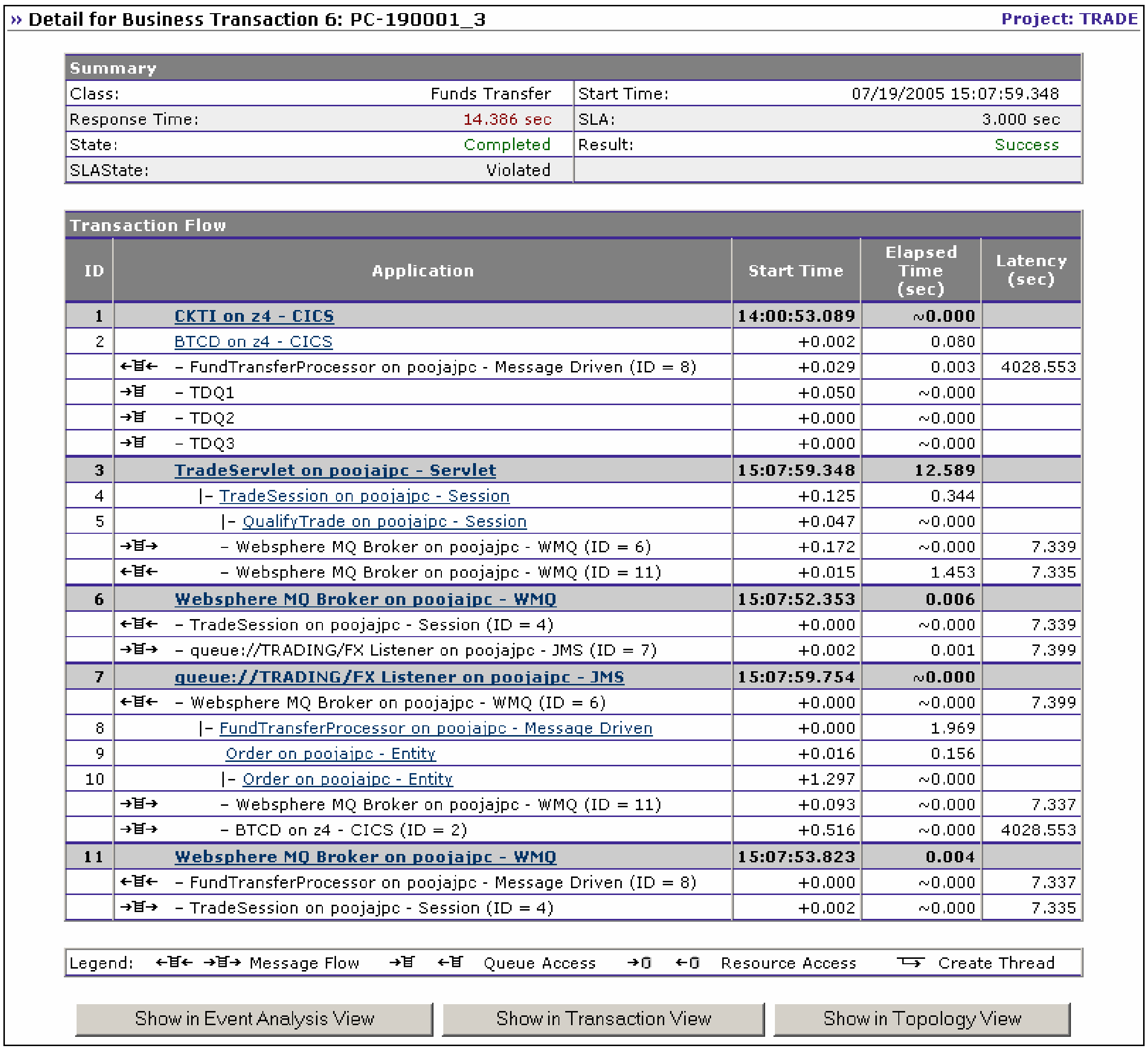
By default, this report shows the following information for each transaction that meets the report requirements:

- Transaction class. By default, transactions are unclassified. See the *TransactionVision Programmer's Guide* for information about transaction classification.
- Start time
- Response time
- Completion state
- Result state
- Label. By default, transaction labels are null. See the *TransactionVision Programmer's Guide* for information about modifying transaction attributes.

Furthermore, if you have added rules to the transaction definition file `$TVISION_HOME/config/services/TransactionDefinition.xml` to configure the Analyzer to extract and store the other information about transactions (such as session ID, customer ID, etc.), the report provides columns for that information as well. In this example, SLAState is a custom column. For more information on adding rules to the transaction definition file, see the *TransactionVision Programmer's Guide*.

11. To view details about a particular transaction, click the transaction class link. TransactionVision displays the Transaction Details page in a new browser window, so you may view details for more than one transaction at a time. The Transaction Details page provides the following information for the selected transaction:


» Detail for Business Transaction 6: PC-190001_3 Project: TRADE

Summary			
Class:	Funds Transfer	Start Time:	07/19/2005 15:07:59.348
Response Time:	14.386 sec	SLA:	3.000 sec
State:	Completed	Result:	Success
SLAState:	Violated		

Transaction Flow

ID	Application	Start Time	Elapsed Time (sec)	Latency (sec)
1	CKTI on z4 - CICS	14:00:53.089	~0.000	
2	BTCD on z4 - CICS	+0.002	0.080	
	– FundTransferProcessor on poojajpc - Message Driven (ID = 8)	+0.029	0.003	4028.553
	– TDQ1	+0.050	~0.000	
	– TDQ2	+0.000	~0.000	
	– TDQ3	+0.000	~0.000	
3	TradeServlet on poojajpc - Servlet	15:07:59.348	12.589	
4	|– TradeSession on poojajpc - Session	+0.125	0.344	
5	|– QualifyTrade on poojajpc - Session	+0.047	~0.000	
	– Websphere MQ Broker on poojajpc - WMQ (ID = 6)	+0.172	~0.000	7.339
	– Websphere MQ Broker on poojajpc - WMQ (ID = 11)	+0.015	1.453	7.335
6	Websphere MQ Broker on poojajpc - WMQ	15:07:52.353	0.006	
	– TradeSession on poojajpc - Session (ID = 4)	+0.000	~0.000	7.339
	– queue://TRADING/FX Listener on poojajpc - JMS (ID = 7)	+0.002	0.001	7.399
7	queue://TRADING/FX Listener on poojajpc - JMS	15:07:59.754	~0.000	
	– Websphere MQ Broker on poojajpc - WMQ (ID = 6)	+0.000	~0.000	7.399
8	|– FundTransferProcessor on poojajpc - Message Driven	+0.000	1.969	
9	Order on poojajpc - Entity	+0.016	0.156	
10	|– Order on poojajpc - Entity	+1.297	~0.000	
	– Websphere MQ Broker on poojajpc - WMQ (ID = 11)	+0.093	~0.000	7.337
	– BTCD on z4 - CICS (ID = 2)	+0.516	~0.000	4028.553
11	Websphere MQ Broker on poojajpc - WMQ	15:07:53.823	0.004	
	– FundTransferProcessor on poojajpc - Message Driven (ID = 8)	+0.000	~0.000	7.337
	– TradeSession on poojajpc - Session (ID = 4)	+0.002	~0.000	7.335

Legend: Message Flow Queue Access Resource Access Create Thread

Show in Event Analysis View | Show in Transaction View | Show in Topology View

- The **Summary** shows the class, response time, status, start time, result, and the value for any custom attributes (SLAState and SLA in this example).
- The **Transaction Flow** shows the local transaction ID, application name, start time, and processing time for each local transaction within the selected business transaction. An icon indicates whether the local transaction starts a message flow,

accesses a queue, accesses a resource, or creates a thread.

If a message flow starts from the application in a local transaction, a sub-row appears. The direction of the arrows in the message flow icon in the sub-row indicates whether a message flow starts or ends from the application. Arrows pointing right indicate a message flow start; arrows pointing left indicate a message flow end. The message flow icon is followed by the name of the application where the message flow starts or ends. Both the queue icon and the application name link to the local transaction where the message flow ends. Click this link to navigate to the local transaction where the message flow ends.

A sub-row without an icon indicates that a control flow starts from the application. The sub-row specifies the name of the application where the control flow ends. Click the application name in the sub-row to navigate to the local transaction where the control flow ends.

Note that processing time for each program does not include the CICS TASK_START and TASK_END events, because these events do not contain a program name. Therefore, the processing time in this report differs slightly from the execution times in the Transaction Analysis view.

12. To display the Event Details view for an event message in the Transaction Details page, click the message link in the Transaction Flow table or the latency link in the Message Flow table. The Event Details view opens in a separate browser window. For a message flow, separate panes show a side-by-side comparison of the departure and arrival user data buffer. For a control flow, only the event details for the event that corresponds to the destination event in the control flow are shown. For more information about the Event Details view, see Chapter 6, “Using the Event Details View.”
13. To display the current business transaction in the Transaction Analysis view, click Show in Transaction View on the Transaction Details page. The Transaction Analysis View opens in a separate browser window. For more information about the Transaction Analysis view, see Chapter 4, “Using the Transaction Analysis View.”

    Note that the current query is **not** applied to the Transaction Analysis view. All business transactions are listed in the left pane, with the selected transaction highlighted.

14. To display the current business transaction in the Event Analysis view, click Show in Event Analysis View on the Transaction Details page. The Event Analysis View opens in a separate browser window. For more information about the Event Analysis view, see Chapter 5, “Using the Event Analysis View.”
15. To display the current business transaction in the Component Topology Analysis view, click Show in Topology View on the Transaction Details page. The Component Topology Analysis View opens in a separate browser window. For more information about the Transaction Analysis view, see Chapter 3, “Using the Component Topology Analysis View.”

Web Session Report

This report provides access to all transactions by session ID within a specified time range. You may optionally specify a customer ID to filter the sessions in the report output.

Enabling Session Tracking

In order to use this report your Analyzer must be configured to extract and store session ID information. This information is not stored by default. To filter using the customer ID, the customer field must also be populated for each business transaction.

To enable analysis and classification of session ID with a servlet's transaction, perform the following steps:

1. Modify the transaction.xdm file to include the fields to store the transaction id.
2. The web session report uses the `/Transaction/sessionid` and `/transaction/customer` fields to display its report.

   To add the customer and session xdm mapping, add the following:

   ```
   <Column name="customer" type="VARCHAR" size="32"
   description="Customer">
      <Path>/Transaction/Customer</Path>
   </Column>
   <Column name="sessionid" type="VARCHAR" size="32"
   description="SessionId">
      <Path>/Transaction/SessionId</Path>
   </Column>
   ```
3. Enable the Classification bean in the `Beans.xml` file.
4. Add the following classification definition to `TransactionDefinition.xml`. Add your schema name to the `dbschema` attribute.

```
<Class name="web" dbschema="YOUR_SCHEMA_NAME_HERE">
   <Classify id="1">
      <Match
xpath="/Event/Technology/Servlet/HTTP/Method"
operator="EQUAL" value="HTTP_GET"/>

   </Classify>
   <Classify id="2">
      <Match
xpath="/Event/Technology/Servlet/HTTP/Method"
operator="EQUAL" value="HTTP_POST"/>

   </Classify>


   <Attribute name="SessionId">
      <Path>/Transaction/SessionId</Path>
      <ValueRule name="SetSessionId">
         <Match xpath="/Event/StdHeader/TechName"
operator="EQUAL" value="Servlet"/>
         <Value type="XPath">/Event/Technology/
Servlet/Session/ID</Value>
      </ValueRule>
   </Attribute>

</Class>
```

5. Add a rule for storing the customer name to `TransactionDefinition.xml`. This rule varies, depending on your system and where this information is stored in message data that passes through TransactionVision.
6. Restart your Analyzer, and then create a new project to pick up these changes.
7. Insert the transaction class definition into your new schema by running the following sql:

   ```
   INSERT INTO YOUR_SCHEMA_NAME_HERE.TRANSACTION_CLASS
   (CLASS_ID, CLASS_NAME, SLA) VALUES(1,'web',4000);
   ```

   Note that if there are already custom classes in the system, the class_id should have a different value.
8. Now start collecting events. The transactions should be classified into the **web** transaction class—this can be verified by going to the Where are my transactions? report and seeing web transactions listed. To verify that the session id is stored in the transaction table, run the web session report.

Running the Web Session Report

To run the Web Session report, perform the following steps:

1. Click the What transactions occurred within a specific web session? link on

the Reports page.

Report Parameters	
Reporting Time Period:	All Time Periods
Customer:	
Results per page:	20

2. Select the reporting time period from the list of predefined time periods. To specify a custom time period, choose Date Range and specify the start and end dates and times. Click the calendar icon to select a date from a calendar control. To include all statistics for the entire project, choose All Time Periods.
3. Optionally specify the customer name to include in the report. If you do not specify a customer name, the report shows web session information for all customers.
4. Specify the number of results to display per page.
5. Click Generate Report. TransactionVision displays results similar to the following example:

Web Session Report
(103 sessions, showing 1-10)

Session Start	Session End	Customer	Transaction Count	Value (Dollars)
02/02/2005 16:25:11.935	02/02/2005 16:25:18.623	NE-210001	1	$1,006.90
02/02/2005 17:45:47.805	02/02/2005 17:45:54.430	NE-210001	1	$128.75
02/02/2005 17:48:37.133	02/02/2005 17:48:43.446	PC-460004	1	$38,437.50
02/02/2005 17:49:15.456	02/02/2005 18:10:16.020	MW-330001, MW-330003, MW-830004, MW-890005, NE-210001, NE-210002, NE-210003, NE-410006, NE-510007, NE-910010, PC-330007, PC-370003, PC-380006, PC-550005, PC-650030, PC-740009, SE-340002, SE-450001, SE-880004, SE-920005	35	$1,879,363.25
02/02/2005 18:10:48.020	02/02/2005 18:13:19.083	MW-830004, MW-890005, NE-210001, NE-410006, PC-740009	5	$264,273.00
02/02/2005 18:13:51.098	02/02/2005 18:18:19.956	MW-330003, NE-320004, NE-510007, PC-330007, PC-650030, SE-450001, SE-880004	8	$371,771.75
02/02/2005 18:18:51.956	02/02/2005 18:18:56.471	SE-920005	1	$40,000.00
02/02/2005 18:19:28.473	02/02/2005 18:20:49.067	MW-330001, NE-410006, PC-380006	3	$176,512.50
02/02/2005 18:21:21.067	02/02/2005 18:23:15.801	NE-320004, PC-830008, SE-340002, SE-450001	4	$254,975.00
02/02/2005 18:23:47.801	02/02/2005 18:26:58.051	MW-280002, MW-830004, MW-890005, NE-320005, NE-410006, SE-880004	6	$383,559.50

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For each session, this report shows the session start and end time, the customer, the number of transactions in the session, and the dollar value of the session.

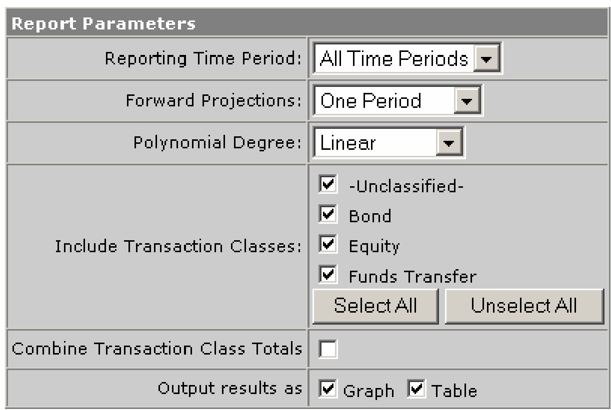
6. For information about the transactions that occurred within a specific session, click the Session Start link. TransactionVision runs the Transaction Tracking report on the transactions within that session.

Capacity Planning Report

The primary purpose of the Capacity Planning report is to make a projection of future transaction response times based on current trends. This report displays a graph of average response time and transaction volume for each selected transaction class for the specified time range. It then performs a linear regression analysis to project forward the current transaction response times a specified number of periods. Looking at the resulting graph for the intersection of the projected response time to the service level for that transaction gives you an estimate of when a particular transaction, using the resources it currently has available, might start to exceed its service level.

To run the Capacity Planning report, perform the following steps:

1. Click the What was my transactional throughput in the past and capacity for the future? link on the Reports page.

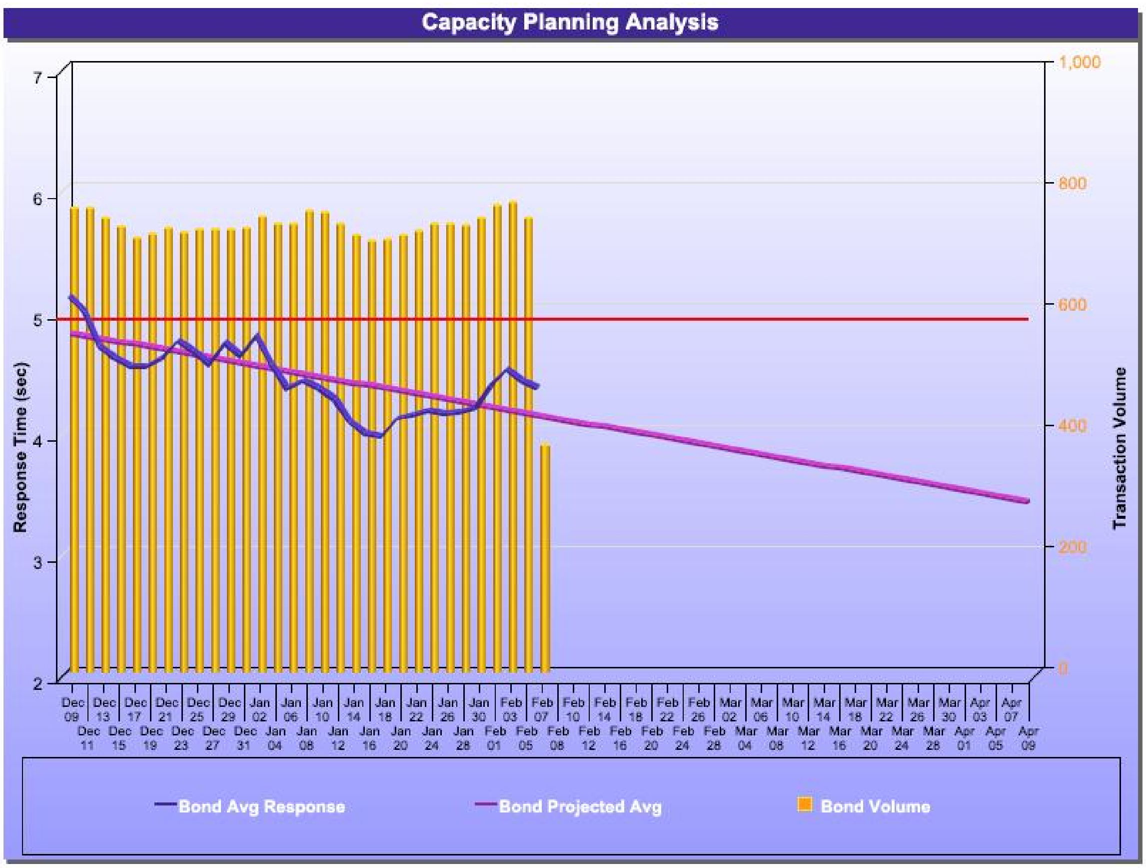


2. Select the reporting time period from the list of predefined time periods. To specify a custom time period, choose Date Range and specify the start and end dates and times. Click the calendar icon to select a date from a calendar control. To include all statistics for the entire project, choose All Time Periods.
3. Specify the number of periods into the future to project. You may project one, two, or three periods of the same type as the reporting time period.
4. Specify the polynomial degree of analysis to perform when making projections.
5. Select the transaction classes to include in the report. To select all transaction classes, click Select All. To deselect all transaction classes, click Unselect All. For information about defining classes, see the *TransactionVision Programmer's Guide*.

6. Check whether to show combined totals for all selected transaction classes instead of totals for each selected class.
7. Select whether to display results in a graph, a table, or both.
8. Click Generate Report. TransactionVision displays results in a chart similar to the following example and/or a table.

   For each transaction class, this chart shows the following:

   - Vertical bars represent transaction volume.
   - Solid lines represent actual and projected average response times.



9. To view more information about a data item in the chart, move your cursor over the data item. TransactionVision displays a tool-tip that shows the value of the data item.
10. To zoom in on the results chart, point your cursor to the area of the chart you wish to zoom and do either of the following:

    - Right-click and choose Zoom In from the shortcut menu.
    - Hold the CTRL key and click the chart.

Transaction Performance Report

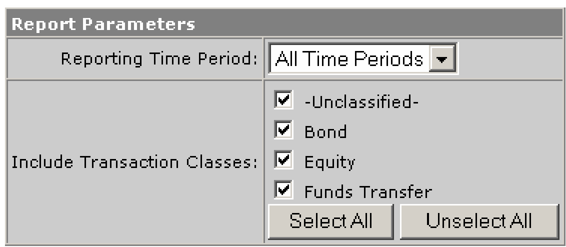
This report displays a gauge showing the average transaction response time for each selected transaction class. Additionally, it provides a quality ratio measurement that displays the percentage of transactions that have succeeded.

You may run the Transaction Performance report either for a specific time period in the past, or in real-time.

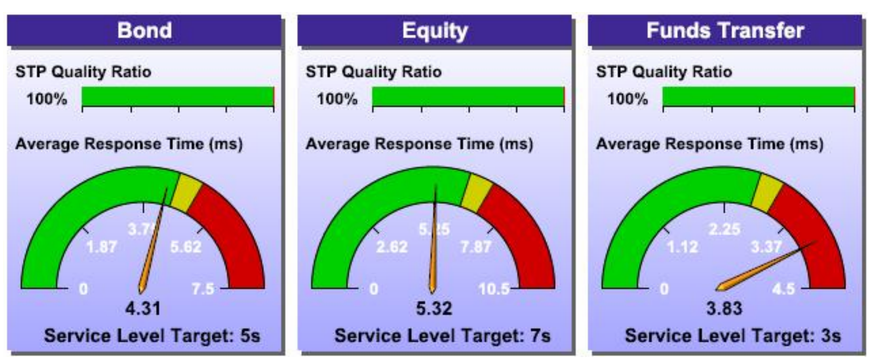
Transaction Performance for a Specific Time Period

To run the Transaction Performance report for a specific time period, perform the following steps:

1. Click the How did my transactions perform previously? link on the Reports page.



2. Select the reporting time period from the list of predefined time periods. To specify a custom time period, choose Date Range and specify the start and end dates and times. Click the calendar icon to select a date from a calendar control. To include all statistics for the entire project, choose All Time Periods.
3. Select the transaction classes to include in the report. To select all transaction classes, click Select All. To deselect all transaction classes, click Unselect All. For information about defining classes, see the *TransactionVision Programmer's Guide*.
4. Click Generate Report. TransactionVision displays results in a gauge for each selected transaction class, as in the following example:

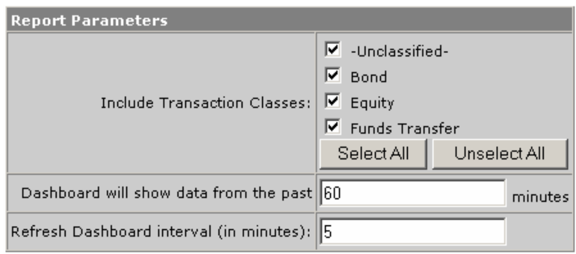


5. Click the transaction class name on a gauge to run the Transaction Tracking report for that transaction class.
6. Click the quality ratio gauge to run the Transaction Tracking report on transactions that have exceeded required service levels.

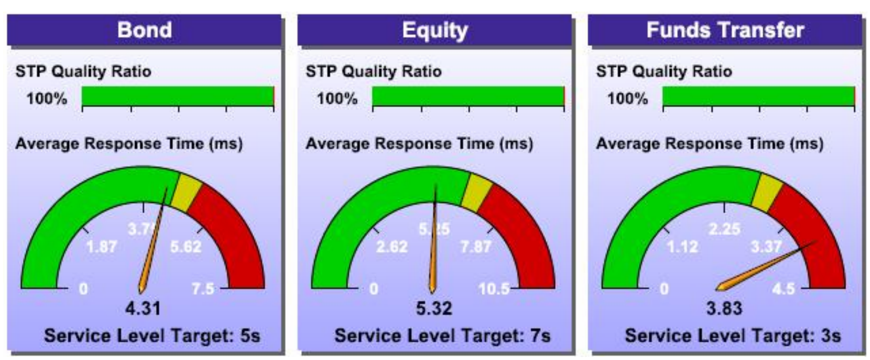
Transaction Performance in Real Time

To run the Transaction Performance report in real time, perform the following steps:

1. Click the How are my transactions performing? link on the Reports page.



2. Select the transaction classes to include in the report. To select all transaction classes, click Select All. To deselect all transaction classes, click Unselect All. For information about defining classes, see the *TransactionVision Programmer's Guide*.
3. Specify the number of minutes you wish to show performance results for. The default value is 60 minutes.
4. Specify the interval (in minutes) that you with to refresh the results. TransactionVision will continue to update the report results at this interval as long as this report page is displayed in the TransactionVision user interface.
5. Click Generate Report. TransactionVision displays results in a gauge for each selected transaction class, as in the following example. The time period for the results is displayed below each gauge.



6. Click the transaction class name on a gauge to run the Transaction Tracking report for that transaction class.

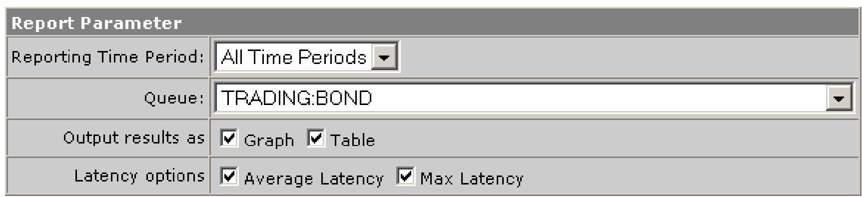
7. Click the quality ratio gauge to run the Transaction Tracking report on transactions that have exceeded required service levels.

Message Latency Analysis Report

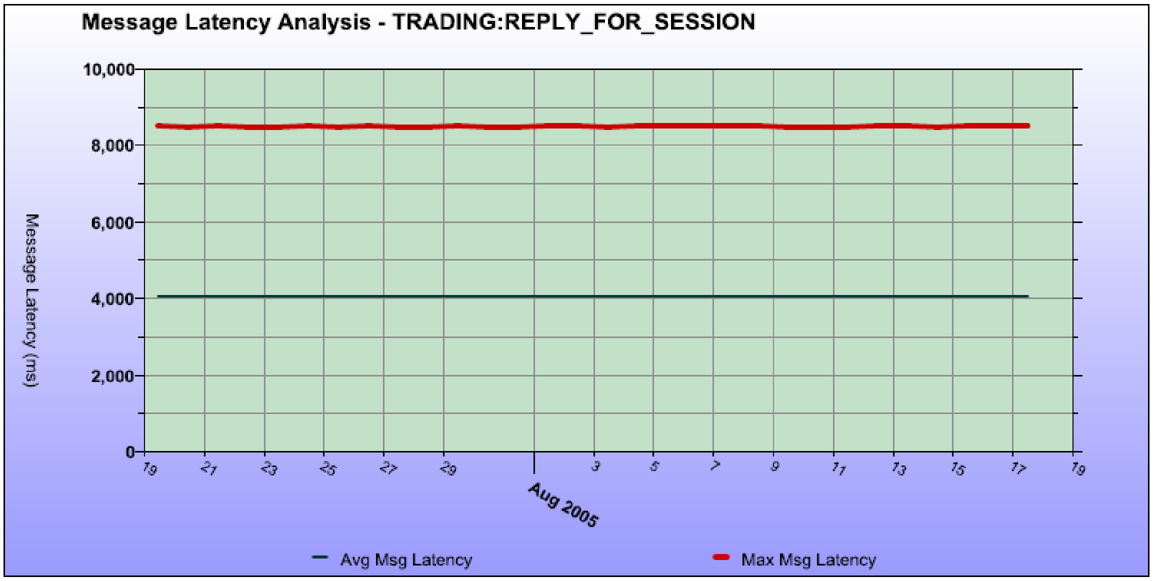
This report displays a chart showing the average and maximum latency on a selected message queue.

To run the Message Latency Analysis report, perform the following steps:

1. Click the How is the message latency on a given queue performing? link on the Reports page.



2. Select the reporting time period from the list of predefined time periods. To specify a custom time period, choose Date Range and specify the start and end dates and times. Click the calendar icon to select a date from a calendar control. To include all statistics for the entire project, choose All Time Periods.
3. Select the queue for which you want to view latency information. Use the drop-down list to choose from all queues in the project.
4. Specify whether to show results in a graph, a table, or both.
5. Specify whether to report the average latency, maximum latency, or both.
6. Click Generate Report. TransactionVision displays results in a chart and/or table, similar to the example on the following page.



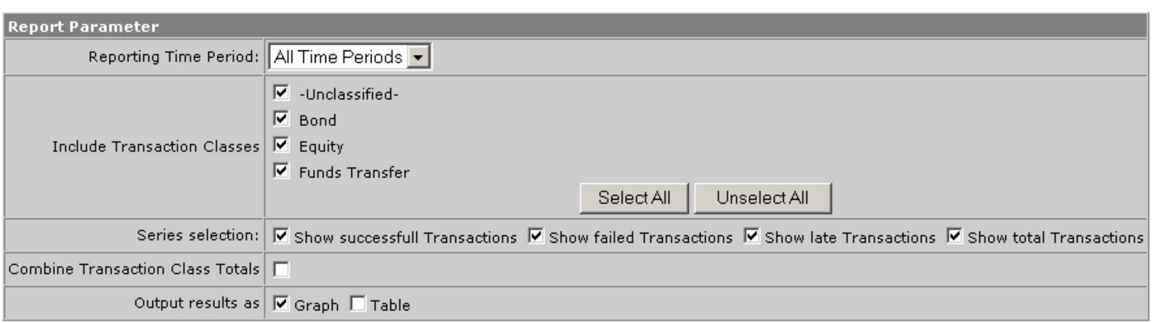
7. To view more information about a data item in a chart, move your cursor over the data item. TransactionVision displays a tool-tip that shows the value of the data item.
8. To zoom in on a results chart, point your cursor to the area of the chart you wish to zoom and do either of the following:
   - Right-click and choose Zoom In from the shortcut menu.
   - Hold the CTRL key and click the chart.

Transaction Volume Analysis Report

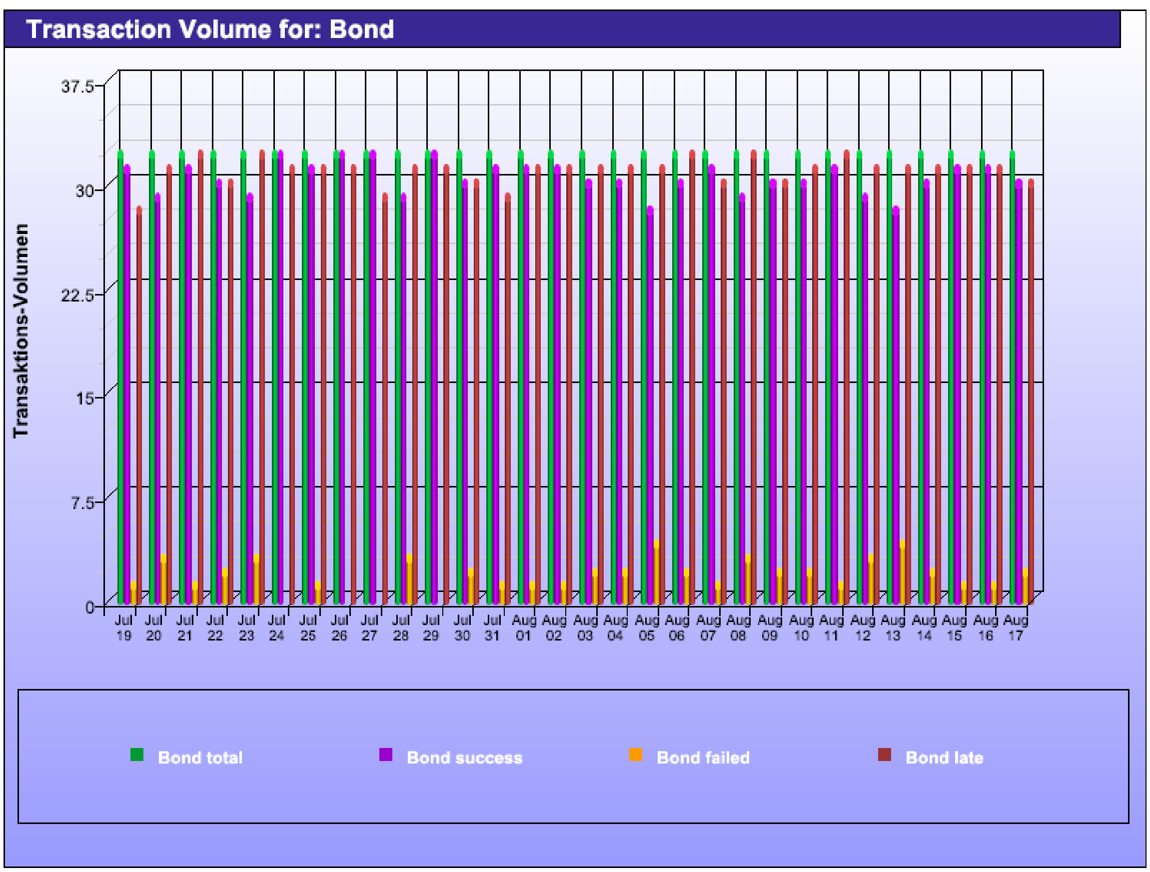
This report displays a chart showing the volume of successful, failed, or late transactions for a given transaction class.

To run the Transaction Volume Analysis report, perform the following steps:

1. Click the What is the volume of my transactions? link on the Reports page.



2. Select the reporting time period from the list of predefined time periods. To specify a custom time period, choose Date Range and specify the start and end dates and times. Click the calendar icon to select a date from a calendar control. To include all statistics for the entire project, choose All Time Periods.
3. Select the transaction classes to include in the report. To select all transaction classes, click Select All. To deselect all transaction classes, click Unselect All. For information about defining classes, see the *TransactionVision Programmer's Guide*.
4. Check each series you wish to include in your report.
5. Check Combine Transaction Class Totals to display results for all selected transaction classes in a single chart. Otherwise, TransactionVision displays a separate chart for each selected transaction class.
6. Specify whether to show results in a graph, a table, or both.
7. Click Generate Report. TransactionVision displays results in a chart and/or table, similar to the following example.



8. To view more information about a data item in a chart, move your cursor over the data item. TransactionVision displays a tool-tip that shows the value of the data item.
9. To zoom in on a results chart, point your cursor to the area of the chart you wish to zoom and do either of the following:
   - Right-click and choose Zoom In from the shortcut menu.
   - Hold the CTRL key and click the chart.
10. To run the Transaction Tracking report on a series for a given date, click the bar representing that series and date. TransactionVision displays the results in a separate window.

Dashboard Report

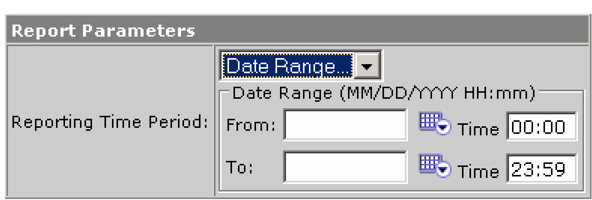
This report provides an overview of the performance of all activity the following categories:

- Transactions
- Application Servers
- WebSphere MQ
- JMS

For each category, it provides summary information and applicable performance statistics, including a graph that plots the activity/volume over the specified time interval.

To run the Dashboard report, perform the following steps:

1. Click the How is my IT infrastructure performing? link on the Reports page.

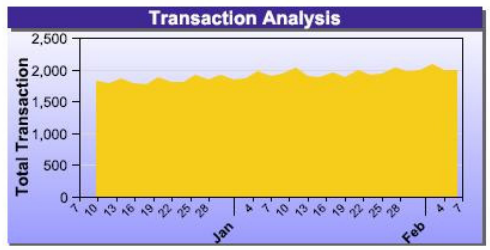


2. Select the reporting time period from the list of predefined time periods. To specify a custom time period, choose Date Range and specify the start and end dates and times. Click the calendar icon to select a date from a calendar control. To include all statistics for the entire project, choose All Time Periods.
3. Click Generate Report. TransactionVision displays results in text and chart format, similar to the example on the following page.

4. To view more information about a data item in a chart, move your cursor over the data item. TransactionVision displays a tool-tip that shows the value of the data item.
5. To zoom in on a results chart, point your cursor to the area of the chart you wish to zoom and do either of the following:
   - Right-click and choose Zoom In from the shortcut menu.
   - Hold the CTRL key and click the chart.

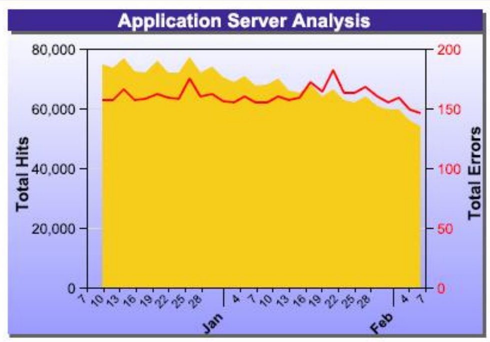
Transaction Analysis

Total transactions:	57,275
Average transactions per day:	938
Average transactions per week:	4,834
Highest volume time of day:	0:00 - 1:00
Highest volume day of week:	Monday
Highest volume day of month:	02/02/2005
Average transaction response time:	4.14 sec
Maximum transaction response time:	208.14 sec



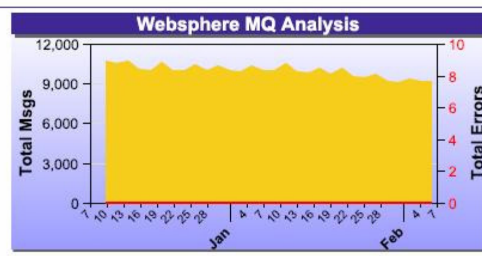
Application Server Analysis

Total Servlet hits:	499,983
Total EJB calls:	1,536,804
Total errors:	4,809
Busiest Servlet component:	/main.jsp
Slowest Servlet component:	TradeServlet
Max Servlet response time:	236.11 sec
Average Servlet response time:	0.66 sec
Busiest EJB Method:	Order/getId
Slowest EJB Method:	EquityTradeProcessor/onMessage
Max EJB response time:	173.09 sec
Average EJB response time:	0.82 sec



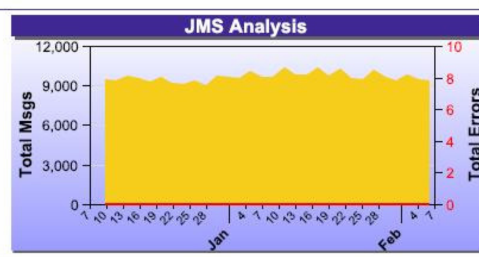
WebSphere MQ Analysis

Total messages sent:	117,006
Total messages received:	182,637
Total megabytes sent:	77.68
Total megabytes received:	98.28
Total errors:	0
Highest traffic queue:	REPLY
Highest traffic queue manager:	TRADING
Highest traffic application:	DataFlowEngine



JMS Analysis

Total messages sent:	174,699
Total messages received:	114,900
Total megabytes sent:	70.18
Total megabytes received:	44.61
Total errors:	0
Highest traffic queue/topic:	REPLY_FOR_SESSION
Highest traffic application:	TradeSession

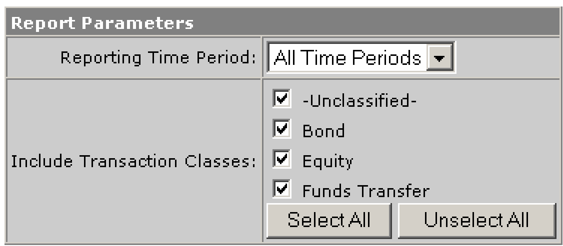


Charge-Back Report

This report calculates the charge-back value for different transactions. The rate of charge-back is determined by a cost-per-transaction valued defined in the COST_PER_TRANSACTION column of the transaction class definition. The cost-per-transaction is multiplied by the volume of transactions for the given time period.

To run the Charge-Back report, perform the following steps:

1. Click the What are my charge-back costs for the transactional infrastructure? link on the Reports page.



2. Select the reporting time period from the list of predefined time periods. To specify a custom time period, choose Date Range and specify the start and end dates and times. Click the calendar icon to select a date from a calendar control. To include all statistics for the entire project, choose All Time Periods.
3. Select the transaction classes to include in the report. To select all transaction classes, click Select All. To deselect all transaction classes, click Unselect All. For information about defining classes, see the *TransactionVision Programmer's Guide*.
4. Click Generate Report. TransactionVision displays results in a table similar to the following example. If you specify a predefined reporting time period, the table shows results from both the current reporting period and the previous one.

Transaction Charge-back Report

		This Period		Last Period	
Transaction Class	**Cost per Transaction**	**Transaction Count**	**Cost**	**Transaction Count**	**Cost**
-Unclassified-	0.0000	5,550	$0.00	N/A	N/A
Bond	0.0150	960	$14.40	N/A	N/A
Equity	0.0200	990	$19.80	N/A	N/A
Funds Transfer	0.0100	1,050	$10.50	N/A	N/A
		Total:	**$44.70**	**Total:**	**$0.00**

Business Impact Report

This report provides a view of the dollar impact of system performance on defined business groups. A business group is a group of one or more transaction classes or child business groups.

In order to use this report, you must define business groups and a mapping of transaction classes to corresponding business groups. You must also configure the Analyzer to extract and store the appropriate Value information.

To set up business groups, see the *TransactionVision Programmer's Guide*.

Enabling Value Tracking

In order to use this report your Analyzer must be configured to extract and store value information. This information is not stored by default.

To enable analysis and classification of session ID with a servlet's transaction, perform the following steps:

1. Modify the transaction.xdm file to include the fields to store the transaction id.
2. The Bussiness Impact report uses the `/Transaction/value` and `/transaction/sessionid` fields to display its report.

   To add the value and session xdm mapping, add the following:

```
<Column name="value" type="DOUBLE" description="Value">
    <Path>/Transaction/Value</Path>
</Column>
<Column name="sessionid" type="VARCHAR" size="32"
description="SessionId">
    <Path>/Transaction/SessionId</Path>
</Column>
```

3. Enable the Classification bean in the `Beans.xml` file.
4. Add the following classification definition to `TransactionDefinition.xml`. Add your schema name to the `dbschema` attribute.

```
<Class name="web" dbschema="YOUR_SCHEMA_NAME_HERE">
   <Classify id="1">
      <Match
xpath="/Event/Technology/Servlet/HTTP/Method"
operator="EQUAL" value="HTTP_GET"/>

   </Classify>
   <Classify id="2">
      <Match
```

```
xpath="/Event/Technology/Servlet/HTTP/Method"
operator="EQUAL" value="HTTP_POST"/>

   </Classify>

   <Attribute name="StartTime" final="false">
      <Path>/Transaction/StartTime</Path>
      <ValueRule name="EventTime">
          <Value type="XPath">/Event/StdHeader/
SecondaryTime</Value>
      </ValueRule>
   </Attribute>


   <Attribute name="SessionId">
      <Path>/Transaction/SessionId</Path>
      <ValueRule name="SetSessionId">
         <Match xpath="/Event/StdHeader/TechName"
operator="EQUAL" value="Servlet"/>
         <Value
type="XPath">/Event/Technology/Servlet/
Session/ID</Value>
      </ValueRule>
   </Attribute>

</Class>
```

5. Add a rule for storing the value to `TransactionDefinition.xml`. This rule varies, depending on your system and where this information is stored in message data that passes through TransactionVision.
6. Restart your Analyzer, and then create a new project to pick up these changes.
7. Insert the transaction class definition into your new schema by running the following sql:

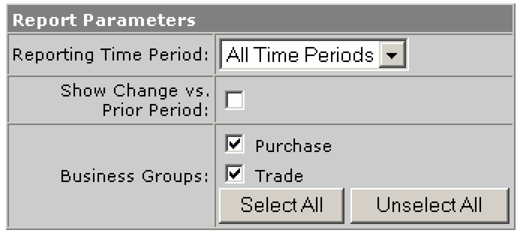
```
INSERT INTO YOUR_SCHEMA_NAME_HERE.TRANSACTION_CLASS
(CLASS_ID, CLASS_NAME, SLA) VALUES(1,'web',4);
```

8. Now start collecting events. The transactions should be classified into the **web** transaction class—this can be verified by going to the Where are my transactions? report and seeing web transactions listed. To verify that the value is stored in the transaction table, run the Business Impact report.

Report Instructions

To run the Business Impact report, perform the following steps:

1. Click the How is system performance affecting each business group? link on the Reports page.



2. Select the reporting time period from the list of predefined time periods. To specify a custom time period, choose Date Range and specify the start and end dates and times. Click the calendar icon to select a date from a calendar control. To include all statistics for the entire project, choose All Time Periods.
3. To display the change compared to the prior period, check the Show Change vs. Prior Period checkbox. This option has no effect if you select All Time Periods.
4. Select the business groups to include in the report. To select all business groups, click Select All. To deselect all business groups, click Unselect All. For information about defining business groups, see the *TransactionVision Programmer's Guide*.
5. Click Generate Report. TransactionVision displays results similar to the following example for each selected business group:

Business Impact Report

			All Transactions			Delayed Transactions			Exceptions		
Name	Met Service Level	Completed Successfully	Count	Total Value (Millions)	Avg. Value (Millions)	Count	Total Value (Millions)	Avg. Value (Millions)	Count	Total Value (Millions)	Avg. Value (Millions)
Purchase			665	$35.04	$0.05	21	$1.08	$0.05	57	$0.11	$0
Bond			332	$18.21	$0.05	10	$0.5	$0.05	30	$0.02	$0
Equity			333	$16.82	$0.05	11	$0.58	$0.05	27	$0.09	$0
Trade			330	$16.52	$0.05	317	$16.52	$0.05	14	$0.06	$0
Funds Transfer			330	$16.52	$0.05	317	$16.52	$0.05	14	$0.06	$0

The data in the report is grouped into sections according to Business Group. The top row of each section (in blue) represents the business group. This row contains the aggregated data values for the transaction classes within that group. Subrows in each section display data for each transaction class within the business group.

A successful transaction is one that completes and returns a positive status code.

If you selected Show Change vs. Prior Period, each row is followed by a row showing the change from the prior period.

6. To run the Service Level Analysis report for all transaction classes in a business group, click the business group link. TransactionVision opens a separate window to display the results of the Service Level Analysis report. For more information about this report, see page 189.
7. To run the Service Level Analysis report for a single transaction class, click the transaction class link. TransactionVision opens a separate window to the display the results of the Service Level Analysis report. For more information about this report, see page 189.
8. To run the Transaction Tracking report on the transactions reflected in the Business Impact report results, click a Count link. TransactionVision opens a separate window to display the results of the Transaction Tracking report for the transactions included in the count. For more information about this report, see page 198.

Event Replay Report

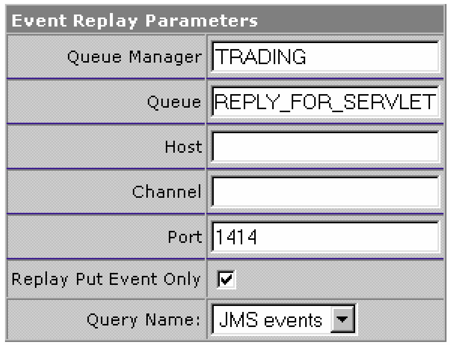
The Event Replay report enables you to replay, based on a query, the user data in an MQPUT, MQPUT1, or MQGET to a particular queue manager/queue. The user data for each MQPUT/MQPUT1/MQGET found within the query will be sent to the specified queue. The msgid/correlid of a message replayed using this report will be set to the same msgid/correlid of the event that is being replayed.

Important! In order for Events Replay report page to work, WebSphere MQSeries needs to be configured and installed on the Application Server. The following paths must be added to the JVM classpath list of the WebSphere Application Server where TransactionVision is installed:

- /opt/mqm/java/lib
- /opt/mqm/java/lib/com.ibm.mqjms.jar
- /opt/mqm/java/lib/fscontext.jar
- /opt/mqm/java/lib/providerutil.jar
- /opt/mqm/java/lib/connector.jar
- /opt/mqm/java/lib/jta.jar
- /opt/mqm/java/lib/com.ibm.mqbind.jar
- /opt/mqm/java/lib/com.ibm.mq.jar

To run the Event Replay report, perform the following steps:

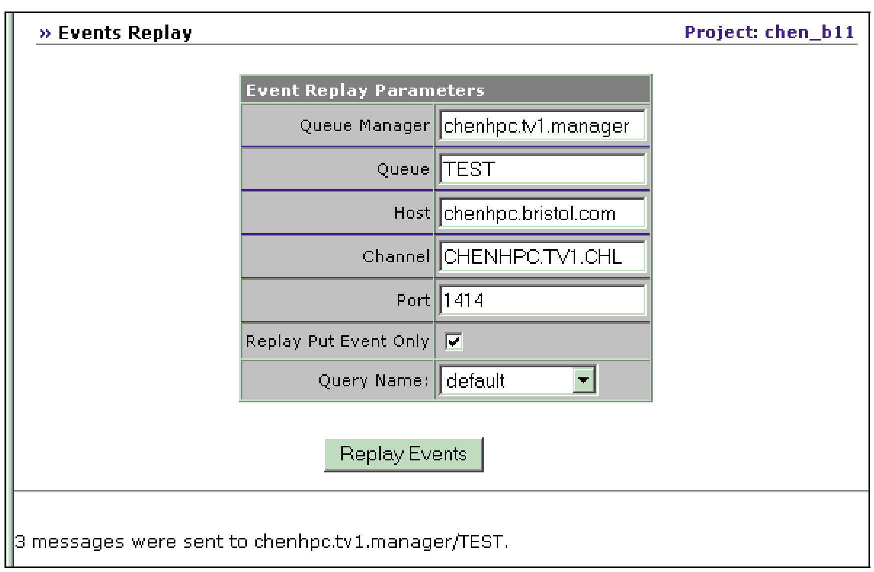
1. Click the Replay WebSphere MQ messages link on the Reports page.



2. Specify the following settings:

Parameter	Description
Queue Manager	Enter the name of the queue manager on which to replay events.
Queue	Enter the name of the queue on which to replay events.
Host	Enter the name of the host on which to replay events.
Channel	Enter the name of the channel on which to replay events.
Port	Enter the port number on which to replay events.
Replay Put Event Only	Check to replay only MQPUT and MQPUT1 events. Otherwise, MQGET events are also replayed.
Query Name	Select the query to use. Only events that match the selected query are replayed.

3. Click Replay Events. TransactionVision replays the events as specified and displays results similar to the following example:



Chapter 8

Using TransactionVision with WebSphere Business Integration

TransactionVision Sensors typically monitor WebSphere MQ API calls such as MQPUT and MQGET invoked by WebSphere Business Integration Message Brokers (WBIMB), rather than the independent message flows that make up the WBI processes. The result is that the broker appears as a black box; the Sensor is unable to provide insight into the message flow activities. However, TransactionVision provides a WBI Sensor that enables TransactionVision to distinguish the various message flows and identify individual logical transaction paths within WBI.

Important! See the TransactionVision release notes for information about which versions of WBI are supported by TransactionVision.

The WBI Sensor is a WBI plug-in that supports trace nodes, inserted into normal execution paths, and failure nodes, inserted into failure paths. You may insert any number of processing nodes into an existing message flow at the desired points. Each processing node is a checkpoint that collects the state of the current message flow and reports it to the Analyzer. The reported event provides information such as broker name, message flow name, message data, etc. You may assign a unique label to each node; the label is reported in the TransactionVision event associated with the node instance.

TransactionVision Nodes

TransactionVision supports the following two types of nodes:

- Trace nodes
- Failure nodes

Trace Nodes

The trace node (TransactionVisionTrace) has an input terminal (in) and an output terminal (out). You may insert the node at any point within the message flow between two existing connected processing nodes. In general, the input terminal of the trace node will be connected to the output terminal of an existing source node, while the output terminal of the trace node will be connected to the input terminal of the node originally connected to the source node.

Failure Nodes

The failure node (TransactionVisionFailure) also has one input terminal (in) and an output terminal (failure). In general, you will attach this type of node to the failure terminal of an existing node in the message flow through the input terminal. If there is already a node attached to the existing node's failure terminal, this node can be reconnected to the failure terminal of the TransactionVision failure node.

Debug Logging

Both trace and failure nodes have a Boolean property called nodeTracing that controls informational debug logging. By default, this property is set to false. If you enable this property, any informational TransactionVision WBI Sensor events will be recorded in the local logging facility supported on the Sensor host. Sensor errors and problems will always be logged, regardless of this property setting.

WBI Sensor Events

Events generated by the trace and failure nodes are reported in TransactionVision under the API MQSI2TRACE API. This API is an extension API implemented in the Sensor. It provides a standard interface to represent message flow states.

The MQSI2TRACE API has the following prototype:

```
void MQSI2TRACE(
  MQHCONN           hConn,
  BSMQSIMFH         *pMFH,
  MQMD         *pMQMD,
  MQLONG            nBufferLength,
  PMQVOID           pBuffer,
  PMQLONG           pCompCode,
  PMQLONG           pReason)
```

The following table describes the parameters for this API:

Parameter	Description
hConn	The connection handle to the queue manager associated with the broker executing the message flow.
pMFH	A pointer to the message flow header structure (BSMQSIMFH) defined by TransactionVision.
pMQMD	A pointer to the message descriptor structure (MQMD) associated with the current message.
nBufferLength	The length of the message data reference by pBuffer.
pBuffer	Points to the message data at the current stage of message flow processing.
pCompCode	Points to the completion code representing the current trace state. The completion code also indicates the origin of the event. Trace nodes always return the completion code MQCC_OK. Failure nodes always return MQCC_FAILED.
pReason	Points to a reason code.

The structure BSMQSIMFH is defined by TransactionVision and is used to organize information about the message flow. It is defined as follows:

```
typedef struct tagBSMQSIMFH {
  MQCHAR4           StrucId;
  MQLONG            Version;
  MQCHAR48          MsgFlowName;
  MQCHAR48          NodeName;
  MQCHAR48          NodeLabel;
  MQCHAR48          QMgrName;
  MQCHAR48          BrokerName;
  MQCHAR48          ExecutionGroupName;
} BSMQSIMFH;
```

The following table describes each field of this structure:

Field	Description
StrucId	Contains a string that uniquely identifies the structure. The value for this field is defined as "MFH ".
Version	Contains the version number of this structure. In the current release, the value of this field is always 1.
MsgFlowName	Contains the name of the message flow associated with the current event.

Field	Description
`NodeName`	Contains the name of the type of node associated with the current event. For trace nodes, the value is ComBristolTVisionTrace. For failure nodes, the value is ComBristolTVisionFailure.
`NodeLabel`	Contains the label string associated with the node of the current event. This label helps to identify the particular trace or failure node instance in a message flow.
`QmgrName`	Denotes the queue manager associated with the WBIMB handling the current event.
`BrokerName`	Denotes the WBIMB handling the current event.
`ExecutionGroupName`	Denotes the associated execution group for the current message flow.

Installation and Configuration

To use the WBI Sensor, you must do the following:

- Integrate the TransactionVision plugin with the Message Brokers Toolkit for WebSphere Studio.
- Install the TransactionVision WBI Sensor on the WBIMB platform.

See the *TransactionVision Installation and Configuration Guide* for instructions on installing and configuring the WBI Sensor.

Node Insertion

Once the installation and configuration tasks are complete, you may insert any number of TransactionVision Sensor trace and failure nodes into any message flows through the Message Brokers Toolkit. Remember that any changes made to the configuration repository must be deployed to the appropriate brokers.

TransactionVision Filtering

TransactionVision filtering support has been extended to support WBI trace and failure node monitoring. For both data collection filters and queries, you may filter on the API name (MQSI2TRACE), the broker name, and the message flow name. For queries, you may also filter on the parameters for the MQSI2TRACE API.

Quick Tour

To illustrate TransactionVision's WBI monitoring process, modify the Text Messenger sample from the WBI sample suite to introduce TransactionVision message flow tracing. Before you begin, make sure that TransactionVision has been integrated properly for the Message Brokers Toolkit and the WBI Sensor is installed with the WBI message broker(s).

Modifying Message Flow

The first step is to modify the Text Messenger message flow by adding TransactionVision trace and failure nodes.

The TEXTMESSENGER node retrieves the original message from the input queue, the Add IBM text node processes and modifies the message to add IBM text, and the PAGER node delivers the new message to the output queue. If a failure occurs somewhere along the flow, the message will be put on a failure queue by the TEXTMESSENGER_FAIL node.

Modify this message flow as follows:

1. Insert a TransactionVision trace node named "Before IBM text" between the TEXTMESSENGER and Add IBM text nodes. (Right-click the node and select Rename... to rename a node.) Connect the trace node in terminal to the out terminal of the TEXTMESSENGER node, and the out terminal of the trace node to the in terminal of the Add IBM text node. This node captures the flow state before the Add IBM text processing.
2. Insert a trace node named "After IBM text" between the Add IBM text and the PAGER nodes. This node captures the flow state after a successful Add IBM text processing.
3. Connect a TransactionVision failure node between the TEXTMESSENGER and TEXTMESSENGER_FAIL nodes. This node captures the flow state if a failure occurs within the message flow.

You may now deploy the modified Text Messenger message flow to the appropriate WBI broker.

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