

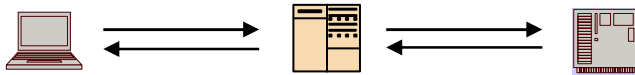
IBM Rational® ClearQuest® Web: Comparing Browser-to-Server Single-User Network Traffic between 2003.06.16.910 and 7.0.1

Performance tests used in this report utilized a sample test schema derived from an actual client schema (Rv15) of moderate complexity and size. The use-cases covered in this data sheet (see figure 2.) capture the core set of operations that are available in the ClearQuest Web interface. These operations are common to all customer schemas irrespective of their customizations. Tests

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Users of this document should verify the applicable data for their specific environment.

Test Environment and Configuration

This test consisted of three machines, Test Controller responsible for Web Browser Simulation, database server and a ClearQuest Web Server all on the same 100 MB network.



Testing Tools:

IBM Rational Performance Tester (RPT) was the tool of choice for execution of these performance tests. In addition to RPT, a network protocol analyzer (Ethereal®) - <http://www.ethereal.com/> was used to capture and analyze network traffic between the web server and web client (RPT generated client traffic).

Use-Case Flows Tested:

Create Flow	
Use-Case	Description
Login*	Time from submitting login request to loading the workspace.
Initiate New Defect	On creating new defect, wait for form to display
Fill New Defect	Fill the form
Commit New Defect	Save the Defect

Find Existing	Find an existing defect
Initiate Modify Existing Defect	On modifying the defect just found, wait for form to display
Commit Modify Existing Defect	Make modifications and save them
Logout	

Use-Case Query Flow:

Query Flow	
Use-Case	Description
Login*	Time from submitting login request to loading the workspace.
Build New Query	Build a new query that searches for 1000 records (where id contains "XXX00001")
Run New Query	Run the query and display the results (25 records displayed)
Load First Record	Load first defect returned in query
Logout	

- In SR6 - Login consists of two separate user interactions—Login and Select Database. In 7.x, these two interactions are combined in a single user-level Login dialog box. In either case the network traffic was measured between the same two endpoints—the login dialog to loading the user workspace.

Test Description:

The ClearQuest Web server was configured for non-SSL encryption and as a single machine configuration containing both the Rational Web Platform and ClearQuest Web components. Both ClearQuest Web versions were exercised with one virtual user working through the two listed use-case flows. For each individual use-case, execution occurred once with a six second interval for each transaction. During test execution, Ethereal collected packet and network statistics for each use-case. After the capture, filtering within Ethereal enabled a view of only the network traffic between the client and server machines. With filtering enabled, trace data could then be separated for each transaction and plotted.

Results

Figure 1. provides a graph of the number of packets for each set of transactions while Figure 2., shows the Total number of Bytes for the same set of transactions. Login and Logout are denoted 1 and 2 to separate the data obtained from each use-case flow.

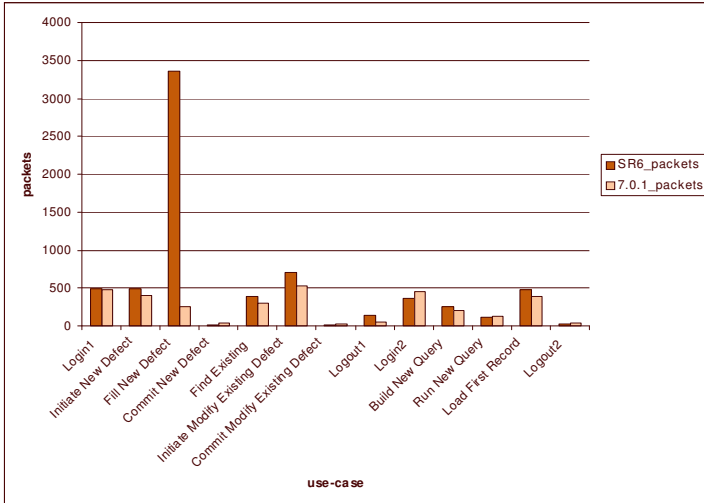


Figure 1. Total Number of Packets for each transaction.

The brown bars in Figure 1. represent the total number of inbound and outbound packets sent between the simulated browser traffic and the ClearQuest Web Server. Of the total number of packets analyzed, 100% of them were TCP packets in both 7.0.1 and SR6. Of that 100% in 7.0.1 and SR6, 15.4% and 9.7%, respectively, were attributable to the http protocol. Across most of the use cases 7.0.1 showed an improvement over SR6 with fewer packets sent per operation. The Fill New Defect use case showed the most marked improvement.

Figure 2. shows the number of bytes transferred during each use case instead of the number of packets. Again, the use-case with the most marked improvement SR6 is the Fill New Defect use-case. In 7.0.1, the largest use-case is initiating a defect modify which uses about 550KB. For 7.0.1, most use-cases require less 400KB of data transfer.

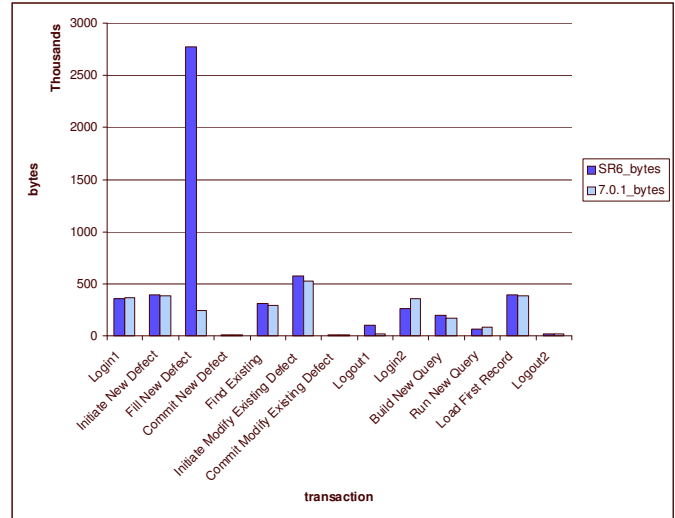


Figure 2. Total Number of Bytes for defined set of transactions

Discussion

The marked improvement in Fill New Defect is from an extensive rewrite in the ClearQuest code that processes web dependent fields. The optimization reduces the size of the JavaScript transferred to the browser by over 50%. This not only reduces the overall bandwidth needs of each browser-based client, but it also improves the user experience while making choice list selections on web dependent fields in higher latency environments.

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