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Business Objects: BusinessObjects XI, Default Configuration vs. Adaptive Data Sharing Configuration Capacity Test

Test report prepared under contract from Business Objects

Executive Summary

Business Objects SA ("Business Objects") commissioned VeriTest, a division of Lionbridge Technologies, Inc, to conduct a performance study of BusinessObjects XI in default and optimized adaptive data sharing ("ADS") configurations using one quad-CPU report server configuration. BusinessObjects XI is a business intelligence software solution that provides reporting and analysis tools and present browser-based information to end users.

Key findings

- In our testing, we found that BusinessObjects XI processed 12,691 reports in default configuration and 21,740 in optimized ADS configuration across the 30 minutes duration of the test.
- This result demonstrates a default 4 CPU configuration returning 423 operational reports per minute and 725 operational test reports per minute under the optimized 4 CPU configuration.
- In the optimized ADS configuration, while returning an average of 725 reports per minute over the period of the test, BusinessObjects XI maintained an average response time of 0.745 seconds.
- In our test configuration using the operational report, BusinessObjects XI processed 71% more reports in an optimized ADS configuration than in a default configuration.

To conduct this test, we created a test script based on user activity scenarios provided by Business Objects. The script was used to perform two distinct performance tests. These tests included:

1. BusinessObjects XI running on a single quad-CPU report server on a operational report in a **default configuration**
2. BusinessObjects XI running on a single quad-CPU report server on a operational report in an **optimized ADS configuration**

We used the Mercury LoadRunner test tool to model the test script and to exercise the performance of both configurations. See Appendix B for complete content of the script.

VeriTest performed incremental load tests to find the capacity load at which the maximum number of reports could be processed while less than 1% of transactions returned errors. Once we determined this capacity load, we conducted a stability test at this level for 30 minutes.

Figure 1 illustrates a comparison of the capacity for both configurations while processing operational reports at the capacity load. In a single quad-CPU report server configuration, when we processed the operational report at capacity load for 30 minutes, BusinessObjects XI in a default configuration processed 12,691 reports. When we processed the operational report at capacity load for 30 minutes, BusinessObjects XI in an optimized ADS configuration processed 21,740 reports.

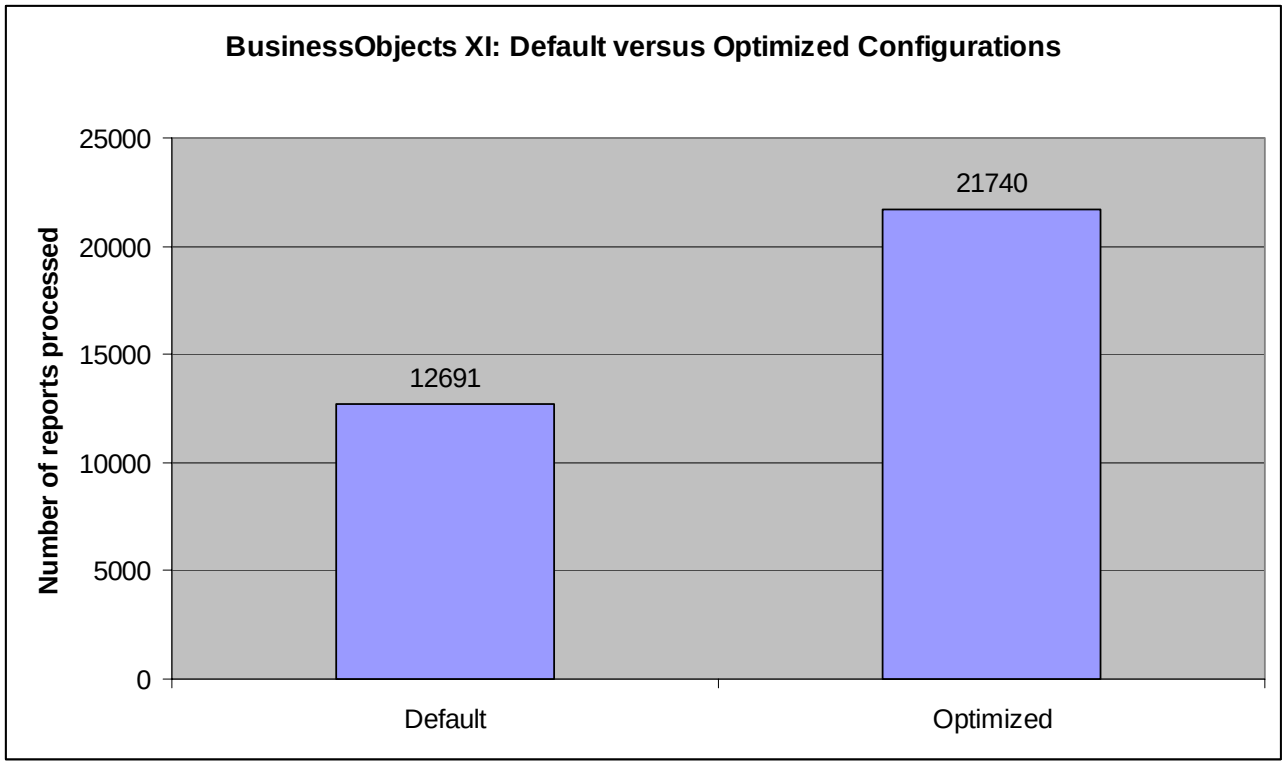

Figure 1: BusinessObjects XI generated 70% more reports in optimized configuration

Testing Methodology

Business Objects commissioned VeriTest, a division of Lionbridge Technologies, Inc., to conduct a performance test of the BusinessObjects XI software package in default and optimized adaptive data sharing configurations. BusinessObjects XI is a business intelligence platform that provides browser-based reporting requirements tools. Business Objects supplied the BusinessObjects XI software to VeriTest.

This study focused on finding the capacity in default and optimized configurations when using one quad-CPU reporting server. This analysis was aimed to find the capacity and scalability of each tested configurations by instructing each to process the same reports on the same hardware configuration.

VeriTest used Mercury LoadRunner as the automated performance test tool for this study. VeriTest created the LoadRunner test scripts based on the use case scenario provided by Business Objects.

Testbed Configuration

Figure 2 depicts the testbed used for the testing. This testbed consisted of one quad-CPU reporting server, a database server for querying reporting data, a database server for repository, a Mercury LoadRunner controller system and a LoadRunner load generator systems. Because BusinessObjects XI allows built-in user authentication, we did not use an Active Directory server.

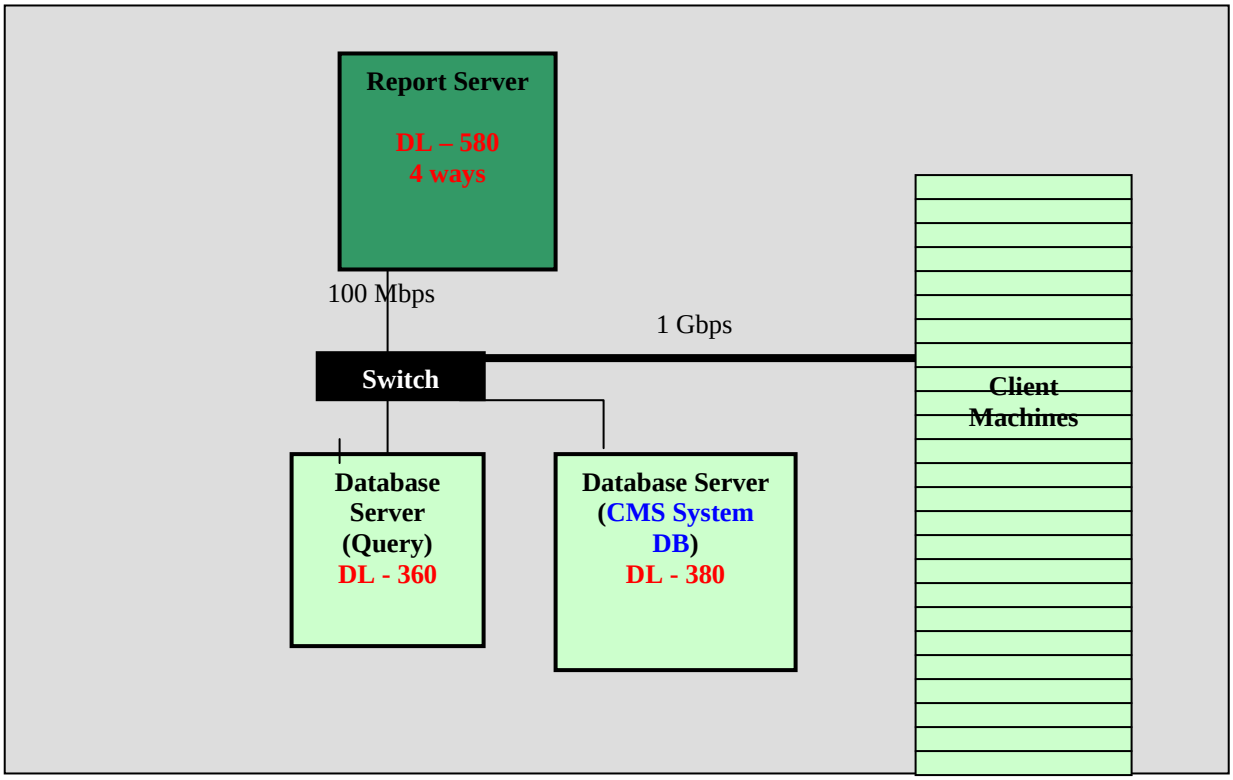

Figure 2: Physical Architecture of the BusinessObjects XI Test Environment

For the Optimized Adaptive Data Sharing test bed configuration:
The optimization was achieved by activating the BusinessObjects adaptive data caching services in the platform. The "Oldest On-Demand Data Given To a Client (in minutes)" setting controls how long the Page Server uses previously processed data to meet requests. If the Page Server receives a request that can be met using data that was generated to meet a previous request, and the time elapsed since that data was generated is less than the value set here, then the Page Server will reuse this data to meet the subsequent

request. Reusing data in this way significantly improves system performance when multiple users need the same information. We kept the test environment isolated. We used gigabit connectivity between the load generators and server. All servers were connected via a Gigabit switch.

Since the objective of this study was to find the capacity of product when using a 4-CPU reporting server, VeriTest ensured that the reporting server was performing only the activities required to generate a report.

See Appendix A for detailed hardware and software specifications.

Test Scripting

BusinessObjects XI is a browser-based software package used for enterprise reporting. VeriTest used Mercury LoadRunner as the automated performance test tool for this study. VeriTest created the LoadRunner test scripts based on the use case scenario provided by Business Objects. The use cases are listed in Figure 3.

Script Section	Step Description
Initialization	Go to Home Page
	Log on to the application
	Navigate to the report folder
Action	Allow two seconds of think time
	Click on the report to be tested
	Close the report
End	Log out from the application

Figure 3: Use cases utilized for both products

During a standard LoadRunner performance test, the LoadRunner agents generate multiple threads. The threads that execute the script are called virtual users (vusers). As pointed out in the “Script Section” column in Figure 5, the script features the three sections listed below:

1. The Initialization section is executed only once when each vuser starts the execution of the script.
2. The Action section is the core of the script. Once the vuser has completed the Initialization section, it iteratively performs the Action section until the duration of the test.
3. At the time of test termination, the vuser executes the End section.

We used parameterization so that each script could use operational reports.

Operational Reports

In this study, we conducted tests using an operational style report with a 7,069 report pages. The report is representative of a listing style production report. The test report contained over 43,000 records.

Test Objectives and Design

The objectives of this performance study were:

- To determine the maximum capacity of both default and optimized configurations while processing operational reports using one (1) quad-CPU reporting server.
- Compare the response time for processing the given on-demand report at capacity load.

To achieve these goals, VeriTest designed two tests:

1. Incremental user test
2. Fixed user test

In the Incremental User test, we began with two vusers and added two more vusers every four minutes. We stopped the test when we received a significant number of application errors, timeout errors, or vuser failures due to failing initializations. We then calculated the number of reports executed during each four-minute stage. We studied the errors that occurred during each stage, if any.

We defined the capacity load of the product under test for the given report at the level where the vusers caused less than 1% errors and a maximum number of reports were processed. Another objective of the incremental user test was to find the scalability of the application by studying the response time under the different levels of load.

In the Fixed User test, we ran the capacity load of vusers on each product for 30 minutes. If we received errors from more than 1% of the total transactions processed, then we decreased the number of virtual users and restarted the test. We repeated this until we completed a test and received errors totaling less than 1% of the transactions processed. We defined this number of vusers as the target capacity load. Figure 4 illustrates the design of the test.

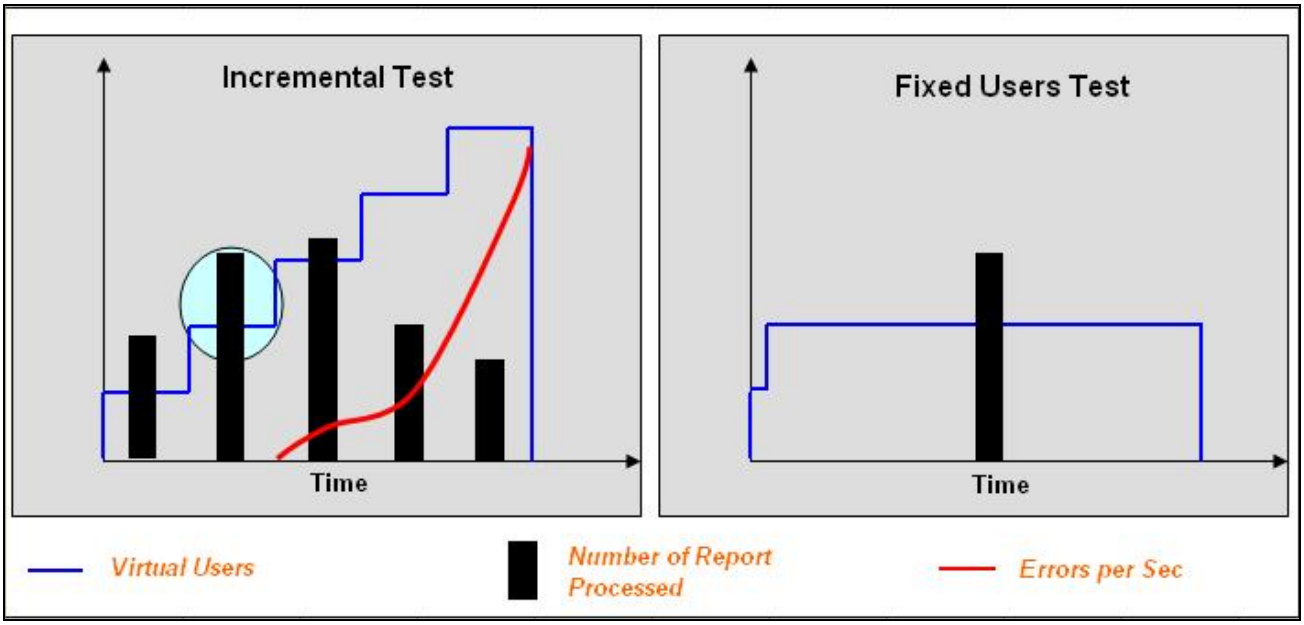

Figure 4: Graphical Depiction of Incremental and Fixed User tests

VeriTest executed the tests as defined in Figure 5. The tests listed were executed twice to ensure result repeatability.

Test	CPUs	Name of Report	Type of Test
1	4	Customer Invoice	Incremental user test
2		Customer Invoice	Fixed user test

Figure 5: Test Matrix

Test Results

Business Objects commissioned VeriTest, a division of Lionbridge Technologies, Inc, to compare the performance and scalability of the BusinessObjects XI business intelligence software package in default and optimized configurations using a quad-CPU reporting server. This analysis was aimed to find the capacity of each tested configuration by instructing each to process the same report requirements on the same hardware configuration.

VeriTest used Mercury LoadRunner as the automated performance test tool for this study. VeriTest created the LoadRunner test scripts based on the use case descriptions provided by Business Objects.

During each test, VeriTest collected various performance counters on all servers. Since the objective of this study was to find the capacity of each configuration, we ensured during testing that none of the other servers (database servers, LoadRunner controller, and LoadRunner generator systems) encountered a performance bottleneck on any hardware resource (processor, memory, physical disk, and network). Please see the Testing Methodology section for complete details on how we conducted these tests.

Test 1: BusinessObjects XI, Operational Report (Customer Invoice) on a Single Quad-CPU Report Server in Default Configuration

Test 1 comprised of measuring BusinessObjects XI while processing the operational report (Customer Invoice report) in an Incremental User Test and in a related Fixed User Test on a 4-CPU reporting server in default configuration.

Figure 6 describes a summary of the Incremental User Test within Test 1. Over the course of this Incremental User Test, we found the highest throughput (number of reports processed) at the 180 vuser level. However, we began to receive errors (120-second timeouts, connection failure with server) after 126 vusers were ramped up.

Test 1: BusinessObjects XI, Operational Report – Incremental User Test	
Date	5/25/2005
Type	Incremental
Ramp-up Details	Increment by 2 vusers every 4 minutes
Duration	6 hours 40 minutes
Errors	Started after 4 Hr 12 min or at 126 number of vusers
Maximum Reports Processed with less than 1% errors	At 124 vuser level

Figure 6: Configuration Details and Summary of Results for Test 1 – Incremental User Test

Figure 7 shows the number of reports processed and average response times as the vusers are ramped up. In our test configuration, we found the capacity load of BusinessObjects XI for the given operational report to be at or around 124 vusers.

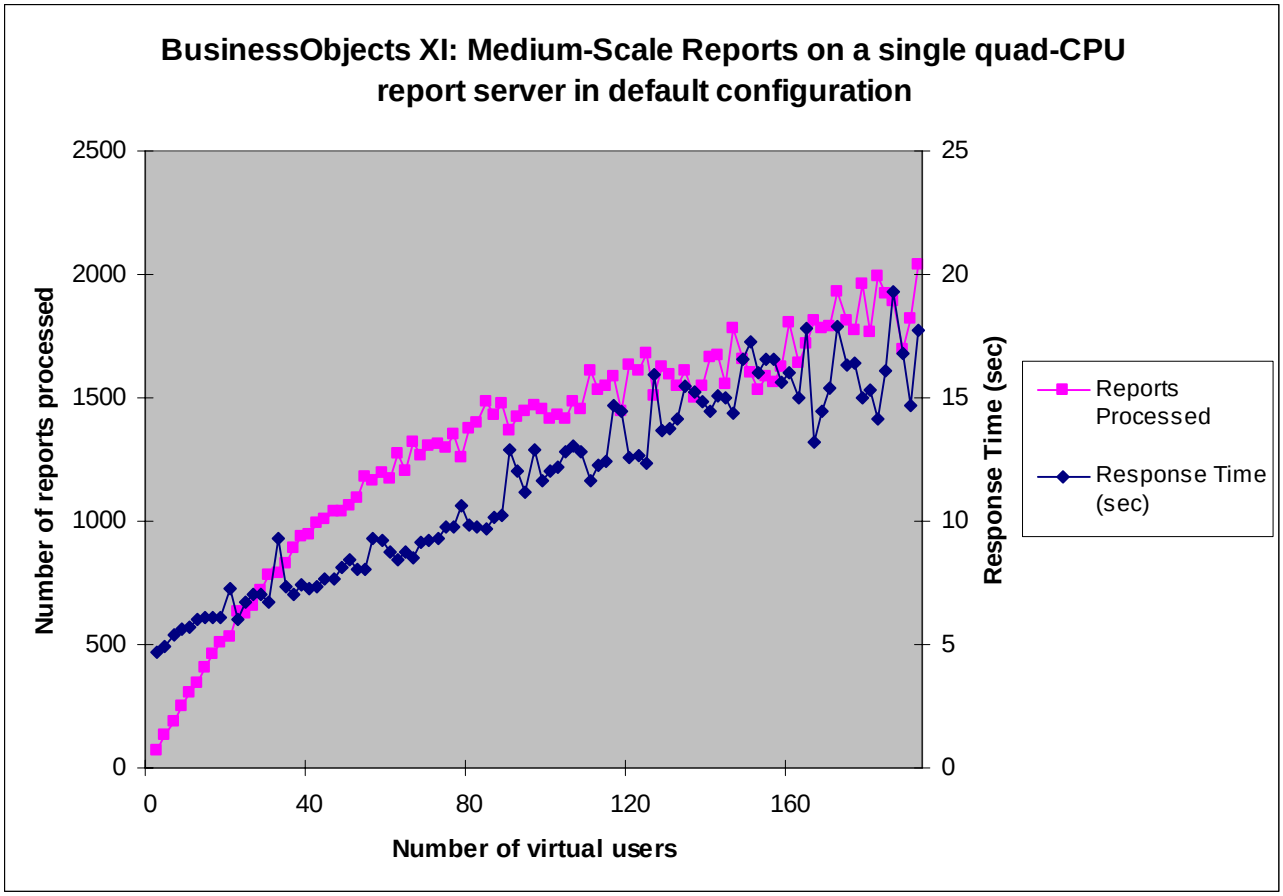

Figure 7: Test 1 Results for BusinessObjects XI Processing the Operational Report

Once we determined the capacity load in the Incremental User Test, we ran this load of 124 vusers for 30 minutes in a Fixed User Test to determine the capacity of BusinessObjects XI. However, by the end of the test we had received 20 timeout errors and 12 errors for connections refused by the server. We gradually decreased the number of vusers to 120, ran the same test again and ran a successful 30 min test without errors.

This Fixed User Test with 120 vusers showed Business Objects able to complete 12,691 operational reports within a 30-minute period. Figure 8 shows the results of this test.

Test 1: BusinessObjects XI, Operational Report – Fixed User Test	
Date	5/26/2005
Type	Fixed Users
Test Details	120 vusers for 30 minutes
Duration	30 minutes
Errors	No error reported.
Average %CPU on Report Server	51.56%
Reports Processed at Capacity load	12,691 reports

Figure 8: Configuration Details and Summary of Results for Test 1 – Fixed User Test

Test 2: BusinessObjects XI, Operational Report (Customer Invoice) on a Single Quad-CPU Report Server in Optimized Configuration

Test 2 comprised of measuring BusinessObjects XI while processing the operational report (Customer Invoice report) in an Incremental User Test and in a related Fixed User Test on a 4-CPU reporting server in optimized configuration.

Figure 9 describes a summary of the Incremental User Test within Test 2. Over the course of this Incremental User Test, we found the highest throughput (number of reports processed) at the 36 vuser level. After 36 vusers when we increased the vusers, we monitored the response time going up and number of processed reports was decreasing.

Test 2: BusinessObjects XI, Operational Report – Incremental User Test	
Date	06/15/2005
Type	Incremental
Ramp-up Details	Increment by 4 vusers every 4 minutes
Duration	2 Hours
Errors	Started after 1 Hr 4 min or at 64 number of vusers
Maximum Reports Processed with less than 1% errors	At 36 vuser level

Figure 9: Configuration Details and Summary of Results for Test 2 – Incremental User Test

Figure 10 shows the number of reports processed and average response times as the vusers are ramped up. In our test configuration, we found the capacity load of BusinessObjects XI for the given report to be at or around 36 vusers.

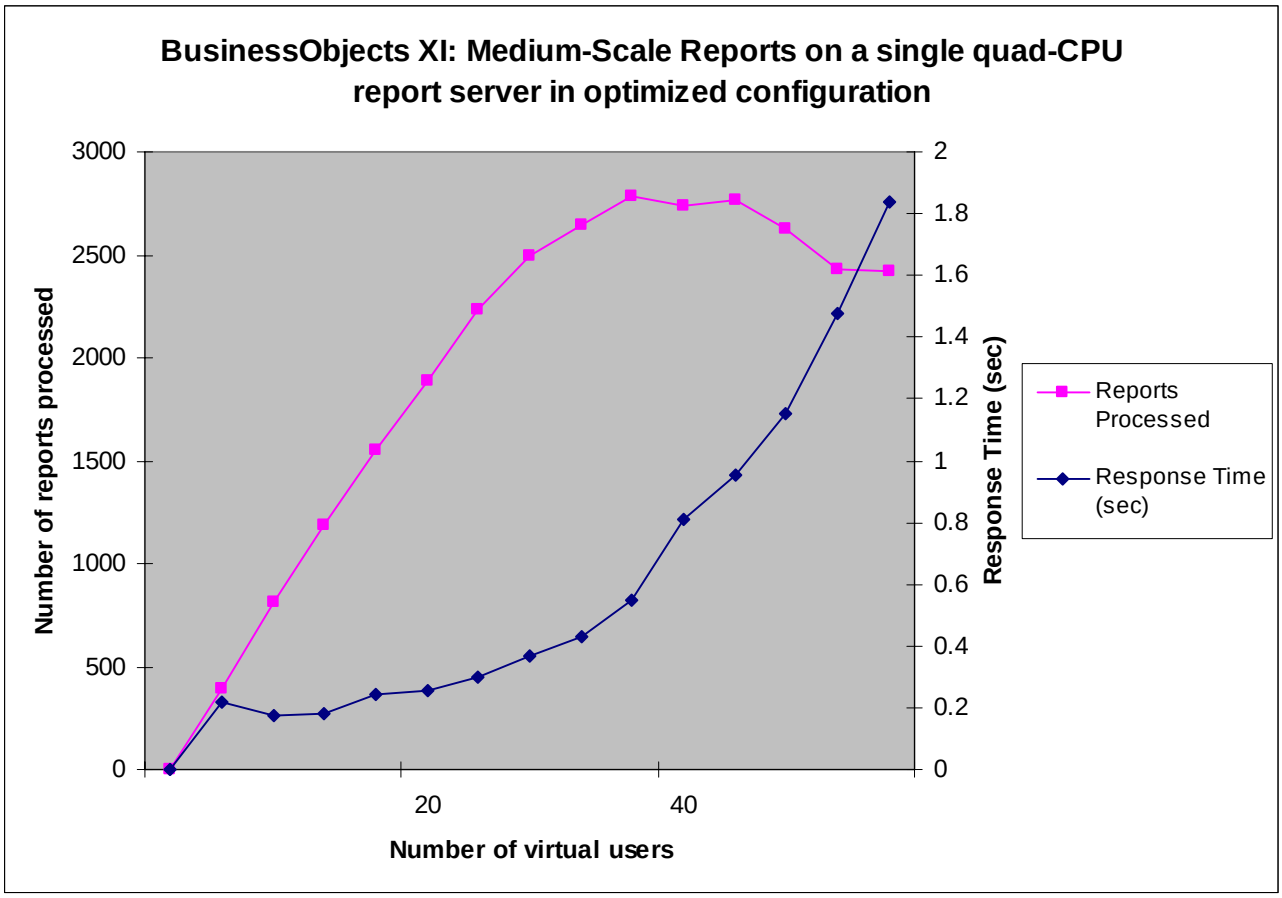

Figure 10: Test 2 Results for BusinessObjects XI Processing the Operational Report in optimized configuration

Once we determined the capacity load in the Incremental User Test, we ran this load of 36 vusers for 30 minutes in a Fixed User Test to determine the capacity of BusinessObjects XI with one quad–CPU report server. This test showed BusinessObjects XI able to complete operational reports within a 30-minute period. Figure 11 shows the results of this test.

Test 2: BusinessObjects XI, Operational Report – Fixed User Test	
Date	06/17/2005
Type	Fixed Users
Test Details	36 vusers for 30 minutes
Duration	30 minutes
Errors	No error reported.
Average %CPU on Report Server	48.53%
Reports Processed at Capacity load	21740 reports

Figure 11: Configuration Details and Summary of Results for Test 2 – Fixed User Test

Results Analysis

Figure 12 shows a comparison of the maximum number of operational reports processed in a 30-minute period using each configuration on one quad-CPU reporting server. In our test configuration using the operational report, BusinessObjects XI processed 70 percents more reports in an optimized configuration than in a default configuration.

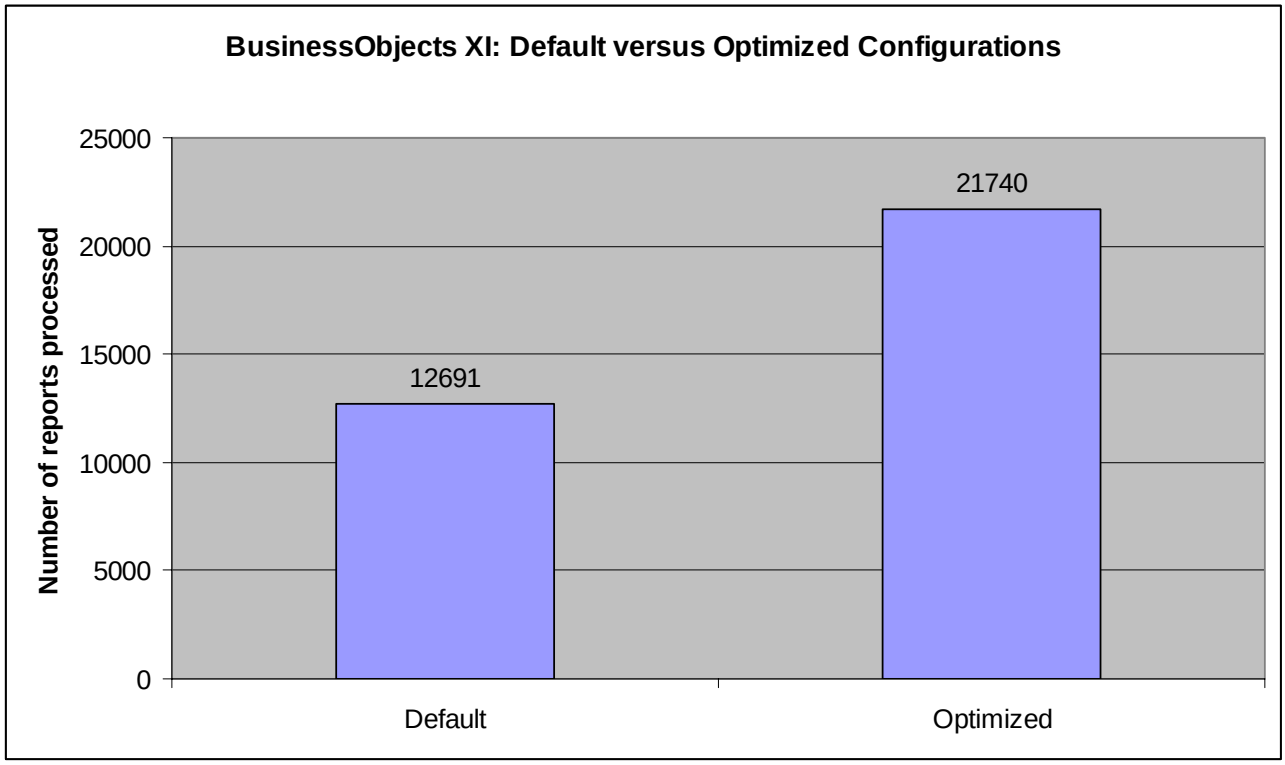

Figure 12: Comparison of Number of Reports Processed by Each Configuration, using the Operational Reports on a single quad-CPU report server

Appendices

A. Hardware and Software Configuration

Report Server	
Product	HP ProLiant DL-580
Processor Type	Quad Intel Xeon-A MP, 2000 MHz
BIOS Type	Compaq
L1 cache	8 KB (data Cache), 12K Instructions (Trace cache)
L2 cache	512 KB (On-Die, ATC, Full-Speed)
L3 cache	1 MB
Memory	4 GB
Storage	4 x 36GB Compaq SCSI Disk Device (10K RPM)
Operating System	Microsoft Windows 2000 Advance Server SP4
Application Under Test	Business Objects XI

Database Server (Query)	
Product	HP ProLiant DL-380
Processor Type	Dual Intel Xeon-A, 2782 MHz
BIOS Type	Compaq
L1 cache	8 KB (data Cache), 12K Instructions (Trace cache)
L2 cache	512 KB (On-Die, ATC, Full-Speed)
Memory	1 GB
Storage	2 x 18GB Compaq SCSI Disk Device (10K RPM)
Operating System	Microsoft Windows 2000 Advance Server SP4

Database Server (Repository)	
Product	HP ProLiant DL-360
Processor Type	Dual Intel Xeon-A, 2400 MHz
BIOS Type	Compaq
L1 cache	8 KB (data Cache), 12K Instructions (Trace cache)
L2 cache	512 KB (On-Die, ATC, Full-Speed)
Memory	1 GB
Storage	2 x 18GB Compaq SCSI Disk Device (10K RPM)
Operating System	Microsoft Windows 2000 Advance Server SP4

B. LoadRunner Script

Business Objects View Report Script

```
/* -----------------------------------------------------------------------------
        Script Title       : Business_Objects_View Script
        Script Description : Init: Login and naviate to Folder containing the Report
                                   under test
                             Action: Click on the report and close the report
                             End: Logout
        Recorder Version   : 824
   ----------------------------------------------------------------------------- */

vuser_init()
{

        web_reg_save_param("JSESSIONID2",
                "LB/IC=jsessionid=",
                "RB/IC='",
                "Ord=1",
                "Search=body",
                "RelFrameId=1",
                LAST);

        web_url("logon.object",
                "URL=http://{Server}/desktoplaunch/InfoView/logon/logon.object",
                "Resource=0",
                "RecContentType=text/html",
                "Referer=",
                "Snapshot=t1.inf",
                "Mode=HTML",
                EXTRARES,
                "Url=../res/schema.blue/default.css;jsessionid={JSESSIONID2}",
"Referer=http://{Server}/desktoplaunch/InfoView/logon/logon.object", ENDITEM,
                "Url=../res/schema.blue/banner_logo.gif", "Referer=http://{Server}/desktoplaunch/InfoView/logon/logon.object",
ENDITEM,
                "Url=../res/schema.blue/banner_fill_center.gif", "Referer=http://{Server}/desktoplaunch/InfoView/logon/logon.object",
ENDITEM,
                "Url=../res/schema.blue/banner_fill_left.gif", "Referer=http://{Server}/desktoplaunch/InfoView/logon/logon.object",
ENDITEM,
                "Url=../res/schema.blue/banner_fill_right.gif", "Referer=http://{Server}/desktoplaunch/InfoView/logon/logon.object",
ENDITEM,
                LAST);

        lr_start_transaction("BusinessObjects_Login");

        web_submit_data("logon.object;jsessionid=E4865653F1D8627D4AA5871FDC8E3A1B",
                "Action=http://{Server}/desktoplaunch/InfoView/logon/logon.object;jsessionid={JSESSIONID2}",
                "Method=POST",
                "RecContentType=text/html",
                "Referer=http://{Server}/desktoplaunch/InfoView/logon/logon.object",
                "Snapshot=t2.inf",
                "Mode=HTML",
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                "Name=qryStr", "Value=", ENDITEM,
                "Name=cmsVisible", "Value=true", ENDITEM,
                "Name=authenticationVisible", "Value=true", ENDITEM,
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                "Name=username", "Value=administrator", ENDITEM,
                "Name=password", "Value=", ENDITEM,
                "Name=authType", "Value=secEnterprise", ENDITEM,
                EXTRARES,
                "Url=../utils/utils.js", "Referer=http://{Server}/desktoplaunch/InfoView/logon/logon.object;jsessionid={JSESSIONID2}",
ENDITEM,
                LAST);

        web_url("headerPlus.do",
                "URL=http://{Server}/desktoplaunch/InfoView/main/headerPlus.do?objId=0",
```

```
                "Resource=0",
                "RecContentType=text/html",
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                "Mode=HTML",
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                "Url=../dhtmllib/language/en/labels.js",
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"Referer=http://{Server}/desktoplaunch/InfoView/main/headerPlus.do?objId=0", ENDITEM,
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ENDITEM,
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"Referer=http://{Server}/desktoplaunch/InfoView/main/headerPlus.do?objId=0", ENDITEM,
                "Url=../dhtmllib/images/skin_standard/iconsep.gif",
"Referer=http://{Server}/desktoplaunch/InfoView/main/headerPlus.do?objId=0", ENDITEM,
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ENDITEM,
                "Url=../res/general/toolbar/myinfoview.gif",
"Referer=http://{Server}/desktoplaunch/InfoView/main/headerPlus.do?objId=0", ENDITEM,
                LAST);

        web_url("navWork.do",
                "URL=http://{Server}/desktoplaunch/InfoView/main/navWork.do?objId=0",
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                "Referer=http://{Server}/desktoplaunch/InfoView/main/data.do?objId=0",
                "Snapshot=t4.inf",
                "Mode=HTML",
                LAST);

        web_url("discussions.do",
                "URL=http://{Server}/desktoplaunch/InfoView/main/discussions.do",
                "Resource=0",
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                "Referer=http://{Server}/desktoplaunch/InfoView/main/data.do?objId=0",
                "Snapshot=t5.inf",
                "Mode=HTML",
                EXTRARES,
                "Url=../res/general/toolbar/search_arrow.gif",
"Referer=http://{Server}/desktoplaunch/InfoView/main/headerPlus.do?objId=0", ENDITEM,
                "Url=../res/general/toolbar/preferences.gif",
"Referer=http://{Server}/desktoplaunch/InfoView/main/headerPlus.do?objId=0", ENDITEM,
                LAST);

        web_url("navigation.do",
                "URL=http://{Server}/desktoplaunch/InfoView/main/navigation.do",
                "Resource=0",
                "RecContentType=text/html",
                "Referer=http://{Server}/desktoplaunch/InfoView/main/navWork.do?objId=0",
                "Snapshot=t6.inf",
                "Mode=HTML",
                LAST);

        web_url("discussionsHeader.do",
                "URL=http://{Server}/desktoplaunch/InfoView/main/discussionsHeader.do",
                "Resource=0",
                "RecContentType=text/html",
                "Referer=http://{Server}/desktoplaunch/InfoView/main/discussions.do",
                "Snapshot=t7.inf",
                "Mode=HTML",
                LAST);

        web_url("workspace.do",

        "URL=http://{Server}/desktoplaunch/InfoView/main/workspace.do?url=%2Fbusinessobjects%2Fenterprise11%2Fdesktoplaunch%2FInfoView%2Fmain%2Fhome.do",
```

```
		"Resource=0",
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		LAST);

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		"Referer=http://{Server}/desktoplaunch/InfoView/main/discussions.do",
		"Snapshot=t9.inf",
		"Mode=HTML",
		LAST);

	web_url("navigationHeader.do",
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		"RecContentType=text/html",
		"Referer=http://{Server}/desktoplaunch/InfoView/main/navigation.do",
		"Snapshot=t10.inf",
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		LAST);

	web_url("navigationFolders.do",
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		"RecContentType=text/html",
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		"Mode=HTML",
		LAST);

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		"Resource=0",
		"RecContentType=text/html",

	"Referer=http://{Server}/desktoplaunch/InfoView/main/workspace.do?url=%2Fbusinessobjects%2Fenterprise11%2Fdesktoplaunch%2FInfoView%2Fmain%2Fhome.do",
		"Snapshot=t12.inf",
		"Mode=HTML",
		LAST);

	web_url("home.do",
		"URL=http://{Server}/desktoplaunch/InfoView/main/home.do",
		"Resource=0",
		"RecContentType=text/html",

	"Referer=http://{Server}/desktoplaunch/InfoView/main/workspace.do?url=%2Fbusinessobjects%2Fenterprise11%2Fdesktoplaunch%2FInfoView%2Fmain%2Fhome.do",
		"Snapshot=t13.inf",
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		"Url=../res/schema.blue/arrow_down_hover.gif",
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```
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"Referer=http://{Server}/desktoplaunch/InfoView/main/workspaceHeader.do?title=", ENDITEM,
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"Referer=http://{Server}/desktoplaunch/InfoView/main/workspaceHeader.do?title=", ENDITEM,
		"Url=../res/schema.blue/close_panel_hover.gif",
"Referer=http://{Server}/desktoplaunch/InfoView/main/workspaceHeader.do?title=", ENDITEM,
		LAST);

	lr_end_transaction("BusinessObjects_Login",LR_AUTO);

	lr_start_transaction("BusinessObjects_PublicFolder");

	web_custom_request("navigationFolders.do_2",
		"URL=http://{Server}/desktoplaunch/InfoView/main/navigationFolders.do",
		"Method=POST",
		"Resource=0",
		"RecContentType=text/html",
		"Referer=http://{Server}/desktoplaunch/InfoView/main/navigationFolders.do?nid=-1",
		"Snapshot=t14.inf",
		"Mode=HTML",

	"Body=clientPostback=true&isPostBack=1&userAction=retrieveChildrenSubTree&userActionParam=&uid=folderTreeCtrl%3a_i
d0%3a0&expandedNodes=folderTreeCtrl%3a_id0%3a0&collapsedNodes=&checkedNodes=&uncheckedNodes=&jsfReferer=%2fbusines
sobjects%2fenterprise11%2fdesktoplaunch%2fInfoView%2fmain%2fnavigationFolders.do&selectedNodes=&safariClientCallbackWorkaro
und=true",
		EXTRARES,
		"Url=../res/general/treeCtrlImages/lminus.gif",
"Referer=http://{Server}/desktoplaunch/InfoView/main/navigationFolders.do?nid=-1", ENDITEM,
		LAST);

	web_url("objectList.do",
		"URL=http://{Server}/desktoplaunch/InfoView/main/objectList.do?objId=383",
		"Resource=0",
		"RecContentType=text/html",

	"Referer=http://{Server}/desktoplaunch/InfoView/main/workspace.do?url=%2Fbusinessobjects%2Fenterprise11%2Fdesktoplau
nch%2FInfoView%2Fmain%2Fhome.do",
		"Snapshot=t15.inf",
		"Mode=HTML",
		EXTRARES,
		"Url=../res/general/toolbar/organize.gif",
"Referer=http://{Server}/desktoplaunch/InfoView/main/objectList.do?objId=383", ENDITEM,
		LAST);

	web_url("reportList.do",

	"URL=http://{Server}/desktoplaunch/InfoView/listing/reportList.do?type=all&objId=383&searchText=&searchParam=&advSearc
h=false&objectPageNum=0",
		"Resource=0",
		"RecContentType=text/html",
		"Referer=http://{Server}/desktoplaunch/InfoView/main/objectList.do?objId=383",
		"Snapshot=t16.inf",
		"Mode=HTML",
		EXTRARES,
		"Url=../res/general/arrow_down.gif",
"Referer=http://{Server}/desktoplaunch/InfoView/listing/reportList.do?type=all&objId=383&searchText=&searchParam=&advSearch=false
&objectPageNum=0", ENDITEM,
		"Url=../res/general/grey_title_bar_fill.gif",
"Referer=http://{Server}/desktoplaunch/InfoView/listing/reportList.do?type=all&objId=383&searchText=&searchParam=&advSearch=false
&objectPageNum=0", ENDITEM,
		LAST);

	lr_end_transaction("BusinessObjects_PublicFolder",LR_AUTO);

	return 0;
```

```
}

Action()
{
	int rc;
	long fp;
	char* path = (char*) malloc(40);
	strcpy(path,(char*) lr_eval_string("d:\\Temp\\LRLogs\\{DateTime}.html"));


	web_reg_save_param("HTML_Code",
		"LB/IC=<HTML>",
		"RB/IC=</HTML>",
		"Ord=1",
		"NotFound=EMPTY",
		"Search=Body",
		LAST);

	web_reg_save_param("textcheck",
		"LB=ePortfolioCry",
		"RB=talForm",
		"Ord=1",
		"NotFound=EMPTY",
		"Search=Body",
		LAST);
	lr_think_time(2);

	lr_start_transaction("BusinessObjects_ViewReport");

	web_url("viewDHTMLReport.jsp",

	"URL=http://{Server}/desktoplaunch/InfoView/plugin/crystalenterprise/report/viewDHTMLReport.jsp?objId={Objid}&ceVwr=1&ini
t=connect",
		"Resource=0",
		"RecContentType=text/html",

	"Referer=http://{Server}/desktoplaunch/InfoView/main/workspace.do?url=%2Fbusinessobjects%2Fenterprise11%2Fdesktoplau
nch%2FInfoView%2Fmain%2Fhome.do",
		"Snapshot=t17.inf",
		"Mode=HTML",
		LAST);
	rc = strcmp( lr_eval_string("{textcheck}"),		"s" );

	if (rc != 0)
	{
	//**********************FILE OPERATION******************
		if ((fp = fopen(path, "w" )) == NULL)
		{
	   lr_output_message("Unable to create %s", path);
			return 0;
	}

		fprintf(fp,"%s",lr_eval_string("<html> {HTML_Code} </html>"));
		fclose(fp);
	//*****************************END**********************
		lr_end_transaction("BusinessObjects_ViewReport", LR_FAIL);
		lr_error_message("%s", lr_eval_string("Failed on transaction BusinessObjects_ViewReport ItNum {ItNum}, Vuser
{VuserID}, Group {LR_Group}, LRHost {LR_Host}, Date & Time {DateTime}"));
		return 0;
	}

	web_url("crystalimagehandler.jsp",

	"URL=http://{Server}/desktoplaunch/viewers/crystalreportviewers11/crystalimagehandler.jsp?dynamicimage=crystal26759.png"
,
		"Resource=1",
		"RecContentType=image/png",

	"Referer=http://{Server}/desktoplaunch/InfoView/plugin/crystalenterprise/report/viewDHTMLReport.jsp?objId={Objid}&ceVwr=1
&init=connect",
		LAST);

	lr_end_transaction("BusinessObjects_ViewReport",LR_PASS);
```

```
	lr_start_transaction("BusinessObjects_CloseReport");

	web_url("objectList.do_2",
		"URL=http://{Server}/desktoplaunch/InfoView/main/objectList.do?objId=383",
		"Resource=0",
		"RecContentType=text/html",

	"Referer=http://{Server}/desktoplaunch/InfoView/main/workspace.do?url=%2Fbusinessobjects%2Fenterprise11%2Fdesktoplaunch%2FInfoView%2Fmain%2Fhome.do",
		"Snapshot=t18.inf",
		"Mode=HTML",
		LAST);


	web_reg_save_param("HTML_Code",
		"LB/IC=<HTML>",
		"RB/IC=</HTML>",
		"Ord=1",
		"NotFound=EMPTY",
		"Search=Body",
		LAST);
	web_reg_save_param("textcheck",
		"LB=encodedAdvance",
		"RB=Search",
		"Ord=1",
		"NotFound=EMPTY",
		"Search=Body",
		LAST);

	web_url("reportList.do_2",

	"URL=http://{Server}/desktoplaunch/InfoView/listing/reportList.do?type=all&objId=383&searchText=&searchParam=&advSearch=false&objectPageNum=0",
		"Resource=0",
		"RecContentType=text/html",
		"Referer=http://{Server}/desktoplaunch/InfoView/main/objectList.do?objId=383",
		"Snapshot=t19.inf",
		"Mode=HTML",
		LAST);
	rc = strcmp( lr_eval_string("{textcheck}"),		"d" );

	if (rc != 0)
	{
	//**********************FILE OPERATION*******************
		if ((fp = fopen(path, "w" )) == NULL)
		{
	   lr_output_message("Unable to create %s", path);
			return 0;
	}

		fprintf(fp,"%s",lr_eval_string("<html> {HTML_Code} </html>"));
		fclose(fp);
	//*****************************END**********************
		lr_end_transaction("BusinessObjects_CloseReport", LR_FAIL);
		lr_error_message("%s", lr_eval_string("Failed on transaction BusinessObjects_CloseReport ItNum {ItNum}, Vuser {VuserID}, Group {LR_Group}, LRHost {LR_Host}, Date & Time {DateTime}"));
		return 0;
	}

	lr_end_transaction("BusinessObjects_CloseReport",LR_PASS);



	return 0;
}

vuser_end()
{

	lr_start_transaction("BusinessObjects_Logoff");
```

```
	web_url("logoff.do",
		"URL=http://{Server}/desktoplaunch/InfoView/logon/logoff.do",
		"Resource=0",
		"RecContentType=text/html",
		"Referer=",
		"Snapshot=t20.inf",
		"Mode=HTML",
		LAST);

	lr_end_transaction("BusinessObjects_Logoff",LR_AUTO);

	return 0;
}
```

VeriTest (www.veritest.com), the testing division of Lionbridge Technologies, Inc., provides outsourced testing solutions that maximize revenue and reduce costs for our clients. For companies who use high-tech products as well as those who produce them, smoothly functioning technology is essential to business success. VeriTest helps our clients identify and correct technology problems in their products and in their line of business applications by providing the widest range of testing services available.

VeriTest created the suite of industry-standard benchmark software that includes WebBench, NetBench, Winstone, and WinBench. We've distributed over 20 million copies of these tools, which are in use at every one of the 2001 Fortune 100 companies. Our Internet BenchMark service provides the definitive ratings for Internet Service Providers in the US, Canada, and the UK.

Under our former names of ZD Labs and eTesting Labs, and as part of VeriTest since July of 2002, we have delivered rigorous, objective, independent testing and analysis for over a decade. With the most knowledgeable staff in the business, testing facilities around the world, and almost 1,600 dedicated network PCs, VeriTest offers our clients the expertise and equipment necessary to meet all their testing needs.

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