

Performance Test Report for Service Manager 7.01

Performance Test using LoadRunner against a Service Manager 7.01 system on Windows running with an Oracle Database on Windows.

HP® Software — Service Management



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Introduction

Hewlett-Packard is ranked among the top software companies worldwide. HP provides solutions that enable companies to manage infrastructure and simplify employee access to that infrastructure, as well as extend next generation e-Business capabilities inside the enterprise and outside the firewall.

HP software delivers rich functionality with robust performance. To ensure that this performance is maintained at high volumes, HP's development team routinely conducts benchmarks on all HP products. The benchmarks demonstrate HP software's performance characteristics for a range of processing volumes in a specific configuration. Customers and prospects can use this information to determine the software, hardware and network configurations necessary to support their processing volumes.

This document details the benchmark of HP Service Manager 7.01 on Windows Server 2003 and Oracle 10.2.

Scope

Service Manager 7.01 was benchmarked in a horizontally load balanced configuration with Oracle on Windows via the web-based client interface. The software used to conduct the benchmark was LoadRunner 8.1.4. It is a capacity-testing tool that records the user actions and compiles them into a script used by one or more virtual users. The test administrator can specify the number of users, the types of transactions, transaction arrival and duration of the test. Different user transaction profiles running for a 60-minute timeframe were simulated. The scope of this effort is to verify the scalability of selected Service Manager 7.01 server configurations.

Test Environment

Hardware

All tests were conducted at the HP Rancho Bernardo facility in San Diego, CA using the following physical assets:

ID	Usage		OS
1	SM 7 Load balancer	IBM HS20 Blade 2 x 2.8GHz w/4GB	Win 2003
2	SM 7 Server	IBM X445 Blade 8 x 3.2GHz w/16GB	Win 2003
3	SM 7 Server	IBM X445 Blade 8 x 3.2GHz w/16GB	Win 2003
4	SM 7 Server	HP BL25 Blade 2 x 2.8GHz w/3GB	Win 2003
5	LoadRunner /VU Controller	IBM HS20 Blade 2 x 2.8GHz w/3GB	Win 2003
6	VU generator	IBM HS20 Blade 2 x 2.8GHz w/3GB	Win 2003
7	VU generator	IBM HS20 Blade 2 x 2.8GHz w/3GB	Win 2003
8	SM 7 Web-tier 1x Apache /3x Tomcat	IBM HS20 Blade 2 x 2.8GHz w/3GB	Win 2003
9	SM 7 Web-tier – 3 x Tomcat	IBM HS20 Blade 2 x 2.8GHz w/3GB	Win 2003
10	SM 7 Web-tier – 3 x Tomcat	IBM HS20 Blade 2 x 3.6GHz w/3GB	Win 2003
11	Oracle 10.2 Database server	IBM HS40 Blade 8 x 2.2GHz w/10GB	Win 2003

Software

All tests were conducted with the following software set:

- Service Manager 7.01
- Oracle 10g 10.2.0.1
- Windows Server 2003 Enterprise and Standard Editions
- HP LoadRunner 8.1.4
- Apache HTTP Server 2.0.53
- Apache Tomcat Server 5.0.28

Performance Test Information

Setup and Tuning

Service Manager was configured to utilize a four-tier client/server architecture that allows for maximum flexibility and customization within a given networked environment. All testing was conducted using the Service Manager web client interface supported by Apache HTTP and Tomcat servers.

Testing was conducted with the Windows systems in an *as installed* state. During the course of testing, there was no tuning of the Service Manager or Oracle 10.2 server required.

Note: The test script was run without background processes running.

Test Script

1. Connect to Service Manager web client
2. Log in as falcon
3. Go to Incident Management
4. Click on Open New Incident
5. Fill in the brief description
6. Fill in the Contact Information by typing it in manually
7. Fill in the category manually
8. Click the fill button to select subcategory, product type and problem type
9. Fill in the other required fields by selecting from the dropdowns: Impact Assessment, Site Category
10. Type in a Description
11. Click Submit
12. Select Assignment Group
13. Select the Affected Item
14. Click Cancel
15. Click on Open New Incident
16. Fill in the brief description
17. Fill in the Contact Information by using the fill button and select the affected item when prompted
18. Fill in the category manually
19. Click the fill button to select subcategory, product type and problem type
20. Fill in the other required fields by selecting from the dropdowns: Impact Assessment
21. Type in a Description
22. Click Submit and select valid Assignment Group
23. When prompted with possibly related items, click open new incident
24. Repeat Steps 13 – 22 four more times.
25. Exit and Log out.

Performance Benchmarks

The goal of this testing was to determine the maximum user level that can be supported on a given system, as such, the Test Plan did not call for any specific user levels to be tested. Rather, user levels were increased until response times fell outside the parameters defined below. For this performance test effort each user ran at a rate of 4 transactions per hour. This was accomplished by configuring each Service Manager virtual user to open at least 4 Incident Management tickets.

Success Criteria

The benchmark tests were considered successful when:

- The specified users are simultaneously logged in and able to complete the recorded tests.
- Average response times of approximately 3 seconds (5 seconds for Login).

- 90th Percentile response times of approximately 5 seconds (7seconds for Login).

Reporting Methodology

Reports consist of metrics from the HP LoadRunner generated charts, along with a detailed report of what was done / modified to accomplish the test.

Tools

HP LoadRunner 8.1.4

This load testing software is produced by Hewlett-Packard. LoadRunner simulates high user loads to gauge hardware limitations of a given system. Data gathered from these tests help to determine if a system can handle a given user load with acceptable response times. The tool launches a predetermined number of users that perform a specific number of transactions in a specified period of time, and records elapsed time, CPU time and number of string copies for each transaction.

Test Results

The testing conducted during this engagement was concentrated on a horizontally load balanced Service Manager configuration. The load balanced environment proved to be quite robust in its ability to handle large user counts at average ticket volumes. There was a slight degradation noted on the servers when compared to their capabilities in a standalone environment. This degradation was attributed to the additional latency involved in sending and receiving information from the Load Balance server. This latency didn't show to have a notable impact on individual user transactions, but was only noted in the servers overall scalability.

1200 Users – Load Balanced

Note: Results are in seconds.

Transaction Name	Minimum	Average	Maximum	Std. Deviation	90 Percent
cancel <i>Step 14</i>	0.026	0.043	0.117	0.011	0.06
cancel_2	0.016	0.041	0.164	0.01	0.06
cancel_3	0.016	0.04	0.104	0.01	0.06
cancel_4	0.016	0.038	0.12	0.009	0.05
category fill <i>Step 19</i>	0.318	0.522	2.204	0.157	0.622
category_fill_2	0.3	0.508	2.207	0.152	0.601
category_fill_3	0.305	0.485	1.998	0.117	0.561
category_fill_4	0.27	0.446	1.534	0.075	0.531
IM_TX01_Login <i>Step 2</i>	1.987	3.18	8.584	0.672	3.955
Log out <i>Step 24</i>	0.061	0.092	0.375	0.02	0.12
open_new_button <i>Step 4</i>	1.329	2.641	13.242	1.213	3.933
open_new_button_2	1.319	2.629	15.929	1.278	4.142
open_new_button_3	0.937	2.427	10.414	1.14	3.693
open_new_button_4	1.072	2.084	9.29	0.726	2.64
open_new_tab <i>Step 15</i>	0.127	0.246	3.306	0.169	0.289
open_new_tab_2	0.08	0.14	1.12	0.062	0.17
open_new_tab_3	0.078	0.138	1.218	0.063	0.17
open_new_tab_4	0.077	0.129	1.123	0.043	0.16
submit <i>Step 22</i>	0.211	0.365	2.102	0.179	0.421
submit_2	0.21	0.359	2.293	0.17	0.41
submit_3	0.204	0.33	1.902	0.126	0.39
submit_4	0.186	0.293	0.547	0.046	0.35
user_fill <i>Step 17</i>	0.233	0.422	2.107	0.158	0.521
user_fill_2	0.225	0.42	2.029	0.168	0.511
user_fill_3	0.232	0.418	2.451	0.138	0.501
user_fill_4	0.208	0.359	1.618	0.082	0.439

Problems and Issues

There were no Service Manager problems or issues encountered during testing.

Conclusions

Service Manager performed acceptably during testing. This test met all of the response time goals up to the maximum tested concurrent user level of 1200 users.

Service Manager 7.01 is database intensive and more work on database tuning needs to be done to fully reach the potential of this product. During extended testing, the functional limitations of Oracle 10g on 32-bit Windows were reached. Due to limitations of the 32-bit Windows architecture and Oracle's Windows product architecture, it is not recommended to implement more than a *small* environment using Oracle on 32-bit Windows as the RDBMS. Service Manager implementations in *medium* or larger environments that wish to use Oracle on Windows as the RDBMS should move to the 64-bit Itanium architecture.

Appendix A: Service Manager Settings

Sm.ini

```
# HP Service Manager Server Initialization File
#
# Used by smstart script to start the Service Manager server processes.
#
#####
# Copyright (c) 1997-2007 HP, Inc.
# All Rights Reserved
#
#####
#
# Installed Configuration
#

shared_memory:128000000
log:d:\logs\sm.log
alertlog:d:\logs\sm.alert.log

threadperprocess:100
ir_asynchronous:1
fastcounters:2000

sslConnector:0

plugin0:kmplugin.dll

groupname:sm7_perf_test
groupport:50000
grouplicenseip:99.99.99.99
groupmcastaddress:228.99.99.99

system:23080
#httpPort:23080

[oracle10]
sqlldb:ORASM_PDORDBMS-04
sqllogin:sm7perf/xxxx
sqldictionary:oracle10
sqllibrary:sqoracle.oci10.DLL

JVMOption0:-DFastInfoSet=false:
```


Sm.cfg

Load Balancer machine:

```
#
# HP Service Manager Server Configuration File
#
# Used by smstart script to start the Service Manager server processes.
#
#####
# Copyright (c) 1997-2007 HP, Inc.
# All Rights Reserved
#
#####
#
# start the Service Manager loadBalancer
#
sm -loadBalancer -httpPort:23080 -log:d:\logs\23080.log
#ir asynchronous
sm -que:ir -log:d:\logs\ir.log
```

Servlets on large server (see Hardware on page 3)

```
#
# HP Service Manager Server Configuration File
#
# Used by smstart script to start the Service Manager server processes.
#
#####
# Copyright (c) 1997-2007 HP, Inc.
# All Rights Reserved
#
#####
#
# start the Service Manager listeners
#
sm -httpPort:23081 -httpsPort:23082 -log:d:\logs\23081.log
sm -httpPort:23083 -httpsPort:23084 -log:d:\logs\23083.log
sm -httpPort:23085 -httpsPort:23086 -log:d:\logs\23085.log
sm -httpPort:23087 -httpsPort:23088 -log:d:\logs\23087.log
sm -httpPort:23089 -httpsPort:23090 -log:d:\logs\23089.log
sm -httpPort:23091 -httpsPort:23092 -log:d:\logs\23091.log

#ir asynchronous
sm -que:ir -log:d:\logs\ir.log
```

Appendix B: Oracle Database Parameters

```
audit_file_dest = C:\ORACLE\PRODUCT\10.2.0\ADMIN\ORASM\ADUMP
background_dump_dest = C:\ORACLE\PRODUCT\10.2.0\ADMIN\ORASM\BDUMP
compatible = 10.2.0.3.0
control_files = ('C:\ORACLE\PRODUCT\10.2.0\ORADATA\ORASM\CONTROL01.CTL',
'C:\ORACLE\PRODUCT\10.2.0\ORADATA\ORASM\CONTROL02.CTL',
'C:\ORACLE\PRODUCT\10.2.0\ORADATA\ORASM\CONTROL03.CTL')
core_dump_dest = C:\ORACLE\PRODUCT\10.2.0\ADMIN\ORASM\CDUMP
db_block_size = 8192
db_domain = ''
db_file_multiblock_read_count = 8
db_name = orasm
db_recovery_file_dest = C:\oracle\product\10.2.0\flash_recovery_area
db_recovery_file_dest_size = 2147483648
dispatchers = '(protocol=TCP)(disp=8)(con=275)(sess=2000)'
dml_locks = 750
job_queue_processes = 250
large_pool_size = 0
log_archive_dest_1 = ''
open_cursors = 750
pga_aggregate_target = 630194176
processes = 3000
recyclebin = OFF
remote_login_passwordfile = EXCLUSIVE
sessions = 3305
sga_max_size = 2726297600
sga_target = 2726297600
shared_pool_size = 0
shared_servers = 6
undo_management = AUTO
undo_tablespace = UNDOTBS1
user_dump_dest = C:\ORACLE\PRODUCT\10.2.0\ADMIN\ORASM\UDUMP
```

For more information

Please visit the HP Software support Web site at:

www.hp.com/go/hpssoftwaresupport

This Web site provides contact information and details about the products, services, and support that HP Software offers.

HP Software online software support provides customer self-solve capabilities. It provides a fast and efficient way to access interactive technical support tools needed to manage your business. As a valued customer, you can benefit by being able to:

- Search for knowledge documents of interest
- Submit and track progress on support cases
- Submit enhancement requests online
- Download software patches
- Manage a support contract
- Look up HP support contacts
- Review information about available services
- Enter discussions with other software customers
- Research and register for software training

Note: Most of the support areas require that you register as an HP Passport user and sign in. Many also require an active support contract.

To find more information about support access levels, go to the following URL:

www.hp.com/go/hpssoftwaresupport/new_access_levels

To register for an HP Passport ID, go to the following URL:

www.hp.com/go/hpssoftwaresupport/passport-registration

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