



# SM 9.20 Performance test report

Description of the test environment and test results on Windows and Oracle

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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 9.20 on Windows Server 2003 and Oracle 11g.

## Scope

Service Manager 9.20 was benchmarked in a horizontally load-balanced configuration with Oracle on Windows via the web client interface. The software used to conduct the benchmark was LoadRunner 9.5.2. Different user transaction profiles running for a 60-minute timeframe were simulated. The scope of this effort is to verify the scalability of Service Manager 9.20.

## Executive Summary

Service Manager performed acceptably during testing and demonstrated good scalability. All of the response time goals, up to the maximum tested concurrent user level of 2500 users, were met with a significant margin for increased workload.

# 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 9.20 Load balancer/Server	HP BL460c G1 Blade 8 x 2.6GHz w/32GB	Win 2003 – 64 bit
2	SM 9.20 Server	HP BL460c G1 Blade 8 x 2.6GHz w/32GB	Win 2003 – 64 bit
3	SM 9.20 Server	HP BL460c G1 Blade 8 x 2.6GHz w/32GB	Win 2003 – 64 bit
4	Oracle 11g Database server	HP DL585 G2 8 x 2.8GHz w/64GB	Win 2003 – 64 bit
5	LoadRunner /VU Controller	VMWare VM 1 x 2.6GHz w/3GB	Win 2003 – 32 bit
6	VU generator	IBM HS20 Blade 2 x 2.8GHz w/3GB	Win 2003 – 32 bit
7	VU generator	IBM HS20 Blade 2 x 2.8GHz w/3GB	Win 2003 – 32 bit
8	Apache HTTP Server	IBM HS20 Blade 2 x 2.8GHz w/3GB	Win 2003 – 32 bit
9	SM 9.20 Web-tier – 10 x Tomcat	IBM P550 8 x 2.8GHz w/32GB	AIX 5.3

## Software

All tests were conducted with the following software set:

- Service Manager 9.20
- Oracle 11g 11.1.0.6
- Windows Server 2003 Enterprise 64-bit and Standard 32-bit Editions
- HP LoadRunner 9.52
- Apache HTTP Server 2.0.55
- Apache Tomcat Server 5.5.28

# 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 11.1 server required beyond basic sizing. Specific Service Manager settings and Oracle parameters used are available in Appendices A and B, respectively.

Minor changes were made to the out of the box Service Manager applications. The first change was to disable Application License Tracking. Due to the very rapid user ramp-up unique to load testing, minor issues were encountered during the login phase. The pace of user logins is not likely to be replicated in a live system and this change should not be necessary. The second change was to disable Problem and Incident Matching in the Incident Management profile for the group encompassing the test users. Due to the limited variability of the data being entered for new incident tickets, an artificial situation was created where a step in the incident creation process would take progressively longer as the test ran. As this is not likely to occur in a live system, incident matching was disabled for testing. It should be noted that in a very large deployment this issue could present itself if a user manually entered an incident for an issue that was reported repeatedly by an automated process.

## Test Scripts

The test scripts used for this test were modeled after typical user transactions in an out-of-box system. The scripts covered the areas of Service Desk, Incident Management, Problem Management, Change Management, and Service Catalog. During the test, each virtual user logs in only once, completes one or more iterations of the scripts' actions, and then logs out. A complete description of the user scenarios used to build the scripts is contained in Appendix C of this document.

## Performance Benchmarks

The goal of this testing was to determine scalability and system behavior at a specific user level. For this performance benchmarking test effort, each user ran at a rate of approximately 8 transactions per hour.

### **Success Criteria**

The benchmark tests were considered successful when:

- The specified users are simultaneously logged in and able to complete the recorded tests.
- Response times fall within the parameters defined
  - Login- 5 seconds average
  - Submit SD Interaction- 7 seconds average
  - All others- 3.5 seconds average

### **Reporting Methodology**

Reports consist of metrics from the HP LoadRunner generated charts, along with a detailed report of test system resource utilization under load.

## Tools

### HP LoadRunner 9.52

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, amount of data transferred, total hits, and much more.

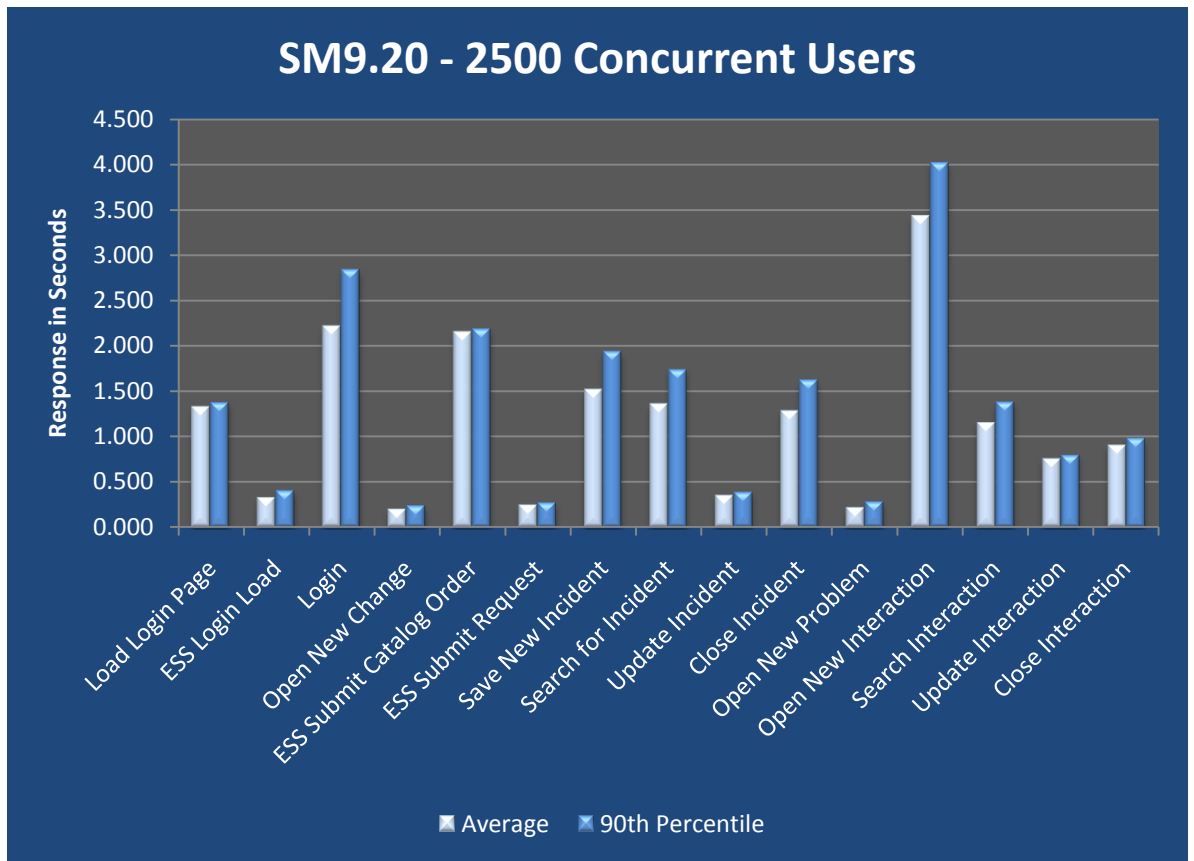
### LoadRunner Test Scenario Settings

<b>User Scenario</b>	<b>User Count</b>	<b>Start Time</b>	<b>Ramp-up Rate</b>
<b>Change Management</b>	800	+0:00:00	9 users every 30 seconds
<b>Incident Management</b>	800	+0:02:20	9 users every 30 seconds
<b>ESS Interaction</b>	800	+0:05:10	9 users every 30 seconds
<b>Problem Management</b>	130	+0:51:30	10 users every 30 seconds
<b>Service Desk</b>	110	+0:59:30	10 users every 30 seconds
<b>Service Catalog (ESS)</b>	80	+1:06:30	10 users every 30 seconds

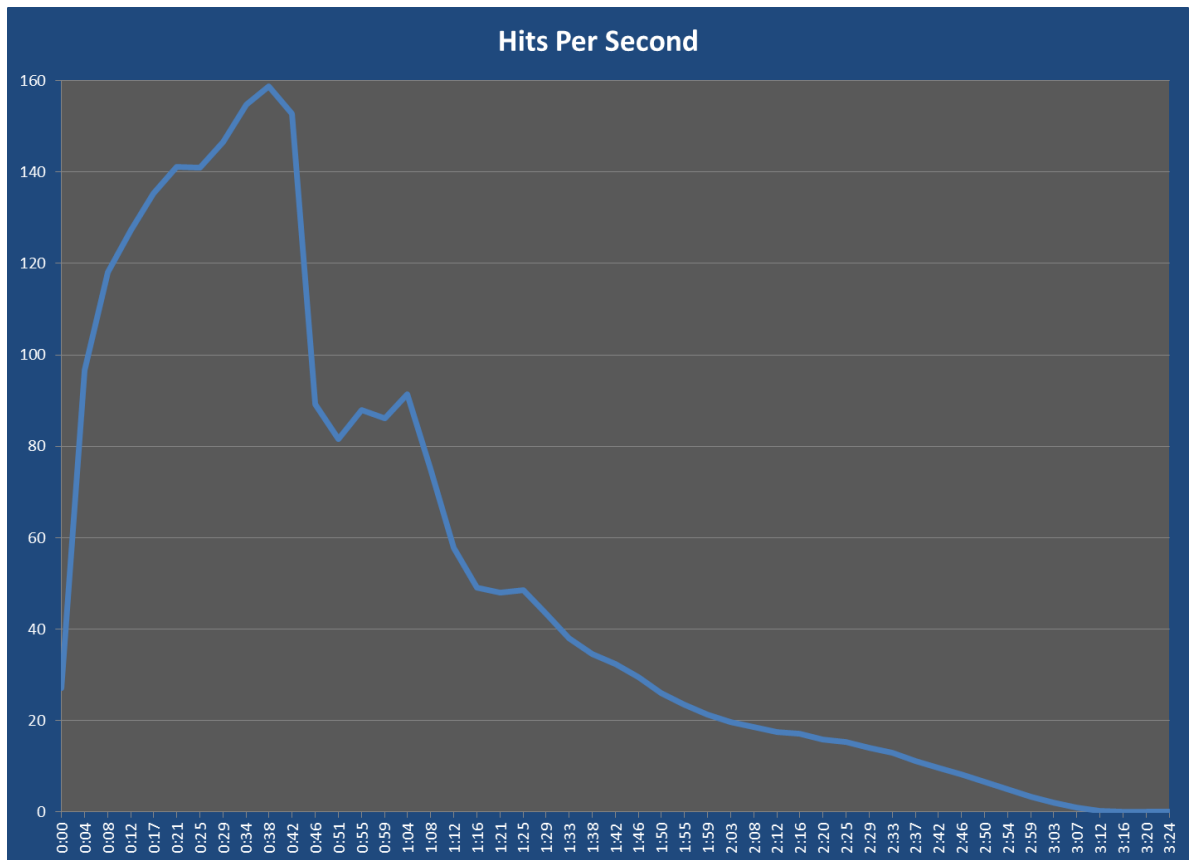
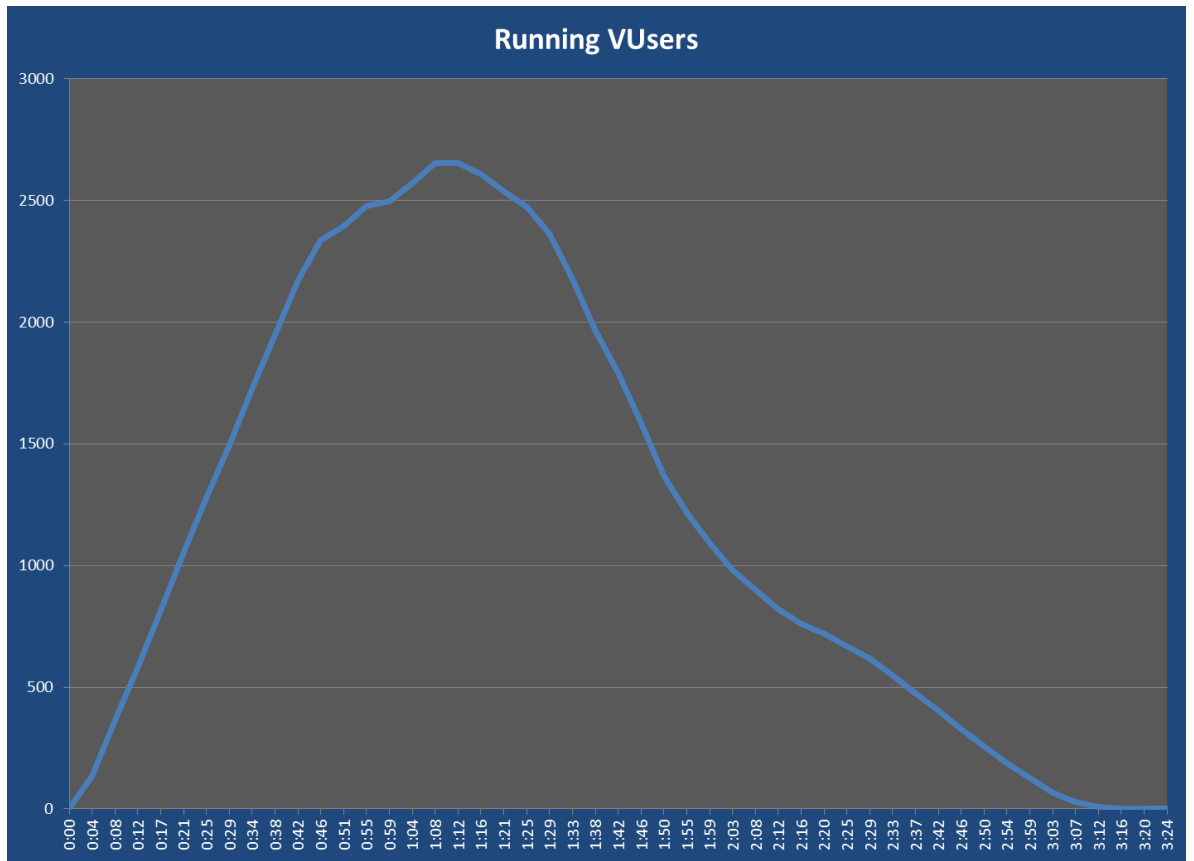
## Test Results

The testing conducted during this engagement was 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.

## Transaction Response Times

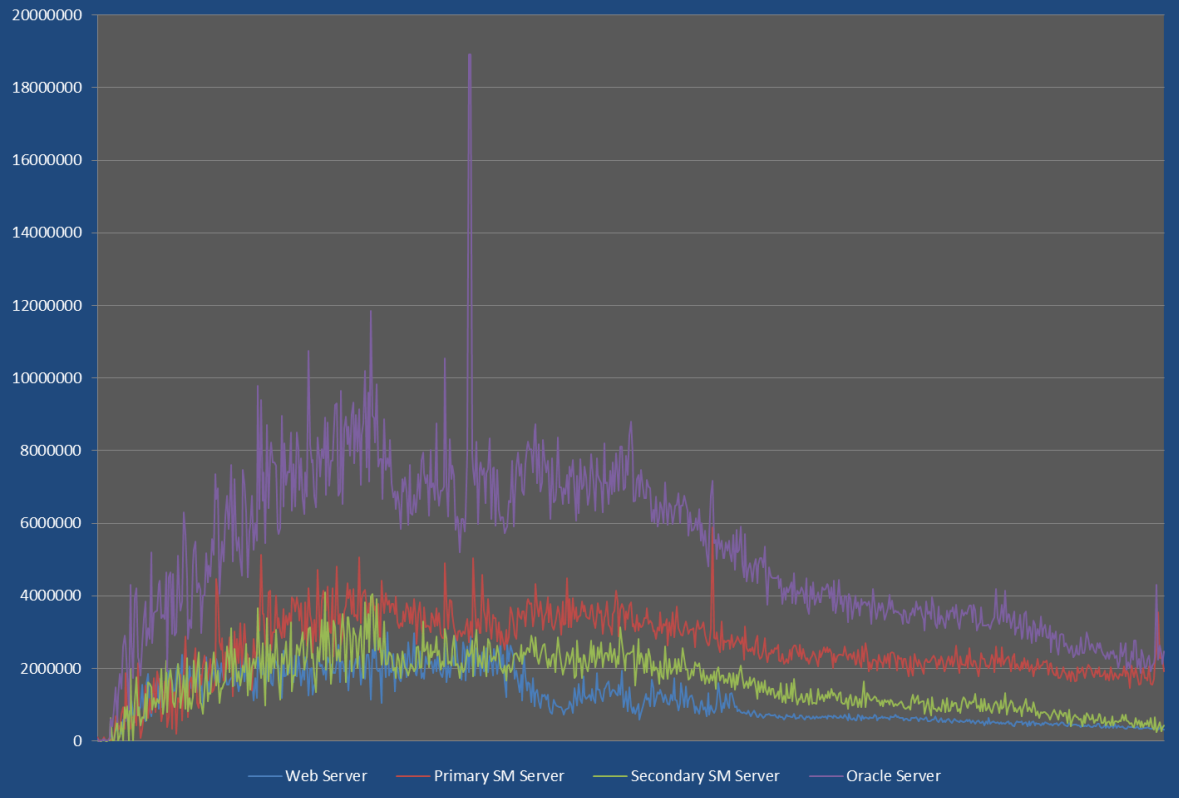


# Test Statistics



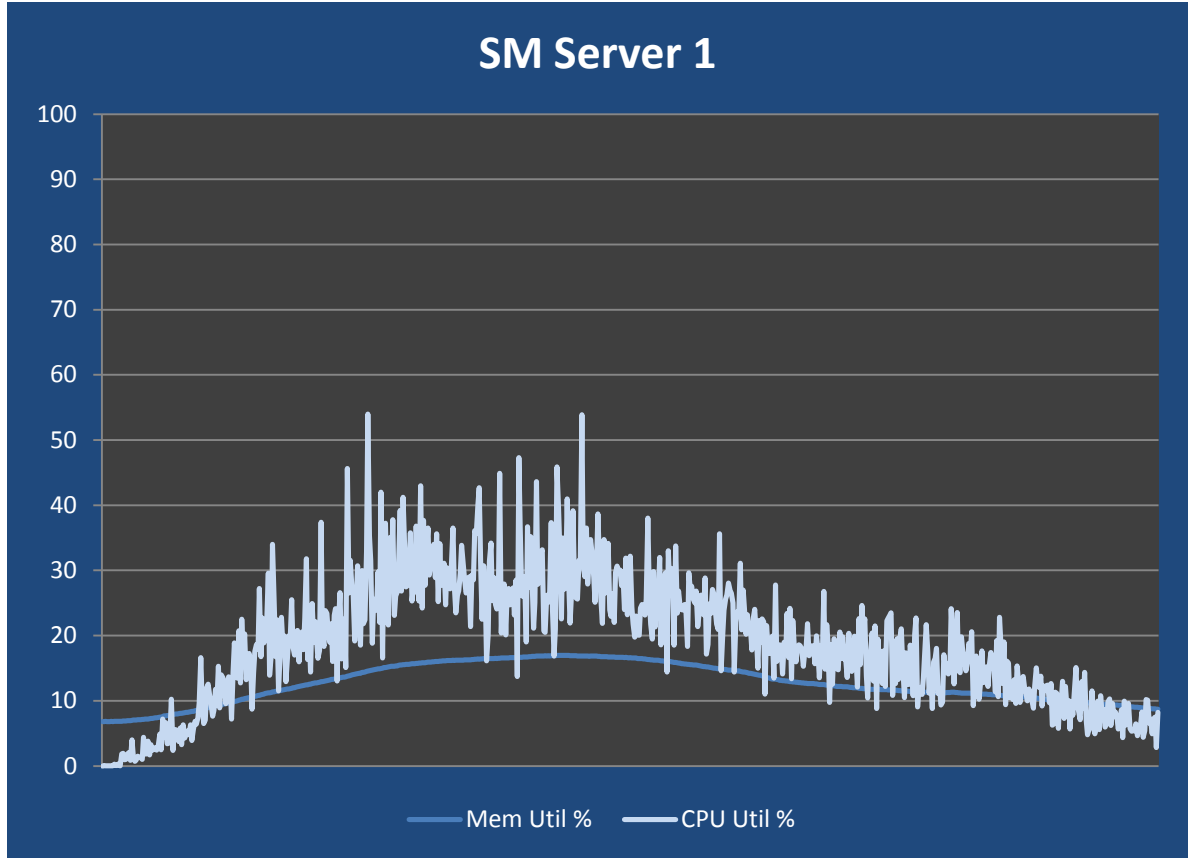


# Network Bytes Per Second

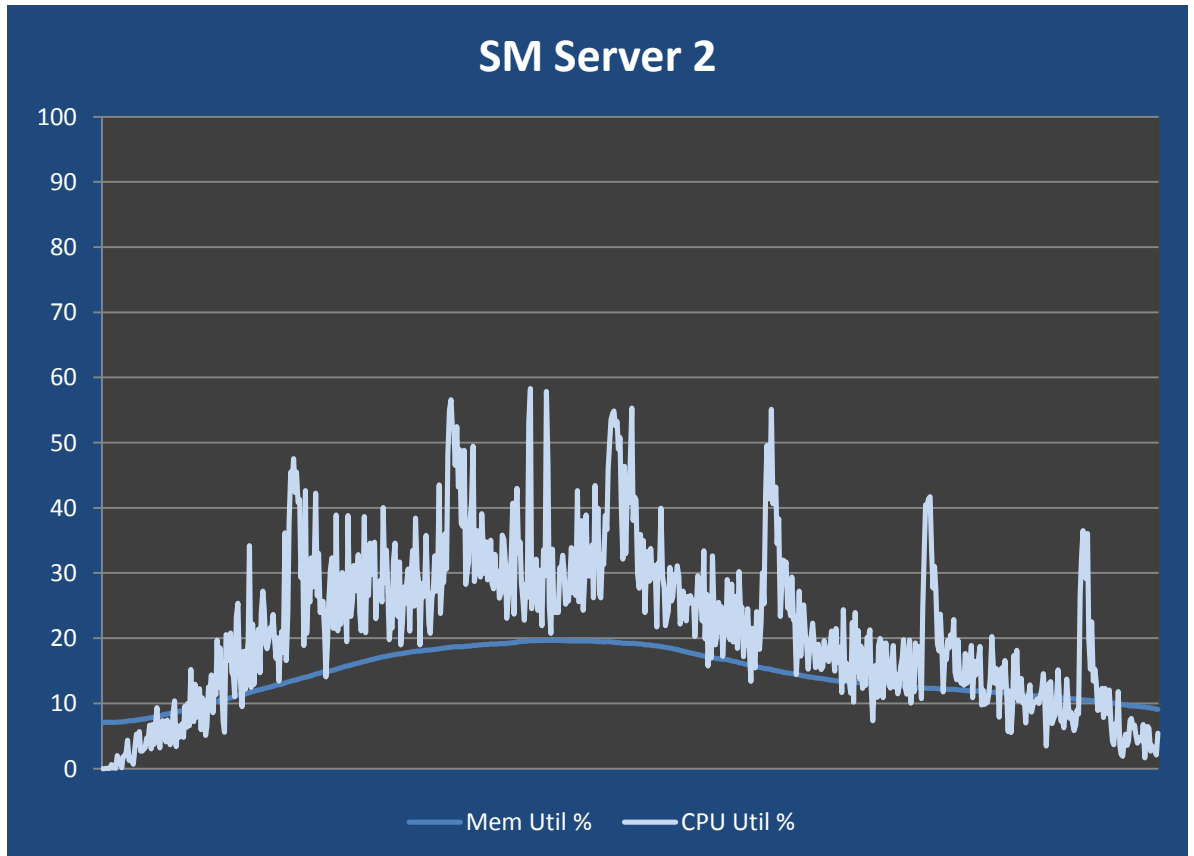


# System Resource Utilization – 2500 Users

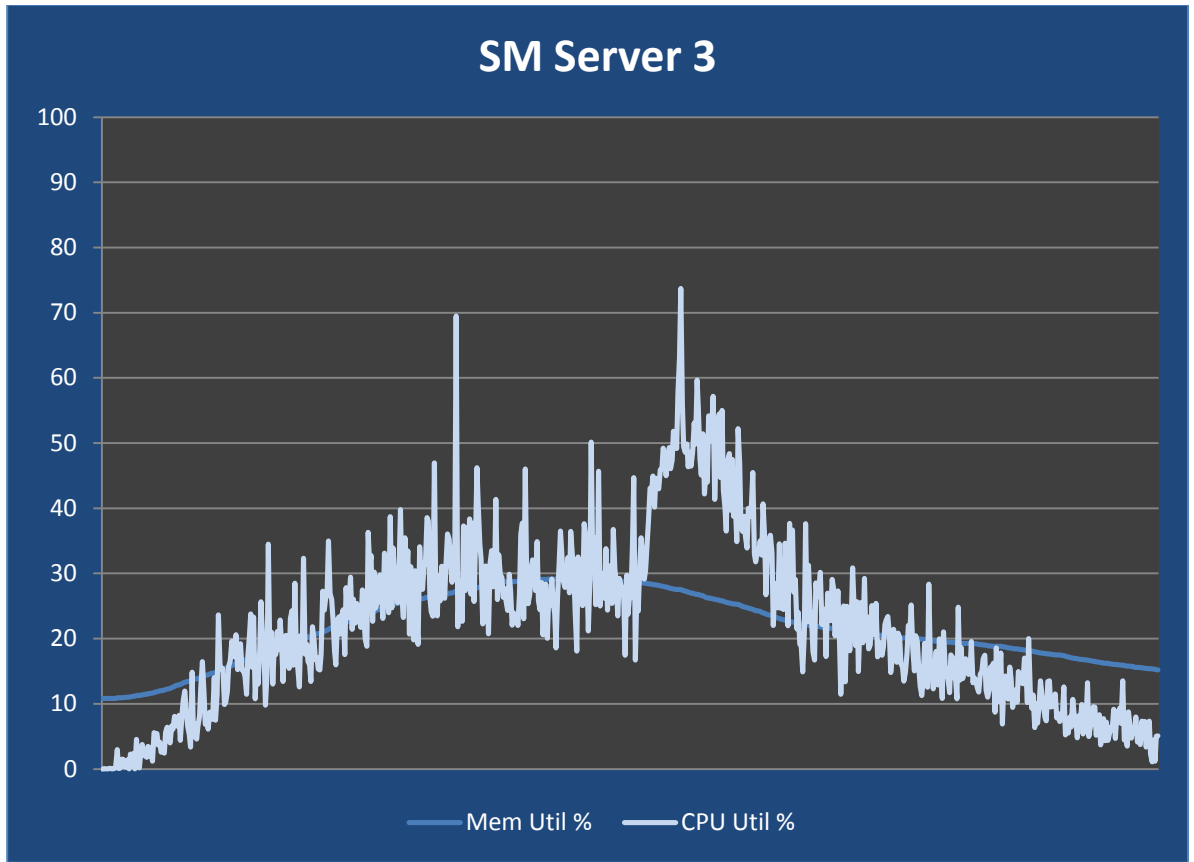
## Primary Service Manager Server



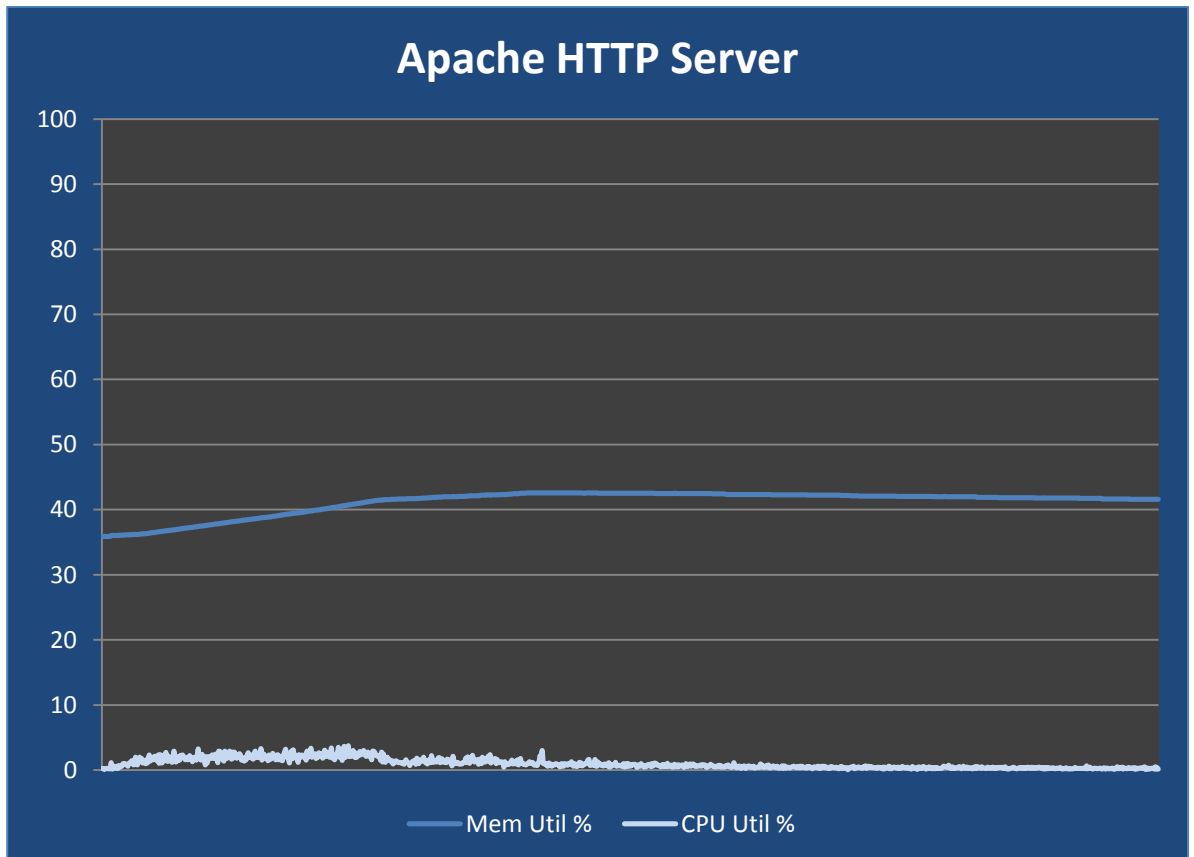
## Secondary Service Manager Server 1



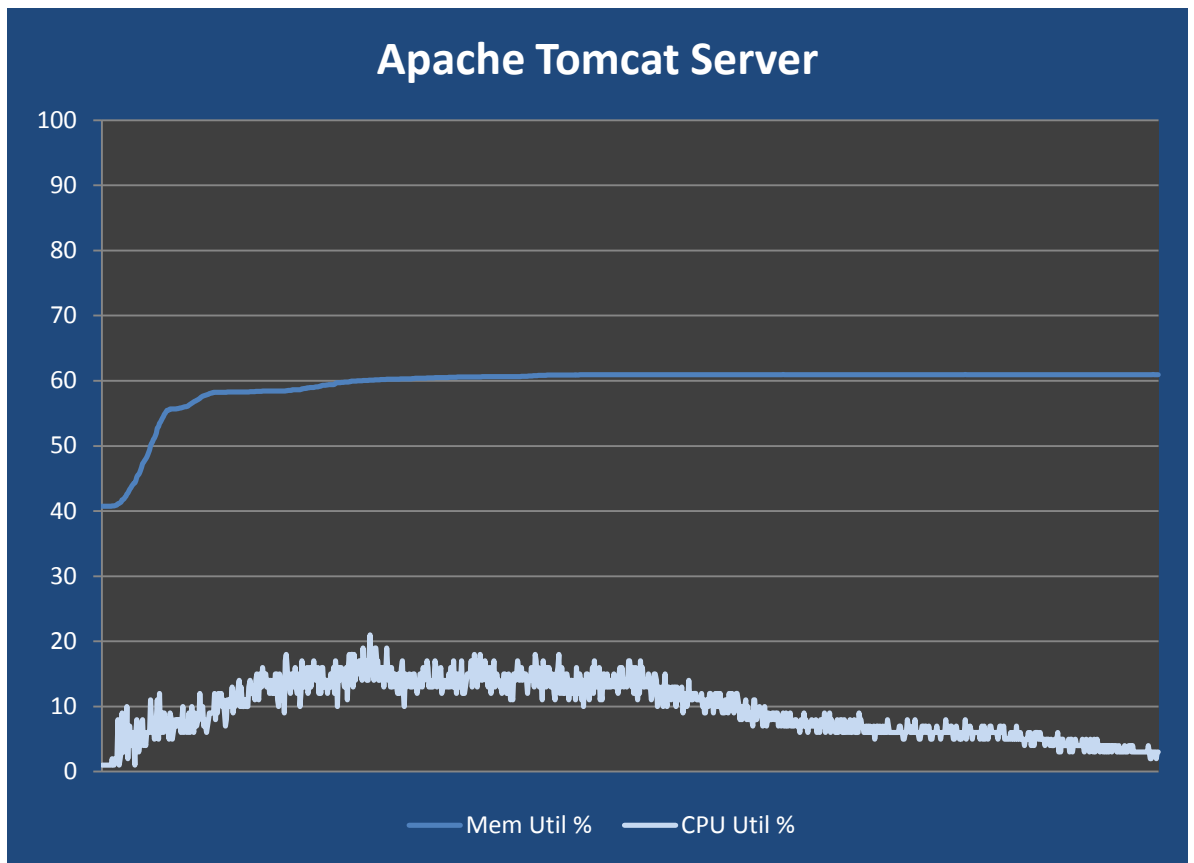
## Secondary Service Manager Server 2



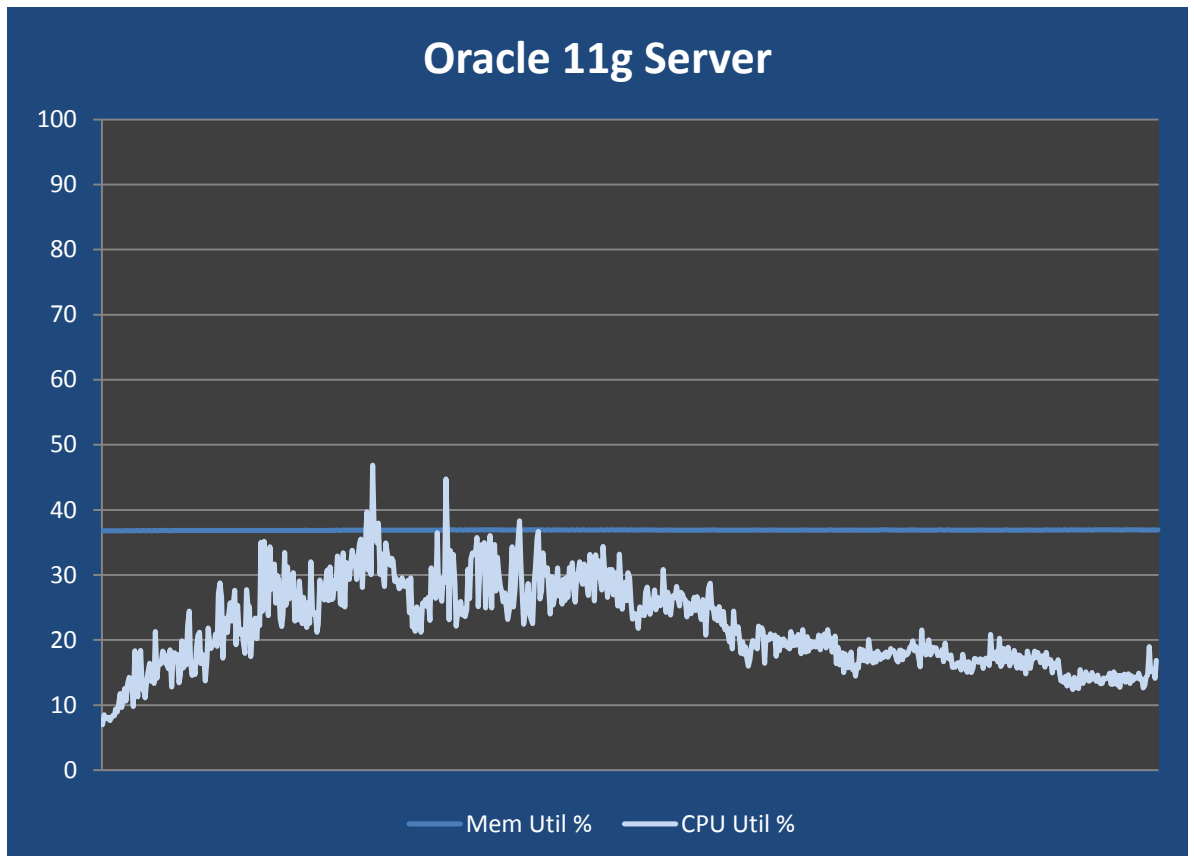
## Apache HTTP Server



## Apache Tomcat Server



## Oracle RDBMS Server



## Problems and Issues

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

## Conclusions

Service Manager performed acceptably during testing and demonstrated good scalability. All of the response time goals, up to the maximum tested concurrent user level of 2500 users, were met with a significant margin for increased workload.

Service Manager 9.20 is complex product and extensive customization is possible that will substantially affect system response. Care should be taken when customizing Service Manager to ensure no adverse conditions are introduced. Implementers should evaluate performance continually throughout the Development and UAT implementation phases. 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 with Service Manager or the Oracle RDBMS on 32-bit Windows. Service Manager implementations in *medium* or larger environments that wish to use Service Manager or Oracle RDBMS on Windows should move to the 64-bit AMD or Intel architecture.

## Appendix A: Service Manager Settings

### Sm.ini

```
#Default Autopass Directory on Unix Platform
#autopass_dir:/opt/OV/HPOvLIC
#Default Autopass Directory on Windows Platform
#autopass_dir:C:/Program Files/Common Files/Hewlett-Packard/HPOvLIC
#path:../data

shared_memory:128000000
log:../logs/sm.log

system:62271
threadspereprocess:100
sslConnector:0
plugin0:kmplugin.dll

groupname:GAperf
groupport:50000
grouplicenseip:99.99.99.99
groupmcastaddress:228.3.15.99
groupbindaddress:99.99.99.99

sqldictionary:oracle10

language:UTF-8
JVMOption0:-DFastInfoset=false
httpPort:62271
heartbeatinterval:360

[oracle10]
sqldb:GAperf
sqllogin:perf/perf
sqllibrary:sqoracle.oci10.DLL
```

## Sm.cfg

Load Balancer machine:

```
#
sm -loadBalancer -httpPort:62271
sm -httpPort:62273 -log:../logs/sm.62273.log
sm -httpPort:62275 -log:../logs/sm.62275.log
sm -httpPort:62277 -log:../logs/sm.62277.log
sm -httpPort:62279 -log:../logs/sm.62279.log
sm -httpPort:62281 -log:../logs/sm.62281.log
sm -httpPort:62283 -log:../logs/sm.62283.log
sm -httpPort:62285 -log:../logs/sm.62285.log
sm -httpPort:62287 -log:../logs/sm.62287.log
sm system.start
sm -que:ir
```

Servlets on large server (see Hardware on page 4)

```
#
sm -httpPort:62273 -log:../logs/sm.62273.log
sm -httpPort:62275 -log:../logs/sm.62275.log
sm -httpPort:62277 -log:../logs/sm.62277.log
sm -httpPort:62279 -log:../logs/sm.62279.log
sm -httpPort:62281 -log:../logs/sm.62281.log
sm -httpPort:62283 -log:../logs/sm.62283.log
sm -httpPort:62285 -log:../logs/sm.62285.log
sm -httpPort:62287 -log:../logs/sm.62287.log
sm -httpPort:62289 -log:../logs/sm.62289.log
sm -httpPort:62291 -log:../logs/sm.62291.log
sm -httpPort:62293 -log:../logs/sm.62293.log
sm -httpPort:62301 -log:../logs/sm.62301.log
sm -sync
```

## Appendix B: Oracle Database Parameters

```
orallwin.__db_cache_size=8589934592
orallwin.__java_pool_size=1073741824
orallwin.__large_pool_size=3221225472
orallwin.__oracle_base='F:\oracle'#ORACLE_BASE set from environment
orallwin.__pga_aggregate_target=10737418240
orallwin.__sga_target=23622320128
orallwin.__shared_io_pool_size=0
orallwin.__shared_pool_size=10468982784
orallwin.__streams_pool_size=0
*.audit_file_dest='F:\ORACLE\ADMIN\ORA11WIN\ADUMP'
*.audit_trail='NONE'
*.compatible='11.1.0.0.0'
*.control_files='F:\ORACLE\ORADATA\ORA11WIN\CONTROL02.CTL',
'F:\ORACLE\ORADATA\ORA11WIN\CONTROL03.CTL',
'F:\ORACLE\ORADATA\ORA11WIN\CONTROL01.CTL'
*.db_block_size=8192
*.db_recovery_file_dest='F:\oracle\flash_recovery_area'
*.db_recovery_file_dest_size=4G
*.db_unique_name='orallwin'
*.diagnostic_dest='F:\ORACLE'
*.dispatchers='(protocol=TCP) (disp=15) (con=1000) '
*.max_dispatchers=20
*.max_shared_servers=500
*.memory_target=32G
*.open_cursors=5000
*.processes=7500
*.remote_login_passwordfile='EXCLUSIVE'
*.session_cached_cursors=100
*.sessions=8255
*.sga_target=22G
*.shared_servers=100
*.undo_tablespace='UNDOTBS1'
```



# Appendix C: LoadRunner Script Actions

## Service Desk

1. Log in to Service Management
2. Using Menu Navigation tree, Go to Service Desk
3. Click on Register New Interaction
4. Enter Required Interaction information
  - a. Contact
    - i. Type FAL
    - ii. Click Fill
  - b. Service Recipient
    - i. Type FAL
    - ii. Click Fill
  - c. Service
    - i. Type MyD
    - ii. Click Fill
  - d. Title
    - i. Test ticket for performance testing
  - e. Description
    - i. Router
  - f. Category
    - i. Type inc
    - ii. Click Fill
  - g. Area
    - i. Select hardware
  - h. SubArea
    - i. Select hardware failure
  - i. Impact
    - i. 4-User
  - j. Urgency
    - i. 3-Average
5. Escalate Interaction
6. Select "New Incident"
  - a. Location
    - i. Advantage/North America
  - b. Click Next
  - c. Make a note of the number of the Interaction just opened
7. Click OK
8. Cancel out of new interaction screen
  - a. Select No when prompted about unsaved changes
9. Select Search Interaction Records
10. Enter the Interaction number from 5a above
11. Click Search
12. Select the Activities tab
13. Update the Interaction
  - a. Type
    - i. Communication with Customer
  - b. Enter Update text
14. Click OK

15. Enter the Interaction number from 5a above
16. Click Search
17. Select the Activities tab
18. Update the Interaction
  - a. Type
    - i. Update from Customer
  - b. Enter Update text
19. Click OK
20. Enter the Interaction number from 5a above
21. Click Search
22. Update the Interaction
  - a. Urgency – 1-Critical
23. Click OK
24. Enter the Interaction number from 5a above
25. Click Search
26. Update the Interaction
  - a. Select Closure Code
    - i. Type "Solved by User Instruction"
    - ii. Click Fill
  - b. Enter Solution text
27. Click Close
28. Click Back from the Interaction
29. Click Back on the Interaction Search Form
30. Collapse Service Desk Menu
31. Collapse Menu Navigation Tree
32. Log out of Service Management

## Incident Management

1. Log in to Service Management
2. Using Menu Navigation tree, Go to Incident Management
3. Click Open New Incident
4. Enter ticket information
  - a. Title
    - i. Test Ticket
  - b. Desc.
    - i. phone
  - c. Area
    - i. hardware
    - ii. Click Fill
  - d. SubArea
    - i. Select hardware failure
  - e. Service
    - i. MyDevices
  - f. Impact
    - i. 4-User
  - g. Urgency
    - i. 3-Normal
  - h. Assignment Group
    - i. Hardware

5. Submit new Incident
  - a. Make a note of the number of the Incident just opened
6. Click Cancel
7. Select Search Incidents
8. Enter the incident number from 5a above
9. Click Search
10. Select the Activities tab
11. Update the Interaction
  - a. Type
    - i. Update from Customer
  - b. Enter Update text
12. Click OK
13. Enter the incident number from 5a above
14. Click Search
15. Select the Activities tab
16. Update the Interaction
  - a. Type
    - i. Communication with Customer
  - b. Enter Update text
17. Click OK
18. Enter the Incident number from 5a above
19. Click Search
20. Enter Closure Code
  - a. Solved By User Instruction
  - b. Enter Update Text
21. Click OK
22. When prompted to close associated Interactions, Click OK
23. Click Back on the Incident Search Form
24. Collapse Incident Management Menu
25. Collapse Menu Navigation Tree
26. Log out of Service Management

## Change Management

1. Log in to Service Management
2. Using Menu Navigation tree, Go to Change Management/Changes
3. Click Open New Change
4. Select Category
  - a. Hardware
5. Enter ticket information
  - a. Assignment Group
    - i. Network
  - b. Service
    - i. MyDevices
  - c. Impact
    - i. 4-User
  - d. Urgency
    - i. 3-Average
  - e. Initiated By
    - i. Type FAL
    - ii. Click Fill
  - f. Description
  - g. Title
  - h. Requested End Date

- i. <End of the Current Month>
- 6. Click OK
- 7. Collapse Changes Menu
- 8. Collapse Change Management Menu
- 9. Collapse Menu Navigation Tree
- 10. Log out of Service Management

## Problem Management

1. Log in to Service Management
2. Using Menu Navigation tree, Go to Problem Management, then Problem Control
3. Click Open New Problem
4. Enter ticket information
  - a. Service
    - i. MyDevices
  - b. Assignment Group
    - i. Network
  - c. Title
  - d. Description
  - e. Area
    - i. hardware
    - ii. Click Fill
  - f. SubArea
    - i. Select hardware Failure
  - g. Impact
    - i. 4-User
  - h. Urgency
    - i. 3-Average
5. Click OK
6. Collapse Problem Control Menu
7. Collapse Problem Management Menu
8. Collapse Menu Navigation Tree
9. Log out of Service Management

## ESS User – Submit Problem Request

1. Log in to Service Management
2. Select Request Help
  - a. Set ESS user to have Main Menu as login page
3. Enter ticket information
  - a. Service
    - i. MyDevices
  - b. Notify By
    - i. Email or Telephone
  - c. Title
  - d. Description
  - e. Urgency
    - i. 3-Average
4. Click OK
5. Log out of Service Management

## ESS User – Submit Catalog Order

1. Log in to Service Management
2. Select Order from the Product and Services Catalog
  - a. Set ESS user to have Main Menu as login page
3. Select Personal Productivity Services
4. Select Hardware Bundles
5. Select Basic PC Package
6. Select Add to Cart
  - a. Leave default information
7. Select View Cart/Checkout
8. Select Submit Request
9. Enter Required information
  - a. Purpose
    - i. Desktop Replacement. Un-repairable problem.
  - b. Needed By
    - i. Select last day of current month
  - c. Urgency
    - i. 3-Average
  - d. Notify By
    - i. Email or Telephone
10. Click Submit
11. Select Continue
12. Select Main Menu
13. Log out of Service Management

## For more information

Please visit the HP Software support Web site at:

[www.hp.com/go/hpsupport](http://www.hp.com/go/hpsupport)

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/hpsupport/new\\_access\\_levels](http://www.hp.com/go/hpsupport/new_access_levels)

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

[www.hp.com/go/hpsupport/passport-registration](http://www.hp.com/go/hpsupport/passport-registration)

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