



VMware Horizon View 5.3 VDI Scalability Testing on Cisco UCS B200 M3 With E5-2697 v2 Processor

First Published: July 04, 2014

Last Modified: July 08, 2014

Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Text Part Number:



CONTENTS

CHAPTER 1

VMWare VDI Scalability Testing on Cisco UCS B200 M3 Server 1

Overview 1

CHAPTER 2

Test Topology and Environment Matrix 3

Test Topology 4

Environment Matrix 4

CHAPTER 3

Implementation Steps And Test Execution Details 7

Implementation steps for VMware Horizon View 7

Test Execution Details 7

CHAPTER 4

VMware Horizon View VDI Scalability Testing on Cisco UCS B200 M3 server 9

Comparison of Windows 7 performance in Japanese and English Environment 9

Comparison of Windows 8 Performance in Japanese and English Environment 19

Related Documentation 29



CHAPTER 1

VMWare VDI Scalability Testing on Cisco UCS B200 M3 Server

- [Overview, page 1](#)

Overview

When deploying your virtual desktop solution, choosing server hardware that is powerful enough across the compute and memory dimensions to support a large number of virtual desktops is crucial. The more virtual desktops per server you can support, the fewer servers you need to buy to provide virtual desktops to support your desired number of users.

To find the virtual desktop capacity of a single Cisco UCS B200 M3 Server, we used the Login Consultants Virtual Session Indexer (Login VSI) 4.0.11 benchmark. The Login VSI workload we used performs a range of tasks to simulate a typical knowledge worker. The benchmark results show the maximum number of virtual desktops that a server can support by measuring response times throughout the test

We set out to examine such a virtual desktop solution that consisted of the following components:

- Cisco Unified Computing System (UCS) B200M3 Blade Server with Intel(R) Xeon(R) E5-2697 v2 processor
- VMware vSphere 5.5.0
- A VMware Horizon View 5.3 virtual desktop linked clone pool consisting of Microsoft Windows 7 and Windows 8 x64 VMs
- All Virtual machines in the Desktop Pool are provisioned with 2 vCPU, 1.5 GB of reserved memory for Windows 7 and 2vCPU, 2 GB of reserved memory for Windows 8.
- NetApp FAS 3240 storage array

Acronyms

Acronym	Description
AD	Active Directory
DHCP	Dynamic Host Configuration Protocol

Acronym	Description
DNS	Domain Name System
FCOE	Fiber Channel Over Ethernet
LUN	Logical Unit Number
OS	Operating System
SUT	Server Under Test
UCS	Unified Computing System
UCSM	Unified Computing System Manager
VDI	Virtual Desktop Infrastructure
VM	Virtual Machine
VSI	Virtual session Indexer



CHAPTER

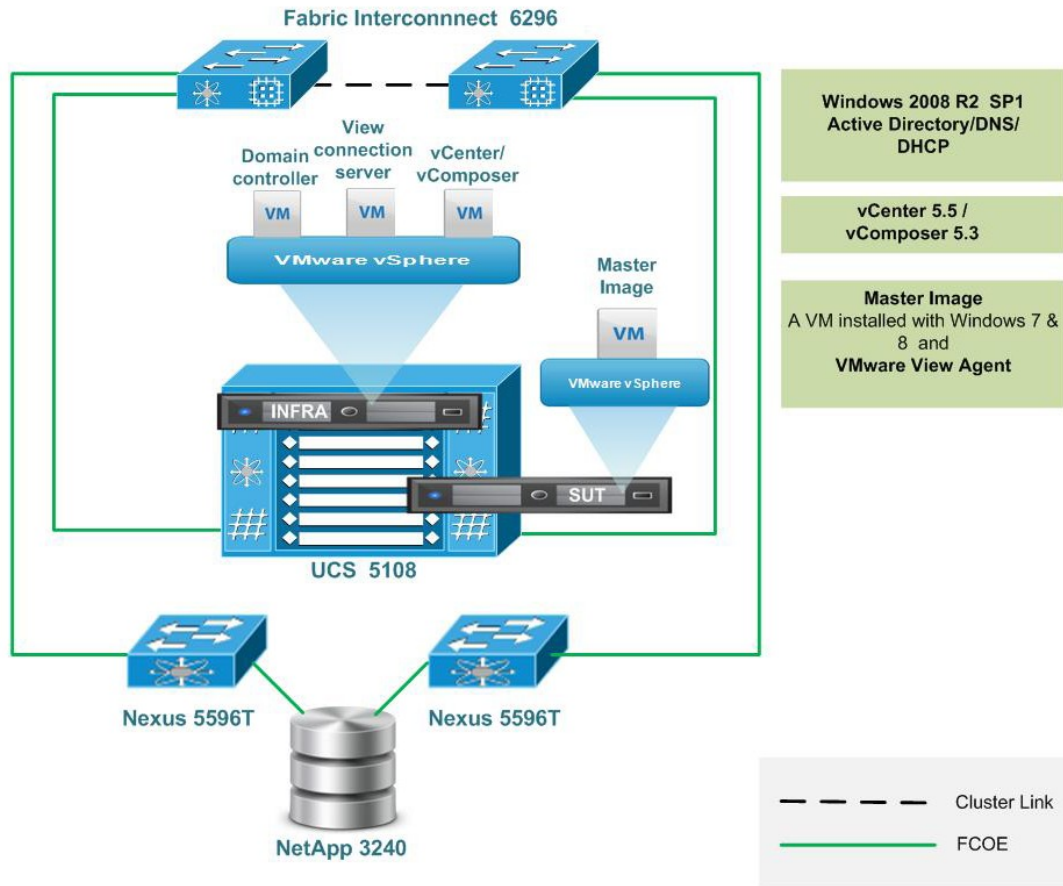
2

Test Topology and Environment Matrix

- [Test Topology, page 4](#)
- [Environment Matrix, page 4](#)

Test Topology

Figure 1: Topology in Use



382127

Environment Matrix

Infra Components

Component	Version
UCS Blade server	UCS B200 M3 (for SUT and Infra)
UCSM	2.2(1d)
Operating System	
Windows Server OS	Windows Server 2008 R2 SP1 x64 (Japanese/English)

Component	Version
Windows Desktop OS	Windows 7 and 8 Enterprise x64 (Japanese/English)
Hypervisor	
ESXi	VMware ESXi 5.5.0 1331820
Storage	
NetApp FAS 3240	8.0.2
Intel(R) Xeon(R)	E5-2697 v2
FCoE Switch	
Nexus 5596 T	6.0(2)N2(3)
Virtual Desktop Delivery Component	
VMware Horizon View	5.3
VDI Scalability measuring Tool	
Login VSI	4.0.11
Active Directory & DHCP	Windows 2008 R2 SP1 server x64 (Japanese/English)
Login VSI Launcher, Analyzer and VSI share	Windows 2008 R2 SP1 server x64 (Japanese/English)

SUT Components

Component	Type
CPUs	
Vendor	Intel® Corporation
Name	Intel(R) Xeon(R) E5-2697 v2
Core Frequency (GHz)	2.7
Platform	
Vendor	Cisco
BIOS Settings	2.2(1d)
Memory modules	
Total RAM in the system (GB)	384
Type	DDR3
Speed (MHz)	1866
Size (GB)	16

Component	Type
Number of RAM modules	24
Chip organization	Double sided
Rank	Dual
Hypervisor	
Name	VMWare ESXi 5.5.0
Build number	1331820
Operating System Power Profile	Maximum Performance
IO Adapters	
Vendor and Model number	Cisco and UCS VIC 1240

Tested Windows 7 VM Configuration

Components of VM	English	Japanese
Virtual Desktop - vCPU	2	2
Virtual Desktop - RAM	1.5 GB	1.5 GB
Virtual Desktop - HardDisk	32GB (Thin Provisioned)	32GB (Thin Provisioned)
VirtualDesktop -NetworkAdapter	Intel e1000	Intel e1000
OS Build No	677651	677662

Tested Windows 8 VM Configuration

Components of VM	English	Japanese
Virtual Desktop - vCPU	2	2
Virtual Desktop - RAM	2 GB	2 GB
Virtual Desktop - HardDisk	35GB (Thin Provisioned)	35GB (Thin Provisioned)
VirtualDesktop -NetworkAdapter	Intel e1000	Intel e1000
OS Build No	917522	917919



Implementation Steps And Test Execution Details

- [Implementation steps for VMware Horizon View, page 7](#)
- [Test Execution Details, page 7](#)

Implementation steps for VMware Horizon View

- Infra components such as Active Directory/DNS and DHCP server, vCenter server, View composer and View connections server are deployed as Virtual machines on Cisco UCS B200 M3 server.
- Master image created on the Server Under Test (B200 M3) and installed with Windows 7 & Windows 8 (English/Japanese) resides on the 2TB LUN is provided from NetApp storage to the SUT server for VM provisioning.
- Login VSI Launcher is deployed as Virtual machine to incrementally login the users to the Virtual desktop sessions (created from master image) and begin the workload (Light, Medium, heavy) on each.

Test Execution Details

Login VSI helps to test and compare the performance of different software and hardware solutions in VDI environment. Login VSI used to measure the maximum capacity of current infrastructure in a quick and easy way. The simulated users work with the same applications as your average employee such as Word, Excel, Outlook and Internet Explorer and also can easily add our own custom applications to the tests

Light Workload

The light workload runs fewer applications and starts/stops them less frequently. This results in lower CPU, memory and IO usage.

Medium Workload

Medium workload is the default workload in Login VSI. The standard Login VSI medium workload designed to run on 2vCPU's per desktop VM. This workload emulates a medium knowledge worker using Office, IE, PDF and Java/ FreeMind.

- Once a session has been started the workload will repeat (loop) every 48 minutes. The loop is divided in 4 segments, each consecutive Login VSI user logon will start a different segments. This ensures that all elements in the workload are equally used throughout the test.

- During each loop the response time is measured every 3-4 minutes. The medium workload opens up to 5 applications simultaneously. The keyboard type rate is 160 ms for each character. Approximately 2 minutes of idle time is included to simulate real- - world users.

Each loop will open and use:

- Outlook, browse messages.
- Internet Explorer, browsing different webpages and a YouTube style video (480p movie trailer) is opened three times in every loop.
- Word, one instance to measure response time, one instance to review and edit a document.
- Doro PDF Printer & Acrobat Reader, the word document is printed and reviewed to PDF.
- Excel, a very large randomized sheet is opened. Documentation

Heavy Workload

The heavy workload is based on the medium workload except that the heavy workload:

- Begins by opening 4 instances of Internet Explorer. These instances stay open throughout the workload loop.
- Begins by opening 2 instances of Adobe Reader. These instances stay open throughout the workload loop
- There are more PDF printer actions in the workload.
- Instead of 480p videos a 720p and a 1080p video are watched.
- Increased the time the workload plays a flash game.
- The idle time is reduced to 2 minutes.



CHAPTER 4

VMware Horizon View VDI Scalability Testing on Cisco UCS B200 M3 server

- [Comparison of Windows 7 performance in Japanese and English Environment, page 9](#)
- [Comparison of Windows 8 Performance in Japanese and English Environment, page 19](#)
- [Related Documentation, page 29](#)

Comparison of Windows 7 performance in Japanese and English Environment

VSIMAX Result		
Type of Workload	English	Japanese
Light	171	164
Medium	140	131
Heavy	131	121

Light Workload Result

Light		
Desktop OS	No.of Launched Sessions	VSIMax
English	200	171
Japanese	200	164

Login VSIMax

Figure 2: English

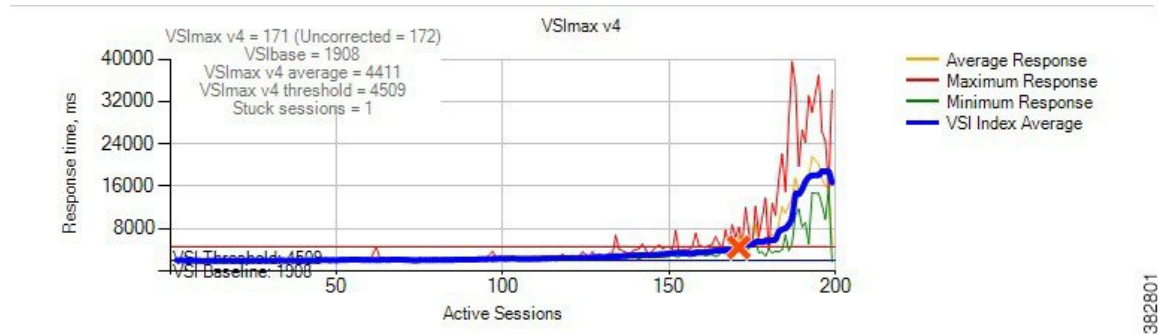


Figure 3: Japanese

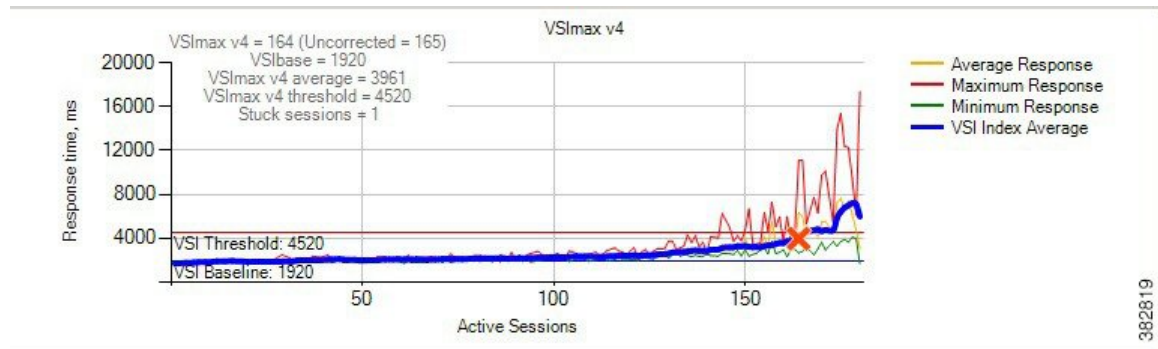
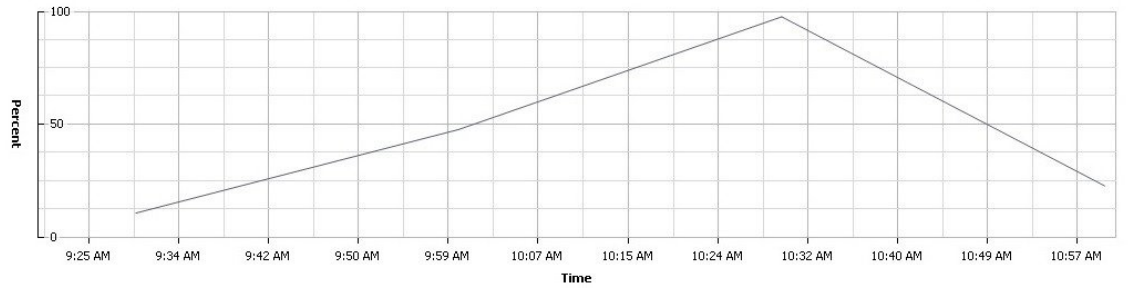


Fig 2 and 3: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M3 server

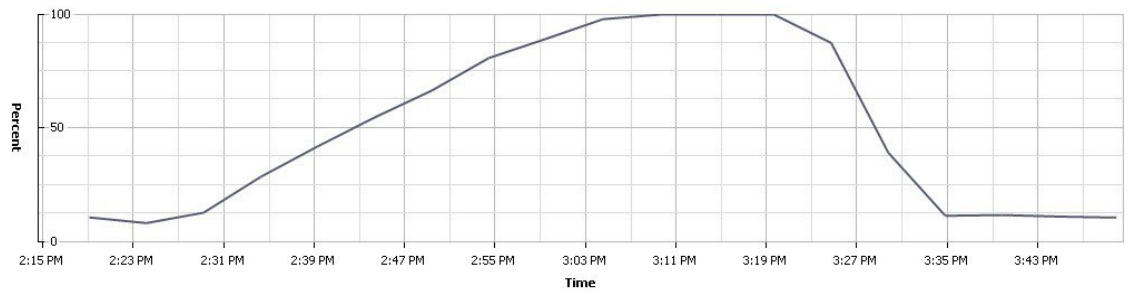
Processor And Memory Utilization throughout the test

Figure 4: English



362805

Figure 5: Japanese



362813

Figure 4 and 5 : CPU utilization throughout the test

Figure 6: English

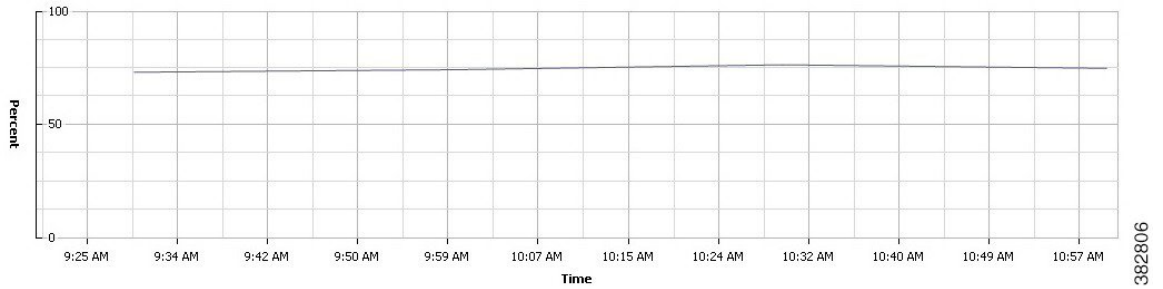


Figure 7: Japanese

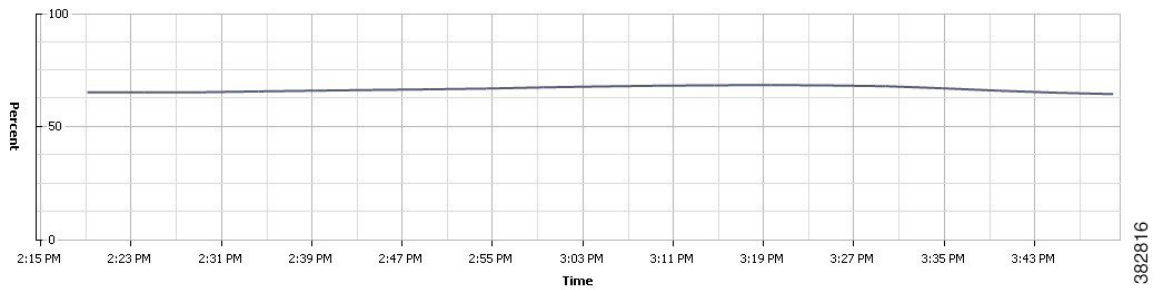


Figure 6 and 7 : Memory usage throughout the test
Network and Storage Utilization throughout the Test

Figure 8: English

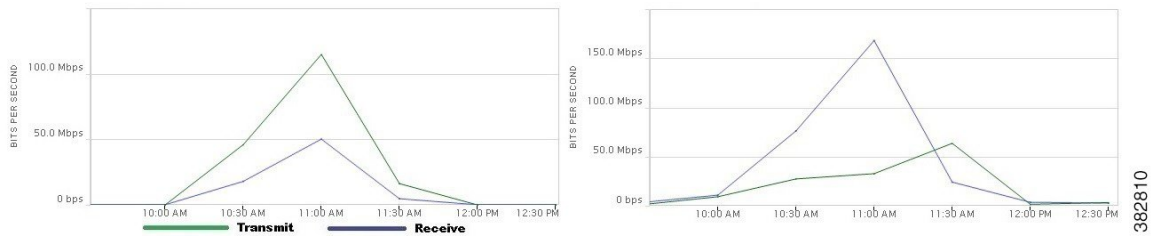


Figure 9: Japanese

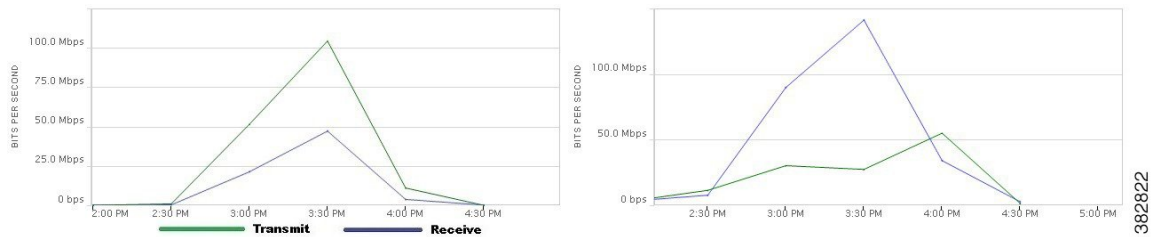


Figure 8 and 9 : Provisioning Services Network and Storage usage throughout the test

Medium workload Result

Medium		
Desktop OS	No.of Launched Sessions	VSIMax
English	175	140
Japanese	175	131

Login VSIMax

Figure 10: English

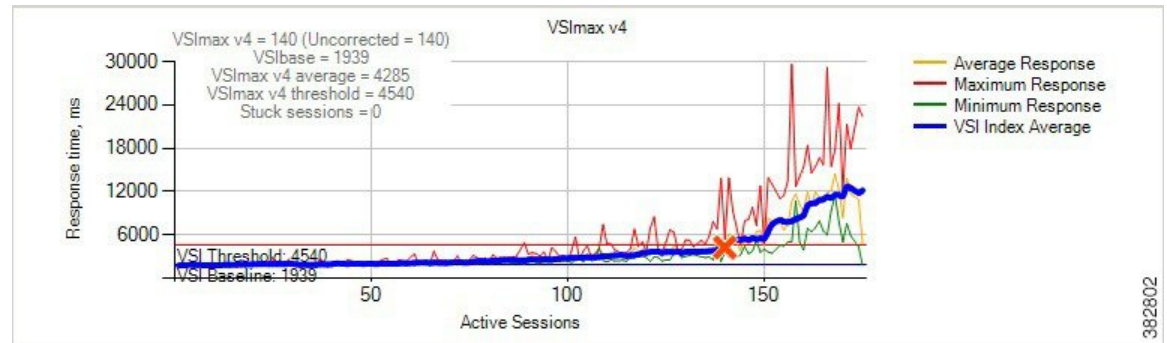


Figure 11: Japanese

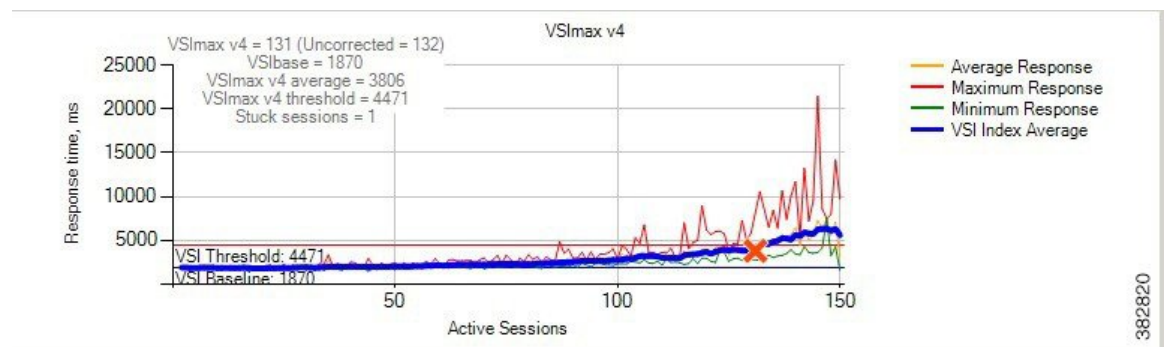


Fig 10 and 11: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M3 server

Processor And Memory Utilization throughout the test

Figure 12: English

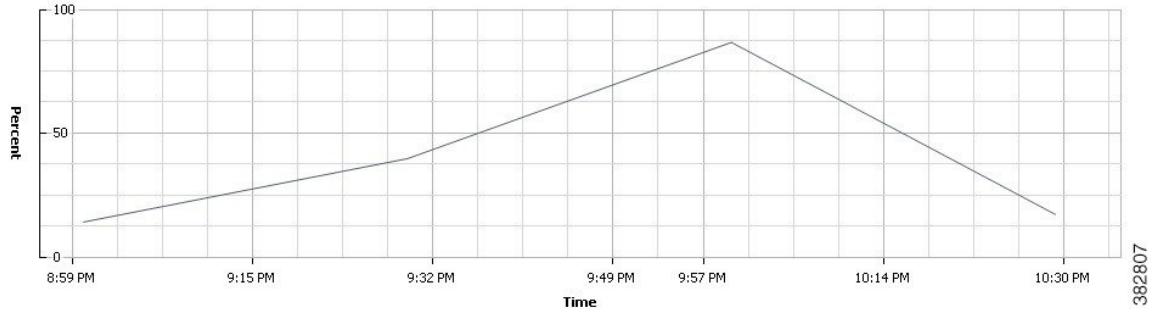
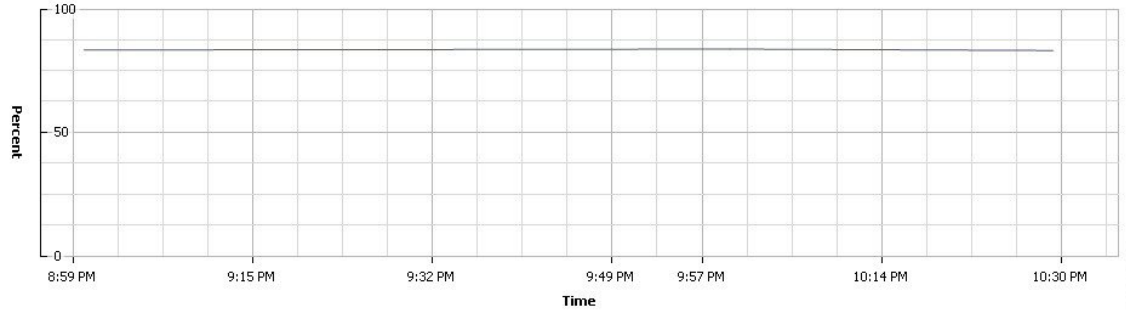


Figure 13: Japanese



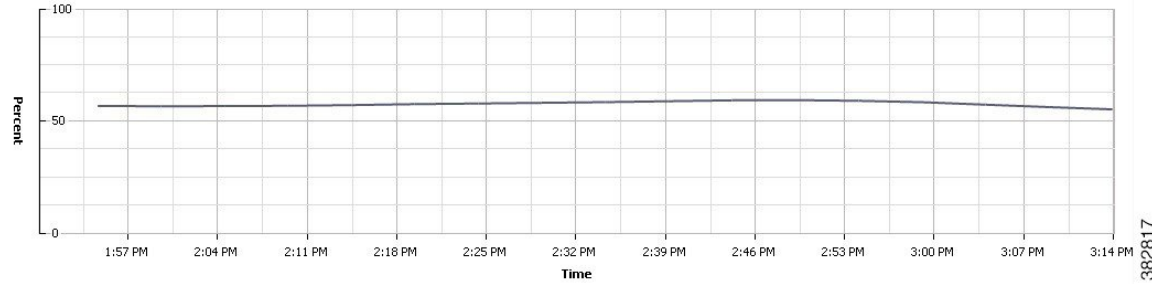
Figure 12 and 13 : CPU utilization throughout the test

Figure 14: English



382808

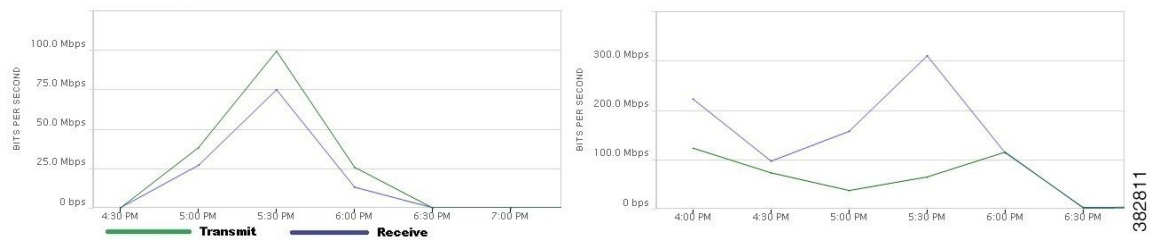
Figure 15: Japanese



382817

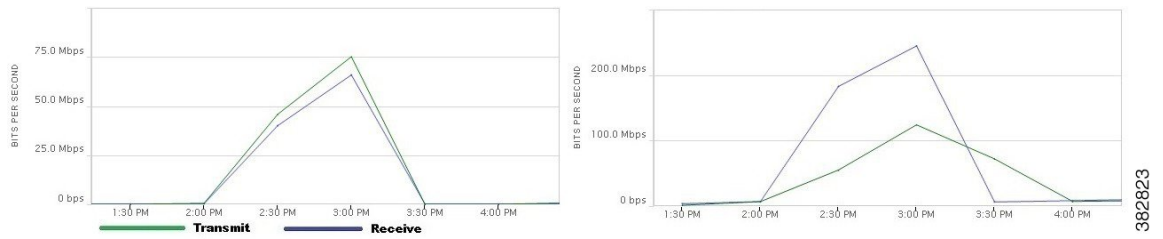
Figure 14 and 15 : Memory usage throughout the test
Network And Storage Utilization throughout the test

Figure 16: English



382811

Figure 17: Japanese



382823

Figure 16 and 17 : Provisioning Services Network and Storage usage throughout the test

Heavy workload Result

Heavy		
Desktop OS	No.of Launched Sessions	VSIMax
English	150	131
Japanese	150	121

Login VSIMax

Figure 18: English

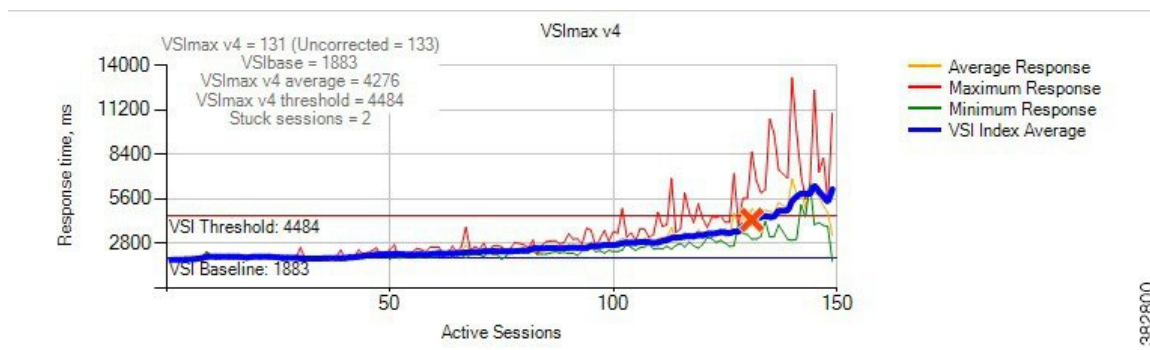


Figure 19: Japanese

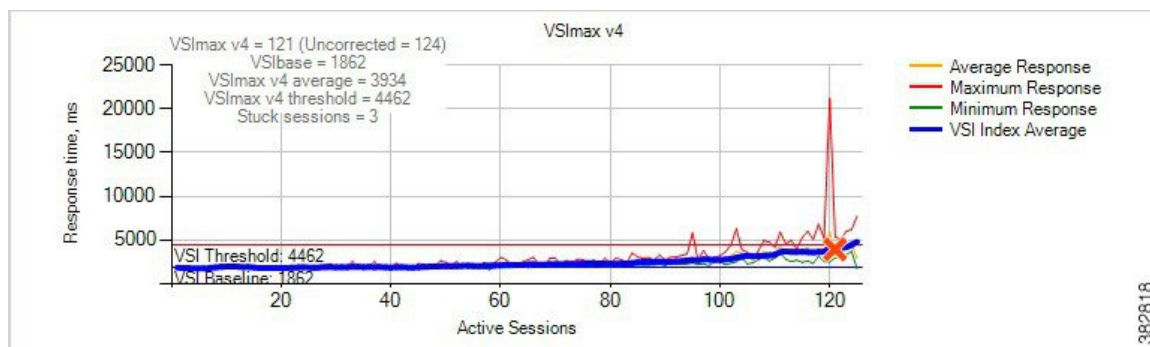
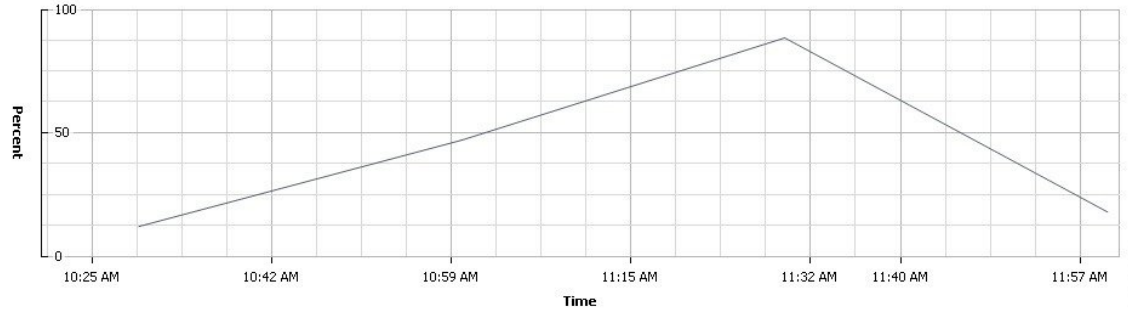


Fig 18 and 19: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M3 server

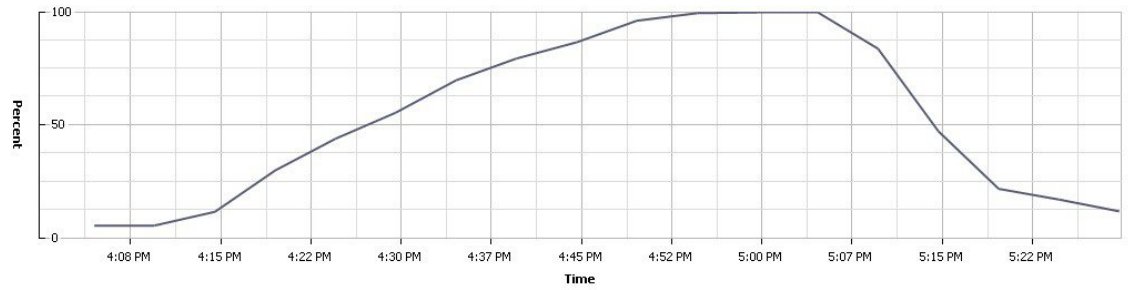
Processor And Memory Utilization throughout the test

Figure 20: English



382803

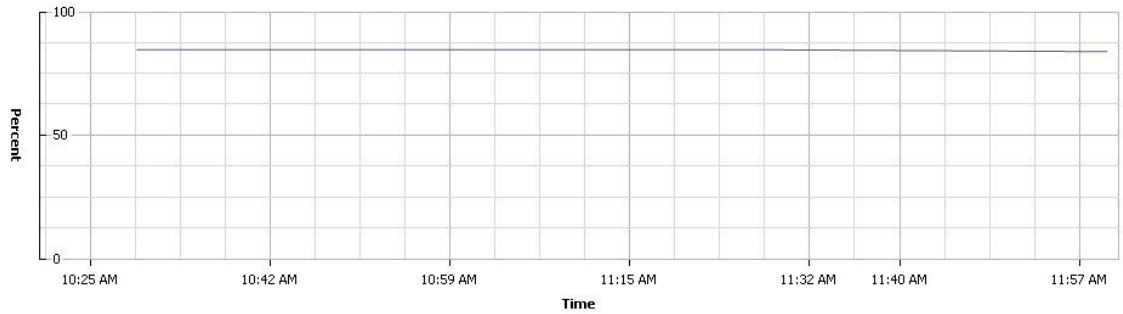
Figure 21: Japanese



382812

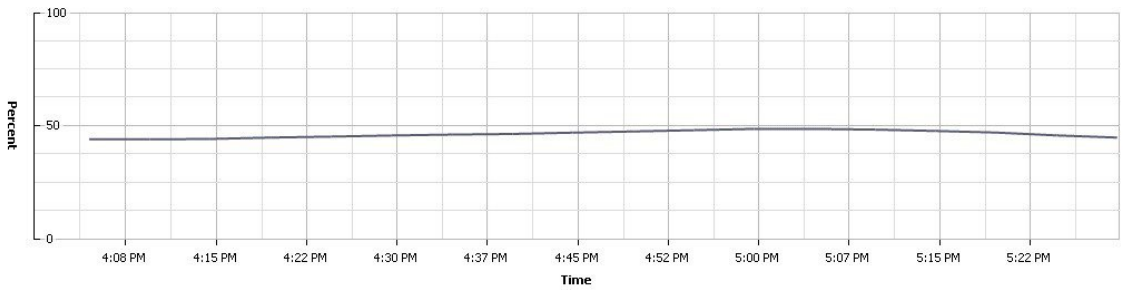
Figure 20 and 21 : CPU utilization throughout the test

Figure 22: English



382804

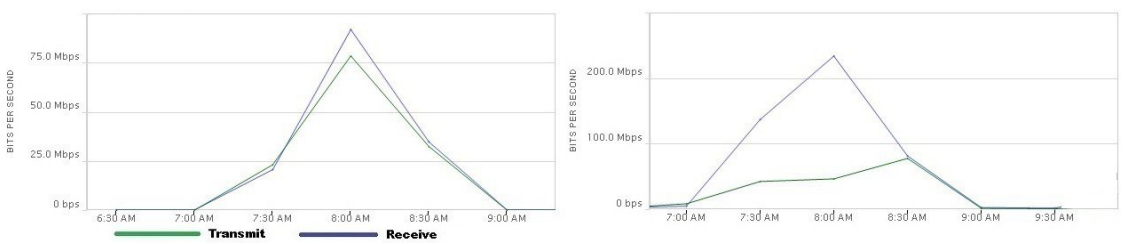
Figure 23: Japanese



382815

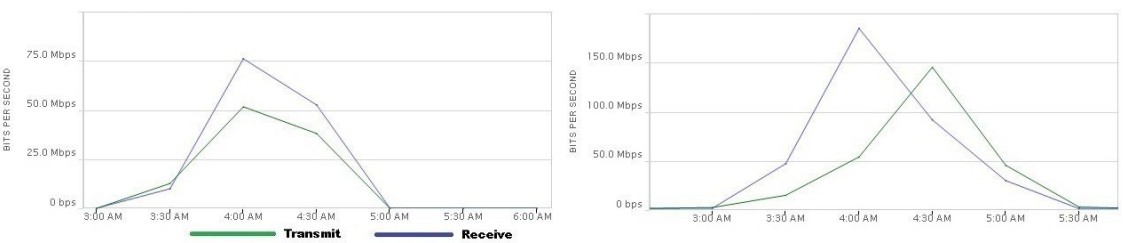
Figure 22 and 23: Memory usage throughout the test
 Network and Storage Utilization throughout the test

Figure 24: English



382809

Figure 25: Japanese



382821

Figure 24 and 25 : Provisioning Services Network and Storage usage throughout the test

Comparison of Windows 8 Performance in Japanese and English Environment

VSIMax Result		
Type of Workload	English	Japanese
Light	135	119
Medium	108	92
Heavy	97	85

Light Workload Result

Light		
Desktop OS	No.of Launched Sessions	VSIMax
English	150	135
Japanese	150	119

Login VSIMax

Figure 26: English

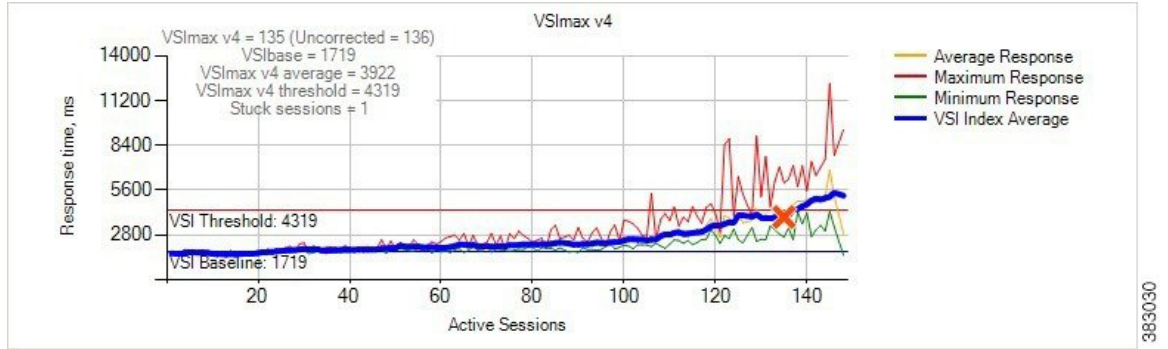


Figure 27: Japanese

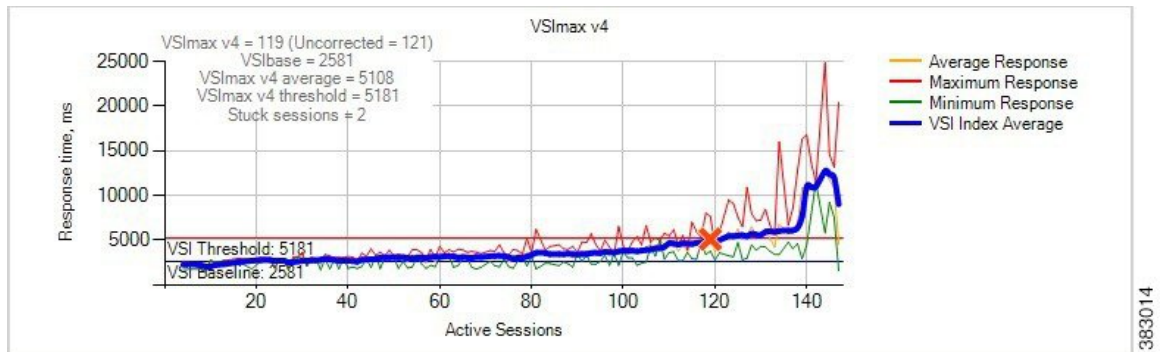
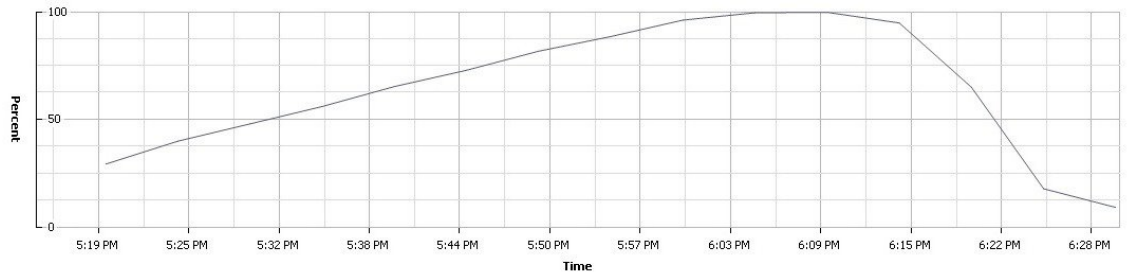


Fig 26 and 27: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M3 server

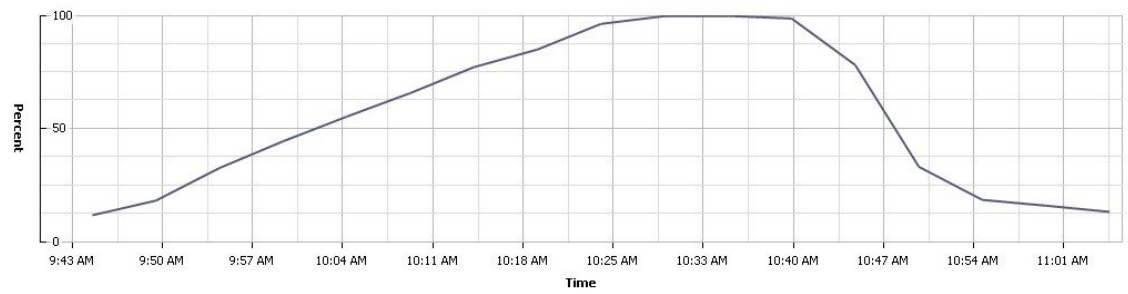
Processor And Memory Utilization throughout the test

Figure 28: English



3683028

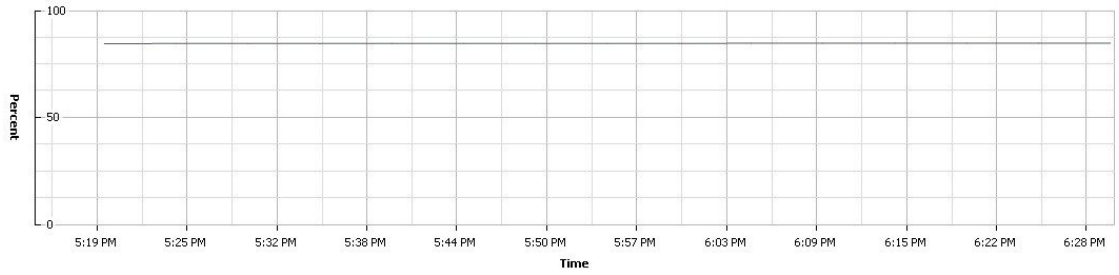
Figure 29: Japanese



3683012

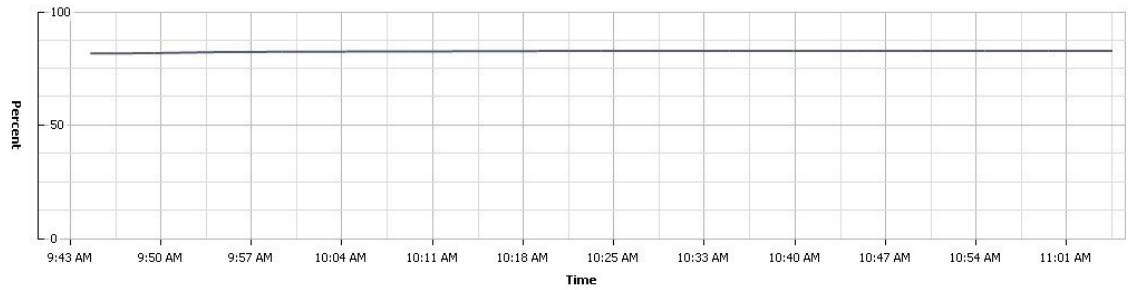
Figure 28 and 29 : CPU utilization throughout the test

Figure 30: English



383029

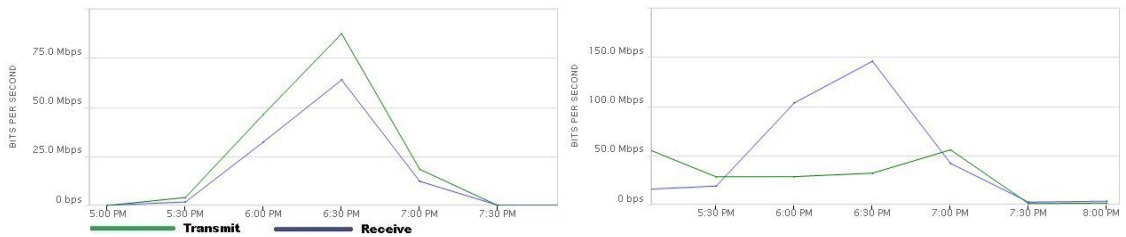
Figure 31: Japanese



383013

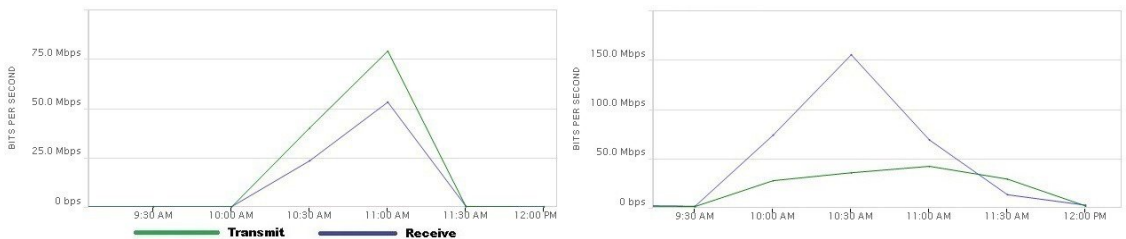
Figure 30 and 31 : Memory usage throughout the test
Network and Storage Utilization throughout the Test

Figure 32: English



383031

Figure 33: Japanese



383015

Figure 32 and 33 : Provisioning Services Network and Storage usage throughout the test

Medium workload Result

Medium		
Desktop OS	No.of Launched Sessions	VSIMax
English	125	108
Japanese	125	92

Login VSIMax

Figure 34: English

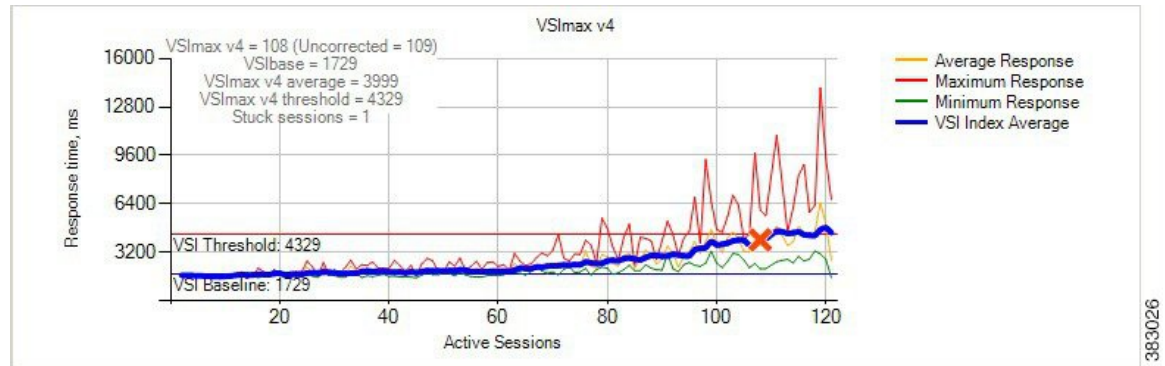


Figure 35: Japanese

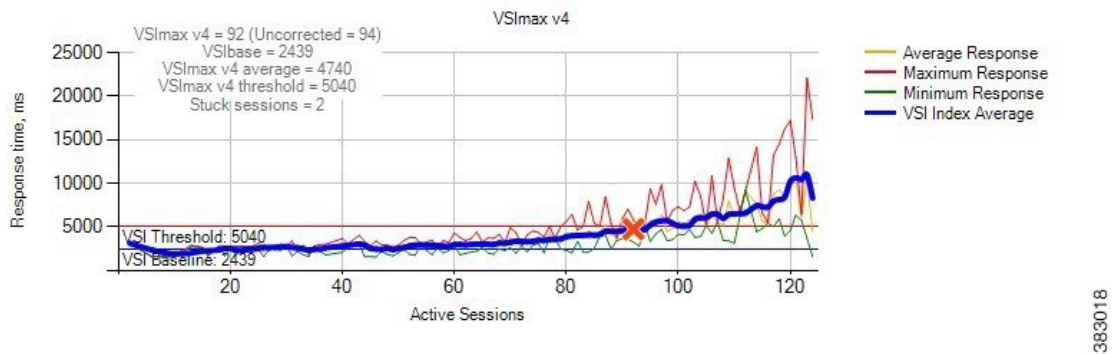
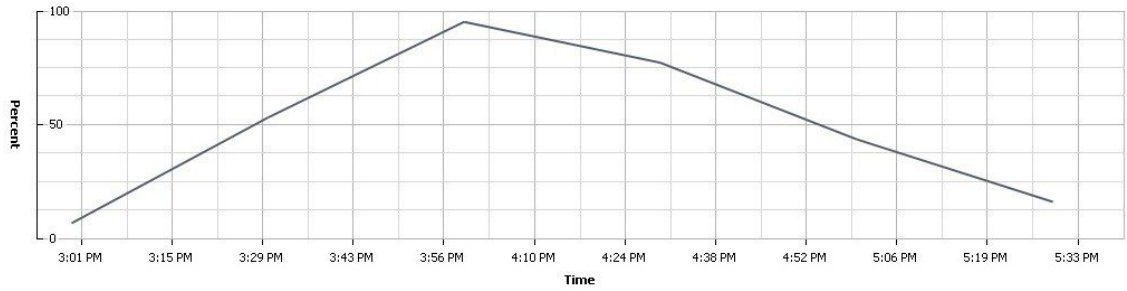


Fig 34 and 35: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M3 server

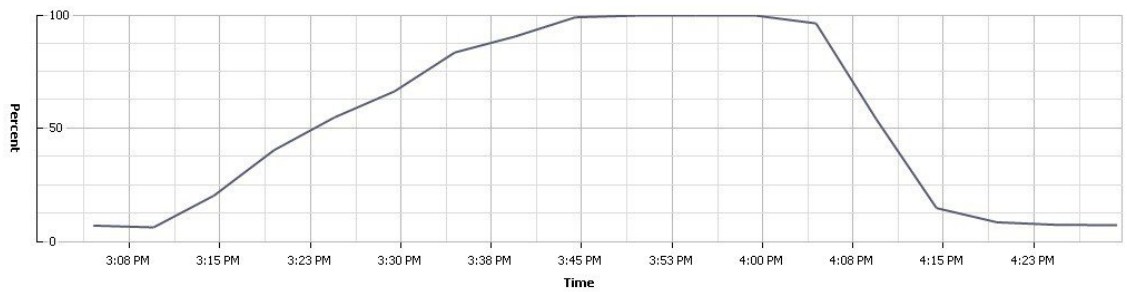
Processor And Memory Utilization throughout the test

Figure 36: English



383024

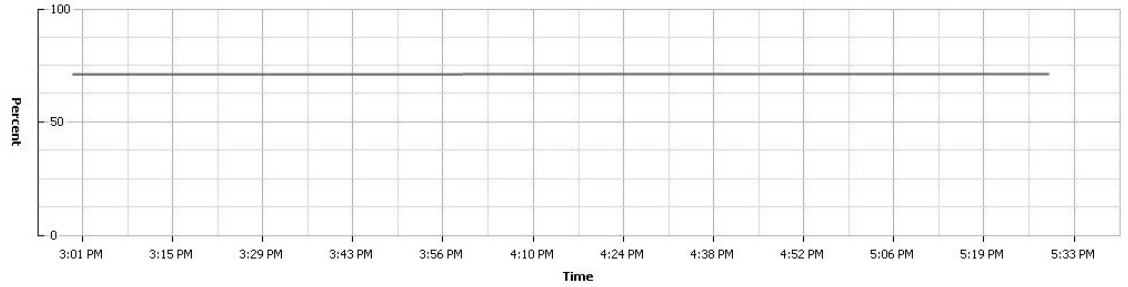
Figure 37: Japanese



383016

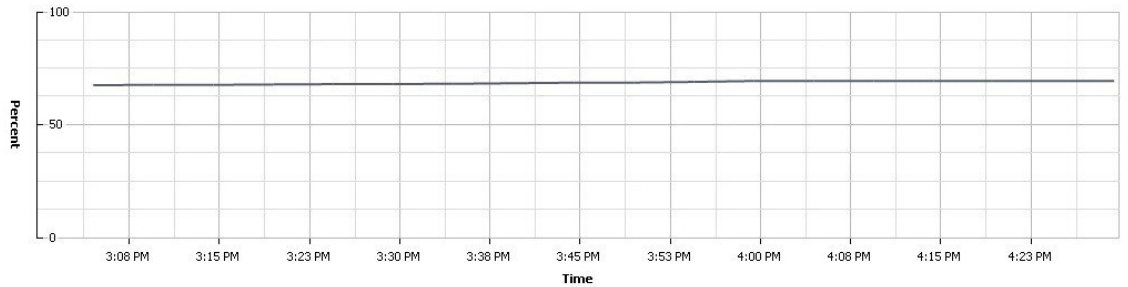
Figure 36 and 37 : CPU utilization throughout the test

Figure 38: English



383025

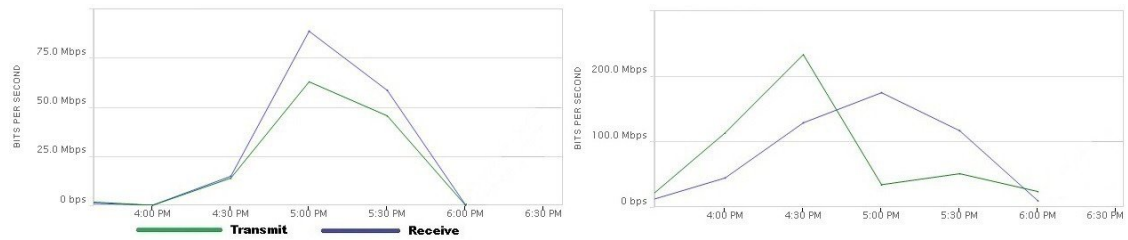
Figure 39: Japanese



383017

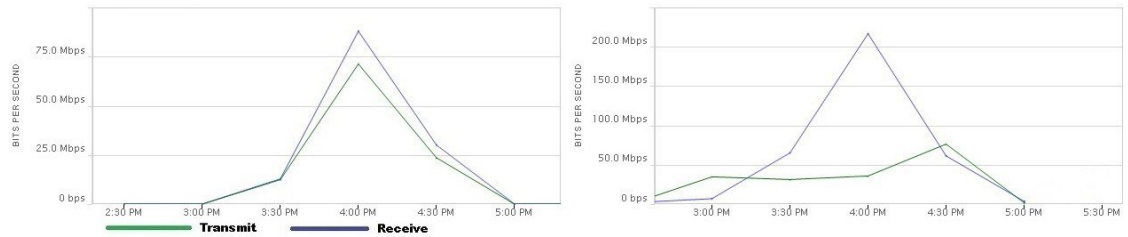
Figure 38 and 39 : Memory usage throughout the test
Network and Storage Utilization throughout the Test

Figure 40: English



383027

Figure 41: Japanese



383019

Figure 40 and 41 : Provisioning Services Network and Storage usage throughout the test

Heavy Workload Result

Heavy		
Desktop OS	No.of Launched Sessions	VSIMax
English	100	97
Japanese	100	85

Login VSIMax

Figure 42: English

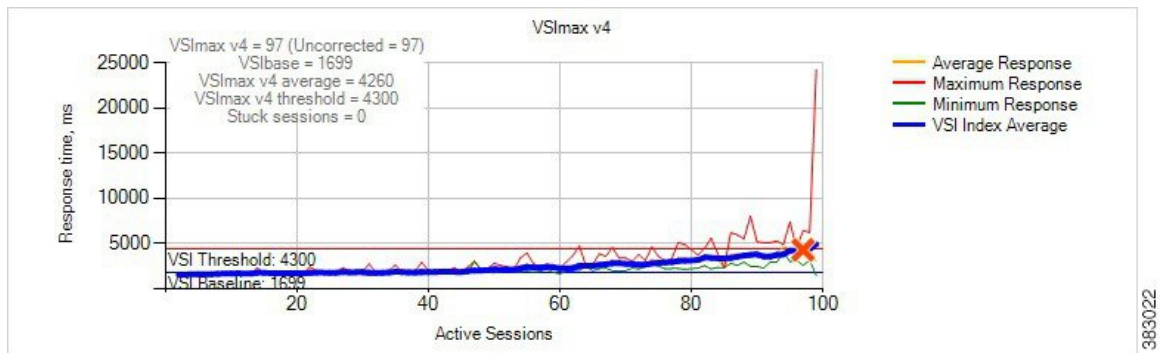


Figure 43: Japanese

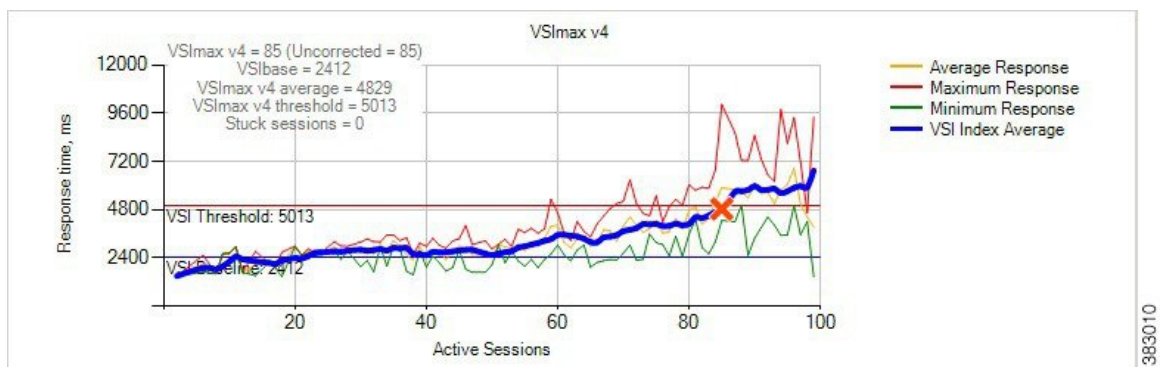
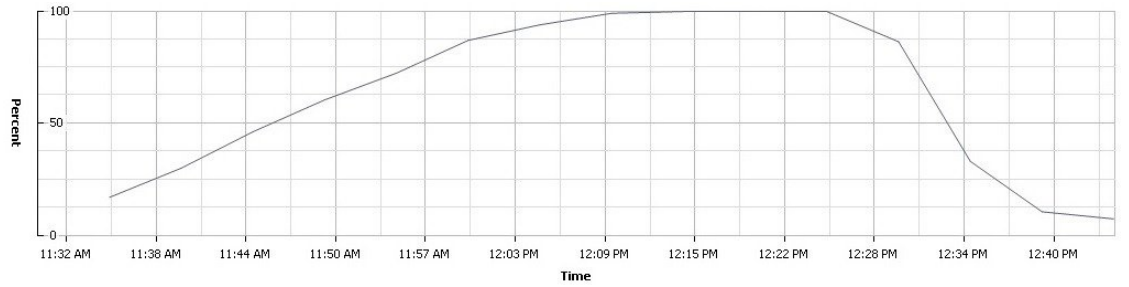


Fig 42 and 43: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M3 server

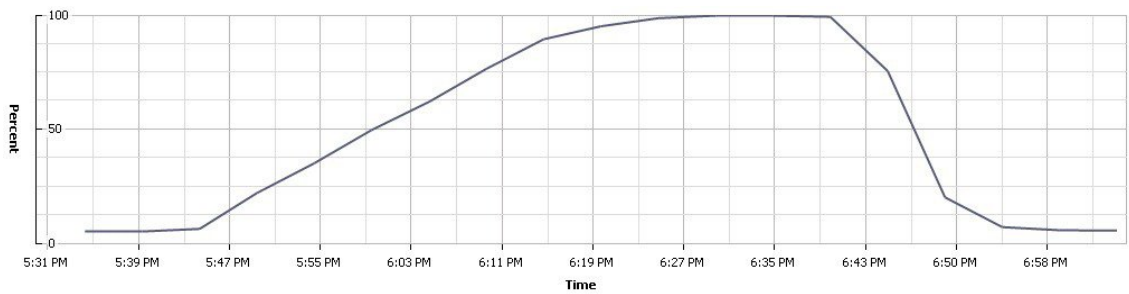
Processor And Memory Utilization throughout the test

Figure 44: English



383020

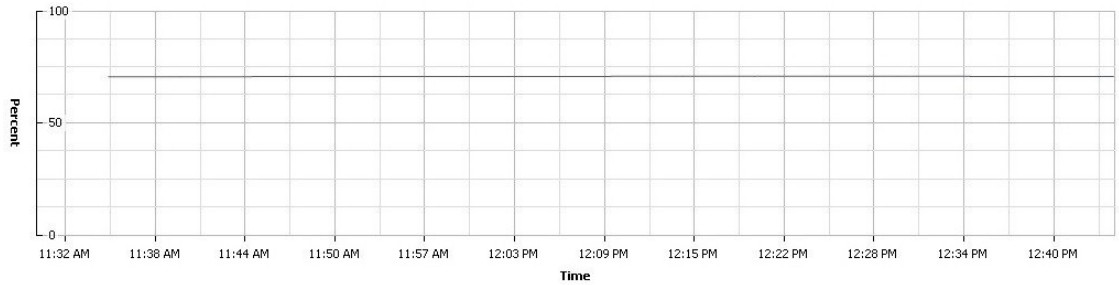
Figure 45: Japanese



383008

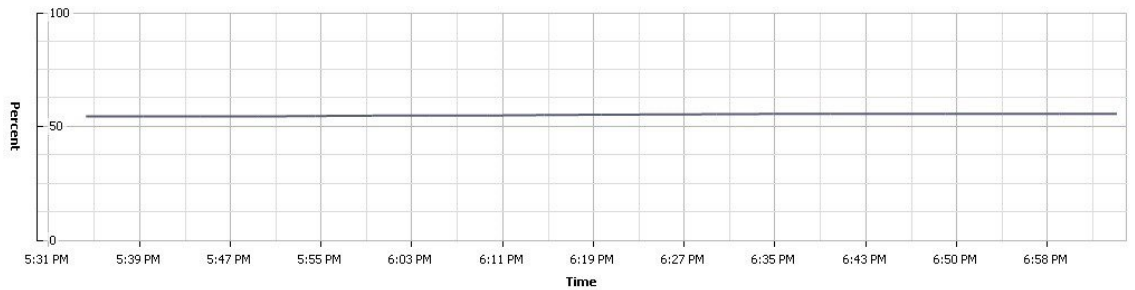
Figure 44 and 45 : CPU utilization throughout the test

Figure 46: English



383021

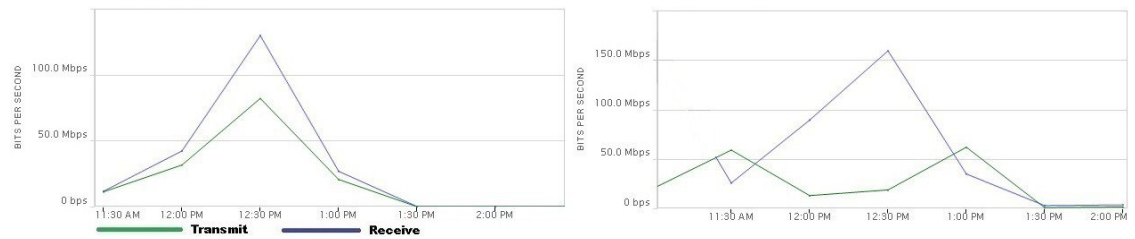
Figure 47: Japanese



383009

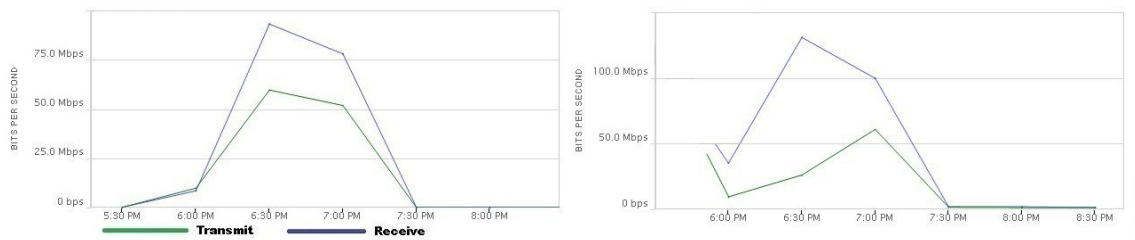
Figure 46 and 47 : Memory usage throughout the test
Network and Storage Utilization throughout the Test

Figure 48: English



383023

Figure 49: Japanese



383011

Figure 48 and 49 : Provisioning Services Network and Storage usage throughout the test

Related Documentation

Cisco Unified computing

<http://www.cisco.com/en/US/products/ps10265/index.html>

http://www.cisco.com/en/US/prod/collateral/ps10265/ps10280/ps12288/data_sheet_c78-700625.html

Login VSI

http://www.loginvsi.com/documentation/index.php?title=Main_Page

VMware Horizon View

<https://www.vmware.com/pdf/horizon-view/horizon-view-53-feature-pack-document.pdf>

