Cisco UCS B200 M3 VMware Horizon View 5.3 VDI scalability Test Results

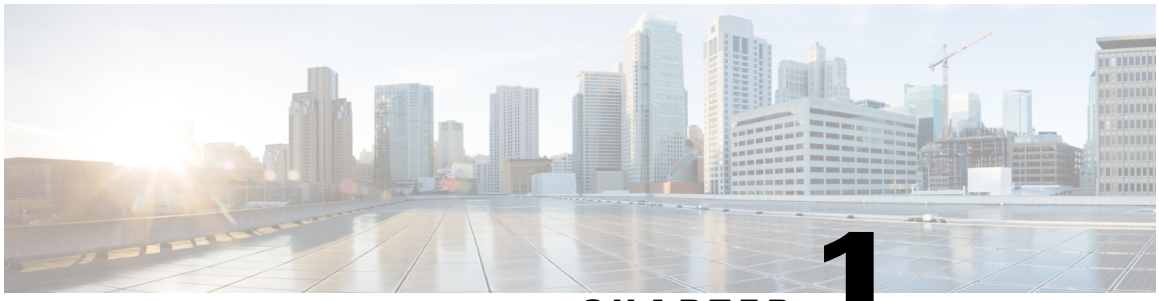
First Published: February 24, 2014

Last Modified: February 28, 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: OL-31655-01

CONTENTS



CHAPTER 1

Cisco UCS B200 M3 VMware Horizon View 5.3 VDI scalability Test Results

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) 4.0.9 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

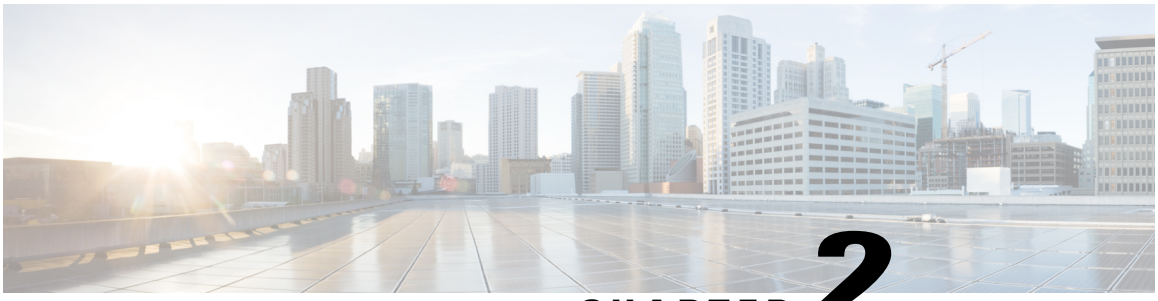
We set out to examine such a virtual desktop solution that consisted of the following components:

- Cisco Unified Computing System (UCS) B200 M3 Blade Server with Intel Xeon processor E5-2690 V2
- 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

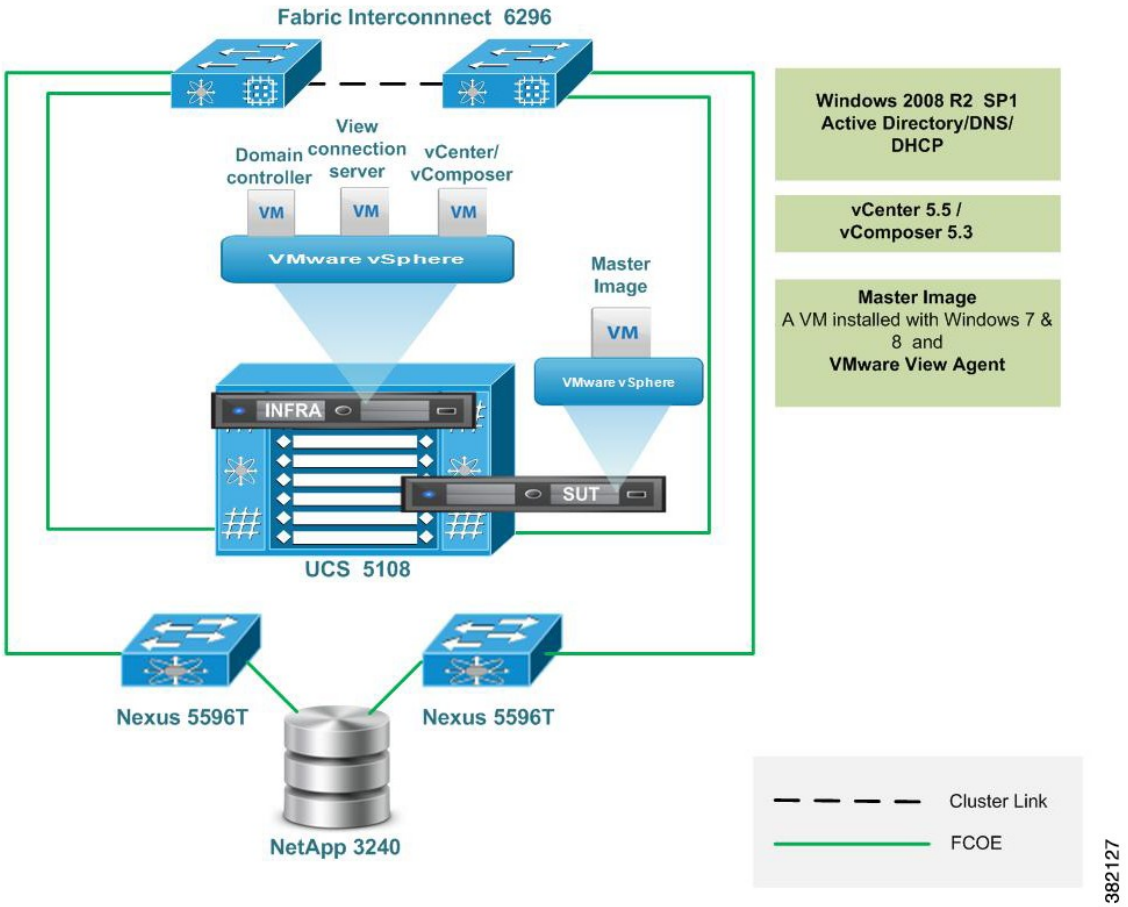


CHAPTER 2

Test Topology and Environment Matrix

Test Topology

Figure 1: Topology in Use



Environment Matrix

Infra Components

Component	Version
UCS Blade server	UCS B200 M3 (for SUT) and UCS B440 M2 (for Infra)
UCSM	2.2(1b)
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
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	4.0.9
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® Xeon® E5-2690 V2
Core Frequency (GHz)	3
Platform	
Vendor	Cisco
BIOS Settings	2.2(1b)
Memory modules	
Total RAM in the system (GB)	384
Vendor	Samsung
Type	DDR3
Speed (MHz)	1600
Size (GB)	16
Number of RAM modules	24
Chip organization	Double sided

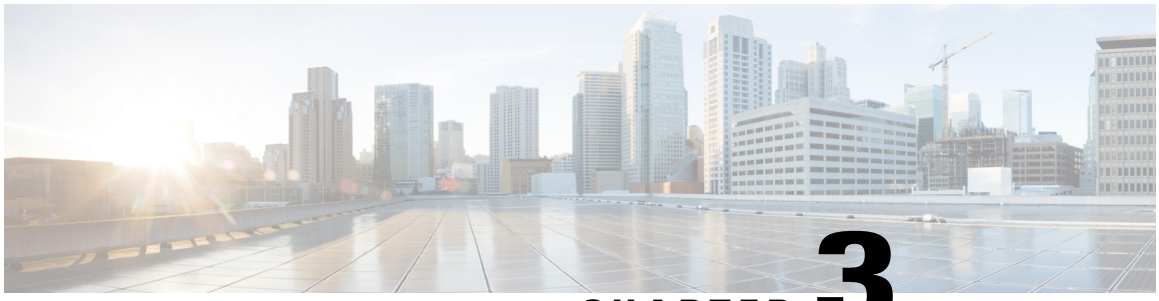
Component	Type
Rank	Dual
Operating System	
Name	VMWare ESXi 5.5.0
Build number	1331820
Operating System Power Profile	Maximum Performance
IO Adapters	
Vendor and Model number	Cisco and VIC 1280

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	32GB(Thin Provisioned)	32GB(Thin Provisioned)
VirtualDesktop -NetworkAdapter	Intel e1000	Intel e1000
OS Build No	917522	917919



CHAPTER 3

Implementation Steps And Test Execution Details

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 B440 M2 server.
- Master image created on the Server Under Test (B200 M3) and installed with Windows 7 and Windows 8(English/Japanese) resides on the 3TB 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.

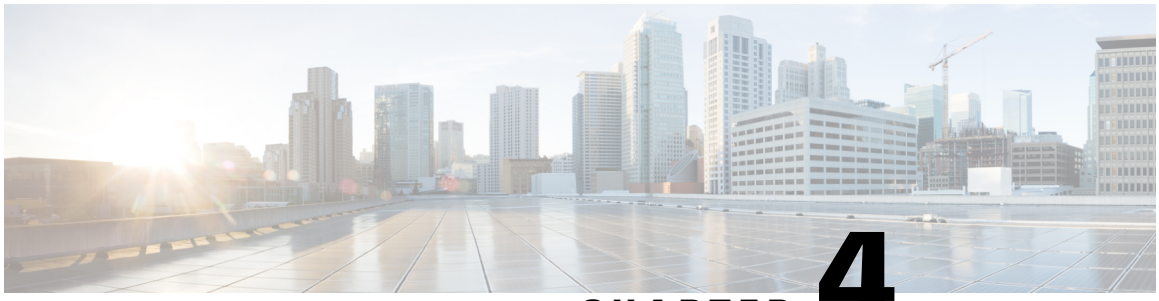
Each loop will open and use:

- 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

VSIMAX Result		
Type of Workload	**English**	**Japanese**
Light	160	158
Medium	132	129
Heavy	121	117

Light Workload Result

Light		
Server OS	**No . of Launched Sessions**	**VSIMax**
English	180	160
Japanese	180	158

Login VSIMax

Figure 2: English

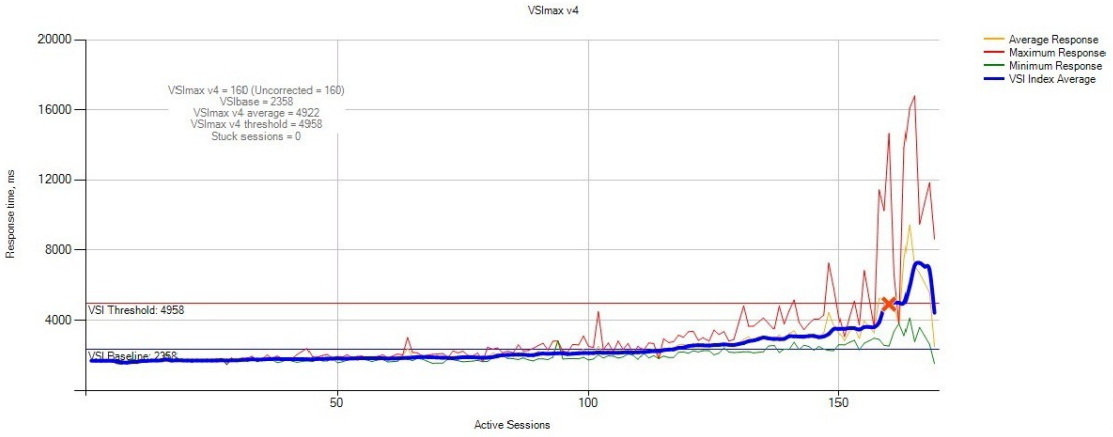


Figure 3: Japanese

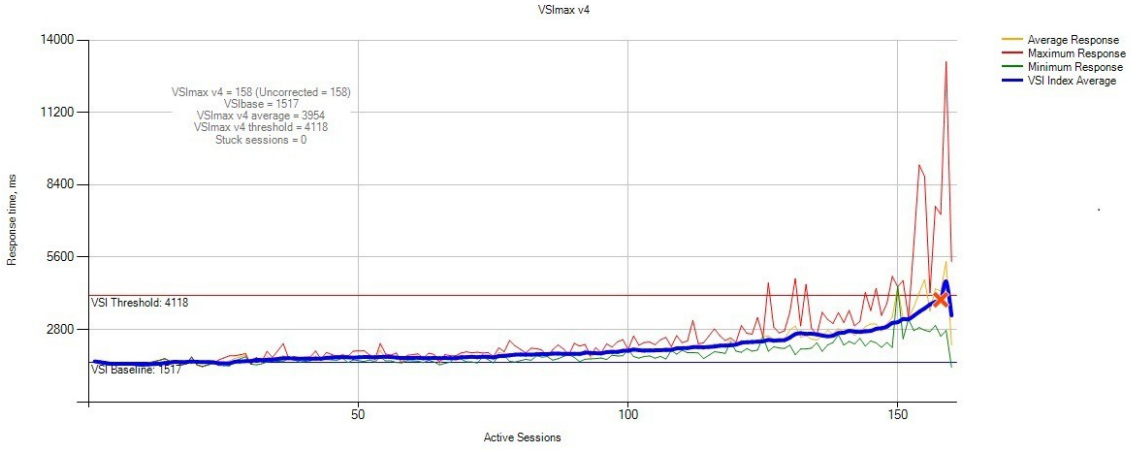


Fig 2 and 3: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M3 server

Processor And Memory Utilization throughout the test

Figure 4: English

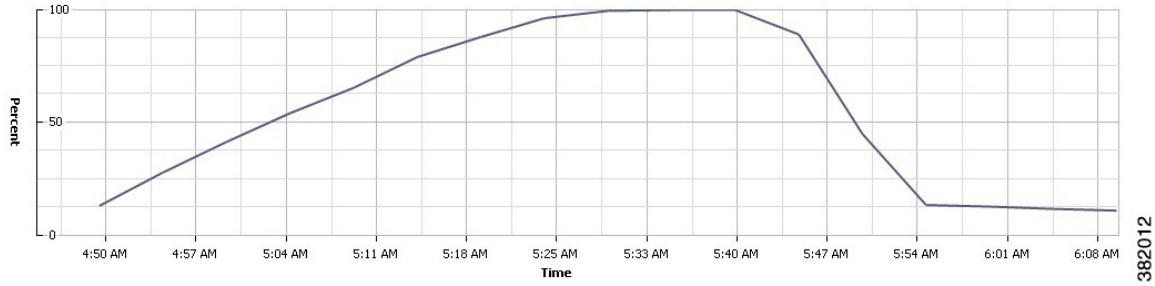


Figure 5: Japanese

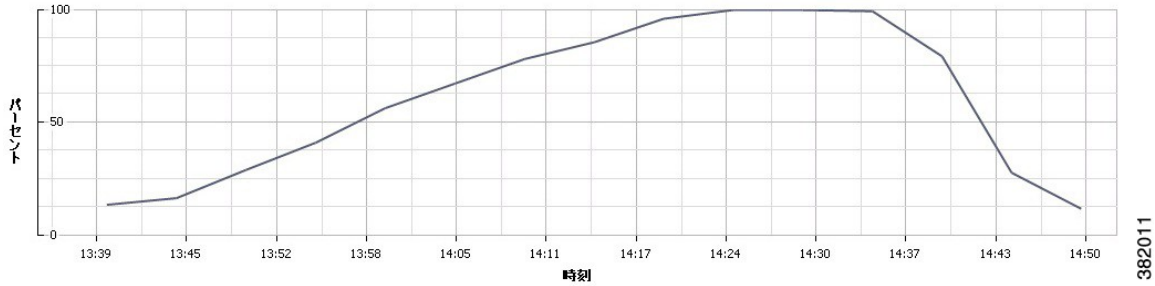


Figure 4 and 5 : CPU utilization throughout the test

Figure 6: English

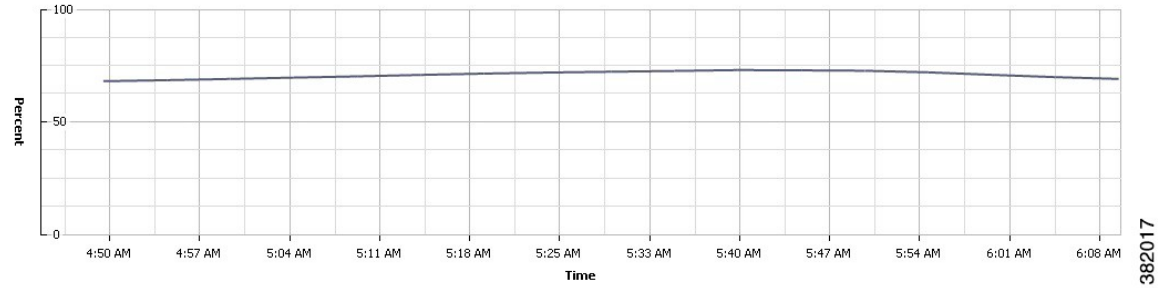


Figure 7: Japanese

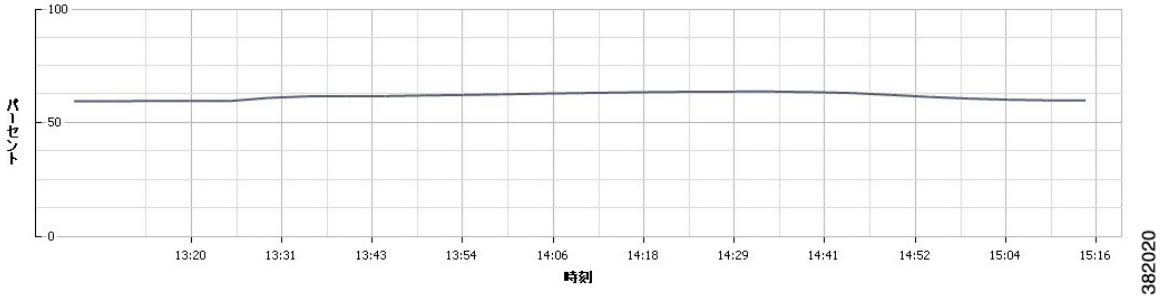


Figure 6 and 7 : Memory usage throughout the test

Network and Storage Utilization throughout the Test

Figure 8: English

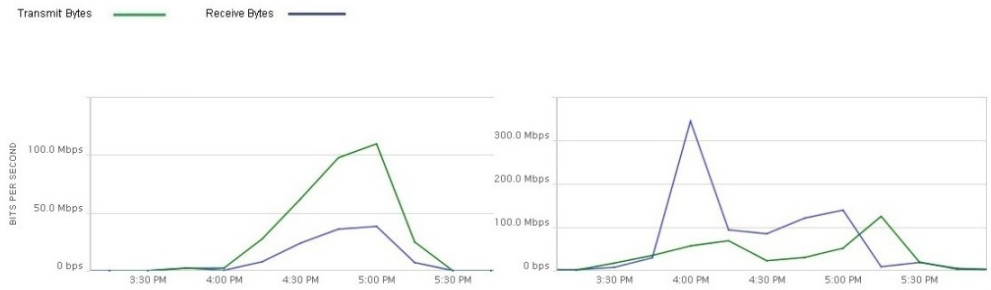


Figure 9: Japanese

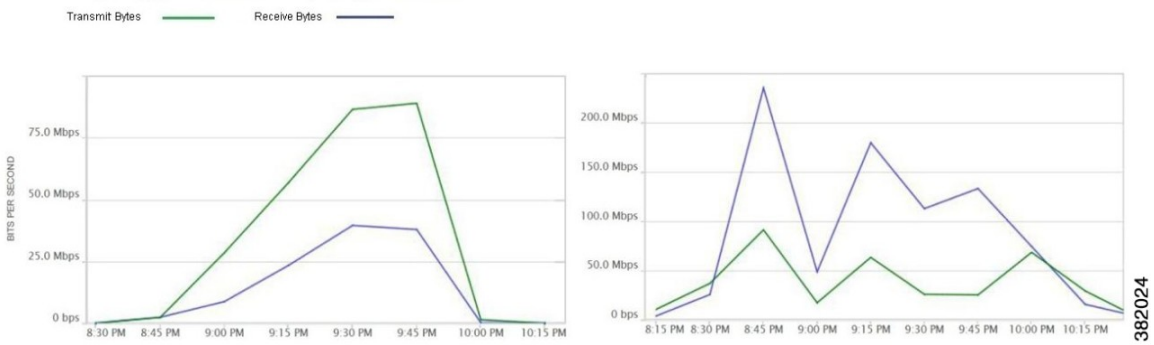


Figure 8 and 9 : Provisioning Services Network and Storage usage throughout the test

Medium workload Result

Medium		
Server OS	**No . of Launched Sessions**	**VSIMax**
English	150	132
Japanese	150	129

Login VSIMax

Figure 10: English

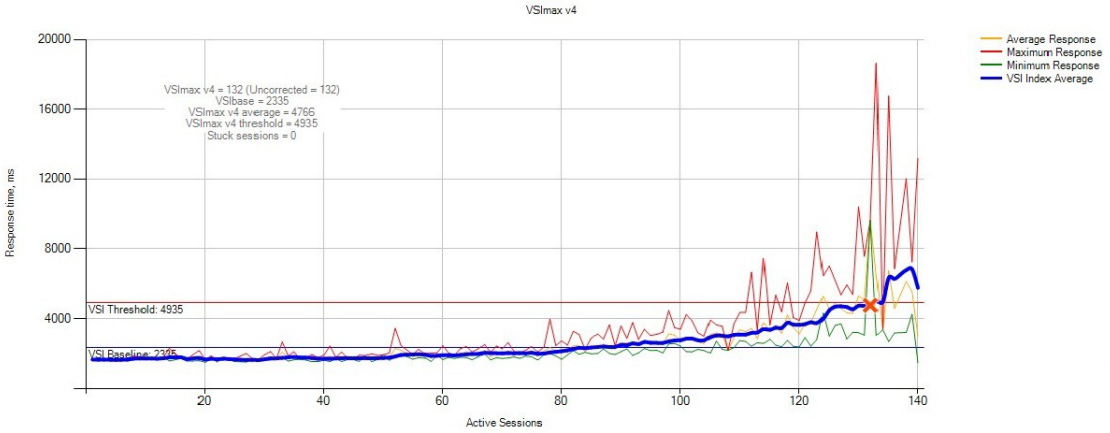


Figure 11: Japanese

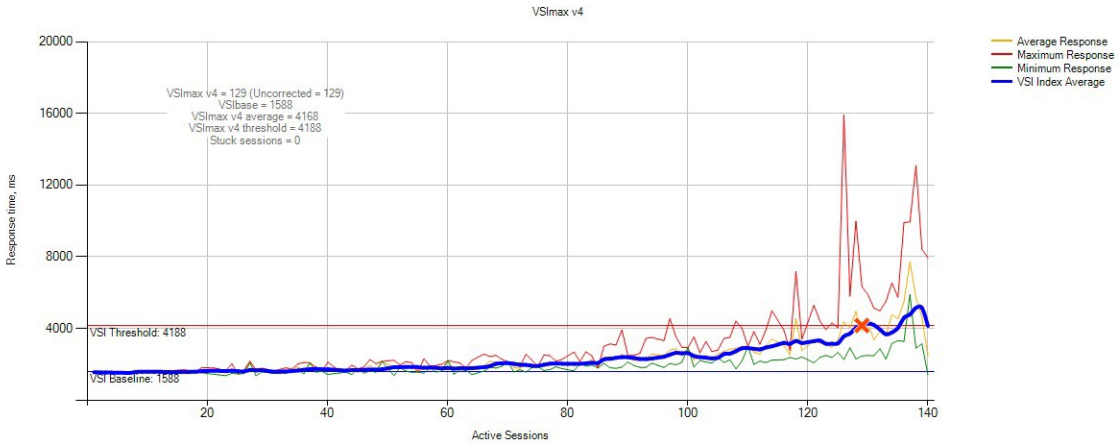


Fig 10 and 11: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M3 server

Processor And Memory Utilization throughout the test

Figure 12: English

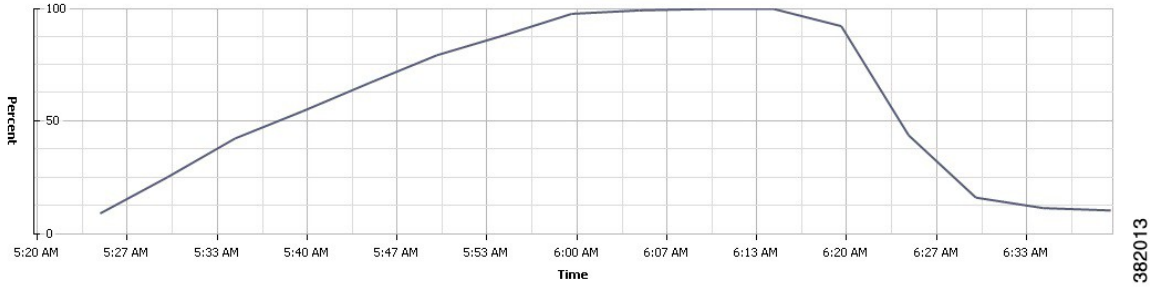


Figure 13: Japanese

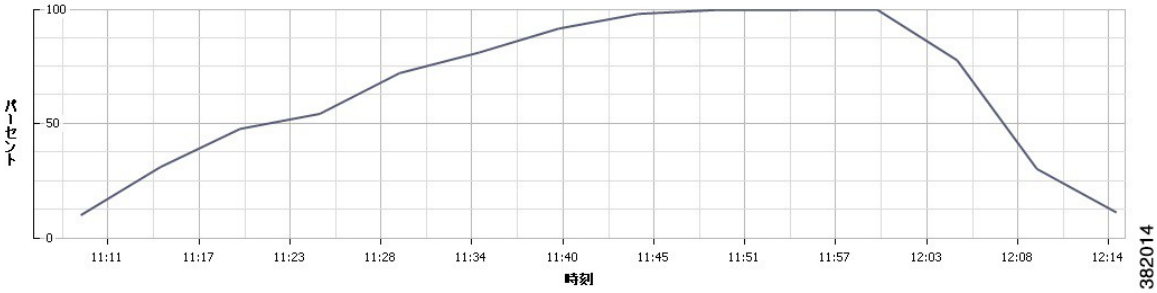


Figure 12 and 13 : CPU utilization throughout the test

Figure 14: English

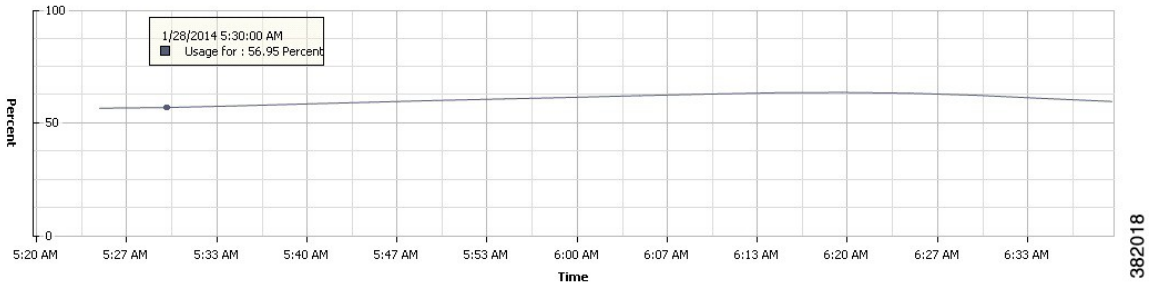


Figure 15: Japanese

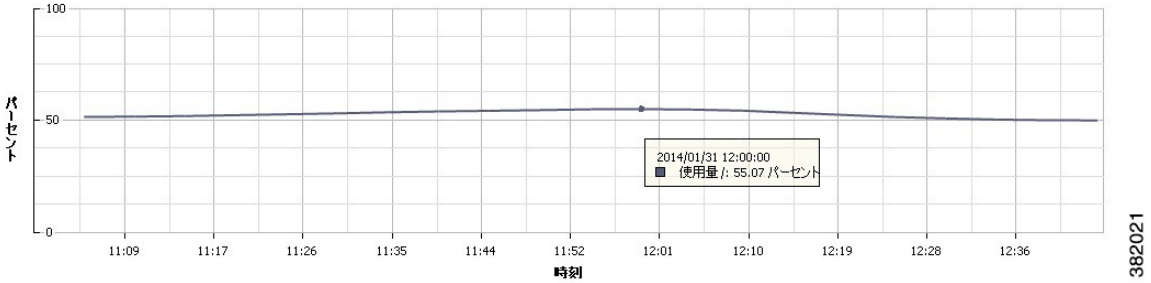


Figure 14 and 15 : Memory usage throughout the test

Network And Storage Utilization throughout the test

Figure 16: English

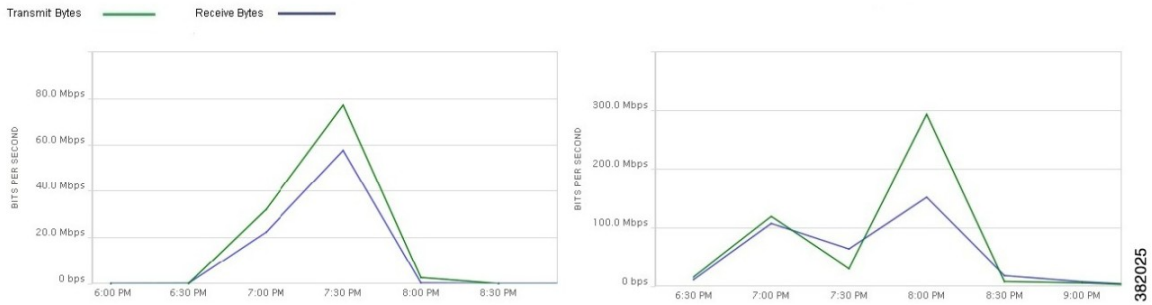


Figure 17: Japanese

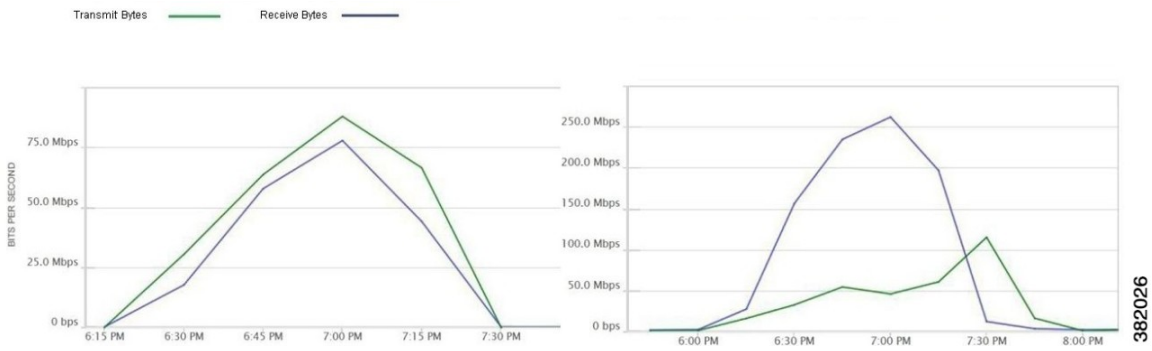


Figure 16 and 17 : Provisioning Services Network and Storage usage throughout the test

Heavy workload Result

Heavy		
Server OS	**No . of Launched Sessions**	**VSIMax**
English	140	121
Japanese	140	117

Login VSIMax

Figure 18: English

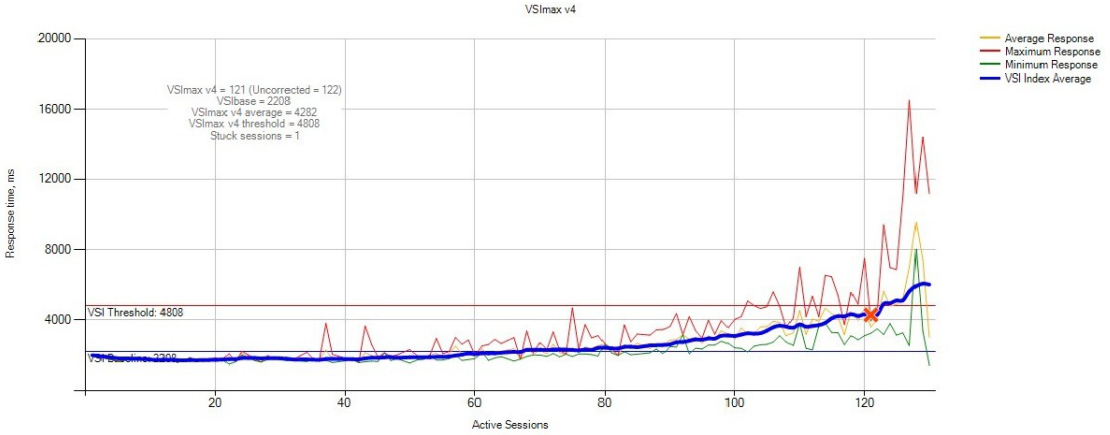


Figure 19: Japanese

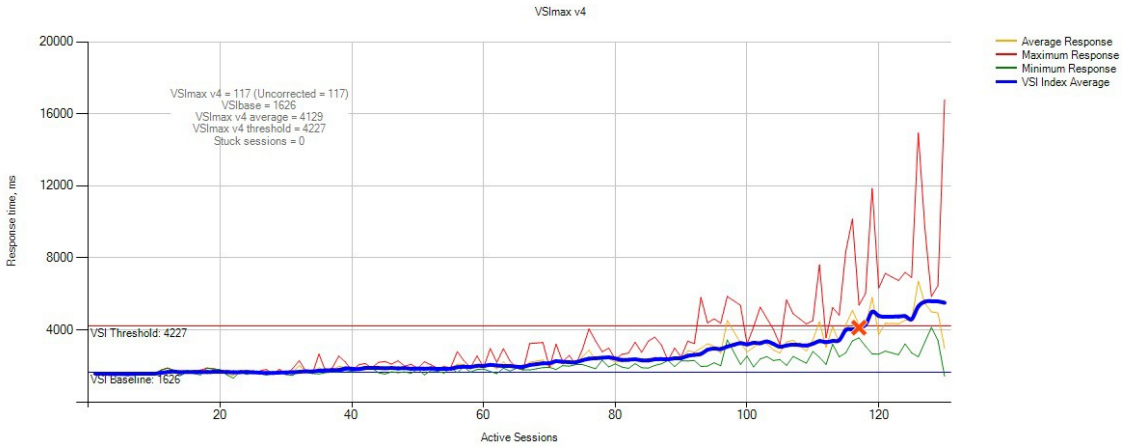


Fig 18 and 19: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M3 server

Processor And Memory Utilization throughout the test

Figure 20: English

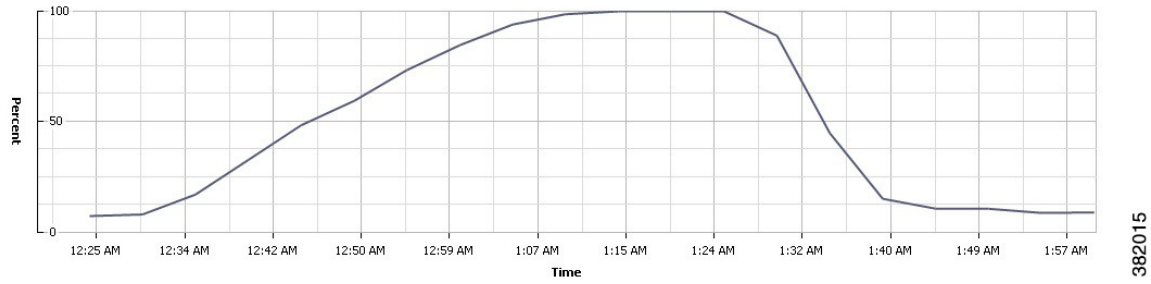


Figure 21: Japanese

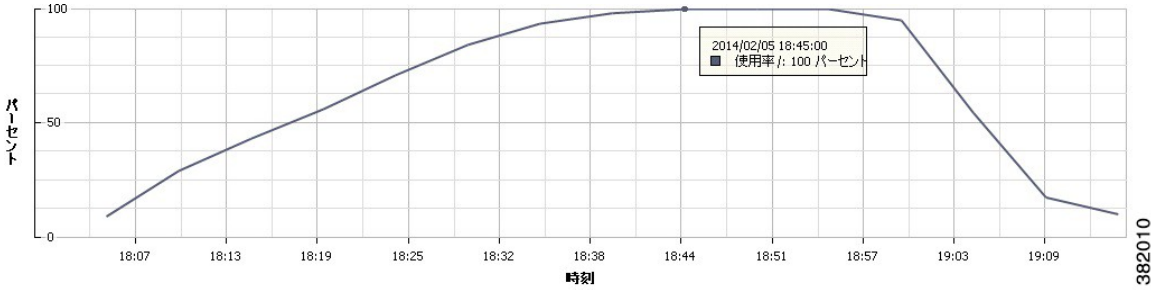


Figure 20 and 21 : CPU utilization throughout the test

Figure 22: English

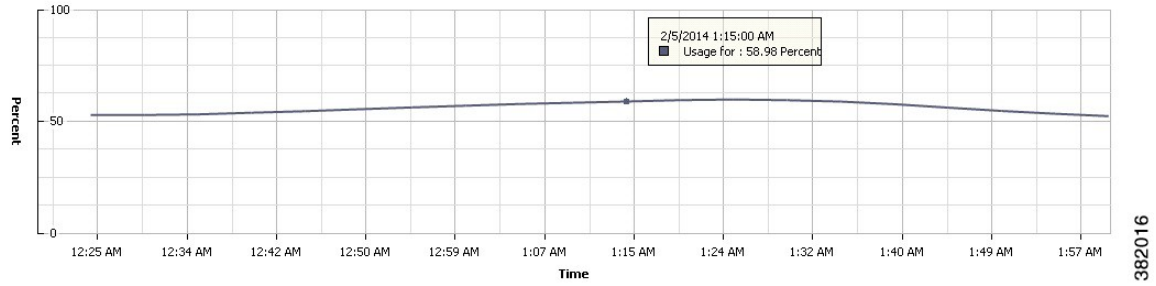


Figure 23: Japanese

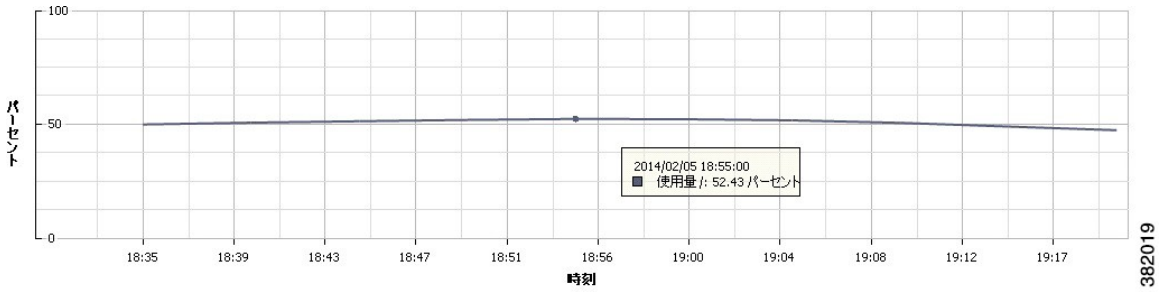


Figure 22 and 23: Memory usage throughout the test

Network and Storage Utilization throughout the test

Figure 24: English

Figure 25: Japanese

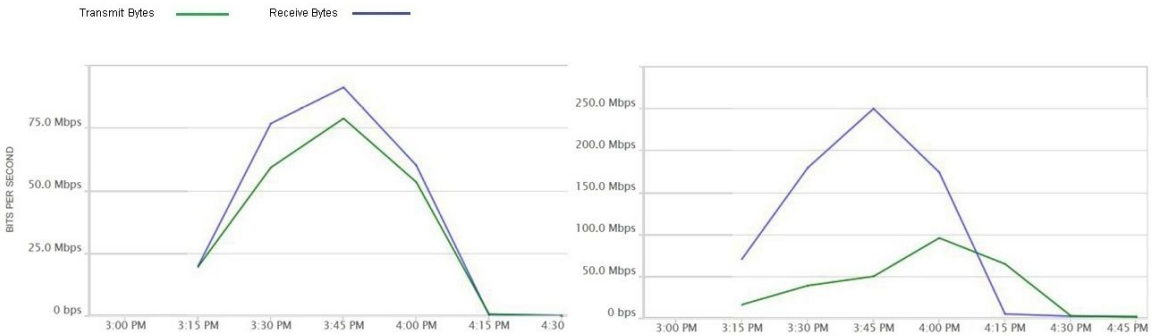


Figure 24 and 25 : Provisioning Services Network and Storage usage throughout the test

Comparison of Windows 8 Performance in Japanese and English Environment

VSIMAX Result		
Type of Workload	**English**	**Japanese**
Light	128	115
Medium	101	90
Heavy	93	82

Light Workload Result

Light		
Server OS	**No . of Launched Sessions**	**VSIMax**
English	140	128
Japanese	130	115

Login VSIMax

Figure 26: English

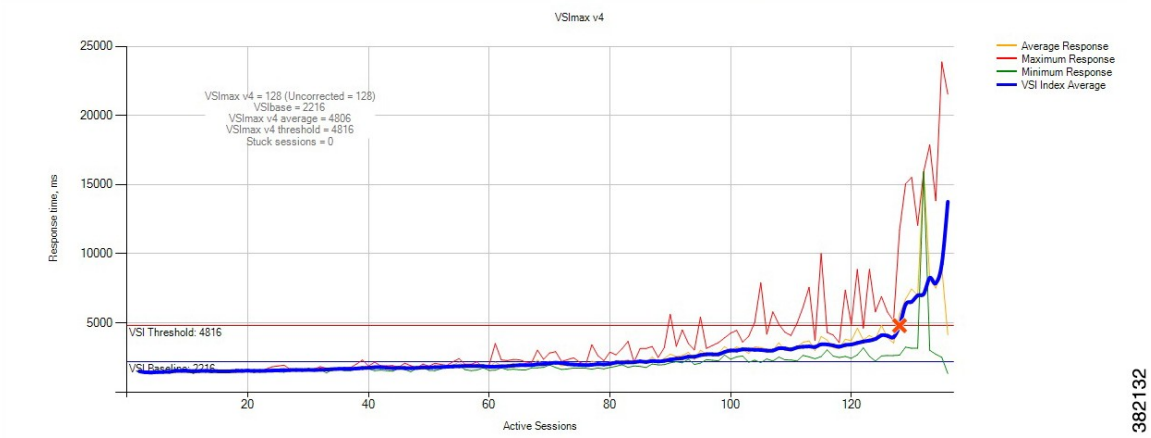


Figure 27: Japanese

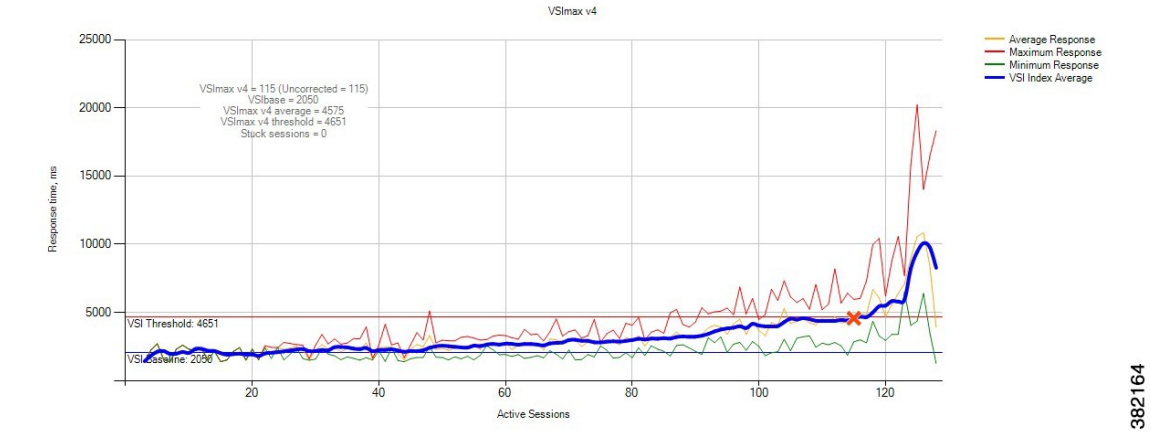


Fig 26 and 27: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M3 server

Processor And Memory Utilization throughout the test

Figure 28: English

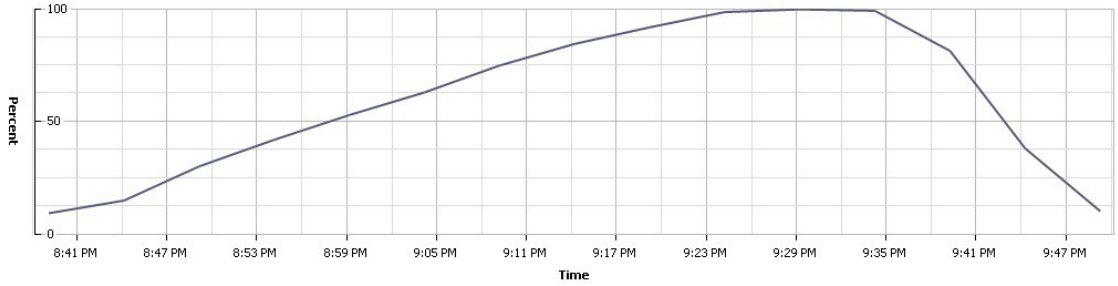


Figure 29: Japanese

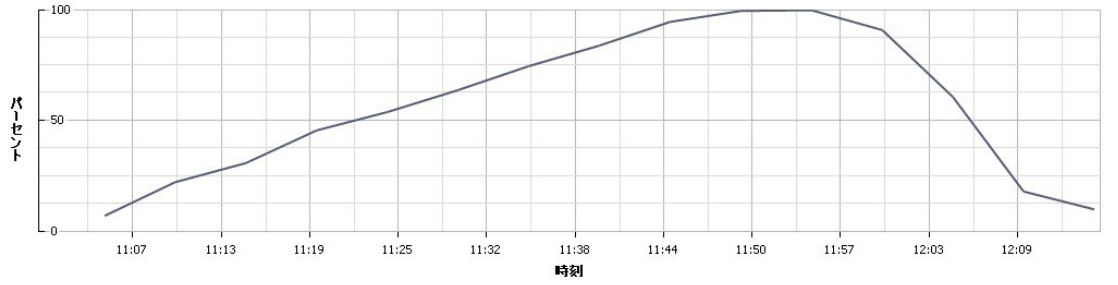


Figure 28 and 29 : CPU utilization throughout the test

Figure 30: English

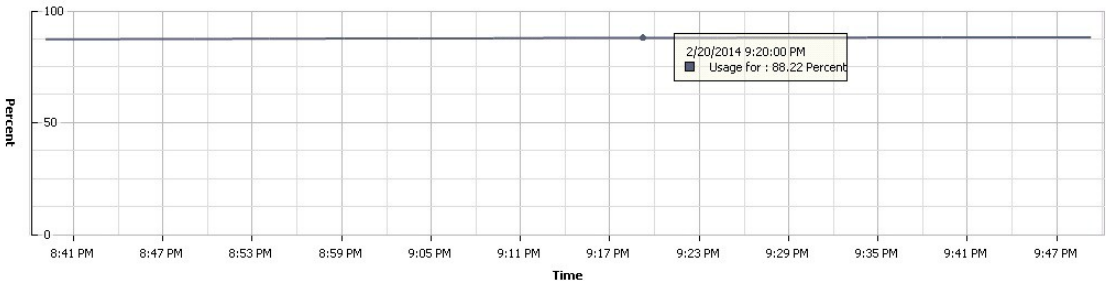


Figure 31: Japanese

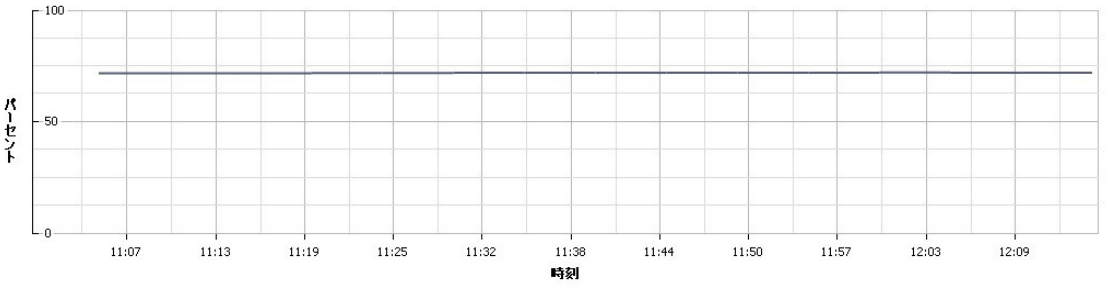


Figure 30 and 31 : Memory usage throughout the test

Network and Storage Utilization throughout the Test

Figure 32: English

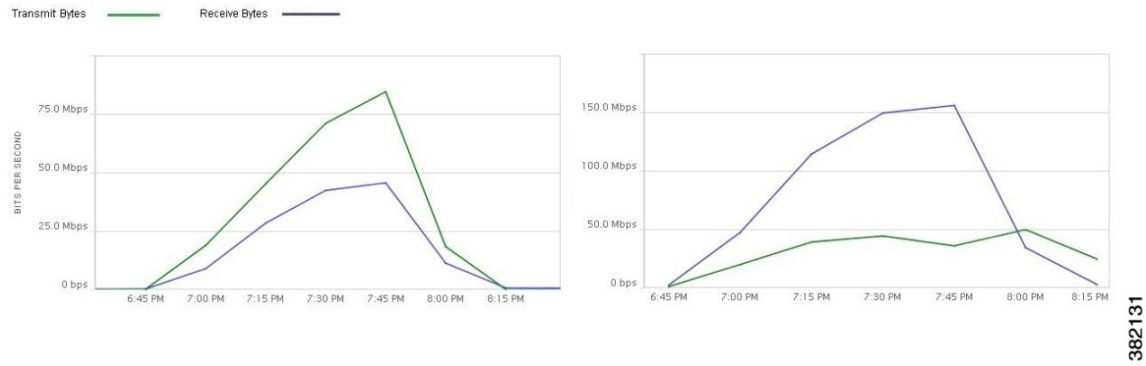


Figure 33: Japanese

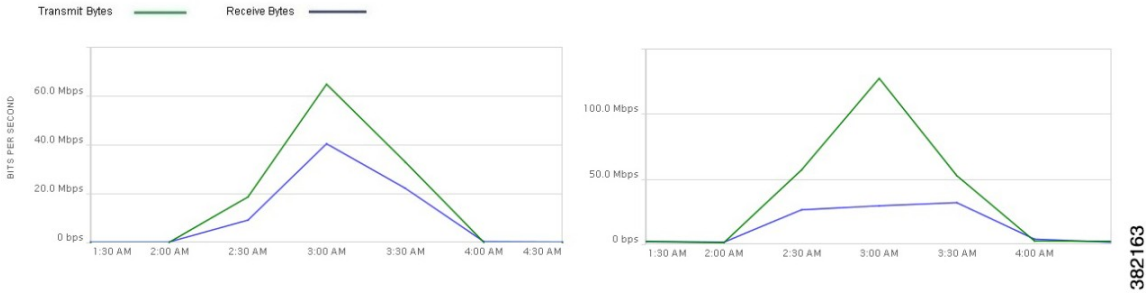


Figure 32 and 33 : Provisioning Services Network and Storage usage throughout the test

Medium workload Result

Medium		
Server OS	**No . of Launched Sessions**	**VSIMax**
English	110	101
Japanese	120	90

Login VSIMax

Figure 34: English

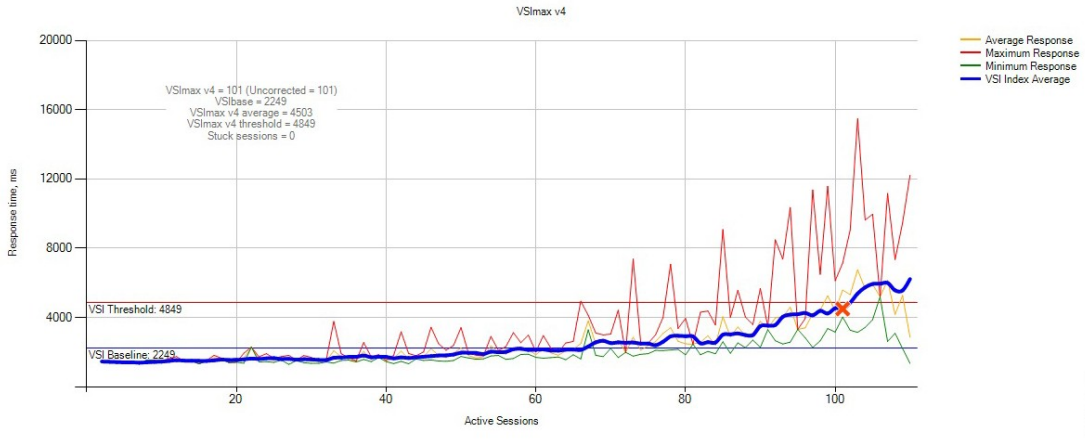


Figure 35: Japanese

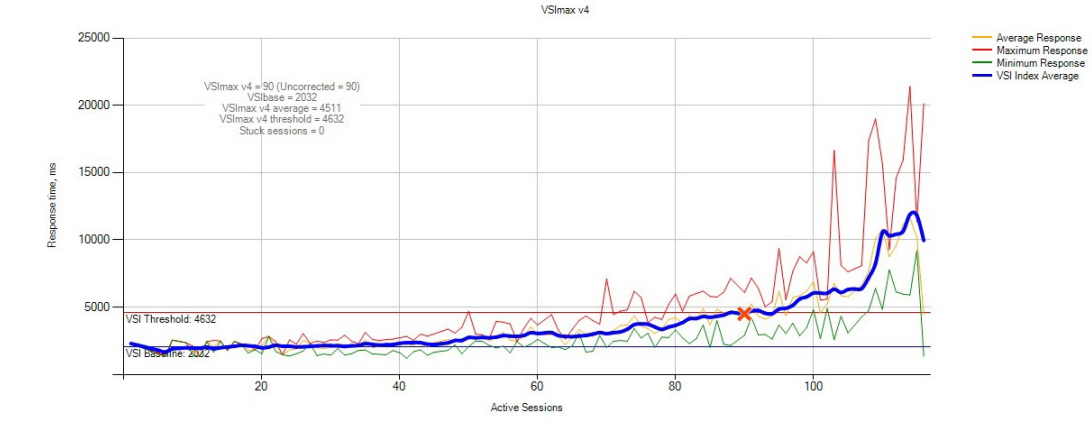


Fig 34 and 35: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M3 server

Processor And Memory Utilization throughout the test

Figure 36: English

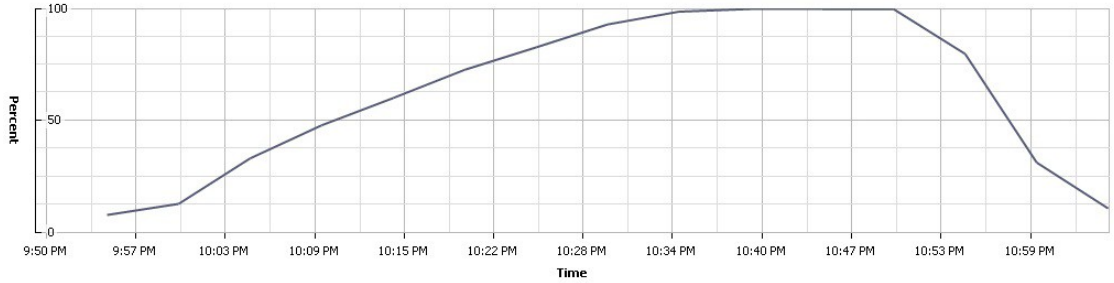


Figure 37: Japanese

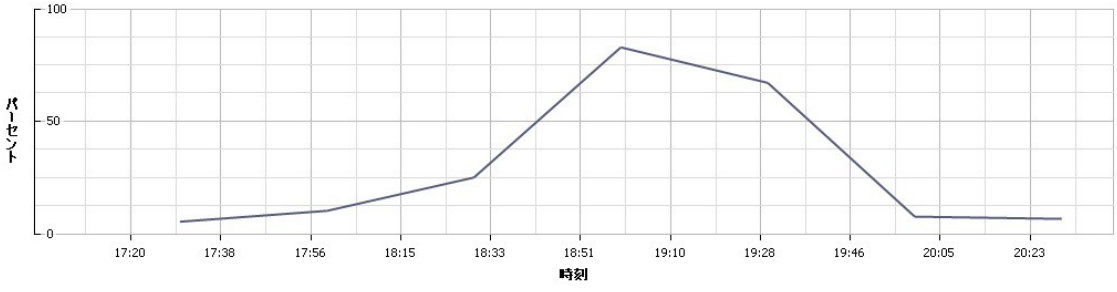


Figure 36 and 37 : CPU utilization throughout the test

Figure 38: English

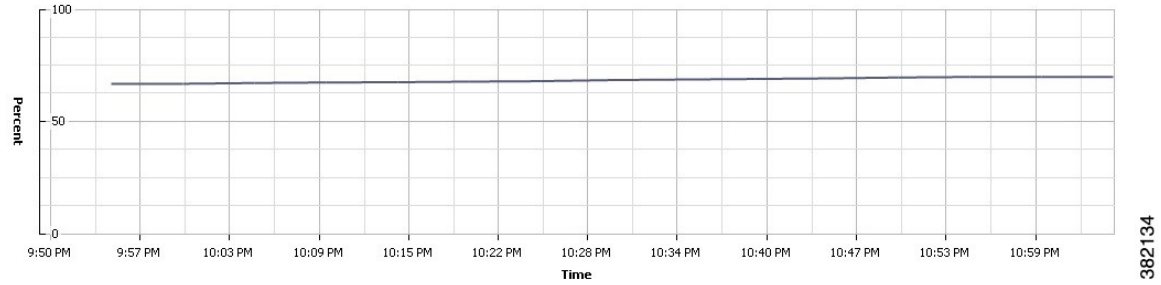


Figure 39: Japanese

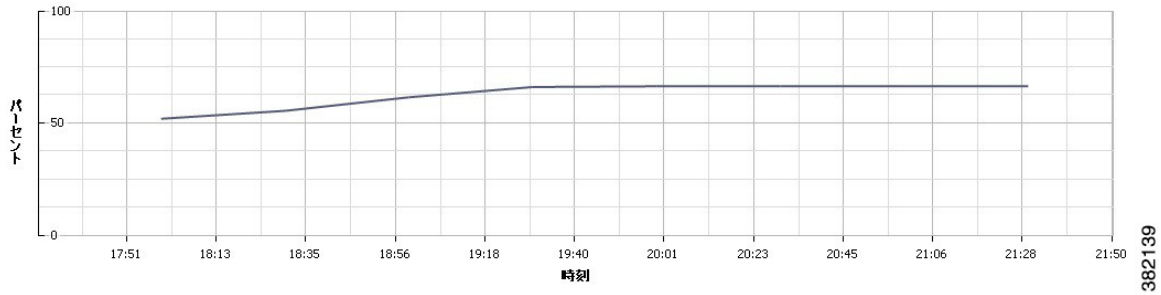


Figure 38 and 39 : Memory usage throughout the test

Network And Storage Utilization throughout the test

Figure 40: English

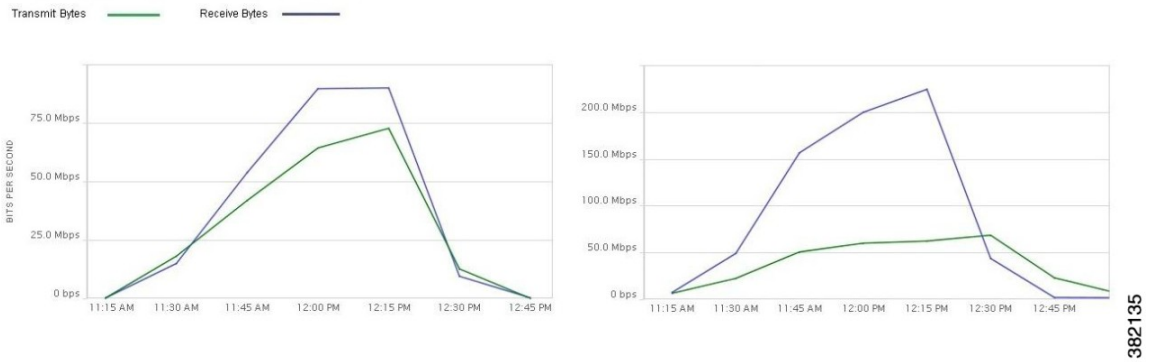


Figure 41: Japanese

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

Heavy workload Result

Heavy		
Server OS	**No . of Launched Sessions**	**VSIMax**
English	100	93
Japanese	100	82

Login VSIMax

Figure 42: English

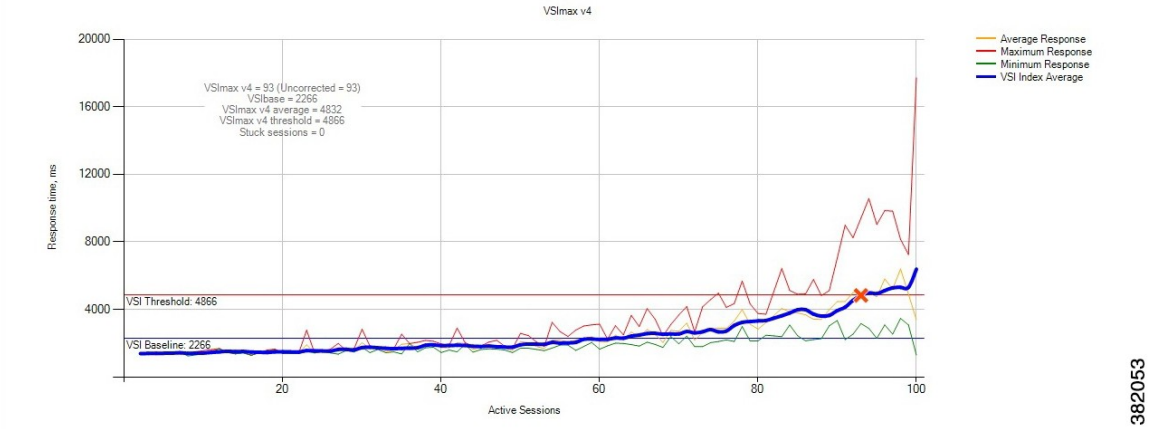


Figure 43: Japanese

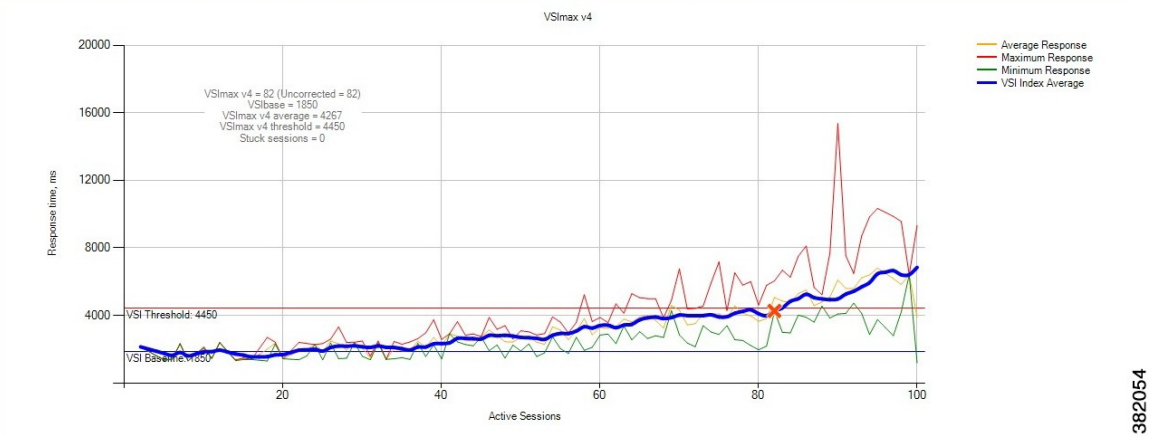


Fig 42 and 43: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M3 server

Processor And Memory Utilization throughout the test

Figure 44: English

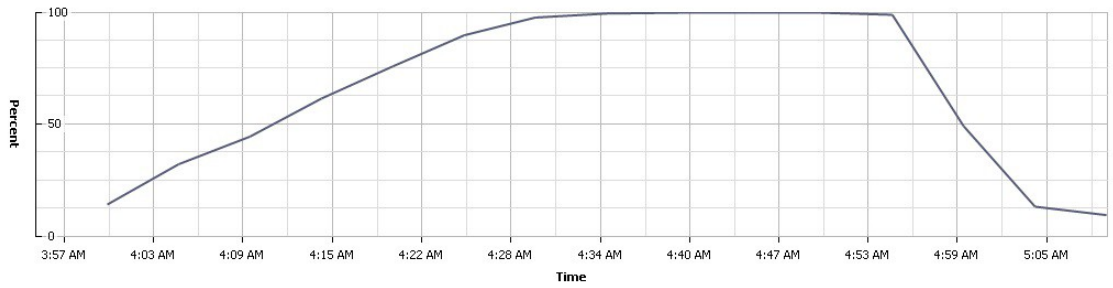


Figure 45: Japanese

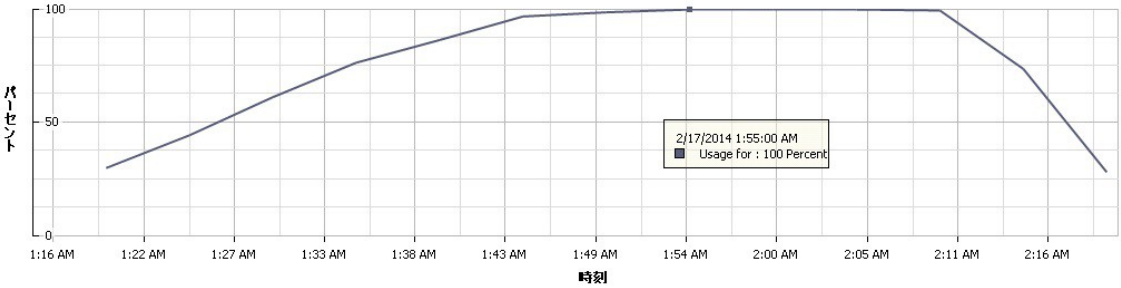


Figure 44 and 45: CPU utilization throughout the test

Figure 46: English

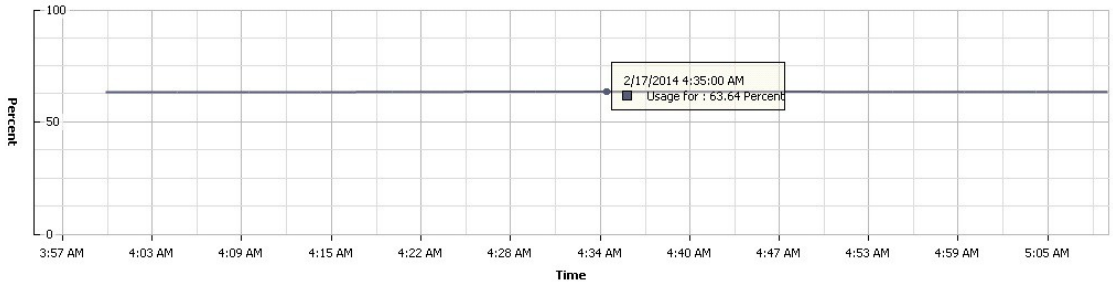


Figure 47: Japanese

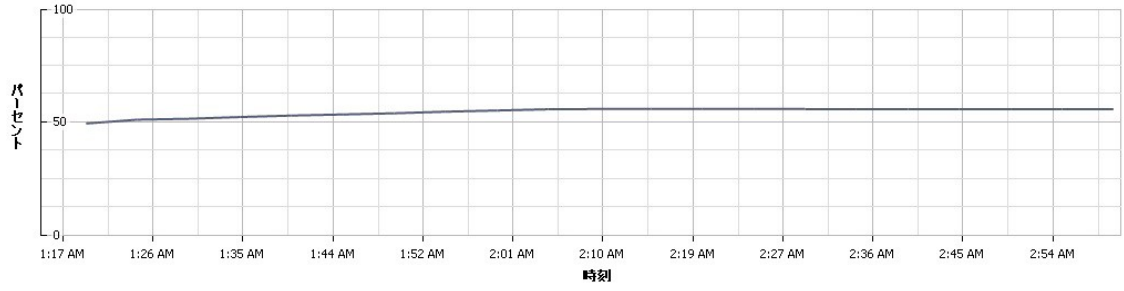


Figure 46 and 47 : Memory usage throughout the test

Network and Storage Utilization throughout the test

Figure 48: English

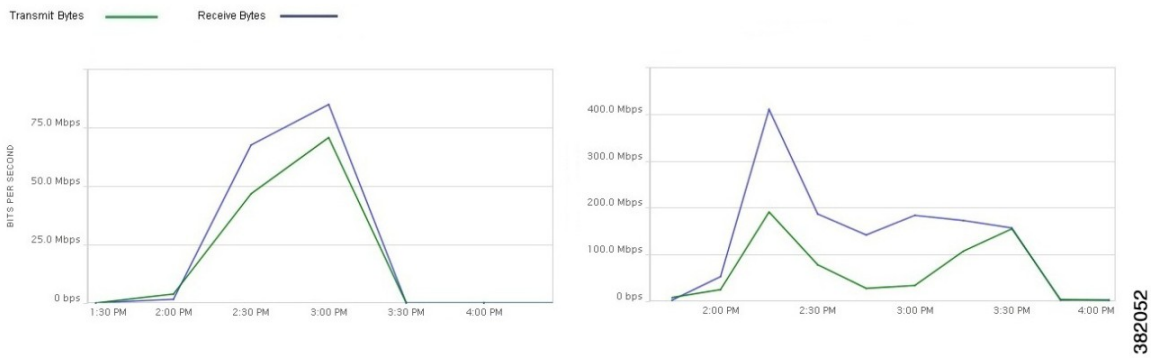


Figure 49: Japanese

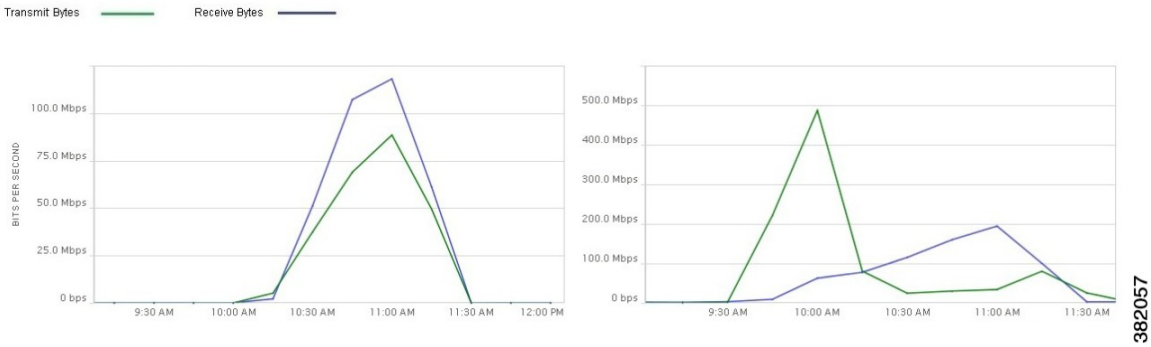


Figure 48 and 49 : Provisioning Services Network and Storage usage throughout the test

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