VMware Horizon View 6 VDI Scalability Testing on Cisco UCS B200 M4 Server with E5-2699 v3 processor

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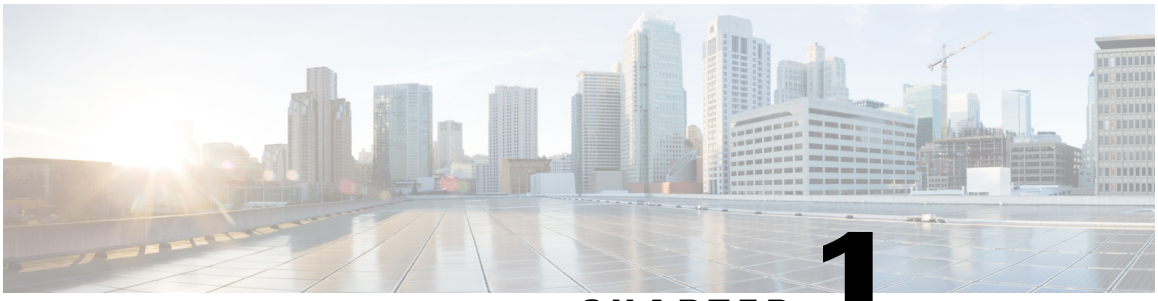


CHAPTER 1

VMWare VDI Scalability Testing on Cisco UCS B200 M4 Server with UCS Mini

- 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.

Cisco UCS Mini is the ideal solution for customers who need fewer servers but still want the comprehensive management capabilities provided by Cisco UCS Manager. Cisco UCS Mini delivers servers, storage, and 10-Gigabit networking in an easy-to-deploy, compact form factor.

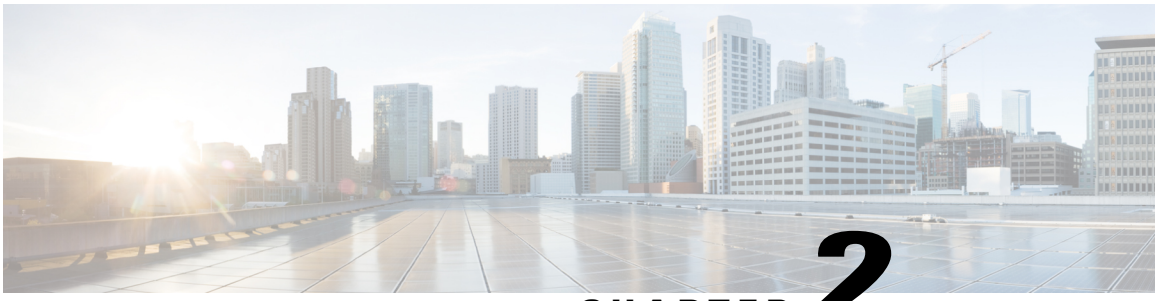
To find the virtual desktop capacity of a single Cisco UCS B200 M4 Server with UCS Mini, we used the Login Consultants Virtual Session Indexer (Login VSI) 4.1.4 benchmark. The Login VSI workload we used performs a range of tasks to simulate a typical knowledge worker. The benchmark results show the maximum 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 UCS Mini (Cisco UCS 5108 AC2 Chassis and Cisco UCS 6324 FI).
- Cisco UCS B200 M4 server with Intel(R) Xeon(R) E5 2699 V3 processor.
- VMware vSphere 5.5 U2.
- A VMware Horizon View 6.0.2 virtual desktop linked clone pool consisting of Microsoft Windows 7SP1 x64 VMs.
- All Virtual machines in the Desktop Pool are provisioned with 2 vCPU, 1.5GB of reserved memory and 32GB Storage for Windows 7 SP1 x64.
- All the VMs are created on the 3TB LUN provided from the NetApp Storage.

Acronyms

Acronym	Description
FI	Fabric Interconnect
LUN	Logical Unit Number
OS	Operating System
HDD	Hard Disk Drive
UCS	Unified Computing System
UCSM	Unified Computing System Manager
VDI	Virtual Desktop Infrastructure
VIC	Virtual Interface Card
VM	Virtual Machine
VSI	Virtual Session Index



CHAPTER 2

Test Topology and Environment Matrix

- Test Topology, page 3
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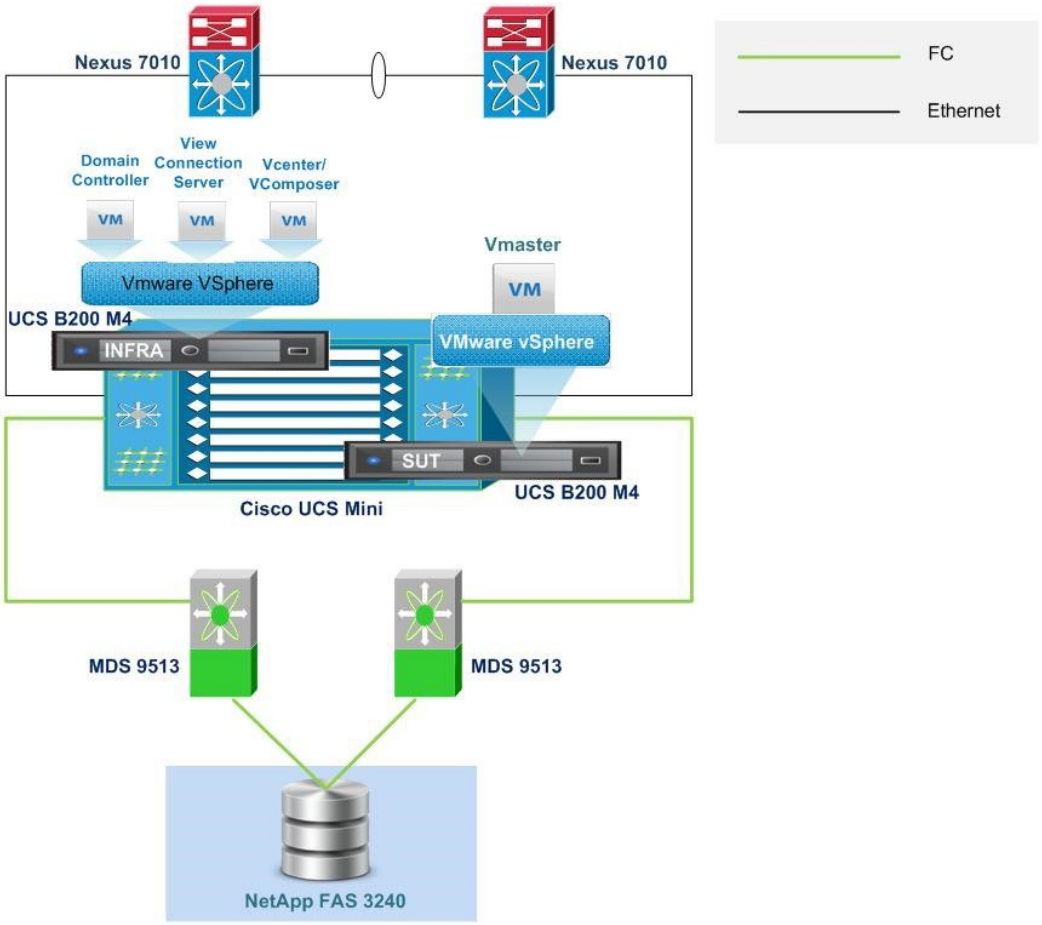
Test Topology

Figure 1: Topology in use



Environment Matrix

Infra Components

Component	Version
UCS Server	UCS B200 M4
UCSM	3.1(1e)
Hypervisor	
ESXi	VMWare ESXi 5.5 U2
Operating System	
Windows Server OS	Windows Server 2012 R2 x64 (Japanese/ English)
Virtual Desktop Delivery Component	
VMWare Horizon View	6.0.2

Component	Version
VDI Scalability Measuring Tool	
Login VSI	4.1.4
Active Directory, DHCP and DNS	Windows Server 2012 R2 x64 (Japanese/ English)
Login VSI Launcher, Analyzer and VSI share	Windows Server 2012 R2 x64 (Japanese/ English)
Switches	
Nexus 7010	7.2(1)D1(1)
MDS 9513	6.2(13b)

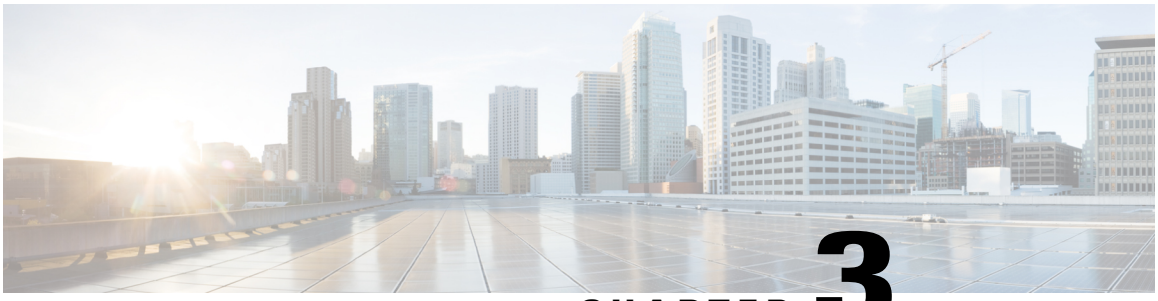
SUT Components

Componenet	Version/ Type
UCS Server	Cisco UCS B200 M4 Server with UCS Mini
UCSM	3.1(1e)
CPUs	
Vendor	Intel® Corporation
Name	Intel(R) Xeon(R) E5-2699 v3
Core Frequency (GHz)	2.3
Platform	
Vendor	Cisco
BIOS Settings	3.1(1e)
Memory Modules	
Total RAM in the system (GB)	576
Type	DDR4
Speed (MHz)	2133
Number of RAM Modules	18
Size (GB)	32
Chip organization	Double sided
Rank	Quad
Hypervisor	
Name	VMWare ESXi 5.5 U2
Build Number	2068190
Operating System Power Profile	Maximum Performance

Componenet	Version/ Type
Operating Systems	
Windows Desktop OS	Windows 7 SP1 x64 (Japanese/ English)
Adapters	
IO Adapter	Cisco UCS VIC 1380 - 4.1(1d)

Tested Windows 7 SP1 x64 VM Configuration

Components of VM	English	Japanese
Virtual Desktop - vCPU	2	2
Virtual Desktop - RAM	1.5 GB	1.5 GB
Virtual Desktop - Hard Disk	32 GB (Thin Provisioned)	32 GB (Thin Provisioned)
Virtual Desktop - Network Adapeter	Intel e1000	Intel e1000
OS Build number	677651	677662



CHAPTER 3

Implementation Steps and Test Execution Steps

- Implementation steps, page 7
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Implementation steps

- Infra components such as Active Directory/DNS and DHCP server, vCenter server, View composer and View Connection server are deployed as Virtual machines on Cisco UCS B200 M4 server with UCS Mini.
- Master image created on Server Under Test (Cisco UCS B200 M4 server with UCS Mini) and installed with Windows 7 SP1 x64 resides on 3TB LUN provided from NetApp Storage.
- Login VSI Launcher is deployed as VM 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 ideal time is included in simulate real-world users.

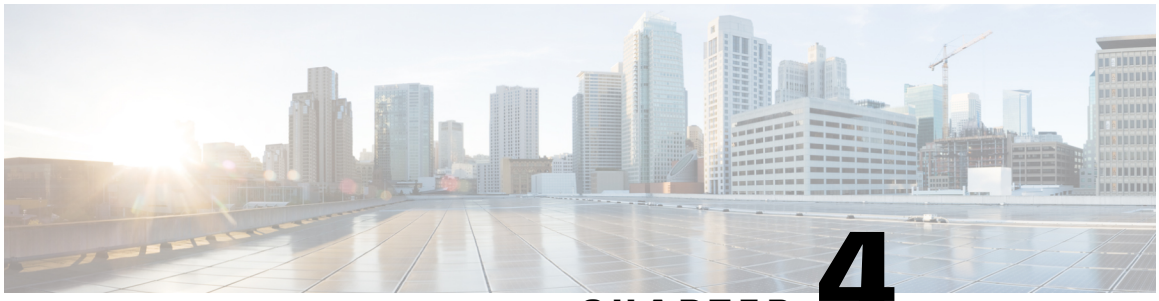
Each loop will open and use:

- Outlook, browse messages.
- Internet Explorer, browsing different web pages and a YouTube style video(480p Movie Trailer) is opened 3 times in every loop.
- Word, one instance to measure response time, one instance to review and edit the document.
- Doro PDF Printer & Acrobat reader, the word document is printed and reviewed to PDF.
- Excel, a very large randomized sheet is opened.

Heavy Workload

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

- Begins by opening 4 instance 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 videos are watched.
- Increased the time the workload plays the flash game.
- The ideal time is reduced to 2minutes.



CHAPTER 4

VMWare Horizon View VDI Scalability Testing on Cisco UCS B200 M4 Server with UCS Mini

- Comparison of Windows 7 SP1 x64 performance in Japanese and English Environment, page 9
- Related Documentation, page 18

Comparison of Windows 7 SP1 x64 performance in Japanese and English Environment

Light Workload Result, on page 9

Medium Workload Result, on page 12

Heavy Workload Result, on page 15

VSI Max Results

Type of Workload	English	Japanese
Light	111	103
Medium	101	88
Heavy	90	80

Light Workload Result

Light Workload		
Desktop OS	**No.of Launched Sessions**	**VSIMax**
English	130	111
Japanese	120	103

Login VSIMax

Figure 2: English

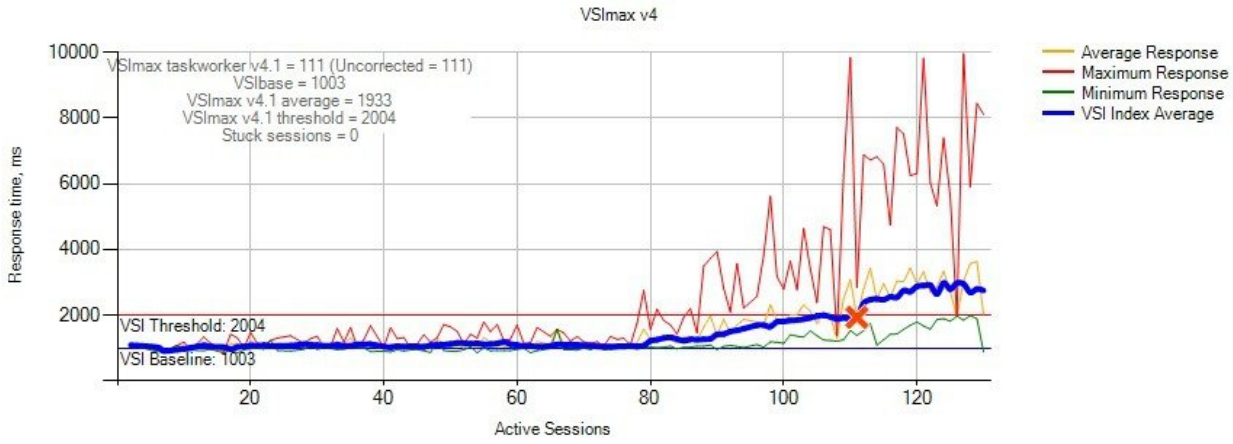


Figure 3: Japanese

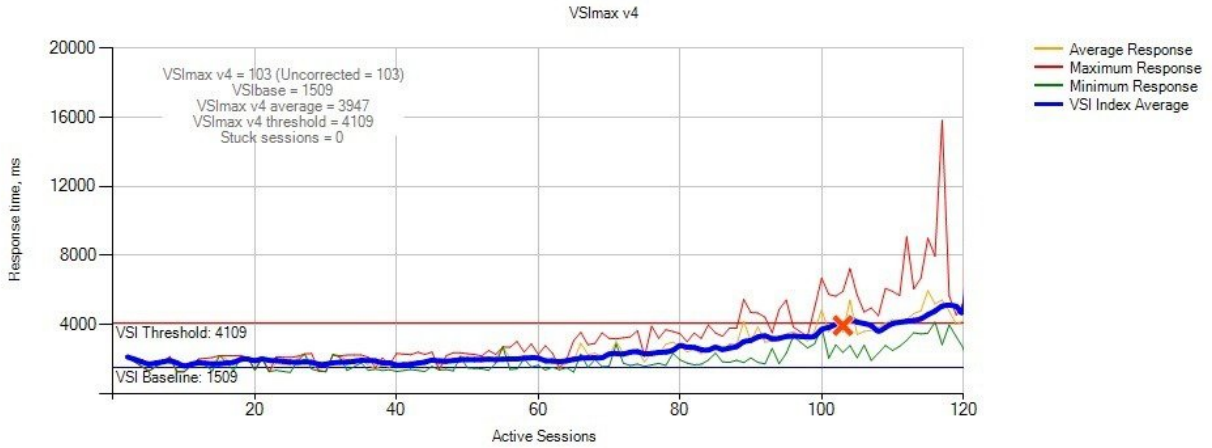


Figure 2 and 3: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M4 server with UCS Mini

Processor And Memory Utilization throughout the test

Figure 4: English

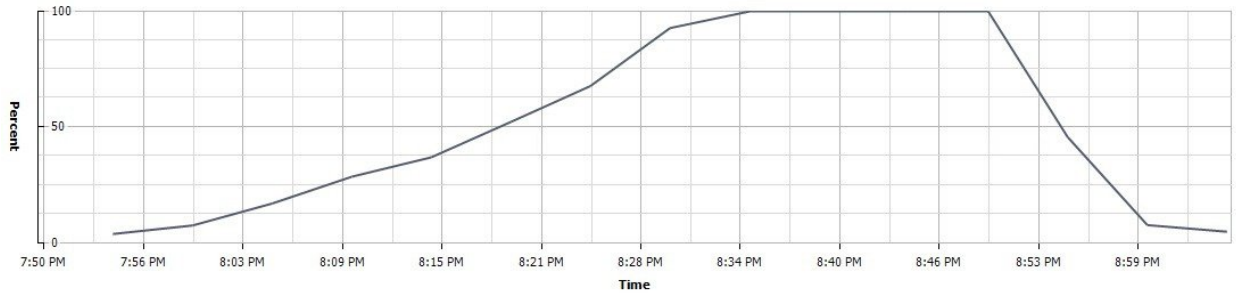


Figure 5: Japanese

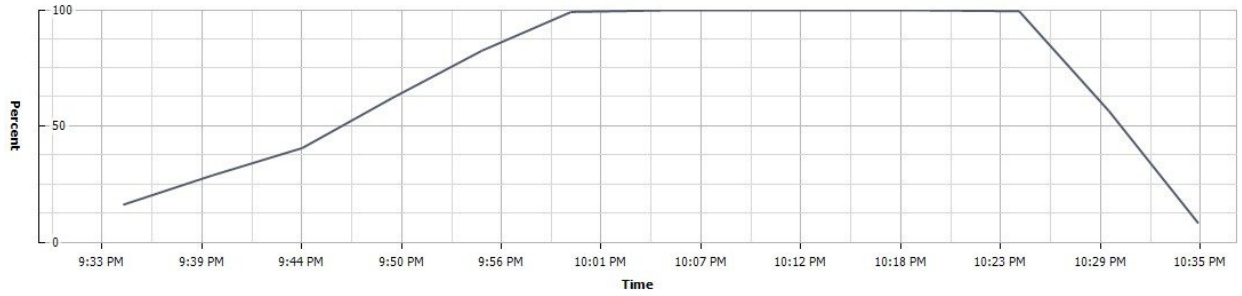


Figure 4 and 5 : CPU utilization throughout the test

Figure 6: English

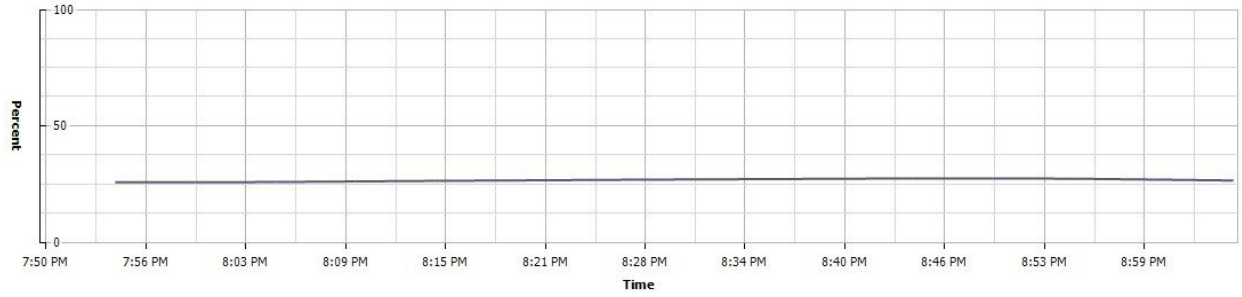


Figure 7: Japanese

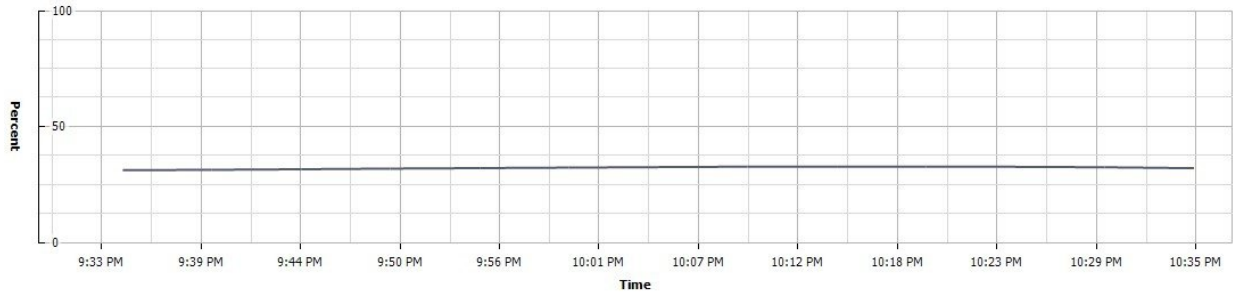


Figure 6 and 7 : Memory usage throughout the test

IO throughtout the test

Figure 8: English

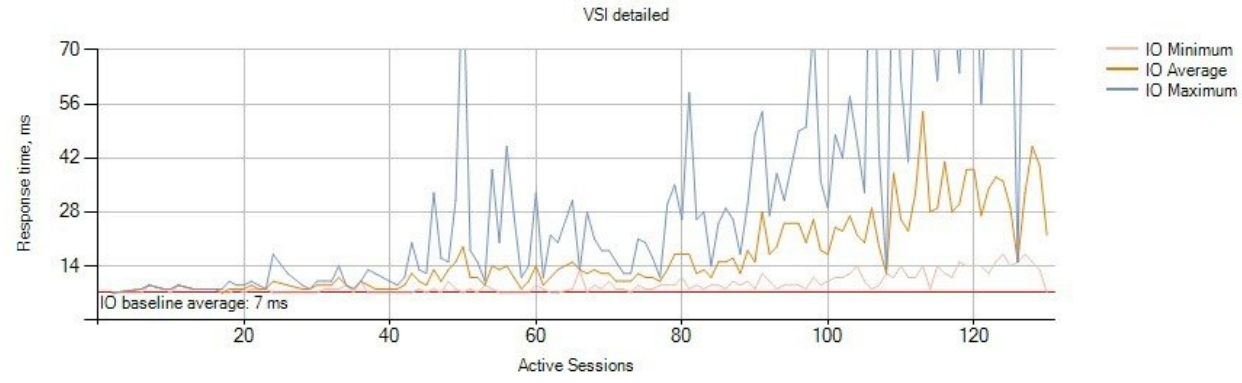


Figure 9: Japanese

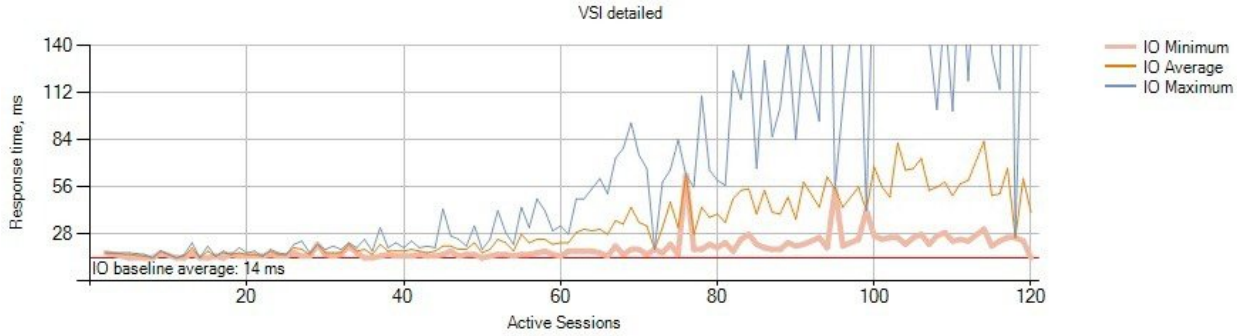


Figure 8 and 9 : IO throughout the test

Medium Workload Result

Medium Workload		
Desktop OS	**No.of Launched Sessions**	**VSIMax**
English	115	101
Japanese	95	88

Login VSIMax

Figure 10: English

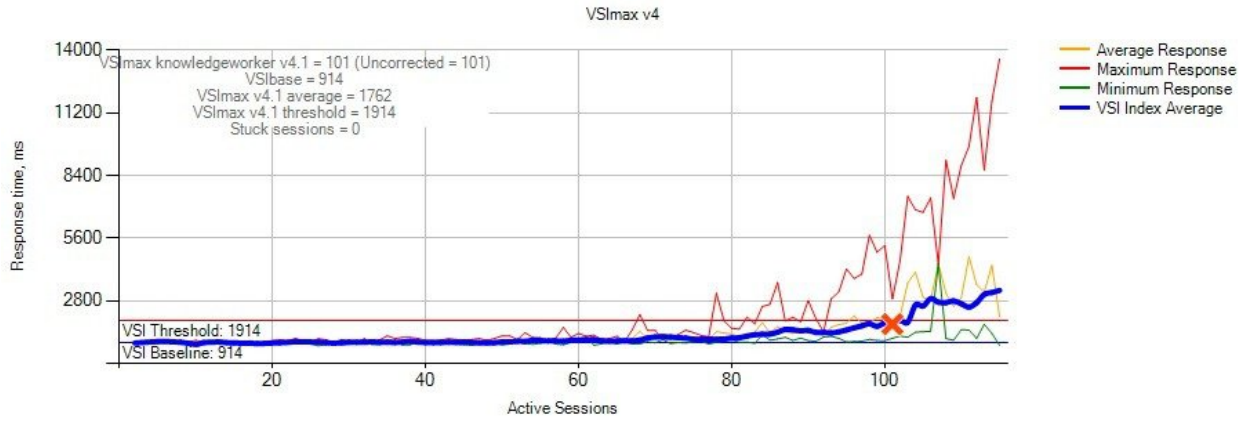


Figure 11: Japanese

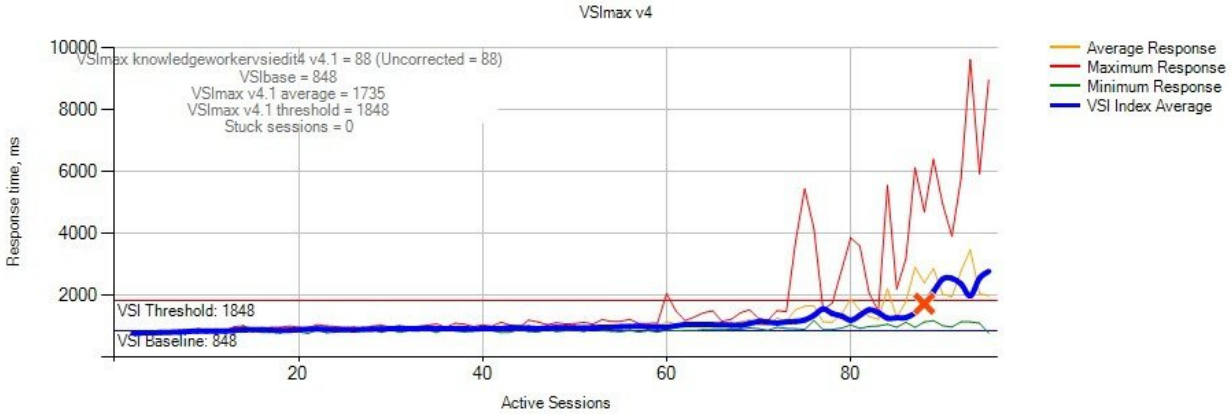


Figure 10 and 11: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M4 server with UCS Mini

Processor And Memory Utilization throughout the test

Figure 12: English

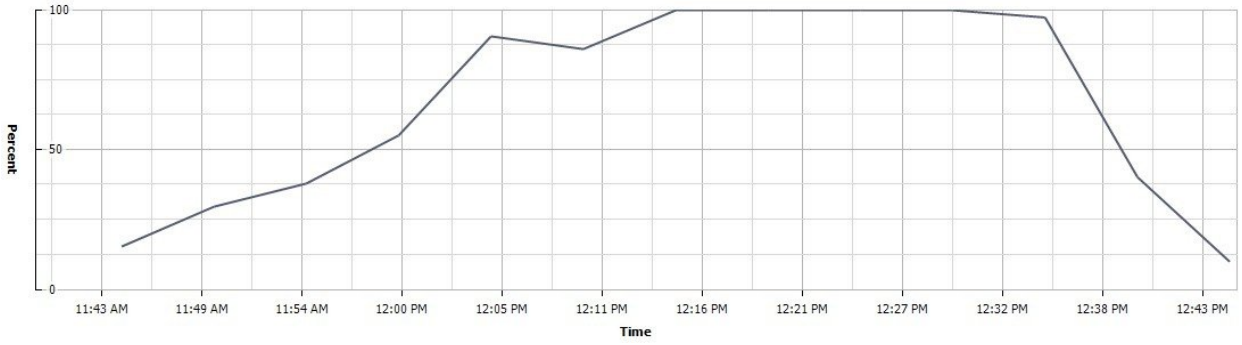


Figure 13: Japanese

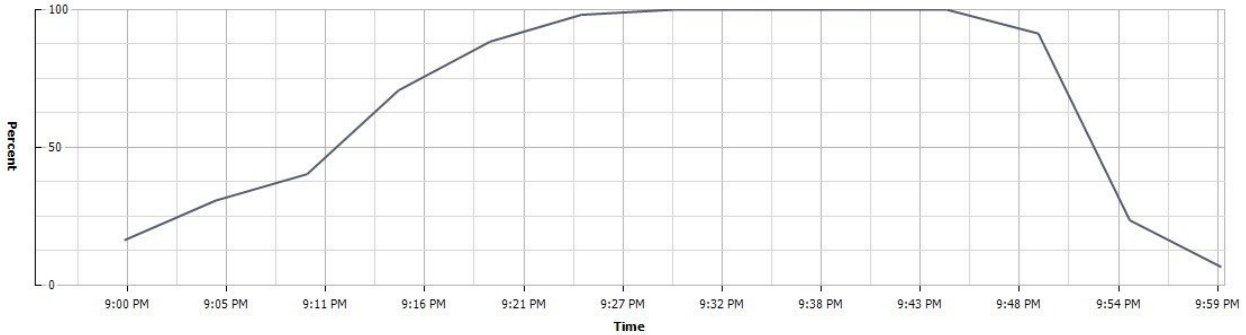


Figure 12 and 13 : CPU utilization throughout the test

Figure 14: English

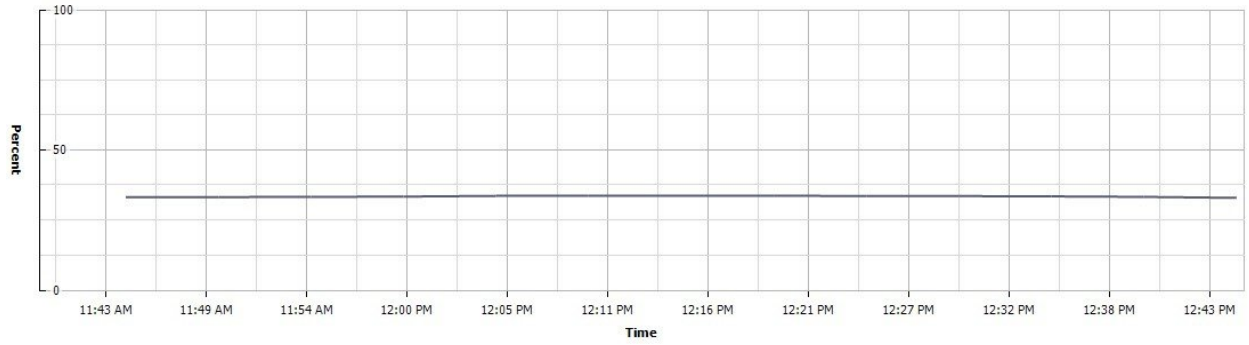


Figure 15: Japanese

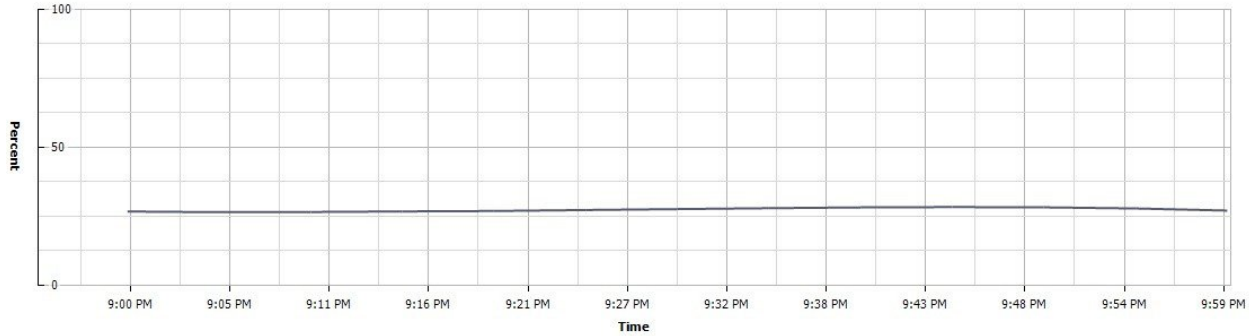


Figure 14 and 15 : Memory usage throughout the test

IO throughtout the test

Figure 16: English

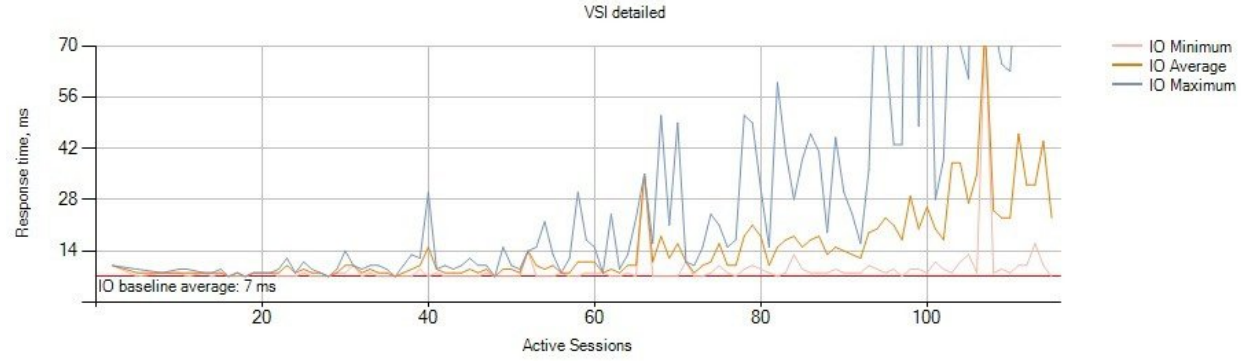


Figure 17: Japanese

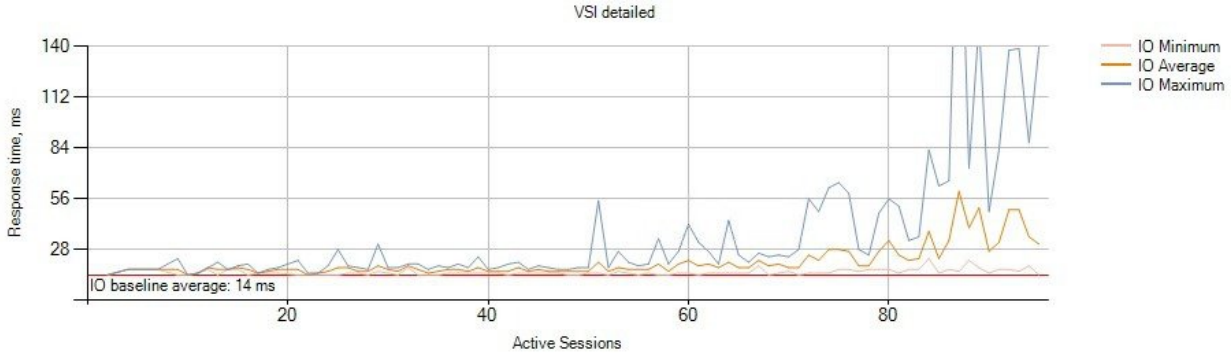


Figure 16 and 17 : IO throughout the test

Heavy Workload Result

Heavy Workload		
Desktop OS	**No.of Launched Sessions**	**VSIMax**
English	100	90
Japanese	85	80

Login VSIMax

Figure 18: English

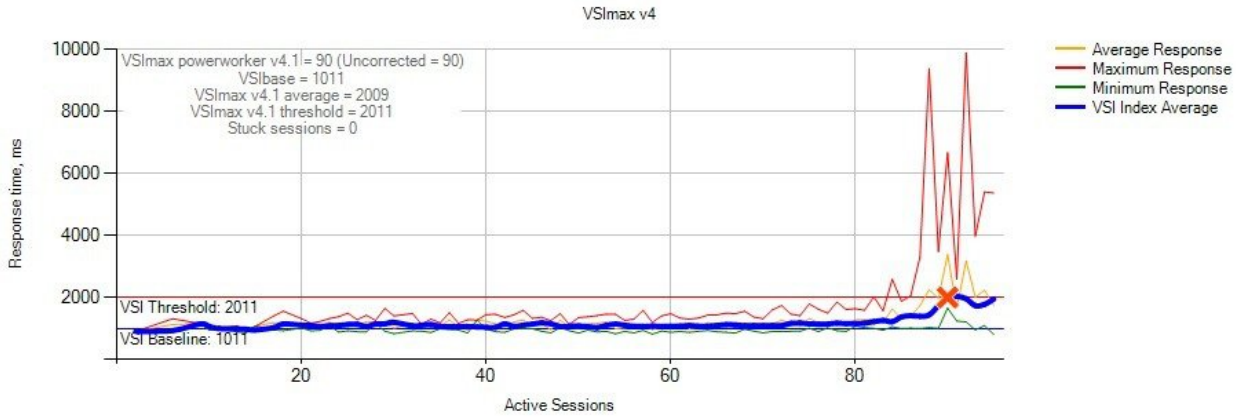


Figure 19: Japanese

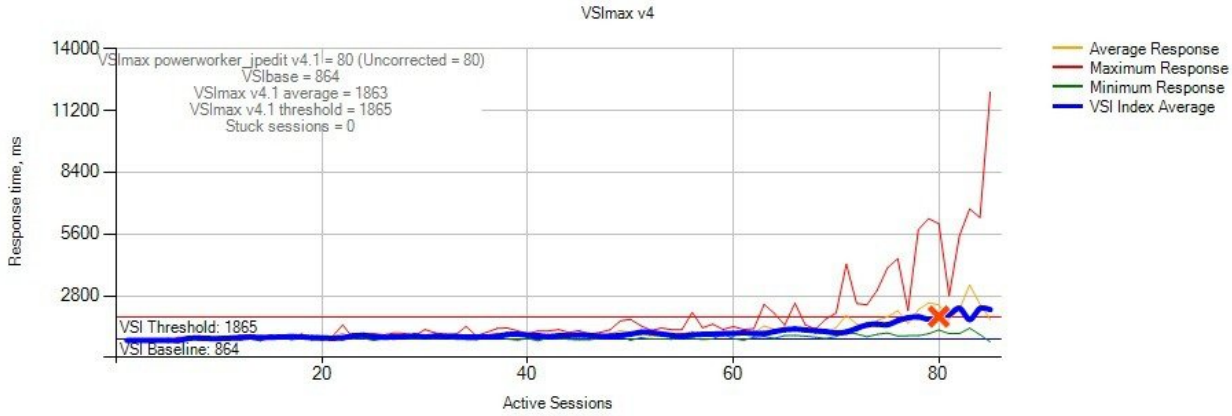


Figure 18 and 19: Average virtual desktop response times at various number of virtual desktops on the Cisco UCS B200 M4 server with UCS Mini

Processor And Memory Utilization throughout the test

Figure 20: English

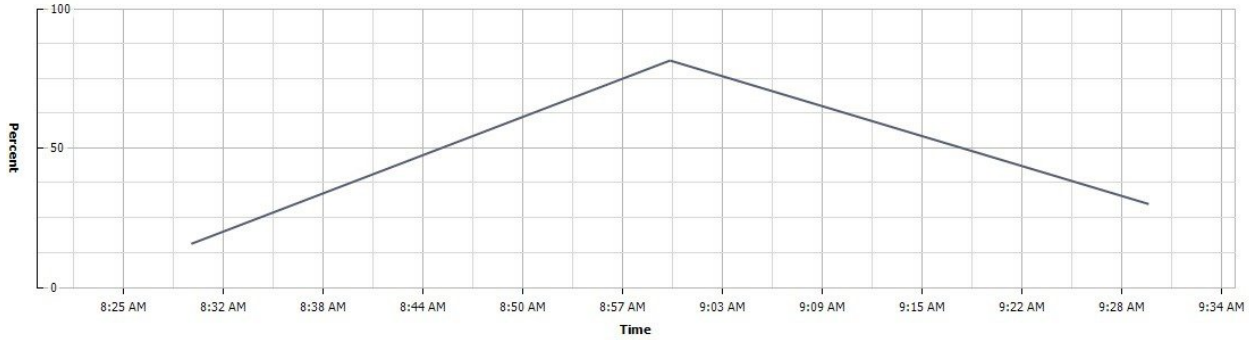


Figure 21: Japanese

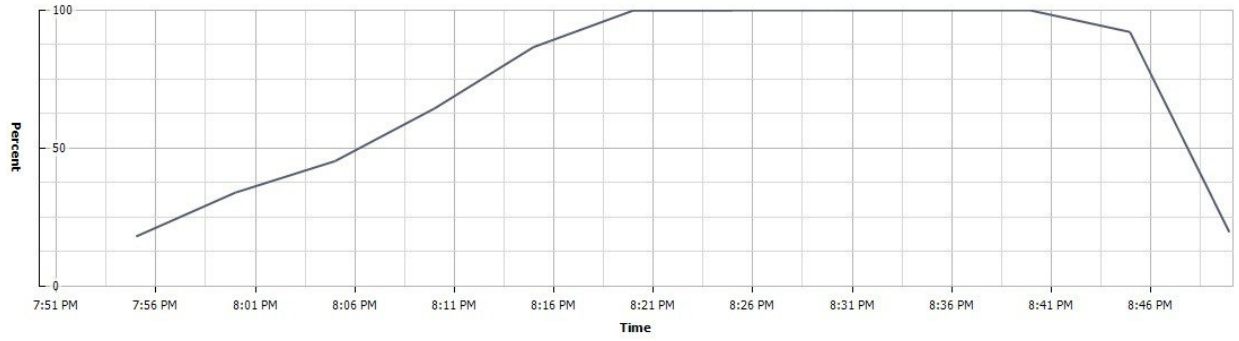


Figure 20 and 21 : CPU utilization throughout the test

Figure 22: English

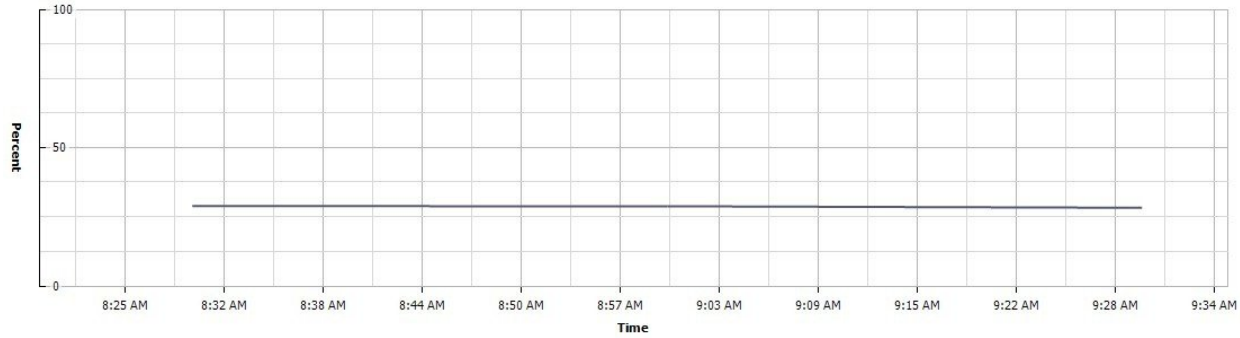


Figure 23: Japanese

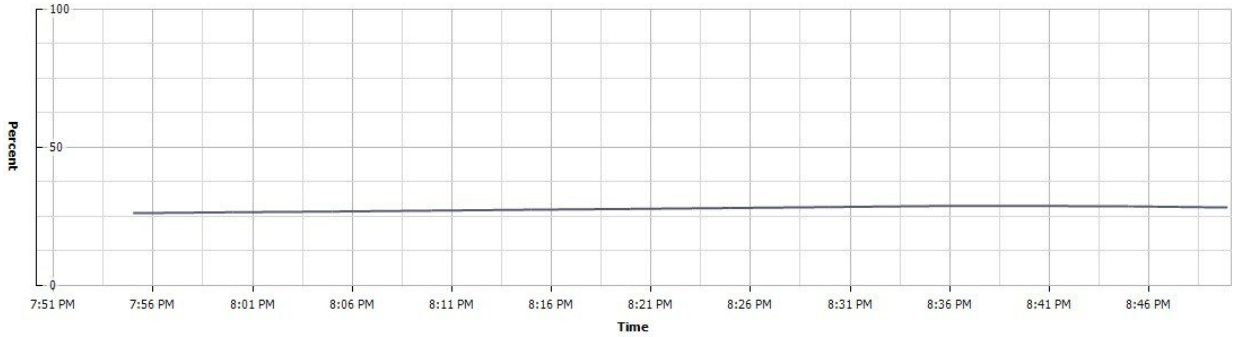


Figure 22 and 23 : Memory usage throughout the test

IO throughtout the test

Figure 24: English

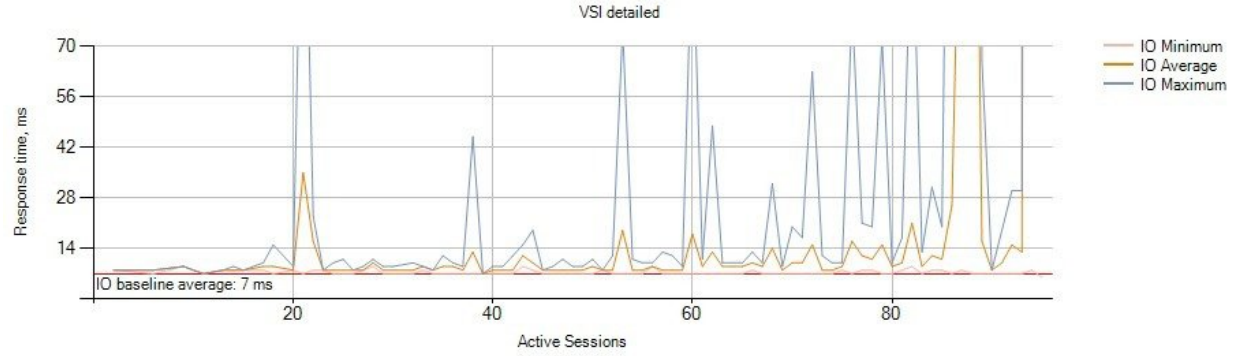


Figure 25: Japanese

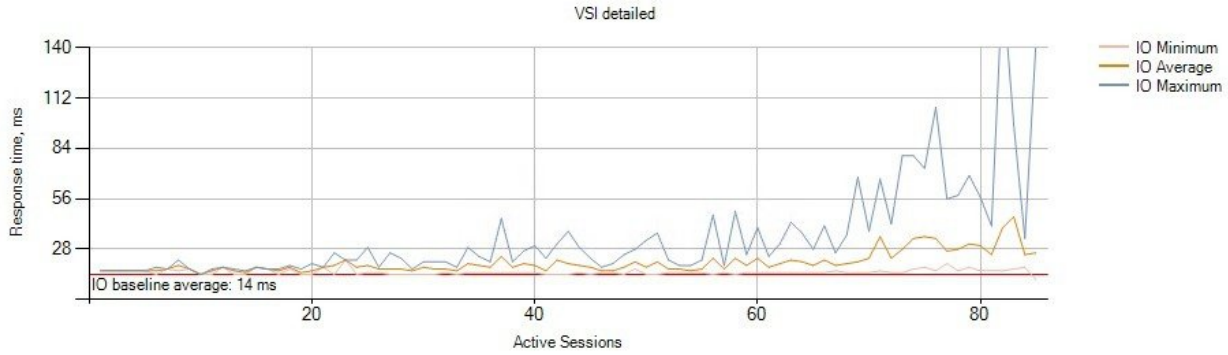


Figure 24 and 25 : IO throughout the test

Related Documentation

Cisco UCS Servers

http://www.cisco.com/c/en/us/products/servers-unified-computing/index.html

http://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-b200-m4-blade-server/index.html

Cisco UCS Mini

http://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-mini/index.html

http://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/ucs-b-series-blade-servers/ucsmini-specsheet.pdf

Login VSI

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

VMWare Horizon View

https://www.vmware.com/support/horizon-view/doc/horizon-view-602-release-notes.html