



Validating Adobe Connect Client on VMware® View Desktops

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Introduction

Many businesses deploy VMware View to simplify desktop and application management, and ultimately increase control and security for their IT staff. VMware View is the only end-to-end solution that simplifies IT management, increases security and control of end users, while decreasing cost by centrally delivering desktop services from the cloud. Additionally, VMware View increases flexibility by allowing users to connect to their View Desktop from a variety of devices including desktops, thin or zero clients, and mobile devices.

When using a View Desktop, a virtual machine hosted on ESX, the user's programs are installed and executed within the virtual machine, and their data is secured in the data center. Users access their View Desktop through a VMware View Connection Server from a lightweight client device on the desktop that may have no operating system at all (a zero-client) or a reduced version of a standard operating system (thin clients). Users may also use a VMware View Client on their older desktop PCs to access their View Desktop and run applications that they used previously on physical desktops.

Companies are also increasingly using web-based meetings to increase productivity, enhance their communications and to save costs on business travel. Adobe Connect is a leading web collaboration offering in this area. Adobe Connect provides the capability for meeting participants to collaborate and share information, and communicate using rich real-time voice and video capabilities.

This paper provides technical considerations and best practices for running an Adobe Connect client in View Desktops in order to participate in Adobe Connect web based meetings.

Testing Overview

VMware and Adobe jointly conducted testing to validate that customers can participate in Adobe Connect web meetings from View Desktops.

The testing had the following goals:

- Verify that the Adobe Connect client can launch web-based meetings successfully from a VMware View desktop.
- Verify that participants can view shared screens and documents and that the quality is acceptable.
- Verify multiple View Desktop sessions running on the same ESX host can simultaneously present webcam streams as part of an Adobe Connect web meeting with acceptable voice and video quality

Further descriptions of the features of Adobe Connect 8 and VMware View 4.6, are given in the following sections.

About Adobe Connect

Adobe® Connect™ is an enterprise web conferencing solution for online meetings, eLearning, and webinars used by leading corporations and government agencies. It is based on Adobe Flash® technology (and it requires that the Flash Player be installed on the Adobe Connect Client side).

The key features of Adobe Connect 8 are:

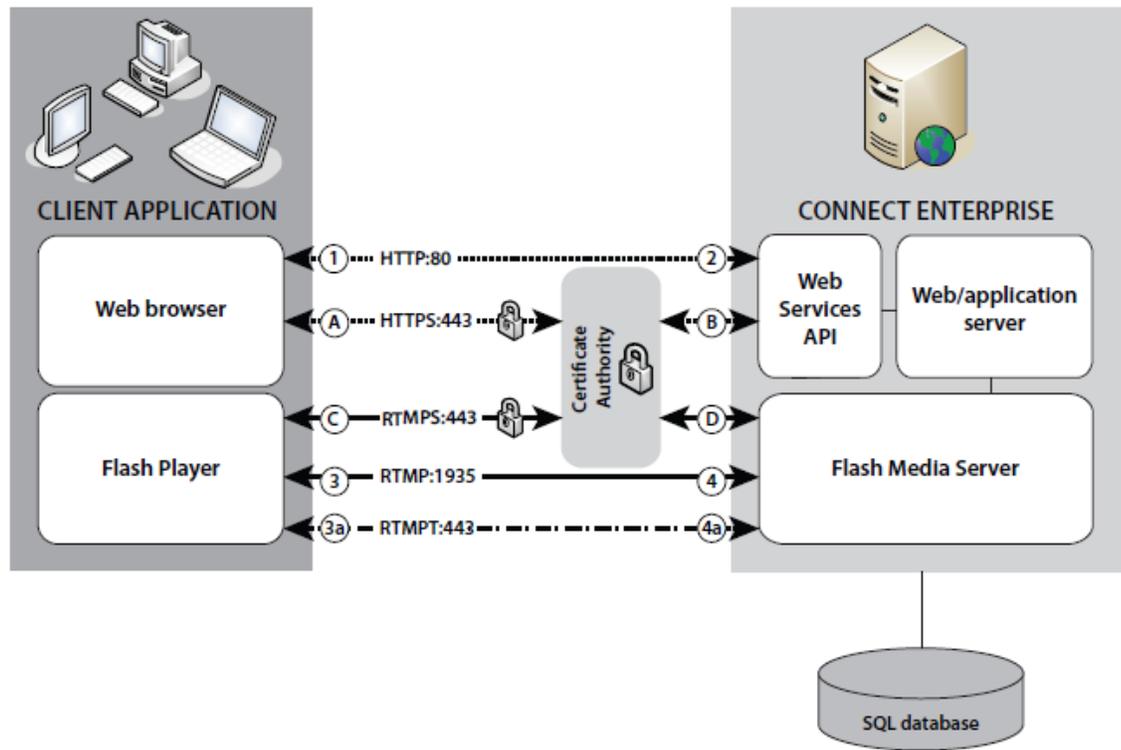


- **Simplified interface:** A primary focus of Adobe® Connect® 8 is usability. It has a simplified interface with enhanced layouts and organized controls, accessibility functions, and one-click sharing,
- **Collaborate efficiently:** To collaborate effectively, dispersed teams need to be able to share ideas and communicate freely, as well as capture decisions and results. Adobe Connect 8 offers flexible and robust collaboration capabilities that enable teams to drive better results.
- **Rich audio and video experiences:** Adobe Connect 8 provides rich multimedia experiences for participants with integrated audio and video conferencing.
- **Improved access and extensibility:** Busy professionals working on multiple projects with global teams need to be able to track down key people, instantly collaborate, and respond quickly to meet deadlines. This can be achieved through plug-ins for Microsoft Outlook, Adobe Creative Suite® 5 software, and Microsoft Communication Server clients.
- **Highly secure and enterprise support:** Adobe Connect 8 is web conferencing software for the enterprise. With strengthened security capabilities and improved support for virtualization and meeting resiliency, Adobe Connect is ideally suited for enterprise deployments.
- **Ensure easy meeting access for all participants:** Today, there is a growing need to collaborate with customers, partners, and colleagues in multiple locations, across different hardware platforms and operating systems, on networks with varying bandwidth capacities, in real time and asynchronously.
- **Enable rich, highly collaborative interactions:** At the heart of Adobe Connect is its ability to significantly improve collaboration for the enterprise. With Adobe Connect, meeting hosts leverage a robust set of capabilities to drive highly effective, collaborative interactions.
- **Manage meetings and content effectively:** For efficient collaboration, powerful content and meeting management tools and capabilities are a must. With Adobe Connect, hosts have full control over meeting room layout and appearance, meeting room persistence, participant roles and privileges, content creation, storage, and access.

Technical Layout

Figure 1 shows how the Adobe Connect Client (labeled as “CLIENT APPLICATION” in the figure below) typically connects to the Adobe Connect Server (labeled as “CONNECT ENTERPRISE” below). For the purposes of the testing described in this document, the Adobe Connect Client was placed in a virtual machine that was controlled by VMware View. The Adobe Connect Server side of the product was centrally hosted by Adobe during our tests. We did not address virtualizing the Adobe Connect server as that test had been done on an earlier validation exercise (Refer to the Deployment Guide for Adobe Connect Pro here).

Figure 1. Adobe Connect - Data Flow Diagram



The Adobe Connect Server uses a set of protocols for communication with the Adobe Connect Client. These include HTTP, HTTPS, RTMP, and RTMPS. Adobe’s Real-Time Messaging Protocol (RTMP) is optimized to deliver real-time, high-impact streams. RTMPS is the secure implementation of RTMP.

The connection paths vary depending on whether or not the communication is encrypted between the Adobe Connect Client and the Adobe Connect Server. Unencrypted connections are made over HTTP and RTMP and follow the paths described in the following description. The numbers below correspond to the numbered arrows in the data flow diagram above. Here is a description of the message flows that make up an Adobe Connect meeting.

Number Description:

- 1 The client web browser requests either the initiation of a meeting or content URL over HTTP:80.
- 2 The web server responds and transfers the content or provides the client with information to connect to the meeting.
- 3 The client Flash Player requests a connection to the meeting on the Adobe Connect Server over RTMP:1935.
- 4 The Flash Media Server responds and opens a persistent connection for Acrobat Connect streaming traffic.
- 3a The Client-side Flash Player requests a connection to the meeting but can only connect over RTMPT: 443.
- 4a The Flash Media Server responds and opens a tunneled connection for Acrobat Connect streaming traffic.

Encrypted connections are made over HTTPS and RTMPS, and follow the paths described below. The letters in the table correspond to the letters in the data flow diagram.

Letter Description

- A The client web browser requests a meeting or content URL over a secure connection on HTTPS:443.
- B The web server responds and transfers the content over a secure connection or provides the client with information to connect to the meeting securely.
- C The client-side Flash Player requests a secure connection to Flash Media Server over RTMPS:443.
- D Flash Media Server responds and opens a secure, persistent connection for Acrobat Connect streaming traffic.

A client initiates the first connection to the application server. These connections, such as those for login requests, file publishing or content and event management, are made through HTTP or HTTPS. After the client engages in real-time communication, a connection to the Flash Media Server is started, and the Adobe Connect Server uses either RTMP or RTMPS to deliver streamed content to the Flash Media Player on the Adobe Connect Client side.

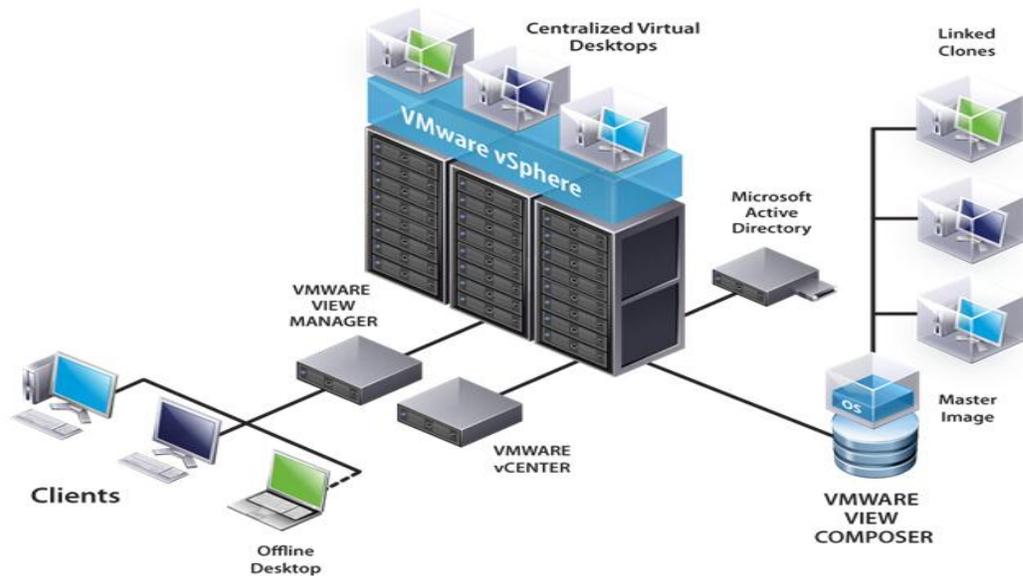
By default, RTMP travels over port 1935 and it is used for live interactions in an Acrobat Connect Professional meeting (video, voice, and screen sharing). HTTP traffic travels over port 80, and is used for client login and in order to transfer content (slides, documents, and so on). An RTMP connection uses port 443 if a connection through port 1935 is not successful, or if the server is configured to use SSL encryption. However, tunneling incurs additional overhead, and negatively affects streaming performance. This is described in more detail in the section entitled “The Validation Testing Process” below.

About VMware View

VMware View is the industry’s leading desktop virtualization platform, and the only purpose-built solution for delivering desktops as a secure managed service. Built on the proven power of VMware vSphere™, VMware View provides the platform, management tools and rich user experience that organizations need to reduce costs, streamline administration and increase end-user satisfaction.

Figure 2 depicts the typical architecture of a VMware View implementation showing its different features.

Figure 2. VMware View System Architecture



Some of the features and benefits of VMware View are:

- **Reduce Operational Costs:** Centralizing your desktop infrastructure with VMware View makes it faster, easier and less costly for IT staff to provision, deploy, maintain and monitor desktop images across their entire life cycle.
- **Simplify Desktop and Application Management:** Using VMware View, we can manage tens of thousands of virtual desktops, applications and user data from a centralized administrative interface while simplifying key IT processes such as provisioning, configuration management, connection brokering, policy enforcement, and application assignment.
- **Deliver Rich User Experiences on Demand:** VMware View is the only solution that lets you deliver rich user experiences for end-users across your organization on any device at any location—online or off the grid. High-performance PC-over-IP (PCoIP) technology lets users work with their virtual desktops via a LAN or WAN connection, while VMware View Client with Local Mode enables them to work offline and leverage local processing resources. The result is a seamless user experience that combines the best of VDI and client virtualization.
- **Automated Desktop Provisioning:** Provides a single management tool to provision new desktops or groups of desktops, and an easy interface for setting desktop policies. Using a template, you can customize virtual pools of desktops and easily set policies, such as how many virtual machines can be in a pool, or logoff parameters.
- **Advanced Virtual Desktop Image Management:** Based on the mature Linked Clone technology, VMware View Composer enables the rapid creation of desktop images from a golden image. Updates implemented on the parent image can be easily pushed out to any number of virtual desktops in minutes, greatly simplifying deployment, upgrades and patches while reducing desktop operational costs. With the core components of the desktop being managed separately the process does not affect user settings, data or applications, so the end-user remains productive on a working desktop, even while changes are being applied to the master image.
- **Availability and Scalability:** VMware View delivers high availability, with no single point of failure. VMware High Availability (HA) ensures automatic failover and provides pervasive, cost-effective

protection within your virtualized desktop environment to ensure service level agreements are met and downtime is minimized. Advanced clustering capabilities on the physical and virtual layers provide enterprise-class scalability with no single point of failure. VMware View can also be integrated with existing systems management platforms already deployed within the enterprise.

The Validation Testing Process

The Adobe Connect server components have already been tested and validated on VMware virtualization platforms. More details on the Adobe Connect Server validation testing can be found at the following link <http://www.vmware.com/resources/techresources/10105>

For the purposes of testing the Adobe Connect Client in a View Desktop, the team utilized a centrally hosted Adobe Connect server provided by Adobe. This Adobe Connect server was hosted in a datacenter in Dallas and accessed from VMware's site in Palo Alto over the internet.

The testing of the Adobe Connect client, which was run from within the View Desktop, was conducted manually through a series of real world tests during a live Adobe Connect web meeting. The full VMware View environment was built at the VMware Independent Software Vendor (ISV) lab in Palo Alto, California. The thin clients and zero clients used in the testing are hardware devices that allow connections to a VMware View Connection Server. Several different types of client devices were used to connect with each View Desktop session, in separate tests.

In each test, the Adobe Connect web meeting was started from a browser running inside a View Desktop. Internet Explorer (IE) versions 7.0, 8.0 and 9.0 were installed in separate View Desktops and the Adobe Connect meeting session was launched from each browser.

The connection between the Adobe Connect Client and the Adobe Connect Server was made using "RTMP:1935". We did not use the tunneling connection in order to reduce the network latency.

Although the Adobe Connect Server was hosted outside of the VMware internal lab network, the available network bandwidth from the VMware ISV lab to the Adobe Connect server was not measured. Optimizing the network between these two locations was considered to be beyond the scope of this validation exercise.

The testing was performed by launching twenty View Desktop sessions. One of the View Desktop users launched the meeting as Host and the remaining View Desktop users joined the meeting as participants.

To test the document sharing functionality within the Adobe Connect web meeting, a Microsoft PowerPoint presentation was displayed by one of the meeting participants. In order to test the Adobe Connect screen share functionality, the entire desktop was shared and a Notepad application was launched and contents were typed in manually.

Three audio analog headsets were connected to the zero clients and subsequently to the Adobe Connect meeting. These headsets were disconnected and re-connected back to other available VMware View desktops (via the zero clients) in the meeting to observe the audio quality. The Teradici audio driver was used for the headsets for audio playback and recording.

Note: VMware does not provide support for the Teradici audio drivers. Customers using zero clients along with the Teradici audio driver should contact Teradici for availability and support.

Webcams were connected incrementally going from 1 up to 3 and then each user on the separate VMware View desktops shared their own webcam video within the meeting. The webcams were physically connected to the USB ports on the thin and zero clients.

The VMware “esxtop” utility was used to measure the resource utilization of the VMware View desktops during the meeting and the “Wireshark” utility was used to measure the network bandwidth usage between VMware View desktops and the thin/zero clients when the webcams were connected to the meeting.

Hardware and System Host Configuration

Table 3.1 and 3.2 describe the configuration of ESX Servers, storage and client hardware used in the solution architecture.

Table 3.1 ESX Host Hardware Configuration

Hardware	Configuration
Server	Two HP Proliant BL 460c G6 servers. Each server is equipped with: <ul style="list-style-type: none"> • 2.8 GHz dual quad-core Intel Xeon E5560 • 48 GB RAM One HP Proliant BL 460c G6 servers. Each server is equipped with: <ul style="list-style-type: none"> • 3.0GHz dual quad core Intel Xeon E5450 • 16 GB RAM
Storage	NetApp FAS 3020: <ul style="list-style-type: none"> • Aggregate of 21 disks • RAID DP • 4 Gbps fibre connectivity • 10K RPM disks • FC protocol

Table 3.2 Client Hardware Configuration

Hardware	Configuration
Web Camera	<ul style="list-style-type: none"> • Microsoft HD Life Cam Studio 1080p • Microsoft HD Life Cam 720p • Logitech Webcam C 905 • Logitech Webcam Pro 9000 • Logitech HD Webcam Pro C910
Thin Client	<ul style="list-style-type: none"> • Wyse C90LEW WES (Win 7 embedded OS)
Teradici Zero Client	<ul style="list-style-type: none"> • Wyse P20 Firmware Version 3.3/3.4
Microphone and Headset	<ul style="list-style-type: none"> • Logitech Clear Chat Premium Headset (Analog) - connected to the zero clients only

Installed Software

Table 4 lists the software used in the solution architecture.

Table 4. Software Installation

Software Provider	Software Configuration
VMware	vSphere 4.1, vCenter Server 4.1, VMware View 4.6 Site Recovery Manager 4.1.1

Microsoft	Microsoft AD/DNS
Adobe	Adobe Connect Client Add-in, Adobe Flash Player*
Adobe	Adobe Connect Server 8 (Used centrally hosted server)
Teradici (Can be downloaded free from Teradici web site)	Teradici Audio Driver (Note that this driver is not supported by VMware and is only recommended for use with zero clients)

*For Adobe Connect client installation requirement, follow the link below:
<http://www.adobe.com/products/adobeconnect/tech-specs.html>

Virtual Machine Configuration

Table 5 describes the configuration of virtual machines running on ESX host servers in the solution architecture.

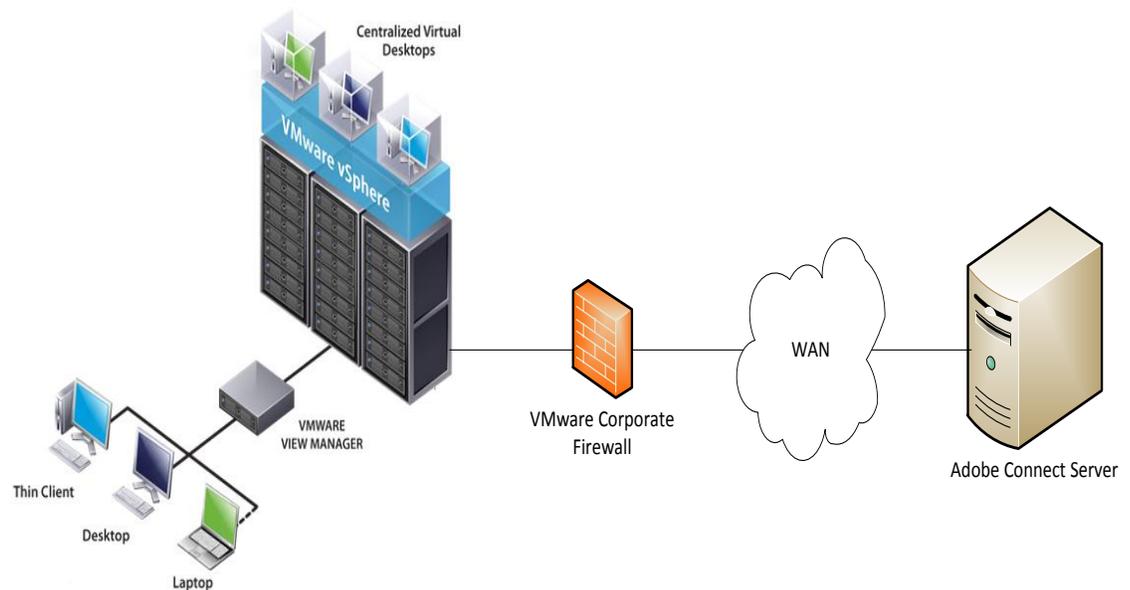
Table 5. Virtual Machines

Virtual Machine (VIEW Desktops)	Hardware Configuration
Windows XP SP3 – 32 bit (IE 7, 10.3.181.34, Adobe Connect Add-In)	<ul style="list-style-type: none"> • 2 vCPU • 2 GB memory • 1 Ethernet card (vmxnet 3 driver) • 12 GB storage (vmdk only)
Windows 7 Professional 64-bit (IE 8 or IE 9, Flash Player 10.3.183.5, Adobe Connect Add-In)	<ul style="list-style-type: none"> • 2 vCPU • 2 GB memory • 1 Ethernet card (vmxnet 3 driver) • 20 GB storage (vmdk only)
Virtual Machine (SERVERS)	Hardware Configuration
VMware View Manager Server: Windows Enterprise Server 2003 – 64 bit	<ul style="list-style-type: none"> • 2 vCPU • 4 GB memory • 1 Ethernet card (E1000 driver) • 15 GB storage (vmdk only)
VMware vCenter Server: Windows Enterprise Server 2003 – 64 bit	<ul style="list-style-type: none"> • 2 vCPU • 2 GB memory • 1 Ethernet card (E1000 driver) • 15 GB storage (vmdk only)
AD/DNS Server: Windows Enterprise Server 2003 – 64 bit	<ul style="list-style-type: none"> • 1 vCPU • 1 GB memory • 1 Ethernet card (E1000 driver) • 15 GB storage (vmdk only)

Test Configuration

The technical architecture for testing Adobe Connect Client with VMware View is described in the following sections.

Figure 3. Adobe Connect Client–VMware View Technical Architecture



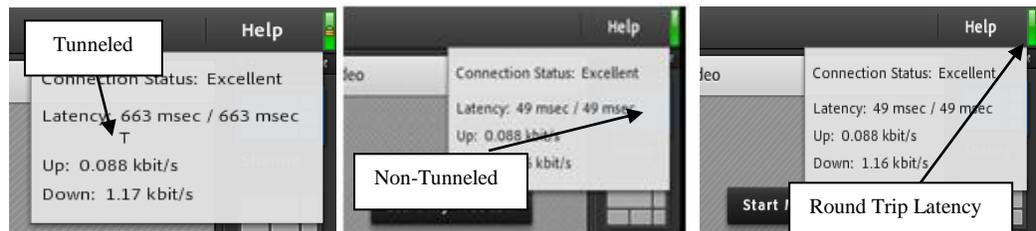
The technical architecture included:

- VMware View desktops (Virtual Machines) running on two ESX servers located in the ISV lab environment.
- The VMware View Manager, VMware vCenter Server and Windows AD/DNS running as virtual machines with the ISV lab environment
- The thin clients and zero client machines were located in a separate building from the data center where the VMware View components were hosted. Connectivity from one building to the other on the VMware campus was over the VMware corporate network, which was shared with other users.
- The Adobe Connect Server 8.0 was hosted centrally in the Adobe Dallas datacenter and was accessed via a web browser from each of the View Desktops.
- Webcams and audio headsets were connected to the thin/zero clients before any Adobe Connect meeting was launched.
- The “Wireshark” network bandwidth measurement tool was installed in the VMware View desktops in order to measure the network traffic between the View desktops and the thin/zero clients.
- The network bandwidth availability between the thin/zero clients and the ESX servers was 100 Mbps

(This was shared among many VMware users working outside of this test environment).

- The following discussion applies to both physical and virtual forms of Adobe Connect Server setup. The network infrastructure was configured so that the round-trip latency was minimized as much as possible and the connection was “non-tunneled”. Specific rules were set at the VMware corporate firewall in order to bypass internal proxy servers so that these optimizations could be achieved. The diagram below shows the method used within the Adobe Connect Client screens for detecting whether the connection to the Adobe Connect Server was tunneled or not and what the latency numbers were between the Adobe Connect Client and the Adobe Connect Server, during a meeting. We expended considerable effort in network configuration to keep the “latency” figure shown in the rightmost image below to less than 120ms for this testing, as recommended by the Adobe staff.

Figure 4. Tunneled, Non-Tunneled and Round Trip Latency from Adobe Connect Client Meeting



Test Steps

To test the configured system, the following meeting workflow was executed.

1. Login into Adobe Connect using the browser on the VMware View desktop
2. Create a new meeting
3. Launch the meeting
4. Download the Adobe Connect Addin/Preinstall Connect Addin
5. Start “Screen Share” OR start “Document Share” within the Adobe Connect meeting
6. Start a webcam
7. Start VoIP
8. Start whiteboard
9. Start chat
10. Start Poll Pod
11. Change Layouts
12. End the Meeting

In addition to the above test, the following two tests were also carried out:

- Multiple meetings were initiated from a single desktop by a single user
- An Adobe Connect meeting host received a notification when a new guest wanted to join in the meeting and only if the host allows it was the new guest allowed to participate in the meeting

Test Results

A summary of the tests and resulting observations is given below.

The following table shows resource utilization of the virtual machines representing the View Desktops as measured using the “esxtop” utility.

Virtual Machine	Avg. CPU Utilization	Avg. Memory Utilization	Avg. Network Utilization	
			MBits Received/sec	MBits Transmitted/sec
Host or Participants (Sharing Screen and Web Cam)	25 - 30%	25 - 30%	4.6	3.0
Participants	10 - 15%	10 - 15%	0.5	0.2

The following table shows resource utilization of the View Manager and vCenter Server components as measured using “esxtop” utility during the Adobe Connect meeting:

Virtual Machine	Avg. CPU Utilization	Avg. Memory Utilization
View Manager	< 5%	5%
vCenter Server	< 5%	5%

The following table shows the network bandwidth utilization from thin/zero clients to the View desktops measured using the Wireshark tool during the Adobe Connect meeting. The measurement was done by running a single View desktop session and setting the webcam video quality to “low” from the Adobe Connect Client meeting menu option (Meetings → Preferences → Video).

Type of Device	Type Of Operation	Avg. Network Bandwidth Consumption (Mbit/sec)
Thin Client	Desktop is accessed from thin client using PCoIP protocol (no Adobe meeting is launched from the browser)	0.2
Thin Client	Adobe meeting is launched and only screen share operation is performed. No webcam and audio is connected.	0.5
Thin Client	Screen Share with Webcam and Audio	16.0
Zero Client	Desktop is accessed from zero client using PCoIP protocol (no Adobe meeting is launched from the browser)	0.2
Zero Client	Adobe meeting is launched and only screen share operation is performed. No webcam and audio is connected.	0.6

Type of Device	Type Of Operation	Avg. Network Bandwidth Consumption (Mbit/sec)
Zero Client	Screen Share with Webcam and Audio	9.0

Testing Summary

The Adobe Connect Client works well in the VMware View environment and all the tested functionality passed the tests successfully.

The testing results given here show that the Adobe Connect client can share documents and screens, connect multiple webcams, and multiple audio headsets in the meeting and this works well within the VMware View environment.

Specific testing with webcam and audio headphones was done. We found that the user experience in the meeting was good while webcam video was shared between the different participants. The audio quality was also good and no delay or choppiness was observed. The quality of the speaker’s voice was completely clear to the other participants when the speaker was driving the presentation.

The team tested up to 3 webcams concurrently within an Adobe Connect web meeting successfully without any video refreshes delay. The team decided to limit the test to 3 concurrent webcam sessions because of the network bandwidth restrictions between the zero/thin clients and the ESX servers. If additional bandwidth were available, we could have tested additional concurrent webcam sessions.

The “document share” and “screen share” functions in the meeting worked well and there was no visible latency observed. When the presentation was scrolled or slides were changed, the updates were seen instantaneously in the other participating desktops. The typing sequence in Notepad was also being updated instantaneously in the other meeting participants’ windows.

The round trip latency of network traffic observed between the Adobe Connect Server and thin/zero client was in the range of 100 – 120 msec. during the testing.

End User Experience Matrix for Webcam Video:

The webcam video refresh in the table below was measured using the visual experience of the end user. No specific measurement tool was used to measure webcam video quality.

Type of Operation	Results
One webcam connected (1 zero Client)	Webcam video quality good.
Three webcam connected (2 zero client + 1 thin client)	Webcam video quality good.
Three webcam connected (3 zero client)	Webcam video quality good.

End User Experience Matrix for Audio:

Type of Operation	Results
Three headsets were connected to the meeting and the	The participants can listen to the audio without any

Type of Operation	Results
contents of the shared presentation were read.	interruption and the voice quality was clear. Leap movement between video and audio is in sync while the contents are read. There are occasional delay seen but it was no more than a second. This is visual observation and no tool is used for that.

Recommendations

The testing results indicate that the best performance when implementing the Adobe Connect meeting solutions can be achieved by using the best practices described below.

- Provide adequate network bandwidth between the thin/zero client and the ESX servers where the View Desktops are residing in order for a set of webcams to work seamlessly.
- For better streaming performance of the Adobe Connect meeting traffic, the connection to the Adobe Connection Server may have to be set to be “non-tunneled” using RTMP:1935 (an Adobe specific protocol: port number). This recommendation is made for the Adobe Connect Client irrespective of whether the desktop is virtual or physical.
- For better performance of the meeting, make sure that the round trip latency of network traffic to the Adobe Connect Server is as low as possible (Adobe recommends less than 150ms for the round trip latency). This recommendation holds for any Adobe Connect environment, whether virtualized or not.
- For low bandwidth network, set the video quality to use low resolution for the webcam. This can be set from the Adobe meeting “Preferences” menu option.
- Use the default “Flash Player” settings of VMware View Manager Administrator interface. Do not use the flash throttling option as it impacts the overall meeting quality.
- Deploy the VMware View Desktops using an automated pool (linked clone or full clone).
- Prepare the golden image of the VMware View desktops following the VMware View desktop optimization guides.
- Keep the server components and VMware View desktops on separate ESX hosts. That is, keep the VMware vCenter server, VMware View manager and AD/DNS server virtual machines on one ESX host and deploy the VMware View desktop (VMs) on separate ESX hosts.
- Do not use the proprietary USB video drivers that come with the webcam CD. It is recommended to use the generic USB driver “usbvideo.sys” when connecting the webcam in an Adobe Connect meeting on VMware View.
- When connecting a webcam in a thin or thick client, make sure that both the thin/thick client and the VMware View desktop use the same USB generic video driver “usbvideo.sys”.
- The “usbvideo.sys” file is located at C:\Windows\system32\ folder. Starting with Device Manager you can validate whether the camera is in fact using the generic Microsoft usbvideo.sys driver by selecting driver details. In case the camera uses a proprietary driver, you can force the system to select the “usbvideo.sys” in the following way (This example is for a windows 7 desktop):
 - Go to “Device Manager” and select “Imaging Device”.
 - Expand “Imaging Device” and select the webcam, right click on it and select “Update

- Driver Software”.
 - Select “Browse my computer for driver software”
 - Select “Let me pick from a list of device drivers....”
 - Select the Generic USB Video Device driver from the listing and then hit “Next”.
 - The device is now “updated” to the generic driver.
- It is recommended that you use zero clients with firmware version 3.3 or higher. The Teradici zero client does not support isochronous USB devices such as webcams in earlier version of the firmware. If you connect the webcam using an earlier firmware version, you may see a blank black screen in the video pod of the meeting.
- A small number of webcams come with audio functionality as well. Users can choose this audio device during a meeting or they can use the Teradici audio driver for voice. VMware does not support the Teradici audio driver.
- In order to get best use of a webcam in the VMware View environment with the PCoIP protocol, the webcam is required to be connected to a USB port that supports USB version 1.1 or higher. When connected to a USB 1.0 port, the webcam refresh may not be acceptable in a meeting session.
- Verify in the VMware View desktop control panel that “Sound and Audio Device” properties are set correctly. e.g. when the Teradici audio driver is installed, “Sound Playback” and “Voice Playback” are set to “Teradici Audio Driver”.
- Verify that the speaker output is set to the right device. e.g. if you intend to use the audio headset, then under “Sound and Audio Device” properties in “Advanced” button in “Audio” and “Voice” tab, the speaker option should be set to “Stereo Headphones”. By default this option is set to “Desktop Stereo Speakers”.
- Thin clients do not support analog headsets. If a thin client is used, make sure to use a USB headset instead of an analog one. The zero clients support both analog and USB headsets.
- When configuring the operating system on a thin client device, make sure that the correct components are in place to support the usbvideo.sys driver.

Conclusion

This paper discusses the validation testing that was done on Adobe Connect clients in a VMware View setup at the VMware labs in Palo Alto, California. General Adobe Connect web meeting functionality such as screen sharing, document sharing, webcam and audio features worked well in the VMware View environment. We successfully validated that the Adobe Connect client can launch web-based meetings with up to twenty participants and up to three webcams. All functions of Adobe Connect and VMware View products performed as expected.

Resources

For more information about VMware and related products, use the links and references below.

VMware References

- VMware Documentation:
<http://www.vmware.com/support/pubs/>
- VMware Licensing:
<http://www.vmware.com/support/licensing/>
- VMware Proven Best Practices (VIOPS):
<http://communities.vmware.com/community/viops>
- VMware Solutions/Product/Partner Podcasts:
<http://www.vmware.com/technical-resources/podcasts/>
- VMware Global Support KB:
<http://kb.vmware.com>
- VMware TV:
<http://www.youtube.com/user/vmwaretv>

Adobe Connect References

- Adobe Connect:
<http://www.adobe.com/products/adobeconnect.html>