VMware Workstation 9

WSX Overview

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Introduction

In VMware Workstation 8, VMware introduced the ability to share virtual machines with other Workstation users across the network and enabled remote connections to virtual machines running on ESXi/vSphere. Using VMware Workstation you could use any computer in your network to reach any virtual machine.

However, the world is evolving quickly and more people are moving to tablets and smart phones. It doesn't mean the end of desktops or servers, but it does change how people are accessing their data, applications and their virtual machines.

WSX is a prototype of a new web interface for Workstation that allows you to access your virtual machines from your tablets, smart phones, and any PC or device with a modern browser.

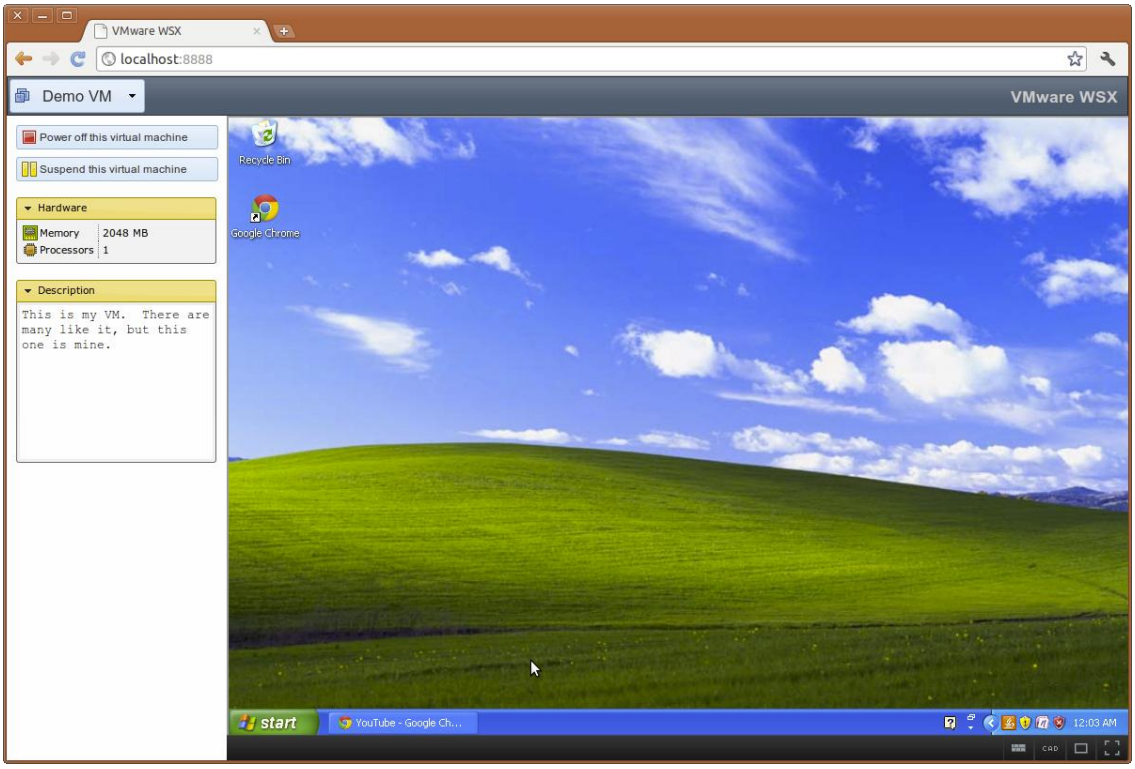

Figure 1: WSX in Google Chrome Browser accessing a Windows XP virtual machine running in Workstation

With WSX you can launch a browser, enter the URL for the WSX server, provide your credentials and connect to your virtual machine. You can use the touch screen or keyboard of your mobile device to directly interact with applications running in the virtual machine.

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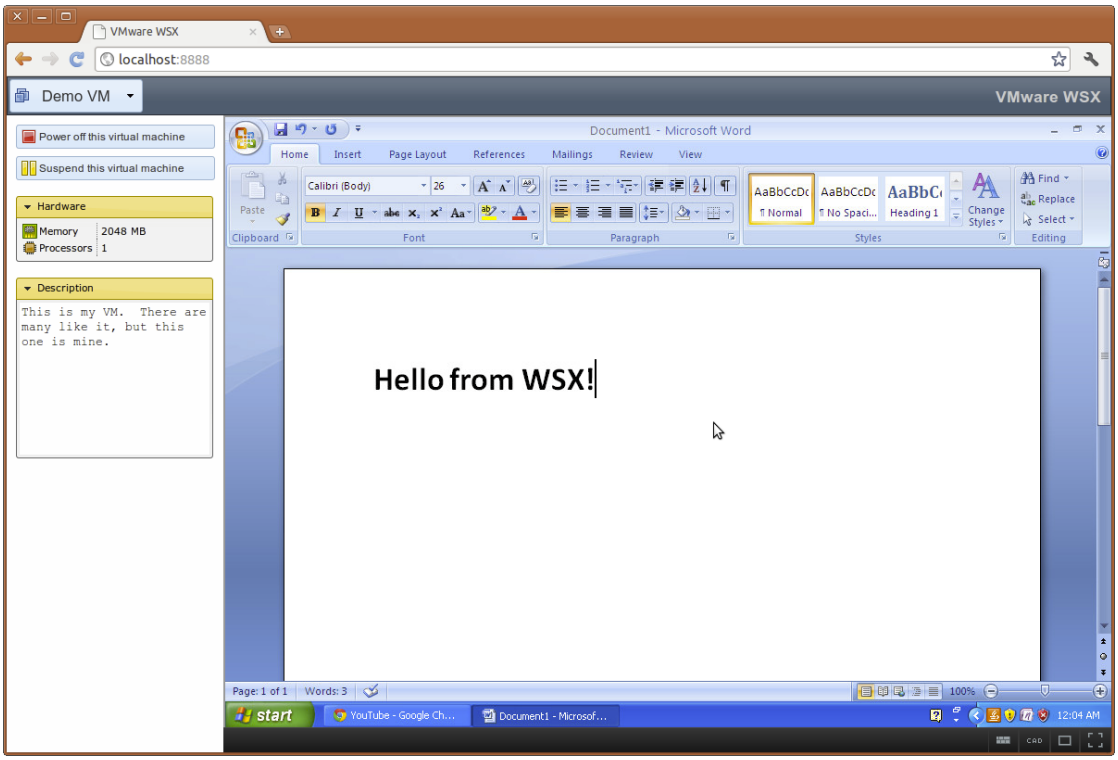

Figure 2: Document being written via the WSX interface in Microsoft Word running in a virtual machine hosted in the data center.

WSX is designed to enable virtualization professionals to access their virtual desktops. VMware has made a significant investment in delivering a good user experience when interacting with the remote desktop. We have focused on performance of the remoting protocol and believe we have accomplished our goal of providing a good interaction even when displaying your virtual desktop in full-screen mode.

WSX enables you to interact via the touch screen on a tablet or phone but also works well from a desktop with a mouse and keyboard. Even the mouse wheel inputs should be transferred to the remote desktop to make scrolling and zooming easy! (Note: Mouse wheels events work a bit differently across different browsers, so depending on which browser you use, the sensitivity may be off. It works pretty well in Chrome and Firefox.)

Streaming a 720p YouTube video inside a virtual machine and accessing it from Chrome or Firefox on a modern PC or an iPad, delivers near-native quality and frame rates. However, interactively using graphic intensive applications or attempting to play video games via WSX pushes it to its limits.

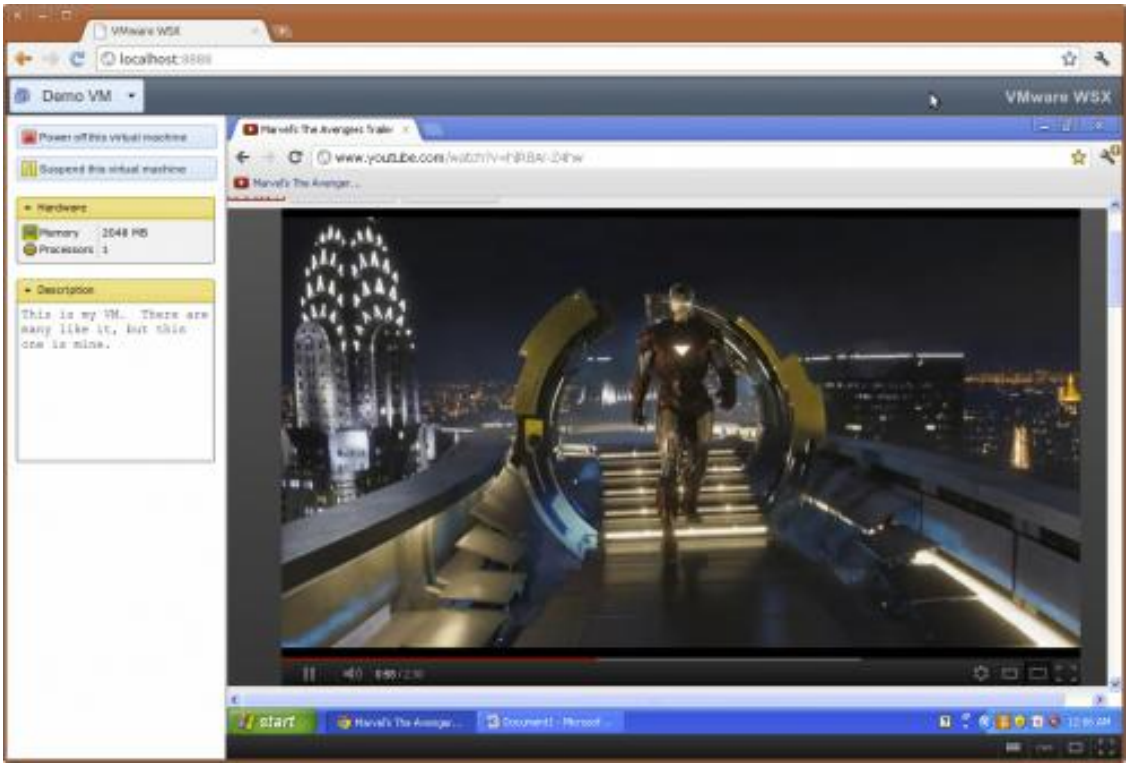

Figure 3: WSX displaying a Windows desktop running a YouTube HD video

No Apps and No Plug-ins

WSX enables you to power your virtual machines on and off, suspend them, and interact with them all from a web browser without plugins.

Not having to install a native application on each device or plug-ins in the browser makes WSX incredibly easy to use and avoids many maintenance headaches and security concerns.

You can walk into the Apple store, pick up an iPad right off the shelf, and in less than a minute, start using your desktop back home. (Of course, your WSX server must be accessible outside of your network)

Figure 4: WSX displaying Windows applications on a Retina display.

iPad Support

The WSX user interface on an iPad includes a button for you to toggle the screen resolution which works great for using WSX on an Apple device with a Retina display. WSX also maps many of gestures to mouse events, giving you support for right-click, middle-click, and scrolling.

- To right-click, just tap-and-hold part of the screen. Or you can press with one finger and tap with a second. Pressing instead of tapping with the second finger is equivalent to holding down the right mouse button, letting you drag around the screen. The actual click will take place where you press the first finger.

- Just add a third finger to the mix to work with the middle button. That is, press with one finger and then tap (or press) with two more fingers.

- Drag up or down with two fingers to scroll. This works just like the mouse wheel.

Speech-to-Text on iOS also works! You know that little microphone button on the iOS keyboard on the latest iPad/iPhones? Pressing that allows you to “type” with your voice on native applications. From within WSX, open up an application in the virtual machine (Word, for example), pop up the iPad onscreen keyboard, and hit the microphone. Begin speaking, and your words will appear automatically in your application as if you were typing them. It’s fun!

What can someone do with WSX?

- You can work on your documents on your virtual desktop from your iPad from anywhere, knowing your data is safe in your network.
- If your virtual machine is acting up while you’re out at dinner, you can connect to it from your phone/tablet to see what is going on instead of rushing home.
- Run a presentation or live demo within a VM and when your laptop inevitably dies at the most inopportune time, you can grab anyone else’s laptop or iPad and quickly resume where you left off.
- Play Windows Solitaire from your iPhone.
- Run Windows 8 in your virtual machine, put WSX in full-screen mode on your iPad, and baffle your friends.
- We are very interested to see what other creative ways our community comes up with to use WSX!

How does it work?

WSX is a web server that you install in your network that serves up a web interface for accessing your Workstation Shared virtual machines and your virtual machines running on vSphere/ESXi 5.

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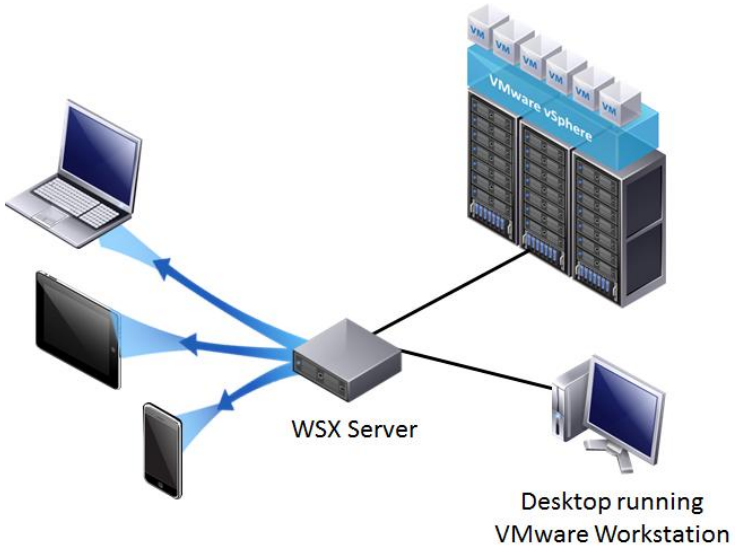

Figure 5: WSX architecture diagram

WSX makes use of modern web technologies, such as HTML5 Canvas elements and Web Sockets, along with a small but powerful web server to turn your browser into a fully capable remote console.

The hypervisor that runs the virtual machine includes the ability to pipe the mouse, keyboard and screen information to and from a remote console. This technology is currently used by Workstation to remotely connect to virtual machines running on vSphere. This technology does not require any special drivers or software to be installed in the virtual machine in order for it to work with all supported operating systems. Installing VMware Tools into the virtual machine provides a better user experience but is not necessary.

The WSX server talks to Workstation, ESXi, and vSphere via WebSockets to handle the exchange of credentials necessary to make a connection to the hypervisor running the desired virtual machine. After establishing a link, WSX relays the appropriate mouse, keyboard and screen information to the JavaScript client running in the web browser on the device. With this data, the JavaScript client updates the HTML5 Canvas element to accurately display the virtual desktop and then it sends back any input from the user.

WSX does make some adjustments to the data stream for specific devices to provide the best possible experience on each device.

Encryption

WSX can be configured to encrypt all the traffic between the WSX server and your computer or mobile device over an SSL connection. You only need to generate or purchase an SSL certificate, name the files wsx.crt and wsx.key and place them in your /etc/vmware/wsx/ssl/ directory (on Linux) or Application Data\VMware\VMware WSX\SSL directory (on Windows).

Why isn't this the default, you may wonder? Of course we'd love to just generate self-signed certs by default and encrypt everything, but it turns out there are some browser compatibility issues with self-signed certs and WebSockets, which we use for all our communication. iOS, in particular, is currently unable to support this configuration.

There are several places on the web where you can get free or inexpensive certificates that should work fine for testing.

We highly recommend installing an SSL certificate to enable HTTPS for WSX. Another option is to require access to WSX through a secure VPN.

Installing WSX

WSX can be installed and run on either Windows or Linux. It can be installed on its own server, on the same system where Workstation is installed (highly recommended) or in a virtual machine.

Windows Installation

1. Begin by downloading VMware –WSX-Server-1.0.0-812388.msi
    a. www.vmware.com/go/downloadworkstation
2. Run the installer. The following welcome screen will appear. Please simply follow the instructions on each screen.

Figure 6: WSX Initial installation screen

3. Accept the EULA – Press Next
4. Choose a port that you would like to run the WSX Service on (default 8888). Press Next.
5. Press Finish

Linux installation instructions provided upon request.

Using WSX

WSX is known to work well with the latest versions of Chrome, Firefox, and Safari. It also works with the Internet Explorer 10 preview although we are aware of several usability issues. For tablet users, WSX works very well with the iPad running iOS 5+ using the Safari browser. Android users running Ice Cream Sandwich may have some luck with Google Chrome for Android, but VMware is still working on better Android compatibility. Currently capturing on screen keyboard input from Android devices is a challenge and we have contacted Google for help.

To begin using WSX, open your Chrome Browser and enter: http://localhost:8888. If you chose a different port number during installation enter that number after the colon. (http://localhost:*port*)

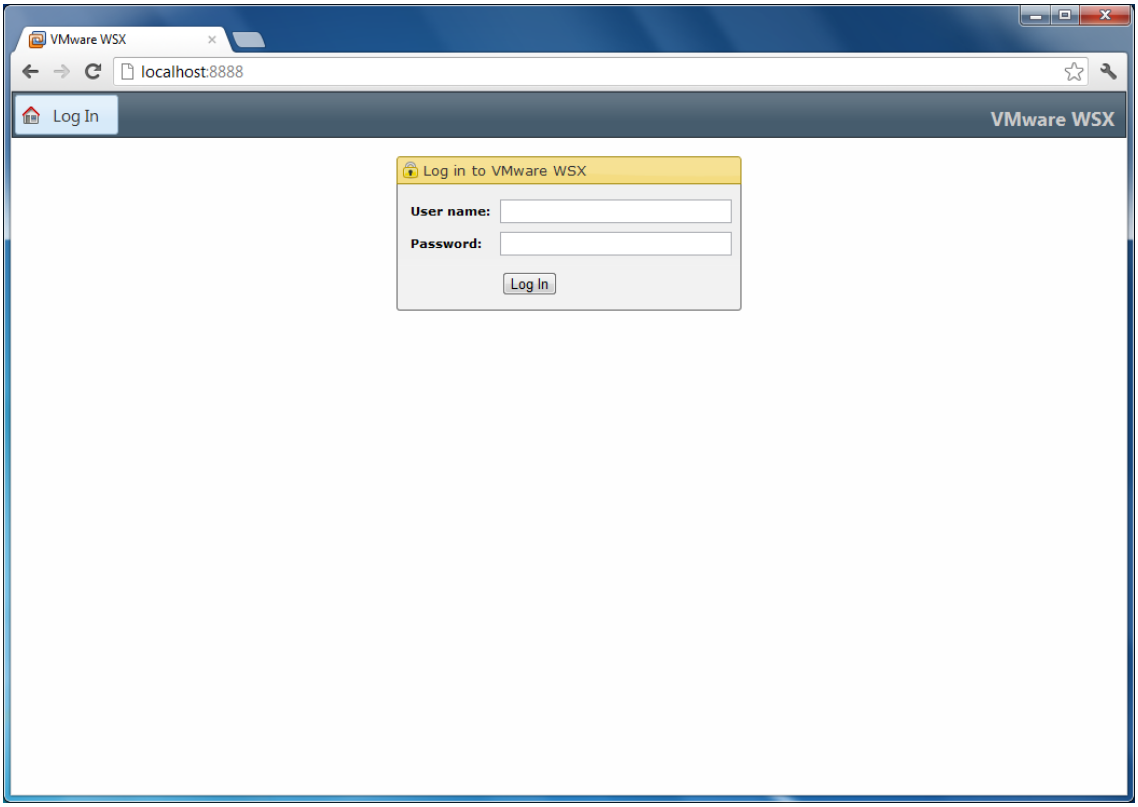

Figure 7: WSX Login page

By default WSX uses the Windows account management system and allows local system administrators to log into VMware WSX. You should be able to log into WSX using the same username and password that you used to log into Windows. **Note: WSX does not currently support domain accounts.**

User Interface

The Home page serves as a jumping point to get to your servers and to configure your server list. If you have installed WSX on the same server where Workstation 9 has been installed, the virtual machines that you have shared in Workstation will automatically be listed under the Shared VMs server.

To Add a Server to the list (a Workstation 9 installation on another machine or ESX host) simply select “Add a Server” from the home screen and enter the address of the server. It will be added to the list of available servers on the home screen and will persist when you log in again in the future.

To connect to a server and access a virtual machine, click on the name of the server in the list. If the connection is successful you will be prompted to provide credentials to list the available virtual machines that you have permission to access.

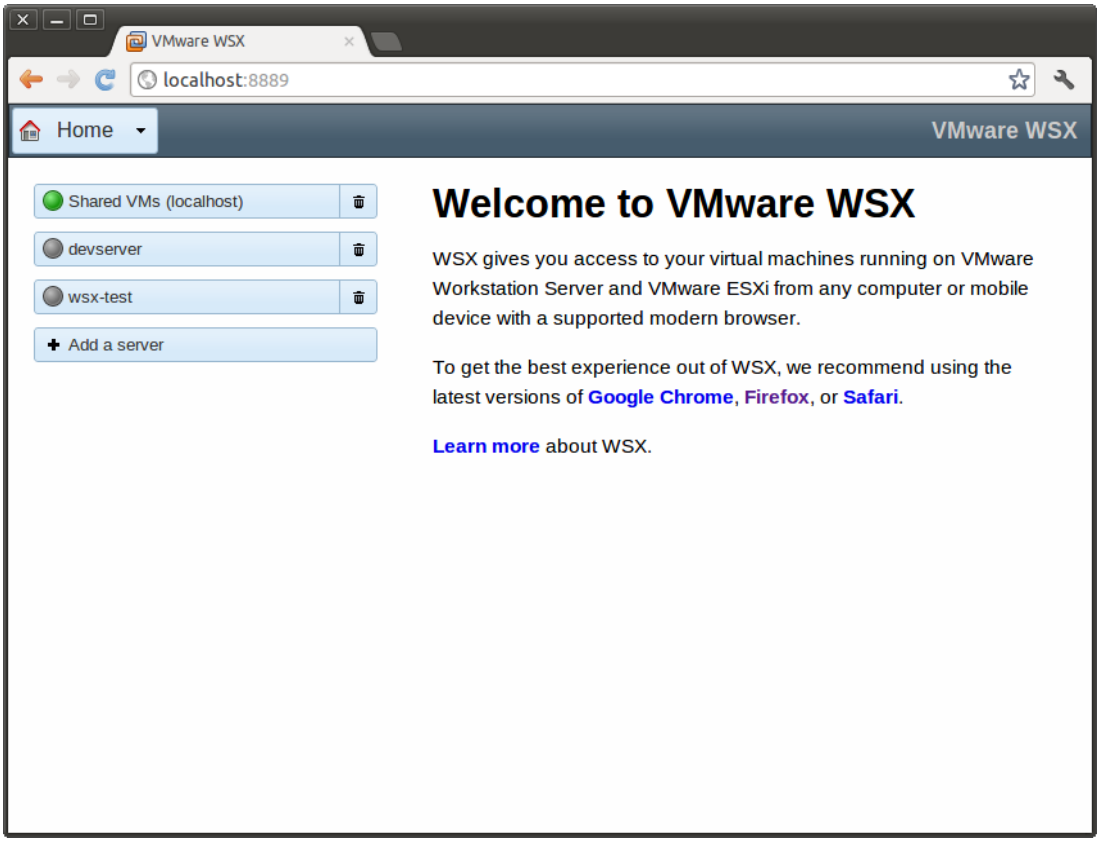

Figure 8: WSX Home Screen

Servers that you are logged into will have a green sphere next to their name and will remember your credentials until you close your browser.

After supplying the necessary credentials you will be taken to the Server page which will list the available virtual machines on that server.

The Server page is an alphabetic list of virtual machines that you have permission to connect to. The list can be searched or filtered to find the virtual machine you are looking for. Search for your VMs by typing part of their name, or filter them by power state. The icon next to each virtual machine indicates their power state (powered on, suspended etc.)

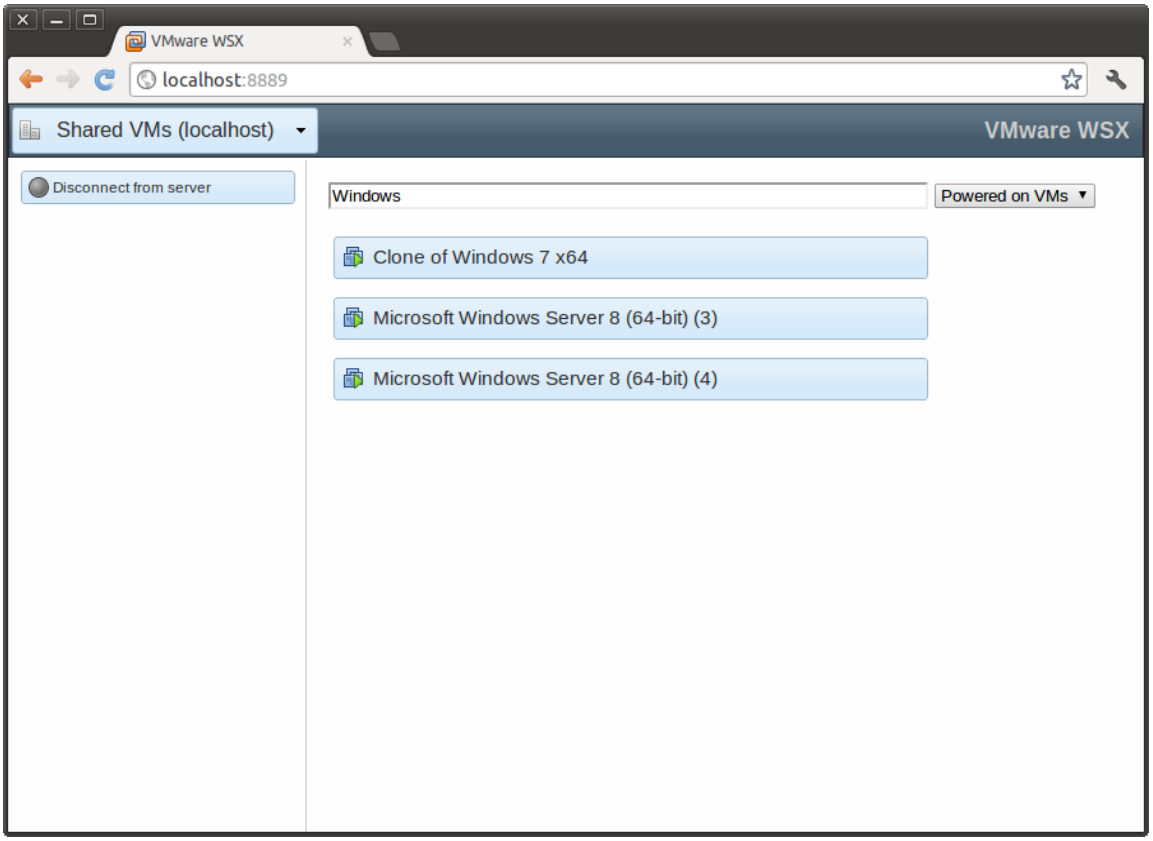

Figure 9: Figure 9: WSX Server Screen with three virtual machines

To connect to a virtual machine, simply click on the name of the virtual machine from the list on the Server page. Clicking on the virtual machine name will take you to the virtual machine interface where you will be able to perform power operations on the virtual machine (power on, power off, suspend), see the number of processors and memory allocated to the VM, and review the description.

If you do not have any virtual machines available to connect to, you may not have any virtual machines being shared or you do not have the necessary permissions required to access any of the Shared virtual machines. You will need to launch Workstation to Share your virtual machines and change ownership or permissions on the virtual machine in order for it to appear in the list.

To power on a virtual machine, click on either the operation button on the left hand side of the screen or the giant play icon in the center of the console screen.

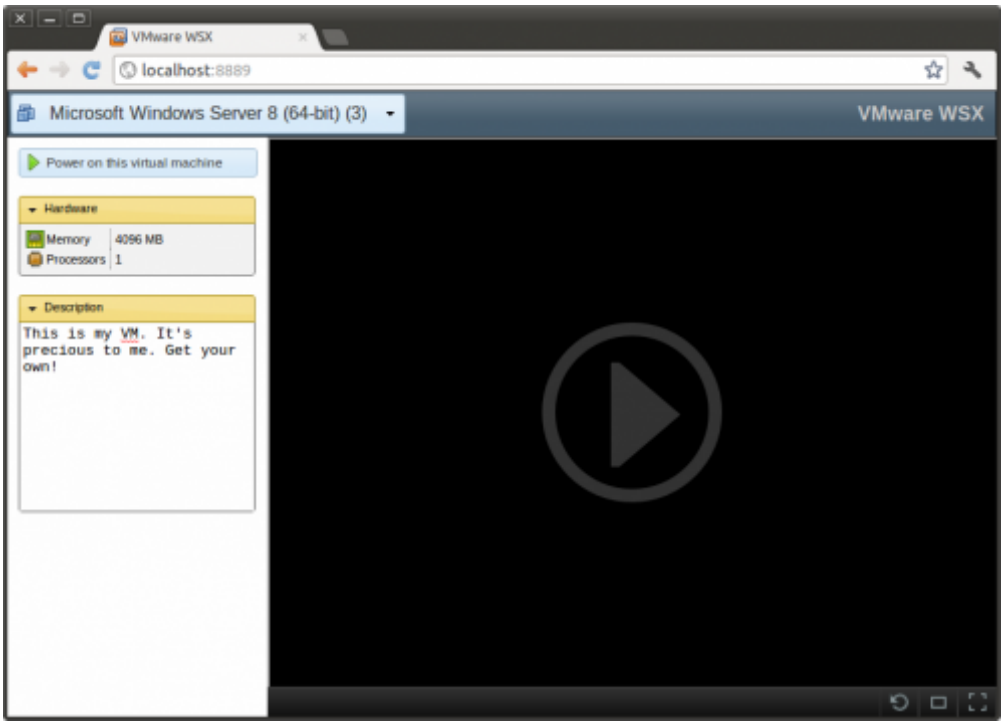

Figure 10: WSX displaying a powered off virtual machine

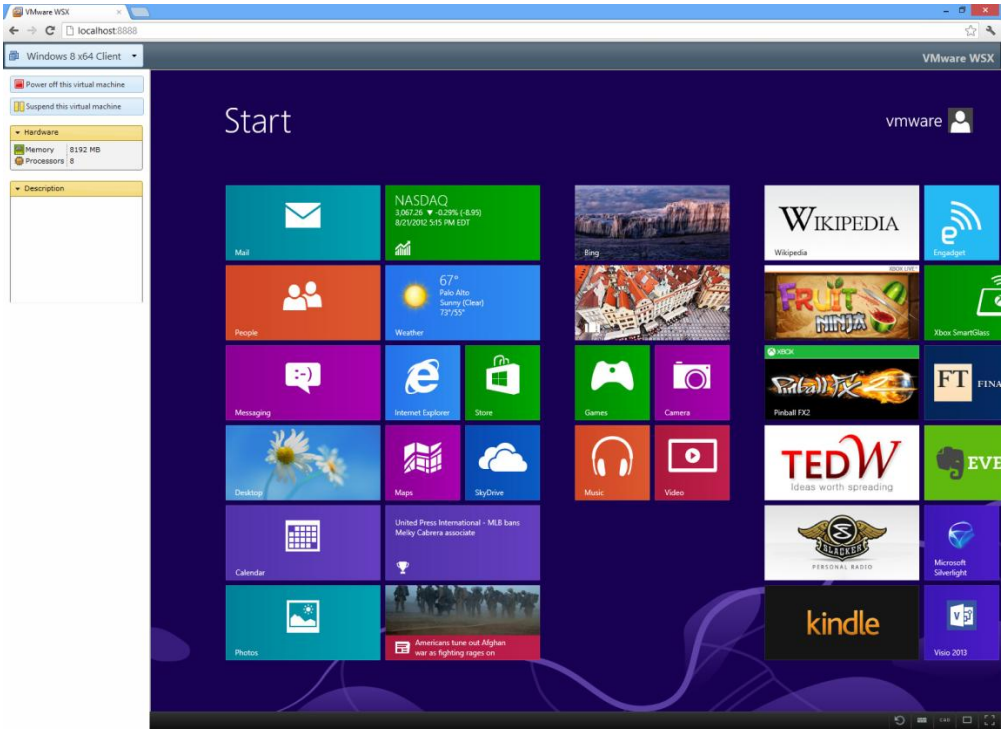

Figure 11: Windows 8 virtual machine accessed via WSX

To interact with the virtual desktop simply click or touch in console area.

In the lower right hand corner there are several icons that enable you to interact more easily with the virtual machine.

 Reload – Refreshes the console screen which can come in handy after resolution changes or if the connection is broken.

 Keyboard – On tablets, this will display the onscreen keyboard. On PCs this icon does not currently do anything.

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 Ctrl-Alt-Delete – To send this command to the guest, press this button.

 Display – Toggles the left-hand pane to provide more room for the console

 Full-Screen – Puts the browser in full screen mode to provide the maximum real estate for interacting with the virtual desktop.

Known Issues

Please remember, this is a new prototype, and is not a finalized product! WSX is currently in its infancy. We are excited about the potential of a web interface to VMware Workstation, and we realize that WSX is not yet production ready. However, we believe it is far enough along for our customers to realize many benefits and to provide VMware with valuable feedback to help us define the future direction for this feature.

There are some known issues in WSX and we are continuing to make improvements at a rapid pace. Below are some of the issues that we are aware of in this release:

- We use the on-screen keyboards on mobile devices, which don't contain things like Control keys, function keys, etc. So for now, those keys aren't available. We will be working on a solution for this shortly.
- There's no sound. There are some emerging browser standards that we are waiting for the industry to adopt before we implement this.
- On the iPad, there are issues still with international characters.
- Occasionally, the screen may stop updating or a black screen will appear. When this occurs, there is a Reload button you can press to re-establish the connection to the VM's display.
- No 3d-graphics on shared VMs. This is a limitation of Shared VMs not WSX
- WSX does not currently support domain accounts. The server you install WSX on must have a local system administrator account to use.
- The CTRL-ALT-DEL button in the WSX interface occasionally will not unlock Windows VMs running on ESX / vSphere. This prevents users from logging into Windows virtual machines and is something we are actively working on fixing.

We would appreciate you providing feedback on WSX in the VMware Workstation Communities pages http://communities.vmware.com/community/vmtn/desktop/workstation