A Quick start guide to deploying Citrix XenDesktop™ v7.1 on VMware vSphere™ 5.1 and Tintri VMstore™
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This deployment guide is intended to provide an admin with intermediate skills with the information needed to quickly get a Citrix XenDesktop 7.1 environment up and running in a VMware vSphere 5.1 and Tintri environment. With this document in hand, you can have your Proof of Concept environment up with as little time and effort as possible so that you can spend your time focusing on what matters most to you: the applications running inside your infrastructure, not the infrastructure itself.

If you already have a working XenDesktop environment up & running, we suggest you move on to our follow-up white paper to this Guide: XenDesktop 7.1 on Tintri: Provisioning and Machine Creation Deep Dive.

This guide will walk you through creating Hosted Virtual Desktops (HVD) based on Windows 8.1. Users connect to their virtual desktops in a one to one relationship. One user connects to one Virtual Machine and a large enough pool of VMs needs to be created to provide a dedicate VM to each concurrent user. Generally speaking, when referring to “VDI”, HVD is the model implied and is the model covered in this guide. Another type of VDI is HSD – Hosted Shared Desktops, which is based on Windows Server VMs. HSD is referenced multiple times in this guide, but isn’t explicitly covered.

What differentiates this guide from similar guides available from other storage providers is what you won’t find in this guide. The lack of configuration details for the underlying storage is not an oversight and this guide contains everything you need to deploy a successful VDI environment.

Tintri VMstore VM-aware appliances are purpose-built for Virtualization and are designed to support both VDI and server virtualization in the same appliance. You do not need any special storage knowledge beyond the basics of virtualization to be able to successfully deploy a XenDesktop infrastructure. The complex configurations (RAID levels, disk groups, LUNs, spindle calculations, flash pools, etc) required to ensure performance and stability on other storage products simply aren’t required with a Tintri array.

Citrix offers a 90 day evaluation of XenDesktop 7.1 which allows for up to 99 seats to be licensed. This guide has been written in a way that maximizes your evaluation time on a fully-functional working XenDesktop environment, not the setup process. Although the desktops in this guide are based on Windows 8.1, the same process can be used to create Windows 7-based desktops just as easily.

By the end of this guide, you’ll have a fully-functional XenDesktop environment that you can evaluate and compare to other VDI solutions, such as VMware Horizon View. And within your XenDesktop environment, you can easily set up both models of VDI (HVD & HSD) on which to explore which one model, or mix of both, is best for you, your users and the rest of your IT department within your Organization.
Storage Design Considerations

The Citrix Reviewer’s Guide does not touch upon the design complexities required in the underlying storage that would be needed in a real-world deployment to satisfy performance demands. Fortunately, with a Tintri VMstore, we do not need to create a complex design either. All Virtual Machines (VMs) and data covered in this document will reside in the same VMstore. This is NOT just to simplify this 99-seat evaluation deployment (as is the case of using one server instead of many), but it is our recommendation that production deployments are just as simple for up to ~2000 VMs on a single VMstore, depending on the model of your underlying Tintri VMstore.

Your Tintri VMstore has been designed from the ground up to handle the mixed workloads of many VMs running a wide variety of different applications, and will easily provide the needed performance for all VMs required in a Citrix XenDesktop deployment, including all Infrastructure and database VMs, as well as all of the individual virtual desktop VMs. In other words, when you finish a deployment based on this guide, you can feel confident that your underlying storage will allow you to scale this well beyond a 99-seat Proof-of-Concept.
In this guide, we'll be creating a new Citrix XenDesktop 7.1 environment from scratch within an existing VMware vSphere 5.1 Infrastructure backed by Tintri storage.

Here is an overview of the steps we’ll take to building our fully-functional XenDesktop environment:

1. **PREREQUISITES** – This section covers infrastructure requirements, provides links to all of the software you’ll need to download, and additional tasks you’ll need to take care of before you dive into our XenDesktop deployment. This very important section will most likely consume more time than any other section in this guide.

2. **INSTALLATION** – With the prerequisites out of the way, we proceed with the installation & configuration of XenDesktop 7.1

3. **CREATE MACHINE CATALOGS** – We’ll create “machine catalogs” for Windows 8.1 desktop VMs. These are the underlying “Virtual Desktop” virtual machine objects that clients connect to. Desktop and Application workloads run on these VMs.

4. **CITRIX STOREFRONT** – We’ll create and configure a StoreFront, which is the web-based portal that presents your desktops and applications to users.

5. **CREATE DELIVERY GROUPS** – With underlying virtual machines created (Machine Catalogs) and a StoreFront created, we’ll create Delivery Groups to determine what we present (Desktops and/or Applications) and who can access what is made available.

6. **CONNECT, TEST & EVALUATE: LET THE FUN BEGIN!** – We’ve built our XenDesktop infrastructure, now let’s verify it works, license it, and let the fun begin. Our 90 days of evaluation starts here.

7. **ADDITIONAL RESOURCES** – This guide is intended to get you up & running quickly and pain-free, but it doesn’t explore the many features XenDesktop has to offer. The links in this section will point you in the right direction to go beyond the basics.
Prerequisites

Existing Infrastructure

1. **Virtual Infrastructure:**
   a. **Hypervisor** – This guide was written and tested using VMware vSphere 5.1 Hosts connected to vCenter 5.1. Refer to Official Citrix system requirement docs for a complete list of what platforms are supported: [http://support.citrix.com/proddocs/topic/xendesktop-71/cds-system-requirements-71.html#system-requirements-71](http://support.citrix.com/proddocs/topic/xendesktop-71/cds-system-requirements-71.html#system-requirements-71).
   b. **Storage** – This Guide was written and tested using a Tintri VMstore T540 array running Tintri OS 2.1.1.2 connected to the vSphere 5.1 hosts. Any Tintri array is fully supported and this Guide can be followed regardless of the VMstore model. The VMstore model will determine how many VMs you’ll be able to safely run. Refer to [http://www.tintri.com/products/tintri-vmstore](http://www.tintri.com/products/tintri-vmstore) for more information.
   c. **Configuration** – Ensure your hosts are properly configured for your Tintri VMstore. Refer to the Tintri NFS Best Practices guide to confirm: [http://go.tintri.com/nfs-best-practices](http://go.tintri.com/nfs-best-practices)

2. **Available Compute Capacity:** The amount of available compute capacity you have will dictate how many VMs you’ll be able to support in your XenDesktop evaluation. At a minimum, you’ll require enough available compute to run ONE infrastructure Server VMs (2 vCPU and 4 GB of RAM) and several Windows 8.1 Desktop VMs (1vCPU & 2 GB RAM). Beyond the minimum, the number of desktop & application VMs as you want to test from the 99 seats available in the eval license is up to you.

**TIP:** If you are not comfortable with determining how many VMs you can safely run on your hosts without impacting existing workloads, we suggest you play it safe and use one or more dedicated hosts to reduce the potential of impacting production loads.

3. **Active Directory** – Citrix XenDesktop requires that you have an Active Directory, and the Server you install the XenDesktop software on is a member of the domain. It is recommended that you use an isolated test AD or setup one for testing purposes.

4. **DHCP and DNS** are both required.

Downloads

1. Register for a XenDesktop 7.1 evaluation from Citrix: [http://www.citrix.com/TryXenDesktop](http://www.citrix.com/TryXenDesktop). The 90 day eval includes a 99 seat license and provides access to all supporting Citrix software we’ll be using in this guide.
   a. Within the download links provided by Citrix as part of the XenDesktop eval, you will only need to download one of the files to follow this guide: XenDesktop7_1.iso (~2.8 GB).
   b. After registering, you will receive a license code via email, but you will not need it yet. Throughout the majority of this guide, we’ll be working inside the built-in 30 day grace period. **Keep the license code handy, but don’t take any action until instructed to so near the end of this guide.** This will maximize the 90 days available to you.

2. Download the XenDesktop 7.1 Reviewer’s Guide (PDF), which this guide referred to within this document. I can be download here: [http://www.citrix.com/skb/articles/RDY8316](http://www.citrix.com/skb/articles/RDY8316).

3. Download a copy of Windows 8.1 Enterprise (64bit). The 90-day Evaluation is available

4. To use the Evaluation Edition of Windows 8.1 (downloaded in the previous step), you’ll need to download this Citrix patch: http://support.citrix.com/article/CTX139660. We’ll cover this later in this guide when we are installing the Virtual Delivery Agent (VDA).


### Additional Tasks

1. CREATE a group in your test AD: “CitrixEval-Win8”.
2. Optional: Create a 2nd group in your AD called “CitrixEval-Win2012” in the event you you choose to explore HSD options, not explicitly covered in this guide.
3. Add test users to the group(s) created in the previous step.
4. Create a new OU in your Active Directory to place your Computer objects in. In this guide, we’ve created a new OU off the root called “Citrix_XenDesktop”. Although not required, this will make it easier to identify new computer accounts created by Machine Creation Services (MCS) as part of your eval of XenDesktop. This will simplify cleanup of your AD after you’ve finished this eval.

5. You will need to setup a **Windows 2012 R2 Server virtual machine**, sized with 2vCPU & 4 GB RAM. If you do not already have a Win 2012 R2 template in your environment, create a new VM and install the OS by booting from the Windows 2012 R2 Server Datacenter ISO you downloaded in the steps above. Once your new VM is configured, run Windows updates to bring it up to current patch levels and then convert it to a template.

6. Use the Windows 2012 template you just created to deploy a server VM that we install our Citrix XenDesktop server components to in the Installation section below. In this guide, we’ve named it CitrixXD71Eval. Join this system to your Windows Domain

7. Create a Windows 8.1 Enterprise VM with 1vCPU and 2 GB RAM. Mount the Windows 8.1 Enterprise (x64) ISO you downloaded in the Downloads section above and install the OS. In this guide, we’ve named this virtual machine Win81EntEval.

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**Note:** Although we’ll use this VM as a “template”, leave it as a virtual machine and do NOT convert it into a VMware template. In a later step, we will select this VM as the master image from a list of VMs which do not display VMware templates.

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8. The Windows 8.1 VM we just created (Win81EntEval) will be our master image to present as Virtual Desktops and Applications to your users with.

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**IMPORTANT TIP!** – Before we proceed with installing software, such as Office and other productivity apps to these VMs, we need to verify that our master image VM created in the steps above can be cloned. If the VM is not in a state that it can be cloned, all of our work customizing the VM and installing software will be for nothing and we’ll need to start again with a clean VM! This simple tip can save you many hours!
a. On EACH VM, open an elevated command prompt and run “cscript c:\windows\system32\slmgr.vbs /dlv all”.

b. In the output, ensure there is at LEAST 1 re-arm left:

c. If your rearm counts are 1 or more, you’ve passed the check and can proceed to the next step of installing software and configuring the VM.

d. If your rearm count is 0, this VM has previously been cloned and has exceeded the number of rearms allowed. You will need to create a clean VM and perform a fresh install of the OS from DVD. Better now than AFTER you’ve put too much work into the VM!

Additional Info/Background: Cloning a VM or template in VMware with the “customize Guest OS” option and the Citrix process used to prepare your master image both use Microsoft Sysprep. Every time you run sysprep within a VM or template, the number of available re-arms decreases by one until it hits 0, at which time the sysprep process will fail. This applies to Windows OS software, as well as some other Microsoft software such as Office. The Evaluation Edition of Windows 8.1 Enterprise is limited to only ONE sysprep “re-arm”, which means that you must be working with a cleanly install version of Windows and NOT a clone of a previous template you may have made. To play it safe and avoid problems associated with this, this is why we first verified that our VMs we prepared have sysprep re-arms available prior to installing the Citrix Virtual Delivery Agent. For more information on this, refer to this Microsoft support article: http://technet.microsoft.com/en-us/library/dn385356.aspx.

9. Now that we’ve verified the VM we’ll use for our Master Image (Win81EntEval) meets the sysprep requirements, you can proceed with customization and installation of any software you want available to users on your desktop or presented as a published applications. Some suggested software to install are Microsoft Office, Windows updates, custom in-house-devel-
oped apps, security software (anti-virus), and any other software you would make available to your users. You can create multiple images for different software, so for the purposes of getting the environment up and running, we don't recommend you spend too much time on your initial image. You can always return to this step and further hone and perfect your images until you have something that is production-ready and fully user-tested.

**TIP:** Depending on the software you choose to install in your base image and actual loads generated by your users, you may need to adjust resources allocated to your VMs (ie. increase/decrease vRAM and vCPU). The difference between 1 and 2 vCPUs per-VM may seem trivial, but when dealing with 100’s or 1000’s of VMs configured identically, the impact can be dramatic! Sizing and load monitoring is out of scope of this Guide, but be mindful of this and test thoroughly before moving from PoC to a full production deployment.

10. **vCenter SSL Certificate** - The Citrix XenDesktop Broker (to be installed later in this guide) will need communicate with vCenter and it does this securely using SSL. A very common and frustrating error that occurs when trying to configure XenDesktop comes as a result of the Citrix controller not trusting the vCenter SSL certificate, which is often self-signed. More detail about the problem and the workaround were provided by Thomas Berger (Thanks!) on the Citrix Blog: [http://blogs.citrix.com/2013/12/18/using-the-default-vmware-vcenter-server-certificate-in-xendesktop-pocs/](http://blogs.citrix.com/2013/12/18/using-the-default-vmware-vcenter-server-certificate-in-xendesktop-pocs/). To proactively avoid problems in the installation section, follow these simple steps to ensure that the vCenter certificate will not be an issue.

   a. Connect to your vCenter server and browse to `C:\ProgramData\VMware\VMware VirtualCenter\SSL`.
   b. Copy the `cacert.pem` file to a folder (e.g. `C:\Temp`) in the VM we prepared for the Citrix software install: CitrixXD71Eval.
   c. Using the VMware console or Remote Desktop, connect to the VM prepared for the Citrix software install (CitrixXD71Eval)
   d. Open a Microsoft Management Console (by running the `mmc.exe` command) as an Administrator
   e. Add the Certificates Snap-In and select to manage certificates for the local computer account.
   f. Browse to “Trusted Root Certification Authorities” and select **Import**.
   g. Import the `cacert.pem` file we copied in the second bullet. You need to select All Files from the dropdown menu in the lower right hand corner, to be able to see it.
   h. Now you should be able to see the vCenter certificate in the list of trusted certificates and XenDesktop should connect to vCenter without any error message.
Congratulations! You made it past the prerequisites! We have everything in place, and are now ready to proceed. The rest of our install and configuration process should be quick and move smoothly.

Install XenDesktop 7.1 Software

On the Windows 2012 R2 Server VM named “CitrixXD71Eval” that we created in the prerequisites, mount the DVD iso file XenDesktop7_1.iso that we downloaded from Citrix.

If autorun doesn’t automatically start the main install menu, run “AutoSelect.exe” from the root of the DVD mounted to your VM. Click Start to begin on the intro screen.

From here, follow the screen shots, choosing defaults unless otherwise noted:

Note: In our install, we are going choose all components (Default) to install to the same single server. In a production environment, you would want to create one or more server(s) for each role to provide scale and performance.
Although roles should be installed on separate servers, they can all sit in the same Tintri VMstore from a performance perspective. Click **Next**.

**Note:** In our install, we’ll choose to have SQL Server 2012 Express installed automatically.

In a larger scale, production install, specify a separate database server running a full-featured database version (ie. Not the free “express” edition).

After clicking Install, the install process will 10-30 mins, depending on the size of your VM and speed of your host CPUs. Your progress will be displayed on screen:

![Insert Installation theme music here](image)

You are now done installing XenDesktop 7.1. Leave the checkbox ticked to Launch Studio click **Finish**.
Configure a Site

On heels of our install, we move on to configuring our site. We’ll be selecting mostly defaults again, or making up values along the way.

After Citrix Studio launches, click on Get Started! Create a site:
On the connection screen, change your Host Type to: VMware vSphere®. For the address, use the fully qualified name of your vSphere server: https://_____vCenter-FQDN_____/sdk. If you click next and get an error, check to make sure the user name you entered (Domain\User) has administrative access to vCenter and verify your password.

If you continue to get an error, it is most likely related to SSL certificates, which should have been taken care of in the prerequisites. Refer back to the prerequisites of this Guide and double-check that you followed the SSL Certificated trust settings correctly, and to the correct Certificate store (“local machine” on the server you are installed XenDesktop to – CitrixXD71Eval in our case).

After successful connection to vCenter, you will be prompted for a Host or Cluster to connect to. You’ll need to make sure the Master Image VMs created earlier are on this cluster, which is also the same location that XenDesktop clones will be deployed to.
After we click finish, initial configuration of our XenDesktop Site is complete. Click **Test Site** to run a battery of tests to ensure the site configuration is valid.

After the test has complete, you should get a notice that all 178 tests were successful.

If you would like to investigate further into what was tested, click **Show Report** for a full report of all the tests performed. This test can be performed anytime, so if you run into any problems in the future come back to this screen and retest your site.
Create Machine Catalogs

In this section, we’ll make the final preparations on the master image VM we created in the prerequisites, and then create Machine Catalogs.

Prepare the Master Image VMs

In this step, we’re going to start with the Windows 8.1 VM that we created in the prerequisite tasks and prepare it for XenDesktop. In order to do this, we need to install the Citrix Virtual Delivery Agent (VDA) on this machine.

1. Before we can proceed with the installation of the Virtual Delivery Agent (VDA) software within our Windows 8.1 VM, we need to apply the patch (CTX139660) we downloaded in the prerequisites section above. This only applies to the evaluation version of Windows 8.1, but failure to install from a patched version will result in an “Incompatible OS error” that will prevent us from proceeding. View the support article for more detail: [http://support.citrix.com/article/CTX139660](http://support.citrix.com/article/CTX139660).

2. After you’ve applied the patch to the install files, log onto the Windows 8.1 VM console as an administrator and browse to location of the patched setup files and run AutoSelect.exe (Ex. \FileServer\Install\Citrix\XenDesktop7.1\AutoSelect.exe)

All options are shown in the screen shots:
After our VM reboots, log back in on the console and verify there are no further install messages or actions to take. If there are no pop-ups or additional reboot nags, shutdown the VM and proceed to the next section. If there are actions to take, follow them until you have a clean logon.

You have finished prepping the Windows 8.1 VM.

Optional: The steps to prepare a Windows 8.1 Enterprise VM (for HVD) and Windows 2012 R2 Server VM (for HSD) are identical. If you decide to add a Windows Server-based catalog to explore an HSD model of VDI, repeat this step within a Windows 2012 R2 VM. We recommend you size it at 2vCPU and 4GB RAM to start.

With the VDA installed your VM(s) should now be in a powered off state.
Choosing your Machine Creation method

Ultimately, the core of your XenDesktop infrastructure is the collection of VMs (underlying resources) that your users connect to, whether that is for use as their primary desktop and applications, or to run a single published application. Ongoing management of these VMs, inside & out, will be critical to the success of your deployment.

Managing inside these VMs refers to maintaining an up-to-date master image that includes the latest bug fixes and patches for the OS and applications, up-to-date security software, and other changes to the build that will be driven by business requirements and user requests. Managing outside of the VMs refers to the physical & virtual infrastructure that powers your VMs: Servers and Storage. Do you have enough capacity (compute & storage) to support existing workload demands, how much headroom do you have, and how easy is it to scale when you need more?

Can one master image serve all departments within the entire company, or do you need many images, managed by different business units? Who will update these master images, what access and knowledge to they need to be do so, and how often are they updated? How is testing and change control carried out? These questions and many others go beyond the scope of this paper, but do factor in heavily to what deployment method you choose.

There are 3 methods of provisioning machines provided with the XenDesktop management framework:

- **Citrix Machine Creation Services (MCS)**
- **Citrix PVS Provisioning Services**
- **Other**: Allows for a non-Citrix provisioning technology to be used, such as “Tintri Native Clones”.

If you are reading this paper, your objective is to get XenDesktop up and running quickly so that you can explore the technology and better understand all that is involved in choosing your provisioning technology. And fortunately for you, by choosing Tintri, you have best-of-breed VM-aware architecture under the hood that will allow you to achieve great performance using MCS, PVS, and/or leverage Tintri-specific tools as an alternative means of provisioning your machines.

In this paper, we’ll walk through the quickest and easiest method to setup: **Citrix Machine Creation Services (MCS)**. Once you’ve completed this guide and have a working XenDesktop deployment, adding PVS or Tintri Native clones later is simple. We strongly encourage you to review our follow-up white paper to this guide: **XenDesktop 7.1 on Tintri: Provisioning and Machine Creation Deep Dive**. We’ll explore the pros and cons of various provisioning methods and dig deeper into ongoing management of your machine catalogs, and the impact this has on storage capacity & performance.
Create Windows 8.1 Enterprise Desktop Images using MCS

Follow the steps in the screenshots below to use Citrix Machine Creation Services (MCS) to create a Machine Catalog containing Windows 8.1 desktop VMs:

Select the Master Image that we prepare in the prerequisite steps and finalized in the previous section:

Decide how many VMs you want to deploy with this initial catalog. The amount of spare compute resources should be taken into account. When in doubt, stay conservative and choose a low number... you can always add more later.
In our case, I’ve chosen to deploy 5 Windows 8.1 Enterprise Desktop VMs.

Choose to create new AD computer accounts and place them in the `Citrix_XenDesktop` OU we created in the prerequisites. Give your systems a name that makes sense, such as CTX-Win8-###. Machine Creation Services (MCS) will automatically serialize your VMs with numbers when you use # for as many digits as you want.

Finally, give your Machine Catalog a name and description and click **Finish**:

At this point, your new VMs are being created. Open up vCenter and have a look at the task pane for a better understanding of what MCS is doing under the hood. I have highlighted a few of the more interesting tasks that were performed:

Congratulations! You now have a Machine Catalog!

**Optional:** If you want to explore HSD, repeat this section to create a machine catalog containing Windows 2012 R2 Server VMs.
StoreFront is an integral component of any XenDesktop, XenApp, XenMobile, or VDI-in-a-Box implementation. StoreFront authenticates users to Microsoft Active Directory and manages the delivery of desktops and applications from your servers in the datacenter to users’ devices. Users access StoreFront stores through “Citrix Receiver” or by browsing to a “Receiver for Web” or Desktop Appliance site, which enables users to access stores through a webpage.

In the Reviewer’s guide, the StoreFront was created as HTTP, instead of HTTPS (secure). While HTTP is generally easier to configure and troubleshoot, the client software (Citrix Receiver) only accepts addresses that start with HTTPS (by default). Although this can be overridden on the client-side, the workaround is more effort than getting StoreFront to run via SSL in the first place, and leaves you with a less secure deployment.

Follow the instructions closely and you’ll avoid some of the gotchas we ran into and have a StoreFront up and running in no time.

Detailed information on StoreFront can be found at: http://support.citrix.com/proddocs/topic/dws-storefront-21/dws-version-wrapper.html.

Create StoreFront

The section and beyond will switch back to the console on our XenDesktop 7.1 server we setup and created a site on. Throughout this guide, this has been the Windows 2012 R2 Server VM named “CitrixXD71Eval”.

We’re going to set StoreFront up with HTTPS and we’re going to do it before we create Delivery Groups in the next section. We’ll create and use a self-signed SSL certificate to simplify this setup. In a production environment, you should follow best practices and use a certificate issued by a trusted CA (certificate authority) for your server(s), for both internal and external FQDNs. If you’ve got the means to issue an SSL cert from a CA in your environment, you can skip the steps required to create the self-signed cert and bind it.

As with the earlier sections, follow the screenshots and pay attention to the notes listed below:
The Remote Access section will be left as the default response: "None".
If we had a Citrix NetScaler Gateway, this is where we would configure it.

![Image of Citrix NetScaler Gateway configuration](image)

We’ve now successfully created our store called “XD71Demo”. Take note of the URL that has been created... this is the URL you will use for testing access from a web browser on your client. The format is as follows, with RED text denoting the parts of the URL that your unique URL will match:

https://SERVER-FQDN/Citrix/STORENAMEWeb

**Note:** Do not attempt to connect to this URL yet... we’ll cover this later once we assign an SSL Certificate.

**SERVER-FQDN** = the Fully Qualified domain name of the server you installed XenDesktop 7.1 ([citrixxd71eval.ttucs.tm.tintri.com](http://citrixxd71eval.ttucs.tm.tintri.com) in our example)

**STORENAME** = the name you gave your store at the beginning of this wizard. In this example, this is *XD71Demo*.

Take special note of the “Web” appended to your Store name of your URL. There is another website created in IIS which is very similar, but does not have “Web” on the end, as you will see later.

With the StoreFront created, we’ll add it to the Configuration within Citrix Studio so that it is available later when we need upon creation of our Delivery Groups. Click on StoreFront (on the left, under Configuration), and then click Add StoreFront from the actions tab on the far right:
Add the URL shown at the end of the creation screen, starting with https:// and ending with Web appended to it. Once added, it should show like this, where you can confirm the Store name and URL are accurate:

![StoreFront console screen showing the URL configuration]

**Configure StoreFront**

With a StoreFront created, a few more configuration changes are required to have it fully functional. Before we do this, right-click on the “Citrix StoreFront” node within the management console and choose **Refresh**. Now let’s go through each relevant sub-section of Citrix StoreFront to confirm the information is accurate and make configuration changes if necessary.
Create Delivery Groups

A Delivery Group is the mechanism that makes desktops and applications available to the users you specify. Create Delivery Groups for specific teams, departments, or types of users. Within each Delivery Group, you will define which Machine Catalog (i.e. pool of VMs) to use, and how many VMs to use from the total available in that Catalog (pool). You can define what is delivered from within each Delivery Group: Desktops only, Applications only, or BOTH Desktops and Applications.

We’re going to a single delivery group of the delivery type that allows both Desktops AND Applications to be presented from the same machine catalog comprised of our Windows 8.1 VMs. Follow the screenshots below to create the first Delivery Group, comprised of Windows 8.1 VMs:

![Screenshot 1](image1)

![Screenshot 2](image2)

![Screenshot 3](image3)

![Screenshot 4](image4)
We have now successfully created a Delivery Group for our Windows 8.1 Machine Catalog.

**Optional:** If you want to explore HSD, you can repeat this process to create another Delivery Group comprised of Windows 2012 R2 Server VMs.
Connect, Test & Evaluate: Let the Fun Begin!

Congratulations! You should now have a fully-functional XenDesktop 7.1 Environment! This section will validate functionality and give you some pointers on what to do next.

Confirm Client Connection

In a browser on a test client, open the same StoreFront URL we confirmed earlier (https://FQDN/Citrix/XD71DemoWeb/). When prompted, enter your user ID and password, and you should see all Desktops and Apps presented to you:

![Connect Client](image1)

The desktops and apps available are determined by your membership in the security you used to control access within your Delivery Group(s).

At this point, you should be able to click into a desktop or one of the apps and let the testing begin!

License your Evaluation

Until now, everything has worked using a built-in 30 day license. Log into the Citrix website and generate a license file using the key you received via email when you registered for the Eval. Your 90 days start once you generate the license file on the Citrix site. For this reason, we’ve waited until we’ve gotten everything setup so that you can maximize the effective length of the eval. After you’ve obtained a license file, add it in Citrix Studio under Configuration – Licensing:

![License](image2)

Your 90 days have just begun! Tick-tock!
Explore Hosted Shared Desktops (HSD)

If you’re finding that many users running their own dedicated desktop VM requires more compute resources than you anticipated/desire, you may want to consider using an HSD model of VDI. Hosted Shared Desktops (HSD) have a larger VM footprint (more vCPU & RAM) than their Hosted Virtual Desktop (HVD) brothers, but keep in mind that these servers can accommodate multiple users at the same time. With this in mind, you should be able to fit more total users onto the same finite amount of underlying server hardware in an HSD deployment (many-to-one) than an HSV deployment (one-to-one).

However, shared server desktops (HSD) have a disadvantage when it comes to resource contention between users on the same server and the resulting user experience can be negatively impacted. Every environment has resource hogs ("heavy users"). In an HVD scenario, desktop VMs will shuffle between hosts in a DRS cluster dynamically as user workloads change, which minimizes the impact of having one or more resources hogs running in the same physical host. In a dedicated virtual desktop, a resource hogs should only impact themselves when they hit their resource limits within their VM. In a shared server, that same resource hog can negatively impact other users on the same shared server by consuming more than their “fair share”. Unfortunately, user session don’t dynamically vMotion between servers like VMs can automatically move between hosts. Although there are controls for “fair sharing” within the same VM, it’s not nearly as dynamically balancing these ever-changing workloads between physical server resources.

Monitor & Manage: Citrix Director

The XenDesktop install we’ve just completed includes a tool called “Citrix Director”. You can access this through https://FQDN/Director. Log in with an account that has administrative access, such as the one you used for your install.

You can use Director to see an overview who is connected and what resources are being consumed. vCenter can show you a desktop VM that is consuming high CPU, but it won’t be very helpful when it comes to determining who is generating the load inside that VM. This is where Director comes in, providing context for what is happening from the users’ perspective. In this example of high CPU usage, you can determine the user that is connected and view what application(s) are driving the CPU load.

In addition to real-time monitoring machines, sessions and connections, Director also allows you to view historical information and trends. You can also use Director perform tasks such as changing the power state of a VM, disconnect sessions, or log off disconnected sessions. For more information on Director, visit: http://support.citrix.com/proddocs/topic/xendesktop-71/cds-monitor-wrapper.html.
Additional Resources – Reference URLs

Tintri Links:
- **XenDesktop 7.1 Provisioning & Machine Creation Deep Dive** – Referenced throughout this paper as “the main” provisioning deep dive paper and contains information that applies to all XenDesktop provisioning methods, and compares the method discussed in this paper to alternative methods.
- **XenDesktop 7.1 Provisioning Services (PVS) Deep Dive** – A continuation in the XenDesktop Deep Dive Series – this paper focuses on PVS for provisioning virtual desktops.
- **XenDesktop 7.1 Machine Creation Services (MCS) Deep Dive** – A continuation in the XenDesktop Deep Dive Series – this paper focuses on MCS for provisioning virtual desktops.
- **XenDesktop 7.1 Tintri Native Clones Deep Dive** – A continuation in the XenDesktop Deep Dive Series – this paper focuses on using Tintri Native Clones for provisioning virtual desktops.
- **XenDesktop Best Practices white paper.**
- **NFS Best Practices.**
- **Additional resources.**

Citrix Links:

Windows Downloads: