RADEON PRO SOFTWARE

AMD MxGPU and Citrix XenServer/XenDesktop

Deployment Guide v1.0

This guide describes host and VM configuration procedures to enable AMD MxGPU hardware-based GPU virtualization using the PCIe SR-IOV protocol.



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REVISION HISTORY

Version	Date	Author	Notes
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Overview

This Deployment Guide describes configuring Citrix[®] XenServer[®], XenDesktop[®], and XenApp[®] to use AMD Multiuser GPU (MxGPU) technology, which allows system administrators to deploy and manage graphicsaccelerated virtual machines using the AMD FirePro[™] S7100X, S7150, and S7150 x2 family of products in MxGPU mode. MxGPU technology uses the Single Root I/O Virtualization (SR-IOV) PCIe[®] virtualization standard to create up to 16 virtual MxGPUs per physical GPU. These MxGPUs can then be automatically or manually assigned to virtual machines on the Citrix host.

Why MxGPU?

AMD MxGPU technology offers the following benefits:

- Full Workstation Acceleration: Hardware-based virtualization enables workstation-grade Radeon™ Pro 2D/3D graphics acceleration using the Single Root I/O Virtualization (SR-IOV) PCIe virtualization standard. This eliminates proprietary and complex software from the hypervisor, and allows each VM to use native Radeon Pro drivers with natural compatibility and access to all GPU graphics and compute functions on the server. Each physical GPU can support 1 to 16 users and requires no profiles. The consistent performance delivered by hardware-based MxGPU virtualization fully realizes all of the other benefits described here while also simplifying resource allocation and planning.
- **Real-Time Remote Access:** Replacing an individual workstation with an access portal allows each authorized user to access either a desktop (personalized or pooled) and/or applications at virtually any time from virtually any location on virtually any device via almost any broadband connection. Flexible permissions allow groups and individuals to access only the resources they need. Users transmit commands and receive fully-rendered pixels, with all compute and graphics processing taking place on the server and all data remaining in the datacenter. Updates made by one user are instantly visible to all users with appropriate access privileges.
- **Data Security:** Traditional workstations often use locally-stored working copies of data, which exposes that data to potential loss or theft. Centralizing data storage facilitates backup and other protective measures while eliminating these possibly catastrophic losses. User sessions that transmit only commands and fully-rendered pixels but no actual data further mitigate the risks of unauthorized access. This also allows fast, easy IT management and maintenance from a single location.
- Scalability and Flexibility: Adding and removing users is as easy as creating or removing accounts and allocating resources. Users needing access to different applications and/or GPU performance when shifting projects can receive the resources they need within minutes.
- Effective Version Control: All compute and graphics functions occur on the server. Users
 receive only fully-rendered pixels and transmit only commands. The data itself remains in the
 datacenter, with no need to transfer large files between locations nor reconcile changes.
 Hosting environments in the data center also ensures standardization among all users, further
 reducing the need to control versions.

 Cost Effectiveness: IT departments no longer need to procure, support, repair, and upgrade individual workstations with multiple hardware, OS, and application configurations, especially among ever-shifting project teams. Users simply log in to their virtual desktops at virtually any time from virtually any device and receive full workstation performance, GPU acceleration, and application/data access based on their credentials and assigned resources. Predictable, profile-less GPU assignment simplifies resource allocation and planning with linear scalability and no additional hardware licensing or other fees beyond the hardware purchase. Persistent desktops can be used for internal parties with consistent needs, while third parties or users with widely varying needs can access pooled desktops. There is also less need for personnel to be on site to work. Additional savings can be realized from a reduced need to transfer large file between locations and reconcile different versions of that data.

System Topology

The following diagram displays the high-level system topology where a single host is running multiple MxGPU-enabled virtual machines that are being accessed by remote users on a variety of devices.



Hardware and Software Requirements

The following requirements must be met in order to enable MxGPU virtualization:

- Host/Server: Please contact AMD for an up-to-date list of MxGPU-certified servers. Each server must have the following minimum configuration:
 - **Graphics Adapter:** AMD FirePro[™] S7100X, S7150, or S7150 x2.
 - **CPU:** One or more Intel VT or AMD-V 64-bit x86-based CPU(s).
 - **System memory:** 32 GB (minimum; 1 TB maximum). The number of guest VMs and individual use cases will determine the optimum amount of RAM needed.
 - **Storage:** 500 GB (minimum). The number of guest VMs and individual use cases will determine the optimum type(s) and amount of storage needed.
 - Network adapter: Gigabit Ethernet (GbE) and up.
 - **BIOS:** Enable IOMMU (AMD CPUs) or VT-d (Intel CPUs), SR-IOV, ARI, memory mapping above 4 GB, MMIO High Size (if available), and UEFI boot. Please refer to your BIOS documentation for instructions on enabling these options.



Note: Some platforms support additional virtualization options. For example, the AMD Kaveri APU includes an ARI (Alternative Reroute Interface). Please refer to your platform documentation for information and instructions.

- **Software:** The host/server must have both Citrix XenServer 7.2 or later and Citrix XenDesktop 7.13 or later.
- **Client:** Any of the following client devices can be used to access virtual machines that have been configured on the host/server:
 - Zero client (up to 4 connectors) with standard mouse, keyboard, and monitor.
 - Thin client with standard mouse, keyboard, and monitor running Microsoft[®] Windows[®] Embedded OS.
 - Laptop/desktop with standard mouse, keyboard, and monitor running with Microsoft Windows 7 or later.
- Administrator System: The system used for administrative functions must be configured as follows:
 - **OS:** Windows 7 or later (64-bit).
 - Browser: Microsoft Internet Explorer[®] 11+, Microsoft Edge[™], Google Chrome[™], or Mozilla Firefox[®].

• **Guest VM resources:** The following table lists some recommended resource allocations for guest VMs depending on user needs:

User Type/Performance	vCPU cores	System memory (GB)	# of enabled MxGPUs	Frame buffer size (MB) ¹
Workstation (High-performance)	4	8	2	3840
Power (Professional)	2	4	4	1920
Knowledge	2	3	8	960
(Enhanced)	2	3	10	768
Task (Standard)	1	2	16	480
Note: All guest memory must be loc	ked/reserved.			

1. Amount of memory available to each VF.

- **Guest VM configuration:** Each guest VM must be configured as follows:
 - **OS:** Windows 7 or 10 (64-bit).
 - **AMD Drivers:** Radeon Pro Software 17.5.2 or later.
 - Citrix XenDesktop or XenApp VDA: Version 7.13 or later.

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XenServer MxGPU Setup

Configuring Citrix XenServer for MxGPU virtualization is a straightforward procedure. First, complete initial passthrough setup on the virtual machine. Next, enable platform SR-IOV by installing an MxGPU patch on the XenServer host. You may also need to install a PGP key. Finally, assign virtualized MxGPU resources to the virtual machine, and then log in to that virtual machine to verify and complete setup and personalization, such as screen resolution or multiple monitors.

Prerequisites

The following prerequisites must be met before configuring MxGPU on a XenServer host:

- The host meets all of the applicable requirements listed in "Hardware and Software Requirements" on page 4, including BIOS configuration.
- Citrix XenServer has been installed on the host (server).
- Citrix XenCenter[®] has been installed on the management system.
- All required Citrix licenses have been installed.
- One or more virtual machine(s) meeting all of the applicable requirements in "Hardware and Software Requirements" on page 4 have been created on the host, and both an operating system and Citrix XenServer Tools have been installed on the virtual machine(s).



Note: When creating the VM, you can select either **None** or any available GPU when prompted to assign a virtual GPU.

Passthrough Setup

To begin setting up the GPU passthrough on a virtual machine:

- 1. In XenCenter, verify that the selected virtual machine is shut down.
- 2. Select the virtual machine and then either:
 - Right-click the virtual machine and then select Properties.
 - Click the **Properties** button in the **General** tab.

The **<Virtual Machine> Properties** window appears, where **<Virtual Machine>** is the name of the selected virtual machine.

3. In the left pane of the **<Virtual Machine> Properties** window, select **GPU** in the left pane, and then use the **GPU type** pull-down menu to select the **Advanced Micro Devices** option.



- 4. Click **OK** to close the **<Virtual Machine> Properties** window.
- 5. In XenCenter, select the virtual machine and then either:
 - Right-click the virtual machine and then select Start.
 - Click the **Start** button in the toolbar at the top of the window.



The virtual machine will boot and display the operating system desktop.

Enabling Platform SR-IOV

Unleashing the full power of AMD MxGPU virtualization requires enabling additional virtualization capabilities in the server BIOS beyond IOMMU or VT-d. This is done by installing an MxGPU patch (.iso) on the XenServer host. If you are using a pre-release patch version, you may also need to install a PGP key. Release candidate and production patch versions will include this key.

Step 1: Key Installation

To install the PGP key, if needed:

- 1. Obtain the key file RPM-GPG-KEY-AMD-MXGPU and copy it to the /opt/xensource/ debug/ directory on the XenServer host.
- 2. Log in to the XenServer host as a root user, navigate to the /opt/xensource/debug/ directory, and then execute the following command: ./import-update-key RPM-GPG-KEY-AMD-MXGPU

The console displays output similar to the following:



Step 2: MxGPU Patch Installation

To install the MxGPU patch:

- 1. Download the supplemental pack mxgpu-<version>.amd.iso, where <version> is the version number of the patch, such as 1.0. Place this file in a known location that can be accessed by XenCenter.
- 2. On the management system, access the XenCenter interface.
- 3. Select Tools>Install Updates.



The Install Update window appears with the Before You Start page displayed.

4. Read the information on this window, verify that you have followed all of the procedures, and then click **Next**.

The **Select Update** page appears.

5. Click the **Browse** button, and then navigate to the directory where you placed the MxGPU patch.



6. Select the MxGPU patch, and then click **Next**.

The **Select Servers** page appears.

Select the servers you wish to update Before You Start Select one or more servers from the list of available servers. Servers where the selected update cannot be applied appear disabled in this list.	
Sefore You Start Select one or more servers from the list of available servers. Select Update Servers where the selected update cannot be applied appear disabled in this list.	
Gelect Servers Name	Version
Ipload Image: Senserver-test1	7.1
Prachacke	

7. Select the XenServer host or pool to which you would like to apply the supplemental pack, and then click **Next**.

The **Upload** page appears and displays the status of the upload. An error message will appear if there is not enough space.

The **Prechecks** page appears once the upload is complete.

-				_
Before You Start Select Update	Update prechecks are performed to verify that the update *	'mxgpu" can be applied to the sen	vers.	
Select Servers	Checking HA and WLB status OK			
Upload	Checking storage connections status OK			
Prechecks	Checking server side status OK			
update Mode Install Update	Checking reboots required OK			
				_
	Hide successful prechecks	Check Again	Resolve	

8. XenCenter performs a series of prechecks to determine whether the MxGPU patch can be applied onto the selected servers and displays the results. If needed, follow the on-screen recommendations to resolve any update prechecks that have failed, and then click **Next** to continue.

The **Update Mode** page appears.

9. Check the Allow XenCenter to carry out the post-update tasks... option, and then click Install update.

The **Install Update** window displays a progress bar and status messages as the installation proceeds.

- 10. Click Finish to close the Install Update window.
- 11. Log in to the XenServer host as a root user, and then execute the following command: xe-toolstack-restart

The host will disconnect from XenCenter.

12. In the XenCenter interface, right-click the disconnected host and then select **Connect**.



13. Select the reconnected host, open the **GPU** tab, and then click the **Edit** button.

The **<GPU>** window appears, where **<GPU>** is the AMD GPU type, such as **Tonga XT GL** (FirePro S7150) (1GPU).

	Q	🚺 xenserver-test	4	a <u></u>			Logged in as: Local root accou
XenCent X	ter enver-test1 WD drives ccal storage lemovable storage MB ISO library MB ISO library (1) enver-test5 WD drives ccal storage temovable storage enver-test2	General Memory 1 GPU Placement policy: I Tonga XT GL [I	Storage Networking NIG Maximum density: put as n FirePro \$7150]	is GPU is	onsole Perform	e GPU Edit	Search Virtual GPU types: Virtual GPU types: Mageut Virtual GPU (2) ger GP MageUL4 virtual GPU (4) per GP
	-						MxGPU.8 virtual GPU (8 per GP
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-	Select which virtual GPU	S7150] (1 GPU) I types are allowed on thi	s GPU: Virtual GPUs per GPU	Max resolution	Max displays	? X	MicGPU.3 virtual GPU (5 per GP MicGPU.10 virtual GPU (10 per G MicGPU.16 virtual GPU (16 per G Edit
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	Tonga XT GL [FirePro Select which virtual GPU Name Pass-through whole MtxGPU.2 MtxGPU.4 MtxGPU.4	S7150] (1 GPU) I types are allowed on thi	s GPU: Virtual GPUs per GPU 2 4 8	Max resolution 0x0 0x0 0x0	Max displays 1 1 1	? × Video RAM 4.0 GB 2.0 GB 1.0 GB	McGPD3 virtual GPU (bp er (c) McGPU.16 virtual GPU (16 per (McGPU.16 virtual GPU (16 per (Edt
	Tonga XT GL (FirePro Select which virtual GPL Name Pass-through whole MuGPU.2 MuGPU.4 MuGPU.8 MuGPU.10	S7150] (1 GPU) I types are allowed on thi	s GPU: Virtual GPUs per GPU 2 4 8 10	Max resolution 0x0 0x0 0x0 0x0	Max displays 1 1 1 1 1	? X Video RAM 4.0 GB 2.0 GB 1.0 GB 819 MB	McGPU.3 virtual GPU (3p erc / McGPU.15 virtual GPU (15 per (Edt
	Tonga XT GL [FirePro Select which virtual GPU Name Pass-through whole MuGPU.2 MuGPU.4 MuGPU.10 MuGPU.16	S7150] (1 GPU) I types are allowed on thi	s GPU: Virtual GPUs per GPU 2 4 8 10 10	Max resolution	Max displays 1 1 1 1 1 1 1	 ? × Video RAM 4.0 GB 2.0 GB 1.0 GB 819 MB 512 MB 	MicaPUs virtual GPU (b) per (c) MicaPUs virtual GPU (b) per (c) MicaPUs Virtual GPU (b) per (c) Edit
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Step 3: Finishing MxGPU Setup

To finish setting up MxGPU virtualization:

- 1. Verify that the virtual machine you are configuring is shut down, and then either:
 - Right-click the virtual machine and then select Properties.
 - Click the **Properties** button in the **General** tab.

The **<Virtual Machine> Properties** window appears, where **<Virtual Machine>** is the name of the selected virtual machine.

2. In the left pane of the **<Virtual Machine> Properties** window, select **GPU** in the left pane, and then use the **GPU type** pull-down menu to select the desired passthrough option.



When configuring the passthrough option, smaller "per GPU" numbers indicate fewer virtual GPUs per physical GPU, which provides higher performance, and vice-versa. The following table provides some general recommended passthrough options based on user type:

User Type/Performance	vCPU cores	System memory (GB)	# of enabled MxGPUs	Frame buffer size (MB) ¹
Workstation	4	8	2	3840
(High-performance)				
Power	2	4	4	1920
(Professional)				
Knowledge	2	3	8	960
(Enhanced)	2	3	10	768
Task	1	2	16	480
(Standard)				
Note: All guest memory must be loo	ked/reserved.			
1. Amount of memory available to each	n VF.			

- 3. Select the desired GPU passthrough option, and then click **OK**.
- 4. Start the virtual machine.
- 5. Once the virtual machine has booted, access Device Manager and note the new graphics adapter. You may now complete setting up the virtualized environment, such as screen resolution or adding/configuring multiple monitors.

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HDX 3D Pro Setup

This chapter provides step-by-step instructions for setting up Citrix HDX[™] 3D Pro remote desktops for guest virtual machines. To setup the HDX 3D Pro remote desktop, create a Windows Server 2012 VM is needed to install the Delivery Controller, install the Virtual Delivery Agent (VDA) on the target virtual machines, and install Citrix Receiver[™] on a client (remote) system.

Please see http://docs.citrix.com/en-us/xenapp-and-xendesktop/7-13/ hdx/gpu-acceleration-server.html for more information and HDX 3D Pro.

Step 1: Installing XenDesktop

To install Citrix XenDesktop:

- 1. Create a guest virtual machine, and then install Windows Server 2012.
- 2. Configure the virtual machine as follows:
 - If necessary, join the server to a domain.
 - Add yourself as an administrator.
- 3. Reboot the virtual machine, and then log in to the machine or domain, as appropriate.
- 4. Either copy the Citrix Virtual Delivery Agent (VDA) standalone package (.iso) to the virtual machine, or map a network location that contains the package.
- 5. Mount the .iso and then execute autoselect.exe.

The following splash screen appears.

Deliver applications and desktops to any user, anywhere, on any device. • Secure mobile device management • Hybrid cloud, cloud and enterprise provisioning. • Start • Cancel	
CITRIX	

6. Click the **Start** button in the **XenDesktop** section.

A screen with a series of options appears.

- In the Getting Started section on the left side of the screen, click Delivery Controller.
 A pop-up window appears.
- 8. Select Yes.

The Software License Agreement page appears.

9. Check the I have read, understood, and accept... radio button, and then click Next.

HDX 3D PRO SETUP

- 10. The **Core Components** page appears. Make sure that all components are selected, and then click **Next**.
- 11. The **Features** page appears. Make sure that all features are selected, and then click **Next**.

The **Firewall** page appears.

XenDesktop 7.13	Firewall			
✓ Licensing Agreement	The default ports are list	sted below.		Printable versio
 ✓ Core Components ✓ Features 	Delivery Controller	Director	License Server	StoreFront
Firewall	80 TCP	80 TCP	7279 TCP	80 TCP
	Configure firewall rules	R.	~	
	Configure firewall rules Automatically Select this option be created even Manually Select this calls	n to automatically c	reate the rules in the Windo wall is turned off.	ws Firewall. The rules will

12. Check the **Automatically** radio button, and then click **Next**.

A **Summary** page appears.

 Licensing Agreement 	Review the prerequisites and confirm the components you want to install.	
✓ Core Components	Installation directory	-
✓ Features	C:\Program Files\Citrix	
✓ Firewall	Prerequisites	
Summary	Local Host Cache Storage (LocalDB)	
		-
-		
	~~~~	-

13. Click **Install** to continue.

The system installs the necessary files/components. The virtual machine may reboot several times during this process.

14. A **Call Home** page may appear. Make the appropriate selection for your needs, and then click **Next**.

The Finish Installation page appears.

	Finish installation		
Licensing Agreement	The installation completed successfully.		<ul> <li>Success</li> </ul>
<ul> <li>Core Components</li> <li>Features</li> <li>Firewall</li> <li>Summary</li> <li>Install</li> <li>Call Home</li> <li>Finish</li> </ul>	Prerequisites  V Microsoft .NET Framework 4.5.2  Microsoft SQL Server 2014 SP1 Express  V Microsoft SQL Server 2014 SP1 Express  Local Host Cache Storage (LocalD8)  SQL CLR Types (x86)  SQL CLR Types (x86)  SQL CLR Types (x84)  Microsoft Visual x84 C++ 2008 Runtime  Microsoft Internet Information Services  Core Components  Delivery Controller  Studio Director  License Server	Installed Installed Installed Installed Installed Installed Installed Installed Installed Installed Installed Installed Installed	
	StoreFront Post Install Component Initialization	Installed	•

15. Make sure that the Launch Studio checkbox is selected, and then click Finish.



Note: If you do not check the Launch Studio checkbox, then you will need to launch Citrix Studio after the installation complete.

#### Step 2: Configuring XenDesktop

To configure Citrix Studio to deliver desktops using XenDesktop:

1. After Citrix Studio launches, click **Deliver applications and desktops to your users**.



The **Introduction** page appears.

	Site Setup
Studio	Introduction
Introduction Databases	You have two options when creating a new Site. The simplest option is to automatically create a fully configured, production-ready Site. The second, more advanced option is to create an empty Site, which you must configure yourself.
Licensing Connection Network	What kind of Site do you want to create?  A fully configured, production-ready Site (recommended for new users)
Additional Features Summary	Site name

2. Check the **A fully configured...** radio button, add a name in the **Site name** field, and then click **Next**.



Note: A site name is the name given to a product deployment. It comprises the Delivery Controllers and the other core components, VDAs, virtual resource connections (if used), plus the machine catalogs and Delivery Groups that you create and manage.

3. The **Databases** page appears. Check the **Create and setup databases from Studio** radio button, and then click **Next**.

#### The **Site Setup** page appears.

	Site Setup
Studio	Introduction
Introduction Databases	You have two options when creating a new Site. The simplest option is to automatically create a fully configured, production-ready Site. The second, more advanced option is to create an empty Site, which you must configure yourself.
Licensing Connection	What kind of Site do you want to create?
Network Additional Features	An empty, unconfigured Site
Summan	Site page.

4. Enter the License server address and then click Connect to open a Certification Authentication popup.

Studio	Licensing
	License server andress: wsp232834wss.amd.com
✓ Introduction	
✓ Databases	I want to:
Licensing	Certificate Authentication
Connection	
Network	This certificate is not trusted:
Additional Features	All services have not been configured.
Summary	wsp232834wss.amd.com View certificate
	Do not connect me
	I need to verify that this server is secure.
	Connect me
	I trust this server, remember it next time I connect.
	Confirm

5. In the popup, select **Connect me**, and then click **Confirm**.

The system connects to the specified licensing server, and then displays the **Licensing** page.

Studio	Licensing	
	License server address: wsp232834wss.an	nd.com
✓ Introduction		Connected to trusted serve View certificat
✓ Databases	I want to:	
Licensing	Use the free 30-day trial	
Connection	You can add a license later.	
Network	Use an existing license     The product list below is generated	by the license server
Additional Features	The product list below is generated in	by the license server.
Summary	Product Q Citrix XenDeckton Platinum	Model
	Citrix XenApp Platinum	Concurrent
		54
	Allocate and download Browse for	or license file
	You have "read only" access to the l	license server. To add licenses, contact your license

6. Check the **Use an existing license** and **Citrix XenDesktop Platinum** radio buttons, and then click **Next**.

The **Connection** page appears.

		ne setop
Studio	Connection Select a Connection type	e. If machine management is not used (for example when using physical
✓ Introduction	hardware), select 'No ma Connection type:	ichine management.' VMware vSphere®
Databases     Licensing     Connection	Connection address:	https://172.29.0.31/ Clearn about user permissions
Additional Features Summary	Password:	amdijerryj
	Create virtual machines Studio tools (Mai Select this option Other tools	XenDCMK2 using: shine Creation Services) when using AppDisks, even if you are using Provisioning Services.
		<u>B</u> ack <u>N</u> ext Cancel

- 7. Select the following:
  - **Connection type:** Citrix XenServer.
  - Connection address: IP address of the XenServer host.
  - **Username:** Your domain (if any) and username, such as amd/johndoe.
  - Password: Your password.
  - Connection name: Enter a name for this connection.
  - Create virtual machines using: Check the Other tools radio button.
- 8. Click Next to open a Certificate Authentication window.
- 9. Check the **Trust certificate** checkbox, and then click **OK**.
- 10. The Additional Features page appears. Leave all options blank, and then click Next.
- 11. The **Summary** page appears. Review the summary to ensure that all parameters are correctly configured, and then click **Finish**.

The system will configure Citrix Studio using the parameters you provided in Steps 1-10, above, and then return to the **Site Setup** window with the **Configuration** option checked.



## **Step 3: Configuring the Machine Catalog**

After configuring the basic options, the next step is to set up machines for desktops, applications, or remote access. To do this:

- 1. In the **Site Setup** window, click **Set up machines for desktop and applications or remote PC access**.
- 2. The Introduction page appears. Review the information on this page, and then click Next.

- 3. The **Operating System** page appears. Select **Remote PC Access**, and then **Next**.
- The Machine Catalog Setup page appears. Click the Add machine accounts... button. The Select Computers popup appears.

	Select Computers	? )
Select this object type:		
Computers		Object Types
From this location:		
Entire Directory		Locations
		Europeror io
Ener une object names	to select ( <u>examples</u> ):	
Enter the object names HDX-RF1	to select ( <u>examples</u> ):	Check Names
HDX-RF1	to select ( <u>examples</u> ):	Check Names
HDX-RF1	to select ( <u>examples</u> ):	

- 5. Enter the name of a guest virtual machine that will require HDX 3D Pro remote desktops, and then click the **Check Names** button. A line appears under the name if the system can find the specified computer.
- 6. Repeat Step 5 for each additional virtual machine that you want to add. Remember to click **Check Names** after each name you enter. When you have finished entering all virtual machines, click **OK** to continue.
- 7. In the Machine Accounts page, double-check the list of virtual machines, and then click Next.

The **Summary** page appears.

Studio	Summary	
<ul> <li>✓ Introduction</li> <li>✓ Operating System</li> <li>✓ Machine Accounts</li> <li>Summary</li> </ul>	Machine type: Machines added: VDA version: Scopes: Zone:	Remote PC Access 2 machines 7.9 - Primary
	Machine Catalog name:	
	HDX3D-RF Test	
	Machine Catalog descript	ion for administrators: (Optional)
	Example: Windows 7 SP1	desktops for the London Sales office
	To complete the deployme	ent, assign this Machine Catalog to a Delivery Group by selecting

8. Click Finish.

The **Creating Catalog** popup appears while the setup process completes. When complete, the system returns to the **Site Setup** window with both the **Configuration** and **Machine Catalogs** options checked.



## **Step 4: Setting up Delivery Groups**

After configuring the basic options and machine catalog, the next step is to set up delivery groups that will allow you to assign desktops and applications to users. To do this:

- 1. In the Site Setup window, click Set up Delivery Groups to assign desktops and applications to your users.
- 2. The Introduction page appears. Review the information on this page, and then click Next.
- 3. The **Machines** page appears. Select the catalog that you created in "Step 3: Configuring the Machine Catalog" on page 24, and then click **Next**.
- 4. The Users page appears. Proceed as follows:
  - If you want to allow any authenticated user to access this Delivery Group, then check the **Allow any authenticated users...** radio button, and then click **Next**. Skip to Step xx.
  - If you want to restrict access to this Delivery Group to only certain users, then check the Restrict use of this Delivery Group... radio button to open the Select Users or Groups popup, configure the authorized users, and then click Next. Be sure to click the Check Names button after each user/group you enter; a line appears under the name if it is valid. Proceed to Step 5.

The **Desktop Assignment Rules** page appears.

Display name:	win7 desktop
Description:	Example: Assigned desktops for Finance Dept.
	The name and description are shown in Receiver.
COLLVietur	Viration Tech Group (AMD) GPU Virtualizzation Tech Group)
GPU Virtua	alization Tech Group (AMD\GPU Virtualiazation Tech Group)
GPU Virtua	alization Tech Group (AMD\GPU Virtualiazation Tech Group)
GPU Virtua <u>A</u> dd Maximum deskt	alization Tech Group (AMD\GPU Virtualiazation Tech Group)           Remove           ops per user:         2

5. Click the **Add...** button to open the **Add Desktop Assignment Rule** popup.

- 6. Enter the following information:
  - Display name: Name of the desktop.,
  - **Description:** Brief description of the desktop (optional).
  - **Assignment:** Verify that the user(s) and/or group(s) that you entered in Step 4 are correct.
  - Enable desktop assignment rule: Make sure this checkbox is checked.
- 7. Click **OK** to proceed. The desktop display name and user/group list appears in the list. Click **Next**.

The **Summary** page appears.

8. Enter the **Delivery Group name**, an optional description, and then click **Finish**.

The system returns to the **Site Setup** window with all three sections (**Configuration**, **Machine Catalogs** , and **Delivery Groups**) populated.

Console Root	CITRIX				Actions	
Search	analy				Citrix Studio (HD)	(Test)
Machine Catalogs	Common Tasks Actions PowerShell				View	'
AppDisks					G Refresh	
Applications Policies Configuration A Administrators	Common Tasks Use this screen to perform common maintenance ta	sks.			📔 Help	
Hosting	Site configuration					
StoreFront	Task	Administrator	Time			
App-V Publishi	Set Site metadata property 'Studio_SiteConfiguration	AMD/JerryJ	9/19/2016 : 3:25:33 PM			
AppDNA	Create Machine 'win7 desktop' in Delivery Group 'RF	AMD/JerryJ	9/19/2016 : 3:25:30 PM			
Citrix StoreFront	Consta Dalloras Conce /DC Daabida a Tast	AAAPS lased	Tech	che		
ee Cronx storerront	Machine catalogs					
	HDX3D-RF Test	2 Machines		•		
	Delivery groups		Update master image Test ca	talog_		
	RF Destiktop Test	1 Machine		-		
		ſ		*		

## **Step 5: Verifying the XenDesktop Address**

To verify the XenDesktop address:

- 1. In Citrix Studio, select **Citrix Storefront**, and then select **View or Change Stores**.
- 2. Select the **Details** tab, and then note the **Store URL** entry.

<b>1</b>			Citrix Studio		R -	o x
Ele Action View Help						
Console Root	alanua				Actions	
A Citrix Studio (HDxTest)	cirkix				Stores	
Machine Catalogs	Name	Authenticated	Subscription Enabled	Access	Create Store	
AppDisks	Store Service	Yes	Yes	Internal network only	Export Multi-Sto	re Pro_
B Delivery Groups Applications Policies					Manage NetScal Manage Beacons	er Gat
C Logging					Set Default Webs	ite
Configuration					View	
Controllers	Details - Store Service				G Refresh	
Hosting	Details Delivery Controller	rs Receiver for Web	Stes		👔 Help	
StoreFront					Store Service	
<ul> <li>App-V Publishing</li> <li>AppDNA</li> <li>Zones</li> </ul>	A StoreFront using HTT	P not HTTPS.			Manage Delivery Configure Unifie	Contr d Expe
a 🛱 Citrix StoreFront	Store URL:	http://xendc2.am	d.com/Citrix/Store		Manage Authent	sicatio
Stores	Remote Access	Disabled	a.com/carear/iAgent/	config.xmt	Manage Receive	r for
Jerver Group	Advertised:	Ves	$\sim$ $<$	$\sim$	Configure Remo	te Acc.

3. Open a web browser, and then navigate to the Store URL. You should be able to access a remote desktop using your username and password.

#### **Step 6: Installing the Virtual Delivery Agent**

To install the Virtual Delivery Agent (VDA) on a guest virtual machine:

- 1. Log in to the virtual machine.
- 2. Either copy the Citrix Virtual Delivery Agent (VDA) standalone package (.iso) to the virtual machine, or map a network location that contains the package.
- 3. Mount the .iso and then execute autoselect.exe.

The following splash screen appears.

4. Click the **Start** button in the **XenDesktop** section.

The following screen appears.

Get Started	Prepare Machines and Images	Extend Deployment	
	Virtual Delivery Agent for Windows Server OS		
	Virtual Delivery Agent for Windows Desktop OS	Citrix Studio	
	Install this agent to deliver applications and desktops from Windows desktop OS- based VMs or physical machines.		
		Federated Authentication Service	
🗹 Send anonymous installation experience m	etrics to Citrix. Learn More		

- 5. Select Virtual Delivery Agent for Windows Desktop OS.
- 6. The **Environment** page appears. Check the **Enable Remote PC Access** radio button, and then click Next.
- 7. The HDX 3D Pro page appears. Check the Yes, install the VDA for HDX 3D Pro radio button, and then click Next.

8. The Core Components page appears.



9. If needed, click the Change... button to change the VDA installation location away from the default C:\Program Files\Citrix folder. You may also clear the Citrix Receiver checkbox because you are working on a target machine. Click Next when you have finished making any changes.

The **Delivery Controller** page appears.

Environment     Configuration     HDX 3D Pro     How do you want to enter the locations of your Delivery Controllers?     Delivery Controller     Features     Controller address:		Delivery Controller	(enDesktop 7.13
HDX 3D Pro  Core Components  Delivery Controller  Features  Controller address:		Configuration	Environment
Core Components Delivery Controller Features Controller address:	enter the locations of your Delivery Controllers?	How do you want to	HDX 3D Pro
Features Controller address:	•	Do it manually	Core Components Delivery Controller
Controller address:			Features
Firewall		Controller address:	Firewall
Summary XenDC2.amd.com	( ~	XenDC2.amd.com	Summary
Summary XenDC2 and com		Controller address: XenDC2 amd.com	Firewall Summary

- 10. Use the **How do you want...** pull-down menu to select **Do it manually**, and then:
  - a. Add the Windows Server 2012 virtual machine name (see "Step 1: Installing XenDesktop" on page 18) in the **Controller address** field.
  - b. Click the **Test Connection** button.
  - c. Verify that a green check mark appears after the connection name.
  - d. Click the Add button. If needed, you can edit or delete the connection.
  - e. Click Next when you have finished configuring and testing the connection.
- 6. The Features page appears, Keep the default selections, and then click Next.
- 7. The Firewall page appears. Check the Automatically radio button, and then click Next.
- The Summary page appears. Verify all of the selected options, and then click Install.
   A popup displays installation progress.
- 9. Some warnings about new Citrix devices/software, USB, and network protocols may appear. In each warning, click **Install** to continue.

10. The **Call Home** page appears. Make the appropriate selection for your needs, and then click **Next**.

The Finish installation page appears.

XenDesktop 7.13	Delivery Controller
✓ Environment	Configuration
✓ HDX 3D Pro	How do you want to enter the locations of your Delivery Controllers?
✓ Core Components	
Delivery Controller	Do it manually
Features	
Firewall	Controller address:
Summary	XenDC2.amd.com
Install	Test connection Add
Call Home	

11. Verify that the **Restart machine** checkbox is checked, and then click **Finish**.

The virtual machine will restart.

- 12. Once the virtual machine has restarted, log in using your username and password.
- 13. If needed, download the AMD graphics driver from http://www.amd.com/en-us/solutions/ professional/virtualization to the virtual machine, and then run the setup.



The **Device Manager** on the virtual machine will display **AMD MxGPU** as the **Display Adapter** once the driver setup process is completed.

# Step 7: Configuring XenApp

To configure Citrix Studio to deliver applications using XenApp:

1. In Citrix Studio, select Applications>Add Application.



The **Add Applications** window appears with the **Introduction** page displayed.

2. Accept the default options, and then click **Next** to proceed.

The **Groups** page appears.

	Add Applications			
Studio	Groups			
	Select one or more Application Groups o applications will be added.	or one or more Delivery Groups where the new		
✓ Introduction	Name	4 Machines		
Groups	<ul> <li>Application Groups (1)</li> </ul>			
Applications	▼ Delivery Groups (4)			
Summary	Amd-XenDesktop	1		
	WinSepter2016			
		$\checkmark$		
		$\sim$		
		Park Nort Canad		

3. Add a new delivery group and/or select one or more existing group(s), as appropriate, and then click **Next**.

The **Applications** page appears.

Studio	Applications
<ul> <li>✓ Introduction</li> <li>✓ Groups</li> </ul>	To add applications, click "Add" and choose a source. Then select applications from that source. If you choose Application Groups, all current and future applications in the selected groups will be added. You can also place new applications in a non-default folder and change application properties.
Applications	Add applications
	Add v Remove Properties
	Add  Remove Properties From start menu Manually Existing App-V

4. Select the applications to provision by choosing applications from the **Start** menu and/or by manually specifying the path to an application. Please refer to your Citrix documentation for additional instructions. Click **Next** when you have finished.

The **Summary** page appears.

5. Review the configuration, and then click **Finish**.

This page intentionally left blank.

## **Remote Connection Setup**

This chapter describes how to install Citrix Receiver on the client device, and then guides you through connecting to an MxGPU-enabled virtual machine. Installing Citrix Receiver is a one-time process; for subsequent connections, simply open a web browser to the Store URL, log in, and connect to an available virtual machine.

## **Step 1: Install Citrix Receiver**



Note: This is a one-time procedure. Once Citrix Receiver is installed on the client device, you can simply connect remotely to the virtual machine as described in "Step 2: Connect to the Virtual Machine" on page 37.

To install Citrix Receiver:

- 1. Log in to the client device.
- 2. Open a web browser and navigate to the Citrix StoreFront URL.



Note: You can view the Citrix StoreFront URL by opening Citrix Studio, selecting **Citrix Storefront>View or Change Stores**, and then noting the **Store URL**.

A Receiver page appears. Select I agree, and then click Install.

3. One or more warning popup(s) may appear. If this happens, click **Run** or **Yes**, as appropriate.

The Welcome to Citrix Receiver window appears.

<ul> <li>Allow applications to use your location.</li> <li>Allow access to local applications authorized by your company.</li> <li>Save your credential to log on automatically.</li> <li>Click Start to set up and install Citrix Receiver on your computer.</li> </ul>	сітярх Receiver	Citrix Receiver installs software that allows access to virtual applications that your organization provides, including software that allows access to the applications that use your browser. - Allow applications access to your webcam and microphone. - Allow applications to use your location. - Allow applications to use your location. - Allow applications to use your location. - Allow access to local applications authorized by your company. - Save your credential to log on automatically. Click Start to set up and install Citrix Receiver on your computer.
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

- 4. Click Start.
- 5. The License Agreement window appears. Check the I accept the license agreement checkbox, and then click Install.

A progress bar appears while Citrix Receiver installs on your system.

6. The **Installation Successful** window appears when the installation is complete. Click **Finish**.

7. Return to the web browser, and then click **Continue**.



Citrix Receiver is now installed on the client system.

#### Step 2: Connect to the Virtual Machine

To remotely connect to the virtual machine from the client system:

1. On the client system, open a web browser and navigate to the **Citrix StoreFront** page for your organization.



Note: You can view the Citrix StoreFront URL by opening Citrix Studio, selecting **Citrix Storefront>View or Change Stores**, and then noting the **Store URL**.

The **Citrix StoreFront** page appears.



2. Enter your username and password, and then click Log On.

#### XenDesktop

To access a full Windows Desktop delivered by XenDesktop:

1. The **StoreFront** page appears after you log in to the StoreFront. Click the **Desktop** button in the toolbar.



The guest virtual machine(s) registered with this Storeweb will appear.

	n ×
Citrix StoreFront	
	Q Jearch Desktops

2. Click the virtual machine that you want to connect to. If a warning appears, click Allow.

Citrix Receiver connects to the selected virtual machine and displays the virtual machine desktop in the window. Please refer to your Citrix documentation for information about Citrix Receiver.

#### XenApp

To access applications without a desktop delivered by Citrix XenApp:

1. The **StoreFront** page appears after you log in to the StoreFront. Click the **Apps** button in the toolbar.



The available applications registered with this Storeweb will appear.

Citrix StoreFront	Favorites	DESKTOPS	
Search Results (1)			
3DMark Details			

2. Click the application that you want to launch. If a warning appears, click Allow.

Citrix Receiver launches the selected application. Please refer to your Citrix documentation for information about Citrix Receiver.

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#### AMD MxGPU and Citrix XenServer/XenDesktop

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