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Citrix VDI-in-a-Box is a desktop virtualization solution that runs on off-the-shelf servers to deliver centrally-managed virtual desktops to any user, on any device.

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About Citrix VDI-in-a-Box 5.1.x

VDI-in-a-Box is a single virtual appliance that provides all of the functionality needed to create, provision, manage, and load balance virtual desktops. VDI-in-a-Box has a built-in connection broker, load balancer, user manager, and desktop provisioning server. It does not require separate shared storage, high-speed interconnects, or multiple management servers. The appliance runs on commodity servers running a hypervisor such as Citrix XenServer, Microsoft Hyper-V, or VMware ESXi.

Citrix Receiver helps provide VDI-in-a-Box desktop users with secure connections to a high-definition user experience. Powered by Citrix HDX technologies, VDI-in-a-Box provides a superior user experience with Flash multimedia and applications, 3D graphics, webcams, audio, and branch office delivery. Although the desktops run on remote servers, the user experience is equivalent to that of a local Windows desktop. From the user's perspective, logging on to a virtual desktop is the same as logging on to a local desktop.

New features

This release includes several new features and enhancements to Citrix VDI-in-a-Box.

Personal desktops

You can now create personalized desktops from a common published Windows 7 image by checking a box. Users can install applications of their choice, set their profiles, and store user data. Administrators can update, manage, backup, and restore these personalized desktops. When the published image is updated, the base image of all the personal desktops are automatically updated with the administrator’s changes and yet the user installed applications, profiles, and data remain intact.

Citrix recommends using a profile management application with the personal desktop feature to backup user profile data. Citrix Profile management is included with VDI-in-a-Box.

Automated Desktop Agent

The VDI-in-a-Box Desktop Agent resides on each desktop created from the published image. vdiManager communicates with the desktop through the agent. The new Desktop Agent process installs the agent on the draft image automatically.

The automated installation process is part of the process for creating a first draft image.
Active Directory failover

This release introduces Active Directory failover. VDI-in-a-Box automatically starts to use another Active Directory server if the primary server fails. Administrators can specify two or more Active Directory servers in a prioritized list. VDI-in-a-Box uses the primary Active Directory until it fails and then defaults to the next Active Directory on the list and continues in this fashion. VDI-in-a-Box periodically checks to see if failed Active Directory servers have recovered and automatically reverts back to the highest priority Active Directory server.

**Note:** To ensure uninterrupted desktop provisioning, each Active Directory in the list should contain identical data and be synchronized. VDI-in-a-Box does not provide a mechanism to ensure synchronized operations among the Active Directory servers.

Ability to specify virtual desktop names

This release allows administrators to specify the complete name of their virtual machines and computers. This allows administrators to track your virtual machines on your hypervisors and the associated computers on the Active Directory server.

The pattern is as follows:

`<prefix><suffix>`

The prefix accepts letters, numbers, and hyphens (-). The suffix only accepts numbers. One digit is required and up to four can be used. Use of leading zeroes is recommended.

Grid-wide virtual IP address

This feature allows user devices to access the grid through a single virtual IP address hosted by one of the servers in the grid. All user connection requests are sent to this host server. If the host server fails, another server in the grid becomes the host and fields the connection requests.

The grid-wide virtual IP address feature provides end-to-end high availability without requiring a load balancer between the user and the grid of servers. This feature works with any user device.

Citrix HDX 5.6 Feature Pack 1 support

This release includes Citrix HDX 5.6 Feature Pack 1.

Active Directory services search for users and groups

When assigning users or groups to virtual desktops, you can search for a user or a group and select from a list of matching names.
Multiple virtual CPU

Some applications either require or perform much better with multiple CPUs. This release allows a virtual desktop to be specified to run on multiple virtual CPUs. Use this option with care as it does require more physical CPU resources and can impact the number of desktops that can run on a server.

Separate user and computer domains

VDI-in-a-Box enables the flexibility to place users and desktops in different Windows domains. This is useful when security regulations require a more stringent relationship between users and their desktops.

Dual data stores

The dual data stores feature allows you to store images and personal desktops on a data store separate from that used by pooled desktops. This flexibility can be used in many ways, for example, storing the pooled desktops in a solid-state drive datastore for faster performance. Since pooled desktops require less space, better performance can be achieved by adding only small amounts of solid-state drives to a server.

Remote Desktop Gateway

Remote access to VDI-in-a-Box desktops is available through the Remote Desktop Gateway. The Remote Desktop Gateway must be set up in the demilitarized zone. It should be in the same domain as the virtual desktops to which it provides remote access. The vdiManager must be configured with the Remote Desktop Gateway's IP address.

Network Time Protocol

VDI-in-a-Box allows the use of a Network Time Protocol server as the master clock with which all the vdiManagers in the grid synchronize. This ensures that cross-server logs are consistent with respect to time.

Optimization for Google Earth

Desktops provisioned from VDI-in-a-Box are now able to provide sharper image quality for Google Earth when the Google Earth Optimization Pack is installed.

To install the Google Earth Optimization Pack, download the optimization pack from http://citrix.com/downloads/xendesktop/components/optimization-pack-for-google-earth.html to the draft image, then copy D3d9.dll to the folder containing Googleear.exe.

For additional information, see http://support.citrix.com/article/CTX131167

Note: Images running the optimization pack require at least two virtual CPUs.
Citrix Desktop Lock (Available from November 2012)

Use the Desktop Lock when users do not need to interact with the local desktop. In this access scenario, the virtual desktop effectively replaces the local one, allowing the user to interact with the virtual desktop as if it is local. This enables you to use workstations as thin clients to connect to VDI-in-a-Box.

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Download the Desktop Lock from the VDI-in-a-Box download page on the Citrix web site.
Known issues

Known issues for VDI-in-a-Box 5.1.1

This section contains:

- Installation issues
- General issues
- Third-party issues

Installation issues

- During an upgrade, if the Take grid out of maintenance mode confirmation dialog indicates that the grid nodes have different versions, wait a few minutes more before taking the grid out of maintenance mode. This additional time is needed because the servers in the grid are upgraded twice. [324628]

- After an upgrade, if the Status History contains two "Hyper-V Connector upgrade failed" entries followed by the entry "Server checks out fine," the upgrade was successful. [324937]

- A non-English Windows Server 2008 R2 environment upgraded from VDI-in-a-Box 5.0.2 to 5.1 has a status of "broken" if the firewall on the Hyper-V server blocks SMB ports (for file and printer sharing). To resolve this issue, uninstall the Hyper-V connector and manually install the VDI-in-a-Box 5.1.1 version, downloaded in VDI-in-a-Box_Hyper-V_v5_1_1.zip. [327239]

General issues

- XenServer 6.1 is not supported, and VDI-in-a-Box 5.1.x does not run on XenServer 6.1.

- The Citrix license may not be visible in the About dialog box after it has been uploaded to VDI-in-a-Box. If this occurs, restart the VDI-in-a-Box Manager on which the license was uploaded, reconnect to the VDI-in-a-Box Manager, and click About to see the license. [300849]

- VDI-in-a-Box does not support surrogate pair characters in hypervisor items such as VM name or Network name. [318681]

- VDI-in-a-Box does not support non-ASCII characters in VMware ESX or ESXi items. [318690]

- The user name displayed on the log on screen in an RDP session contains corrupted characters if the name includes non-ASCII characters. [321966]
VDI-in-a-Box does not support non-ASCII characters for the user name when the VDI-in-a-Box Java Desktop Client is started from a Command Prompt window. If possible, launch the Java Desktop Client with a Web browser by typing https://IPaddress/dt/vdiclient.jnlp in the Address box. [297880]

Personal desktops using Multiple Activation Key (MAK) activation consume a new activation each time the personal desktop is refreshed or reset. [317240]

File and printer sharing firewall exceptions are not created for the domain when you create a draft image from a base image that was a member of a workgroup before it was imported. To work around this issue, from the Control Panel go to System and Security > Windows Firewall > Allowed Programs and select File and Printer Sharing in the Domain column. [325619]

A personal desktop does not provision successfully if it has more vCPUs than the draft image. To work around this issue, set the vCPU on the draft image to the number to be used for provisioning. [326647]

Disabling the dual data stores feature after it has been enabled does not remove or block the second data store. Both data stores remain available. To remove the second data store, from the VDI-in-a-Box Manager Console, click the Servers tab and click the server to be configured. In the Server Properties dialog box, click Configure and in the Select datastores section, set both data stores to the same data store. [310168]

The Username field on the VDI-in-a-Box web logon page is case-sensitive if User Database is set to VDI-in-a-Box workgroup. [328059]

The HDX connection to a VDI-in-a-Box desktop running Windows 7 using a VMware ESX/ESXi hypervisor may fail. This can happen if VMware Tools has been updated on the image after the VDI-in-a-Box Desktop Agent was installed. To resolve this issue, disable the display adapter VMware SVGA 3D, which is added as part of the VMware Tools installation. [318109]

Issues fixed in VDI-in-a-Box 5.1.1

See Hotfix 1 for Citrix VDI-in-a-Box 5.1 at http://support.citrix.com/article/CTX135053.

Known issues for VDI-in-a-Box 5.1

This section contains:

- Installation issues
- General issues
- Third-party issues
- Globalization issues

Installation issues
Known issues

- During an upgrade, if the **Take grid out of maintenance mode** confirmation dialog indicates that the grid nodes have different versions, wait a few minutes more before taking the grid out of maintenance mode. This additional time is needed because the servers in the grid are upgraded twice. [324628]

- After an upgrade, if the Status History contains two “Hyper-V Connector upgrade failed” entries followed by the entry “Server checks out fine,” the upgrade was successful. [324937]

- You cannot establish an HDX-based connection to a draft image in a workgroup immediately after Desktop Agent installation. To work around this issue, restart the draft image from the Image page. [325666]

- A server upgraded from 5.0.2 to 5.1 has a status of “broken” if the firewall on the Hyper-V server blocks SMB ports (for file and printer sharing). To resolve this issue, either manually upgrade Hyper-V Connector or open File and Printer Sharing on the firewall and then restart vdiManager. For some non-English environments, you must restart vdiManager after manually upgrading Hyper-V Connector. [328040]

General issues

- The Citrix license may not be visible in the **About** dialog box after it has been uploaded to VDI-in-a-Box. If this occurs, restart the VDI-in-a-Box Manager on which the license was uploaded, reconnect to the VDI-in-a-Box Manager, and click **About** to see the license. [300849]

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- VDI-in-a-Box does not support non-ASCII characters in VMware ESX or ESXi items. [318690]

- The user name displayed on the log on screen in an RDP session contains corrupted characters if the name includes non-ASCII characters. [321966]

- VDI-in-a-Box does not support non-ASCII characters for the user name when the VDI-in-a-Box Java Desktop Client is started from a **Command Prompt** window. If possible, launch the Java Desktop Client with a Web browser by typing https://IPaddress/dt/vdiclient.jnlp in the **Address** box. [297880]

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data store, from the VDI-in-a-Box Manager Console, click the Servers tab and click the server to be configured. In the Server Properties dialog box, click Configure and in the Select datastores section, set both data stores to the same data store. [310168]

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- The HDX connection to a VDI-in-a-Box desktop running Windows 7 using a VMware ESX/ESXi hypervisor may fail. This can happen if VMware Tools has been updated on the image after the VDI-in-a-Box Desktop Agent was installed. To resolve this issue, disable the display adapter VMware SVGA 3D, which is added as part of the VMware Tools installation. [318109]

- The error dialog box that lists the possible causes of a credentials failing during an image import does not include this cause: “The Trust Relationship between the selected image and the domain failed. Please rejoin the image to the domain.” [327674]

**Third-party issues**

- The error “SSL Certificate for vdiHVConnector failed to install” appears during installation of VDI-in-a-Box for Hyper-V due to a Windows issue documented in the Microsoft Support article Default permissions for the MachineKeys folders.

  When modifying permissions on the Machine Keys folder, configure SYSTEM and the Administrators group with Full access to the Machine Keys folder and all of its subfolders. If an “Access is denied” dialog box appears for individual files, click Continue as many times as is required to complete the operation. [328174]

**Globalization issues**

- VDI-in-a-Box does not support non-ASCII characters in ESXi hypervisor items. [318690]

- VDI-in-a-Box does not support Surrogate Pairs characters in hypervisor items such as VM name or Network Adopter name. [318681]
VDI-in-a-Box architecture

The VDI-in-a-Box appliance, referred to as VDI-in-a-Box Manager or vdiManager, runs as a virtual machine on a hypervisor. vdiManager creates and manages virtual desktops on the local physical server by communicating with the local hypervisor.

Each vdiManager can be set up to run as a single physical server or it can be a part of a collection of physical servers referred to as a VDI-In-a-Box grid. Each vdiManager in a grid performs the following functions:

- Creates virtual desktops from a template. A template consists of:
VDI-in-a-Box architecture

- An image that includes a desktop operating system (such as Windows Server 2008 R2 Service Pack 1, Windows 7, or Windows XP), a set of applications, and the VDI-in-a-Box Desktop Agent, which communicates with the vdiManager about user connections and desktop health. Multiple templates can use the same image.

- Policies that specify characteristics such as how many desktops to create, how much RAM to allocate to them, whether local USB peripherals can be accessed by the virtual desktop, and the desktop refresh policy.

- Balances the load across the grid. vdiManagers create desktops across servers running vdiManager based on how many desktops are currently running on each server and the availability of computing resources (memory and cores) on each server. When a user logs on, vdiManager provisions a desktop from a lightly loaded server.

- Provides high availability. vdiManager instances on physical servers communicate with each other to share key operational and configuration information.

  For instance, VDI-in-a-Box templates and images are stored on multiple servers so they are not lost if a physical server fails. When a physical server fails, the remaining servers in the grid have the needed information to create extra desktops to replace those on the failed server. When the failed server is repaired and rejoins the grid, the key operational and configuration information is sent to it and it then resumes desktop provisioning.

- Brokers connections so that a user can log on to any server in the grid.

- Provides a web-based interface, the VDI-in-a-Box console, used to configure and manage servers running vdiManager, desktops, templates, images, users, and the grid, all at the grid level. In the VDI-in-a-Box console, the grid appears as one logical server running vdiManager. It is also possible to view the status and activity of each server individually when required. When you update vdiManager on one server, vdiManager distributes the changes to all servers in the grid.

VDI-in-a-Box is designed to work without shared storage. A direct access storage device for each server is sufficient.

User authentication and user data

VDI-in-a-Box allows you to choose between Active Directory and Workgroups.

VDI-in-a-Box uses Active Directory for authentication and a simple network file system to hold user data.
For Windows domain environments, Active Directory service is required to provide user authorization and authentication.

Active Directory can also be used to provide “roaming profiles,” keeping user application configurations and their My Documents folders in a central location outside of the desktop. With this approach users are presented with a personalized desktop each time they log on. While the use of roaming profiles is optional, it provides personalization that makes the user experience for virtual desktops nearly identical to that for a physical desktop. Use of third-party profile management tools with VDI-in-a-Box requires only the deployment of their agents on each VDI-in-a-Box image.

Each server running vdiManager requires sufficient local storage to keep images, templates, and configuration information needed for a highly available system. VDI-in-a-Box does not back up user data stored on virtual desktops. Typical usage is to create desktops dynamically from a template and destroy them based on a refresh policy. A simple network file system is sufficient to keep user data outside the desktop.

For sites using Workgroups, VDI-in-a-Box includes a user database for authentication.
System requirements for VDI-in-a-Box 5.1.x

The following hypervisors, user devices, and system resources are required to work with Citrix VDI-in-a-Box.

Note: VDI-in-a-Box implements its own clustering therefore, Citrix recommend not enabling your hypervisor’s own clustering/pooling feature.

Supported hypervisors

Citrix XenServer

- Citrix XenServer 6.0 - 6.0.2 Platinum, Enterprise, Advanced, and Free editions
- Citrix XenServer 5.6 Feature Pack 1. Platinum, Enterprise, Advanced, and Free editions
- Citrix XenServer 5.6 Service Pack 2. Platinum, Enterprise, Advanced, and Free editions

Note: Servers in a XenServer pool are not supported by VDI-in-a-Box.

To optimize usage of space on your servers, consider using the XenServer Thin Provisioning feature.

Microsoft Hyper-V

- Microsoft Hyper-V Server 2008 R2 with Service Pack 1
- Windows Server 2008 R2 with Service Pack 1, Enterprise edition, with Hyper-V role enabled
  - Dynamic Host Configuration Protocol (DHCP) server - supported
  - Active Directory - supported
- Windows Server 2008 R2 with Service Pack 1 Server Core, with Hyper-V role enabled
  - Dynamic Host Configuration Protocol (DHCP) server - supported
  - Active Directory - supported

Note: Windows Server 2008 R2 with Service Pack 1, Standard edition is not supported by VDI-in-a-Box for use with Hyper-V.

VMware ESXi or VMware vSphere

- VMware Essentials license or greater is required.

Note: If you are evaluating Citrix VDI-in-a-Box and have downloaded a free version of ESXi from the VMware Web site, do not install the license key that comes with that
System requirements for VDI-in-a-Box 5.1.x

version. If you install this license key, the APIs required for Citrix VDI-in-a-Box to work with the hypervisor close and the setup process ends. Leave the license selection as Evaluation Mode (No License Key). Convert to a paid hypervisor license during the trial period.

- VMware ESXi 5.0 Update 1
- VMware ESXi 4.1 Update 2

Citrix Profile Management

VDI-in-a-Box supports Citrix Profile management 4.1.1.

Web browsers - accessing the vdiManager console

Use the following Web browsers to access the VDI-in-a-Box Manager (vdiManager) console:

- Windows Internet Explorer 9 and 8
- Google Chrome
- Mozilla Firefox

Web browsers - accessing desktops from user devices

Use the following Web browsers to access the VDI-in-a-Box provisioned desktops from user devices:

- Windows Internet Explorer 9 and 8
- Google Chrome
- Mozilla Firefox
- Safari 5
- Opera 11

User devices

VDI-in-a-Box provisioned desktops can be accessed from a Web browser, Citrix Receiver, or the VDI-in-a-Box Java Desktop Client (using Java SE Runtime Environment (JRE) 6 or 7). All three access methods require Citrix Receiver on the user device. Java Desktop Client requires JRE 6 or 7 on the user device.

Devices running the following are supported:

- Windows XP Service Pack 3 – 32-bit or 64-bit versions
- Windows 7 Service Pack 1 – 32-bit or 64-bit versions
- Windows Server 2008 R2 with Service Pack 1 – 64-bit version
- Mac OS X 10.8
- Ubuntu 12.04 Long Term Support (LTS) - 32-bit version
- Ubuntu 12.04 Long Term Support (LTS) - 64-bit version
- iOS 5.0.1 or 5.1 (for iPhones and iPads)
- Android 3.1, 3.2.6, or 4.04


To use the Desktop Lock, user devices must be running Windows XP or Windows 7 and have Receiver Enterprise edition installed.

**Secure remote connectivity**

Secure remote connections from user devices to virtual desktops are supported for the following products:

- Citrix Access Gateway VPX 5.0.4
- Citrix Netscaler Access Gateway 10
- Remote Desktop Gateway with Remote Desktop Connection 6.1 or 7

**Virtual desktop operating systems**

- Windows XP Service Pack 3, Professional edition - 32-bit version
- Windows 7 Service Pack 1 Professional, Enterprise editions - 32-bit or 64-bit versions
- Windows Server 2008 R2 with Service Pack 1, Enterprise edition - 64-bit version
- Windows 8 RTM - 32-bit or 64-bit versions (Experimental. For RDP connections only.)
- Windows Server 2012, Standard edition - 64-bit version (Experimental. For RDP connections only.)

Windows 7 N is not supported.
Size your VDI-in-a-Box infrastructure

This topic provides recommended CPU, memory, disk, and storage allocations to use when sizing a VDI-in-a-Box deployment. These recommendations are based on average knowledge or task worker desktops and may vary based on your desktop needs.

Note: Desktop performance depends on many factors, including user workload, applications, hypervisors, and type of server components (CPU, clock speed, amount of L1/L2 cache, cache size of disk controllers, and so on).

Server sizing calculators are available:

- Partners: Go to http://www.citrix.com/skb, click VDI-in-a-Box, and then click Citrix VDI-in-a-Box 5.1 Server Sizing Tool.

**CPU**

- For standard CPUs:
  - 3 desktops per core for knowledge workers
  - 6 desktops per core for task workers
- For CPUs with hyper-threading:
  - 4 desktops per core for knowledge workers
  - 10 desktops per core for task workers
- Personal desktops consume up to 15% CPU overhead compared to pooled desktops. Be more conservative when sizing CPUs for grids with a large number of personal desktops.
  - At least 1 core is required for the hypervisor.

**Memory (RAM)**

- For Windows 7 and Windows Server 2008 R2 desktops: 1.5 - 2 GB
- For Windows XP desktops: 0.5 - 1 GB
- At least 1 GB for the VDI-in-a-Box appliance
Size your VDI-in-a-Box infrastructure

- 10% reserved for server operations
- Hypervisor RAM varies with hypervisor type:
  - Citrix XenServer
    
    128 MB for the hypervisor + 752 MB for Dom0 + 20 MB + 1024 * 1% per virtual machine (VM)

    Increase the Dom0 size to 2940 MB if there are more than 75 VMs per server.
  - Microsoft Hyper-V
    
    300 MB for the hypervisor + 32 MB for the first 1 GB of RAM, then 8 MB for every 1 GB of RAM thereafter per VM
  - VMware ESXi or VMware vSphere
    
    800 MB for the hypervisor + 25 MB for the first 1 GB of RAM, then 8 MB for every 1 GB of RAM thereafter per VM

Example:

<table>
<thead>
<tr>
<th>Number of desktops</th>
<th>Citrix XenServer</th>
<th>Microsoft Hyper-V</th>
<th>VMware ESXi or VMware vSphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Windows 7 or Windows Server 2008 R2 knowledge worker: 2 GB</td>
<td>Windows 7 or Windows Server 2008 R2 knowledge worker: 2 GB</td>
<td>Windows 7 or Windows Server 2008 R2 knowledge worker: 3 GB</td>
</tr>
<tr>
<td></td>
<td>Windows XP task worker: 2 GB</td>
<td>Windows XP task worker: 2 GB</td>
<td>Windows XP task worker: 2 GB</td>
</tr>
<tr>
<td>50</td>
<td>Windows 7 or Windows Server 2008 R2 knowledge worker: 3 GB</td>
<td>Windows 7 or Windows Server 2008 R2 knowledge worker: 3 GB</td>
<td>Windows 7 or Windows Server 2008 R2 knowledge worker: 4 GB</td>
</tr>
<tr>
<td></td>
<td>Windows XP task worker: 3 GB</td>
<td>Windows XP task worker: 3 GB</td>
<td>Windows XP task worker: 4 GB</td>
</tr>
<tr>
<td>75</td>
<td>Windows 7 or Windows Server 2008 R2 knowledge worker: 7 GB</td>
<td>Windows 7 or Windows Server 2008 R2 knowledge worker: 4 GB</td>
<td>Windows 7 or Windows Server 2008 R2 knowledge worker: 5 GB</td>
</tr>
<tr>
<td></td>
<td>Windows XP task worker: 6 GB</td>
<td>Windows XP task worker: 3 GB</td>
<td>Windows XP task worker: 4 GB</td>
</tr>
<tr>
<td>100</td>
<td>Windows 7 or Windows Server 2008 R2 knowledge worker: 8 GB</td>
<td>Windows 7 or Windows Server 2008 R2 knowledge worker: 5 GB</td>
<td>Windows 7 or Windows Server 2008 R2 knowledge worker: 6 GB</td>
</tr>
<tr>
<td></td>
<td>Windows XP task worker: 7 GB</td>
<td>Windows XP task worker: 4 GB</td>
<td>Windows XP task worker: 5 GB</td>
</tr>
</tbody>
</table>
Disk

- Hard drives
  - SAS: 10 K (minimum), 15 K (preferred), or SSD

<table>
<thead>
<tr>
<th>Hard drive RPM</th>
<th>IOPS (Raid 0)</th>
<th>IOPS (Raid 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSD</td>
<td>6000</td>
<td></td>
</tr>
<tr>
<td>15,000</td>
<td>175</td>
<td>122.5</td>
</tr>
<tr>
<td>10,000</td>
<td>125</td>
<td>87.5</td>
</tr>
</tbody>
</table>

- IOPS are calculated with a 40-60 split between Read and Write OPS during end-user desktop access.

- RAID 1, 0+1, and 1+0 reduce IOPS and increase the number of disks and storage required.

  Disk IOPS capacity formula: (Read ops x 40%) + (Write ops x 60%) x 0.5

For example, assuming a 15 K SAS drive, 175 IOPS, and Raid 10 configuration, the IOPS calculation is: (175 x 40%) + (175 x 60%) x 50% = 122.5 IOPS.

- Minimum desktop IOPS requirements:

<table>
<thead>
<tr>
<th>Desktop IOPS</th>
<th>Windows 7 or Windows Server 2008 R2</th>
<th>Windows XP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task worker</td>
<td>10 IOPS</td>
<td>5 IOPS</td>
</tr>
<tr>
<td>Knowledge worker</td>
<td>20 IOPS</td>
<td>10 IOPS</td>
</tr>
</tbody>
</table>

- Approximate number of disks required:

<table>
<thead>
<tr>
<th>Desktops</th>
<th>Disks (Raid 0)</th>
<th>Disks (Raid 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>50</td>
<td>6 to 8</td>
<td>12 to 16</td>
</tr>
<tr>
<td>75</td>
<td>10 to 12</td>
<td>20 to 24</td>
</tr>
</tbody>
</table>

Note: Raid 0 is sufficient for server-level high availability with pooled desktops and provides the best performance. Use Raid 1 or Raid 10 to protect the server from disk-level failure. Use Raid 1 or Raid 10 to halve the storage capacity (for 1 TB per server, it provides 2 TB of disk capacity).

Storage

Capacity is determined by the number of images, the number of desktops, and the type of desktops.

Formula:
Size your VDI-in-a-Box infrastructure

- Golden image: 2 * total golden image size
- VDI-in-a-Box appliance: 75 GB (can be reduced)
- Per pooled desktop: 15% of size of golden image

Assumptions for pooled desktops: User and profile data are stored externally for pooled desktops. Desktops are refreshed frequently (at least weekly or bi-weekly). If that is not the case in your deployment, or if you have applications that require more write space, allocate more than 15% per pooled desktop.

- Per personal desktop: Size assigned per template, between 4 to 60 GB
- Swap space: VM RAM size * number of VMs
- Thin clone expansion buffer: 10% * golden image size * number of desktops

Example:

<table>
<thead>
<tr>
<th></th>
<th>50 pooled desktops</th>
<th>40 pooled desktops + 10 personal desktops (80/20 split)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golden image</td>
<td>2 * 20 GB * 2 = 80 GB</td>
<td></td>
</tr>
<tr>
<td>VDI-in-a-Box appliance</td>
<td>75 GB</td>
<td></td>
</tr>
<tr>
<td>Image space per desktop</td>
<td>15% * 20 GB * 50 = 150 GB</td>
<td>Pooled: 15% * 20 GB * 40 = 120 GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Personal: 8 GB * 10 = 80 GB</td>
</tr>
<tr>
<td>Swap space</td>
<td>2 GB * 50 = 100 GB</td>
<td></td>
</tr>
<tr>
<td>Thin clone expansion buffer</td>
<td>10% * 20 GB * 50 = 100 GB</td>
<td></td>
</tr>
<tr>
<td>Recommended per-server storage</td>
<td>Total: 505 GB</td>
<td>Total: 555 GB</td>
</tr>
<tr>
<td></td>
<td>Recommended: 750 GB to about 1 TB</td>
<td>Recommended: 850 GB to about 1 TB</td>
</tr>
</tbody>
</table>
Before getting started with VDI-in-a-Box

Before proceeding with the installation, configuration, and use of Citrix VDI-in-a-Box, you must have the following available:

- One or more servers running one of the following hypervisor systems:
  - Citrix XenServer/XenCenter
  - Microsoft Hyper-V/Hyper-V Manager
  - VMware ESXi/vSphere Client
  - Windows Volume License
  - Dynamic Host Configuration Protocol (DHCP) server
Get started with VDI-in-a-Box

The get started topics take you through the process of creating a Citrix VDI-in-a-Box grid on hypervisor using a Windows operating system image. The following scenarios are covered:

- Citrix XenServer using a Windows 7 image
- Citrix XenServer using a Windows XP image
- Citrix XenServer using a Windows Server 2008 R2 image
- Microsoft Hyper-V using a Windows 7 image
- Microsoft Hyper-V using a Windows XP image
- Microsoft Hyper-V using a Windows Server 2008 R2 image
- VMware ESXi using a Windows 7 image
- VMware ESXi using a Windows XP image
- VMware ESXi using a Windows Server 2008 R2 image
Citrix XenServer using a Windows 7 image

Use the get started topics to set up a Citrix VDI-in-a-Box deployment:

- To download and extract the VDI-in-a-Box Manager
- Create and configure the grid
- Create the first Windows image
- To create the first template from the published image
- To edit the template
- Assign templates to users, groups, and IP addresses
- Test the connection as a user
To download and extract the VDI-in-a-Box Manager

Download the VDI-in-a-Box virtual appliance, called VDI-in-a-Box Manager (vdiManager), for use with Citrix XenServer from the Citrix website.

The download package, VDI-in-a-Box_XenServer_v5_1_0.zip, contains the vdiManager file, vdiManager_Xen_v5_1_0.xva. About 1.9 GB of disk space is needed to extract vdiManager.

Note: Be sure to download and extract the file to a location accessible with Citrix XenCenter.


2. If you are not already logged on to My Citrix, do so now.

3. Click Downloads.

4. From the products list, select VDI-in-a-Box.

5. From the download type list, select Product Software.

6. Click Find. The VDI-in-a-Box product software page appears.

7. Click VDI-in-a-Box 5.1. The VDI-in-a-Box 5.1 page appears.

8. From the Appliances section, for the version that matches your hypervisor, click Download.

The End-User License Agreement appears.

9. Accept the agreement. The Download Manager window opens.
To download and extract the VDI-in-a-Box Manager

10. Click **Download Now**.

11. Click **Install** and save VDI-in-a-Box_XenServer_v5_1_0.zip. The Download Manager downloads the zip file.

12. From the zip file, extract the vdiManager file, vdiManager_Xen_v5_1_0.xva.

**To import vdiManager**

When the vdiManager file, vdiManager_Xen_v5_1_0.xva, is extracted, import it into Citrix XenCenter. For details on importing with XenCenter, see your XenServer documentation. When the import process is finished, vdiManager appears in the XenCenter management console as a virtual machine.

**Important:** Do not import more than one vdiManager per hypervisor. Doing so may result in excessive CPU, RAM, disk, and network consumption, and cause system non-responsiveness.
Create and configure the grid

Configure the VDI-in-a-Box grid once VDI-in-a-Box Manager (vdiManager) has been imported into your hypervisor and is available in its management console.

The grid unites servers running vdiManager, allowing load balancing and ensuring high availability of virtual machines on the servers.

Enable JavaScript and cookies on your browser.

To open the vdiManager console for first time setup

These steps may vary slightly depending on your Web browser.

1. In your hypervisor, ensure vdiManager is started and in a powered on state.

   **Note:** If you have not already done so, make note of the vdiManager IP address.

2. In your Web browser’s URL box, type **https://<IPaddress>/admin/** and press Enter. A security warning about the Web site’s certificate may appear.

3. Accept the certificate as trusted and continue. If additional warnings appear, accept those, too. The *Citrix VDI-in-a-Box Administrator Login* page appears.

4. On the *Citrix VDI-in-a-Box Administrator Login* page, in the **Username** box, type **vdiadmin**.

5. In the **Password** box, type **kaviza** and click **Log On**. The *Welcome* page, showing the four high-level steps necessary to complete virtual desktops, appears.
Create and configure the grid

Welcome!

Thank you for choosing VDI-in-a-Box. We want this to be a fast and pleasant experience. Below is a brief overview of the set up process. If you want background information on VDI-in-a-Box before you get started, go to support.citrix.com/VDI-in-a-Box.

Overview

Below are the 4 steps you will need to complete in order to generate desktops for your users.

1. Set up your Hypervisor and VDI-in-a-Box Grid
2. Generate a Base Desktop Image
3. Create Desktop Template from the Base Image
4. Assign Users to Desktops

Get Started
To set up the hypervisor

1. On the Welcome page, click Get Started. The Set up your Hypervisor and VDI-in-a-Box Grid page appears.

2. Click Continue. The Hypervisor page of the VDI-in-a-Box Initial Setup wizard appears.

3. In the IP Address box, type the IP address for the server running your hypervisor.

4. In the User Name and Password boxes, type your user name and password. The user account must have root privileges.

5. Click Next. The Datastore page of the VDI-in-a-Box Initial Setup wizard appears.

To set up the data store and network label

The data store contains your desktop images and virtual desktops.

Note: If you are using ESXi or Hyper-V, do not change any data store's name after specifying it in VDI-in-a-Box, otherwise desktop generation and cleanup processes will fail.

1. On the Datastore page, select the data store and network label.
2. Click **Next**. The data store information is saved and the **Grid** page of the VDI-in-a-Box Initial Setup wizard appears, allowing you to create a new grid or join an existing grid.

**Select a new or existing grid**

Create a new grid when setting up a new VDI-in-a-Box environment. When creating a new grid, you must associate it with a database containing the users and groups who will be accessing the VDI-in-a-Box virtual machines. The database can be your Active Directory server or a locally stored database called a workgroup.

Join an existing grid when expanding a VDI-in-a-Box environment.
To create a new grid and assign a database

1. On the Grid page, select Create a new VDI-in-a-Box grid and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. In User Database, select VDI-in-a-Box workgroup or Microsoft Active Directory. If you selected Microsoft Active Directory, you must provide additional information. If you selected VDI-in-a-Box workgroup, you do not need to provide this information.
3. If you selected Active Directory, in the IP Address box, type the IP address hosting the database.

4. If you selected Active Directory, in the Domain box, type the DNS domain.

5. If you selected Active Directory, in the User Name and Password boxes, type your user name and password. The user must have Domain Administrator privileges.

6. Click Next. The question “Have you reserved a dedicated IP address for VDI-in-a-Box Manager?,” appears.

7. Select Yes or No and click Done. The Generate a Base Desktop Image page appears.
To join an existing grid

1. In the VDI-in-a-Box Initial Set up wizard, on the Grid page, select Join a VDI-in-a-Box server on an existing grid and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. On the Configuration page, in the IP Address box, type the IP address of the vdiManager in the existing grid.

3. On the Configuration page, in the User Name and Password boxes, type your vdiManager console user name and password.

4. Click Next. The grid configuration process is finished.
Create the first Windows image

After you have created your VDI-in-a-Box Manager (vdiManager) and associated it with a data store, database, and grid, you can create your first Windows image.

Use your hypervisor to create a new virtual machine running Windows. Refer to your hypervisor documentation for details.

When creating the virtual machine, be sure that it meets the following conditions:

- The virtual machine is running Windows XP Professional edition (32-bit) or Windows 7 Professional or Enterprise editions (32-bit or 64-bit).
- Remote Desktop Connection (RDP) functionality must be enabled on the virtual machine.
- The virtual machine has only one network interface card (NIC) and it is assigned to Device 0.
- The virtual machine has only one disk image.
- The virtual machine must be started and in a powered on state prior to importing into VDI-in-a-Box.
- The virtual machine has at least 4 GB of space available.

To prepare for importing the image

You must complete the following steps outside VDI-in-a-Box. See the respective manufacturers’ documentation for details.

1. Activate the virtual machine using a valid Microsoft Volume Activation key.

2. Enable the Local Administrator account on the virtual machine.

3. Install your hypervisor’s management tools on the virtual machine. See the hypervisor manufacturer’s documentation for details.

4. If desired, join the virtual machine to a domain.

   Note: The virtual machine can be a member of a workgroup.

5. Log on to the virtual machine as the local administrator and enable remote connections for your users.

6. Enable File and Printer Sharing in firewall settings to allow remote agent installation. See the firewall manufacturer’s documentation for details.
To import the Windows virtual machine

If the Generate a Base Desktop Image page is not currently displayed in your Web browser, navigate to your new vdiManager (https://<IPaddress>/admin/) and log on.

1. On the Generate a Base Desktop Image page, click Continue.

2. On the Import new VM page, select the virtual machine you want to use as an image.

3. In the New Image Name box, type a name for the imported virtual machine.

   **Note**: The name should be different from the name of the source image.

4. In the Description box, type a description of the virtual machine and click Import. The Specify Administrator Credentials dialog box appears.
5. Select whether to provide credentials for an administrator or a local user with administrator privileges.


6. Type the user name and password for an account with administrator privileges on the image and click **OK**. The import and Desktop Agent installation process begins creating a draft image, and a status page appears showing the progress. The **Edit Image** page of the Import new VM wizard appears.

---

**To edit the draft image**

Edit the draft image to add any necessary updates, settings, or patches as well as any applications to be included in the deployed image. A checklist is provided to help ensure the image meets all prerequisites for producing desktops.

1. On the **Edit Image** page, click **Connect**.
2. In the Citrix VDI-in-a-Box Log in dialog box, provide your administrator credentials for the image and click Log in.

3. Edit the image as necessary and log off.

4. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

5. On the Edit Image page, click View. A list of prerequisites, in question format, appears.
Create the first Windows image

*Note:* The prerequisites vary based on hypervisor and image operating system.

6. Click Yes to indicate each prerequisite has been met.

7. When all prerequisites have been met, click Done. The prerequisites close and the Edit Image page appears.

8. Click Next. The Prepare Image page appears.

**To prepare the image**

On the Prepare Image page, select whether the image will be used to generate pooled or personal desktops. Pooled desktops are single-disk desktops derived from the published image, which you are in the process of building with this wizard. Personal desktops are two-disk desktops joining the published image with a personal vDisk. For details about personal desktops, see Manage personal desktops. An image prepared for use with a personal desktop can also be used to generate pooled desktops, allowing you flexibility in how you use your published image. However, if you intend to use an image to generate pooled desktops only, prepare it using the Pooled desktops option to avoid adding unnecessary personal vDisk settings.

1. On the Prepare Image page, in the Domain name box, if it is active, select the domain or workgroup.
Create the first Windows image

2. In the optional Organizational unit (OU) box, type the organization unit to which the image will apply.

3. Select Pooled desktops or Pooled and personal desktops.

4. Click Prepare. The Confirm message appears.

5. Click Confirm. The Confirm message and the Prepare Image page close. A status page appears showing the progress. A test desktop is created based on the prepared image and the Test Image page appears.

To test the prepared desktop image

Use the test image to verify the prepared draft image is suitable for generating your desktops and that users can connect to their desktops through HDX and RDP. The test image and any changes made to it are deleted when the draft image is saved.

1. On the Test Image page, click Connect. The Connect to the draft image dialog box appears.
2. In the **Connect to the draft image** dialog box, select **Use Citrix HDX** and click **Connect**. The Citrix VDI-in-a-Box Log in dialog box appears.

3. Provide user credentials and click **Log in** to log on to the test image through an HDX connection. The test image opens through an HDX connection.

4. Verify that the installed applications are functioning properly and the required group policies are applied.

5. If your grid is configured with Active Directory, log off and log on as a domain user to test access.

6. Log off from the test image. The test image closes.

7. In the **Citrix VDI-in-a-Box Log in** dialog box, click **Cancel** to close it.

8. On the **Test Image** page, click **Connect**.

9. In the **Connect to the draft image** dialog box, select **Use Microsoft RDP** and click **Connect**. The test image opens through an RDP connection.

10. Log on to the test image to verify the RDP connection works properly and then log off. The test image closes.

11. On the **Test Image** page, click **Save**. The Confirm message appears.

12. In the Confirm message, click **Confirm**. The Confirm message and **Test Image** page close. A status page appears showing the progress. The **Create Desktop Templates from the Base Image** page appears.
To create the first template from the published image

Use templates to create uniform virtual desktops that meet your specifications. Templates consist of an image and policies. The image contains the operating system and applications that run on the desktop. For details on creating an image, see Create the first Windows image. One image can be used by multiple templates.

**Important:** You must have created and published at least one image before you can create a template.

Policies, which you set while creating the template, are characteristics such as how many desktops to create and how much RAM to allocate.

Establish naming patterns for all desktops generated by your templates by setting computer names with prefixes and suffixes. The prefix and suffix can combine to be up to 15 characters long. Use leading zeros in the suffix to hold places for up to four digits. The number generated by the suffix increases with each virtual desktop. For example, if you set the computer prefix `<name>` and the suffix as 0000 and generate 2 virtual desktops, they will be called `<name>`0001 and `<name>`0002. If leading zeros are not included in the suffix, they will not be included in the resulting names. For example, a suffix value of 1 produces `<name>`1, `<name>`2, `<name>`3, and so on.

The template gives you the option to pre-start desktops. Pre-started desktops are in a powered-on state and at the logon prompt, ready for use. Pre-starting desktops eliminates the need for users to wait for virtual desktops to start. When you specify a number of desktops for pre-start, VDI-in-a-Box maintains that number as users log on. For example, if you specify five pre-started desktops in the template, there will be five virtual desktops started and waiting for your users. When two users log on to their desktops, VDI-in-a-Box starts two more desktops to maintain the requested five pre-starts. This continues until your stated maximum number for the template is reached. If the pre-start value for a template is 0, the template is shut down and no users can connect to it.

If the Create Desktop Templates from the Base Image page is not currently displayed in your Web browser, navigate to your new VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the Create Desktop Templates from the Base Image page, click Continue. The Template Information page of the Create a New Desktop Template wizard appears.
To create the first template from the published image

2. In the **Template Name** box, type a name for the template.

3. From the list of available images, select the image you want to associate with this template.

4. In the **Description** box, type a description of the template.

5. In the **Prefix** box, provide a prefix for the generated images.
   
   **Note:** Valid characters for the prefix include numbers, letters, and hyphens (-).

6. In the **Suffix** box, provide a new suffix.
   
   **Note:** The combined prefix and suffix can be up to 15 characters. The suffix must be at least one numeric character and can be up to four numeric characters. Leading zeros are allowed.

7. From the **Memory (MB)** list, allocate memory for the desktop.
   
   **Note:** Citrix recommends allocating at least 1536 MB of memory for Windows 7 and Windows Server 2008 R2 desktops. For Windows XP desktops, a minimum of 512 MB of memory is required and 1 GB of memory is recommended.

8. From the **Virtual CPUs** list, select the number of CPUs to be assigned to each generated desktop.

9. Select any local devices, such as disk drives or printers, you want to connect to the virtual desktops.
To create the first template from the published image

10. Adjust the color depth of the HDX connection as necessary.

11. If your published image has a Key Management Service (KMS) activation key, Citrix recommends selecting **Reset the activation time (KMS clients)**.

12. Click **Next**. The **Template Policies** page appears.
13. In the **Maximum desktops** box, type the maximum number of desktops to deploy from this template.

14. In the **Pre-started desktops** box, type the number of desktops that should be started and available for users upon logon. You must pre-start at least one desktop or users will not be able to access the template.

   **Note:** For testing purposes, Citrix recommends setting a maximum of two desktops with one pre-started desktop.

15. Select **Make this the default template** to provide this template to any user with access to whom a template has not been assigned.

   **Note:** If a default template has not been designated for the grid, users who have not been assigned a template will have their logon credentials rejected.

16. Select whether the template type is **Pooled Desktop** or **Personal Desktop**. Different information is required for each type.

17. If you selected Pooled Desktop, from the **Refresh desktop** list, select a method of refresh. The refresh method determines when users' desktops are replaced with a fresh desktop matching the template. Note that if you select 'On logout', this does not apply to administrators; for debugging reasons, administrators are allowed to log on and off without triggering desktop lifecycle events.

   - **On logout**: Refreshes the desktop each time the user logs off.
To create the first template from the published image

- **Scheduled**: Refreshes at a set day and time on a daily, weekly, or monthly basis. You can include desktops in use at the scheduled time. If you exclude in-use desktops, they are replaced when the user logs out following the scheduled refresh.

- **Scheduled or on logout**: Refreshes at a set day and time and each time the user logs off. This is useful in environments where users stay logged on to desktops for extended periods.

- **Manual**: Refreshes only through your action. This setting results in a persistent desktop, one which remains with the user indefinitely. Users can add applications and other modifications with the expectation that they will be available with each log on.

18. If you selected Pooled Desktop, select **Do not reassign desktops "On Hold" to new users** to allow desktops to be held by users.

   **Note**: This option is selected by default.

19. If you selected Pooled Desktop, select **Enable fast refresh of desktops** to quicken the refresh process when users log off.

20. If you selected Personal Desktop, select the personal desktop disk size.

21. Click **Save**.

22. Click **Close**. The number of desktops designated for pre-start are started and the **Assign Users to Desktops** page appears.
To edit the template

You can change the maximum number of desktops, the number of pre-started desktops, and make other changes by editing your template.

If the VDI-in-a-Box console is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the VDI-in-a-box console, click the Templates tab.
2. Click the name of the template you want to edit.
3. Make the desired changes and click Save.

**Important:** Save is on the Template Policies page.
Assign templates to users, groups, and IP addresses

When you have created your templates, you can assign them to users, user groups, and IP addresses. Users and groups can have multiple templates assigned to them. When templates are assigned to an IP address, such as for a kiosk, all users logging on at that kiosk receive the same desktop.

If a user has not been assigned a template and logs on, that user receives the default template. If you have not specified a default template, that user’s credentials are rejected.

If the Assign Users to Desktops page is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

To assign templates to user groups

1. On the Assign Users to Desktops page, click Continue. The Users page appears. It contains tables for user groups, users, and IP addresses.

2. At the User Groups table, click Add. A row for a new user group entry appears in the User Group table.

<table>
<thead>
<tr>
<th>Group Name</th>
<th>Description</th>
<th># Templates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>None</td>
</tr>
</tbody>
</table>

3. In the Group Name box, you can type the name of the group to which you want to assign a template. If Active Directory is used as the user database, type the first characters of the group name and press Enter to select from matching groups.

4. In the Description box, type a group description.

5. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the group. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

6. Click Save. The group is added to the table.

7. Repeat these steps to assign templates to additional groups.
To assign templates to users

1. At the Users table, click Add. A row for a new user entry appears in the Users table.

2. In the User ID box, you can type the user ID of a user to whom you want to assign a template. If Active Directory is used as the user database, type the first characters of the User ID and press Enter to select from matching IDs.

   **Note:** First Name, Last Name, and Group are optional and automatically filled in if the user and full information are in the Active directory.

3. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the user. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

4. Click Save. The user is added to the table.

5. Repeat these steps to assign templates to additional users.
To assign templates to incoming IP addresses

1. At the IP Addresses table, click Add. A row for a new IP address entry appears in the IP Addresses table.

2. In the IP Address Ranges box, type the ranges of the user device IP addresses to which you want to assign a template. Addresses can be added as individual addresses (192.168.23.143), prefixes (192.168), or ranges (192.168.10.174-204). Separate entries with new lines or spaces.

3. From the templates list, select the template you want to assign to the IP address.

4. Click Save. The IP address is added to the table.

5. Repeat these steps to assign additional templates to IP addresses.

   Note: Once a template is assigned, it cannot be assigned again until the existing assignment is terminated.

To edit template assignments

1. In the VDI-in-a-Box console, select the Users page.

2. Point to the user group, user, or IP address whose template you want to edit and click Edit.

3. Edit as necessary and click Save.
Test the connection as a user

After setting up a template, creating desktops from the template, and assigning them to users, log on to a desktop as a user to ensure the connection works correctly. To do this, you must first install the latest version of Citrix Receiver, if you have not already done so. If you plan to use the Java Desktop Client, you must also install Java SE Runtime Environment (JRE) 6 or 7.

To prepare your user device

Prepare your user device for testing by installing Citrix Receiver to take advantage of the HDX connections.

- If it is not already installed, from https://www.citrix.com, download Citrix Receiver following the directions provided at that web site.

- If you plan to use the Java Desktop Client, ensure you have JRE 6 or 7 installed on the user device. If necessary, obtain the latest version from https://www.java.com, following the directions provided at that web site.

To connect to the desktop

These steps may vary slightly depending on your web browser.

1. Start your web browser.

2. In the web browser address box, type https://<Ipaddress>/ . A security warning about the web site's certificate may appear.

3. Accept the certificate as trusted and continue.

4. In the Citrix VDI-in-a-Box page, in the Username box, type your user name.

5. In the Password box, type your password and click Log On.

6. Click the desired desktop. You are connected to the virtual desktop.

To connect to the desktop through the VDI-in-a-Box Java Desktop Client from a web browser

These steps may vary slightly based on the Web browser you are using.

1. Start your web browser.
2. In the web browser address box, type https://<IPaddress>/dt/vdiclient.jnlp. A security warning about the web site's certificate may appear.

3. Accept the certificate as trusted and continue. Depending on which web browser you are using, the Opening vdiclient.jnlp dialog box appears.

4. If the Opening vdiclient.jnlp dialog box appears, ensure Open with is selected and Java(TM) Web Start Launcher (default) appears from the list next to it, then click OK.

5. In the Citrix VDI-in-a-Box Client dialog box, type your user credentials and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.

To connect to the desktop though the VDI-in-a-Box Java Desktop Client from a command prompt

These steps may vary slightly based on the user device you are using.

1. Open the Command Prompt window.

2. Type the command: javaws https://<IPaddress>/dt/vdiclient.jnlp.

3. Press Enter.

4. In the Log on dialog box, in the User name box, type your user name.

5. In the Password box, type your password and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.
Citrix XenServer using a Windows XP image

Use the get started topics to set up a Citrix VDI-in-a-Box deployment:

- To download and extract the VDI-in-a-Box Manager
- Create and configure the grid
- Create the first Windows image
- To create the first template from the published image
- To edit the template
- Assign templates to users, groups, and IP addresses
- Test the connection as a user
To download and extract the VDI-in-a-Box Manager

Download the VDI-in-a-Box virtual appliance, called VDI-in-a-Box Manager (vdiManager), for use with Citrix XenServer from the Citrix website.

The download package, VDI-in-a-Box_XenServer_v5_1_0.zip, contains the vdiManager file, vdiManager_Xen_v5_1_0.xva. About 1.9 GB of disk space is needed to extract vdiManager.

**Note:** Be sure to download and extract the file to a location accessible with Citrix XenCenter.

2. If you are not already logged on to My Citrix, do so now.
3. Click **Downloads**.
4. From the products list, select **VDI-in-a-Box**.
5. From the download type list, select **Product Software**.
6. Click **Find**. The VDI-in-a-Box product software page appears.
7. Click **VDI-in-a-Box 5.1**. The VDI-in-a-Box 5.1 page appears.
8. From the Appliances section, for the version that matches your hypervisor, click **Download**.

The End-User License Agreement appears.

9. Accept the agreement. The **Download Manager** window opens.
To download and extract the VDI-in-a-Box Manager

10. Click Download Now.

11. Click Install and save VDI-in-a-Box_XenServer_v5_1_0.zip. The Download Manager downloads the zip file.

12. From the zip file, extract the vdiManager file, vdiManager_Xen_v5_1_0.xva.

To import vdiManager

When the vdiManager file, vdiManager_Xen_v5_1_0.xva, is extracted, import it into Citrix XenCenter. For details on importing with XenCenter, see your XenServer documentation. When the import process is finished, vdiManager appears in the XenCenter management console as a virtual machine.

**Important:** Do not import more than one vdiManager per hypervisor. Doing so may result in excessive CPU, RAM, disk, and network consumption, and cause system non-responsiveness.
Create and configure the grid

Configure the VDI-in-a-Box grid once VDI-in-a-Box Manager (vdilManager) has been imported into your hypervisor and is available in its management console.

The grid unites servers running vdiManager, allowing load balancing and ensuring high availability of virtual machines on the servers.

Enable JavaScript and cookies on your browser.

To open the vdiManager console for first time setup

These steps may vary slightly depending on your Web browser.

1. In your hypervisor, ensure vdiManager is started and in a powered on state.
   
   **Note:** If you have not already done so, make note of the vdiManager IP address.

2. In your Web browser’s URL box, type `https://<IPaddress>/admin/` and press Enter. A security warning about the Web site’s certificate may appear.

3. Accept the certificate as trusted and continue. If additional warnings appear, accept those, too. The Citrix VDI-in-a-Box Administrator Login page appears.

4. On the Citrix VDI-in-a-Box Administrator Login page, in the **Username** box, type `vdiadmin`.

5. In the **Password** box, type `kaviza` and click **Log On**. The **Welcome** page, showing the four high-level steps necessary to complete virtual desktops, appears.
Create and configure the grid

VDI-in-a-Box

Welcome!
Thank you for choosing VDI-in-a-Box. We want this to be a fast and pleasant experience. Below is a brief overview of the set up process. If you want background information on VDI-in-a-Box before you get started, go to support.citrix.com/VDI-in-a-Box.

Overview
Below are the 4 steps you will need to complete in order to generate desktops for your users.

1. Set up your Hypervisor and VDI-in-a-Box Grid
2. Generate a Base Desktop Image
3. Create Desktop Templates from the Base Image
4. Assign Users to Desktops

Get Started
To set up the hypervisor

1. On the Welcome page, click Get Started. The Set up your Hypervisor and VDI-in-a-Box Grid page appears.

2. Click Continue. The Hypervisor page of the VDI-in-a-Box Initial Set up wizard appears.

3. In the IP Address box, type the IP address for the server running your hypervisor.

4. In the User Name and Password boxes, type your user name and password. The user account must have root privileges.

5. Click Next. The Datastore page of the VDI-in-a-Box Initial Set up wizard appears.

To set up the data store and network label

The data store contains your desktop images and virtual desktops.

Note: If you are using ESXi or Hyper-V, do not change any data store's name after specifying it in VDI-in-a-Box, otherwise desktop generation and cleanup processes will fail.

1. On the Datastore page, select the data store and network label.
2. Click Next. The data store information is saved and the Grid page of the VDI-in-a-Box Initial Setup wizard appears, allowing you to create a new grid or join an existing grid.

## Select a new or existing grid

Create a new grid when setting up a new VDI-in-a-Box environment. When creating a new grid, you must associate it with a database containing the users and groups who will be accessing the VDI-in-a-Box virtual machines. The database can be your Active Directory server or a locally stored database called a workgroup.

Join an existing grid when expanding a VDI-in-a-Box environment.
To create a new grid and assign a database

1. On the Grid page, select Create a new VDI-in-a-Box grid and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. In User Database, select VDI-in-a-Box workgroup or Microsoft Active Directory. If you selected Microsoft Active Directory, you must provide additional information. If you selected VDI-in-a-Box workgroup, you do not need to provide this information.

![VDI-in-a-Box Initial Set up](image)
3. If you selected Active Directory, in the IP Address box, type the IP address hosting the database.

4. If you selected Active Directory, in the Domain box, type the DNS domain.

5. If you selected Active Directory, in the User Name and Password boxes, type your user name and password. The user must have Domain Administrator privileges.

6. Click Next. The question "Have you reserved a dedicated IP address for VDI-in-a-Box Manager?," appears.

7. Select Yes or No and click Done. The Generate a Base Desktop Image page appears.
To join an existing grid

1. In the VDI-in-a-Box Initial Set up wizard, on the Grid page, select Join a VDI-in-a-Box server on an existing grid and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. On the Configuration page, in the IP Address box, type the IP address of the vdiManager in the existing grid.

3. On the Configuration page, in the User Name and Password boxes, type your vdiManager console user name and password.

4. Click Next. The grid configuration process is finished.
Create the first Windows image

After you have created your VDI-in-a-Box Manager (vdiManager) and associated it with a data store, database, and grid, you can create your first Windows image.

Use your hypervisor to create a new virtual machine running Windows. Refer to your hypervisor documentation for details.

When creating the virtual machine, be sure that it meets the following conditions:

- The virtual machine is running Windows XP Professional edition (32-bit) or Windows 7 Professional or Enterprise editions (32-bit or 64-bit).
- Remote Desktop Connection (RDP) functionality must be enabled on the virtual machine.
- The virtual machine has only one network interface card (NIC) and it is assigned to Device 0.
- The virtual machine has only one disk image.
- The virtual machine must be started and in a powered on state prior to importing into VDI-in-a-Box.
- The virtual machine has at least 4 GB of space available.

To prepare for importing the image

You must complete the following steps outside VDI-in-a-Box. See the respective manufacturers’ documentation for details.

1. Install your hypervisor’s management tools on the virtual machine. See the hypervisor manufacturer’s documentation for details.

2. If desired, join the virtual machine to a domain.
   
   **Note:** The virtual machine can be a member of a workgroup.

3. Log on to the virtual machine as the local administrator and enable remote connections for your users.

4. Enable **File and Printer Sharing** in firewall settings to allow remote agent installation. See the firewall manufacturer’s documentation for details.

5. In the **Advanced Setting** section of the **View** dialog box (**My Computer > Tools > Folder Options > View**), disable **Use simple file sharing**.
To import the Windows virtual machine

If the Generate a Base Desktop Image page is not currently displayed in your Web browser, navigate to your new vdiManager (https://<IPaddress>/admin/) and log on.

1. On the Generate a Base Desktop Image page, click Continue.

2. On the Import new VM page, select the virtual machine you want to use as an image.

3. In the New Image Name box, type a name for the imported virtual machine.
   
   **Note:** The name should be different from the name of the source image.

4. In the Description box, type a description of the virtual machine and click Import. The Specify Administrator Credentials dialog box appears.
5. Type the user name and password for an account with administrator privileges on the image and click OK. The import and Desktop Agent installation process begins creating a draft image, and a status page appears showing the progress. The **Edit Image** page of the Import new VM wizard appears.

**To edit the draft image**

Edit the draft image to add any necessary updates, settings, or patches as well as any applications to be included in the deployed image. A checklist is provided to help ensure the image meets all prerequisites for producing desktops.

1. On the **Edit Image** page, click **Connect**.
2. In the Citrix VDI-in-a-Box Log in dialog box, provide your administrator credentials for the image and click Log in.

3. Edit the image as necessary and log off.

4. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

5. On the Edit Image page, click View. A list of prerequisites, in question format, appears.
Create the first Windows image

Note: The prerequisites vary based on hypervisor and image operating system.

6. Click Yes to indicate each prerequisite has been met.

7. When all prerequisites have been met, click Done. The prerequisites close and the Edit Image page appears.

8. Click Next. The Prepare Image page appears.

To prepare the image

1. On the Prepare Image page, in the Domain name box, if it is active, select the domain or workgroup.

2. In the optional Organizational unit (OU) box, type the organization unit to which the image will apply.

3. Click Prepare. The Confirm message appears.

4. In the Confirm message, click Confirm. The Confirm message and the Prepare Image page close. A status page appears showing the progress. A test desktop is created based on the prepared image and the Test Image page appears.

To test the prepared desktop image
Create the first Windows image

Use the test image to verify the prepared draft image is suitable for generating your desktops and that users can connect to their desktops through HDX and RDP. The test image and any changes made to it are deleted when the draft image is saved.

1. On the Test Image page, click Connect. The Connect to the draft image dialog box appears.

   ![Connect to the draft image dialog box](image-url)
Create the first Windows image

2. In the Connect to the draft image dialog box, select Use Citrix HDX and click Connect. The Citrix VDI-in-a-Box Log in dialog box appears.

3. Provide user credentials and click Log in to log on to the test image through an HDX connection. The test image opens through an HDX connection.

4. Verify that the installed applications are functioning properly and the required group policies are applied.

5. If your grid is configured with Active Directory, log off and log on as a domain user to test access.

6. Log off from the test image. The test image closes.

7. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

8. On the Test Image page, click Connect.

9. In the Connect to the draft image dialog box, select Use Microsoft RDP and click Connect. The test image opens through an RDP connection.

10. Log on to the test image to verify the RDP connection works properly and then log off. The test image closes.


12. In the Confirm message, click Confirm. The Confirm message and Test Image page close. A status page appears showing the progress. The Create Desktop Templates from the Base Image page appears.
To create the first template from the published image

Use templates to create uniform virtual desktops that meet your specifications. Templates consist of an image and policies. The image contains the operating system and applications that run on the desktop. For details on creating an image, see Create the first Windows image.

**Important:** You must have created and published at least one image before you can create a template.

Policies, which you set while creating the template, are characteristics such as how many desktops to create and how much RAM to allocate.

Establish naming patterns for all desktops generated by your templates by setting computer names with prefixes and suffixes. The prefix and suffix can combine to be up to 15 characters long. The suffix can be up to four numeric characters. Leading zeros are acceptable in the suffix. The number generated by the suffix increases with each virtual desktop. For example, if you set the computer prefix `<name>` and the suffix as 0000 and generate 2 virtual desktops, they will be called `<name>0001` and `<name>0002`. If leading zeros are not included in the suffix, they will not be included in the resulting names. For example, a suffix value of 1 produces `<name>1`, `<name>2`, `<name>3`, and so on.

The template gives you the option to pre-start desktops. Pre-started desktops are in a powered-on state and at the logon prompt, ready for use. Pre-starting desktops eliminates the need for users to wait for virtual desktops to start. When you specify a number of desktops for pre-start, VDI-in-a-Box maintains that number as users log on. For example, if you specify five pre-started desktops in the template, there will be five virtual desktops started and waiting for your users. When two users log on to their desktops, VDI-in-a-Box starts two more desktops to maintain the requested five pre-starts. This continues until your stated maximum number for the template is reached. If the pre-start value for a template is 0, the template is shut down and no users can connect to it.

**Note:** When the image is running Windows XP, the template provisions pooled desktops only.

If the Create Desktop Templates from the Base Image page is not currently displayed in your Web browser, navigate to your new VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the Create Desktop Templates from the Base Image page, click Continue. The Template Information page of the Create a New Desktop Template wizard appears.
To create the first template from the published image

2. In the **Template Name** box, type a name for the template.

3. From the list of available images, select the image you want to associate with this template.

4. In the **Description** box, type a description of the template.

5. In the **Prefix** box, provide a prefix for the generated images.
   
   **Note:** Valid characters for the prefix include numbers, letters, and hyphens (-).

6. In the **Suffix** box, provide a suffix.
   
   **Note:** The combined prefix and suffix can be up to 15 characters. The suffix must be at least one numeric character and can be up to four numeric characters. Leading zeros are allowed.

7. From the **Memory (MB)** list, allocate memory for the desktop.
   
   **Note:** Citrix recommends allocating at least 1536 MB of memory for Windows 7 and Windows Server 2008 R2 desktops. For Windows XP desktops, a minimum of 512 MB of memory is required and 1 GB of memory is recommended.

8. From the **Virtual CPUs** list, select the number of CPUs to be assigned to each generated desktop.

9. Select any local devices, such as disk drives or printers, you want to connect to the virtual desktops.
10. Adjust the color depth of the HDX connection as necessary.

11. Click Next. The Template Policies page appears.

12. In the Maximum desktops box, type the maximum number of desktops to deploy from this template.

13. In the Pre-started desktops box, type the number of desktops that should be started and available for users upon logon. You must pre-start at least one desktop or users will not be able to access the template.

   Note: For testing purposes, Citrix recommends setting a maximum of two desktops with one pre-started desktop.

14. From the Refresh desktop list, select a method of refresh. The refresh method determines when users’ desktops are replaced with a fresh desktop matching the template. Note that if you select ‘On logout’, this does not apply to administrators; for debugging reasons, administrators are allowed to log on and off without triggering desktop lifecycle events.

   - **On logout**: Refreshes the desktop each time the user logs off.
   
   - **Scheduled**: Refreshes at a set day and time on a daily, weekly, or monthly basis. You can include desktops in use at the scheduled time. If you exclude in-use desktops, they are replaced when the user logs out following the scheduled refresh.

   - **Scheduled or on logout**: Refreshes at a set day and time and each time the user logs off. This is useful in environments where users stay logged on to desktops for extended periods.
To create the first template from the published image

- **Manual**: Refreshes only through your action. This setting results in a persistent desktop, one which remains with the user indefinitely. Users can add applications and other modifications with the expectation that they will be available with each log on.

15. Select **Do not reassign desktops "On Hold" to new users** to allow desktops to be held by users.

   **Note**: This option is selected by default.

16. Select **Enable fast refresh of desktops** to quicken the refresh process when users log off.

17. Select **Make this the default template** to provide this template to any user with access to whom a template has not been assigned.

   **Note**: If a default template has not been designated for the grid, users who have not been assigned a template will have their logon credentials rejected.

18. Click **Save**.

19. Click **Close**. The number of desktops designated for pre-start are started and the Assign Users to Desktops page appears.
To edit the template

You can change the maximum number of desktops, the number of pre-started desktops, and make other changes by editing your template.

If the VDI-in-a-Box console is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the VDI-in-a-box console, click the Templates tab.
2. Click the name of the template you want to edit.
3. Make the desired changes and click Save.

**Important:** Save is on the Template Policies page.
Assign templates to users, groups, and IP addresses

When you have created your templates, you can assign them to users, user groups, and IP addresses. Users and groups can have multiple templates assigned to them. When templates are assigned to an IP address, such as for a kiosk, all users logging on at that kiosk receive the same desktop.

If a user has not been assigned a template and logs on, that user receives the default template. If you have not specified a default template, that user's credentials are rejected.

If the Assign Users to Desktops page is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

To assign templates to user groups

1. On the Assign Users to Desktops page, click Continue. The Users page appears. It contains tables for user groups, users, and IP addresses.

2. At the User Groups table, click Add. A row for a new user group entry appears in the User Group table.

3. In the Group Name box, you can type the name of the group to which you want to assign a template. If Active Directory is used as the user database, type the first characters of the group name and press Enter to select from matching groups.

4. In the Description box, type a group description.

5. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the group. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

6. Click Save. The group is added to the table.

7. Repeat these steps to assign templates to additional groups.
To assign templates to users

1. At the Users table, click Add. A row for a new user entry appears in the Users table.

   ![Users table](image)

2. In the User ID box, you can type the user ID of a user to whom you want to assign a template. If Active Directory is used as the user database, type the first characters of the User ID and press Enter to select from matching IDs.

   **Note:** First Name, Last Name, and Group are optional and automatically filled in if the user and full information are in the Active directory.

3. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the user. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

4. Click Save. The user is added to the table.

5. Repeat these steps to assign templates to additional users.
To assign templates to incoming IP addresses

1. At the IP Addresses table, click Add. A row for a new IP address entry appears in the IP Addresses table.

![IP Addresses Table]

2. In the IP Address Ranges box, type the ranges of the user device IP addresses to which you want to assign a template. Addresses can be added as individual addresses (192.168.23.143), prefixes (192.168), or ranges (192.168.10.174-204). Separate entries with new lines or spaces.

3. From the templates list, select the template you want to assign to the IP address.

4. Click Save. The IP address is added to the table.

5. Repeat these steps to assign additional templates to IP addresses.

**Note:** Once a template is assigned, it cannot be assigned again until the existing assignment is terminated.

To edit template assignments

1. In the VDI-in-a-Box console, select the Users page.

2. Point to the user group, user, or IP address whose template you want to edit and click Edit.

3. Edit as necessary and click Save.
Test the connection as a user

After setting up a template, creating desktops from the template, and assigning them to users, log on to a desktop as a user to ensure the connection works correctly. To do this, you must first install the latest version of Citrix Receiver, if you have not already done so. If you plan to use the Java Desktop Client, you must also install Java SE Runtime Environment (JRE) 6 or 7.

To prepare your user device

Prepare your user device for testing by installing Citrix Receiver to take advantage of the HDX connections.

- If it is not already installed, from https://www.citrix.com, download Citrix Receiver following the directions provided at that web site.
- If you plan to use the Java Desktop Client, ensure you have JRE 6 or 7 installed on the user device. If necessary, obtain the latest version from https://www.java.com, following the directions provided at that web site.

To connect to the desktop

These steps may vary slightly depending on your web browser.

1. Start your web browser.

2. In the web browser address box, type https://<IPaddress>/ . A security warning about the web site's certificate may appear.

3. Accept the certificate as trusted and continue.

4. In the Citrix VDI-in-a-Box page, in the Username box, type your user name.

5. In the Password box, type your password and click Log On.

6. Click the desired desktop. You are connected to the virtual desktop.

To connect to the desktop through the VDI-in-a-Box Java Desktop Client from a web browser

These steps may vary slightly based on the Web browser you are using.

1. Start your web browser.
2. In the web browser address box, type `https://<IPaddress>/dt/vdiclient.jnlp`. A security warning about the web site's certificate may appear.

3. Accept the certificate as trusted and continue. Depending on which web browser you are using, the Opening vdiclient.jnlp dialog box appears.

4. If the Opening vdiclient.jnlp dialog box appears, ensure Open with is selected and Java(TM) Web Start Launcher (default) appears from the list next to it, then click OK.

5. In the Citrix VDI-in-a-Box Client dialog box, type your user credentials and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.

To connect to the desktop though the VDI-in-a-Box Java Desktop Client from a command prompt

These steps may vary slightly based on the user device you are using.

1. Open the Command Prompt window.

2. Type the command: `javaws https://<IPaddress>/dt/vdiclient.jnlp`.

3. Press Enter.

4. In the Log on dialog box, in the User name box, type your user name.

5. In the Password box, type your password and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.
Citrix XenServer using a Windows Server 2008 R2 image

Use the get started topics to set up a Citrix VDI-in-a-Box deployment:

- To download and extract the VDI-in-a-Box Manager
- Create and configure the grid
- Create the first Windows image
- To create the first template from the published image
- To edit the template
- Assign templates to users, groups, and IP addresses
- Test the connection as a user
To download and extract the VDI-in-a-Box Manager

Download the VDI-in-a-Box virtual appliance, called VDI-in-a-Box Manager (vdiManager), for use with Citrix XenServer from the Citrix website.

The download package, VDI-in-a-Box_XenServer_v5_1_1.zip, contains the vdiManager file, vdiManager_Xen_v5_1_1.xva. About 1.9 GB of disk space is needed to extract vdiManager.

**Note:** Be sure to download and extract the file to a location accessible with Citrix XenCenter.

2. If you are not already logged on to My Citrix, do so now.
3. Click Downloads.
4. From the products list, select VDI-in-a-Box.
5. From the download type list, select Product Software.
6. Click Find. The VDI-in-a-Box product software page appears.
7. Click VDI-in-a-Box 5.1.1. The VDI-in-a-Box 5.1.1 page appears.
8. From the Appliances section, for the version that matches your hypervisor, click Download.

The End-User License Agreement appears.

9. Accept the agreement. The Download Manager window opens.
To download and extract the VDI-in-a-Box Manager

10. Click Download Now.

11. Click Install and save VDI-in-a-Box_XenServer_v5_1_1.zip. The Download Manager downloads the zip file.

12. From the zip file, extract the vdiManager file, vdiManager_Xen_v5_1_1.xva.

To import vdiManager

When the vdiManager file, vdiManager_Xen_v5_1_1.xva, is extracted, import it into Citrix XenCenter. For details on importing with XenCenter, see your XenServer documentation. When the import process is finished, vdiManager appears in the XenCenter management console as a virtual machine.

**Important:** Do not import more than one vdiManager per hypervisor. Doing so may result in excessive CPU, RAM, disk, and network consumption, and cause system non-responsiveness.
Create and configure the grid

Configure the VDI-in-a-Box grid once VDI-in-a-Box Manager (vdiManager) has been imported into your hypervisor and is available in its management console.

The grid unites servers running vdiManager, allowing load balancing and ensuring high availability of virtual machines on the servers.

Enable JavaScript and cookies on your browser.

To open the vdiManager console for first time setup

These steps may vary slightly depending on your Web browser.

1. In your hypervisor, ensure vdiManager is started and in a powered on state.

   Note: If you have not already done so, make note of the vdiManager IP address.

2. In your Web browser’s URL box, type https://<IPaddress>/admin/ and press Enter. A security warning about the Web site’s certificate may appear.

3. Accept the certificate as trusted and continue. If additional warnings appear, accept those, too. The Citrix VDI-in-a-Box Administrator Login page appears.

4. On the Citrix VDI-in-a-Box Administrator Login page, in the Username box, type vdiadmin.

5. In the Password box, type kaviza and click Log On. The Welcome page, showing the four high-level steps necessary to complete virtual desktops, appears.
Create and configure the grid

Welcome!
Thank you for choosing VDI-in-a-Box. We want this to be a fast and pleasant experience. Below is a brief overview of the set up process. If you want background information on VDI-in-a-Box before you get started, go to support.citrix.com/VDI-in-a-Box.

Overview
Below are the 4 steps you will need to complete in order to generate desktops for your users.

1. Set up your Hypervisor and VDI-in-a-Box Grid
2. Generate a Base Desktop Image
3. Create Desktop Template from the Base Image
4. Assign Users to Desktops

Get Started
To set up the hypervisor

1. On the Welcome page, click Get Started. The Set up your Hypervisor and VDI-in-a-Box Grid page appears.

2. Click Continue. The Hypervisor page of the VDI-in-a-Box Initial Set up wizard appears.

3. In the IP Address box, type the IP address for the server running your hypervisor.

4. In the User Name and Password boxes, type your user name and password. The user account must have root privileges.

5. Click Next. The Datastore page of the VDI-in-a-Box Initial Set up wizard appears.

To set up the data store and network label

The data store contains your desktop images and virtual desktops.

1. On the Datastore page, select the data store and network label.
Create and configure the grid

2. Click Next. The data store information is saved and the Grid page of the VDI-in-a-Box Initial Setup wizard appears, allowing you to create a new grid or join an existing grid.

Select a new or existing grid

Create a new grid when setting up a new VDI-in-a-Box environment. When creating a new grid, you must associate it with a database containing the users and groups who will be accessing the VDI-in-a-Box virtual machines. The database can be your Active Directory server or a locally stored database called a workgroup.

Join an existing grid when expanding a VDI-in-a-Box environment.
To create a new grid and assign a database

1. On the Grid page, select Create a new VDI-in-a-Box grid and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. In User Database, select VDI-in-a-Box workgroup or Microsoft Active Directory. If you selected Microsoft Active Directory, you must provide additional information. If you selected VDI-in-a-Box workgroup, you do not need to provide this information.
3. If you selected Active Directory, in the **IP Address** box, type the IP address hosting the database.

4. If you selected Active Directory, in the **Domain** box, type the DNS domain.

5. If you selected Active Directory, in the **User Name** and **Password** boxes, type your user name and password. The user must have Domain Administrator privileges.

6. Click **Next**. The question "Have you reserved a dedicated IP address for VDI-in-a-Box Manager?," appears.

7. Select **Yes** or **No** and click **Done**. The Generate a **Base Desktop Image** page appears.
To join an existing grid

1. In the VDI-in-a-Box Initial Set up wizard, on the Grid page, select Join a VDI-in-a-Box server on an existing grid and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. On the Configuration page, in the IP Address box, type the IP address of the vdiManager in the existing grid.

3. On the Configuration page, in the User Name and Password boxes, type your vdiManager console user name and password.

4. Click Next. The grid configuration process is finished.
Create the first Windows image

After you have created your VDI-in-a-Box Manager (vdiManager) and associated it with a data store, database and grid, you can create your first Windows image.

Use your hypervisor to create a new virtual machine running Windows. Refer to your hypervisor documentation for details.

When creating the virtual machine, be sure that it meets the following conditions:

- The virtual machine is running Windows Server 2008 R2, Enterprise Edition.
- Remote Desktop Connection (RDP) functionality must be enabled on the virtual machine.
- The virtual machine has only one network interface card (NIC) and it is assigned to Device 0.
- The virtual machine has only one disk image.
- The virtual machine must be started and in a powered on state prior to importing into VDI-in-a-Box.
- The virtual machine has at least 4 GB of space available.

To prepare for importing the image

You must complete the following steps outside VDI-in-a-Box. See the respective manufacturers’ documentation for details.

1. Activate the virtual machine using a valid Microsoft Volume Activation key.
2. Enable the Local Administrator account on the virtual machine.
3. Install your hypervisor’s management tools on the virtual machine. See the hypervisor manufacturer’s documentation for details.
4. If desired, join the virtual machine to a domain.
   
   **Note:** The virtual machine can be a member of a workgroup.
5. Log on to the virtual machine as the local administrator and enable remote connections for your users.
6. Enable **File and Printer Sharing** in firewall settings to allow remote agent installation. See the firewall manufacturer’s documentation for details.
To import the Windows virtual machine

If the **Generate a Base Desktop Image** page is not currently displayed in your Web browser, navigate to your new vdiManager (https://<IPaddress>/admin/) and log on.

1. On the **Generate a Base Desktop Image** page, click **Continue**.

2. On the **Import new VM** page, select the virtual machine you want to use as an image.

![Import new VM page]

3. In the **New Image Name** box, type a name for the imported virtual machine.

   **Note:** The name should be different from the name of the source image.

4. In the **Description** box, type a description of the virtual machine and click **Import**. The **Specify Administrator Credentials** dialog box appears.
5. Select whether to provide credentials for an administrator or a local user with administrator privileges.

**Important:** If you select to use the credentials for a local user with administrator privileges, disable the Microsoft Windows feature User Account Control (UAC). For details, see http://technet.microsoft.com/en-us/library/cc709691(v=ws.10).aspx.

6. Type the user name and password for an account with administrator privileges on the image and click OK.

**To edit the draft image**

Edit the draft image to add any necessary updates, settings, or patches as well as any applications to be included in the deployed image. A checklist is provided to help ensure the image meets all prerequisites for producing desktops.

1. On the **Edit Image** page, click Connect.
2. In the Citrix VDI-in-a-Box Log in dialog box, provide your administrator credentials for the image and click Log in.

3. Edit the image as necessary and log off.

4. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

5. On the Edit Image page, click View. A list of prerequisites, in question format, appears.
Create the first Windows image

Note: The prerequisites vary based on hypervisor and image operating system.

6. Click Yes to indicate each prerequisite has been met.

7. When all prerequisites have been met, click Done. The prerequisites close and the Edit Image page appears.

8. Click Next. The Prepare Image page appears.

To prepare the image

1. On the Prepare Image page, in the Domain name box, if it is active, select the domain or workgroup.

2. In the optional Organizational unit (OU) box, type the organization unit to which the image will apply.

3. Click Prepare. The Confirm message appears.

4. Click Confirm. The Confirm message and the Prepare Image page close. A status page appears showing the progress. A test desktop is created based on the prepared image and the Test Image page appears.
To test the prepared desktop image

Use the test image to verify the prepared draft image is suitable for generating your desktops and that users can connect to their desktops through HDX and RDP. The test image and any changes made to it are deleted when the draft image is saved.

1. On the Test Image page, click Connect. The Connect to the draft image dialog box appears.
2. In the Connect to the draft image dialog box, select Use Citrix HDX and click Connect. The Citrix VDI-in-a-Box Log in dialog box appears.

3. Provide user credentials and click Log in to log on to the test image through an HDX connection. The test image opens through an HDX connection.

4. Verify that the installed applications are functioning properly and the required group policies are applied.

5. If your grid is configured with Active Directory, log off and log on as a domain user to test access.

6. Log off from the test image. The test image closes.

7. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

8. On the Test Image page, click Connect.

9. In the Connect to the draft image dialog box, select Use Microsoft RDP and click Connect. The test image opens through an RDP connection.

10. Log on to the test image to verify the RDP connection works properly and then log off. The test image closes.


12. In the Confirm message, click Confirm. A status page appears showing the progress. The Template Information page of the Create a New Desktop Template wizard appears.
To create the first template from the published image

Use templates to create uniform virtual desktops that meet your specifications. Templates consist of an image and policies. The image contains the operating system and applications that run on the desktop. For details on creating an image, see Create the first Windows image. One image can be used by multiple templates.

**Important:** You must have created and published at least one image before you can create a template.

Policies, which you set while creating the template, are characteristics such as how many desktops to create and how much RAM to allocate.

Establish naming patterns for all desktops generated by your templates by setting computer names with prefixes and suffixes. The prefix and suffix can combine to be up to 15 characters long. Use leading zeros in the suffix to hold places for up to four digits. The number generated by the suffix increases with each virtual desktop. For example, if you set the computer prefix `<name>` and the suffix as 0000 and generate 2 virtual desktops, they will be called `<name>`0001 and `<name>`0002. If leading zeros are not included in the suffix, they will not be included in the resulting names. For example, a suffix value of 1 produces `<name>1`, `<name>2`, `<name>3`, and so on.

The template gives you the option to pre-start desktops. Pre-started desktops are in a powered-on state and at the logon prompt, ready for use. Pre-starting desktops eliminates the need for users to wait for virtual desktops to start. When you specify a number of desktops for pre-start, VDI-in-a-Box maintains that number as users log on. For example, if you specify five pre-started desktops in the template, there will be five virtual desktops started and waiting for your users. When two users log on to their desktops, VDI-in-a-Box starts two more desktops to maintain the requested five pre-starts. This continues until your stated maximum number for the template is reached. If the pre-start value for a template is 0, the template is shut down and no users can connect to it.

If the Create Desktop Templates from the Base Image page is not currently displayed in your Web browser, navigate to your new VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the Create Desktop Templates from the Base Image page, click Continue. The Template Information page of the Create a New Desktop Template wizard appears.
To create the first template from the published image

2. In the Template Name box, type a name for the template.

3. From the list of available images, select the image you want to associate with this template.

4. In the Description box, type a description of the template.

5. In the Prefix box, provide a prefix for the generated images.
   
   **Note:** Valid characters for the prefix include numbers, letters, and hyphens (-).

6. In the Suffix box, provide a new suffix.
   
   **Note:** The combined prefix and suffix can be up to 15 characters. The suffix must be at least one numeric character and can be up to four numeric characters. Leading zeros are allowed.

7. From the Memory (MB) list, allocate memory for the desktop.
   
   **Note:** Citrix recommends allocating at least 1536 MB of memory for Windows Server 2008 R2 desktops.

8. From the Virtual CPUs list, select the number of CPUs to be assigned to each generated desktop.

9. Select any local devices, such as disk drives or printers, you want to connect to the virtual desktops.

10. Adjust the color depth of the HDX connection as necessary.
To create the first template from the published image

11. If your published image has a Key Management Service (KMS) activation key, Citrix recommends selecting **Reset the activation time (KMS clients)**.

12. Click **Next**. The **Template Policies** page appears.

![Create a New Desktop Template - Building A](image)

13. In the **Maximum desktops** box, type the maximum number of desktops to deploy from this template.

14. In the **Pre-started desktops** box, type the number of desktops that should be started and available for users upon logon. You must pre-start at least one desktop or users will not be able to access the template. For testing purposes, Citrix recommends setting a maximum of two desktops with one pre-started desktop.

15. From the **Refresh desktop** list, select a method of refresh. The refresh method determines when users' desktops are replaced with a fresh desktop matching the template. Note that if you select 'On logout', this does not apply to administrators; for debugging reasons, administrators are allowed to log on and off without triggering desktop lifecycle events.

   - **On logout**: Refreshes the desktop each time the user logs off.

   - **Scheduled**: Refreshes at a set day and time on a daily, weekly, or monthly basis. You can include desktops in use at the scheduled time. If you exclude in-use desktops, they are replaced when the user logs out following the scheduled refresh.

   - **Scheduled or on logout**: Refreshes at a set day and time and each time the user logs off. This is useful in environments where users stay logged on to desktops for extended periods.
To create the first template from the published image

- **Manual**: Refreshes only through your action. This setting results in a persistent desktop, one which remains with the user indefinitely. Users can add applications and other modifications with the expectation that they will be available with each log on.

16. Select **Do not reassign desktops "On Hold" to new users** to allow desktops to be held by users.

   **Note**: This option is selected by default.

17. Select **Enable fast refresh of desktops** to quicken the refresh process when users log off.

18. Select **Make this the default template** to provide this template to any user with access to whom a template has not been assigned.

   **Note**: If a default template has not been designated for the grid, users who have not been assigned a template will have their logon credentials rejected.

19. Click **Save**.

20. Click **Close**. The **Assign Users to Desktops** page appears.
To edit the template

You can change the maximum number of desktops, the number of pre-started desktops, and make other changes by editing your template.

If the VDI-in-a-Box console is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the VDI-in-a-box console, click the Templates tab.

2. Click the name of the template you want to edit.

3. Make the desired changes and click Save.

   **Note:** Save is on the Template Policies page.
Assign templates to users, groups, and IP addresses

When you have created your templates, you can assign them to users, user groups, and IP addresses. Users and groups can have multiple templates assigned to them. When templates are assigned to an IP address, such as for a kiosk, all users logging on at that kiosk receive the same desktop.

If a user has not been assigned a template and logs on, that user receives the default template. If you have not specified a default template, that user’s credentials are rejected.

If the Assign Users to Desktops page is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

To assign templates to user groups

1. On the Assign Users to Desktops page, click Continue. The Users page appears. It contains tables for user groups, users, and IP addresses.

2. At the User Groups table, click Add. A row for a new user group entry appears in the User Group table.

3. In the Group Name box, you can type the name of the group to which you want to assign a template. If Active Directory is used as the user database, type the first characters of the group name and press Enter to select from matching groups.

4. In the Description box, type a group description.

5. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the group. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

6. Click Save. The group is added to the table.

7. Repeat these steps to assign templates to additional groups.
To assign templates to users

1. At the Users table, click Add. A row for a new user entry appears in the Users table.

   ![Users Table](image)

2. In the User ID box, you can type the user ID of a user to whom you want to assign a template. If Active Directory is used as the user database, type the first characters of the User ID and press Enter to select from matching IDs.

   **Note:** First Name, Last Name, and Group are optional and automatically filled in if the user and full information are in the Active directory.

3. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the user. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

4. Click Save. The user is added to the table.

5. Repeat these steps to assign templates to additional users.
To assign templates to incoming IP addresses

1. At the IP Addresses table, click Add. A row for a new IP address entry appears in the IP Addresses table.

2. In the IP Address Ranges box, type the ranges of the user device IP addresses to which you want to assign a template. Addresses can be added as individual addresses (192.168.23.143), prefixes (192.168), or ranges (192.168.10.174-204). Separate entries with new lines or spaces.

3. From the Template Name list, select the template you want to assign to the IP address.

4. Click Save. The IP address is added to the table.

5. Repeat these steps to assign additional templates to IP addresses.

   **Note:** Once a template is assigned, it cannot be assigned again until the existing assignment is terminated.

To edit template assignments

1. In the VDI-in-a-Box console, select the Users page.

2. Point to the user group, user, or IP address whose template you want to edit and click Edit.

3. Edit as necessary and click Save.
Test the connection as a user

After setting up a template, creating desktops from the template, and assigning them to users, log on to a desktop as a user to ensure the connection works correctly. To do this, you must first install the latest version of Citrix Receiver and Java SE Runtime Environment (JRE) 6 or 7, if you have not already done so.

**Note:** JRE is required only when using the VDI-in-a-Box Java Desktop Client.

To prepare your user device

Prepare your user device for testing by installing Citrix Receiver to take advantage of the HDX connections. If you plan on using the Java Desktop Client, ensure JRE 6 or 7 is installed.

- If it is not already installed, from https://www.citrix.com, download Citrix Receiver following the directions provided at that Web site.
- Ensure you have JRE 6 or 7 installed on the user device. If necessary, obtain the latest version from https://www.java.com, following the directions provided at that Web site.

**Note:** JRE is required to run the VDI-in-a-Box Java client.

To connect to the desktop

These steps may vary slightly depending on your Web browser.

1. Start your Web browser.
2. In the Web browser address box, type https://<Ipaddress>/ . A security warning about the Web site’s certificate may appear.
3. Accept the certificate as trusted and continue.
4. In the Citrix VDI-in-a-Box page, in the Username box, type your user name.
5. In the Password box, type your password and click Log On.
6. Click the desired desktop. You are connected to the virtual desktop.

To connect to the desktop through the VDI-in-a-Box Java Desktop Client from a Web browser

These steps may vary slightly based on the Web browser you are using.
Test the connection as a user

1. Start your Web browser.

2. In the Web browser address box, type https://<IPaddress>/dt/vdiclient.jnlp. A security warning about the Web site's certificate may appear.

3. Accept the certificate as trusted and continue. Depending on which Web browser you are using, the Opening vdiclient.jnlp dialog box appears.

4. If the Opening vdiclient.jnlp dialog box appears, ensure Open with is selected and Java(TM) Web Start Launcher (default) appears from the list next to it, then click OK.

5. In the Citrix VDI-in-a-Box Client dialog box, type your user credentials and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.

To connect to the desktop though the VDI-in-a-Box Java Desktop Client from a command prompt

These steps may vary slightly based on the user device you are using.

1. Open the Command Prompt window.

2. Type the command: javaws https://<IPaddress>/dt/vdiclient.jnlp.

3. Press Enter.

4. In the Log on dialog box, in the User name box, type your user name.

5. In the Password box, type your password and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.
Microsoft Hyper-V using a Windows 7 image

Use the get started topics to set up a Citrix VDI-in-a-Box deployment:

- To download and extract the VDI-in-a-Box Manager
- Create and configure the grid
- Create the first Windows image
- To create the first template from the published image
- To edit the template
- Assign templates to users, groups, and IP addresses
- Test the connection as a user
To download and extract the VDI-in-a-Box Manager

Download the VDI-in-a-Box virtual appliance, called VDI-in-a-Box Manager (vdiManager), for use with Microsoft Hyper-V from the Citrix website.

The download package, VDI-in-a-Box_Hyper-V_v5_1_1.zip, contains the vdiManager file, vdiManager_Hyper-V_v5_1_1.exe. About 2 GB of disk space is needed to extract vdiManager. In addition to installing vdiManager, vdiManager_Hyper-V_v5_1_1.exe configures Microsoft Hyper-V to work with VDI-in-a-Box, including enabling the Hyper-V Manager role, if it is not already set.

Note: Be sure to download and extract the file to a location accessible with Microsoft Hyper-V.

2. If you are not already logged on to My Citrix, do so now.
3. Click Downloads.
4. From the products list, select VDI-in-a-Box.
5. From the download type list, select Product Software.
6. Click Find. The VDI-in-a-Box product software page appears.
7. Click VDI-in-a-Box 5.1.1. The VDI-in-a-Box 5.1.1 page appears.
8. From the Appliances section, for the version that matches your hypervisor, click Download.

The End-User License Agreement appears.
9. Accept the agreement. The Download Manager window opens.

10. Click Download Now.

11. Click Install and save VDI-in-a-Box_Hyper-V_v5_1_1.zip. The Download Manager downloads the zip file.

12. From the zip file, extract the vdiManager file, vdiManager_Hyper-V_v5_1_1.exe.
Create and configure the grid

Configure the VDI-in-a-Box grid once VDI-in-a-Box Manager (vdiManager) has been installed on your hypervisor and is available in its management console.

The grid unites servers running vdiManager, allowing load balancing and ensuring high availability of virtual machines on the servers.

Enable JavaScript and cookies on your browser.

**Important:** Do not import a vdiManager onto a Hyper-V server with an existing vdiManager. Doing so updates the Hyper-V connector on the server, rendering it incompatible with the existing grid and causing the grid to stop functioning.

**Note:** Do not change any data store’s name after specifying it in VDI-in-a-Box, otherwise desktop generation and cleanup processes will fail.

Import the vdiManager into Hyper-V

The Citrix VDI-in-a-Box for Hyper-V Setup wizard installs:

- Citrix VDI-in-a-Box for Hyper-V connector

  **Note:** Use the Citrix VDI-in-a-Box for Hyper-V connector delivered with VDI-in-a-Box_Hyper-V_v5_1_1.zip. Earlier versions are not supported.

- Citrix VDI-in-a-Box Manager appliance

  **Important:** Hyper-V automatically pauses virtual machines, including the VDI-in-a-Box Managers, when it detects the server on which it is running is low on disk space. The virtual machines are placed in the Paused-Critical state. To resolve this, make space available on the server.

1. Start vdiManager_Hyper-V_v5_1_1.exe by double-clicking the icon or at a command prompt. The Citrix VDI-in-a-Box for Hyper-V Setup wizard appears.

2. Click **Next**. The **Select Destination Location** page appears.

3. Accept the default location for the VDI-in-a-Box installation and click **Next**. The **Select Additional Tasks** page appears.

4. Leaving **Create Citrix VDI-in-a-Box manager virtual appliance** selected, click **Install**.

   **Note:** Selecting **Enable Hyper-V Remote Administration** enables you to manage the virtual desktops from a remote device.

The installation process begins. At its conclusion, the **Welcome to Citrix VDI-in-a-Box for Hyper-V** page appears.
Create and configure the grid

5. Click Close.

6. Click Finish. On the device running Hyper-V Manager, or an alternative management console, the vdiManager appears in the hypervisor list of virtual machines as vdiManager_timestamp.

Important: Do not import more than one vdiManager per hypervisor. Doing so may result in excessive CPU, RAM, disk, and network consumption, and cause system non-responsiveness.

To open the vdiManager console for first time setup

These steps may vary slightly depending on your Web browser.

1. In the hypervisor list of virtual machines, select the vdiManager and from the Action menu, click Start. The vdiManager status changes from Off to Running.

2. Obtain the IP address for the vdiManager: In the hypervisor list of virtual machines, select the vdiManager and from the Action menu click Connect. A command window appears, displaying the IP address for the vdiManager.

3. Make note of the IP address for future use and close the command window.


5. Accept the certificate as trusted and continue. If additional warnings appear, accept those, too. The Citrix VDI-in-a-Box Log On page appears.

6. On the Citrix VDI-in-a-Box Log On page, in the Username box, type vdiadmin.

7. In the Password box, type kaviza and click Log On. The Welcome page, showing the four high-level steps necessary to complete virtual desktops, appears.
Create and configure the grid

VDI-in-a-Box

Welcome!
Thank you for choosing VDI-in-a-Box. We want this to be a fast and pleasant experience. Below is a brief overview of the set up process. If you want background information on VDI-in-a-Box before you get started, go to support.citrix.com/vdi-in-a-box.

Overview
Below are the 4 steps you will need to complete in order to generate desktops for your users.

1. Set up your Hypervisor and VDI-in-a-Box Grid
2. Generate a Base Desktop Image
3. Create Desktop Template from the Base Image
4. Assign Users to Desktops

Get Started
To set up the hypervisor

1. In the Welcome page, click Get Started. The Set up your Hypervisor and VDI-in-a-Box Grid page appears.

2. Click Continue. The Hypervisor page of the VDI-in-a-Box Initial Set up wizard appears.

3. In the IP Address box, type the IP address for the server running your hypervisor.

4. In the User Name and Password boxes, type your user name and password. The user account must have administrator privileges.

5. Click Next. The Datastore page of the VDI-in-a-Box Initial Set up wizard appears.

To set up the data store and network label

The data store contains your desktop images and virtual desktops.

Note: If you are using ESXi or Hyper-V, do not change any data store’s name after specifying it in VDI-in-a-Box, otherwise desktop generation and cleanup processes will fail.

1. On the Datastore page, select the data store and network label.
2. Click **Next**. The data store information is saved and the **Grid** page of the VDI-in-a-Box Initial Setup wizard appears, allowing you to create a new grid or join an existing grid.

**Select a new or existing grid**

Create a new grid when setting up a new VDI-in-a-Box environment. When creating a new grid, you must associate it with a database containing the users and groups who will be accessing the VDI-in-a-Box virtual machines. The database can be your Active Directory server or a locally stored database called a workgroup.

Join an existing grid when expanding a VDI-in-a-Box environment.
To create a new grid and assign a database

1. On the Grid page, select Create a new VDI-in-a-Box grid and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. In User Database, select VDI-in-a-Box workgroup or Microsoft Active Directory. If you selected Microsoft Active Directory, you must provide additional information. If you selected VDI-in-a-Box workgroup, you do not need to provide this information.
3. If you selected Active Directory, in the IP Address box, type the IP address hosting the database.

4. If you selected Active Directory, in the Domain box, type the DNS domain.

5. If you selected Active Directory, in the User Name and Password boxes, type your user name and password. The user must have Domain Administrator privileges.

6. Click Next. The question “Have you reserved a dedicated IP address for VDI-in-a-Box Manager?,” appears.

7. Select Yes or No and click Done. The Generate a Base Desktop Image page appears.
To join an existing grid

1. In the VDI-in-a-Box Initial Set up wizard, on the Grid page, select Join a VDI-in-a-Box server on an existing grid and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. On the Configuration page, in the IP Address box, type the IP address of the vdiManager in the existing grid.

3. On the Configuration page, in the User Name and Password boxes, type your vdiManager console user name and password.

4. Click Next. The grid configuration process is finished.
Create the first Windows image

After you have created your VDI-in-a-Box Manager (vdiManager) and associated it with a data store, database and grid, you can create your first Windows image.

Use your hypervisor to create a new virtual machine running Windows. Refer to your hypervisor documentation for details.

When creating the virtual machine, be sure that it meets the following conditions:

- The virtual machine is running Windows XP Professional edition (32-bit) or Windows 7 Professional or Enterprise editions (32-bit or 64-bit).
- Remote Desktop Connection (RDP) functionality must be enabled on the virtual machine.
- The virtual machine has only one network interface card (NIC) and it is assigned to Device 0.
- The virtual machine has only one disk image.
- The virtual machine must be started and in a powered on state prior to importing into VDI-in-a-Box.
- The virtual machine must not have any snapshots.
- The virtual machine has at least 4 GB of space available.

To prepare for importing the image

You must complete the following steps outside VDI-in-a-Box. See the respective manufacturers’ documentation for details.

1. Activate the virtual machine using a valid Microsoft Volume Activation key.
2. Enable the Local Administrator account on the virtual machine.
3. If desired, join the virtual machine to a domain.
   
   **Note:** The virtual machine can be a member of a workgroup.

4. Log on to the virtual machine as the local administrator and enable remote connections for your users.
5. Enable File and Printer Sharing in firewall settings to allow remote desktop connections for all networks. See the firewall manufacturer’s documentation for details.
To import the Windows virtual machine

If the **Generate a Base Desktop Image** page is not currently displayed in your Web browser, navigate to your new vdiManager (https://<IPaddress>/admin/) and log on.

1. On the **Generate a Base Desktop Image** page, click **Continue**.

2. On the **Import new VM** page, select the virtual machine you want to use as an image.

![Import new VM dialog box](image)

3. In the **New Image Name** box, type a name for the imported virtual machine.

   **Note:** The name should be different from the name of the source image.

4. In the **Description** box, type a description of the virtual machine and click **Import**. The **Specify Administrator Credentials** dialog box appears.
5. Select whether to provide credentials for an administrator or a local user with administrator privileges.


6. Type the user name and password for an account with administrator privileges on the image and click OK. The import and Desktop Agent installation process begins creating a draft image, and a status page appears showing the progress. The **Edit Image** page of the Import new VM wizard appears.

## To edit the draft image

Edit the draft image to add any necessary updates, settings, or patches as well as any applications to be included in the deployed image. A checklist is provided to help ensure the image meets all prerequisites for producing desktops.

1. On the **Edit Image** page, click **Connect**.
Create the first Windows image

2. In the Citrix VDI-in-a-Box Log in dialog box, provide your administrator credentials for the image and click Log in.

3. Edit the image as necessary and log off.

4. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

5. On the Edit Image page, click View. A list of prerequisites, in question format, appears.
Note: The prerequisites vary based on hypervisor and image operating system.

6. Click Yes to indicate each prerequisite has been met.

7. When all prerequisites have been met, click Done. The prerequisites close and the Edit Image page appears.

8. Click Next. The Prepare Image page appears.

To prepare the image

On the Prepare Image page, select whether the image will be used to generate pooled or personal desktops. Pooled desktops are single-disk desktops derived from the published image, which you are in the process of building with this wizard. Personal desktops are two-disk desktops joining the published image with a personal vDisk. For details about personal desktops, see Manage personal desktops. An image prepared for use with a personal desktop can also be used to generate pooled desktops, allowing you flexibility in how you use your published image. However, if you intend to use an image to generate pooled desktops only, prepare it using the Pooled desktops option to avoid adding unnecessary personal vDisk settings.

1. On the Prepare Image page, in the Domain name box, if it is active, select the domain or workgroup.
2. In the optional Organizational unit (OU) box, type the organization unit to which the image will apply.

3. Select Pooled desktops or Pooled and personal desktops.

4. Click Prepare. The Confirm message appears.

5. Click Confirm. The Confirm message and the Prepare Image page close. A status page appears showing the progress. A test desktop is created based on the prepared image and the Test Image page appears.

To test the prepared desktop image

Use the test image to verify the prepared draft image is suitable for generating your desktops and that users can connect to their desktops through HDX and RDP. The test image and any changes made to it are deleted when the draft image is saved.

1. On the Test Image page, click Connect. The Connect to the draft image dialog box appears.
2. In the Connect to the draft image dialog box, select Use Citrix HDX and click Connect. The Citrix VDI-in-a-Box Log in dialog box appears.

3. Provide user credentials and click Log in to log on to the test image through an HDX connection. The test image opens through an HDX connection.

4. Verify that the installed applications are functioning properly and the required group policies are applied.

5. If your grid is configured with Active Directory, log off and log on as a domain user to test access.

6. Log off from the test image. The test image closes.

7. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

8. On the Test Image page, click Connect.

9. In the Connect to the draft image dialog box, select Use Microsoft RDP and click Connect. The test image opens through an RDP connection.

10. Log on to the test image to verify the RDP connection works properly and log off. The test image closes.


12. In the Confirm message, click Confirm. The Confirm message and Test Image page close. A status page appears showing the progress. The Create Desktop Templates from the Base Image page appears.
To create the first template from the published image

Use templates to create uniform virtual desktops that meet your specifications. Templates consist of an image and policies. The image contains the operating systems and applications that run on the desktop. For details on creating an image, see Create the first Windows image. One image can be used by multiple templates.

**Important:** You must have created and published at least one image before you can create a template.

Policies, which you set while creating the template, are characteristics such as how many desktops to create and how much RAM to allocate.

Establish naming patterns for all desktops generated by your templates by setting computer names with prefixes and suffixes. The prefix and suffix can combine to be up to 15 characters long. Use leading zeros in the suffix to hold places for up to four digits. The number generated by the suffix increases with each virtual desktop. For example, if you set the computer prefix `<name>` and the suffix as 0000 and generate 2 virtual desktops, they will be called `<name>0001` and `<name>0002`. If leading zeros are not included in the suffix, they will not be included in the resulting names. For example, a suffix value of 1 produces `<name>1`, `<name>2`, `<name>3`, and so on.

The template gives you the option to pre-start desktops. Pre-started desktops are in a powered-on state and at the logon prompt, ready for use. Pre-starting desktops eliminates the need for users to wait for virtual desktops to start. When you specify a number of desktops for pre-start, VDI-in-a-Box maintains that number as users log on. For example, if you specify five pre-started desktops in the template, there will be five virtual desktops started and waiting for your users. When two users log on to their desktops, VDI-in-a-Box starts two more desktops to maintain the requested five pre-starts. This continues until your stated maximum number for the template is reached. If the pre-start value for a template is 0, the template is shut down and no users can connect to it.

If the **Create Desktop Templates from the Base Image** page is not currently displayed in your Web browser, navigate to your new VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the **Create Desktop Templates from the Base Image** page, click **Continue**. The **Template Information** page of the Create a New Desktop Template wizard appears.
2. In the **Template Name** box, type a name for the template.

3. From the list of available images, select the image you want to associate with this template.

4. In the **Description** box, type a description of the template.

5. In the **Prefix** box, provide a new prefix for the generated images.
   
   **Note:** Valid characters for the prefix include numbers, letters, and hyphens (-).

6. In the **Suffix** box, provide a new suffix.
   
   **Note:** The combined prefix and suffix can be up to 15 characters. The suffix must be at least one numeric character and can be up to four numeric characters. Leading zeros are allowed.

7. From the **Memory (MB)** list, allocate memory for the desktop.
   
   **Note:** Citrix recommends allocating at least 1536 MB of memory for Windows 7 and Windows Server 2008 R2 desktops. For Windows XP desktops, a minimum of 512 MB of memory is required and 1 GB of memory is recommended.

8. From the **Virtual CPUs** list, select the number of CPUs to be assigned to each generated desktop.

9. Select any local devices, such as disk drives or printers, you want to connect to the virtual desktops.
To create the first template from the published image

10. Adjust the color depth of the HDX connection as necessary.

11. If your published image has a Key Management Service (KMS) activation key, Citrix recommends selecting **Reset the activation time (KMS clients)**.

12. Click **Next**. The **Template Policies** page appears.
To create the first template from the published image

13. In the **Maximum desktops** box, type the maximum number of desktops to deploy from this template.

14. In the **Pre-started desktops** box, type the number of desktops that should be started and available for users upon logon. You must pre-start at least one desktop or users will not be able to access the template.

   **Note:** For testing purposes, Citrix recommends setting a maximum of two desktops with one pre-started desktop.

15. Select **Make this the default template** to provide this image to any user with access to whom a template has not been assigned.

   **Note:** If a default template has not been designated for the grid, users who have not been assigned a template will have their logon credentials rejected.

16. Select whether the template type is **Pooled Desktop** or **Personal Desktop**. Different information is required for each type.

17. If you selected Pooled Desktop, from the **Refresh desktops** list, select a method of refresh. The refresh method determines when users' desktops are replaced with a fresh desktop matching the template. Note that if you select 'On logout', this does not apply to administrators; for debugging reasons, administrators are allowed to log on and off without triggering desktop lifecycle events.

   - **On logout:** Refreshes the desktop each time the user logs off.
To create the first template from the published image

- **Scheduled**: Refreshes at a set day and time on a daily, weekly, or monthly basis. You can include desktops in use at the scheduled time. If you exclude in-use desktops, they are replaced when the user logs out following the scheduled refresh.

- **Scheduled or on logout**: Refreshes at a set day and time and each time the user logs off. This is useful in environments where users stay logged on to desktops for extended periods.

- **Manual**: Refreshes only through your action. This setting results in a persistent desktop, one which remains with the user indefinitely. Users can add applications and other modifications with the expectation that they will be available with each log on.

18. If you selected Pooled Desktop, select **Do not reassign desktops "On Hold" to new users** to allow desktops to be held by users.

   **Note**: This option is selected by default.

19. If you selected Pooled Desktop, select **Enable fast refresh of desktops** to quicken the refresh process when users log off.

20. If you selected Personal Desktop, select the personal desktop disk size.

21. Click **Save**.

22. Click **Close**. The amount of desktops designated for pre-start are started and the Assign Users to Desktops page appears.
To edit the template

You can change the maximum number of desktops, the number of pre-started desktops, and make other changes by editing your template.

If the VDI-in-a-Box console is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the VDI-in-a-box console, click the Templates tab.
2. Click the name of the template you want to edit.
3. Make the desired changes and click Save.

**Important:** Save is on the Template Policies page.
Assign templates to users, groups, and IP addresses

When you have created your templates, you can assign them to users, user groups, and IP addresses. Users and groups can have multiple templates assigned to them. When templates are assigned to an IP address, such as for a kiosk, all users logging on at that kiosk receive the same desktop.

If a user has not been assigned a template and logs on, that user receives the default template. If you have not specified a default template, that user's credentials are rejected.

If the Assign Users to Desktops page is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

To assign templates to user groups

1. On the Assign Users to Desktops page, click Continue. The Users page appears. It contains tables for user groups, users, and IP addresses.

2. At the User Groups table, click Add. A row for a new user group entry appears in the User Group table.

3. In the Group Name box, you can type the name of the group to which you want to assign a template. If Active Directory is used as the user database, type the first characters of the group name and press Enter to select from matching groups.

4. In the Description box, type a group description.

5. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the group. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

6. Click Save. The group is added to the table.

7. Repeat these steps to assign templates to additional groups.
To assign templates to users

1. At the Users table, click Add. A row for a new user entry appears in the Users table.

2. In the User ID box, you can type the user ID of a user to whom you want to assign a template. If Active Directory is used as the user database, type the first characters of the User ID and press Enter to select from matching IDs.

   Note: First Name, Last Name, and Group are optional and automatically filled in if the user and full information are in the Active directory.

3. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the user. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

4. Click Save. The user is added to the table.

5. Repeat these steps to assign templates to additional users.
To assign templates to incoming IP addresses

1. At the IP Addresses table, click Add. A row for a new IP address entry appears in the IP Addresses table.

2. In the IP Address Ranges box, type the ranges of the user device IP addresses to which you want to assign a template. Addresses can be added as individual addresses (192.168.23.143), prefixes (192.168), or ranges (192.168.10.174-204). Separate entries with new lines or spaces.

3. From the templates list, select the template you want to assign to the IP address.

4. Click Save. The IP address is added to the table.

5. Repeat these steps to assign additional templates to IP addresses.

   Note: Once a template is assigned, it cannot be assigned again until the existing assignment is terminated.

To edit template assignments

1. In the VDI-in-a-Box console, select the Users page.

2. Point to the user group, user, or IP address whose template you want to edit and click Edit.

3. Edit as necessary and click Save.
Test the connection as a user

After setting up a template, creating desktops from the template, and assigning them to users, log on to a desktop as a user to ensure the connection works correctly. To do this, you must first install the latest version of Citrix Receiver, if you have not already done so. If you plan to use the Java Desktop Client, you must also install Java SE Runtime Environment (JRE) 6 or 7.

To prepare your user device

Prepare your user device for testing by installing Citrix Receiver to take advantage of the HDX connections.

- If it is not already installed, from https://www.citrix.com, download Citrix Receiver following the directions provided at that web site.

- If you plan to use the Java Desktop Client, ensure you have JRE 6 or 7 installed on the user device. If necessary, obtain the latest version from https://www.java.com, following the directions provided at that web site.

To connect to the desktop

These steps may vary slightly depending on your web browser.

1. Start your web browser.

2. In the web browser address box, type https://<IPaddress>/ . A security warning about the web site's certificate may appear.

3. Accept the certificate as trusted and continue.

4. In the Citrix VDI-in-a-Box page, in the Username box, type your user name.

5. In the Password box, type your password and click Log On.

6. Click the desired desktop. You are connected to the virtual desktop.

To connect to the desktop through the VDI-in-a-Box Java Desktop Client from a web browser

These steps may vary slightly based on the Web browser you are using.

1. Start your web browser.
To connect to the desktop though the VDI-in-a-Box Java Desktop Client from a command prompt

These steps may vary slightly based on the user device you are using.

1. Open the Command Prompt window.

2. Type the command: `javaws https://<IPaddress>/dt/vdiclient.jnlp`.

3. Press Enter.

4. In the Log on dialog box, in the User name box, type your user name.

5. In the Password box, type your password and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.
Microsoft Hyper-V using a Windows XP image

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- Test the connection as a user
To download and extract the VDI-in-a-Box Manager

Download the VDI-in-a-Box virtual appliance, called VDI-in-a-Box Manager (vdiManager), for use with Microsoft Hyper-V from the Citrix website.

The download package, VDI-in-a-Box_Hyper-V_v5_1_1.zip, contains the vdiManager file, vdiManager_Hyper-V_v5_1_1.exe. About 2 GB of disk space is needed to extract vdiManager. In addition to installing vdiManager, vdiManager_Hyper-V_v5_1_1.exe configures Microsoft Hyper-V to work with VDI-in-a-Box, including enabling the Hyper-V Manager role, if it is not already set.

**Note:** Be sure to download and extract the file to a location accessible with Microsoft Hyper-V.

1. With a Web browser, navigate to [https://www.citrix.com](https://www.citrix.com).
2. If you are not already logged on to My Citrix, do so now.
3. Click **Downloads**.
4. From the products list, select **VDI-in-a-Box**.
5. From the download type list, select **Product Software**.
6. Click **Find**. The VDI-in-a-Box product software page appears.
7. Click **VDI-in-a-Box 5.1.1**. The VDI-in-a-Box 5.1.1 page appears.
8. From the Appliances section, for the version that matches your hypervisor, click **Download**.

The End-User License Agreement appears.
To download and extract the VDI-in-a-Box Manager

9. Accept the agreement. The **Download Manager** window opens.

10. Click **Download Now**.

11. Click **Install** and save VDI-in-a-Box_Hyper-V_v5_1_1.zip. The Download Manager downloads the zip file.

12. From the zip file, extract the vdiManager file, vdiManager_Hyper-V_v5_1_1.exe.
Create and configure the grid

Configure the VDI-in-a-Box grid once VDI-in-a-Box Manager (vdiManager) has been installed on your hypervisor and is available in its management console.

The grid unites servers running vdiManager, allowing load balancing and ensuring high availability of virtual machines on the servers.

Enable JavaScript and cookies on your browser.

**Note:** Do not change any data store's name after specifying it in VDI-in-a-Box, otherwise desktop generation and cleanup processes will fail.

To import the vdiManager into Hyper-V

The Citrix VDI-in-a-Box for Hyper-V Setup wizard installs:

- Citrix VDI-in-a-Box for Hyper-V connector

  **Note:** Use the Citrix VDI-in-a-Box for Hyper-V connector delivered with VDI-in-a-Box_Hyper-V_v5_1_1.zip. Earlier versions are not supported.

- Citrix VDI-in-a-Box Manager appliance

  **Important:** Hyper-V automatically pauses virtual machines, including the VDI-in-a-Box Managers, when it detects the server on which it is running is low on disk space. The virtual machines are placed in the Paused-Critical state. To resolve this, make space available on the server.

1. Start vdiManager_Hyper-V_v5_1_1.exe by double-clicking the icon or at a command prompt. The Citrix VDI-in-a-Box for Hyper-V Setup wizard appears.

2. Click **Next**. The **Select Destination Location** page appears.

3. Accept the default location for the VDI-in-a-Box installation and click **Next**. The **Select Additional Tasks** page appears.

4. Leaving **Create Citrix VDI-in-a-Box manager virtual appliance** selected, click **Install**.

   **Note:** Selecting Enable Hyper-V Remote Administration enables you to manage the virtual desktops from a remote device.

   The installation process begins. At its conclusion, the **Welcome to Citrix VDI-in-a-Box for Hyper-V** page appears.

5. Click **Close**.
6. Click Finish. On the device running Hyper-V Manager, or an alternative management console, the vdiManager appears in the hypervisor list of virtual machines as vdiManager_timestamp.

Important: Do not import more than one vdiManager per hypervisor. Doing so may result in excessive CPU, RAM, disk, and network consumption, and cause system non-responsiveness.

To open the vdiManager console for first time setup

These steps may vary slightly depending on your Web browser.

1. In the hypervisor list of virtual machines, right-click the vdiManager and click Start. The vdiManager status changes from Off to Running.

2. Obtain the IP address for the vdiManager: In the hypervisor list of virtual machines, right-click the vdiManager and click Connect. A command window appears, displaying the IP address for the vdiManager.

3. Make note of the IP address for future use and close the command window.


5. Accept the certificate as trusted and continue. If additional warnings appear, accept those, too. The VDI-in-a-Box Log On page appears.

6. On the VDI-in-a-Box Log On page, in the Username box, type vdiadmin.

7. In the Password box, type kaviza and click Log On. The Welcome page, showing the four high-level steps necessary to complete virtual desktops, appears.
8.

To set up the hypervisor

1. In the Welcome page, click Get Started. The Set up your Hypervisor and VDI-in-a-Box Grid page appears.

2. Click Continue. The Hypervisor page of the VDI-in-a-Box Initial Set up wizard appears.

3. In the IP Address box, type the IP address for the server running your hypervisor.

4. In the User Name and Password boxes, type your user name and password. The user account must have administrator privileges.

5. Click Next. The Datastore page of the VDI-in-a-Box Initial Set up wizard appears.

To set up the data store and network label

The data store contains your desktop images and virtual desktops.

**Note:** If you are using ESXi or Hyper-V, do not change any data store’s name after specifying it in VDI-in-a-Box, otherwise desktop generation and cleanup processes will fail.

1. On the Datastore page, select the data store and network label.
Create and configure the grid

2. Click Next. The data store information is saved and the Grid page of the VDI-in-a-Box Initial Setup wizard appears, allowing you to create a new grid or join an existing grid.

Select a new or existing grid

Create a new grid when setting up a new VDI-in-a-Box environment. When creating a new grid, you must associate it with a database containing the users and groups who will be accessing the VDI-in-a-Box virtual machines. The database can be your Active Directory server or a locally stored database called a workgroup.

Join an existing grid when expanding a VDI-in-a-Box environment.
Create and configure the grid

To create a new grid and assign a database

1. On the Grid page, select Create a new VDI-in-a-Box grid and click Next. The Configuration page of the VDI-in-a-Box Initial Setup wizard appears.

2. In User Database, select VDI-in-a-Box workgroup or Microsoft Active Directory. If you selected Microsoft Active Directory, you must provide additional information. If you selected VDI-in-a-Box workgroup, you do not need to provide this information.
3. If you selected Active Directory, in the **IP Address** box, type the IP address hosting the database.

4. If you selected Active Directory, in the **Domain** box, type the DNS domain.

5. If you selected Active Directory, in the **User Name** and **Password** boxes, type your user name and password. The user must have Domain Administrator privileges.

6. Click **Next**. The question “Have you reserved a dedicated IP address for VDI-in-a-Box Manager?,” appears.

7. Select **Yes** or **No** and click **Done**. The **Generate a Base Desktop Image** page appears.
Create and configure the grid

To join an existing grid

1. In the VDI-in-a-Box Initial Set up wizard, on the Grid page, select Join a VDI-in-a-Box server on an existing grid and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. On the Configuration page, in the IP Address box, type the IP address of the vdiManager in the existing grid.

3. On the Configuration page, in the User Name and Password boxes, type your vdiManager console user name and password.

4. Click Next. The grid configuration process is finished.
Create the first Windows image

After you have created your VDI-in-a-Box Manager (vdiManager) and associated it with a data store, database and grid, you can create your first Windows image.

Use your hypervisor to create a new virtual machine running Windows. Refer to your hypervisor documentation for details.

When creating the virtual machine, be sure that it meets the following conditions:

- The virtual machine is running Windows XP Professional edition (32-bit) or Windows 7 Professional or Enterprise editions (32-bit or 64-bit).
- Remote Desktop Connection (RDP) functionality must be enabled on the virtual machine.
- The virtual machine has only one network interface card (NIC) and it is assigned to Device 0.
- The virtual machine has only one disk image.
- The virtual machine must be started and in a powered on state prior to importing into VDI-in-a-Box.
- The virtual machine must not have any snapshots.
- The virtual machine has at least 4 GB of space available.

To prepare for importing the image

You must complete the following steps outside VDI-in-a-Box. See the respective manufacturers’ documentation for details.

1. If desired, join the virtual machine to a domain.
   
   **Note:** The virtual machine can be a member of a workgroup.

2. Log on to the virtual machine as the local administrator and enable remote connections for your users.

3. Enable **File and Printer Sharing** in firewall settings to allow remote desktop connections for all networks. See the firewall manufacturer’s documentation for details.
To import the Windows virtual machine

If the **Generate a Base Desktop Image** page is not currently displayed in your Web browser, navigate to your new vdiManager (https://<IPaddress>/admin/) and log on.

1. On the **Generate a Base Desktop Image** page, click **Continue**.

2. On the **Import new VM** page, select the virtual machine you want to use as an image.

3. In the **New Image Name** box, type a name for the imported virtual machine. The name should be different from the name of the source image.

4. In the **Description** box, type a description of the virtual machine and click **Import**. The **Specify Administrator Credentials** dialog box appears.
5. Type the user name and password for an account with administrator privileges on the image and click **OK**. The import and Desktop Agent installation process begins creating a draft image, and a status page appears showing the progress. The **Edit Image** page of the Import new VM wizard appears.

### To edit the draft image

Edit the draft image to add any necessary updates, settings, or patches as well as any applications to be included in the deployed image. A checklist is provided to help ensure the image meets all prerequisites for producing desktops.

1. On the **Edit Image** page, click **Connect**.
2. In the Citrix VDI-in-a-Box Log in dialog box, provide your administrator credentials for the image and click Log in.

3. Edit the image as necessary and log off.

4. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

5. On the Edit Image page, click View. A list of prerequisites, in question format, appears.
Create the first Windows image

**Note:** The prerequisites vary based on hypervisor and image operating system.

6. Click Yes to indicate each prerequisite has been met.

7. When all prerequisites have been met, click Done. The prerequisites close and the Edit Image page appears.

8. Click Next. The Prepare Image page appears.

**To prepare the image**

1. On the Prepare Image page, in the **Domain name** box, select the domain.

2. In the optional **Organizational unit (OU)** box, type the organization unit to which the image will apply.

3. Click **Prepare**. The Confirm message appears.

4. In the Confirm message, click **Confirm**. The Confirm message and the Prepare Image page close. A status page appears showing the progress. A test desktop is created based on the prepared image and the **Test Image** page appears.
To test the prepared desktop image

Use the test image to verify the prepared draft image is suitable for generating your desktops and that users can connect to their desktops through HDX and RDP. The test image and any changes made to it are deleted when the draft image is saved.

1. On the Test Image page, click Connect. The Connect to the draft image dialog box appears.
2. In the **Connect to the draft image** dialog box, select **Use Citrix HDX** and click **Connect**. The Citrix VDI-in-a-Box Log in dialog box appears.

3. Provide user credentials and click **Log in** to log on to the test image through an HDX connection. The test image opens through an HDX connection.

4. Verify that the installed applications are functioning properly and the required group policies are applied.

5. If your grid is configured with Active Directory, log off and log on as a domain user to test access.

6. Log off from the test image. The test image closes.

7. In the **Citrix VDI-in-a-Box Log in** dialog box, click **Cancel** to close it.

8. On the **Test Image** page, click **Connect**.

9. In the **Connect to the draft image** dialog box, select **Use Microsoft RDP** and click **Connect**. The test image opens through an RDP connection.

10. Log on to the test image to verify the RDP connection works properly and log off. The test image closes.

11. On the **Test Image** page, click **Save**. The Confirm message appears.

12. In the Confirm message, click **Confirm**. The Confirm message and **Test Image** page close. A status page appears showing the progress. The **Create Desktop Templates from the Base Image** page appears.
To create the first template from the published image

Use templates to create uniform virtual desktops that meet your specifications. Templates consist of an image and policies. The image contains the operating systems and applications that run on the desktop. For details on creating an image, see Create the first Windows image.

**Important:** You must have created and published at least one image before you can create a template.

Policies, which you set while creating the template, are characteristics such as how many desktops to create and how much RAM to allocate.

Establish naming patterns for all desktops generated by your templates by setting computer names with prefixes and suffixes. The prefix and suffix can combine to be up to 15 characters long. The suffix can be up to four numeric characters. Leading zeros are acceptable in the suffix. The number generated by the suffix increases with each virtual desktop. For example, if you set the computer prefix `<name>` and the suffix as 0000 and generate 2 virtual desktops, they will be called `<name>0001` and `<name>0002`. If leading zeros are not included in the suffix, they will not be included in the resulting names. For example, a suffix value of 1 produces `<name>1`, `<name>2`, `<name>3`, and so on.

The template gives you the option to pre-start desktops. Pre-started desktops are in a powered-on state and at the logon prompt, ready for use. Pre-starting desktops eliminates the need for users to wait for virtual desktops to start. When you specify a number of desktops for pre-start, VDI-in-a-Box maintains that number as users log on. For example, if you specify five pre-started desktops in the template, there will be five virtual desktops started and waiting for your users. When two users log on to their desktops, VDI-in-a-Box starts two more desktops to maintain the requested five pre-starts. This continues until your stated maximum number for the template is reached. If the pre-start value for a template is 0, the template is shut down and no users can connect to it.

**Note:** When the image is running Windows XP, the template provisions pooled desktops only.

If the Create Desktop Templates from the Base Image page is not currently displayed in your Web browser, navigate to your new VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the Create Desktop Templates from the Base Image page, click Continue. The Template Information page of the Create a New Desktop Template wizard appears.
2. In the Template Name box, type a name for the template.

3. From the list of available images, select the image you want to associate with this template.

4. In the Description box, type a description of the template.

5. In the Prefix box, provide a new prefix for the generated images.

   Note: Valid characters for the prefix include numbers, letters, and hyphens (-).

6. In the Suffix box, provide a new suffix.

   Note: The combined prefix and suffix can be up to 15 characters. The suffix must be at least one numeric character and can be up to four numeric characters. Leading zeros are allowed.

7. From the Memory (MB) list, allocate memory for the desktop.

   Note: Citrix recommends allocating at least 1536 MB of memory for Windows 7 and Windows Server 2008 R2 desktops. For Windows XP desktops, a minimum of 512 MB of memory is required and 1 GB of memory is recommended.

8. From the Virtual CPUs list, select the number of CPUs to be assigned to each generated desktop.

9. Select any local devices, such as disk drives or printers, you want to connect to the virtual desktops.
10. Adjust the color depth of the HDX connection as necessary.

11. Click Next. The Template Policies page appears.

![Create a New Desktop Template - Building A](image)

12. In the Maximum desktops box, type the maximum number of desktops to deploy from this template.

13. In the Pre-started desktops box, type the number of desktops that should be started and available for users upon logon. You must pre-start at least one desktop or users will not be able to access the template.

   **Note:** For testing purposes, Citrix recommends setting a maximum of two desktops with one pre-started desktop.

14. From the Refresh desktops list, select a method of refresh. The refresh method determines when users’ desktops are replaced with a fresh desktop matching the template. Note that if you select 'On logout', this does not apply to administrators; for debugging reasons, administrators are allowed to log on and off without triggering desktop lifecycle events.

   - **On logout:** Refreshes the desktop each time the user logs off.
   - **Scheduled:** Refreshes at a set day and time on a daily, weekly, or monthly basis. You can include desktops in use at the scheduled time. If you exclude in-use desktops, they are replaced when the user logs out following the scheduled refresh.
   - **Scheduled or on logout:** Refreshes at a set day and time and each time the user logs off. This is useful in environments where users stay logged on to desktops for extended periods.
To create the first template from the published image

- **Manual**: Refreshes only through your action. This setting results in a persistent desktop, one which remains with the user indefinitely. Users can add applications and other modifications with the expectation that they will be available with each log on.

15. Select **Do not reassign desktops "On Hold" to new users** to allow desktops to be held by users. This option is selected by default.

16. Select **Enable fast refresh of desktops** to quicken the refresh process when users log off.

   **Note**: If a default template has not been designated for the grid, users who have not been assigned a template will have their logon credentials rejected.

17. Select **Make this the default template** to provide this image to any user with access to whom a template has not been assigned.

18. Click **Save**.

19. Click **Close**. The amount of desktops designated for pre-start are started and the **Assign Users to Desktops** page appears.
To edit the template

You can change the maximum number of desktops, the number of pre-started desktops, and make other changes by editing your template.

If the VDI-in-a-Box console is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPAddress>/admin/) and log on.

1. In the VDI-in-a-box console, click the Templates tab.
2. Click the name of the template you want to edit.
3. Make the desired changes and click Save.

**Important:** Save is on the Template Policies page.
Assign templates to users, groups, and IP addresses

When you have created your templates, you can assign them to users, user groups, and IP addresses. Users and groups can have multiple templates assigned to them. When templates are assigned to an IP address, such as for a kiosk, all users logging on at that kiosk receive the same desktop.

If a user has not been assigned a template and logs on, that user receives the default template. If you have not specified a default template, that user’s credentials are rejected.

If the Assign Users to Desktops page is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

To assign templates to user groups

1. On the Assign Users to Desktops page, click Continue. The Users page appears. It contains tables for user groups, users, and IP addresses.

2. At the User Groups table, click Add. A row for a new user group entry appears in the User Group table.

3. In the Group Name box, you can type the name of the group to which you want to assign a template. If Active Directory is used as the user database, type the first characters of the group name and press Enter to select from matching groups.

4. In the Description box, type a group description.

5. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the group. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

6. Click Save. The group is added to the table.

7. Repeat these steps to assign templates to additional groups.
To assign templates to users

1. At the Users table, click Add. A row for a new user entry appears in the Users table.

<table>
<thead>
<tr>
<th>User ID</th>
<th>First Name</th>
<th>Last Name</th>
<th>Group</th>
<th># Templates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>None</td>
</tr>
</tbody>
</table>

   Note: First Name, Last Name, and Group are optional and automatically filled in if the user and full information are in the Active directory.

2. In the User ID box, you can type the user ID of a user to whom you want to assign a template. If Active Directory is used as the user database, type the first characters of the User ID and press Enter to select from matching IDs.

3. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the user. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

4. Click Save. The user is added to the table.

5. Repeat these steps to assign templates to additional users.
To assign templates to incoming IP addresses

1. At the IP Addresses table, click Add. A row for a new IP address entry appears in the IP Addresses table.

2. In the IP Address Ranges box, type the ranges of the user device IP addresses to which you want to assign a template. Addresses can be added as individual addresses (192.168.23.143), prefixes (192.168), or ranges (192.168.10.174-204). Separate entries with new lines or spaces.

3. From the templates list, select the template you want to assign to the IP address.

4. Click Save. The IP address is added to the table.

5. Repeat these steps to assign additional templates to IP addresses.

   **Note**: Once a template is assigned, it cannot be assigned again until the existing assignment is terminated.

To edit template assignments

1. In the VDI-in-a-Box console, select the Users page.

2. Point to the user group, user, or IP address whose template you want to edit and click Edit.

3. Edit as necessary and click Save.
Test the connection as a user

After setting up a template, creating desktops from the template, and assigning them to users, log on to a desktop as a user to ensure the connection works correctly. To do this, you must first install the latest version of Citrix Receiver, if you have not already done so. If you plan to use the Java Desktop Client, you must also install Java SE Runtime Environment (JRE) 6 or 7.

To prepare your user device

Prepare your user device for testing by installing Citrix Receiver to take advantage of the HDX connections.

- If it is not already installed, from https://www.citrix.com, download Citrix Receiver following the directions provided at that web site.
- If you plan to use the Java Desktop Client, ensure you have JRE 6 or 7 installed on the user device. If necessary, obtain the latest version from https://www.java.com, following the directions provided at that web site.

To connect to the desktop

These steps may vary slightly depending on your web browser.

1. Start your web browser.

2. In the web browser address box, type https://<Ipaddress>/ . A security warning about the web site's certificate may appear.

3. Accept the certificate as trusted and continue.

4. In the Citrix VDI-in-a-Box page, in the Username box, type your user name.

5. In the Password box, type your password and click Log On.

6. Click the desired desktop. You are connected to the virtual desktop.

To connect to the desktop through the VDI-in-a-Box Java Desktop Client from a web browser

These steps may vary slightly based on the Web browser you are using.

1. Start your web browser.
2. In the web browser address box, type https://<IPaddress>/dt/vdiclient.jnlp. A security warning about the web site's certificate may appear.

3. Accept the certificate as trusted and continue. Depending on which web browser you are using, the Opening vdclient.jnlp dialog box appears.

4. If the Opening vdclient.jnlp dialog box appears, ensure Open with is selected and Java(TM) Web Start Launcher (default) appears from the list next to it, then click OK.

5. In the Citrix VDI-in-a-Box Client dialog box, type your user credentials and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.

To connect to the desktop though the VDI-in-a-Box Java Desktop Client from a command prompt

These steps may vary slightly based on the user device you are using.

1. Open the Command Prompt window.

2. Type the command: javaws https://<IPaddress>/dt/vdiclient.jnlp.

3. Press Enter.

4. In the Log on dialog box, in the User name box, type your user name.

5. In the Password box, type your password and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.
Microsoft Hyper-V using a Windows Server 2008 R2 image

Use the get started topics to set up a Citrix VDI-in-a-Box deployment:

- To download and extract the VDI-in-a-Box Manager
- Create and configure the grid
- Create the first Windows image
- To create the first template from the published image
- To edit the template
- Assign templates to users, groups, and IP addresses
- Test the connection as a user
To download and extract the VDI-in-a-Box Manager

Download the VDI-in-a-Box virtual appliance, called VDI-in-a-Box Manager (vdiManager), for use with Microsoft Hyper-V from the Citrix website.

The download package, VDI-in-a-Box_Hyper-V_v5_1_1.zip, contains the vdiManager file, vdiManager_Hyper-V_v5_1_1.exe. About 2 GB of disk space is needed to extract vdiManager. In addition to installing vdiManager, vdiManager_Hyper-V_v5_1_1.exe configures Microsoft Hyper-V to work with VDI-in-a-Box, including enabling the Hyper-V Manager role, if it is not already set.

Note: Be sure to download and extract the file to a location accessible with Microsoft Hyper-V.

2. If you are not already logged on to My Citrix, do so now.
3. Click Downloads.
4. From the products list, select VDI-in-a-Box.
5. From the download type list, select Product Software.
6. Click Find. The VDI-in-a-Box product software page appears.
7. Click VDI-in-a-Box 5.1.1. The VDI-in-a-Box 5.1.1 page appears.
8. From the Appliances section, for the version that matches your hypervisor, click Download.

The End-User License Agreement appears.
9. Accept the agreement. The Download Manager window opens.

10. Click Download Now.

11. Click Install and save VDI-in-a-Box_Hyper-V_v5_1_1.zip. The Download Manager downloads the zip file.

12. From the zip file, extract the vdiManager file, vdiManager_Hyper-V_v5_1_1.exe.
Create and configure the grid

Configure the VDI-in-a-Box grid once VDI-in-a-Box Manager (vdiManager) has been imported into your hypervisor and is available in its management console.

The grid unites servers running vdiManager, allowing load balancing and ensuring high availability of virtual machines on the servers.

Enable JavaScript and cookies on your browser.

**Important:** Do not import a vdiManager onto a Hyper-V server with an existing vdiManager. Doing so updates the Hyper-V connector on the server, rendering it incompatible with the existing grid and causing the grid to stop functioning.

To import the vdiManager into Hyper-V

The Citrix VDI-in-a-Box for Hyper-V Setup wizard installs:

- Citrix VDI-in-a-Box for Hyper-V connector

  **Note:** Use the Citrix VDI-in-a-Box for Hyper-V connector delivered with VDI-in-a-Box_Hyper-V_v5_1_1.zip. Earlier versions are not supported.

- Citrix VDI-in-a-Box Manager appliance

  **Important:** Hyper-V automatically pauses virtual machines, including the VDI-in-a-Box Managers, when it detects the server on which it is running is low on disk space. The virtual machines are placed in the Paused-Critical state. To resolve this, make space available on the server.

1. Start vdiManager_Hyper-V_v5_1_1.exe by double-clicking the icon or at a command prompt. The Citrix VDI-in-a-Box for Hyper-V Setup wizard appears.

2. Click Next. The Select Destination Location page appears.

3. Accept the default location for the VDI-in-a-Box installation and click Next. The Select Additional Tasks page appears.

4. Leaving Create Citrix VDI-in-a-Box manager virtual appliance selected, click Install.

   **Note:** Selecting Enable Hyper-V Remote Administration enables you to manage the virtual desktops from a remote device.

   The installation process begins. At its conclusion, the Welcome to Citrix VDI-in-a-Box for Hyper-V page appears.

5. Click Close.
6. Click Finish. On the device running Hyper-V Manager, or an alternative management console, the vdiManager appears in the hypervisor list of virtual machines as vdiManager_timestamp.

**Note:** Do not import more than one vdiManager per hypervisor. Doing so may result in excessive CPU, RAM, disk, and network consumption, and cause system non-responsiveness.

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### To open the vdiManager console for first time setup

These steps may vary slightly depending on your Web browser.

1. In the hypervisor list of virtual machines, select the vdiManager and from the **Action** menu, click **Start**. The vdiManager status changes from Off to Running.

2. Obtain the IP address for the vdiManager: In the hypervisor list of virtual machines, select the vdiManager and from the **Action** menu click **Connect**. A command window appears, displaying the IP address for the vdiManager.

3. Make note of the IP address for future use and close the command window.


5. Accept the certificate as trusted and continue. If additional warnings appear, accept those, too. The **Citrix VDI-in-a-Box Log On** page appears.

6. On the **Citrix VDI-in-a-Box Log On** page, in the **Username** box, type `vdiadmin`.

7. In the **Password** box, type `kaviza` and click **Log On**. The **Welcome** page, showing the four high-level steps necessary to complete to generate virtual desktops, appears.
Create and configure the grid

**Welcome!**

Thank you for choosing VDI-in-a-Box. We want this to be a fast and pleasant experience. Below is a brief overview of the set up process. If you want background information on VDI-in-a-Box before you get started, go to support.citrix.com/VDI-in-a-Box.

**Overview**

Below are the 4 steps you will need to complete in order to generate desktops for your users.

1. Set up your Hypervisor and VDI-in-a-Box Grid
2. Generate a Base Desktop Image
3. Create Desktop Templates from the Base Image
4. Assign Users to Desktops

Get Started
To set up the hypervisor

1. In the Welcome page, click Get Started. The Set up your Hypervisor and VDI-in-a-Box Grid page appears.

2. Click Continue. The Hypervisor page of the VDI-in-a-Box Initial Set up wizard appears.

3. In the IP Address box, type the IP address for the server running your hypervisor.

4. In the User Name and Password boxes, type your user name and password. The user account must have administrator privileges.

5. Click Next. The Datastore page of the VDI-in-a-Box Initial Set up wizard appears.

To set up the data store and network label

The data store contains your desktop images and virtual desktops.

Note: Do not change any data store’s name after specifying it in VDI-in-a-Box, otherwise desktop generation and cleanup processes will fail.

1. On the Datastore page, select the data store and network label.
2. Click **Next**. The data store information is saved and the **Grid** page of the VDI-in-a-Box Initial Setup wizard appears, allowing you to create a new grid or join an existing grid.

**Select a new or existing grid**

Create a new grid when setting up a new VDI-in-a-Box environment. When creating a new grid, you must associate it with a database containing the users and groups who will be accessing the VDI-in-a-Box virtual machines. The database can be your Active Directory server or a locally stored database called a workgroup.

Join an existing grid when expanding a VDI-in-a-Box environment.
To create a new grid and assign a database

1. On the Grid page, select **Create a new VDI-in-a-Box grid** and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. In **User Database**, select **VDI-in-a-Box workgroup** or **Microsoft Active Directory**. If you selected **Microsoft Active Directory**, you must provide additional information. If you selected **VDI-in-a-Box workgroup**, you do not need to provide this information.
3. If you selected Active Directory, in the **IP Address** box, type the IP address hosting the database.

4. If you selected Active Directory, in the **Domain** box, type the DNS domain.

5. If you selected Active Directory, in the **User Name** and **Password** boxes, type your user name and password. The user must have Domain Administrator privileges.

6. Click **Next**. The question “Have you reserved a dedicated IP address for VDI-in-a-Box Manager?,” appears.

7. Select **Yes** or **No** and click **Done**. The **Generate a Base Desktop Image** page appears.
Create and configure the grid

To join an existing grid

1. In the VDI-in-a-Box Initial Set up wizard, on the Grid page, select **Join a VDI-in-a-Box server on an existing grid** and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. On the **Configuration** page, in the **IP Address** box, type the IP address of the vdiManager in the existing grid.

3. On the **Configuration** page, in the **User Name** and **Password** boxes, type your vdiManager console user name and password.

4. Click **Next**. The grid configuration process is finished.
Create the first Windows image

After you have created your VDI-in-a-Box Manager (vdiManager) and associated it with a data store, database and grid, you can create your first Windows image.

Use your hypervisor to create a new virtual machine running Windows. Refer to your hypervisor documentation for details.

When creating the virtual machine, be sure that it meets the following conditions:

- The virtual machine is running Windows Server 2008 R2, Enterprise Edition.
- Remote Desktop Connection (RDP) functionality must be enabled on the virtual machine.
- The virtual machine has only one network interface card (NIC) and it is assigned to Device 0.
- The virtual machine has only one disk image.
- The virtual machine must be started and in a powered on state prior to importing into VDI-in-a-Box.
- The virtual machine must not have any snapshots.
- The virtual machine has at least 4 GB of space available.

To prepare for importing the image

You must complete the following steps outside VDI-in-a-Box. See the respective manufacturers’ documentation for details.

1. Activate the virtual machine using a valid Microsoft Volume Activation key.

2. Enable the Local Administrator account on the virtual machine.

3. If desired, join the virtual machine to a domain.

   **Note:** The virtual machine can be a member of a workgroup.

4. Log on to the virtual machine as the local administrator and enable remote connections for your users.

5. Enable **File and Printer Sharing** in firewall settings to allow remote desktop connections for all networks. See the firewall manufacturer’s documentation for details.
To import the Windows virtual machine

If the Generate a Base Desktop Image page is not currently displayed in your Web browser, navigate to your new vdiManager (https://<IPaddress>/admin/) and log on.

1. On the Generate a Base Desktop Image page, click Continue.

2. On the Import new VM page, select the virtual machine you want to use as an image.

3. In the New Image Name box, type a name for the imported virtual machine.

   **Note:** The name should be different from the name of the source image.

4. In the Description box, type a description of the virtual machine and click Import. The Specify Administrator Credentials dialog box appears.
5. Select whether to provide credentials for an administrator or a local user with administrator privileges.

Note: If you select to use the credentials for a local user with administrator privileges, disable the Microsoft Windows feature User Account Control (UAC). For details, see http://technet.microsoft.com/en-us/library/cc709691(v=ws.10).aspx.

6. Type the user name and password for an account with administrator privileges on the image and click **OK**. The import and Desktop Agent installation process begins creating a draft image, and a status page appears showing the progress. The **Edit Image** page of the Import new VM wizard appears.

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**To edit the draft image**

Edit the draft image to add any necessary updates, settings, or patches as well as any applications to be included in the deployed image. A checklist is provided to help ensure the image meets all prerequisites for producing desktops.

1. On the **Edit Image** page, click **Connect**.
2. In the Citrix VDI-in-a-Box Log in dialog box, provide your administrator credentials for the image and click Log in.

3. Edit the image as necessary and log off.

4. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

5. On the Edit Image page, click View. A list of prerequisites, in question format, appears.
Create the first Windows image

**Note:** The prerequisites vary based on hypervisor and image operating system.

6. Click **Yes** to indicate each prerequisite has been met.

7. When all prerequisites have been met, click **Done**. The prerequisites close and the **Edit Image** page appears.

8. Click **Next**. The **Prepare Image** page appears.

To prepare the image

1. On the **Prepare Image** page, in the **Domain name** box, if it is active, select the domain or workgroup.

2. In the optional **Organizational unit (OU)** box, type the organization unit to which the image will apply.

3. Click **Prepare**. The Confirm message appears.

4. Click **Confirm**. The Confirm message and the Prepare Image page close. A status page appears showing the progress. A test desktop is created based on the prepared image and the **Test Image** page appears.
To test the prepared desktop image

Use the test image to verify the prepared draft image is suitable for generating your desktops and that users can connect to their desktops through HDX and RDP. The test image and any changes made to it are deleted when the draft image is saved.

1. On the Test Image page, click Connect. The Connect to the draft image dialog box appears.
2. In the **Connect to the draft image** dialog box, select **Use Citrix HDX** and click **Connect**. The Citrix VDI-in-a-Box Log in dialog box appears.

3. Provide user credentials and click **Log in** to log on to the test image through an HDX connection. The test image opens through an HDX connection.

4. Verify that the installed applications are functioning properly and the required group policies are applied.

5. If your grid is configured with Active Directory, log off and log on as a domain user to test access.

6. Log off from the test image. The test image closes.

7. In the **Citrix VDI-in-a-Box Log in** dialog box, click **Cancel** to close it.

8. On the **Test Image** page, click **Connect**.

9. In the **Connect to the draft image** dialog box, select **Use Microsoft RDP** and click **Connect**. The test image opens through an RDP connection.

10. Log on to the test image to verify the RDP connection works properly and then log off. The test image closes.

11. On the **Test Image** page, click **Save**. The Confirm message appears.

12. In the Confirm message, click **Confirm**. A status page appears showing the progress. The **Template Information** page of the Create a New Desktop Template wizard appears.
To create the first template from the published image

Use templates to create uniform virtual desktops that meet your specifications. Templates consist of an image and policies. The image contains the operating systems and applications that run on the desktop. For details on creating an image, see Create the first Windows image. One image can be used by multiple templates.

**Important:** You must have created and published at least one image before you can create a template.

Policies, which you set while creating the template, are characteristics such as how many desktops to create and how much RAM to allocate.

Establish naming patterns for all desktops generated by your templates by setting computer names with prefixes and suffixes. The prefix and suffix can combine to be up to 15 characters long. Use leading zeros in the suffix to hold places for up to four digits. The number generated by the suffix increases with each virtual desktop. For example, if you set the computer prefix `<name>` and the suffix as 0000 and generate 2 virtual desktops, they will be called `<name>0001` and `<name>0002`. If leading zeros are not included in the suffix, they will not be included in the resulting names. For example, a suffix value of 1 produces `<name>1`, `<name>2`, `<name>3`, and so on.

The template gives you the option to pre-start desktops. Pre-started desktops are in a powered-on state and at the logon prompt, ready for use. Pre-starting desktops eliminates the need for users to wait for virtual desktops to start. When you specify a number of desktops for pre-start, VDI-in-a-Box maintains that number as users log on. For example, if you specify five pre-started desktops in the template, there will be five virtual desktops started and waiting for your users. When two users log on to their desktops, VDI-in-a-Box starts two more desktops to maintain the requested five pre-starts. This continues until your stated maximum number for the template is reached. If the pre-start value for a template is 0, the template is shut down and no users can connect to it.

**Note:** When the image is running Windows Server 2008 R2, the template provisions pooled desktops only.

If the Create Desktop Templates from the Base Image page is not currently displayed in your Web browser, navigate to your new VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the Create Desktop Templates from the Base Image page, click Continue. The Template Information page of the Create a New Desktop Template wizard appears.
To create the first template from the published image

2. In the **Template Name** box, type a name for the template.

3. From the list of available images, select the image you want to associate with this template.

4. In the **Description** box, type a description of the template.

5. In the **Prefix** box, provide a new prefix for the generated images.

   **Note:** Valid characters for the prefix include numbers, letters, and hyphens (-).

6. In the **Suffix** box, provide a new suffix.

   **Note:** The combined prefix and suffix can be up to 15 characters. The suffix must be at least one numeric character and can be up to four numeric characters. Leading zeros are allowed.

7. From the **Memory (MB)** list, allocate memory for the desktop.

   **Note:** Citrix recommends allocating at least 1536 MB of memory for Windows 7 and Windows Server 2008 R2 desktops. For Windows XP desktops, a minimum of 512 MB of memory is required and 1 GB of memory is recommended.

8. From the **Virtual CPUs** list, select the number of CPUs to be assigned to each generated desktop.

9. Select any local devices, such as disk drives or printers, you want to connect to the virtual desktops.
To create the first template from the published image

10. Adjust the color depth of the HDX connection as necessary.

11. If your published image has a Key Management Service (KMS) activation key, Citrix recommends selecting **Reset the activation time (KMS clients)**.

12. Click **Next**. The **Template Policies** page appears.

![Create a New Desktop Template - Building A](image)

13. In the **Maximum desktops** box, type the maximum number of desktops to deploy from this template.

14. In the **Pre-started desktops** box, type the number of desktops that should be started and available for users upon logon. You must pre-start at least one desktop or users will not be able to access the template. For testing purposes, Citrix recommends setting a maximum of two desktops with one pre-started desktop.

15. From the **Refresh desktop** list, select a method of refresh. The refresh method determines when users’ desktops are replaced with a fresh desktop matching the template. Note that if you select ‘On logout’, this does not apply to administrators; for debugging reasons, administrators are allowed to log on and off without triggering desktop lifecycle events.

   - **On logout**: Refreshes the desktop each time the user logs off.
   - **Scheduled**: Refreshes at a set day and time on a daily, weekly, or monthly basis. You can include desktops in use at the scheduled time. If you exclude in-use desktops, they are replaced when the user logs out following the scheduled refresh.
   - **Scheduled or on logout**: Refreshes at a set day and time and each time the user logs off. This is useful in environments where users stay logged on to desktops for
extended periods.

- **Manual**: Refreshes only through your action. This setting results in a persistent desktop, one which remains with the user indefinitely. Users can add applications and other modifications with the expectation that they will be available with each log on.

16. Select **Do not reassign desktops "On Hold" to new users** to allow desktops to be held by users.

    **Note**: This option is selected by default.

17. Select **Enable fast refresh of desktops** to quicken the refresh process when users log off.

18. Select **Make this the default template** to provide this template to any user with access to whom a template has not been assigned.

    **Note**: If a default template has not been designated for the grid, users who have not been assigned a template will have their logon credentials rejected.

19. Click **Save**.

20. Click **Close**.
To edit the template

You can change the maximum number of desktops, the number of pre-started desktops, and make other changes by editing your template.

If the VDI-in-a-Box console is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the VDI-in-a-box console, click the Templates tab.
2. Click the name of the template you want to edit.
3. Make the desired changes and click Save.

   Note: Save is on the Template Policies page.
Assign templates to users, groups, and IP addresses

When you have created your templates, you can assign them to users, user groups, and IP addresses. Users and groups can have multiple templates assigned to them. When templates are assigned to an IP address, such as for a kiosk, all users logging on at that kiosk receive the same desktop.

If a user has not been assigned a template and logs on, that user receives the default template. If you have not specified a default template, that user's credentials are rejected.

If the Assign Users to Desktops page is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

To assign templates to user groups

1. On the Assign Users to Desktops page, click Continue. The Users page appears. It contains tables for user groups, users, and IP addresses.

2. At the User Groups table, click Add. A row for a new user group entry appears in the User Group table.

3. In the Group Name box, you can type the name of the group to which you want to assign a template. If Active Directory is used as the user database, type the first characters of the group name and press Enter to select from matching groups.

4. In the Description box, type a group description.

5. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the group. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

6. Click Save. The group is added to the table.

7. Repeat these steps to assign templates to additional groups.
To assign templates to users

1. At the Users table, click Add. A row for a new user entry appears in the Users table.

![Users table screenshot]

2. In the User ID box, you can type the user ID of a user to whom you want to assign a template. If Active Directory is used as the user database, type the first characters of the User ID and press Enter to select from matching IDs.

   **Note:** First Name, Last Name, and Group are optional and automatically filled in if the user and full information are in the Active directory.

3. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the user. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

4. Click Save. The user is added to the table.

5. Repeat these steps to assign templates to additional users.
To assign templates to incoming IP addresses

1. At the IP Addresses table, click Add. A row for a new IP address entry appears in the IP Addresses table.

2. In the IP Address Ranges box, type the ranges of the user device IP addresses to which you want to assign a template. Addresses can be added as individual addresses (192.168.23.143), prefixes (192.168), or ranges (192.168.10.174-204). Separate entries with new lines or spaces.

3. From the templates list, select the template you want to assign to the IP address.

4. Click Save. The IP address is added to the table.

5. Repeat these steps to assign additional templates to IP addresses.

   **Note:** Once a template is assigned, it cannot be assigned again until the existing assignment is terminated.

To edit template assignments

1. In the VDI-in-a-Box console, select the Users page.

2. Point to the user group, user, or IP address whose template you want to edit and click Edit.

3. Edit as necessary and click Save.
Test the connection as a user

After setting up a template, creating desktops from the template, and assigning them to users, log on to a desktop as a user to ensure the connection works correctly. To do this, you must first install the latest version of Citrix Receiver, if you have not already done so. If you plan to use the Java Desktop Client, you must also install Java SE Runtime Environment (JRE) 6 or 7.

To prepare your user device

Prepare your user device for testing by installing Citrix Receiver to take advantage of the HDX connections.

- If it is not already installed, from https://www.citrix.com, download Citrix Receiver following the directions provided at that web site.
- If you plan to use the Java Desktop Client, ensure you have JRE 6 or 7 installed on the user device. If necessary, obtain the latest version from https://www.java.com, following the directions provided at that web site.

To connect to the desktop

These steps may vary slightly depending on your web browser.

1. Start your web browser.

2. In the web browser address box, type https://<IpAddress>/ . A security warning about the web site's certificate may appear.

3. Accept the certificate as trusted and continue.

4. In the Citrix VDI-in-a-Box page, in the Username box, type your user name.

5. In the Password box, type your password and click Log On.

6. Click the desired desktop. You are connected to the virtual desktop.

To connect to the desktop through the VDI-in-a-Box Java Desktop Client from a web browser

These steps may vary slightly based on the Web browser you are using.

1. Start your web browser.
2. In the web browser address box, type https://<IPaddress>/dt/vdiclient.jnlp. A security warning about the web site's certificate may appear.

3. Accept the certificate as trusted and continue. Depending on which web browser you are using, the Opening vdiclient.jnlp dialog box appears.

4. If the Opening vdiclient.jnlp dialog box appears, ensure Open with is selected and Java(TM) Web Start Launcher (default) appears from the list next to it, then click OK.

5. In the Citrix VDI-in-a-Box Client dialog box, type your user credentials and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.

To connect to the desktop though the VDI-in-a-Box Java Desktop Client from a command prompt

These steps may vary slightly based on the user device you are using.

1. Open the Command Prompt window.

2. Type the command: javaws https://<IPaddress>/dt/vdiclient.jnlp.

3. Press Enter.

4. In the Log on dialog box, in the User name box, type your user name.

5. In the Password box, type your password and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.
VMware ESXi using a Windows 7 image

Use the get started topics to set up a Citrix VDI-in-a-Box deployment:

- To download and extract the VDI-in-a-Box Manager
- Create and configure the grid
- Create the first Windows image
- To create the first template from the published image
- To edit the template
- Assign templates to users, groups, and IP addresses
- Test the connection as a user
To download and extract the VDI-in-a-Box Manager

Download the VDI-in-a-Box virtual appliance, called VDI-in-a-Box Manager (vdiManager), for use with VMware ESXi from the Citrix website.

The download package, VDI-in-a-Box_ESX_v5_1_1.zip, contains the vdiManager file, vdiManager_ESX_v5_1_1.ova. About 2 GB of disk space is needed to extract vdiManager.

**Note:** Be sure to download and extract the file to a location accessible with VMware vSphere Client.

2. If you are not already logged on to My Citrix, do so now.
3. Click **Downloads**.
4. From the products list, select **VDI-in-a-Box**.
5. From the download type list, select **Product Software**.
6. Click **Find**. The VDI-in-a-Box product software page appears.
7. Click **VDI-in-a-Box 5.1.1**. The VDI-in-a-Box 5.1.1 page appears.
8. From the Appliances section, for the version that matches your hypervisor, click **Download**.

   ![Appliance](image)

   The End-User License Agreement appears.

9. Accept the agreement. The **Download Manager** window opens.
To download and extract the VDI-in-a-Box Manager

10. Click **Download Now**.

11. Click **Install** and save VDI-in-a-Box_ESX_v5_1_1.zip. The Download Manager downloads the zip file.

12. From the zip file, extract the vdiManager file, vdiManager_ESX_v5_1_1.ova.

**To import vdiManager**

When the vdiManager file, vdiManager_ESX_v5_1_1.ova, is extracted, import it into VMware vSphere Client. For details on importing with vSphere Client, see [http://www.vmware.com/](http://www.vmware.com/). When the import process is finished, vdiManager appears in the vSphere Client management console Inventory view as a virtual machine.

**Important:** Do not import more than one vdiManager per hypervisor. Doing so may result in excessive CPU, RAM, disk, and network consumption, and cause system non-responsiveness.
Create and configure the grid

Configure the VDI-in-a-Box grid once VDI-in-a-Box Manager (vdiManager) has been imported into your hypervisor and is available in its management console.

The grid unites servers running vdiManager, allowing load balancing and ensuring high availability of virtual machines on the servers.

Enable JavaScript and cookies on your browser.

To open the vdiManager console for first time setup

These steps may vary slightly depending on your Web browser.

1. In your hypervisor, ensure vdiManager is started and in a powered on state.

   **Note:** If you have not already done so, make note of the vdiManager IP address.


3. Accept the certificate as trusted and continue. If additional warnings appear, accept those, too. The Citrix VDI-in-a-Box Administrator Login page appears.

4. On the Citrix VDI-in-a-Box Administrator Login page, in the Username box, type `vdiadmin`.

5. In the Password box, type `kaviza` and click Log On. The Welcome page, showing the four high-level steps necessary to complete virtual desktops, appears.
Create and configure the grid

**Welcome!**

Thank you for choosing VDI-in-a-Box. We want this to be a fast and pleasant experience. Below is a brief overview of the set up process. If you want background information on VDI-in-a-Box before you get started, go to support.citrix.com/VDI-in-a-Box.

**Overview**

Below are the 4 steps you will need to complete in order to generate desktops for your users.

1. Set up your Hypervisor and VDI-in-a-Box Grid
2. Generate a Base Desktop Image
3. Create Desktop Template from the Base Image
4. Assign Users to Desktops

Get Started
To set up the hypervisor

1. On the Welcome page, click Get Started. The Set up your Hypervisor and VDI-in-a-Box Grid page appears.

2. Click Continue. The Hypervisor page of the VDI-in-a-Box Initial Set up wizard appears.

3. In the IP Address box, type the IP address for the server running your hypervisor.

4. In the User Name and Password boxes, type your user name and password. The user account must have root privileges.

5. Click Next. The Datastore page of the VDI-in-a-Box Initial Set up wizard appears.

To set up the data store and network label

The data store contains your desktop images and virtual desktops.

Note: Do not change any data store’s name after specifying it in VDI-in-a-Box, otherwise desktop generation and cleanup processes will fail.

1. On the Datastore page, select the data store and network label.
2. Click **Next**. The data store information is saved and the **Grid** page of the VDI-in-a-Box Initial Setup wizard appears, allowing you to create a new grid or join an existing grid.

**Select a new or existing grid**

Create a new grid when setting up a new VDI-in-a-Box environment. When creating a new grid, you must associate it with a database containing the users and groups who will be accessing the VDI-in-a-Box virtual machines. The database can be your Active Directory server or a locally stored database called a workgroup.

Join an existing grid when expanding a VDI-in-a-Box environment.
To create a new grid and assign a database

1. On the Grid page, select Create a new VDI-in-a-Box grid and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. In User Database, select VDI-in-a-Box workgroup or Microsoft Active Directory. If you selected Microsoft Active Directory, you must provide additional information. If you selected VDI-in-a-Box workgroup, you do not need to provide this information.
3. If you selected Active Directory, in the **IP Address** box, type the IP address hosting the database.

4. If you selected Active Directory, in the **Domain** box, type the DNS domain.

5. If you selected Active Directory, in the **User Name** and **Password** boxes, type your user name and password. The user must have Domain Administrator privileges.

6. If VMware vCenter manages servers in the grid, select **vCenter manages servers in this grid**. If you selected **vCenter manages servers in this grid**, you must provide additional information.

7. If you selected **vCenter manages servers in this grid**, in the **IP Address** box, type the IP address of the server running vCenter.

8. If you selected **vCenter manages servers in this grid**, in the **User Name** and **Password** boxes, type your vCenter user name and password. The user must have Domain Administrator privileges.

9. Click **Next**. The question "Have you reserved your VDI-in-a-Box Manager's IP address?" appears.
Create and configure the grid

10. Select Yes or No and click Done. The Generate a Base Desktop Image page appears.

To join an existing grid

1. On the VDI-in-a-Box Initial Set up wizard, on the Grid page, select Join this VDI-in-a-Box server to an existing grid and click Next. The Database page of the VDI-in-a-Box Initial Set up wizard appears.

2. On the Configuration page, in the IP Address box, type the IP address of the vdiManager in the existing grid.

3. On the Configuration page, in the User Name and Password boxes, type your vdiManager console user name and password.

4. Click Next. The grid configuration process is finished.
Create the first Windows image

After you have created your VDI-in-a-Box Manager (vdiManager) and associated it with a data store, database and grid, you can create your first Windows image.

Use your hypervisor to create a new virtual machine running Windows. Refer to your hypervisor documentation for details.

When creating the virtual machine, be sure that it meets the following conditions:

- The virtual machine is running Windows XP Professional edition (32-bit), Windows 7 Professional or Enterprise editions (32-bit or 64-bit) or Windows Server 2008 R2, Enterprise Edition.
- Remote Desktop Connection (RDP) functionality must be enabled on the virtual machine.
- The virtual machine has only one disk image.
- The virtual machine must be started and in a powered on state prior to importing into VDI-in-a-Box.
- The virtual machine has at least 4 GB of space available.

To prepare for importing the image

You must complete the following steps outside VDI-in-a-Box. See the respective manufacturers’ documentation for details.

1. Activate the virtual machine using a valid Microsoft Volume Activation key.

2. Enable the Local Administrator account on the virtual machine.

3. Install your hypervisor’s management tools on the virtual machine. See the hypervisor manufacturer’s documentation for details.

4. If desired, join the virtual machine to a domain.

   **Note:** The virtual machine can be a member of a workgroup.

5. Log on to the virtual machine as the local administrator and enable remote connections for your users.

6. Enable **File and Printer Sharing** in firewall settings to allow remote agent installation. See the firewall manufacturer’s documentation for details.
To import the Windows virtual machine

If the Generate a Base Desktop Image page is not currently displayed in your Web browser, navigate to your new vdiManager (https://<IPaddress>/admin/) and log on.

1. On the Generate a Base Desktop Image page, click Continue.

2. On the Import new VM page, select the virtual machine you want to use as an image.

3. In the New Image Name box, type a name for the imported virtual machine.

   **Note:** The name should be different from the name of the source image.

4. In the Description box, type a description of the virtual machine and click Import. The Specify Administrator Credentials dialog box appears.
5. Select whether to provide credentials for an administrator or a local user with administrator privileges.


6. Type the user name and password for an account with administrator privileges on the image and click **OK**. The import and Desktop Agent installation process begins creating a draft image, and a status page appears showing the progress. The **Edit Image** page of the Import new VM wizard appears.

## To edit the draft image

Edit the draft image to add any necessary updates, settings, or patches as well as any applications to be included in the deployed image. A checklist is provided to help ensure the image meets all prerequisites for producing desktops.

1. On the **Edit Image** page, click **Connect**.
Create the first Windows image

2. In the Citrix VDI-in-a-Box Log in dialog box, provide your administrator credentials for the image and click Log in.

3. Edit the image as necessary and log off.

4. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

5. On the Edit Image page, click View. A list of prerequisites, in question format, appears.
Create the first Windows image

Note: The prerequisites vary based on hypervisor and image operating system.

6. Click Yes to indicate each prerequisite has been met.

7. When all prerequisites have been met, click Done. The prerequisites close and the Edit Image page appears.

8. Click Next. The Prepare Image page appears.

To prepare the image

On the Prepare Image page, select whether the image will be used to generate pooled or personal desktops. Pooled desktops are single-disk desktops derived from the published image, which you are in the process of building with this wizard. Personal desktops are two-disk desktops joining the published image with a personal vDisk. For details about personal desktops, see Manage personal desktops. An image prepared for use with a personal desktop can also be used to generate pooled desktops, allowing you flexibility in how you use your published image. However, if you intend to use an image to generate pooled desktops only, prepare it using the Pooled desktops option to avoid adding unnecessary personal vDisk settings.

1. On the Prepare Image page, in the Domain name box, if it is active, select the domain or workgroup.
2. In the optional Organizational unit (OU) box, type the organization unit to which the image will apply.

3. Select Pooled desktops or Pooled and personal desktops.

4. Click Prepare. The Confirm message appears.

5. Click Confirm. The Confirm message and the Prepare Image page close. A status page appears showing the progress. A test desktop is created based on the prepared image and the Test Image page appears.

**To test the prepared desktop image**

Use the test image to verify the prepared draft image is suitable for generating your desktops and that users can connect to their desktops through HDX and RDP. The test image and any changes made to it are deleted when the draft image is saved.

1. On the Test Image page, click Connect. The Connect to the draft image dialog box appears.
2. In the Connect to the draft image dialog box, select Use Citrix HDX and click Connect. The Citrix VDI-in-a-Box Log in dialog box appears.

3. Provide user credentials and click Log in to log on to the test image through an HDX connection. The test image opens through an HDX connection.

4. Verify that the installed applications are functioning properly and the required group policies are applied.

5. If your grid is configured with Active Directory, log off and log on as a domain user to test access.

6. Log off from the test image. The test image closes.

7. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

8. On the Test Image page, click Connect.

9. In the Connect to the draft image dialog box, select Use Microsoft RDP and click Connect. The test image opens through an RDP connection.

10. Log on to the test image to verify the RDP connection works properly and then log off. The test image closes.


12. In the Confirm message, click Confirm. The Confirm message and Test Image page close. A status page appears showing the progress. The Create Desktop Templates from the Base Image page appears.
To create the first template from the published image

Use templates to create uniform virtual desktops that meet your specifications. Templates consist of an image and policies. The image contains the operating systems and applications that run on the desktop. For details on creating an image, see Create the first Windows image. One image can be used by multiple templates.

**Important:** You must have created and published at least one image before you can create a template.

Policies, which you set while creating the template, are characteristics such as how many desktops to create and how much RAM to allocate to the CPUs.

Establish naming patterns for all desktops generated by your templates by setting computer names with prefixes and suffixes. The prefix and suffix can combine to be up to 15 characters long. Use leading zeros in the suffix to hold places for up to four digits. The number generated by the suffix increases with each virtual desktop. For example, if you set the computer prefix `<name>` and the suffix as 0000 and generate 2 virtual desktops, they will be called `<name>`0001 and `<name>`0002. If leading zeros are not included in the suffix, they will not be included in the resulting names. For example, a suffix value of 1 produces `<name>`1, `<name>`2, `<name>`3, and so on.

The template gives you the option to pre-start desktops. Pre-started desktops are in a powered-on state and at the logon prompt, ready for use. Pre-starting desktops eliminates the need for users to wait for virtual desktops to start. When you specify a number of desktops for pre-start, VDI-in-a-Box maintains that number as users log on. For example, if you specify five pre-started desktops in the template, there will be five virtual desktops started and waiting for your users. When two users log on to their desktops, VDI-in-a-Box starts two more desktops to maintain the requested five pre-starts. This continues until your stated maximum number for the template is reached. If the pre-start value for a template is 0, the template is shut down and no users can connect to it.

If the Create Desktop Templates from the Base Image page is not currently displayed in your Web browser, navigate to your new VDI-in-a-Box Manager (https://<ipaddress>/admin/) and log on.

1. In the Create Desktop Templates from the Base Image page, click Continue. The Template Information page of the New Desktop Template wizard appears.
To create the first template from the published image

2. In the **Template Name** box, type a name for the template.

3. From the list of available images, select the image you want to associate with this template.

4. In the **Description** box, type a description of the template.

5. In the **Prefix** box, provide a new prefix for the generated images.
   
   **Note:** Valid characters for the prefix include numbers, letters, and hyphens (-).

6. In the **Suffix** box, provide a new suffix.
   
   **Note:** The combined prefix and suffix can be up to 15 characters. The suffix must be at least one numeric character and can be up to four numeric characters. Leading zeros are allowed.

7. From the **Memory (MB)** list, allocate memory for the desktop.
   
   **Note:** Citrix recommends allocating at least 1536 MB of memory for Windows 7 and Windows Server 2008 R2 desktops. For Windows XP desktops, a minimum of 512 MB of memory is required and 1 GB of memory is recommended.

8. From the **Virtual CPUs** list, select the number of CPUs to be assigned to each generated desktop.

9. Select any local devices, such as disk drives or printers, you want to connect to the virtual desktops.
To create the first template from the published image

10. Adjust the color depth of the HDX connection as necessary.

11. If your published image has a Key Management Service (KMS) activation key, Citrix recommends selecting **Reset the activation time (KMS clients)**.

12. Click **Next**. The **Template Policies** page appears.
13. In the **Maximum desktops** box, type the maximum number of desktops to deploy from this template.

14. In the **Pre-started desktops** box, type the number of desktops that should be started and available for users upon logon. You must pre-start at least one desktop or users will not be able to access the template.

   **Note:** For testing purposes, Citrix recommends setting a maximum of two desktops with one pre-started desktop.

15. Select **Make this the default template** to provide this image to any user with access to whom a template has not been assigned.

   **Note:** If a default template has not been designated for the grid, users who have not been assigned a template will have their logon credentials rejected.

16. Select whether the template type is **Pooled Desktop** or **Personal Desktop**. Different information is required for each type.

17. If you selected Pooled Desktop, from the **Refresh desktop** list, select a method of refresh. The refresh method determines when users’ desktops are replaced with a fresh desktop matching the template. Note that if you select ‘On logout’, this does not apply to administrators; for debugging reasons, administrators are allowed to log on and off without triggering desktop lifecycle events.

   - **On logout:** Refreshes the desktop each time the user logs off.
To create the first template from the published image

- **Scheduled**: Refreshes at a set day and time on a daily, weekly, or monthly basis. You can include desktops in use at the scheduled time. If you exclude in-use desktops, they are replaced when the user logs out following the scheduled refresh.

- **Scheduled or on logout**: Refreshes at a set day and time and each time the user logs off. This is useful in environments where users stay logged on to desktops for extended periods.

- **Manual**: Refreshes only through your action. This setting results in a persistent desktop, one which remains with the user indefinitely. Users can add applications and other modifications with the expectation that they will be available with each log on.

18. If you selected Pooled Desktop, select **Do not reassign desktops “On Hold” to new users** to allow desktops to be held by users.

   **Note**: This option is selected by default.

19. If you selected Pooled Desktop, Select **Enable fast refresh of desktops** to quicken the refresh process when users log off.

20. If you selected Personal Desktop, select the personal desktop disk size.

21. Click **Save**.

22. Click **Close**. The amount of desktops designated for pre-start are started and the **Assign Users to Desktops** page appears.
To edit the template

You can change the maximum number of desktops, the number of pre-started desktops, and make other changes by editing your template.

If the VDI-in-a-Box console is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the VDI-in-a-box console, click the Templates tab.
2. Click the name of the template you want to edit.
3. Make the desired changes and click Save.

**Important:** Save is on the Template Policies page.
Assign templates to users, groups, and IP addresses

When you have created your templates, you can assign them to users, user groups, and IP addresses. Users and groups can have multiple templates assigned to them. When templates are assigned to an IP address, such as for a kiosk, all users logging on at that kiosk receive the same desktop.

If a user has not been assigned a template and logs on, that user receives the default template. If you have not specified a default template, that user’s credentials are rejected.

If the Assign Users to Desktops page is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

To assign templates to user groups

1. On the Assign Users to Desktops page, click Continue. The Users page appears. It contains tables for user groups, users, and IP addresses.

2. At the User Groups table, click Add. A row for a new user group entry appears in the User Group table.

3. In the Group Name box, you can type the name of the group to which you want to assign a template. If Active Directory is used as the user database, type the first characters of the group name and press Enter to select from matching groups.

4. In the Description box, type a group description.

5. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the group. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

6. Click Save. The group is added to the table.

7. Repeat these steps to assign templates to additional groups.
To assign templates to users

1. At the Users table, click Add. A row for a new user entry appears in the Users table.

2. In the User ID box, you can type the user ID of a user to whom you want to assign a template. If Active Directory is used as the user database, type the first characters of the User ID and press Enter to select from matching IDs.

   Note: First Name, Last Name, and Group are optional and automatically filled in if the user and full information are in the Active directory.

3. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the user. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

4. Click Save. The user is added to the table.

5. Repeat these steps to assign templates to additional users.
To assign templates to incoming IP addresses

1. At the IP Addresses table, click Add. A row for a new IP address entry appears in the IP Addresses table.

2. In the IP Address Ranges box, type the ranges of the user device IP addresses to which you want to assign a template. Addresses can be added as individual addresses (192.168.23.143), prefixes (192.168), or ranges (192.168.10.174-204). Separate entries with new lines or spaces.

3. From the templates list, select the template you want to assign to the IP address.

4. Click Save. The IP address is added to the table.

5. Repeat these steps to assign additional templates to IP addresses.

Note: Once a template is assigned, it cannot be assigned again until the existing assignment is terminated.

To edit template assignments

1. In the VDI-in-a-Box console, select the Users page.

2. Point to the user group, user, or IP address whose template you want to edit and click Edit.

3. Edit as necessary and click Save.
Test the connection as a user

After setting up a template, creating desktops from the template, and assigning them to users, log on to a desktop as a user to ensure the connection works correctly. To do this, you must first install the latest version of Citrix Receiver, if you have not already done so. If you plan to use the Java Desktop Client, you must also install Java SE Runtime Environment (JRE) 6 or 7.

To prepare your user device

Prepare your user device for testing by installing Citrix Receiver to take advantage of the HDX connections.

- If it is not already installed, from https://www.citrix.com, download Citrix Receiver following the directions provided at that web site.

- If you plan to use the Java Desktop Client, ensure you have JRE 6 or 7 installed on the user device. If necessary, obtain the latest version from https://www.java.com, following the directions provided at that web site.

To connect to the desktop

These steps may vary slightly depending on your web browser.

1. Start your web browser.

2. In the web browser address box, type https://<IpAddress>/ . A security warning about the web site’s certificate may appear.

3. Accept the certificate as trusted and continue.

4. In the Citrix VDI-in-a-Box page, in the Username box, type your user name.

5. In the Password box, type your password and click Log On.

6. Click the desired desktop. You are connected to the virtual desktop.

To connect to the desktop through the VDI-in-a-Box Java Desktop Client from a web browser

These steps may vary slightly based on the Web browser you are using.

1. Start your web browser.
Test the connection as a user

2. In the web browser address box, type https://<IPaddress>/dt/vdiclient.jnlp. A security warning about the web site's certificate may appear.

3. Accept the certificate as trusted and continue. Depending on which web browser you are using, the Opening vdiclient.jnlp dialog box appears.

4. If the Opening vdiclient.jnlp dialog box appears, ensure Open with is selected and Java(TM) Web Start Launcher (default) appears from the list next to it, then click OK.

5. In the Citrix VDI-in-a-Box Client dialog box, type your user credentials and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.

To connect to the desktop though the VDI-in-a-Box Java Desktop Client from a command prompt

These steps may vary slightly based on the user device you are using.

1. Open the Command Prompt window.

2. Type the command: javaws https://<IPaddress>/dt/vdiclient.jnlp.

3. Press Enter.

4. In the Log on dialog box, in the User name box, type your user name.

5. In the Password box, type your password and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.
VMware ESXi using a Windows XP image

Use the get started topics to set up a Citrix VDI-in-a-Box deployment:

- To download and extract the VDI-in-a-Box Manager
- Create and configure the grid
- Create the first Windows image
- To create the first template from the published image
- To edit the template
- Assign templates to users, groups, and IP addresses
- Test the connection as a user
To download and extract the VDI-in-a-Box Manager

Download the VDI-in-a-Box virtual appliance, called VDI-in-a-Box Manager (vdiManager), for use with VMware ESXi from the Citrix website.

The download package, VDI-in-a-Box_ESX_v5_1_1.zip, contains the vdiManager file, vdiManager_ESX_v5_1_1.ova. About 2 GB of disk space is needed to extract vdiManager.

**Note:** Be sure to download and extract the file to a location accessible with VMware vSphere Client.

2. If you are not already logged on to My Citrix, do so now.
3. Click **Downloads**.
4. From the products list, select **VDI-in-a-Box**.
5. From the download type list, select **Product Software**.
6. Click **Find**. The VDI-in-a-Box product software page appears.
7. Click **VDI-in-a-Box 5.1.1**. The VDI-in-a-Box 5.1.1 page appears.
8. From the Appliances section, for the version that matches your hypervisor, click **Download**.

![Download Window](image.png)

The End-User License Agreement appears.

9. Accept the agreement. The **Download Manager** window opens.
To download and extract the VDI-in-a-Box Manager

10. Click Download Now.

11. Click Install and save VDI-in-a-Box_ESX_v5_1_1.zip. The Download Manager downloads the zip file.

12. From the zip file, extract the vdiManager file, vdiManager_ESX_v5_1_1.ova.

To import vdiManager

When the vdiManager file, vdiManager_ESX_v5_1_1.ova, is extracted, import it into VMware vSphere Client. For details on importing with vSphere Client, see http://www.vmware.com/. When the import process is finished, vdiManager appears in the vSphere Client management console Inventory view as a virtual machine.

**Important:** Do not import more than one vdiManager per hypervisor. Doing so may result in excessive CPU, RAM, disk, and network consumption, and cause system non-responsiveness.
Create and configure the grid

Configure the VDI-in-a-Box grid once VDI-in-a-Box Manager (vdiManager) has been imported into your hypervisor and is available in its management console.

The grid unites servers running vdiManager, allowing load balancing and ensuring high availability of virtual machines on the servers.

Enable JavaScript and cookies on your browser.

**Note:** Do not change any data store's name after specifying it in VDI-in-a-Box, otherwise desktop generation and cleanup processes will fail.

To open the vdiManager console for first time setup

These steps may vary slightly depending on your Web browser.

1. In your hypervisor, ensure vdiManager is started and in a powered on state.

   **Note:** If you have not already done so, make note of the vdiManager IP address.


3. Accept the certificate as trusted and continue. If additional warnings appear, accept those, too. The Citrix VDI-in-a-Box Administrator Login page appears.

4. On the Citrix VDI-in-a-Box Administrator Login page, in the Username box, type `vdiadmin`.

5. In the Password box, type `kaviza` and click Log On. The Welcome page, showing the four high-level steps necessary to complete virtual desktops, appears.
Create and configure the grid

VDI-in-a-Box

Welcome!

Thank you for choosing VDI-in-a-Box. We want this to be a fast and pleasant experience. Below is a brief overview of the set up process. If you want background information on VDI-in-a-Box before you get started, go to support.citrix.com/VDI-in-a-Box.

Overview

Below are the 4 steps you will need to complete in order to generate desktops for your users.

1. Set up your Hypervisor and VDI-in-a-Box Grid
2. Generate a Base Desktop Image
3. Create Desktop Template from the Base Image
4. Assign Users to Desktops

Get Started
To set up the hypervisor

1. On the Welcome page, click Get Started. The Set up your Hypervisor and VDI-in-a-Box Grid page appears.

2. Click Continue. The Hypervisor page of the VDI-in-a-Box Initial Set up wizard appears.

3. In the IP Address box, type the IP address for the server running your hypervisor.

4. In the User Name and Password boxes, type your user name and password. The user account must have root privileges.

5. Click Next. The Datastore page of the VDI-in-a-Box Initial Set up wizard appears.

To set up the data store and network label

The data store contains your desktop images and virtual desktops.

Note: If you are using ESXi or Hyper-V, do not change any data store's name after specifying it in VDI-in-a-Box, otherwise desktop generation and cleanup processes will fail.

1. On the Datastore page, select the data store and network label.
2. Click Next. The data store information is saved and the Grid page of the VDI-in-a-Box Initial Setup wizard appears, allowing you to create a new grid or join an existing grid.

**Select a new or existing grid**

Create a new grid when setting up a new VDI-in-a-Box environment. When creating a new grid, you must associate it with a database containing the users and groups who will be accessing the VDI-in-a-Box virtual machines. The database can be your Active Directory server or a locally stored database called a workgroup.

Join an existing grid when expanding a VDI-in-a-Box environment.
Create and configure the grid

To create a new grid and assign a database

1. On the Grid page, select Create a new VDI-in-a-Box grid and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. In User Database, select VDI-in-a-Box workgroup or Microsoft Active Directory. If you selected Microsoft Active Directory, you must provide additional information. If you selected VDI-in-a-Box workgroup, you do not need to provide this information.
3. If you selected Active Directory, in the **IP Address** box, type the IP address hosting the database.

4. If you selected Active Directory, in the **Domain** box, type the DNS domain.

5. If you selected Active Directory, in the **User Name** and **Password** boxes, type your user name and password. The user must have Domain Administrator privileges.

6. If VMware vCenter manages servers in the grid, select **vCenter manages servers in this grid**. If you selected **vCenter manages servers in this grid**, you must provide additional information.

7. If you selected **vCenter manages servers in this grid**, in the **IP Address** box, type the IP address of the server running vCenter.

8. If you selected **vCenter manages servers in this grid**, in the **User Name** and **Password** boxes, type your vCenter user name and password. The user must have Domain Administrator privileges.

9. Click **Next**. The question "Have you reserved your VDI-in-a-Box Manager's IP address?,” appears.
Create and configure the grid

10. Select Yes or No and click Done. The Generate Base Image page appears.

To join an existing grid

1. On the VDI-in-a-Box Initial Set up wizard, on the Grid page, select Join a VDI-in-a-Box server on an existing grid and click Next. The Database page of the VDI-in-a-Box Initial Set up wizard appears.

2. On the Database page, in the IP Address box, type the IP address of the vdiManager in the existing grid.

3. On the Database page, in the User Name and Password boxes, type your vdiManager console user name and password.

4. Click Next. The grid configuration process is finished.
Create the first Windows image

After you have created your VDI-in-a-Box Manager (vdiManager) and associated it with a data store, database and grid, you can create your first Windows image.

Use your hypervisor to create a new virtual machine running Windows. Refer to your hypervisor documentation for details.

When creating the virtual machine, be sure that it meets the following conditions:

- The virtual machine is running Windows XP Professional edition (32-bit), Windows 7 Professional or Enterprise editions (32-bit or 64-bit) or Windows Server 2008 R2, Enterprise Edition.
- Remote Desktop Connection (RDP) functionality must be enabled on the virtual machine.
- The virtual machine has only one disk image.
- The virtual machine must be started and in a powered on state prior to importing into VDI-in-a-Box.
- The virtual machine has at least 4 GB of space available.

To prepare for importing the image

You must complete the following steps outside VDI-in-a-Box. See the respective manufacturers’ documentation for details.

1. Install your hypervisor’s management tools on the virtual machine. See the hypervisor manufacturer’s documentation for details.

2. If desired, join the virtual machine to a domain.

   Note: The virtual machine can be a member of a workgroup.

3. Log on to the virtual machine as the local administrator and enable remote connections for your users.

4. Enable File and Printer Sharing in firewall settings to allow remote desktop connections for all networks. See the firewall manufacturer’s documentation for details.

5. In the Advanced Setting section of the View dialog box (My Computer > Tools > Folder Options > View), disable Use simple file sharing.
To import the Windows virtual machine

If the Generate a Base Desktop Image page is not currently displayed in your Web browser, navigate to your new vdiManager (https://<IPaddress>/admin/) and log on.

1. On the Generate a Base Desktop Image page, click Continue.

2. On the Import new VM page, select the virtual machine you want to use as an image.

3. In the New Image Name box, type a name for the imported virtual machine.

   Note: The name should be different from the name of the source image.

4. In the Description box, type a description of the virtual machine and click Import. The Specify Administrator Credentials dialog box appears.
5. Type the user name and password for an account with administrator privileges on the image and click **OK**. The import and Desktop Agent installation process begins creating a draft image, and a status page appears showing the progress. The **Edit Image** page of the Import new VM wizard appears.

**To edit the draft image**

Edit the draft image to add any necessary updates, settings, or patches as well as any applications to be included in the deployed image. A checklist is provided to help ensure the image meets all prerequisites for producing desktops.

1. On the **Edit Image** page, click **Connect**.
2. In the Citrix VDI-in-a-Box Log in dialog box, provide your administrator credentials for the image and click Log in.

3. Edit the image as necessary and log off.

4. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

5. On the Edit Image page, click View. A list of prerequisites, in question format, appears.
The prerequisites vary based on hypervisor and image operating system.

6. Click Yes to indicate each prerequisite has been met.
7. When all prerequisites have been met, click Done. The prerequisites close and the Edit Image page appears.
8. Click Next. The Prepare Image page appears.

To prepare the image

1. On the Prepare Image page, in the Domain name box, if it is active, select the domain or workgroup.

2. In the optional Organizational unit (OU) box, type the organization unit to which the image will apply.
3. Click Prepare. The Confirm message appears.
4. Click Confirm. The Confirm message and the Prepare Image page close. A status page appears showing the progress. A test desktop is created based on the prepared image and the Test Image page appears.

To test the prepared desktop image

Use the test image to verify the prepared draft image is suitable for generating your desktops and that users can connect to their desktops through HDX and RDP. The test image
Create the first Windows image

and any changes made to it are deleted when the draft image is saved.

1. On the Test Image page, click Connect. The Connect to the draft image dialog box appears.

2. In the Connect to the draft image dialog box, select Use Citrix HDX and click Connect. The Citrix VDI-in-a-Box Log in dialog box appears.
Create the first Windows image

3. Provide user credentials and click Log in to log on to the test image through an HDX connection. The test image opens through an HDX connection.

4. Verify that the installed applications are functioning properly and the required group policies are applied.

5. If your grid is configured with Active Directory, log off and log on as a domain user to test access.

6. Log off from the test image. The test image closes.

7. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

8. On the Test Image page, click Connect.

9. In the Connect to the draft image dialog box, select Use Microsoft RDP and click Connect. The test image opens through an RDP connection.

10. Log on to the test image to verify the RDP connection works properly and then log off. The test image closes.


12. In the Confirm message, click Confirm. The Confirm message and Test Image page close. A status page appears showing the progress. The Create Desktop Templates from the Base Image page appears.
To create the first template from the published image

Use templates to create uniform virtual desktops that meet your specifications. Templates consist of an image and policies. The image contains the operating systems and applications that run on the desktop. For details on creating an image, see Create the first Windows image.

Important: You must have created and published at least one image before you can create a template.

Policies, which you set while creating the template, are characteristics such as how many desktops to create and how much RAM to allocate.

Establish naming patterns for all desktops generated by your templates by setting computer names with prefixes and suffixes. The prefix and suffix can combine to be up to 15 characters long. The suffix can be up to four numeric characters. Leading zeros are acceptable in the suffix. The number generated by the suffix increases with each virtual desktop. For example, if you set the computer prefix <name> and the suffix as 0000 and generate 2 virtual desktops, they will be called <name>0001 and <name>0002. If leading zeros are not included in the suffix, they will not be included in the resulting names. For example, a suffix value of 1 produces <name>1, <name>2, <name>3, and so on.

The template gives you the option to pre-start desktops. Pre-started desktops are in a powered-on state and at the logon prompt, ready for use. Pre-starting desktops eliminates the need for users to wait for virtual desktops to start. When you specify a number of desktops for pre-start, VDI-in-a-Box maintains that number as users log on. For example, if you specify five pre-started desktops in the template, there will be five virtual desktops started and waiting for your users. When two users log on to their desktops, VDI-in-a-Box starts two more desktops to maintain the requested five pre-starts. This continues until your stated maximum number for the template is reached. If the pre-start value for a template is 0, the template is shut down and no users can connect to it.

Note: When the image is running Windows XP, the template provisions pooled desktops only.

If the Create Desktop Templates from the Base Image page is not currently displayed in your Web browser, navigate to your new VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the Create Desktop Templates from the Base Image page, click Continue. The Template Information page of the Create a New Desktop Template wizard appears.
To create the first template from the published image

2. In the **Template Name** box, type a name for the template.

3. From the list of available images, select the image you want to associate with this template.

4. In the **Description** box, type a description of the template.

5. In the **Prefix** box, provide a new prefix for the generated images.

   **Note**: Valid characters for the prefix include numbers, letters, and hyphens (-).

6. In the **Suffix** box, provide a new suffix.

   **Note**: The combined prefix and suffix can be up to 15 characters. The suffix must be at least one numeric character and can be up to four numeric characters. Leading zeros are allowed.

7. From the **Memory (MB)** list, allocate memory for the desktop.

   **Note**: Citrix recommends allocating at least 1536 MB of memory for Windows 7 and Windows Server 2008 R2 desktops. For Windows XP desktops, a minimum of 512 MB of memory is required and 1 GB of memory is recommended.

8. From the **Virtual CPUs** list, select the number of CPUs to be assigned to each generated desktop.

9. Select any local devices, such as disk drives or printers, you want to connect to the virtual desktops.
10. Adjust the color depth of the HDX connection as necessary.

11. Click Next. The Template Policies page appears.

12. In the **Maximum desktops** box, type the maximum number of desktops to deploy from this template.

13. In the **Pre-started desktops** box, type the number of desktops that should be started and available for users upon logon. You must pre-start at least one desktop or users will not be able to access the template.

   **Note:** For testing purposes, Citrix recommends setting a maximum of two desktops with one pre-started desktop.

14. From the **Refresh desktop** list, select a method of refresh. The refresh method determines when users’ desktops are replaced with a fresh desktop matching the template. Note that if you select ‘On logout’, this does not apply to administrators; for debugging reasons, administrators are allowed to log on and off without triggering desktop lifecycle events.

   - **On logout:** Refreshes the desktop each time the user logs off.
   - **Scheduled:** Refreshes at a set day and time on a daily, weekly, or monthly basis. You can include desktops in use at the scheduled time. If you exclude in-use desktops, they are replaced when the user logs out following the scheduled refresh.
   - **Scheduled or on logout:** Refreshes at a set day and time and each time the user logs off. This is useful in environments where users stay logged on to desktops for extended periods.
To create the first template from the published image

- **Manual**: Refreshes only through your action. This setting results in a persistent desktop, one which remains with the user indefinitely. Users can add applications and other modifications with the expectation that they will be available with each log on.

15. Select **Do not reassign desktops "On Hold" to new users** to allow desktops to be held by users.

    **Note**: This option is selected by default.

16. Select **Enable fast refresh of desktops** to quicken the refresh process when users log off.

17. Select **Make this the default template** to provide this image to any user with access to whom a template has not been assigned.

    **Note**: If a default template has not been designated for the grid, users who have not been assigned a template will have their logon credentials rejected.

18. Click **Save**.

19. Click **Close**. The amount of desktops designated for pre-start are started and the **Assign Users to Desktops** page appears.
To edit the template

You can change the maximum number of desktops, the number of pre-started desktops, and make other changes by editing your template.

If the VDI-in-a-Box console is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the VDI-in-a-box console, click the **Templates** tab.
2. Click the name of the template you want to edit.
3. Make the desired changes and click **Save**.

   **Important:** **Save** is on the **Template Policies** page.
Assign templates to users, groups, and IP addresses

When you have created your templates, you can assign them to users, user groups, and IP addresses. Users and groups can have multiple templates assigned to them. When templates are assigned to an IP address, such as for a kiosk, all users logging on at that kiosk receive the same desktop.

If a user has not been assigned a template and logs on, that user receives the default template. If you have not specified a default template, that user’s credentials are rejected.

If the Assign Users to Desktops page is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

To assign templates to user groups

1. On the Assign Users to Desktops page, click Continue. The Users page appears. It contains tables for user groups, users, and IP addresses.

2. At the User Groups table, click Add. A row for a new user group entry appears in the User Group table.

3. In the Group Name box, you can type the name of the group to which you want to assign a template. If Active Directory is used as the user database, type the first characters of the group name and press Enter to select from matching groups.

4. In the Description box, type a group description.

5. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the group. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

6. Click Save. The group is added to the table.

7. Repeat these steps to assign templates to additional groups.
To assign templates to users

1. At the Users table, click Add. A row for a new user entry appears in the Users table.

2. In the User ID box, you can type the user ID of a user to whom you want to assign a template. If Active Directory is used as the user database, type the first characters of the User ID and press Enter to select from matching IDs.

   **Note:** First Name, Last Name, and Group are optional and automatically filled in if the user and full information are in the Active directory.

3. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the user. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

4. Click Save. The user is added to the table.

5. Repeat these steps to assign templates to additional users.
To assign templates to incoming IP addresses

1. At the IP Addresses table, click Add. A row for a new IP address entry appears in the IP Addresses table.

2. In the IP Address Ranges box, type the ranges of the user device IP addresses to which you want to assign a template. Addresses can be added as individual addresses (192.168.23.143), prefixes (192.168), or ranges (192.168.10.174-204). Separate entries with new lines or spaces.

3. From the templates list, select the template you want to assign to the IP address.

4. Click Save. The IP address is added to the table.

5. Repeat these steps to assign additional templates to IP addresses.

   Note: Once a template is assigned, it cannot be assigned again until the existing assignment is terminated.

To edit template assignments

1. In the VDI-in-a-Box console, select the Users page.

2. Point to the user group, user, or IP address whose template you want to edit and click Edit.

3. Edit as necessary and click Save.
Test the connection as a user

After setting up a template, creating desktops from the template, and assigning them to users, log on to a desktop as a user to ensure the connection works correctly. To do this, you must first install the latest version of Citrix Receiver, if you have not already done so. If you plan to use the Java Desktop Client, you must also install Java SE Runtime Environment (JRE) 6 or 7.

To prepare your user device

Prepare your user device for testing by installing Citrix Receiver to take advantage of the HDX connections.

- If it is not already installed, from https://www.citrix.com, download Citrix Receiver following the directions provided at that web site.

- If you plan to use the Java Desktop Client, ensure you have JRE 6 or 7 installed on the user device. If necessary, obtain the latest version from https://www.java.com, following the directions provided at that web site.

To connect to the desktop

These steps may vary slightly depending on your web browser.

1. Start your web browser.

2. In the web browser address box, type https://<IpAddress>/ . A security warning about the web site's certificate may appear.

3. Accept the certificate as trusted and continue.

4. In the Citrix VDI-in-a-Box page, in the Username box, type your user name.

5. In the Password box, type your password and click Log On.

6. Click the desired desktop. You are connected to the virtual desktop.

To connect to the desktop through the VDI-in-a-Box Java Desktop Client from a web browser

These steps may vary slightly based on the Web browser you are using.

1. Start your web browser.
2. In the web browser address box, type https://<IPaddress>/dt/vdiclient.jnlp. A security warning about the web site's certificate may appear.

3. Accept the certificate as trusted and continue. Depending on which web browser you are using, the Opening vdiclient.jnlp dialog box appears.

4. If the Opening vdiclient.jnlp dialog box appears, ensure Open with is selected and Java(TM) Web Start Launcher (default) appears from the list next to it, then click OK.

5. In the Citrix VDI-in-a-Box Client dialog box, type your user credentials and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.

To connect to the desktop though the VDI-in-a-Box Java Desktop Client from a command prompt

These steps may vary slightly based on the user device you are using.

1. Open the Command Prompt window.

2. Type the command: javaws https://<IPaddress>/dt/vdiclient.jnlp.

3. Press Enter.

4. In the Log on dialog box, in the User name box, type your user name.

5. In the Password box, type your password and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.
VMware ESXi using a Windows Server 2008 R2 image

Use the get started topics to set up a Citrix VDI-in-a-Box deployment:

- To download and extract the VDI-in-a-Box Manager
- Create and configure the grid
- Creating the first Windows image
- To create the first template from the published image
- To edit the template
- Assign templates to users, groups, and IP addresses
- Test the connection as a user
To download and extract the VDI-in-a-Box Manager

Download the VDI-in-a-Box virtual appliance, called VDI-in-a-Box Manager (vdiManager), for use with VMware ESXi from the Citrix website.

The download package, VDI-in-a-Box_ESX_v5_1_1.zip, contains the vdiManager file, vdiManager_ESX_v5_1_1.ova. About 2 GB of disk space is needed to extract vdiManager.

**Note:** Be sure to download and extract the file to a location accessible with VMware vSphere Client.

2. If you are not already logged on to My Citrix, do so now.
3. Click **Downloads**.
4. From the products list, select **VDI-in-a-Box**.
5. From the download type list, select **Product Software**.
6. Click **Find**. The VDI-in-a-Box product software page appears.
7. Click **VDI-in-a-Box 5.1.1**. The VDI-in-a-Box 5.1.1 page appears.
8. From the Appliances section, for the version that matches your hypervisor, click **Download**.

The End-User License Agreement appears.

9. Accept the agreement. The **Download Manager** window opens.
10. Click **Download Now**.

11. Click **Install** and save VDI-in-a-Box_ESX_v5_1_1.zip.

12. From the zip file, extract the vdiManager file, vdiManager_ESX_v5_1_1.ova.

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**To import vdiManager**

When the vdiManager file, vdiManager_ESX_v5_1_1.ova, is extracted, import it into VMware vSphere Client. For details on importing with VSphere Client, see [http://www.vmware.com/](http://www.vmware.com/). When the import process is finished, vdiManager appears in the vSphere Client management console Inventory view as a virtual machine.

**Important:** Do not import more than one vdiManager per hypervisor. Doing so may result in excessive CPU, RAM, disk, and network consumption, and cause system non-responsiveness.
Create and configure the grid

Configure the VDI-in-a-Box grid once VDI-in-a-Box Manager (vdiManager) has been imported into your hypervisor and is available in its management console.

The grid unites servers running vdiManager, allowing load balancing and ensuring high availability of virtual machines on the servers.

Enable JavaScript and cookies on your browser.

To open the vdiManager console for first time setup

These steps may vary slightly depending on your Web browser.

1. In your hypervisor, ensure vdiManager is started and in a powered on state.

   Note: If you have not already done so, make note of the vdiManager IP address.


3. Accept the certificate as trusted and continue. If additional warnings appear, accept those, too. The Citrix VDI-in-a-Box Administrator Login page appears.

4. On the Citrix VDI-in-a-Box Administrator Login page, in the Username box, type vdiadmin.

5. In the Password box, type kaviza and click Log On. The Welcome page, showing the four high-level steps necessary to complete virtual desktops, appears.
Create and configure the grid

Welcome!

Thank you for choosing VDI-in-a-Box. We want this to be a fast and pleasant experience. Below is a brief overview of the set up process. If you want background information on VDI-in-a-Box before you get started, go to support.citrix.com/VDI-in-a-Box.

Overview

Below are the 4 steps you will need to complete in order to generate desktops for your users.

1. Set up your Hypervisor and VDI-in-a-Box Grid
2. Generate a Base desktop image
3. Create Desktop Template from the Base Image
4. Assign Users to Desktops

Get Started
To set up the hypervisor

1. On the Welcome page, click Get Started. The Set up your Hypervisor and VDI-in-a-Box Grid page appears.

2. Click Continue. The Hypervisor page of the VDI-in-a-Box Initial Set up wizard appears.

3. In the IP Address box, type the IP address for the server running your hypervisor.

4. In the User Name and Password boxes, type your user name and password. The user account must have root privileges.

5. Click Next. The Datastore page of the VDI-in-a-Box Initial Set up wizard appears.

To set up the data store and network label

The data store contains your desktop images and virtual desktops.

Note: Do not change any data store's name after specifying it in VDI-in-a-Box, otherwise desktop generation and cleanup processes will fail.

1. On the Datastore page, select the data store and network label.
2. Click **Next**. The data store information is saved and the **Grid** page of the VDI-in-a-Box Initial Setup wizard appears, allowing you to create a new grid or join an existing grid.

**Select a new or existing grid**

Create a new grid when setting up a new VDI-in-a-Box environment. When creating a new grid, you must associate it with a database containing the users and groups who will be accessing the VDI-in-a-Box virtual machines. The database can be your Active Directory server or a locally stored database called a workgroup.

Join an existing grid when expanding a VDI-in-a-Box environment.
To create a new grid and assign a database

1. On the Grid page, select Create a new VDI-in-a-Box grid and click Next. The Configuration page of the VDI-in-a-Box Initial Set up wizard appears.

2. In User Database, select VDI-in-a-Box workgroup or Microsoft Active Directory. If you selected Microsoft Active Directory, you must provide additional information. If you selected VDI-in-a-Box workgroup, you do not need to provide this information.
3. If you selected Active Directory, in the **IP Address** box, type the IP address hosting the database.

4. If you selected Active Directory, in the **Domain** box, type the DNS domain.

5. If you selected Active Directory, in the **User Name** and **Password** boxes, type your user name and password. The user must have Domain Administrator privileges.

6. If VMware vCenter manages servers in the grid, select **vCenter manages servers in this grid**. If you selected **vCenter manages servers in this grid**, you must provide additional information.

7. If you selected **vCenter manages servers in this grid**, in the **IP Address** box, type the IP address of the server running vCenter.

8. If you selected **vCenter manages servers in this grid**, in the **User Name** and **Password** boxes, type your vCenter user name and password. The user must have Domain Administrator privileges.

9. Click **Next**. The question "Have you reserved your VDI-in-a-Box Manager's IP address?" appears.
10. Select Yes or No and click Done. The Generate a Base Desktop Image page appears.

To join an existing grid

1. On the VDI-in-a-Box Initial Set up wizard, on the Grid page, select Join this VDI-in-a-Box server to an existing grid and click Next. The Database page of the VDI-in-a-Box Initial Set up wizard appears.

2. On the Configuration page, in the IP Address box, type the IP address of the vdiManager in the existing grid.

3. On the Configuration page, in the User Name and Password boxes, type your vdiManager console user name and password.

4. Click Next. The grid configuration process is finished.
Creating the first Windows image

Use your hypervisor to create a new virtual machine running Windows. Refer to your hypervisor documentation for details.

When creating the virtual machine, be sure that it meets the following conditions:

- The virtual machine is running Windows XP Professional edition (32-bit), Windows 7 Professional or Enterprise editions (32-bit or 64-bit) or Windows Server 2008 R2, Enterprise Edition.
- Remote Desktop Connection (RDP) functionality must be enabled on the virtual machine.
- The virtual machine has only one disk image.
- The virtual machine must be started and in a powered on state prior to importing into VDI-in-a-Box.
- The virtual machine has at least 4 GB of space available.

To prepare for importing the image

You must complete the following steps outside VDI-in-a-Box. See the respective manufacturers’ documentation for details.

1. Activate the virtual machine using a valid Microsoft Volume Activation key.
2. Enable the Local Administrator account on the virtual machine.
3. Install your hypervisor’s management tools on the virtual machine. See the hypervisor manufacturer’s documentation for details.
4. If desired, join the virtual machine to a domain.
   
   **Note:** The virtual machine can be a member of a workgroup.
5. Log on to the virtual machine as the local administrator and enable remote connections for your users.
6. Enable **File and Printer Sharing** in firewall settings to allow remote agent installation. See the firewall manufacturer’s documentation for details.
To import the Windows virtual machine

If the Generate a Base Desktop Image page is not currently displayed in your Web browser, navigate to your new vdiManager (https://<IPaddress>/admin/) and log on.

1. On the Generate a Base Desktop Image page, click Continue.

2. On the Import new VM page, select the virtual machine you want to use as an image.

3. In the New Image Name box, type a name for the imported virtual machine.

   **Note:** The name should be different from the name of the source image.

4. In the Description box, type a description of the virtual machine and click Import. The Specify Administrator Credentials dialog box appears.
5. Select whether to provide credentials for an administrator or a local user with administrator privileges.


6. Type the user name and password for an account with administrator privileges on the image and click **OK**. The import and Desktop Agent installation process begins creating a draft image, and a status page appears showing the progress. The **Edit Image** page of the Import new VM wizard appears.

**To edit the draft image**

Edit the draft image to add any necessary updates, settings, or patches as well as any applications to be included in the deployed image. A checklist is provided to help ensure the image meets all prerequisites for producing desktops.

1. On the **Edit Image** page, click **Connect**.
2. In the Citrix VDI-in-a-Box Log in dialog box, provide your administrator credentials for the image and click Log in.

3. Edit the image as necessary and log off.

4. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

5. On the Edit Image page, click View. A list of prerequisites, in question format, appears.
Creating the first Windows image

**Note:** The prerequisites vary based on hypervisor and image operating system.

6. Click **Yes** to indicate each prerequisite has been met.

7. When all prerequisites have been met, click **Done**. The prerequisites close and the **Edit Image** page appears.

8. Click **Next**. The **Prepare Image** page appears.

**To prepare the image**

1. On the **Prepare Image** page, in the **Domain name** box, if it is active, select the domain or workgroup.

2. In the optional **Organizational unit (OU)** box, type the organization unit to which the image will apply.

3. Click **Prepare**. The Confirm message appears.

4. Click **Confirm**. The Confirm message and the Prepare Image page close. A status page appears showing the progress. A test desktop is created based on the prepared image and the **Test Image** page appears.
To test the prepared desktop image

Use the test image to verify the prepared draft image is suitable for generating your desktops and that users can connect to their desktops through HDX and RDP. The test image and any changes made to it are deleted when the draft image is saved.

1. On the Test Image page, click Connect. The Connect to the draft image dialog box appears.
2. In the Connect to the draft image dialog box, select Use Citrix HDX and click Connect. The Citrix VDI-in-a-Box Log in dialog box appears.

3. Provide user credentials and click Log in to log on to the test image through an HDX connection. The test image opens through an HDX connection.

4. Verify that the installed applications are functioning properly and the required group policies are applied.

5. If your grid is configured with Active Directory, log off and log on as a domain user to test access.

6. Log off from the test image. The test image closes.

7. In the Citrix VDI-in-a-Box Log in dialog box, click Cancel to close it.

8. On the Test Image page, click Connect.

9. In the Connect to the draft image dialog box, select Use Microsoft RDP and click Connect. The test image opens through an RDP connection.

10. Log on to the test image to verify the RDP connection works properly and then log off. The test image closes.


12. In the Confirm message, click Confirm. A status page appears showing the progress. The Template Information page of the Create a New Desktop Template wizard appears.
To create the first template from the published image

Use templates to create uniform virtual desktops that meet your specifications. Templates consist of an image and policies. The image contains the operating system and applications that run on the desktop. For details on creating an image, see Creating the first Windows image. One image can be used by multiple templates.

**Important:** You must have created and published at least one image before you can create a template.

Policies, which you set while creating the template, are characteristics such as how many desktops to create and how much RAM to allocate.

Establish naming patterns for all desktops generated by your templates by setting computer names with prefixes and suffixes. The prefix and suffix can combine to be up to 15 characters long. Use leading zeros in the suffix to hold places for up to four digits. The number generated by the suffix increases with each virtual desktop. For example, if you set the computer prefix `<name>` and the suffix as 0000 and generate 2 virtual desktops, they will be called `<name>0001` and `<name>0002`. If leading zeros are not included in the suffix, they will not be included in the resulting names. For example, a suffix value of 1 produces `<name>1`, `<name>2`, `<name>3`, and so on.

The template gives you the option to pre-start desktops. Pre-started desktops are in a powered-on state and at the logon prompt, ready for use. Pre-starting desktops eliminates the need for users to wait for virtual desktops to start. When you specify a number of desktops for pre-start, VDI-in-a-Box maintains that number as users log on. For example, if you specify five pre-started desktops in the template, there will be five virtual desktops started and waiting for your users. When two users log on to their desktops, VDI-in-a-Box starts two more desktops to maintain the requested five pre-starts. This continues until your stated maximum number for the template is reached. If the pre-start value for a template is 0, the template is shut down and no users can connect to it.

If the **Create Desktop Templates from the Base Image** page is not currently displayed in your Web browser, navigate to your new VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the **Create Desktop Templates from the Base Image** page, click **Continue**. The **Template Information** page of the Create a New Desktop Template wizard appears.
2. In the Template Name box, type a name for the template.

3. From the list of available images, select the image you want to associate with this template.

4. In the Description box, type a description of the template.

5. In the Prefix box, provide a prefix for the generated images.
   
   **Note:** Valid characters for the prefix include numbers, letters, and hyphens (-).

6. In the Suffix box, provide a new suffix.
   
   **Note:** The combined prefix and suffix can be up to 15 characters. The suffix must be at least one numeric character and can be up to four numeric characters. Leading zeros are allowed.

7. From the Memory (MB) list, allocate memory for the desktop.
   
   **Note:** Citrix recommends allocating at least 1536 MB of memory for Windows Server 2008 R2 desktops.

8. From the Virtual CPUs list, select the number of CPUs to be assigned to each generated desktop.

9. Select any local devices, such as disk drives or printers, you want to connect to the virtual desktops.

10. Adjust the color depth of the HDX connection as necessary.
To create the first template from the published image

11. If your published image has a Key Management Service (KMS) activation key, Citrix recommends selecting **Reset the activation time (KMS clients).**

12. Click **Next.** The Template Policies page appears.

13. In the **Maximum desktops** box, type the maximum number of desktops to deploy from this template.

14. In the **Pre-started desktops** box, type the number of desktops that should be started and available for users upon logon. You must pre-start at least one desktop or users will not be able to access the template. For testing purposes, Citrix recommends setting a maximum of two desktops with one pre-started desktop.

15. From the **Refresh desktop** list, select a method of refresh. The refresh method determines when users’ desktops are replaced with a fresh desktop matching the template. Note that if you select ‘On logout’, this does not apply to administrators; for debugging reasons, administrators are allowed to log on and off without triggering desktop lifecycle events.

   - **On logout**: Refreshes the desktop each time the user logs off.
   - **Scheduled**: Refreshes at a set day and time on a daily, weekly, or monthly basis. You can include desktops in use at the scheduled time. If you exclude in-use desktops, they are replaced when the user logs out following the scheduled refresh.
   - **Scheduled or on logout**: Refreshes at a set day and time and each time the user logs off. This is useful in environments where users stay logged on to desktops for extended periods.
To create the first template from the published image

- **Manual**: Refreshes only through your action. This setting results in a persistent desktop, one which remains with the user indefinitely. Users can add applications and other modifications with the expectation that they will be available with each log on.

16. Select **Do not reassign desktops "On Hold" to new users** to allow desktops to be held by users.

    **Note**: This option is selected by default.

17. Select **Enable fast refresh of desktops** to quicken the refresh process when users log off.

18. Select **Make this the default template** to provide this template to any user with access to whom a template has not been assigned.

    **Note**: If a default template has not been designated for the grid, users who have not been assigned a template will have their logon credentials rejected.

19. Click **Save**.

20. Click **Close. Assign Users to Desktops** page appears.
To edit the template

You can change the maximum number of desktops, the number of pre-started desktops, and make other changes by editing your template.

If the VDI-in-a-Box console is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

1. In the VDI-in-a-box console, click the Templates tab.
2. Click the name of the template you want to edit.
3. Make the desired changes and click Save.

   Note: Save is on the Template Policies page.
Assign templates to users, groups, and IP addresses

When you have created your templates, you can assign them to users, user groups, and IP addresses. Users and groups can have multiple templates assigned to them. When templates are assigned to an IP address, such as for a kiosk, all users logging on at that kiosk receive the same desktop.

If a user has not been assigned a template and logs on, that user receives the default template. If you have not specified a default template, that user’s credentials are rejected.

If the Assign Users to Desktops page is not currently displayed in your Web browser, navigate to your VDI-in-a-Box Manager (https://<IPaddress>/admin/) and log on.

To assign templates to user groups

1. On the Assign Users to Desktops page, click Continue. The Users page appears. It contains tables for user groups, users, and IP addresses.

2. At the User Groups table, click Add. A row for a new user group entry appears in the User Group table.

3. In the Group Name box, you can type the name of the group to which you want to assign a template. If Active Directory is used as the user database, type the first characters of the group name and press Enter to select from matching groups.

4. In the Description box, type a group description.

5. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the group. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

6. Click Save. The group is added to the table.

7. Repeat these steps to assign templates to additional groups.
To assign templates to users

1. At the Users table, click Add. A row for a new user entry appears in the Users table.

2. In the User ID box, you can type the user ID of a user to whom you want to assign a template. If Active Directory is used as the user database, type the first characters of the User ID and press Enter to select from matching IDs.

   Note: First Name, Last Name, and Group are optional and automatically filled in if the user and full information are in the Active directory.

3. Under Templates, click None and, from the list of available templates, select the templates you want to assign to the user. If you selected Make this the default template on the Template Policies page, Default appears in place of None. After assigning one or more templates, the template names replace None.

4. Click Save. The user is added to the table.

5. Repeat these steps to assign templates to additional users.
Assign templates to incoming IP addresses

1. At the IP Addresses table, click Add. A row for a new IP address entry appears in the IP Addresses table.

   ![IP Addresses Table](image)

2. In the IP Address Ranges box, type the ranges of the user device IP addresses to which you want to assign a template. Addresses can be added as individual addresses (192.168.23.143), prefixes (192.168), or ranges (192.168.10.174-204). Separate entries with new lines or spaces.

3. From the Template Name list, select the template you want to assign to the IP address.

4. Click Save. The IP address is added to the table.

5. Repeat these steps to assign additional templates to IP addresses.

   Note: Once a template is assigned, it cannot be assigned again until the existing assignment is terminated.

To edit template assignments

1. In the VDI-in-a-Box console, select the Users page.

2. Point to the user group, user, or IP address whose template you want to edit and click Edit.

3. Edit as necessary and click Save.
Test the connection as a user

After setting up a template, creating desktops from the template, and assigning them to users, log on to a desktop as a user to ensure the connection works correctly. To do this, you must first install the latest version of Citrix Receiver and Java SE Runtime Environment (JRE) 6 or 7, if you have not already done so.

**Note:** JRE is required only when using the VDI-in-a-Box Java Desktop Client.

To prepare your user device

Prepare your user device for testing by installing Citrix Receiver to take advantage of the HDX connections. If you plan on using the Java Desktop Client, ensure JRE 6 or 7 is installed.

- If it is not already installed, from https://www.citrix.com, download Citrix Receiver following the directions provided at that Web site.

- Ensure you have JRE 6 or 7 installed on the user device. If necessary, obtain the latest version from https://www.java.com, following the directions provided at that Web site.

  **Note:** JRE is required to run the VDI-in-a-Box Java client.

To connect to the desktop

These steps may vary slightly depending on your Web browser.

1. Start your Web browser.

2. In the Web browser address box, type https://<IPaddress>/ . A security warning about the Web site’s certificate may appear.

3. Accept the certificate as trusted and continue.

4. In the **Citrix VDI-in-a-Box** page, in the **Username** box, type your user name.

5. In the **Password** box, type your password and click **Log On**.

6. Click the desired desktop. You are connected to the virtual desktop.

To connect to the desktop through the VDI-in-a-Box Java Desktop Client from a Web browser

These steps may vary slightly based on the Web browser you are using.
1. Start your Web browser.

2. In the Web browser address box, type https://<IPaddress>/dt/vdiclient.jnlp. A security warning about the Web site's certificate may appear.

3. Accept the certificate as trusted and continue. Depending on which Web browser you are using, the Opening vdiclient.jnlp dialog box appears.

4. If the Opening vdiclient.jnlp dialog box appears, ensure Open with is selected and Java(TM) Web Start Launcher (default) appears from the list next to it, then click OK.

5. In the Citrix VDI-in-a-Box Client dialog box, type your user credentials and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.

To connect to the desktop though the VDI-in-a-Box Java Desktop Client from a command prompt

These steps may vary slightly based on the user device you are using.

1. Open the Command Prompt window.

2. Type the command: javaws https://<IPaddress>/dt/vdiclient.jnlp.

3. Press Enter.

4. In the Log on dialog box, in the User name box, type your user name.

5. In the Password box, type your password and click Log On. If multiple templates are assigned to the user, the Select a Desktop dialog box appears.

6. Select the desktop you wish to test by clicking Connect. You are connected to the virtual desktop.
Upgrade VDI-in-a-Box 5.0.x to 5.1.x

The following steps describe how to upgrade VDI-in-a-Box 5.0.x to VDI-in-a-Box 5.1.x. If you currently use a version of VDI-in-a-Box earlier than 5.0, you must first upgrade to 5.0 before proceeding to 5.1.x

To download the VDI-in-a-Box upgrade file

2. If you are not already logged on to My Citrix, do so now.
3. Click Downloads.
4. From the products list, select VDI-in-a-Box.
5. From the download type list, select Product Software.
6. Click Find. The VDI-in-a-Box product software page appears.
7. Click VDI-in-a-Box 5.1.1. The VDI-in-a-Box 5.1 page appears.
8. From the Upgrade section, for 5.0 to 5.1.1, click Download. The End-User License Agreement appears.
9. Accept the agreement. The Download Manager window opens.
10. Click Download Now.
11. Navigate to a location to download HF_VDI_inabox_5.1.1.tar and click Save.

To upgrade VDI-in-a-Box

1. Put the grid in maintenance mode: From the VDI-in-a-Box Manager (vdiManager) console, on the Admin page, click Grid Maintenance and then click OK.
2. On the Admin page, click Grid Upgrade. The Grid Upgrade dialog box appears.
3. Click Choose File, navigate to the upgrade file, and click Open.
4. Click Submit. When the upgrade completes, the logon page appears
5. Log on to vdiManager.
6. Take the grid out of maintenance mode: From the Admin page, click Grid Maintenance, and then click OK.
To upgrade the existing images

After upgrading VDI-in-a-Box, your existing images need to be updated. A caution icon appears in the status of these images on the Images page. Hover over the caution icon to see a message indicating the image is out of date.

Note: Templates created with versions of VDI-in-a-Box prior to 5.1 continue to produce pooled desktops even after their images have been upgraded to produce personal desktops. Create new templates to produce personal desktops.

1. On the Images page, in the row of the image you want to upgrade, click Edit. A Confirm message appears stating that a new draft image is about to be created.

2. Click Confirm. A new draft image is started.

   Important: Wait for the status of the new draft image to change to Running before proceeding.

3. In the row for the new draft image, click Edit. The Specify Administrator Credentials dialog box appears.

4. Select whether to provide credentials for an administrator or a local user with administrator privileges.

   Important: If you select to use the credentials for a local user with administrator privileges, disable the Microsoft Windows feature User Account Control (UAC). For details, see http://technet.microsoft.com/en-us/library/cc709691(v=ws.10).aspx.
5. Type the user name and password for an account with administrator privileges on the image and click OK. The installation of the new Desktop Agent begins and a status page appears showing the progress. The Edit Image page of the wizard appears.

6. On the Edit Image page, make any additional edits to the image you require, such as adding new applications, and click Next.

7. Complete the Prepare Image and Test Image pages. For details about these pages, see the relevant topics for your hypervisor and image operating system in eDocs at VDI-in-a-Box > VDI-in-a-Box 5.1.x > Getting Started with VDI-in-a-Box.

8. On the Test Image page, click Save. A Confirm message appears stating that continuing will save the prepared image and distribute it to other servers in the grid.

9. Click Confirm. The now-up-to-date image is published and ready to be deployed based on your refresh policies.

**To refresh desktops**

Following the upgrade, desktops created using the prior version of VDI-in-a-Box must be destroyed and replaced with new desktops.

1. On the Servers page, click the server, and then click Deactivate.

2. Click Confirm.

3. On the Servers page, click the server and then click Activate.

4. Click Confirm.
Upgrade licenses

Upgrading from a VDI-in-a-Box evaluation license to a Citrix permanent license

<table>
<thead>
<tr>
<th>Existing license</th>
<th>New license uploaded</th>
<th>What happens</th>
</tr>
</thead>
<tbody>
<tr>
<td>VDI-in-a-Box evaluation license (30 day, 10 concurrent users)</td>
<td>Citrix permanent license</td>
<td>Citrix permanent license immediately replaces VDI-in-a-Box evaluation license</td>
</tr>
<tr>
<td>VDI-in-a-Box evaluation license (30 day, 10 concurrent users)</td>
<td>Citrix non-permanent</td>
<td>Citrix non-permanent license immediately replaces VDI-in-a-Box evaluation license</td>
</tr>
<tr>
<td>VDI-in-a-Box evaluation license (30 day, 10 concurrent users)</td>
<td>license (evaluation/not for resale) license with 10 or more concurrent users</td>
<td></td>
</tr>
<tr>
<td>VDI-in-a-Box evaluation license (30 day, 10 concurrent users)</td>
<td>Citrix non-permanent</td>
<td>VDI-in-a-Box license stays until it expires. Citrix non-permanent license takes effect afterward</td>
</tr>
<tr>
<td>VDI-in-a-Box evaluation license (30 day, 10 concurrent users)</td>
<td>license (evaluation/not for resale) license with less than 10 concurrent users</td>
<td></td>
</tr>
</tbody>
</table>

Upgrading from a Citrix permanent license to another Citrix license

<table>
<thead>
<tr>
<th>Existing license</th>
<th>New license uploaded</th>
<th>What happens</th>
<th>Expiration displayed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrix permanent license with (&lt;number&gt;) of concurrent users</td>
<td>Citrix permanent license</td>
<td>Both licenses take effect with the concurrent users added together</td>
<td>Permanent</td>
</tr>
<tr>
<td>Citrix permanent license with (&lt;number&gt;) or more concurrent users</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Citrix permanent license with (&lt;number&gt;) of concurrent users</td>
<td>Citrix non-permanent license with (&lt;number&gt;) or more concurrent users</td>
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<td>Permanent</td>
</tr>
<tr>
<td>Citrix permanent license with (&lt;number&gt;) or more concurrent users</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


### Upgrade licenses

<table>
<thead>
<tr>
<th>Citrix permanent license with &lt;number&gt; of concurrent users</th>
<th>Citrix non-permanent license with less than &lt;number&gt; concurrent users</th>
<th>Both licenses take effect with the concurrent users added together until the non-permanent license expires</th>
<th>Permanent</th>
</tr>
</thead>
</table>

## Upgrading from a Citrix non-permanent license to another Citrix license

<table>
<thead>
<tr>
<th>Existing license</th>
<th>New license uploaded</th>
<th>What happens</th>
<th>Expiration displayed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrix non-permanent (evaluation/not for resale) license with &lt;number&gt; of concurrent users</td>
<td>Citrix permanent license with &lt;number&gt; or more concurrent users</td>
<td>Both licenses take effect with the concurrent users added together until the non-permanent license expires</td>
<td>Permanent</td>
</tr>
<tr>
<td>Citrix non-permanent (evaluation/not for resale) license with &lt;number&gt; of concurrent users</td>
<td>Citrix permanent license with less than &lt;number&gt; concurrent users</td>
<td>Both licenses take effect with the concurrent users added together until the non-permanent license expires</td>
<td>Permanent</td>
</tr>
<tr>
<td>Citrix non-permanent (evaluation/not for resale) license with &lt;number&gt; of concurrent users</td>
<td>Citrix non-permanent license with &lt;number&gt; or more concurrent users</td>
<td>Both licenses take effect with the concurrent users added together until one of the licenses expires</td>
<td>Earlier date</td>
</tr>
<tr>
<td>Citrix non-permanent (evaluation/not for resale) license with &lt;number&gt; of concurrent users</td>
<td>Citrix non-permanent license with less than &lt;number&gt; concurrent users</td>
<td>Both licenses take effect with the concurrent users added together until one of the licenses expires</td>
<td>Earlier date</td>
</tr>
</tbody>
</table>
Manage personal desktops

The personal desktop feature retains the single image management of pooled desktops while allowing users to install applications, change their desktop settings, and store data.

**Important:** Personal desktops are only available for published images running Windows 7 (32-bit and 64-bit editions).

Unlike pooled desktops, where users lose their customization and personal applications when the desktop refreshes, personal desktops retain those changes. This means administrators can centrally manage their base images while providing users with a customizable desktop experience.

Personal desktops allow this flexibility because they are composed of two separate virtual hard disks: a personal vDisk and the published image. Any changes made by users, such as changing their profiles or installing applications, are saved to the personal vDisk. The content of the personal vDisk is blended at runtime with the content from the published image to provide a unified experience. The two virtual disks are visible on the personal desktop through Windows Explorer and other applications.
Important: Citrix recommends disabling automatic Windows updates in the published images. Updating images centrally ensures consistency and permanence across your environment.

Updates to the published image are not received by the personal desktop until the user logs off. At that point, the image refreshes without modifying the personal vDisk. When the user next logs on, the refreshed desktop appears with the revised image and the user’s customized settings and applications.

Citrix recommends storing profile data on a network-attached storage (NAS) server along with the use of a profile management application such as Citrix Profile management,
included with VDI-in-a-Box. If you use Profile management, Citrix recommends disabling Profile Redirection in the personal desktops. As a result, profile data is saved to Profile management only, bypassing the personal vDisk and eliminating the backup copy. To create a backup, see Back up and restore personal desktops. To disable profile redirection, see http://support.citrix.com/article/CTX131553.

Creating a template for personal desktops is described in To create the first template from the published image. You can edit the template and change the size of the personal disk after creating a template, but note that the change applies only to personal desktops created after the change has been made, not to existing desktops. For information on changing the personal disk size for existing desktops, see http://support.citrix.com/article/CTX136156.
Back up and restore personal desktops

Protect your users’ profiles and applications by backing up their personal desktops. The restored backup is attached to a fresh desktop generated from the published image to form a new personal desktop.

To prepare to back up personal desktops

The following steps apply when using XenServer, Hyper-V, or ESXi.

1. Obtain the personal disk name of the personal desktop you are backing up: From the Desktops tab, on the User Sessions page, in the row containing the personal desktop, click the VM Name, make note of the personal disk name and click Close.

![Desktop Details - BuildA0004](image)

2. Shut down the personal desktop: From the Desktops tab, on the User Sessions page, in the row containing the personal desktop, click Actions and then click Shutdown.

To back up personal desktops when using XenServer
Back up and restore personal desktops

Use Citrix XenCenter for the following steps.

1. Export the personal desktop to another location accessible to XenServer.
2. Import the exported OVF or XVA file to another server on your VDI-in-a-Box grid.
3. Detach the personal disk from the published image and then delete the published image. The personal disk is stored, unattached to an image and available when needed.

To back up personal desktops when using Hyper-V

Perform the following tasks on the Windows-based device used for Hyper-V management.

1. Map to Drive C of the Hyper-V server hosting the personal desktop being backed up.
2. Map to Drive C of the Hyper-V server on which the personal desktop would be restored.
3. From the data store containing the personal disk images, copy the personal disk to the server on which it would be restored.

Note: By default, personal disks are stored in C:\ProgramData\Citrix\VIAB\PVD.

To back up personal desktops when using ESXi

Use VMware vSphere for the following steps.

1. Connect separate instances of vSphere to the server hosting the personal desktop being backed up and the server on which the backup will be stored.
2. From the server hosting the personal desktop, from the PVD folder, download the personal disk. Two separate files, &lt;PersonalDiskName&gt;.vmdk and &lt;PersonalDiskName&gt;-flat.vmdk, are downloaded.
3. From the server that will store the backup, upload both files to the PVD folder.

To restore personal desktops

The following steps apply when using XenServer, Hyper-V, or ESXi.

1. From the vdiManager console, from the Desktops tab, select the User Sessions page.
2. In the row for the damaged desktop, click Actions and then click Repair. The data stores are searched for a matching copy of the selected personal desktop. If found, a confirmation message appears stating that you are about to repair a personal desktop by destroying the damaged copy and replacing it with the found copy.
3. Click Confirm. VDI-in-a-Box restores the backed up copy on the server on which it was stored.
Back up and restore personal desktops
Manage VDI-in-a-Box

This section contains information about configuring and managing VDI-in-a-Box.

- Create, update, and fix images
- Manage desktops and user sessions
- Install the Desktop Agent manually
- Configure generic user accounts
- Manage a grid
- Prepare for Active Directory failover
- Generate desktops from a pool of MAC addresses
- Update the server configuration for credential changes
- Store data in two data stores
- Configure separate user and computer domains
- Configure VDI-in-a-Box kiosks
- Configure secure remote access
- To configure the vdiManager connection through the Remote Desktop Gateway
- Configure Profile management
- Configure smart card authentication
- Log on to the VDI-in-a-Box appliance
Create, update, and fix images

To create a new draft image, copy a published image. To update an image, edit a published image. Whether you copy or edit an image, the result is a draft image, a working desktop that you prepare and save as a published image.

To create a new draft image from a published one

Use this procedure to copy an image to create a new image with different settings or applications.

1. From the VDI-in-a-Box Manager (vdiManager) console, click the Images tab.
2. In the row of the image you want to copy, click Copy.
3. In the Copy to new image dialog box, type a name and description for the new image and then click OK.
4. When the Images page shows the status for the new image as “Running,” click Edit and then follow the instructions in the Edit image wizard. For help with the wizard, refer to the eDocs topic VDI-in-a-Box > Getting Started with VDI-in-a-Box > Creating the First Windows Image for your hypervisor.

To update an image

Use this procedure to apply changes such as software updates to a published image.

1. From the vdiManager console, click the Images tab.
2. In the row of the image you want to update, click the Edit link for the image and then click Confirm. A draft image, based on the image you want to update, is created.
Create, update, and fix images

3. When the Images page shows the status for the draft image as “Running,” click Edit and then follow the instructions in the Edit image wizard.

4. From the Edit Image wizard, connect to the image to add any necessary updates, settings, or patches as well as any applications to be included in the deployed image.

5. Log off from the draft image and follow the instructions in the wizard. For help with the wizard, refer to the eDocs topic VDI-in-a-Box > Getting Started with VDI-in-a-Box > Creating the First Windows Image for your hypervisor. After you save the new draft image, it becomes the new version of the published image and the previous version of the image is deactivated. The image changes are propagated to the desktops based on the associated template refresh policies.

To fix an image

Use this procedure if vdiManager reports that an image stored on one or more servers in a multi-server grid is not the same on all servers. In that case, the image status changes to “broken” and desktops are not generated from it until the image is fixed.

1. In the vdiManager console, click the Images tab.

2. In the Status column, click the Published link and then under the Fix column, click the icon.

3. Click Confirm.
Manage desktops and user sessions

To refresh pooled desktops

Pooled desktops refresh according to the refresh policy configured for the template. Force a refresh as follows.

1. From the VDI-in-a-Box Manager (vdiManager) console, from the Desktops tab, click Summary.

2. In the Refresh column, click the link for the template entry.

The Confirm dialog box appears, identifying the refresh policy.

3. Click Confirm to immediately refresh those desktops currently in use or click Cancel to refresh the desktops according to their established refresh policies.
To refresh personal desktops

The users’ personal disks are attached to refreshed published desktops. The next time the users log on, their personal desktops are updated with administrative changes while retaining their user-installed applications.

1. From the vdiManager console, from the **Desktops** tab, click **Summary**.

2. In the **Refresh** column, click the link for the template entry.

   ![Desktops tab](image)

   The **Confirm** dialog box appears.

   ![Confirm dialog box](image)

   3. Choose whether to immediately refresh those desktops currently in use or to wait until the users log off, and then click **Confirm**.
To log off, restart, shut down, repair, or destroy a desktop

1. From the vdiManager console, from the Desktops tab, click User Sessions.

2. Click Actions for the user entry you want to act upon.

The Actions menu appears.

3. Select the action you want to take and then click Confirm. The menu omits Restart and Shut Down if the desktop refresh policy is set to “On log out.”
To destroy a broken desktop

A desktop in an unknown state has the status Broken and is not available to users. Causes for broken desktops:

- Typically, broken desktops are unable to start Windows due to a missing or incorrect startup configuration, such as an incorrect product key or domain credentials. Use a console client to see if the broken desktop is waiting on user input.
- The server is too heavily loaded to start new desktops.
- The disk space on the data store is full.
- There are no available MAC addresses.
- The template image no longer exists.

Before destroying a broken desktop, determine the problem, repair the desktop, and then test the desktop to ensure that working desktops replace the broken ones.

1. From the vdiManager console, from the Desktops tab, click Summary. Alternatively, click the Servers tab and then click Desktops.
2. Click the number link in the Broken column and then click Destroy.
3. Click Confirm.
To configure session parameters

The following parameters are advanced properties that apply to the grid.

**User Session** parameters:

- **Desktop session default width** and **Desktop session default height**. Use these settings to establish the default dimensions of the desktop window. Use the default value (0) to open desktops in full-screen display. These parameters do not apply to connections made with Citrix Receiver.

- **Require users to re-enter password on Windows logon screen**. Establish whether users must enter a password to log on to a desktop. By default, this setting is not enabled.

- **Retain user credentials in the VDI-in-a-Box Java Desktop Client**. Use this setting to determine whether users’ credentials are saved in the Java Desktop Client. By default, this setting is not enabled, causing the user’s credentials to be cleared after logon.

- **Log off idle user session from the web console**. Set the amount of time user sessions can be idle before the sessions are automatically ended. The default setting is five minutes.

- **Users can restart "active" or "on hold" desktops assigned to them**. Establish whether users can restart active or on hold desktops. This setting is enabled by default.

**Miscellaneous** parameters related to user sessions:

- **Max server load (90%)**. Set the maximum load assignable to a server. If server failure causes desktop load to be shifted, the remaining servers on the grid will not take on a load beyond this setting, avoiding overloading. The default setting is 90% of a server’s capacity.

- **Max server capacity starting desktops (%)**. Set the maximum capacity of desktops that each server will start at one time. If the creation of a new desktop will cause the number of starting desktops to exceed this percentage of the difference between the current load and 100%, the system will delay startup of the new desktop. This addresses performance problems due to starting too many desktops at one time. The default setting is 0 which disables the restriction on how many desktops can be started at one time.

- **Max number of starting personal desktops**. Set the maximum number of personal desktops each server will start at one time. If the creation of a new desktop will cause the number of starting desktops to exceed this number, the system will delay startup of the new desktop. This addresses performance problems due to reintegrating too many personal disks with their base images at one time.
To configure session parameters

- **Enable generic user.** Establish whether users can log on to desktops with a common user name. For more information, refer to Configure generic user accounts. By default, this setting is not enabled.

- **Specify alternate domain or workgroup for desktops.** This setting determines whether additional images are prepared for alternative domains or no domain at all. By default, this setting is disabled, resulting in computers being automatically prepared and placed in the configured user database domain or the workgroup named WORKGROUP if there is no user database domain configured.

- **Show sysprep option on prepare dialog.** This determines whether to offer Microsoft’s System Preparation Utility (sysprep) as an alternative to the VDI-in-a-Box preparation tool. The VDI-in-a-Box preparation tool is required to prepare an image for use with a personal vDisk. By default, this setting is disabled. If enabled, a check box to select sysprep appears on the Prepare Image page of the Import new VM wizard.

1. From the vdiManager console, from the Admin tab, click Advanced Properties and then scroll to the User Session or Miscellaneous section.

2. Set the parameters as needed and click OK.
Install the Desktop Agent manually

The VDI-in-a-Box Desktop Agent resides on each desktop created from the image. vdiManager communicates with the desktop through the agent. The Desktop Agent is automatically installed when the draft image is being imported into the VDI-in-a-Box Manager (vdiManager). The Desktop Agent on existing images are automatically updated when they are migrated from VDI-in-a-Box 5.0.x to VDI-in-a-Box 5.1.x.

If the automatic installation fails, you can choose to retry it or manually install the Desktop Agent.

To manually install the Desktop Agent on a draft image

These steps may vary slightly depending on your Web browser.

2. Click **Copy to clipboard**, copy the resultant URL to download the Desktop Agent, and click **OK**.

3. Click **Connect**. The logon screen of the image appears.

4. Log on to the desktop, start a Web browser, and paste the URL copied in Step 2 into the Web browser URL box and press Enter. A security warning about the Web site's certificate may appear.

5. Accept the certificate as trusted and continue. The **Install the Desktop Agent** page appears.

![Install the Desktop Agent](image)

1. Please verify the following information before proceeding:
   - You must verify all information before proceeding.
   - Make sure that the image is member of the correct domain or workgroup. If not, please add the image to the correct domain/workgroup. Doing so will require you to reboot the image before proceeding. (In which case, save the URL of this page)
   - Make sure that the Windows firewall or an antivirus software is not blocking TCP ports 1484, 2598, 3389, and 6000.
   - Make sure that the remote desktop access is enabled for the desktop users by adding the desktop users to the ‘Remote Desktop Users’ group.
   - Make sure that no other versions of Citrix VDI-in-a-Box Desktop Agent, Citrix Virtual Desktop Agent, or Citrix PodICA are currently installed on the image.

2. **Install the Desktop Agent**

3. Once the Desktop Agent is installed, close this window and return to VDI-in-a-Box image setup.

6. Verify the information listed in Step 1 of the **Install the Desktop Agent** page.

7. On the Install the Desktop Agent page, click **Install**. The **File Download - Security Warning** dialog box appears.

8. Accept any security warnings that may appear. The Citrix VDI-in-a-Box Desktop Agent Setup wizard, which installs the agent, appears.

9. **Click Install**.

   **Important**: During the installation process, the Citrix VDI-in-a-Box Desktop Agent Installation and Configuration dialog box appears. The messages in this dialog box may pause, indicating success or failure of the installation process. Do not click any buttons in this dialog box or interrupt the installation. When the process is complete the dialog box closes.

   The image automatically restarts following the successful Desktop Agent installation.
Configure generic user accounts

VDI-in-a-Box supports generic user accounts, such as guest accounts, for Active Directory and Microsoft Workgroup authentication. You can use generic user accounts in settings such as classrooms where multiple users can share a common account to log on to desktops. While generic user accounts are similar in concept to kiosks, you can assign multiple templates to a generic user account.

Generic user accounts are enabled at the grid level. Enabling generic user accounts changes the following vdiManager operations:

- By default, vdiManager destroys a desktop when the logged on user does not match the user assignment for the desktop. With generic user accounts enabled, vdiManager overrides that security feature and does not destroy such desktops.

- By default, vdiManager enables users to reconnect to the same desktop session from a different user device after disconnecting from (but staying logged on to) the first device. This is not the case when generic user accounts is enabled. When a generic user disconnects from a session and then logs on to a different user device, the generic user receives a new desktop and vdiManager logs out the disconnected session. If the refresh policy is “On logout” the desktop will be destroyed. If the refresh policy is “manual” the same desktop is issued to the next user who logs on from the same user device.
To configure generic user accounts

1. Configure the grid: From the vdiManager, from the Admin tab, click Advanced Properties.

2. Scroll to the Miscellaneous section and select the Enable generic user check box.

3. Create the desktop images and templates for the generic accounts by following the VDI-in-a-Box image and template creation procedures. Be sure to install the necessary Windows authentication software components on the image.

4. Add the generic user accounts:
   a. Click the Users tab and then, at the User Groups table, click Add.
   b. Type the User ID for the generic account.
   c. In the Templates column, click Edit and None and then select one or more templates to use for the account.
   d. Click Close and then click Save.

5. Test the configuration: Log on to vdiManager with a generic user account.
Manage a grid

To add a server to a grid

1. Import and power on the vdiManager appliance.

2. Note the IP address of the vdiManager and then use a web browser to log on to the vdiManager console (https://IPaddress/admin).

3. Follow the directions in the VDI-in-a-Box Initial Set up wizard to configure the hypervisor and join it to the grid. For help with the wizard, refer to the eDocs topic VDI-in-a-Box > VDI-in-a-Box 5.1 > Getting Started with VDI-in-a-Box. Desktops from other servers are not migrated to the new server. Desktops are created on the new server as needed to satisfy policy requirements.

To remove a server from a grid

When you remove a server from the grid, it becomes the only server in a new grid. It is no longer connected to the rest of the servers in the old grid and does not share its load.

1. Deactivate the server to remove all desktops running on it: From the Servers tab, click the server, and then click Deactivate.
2. Click Confirm.

3. After the server status changes to deactivated, click the Servers tab, click the server, and then click Leave Grid.
To upgrade the grid software or license

1. Put the grid in maintenance mode: From the Admin tab, click Grid Maintenance and then click OK.

2. On the Admin page, click Grid and License Upgrade. The Grid and License Upgrade dialog box appears.

3. Click Choose File, navigate to the upgrade or license file, and click Open.

4. Click Submit. When the upgrade completes, the server status changes to Success.

5. When prompted, log on to vdiManager.

6. Take the grid out of maintenance mode: From the Admin tab, click Grid Maintenance, and then click OK.
To prepare servers for maintenance

1. Let your users know when maintenance is to occur and by when they must log out.

2. Citrix recommends backing up any personal desktops. (See Back up and restore personal desktops.)

3. Put the grid in maintenance mode: From the Admin tab, click Grid Maintenance and then click OK.

4. After all users log out and personal desktop backups are complete, deactivate all servers in the grid: From the Servers tab, click the server, click Deactivate, and then click Confirm. Deactivating a server deletes all desktops, including those in use, and immediately shuts down the server so that it no longer provisions desktops. Only the personal desktops remain, with a status of “On Hold.”

5. Use the hypervisor console to power off the personal desktop virtual machines. To identify those desktop sessions, go to Desktops > User Sessions and look for “On Hold” entries in the Status column.

6. Shut down the vdiManager virtual machines: From the Servers tab, click the server, click Shutdown. The servers are now ready for maintenance performed from the hypervisor.

To resume operations after maintenance

1. Use the hypervisor console to power on all vdiManager virtual machines.

2. When all vdiManagers are running, log on to the vdiManager console and take the grid out of maintenance mode: From the Admin tab, click Grid Maintenance, and then click OK. On the Servers tab, the Recent Tasks and Events section should display the message “Server checks out fine” for each server.

3. Activate each server: From the Servers tab, click the server, and then click Activate.

To assign a static address to vdiManager

Prerequisite:

- A static IP address that is not already assigned.

1. Deactivate the server so that it is not running any desktops: From the Servers tab, click the server, click Deactivate, and then click Confirm.

2. Shut down any draft or test desktops on the server: From the Desktops tab, on the User Sessions page, in the row for each desktop, click Actions, Shutdown, and then Confirm.

3. From the Servers tab, click the server name, and then click Modify.
4. In the VDI-in-a-Box Manager Network Settings dialog box, click **Static IP configuration**, enter the static IP address, and then click **OK**. The Notification dialog box appears indicating the change to the network configuration was successful and that the vdiManager has been restarted.

5. Click **Close**.

**To provide high availability with a grid-wide virtual IP address**

Rather than having user devices access virtual desktops through the IP address of specific servers on the grid, you can assign a single virtual IP address to the entire grid. Access requests made to this address are sent to the primary server in the grid. If that server is unavailable, the virtual IP address is assumed by another server in the grid.

The grid-wide IP address must be a static IP address selected from the same subnet pool used for the other servers in the grid.

1. From the **Admin** tab, click **Advanced Properties**.

2. Scroll to the Grid section and in the **Grid IP address** box, type the static IP address you are assigning to the grid and click **OK**.
To reset vdiManager to factory settings

Resetting vdiManager to factory settings is irreversible. It deletes all the desktops, templates, images, and environment information from the grid and deletes the base image files physically stored on the data store of the hypervisor.

1. Verify that you are logged into the vdiManager console for the server you plan to reset.

2. Remove the server from the grid. Resetting a server to factory settings is not allowed on a server in a grid.

3. From the Admin tab, click Reset Server. After the reset is complete, you are logged out of the vdiManager console. The next time that you log on, the Welcome to VDI-in-a-Box page appears. For information about setting up vdiManager, refer to the eDocs topic VDI-in-a-Box > VDI-in-a-Box 5.1 > Getting Started with VDI-in-a-Box.

To remove vdiManager from a server

1. If the server is part of a grid, remove it from the grid.

2. Reset vdiManager to factory settings.

3. From the hypervisor console, shut down the vdiManager virtual machine and remove it from the host. See the hypervisor manufacturer’s documentation for details.

To synchronize date and time for the servers in the grid

You can synchronize the clocks of the vdiManagers in your grid by connecting to a Network Time Protocol (NTP) server. A result of using NTP is consistency of log time stamps.

1. From the Admin tab, click Advanced Properties.

2. Scroll to the Grid section and in the NTP server box, type the IP address of the Network Time Protocol (NTP) server and click OK. Within an hour, the clocks on all servers on the grid are synchronized. The NTP server and the servers on the grid then synchronize hourly.

3. Configure NTP on your hypervisor, using the same NTP server as in Step 2. For details, see http://support.citrix.com/article/CTX134279.

To set the date and time for grid communication and transfer protocols
The grid time is necessary for grid communication, such as refresh schedules. By default, the grid time is the time on the first server in the grid. Grid time is not tied to a clock and can be set to what you choose. Grid time is synchronized across all the servers in the grid every 24 hours.

**Note:** If the use of an NTP server is enabled, the Grid Time may be changed as NTP synchronization occurs. While this inaccuracy will self-correct when the Grid Time synchronizes, Citrix recommends checking and, if necessary, resetting Grid Time immediately after enabling NTP and again an hour later.

1. From the **Admin** tab, click **Grid Time**. The **Set Grid Time** dialog box appears.

![Set Grid Time dialog box](image)

2. Accept the current date and time or click in the **New Date and Time** box and, from the calendar that appears, select a new date.

   **Note:** Be sure to follow the *mmm dd, yyyy hh:mm:ss [AM|PM]* format.

3. If you selected a new date, edit the time to reflect the current time.

4. Click **Save**.
Prepare for Active Directory failover

Use Active Directory failover to ensure your grid continues to fully function, even if the primary server fails.

VDI-in-a-Box begins using the first Active Directory server you listed. If that server fails, VDI-in-a-Box moves to the next Active Directory server in the list. This process is repeated, as necessary, with each Active Directory server in your list. Periodic checks of the primary server are made and, if it has recovered, VDI-in-a-Box activity automatically resumes on it.

**Important:** To ensure uninterrupted desktop provisioning, each Active Directory in the list should contain identical data and be synchronized. VDI-in-a-Box does not provide a mechanism to ensure synchronized operations among the Active Directory servers.
To prepare for Active Directory failover

1. From the VDI-in-a-Box Manager (vdiManager) console, from the Users page, click Configure.

The Specify Domain dialog box appears.

2. Click Add, type the IP address of an Active Directory server in your grid, and click Save.
The IP address is added to the **IP addresses** list.

3. Repeat Step 2 for each Active Directory server you want to add to the list.

4. Click the arrows to move servers up or down the list.
5. In the **Password** box, type your domain password and click **Save**.
Generate desktops from a pool of MAC addresses

Generate desktops with a specified range of Media Access Control (MAC) addresses if your Dynamic Host Configuration Protocol (DHCP) policies assign IP addresses to MAC addresses or assign free IP addresses only to MAC addresses from a known range. The MAC address pool applies to all desktops, draft images, and test images generated throughout the VDI-in-a-Box grid.

Pre-requisites:

- Verify there are enough MAC addresses in the pool to handle all the desktops and draft images that are planned in the grid.

- Verify that external systems, such as DHCP, that the MAC address pool is intended to serve can handle all of the MAC addresses in the pool. The pool assigns addresses to desktops randomly.

Note: VDI-in-a-Box does not verify that an assigned MAC address is unique in a network, except within the desktops in the grid. If a server leaves a grid that has MAC addresses assigned to desktops, the original grid does not track that the MAC addresses are assigned to desktops and so can reassign them.

1. From the VDI-in-a-Box Manager (vdiManager) console, from the Admin page, click Advanced Properties.

2. Scroll to the MAC Address Pool section and provide the starting address and range length. The MAC address range must be in the following format: 00:50:56:[0-3]x:xx:xx.
Generate desktops from a pool of MAC addresses

Advanced Properties

Externally available VDI-in-a-Box
Manager addresses:

MAC Address Pool

MAC address range start: 00:50:56:01:11:1
MAC address range length: 4

Gateways

External HDX gateway addresses:
Internal HDX gateway IP addresses:
External RDP gateway addresses:
Internal RDP gateway IP addresses:
Update the server configuration for credential changes

You must immediately update the VDI-in-a-Box server configuration parameters if any of the following credentials change: hypervisor, Active Directory, or domain controller. For environments in which account credentials change regularly, Citrix recommends using accounts that remain fixed.

<table>
<thead>
<tr>
<th>Component</th>
<th>To update in the vdiManager console</th>
<th>Impact if not changed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypervisor credentials</td>
<td>Click the Servers tab, click the server name, and then click Configure.</td>
<td>VDI-in-a-Box cannot communicate with the hypervisor.</td>
</tr>
<tr>
<td>Active Directory credentials</td>
<td>Click the Users tab and then click Configure.</td>
<td>VDI-in-a-Box cannot authenticate users.</td>
</tr>
<tr>
<td>Domain controller credentials</td>
<td>Click the Images tab, click edit, and use the wizard to prepare the image. Repeat those steps for all images that use the prior credentials.</td>
<td>Newly generated desktops cannot join the domain and will appear as broken.</td>
</tr>
</tbody>
</table>
Store data in two data stores

The dual data stores feature allows you to store images and personal desktops on a data store separate from that used by pooled desktops. The dual data stores feature is available if your hypervisor is Microsoft Hyper-V, VMware ESXi, or VMware vSphere.

**Note:** Data is not moved when you change data stores. While reference points are maintained to objects in data stores you have left, the objects remain there. Plan any moves carefully and conduct them as infrequently as possible.

**Note:** If you are using ESXi or Hyper-V, do not change any data store's name after specifying it in VDI-in-a-Box, otherwise desktop generation and cleanup processes will fail.

1. In the VDI-in-a-Box Manager (vdiManager) console, from the **Admin** page, click **Advanced Properties**.

2. Scroll to the Miscellaneous section and click **Enable multiple datastores** and then **OK**.

3. Click the **Servers** tab and then the server you want to update. The **Server Properties** dialog box appears.

4. Click **Configure**. The **Configure Server** dialog box appears.
5. In the Select datastores section, select a data store for your desktops.

6. Click Save and then Close.

**Note:** The Images & personal disks data store was selected during your initial grid configuration.
Configure separate user and computer domains

VDI-in-a-Box offers increased security flexibility by enabling separate user and computer domains. For example, higher security can be applied to the computer domain without impacting the less vulnerable user domain.

1. In the VDI-in-a-Box Manager (vdiManager) console, from the Admin page, click Advanced Properties.

2. Scroll to the Miscellaneous section, click Specify alternate domain or workgroup for desktop and then OK.

4. In the **Domain name** box, type the name of the domain for desktops.

5. In the **User name** and **Password** boxes, type the administrator credentials for the domain.

6. Click **Add**, type the IP address for the domain, and click **Save** to add the address to the **IP addresses** list.
7. Click Save.
Configure VDI-in-a-Box kiosks

The VDI-in-a-Box kiosk feature allows you to convert user devices into a kiosk system that you deploy wherever you need standard desktops, such as in conference rooms, school labs, or nurses’ stations at hospitals. You deploy a VDI-in-a-Box kiosk to IP address ranges as a user device location rather than to a user or group name.

Like any VDI-in-a-Box virtual desktop, a kiosk is based on a template. To establish connectivity between a desktop and user device, assign a template to the IP address of the user device.

You can set up a user device so that a user connects to the desktop through Citrix Receiver (recommended), a web browser, or the VDI-in-a-Box Java Desktop Client.

**Note:** In a conflict between kiosk and user settings, the kiosk settings take priority.

**Planning a kiosk deployment**

Plan the number of templates needed for the kiosks, based on:

- Whether the kiosks can use the same desktop policy or need different ones.
- The IP addresses of the user devices. You assign a template to an IP address or a range of IP addresses.

Example: You are deploying VDI-in-a-Box kiosks for the existing computers in the Engineering and Art labs of a school district. Define a template for each lab, assigning the IP address range of the computers in the Engineering lab to the Engineering kiosk template and the IP address range of the computers in the Art lab to the Art kiosk template. This setup ensures that a student logging in from either lab will receive the appropriate desktop.
Best practices and policy guidelines

- Maintain separate templates for use in kiosk deployments. By using kiosk-specific templates only for kiosk device assignments and not for individual user or group assignments, you can manage and monitor the kiosk sessions efficiently.

- Consider implementing daily refresh policies.

- For kiosks in public areas and conference rooms:
  - Set the refresh policy to **On logout** to ensure that each new user gets a fresh desktop.
  - Since it takes time to generate new desktops, prepare the image using the **Fast desktop refresh** option to allow quick provisioning of the desktops when users log out.
  - To keep a reasonable number of desktops in a pre-started or new state, adjust the **Maximum desktops** policy count to exceed the number of user devices.
  - If the load is heavy and desktop re-generation on each use is too resource intensive, use the **Scheduled** refresh method to ensure that the desktops are refreshed every night. In this case, the maximum number of desktops does not need to exceed the number of kiosks.
  - Determine how many desktops to pre-start. Pre-started desktops are in a powered-on state and at the logon prompt, ready for use. Pre-starting desktops eliminates the need for users to wait for virtual desktops to start. When you specify a number of desktops for pre-start, VDI-in-a-Box maintains that number as users log on. For example, if you specify five pre-started desktops in the template, five virtual desktops are started and available for your users. When two users log on to their desktops, VDI-in-a-Box starts two more desktops to maintain the requested five prestarts. This continues until your stated maximum number for the template is reached.

- Observe caution if you change desktop template assignments for kiosks. The reassignment delivers new desktops to the user device while retaining the old desktops in VDI-in-a-Box. Identify these orphaned kiosk sessions and remove them through the VDI-in-a-Box console **Desktops > User Sessions** tab.
Configure user devices as kiosks

To configure user devices as kiosks, follow these general steps:

1. Assign a template to each user device IP address or range of addresses.
2. Set up each user device to operate as a kiosk.
3. Verify the kiosk connection.

To assign a user device to a template

1. In the vdiManager console, click the Users tab.
2. At the IP Addresses table, click Add.
3. In the IP Address Ranges box, type the user device IP addresses to assign to a template. You can specify individual addresses (192.168.23.143), prefixes (192.168), or ranges (192.168.10.174-204). Separate entries with new lines or spaces. You can also use an asterisk (*) to represent all IP addresses, such as 172.*.
4. Select a template to assign to an IP address or range. You can assign only one template to a user device.

The following table shows sample IP address assignments for the Engineering and Art labs, a break room, and a library at a school district.

<table>
<thead>
<tr>
<th>IP address ranges</th>
<th>Template name</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>192.168.1.30-50</td>
<td>Engineering Lab</td>
<td>A separate template is required for the two labs, to accommodate the two IP address ranges.</td>
</tr>
<tr>
<td>192.168.1.1-20</td>
<td>Art Lab</td>
<td></td>
</tr>
<tr>
<td>192.168.2.11</td>
<td>Break Room</td>
<td>The user device in the Break Room requires its own template. If that device had an IP address starting with 192.168.3, the Library template could be used for it.</td>
</tr>
<tr>
<td>192.168.3</td>
<td>Library</td>
<td>All user devices with IP addresses starting with 192.168.3 and 192.168.4 use the Library template.</td>
</tr>
</tbody>
</table>

To set up a user device for kiosk operation

The supported connection methods for kiosk operation are the same as for non-kiosk desktops: Citrix Receiver (recommended), a web browser, and the VDI-in-a-Box Java Desktop Client. For configuration details, refer to the eDocs topics for your user devices in
Access VDI-in-a-Box from user devices.

If you use the Java Desktop Client, consider including it in the end device start-up script so that the client launches when the user device restarts. Alternatively, create a shortcut to the client: Open a command window on the user device, enter `javaws -viewer`, right-click the Java Desktop Client entry, and choose Install Shortcuts. If you have multiple vdiManagers consider creating a shortcut to each one so that a user has options if a VDI-in-a-Box appliance is offline.

Launching the Java Desktop Client with a common user name and password

To pass a default user name (such as “guest”) and password so that the user can connect directly to the desktop without entering credentials, use the command:

```
javaws https://IPaddress/dt/vdiclient.jnlp?username=kioskuser&password=kioskpassword
```

To verify the kiosk connection

In VDI-in-a-Box console, go to the Desktops > User Sessions tab. The User ID and client IP address entries start with an asterisk (*) so you can easily search for and sort kiosk entries.
Configure secure remote access

To provide remote users with secure connections to virtual desktops, use Citrix NetScaler Access Gateway 10 with VDI-in-a-Box. The NetScaler VPX is a virtual appliance for Citrix XenServer, Microsoft Hyper-V, or VMware ESXi that provides secure access to desktops while allowing users to work from anywhere. Using NetScaler Access Gateway eliminates the need for remote users to configure a virtual private network (VPN) connection and log on to it before logging on to the desktop.

For detailed configuration instructions specific to VDI-in-a-Box, see http://support.citrix.com/article/CTX134315. For NetScaler Access Gateway 10 information, see NetScaler Access Gateway 10. For NetScaler 10 information, see NetScaler 10

Prerequisites

- Configure the VDI-in-a-Box Grid IP address, allowing for a single entry on NetScaler Access Gateway without the need for the Load Balancing feature.

  The Grid IP address provides automatic failover of the VDI-in-a-Box Web interface as well as connection brokering roles on a local area network (LAN) and through NetScaler Access Gateway.

To install and configure NetScaler VPX 10 for VDI-in-a-Box

Perform the setup described in eDocs under NetScaler > NetScaler 10 > Getting Started with Citrix NetScaler VPX:

1. Download the Virtual Appliance for NetScaler VPX 10.
2. Import the NetScaler VPX virtual appliance onto a supported hypervisor.
3. Configure NetScaler VPX Basic Settings, including NetScaler IP (NSIP) for management and install a NetScaler VPX Platform License.

To configure the vdiManager connection to Access Gateway

The number of configured gateways must not exceed the number of Access Gateway virtual server instances on the NetScaler.

1. In the vdiManager console, from the Admin tab, click Advanced Properties.
2. Add the Grid IP address. See Manage a grid

3. Scroll to the Gateways section.

4. In **External HDX gateway addresses**, type the list of external fully qualified domain names (FQDN) of the Access Gateway(s), including the port and separated by semicolons. Example: www.gw1.com:443;www.gw2.com:443

5. In **Internal HDX gateway IP addresses**, type the list of Subnet IP (SNIP) or Mapped IP addresses on the NetScalers, separated by semicolons. Specify the same number of Access Gateways in the same order as listed in the external gateways list. Example: 172.16.1.1;172.16.1.2

6. Click OK.

**To configure Access Gateway for VDI-in-a-Box**

Create an Access Gateway virtual server for the VDI-in-a-Box grid. You can create multiple Access Gateway virtual servers on a single NetScaler appliance, allowing access to multiple separate VDI-in-a-Box grids.

1. To start the NetScaler Access Gateway wizard, go to NetScaler > Configuration > Access Gateway, click Create/Monitor Access Gateway, and then click Getting Started.
2. Complete the **Access Gateway Setting** section, providing an IP address to use for the Access Gateway virtual server.

3. Complete the **LDAP Authentication** section, providing the same Active Directory domain used by the VDI-in-a-Box grid.

4. Complete the **Certificates** section, selecting the **Install Certificate** or **Use Test Certificate** option. You can create certificates using the **NetScaler > Configuration > SSL** section or third-party certificate tools.

5. Configure the **DNS** section by typing the IP address of the DNS server you are using.

   
   a. In the **Web Interface Address** field, type the URL corresponding to the VDI-in-a-Box Grid IP address.

   **Note:** Begin the Web Interface Address URL with **https://**.

   b. In **Secure Ticket Authority**, type the Secure Ticket Authority URL, including the Grid IP address, in the following format:

   ```plaintext
   https://<vdiGridIPaddress>/dt/sta
   ```

   **Note:** Begin the Secure Ticket Authority URL with **https://**.

7. Verify the Access Gateway virtual server configuration: In the **NetScaler Configuration > Access Gateway > Virtual Servers** section, double-click the virtual server created and review the settings. Repair any issues before proceeding.

---

**To configure a Citrix Receiver policy on the NetScaler Access Gateway**

For details, see **Receiver for iOS 5.6.x**. This Receiver policy applies to all mobile devices.

1. In the **Web Interface Address** field, specify the PNAgent URL by entering the Grid IP address in the following format: `https://vdiGridIPAddress/dt/PNAgent/config.xml`.

2. In **Single Sign-on Domain**, enter the Active Directory domain used by VDI-in-a-Box.

3. Skip the steps in the Receiver for iOS 5.6.x eDocs page that are related to authentication policies for RADIUS and Active Directory. They are not necessary for VDI-in-a-Box.

**To configure Citrix Receiver**

Use Citrix Receiver to connect to VDI-in-a-Box desktops though Access Gateway. See the **Receiver section** of eDocs for details on setting a server URL option with several user devices. For deployments in which the Receiver session policy has not been created on the
Configure secure remote access

gateway, use the following URL to connect: https://accessgatewayfqdn/dt/PNAgent/config.xml. Specify the same user name used to access desktops through the vdiManager console.

Important: PNA of PNAgent must be uppercase.
To configure the vdiManager connection through the Remote Desktop Gateway

An additional remote access to VDI-in-a-Box desktops is available through the Remote Desktop Gateway. The Remote Desktop Gateway must be set up in the demilitarized zone. It should be in the same domain as the virtual desktops to which it provides remote access. The vdiManager must be configured with the Remote Desktop Gateway's IP address.

Note: For details on configuring the Remote Desktop Gateway, see http://support.citrix.com/article/CTX134286.

1. In the vdiManager console, from the Admin page, click Advanced Properties.

2. Scroll to the Gateways section.

3. In External RDP gateway addresses, type the list of external fully qualified domain names (FQDN) of the Remote Desktop Gateway(s), including the port and separated by semicolons. Example: www.<gateway1>.com:443;www.<gateway2>.com

4. In Internal RDP gateway IP addresses, type the list of internal IP addresses or DNS names of the Remote Desktop Gateways, separated by semicolons. Specify the same
To configure the vdiManager connection through the Remote Desktop Gateway

number of Remote Desktop Gateways in the same order as listed in the external gateways list. Example: 192.0.2.5;192.0.2.20

5. Click OK.
Configure Profile management

To apply user personalization settings to virtual desktops, use Citrix Profile management with VDI-in-a-Box. Profile management consolidates and optimizes user profiles to minimize management and storage requirements. Profile management applies to any user location or user device, providing users with fast logons and logoffs. For details on Profile management, see Profile Management and VDI-in-a-Box.

Prerequisites

- A VDI-in-a-Box grid with at least one server running vdiManager 4.1 or greater
- A Windows 7 or Windows XP image published through vdiManager
- A shared folder on a file server where users have read and write permissions

To install and configure Profile management for VDI-in-a-Box

Plan the deployment and perform the setup described in the following Profile Management topics for your version in eDocs:

- Getting Started with Profile Management
- Planning Your Profile Management Deployment
- Installing and Setting Up Profile Management

**Note:** Install the Profile Management Service on the VDI-in-a-Box published images, either initially creating the image or after it has been published.

- To enable Profile management
- To specify the path to the user store
- Profile Management and Microsoft Outlook

To configure VDI-in-a-Box images for Profile management
For each image used to create desktops, set the Organizational Unit (OU) to the one configured with the Group Policy Object (GPO) template.

1. To view the OU set for an image: Click the Images tab and then click the image name.

2. To set the OU for an image:
   a. Click the Images tab, click the edit link for the image, and then click Confirm.
   b. In the Edit draft image wizard, enter the Organizational unit (OU).

For help with the wizard, refer to the eDocs topic VDI-in-a-Box > Getting Started with VDI-in-a-Box > Creating the First Windows Image for your hypervisor.

After you save the new draft image, it becomes the new version of the published image and the previous version of the image is deactivated. The image changes are propagated to the desktops based on the associated template refresh policies.
Configure smart card authentication

VDI-in-a-Box supports smart card authentication, enabling users to log on to virtual desktops by using a smart card reader. To log on, users swipe a smart card and enter their smart card Personal Identification Number (PIN). Citrix Receiver then displays the desktops available to the user. If users remove their smart cards during a session, they are forced to log off.

Prerequisites

- Smart card support enabled on the server.
  Consult your smart card vendor or integrator to determine detailed configuration requirements for your implementation.

- User device requirements:
  - Windows-based operating system (refer to System requirements for VDI-in-a-Box 5.1.x for supported systems).
  - Citrix Receiver.
  - ActivIdentity ActivClient 6.2 or 6.1, including ActivIdentity device drivers for keyboard functions.
  - Same domain as the VDI-in-a-Box grid.
  - Active Directory for Windows Server 2008 R2:
    - Integrated with the VDI-in-a-Box grid.
    - Configured for smart card authentication.
  - At least one published VDI-in-a-Box desktop image with smart card software installed.
  - For secure access, users must establish a VPN connection.

To set up VDI-in-a-Box for smart cards

1. Plan the templates needed for smart card authentication. Desktops based on a template configured for smart cards require a smart card for access. Users who attempt to connect to such desktops without a smart card are denied access.

2. Create one or more templates configured for smart cards:
   a. Click the Templates tab and then click the Add link.
b. In the Create a New Desktop Template wizard, specify the template information as usual.

c. Select the Smart cards checkbox.

d. Click Proceed and then click Next.

e. Specify the template policies and then click Save.

3. Assign users or groups to the new templates. For help, refer to the eDocs topic VDI-in-a-Box > Getting Started with VDI-in-a-Box > Assigning Templates to Users, Groups, and IP Addresses for your hypervisor.

4. Test smart card authentication: Log on as an end user from a user device configured for smart card authentication.
Log on to the VDI-in-a-Box appliance

You can use the hypervisor console or a Secure Shell (SSH) client, such as PuTTY, to log on to the VDI-in-a-Box appliance. Initial credentials for the appliance are:

- User name: kvm
- Password: kaviza123

Citrix recommends changing the default password in the production environment. Change credentials for user names kvm and root from their initial password “kaviza123” by logging in as each of those users and using the passwd command.

**Important:** When changing these passwords, do so for each VDI-in-a-Box Manager (vdiManager) in the grid. Passwords are associated with the vdiManager appliances, not the entire grid.

To change the VDI-in-a-Box appliance password

1. From your hypervisor console or an SSH client, open the vdiManager.
2. Using the account whose password is to be changed, log on to the vdiManager.
3. At the command prompt, type `passwd` and press Enter.
4. When prompted, type the current password and press Enter.
5. When prompted type the new password and press Enter.
6. When prompted, type the new password again for confirmation and press Enter. A message confirming the successful password change appears.
Use HDX features and enhancements

Citrix HDX includes a broad set of technologies that provide a high-definition user experience for today's media-rich user environments.

Many HDX features are configurable through Group Policy settings. If your network environment includes Active Directory and you have the appropriate permissions to manage Group Policy, you can use the Group Policy Editor to configure HDX policies settings.

The following Citrix XenDesktop topics explain how to configure and use these HDX features and enhancements.

Quick links

- Configuring HDX MediaStream Flash Redirection on the Server
- Configuring Audio
- Avoiding Echo During Multimedia Conferences With HDX RealTime
- Video Conferencing with HDX RealTime Webcam Video Compression
- Redirecting Aero Functionality
- Improving Responsiveness in Low Bandwidth Conditions by Compressing Colors
- Assigning Priorities to Network Traffic
- Providing Smooth-running Videos and Slide Shows
- Configuring Read-Only Access to Mapped Client Drives
- HDX Optimization Pack for Google Earth
Access VDI-in-a-Box from user devices

Users access Citrix VDI-in-a-Box virtual desktops through their user devices. Protocols, such as Remote Desktop Connection (RDP) or Citrix's HDX, are used to communicate between the user device and virtual desktop. A client-side protocol agent and a server-side protocol agent are required to make the connection between the user device and the virtual desktop.

Protocols supported by VDI-in-a-Box

VDI-in-a-Box supports the following protocols:

- **HDX**
  - This is the default protocol.
  - No separate license is required.
  - HDX provides a high-definition user experience.
  - HDX provides better multimedia support while using less bandwidth.
  - HDX is suitable for remote access over a WAN.
- **Remote Desktop Connection (RDP) V6 and V7**
  - RDP is suitable for LAN deployments.

*Note:* For best results when using Remote Desktop Connection V7, Citrix recommends running Windows 7 on both the virtual desktop and the user device.

Access VDI-in-a-Box virtual desktops

Users access VDI-in-a-Box virtual desktops in any of three ways:

**Important:** All three access methods require Citrix Receiver on the user device.

- **Web browser** - Web browsers support both HDX and RDP, although some configuration is required to use each protocol.

- **Citrix Receiver**
  - Citrix Receiver allows direct access to VDI-in-a-Box desktops through an HDX connection without the use of a Web browser or Java client.
  - Receiver connects to VDI-in-a-Box desktops on Windows, Mac, Linux, iOS, and Android platforms.
With Citrix Receiver, older and low-end thin clients that do not have browsers can be used to access VDI-in-a-Box virtual desktops. Mobile devices, such as the iPad, can also be used with Receiver to access VDI-in-a-Box virtual desktops without requiring a Web browser or Java client.

**VDI-in-a-Box Java Desktop Client**

- The Java client automatically checks for updates and refreshes itself as needed.
- The client requires Java Runtime Environment (JRE) 1.6 or higher.
- The client switches to an RDP connection if an HDX connection is not available.

### Use the Citrix Desktop Lock

The Desktop Lock locks down the user device so that users can access only their VDI-in-a-Box virtual desktop; they cannot interact with the local desktop.

The user must have only one template assigned.

For Single Sign-on to work, the user device must be in the same domain as the VDI-in-a-Box grid.

To install the Desktop Lock:

1. Ensure you have read [System requirements for VDI-in-a-Box 5.1.x](#) so that you know your environment is appropriate.

2. Log on to the user device with administrator credentials.


4. Download CitrixDesktopLock.msi from the VDI-in-a-Box download page on the Citrix web site.

5. Open a command prompt and install Receiver as follows:

   ```
   CitrixReceiverEnterprise.exe
   ADDLOCAL="ICA_Client,SSON,USB,DesktopViewer, Flash,PN_Agent,Vd3d"
   SERVER_LOCATION="https://my.vdi-grid" ENABLE_SSON="Yes"
   ```

   where `my.vdi-grid` is the URL of your VDI-in-a-Box grid.

6. When the Receiver installation has completed, click **Cancel** when you are prompted for credentials to log on to the Citrix application.

7. Double-click CitrixDesktopLock.msi, then follow the wizard steps for installing the Desktop Lock.

8. When the installation has completed, click **Close**.

9. When prompted, restart the user device. If you then log on using your domain user credentials, your VDI-in-a-Box desktop opens immediately, just as if it were your local
Access VDI-in-a-Box from user devices

desktop.

Compare client access

<table>
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<th>Client</th>
<th>Accesses virtual desktop</th>
<th>Automatic RDP connection started if there is no HDX</th>
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<tbody>
<tr>
<td>Citrix Receiver</td>
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<td>Not applicable</td>
<td>Y</td>
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<td></td>
</tr>
<tr>
<td>Web browser</td>
<td>Y</td>
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<td>VDI-in-a-Box Java Client</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

Note: If the grid-wide virtual IP address feature is active, automatic failover is available for all three access methods. See Manage a grid for details.

The kiosk option is useful for libraries, nurses’ stations, and anywhere you want to place a public user device with the desktop assigned to the device and not to the user logging on. All users receive the same desktop, based on the purpose of the kiosk.

Log on from a user device

The following figure shows a basic logon sequence between a Web browser on a user device and a server with VDI-in-a-Box Manager. An HDX session between the user device and a specific virtual desktop on the server is being created using Citrix Receiver. Once the connection is created, the session traffic takes place between Receiver and the virtual desktop only. The same sequence applies when the Java client is used.
Configure Windows devices to access VDI-in-a-Box virtual desktops

Prerequisites

Install Citrix Receiver for Windows on the Windows user device in order for it to access VDI-in-a-Box desktops. You can download it from http://receiver.citrix.com/?ntref=citrixdotcomdownloads.

If you are using the VDI-in-a-Box Java Desktop Client you must also install the Java Runtime Environment (JRE), which you can download from https://www.java.com.

To configure Windows devices to access VDI-in-a-Box desktops with a Web browser

These steps may vary slightly depending on your Web browser.

1. Start your Web browser.

2. In the Web browser address box, type https://<vdiManagerIPaddress>. A security warning about the Web site's certificate may appear.

3. Accept the certificate as trusted and continue. The VDI-in-a-Box Log On page appears.

4. Create a desktop shortcut to the VDI-in-a-Box logon page through the Web browser.

To configure Windows devices to access VDI-in-a-Box desktops with Citrix Receiver

You can use Citrix Receiver on Windows devices to connect to VDI-in-a-Box desktops. See the Receiver for Windows section of eDocs for details on setting a server URL option. Use the following URL: http://<vdiManagerIPaddress>/dt/PNAgent/config.xml. Use the user name you use for accessing desktops through the vdiManager console.
To configure Windows devices to access VDI-in-a-Box desktops with the VDI-in-a-Box Java Desktop Client

1. Ensure you have installed the JRE on the device.

2. Open a Command Prompt window on your Windows device.

3. At the command prompt, type the address of the VDI-in-a-Box Java Desktop Client:

4. Accept the certificate as trusted and continue.

5. If additional security warnings appear, accept them and continue. The VDI-in-a-Box Client dialog box appears.

6. Create a desktop shortcut to the VDI-in-a-Box Java Desktop Client.
   a. Open a command window on the device.
   b. At the command prompt, type javaws -viewer. The Java Cache Viewer window appears.
   c. Right-click the JavaClient entry and select Install Shortcuts.
Configure Mac devices to access VDI-in-a-Box virtual desktops

Prerequisites

Install Citrix Receiver for Mac on the Mac user device in order for it to access VDI-in-a-Box desktops. You can download it from http://receiver.citrix.com/?ntref=citrixdotcomdownloads.

If you are using the VDI-in-a-Box Java Desktop Client you must also install the Java Runtime Environment (JRE), which you can download from https://www.java.com.

To configure Mac devices to access VDI-in-a-Box desktops with a Web browser

These steps may vary slightly depending on your Web browser.

1. Start your Web browser.
2. In the Web browser address box, type https://<vdiManagerIPaddress>. A security warning about the Web site's certificate may appear.
3. Accept the certificate as trusted and continue. The VDI-in-a-Box Log On page appears.
4. Create a launcher on the desktop to the VDI-in-a-Box logon page through the Web browser.

To configure Mac devices to access VDI-in-a-Box desktops with Citrix Receiver for Mac

You can use Citrix Receiver on Mac devices to connect to VDI-in-a-Box desktops. See the Receiver for Mac section of eDocs for details on setting a server URL option. Use the following URL: http://<vdiManagerIPaddress>/dt/PNAgent/config.xml. Use the user name you use for accessing desktops through the vdiManager console.
To configure Mac devices to access VDI-in-a-Box desktops with the VDI-in-a-Box Java Desktop Client

1. Ensure you have installed the JRE on the device.

2. Open a Terminal window on your Mac device.

3. At the Terminal prompt, type the address to the VDI-in-a-Box Java Desktop Client: `javaws http://<vdiManagerIPaddress>/dt/vdiclient.jnlp`. A security warning about the Web site’s certificate may appear.

4. Accept the certificate as trusted and continue.

5. If additional security warnings appear, accept them and continue. The VDI-in-a-Box Client dialog box appears.

6. Create a desktop shortcut to the VDI-in-a-Box Java Desktop Client.
   a. Open a Terminal window on the Mac device.
   b. At the Terminal prompt, type `javaws -viewer`. The Java Cache Viewer window appears.
   c. Right-click the JavaClient entry and select Install Shortcuts.
Configure Linux devices to access VDI-in-a-Box virtual desktops

Prerequisites

Install the following on the Linux device in order for it to access VDI-in-a-Box desktops:

- rdesktop 1.7.0. You can download it from http://www.rdesktop.org/

If you are using the VDI-in-a-Box Java Desktop Client you must also install the Java Runtime Environment (JRE), which you can download from https://www.java.com.

To configure Linux devices to access VDI-in-a-Box desktops with a Web browser

These steps may vary slightly depending on your Web browser.

1. Start your Web browser.

2. In the Web browser address box, type https://<vdiManagerIPaddress>. A security warning about the Web site's certificate may appear.

3. Accept the certificate as trusted and continue. The VDI-in-a-Box Log On page appears.

4. Create a launcher on the desktop to the VDI-in-a-Box logon page through the Web browser.

To configure Linux devices to access VDI-in-a-Box desktops with Citrix Receiver

You can use Citrix Receiver on Linux devices to connect to VDI-in-a-Box desktops. See the Receiver for Linux section of eDocs for details on setting a server URL option. Use the following URL: http://<vdiManagerIPaddress>/dt/PNAgent/config.xml. Use the user name you use for accessing desktops through the vdiManager console.
To configure Linux devices to access VDI-in-a-Box desktops with the VDI-in-a-Box Java Desktop Client

1. Ensure you have installed the JRE on the device.

2. Open a Terminal window on your Linux device.

3. At the Terminal prompt, type the address to the VDI-in-a-Box Java Desktop Client: `javaws http://<vdiManagerIPaddress>/dt/vdiclient.jnlp`. A security warning about the Web site's certificate may appear.

4. Accept the certificate as trusted and continue.

5. If additional security warnings appear, accept them and continue. The VDI-in-a-Box Client dialog box appears.

6. Create a desktop shortcut on the desktop to the VDI-in-a-Box Java Desktop Client.
   a. Open a Terminal window on the Linux device.
   b. At the Terminal prompt, type `javaws -viewer`. The Java Cache Viewer window appears.
   c. Right-click the JavaClient entry and select Install Shortcuts.
Configure iOS devices to access VDI-in-a-Box virtual desktops

Prerequisites

- Integrate the Citrix VDI-in-a-Box grid with Active Directory for user authentication.
- Assign at least one template to users accessing desktops from iOS devices (iPads and iPhones).

To configure an iOS device to access VDI-in-a-Box virtual desktops

For details related to Citrix Receiver for iOS, see the Receiver for iOS section of eDocs (Receiver for iOS).

1. Download and install Receiver for iOS from the iTunes App Store.

2. Open the New Account screen to configure accounts manually for Citrix Receiver for mobile devices) and in Address, type the address to the VDI-in-a-Box Manager (vdiManager) in the following format:

   https://<vdiManagerIPAddress>/dt/PNAgent/config.xml.

3. Tap Next. The Verified screen appears.

4. Complete the Verified screen and tap Save. A list of the desktops available to the configured user appears.

To access VDI-in-a-Box virtual desktops with an iOS device

1. On the Accounts screen, tap the VDI-in-a-Box account you want to open.

2. On the Enter Credentials screen, type your user credentials and tap OK.

   Note: Depending on the account settings, the user password may be saved, in which case this step is skipped.

   A list of the available desktops for the account appears.

3. Tap the desired desktop. You are connected to the virtual desktop.
Configure Android devices to access VDI-in-a-Box virtual desktops

Prerequisites

- Enable HDX on the Citrix VDI-in-a-Box grid.
- Enable and license the VDI-in-a-Box HDX Gateway.
- Integrate the Citrix VDI-in-a-Box grid with Active Directory for user authentication.
- Assign at least one template to users accessing desktops from Android devices.

To configure an Android device to access VDI-in-a-Box virtual desktops

For details related to Citrix Receiver for Android, see the Receiver for Android section of eDocs.

1. Download and install Receiver for Android from the Android Market.

2. Open the Add Account screen and in Address, type the address of the VDI-in-a-Box Manager (vdiManager) in the following format: https://<vdiManagerIPAddress>/dt/PNAgent/config.xml. A security warning about the Web site’s certificate may appear.

3. If the security warning message appears, tap Accept. An error message appears.


5. On the Add Account page, type the Username and Domain, and tap Add.

**Caution:** If desired, the user’s password can also be typed here. This saves the password and allows the user to connect to the VDI-in-a-Box desktop with no identity verification.

The new account is added to the Accounts list.
To access VDI-in-a-Box virtual desktops with an Android device

1. On the Citrix Receiver Accounts list, tap the VDI-in-a-Box account you want to open.

2. Type your password.

   **Note:** If the user password was saved during the configuration process, this step is skipped.

3. Type your user credentials and tap **Log On**. You are connected to the virtual desktop.