Citrix XenClient Express

Proof of Concept Implementation Guide
Contents

Introduction .................................................................................................................. 3

Hardware and Software Requirements ................................................................. 3

Installation and Configuration .................................................................................. 4

Section 1: Citrix Receiver for XenClient ............................................................... 4

  XenClient Initial System Configuration ............................................................... 5
  XenClient Installation ............................................................................................. 5
  XenClient Configuration ......................................................................................... 8
  Virtual Machine Creation and Configuration ....................................................... 11

Section 2: Synchronizer for XenClient ............................................................... 15

  Synchronizer Installation ....................................................................................... 16
  Synchronizer Configuration .................................................................................... 18
  Synchronizer Administration ................................................................................ 27
  User Administration ............................................................................................... 27
  Repository Administration ...................................................................................... 29
  Device Activation ID ............................................................................................... 29
  Register and Publish XenClient Virtual Machines with Synchronizer ................. 30
  Virtual Machine Authoring ................................................................................... 39

Section 3: Secure Application Sharing ............................................................... 41

Conclusion ............................................................................................................... 50

Appendix A – Shortcuts ........................................................................................... 51

Appendix B – Generate Status Report .................................................................... 51
Introduction

Desktop virtualization is gaining rapid momentum in the IT industry, but the needs of the mobile laptop user community can be difficult to address with the current desktop virtualization offerings. This mobile laptop user community is cumbersome to manage, support and secure making traditional methods of desktop delivery difficult. Within a mobile laptop there is a constant risk that corporate data security is heavily dependent on individual user behavior and IT has less control over mobile devices since not all laptops are always part of the corporate network. Citrix XenClient, a local desktop virtualization platform that provides new levels of security, performance, and user flexibility presents a new desktop delivery approach. Citrix XenClient enables IT administrators to deliver each employee’s corporate desktop into a secure virtual machine (VM) that runs directly on that user’s computer and also allows users to run their personal desktop VM on the same computer in complete isolation.

With the release of Citrix XenClient Express (a trial and evaluation package), customers and partners can take a firsthand look at this new trial technology. A simple evaluation of XenClient can be performed with just a single laptop by installing the XenClient software on the device. Virtual machines can be created and configured using Windows media. To experience the central configuration and deployment capabilities the Synchronizer for XenClient can be added. This Implementation Guide provides step-by-step instructions for implementing a successful XenClient Express Proof of Concept (PoC) environment based on XenClient, Receiver for XenClient, and Synchronizer downloads available on Citrix.com.

Hardware and Software Requirements

Citrix XenClient was designed and developed based on a strong partnership with Intel and the Intel vPro™ technology for notebook and desktop PCs. Therefore, Intel vPro with VT-x and VT-d are required for the installation of XenClient on a laptop or desktop PC. For a complete list of compatible laptops and laptop-model specific setup instructions, please refer to the Supported Laptop Model section of the XenClient User Guide available on the Citrix Knowledge Center.

In preparation for executing all the steps outlined in this PoC Implementation Guide, the following components will be required in advance of executing the steps in this guide:

- **Laptop or Desktop PC for XenClient**: A list of XenClient ready devices can be found at [http://www.citrix.com/ready/list/products](http://www.citrix.com/ready/list/products)

- **XenServer for the Synchronizer**: A XenServer machine is required to import the Synchronizer VM. Information on XenServer can be found at [http://deliver.citrix.com/go/citrix/freeXenServer](http://deliver.citrix.com/go/citrix/freeXenServer). XenCenter will be used to manage the XenServer and access the Synchronizer VM console.

- **XenClient Installation Media**: The XenClient Installation Media will need to be downloaded from [Citrix.com](http://www.citrix.com) and burnt to a CD for the bare-metal hypervisor installation.
- **Windows 7, Vista or XP Installation Media**: Windows Installation Media will be required to build the virtual machines hosted on XenClient.

## Installation and Configuration

The purpose of this document is to provide step-by-step instructions for the implementation of each component within the Proof of Concept environment. Based on the dependencies of each component, the document is divided into the following sections for each step of the installation process:

- **Section 1: Citrix XenClient and Receiver for XenClient** – This section demonstrates how to install and configure the stand-alone XenClient software, create virtual machines capable of running on XenClient and manage the virtual machines with Citrix Receiver for XenClient.

- **Section 2: Synchronizer for XenClient** – XenClient can run independent of Synchronizer, but this section displays how to install and configure the Synchronizer to centrally manage the virtual machines available within the XenClient environment as well as provide instruction on how to register and assign XenClient virtual machines with the Synchronizer.

- **Section 3: Secure Application Sharing** – This section showcases application sharing between XenClient virtual machines. It should be noted that this functionality is still considered to be experimental for the XenClient Express (XenClient 1.0 RC) version documented in this paper.

### Section 1: Citrix XenClient and Receiver for XenClient

At the heart of Citrix XenClient is a high-performance, bare-metal Xen hypervisor that runs directly on the device hardware and uses Intel hardware-assisted virtualization, as shown in the following diagram:

![Citrix XenClient Architecture](image)

**Figure 1: Citrix XenClient Architecture**
The XenClient software requires a Control Domain and Service VM running on the Xen hypervisor to manage all the end-user virtual machines.

- **Control Domain VM:** The Control Domain VM is a specially privileged virtual machine running on top of the hypervisor and controls all interaction between the virtual machines and the physical hardware. The end user is unable to access the Control Domain VM.
- **Service VM:** The Service VM is an end-user VM that boots on system start up and provides a user interface that communicates directly with the Control Domain over a secure channel. The Citrix Receiver for XenClient implements the Service VM architecture.

The steps required to install XenClient with the Control Domain and Citrix Receiver for XenClient are all encapsulated in this section:

**XenClient Initial System Configuration**

The first step in installing XenClient is to ensure that your computer has the correct settings. Please ensure the following BIOS settings are enabled:

- SATA is setup to use AHCI mode
- Intel ® Virtualization Technology is enabled
- The Intel ® VT-d and VT-x features are enabled
- TXT (Trusted Execution Technology) and TPM (Trusted Platform Module) are disabled

After making the changes in the BIOS, ensure that the system has been completely rebooted before moving forward with the XenClient installation.

**XenClient Installation**

There are several ways to install XenClient, but for the purposes of this Proof of Concept environment, XenClient will be installed from a CD using the Quick Install instructions documented in the User Guide on the Citrix Knowledge Center. XenClient is a bare-metal installation, so all existing data on the hardware will be deleted during this installation.

<table>
<thead>
<tr>
<th>XenClient Installation</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1                      | ![Screenshot](image.png) | - Insert the CD created from the media download on Citrix.com  
- Select the Quick Install option |
<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Select OK</td>
</tr>
<tr>
<td>3</td>
<td>Select OK after reviewing the License Agreement</td>
</tr>
<tr>
<td>4</td>
<td>Select YES if you agree with the Licensing terms</td>
</tr>
<tr>
<td>5</td>
<td>Select the Keyboard Layout and choose Select</td>
</tr>
<tr>
<td></td>
<td>Select Verify to validate the installation CD</td>
</tr>
</tbody>
</table>
6  
- Enter a password for the system
- Select OK

7  
- Select Continue to begin the installation
- XenClient and the Citrix Receiver for XenClient will install during this process

8  
- Select Continue after the installation completes successfully

9  
- Select Reboot to complete the installation
XenClient Configuration

Once XenClient is successfully installed and the system has been rebooted, the Citrix Receiver for XenClient user interface is presented. All XenClient system wide operations are performed from this interface using the following instructions:

<table>
<thead>
<tr>
<th>Initial XenClient Configuration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Screenshot 1" /></td>
<td>• Within the XenClient console, select <strong>System</strong> on top right corner to configure the XenClient system properties</td>
</tr>
</tbody>
</table>
| ![Screenshot 2](image2.png) | • Select the desired **Wallpaper** image  
• Select **Save** to see the new wallpaper |
| ![Screenshot 3](image3.png) | • Select the Power option to configure desired **Lid Close Action** for the XenClient device  
• Select **Save** to activate the changes |
Select the **Input** option to configure **Touchpad Options** and **Touchpad Speed**

Select **Save** to activate the changes

By default, there is no password required during XenClient startup

Select the **Login** option to configure **XenClient startup password** feature

Also specify **Screen lock timeout** value

Select **Save** to activate the changes

*Note: Software, Hardware, Networking and Diagnostics are information only screens.*

Within the XenCenter console select **Network** on top right to configure both Wired and Wireless networks for the XenClient device

Available wireless networks are displayed and new wireless networks can be created by clicking on by **Create New Wireless Network**
To view Active Network Connection Information, Right Click on Network and select Connection Information.

Information about the Active Network Connections is displayed as shown.

To edit existing connections, Right Click on Network and click Edit Connections.

Wired and Wireless connections can be added, edited or removed from this menu.

*Note: Mobile Broadband and DSL network are not currently supported with the XenClient 1.0 RC version.
Virtual Machine Creation and Configuration

There are two types of virtual machines defined on XenClient – Unmanaged and Managed virtual machines.

- **Unmanaged**: VMs that are not registered with the Synchronizer and managed independently by end users are defined as Unmanaged VMs.

- **Managed**: VMs that are centrally configured, registered with the Synchronizer and managed by an administrator are defined as Managed VMs.

There are two ways to add VMs on XenClient. The first method is to run the installation from the operating system installation disc directly on the XenClient device. The second method is to download a preconfigured VM from the Synchronizer to the XenClient device.

End users can download their assigned (Managed) VMs from the Synchronizer to their local XenClient, but then also use installation media, like the Windows 7 install media, to create a local Unmanaged VM running on the same XenClient device as the Managed VM. This allows each VM to run completely isolated from the other VMs; therefore, allowing a corporate mandated VM on the same machine as a personal VM.

To create a Managed VM for multiple users, the IT administrator can perform an initial one time VM installation from disc and register it with the Synchronizer to centrally assign VMs to multiple users. Follow the instructions shown below to install a virtual machine from disk and perform the initial configuration tasks:

<table>
<thead>
<tr>
<th>Virtual Machine Creation and Configuration</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Citrix Receiver for XenClient](image) | - Click on **Add VM** on top left  
- Select **Create from Install Disc** option |
Select the Type of VM that matches the Install Disc from the drop down
- Enter a VM Name for the machine
- Enter a Description for the machine
- Select the Icon that will appear in the Citrix Receiver for XenClient display for this machine
- Select Next

Enter the Memory settings (Default recommendations will be displayed)
- Enter the number of virtual CPUs
- Select Next

Enter the Virtual Disk Size
- Select the Wired Network connection
  - Bridged: VM has full access to the same networks as host
  - Shared: Creates a private network for VM and only allows outbound connections using NAT
  - Internal: Only allows network communication between VMs
- Select Next
5. Select **Start VM & Install OS** to begin the installation
   - Select **Finish**

6. VM installation will begin from install disc
   - Complete installation per Operating System instructions

   *Note: Refer to Appendix A for all shortcuts to toggle between VMs and XenClient interface.*

7. After the installation is complete and the VM reboots, XenClient Tools need to be installed on the VM
   - Select the **Detailed View** button from the XenClient menu to view the details about the newly created VM

8. Under the **General Tab**, click the **Edit** button
   - Change the **Tools CD** dropdown to show **Attached** (This will allow the VM to recognize physical CD drive)
   - Select **Save**
Within the VM, browse to the Virtual Tools CD drive (E drive in this example)
- Run the Setup.exe to install XenTools
- Reboot, if prompted

- Select the checkbox to agree to the License Agreement
- Select Install to start the XenTools installation process

- Select the checkbox next to “Always trust software from Citrix Systems, Inc.”
- Select Install

At this point, Citrix XenClient, Citrix Receiver for XenClient and an Unmanaged VM have all been successfully deployed. The next step in the Proof of Concept is to import the Synchronizer onto a XenServer and upload the newly created VM to the Synchronizer for distribution.
Section 2: Synchronizer for XenClient

Synchronizer for XenClient allows centralized management and distribution of VMs to XenClient devices. With the Synchronizer, IT administrators can centrally backup user data through a secure connection over the internet, define security policies for VMs, disable Managed VMs on lost or stolen XenClient laptops and restore a user’s virtual desktop on any XenClient based laptop.

Figure 2 displays the architecture and communication between Citrix XenClient and Synchronizer. For the PoC environment, Synchronizer for XenClient is a virtual machine running on Citrix XenServer. As shown in Figure 2, the XenClient device is registered with Synchronizer over http(s). In an Active Directory environment, Synchronizer can be joined to the domain. Once Synchronizer is part of the domain, domain users can be linked to from the Synchronizer UI. This allows Synchronizer to assign specific XenClient VMs to a particular AD user or user group allowing IT administrators to leverage Synchronizer to centrally provision VMs.

![Citrix XenClient and Synchronizer Architecture](image)

Figure 2: Citrix XenClient and Synchronizer Architecture
Synchronizer Installation

Synchronizer for XenClient VM must first be downloaded from Citrix.com and imported into an existing XenServer that can communicate with the XenClient device from Section 1. This Implementation Guide does not provide instructions for installing and configuring XenServer, but they can be found in the XenServer Installation Guide. Once a XenServer is available and accessible via XenCenter, follow the steps outlined below to import the Synchronizer VM:

<table>
<thead>
<tr>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Screenshot" /></td>
<td>- Right click on the XenServer host and select <strong>Import VM</strong></td>
</tr>
</tbody>
</table>
| ![Screenshot](image2) | - **Browse** to the location of the Synchronizer_v1_0_RC.xva VM that was downloaded from Citrix.com  
  - Leave the **Import type** as **Exported VM**  
  - Select **Next** |
• Select the XenServer host as the **Home Server**
• Select **Next**

• Determine the appropriate Storage location for the VM based on the XenServer configurations (20GB is the default size of the VM)
• Select **Import**

• Leave the defaults and select **Next**
Synchronizer Configuration

A complete Administrator’s Guide for Synchronizer is available on the Citrix Knowledge Center. After Synchronizer has been imported to XenServer, use the Console tab on XenCenter to access the Synchronizer CLI to configure Synchronizer for the Proof of Concept environment as shown in the following steps:

<table>
<thead>
<tr>
<th>Synchronizer Configuration</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Screenshot](image.png) | • When Synchronizer is first powered on, the following prompts will appear  
• Specify Synchronizer system password |

*Note: The import process will take a few minutes and can be tracked within the XenServer Logs tab.*
Specify Synchronizer system hostname

The Synchronizer Installation script launches, but needs to be cancelled to configure the static IP and DNS entries

Press C to Cancel

Select Enter to abort the installation
After the installation aborts, login with the username **root** and password created in step 1.

At the Synchronizer VM CLI, open the file `/etc/network/interfaces` in your preferred editor, for example:

```
vi /etc/network/interfaces
```

Find the Network Interface line that reads:

```
iface eth0 inet dhcp
```

Edit this line to read:

```
iface eth0 inet static
```

Add the following lines as appropriate for your environment:

```
address <IP address>
netmask <netmask>
gateway <gateway IP address>
```

Save and close the file (vi commands are <ESC> :w <Enter>)

Next configure the DNS server.

At the Synchronizer VM CLI, open the file `/etc/resolv.conf` in your preferred editor, for example:

```
vi /etc/resolv.conf
```

Enter the DNS nameserver.

Save and close the file (vi commands are <ESC> :w <Enter>)
- Configure Host (A) records for Synchronizer on DNS

1. **Example Host Record Entry**

   New Host

   Name (uses parent domain name if blank):
   
   `syncvm`

   Fully qualified domain name (FQDN):
   
   `syncvm.xcdemo.lab`

   IP address:
   
   `192.168.1.5`

   - Create associated pointer (PTR) record

   Add Host  Cancel

2. **Restart the Networking Service** by typing:

   `/etc/init.d/networking restart`

3. **Restart the installation script** by executing the following command:

   `./installer.sh`
*Note: Installer has returned to Step 3.

- Select I if you agree to the License Agreement

- Select OK to change the virtual hostname

- Enter hostname.domain as the virtual hostname (The virtual hostname is the FQDN from Step 10)
  - Select OK
If HTTPS is required, highlight HTTPS Support and select OK.

If configuring HTTPS, select OK.

If configuring HTTPS, select YES to generate the SSL certificate.
19

If HTTPS certificate customization is required, select YES
If not, select NO

*Note: Third Party certificate installation is not currently supported with the XenClient 1.0 RC version.

20

To join a domain, highlight Join Windows Domain and select OK

21

Select Yes
• DNS needs to be configured for domain name lookup
• Enter the Domain name, Username and Password to join to the domain
• Select OK

*Note: Arrow keys need to be used to move between input fields.

• Change Synchronizer local admin password for enhanced security by selecting YES

• Enter new password
• Select OK

*Note: Arrow keys need to be used to move between input fields
To complete the install, highlight **Perform Install** and select **OK**

Select **Yes**

After the script completes, the CLI prompt will return

At this point the Synchronizer WebUI is accessible over http(s)
Synchronizer Administration

After Synchronizer installation and configuration is complete. Synchronizer can be utilized to manage the following components of this XenClient environment:

- **Users**: A Synchronizer user can be either a Microsoft Active Directory (AD) user or a local user created in Synchronizer. Synchronizer keeps track of the relationship between users, their registered devices, and the desktops (VM images) assigned to them.

- **Devices**: A device is a computer that has XenClient installed on it. Secure communication between devices and Synchronizer is enabled when the device is registered with Synchronizer.

- **Desktops**: A desktop is a VM image that can be made available to users. Desktops consist of image files stored in the Microsoft Virtual Hard Disk (VHD) format with policy and configuration information describing how the VM should act when deployed on the client device.

- **Assignments**: An assignment allows a user to instantiate a specific desktop version on their device as a VM by downloading it on their registered XenClient device.

Administering Synchronizer consists of managing desktops, devices, users and groups. The following sections will outline some of the select features associated with Synchronizer management:

**User Administration**

When the Synchronizer is first installed, only the local administrator account has access to the Synchronizer Web UI. The following section outlines how to add users to Synchronizer as both users and administrators:

**Synchronizer User Administration**

<table>
<thead>
<tr>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Screenshot](image.jpg) | - Access Synchronizer Web UI over http(s) using one of the following URLs:  
  http(s): //<Synchronizer FQDN>   
or   
  http(s): //<Synchronizer IP> |
2. Login using local synchronizer credentials
   **User Name:** <Synchronizer Machine Name>\admin
   **Password:** (From Synchronizer Configuration, Step 24)
   - Select OK

3. The **Desktops** screen is displayed first
   *Note: When the Synchronizer interface is first loaded, only the administrator user is listed, and there are no desktops or devices registered. To navigate through the Synchronizer interface, click on the buttons along the top.*

4. Click on **Users** to add new local users and link existing Active Directory users

5. Click on **Link AD User** to add users from the domain
   - Enter username and domain of the desired user account
   - Select the Administrator checkbox if the user is to administer XenClient
Repository Administration

The next important step before registering virtual machines with Synchronizer is to determine the location or repository that will be used to store the virtual machine images for XenClient device distribution. The Synchronizer VM is 20GB in size with a virtual disk partition of 18GB for a local image repository; therefore, the following steps outline how to add additional repositories:

<table>
<thead>
<tr>
<th>Synchronizer Repository Administration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Click on the Settings button on top right to add or edit a Repository</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Select Add Repository to identify an NFS file share to store images</td>
</tr>
<tr>
<td></td>
<td>Enter the name of the repository, the IP address of the NFS Server, the path to the share, and ignore the Mount options</td>
</tr>
<tr>
<td></td>
<td>Select OK</td>
</tr>
</tbody>
</table>

Device Activation ID

Synchronizer offers the ability to group devices into batches based on an Activation ID. The creation of an Activation ID is not required, but does provide an organizational structure for device management. The following steps outline how to create an Activation ID:
Register and Publish XenClient Virtual Machines with Synchronizer

At this point, the Synchronizer is ready to register XenClient devices and store centralized virtual machines for distribution. Currently, there are no virtual machines stored in the Synchronizer. To upload and register the Unmanaged virtual machine created in Section 1: Virtual Machine Creation and Configuration follow the steps mentioned below register the XenClient device with Synchronizer, upload the previously created XenClient VM to Synchronizer and assign the newly Managed virtual machine to users with the appropriate policies configured.
<table>
<thead>
<tr>
<th>Screenshot</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Screenshot" /></td>
</tr>
</tbody>
</table>

### Description

1. On the XenClient device, click on the **System** icon.

2. Select **Connect with Synchronizer**.

3. Enter **Synchronizer Address** (ex: `http://synchronizervm.xc demo.lab`).

4. Enter the **Activation ID** previously created.

5. Select **Register**.

*Note: Make sure the Synchronizer IP is correctly resolved from the XenClient device.*
4. Enter the Synchronizer administrator credentials (<machine name>\admin)

5. Press <Control>+<Alt>+<Backspace> to start the connection

6. Enter the admin password (From Synchronizer Configuration, Step 24)
- Confirm registration completed
- Select Close

- Switch over to the Synchronizer UI
- The device is now displayed under Synchronizer Devices

- Switch over to XenClient device
- From the XenClient console, select the Detailed View icon
- Expand the View Details section for the previously created VM

*Note: Once the XenClient device is registered with the Synchronizer, VMs from the machine can be uploaded.*
10. Select the **Synchronization** tab and click **Upload**

*Note: The **Upload** button will only appear if the user is an Administrator.*

11. Enter the **VM Name** and **Description**

   - Select **Next**

12. Enter a **VM Name** for the local VM that will be created from the Published Desktop

   - Select **Finish**
13. The VM transfer progress is tracked in the top right corner.

14. Once the transfer process completes, switch over to Synchronizer.
   - Select the **Desktops** button and notice that the new VM appears.

15. The next step is to assign the appropriate users to the desktop.
   - Click on **Desktops** and select the device you want to assign.
   - Click **Assign** and the **Assign Desktop** screen will appear as shown.
   - Select dropdown to **Assign to a User** or **Group**.
   - Populate the **User** dropdown with either the user name or group name.
   - Select **Continue**.
Select **Settings**
- Select **Allow Authorship** if the assigned user should be able to create and upload new versions of the VM

Select **System resources**
- If necessary, make changes to the **Memory** or **Virtual CPUs**

Select **USB permissions**
- Enable or disable USB permissions based on security requirements
19. Select **Network permissions**
   - Configure access to Wired and Wireless networks

20. Select **Other hardware permissions**
   - Configure appropriate hardware permissions
   - Select **Assign**

21. Switch over to the XenClient device
   - Once the user is assigned to a desktop VM, the user can download the VM from Synchronizer to the XenClient
   - To download, click on **Add VM** on top left of the XenClient interface
   - Click **Download from Synchronizer**
22. From the display, select the VM to download
   - Select Next

23. Enter the VM Name for the downloaded VM
   - Select Finish

24. Downloaded VM displays in XenClient console
Virtual Machine Authoring

An administrator often needs to update an existing VM by changing configurations, installing new applications or removing old applications. The VM authoring feature allows an administrator to update VMs with changes and create new versions. All versions of the VMs are maintained by Synchronizer by uploading the delta between the different versions. This process streamlines the transfer time and supports efficient use of storage for multiple versions of VMs. In addition, it allows an administrator to assign different versions to multiple users as appropriate.

The administrator can also assign certain users with VM authoring rights when assigning the desktop as seen in the Register and Publish XenClient Virtual Machines with Synchronizer section above. Once the VM is updated with the required changes, the following instructions need to be followed to create a new version:

<table>
<thead>
<tr>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1 | - On the XenClient device, expand the VM details
  - Click on the Synchronization tab to view the VM Authoring section

*Note: VM Authoring is only displayed for VMs and users that have Allow Authorship enabled during desktop assignment. This setting can be enabled by editing the Assigned Desktop properties from the Synchronizer.

| 2 | - Select Next

*Note: This guide leaves the name unchanged to create a new version of this desktop. To create a first version of a brand new desktop, simply specify a new name.
3. Provide a name for the local VM
   - Select Finish

4. Switch over to the Synchronizer
   - Select the Activity button on the Synchronizer interface
   - The Active Transfers tab displays the Progress bar while the VM upload is taking place

5. Once the new version has been uploaded, select the Desktops button
   - Under Desktops, the Windows 7 VM now has two versions
At this point, the XenClient device and Synchronizer are successfully communicating with each other and virtual machines can be transferred from the XenClient device to Synchronizer and the reverse. The next section will outline the process of sharing applications between virtual machines running on a single XenClient device.

Section 3: Secure Application Sharing

Security is a key business driver for assessing any XenDesktop solution, especially one that integrates XenClient. Application Sharing is a key component to ensuring data security. If an end user has a corporate and personal VM running on their XenClient device, the user may want to work within the personal VM, but access business applications that are restricted to the corporate VM. Application Sharing provides the end user with the luxury of working within their personal VM while accessing a business application on the corporate VM that has been secured by the corporate IT administration security team.

Application Sharing is a strategic feature of the overall XenClient solution, but this feature is still considered experimental with the XenClient Express (XenClient 1.0 RC) version documented in this paper. For questions or issues with this or any XenClient feature, the XenClient Support Forums are actively monitored to assist with Proof of Concept environment configurations.

This section will focus on configuring secure application sharing tools and demonstrate a secure application sharing scenario:
Configure Secure Application Sharing Tools

<table>
<thead>
<tr>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Screenshot 1](image1.png) | • Within a VM, browse to the Virtual Tools drive (For example, e:\SecureApplicationSharing)  
*Note: This VM will be referred to as the Personal VM throughout this section. The Personal VM is running Windows XP in this example. |
| ![Screenshot 2](image2.png) | • Click on Setup to begin installation |
| ![Screenshot 3](image3.png) | • Select the checkbox to agree to the licensing terms  
• Select Next |
On the Choose Citrix software screen, select only Subscribe to Applications. Select Next.

*Note, Subscribe to applications include the following components:
- Secure Application Subscription Agent
- Receiver
- Online plug-in
- Dazzle

Select Next.
• Select Finish
• Click Yes to Reboot

7

• Expand the Personal VM details on XenClient (This is the VM where the tools were just installed)
• Select the Experimental tab
• Select Edit
• In Subscribe to Applications, change the dropdown to Enabled

8

• In the Corporate VM, browse to the Virtual Tools drive and the folder SecureApplicationSharing
• Click on Setup to begin installation
• Select the checkbox to agree to the licensing terms
• Select Next
• On the Choose Citrix software screen, select only Publish Applications
• Select Next
*Note: The Corporate VM will publish the applications to the Personal VM.
• Select **Install**

*Note: The Corporate VM is running Windows 7 in this example.*
**Demonstrate a Secure Application Sharing**

Secure Application Sharing allows end users to work in their Personal VM, where they have the freedom to install any application or tool that they prefer, and access a business application running on the Corporate VM from within that Personal VM. The published business application is running on the Corporate VM and securely displayed within the Personal VM over ICA; therefore, protecting the business application from any malicious attacks from unauthorized applications running within the Personal VM. The following demonstration outlines how to share applications between VMs:

*Note: Once the publishing tools are installed, the Publish Applications feature shows as Enabled on the Corporate VM.*
## Demonstration of Secure Application Sharing

<table>
<thead>
<tr>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Screenshot](image1.png) | • On the Personal VM (Experimental Tab > Subscribe to Applications is Enabled)  
• Open Citrix Dazzle  
• Select Get Started  
*Note, prior to the next step ensure that the Personal VM and Corporate VM are accessible to each other.* |
| ![Screenshot](image2.png) | • Click on Application Store>Manage Stores to view all available Stores, the Corporate VM applications will appear  
*Note, if the Corporate VM does not automatically appear as an Application Store, reboot the Personal VM. After it has completely rebooted, then reboot the Corporate VM and Dazzle will automatically update.* |
Now all the applications published from the Corporate VM are enumerated within Dazzle on the Personal VM.

To add a Corporate application to the Personal VM, select the Add button.

*Note, for the remaining screenshots WordPad was added to the Personal VM.

To launch the published application from the Personal VM, open the Start Menu > All Programs > Dazzle.

WordPad shows as the available published application.

Select the published application.

A secure connection to the Corporate VM is created.
8

- The user will be prompted with a login from the Corporate VM

*Note: If the VM publishing applications has a policy to enforce Secure Login (CTRL+ALT+DELETE prompt), the user maybe prompted with a login screen. CTRL+ALT+DELETE will not work. Toggle between the Personal VM and the Corporate VM display and then credentials can be entered.

9

- Enter the Corporate VM user credentials

10

- WordPad launches on the Personal VM with a green border indicating that it is a published application from the Corporate VM

*Note: Any operations performed in this application are synchronized with the original instance running on the publishing VM (i.e. Corporate VM)
Conclusion

The purpose of this document was to provide IT administrators with a step-by-step guide to assist in developing a detailed understanding of the potential of a XenClient local VM desktop solution. To develop a broader understanding of all things XenClient related, please visit the XenClient Product Page, XenClient Support Forum and XenClient Central for technical videos on the creation of XenClient, blog posts from the Product Management team, and customer feedback on their experiences with XenClient.
Appendix A – Shortcuts

The following table lists the shortcut keys:

<table>
<thead>
<tr>
<th>Operation</th>
<th>Shortcut key</th>
</tr>
</thead>
<tbody>
<tr>
<td>To access Receiver for XenClient interface</td>
<td>CTRL+0</td>
</tr>
</tbody>
</table>
| To access VMs.                          | CTRL+ VM-Slot number
   For example, CTL+1 for VM in slot 1, i.e., for 1st installed VM. |
| To access XenClient command line         | CTRL+SHIFT+t                       |

Appendix B – Unregister with Synchronizer

A XenClient device can only be registered with a single Synchronizer. If the XenClient device is unregistered from Synchronizer, all the Managed VMs will be deleted from the XenClient device. The following script must be run from the CLI on the XenClient device to unregister:

```
/etc/bed-deregister
```

Appendix C – Generate Status Report

Status reports can be generated from both XenClient device and Synchronizer for troubleshooting purposes.

<table>
<thead>
<tr>
<th>Installation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screenshot</td>
<td></td>
</tr>
<tr>
<td>Terminal</td>
<td></td>
</tr>
<tr>
<td>root@xenclient:~$ status-report</td>
<td></td>
</tr>
<tr>
<td>Generate a XenClient Status Report.</td>
<td></td>
</tr>
<tr>
<td>This will collate diagnostic information from this system.</td>
<td></td>
</tr>
<tr>
<td>* This application will collate the Xen driver output, details of the hardware configuration of your machine, information about the build of Xen that you are using, plus various logs.</td>
<td></td>
</tr>
<tr>
<td>* The collated information will be saved as a tar.gz for archiving or sending to a Technical Support Representative.</td>
<td></td>
</tr>
<tr>
<td>The logs may contain private information, and if you are at all worried about that, you should exit now, or you should explicitly exclude those logs from the archive.</td>
<td></td>
</tr>
<tr>
<td>This tool can optionally include screenshots of the currently running managed VMs. These can prove to be extremely helpful with diagnosis of some technical issues. You may, however, opt to exclude them.</td>
<td></td>
</tr>
<tr>
<td>Do you wish to include screenshots in this report? (yes/no) Choice: [ ]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• From the XenClient console (accessible via CTL+SHIFT+t), run the status-report command</td>
</tr>
<tr>
<td></td>
<td>• Enter Yes if screenshots should be included in the report</td>
</tr>
</tbody>
</table>
Enter a **Summary** and **Details** describing the status report

- Press **Enter** after each step and it will begin Generating Report

- Run the command `status-server` and download the newly generated status report from http://<XenClient device IP>
- Press **Enter** to stop the server at port 80

Status report can be generated on the Synchronizer by clicking **Generate Report** tab under the **Settings** button
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