Sun™ Virtual Desktop Connector 1.0 Installation and Administration Guide

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Preface

This volume provides instructions for installing, using, and administering the Sun™ Virtual Desktop Connector 1.0, a software product that connects virtualization platforms such as VMware Virtual Center 2.0x and VMware ESX 3.0x with user desktops, in the form of Sun Ray™ thin client desktop units (DTU), also known as virtual display clients, or Web browsers accessed through Sun Secure Global Desktop Software (SGD). Connecting virtualization platforms to user desktops enables users to work on virtual machines. The Virtual Desktop Connector's management and administrative functions handle the lifecycles of virtual machines and their assignment to users.

Audience

The intended audience consists largely of system and network administrators who are already familiar with Windows operating systems and the Sun Ray™ or SGD computing paradigm, and thus with some familiarity with UNIX® commands and procedures. In particular, this document provides, or direct administrators to, what they need to install, set up, and administer the Virtual Desktop Connector.

Scope

This manual is written from the point of view of the Sun Virtual Desktop Connector software. Although this product interacts with products belonging to other companies—notably VMware and Microsoft—this manual does not attempt to duplicate the documentation provided by those companies. Instead, references and, when possible, URLs, are provided to the appropriate documents on the VMware and Microsoft Web sites.

How This Document Is Organized

This manual is organized as follows:

- Chapter 1 gives a concise introduction, describing the Virtual Desktop Connector's capabilities and operation.
- Chapter 2 provides installation instructions for the Virtual Desktop Connector and links to installation instructions for the other components of the virtual desktop solution that it enables.
- Chapter 3 describes the administration of virtual desktops using the Virtual Desktop Connector's administrative interface (Admin GUI).
- Chapter 4 contains troubleshooting tips.

This manual also has a glossary and an index.

Using UNIX Commands

This document might not contain information about basic UNIX commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris™ Operating System documentation, which is published on:

  `http://docs.sun.com`

Shell Prompts

Shell	Prompt
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Typographic Conventions

Typeface*	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your .login file. Use ls -a to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% **su** Password:
AaBbCc123	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this. To delete a file, type rm *filename*.

* The settings on your browser might differ from these settings.

Related Documentation

The latest release notes for this product can be located at:

http://docs.sun.com/app/docs/doc/820-3022

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CHAPTER 1

Introduction

Sun Virtual Desktop Connector presents users with easy access to their virtual desktops, typically instances of Microsoft Windows, from a wide range of devices, such as Sun Ray DTUs (desktop units), PCs, or Web browsers. The effect is to enable access to the same desktop environment from anywhere.

The Virtual Desktop Connector consists primarily of:

- Agents installed on virtualization hosts to handle interactions with virtual machines (VMs). Today, the virtualization hosts can be VMware ESX or VirtualCenter servers.
- Services running on Sun Ray Server Software (SRSS) or Sun Secure Global Desktop Software (SGD) servers that handle the virtual desktops' access and lifecycles.
- A clean, intuitive user interface to connect the various elements and simplify the administration of virtual desktops. See "Using the Admin GUI" on page 25.

Description

The Sun Virtual Desktop Connector can control both access management and the whole lifecycle of a virtual desktop, creating new virtual desktop instances on demand, provisioning them to users on a temporary or permanent basis, and decommissioning outdated instances. Its functionality encompasses:

- Connecting users with their virtual desktops from Sun Ray virtual display clients
- Connecting users with their virtual desktops from PCs or Java-enabled browsers
- Managing hundreds of virtual desktops through a simple interface
- Permanently assigning users to virtual desktops
- Temporarily assigning virtual desktops to users out of pools of identical instances
- Offering policies to control the creation, lifetime, and end-of-life of a virtual desktop as part of a pool

- Support of VMware Virtual Center 2.0x as a virtualization platform, including all resource and high-availability features
- Support of VMware ESX 3.0.x as bare-metal platform for small and medium size deployments

By providing a virtual desktop with a choice of operating systems, access methods, and devices, the Virtual Desktop Connector satisfies user preferences while leveraging existing hardware investment in thin clients, PCs, engineering workstations, and network infrastructure.

By moving applications, operating systems, and computing from individual desktops to secure, centralized servers, the Virtual Desktop Connector reduces risks associated with virus attack, intrusion, and loss of data. It also helps to maximize utilization of computing resources such as virtualization servers and desktop devices, such as Sun Ray DTUs.

Finally, the Virtual Desktop Connector helps system and network administrators to manage large installations of virtual machines with well-designed tools for centralized administration, and largely removes the burden of maintaining individual physical desktops.

Architectural Overview

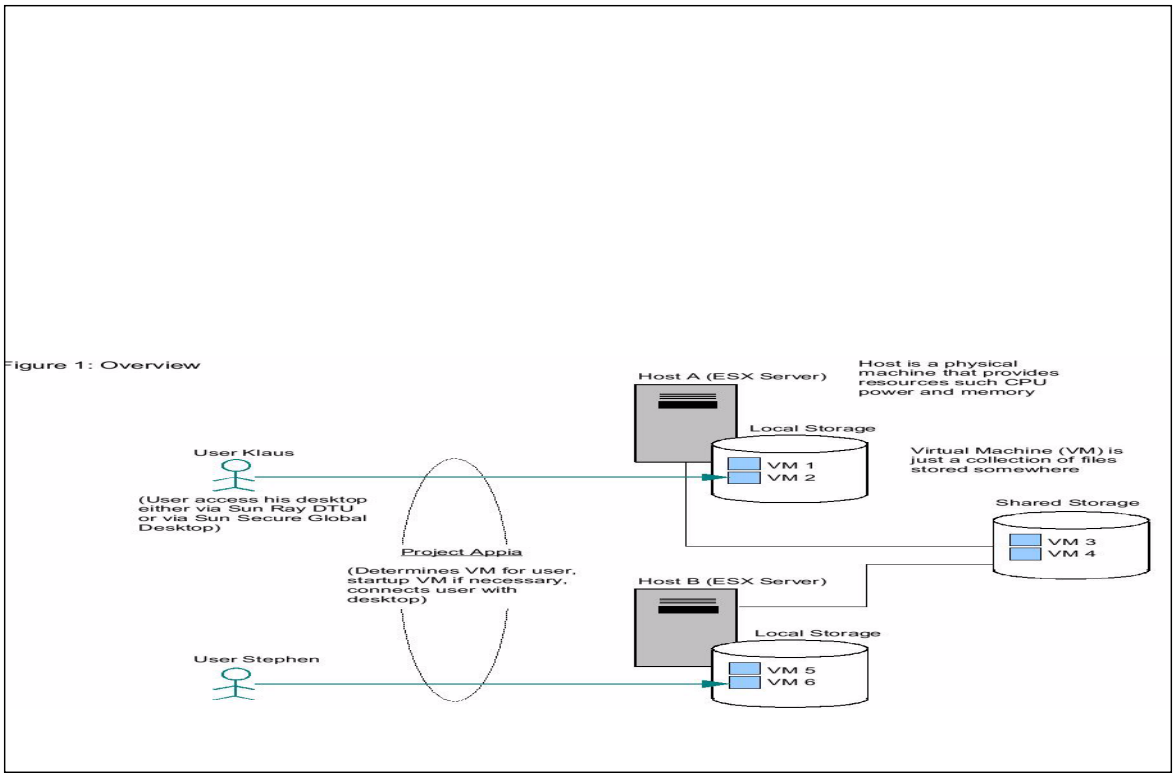
The Virtual Desktop Connector architecture has three main layers: the virtualization layer, the session management layer, and the desktop access layer.

The virtualization layer, where the virtual machines reside, abstracts interaction with the virtualization solution to allow multiple setups. The Virtual Desktop Connector allows either a collection of ESX servers or a single VirtualCenter server to be used as the virtualization layer. The Virtual Desktop Connector's interaction with these products is handled by a Desktop Connector agent installed on each server.

The session management layer is where the administrator manages operation of the Virtual Desktop Connector and the virtual desktop lifecycle. The session management layer is typically either a Sun Ray failover group or a Secure Global Desktop array. The administrator uses the Virtual Desktop Connector's Admin GUI to manage the product operation parameters and the Virtual Desktop Connector service to handle desktop lifecycles.

The desktop access layer is where the user gets access to the appropriate desktop, based on the Virtual Desktop Connector configuration and the user environment. The appropriate desktop can be a Sun Ray Kiosk session, a Secure Global Desktop application object accessed through a Web browser, or some other mechanism. The desktop access layer relies on the Virtual Desktop Connector client.

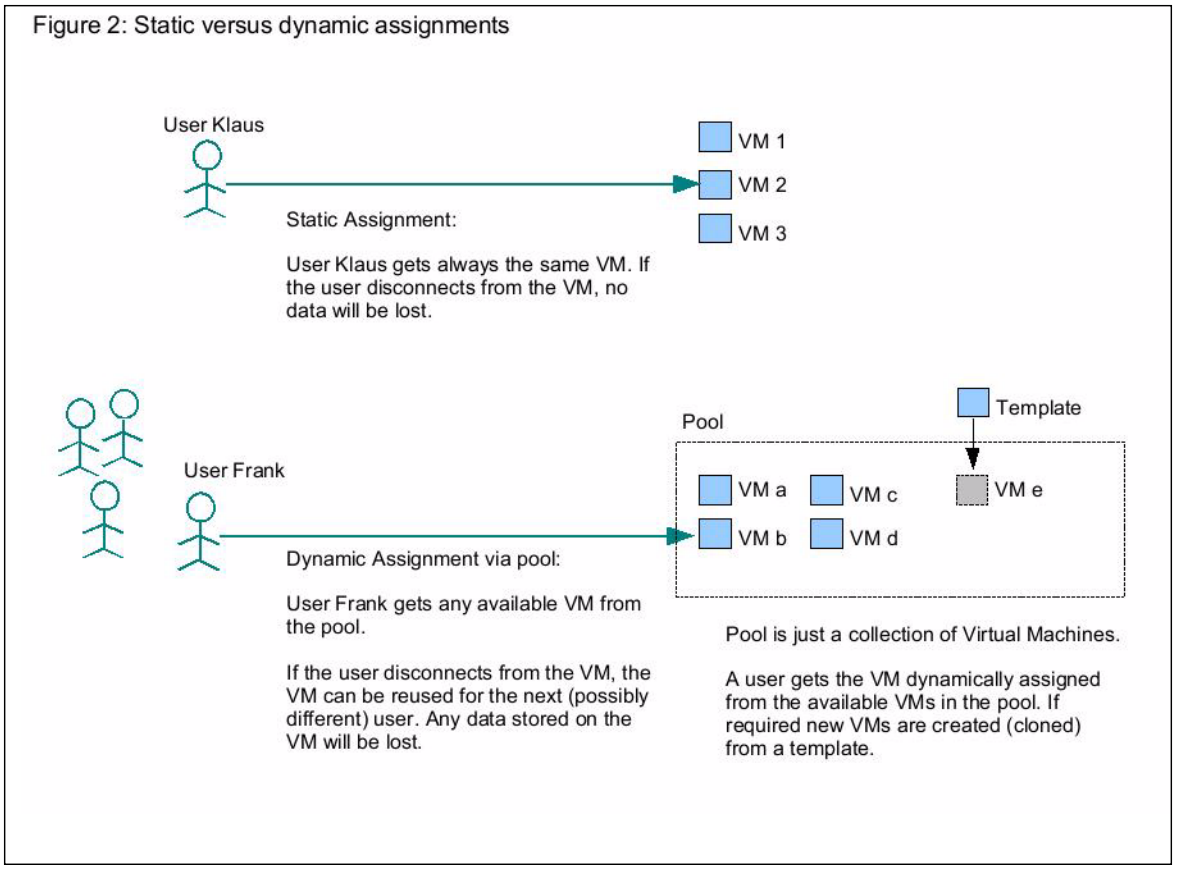
FIGURE 1-1 (New Figure Here) Three Layers of Virtualization



A Brief Theory of Operation

Virtual desktops can be provided to users either from statically assigned virtual machines or from pools of identical virtual machines that are dynamically assigned to sessions as needed. A given user session is associated with the virtual machine used as the desktop through a session identifier and, optionally, the name of a pool from which a dynamic machine is retrieved. Static assignments are useful for users who require a persistent, dedicated desktop session—the same virtual machine every time they log in. Static assignment enables such users always to be provided with the same virtual machine. Dynamic pools are useful for sharing resources when the desktop is standardized and does not need to retain its state between usages.

FIGURE 1-2 New Figure similar to Figure 2 below



Using the Admin GUI, you can define which virtualization hosts to use for virtual machine management. (This is typically a collection of ESX servers or a single VirtualCenter server.) You then assign session identifiers to specific virtual machines and create pools of dynamic virtual machines. The pools can be populated either manually, in which case you must assign existing virtual machines to their respective pools, or automatically, from a virtual machine template.

A user session that requires a virtual desktop can be started from a Sun Ray Kiosk session or from a Secure Global Desktop application object. It invokes the Virtual Desktop Connector client, and the proper session identifier and pool name are computed based on the user session environment. The client then contacts the Virtual Desktop Connector service, which in turn contacts the defined Desktop Connector agents to locate a suitable machine for that identifier and pool.

- If a virtual machine has already been statically assigned to the identifier, that virtual machine is used.

- If there is no static assignment for the identifier, the contents of the specified pool are used.
  - If that pool already contains a machine dynamically assigned to particular session identifier, that machine is used.
  - If not, an unused machine is assigned from the pool to the session identifier.

Once a suitable machine is selected, it is started, and connectivity over the Remote Desktop Protocol (RDP) port ensured. The virtual desktop's IP address is then returned to the client, and an RDP client (the Sun Ray Connector for Windows OS or the Sun Secure Global Desktop client) connects to it to provide the user's desktop session.

Periodically, the Virtual Desktop Connector service ensures that the pools are properly populated according to the parameters the administrator has defined, cloning new virtual machines from the specified template if the need arises. It also checks the state of the dynamically assigned machines in the various pools. Those virtual machines which have not been used for a given period of time are reclaimed and put back as available, thus removing their association with a session identifier.

User Experience Scenario

Once the Virtual Desktop Connector components have been installed and configured, the administrator can use the Admin GUI to set up session provisioning. The first step is to add virtualization hosts—either a VirtualCenter server or multiple ESX servers—to the system. The administrator can then browse the associated resources.

In a scenario with two groups of users—a group of salespeople using their desktops to access a variety of remote resources (with applications such a Web browser, an email client, and an internal database front-end application), and a group of developers who use their desktops for coding and testing of applications—the administrator could perform the following steps:

1. Assign an individual virtual machine to each developer.
2. Create a pool for salespeople, based on a template machine on which the appropriate applications have been installed.

In this scenario, the administrator has configured the virtual machines to go into *standby* mode and suspend themselves after 30 minutes of inactivity, while a pool machine remains assigned to an inactive session identifier for up to an hour.

The users access their desktops with Sun Ray thin clients and smart cards. The smart cards are registered in the Sun Ray Server Software data store and are thus assigned to their owners, and the Sun Ray Server Software is configured to provide Kiosk sessions for smart card users.

When a user inserts the smart card into the Sun Ray DTU, the Kiosk session asks for the virtual desktop associated with the user's smart card token, specifying the created pool name.

If the user is a developer, and has been assigned a specific virtual desktop, that machine is used. If the user is a salesperson, an available machine is picked from the pool.

When a developer disconnects from a session, the next connection attempt retrieves the same virtual machine, since it has been statically assigned. When a salesperson disconnects from a session, the machine reverts to the pool to be recycled after about an hour and a half. If the salesperson's next connection attempt occurs before that time is up, the same dynamically assigned machine is retrieved, otherwise, another virtual machine is dynamically assigned from the pool.

CHAPTER 2

Installation

Preliminary Considerations

Each of the Sun Virtual Desktop Connector's three layers has an associated installation task that you must perform:

1. Install and configure the virtualization platform, which today consists of VMware VirtualCenter or ESX servers and the associated Virtual Desktop Connector agents (see "Setting up the Virtualization Platform" on page 8).

   This manual provides references to the required documents but does not replicate the information they contain. To install and configure the virtualization platform follow the instructions provided by VMware on `http://www.vmware.com/support/pubs`.

2. Install and configure either Sun Ray Server Software (SRSS) or Sun Secure Global Desktop (SGD) to provide access to desktop sessions (see "2.3 Setting up Thin-Client Access" on page 17).

   Whether you choose to install SRSS, SGD, or both, you need to follow the instructions in the respective installation guides, which are published on `docs.sun.com`. As in the first case, this manual provides references to the required documents but does not replicate the information they contain.

3. Install and configure the Sun Virtual Desktop Connector software (see "Setting Up the Virtual Desktop Connector" on page 18).

Note – Configuration of the Virtual Desktop Connector's Admin GUI requires Apache Tomcat version 5.5 or higher.

Setting up the Virtualization Platform

Installing VMware ESX Server

To install the VMware ESX Server, follow the instructions on the VMware Website at `http://www.vmware.com/support/pubs/vi_pubs.html`. Use the navigation bar in the left pane to locate the documentation you need. In this case, locate the *Installation and Upgrade Guide*, and select "Installing VMware ESX Server Software".

If you plan to install VMware VirtualCenter in addition to an ESX Server, see "Installing VMware VirtualCenter" on page 9.

If you do *not* plan to install VMware VirtualCenter:

1. **Install the VMware Virtual Infrastructure Client on a Windows machine as described in the** *Installation and Upgrade Guide* **for a convenient interface to the ESX server and its operation.**

2. **Locate** *Basic System Administration* **in the navigation bar, and add a user to the ESX server, as described under "**Managing Users, Groups, Permissions, and Roles".

   After installation, the only user account on the ESX server console is root, which does not allow remote connection through SSH, although it does allow connection with the Virtual Infrastructure Client.

Note – It can be useful, especially when investigating potential problems, to connect to the ESX server console through SSH, for instance, to gain access to the files added and used by the Virtual Desktop Connector on the ESX server. With an extra user, you can SSH to the machine console and then issue the `su -` command to become root and perform lower level maintenance operations not available from the Virtual Infrastructure Console.

---

3. **Test the ESX server and Virtual Infrastructure Client by setting up new virtual machines usable as desktops, and power them on, following the instructions in "Creating Virtual Machines" and "Managing Virtual Machines" in** *Basic System Administration Guide***.**

   Once you have also installed either Sun Ray Server Software or Sun Secure Global Desktop (see "2.3 Setting up Thin-Client Access" on page 17), you can confirm that you can access these virtual machines with either the Sun Ray

Windows Connector or the SGD Webtop as you would any regular desktops. This is a convenient way to test the overall connectivity from one end of the architecture (the Sun Ray or SGD servers) to the other (the virtual desktop).

For instance, to confirm that the Sun Ray Connector for Windows OS is working, connect to an existing Windows machine:

```
# /opt/SUNWuttsc/bin/uttsc <name or IP-address of Windows machine>
```

Installing VMware VirtualCenter

To install VMware VirtualCenter, follow the instructions on the VMware Website, as above. Locate the *Installation and Upgrade Guide,* and select "Installing VMware VirtualCenter".

1. **Install the VMware Virtual Infrastructure Client as indicated for a convenient interface to the VirtualCenter and its operation.**

   You may also want to read the *Resource Management Guide*, specifically the chapter on "Understanding and Managing Resource Pools" and those related to VMware Clusters. Resource pools are the load balancing units that the Virtual Desktop Connector uses when powering on or cloning virtual machines. Grouping your ESX hosts into clusters can help to improve load balancing performance.

2. **To test the operation of your VirtualCenter, create virtual machines suitable to be used as desktops, and confirm their connectivity from a Sun Ray or SGD server.**

3. **As an added test, clone one of these virtual machines, using a customization specification in the process.**

   See "Using the Customization Specification Wizard" in the "Customizing Guest Operating Systems" chapter of *Basic System Administration*.

Note – If you plan to use dynamic virtual desktop association from pools, and want those desktops to be created from a template, it is important to understand both the cloning procedure and how to create a proper customization specification.

Installing VirtualCenter Agent

To install the VirtualCenter agent:

1. **Extract the VirtualCenter agent zip file on your VirtualCenter machine to any directory.**

2. **Execute the file named** `register-vda-agent.bat` **located in the extracted** `sun-vda` **folder by double clicking it.**

   Your Services list should now contain a new service named Sun Virtual Desktop Connector Agent for VirtualCenter, running and set to start automatically.

Uninstalling VirtualCenter Agent

To uninstall the VirtualCenter agent:

1. **Navigate to the directory on your VirtualCenter machine where you extracted the agent zip file to install it.**
2. **Execute the file named** `unregister-vda-agent.bat` **located in the extracted** `sun-vda` **folder by double clicking it.**
3. **Delete the extracted** `sun-vda` **folder and its contents.**

Defining Virtual Machines and Templates

Creating a Template Virtual Machine

To configure a virtual machine for use as a template, you must first create a Microsoft Windows XP virtual machine using the instructions in "Creating Virtual Machines" in *Basic System Administration* (`http://www.vmware.com/support/pubs/vi_pubs.html`).

Once you have created the template virtual machine, install Windows XP, following the instructions on the Microsoft Website (see `http://www.microsoft.com/resources/documentation/windows/xp`).

After installation, make sure that networking is configured and that the virtual machine can get an IP address. At this point, you should also install any additional software for your virtual machines.

Installing VMware Tools

Once you have created a virtual machine with Microsoft Windows XP installed, install VMware tools. For more information on this topic, see "Installing and Upgrading VMware Tools" in the *Basic System Administration*.

1. **Open a console in Virtual Infrastructure Client, and make sure the virtual machine is powered on and a user is logged into Windows.**

2. **In the Virtual Infrastructure Client, select the Virtual Machine and Templates view, then select the virtual machine from the tree in the left pane.**

3. **Right click on the virtual machine you just created in the left pane, and select Install VMware Tools from the pop-up menu.**

4. **Switch back to the virtual machine's console.**

   The VMware Tools installer will start after a few seconds.

5. **Install the VMware Tools using the default settings, and reboot the virtual machine when asked.**

6. **After the VMware Tools have been installed and the virtual machine has rebooted, switch back to the Virtual Infrastructure Client.**

   With the virtual machine selected in the left pane, the right pane should now show VMware Tools running and display the virtual machine's IP address.

Installing Desktop Connector Tools

To install the Virtual Desktop Connector tools:

1. **Extract the `tools` zip file on your virtual machine to any directory.**

2. **Execute the file named `register-vda-tools.bat` located in the extracted `sun-vda` folder by double clicking it.**

   Your Services list should now contain a new service named Sun Virtual Desktop Connector Tools, running and set to start automatically.

Enabling Remote Desktop

To enable VMware's Virtual Infrastructure Client, with your virtual machine still powered on and logged in:

1. **Open a console.**

2. **In the console, click on the virtual machine's Start button.**

3. **Right click on My Computer on the start menu, and select Properties.**

4. **In the System Properties window, select the Remote tab.**

5. **Under Remote Desktop, check the box marked Enable Remote Desktop on this computer so that this item is selected.**

6. **Click OK to save the settings and close the dialog.**

7. **Shut down the virtual machine by selecting Shut Down from the Start menu.**

System Dependent Information (VirtualCenter/ESX Server)

VMware VirtualCenter

Before VirtualCenter can use customization specifications to customize virtual machines, you must install the Microsoft System Preparation Tool (Sysprep) on the server running VirtualCenter. (See Appendix B in *Basic System Administration)*. Sysprep can be downloaded from:
http://www.microsoft.com/downloads/details.aspx?familyid=0C4BFB06-2824-4D2B-ABC1-0E2223133AFB&displaylang=en

1. **Install Sysprep on the VirtualCenter Server.**
2. **Create Customization Specification.**

   A customization specification stores settings that VirtualCenter can use to customize a Windows installation during the cloning process. To create a customization specification:

   a. **Open Virtual Infrastructure Client.**

   b. **Click Edit from the menu above the tool bar and select Customization Specifications...**

   c. **Click the New icon in the Customization Specification Manager to start the wizard.**

      i. **On the first wizard step, choose Windows as the target virtual machine OS, and give the specification a name and description.**

         The following steps ask the standard Windows installation questions and should be completed to correspond with your requirements, with exception of the following:

      ii. **Computer Name—Make sure that the Use the Virtual Machine Name item is selected.**

         If not, you may end up with duplicate hostnames.

      iii. **Windows License—Enter your Windows XP serial number.**

         The Include Server License Information item should be unchecked.

      iv. **Networking—Make sure the interface is configured for DHCP.**

         If not, your cloned virtual machines will not have unique IP addresses and will not work with the Sun Virtual Desktop Connector.

   d. **After completing the wizard and saving your customization specification, close the Customization Specification Manager.**

3. **Test the Customization Specification and Networking.**

   At this point you should have a Virtual Infrastructure Client open and the template virtual machine you created earlier shut down.

   a. **Right click the virtual machine in the left pane and select Clone.**

   b. **In the Clone Virtual Machine Wizard, choose a name for the new virtual machine (such as *Clone_Test*), and click Next.**

   c. **Choose the host or cluster that you want to run the new virtual machine, and click Next.**

   d. **Select a data store with sufficient free space, and click Next.**

   e. **On the Guest Customization step, select the Customize Using an Existing Customization Specification radio button, then choose the customization specification you just created from the list, and click Next.**

   f. **Review your selections, and click Finish to begin cloning.**

   g. **After the test virtual machine has finished cloning, select it in the left pane and power it on.**

      After it has finished booting, you should see its IP address and hostname appear in the right pane. Make sure that it has a unique IP address and that the hostname corresponds to the virtual machine name. If the virtual machine has no IP address, see "Networking" on page 39.

   h. **On the VMware VirtualCenter server, open a Remote Desktop Connection by clicking Start->All Programs->Accessories->Communications.**

   i. **In the Remote Desktop Connection window, enter the IP address of the newly cloned test virtual machine, and click Connect.**

      If everything is configured correctly, a full-screen Remote Desktop session to your test virtual machine should be displayed.

      - If the Remote Desktop Connection client cannot connect to the virtual machine, you must resolve the issue before continuing. See "Networking" on page 39 for possible issues.
      - If you can get a Remote Desktop Connection to your test virtual machine and it has a unique hostname, the original template virtual machine you created is ready to be used.

VMware ESX Server

1. **Install Microsoft Sysprep on the Template Virtual Machine.**

   a. **Download the Microsoft Sysprep package from** `http://www.microsoft.com/downloads/details.aspx?familyid=0C4BFB06-2824-4D2B-ABC1-0E2223133AFB&displaylang=en` **to the template virtual machine.**

   b. **Unpack to a directory, for example** `C:\Sysprep`**.**

      Make sure that you keep a copy of the original download for later use.

2. **Create Customized** `sysprep.inf` **File.**

   a. **Create a** `sysprep.inf` **file from scratch or use the example below.**

      EXAMPLE 2-1 below is designed for a minimal working configuration. If you use it, remember to edit it to correspond to your setup, especially the product key and administration password. For a more detailed description of all the sysprep parameters, search for sysprep on www.microsoft.com.

   b. **Copy the edited** `sysprep.inf` **file to the directory that contains sysprep.exe and where you unpacked the Sysprep package, for instance,** `C:\Sysprep`**.**

EXAMPLE 2-1 sysprep.inf file

```
;SetupMgrTag
[Data]
 AutoPartition=1
 MsDosInitiated="0"
 UnattendedInstall="Yes"
[Unattended]
 ExtendOemPartition=1
 OemSkipEula=Yes
 InstallFilesPath=C:\sysprep\i386
 TargetPath=\WINDOWS
[GuiUnattended]
 AdminPassword=mypassword
 EncryptedAdminPassword=No
 OEMSkipRegional=1
 OEMDuplicatorstring=WindowsXP_SP2_Base
 TimeZone=110
 OemSkipWelcome=1
[UserData]
 ProductKey=00000-00000-00000-00000-00000
 FullName="Employee"
 OrgName="My Company"
 ComputerName=TestClone
[TapiLocation]
```

EXAMPLE 2-1 sysprep.inf file

```
 CountryCode=49
[RegionalSettings]
 LanguageGroup=1
 Language=00000409
[Identification]
 JoinWorkgroup=WORKGROUP
[Networking]
 InstallDefaultComponents=Yes
[Branding]
 BrandIEUsingUnattended=Yes
[Proxy]
 Proxy_Enable=0
 Use_Same_Proxy=0
```

3. Test the `sysprep.inf` File

Take a snapshot of your template virtual machine as a backup.

a. Open the Virtual Infrastructure Client and right click your template virtual machine.

b. Choose the Snapshot submenu from the pop-up and click Take Snapshot.

c. Enter a name for your snapshot, such as Pre-Sysprep, and click OK.

You can use this snapshot to revert the template virtual machine to this point in time if anything goes wrong while testing the sysprep configuration.

d. Go to the Start menu, select Run, enter `cmd.exe in` the Run dialog and click OK.

A window with a command prompt should be displayed.

e. Change directory to the location where you unpacked Sysprep and saved your `sysprep.inf` file.

f. Execute `sysprep.exe -quiet -reseal -mini` to run `sysprep` and shut down your system.

Windows sets up and configures the virtual machine according to the parameters in the `sysprep.inf` you created. The next time the virtual machine boots, it will run an unattended.

g. Power on the template virtual machine, and open a console to it in the Virtual Infrastructure Client.

As the virtual machine boots, you should see Windows setup start and automatically step through the setup wizard. After the setup has completed and Windows has completely started, you should see the virtual machine's IP address and hostname appear in the right pane of the Virtual Infrastructure Client.

h. **Make sure the virtual machine has a unique IP address and the hostname corresponds to the virtual machine name specified in the `sysprep.inf` file.**

   If the virtual machine has no IP address, see "Networking" on page 39.

i. **On the desktop running the Virtual Infrastructure Client, open Remote Desktop Connection by clicking Start->All Programs->Accessories->Communications.**

j. **In the Remote Desktop Connection window, enter the IP address of the newly cloned test virtual machine and click Connect.**

   - If everything is configured correctly, a full-screen Remote Desktop session to your test virtual machine should be displayed.
   - If the Remote Desktop Connection client cannot connect to the virtual machine, you must resolve the issue before continuing. See "Networking" on page 39 for possible issues.
   - If you get a Remote Desktop Connection to your template virtual machine, and it has a unique hostname, it is configured correctly, but you need to run `sysprep` again before it can be used.

k. **Right click the virtual machine in the Virtual Infrastructure Client.**

l. **Choose Snapshot, then click Revert to Snapshot, and click Yes when prompted.**

m. **When the template virtual machine is finished reverting, power it on and log in.**

n. **Make a copy of the `sysprep.inf` file you created earlier on a machine other than your virtual machine.**

o. **Delete the copy from the `C:\Sysprep` directory or the directory where you unpacked Sysprep.**

p. **Open a command prompt, change directory to the location of Sysprep, and execute `sysprep.exe -quiet -reseal -mini`.**

   This runs `Sysprep` and shuts down your template virtual machine.

q. **Your template virtual machine is now powered off and ready for use as a template for a VMware ESX server.**

Note – Do not start this virtual machine again or you will have to `sysprep` it again.

2.3 Setting up Thin-Client Access

Installing Sun Ray Server Software

The Sun Virtual Desktop Connector can be used in conjunction with Sun Ray Server Software 4.0 and Sun Ray Connector for Windows OS 2.0. Install and configure both products before you continue with the installation and configuration of the Virtual Desktop Connector. Installation and configuration instructions are located in the *Sun Ray Software 4 09/07 Collection* at `http://docs.sun.com/app/docs/coll/1230.6`.

Note – Both Sun Ray Server Software 4.0 and the Sun Ray Windows Connector 2.0 require configuration after they have been installed. Sun Ray Server Software 4.0 supplies separate installation and configuration instructions for Solaris and for Linux. The Sun Ray Connector for Windows 2.0 uses a single manual for all operating systems.

Before installing the Virtual Desktop Connector, download and install the following Sun Ray Server Software patches from `http://sunsolve.sun.com`:

TABLE 2-1 Required SRSS 4.0 Patches

Patch Number	Operating System
127554-01 or later	Solaris 10 Solaris 10 11/06 SPARC
127555-01 or later	Solaris 10 Solaris 10 11/06 x86
127556-01 or later	Linux

Note – Check to see if any other patches are available and recommended for your system. If so, install them as well. After you have retrieved the patches, install them using the instructions given in the README files. The customary commands are `patchadd` on Solaris platforms and `rpm` on Linux. Be sure to restart the Sun Ray Server after you have patched the installation.

Before you continue to set up the Virtual Desktop Connector, confirm that the Sun Ray Windows Connector is working, for instance by trying to connect to an existing Windows machine, as follows:

```
# /opt/SUNWuttsc/bin/uttsc <name or IP-address of Windows machine>
```

If all steps have been executed correctly so far, continue to install and configure the Virtual Desktop Connector.

Installing Sun Secure Global Desktop

The Virtual Desktop Connector can be used with Sun Secure Global Desktop to deliver virtual desktop sessions to users.

If you wish to use SGD to deliver desktops to users, install and configure it before you continue with the installation and configuration of the Virtual Desktop Connector. For detailed instructions, see the *Sun Secure Global Desktop 4.4 Installation Guide* at `http://docs.sun.com/source/820-2549/index.html`.

The SGD Webtop contains a list of applications on the left side. During the configuration of the Virtual Desktop Connector, you can choose to add to this list a My Desktop application from which users can launch their full-screen Windows virtual desktop sessions. After you have installed and configured SGD, users should be able to access their Webtops by browsing to `http://`*<install_server>*`/`*mydesktop*.

Setting Up the Virtual Desktop Connector

The Sun Virtual Desktop Connector connects the SRSS and SGD thin client technologies to the VMware ESX server or VirtualCenter virtualization platform. To set the Virtual Desktop Connector up, you need to:

- Install the Virtual Desktop Connector Solaris packages/RPMs by running the `vda-install` script on the SRSS and/or SGD server.
- Configure the Virtual Desktop Connector by running the `vda-configure` script.

As part of the setup process, you must decide where to store the Virtual Desktop Connector configuration settings. For evaluation purposes, it is sufficient to store the settings on the local file system. In a production environment, where you may need to set Desktop Connector up on multiple servers for load balancing and failover purposes, it is better to take advantage of a central data store, where configuration settings are automatically replicated and kept synchronized with other servers. Both SRSS and SGD come with their own data store implementations, which provide automatic replication capabilities. Desktop Connector leverages these techniques and can take advantage of either the SRSS or the SGD data store. The `vda-configure` script allows you to select which one to use.

If SGD is installed on the server, the configuration script also offers the option of setting up a `My Desktop` application object. This allows users to access a full screen Windows desktop session simply by clicking on the My Desktop link in the SGD Web interface.

If SRSS is installed, Desktop Connector automatically installs a new SRSS Kiosk session type. This makes it easy to configure the SRSS Kiosk mode to serve full-screen Windows sessions from any desktop unit (DTU) connected to the Sun Ray server.

The Virtual Desktop Connector's administration interface is described under "Using the Admin GUI" on page 25.

Note – The corresponding Web application must be hosted in a suitable Web server. The Virtual Desktop Connector requires Apache Tomcat 5.5 or higher, typically available on your system as part of the SRSS or SGD installation. The `vda-configure` script prompts you for the Apache Tomcat installation directory as well as for the desired HTTP/HTTPS ports for accessing the Admin GUI.

Preparing for Installation and Configuration

The following requirements must be met before you start the Virtual Desktop Connector installation:

TABLE 2-2 Installation and Configuration Requirements

Requirement	Comments
SRSS 4.0 and/or SGD 4.4	See "2.3 Setting up Thin-Client Access" on page 17 for instructions.
Java Runtime Environment (JRE) 5 or higher	The latest Java release is available at: `http://java.sun.com/j2se`
Apache Tomcat 5.5 or higher	The JRE and Apache Tomcat are normally part of the SRSS/SGD setup.
SGD data store	See data store instructions below.

Data Store Account Setup

If you plan to use the SGD data store for storing Desktop Connector settings, you must setup an administrative user account on your system.

Any access to the SGD data store requires a username/password authentication. During Desktop Connector configuration, you must specify an existing UNIX user account (with corresponding password) to be used for authentication against the SGD data store. This user account must be a member of the `ttaserv` UNIX group. Because it is used for authentication only, it does not need to have a valid shell. The following example uses the `useradd` and `passwd` commands to set this account up.

- **Execute the following commands as root (super user):**

```
# useradd -g ttaserv <username>
# passwd <username>
```

If you plan to use the SRSS data store for Virtual Desktop Connector settings, you must have the latest SRSS 4.0 patches installed. See TABLE 2-1.

Installation and Configuration

1. **As root (super user) change to the Sun Virtual Desktop Connector image directory and execute the following command to start the installation script:**

```
# ./vda-install
```

   The installation script displays the text of the Sun Software License Agreement and prompts you to accept its terms and conditions. After the license confirmation, the installation process begins, and all Desktop Connector packages are installed.

   Upon completion, **`vda-install`** prints an installation finished message. Time-stamped log files are available at the following locations:

   - On Solaris:

   `/var/sadm/install/logs/vda-install.`*<year_month_date_hour:minute:second>*`.log`

   - On Linux:

   `/var/log/vda-install.`*<year_month_date_hour:minute:second>*`.log`

After successful installation, you need to configure the Virtual Desktop Connector.

2. **Execute the following command to start the configuration script:**

```
# /opt/SUNWvda/sbin/vda-config
```

The configuration script prompts you to supply some information and make certain configuration choices:

a. JRE Location

   The default JRE location is /usr/java.

b. Configuration data store

   If SRSS or SGD is available on your system, the script asks you to select whether to use the SRSS, SGD, or file-based data store to store Desktop Connector configuration settings. The file-based data store is the default. However:

   i. If you select the SGD data store, the script prompts you for the name and password of an existing user account to use for authentication. This user must be a member of the `ttaserv` UNIX group, as described in "Data Store Account Setup" on page 20. The default is `VDAUser`.

      All security-relevant configuration settings are stored in an encrypted form in the data store, so the script also prompts you for a password to use for encryption.

Note – If Desktop Connector is installed on multiple servers in a failover group or an SGD array, then all servers must use the same encryption password.

---

   ii. If you select SRSS data store, all security-relevant configuration settings are stored in encrypted form in the SRSS data store. **`vda-config`** prompts you for a password to use for encryption.

c. My Desktop application object

   If SGD is installed on your system, **`vda-config`** asks whether to set up/configure a My Desktop application object. The default is Yes.

d. Admin GUI configuration

   `vda-config` enables you to configure the Virtual Desktop Connector's Admin GUI. It prompts for configuration settings such as the path to the Apache Tomcat installation and port numbers and supplies reasonable default values.

Note – If remote server administration is disabled (the default), you can access the Admin GUI via `http://localhost:1800` only. Access to the Admin GUI via `http://<servername>:1800` is blocked unless remote administration is enabled.

After a final confirmation question, **vda-config** performs the necessary system adaptations. This may take up to several minutes. A time-stamped log file is available after completion at:

/var/opt/SUNWvda/log/vda-config.<*year_month_date_hour:minute:second*>.log

3. **Execute the following commands to verify the correct startup:**

```
# /opt/SUNWvda/sbin/vda-service status
# /opt/SUNWvda/sbin/vda-webadmin status
```

If everything works as expected, all Virtual Desktop Connector services should now be up and running.

Uninstallation

To remove the Virtual Desktop Connector:

1. **Execute the following command uninstall the Virtual Desktop Connector:**

```
# /opt/SUNWvda/sbin/vda-config -u
```

This shuts down all Desktop Connector services and removes all configuration settings. Afterwards, you can safely remove the packages:

2. **Execute the following command to invoke the installation script with the uninstall option:**

```
# /opt/SUNWvda/sbin/vda-install -u
```

Note – Be sure to invoke this script from outside the `/opt/SUNWvda` directory, otherwise the system may not be able to remove the `SUNWvda` directory.

CHAPTER 3

Administration

This chapter contains a brief description of the Admin GUI and the basic tasks associated with administering the Virtual Desktop Connector.

Setting Up the Admin GUI

The Sun Virtual Desktop Connector's Admin GUI provides an easy way to manage virtual machine assignments and to monitor the state of the underlying virtualization platform. To enable the Admin GUI:

1. **Go to** `https://<INSTALL_SERVER>:1801`
2. **Log in using a valid administrator account for that host. Administrator accounts are described under** "Administrators" on page 33**.**
3. **Configure a virtualization platform to manage.**
   a. **Choose either a VMware ESX server or a VMware VirtualCenter server in the Type of Platform to Configure field.**
   b. **Click the Start Configuration button to launch the appropriate Connection Wizard.**

VMware ESX Server Connection Wizard

The following table describes the fields in the ESX Server Connection Wizard:

TABLE 3-1 VMware ESX Server Connection Wizard

Field	Description
Server Information	Enter the name and authentication credentials for the server, and click the Next button.
Verify the SSL Certificate	The wizard tries to connect to the Virtual Desktop Connector agent running on the specified server. If the agent is installed but not running, then the wizard tries to start the agent. If the agent is not installed or not running, then configuration cannot continue, so the wizard asks whether to start and/or install the agent on the ESX server. Upon successful communication with the Virtual Desktop Connector agent, the wizard displays the agent's SSL Certificate. If the details of the certificate displayed match the details of the agent running on the specified server, then click the Next Button to proceed to the Review Details page.
Review Selections	Review the details displayed, and click the Finish button to complete the configuration of the VMware ESX server. The configured server should now be viewable in the Hosts table of the Hosts tab.

VMware VirtualCenter Connection Wizard

The following table describes the fields in the VirtualCenter Server Connection Wizard:

quickly and easily

TABLE 3-2 VMware VirtualCenter Connection Wizard

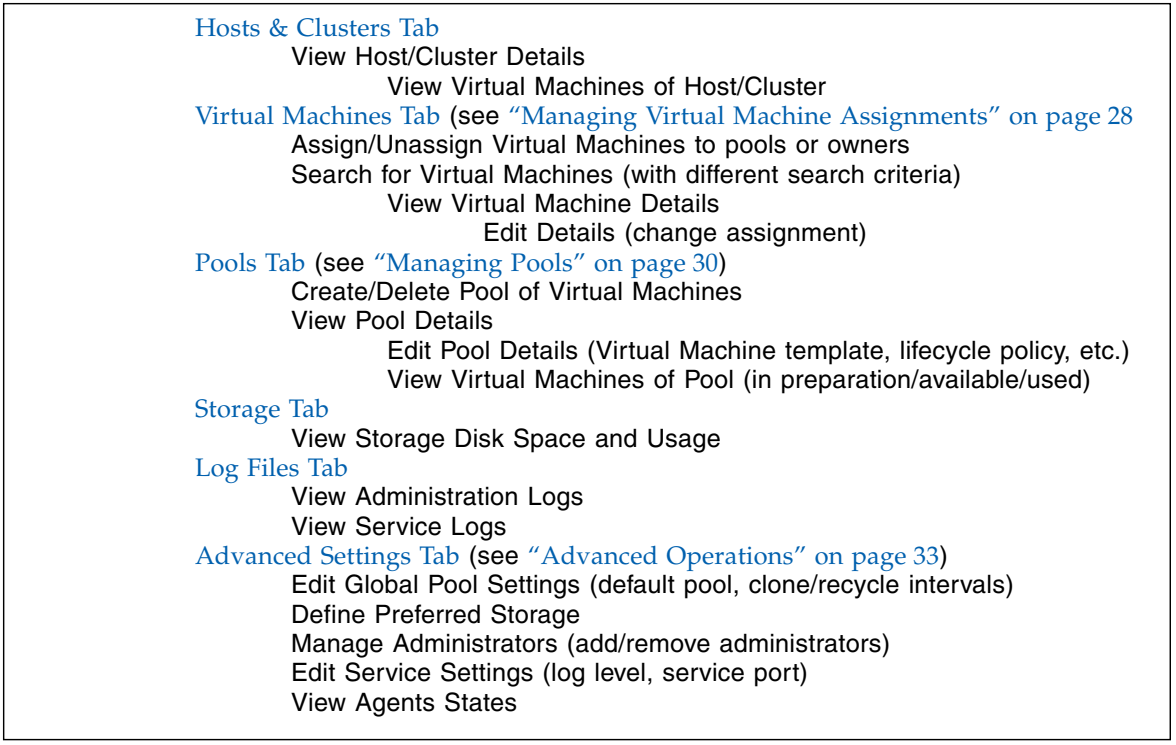
Field	Description
Server Information	Enter the name and authentication credentials for the VMware VirtualCenter Server, and click the Next button.
Verify the SSL Certificate	The wizard tries to connect to the Virtual Desktop Connector agent running on the specified server. Upon successful communication with the Virtual Desktop Connector agent, the agent's SSL Certificate is displayed. If the details of the certificate match the details of the agent running on the specified server, then click the Next Button to proceed. If no agent is running, then communication fails, and you must make sure that the Virtual Desktop Connector agent for VirtualCenter is installed and running on the server and that you provided the correct credentials in the Server Information step. You need to install the Virtual Desktop Connector agent for VirtualCenter on the server manually.
Select Datacenters	The wizard displays the table of available VMware Datacenters. Select the Datacenters you wish to manage, and click the Next button.
Review Selections	Review the details displayed, and click the Finish button to complete configuration of the VirtualCenter server. The clusters and ESX Servers contained in the selected VMware Datacenters are now viewable on the Hosts & Clusters tab.

Using the Admin GUI

The Virtual Desktop Connector provides a Web-based GUI to simplify the tasks of creating and managing pools of virtual machines, assigning virtual machines to users, and monitoring the current system state.

The Admin GUI is organized around primary Desktop Connector objects, such as *hosts*, *virtual machines*, *pools*, and *storage*. A simple tab navigation model with several sub-pages (see FIGURE 3-1) makes it easy to drill down into system details and view or modify any desired settings. All tables can be sorted by clicking on the column headers. You can also use each table's preferences dialog to display or hide table columns.

FIGURE 3-1 Tab Navigation Hierarchy



Hosts & Clusters Tab

The Hosts & Clusters tab gives you an overview of the status of the underlying virtualization platform. It lists all computers (hosts) that provide physical resources, such as memory and CPU power, for the execution of virtual machines. You can click on the host name to display additional details, such as the operating system, model, and total number of virtual machines.

Each host entry typically represents a single ESX server. However, using VirtualCenter as the virtualization platform allows several hosts to be clustered to maximize high availability and load balancing. Clustered hosts work together closely and can, in many respects, be viewed as a single computer. Consequently, the Admin GUI displays the names of clusters, not the names of the individual hosts forming the cluster or clusters. The names of hosts that do not participate in a cluster appear as separate table entries.

Virtual Machines Tab

The Virtual Machines tab lets you browse through all available virtual machines and to view them by owners or by pools. You can also search for specific machines by name, host, or storage location. Clicking on the machine name displays additional details, such as the guest operating system, IP address, CPU, and memory settings. You can also check the machine's state as well as start, stop, or suspend the virtual machine.

Two common usage scenarios are supported:

- Static Assignment

  A user is always assigned the same virtual machine. In this case, the user becomes the owner of the virtual machine.

- Dynamic Assignment

  The virtual machine is assigned dynamically from a pool of available virtual machines. In this case, the virtual machine may be re-assigned to a different user once the original user becomes disconnected.

Pools Tab

The Pools tab lets you create and maintain pools of virtual machines to be used for dynamic assignment of virtual machines to users.

You can choose to populate a pool with virtual machines manually, or to have the Virtual Desktop Connector service create (*clone*) additional virtual machines automatically, as needed, from a template. You can define the lifecycle and minimum/maximum number of virtual machines for each pool.

Storage Tab

Providing sufficient disk space is essential for the creation of additional virtual machines, and it also affects general system performance. The Storage Tab provides an overview of the disk space, available and consumed, taking into account the storage media attached to each host. This tab allows you to detect bottlenecks early and to perform corrective actions before the system runs out of disk space.

Log Files Tab

The Log Files Tab provides sub-tabs that allow Web-based access to the main Virtual Desktop Connector log files. This makes it easier to detect error conditions from a remote location without the need to log in to each host locally and access the log files through the file system.

Advanced Settings Tab

The Advanced Settings Tab has sub-tabs that provide access to more advanced, system-wide settings. These include global settings for the cloning of virtual machines (clone/recycle interval, preferred storage), the list of users who have administrative privileges, and status information on the Virtual Desktop Connector service and agent instances.

Managing Virtual Machine Assignments

The main focus of the Virtual Desktop Connector is the preparation and assignment of virtual machines (VMs) to users. Within an enterprise, it is common to have different types of users. Two common usage scenarios are described under "Virtual Machines Tab" on page 27. In particular, users who require their own virtual machines should be receive static assignments (see Static Assignment).

For those users who have fewer requirements for customizing and maintaining their desktop environments, it is more appropriate to assign a dynamic virtual machine (see Dynamic Assignment), created from a standard golden image, or template, and preserved in a virtual machine pool.

Virtual machines from a pool are only temporarily available to each user. If the user does not use the currently assigned virtual machine instance or is idle for a pre-defined amount of time, the virtual machine is recycled. When a virtual machine from a pool is recycled, it is returned to its prior state before being checked out and assigned to the next user.

Assigning a Virtual Machine to an Owner

The Virtual Desktop Connector Admin GUI simplifies the task of assigning virtual machines to users. Use the Virtual Machines tab to browse through all available VMs, or use the Search function to look up specific VMs by name, host, or storage

location. Clicking on the VM name displays details such as guest operating system, IP address, and CPU and memory settings. You can also check the virtual machine's state and start, stop, or suspend it, if necessary.

To modify the VM assignment, click the Edit button. You can assign the VM to a specific user (owner) or to a VM pool. In the power worker scenario, you would assign the VM to the desired user.

The Virtual Desktop Connector utilizes user identifiers to refer to users. In the simplest case, the user name is used directly as an identifier, but, depending on your needs, more complex items, such as a security token stored on a smart card, can be used.

Assigning a Virtual Machine to a Pool

For those users who do not need static assignment to a particular virtual machine, virtual machines can be picked up on demand from a VM pool (see"Managing Pools" on page 30).

In some cases (especially for testing purposes), you may find it is easier to populate a pool manually with existing virtual machines. The procedure is:

1. **Select the desired virtual machine in the VM table and open the Assignment Actions drop-down.**
2. **Click on the Assign to Pool <*poolname*> entry to assign the selected VM to the pool.**

You can also make the pool assignment from the VM's details page.

How Users Connect to a VM or VM Pool

An unmodified Desktop Connector uses information stored in SRSS and SGD to identify users and start the desired virtual machine.

- When users access their Windows desktops via the SGD Web interface (by clicking on the My Desktop link or by accessing `http://<servername>/sgd/mydesktop)`, the Virtual Desktop Connector identifies them by SGD login name.
- When users access their Windows desktops via a Sun Ray desktop unit (DTU), the Virtual Desktop Connector evaluates the information associated with the smart card inserted in the DTU.

  If the smart card has been registered in SRSS (you can register tokens on the SRSS Admin GUI's Tokens tab), the Desktop Connector reads the smart card's Owner and Other Information settings. By default, the Other Information setting

specifies the virtual machine pool name, and the Owner setting specifies the user identifier. If the smart card is not registered, the Desktop Connector uses the smart card number.

- The Virtual Desktop Connector evaluates both the user identifier and pool name to select and start the correct virtual machine.

  If a pool name has been specified, the Virtual Desktop Connector selects the next available VM from the desired pool. If no pool name has been specified, the user identifier is used to check for any statically assigned VM. If no matching assignment can be found, the Virtual Desktop Connector selects an available VM from the default pool as fallback (see"Pool Settings" on page 33l).

- The Desktop Connector starts the selected virtual machine, if necessary, and connects the user to the Windows desktop.

Note – For a description of how you can adapt the mapping of user identifiers and pool names to users, see "Production Environments" on page 34.

Managing Pools

A pool maintains a collection of available and used virtual machines.

The Pools Tab enables the creation and maintenance of pools of virtual machines. These pools can later be used to dynamically assign virtual machines to users. A pool can be populated manually with virtual machines or the Virtual Desktop Connector can create (clone) additional virtual machines automatically, as needed, from a template. You can define the lifecycle and minimum/maximum number of virtual machines for each pool.

Creating a New Pool

To create a new pool:

1. **Click the New button in the Pools tab.**
2. **Specify the following required settings on the Create New Pool page.**

- Name

  Specify the name of the new pool.

- Cloning

  A pool can be populated and maintained with machines cloned from a specified template virtual machine, or it can be manually populated with existing virtual machines. Choose one of the following settings:

  - None (No Cloning—Populate the Pool Manually

    Choose this option to create an empty pool and to assign virtual machines to the pool manually. No cloning of machines will occur for this pool.

  - Populate the Pool Using:

    Specify the template virtual machine from which all members of this pool will be cloned.

    - Custom Spec

      Select a Custom Spec file to use for installing the cloned machines. This will be a Microsoft Sysprep file. Sysprep is a tool used to install Microsoft Windows operating systems with minimal intervention by an administrator.

    - Minimum Size

      The minimum number of available virtual machines a pool may contain.

    - Maximum Size

      The maximum number of virtual machines a pool may contain.

The following virtual machine lifecycle policies can be specified on a per-pool basis:

- Idle Timeout

  The length of time (in minutes) a machine can remain suspended before being made available to other users.

- Maximum Age

  The length of time a cloned machine can be used before being destroyed.

- Recycle Policy

  The action to take when recycling virtual machines.

  Virtual machines in this pool that are no longer in use and have exceeded the idle timeout interval are recycled. This setting specifies the action to be taken when these machines are recycled. The options are:

  - Snapshot

    Revert the machine to snapshot.

  - Destroy

    Destroy the machine.

  - Reuse

    Make the machine available again.

Note – See "Pool Settings" on page 33 for details of how to specify global pool settings.

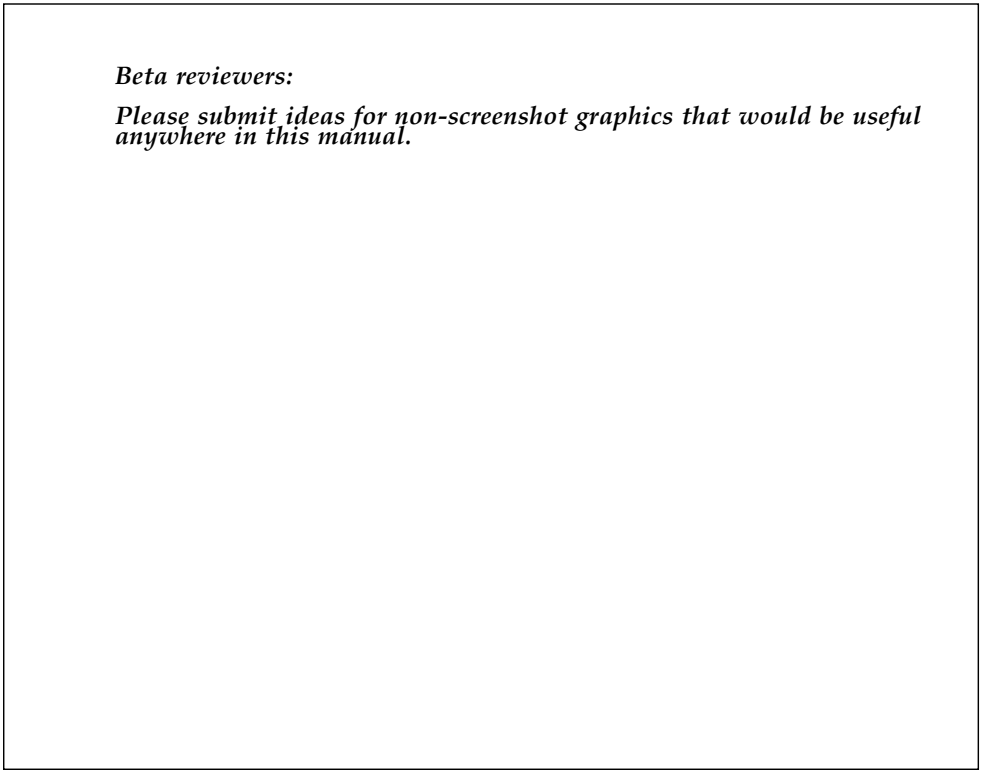
3. **Click the OK button to save the new pool.**

   If you have chosen to use a template for cloning, then the pool will begin to be populated with cloned machines after a few minutes.

Viewing Pool Details

To view the details of a pool, click on the pool name in the Pools table. The Pool Details page shows details for the pool as well as the number of virtual machines currently used, available, and in preparation for the pool.

FIGURE 3-2 Pools Table



Advanced Operations

Among the fields and settings provided on the Advanced tab are the following:

Pool Settings

Specify the global settings for all pools.

- Default Pool

  Specify the default pool. In the absence of specific information for a given user, the Virtual Desktop Connector assigns a machine from the default pool. It is up to the administrator to decide how pool information for users is retrieved. See "Production Environments" on page 34 for details on how to customize the example session scripts provided with the Virtual Desktop Connector.

- Clone Interval

  The length of time the Virtual Desktop Connector service waits before starting the next clone.

- Recycle Interval

  The length of time the Virtual Desktop Connector service waits before checking pools for old machines to be recycled.

Storage Settings

Specify the list of allowed storage devices where pools should save cloned virtual machine data from among the available storage devices. Specify at least one allowed device.

Administrators

Specify the list of administrators allowed on this server. The superuser (root) is automatically configured as administrator and cannot be removed from this list. To add another administrator, click the New button, and enter the username of a valid user on the server.

VMware recommends that VirtualCenter be run redundantly in a Microsoft Cluster, such that the various nodes running VirtualCenter must have identical configurations, including the same network identity. The nodes are synchronized so that only one node is active at a time. If one node fails, a backup is brought up and takes over under the same IP and name. This is described more fully in:

`http://www.vmware.com/pdf/VC_MSCS.pdf`

Service Settings

Two settings are displayed on the Service tab:

- Service Port

Specify the port on the which the Virtual Desktop Connector service communicates. Leave the field empty to allow the Virtual Desktop Connector service to choose its own port.

- Log Level

Specify the logging level for the Virtual Desktop Connector log file (found at `/var/opt/SUNWvda/log/vdaservice.log`).

Production Environments

Virtual machines can be provided to users either from statically assigned virtual machines or from pools of identical, dynamically assigned virtual machines. Two sample approaches that use these assignments to deliver desktops to users in a SRSS or SGD production environment are included with the Virtual Desktop Connector:

- Virtual Desktop Connector SRSS Kiosk session

`/etc/opt/SUNWkio/sessions/vda`

- Virtual Desktop Connector SGD login script

`/opt/SUNWvda/lib/vda-wcpwts.exp`

In both cases, the Virtual Desktop Connector client retrieves the IP address of a virtual machine assigned to the current user session and uses it to connect the session to the assigned virtual machine.

The SRSS Kiosk Session and SGD login script are provided for convenience. The may be used as-is or modified to suit a specific environment.

To customize the SRSS Kiosk session, make a copy of the provided session descriptor `/etc/opt/SUNWkio/sessions/vda.conf` and session directory `/etc/opt/SUNWkio/sessions/vd`a and modify as appropriate. For more details on the contents of SRSS Kiosk sessions, seethe `kiosk(5)` man page. Once you have created a new SRSS Kiosk session, you can select with the SRSS Admin GUI.

For a custom SGD login script, make a copy of the provided login script `/opt/SUNWvda/lib/vda-wcpwts.exp` and modify as appropriate. Copy the resulting script to the SGD login script directory `/opt/tarantella/var/serverresources/expect` and register it with the SGD object manager.

For more information on the Sun Global Desktop Manager, please see the latest documentation on `docs.sun.com`.

Virtual Desktop Connector Client Usage

The Virtual Desktop Connector client may be used to retrieve the IP address of a virtual machine assigned to a given user session. If the specified assignment does not already exist, it will be created.

The Virtual Desktop Connector client usage is as follows:
`/opt/SUNWvda/lib/vda-client [-s <server>] [-p <`*port*`>] [-m <`*identifier*`>] [-P <`*pool*`>]`

where

`-s <`*server*`>` specifies the name or IP address of the server where the Virtual Desktop Connector service is running. The default value is `localhost`.

`-p <`*port*`>` specifies the port where the Virtual Desktop Connector service is listening. The default value is `3809`.

Note – The port currently in use by a running instance of the Virtual Desktop Connector service is available locally in the file `/tmp/vdaservice.port`.

`-m <`*identifier*`>` specifies an identifier to be used when locating a previously assigned virtual machine or creating a new assignment. The default value is `default`.

`-P <`*pool*`>` specifies a preferred pool to be used when locating a previously assigned virtual machine or creating a new assignment. There is no default value.

CHAPTER 4

Troubleshooting

Beta Reviewers: Please provide suggestions for additional items to be included in the production version of this section. We would especially like to know about any problem *you* encountered, whether you know the solution or not.

Setting up an environment to host virtual desktops can be a complex task, especially when you are new to this area. So it is quite common that a few steps might not work in the initial setup. Below you find some guidance for troubleshooting.

Pools

1. **You have created a new pool and virtual machines are not created automatically.**

   There are a couple of reasons why this might fail:

- You have not defined a template for the pool. Make sure that your pool configuration points to a virtual machine or template.
- There is not enough disk space available to create copies of the template.

2. **You have created a pool, new virtual machines are created automatically, but they are not made available:**

   a. **Check that you still have enough disk space for your virtual machines.**

      Before a newly created virtual machine is made available for users, a snapshot is taken by default. This operation requires sufficient disk space.

   b. **Check that the RDP port (typically 3389) of the Windows guest instance is open.**

      Before a newly created virtual machine is made available, the Virtual Desktop Connector verifies whether RDP communication can be established to the virtual machine. The following issues might prevent a successful test:

- The virtual machine is on a private network and cannot be accessed by the Virtual Desktop Connector. Verify your network configuration.
- Remote access is disabled on the in the Windows guest.
- Firewall settings of the Windows guest do not allow RDP connections.
- The Sun Ray Desktop Unit is cycling and cannot connect to a virtual machine:

c. Verify that you have a virtual machine available to connect to.

d. Verify that the remote access is correctly configured on your Windows guest (see above).

e. Verify that the Virtual Desktop Connector is able to communication with the agent.

The firewall on the VirtualCenter server might block the communication.

f. Verify that the VMware tools are installed on the Windows guest.

Users

1. Users are not able to login to the Windows guest instance.

a. Check that the users are configured for remote access and are allowed to perform a remote access.

Machines

1. Unused virtual machine do not suspend:

a. Check if the Power Options on the Windows guest have been configured for standby.

b. Check if the Virtual Desktop Connector Tools are installed and running on the Windows guest.

c. Check if the virtual machine is configured for suspend. Look up the Virtual Machine configuration (Options/Power management).

Make sure that the Suspend the Virtual Machine item is selected.

Note – If you experience problems with the standby feature in Windows XP, you might try EZ GPO, which includes a group policy for power options.

Networking

1. **If the virtual machine does not have a valid IP address or cannot be pinged, make sure your networking interface is properly configured for your ESX server in the Virtual Infrastructure Client.**

   If the network interface is properly configured for your ESX server, verify that there is a properly configured DHCP server with enough leases running on the subnet your virtual machines will run on. See the VMware documentation available on line at `http://www.vmware.com/support/pubs/vi_pubs.html`.

2. **If you are unable to get a Remote Desktop Connection to your virtual machine, verify it has been enabled in the Remote tab of the System Properties dialog.**

   If this is enabled, the issue probably has to do with your network settings. Make sure that the virtual machine's subnet can be reached from the Windows machine from which you run the Remote Desktop Connection client. If you have set up a private network for your virtual machines, it might not be accessible from a machine not on that network.

Glossary

The glossary is obviously a work in progress. Please excuse the current state during Beta review, but do make suggestions for other terms to be defined and for corrections of those already defined here.

agent GlossText

application object

clone (n.) A duplicate of a virtual machine.

(v.) To make a copy of a virtual machine.

Clone Virtual Machine Wizard A point-and-click interface for convenient, easy duplication of a virtual machine.

cluster Server group in the virtual environment.

customization The process of customizing a guest operating system in a virtual machine as it is being deployed from a template or cloned from another existing virtual machine. Customization options include changing the new virtual machine identification and network information.

data center GlossText

data store (or datastore) VMware definition: Virtual representations of combinations of underlying physical storage resources in the datacenter. The datastore is the storage location for the virtual machine files. This can be a physical disk, a RAID, a SAN, or a partition on any of these.

(Need to differentiate Sun and VMW usages before RR)

disk mode GlossText

dynamic assignment Users are assigned machines as needed from a pool of available virtual machines. These machines are only temporarily available to a given user. When a user stops using the assigned machine, it is recycled and becomes available for other users. This is a suitable setup for people who typically work in one or a few applications and have fewer requirements for customizing their desktop environment.

factory GlossText

folder GlossText

guest operating system An operating system that runs inside a virtual machine.

host The physical computer on which the virtual machines managed by VirtualCenter are installed.

host agent Software that, when installed on a virtual machine host, performs actions on behalf of a remote client.

host computer The physical computer on which the VirtualCenter software is installed. It hosts the VirtualCenter virtual machines.

kiosk mode GlossText

lifecycle GlossText

ping

pool A collection of virtual machines or the structure that contains them. Pools ordinarily contain virtual machines that are availble for assignment as well as those that are no longer in active use and are waiting to be recycled or deleted.

pool management unit GlossText

RDP Microsoft Remote Desktop Protocol.

resource pool A division of computing resources used to manage allocations between virtual machines.

This is a VMware definition. Does "resource" in this context mean "server"?

resume To save the current state of a running virtual machine. To return a suspended virtual machine to operation, use the resume feature. See *suspend*.

SSH Secure Shell, a network protocol that enables exchange of data over a secure channel, using public-key cryptography for authentication.

SSL Secure Sockets Layer, a cryptographic protocol used for secure data transfer.

service GlossText

service class GlossText

snapshot A reproduction of the virtual machine just as it was when you took the snapshot, including the state of the data on all the virtual machine?s disks and whether the virtual machine was powered on, powered off, or suspended. You can take snapshots of a virtual machine at any time and go to any snapshot at any time. You can take a snapshot when a virtual machine is powered on, powered off, or suspended. You can configure a virtual machine to exclude specified disks from snapshots.

standby An operating system setting in which a physical or virtual machine puts itself into low-power, or standby, mode.

static assignment Users are explicitly assigned specific virtual machines. In this case, the users become the machine owners much like having their own PCs. This is a typical setup for power workers, such as developers, who normally require a large set of applications and more administrative rights than other users.t

storage GlossText

suspend To save the current state of a running virtual machine. To return a suspended virtual machine to operation, use the resume feature. See *resume*.

suspension A virtual machine operation that can be invoked by VMware products once a machine goes into standby mode if it has been configured to do so.

template A master image of a virtual machine. This typically includes a specified operating system and a configuration that provides virtual counterparts to hardware components. Optionally, a template can include an installed guest operating system and a set of applications. Templates are used by VirtualCenter to create new virtual machines.

VirtualCenter administrator

A role in which the user is allowed to set the user+role permissions and control the VirtualCenter licensing.

VirtualCenter agent

Installed on each virtual machine host, this software coordinates the actions received from the VirtualCenter Server.

VirtualCenter database A persistent storage area for maintaining the status of each virtual machine and user managed in the VirtualCenter environment. Located on the same machine as the VirtualCenter Server.

VirtualCenter Server

A service that acts as a central administrator for VMware servers connected on a network. This service directs actions on the virtual machines and the virtual machine hosts. VirtualCenter Server is the working core of VirtualCenter.

virtual disk

A file or set of files that appears as a physical disk drive to a guest operating system. These files can be on the host machine or on a remote file system. See also physical disk.

Virtual Infrastructure

A system of hosts, agents, and clients that communicate to deploy and operate virtual machines. The total VMware solution to managing a data center. See also host, host agent, VirtualCenter Server.

Virtual Infrastructure Client (VI Client)

A user interface that runs locally in a Windows machine and provides access to the virtual machine?s display. The Virtual Infrastructure Client runs on a networked machine. This can be on the same machine as the VirtualCenter Server or another networked machine. The Virtual Infrastructure Client requires a monitor for access to the virtual machine?s display.

Virtual Infrastructure Web Access Client

A user interface that runs in a Web browser and provides access to the virtual machine?s display.

virtual machine

A virtualized x86 PC environment in which a guest operating system and associated application software can run. Multiple virtual machines can operate on the same host system concurrently.

virtual machine configuration

The specification of which virtual devices, such as disks and memory, are present in a virtual machine and how they are mapped to host files and devices.

virtual machine configuration file

A file containing a virtual machine configuration. It is created when you create the virtual machine. It is used by VirtualCenter to identify and run a specific virtual machine.

virtual machine monitor (VMM)

Software that is responsible for virtualizing the CPUs.

Virtual Machine Properties

A point-and-click control panel used to view and modify the resource settings of all the virtual machines on a host.

Virtual Machine Settings Editor

A point-and-click control panel used to view and modify a virtual machine's settings. See also New Virtual Machine Wizard.

virtual network

A network connecting virtual machines that does not depend on physical hardware connections. For example, you can create a virtual network between a virtual machine and a host that has no external network connections. You can also create a LAN segment for communication between virtual machines on a team.

VMkernel

A high-performance operating system that occupies the virtualization layer and manages most of the physical resources on the hardware, including memory, physical processors, storage, and networking controllers.

VMODL

The interface definition language used in the Virtual Infrastructure SDK.

VMotion

A feature that enables you to move running virtual machines from one ESX Server system to another without interrupting service. It requires licensing on both the source and target hosts. VMotion is activated by the VirtualCenter agent. The VirtualCenter Server centrally coordinates all VMotion activities. See also migration with VMotion.

VMware File System (VMFS)

A file system that is optimized for storing virtual machines. One VMFS partition is supported per SCSI storage device or SAN. Each version of ESX Server uses a corresponding version of VMFS. For example, VMFS3 was introduced with ESX Server 3.

VMware HA An optional feature that supports distributed availability services in an environment that includes ESX Server and VirtualCenter. If you have configured DRS and one of the hosts managed by VirtualCenter Server goes down, all virtual machines on that host are immediately restarted on another host.

VMware Tools A suite of utilities and drivers that enhances the performance and functionality of your guest operating system. Key features of VMware Tools include some or all of the following, depending on your guest operating system: an SVGA driver, a mouse driver, the VMware Tools control panel, and support for such features as shared folders, drag-and-drop in Windows guests, shrinking virtual disks, time synchronization with the host, VMware Tools scripts, and connecting and disconnecting devices while the virtual machine is running.

VMware virtual machine console

An interface to a virtual machine that provides access to one or more virtual machines on the local host or a remote host running VirtualCenter. You can view the virtual machine?s display to run programs within it or modify guest operating system settings. In addition, you can change the virtual machine's configuration, install the guest operating system, or run the virtual machine in full screen mode.

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