

Sun Virtual Desktop Infrastructure

VDI Demo (Featuring Sun VirtualBox) for Version 3.1

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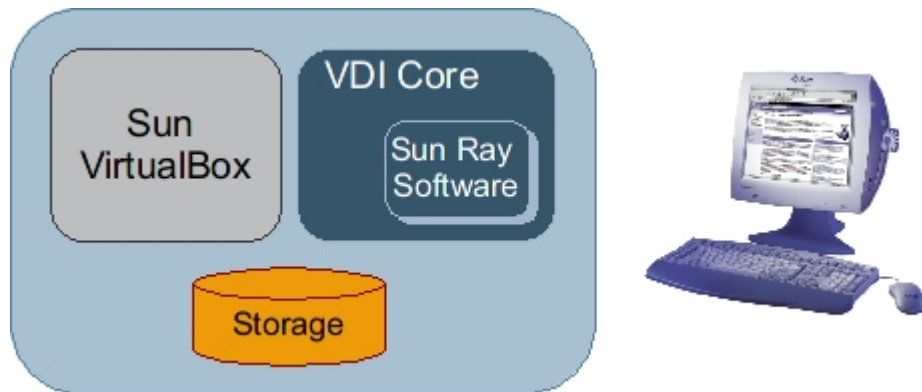
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VDI Demo (Featuring Sun VirtualBox)

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The following information describes how to install and configure the VDI components (VDI Core, virtualization platform, and storage) on one host. A Demo VDI Setup is great for evaluation, but cannot support a large deployment.



The VDI Demos are not supported production environment configurations. For more information about supported production environment VDI configurations, please see the [VDI Configurations](#) page.

You can also make a multi-host demo version of VDI. Be sure to consult the Supported Software tables in the [VDI 3.1 Release Notes](#). Also refer to [VDI Configurations](#) to learn more about which hardware configurations will and will not work.

System Requirements

You must perform the installation on a physical machine (bare metal). Installing the VDI software in a virtual machine will not work.

The machine must meet the following requirements:

- At least one 2.0GHz x86 CPU
- At least 4GB RAM
- At least 32GB disk space - it is recommended to use a system with two disks so that the Solaris OS uses one disk and the ZFS storage uses the other (see below).

Refer to the [VDI 3.1 Release Notes](#) for more details.

1. Install and Configure Sun VirtualBox

Use the following information to install and configure Sun VirtualBox for your VDI Demo. For more general information, see the [About VirtualBox in VDI 3.1](#) section.

How to Install and Configure Sun VirtualBox (Demo)

1. Install a current Solaris operating system.
Refer to the [VDI 3.1 Release Notes](#) for specific version numbers.
 - Install the operating system on the first disk.
 - You should perform a default installation using either UFS or ZFS as the file system.

- We recommend adapting the default partition layout:
 - All of the VDI components will be installed under `/opt` - ensure that sufficient disk space is available here.
 - Swap space must be equal to or greater than the physical memory - if you have 4 GB memory, your swap space must also be 4 GB or more.
 - Templates for virtual machines will be stored under `/var/tmp` - you should reserve enough disk space for storing at least one or two virtual machine images.
 Refer to the [Solaris documentation](#) for more details.

2. Configure the ZFS storage.

Sun VDI 3.1 (in combination with VirtualBox) uses the ZFS filesystem to create snapshots of virtual machine disk images or to clone/replicate virtual machine disks. The interaction with ZFS is handled automatically and is completely encapsulated within VDI. However, initially you must setup the ZFS storage (more precisely a ZFS storage pool aka `zpool`).

- Configure the second disk as ZFS storage by running the following command as root user.

```
# zpool create <name of zpool> <name of second disk>
```

If you do not know the name of your second disk, you can look it up using the `format` or `fdisk` command.

- ZFS uses any memory available (up to the limit) for a so-called ARC cache. This can cause issues in a demo setup, because VDI may falsely report that there is not enough memory for starting up any virtual machine. To resolve this issue, adapt the max value used for the ARC cache.

For example, to restrict the memory to 2GB, add the following line in `/etc/system`:

```
set zfs:zfs_arc_max = 2147483648
```

- Enable the SMF service for iSCSI access (iSCSI target daemon) with the command:

```
svcadm enable svc:/system/iscsitgt:default
```

3. Install the virtualization platform.

You must use the VirtualBox archive that is bundled with Sun VDI 3.1. This archive includes a specific version of Sun VirtualBox with an installation script (`vb-install`) that automates the necessary configuration steps.

- As root user, unzip the VDI archive if you have not already done so. Then unzip the VirtualBox archive, and run the installation.

```
# unzip vda_3.1_amd64.zip
# cd vda_3.1_amd64
# unzip vbox_3.0.zip
# cd vbox_3.0
# ./vb-install
```

The installation script installs the VirtualBox packages and starts up the VirtualBox web service. In addition, the Apache web server (bundled with Solaris 10) will be configured to act as SSL proxy for the VirtualBox web service.

2. Install and Configure the VDI Core Software

How to Install and Configure the VDI Core Software (Demo)

Steps

1. As root user, unzip the VDI archive if you have not already done so, and run the installation (shown for x86).

```
# unzip vda_3.1_amd64.zip
# cd vda_3.1_amd64
# ./vda-install
```

After accepting the license agreement, the installation process begins, and all VDI components are installed. These components include:

```
Sun VDI 3.1 Installation
+ Installing Sun VDI Core...
+ Installing MySQL Database...
+ Installing Web Administration...
+ Installing Apache Tomcat...
+ Installing RDP Broker...
+ Installing Sun Ray Client...
+ Installing Java Runtime Environment...
+ Installing Sun Ray Server Software...
+ Installing Sun Ray Connector for Windows Operating Systems...
```

2. After successful installation reboot your machine.

```
# reboot
```

3. As root user, run the vda-config script, and choose the "0 **Evaluation Sun VDI Host**" configuration type:

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

You will see the following configuration script:

```

Sun Ray Server Software Configuration
+ Providing configuration data...
+ Loading Sun Ray data store...
+ Populating Sun Ray data store...
+ Creating Sun Ray core services configuration...
+ Restarting Sun Ray data store daemon...
+ Configuring Sun Ray Server Software Web Administration...
+ Adding 10 user accounts for Sun Ray sessions...

Sun Ray Client Configuration
+ Setting Kiosk Mode Session Type to 'vda'...
+ Enabling Kiosk Mode Policy for All Card and Non-Card Users...
+ Enabling LAN Connections...
+ Configuring Sun Ray Connector for Windows Operating Systems...
+ Restarting Sun Ray Server Software...

MySQL Database Configuration
+ Creating MySQL group (vdadb)...
+ Creating MySQL user (vdadb)...
+ Setting up MySQL directory...
+ Setting up MySQL cluster directory...
+ Initializing database...
+ Starting Sun VDI database (MySQL)...
+ Setting user rights...
+ Creating database tables...
+ Configuring database connection...

Sun VDI Web Administration Configuration
+ Enabling Sun VDI web administration...
+ Restarting Sun VDI web administration...

RDP Broker Configuration
+ Starting RDP broker...

System Configuration
+ Restarting Common Agent Container service...

```

For more information about the settings of the default configuration, see the [VDI Defaults](#) page.

Once configuration is complete, go to <http://<server name>:1800> (or <http://localhost:1800> if remote administration has been disabled). Use root user credentials to log into the VDI Manager. You will be re-directed to https and the browser will ask you to accept the security certificate. After confirmation, you should get the login screen.

3. Set Up Desktop Providers and Pools

How to Create Desktop Providers (Sun VirtualBox)

Desktop providers encapsulate the details of the underlying virtualization platform. At a minimum, you must configure one desktop provider before you can continue with the creation of pools. There is no limitation to the number of providers the system can manage. At any time, you can configure additional providers.

Follow the steps below to set up a VirtualBox desktop provider.

VDI Manager Steps

1. Sign into the VDI Manager.
 - a. Go to <http://<server name>:1800> (or <http://localhost:1800> if remote administration has been disabled), and use root user credentials. For a multi-host configuration, use one of the VDI Secondary hosts.
 - b. You will be re-directed to https and the browser will ask you to accept the security certificate. After confirmation, you should get the login screen.
2. Select the Desktop Providers category in the left sidebar.

3. Select New in the Sun VirtualBox Desktop Providers overview.

The New Desktop Provider for Sun VirtualBox wizard is displayed. It enables you to add multiple VirtualBox hosts as well as multiple VirtualBox storage servers.

- Type the host name or IP address and the administrator credentials for the VirtualBox host server.
- When you are finished adding new VirtualBox hosts, select the Select Existing Hosts option.
- Type the host name or IP address and the administrator credentials for the VirtualBox storage server.
For a demo setup, the storage host will be the same as the VirtualBox host. You can configure multiple VirtualBox storage servers.
- When you are finished adding new storage hosts, select the Select Existing Storage option.
- Click Finish.

The new desktop provider is displayed in the VDI Manager. You can now view the provider details, including CPU and memory utilization. You can add or remove additional VirtualBox hosts or storage servers as needed.

How to Create Desktop Pools

Sun VDI organizes desktops in pools. A pool is a collection (or container) of desktops. Typically you will create different pools for different types of users. For example, the engineering team at your company might have different desktop requirements than the marketing department.



Sun VirtualBox Desktop Providers Only

When changing pool settings from NAT networking to Host Networking + Windows RDP, existing desktops that are running must be stopped and restarted or else subsequent user requests for these desktops will fail.

This issue occurs because existing, running desktops will be using NAT and will not have a public IP address. After the pools settings have been changed, subsequent requests for that desktop will attempt to access the desktop via the private (and inaccessible) NAT IP.



Microsoft Remote Desktop Providers Only

Only one pool can be created per Microsoft Remote Desktop provider.

VDI Manager Steps

- Sign into the VDI Manager.
 - Go to <http://<server name>:1800> (or <http://localhost:1800> if remote administration has been disabled), and use root user credentials. For a multi-host configuration, use one of the VDI Secondary hosts.
 - You will be re-directed to https and the browser will ask you to accept the security certificate. After confirmation, you should get the login screen.
- Select the Pools category in the left sidebar.
- Click New in the All Pools overview.
A New Pool wizard is displayed.
 - For Sun VirtualBox and Microsoft Hyper-V desktop providers, choose one of the following pool types:
 - Dynamic pools are filled with cloned flexible desktops. If you choose the Dynamic Pool type, the desktops in the pool will be temporarily assigned to users. They will be recycled each time the user logs out. This pool type is considered dynamic because the user-desktop assignments are often changing.
 - Growing pools are filled with cloned personal desktops. If you choose the Growing Pool type, the desktops in the pool will be permanently assigned to users. Users can log in and out without losing their desktop settings. The desktops are not recycled.
 - Manual pools are initially empty. They are filled manually by importing personal desktops. The Manual Pool type should be used if cloned desktop assignment is not an option.



For Microsoft Remote Desktop providers, pool types do not apply.

- Select a template.
If you have already imported a desktop from Sun VirtualBox or Microsoft Hyper-V, you can select it as a template to clone desktops from.

- If no desktop has been imported yet, select None from the drop down menu. After a desktop has been imported, you can select it as a template from the pool's Cloning tab.
- c. If you chose a template in the previous step, select the pool size or enable automatic cloning. You can modify your choice at any time in the pool's Cloning tab.
- d. Click Finish.
A new pool is displayed in the Pools overview.

4. Create, Import, and Clone Virtual Machines

How to Create Virtual Machines (Sun VirtualBox)

Sun VDI presents users with easy access to their virtual desktops, instances of any desktop operating system executed in a virtual machine. You can manually create virtual machines, or you can configure Sun VDI to create or clone additional virtual machines automatically from a template.

Before You Begin

After executing the Sun VirtualBox for VDI 3.1 installer, you can create your first virtual machine. To simplify the installation, use the installation of Sun VirtualBox for VDI 3.1 (described in the previous section) to create the first virtual machine template. You can also install a version of Sun VirtualBox for VDI locally (on your laptop or desktop system), and create virtual machines there. Make sure to install the same version of VirtualBox locally that you have installed on your VirtualBox server. You can download the supported local version of VDI from the [VirtualBox for VDI 3.1 download site](#). See the [VDI 3.1 Release Notes](#) for addition version support information.

Steps

1. Launch the Sun VirtualBox Web Console.

```
# /opt/VirtualBox/VirtualBox
```

- a. Click New to launch the New Virtual Machine wizard.
- b. The wizard will guide you through virtual machine creation.
Be sure to choose the appropriate hard-disk and RAM space for the desired configuration (4 GB hard-disk and 384 MB RAM are recommended).
For more information about virtual machine system requirements, refer to Chapter 3: Starting out with VirtualBox in the [Sun VirtualBox User Manual](#).

2. Install the operating system.

At this point you have an empty virtual machine, equivalent to a PC without an OS installed. The next step is to choose the boot medium for the OS and install it.

- a. Select the newly created virtual machine and click Settings.
- b. Open the Advanced tab in the Settings GUI.
- c. Ensure that CD/DVD-ROM is set as the first boot device.
- d. Select the CD/DVD-ROM option in the left panel of the Settings dialog.
- e. Select the Mount CD/DVD Drive option.
- f. Click OK to save the changes and close the Settings GUI.
At this point the new virtual machine must be started to trigger the OS installation.
- g. Select the new virtual machine and click Start.
- h. Follow the installation prompts, or seek further installation details from the OS manufacturer.

3. Install the VirtualBox Guest Additions.

After the OS is installed, the VirtualBox Guest Additions must be installed.

- a. With the virtual machine running and fully booted, click the Devices menu, then select Install Guest Additions. This will launch the VirtualBox Guest Additions installer inside the virtual machine.
- b. Install the Guest Additions according to the instructions in the wizard and reboot when asked.
- c. Install all additional software for the desired virtual machine template.

4. Enable System Preparation for Windows templates.

For more information, refer to the [How to Enable System Preparation for Windows Templates \(VirtualBox and Hyper-V\)](#) page.

How to Import Desktops (Sun VirtualBox)

A pool is empty and has no desktops after initial creation. After you create virtual machines, you must import them into the VDI Core database.



Importing snapshots of virtual machines is not supported.

Before You Begin

A virtual machine must be created in the VirtualBox interface or using the integrated VDI Manager Flash console before it can be imported into the VDI Core database. Refer to the [How to Create Virtual Machines \(Sun VirtualBox\)](#) page for detailed information.

VDI Manager Steps

1. Sign into the VDI Manager.
 - a. Go to `http://<server name>:1800` (or `http://localhost:1800` if remote administration has been disabled), and use root user credentials. For a multi-host configuration, use one of the VDI Secondary hosts.
 - b. You will be re-directed to https and the browser will ask you to accept the security certificate. After confirmation, you should get the login screen.
2. Open the Pools tab, then select the previously created empty pool.
3. Select the Desktops tab, and click Import.
An import dialog will be displayed.
4. Select a desktop to be imported.
 - If the desktop you would like to import is on the VirtualBox host, select it from the VirtualBox Host tab, and click OK.
 - If the desktop you would like to import is available on the VDI host in `/var/tmp`, define the corresponding XML and VDI files under the VDI Host tab.

After the desktop has been imported successfully, it will be displayed in the Desktops tab of the Pools page. A page refresh might be necessary.



You can move your virtual machine XML file and VDI image to `/var/tmp` using the following command:

```
# scp <path to file> root@<VDI host>:/var/tmp
```

If there is not enough space in `/var/tmp`, you can copy both files to another location on the host and create a symbolic link:

```
# ln -s <path to file> /var/tmp/
```

How to Clone Desktops (Sun VirtualBox)

Cloning is the fastest and most efficient way to populate a pool. Use the steps below to enable cloning in a pool.

Before You Begin

A virtual machine must be imported before a template can be cloned. Refer to the [How to Import Desktops \(Sun VirtualBox\)](#) page for detailed information.

VDI Manager Steps

1. Sign into the VDI Manager.
 - a. Go to `http://<server name>:1800` (or `http://localhost:1800` if remote administration has been disabled), and use root user credentials. For a multi-host configuration, use one of the VDI Secondary hosts.
 - b. You will be re-directed to https and the browser will ask you to accept the security certificate. After confirmation, you should get the login screen.
2. Enable cloning in a desktop pool.
 - If you would like to enable cloning in an existing pool, it can be done on the pool's Cloning tab.
 - a. In the VDI Manager, open the Pools tab, then select the previously created pool.
 - b. Select the Cloning tab, and specify the cloning parameters.
 - c. At a minimum, define a desktop template to clone from, and select Enable Automatic Cloning.
 - Alternatively, you can enable cloning during pool creation in the New Pool wizard.
 - a. Choose the desktop template and select Enable Automatic Cloning.
 - b. Click Finish to finalize the pool creation, and begin the automatic cloning.

Cloning can take up to a minute to start, after which you will see clone jobs begin to display in the Jobs window. To access the Jobs window, click the Jobs Running link in the top left of the VDI Manager. After a clone job has been finished successfully, the new desktop will display in the Desktops tab of the Pool page. A page refresh might be necessary.

CLI Steps

1. Open a terminal window and sign into the server with root credentials.
For a multi-host configuration, use one of the VDI Secondary hosts.
2. Start automatic cloning in a pool.

```
# /opt/SUNWvda/sbin/vda pool-start <pool name>
```


- Example – Starting automatic cloning in a pool


```
example% /opt/SUNWvda/sbin/vda pool-start MyPool
```

5. Set Up a User Directory

How to Set Up a User Directory for a Demo

Now the desktops must be made available to users. Typically the user information is already stored in an Active Directory or LDAP server. Before you can assign users to desktops, you must configure the desired Active Directory/LDAP server and the VDI Core.

 If you do not have a directory already installed, you may use [OpenDS](#) as explained in this [blog entry](#).

 **New Page!**
If you would like more details about setting up Active Directory with Kerberos authentication, refer to the new [How to Set Up Active Directory and Kerberos for a Demo page](#).

Steps

1. Select the Settings category in the left sidebar.
2. Then select the User Directory subcategory.
3. Click Add User Directory... to launch the User Directory wizard. Continue depending on your directory type.
 - LDAP directory that supports Anonymous Authentication



Active Directory does not support Anonymous Authentication.

- a. Select LDAP Type, and click Next.
 - b. Select Anonymous Authentication.
 - c. Enter the hostname or IP address, and port number, of the LDAP server. 389 is the default port number used by most LDAP servers.
 - d. Enter the base DN of the LDAP server. Specifying a base DN is optional. It allows you to restrict the part of the LDAP directory used to search for the users. In most cases it is not necessary to provide the base DN.
For example: `cn=Users,dc=my,dc=company,dc=com`
 - e. Click Next to review your choices before completing the configuration.
- Active Directory or other type of LDAP directory that does not support Anonymous Authentication
 - a. Select LDAP Type, and click Next.
 - b. Select Simple Authentication.
 - c. Enter the hostname or IP address, and port number, of the LDAP server. 389 is the default port number used by most LDAP servers.
 - d. Enter the base DN of the LDAP server. Specifying a base DN is optional. It allows you to restrict the part of the LDAP directory used to search for the users. In most cases it is not necessary to provide the base DN.
For example: `cn=Users,dc=my,dc=company,dc=com`
 - e. Enter the user name. It must be the fully distinguished name (DN) of a user that has sufficient privileges to search the LDAP directory.
For example: `cn=super-user,cn=Users,dc=my,dc=company,dc=com`.
 - f. Enter the password for the user.
 - g. Click Next to review your choices before completing the configuration.

6. Add Users to Pools, and Assign Tokens to Users

How to Assign Users to Pools or Desktops

You can either assign a user to a specific desktop, or you can assign a user (or user group) to a desktop pool. If a user is assigned to a pool and requests a desktop, Sun VDI will automatically deliver any available desktop from the pool.

For Microsoft Remote Desktop providers, users cannot be directly assigned to desktops. Instead, users or groups are assigned to Remote Desktop Services pools.

VDI Manager Steps

1. Sign into the VDI Manager.
 - a. Go to `http://<server name>:1800` (or `http://localhost:1800` if remote administration has been disabled), and use root user credentials. For a multi-host configuration, use one of the VDI Secondary hosts.
 - b. You will be re-directed to https and the browser will ask you to accept the security certificate. After confirmation, you should get the login screen.
2. Select the Users category.
 - To assign a user or a group, select the Users and Groups subcategory in the left sidebar.
 - a. Search for users and groups in the user directory.
You can specify user name or user ID.
 - b. Select a user or group name, and then the Assignment tab in the corresponding profile.
 - c. Select Add in the either the user's Assigned Desktops or Assigned Pools table, or the group's Assigned Pools table.
 - To assign a custom group, select the custom group name in the left sidebar.
 - a. Select the Assignment tab in the custom group's profile.
 - b. Select Add in the custom group's Assigned Pools table.
3. In the pop-up window, choose the pool or desktop to be assigned, and click OK.

You can always see which pools and desktops are associated with a user by clicking the Summary tab of the user or group's

profile.

How to Assign Tokens to Users

In a Sun Ray environment, users will take advantage of smart cards (tokens) to initiate a session on a Sun Ray thin client (DTU). With VDI 3.1, you can assign a token to a user. It is also possible to assign desktops directly to specific tokens. Once tokens have been created, they can be assigned to pools and desktops.

VDI Manager Steps

1. Sign into the VDI Manager.
 - a. Go to `http://<server name>:1800` (or `http://localhost:1800` if remote administration has been disabled), and use root user credentials. For a multi-host configuration, use one of the VDI Secondary hosts.
 - b. You will be re-directed to https and the browser will ask you to accept the security certificate. After confirmation, you should get the login screen.
2. Select the Users tab and Users and Groups entry in the left sidebar.
3. Search for a known user in the user directory.
4. Click on the user's name, and then select the Token tab in their profile.
5. Assign the token.
 - If you are assigning a new token, click New in the Tokens table. Then Enter the ID of the new token (e.g. Payflex.500d9b8900130200).
 - If you are assigning an existing token, select Add in the Tokens table. Then search for the desired token.



Token IDs can be copied directly from the SRSS Admin GUI (see the Tokens tab and display Currently Used Tokens).

CLI Steps

1. Open a terminal window and sign into the server with root credentials.
For a multi-host configuration, use one of the VDI Secondary hosts.
2. Assign a token.
 - Assign a new token to a user.

```
# /opt/SUNWvda/sbin/vda token-create -p token-id=<token ID>,user=<user ID>
```

- Example – Creating a new token and assigning it to a user

```
# /opt/SUNWvda/sbin/vda token-create -p
token-id=Payflex.600a7c5600130200,user=jd123456
Token Payflex.600a7c5600130200 created
```

- Assign an existing token to a user.

```
# /opt/SUNWvda/sbin/vda token-create -p token-id=<token ID>,user=<user ID>
```

- Example – Assigning an existing token to a user

```
# /opt/SUNWvda/sbin/vda token-setprops -p user=jd123456
Payflex.600a7c5600130200
Token properties updated
```

7. Access a Virtual Desktop

The two easiest desktop access methods for a demo setup are Sun Ray and Remote Desktop Connection because they are already configured with VDI Core configuration. The following information will explain a quick way to get them up and running. If you would like to configure the advanced options for these software, or use Sun Secure Global Desktop Software (SGD) as your desktop access method, please refer to the main documentation set on the [Accessing Desktops](#) page.

How to Access Desktops with Sun Ray (Demo)

Sun Ray in VDI 3.1 supports [Sun Ray Desktop Unit \(DTU\)](#) and [Sun Desktop Access Clients](#) as virtual desktop access methods. The steps below refer describe desktop access via a DTU. For detailed information about desktop access with Sun Ray, see the [Accessing Desktops](#) page.

Steps

If you have already directed your DTU to your VDI Core host, you will not need to do any extra configuration. Simply insert a user smartcard, and enter user credentials to access your desktop.

- Turn off authentication (optional).
This information is included to simplify a demo setup, but it is not a required step. If you decide to turn off authentication, no password will be required at the VDI desktop selector screen. If you required authentication for the guest operating system during virtual machine creation, the user must still authenticate themselves in the guest operating system.
Executed the following command on the VDI host:

```
/opt/SUNWvda/sbin/vda settings-setprops -p clientauthentication=Disabled
```



If you are already working from a DTU directed at a server other than your VDI Core host, you will need to redirect the DTU. Refer to the [How to Redirect a DTU Session](#) on the SRSS 4.2 information site for further details.

How to Access Desktops with Microsoft Remote Desktop Connection (Demo)

For detailed information about desktop access with Microsoft Remote Desktop Connection, see the [Accessing Desktops](#) page.

Steps

1. Open a Windows Remote Connection client either on Windows or Mac OSX.
2. Enter details for the VDI Core host and provide a user ID as the connection parameter.
3. Establish the connection to access your desktop.