Passwordstate

Enterprise Password Management

Remote Session Management Manual

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1 Overview

Passwordstate has two different remote session Launchers that you can use, a **Client Based Launcher** and a **Browser Based Launcher**.

The purpose of these launchers is to automatically and securely connect you to remote machines, things like Windows Servers, Desktops, Linux machines, Switches, Databases and Firewalls etc. It does this by retrieving credentials directly from the Passwordstate vault, and passes these through securely to the remote session.

You can even have your users use these launchers to remote into these hosts, without even knowing which password they are connecting in with. This is great for temporary contractors that may be doing some work for your team.

This guide will explain how you can install and configure both of the launchers, and can also help you diagnose any issues you may have when using either of them.

Below is a brief summary of each launcher:

Client Based Launcher:

- Supports connections for the following types:
  - RDP
  - SSH
  - SQL
  - VNC
  - Telnet
  - TeamViewer
- Connects using a physically installed application on your machine, like mstsc.exe or putty.exe
- Requires one installation per machine where you want to use the launcher
- No plugins or agents required on remote hosts
- No session Recording

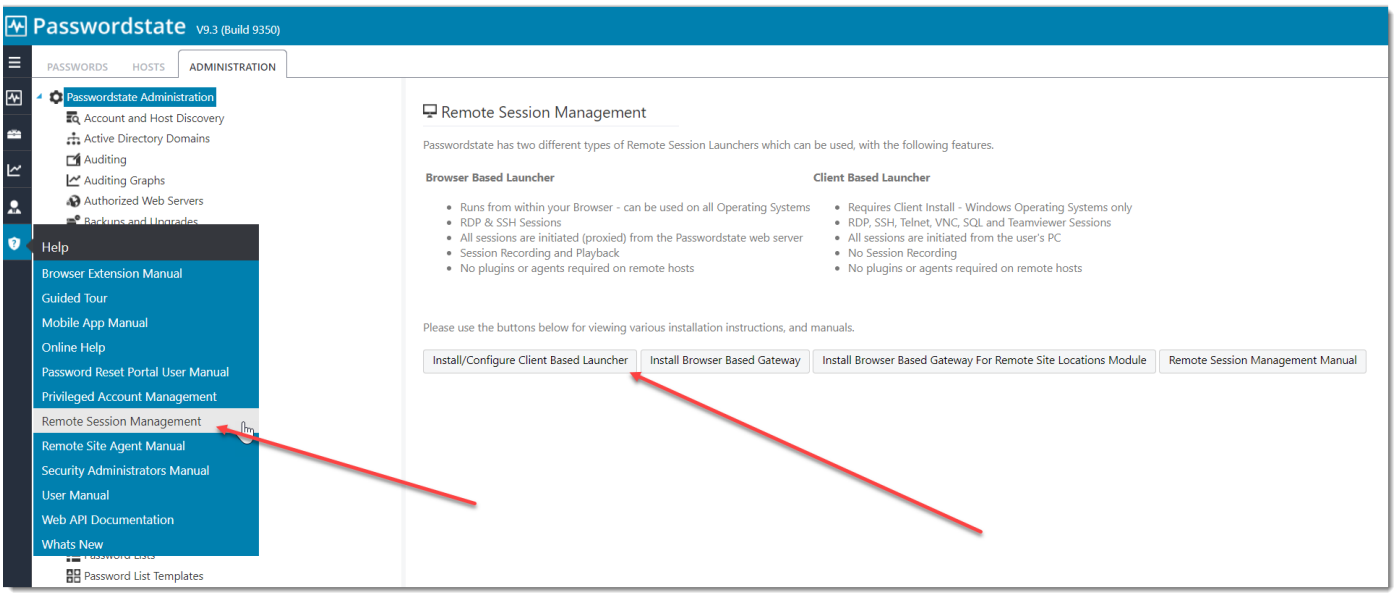
Browser Based Launcher:

- Supports connections for the following types:
  - RDP
  - SSH
- Runs directly in your browser, no installation required on each of your desktops
- All sessions are initiated (proxied) through a Gateway on your Passwordstate webserver, or you can host this Gateway on a separate server if you wish
- No plugins or agents required on remote hosts
- Allows Session Recording for playback at a later date
- Can be used in conjunction with the Remote Site Locations Module, so you can RDP or SSH into machines over the internet or disconnected networks

2 Install the Client Based Launcher

Installing and configuring the Client Based Launcher is a per machine process, and full details on how to do this can be found in Passwordstate under the Help Menu '**Remote Session Management**'

Click on the button '**Install/Configure Client Based Launcher**' and then follow the on page instructions to install the client, and then configure you browser.



Note 1: Configuring the Browser is a once off process, which allows the browser to launch the physically installed app on your machine. If you clear you Browser cache, you will need to follow this process again

Note 2: The Client Base launcher will fail to launch a session if you have popups being blocked in your browser. Please check popups are allowed in your browser if your sessions appear to "Do Nothing" when attempting to connect.

Note 3: If you would like to install the client based launcher using your software deployment tool, you can use the following switch to install it silently without the installer GUI – passwordstatelauncher.exe /s

3 Installing the Browser Based Launcher

Installing the Browser Based Launcher is a once off process on a single server of your choice. It can be installed on any Windows operating system of your choice, and all sessions are tunnelled through a Windows Service that you create during this installation process.

The core Passwordstate website comes preinstalled with this Browser Based Launcher, but it does still require some configuration as a once off process before you can start using it. This is the most preferred and easiest option a majority of Click Studios customers use.

Alternatively, you can install this Browser Based Launcher on a separate server to where you have Passwordstate installed.

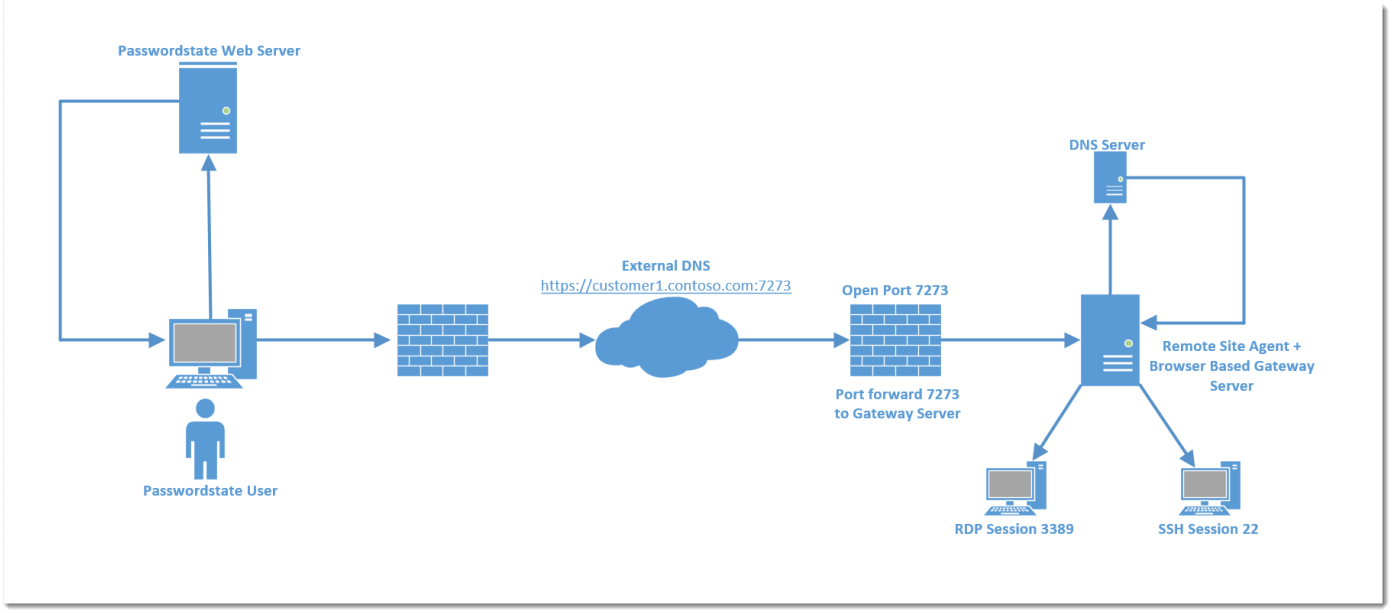
To configure the existing install of the Browser Based Launcher on your Passwordstate webserver, or to install it separately, please see this install guide which is mostly automated for you:

https://www.clickstudios.com.au/downloads/version9/Passwordstate_Remote_Session_Launcher_Gateway_Install_Guide.pdf

4 Install Browser Based Launcher for Remote Site Locations Module

Passwordstate has an additional module called Remote Site Locations, which allows you to deploy an agent to a remote network that you do not have direct connectivity to. This agent can discover and manage privileged accounts and passwords on that remote site, and this is all centrally managed from your internally hosted Passwordstate instance. More information on this Remote Site Locations module can be found here: https://www.clickstudios.com.au/remotesitelocations/default.aspx

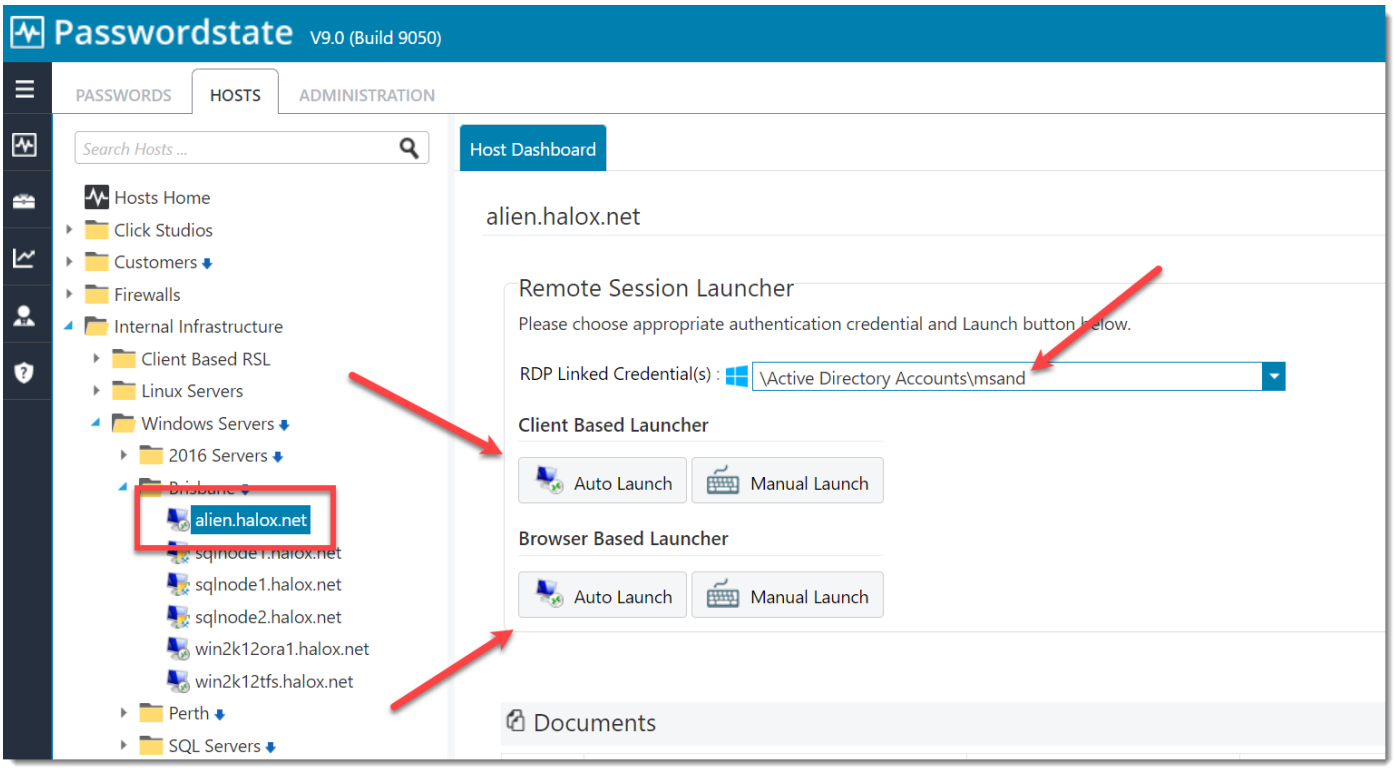
If you use this Remote Site Locations module, it's possible to install the Browser Based Remote Session Launcher on the same network. This allows you to perform RDP and SSH sessions within that remote network over the internet.



To set this up, please follow the section called "**Install Browser Based Remote Session Launcher on Remote Site**" in this manual: https://www.clickstudios.com.au/downloads/version9/Passwordstate_Agent_Manual.pdf

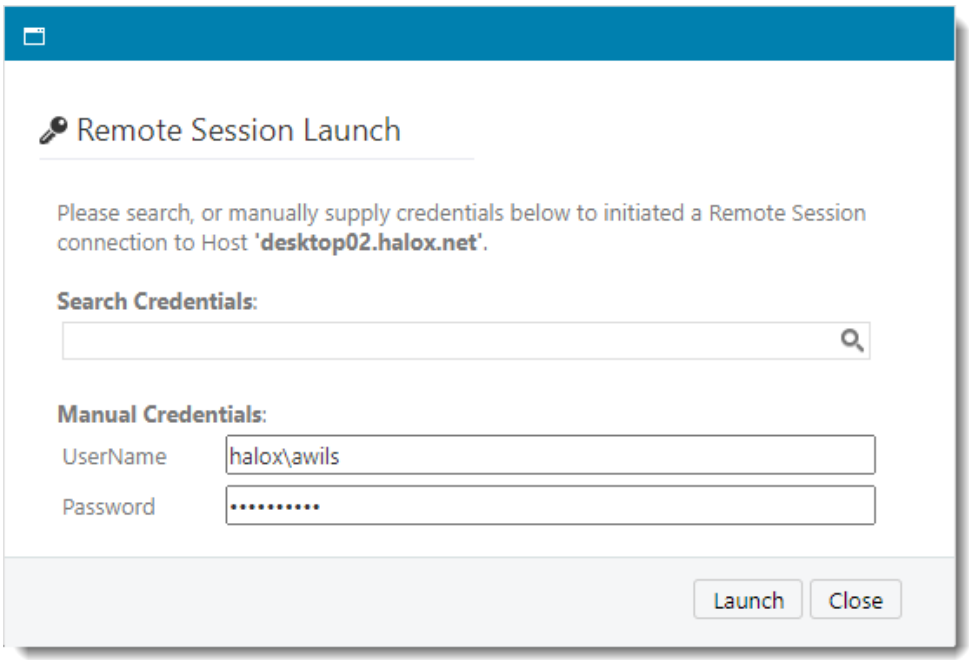
5 How to Launch a Remote Session

Once you have everything set up, launching a session using either of the Launchers is very easy. The primary way is to click on a host, and select the **Auto Launch** button. In the example below, we'll be connecting into **alien.halox.net** with an account called "**msand**" which is a Windows Domain account.

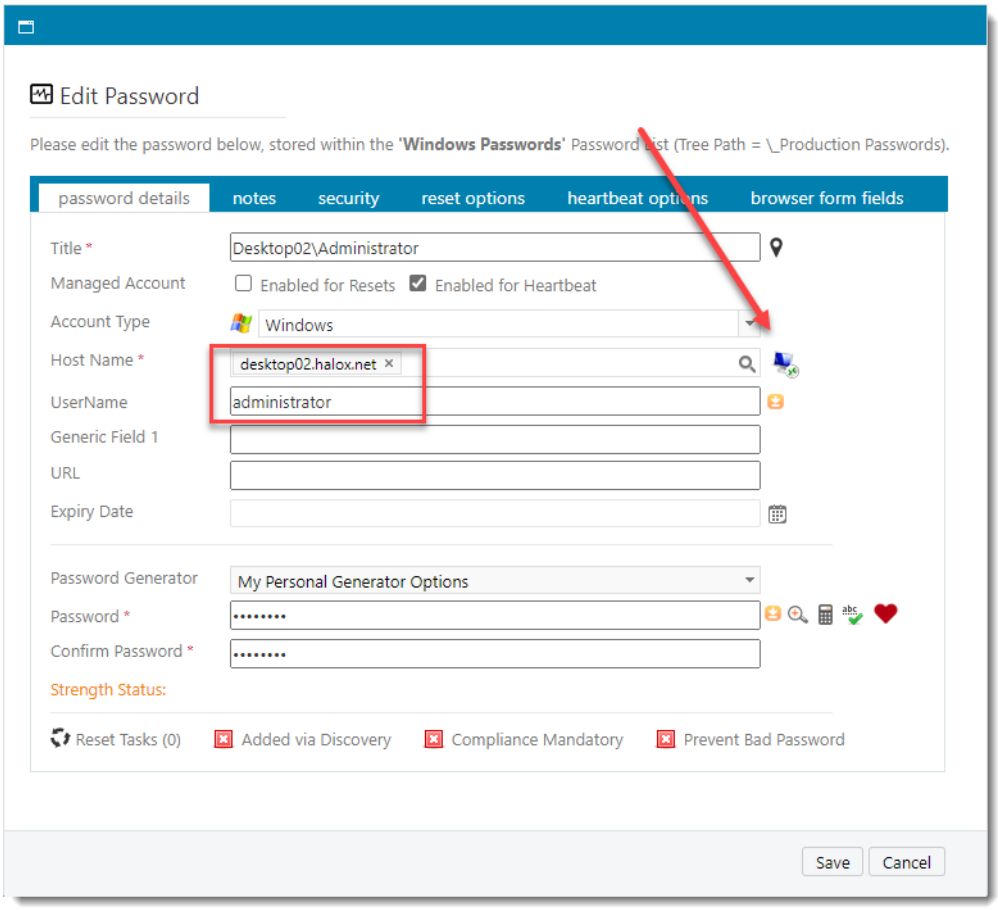


Alternatively, you can click the Manual Launch button instead, which will allow you to enter your credentials if you do not have them already saved in Passwordstate, or you do not have them linked via a Remote Session Launcher:

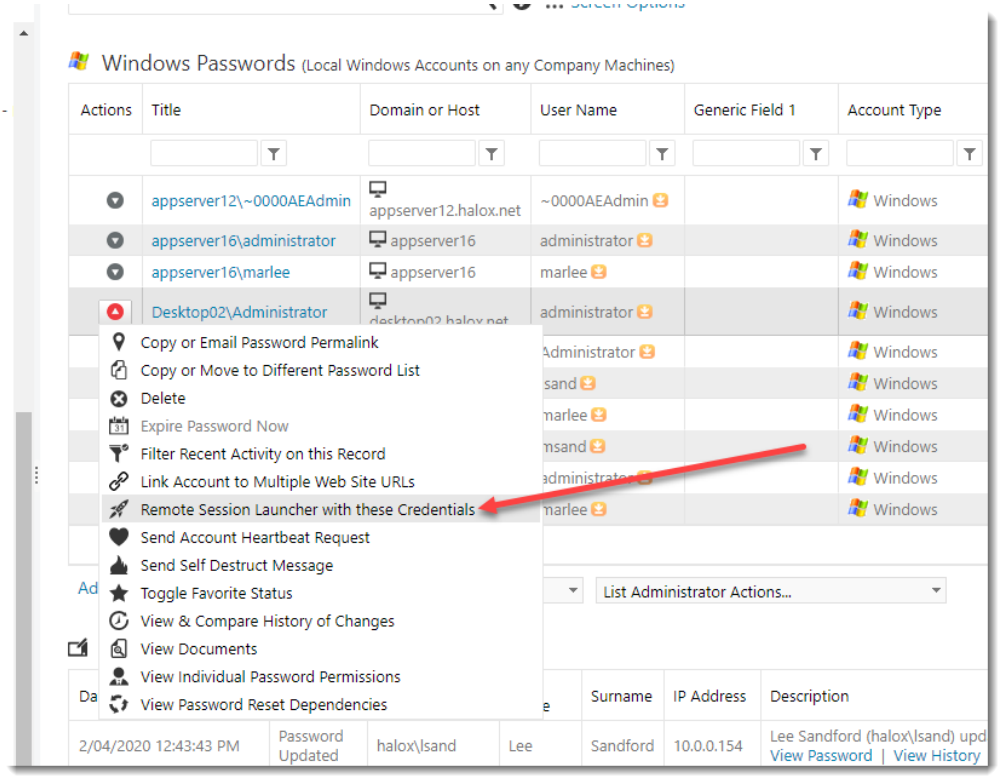
When entering credentials enter them in the format of ***domain\username*** for domain accounts, or just ***username*** for local accounts to the Host.



Another way to establish an automatic connection is directly from within a Password Record. By clicking this icon below, it will connect into the Host using a local account on the machine, in this example we'll be connecting to a host called **Desktop02.halox.net**, but using the Local **Administrator** account:



A second option to launch a session directly from a password record, is from the Actions Menu. Here we are launching into the same machine, with the same Administrator account:



6 Adding Hosts into Passwordstate

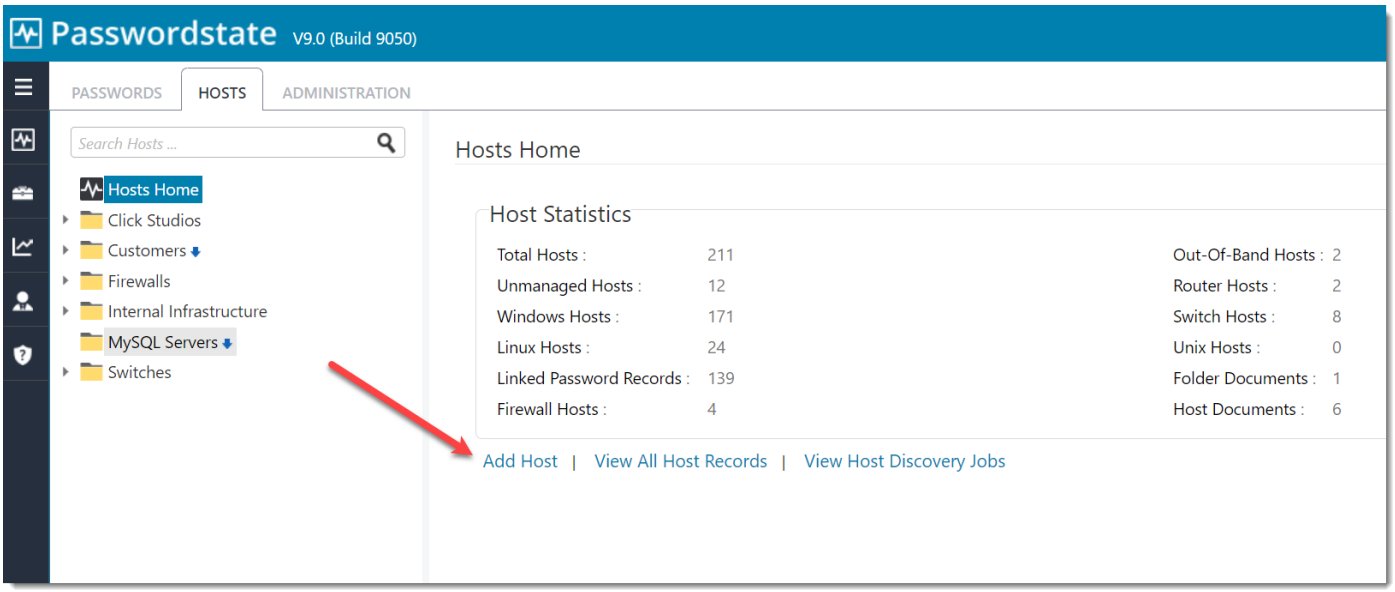
In our software a "**Host**" can be any type of Server, Desktop, Laptop, or other devices such as a Firewall or a Switch. In order to make connections to Hosts, you must first have the Host added into Passwordstate.

There are a few different methods on how to add Hosts:

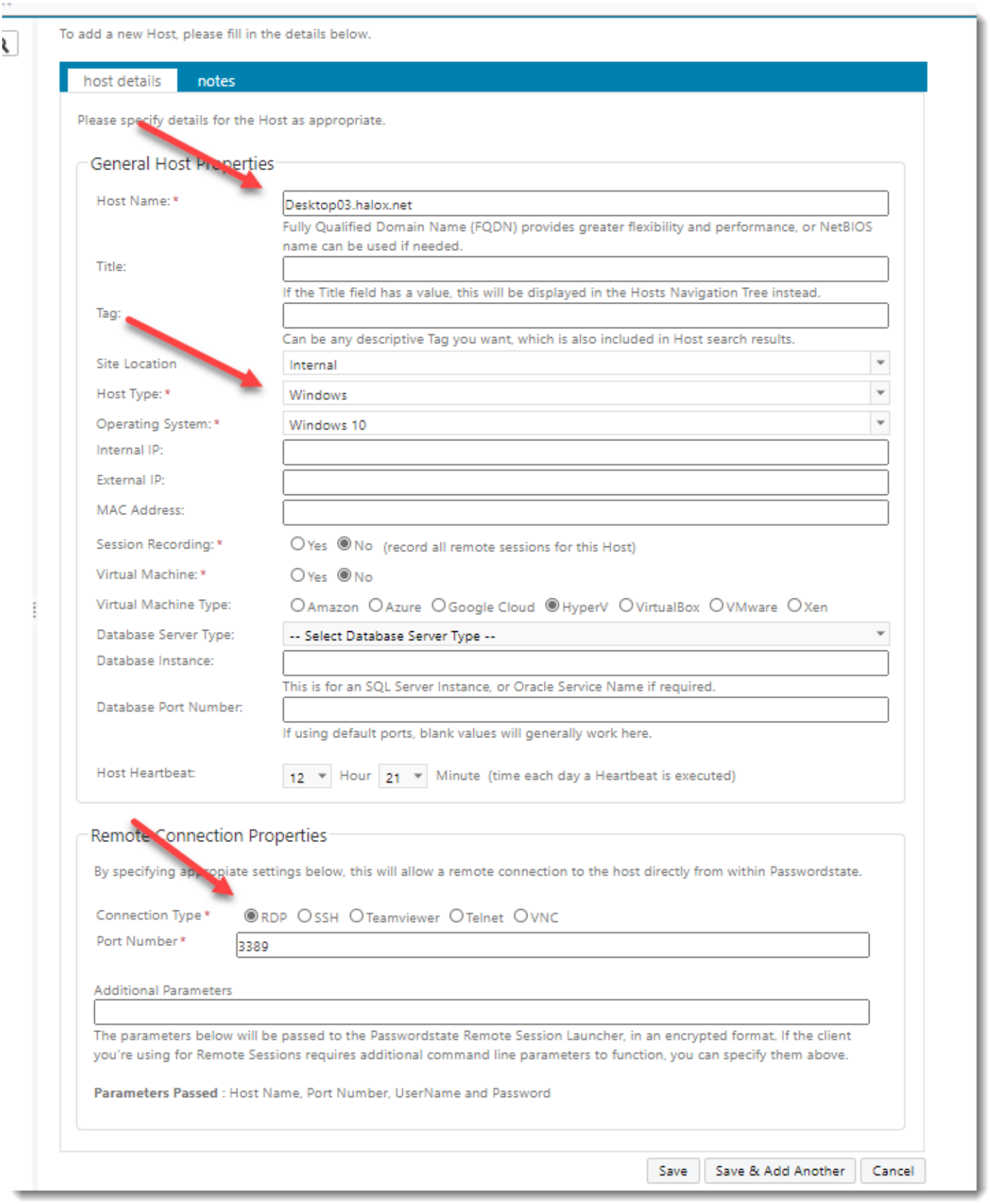
1. Manually add them one by one
2. Import them from a csv file in bulk through the User Interface
3. Add them automatically on a schedule by a Host Discovery job
4. Add them via the Passwordstate API

6.1 Manually Adding Hosts

To add them manually, select the **Add Host** option under **Hosts tab** -> **Hosts Home**:



When adding in a host manually, there are many different options you can set, but the most import ones that you'll need to configure to perform a remote session to it are the Host Name, the Host Type and the Connection Type:



6.2 Adding Hosts in Bulk via CSV File

Importing in bulk via a csv file can be initiated from **Hosts Home** -> **View All Hosts Records** -> **Import**. This process will generate a csv file for you, which you'll need to populate with relevant data, save, and then import back into the system.

6.3 Adding Hosts Automatically using a Hosts Discovery Job

A very easy way to import your Hosts into Passwordstate automatically is via a Hosts Discovery Job. These are mainly used for Windows Servers and Desktops, but if you have Linux Servers or other operating systems added into your Active Directory domain as a computer object, it's possible to import these too via a Host Discovery Job.

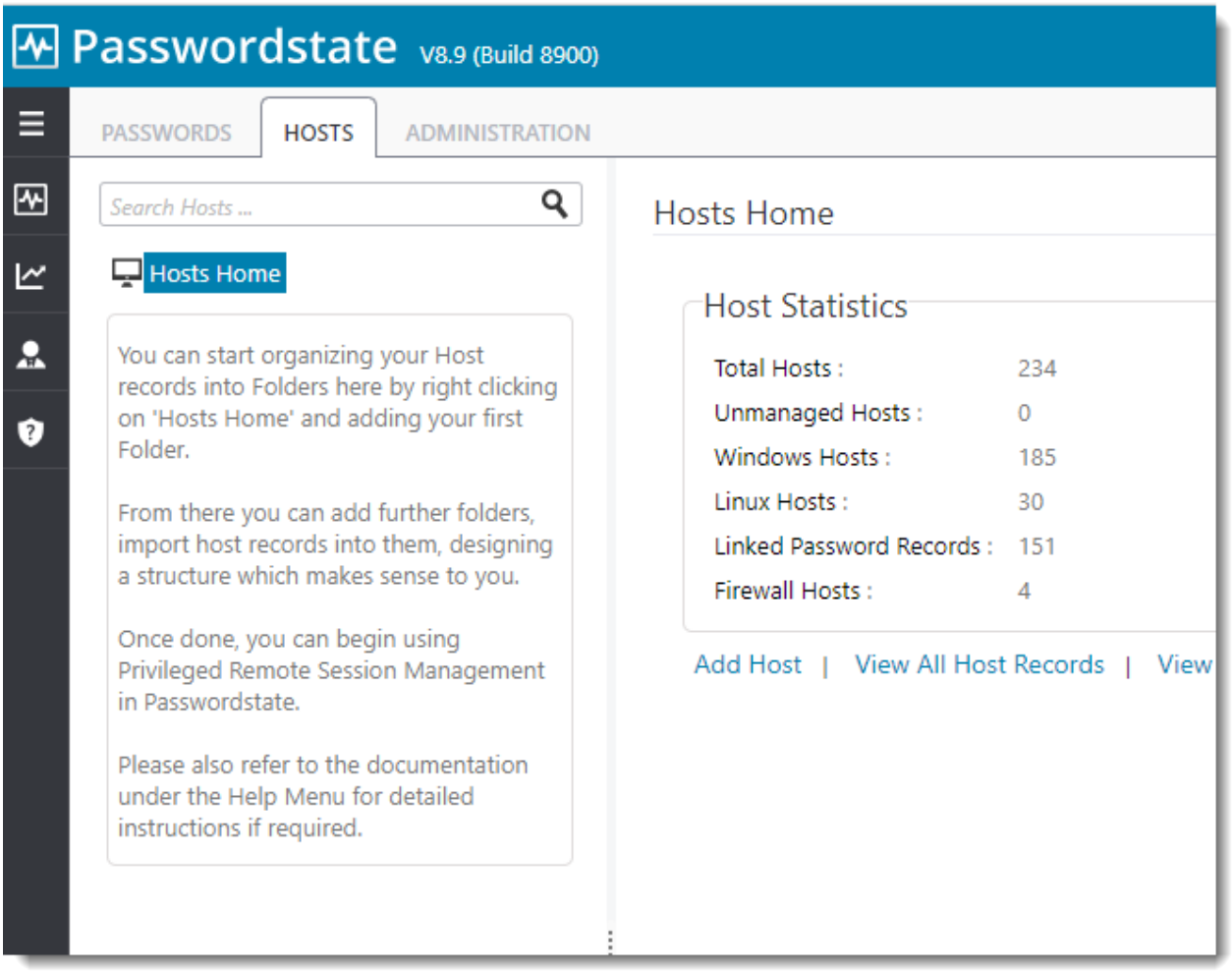
To set up a Hosts discovery job to scan Active Directory and import hosts automatically, please see this tutorial video: https://www.youtube.com/watch?v=UifVi2rH8x0

6.4 Adding Hosts via API

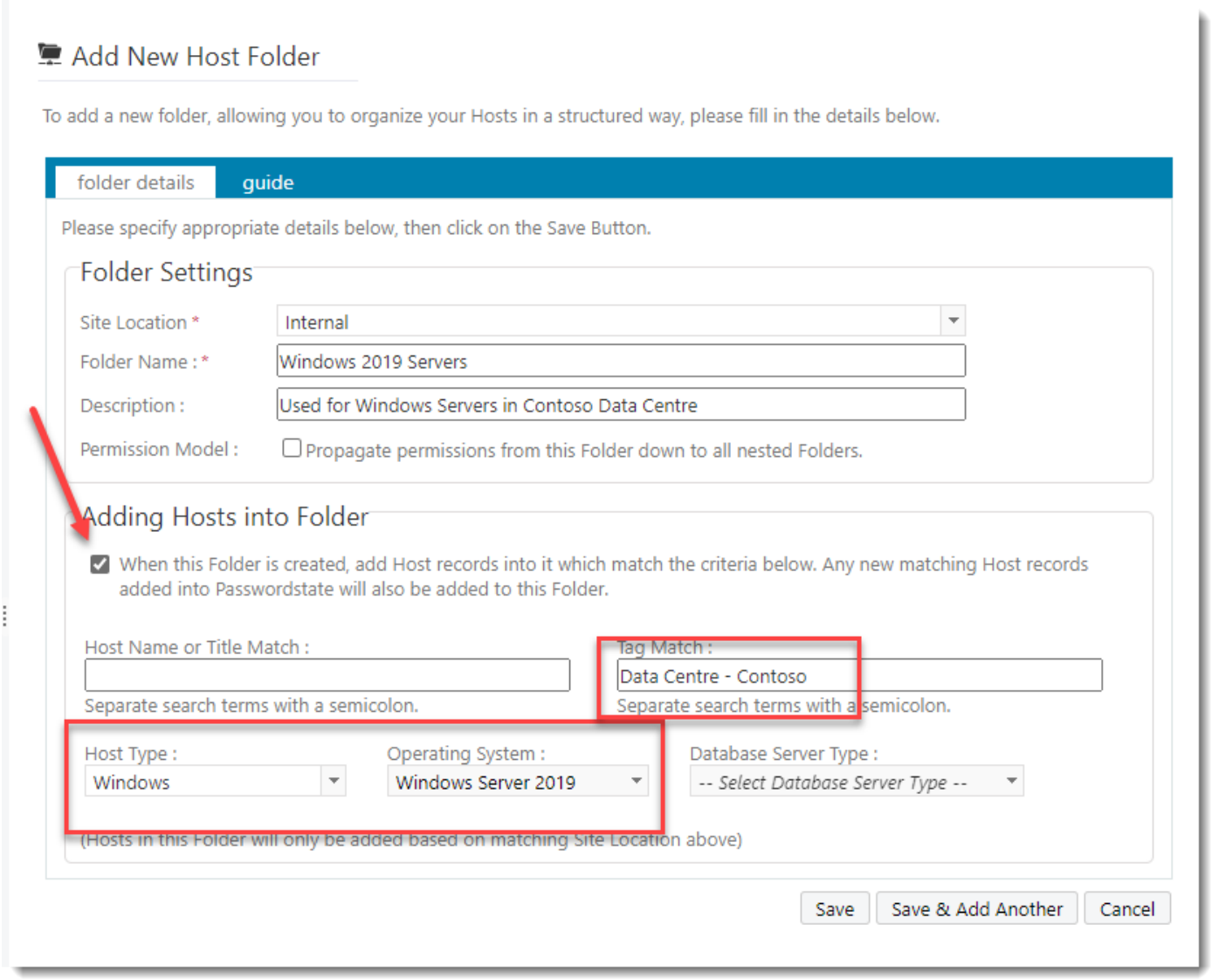
Inside Passwordstate, you'll find a manual for our APIs under **Help** -> **Web API Documentation**. In these manuals there is a section for administering Hosts in Passwordstate, which you can use to script the addition of hosts into your system

6.5 Organising Hosts ready for Connections

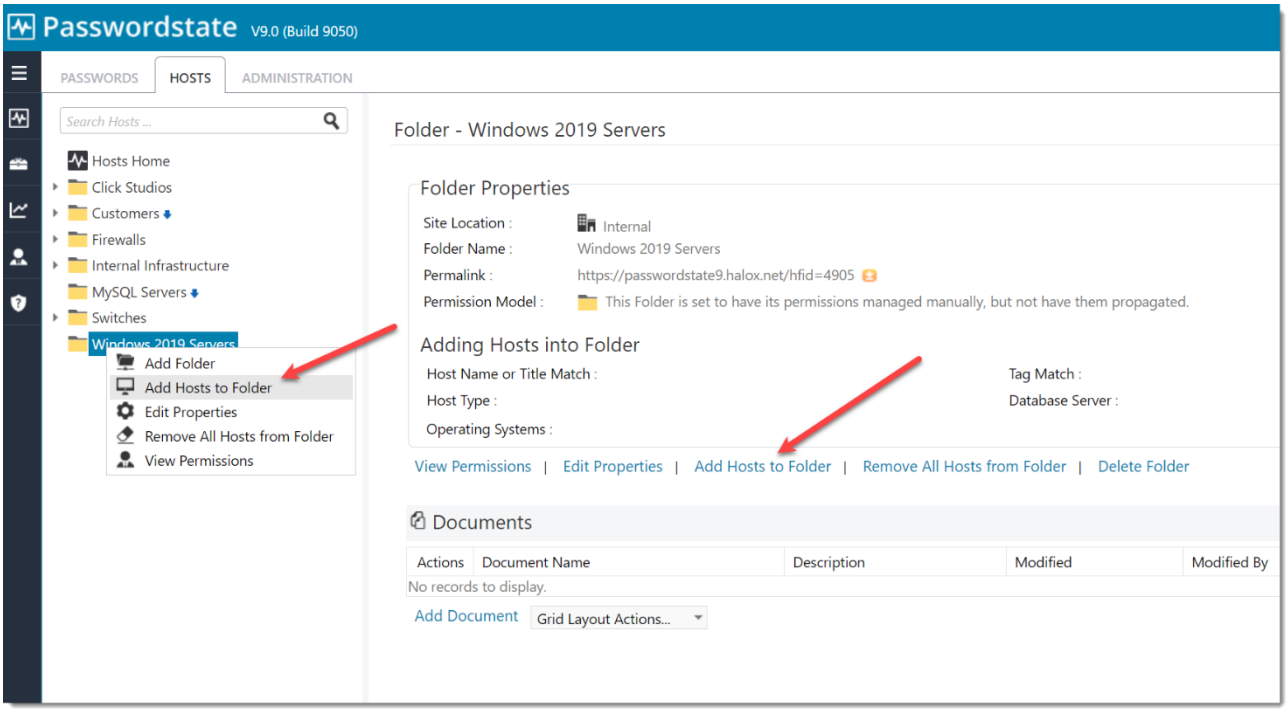
Now that we have added the Hosts into the system, it's time to begin organising them logically into Folders under the Hosts tab. On your Hosts Home screen, you should see an empty Navigation Tree:



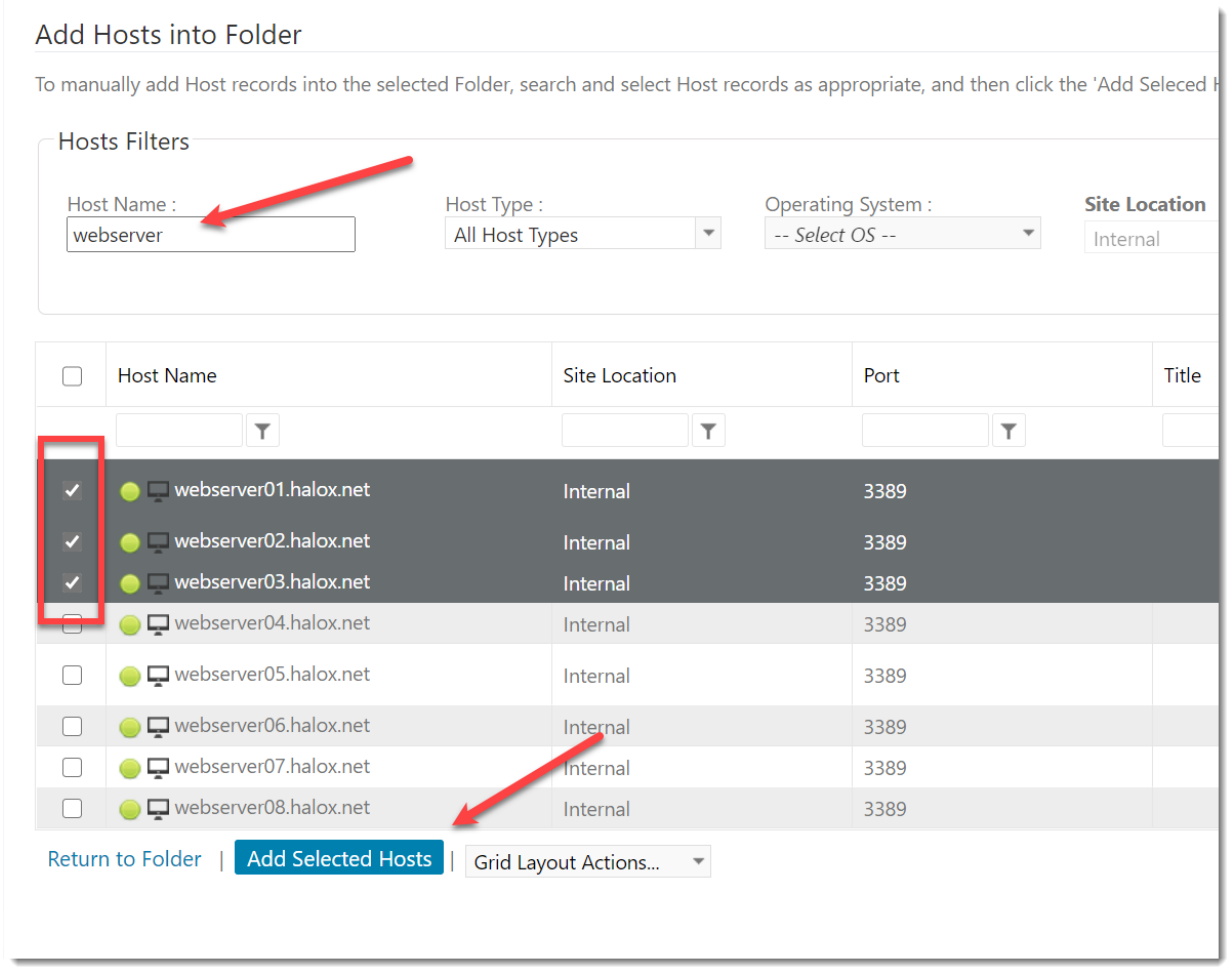
You'll need to create at least one folder by right clicking **Hosts Home** and select **Add Folder**. When adding this Folder, give it a relevant name such as "Windows Servers". If needed you can automatically add Hosts into the Folder based on certain criteria. For example, you could choose Server 2019 machines and if you have tagged your Hosts you could potentially use that information as well. Using this example, all Server 2019 machines that have a matching tag will be added to this folder at the time of creation, and any new Server 2019 machine added to Passwordstate will be added to this folder as well.



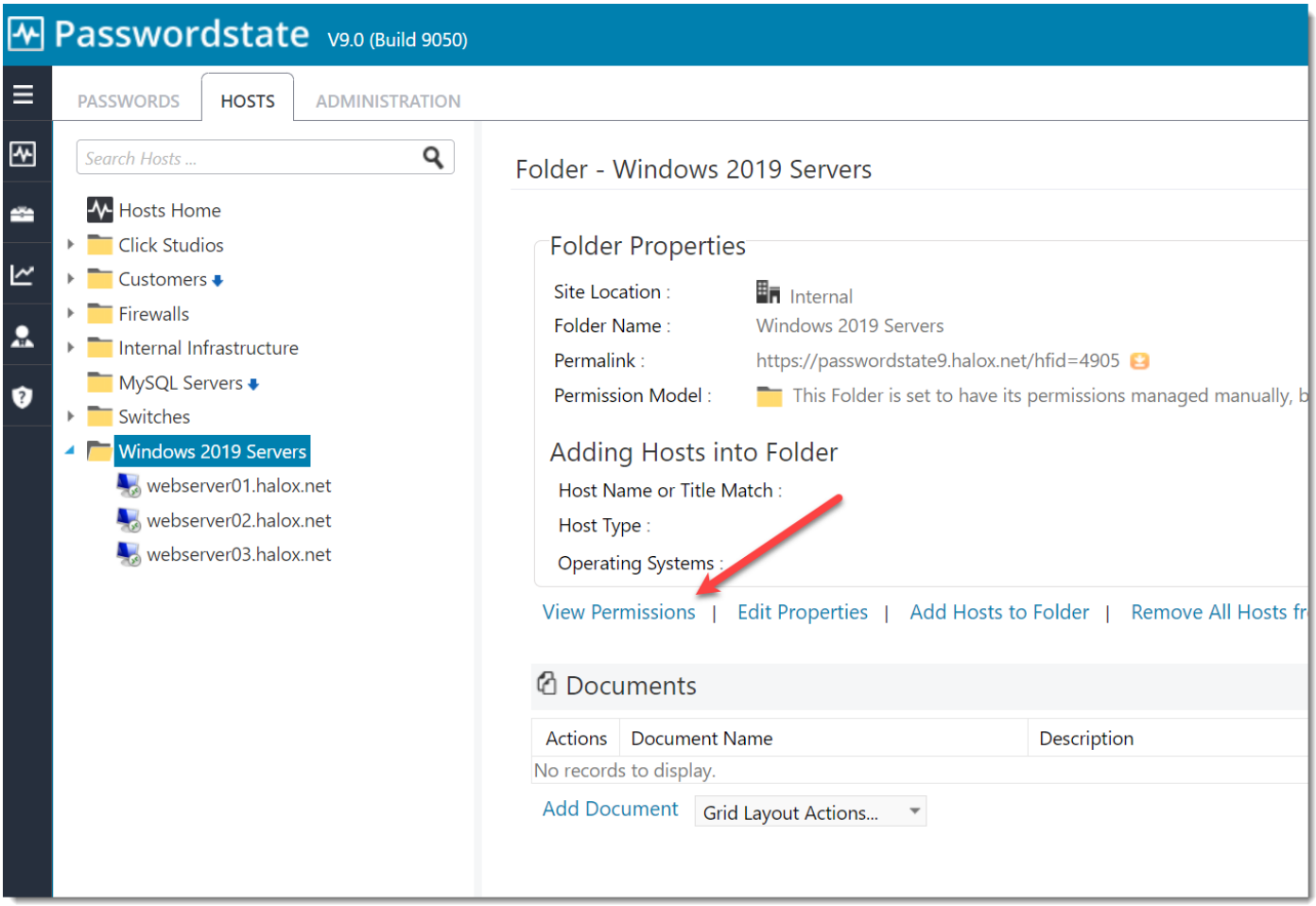
For now, we'll create an empty Folder, so we can demonstrate how to manually add Hosts into this folder. To manually add Hosts to a Folder, select one of these options:



Now find the Host/s you want, and select this option to add them into the Folder:



If you'd like to share this Folder out with another colleague, or any other Passwordstate user, use the **View Permissions** button to add them in:



7 Remote Session Credentials

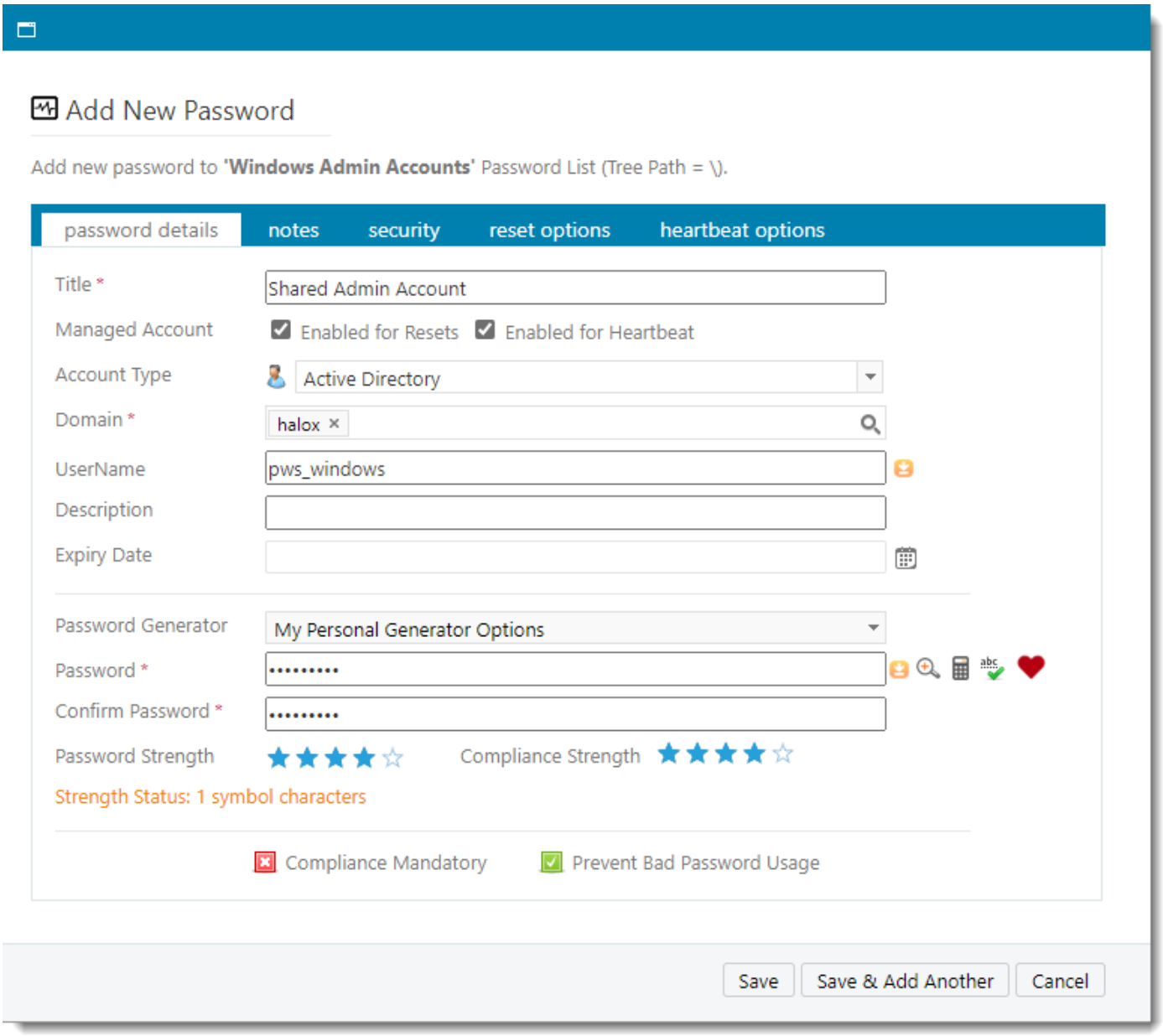
Now that we have the Hosts entered into the system, we need to set up credentials which will be used to connect into the Hosts. Primarily we do this by way of a Remote Session Credential, and we use one Remote Session Credential to connect to multiple Hosts if desired, or we can filter them to only be used to log into specific Hosts.

In the example below, we'll set up a Remote Session Credential that uses an Active Directory Domain account. This domain account has enough permissions to RDP into any Windows Server on the network.

7.1 Adding a Password Record

First, you'll need to create a Password Record, that is in a Password List that is enabled for resets (However you can untick the "**Enabled for Resets Option**" on the record if you do not want Passwordstate to automatically reset this account's password on a schedule).

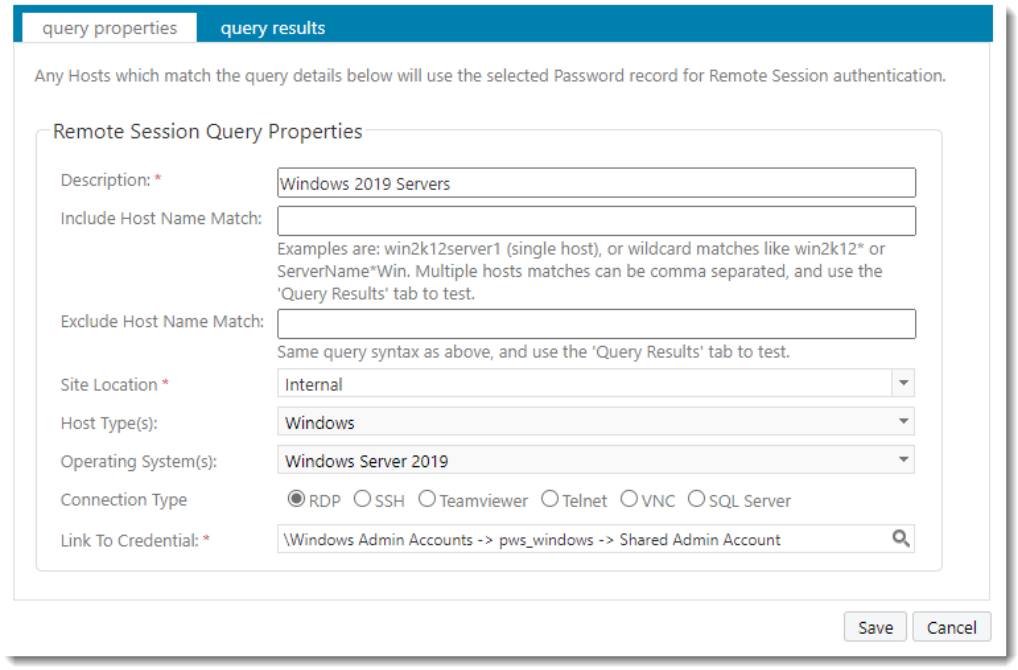
Choose the account type as Active Directory, and set the **Domain**, **Username** and **Password** for this account. If you want to confirm the password is in sync with Active directory, click the **Heartbeat** icon.



7.2 Adding a Remote Session Credential

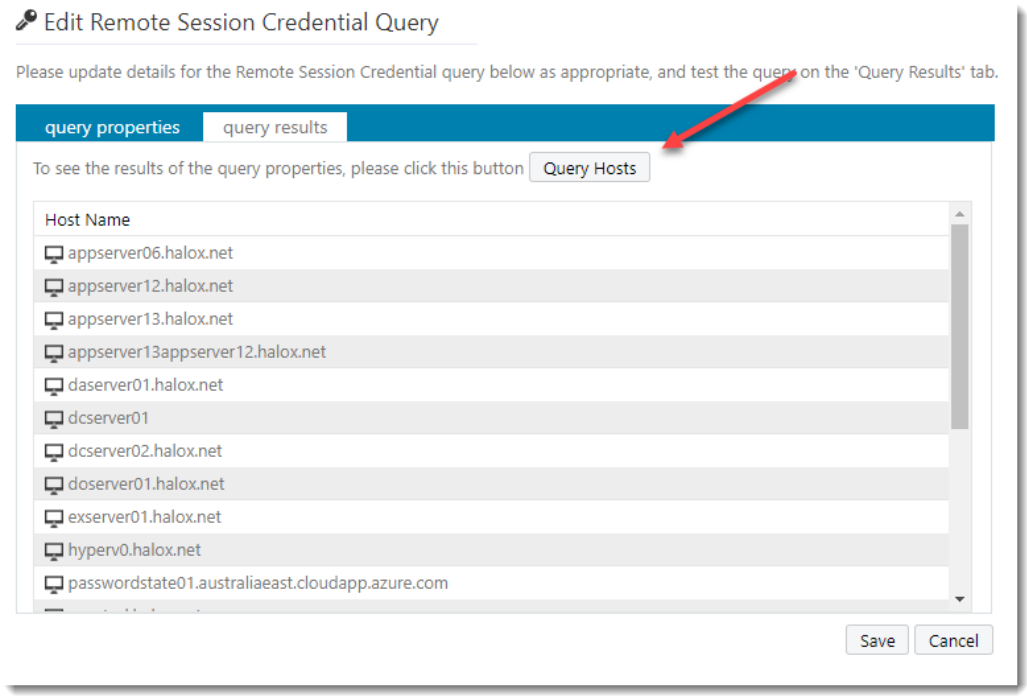
After creating a Password Record, go to **Hosts tab** -> **Hosts Home** and select **Add Credential**.

On this screen you should give your credential a **Description**, choose what type of **Connections** it can make, and link it to the password record we created in the step above (***Hint** - Start typing the username in the **Link To Credential** field*):



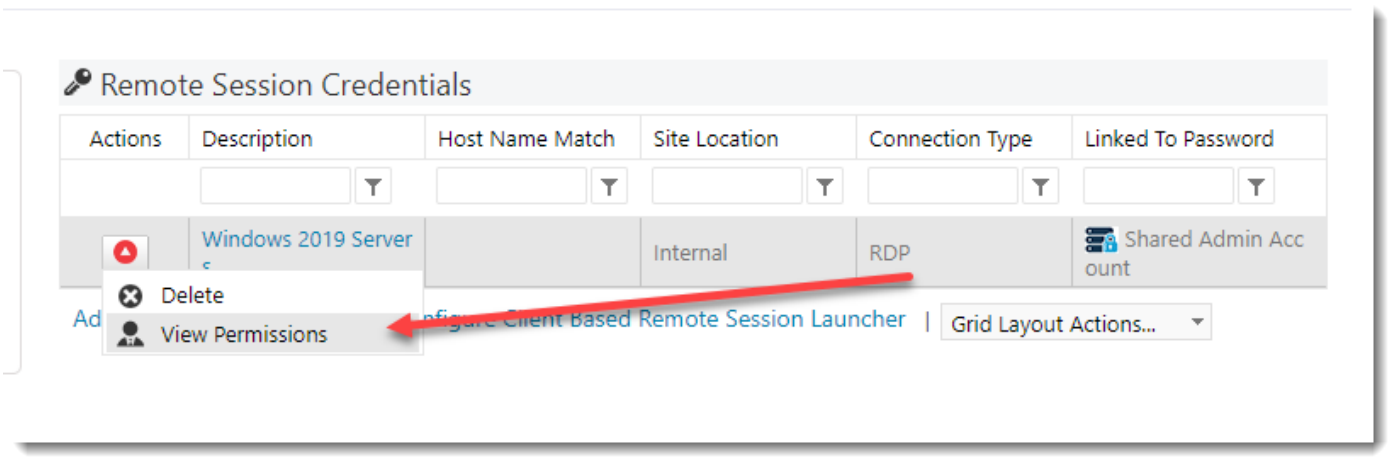
Note: On this page you can filter on which Hosts this Remote Session Credential can connect to with wildcard matches by using the "**Include Host Name Match**" or the "**Exclude Host Name Match**" fields.

To quickly see which Hosts this credential can connect into, click the "**Query Hosts**" tab under the Query Results tab:



7.3 Sharing out a Remote Session Credential

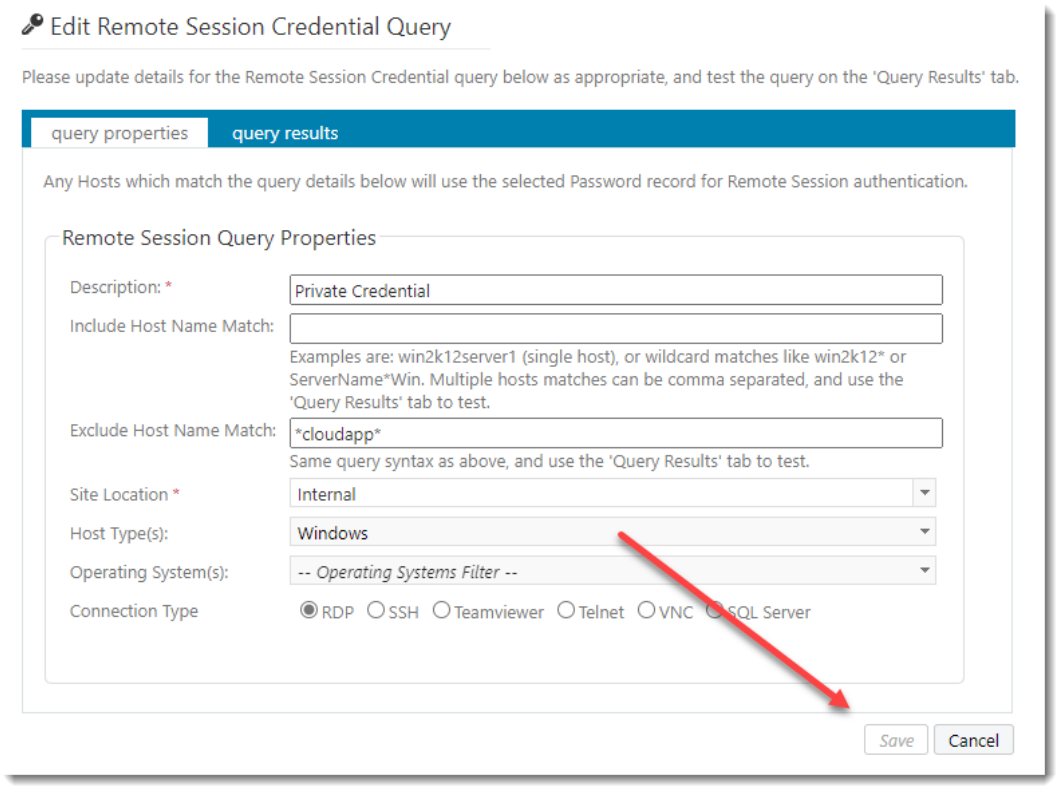
If you want to share this Remote Session Credential out, so other team members can also use it to connect into Hosts, you can do so via the **Actions** menu:



One benefit of sharing out Remote Session Credentials like this, is the user does not need to have access to the password record that it is linked to. This means those users can use this Remote Session Credential to connect to your Hosts, but they will not even know the password they are using to connect in with.

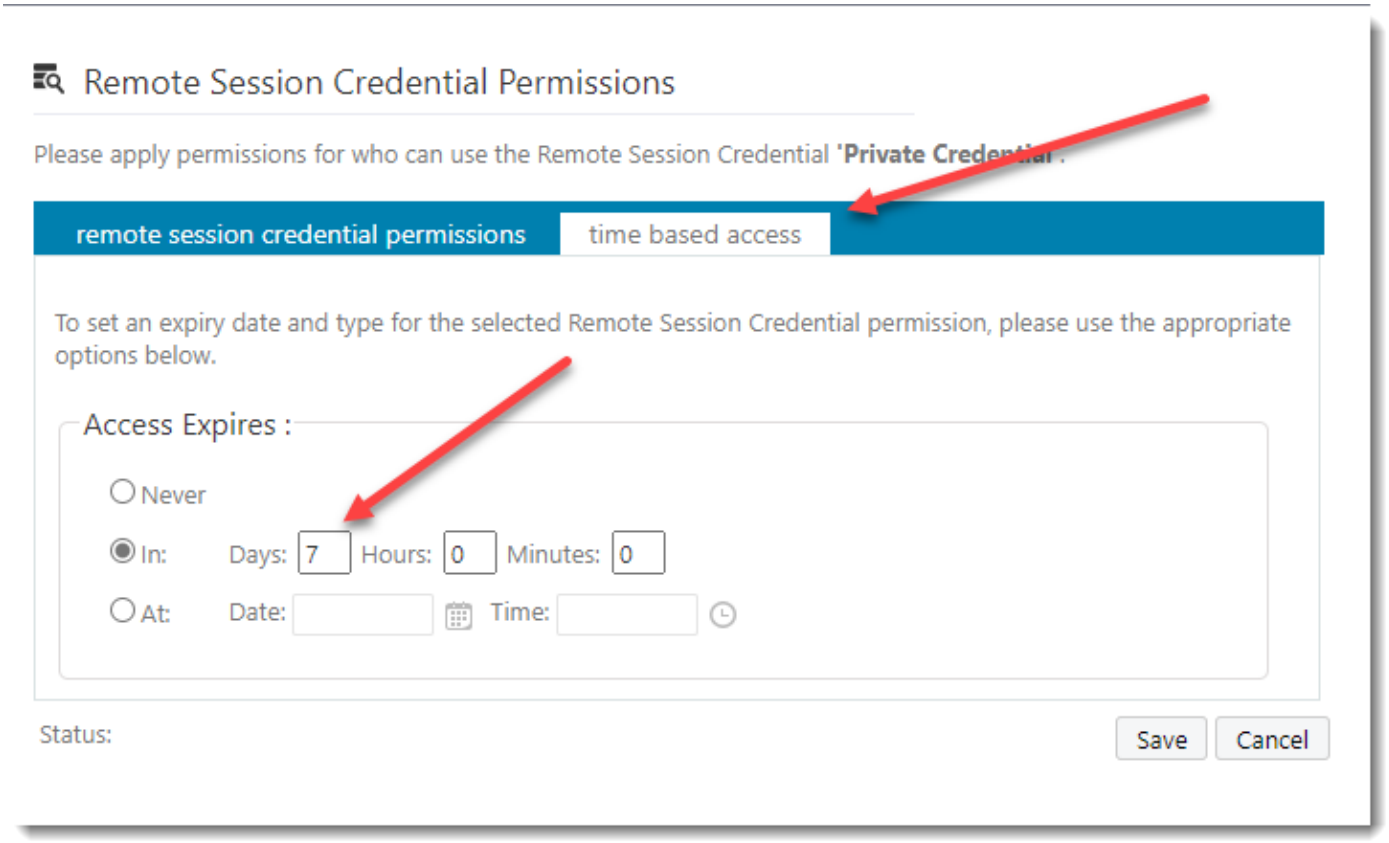
This feature is useful if you have contractors on site with a requirement to remote into different machines. As they do not know the password they are authenticating with, there is no need to reset account passwords when the contractor leaves.

If the contractor attempts to edit the Remote session Credential, the Save button will be disabled as they do not have access to the Password Record it is linked to:



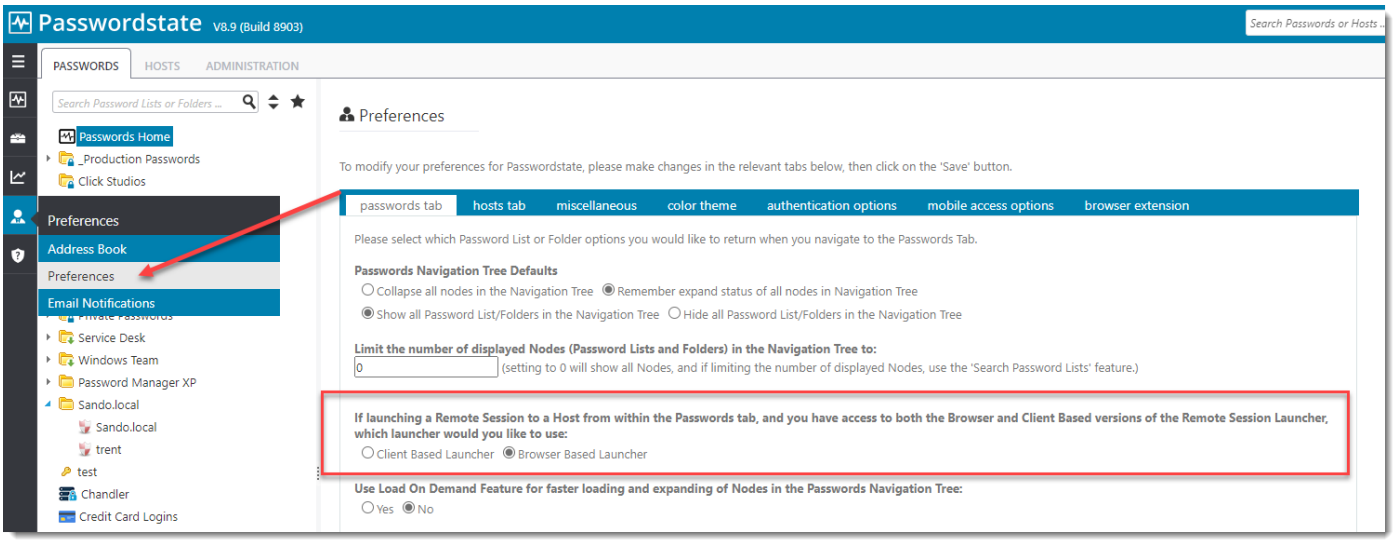
7.4 Time-Based Access to Remote Session Credentials

When applying permissions via the Actions menu in the **Section 6.3** above, you are also able to set an expiry date so access will be automatically removed when your contactor leaves:

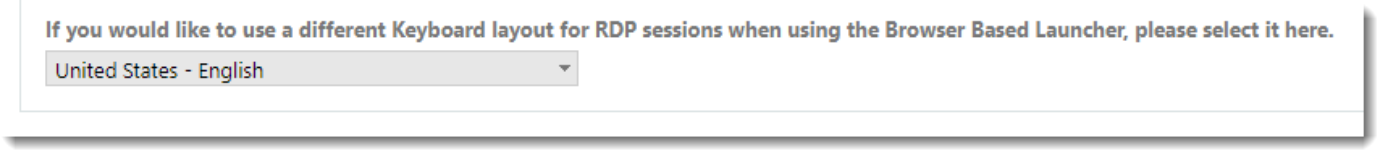


8 Personal Preferences

Under your personal **Preferences**, which can be accessed from the Menu pane on the left-hand side of your web page, or by clicking your name in the top right-hand corner, you can choose which Remote Session Launcher to use if launching from inside a Password Record:



The Browser Based Launcher also includes support for multiple different keyboard layouts. It's possible to change your keyboard layout under Preferences -> Miscellaneous:



9 Administration: Feature Access

As a Security Administrator of Passwordstate, you are able to control how the Remote Session Launcher behaves. There are a number of settings under **Administration** -> **Feature Access** -> **Remote Sessions**

On this page you can configure things such as who can and can't use the Remote Session Launchers, who will have their session recorded, or possibly even control who can manage Remote Session Credentials.

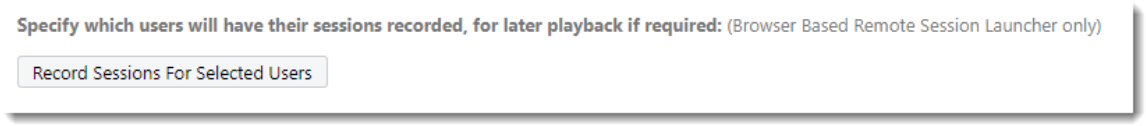
We'd encourage you to as a Security Administrator to browse through this page, and assess whether you will use any of these settings in your environment.

10 Session Recording

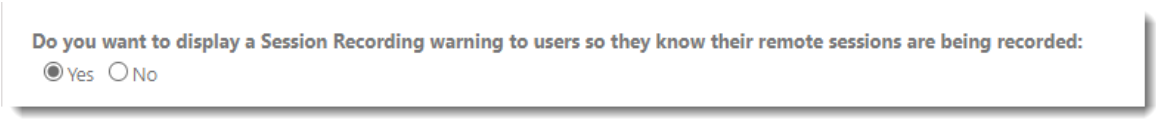
One of the features that you can use with the Browser Based Launcher is **Session Recording**. This will record the screen so an appropriate person in your company can later play it back to review what work a particular person has performed whilst in a remote session.

An example of when you might want to use this is if you have a contractor coming on site to perform some work for you, you can advise them ahead of time that their work will be recorded. This can be handy if you need to get video footage of their work for documentation purposes, or maybe even if you need to have evidence of what work was actually performed.

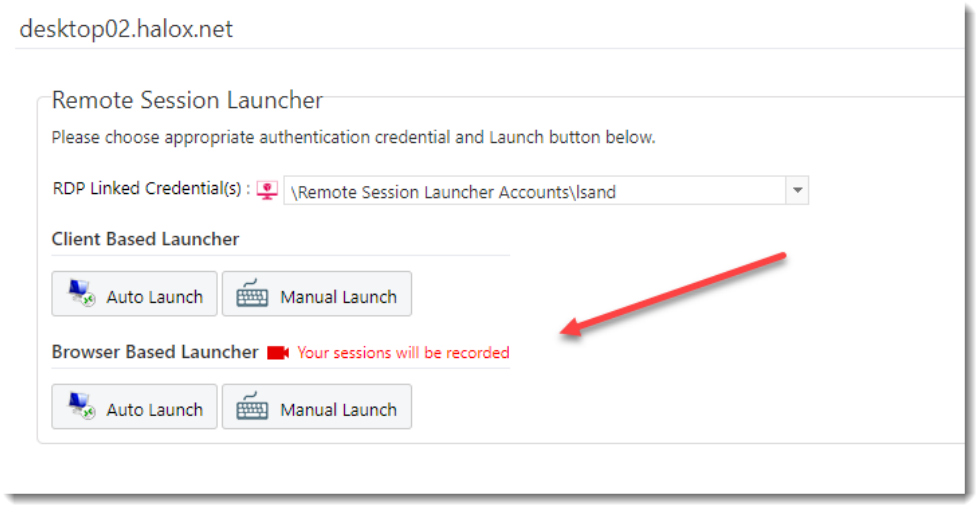
You can control who has their sessions recorded under **Administration** -> **Feature Access** -> **Remote Sessions** by configuring this setting below (By default no one has their sessions recorded)



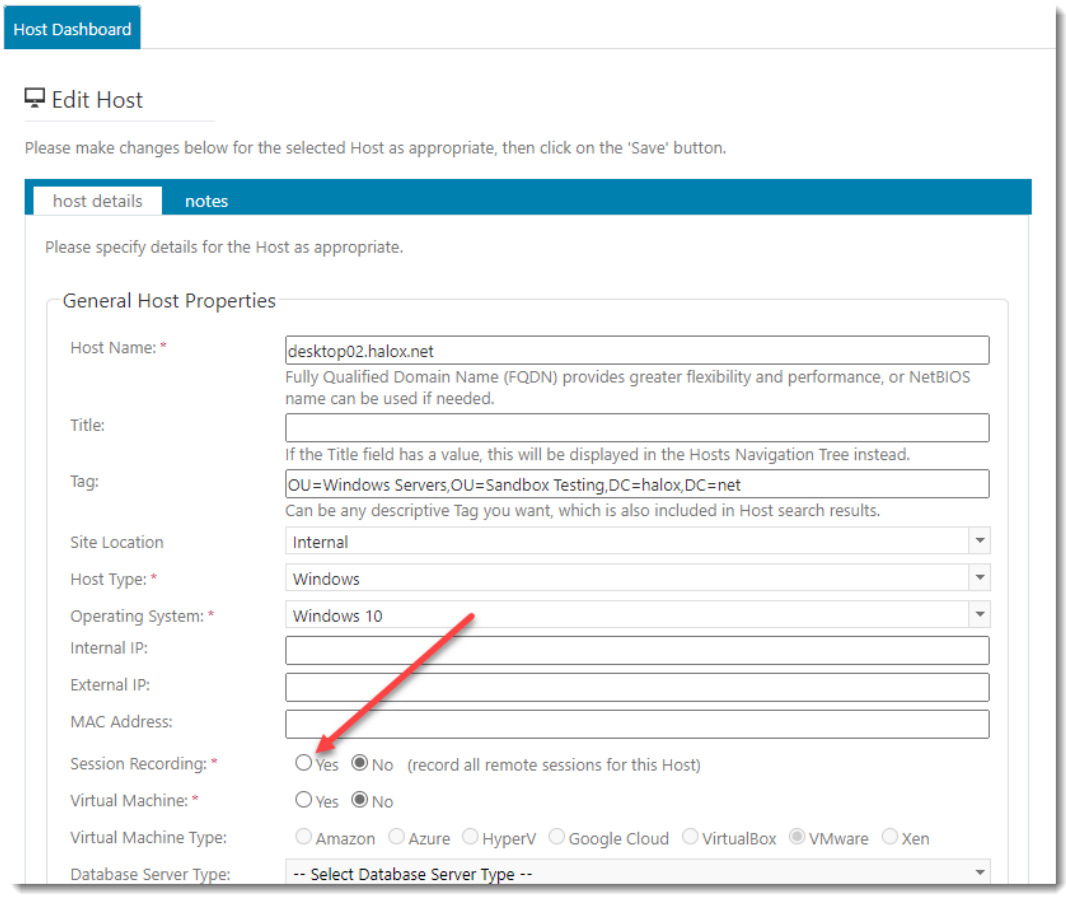
You can also choose whether or not to display a warning that the session will be recorded by enabling this option on the same page:



If you turn on the warning for the user, they will see this message before they attempt to connect:



If you would prefer to record all sessions for a specific Host, rather than per user, you can set this option on the Host when editing it:



Session Recording Settings

Session recordings can be saved in one of three locations:

- The default path is c:\inetpub\passwordstate\hosts\gateway\rec (your path may be different if you've installed Passwordstate into a different folder, or deployed the Gateway separately)
- Or you can save to a different folder or disk on your Passwordstate web server
- Or you can save to a network share.

Note: If you are using the High Availability module for Passwordstate, it is recommended you save recorded sessions to a Network Share, so both instances of Passwordstate have access to replay the session recordings.

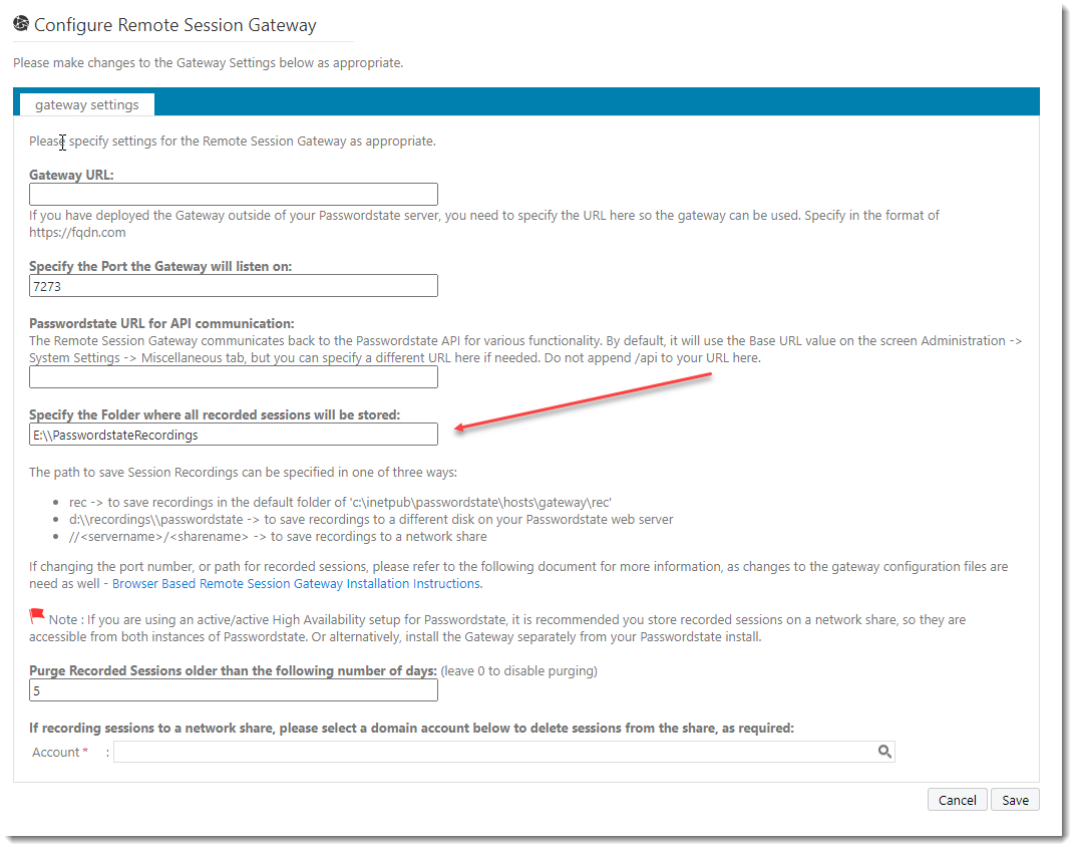
When changing the path to where you wish to save session recordings, this needs to be done in two locations:

1. On the screen **Administration** -> **Remote Session Management** -> **Configure Remote Session Gateway**
2. In the file C:\inetpub\Passwordstate\hosts\gateway**gateway.conf**

The different formats that can be used are:

1. **rec** -> to save recordings in the default folder of 'c:\inetpub\passwordstate\hosts\gateway\rec'
2. **<drivename>:\\<foldername>** -> to save recordings to a different disk on your Passwordstate web server
3. **//<servername>/<sharename>** -> to save recordings to a network share

Example of changing the path in the User Interface:



Example of the changing the path in the gateway.conf file:

```
#listening port
port = 7273

#directory for session recording.
recdir = E:\\PasswordstateRecordings
recdir.play.enable = true

#default folder of where the html files are stored
html = html
```

Note 1: the ***recdir*** setting is used to tell the gateway where to save the Session Recordings

Note 2: When changing this setting, you need to restart the Passwordstate-Gateway Windows Service to pick up the change

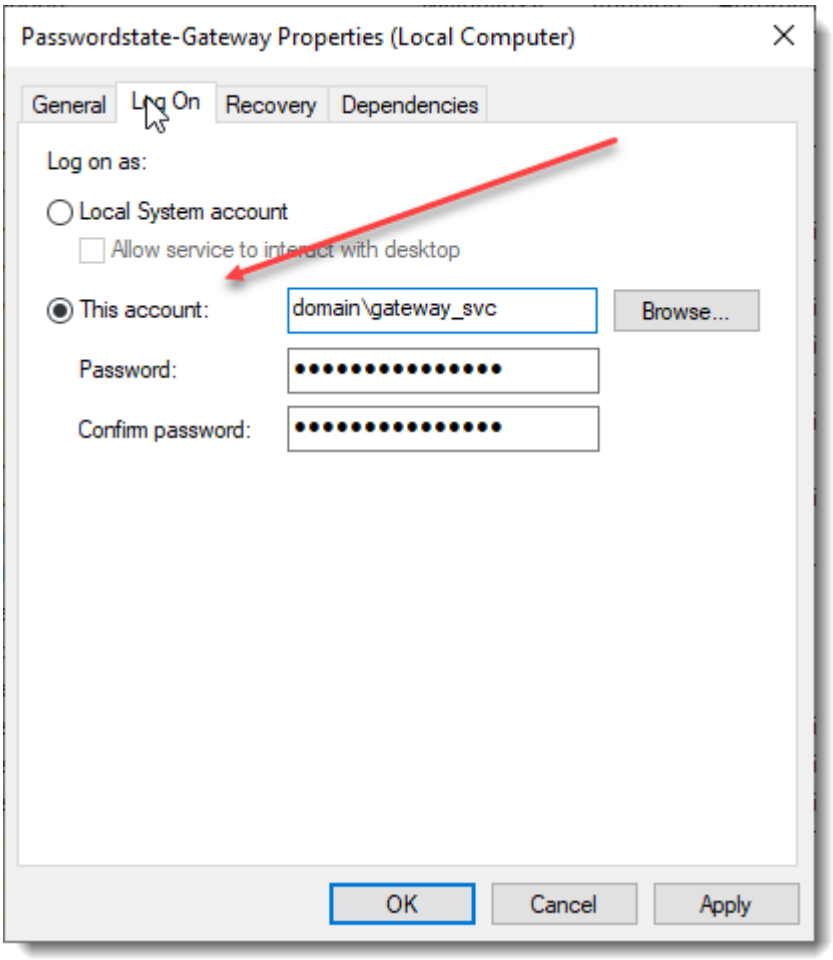
Session Recording Permissions

When storing session recordings using the default ***rec*** value, the NTFS permissions are already correct.

If, however you specify a different location such as static folder on a different disk, then you need to ensure at least Authenticated Users have modify access to the folder.

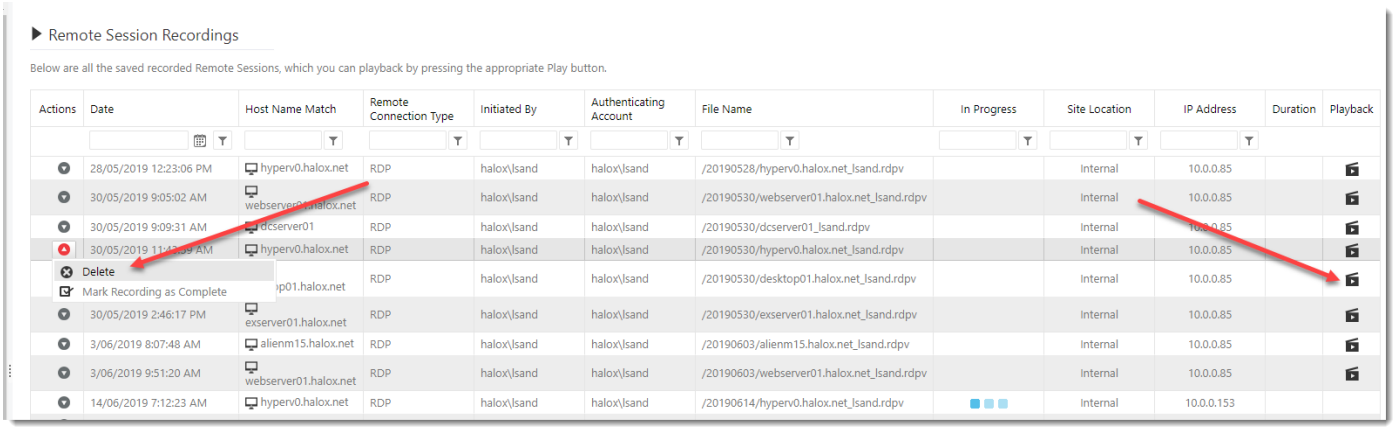
When using a Network Share, you must modify the '**Log On**' rights for the Passwordstate-Gateway Windows Service, with an account that has read/write to the share – screenshot below for this.

If you want Passwordstate to delete session recordings from the network share, please set an account on the Configure Remote Session Gateway page that also has permissions to delete from the network share.



Note: Session Recordings will not be included in the standard Passwordstate backup functionality, due to the potential size of the files. If you have left the recording folder in the default path, then you need to organize your own backups of these files if required.

To play back the recorded session, navigate to **Administration** -> **Remote Session management** -> **Recorded Sessions** and from this page you can watch the video within your browser by clicking on the Media button, or you can delete the session from the Actions Menu:


Remote Session Recordings
Below are all the saved recorded Remote Sessions, which you can playback by pressing the appropriate Play button.
Actions
Date
Host Name Match
Remote Connection Type
Initiated By
Authenticating Account
File Name
In Progress
Site Location
IP Address
Duration
Playback
28/05/2019 12:23:06 PM hyperv0.halox.net RDP halox\lsand halox\lsand /20190528/hyperv0.halox.net_lsand.rdpv Internal 10.0.0.85
30/05/2019 9:05:02 AM RDP halox\lsand halox\lsand /20190530/webserver01.halox.net_lsand.rdpv Internal 10.0.0.85
30/05/2019 9:09:31 AM dcserver01 RDP halox\lsand halox\lsand /20190530/dcserver01_lsand.rdpv Internal
30/05/2019 hyperv0.halox.net RDP halox\lsand halox\lsand /20190530/hyperv0.halox.net_lsand.rdpv Internal 10.0.0.85
Delete
Mark Recording as Complete
RDP halox\lsand halox\lsand /20190530/desktop01.halox.net_lsand.rdpv Internal 10.0.0.85
30/05/2019 2:46:17 PM exserver01.halox.net RDP halox\lsand halox\lsand /20190530/exserver01.halox.net_lsand.rdpv Internal 10.0.0.85
3/06/2019 8:07:48 AM alienm15.halox.net RDP halox\lsand halox\lsand /20190603/alienm15.halox.net_lsand.rdpv Internal 10.0.0.85
3/06/2019 9:51:20 AM webserver01.halox.net RDP halox\lsand halox\lsand /20190603/webserver01.halox.net_lsand.rdpv Internal 10.0.0.85
14/06/2019 7:12:23 AM hyperv0.halox.net RDP halox\lsand halox\lsand /20190614/hyperv0.halox.net_lsand.rdpv Internal 10.0.0.153

11 SQL Server Connections

The Client Based Remote Session Launcher is capable of establishing automatic connections with SQL database servers. It's possible to connect with a domain account, or a local SQL account.

We have a training video for this, which explains how to set this up, and launch a SQL session: https://www.youtube.com/watch?v=4RnzHKI-k0o

In order to perform Remote Sessions for SQL Server, you need to have the SQL Server Management Studio installed on your PC where you are accessing Passwordstate from.

Source files for SQL Server Management Studio can be found here: https://docs.microsoft.com/en-us/sql/ssms/download-sql-server-management-studio-ssms?view=sql-server-ver15

Note: Microsoft have removed the ability to pass a SQL Server account password value to SQL Server Management Studio via the command line, in SQL Management Studio 2018. Authenticating with Active Directory accounts works with Management Studio 2018 and above, but if you wish to use Local SQL Accounts you will instead need to use SQL Management Studio 2017.

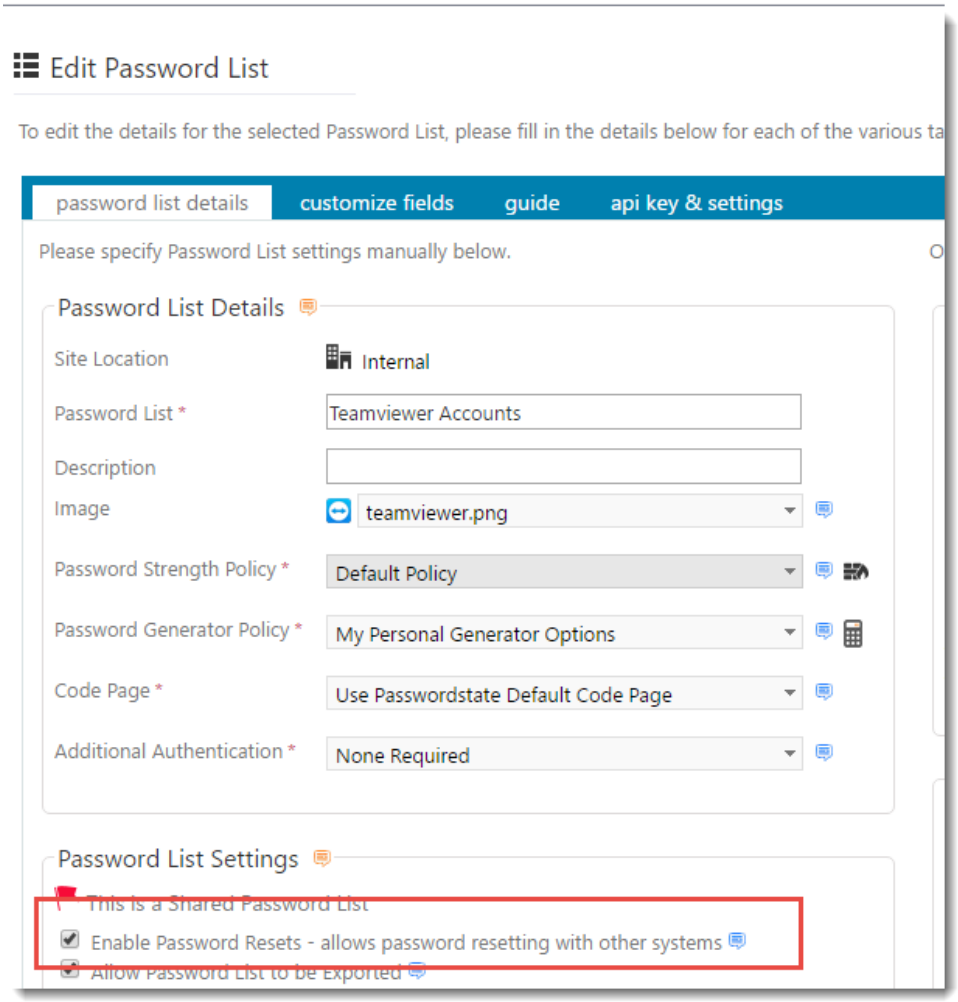
If you need to download SQL Server Management Studio 2017, see this link: https://docs.microsoft.com/en-us/sql/ssms/release-notes-ssms?view=sql-server-2017#previous-ssms-releases

12 TeamViewer Connections

If you use TeamViewer to do Remote Sessions over the internet, it's possible to launch these sessions automatically using our Remote Session Launcher. You must have TeamViewer installed on the computer you are accessing Passwordstate from, and source files for this software can be found here: https://www.teamviewer.com/en/.

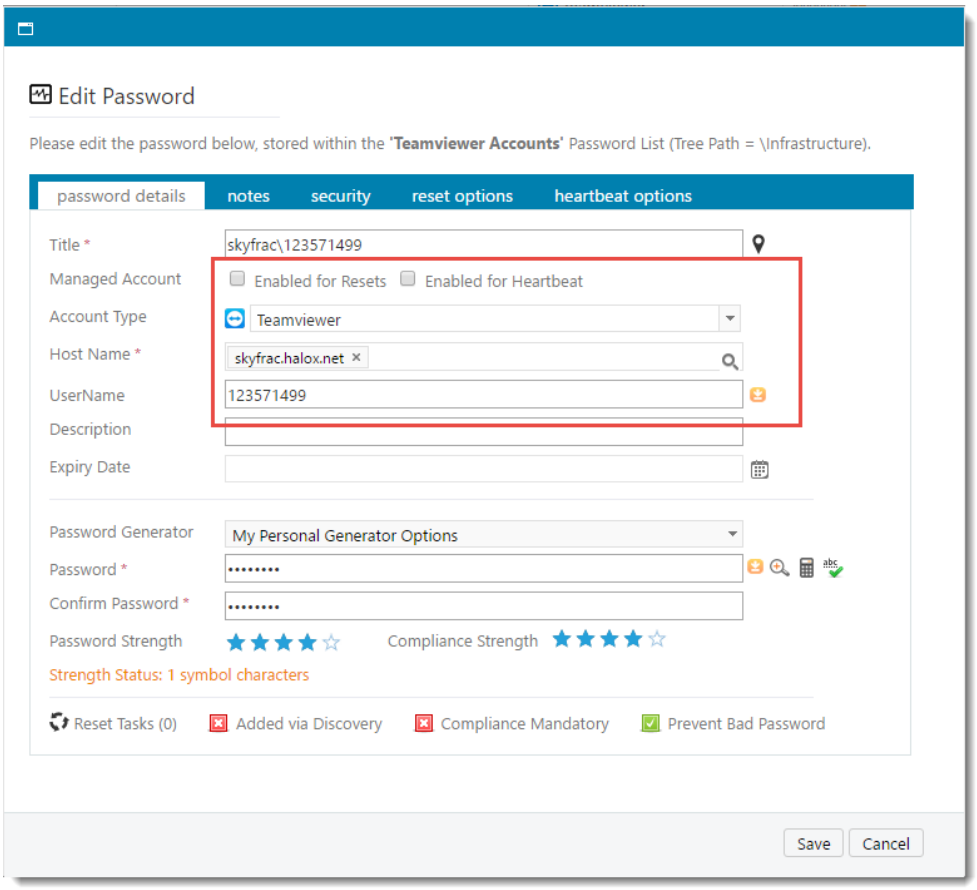
You'll also need to ensure the remote machine you are connecting into has Teamviewer installed and set up for unattended access. This ensures you have a static password configured for the remote TeamViewer machine.

Next, ensure you have a Password List created for your TeamViewer Credentials, with the "**Enable Password Resets**" option enabled:



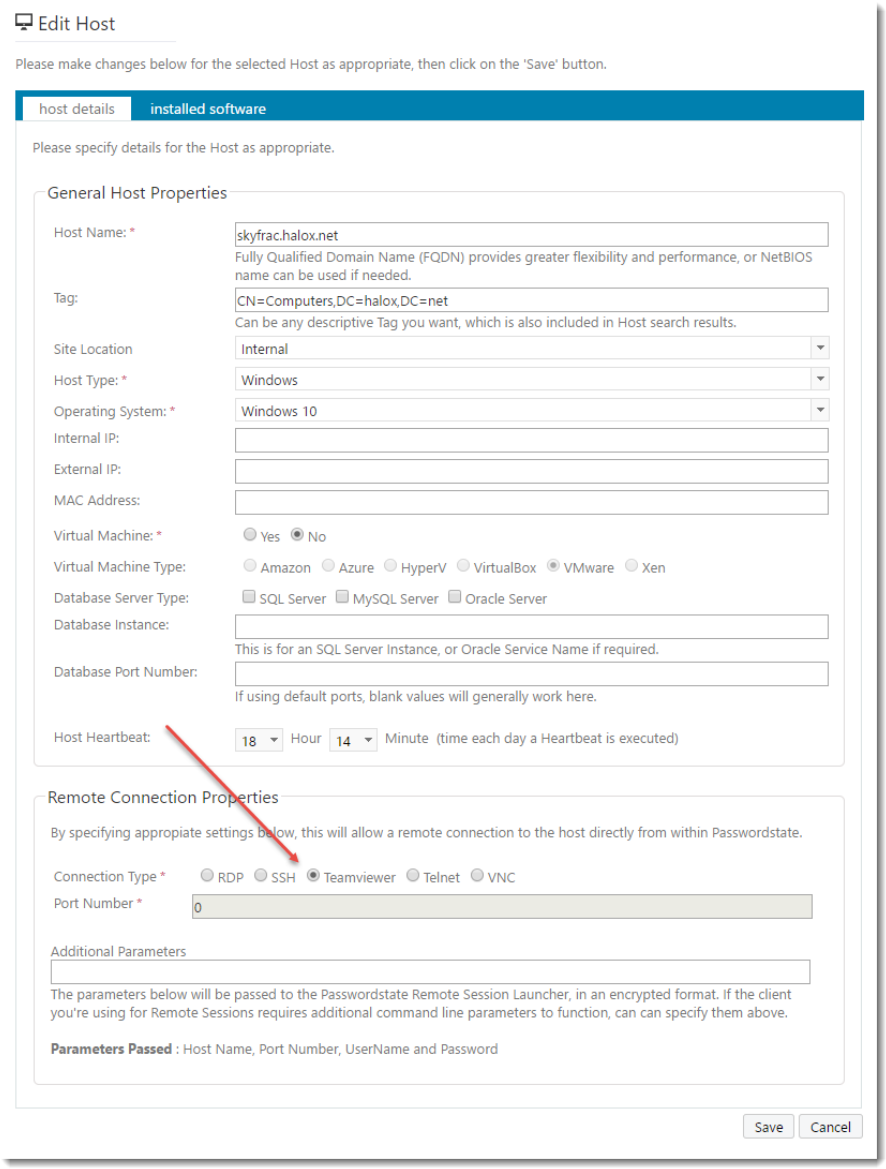
Next, we'll add in a Password Record with the following configuration:

Deselect the '**Managed Account**' options, select the '**Teamviewer**' Account Type, lookup the appropriate Host, and specify the **TeamViewer ID** as the **Username** field – like in the screenshot below.

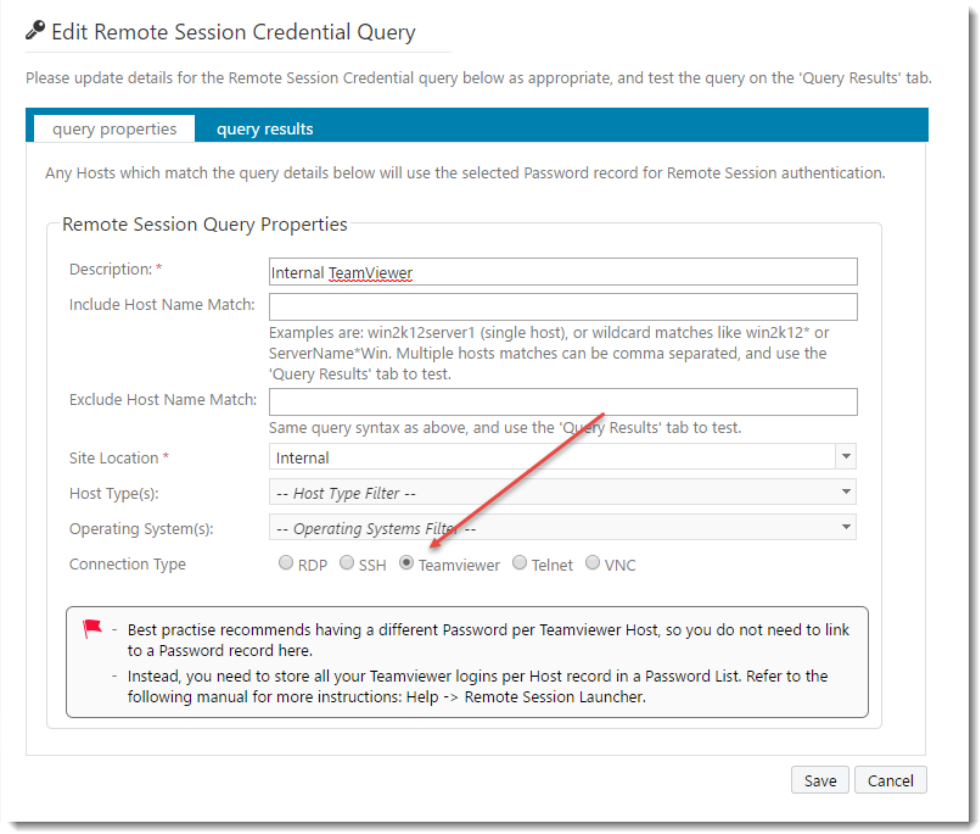


The reason we need to configure the Password List and Password record in this manner, as we need the Remote Session Credentials to be able to find a match against the Host Name and UserName field in the password record itself. This is the only way currently to guarantee this sort of accuracy with the match.

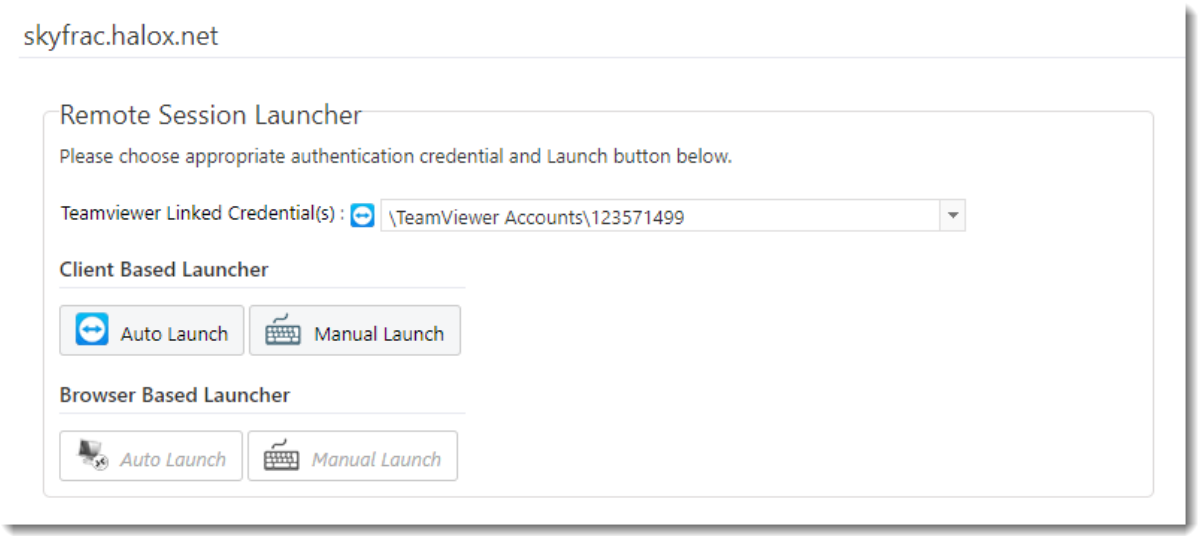
The Host you are connecting to must have the **TeamViewer** option selected:



Now you'll need to set up a Remote Session Credential, from under the **Hosts** tab -> **Hosts Home** screen. When creating this Remote Session Credential, you only need to select the "**TeamViewer**" Connection Type, and are not required to link it to any Password Record



Now if you click on your Host in the to launch a session, you should notice a new Teamviewer button that you can use to launch the session:



13 SSH With Private Public Key

It is possible to perform SSH connections using Public/Private Key Authentication. The Client Based Launcher works with both Putty and OpenSSH keys, whereas the Browser Based Launcher only works with OpenSSH keys.

To do this, you must configure a Generic Field on a Password List and call it **'Private Key'**, and then you can store your private key in this field. When you have a field configured in this manner, then the authentication for the Remote Session Launchers will use this as precedence over the standard password for the user.

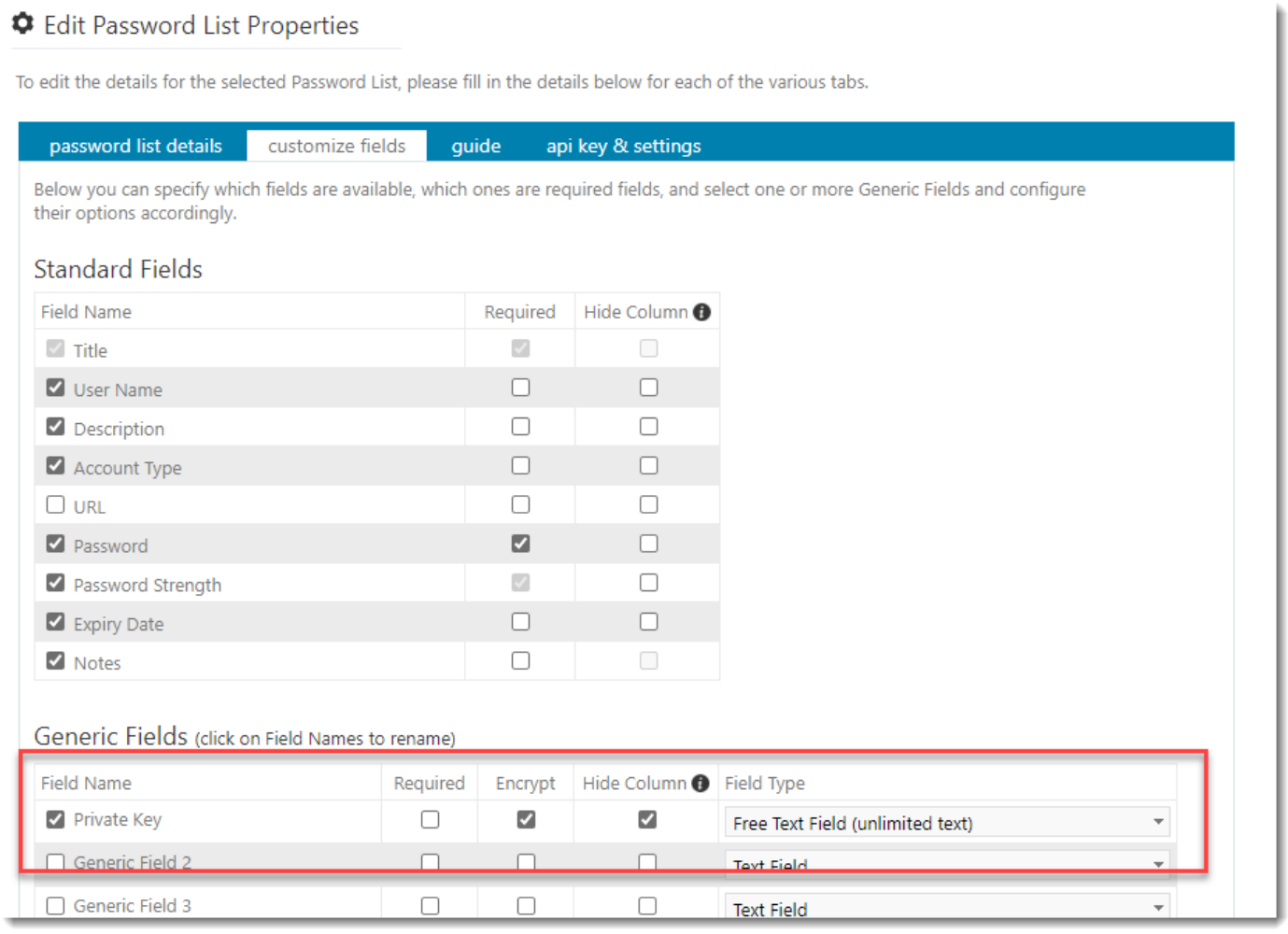
If you use the same private key to authenticate against multiple Linux hosts, then you should use a Remote Session Credential for this.

If you have separate private keys for different hosts, then you can authenticate directly from a password record that has the SSH keys configured. You can also use the Manual Launch option when clicking on a Host under the Hosts tab, and search for your Password record there that has the SSH key set. If you choose this option, your Password List where you are storing your credentials to login with must be enabled for resets, and you need to have the Host configured on this password record too. More information about this below

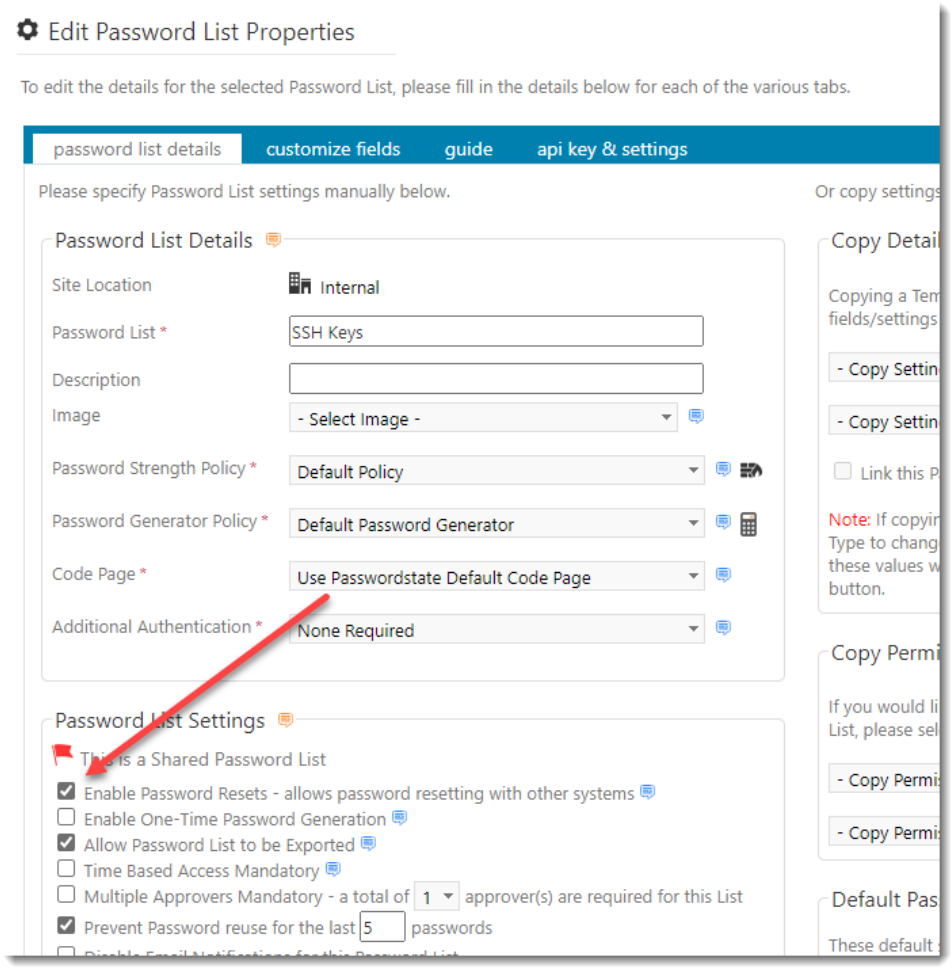
13.1 Password List Requirements for using SSH Keys

In order to create Password Records that you can set your SSH keys with, you must first ensure your Password List has Generic Field configured. This field must be called “Private Key” and it must be Generic Field #1. You should also select this field to be encrypted and the Field Type is Free Text Field (unlimited text).

Hiding the field is also recommended, so your User Interface is not cluttered by lengthy text:



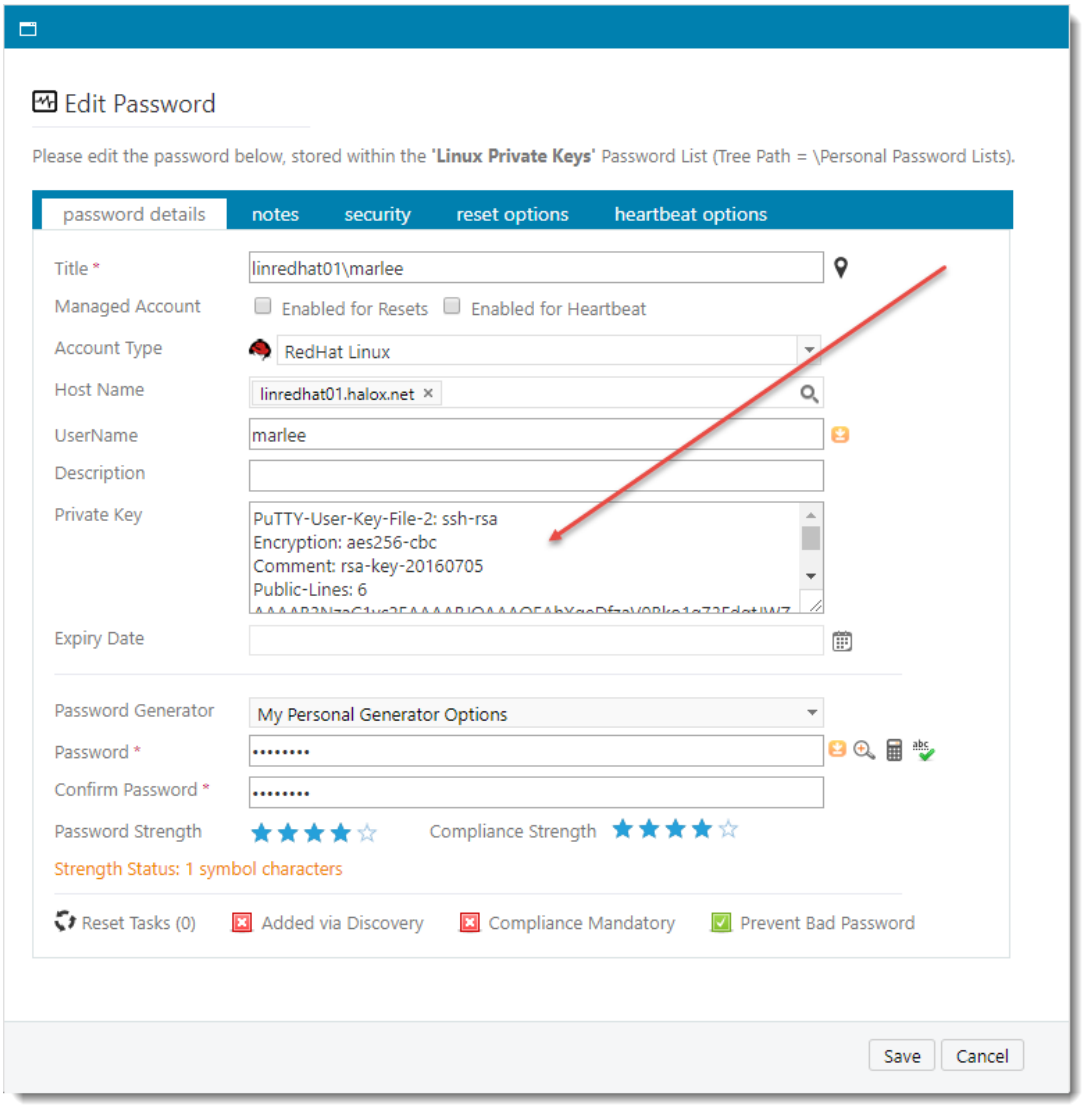
If you have multiple Private Keys for different Hosts, you will need to enable the resets option on the Password List too:



13.2 Creating a Password Record

When creating a Password Record, you should deselect the "**Managed Account**" options. Set the Host name if the SSH Private key is only going to be used for this one machine, otherwise we will create a Remote Session Credential in the next section so the Private Key can be used with multiple Hosts.

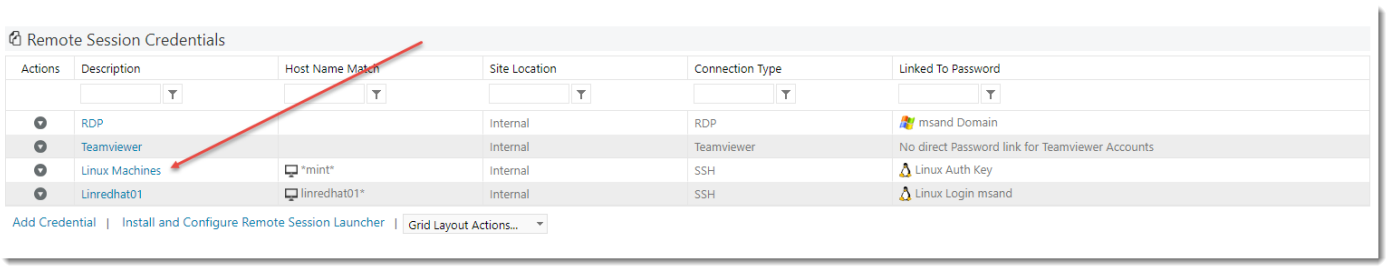
The password that you enter on this screen is the Pass Phrase for the Private Key, not the standard user account password:

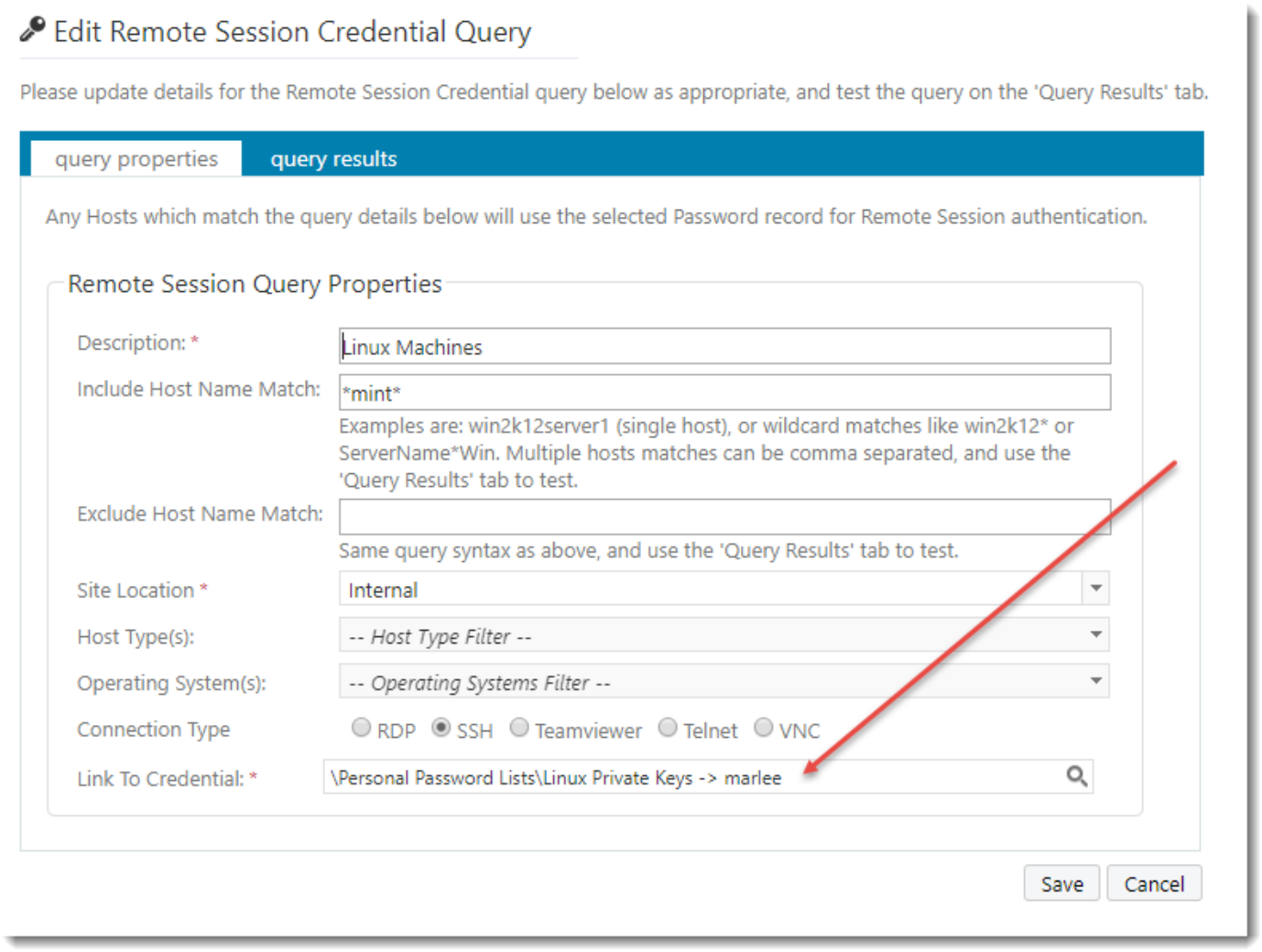


13.3 Creating a Remote Session Credential

Under **Hosts tab** -> **Hosts Home**, click the **Add Credentials** button under the Remote Session Credentials section. Give your Remote Session Credential a description, ensure the connection type is SSH and apply any filters you deem appropriate.

Then link this Remote Session Credential to the Password Record we created in the step above:





Now you can launch a session as you would normally, by clicking the Auto Launch button, and if this Remote Session Credential is selected for that session, it will use the Private Key to authenticate.

13.4 Convert Putty Private Key to OpenSSH Format

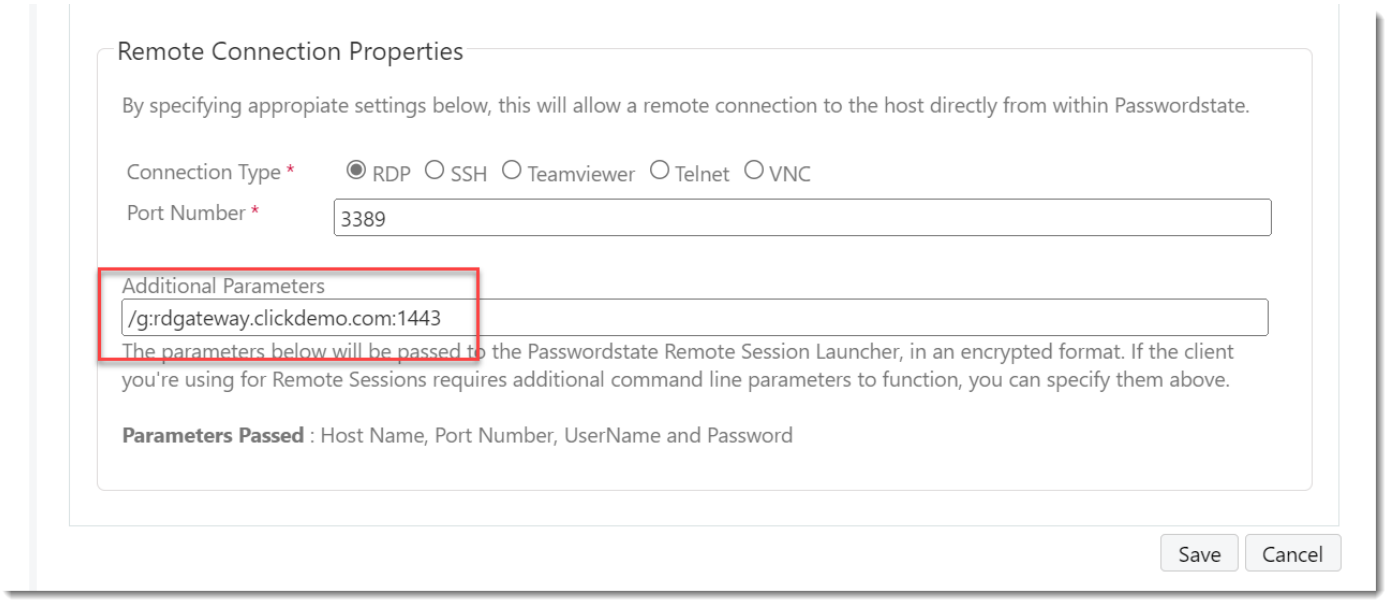
The Browser Based Launcher will not accept Putty key combinations, so you will need to create a set of OpenSSH keys or you can optionally convert your Putty keys using this process below:

- Download PuTTYgen from here - https://www.ssh.com/ssh/putty/windows/puttygen#sec-PuTTYgen-download-and-install
- Open PuttyGen
- Click Load
- Load your private key
- Go to **Conversions**->**Export OpenSSH** and export your private key, then save back into your password record

14 Client Based Launcher with Microsoft Remote Desktop Gateway

Microsoft's Remote Desktop Gateway (RDG or RD Gateway) is **a Windows Server role that provides a secure encrypted connection to the server via RDP.**

If you have a Microsoft RDP Gateway already set up, you can route your remote sessions directly from your desktop to the Microsoft RDP Gateway – which will then route traffic to the required Host. This is achieved in Passwordstate by modifying your host records and inserting the gateway parameters as per below example.



If you use the default port of 443 you do not need to append it on the end of your parameter. This port is only used to connect to the Gateway, and then it will use the standard port of 3389 to connect to your remote machine.

Other command line switches such as /Admin will work if you add them in.

- Note 1: This gateway will only work with Domain accounts, not local Administrator or other Local Windows accounts. Please ensure the credential you set up to remote onto your machine has the account type of "**Active Directory**"
- Note 2: Routing traffic through Microsoft's RDP Gateway is only possible with Click Studios' Client Based Launcher. It is not possible using our Browser Based Launcher (gateway).

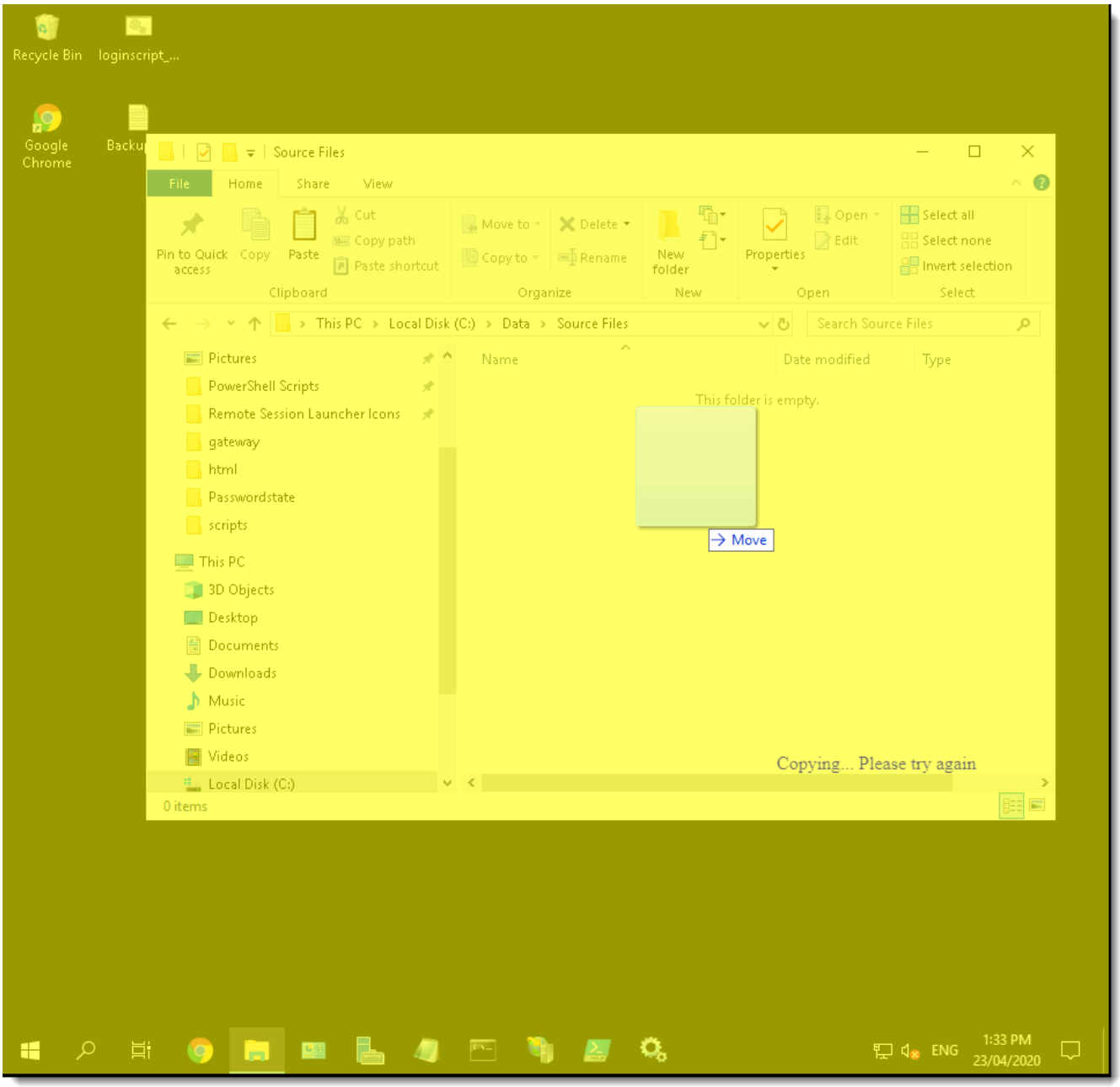
15 File Transfer with Browser Based Launcher

The Browser Based Launcher has the ability to transfer files from your local desktop to the remote machine, or vice versa. This can make data transfer easy instead of mapping drives, or browsing to a UNC path.

File transfer is different depending on if you have an SSH session established, or an RDP session. Below we will explain how we can do both.

15.1 RDP File Transfer

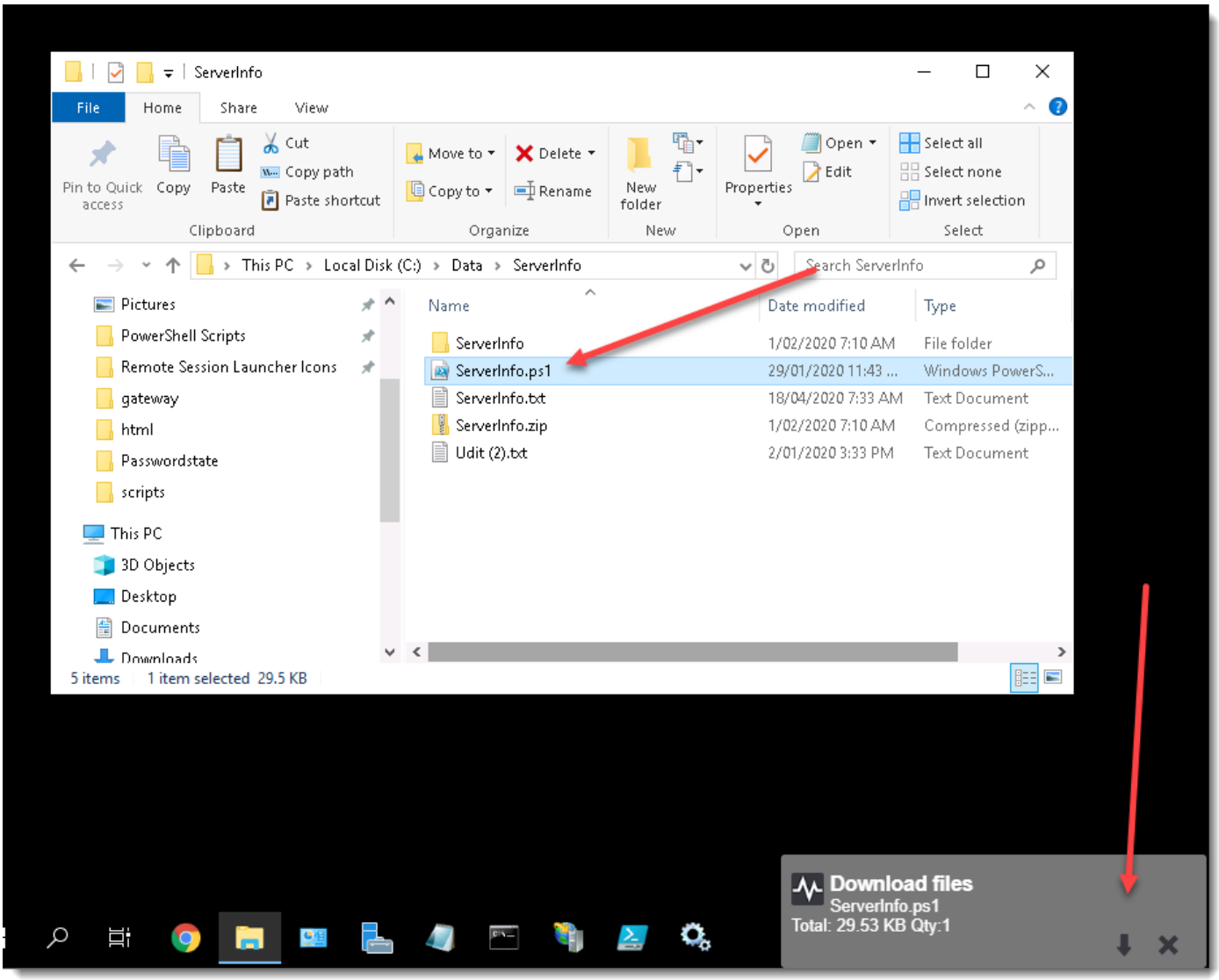
If you drag and drop a file from your local desktop, into a folder inside your RDP session, you'll see the screen turn yellow. When you release the mouse, this will copy the file into that remote folder. The remote folder, which in this below example is "C:\Data\Source Files", need to be the active window in the remote session:



Note: There is a 2GB file limit when transferring files into a remote session

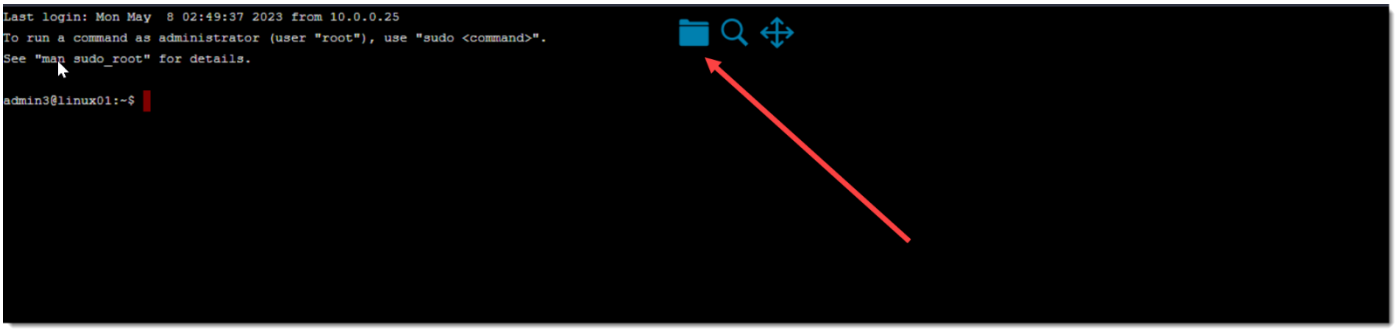
To copy a file out of an RDP session, **Right Click** the file and select **Copy**, and you'll see a pop-up window in the bottom right hand corner of your remote session. This will give you some information about the file you are copying, and you can either cancel the file copy, or click the **Download** button.

When clicking the **Download** button, this will download the file through your local browser to a directory on your local machine. This directory is determined by what you have settings you have configured in your browser, but generally this is your **Downloads** folder inside your **User Profile**.



15.2 SSH File Transfer

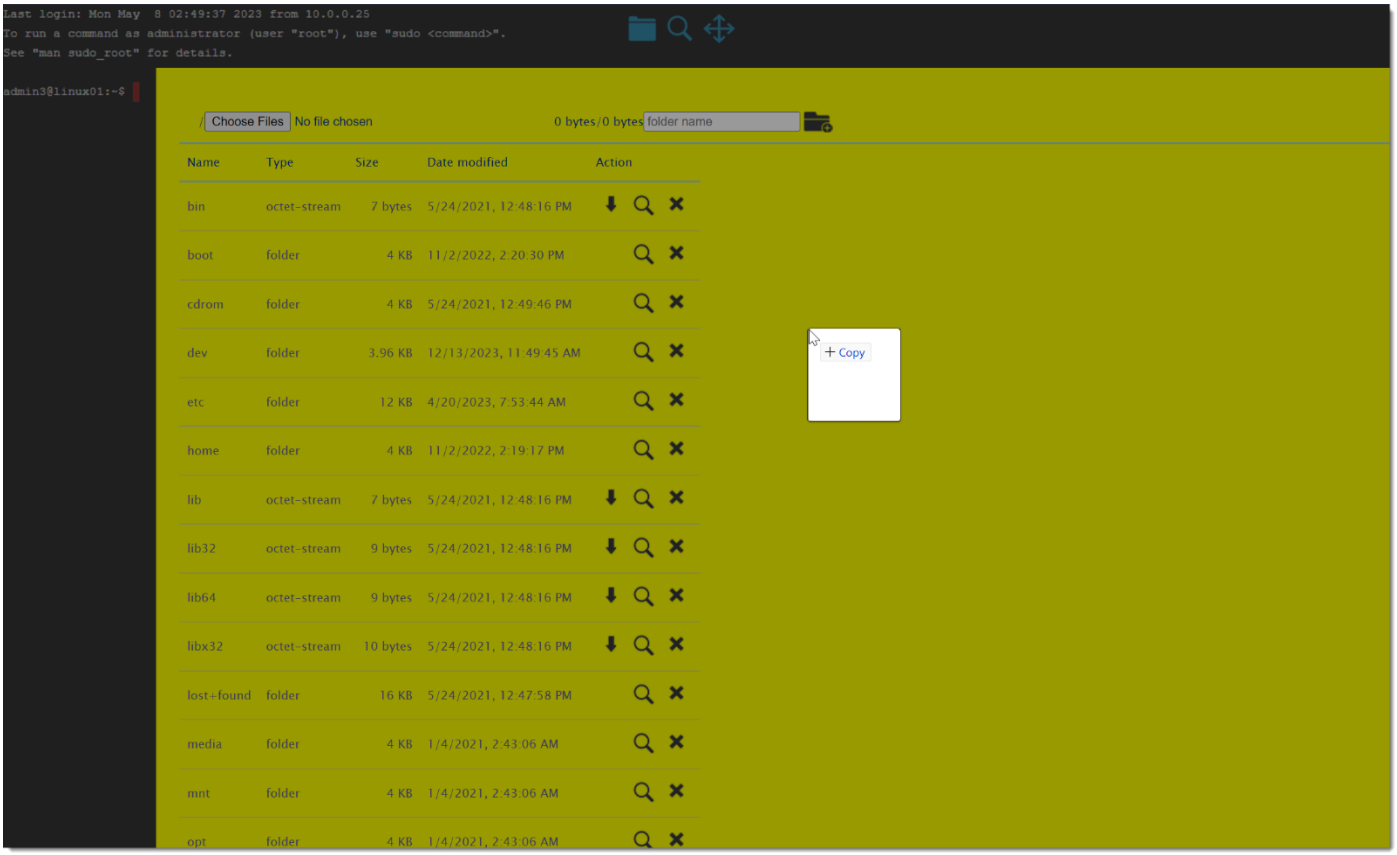
SSH sessions have a built-in file transfer tool that you can access by left clicking anywhere in the empty space within your SSH session. You'll see this tool pop up at the top centre of your page:



When clicking on this File Transfer tool, you'll be presented with a window similar to this screenshot below, where you can:

1. Browse into the relevant folder
2. Create a new folder
3. Upload files to the current position
4. Download file to local desktop
5. Delete file from remote file system

You can also drag and drop a file from your local desktop onto this File Transfer tool in your remote session, and it will turn yellow indicating it is ready to drop into the currently selected folder.



16 Browser Based Launcher Keyboard Shortcuts and FAQ

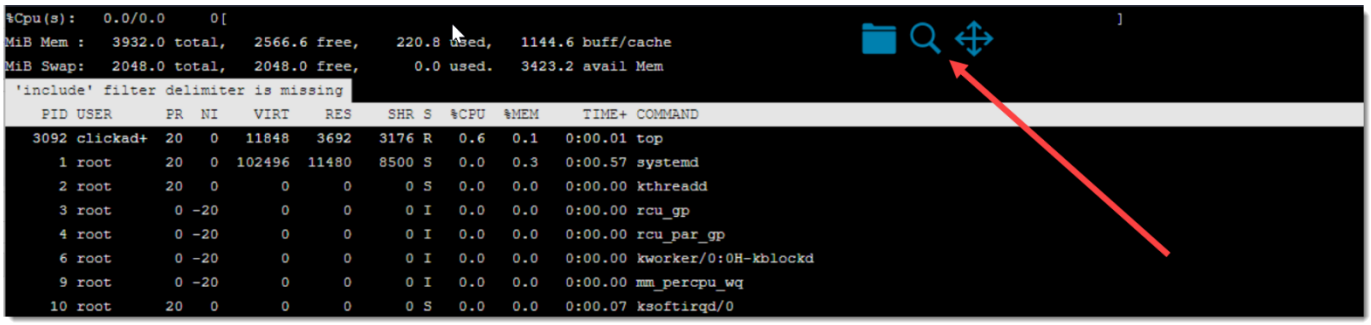
For RDP sessions within the browser-based launcher, there are a few shortcuts you can use which are listed below. Please note Control + C and Control + V should not be used to copy and paste files, rather see section 13.1 of this document for details how to achieve this.

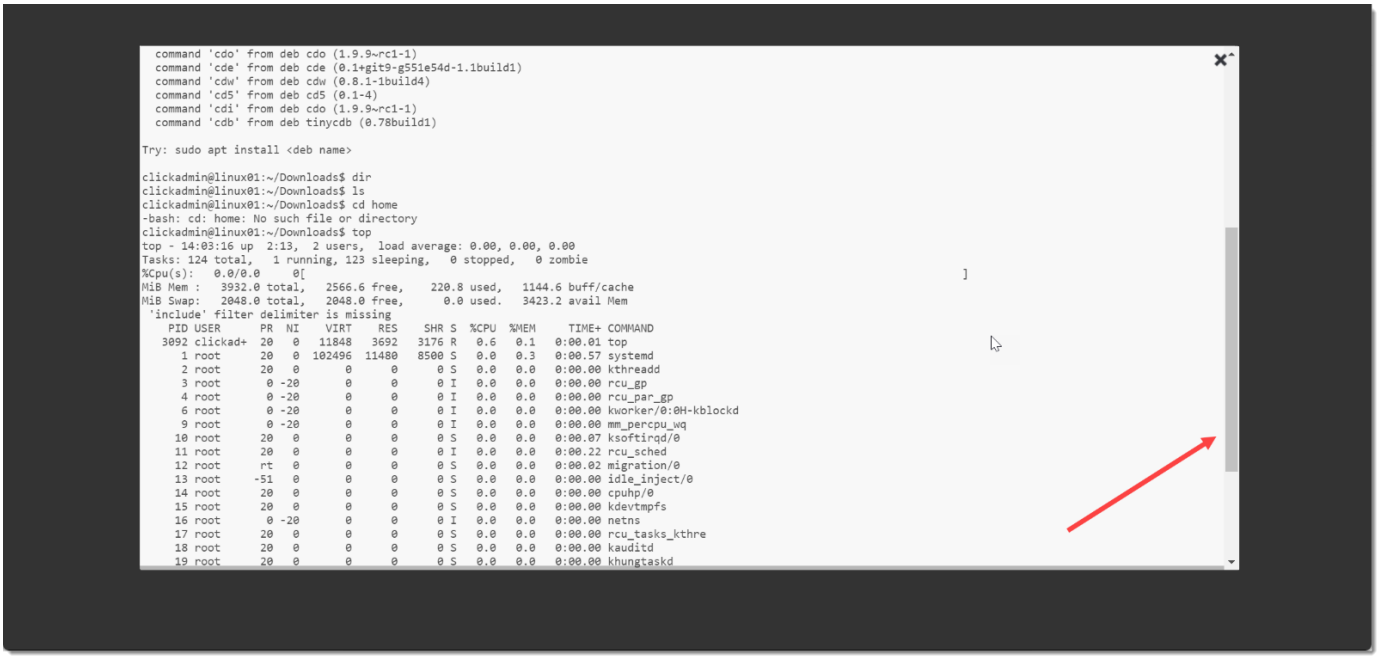
16.1 RDP Keyboard Shortcuts

- CTRL+ALT+END Brings up the Windows Security dialog box
- ALT+PAGE UP Switches between programs from left to right.
- ALT+PAGE DOWN Switches between programs from right to left.
- ALT+INSERT Cycles through the programs in the order they were started.
- ALT+HOME Displays the Start menu.
- CTRL + C allows you to copy text to and from a remote session (not suitable for file copy)
- CTRL + V allows you to paste text to and from a remote session (not suitable for file copy)

16.2 SSH Shell History

When in an SSH session, normally you can type **history** to get a complete history of commands for your session. With the Browser Based Launcher, if you left clicking anywhere in the empty space within your SSH session, you'll see this tool pop up at the top centre of your page a history window appears where you can scroll your entire session history, and then copy/paste as desired.





17 Browser Based Launcher Strong Cipher Settings & TLS

By editing the **gateway.conf** file you can force the Browser Based Launcher to communicate on certain Ciphers, and disable old TLS settings, for extra security. Below is an example cipherSuites settings that you can add which will omit any less secure Ciphers, as well as the recommended SSL Protocols setting. You can copy and paste this code below into your gateway.conf file, ensuring the text is on a single line as per the screenshot below, and then restart your Passwordstate Gateway service for it to take effect.

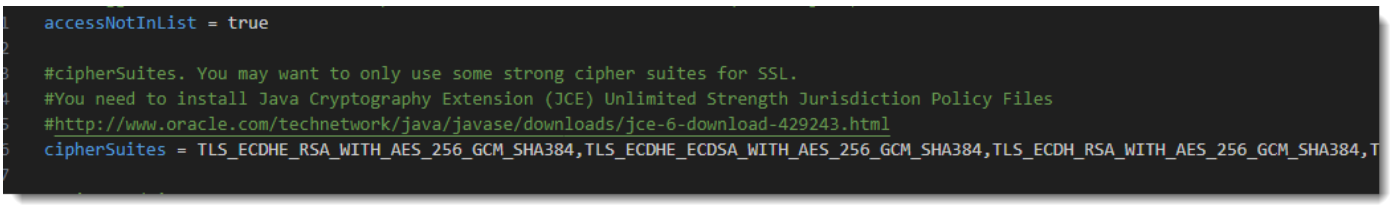
These settings below may already exist in your gateway.conf file, if you are using build 9785 or later.

Cipher Suites
Add the following block of text to your gateway.conf file.

cipherSuites =
TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384,TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384,TLS_ECDH_RSA_WITH_AES_256_GCM_SHA384,TLS_ECDH_ECDSA_WITH_AES_256_GCM_SHA384,TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256,TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256,TLS_ECDH_RSA_WITH_AES_128_GCM_SHA256,TLS_ECDH_ECDSA_WITH_AES_128_GCM_SHA256,TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384,TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384,TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA,TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA,TLS_ECDH_RSA_WITH_AES_256_CBC_SHA384,TLS_ECDH_ECDSA_WITH_AES_256_CBC_SHA384,TLS_ECDH_RSA_WITH_AES_256_CBC_SHA,TLS_ECDH_ECDSA_WITH_AES_256_CBC_SHA,TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256,TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256,TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA,TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA,TLS_ECDH_RSA_WITH_AES_128_CBC_SHA256,TLS_ECDH_ECDSA_WITH_AES_128_CBC_SHA256,TLS_ECDH_RSA_WITH_AES_128_CBC_SHA,TLS_ECDH_ECDSA_WITH_AES_128_CBC_SHA

SSL Protocols
Modify the sslProtocols section of the document, to only use TLS 1.2. as per the example below.

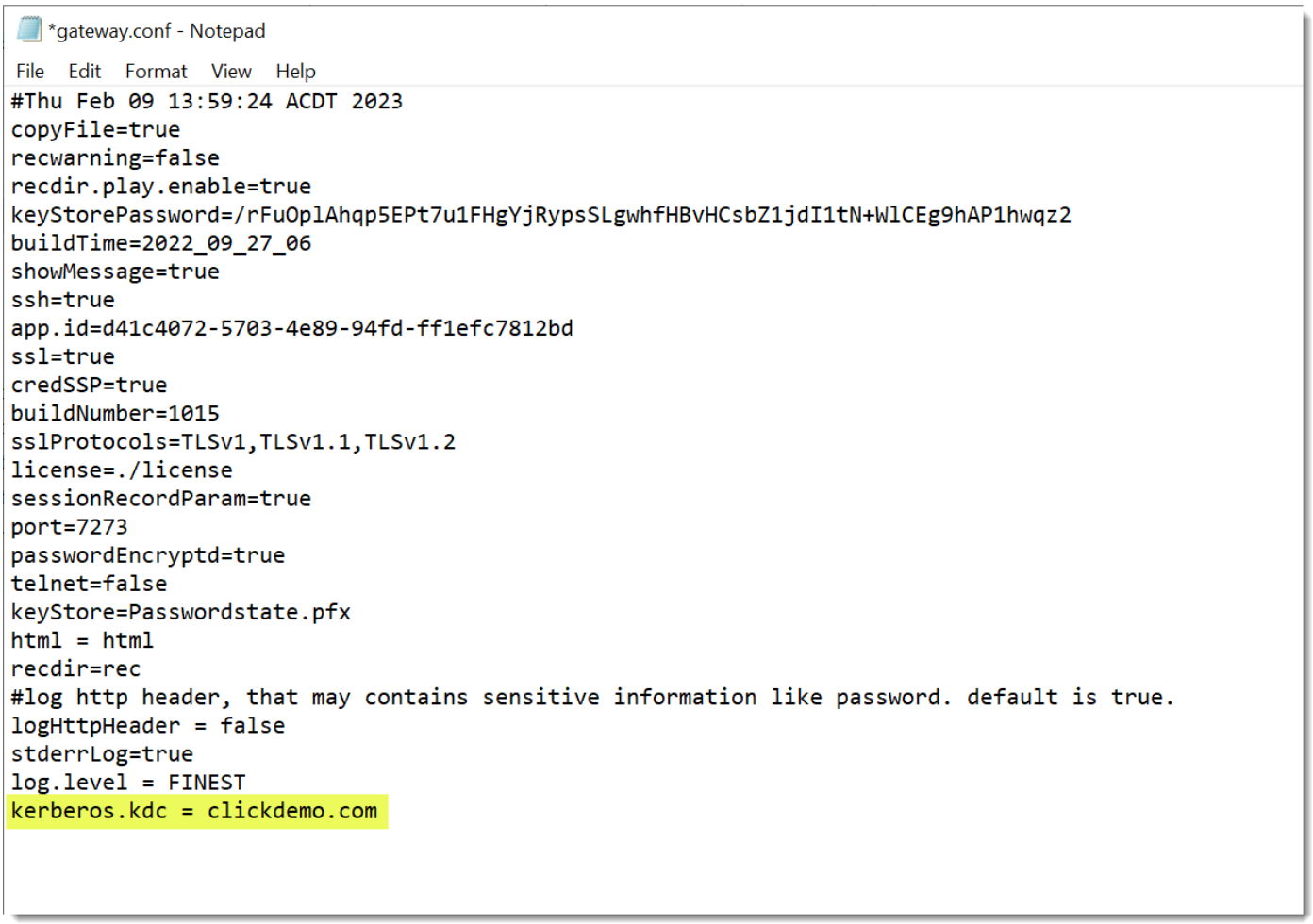
sslProtocols=TLSv1.2



18 Browser Based Launcher Kerberos Connections

As of Passwordstate build **9785**, you can force connections in the Browser Based Launcher to use Kerberos. To configure this, edit the gateway.conf file and add in the following line, but set the domain name of your choice:

kerberos.kdc = clickdemo.com



- Only one domain is supported for this feature, and only one domain can be set in the **gateway.config** file

19 Open Ports for Remote Session Launchers

In order to make connections to different systems, you will need to ensure that the correct ports are open.

- The Client Based Launcher makes connections directly from the desktop machine where you are initiating the sessions from, to the remote machine.
- The Browser Based Launcher tunnels all traffic from the Desktop, through the Gateway, onto the remote machine.

Open Ports for the Client Based Launcher can be found in **Section 13** of this document:
https://www.clickstudios.com.au/downloads/version9/Passwordstate_Open_Port_Requirements.pdf

Open Ports for the Browser Based Launcher can be found in **Section 14** of the same document:
https://www.clickstudios.com.au/downloads/version9/Passwordstate_Open_Port_Requirements.pdf

In **Section 1** of the above linked document, we also have a tutorial on how to test for Open Ports if needed.

20 Performance Metrics for Browser Based Gateway

The Browser Based Gateway can support multiple sessions, and below is some information and statistics to help you determine what hardware requirements you will need.

20.1 CPU Usage

Primarily the CPU on the server where the gateway is installed is the hardware which performs a majority of the work. The minimum requirement for 400 concurrent connections is Pentium Dual-Core 2.7GHz, and usually adding in one more CPU will support up to another 300 – 400 concurrent RDP sessions.

20.2 Memory Usage

The Gateway is light on memory usage, and 250mb is usually enough to support 300 concurrent sessions

20.3 Bandwidth Usage

Bandwidth usage can be very different depending on the content. As the Browser Based Gateway is based on the standard RDP protocol, information about this can be found in the Microsoft white paper: http://download.microsoft.com/download/4/d/9/4d9ae285-3431-4335-a86e-969e7a146d1b/rdp_performance_whitepaper.docx

From our testing and customer response, one RDP session needs about 260 Kbit bandwidth for normal business applications (Office, ERP etc).

21 Troubleshooting Remote Session Launchers

Below is some information and links that may help identify why sessions will not connect.

21.1 Client Based Launcher Troubleshooting Steps

Issue:

When using the Client Based Launcher, and clicking the Auto Launch button, nothing happens

Fix:

This could be due to a few different reasons:

1. The Client Based Launcher is not installed
2. The Browser has not been configured to work with Passwordstate
3. Browser Pop up is blocking Passwordstate from launching a session

This video explains how to address all three issues mentioned above:
https://www.youtube.com/watch?v=A12eHSaGw4c

Issue:

With the Client Based Launcher, the browser configuration page does not have a "Remember this Choice" to always open PSLauncher files, and hence the session will not initiate

Fix:

This issue is present in Chromium based browsers and was introduced in Chromium build 77. A fix for this can be deployed via Group Policy, or manually editing the registry on the local machine.

Issue:

Client Based Launcher will not connect to remote machine

Fix:

Enabling debugging for the Client Based Launcher, and attempt to launch another session. A log file will be created for you which will help understand why the session wasn't established. If needed, send this log file to Click Studios Support for analysis.

Please contact Click Studios support to get instructions on how to enable debugging.

Issue:

Client Based Launcher will not connect to remote machine, error is "**The server's authentication policy does not allow requests using saved credentials. Please enter new credentials**"

Fix:

See this forum post for a fix for this issue: https://forums.clickstudios.com.au/topic/15452-client-based-launcher-failed-connections-the-servers-authentication-policy-does-not-allow-requests-using-saved-credentials-please-enter-new-credentials/

21.2 Browser Based Launcher Troubleshooting Steps

Issue:

The gateway Service will not start. This is usually caused by one of three things:

1. The certificate in the Gateway install folder is not named correctly. It should be called Passwordstate.pfx
2. The certificate in the Gateway install folder has expired
3. The encrypted Password for the certificate is set incorrectly in the gateway.conf file

Fix 1:

You could try reinstalling the gateway again, as this will effectively repair the gateway, and automate assigning a new certificate. Below are the install instructions for the Browser Based Gateway

Gateway Installed internally – Section 4 or 5 of this document:
https://www.clickstudios.com.au/downloads/version9/Passwordstate_Remote_Session_Launcher_Gateway_Install_Guide.pdf

Gateway installed on Remote Site: Section 4 of this document:
https://www.clickstudios.com.au/downloads/version9/Passwordstate_Agent_Manual.pdf

Fix 2:

If you would prefer not to reinstall the gateway, you can try manually exporting your certificate from your Passwordstate web server, by following Section 6 in this document:
https://www.clickstudios.com.au/downloads/version9/Passwordstate_Remote_Session_Launcher_Gateway_Install_Guide.pdf.

Then to encrypt the certificate password, follow this forum post:
https://www.clickstudios.com.au/community/index.php?/topic/2971-how-to-encrypt-the-certificate-password-for-use-with-the-browser-based-gateway/

Issue:

The Browser Based Gateway is installed and the service is running, but sessions will not connect.

Fix 1:

Ensure that your desktop machine where you are initiating sessions from, has direct access to the Gateway service/server. By default, port 7273 is the port that needs to be open unless otherwise modified.

Fix 2:

The gateway may generate some error codes, which you'll find in Passwordstate Administration under the Error Console. A list of these error codes can be found here: https://forums.clickstudios.com.au/topic/2853-error-codes-for-the-browser-based-remote-session-launcher/

Fix 3:

The Browser Based Gateway does have verbose logging which can be sent to Click Studio Support for analysis.
https://forums.clickstudios.com.au/topic/2852-enabling-verbose-logging-for-the-browser-based-remote-session-launcher/

22 Browser Based Launcher and Self Signed Certificates

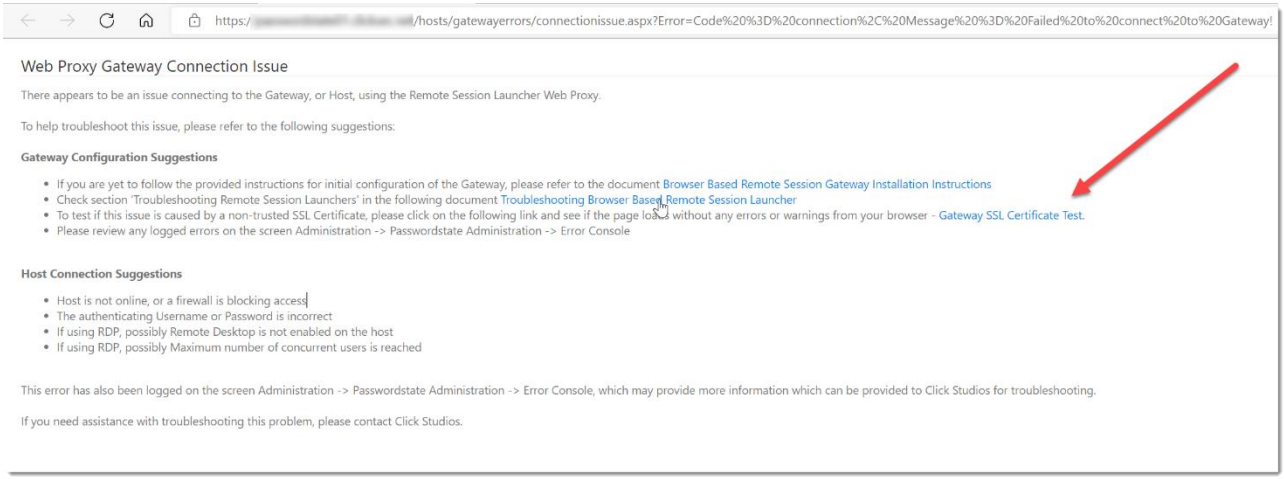
By default, Passwordstate comes installed with a Self-Signed Certificate as this is the only type of certificate Click Studios can supply during the install.

Typically, you would change your certificate to something more secure such as one issued from **your Internal Certificate Authority**, or a purchased one from an **online provider**. If your Passwordstate website is still using a Self-Signed Certificate, and you do not supply your own during the Browser Based Gateway install process install process, your RDP and SSH remote sessions will fail until you force your browser to trust the certificate.

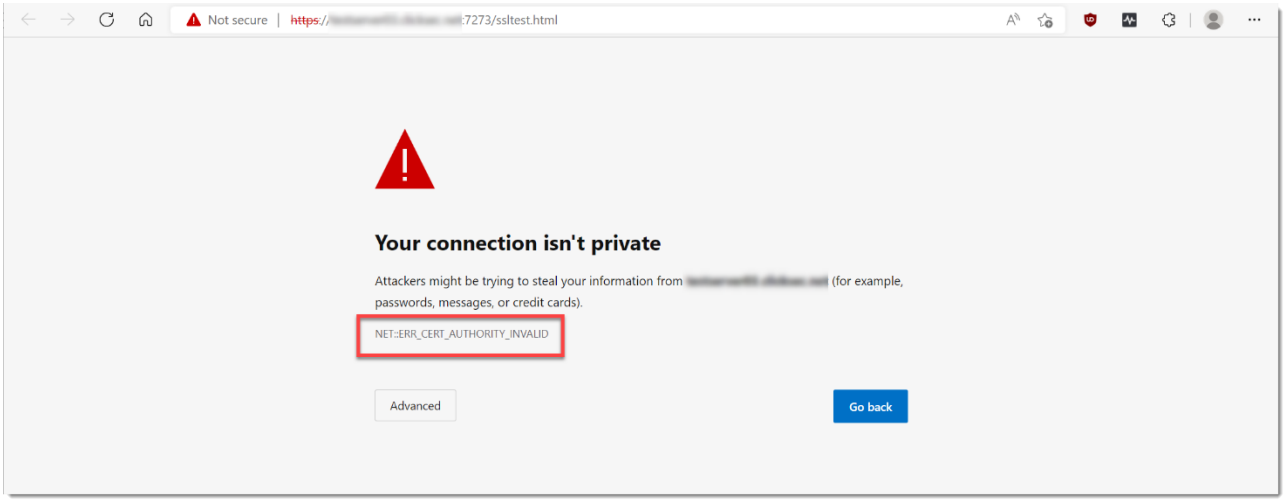
For a seamless experience with the Remote Session Launcher, you should use a trusted certificate, which can either be issued from your own internal Certificate Authority, or from an online provider. If you have no choice but to use a Self-Signed Certificate, then you will need to force your browser to trust this certificate. Below are some instructions on how to do this in Microsoft Edge:

When trying to establish a Remote Session, and you receive the error below, one of the reasons this can occur is if your browser does not trust the certificate that is installed with your Browser Based Gateway.

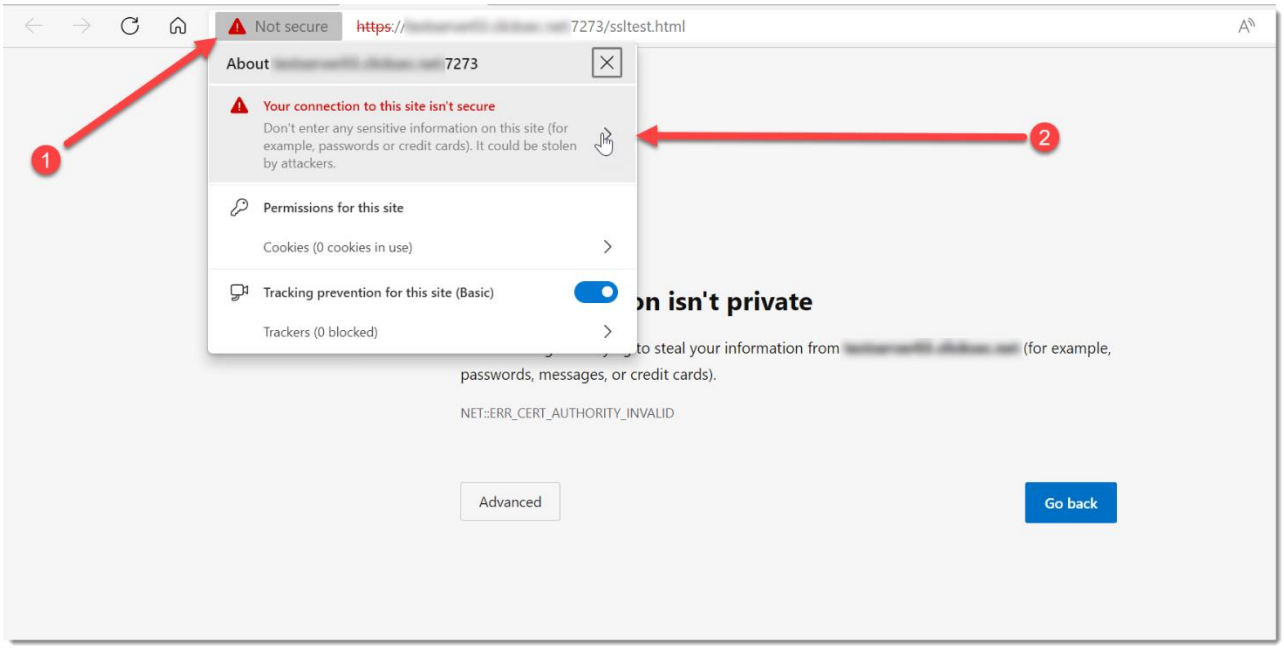
Click on the **Gateway SSL Certificate Test** link:



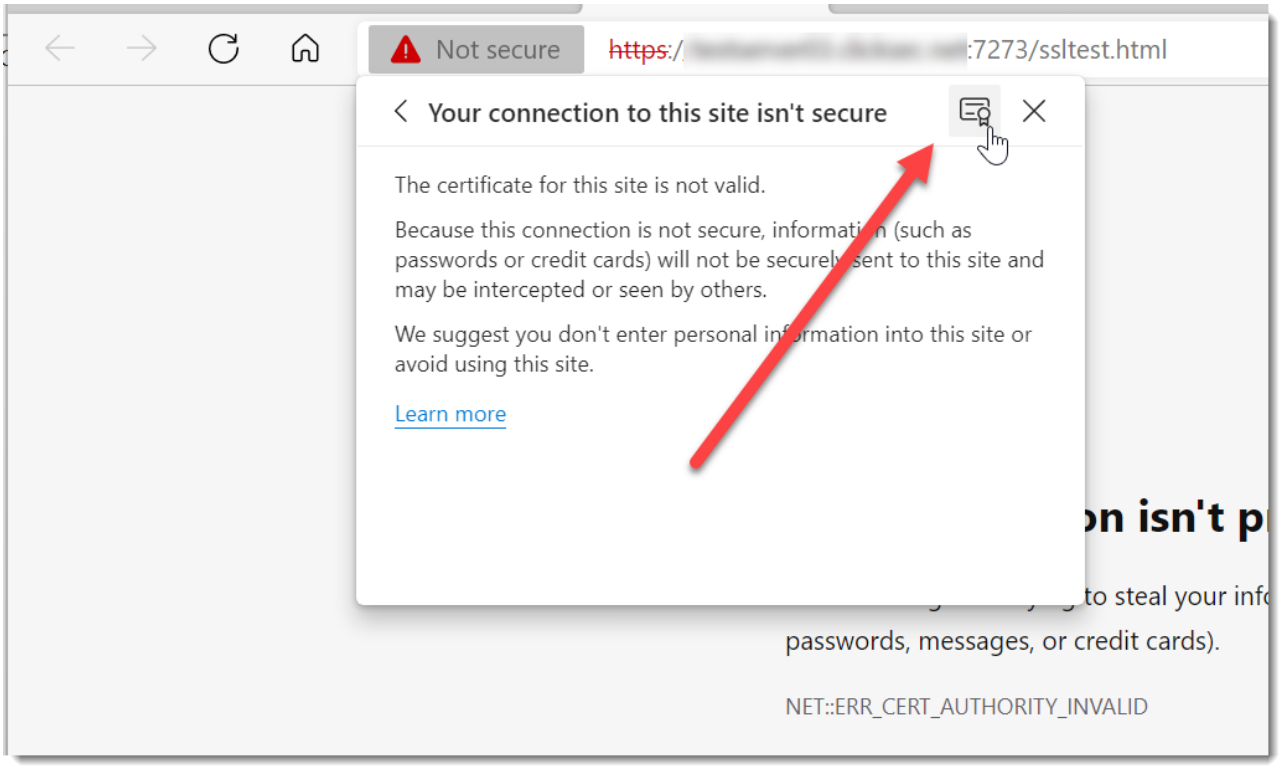
If you then get redirected to a page that looks like the screenshot below, the certificate is not trusted by your browser:



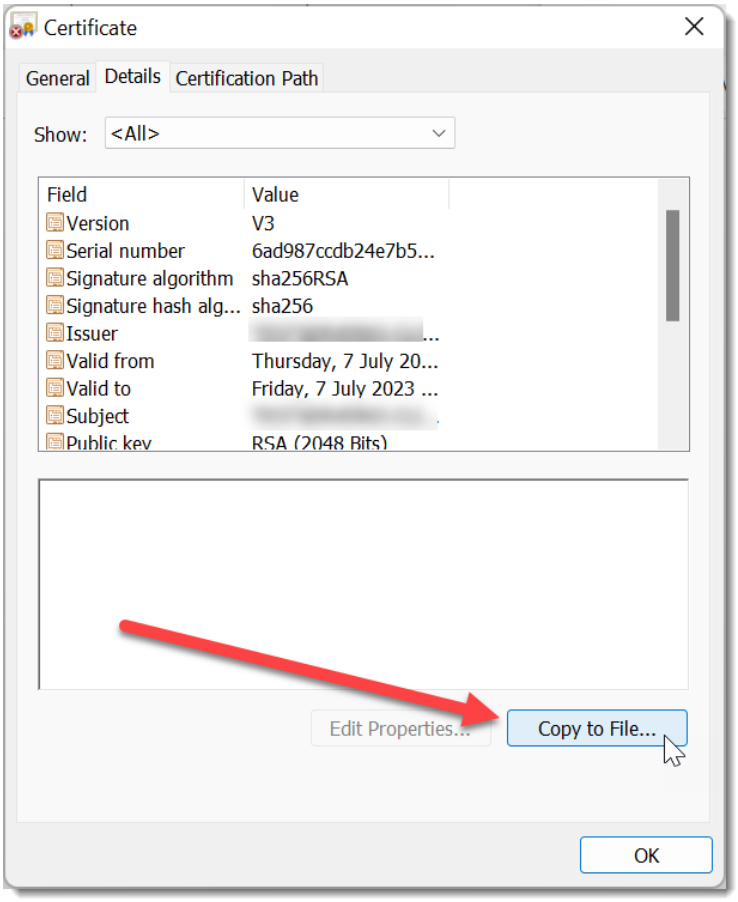
To fix this, you will need to follow this process on every machine that you intend on establishing remote sessions from. First, click the Warning button in Edge, and then click the Warning message:



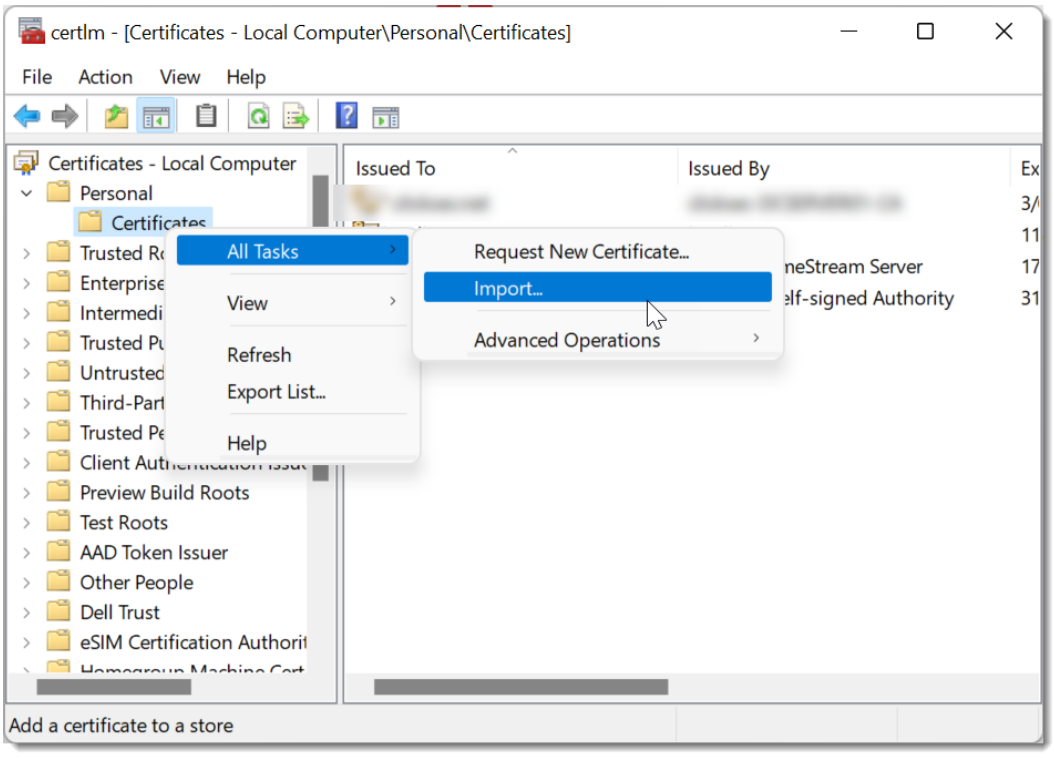
Click the **Certificate** button:



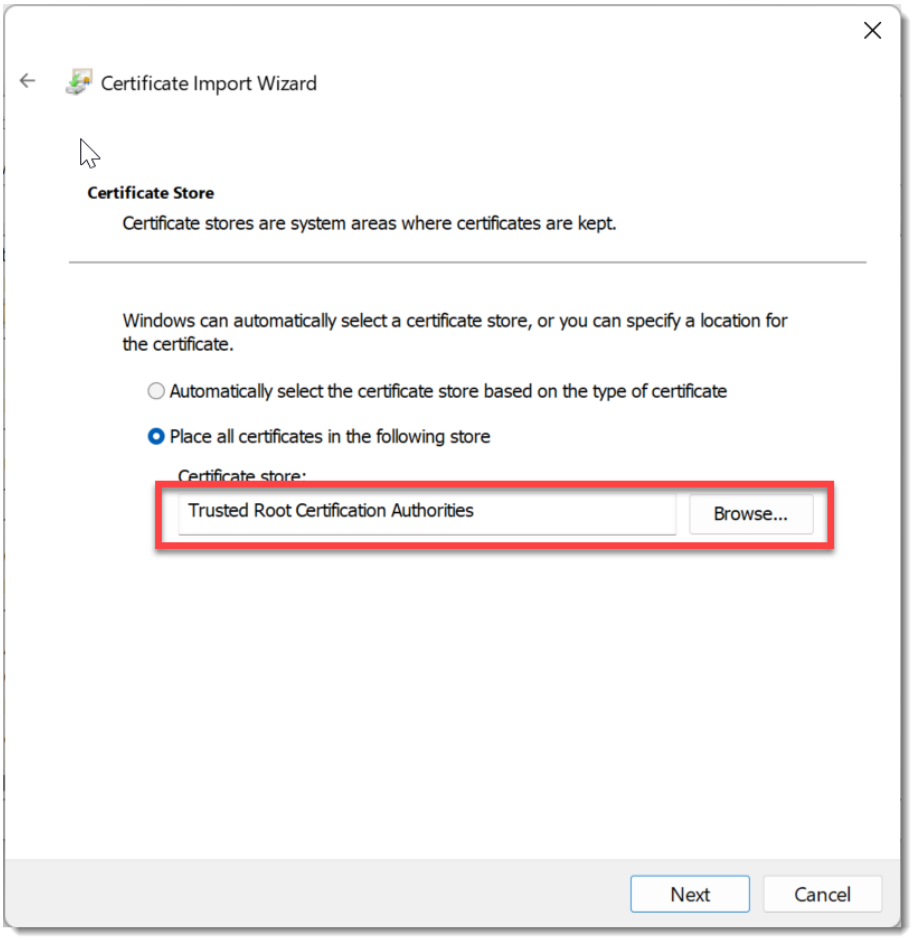
Under the **Details** tab, click **Copy to File**. Follow the prompts to save the certificate to disk, and you can choose all the default options during this process.



Now in Windows, go to **Start** -> **Run** and type in **certlm.msc**, and this will open the **Local Certificate Store** on your machine. Expand our **Personal**, right click **Certificates** -> **All Tasks** -> **Import**:



Follow the prompts and browse to the certificate you saved to disk, and ensure you place the certificate in the **Trusted Root Certificate Authorities** store:



At this point, you should be able to close your browser and reopen it, and try launching a new session. It should connect successfully.

23 Remote Session Launcher FAQ

If your account you are using with your Remote Session Launcher is a member of the “Protected Users” security Group, you will not be able to establish an RDP session with the Browser Based Launcher. This is because it is not possible to authenticate Protected Users on browsers.

It is possible to use a Protected User with the Client Based Remote Session Launcher. The local Windows machine must be a domain member and also must Windows 10, or Server 2012 R2 or later. You cannot log in from Windows 7, or macOS (even with MS RDP client).