Passwordstate

Enterprise Password Management

Passwordstate Remote Site Agent Manual

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1 Remote Site Agent Manual

Welcome to the Passwordstate Remote Site Agent Manual.

The Passwordstate Agent is used for Remote Site Locations, where connectivity is only possible over a HTTPS or Firewalled connection.

With the Passwordstate Agent, it is possible to perform Account Discoveries, Host and Account Heartbeats, and Password Resets on remote networks.

The agent communicates securely with your Passwordstate API, over HTTPS, using unique InTransit Encryption keys for further encrypting the flow of traffic.

The following table summarizes each of the key areas for configuring and using the Passwordstate Agent.

Adding Remote Site Locations	Prior to using the Remote Site Agent, you must first add one or more Remote Site Location records
Installation	Guides you through the process of installing the Remote Site Agent
Configure Browser Based Remote Session Launcher Gateway	If you would like to also use a distributed copy of the Remote Session Launcher Gateway with your Agent, you can follow these instructions
Remote Site Tables	Provides information about synchronization of data between your Passwordstate API and the Remote Site Agents
Remote Agent Logging	Provides detail of where the Agent creates logging data
Tagging Data with a Site Location	Explain where in Passwordstate you can tag certain record for a Remote Site Location
Forcing An Agent Poll	If needed for testing/debugging purposes, you can also Force an Agent Poll within one minute, instead of waiting for the scheduled poll

2 Adding Remote Site Locations

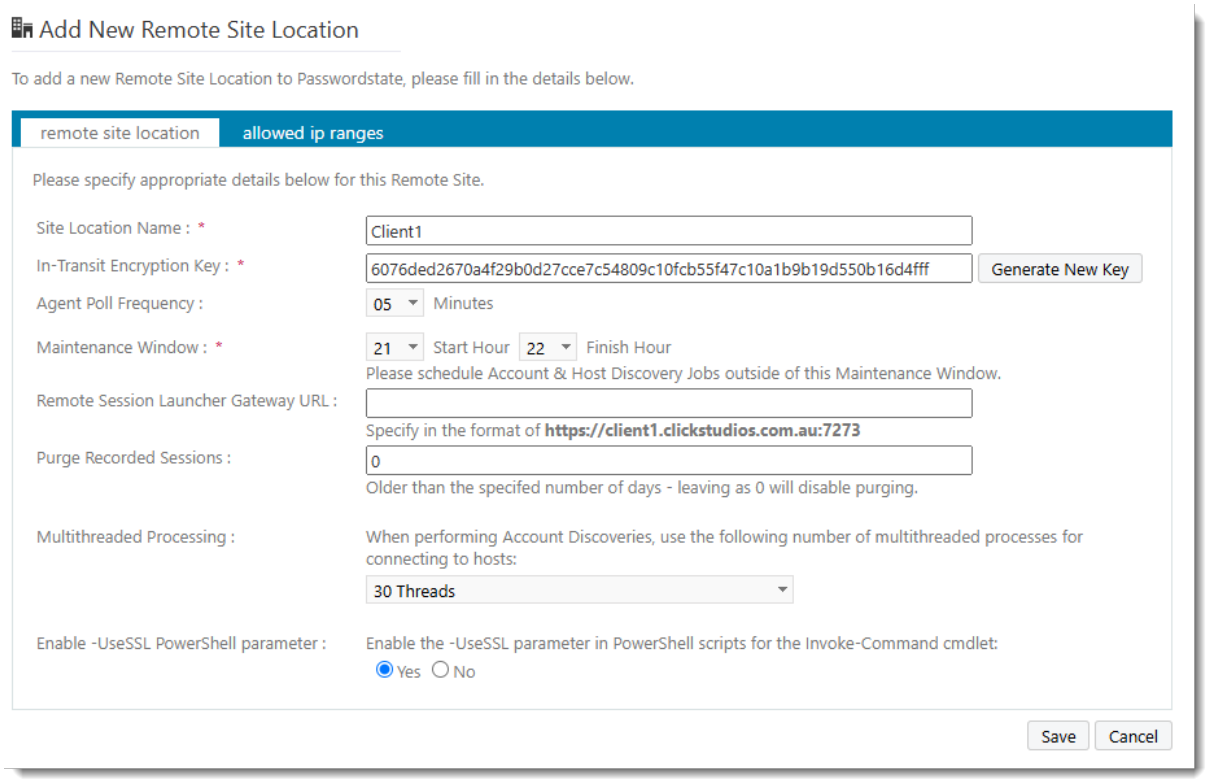
Prior to deploying any Passwordstate Agents, you must add each Remote Site Location into the screen **Administration** -> **Remote Site Administration** -> **Remote Site Locations**.

When adding a Remote Site Location, please specify appropriate settings as appropriate below:

- The name of the Remote Site

- Generate a new In-Transit encryption key (used to further encrypt the BODY of the traffic in the HTTPS requests)
- Agent Poll Frequency - how often you would like the remote agent to poll back in to your core Passwordstate website, to check for new tasks to execute i.e. Discovery Jobs, Account or Host Heartbeats, and Password Resets
- Maintenance Window - the period in which the Remote Agent will not execute any regular tasks - except for refreshing the contents of the Remote Tables. The Maintenance Window gives you a time slot in which you can perform maintenance activities on the remote server, knowing it will not effect any processing tasks.
- Functioning URL for the Browser Based Remote Session Launcher - See Section 4 in this document for more information about this
- If you intend on using the Remote Session Launcher on your Remote Site, and expect to record your remote session, then setting a value for the "Purge Recorded Sessions" can automatically remove these from disk to free up space
- Allowed IP Ranges - if you wish to further secure calls to the API for the selected Remote Site Location, you can specify various IP Addresses or ranges on the 'Allowed IP Ranges' tab
- -UseSSL parameter - please see information below describing this option

Note: Each Remote Site you add will consume a Remote Site Locations license - See https://www.clickstudios.com.au/buy-now.aspx for more information



Enable -UseSSL PowerShell parameter
Enable the -UseSSL parameter for PowerShell script usage, which uses the Secure Sockets Layer (SSL) protocol to establish a connection to the remote computer.

WS-Management encrypts all PowerShell content transmitted over the network. The UseSSL parameter is an additional protection that sends the data across as HTTPS, instead of HTTP.

Please see following Microsoft documentation for more information - https://learn.microsoft.com/en-us/powershell/module/microsoft.powershell.core/invoke-command?view=powershell-7.3

3 Installation of Remote Site Agent

Prior to deploying any Agents, please ensure your firewall allows access through from the remote networks to your Passwordstate web server. The agents communicate back to the API in Passwordstate only. See the open Ports document for more information about this: https://www.clickstudios.com.au/downloads/version9/Passwordstate_Open_Port_Requirements.pdf

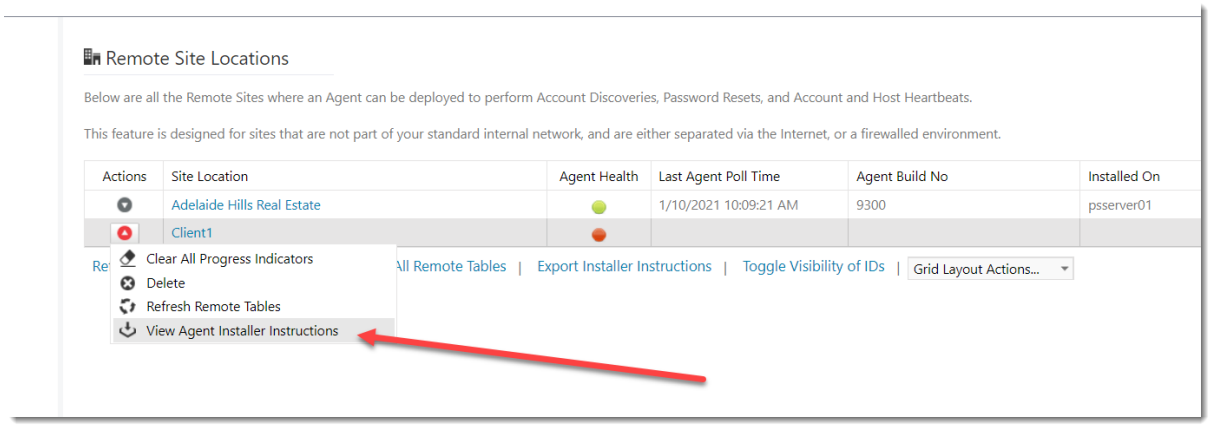
Note 1: It is not recommended or supported to install the Agent on a Domain Controller, WSUS Server, or SharePoint Server.

Note 2: The Server or Desktop where you install the Agent must have .NET Framework 4.7.2 or above installed, and PowerShell 5.0 or above.

Note 3: For Account Discovery and Password Resets at remote site locations, please refer to the **'Password Discovery, Reset And Validation Requirements'** document on Click Studios documentation page at https://www.clickstudios.com.au/documentation/

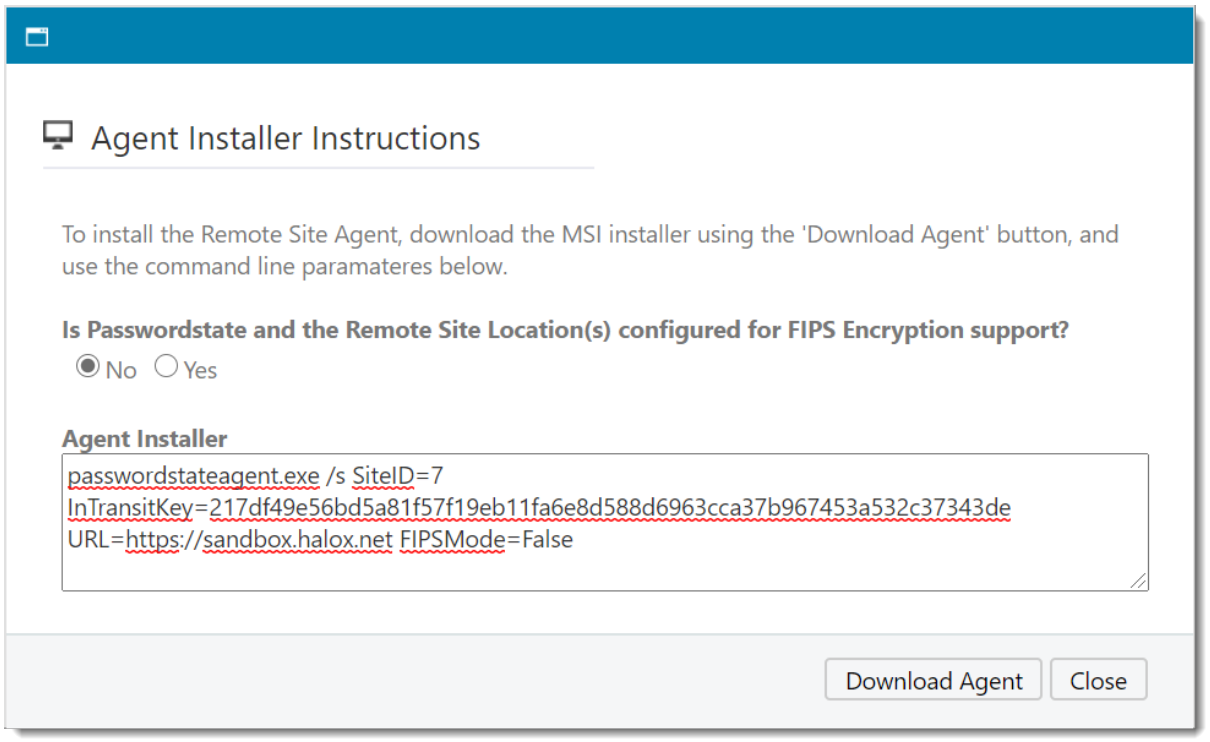
Note 4: Once the agent is installed, it will automatically upgrade itself if required, when you upgrade your core instance of Passwordstate. There is a Windows service called '**Passwordstate Agent Upgrade Service**' which will automatically upgrade the agent within 10 to 15 minutes of you upgrading your Passwordstate web site. This Upgrade service reaches back to your Passwordstate instance to download the latest **agent_upgrade.zip** file

Once you have added the required number of Remote Site Locations into the Administration area of Passwordstate, you can select the '**View Agent Installer Instructions**' Actions menu for the appropriate site, and it will give you the installer command line options for the Agent.



With the installer command line parameters you see in the below screenshot, this will install the Agent silently, as well as configure the required settings in the **C:\Program Files (x86)\Passwordstate Agent\PasswordstateAgent.exe.config** so the Agent can communicate back to your Passwordstate API. This install process takes approximately 10 seconds.

Click the **Download Agent** button, and transfer that to the remote machine where you want the agent to run, and then use the command prompt on that machine to run the command line parameters.



Note 1: You will need to select **FIPS encryption** if your main Passwordstate website is configure for FIPS. To find out if you are using FIPS encryption, log into Passwordstate and look under the **Administration** tab -> **Password Administration** page.

Note 2: The install location for the agent is **C:\Program Files (x86)\Passwordstate Agent**

Encrypting Settings in the AppSettings Section in the PasswordstateAgent.exe.config File

It is highly recommended to encrypt the **AppSetting** section of the **PasswordstateAgent.exe.config** file. Without encrypting this file, you will receive alert reminders when you log into Passwordstate.

To encrypt this file, follow this complete guide:
https://www.clickstudios.com.au/downloads/version9/Encrypt_Passwordstate_Config_Files.pdf

Firewall Considerations and Recommendations

When installing the Passwordstate agent, your Passwordstate URL is recorded in the PasswordstateAgent.exe.config file. The agent itself, does push/pulling of data, back to your instance of Passwordstate, based on this URL.

For the Privileged Account Management features of the agent i.e. discovery, resets, and heartbeats, only one port is required to be open between where the agent is installed, and your Passwordstate instance - the port that your Passwordstate instance communicates on, which by default is port 443.

If your network design is to use the Agent over the Internet, then it is recommended on your firewalls that:

1. The firewall on your internal network, where Passwordstate is installed, only allows incoming traffic from the IP Address of the firewall where your Agent is installed
2. And where the agent is installed, on this firewall you only allow outbound internet traffic from the IP Address of the Host where the agent is installed, to the IP Address of your firewall above

4 Install Browser Based Remote Session Launcher on Remote Site

Passwordstate comes with a Browser Based Gateway feature, which allows you to perform RDP and SSH connections using credentials out of the Passwordstate vault to connect to the remote devices. By configuring this Browser based Remote Session Launcher Gateway with the Remote Site Locations agent, you can get secure RDP and SSH sessions to hosts at the remote network.

You do not need functioning DNS for each of the Host records from your internal Passwordstate environment, the Gateway will perform DNS lookups on the network it is installed in.

In order for this feature to work on your remote site you must have:

- It is highly recommended to use a wildcard certificate. An example of this is ***.clickstudios.com.au**. If you do not supply your own certificate, a Self Signed one will be created for you automatically, however these can be difficult to work with as browsers do not trust them by default.
- At the remote site, the externally facing firewall must allow incoming traffic on the Port you specify the Gateway to listen on. **Port 7273** is the default port. To ensure a secure connection between your company firewall, and the one at the remote end, you can restrict this open port by IP Addresses on each of your firewalls
- You must have a functioning external DNS record which can redirect traffic to the Gateway i.e. for a URL of https://client1.clickstudios.com.au:7273, you would need a DNS entry for client1.clickstudios.com.au to point to the remote site's firewall.
- The firewall would then need to forward traffic on Port 7273 to the host where you have installed the Remote Site Location Agent
- You must be using a trusted SSL certificate for the Remote Session Launcher Gateway. If you are using a purchased wildcard certificate, your browser will automatically trust this which makes for the most user friendly experience.

Changes Made to your Server During this Automated Install

When installing the Remote Site Locations Agent at your remote site, it also preloads some of the files required for the Remote Session Launcher. As a once off process you'll then need to run a Powershell script on the same server where you have the Remote Site Agent installed, which will finish setting up the Browser Based Launcher. This Powershell script will perform the following changes to this server:

- Create a log file in the same directory where you execute the Powershell script from
- Downloads the latest version of **OpenJDK** from https://cdn.azul.com/zulu/bin/ and extracts this file to **C:\Program Files (x86)\OpenJDK**. This download is approximately 200mb in size
- Adds a file path to the "**PATH**" System Environment Variable. Also adds in a new Environment Variable called **JAVA_HOME**. If these already exist, they will be removed before adding them back in

- Installs a Windows Service called **Passwordstate-Gateway**
- Removes all temporary source files that were created during this process
- Will create a Self Signed certificate with the name of your server, if you do not supply your own certificate

Installing the Browser Based Gateway on your Remote Site

1. In the downloads folder of your Passwordstate installation (**c:\inetpub\passwordstate\downloads**) you will from the file **Install-Gateway-RemoteSite.zip**. Download this file to the computer where you have the Remote Site Locations agent installed
2. Extract the zip file into a temporary location, such as **C:\Temp**
3. Open Powershell ISE "**As Administrator**" and open the C:\Temp**Install-Gateway-RemoteSite.ps1**
4. When supplying your own certificate, you will need to supply it in the format of a password protected .pfx file. The exact name of this must be **Passwordstate.pfx**. Place this Passwordstate.pfx file into the same directory where you are running the Powershell script from. More information about supplying your own certificate can be found in the next section, **SSL Certificate Considerations**
5. When you obtain your own certificate and saving it as a .pfx file, you will be assigning it a custom password. This password can be anything you like and you must also insert this password the Powershell script, as per screenshot below
6. Run the script, and it should take about 1 minute to complete

Install-Gateway-RemoteSite.ps1*

```
<#
    .NOTES
    ================================================================================
     Created:       April 2020
     Organization:  Click Studios Pty Ltd
     Filename:      Install-Gateway-RemoteSite.ps1
     Version:       1.4
    ================================================================================
    .DESCRIPTION
        - This script will install and configure the Browser Based Gateway
        - Powershell must be running as Administrator
        - The script should not be executed on the same server where you have Pa
        - A log file will be created in the same folder where you execute this s
        - You must supply an password protected SSL certificate called Passwords
        - Enter the password into the $CertPassword variable on line 32 of this



        .UPDATES
        12/05/2020 1.3 - Added uninstall of Agent Service if it existed
                         - Added better logic for inserting the encrypted passw

        01/06/2020 1.4 - Changed call to 7za.exe process for better extraction o
                         - Removed check for 7zip to finish extracting files as

        16/09/2020 - 1.5 - Added ability to supply java source files in the even

        09/11/2020 - 1.6 - Added support for OpenJDK 15

#>

$CertPassword = 'Welcome01'

# Begin script
Write-Host "Begin script"

# Remove the log file if it already exists in $PSScriptRoot home
Write-Host "Remove the log file if it already exists in $PSScriptRoot home"
$logtest = Test-Path "$PSScriptRoot\Install-Gateway.txt"
if ($logtest -eq $true){Remove-Item $PSScriptRoot\Install-Gateway.txt -Force}
```

If there are any issues running the script, you should see some information in the Powershell output console, and there will be a log file created in the folder where you ran the Powershell script from. If you are unable to determine the cause of the failed install, please create a Support Ticket on the following page https://www.clickstudios.com.au/support.aspx requesting assistance in diagnosing the issue.

If the installation was successful, you should see a Windows Service called **Passwordstate-Gateway** and it should be running.

SSL Certificate Considerations

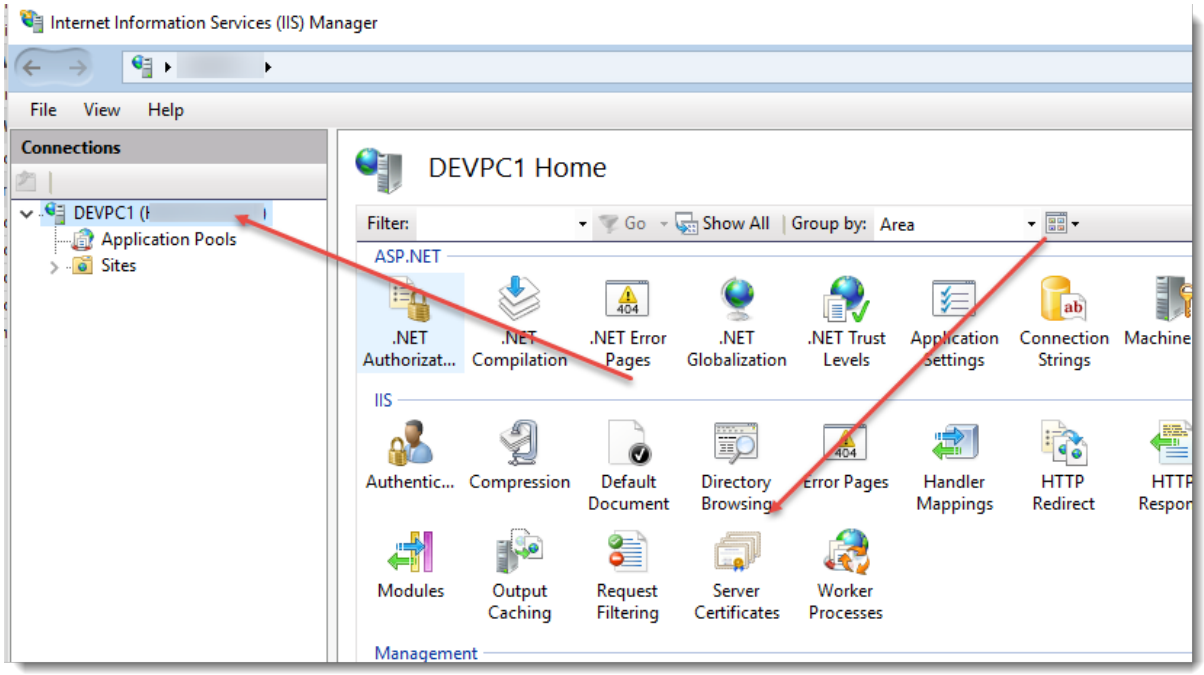
Click Studios recommends using a wildcard certificate for all your clients, as this means you can use the same certificate file, and gateway.conf configuration file across all sites. An example would be to purchase a wildcard certificate like ***.clickstudios.com.au**, and then you could use

URLs like https://client1.clickstudios.com.au:7273 and https://client2.clickstudios.com.au:7273, etc, etc.

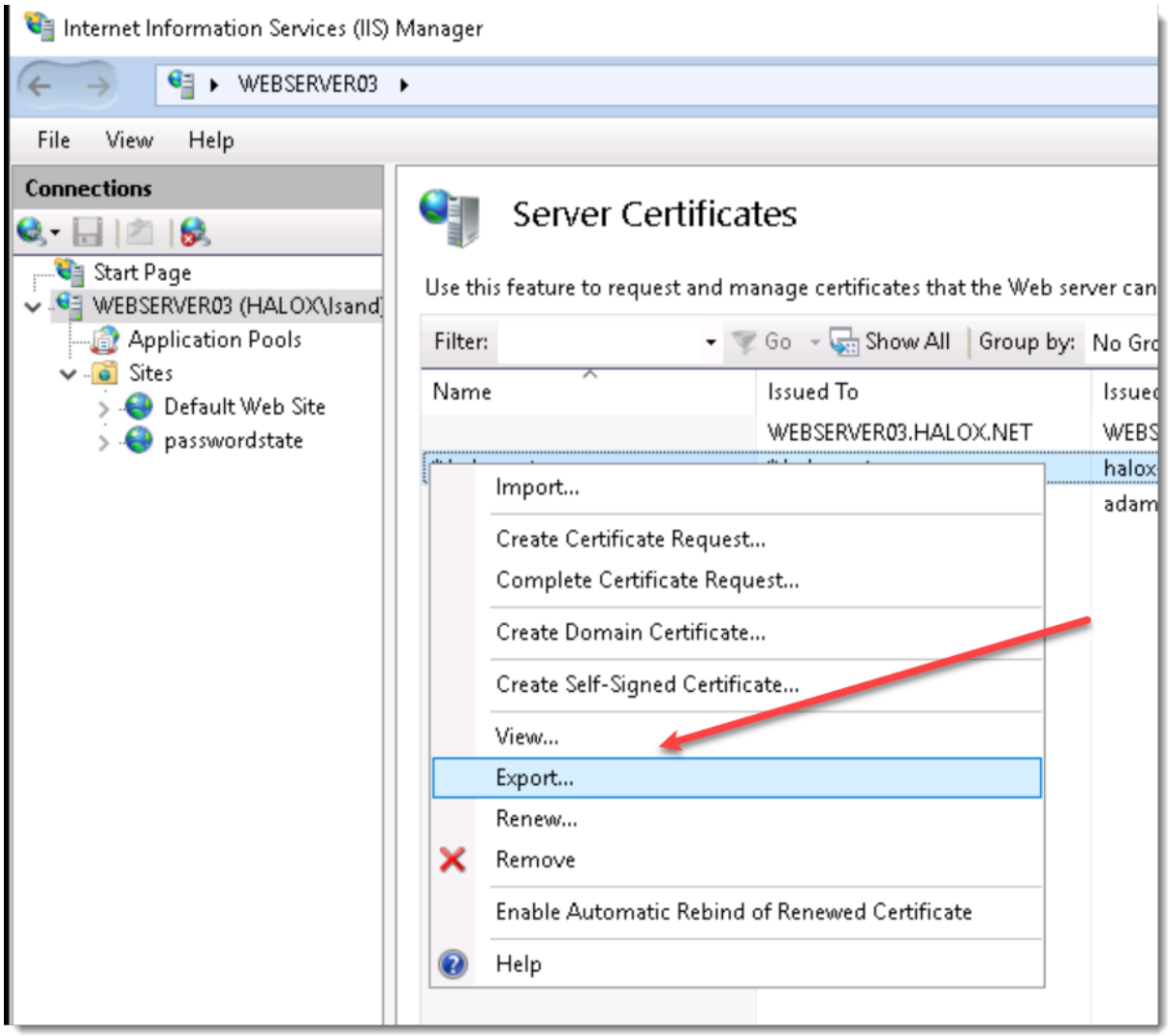
Note 1: You don't have to use a wildcard certificate, but it might work out more cost effective, and easier to manage, if you are deploying multiple agents.
Note 2: If you instead wish to use the Self Signed Certificate that comes with the installer automatically, then you will need to trust this certificate in the browser where you trying to establish RDP and SSH session from. Please see **section 12** of this install guide for details on how to trust certificates in your browser:
https://www.clickstudios.com.au/downloads/version9/Installation_Instructions.pdf

If you already have a wildcard certificate you can use in IIS, you can use the instructions below to export it for use.

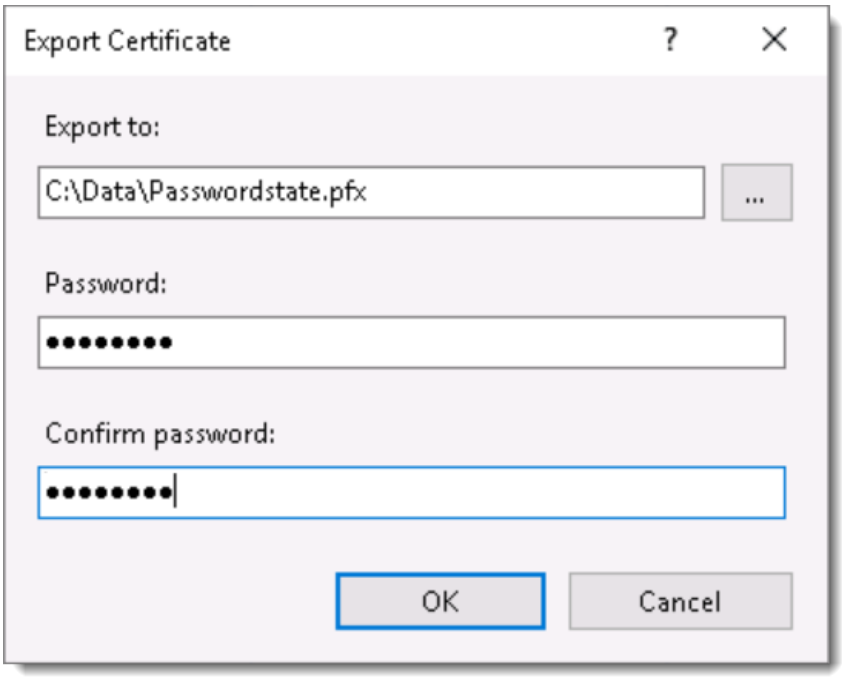
- In IIS, navigate to '**Server Certificates**'



- Right click on your certificate and select '**Export**'



- Export the certificate to a temporary folder, and name it **Passwordstate.pfx** – make sure you specify a password for the exported certificate as well, and keep this password in mind as you'll need it when you install the Gateway

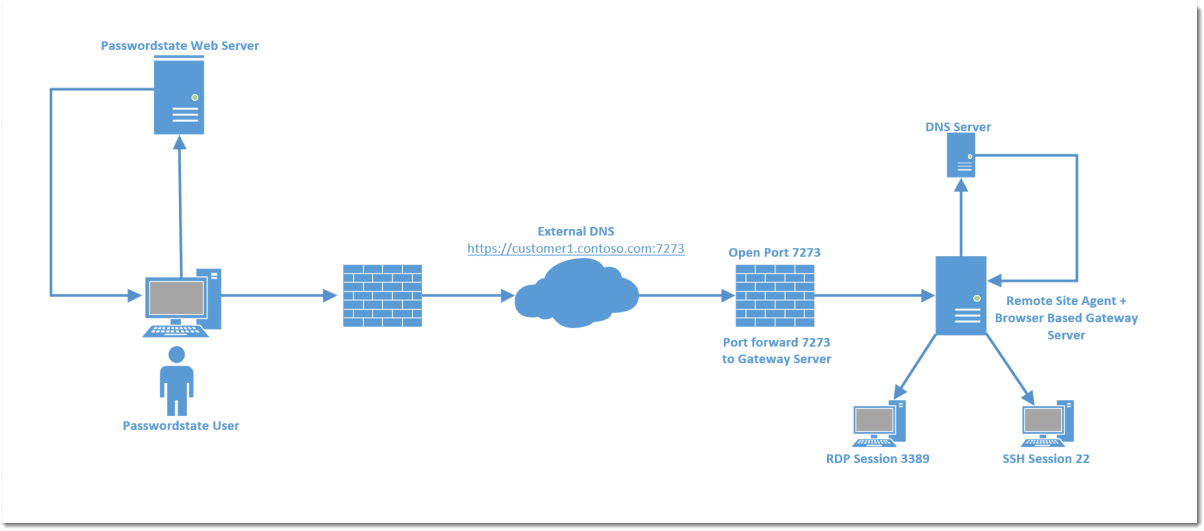


DNS and Port Considerations

In order for your RDP and SSH sessions to communicate to the remote site correctly, you will need to ensure you have a functioning DNS entry , forwarding on traffic to the Remote Site firewall. This firewall will also need an port open which forwards HTTPS traffic onto the server where you have the Remote Site Agent and the Browser Base Gateway installed.

Below is a diagram to give you a visual reference as to how a RDP or SSH Session can be established over the internet, using the Browser Based Launcher and the Remote Site Locations module. You will need to create your own external DNS entry, and this must be set on your Remote Site Location in Passwordstate Administration area. More information about where to set this can be found in the "**Specify Gateway URL in Passwordstate**" below.

Ideally if you had a wildcard certificate of ***.contoso.com** for example, this one certificate could be used on multiple sites. You could create your DNS entries as **customer1.contoso.com**, **customer2.contoso.com** etc.



Session Recording Folder in the Gateway.conf File

By default, and session recordings will be stored in the folder "C:\Program Files (x86)\Passwordstate Agent\gateway\rec".

Depending on how many session recordings you do, and their duration, then this may cause issues with disk space on the C drive, so it is recommended you move this to a different disk with more space. To do this, do the following:

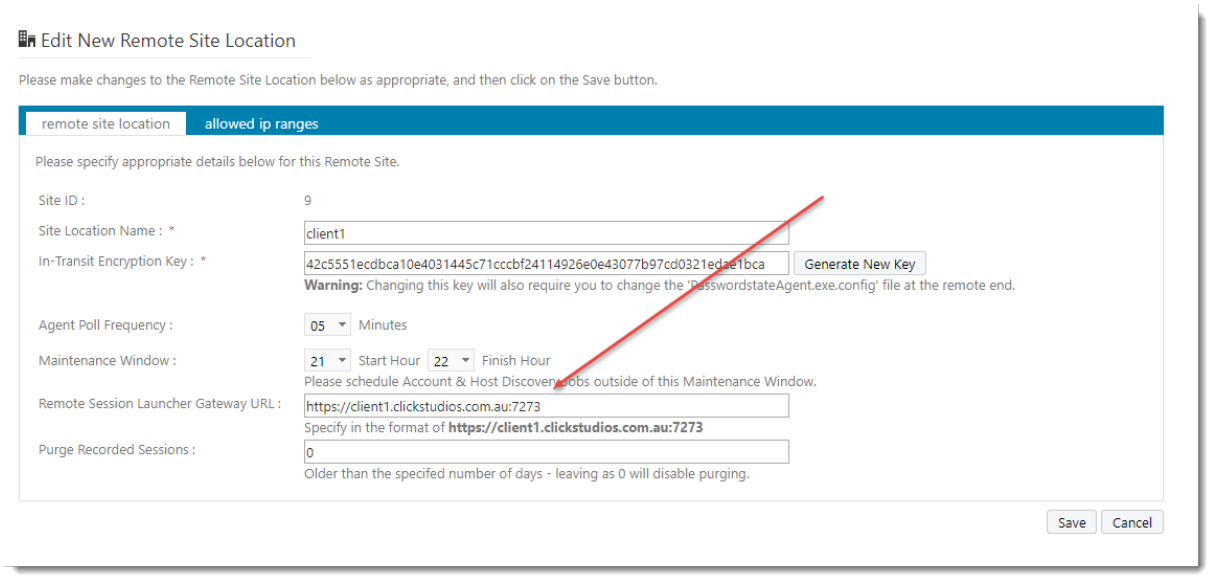
- Change the 'recdir' setting in the Gateway.conf file, like in the screenshot below

```
#listening port
port = 7273

#directory for session recording.
recdir = d:\\recordings
recdir.play.enable = true

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

Specify Gateway URL in Passwordstate

In order for traffic to route to the correct remote site Gateway, you need to edit the Remote Site Locations record and specify the URL, as per the screenshot below.

Remember: You need a functioning DNS record in order to route traffic to the example below of **client1.clickstudios.com.au**

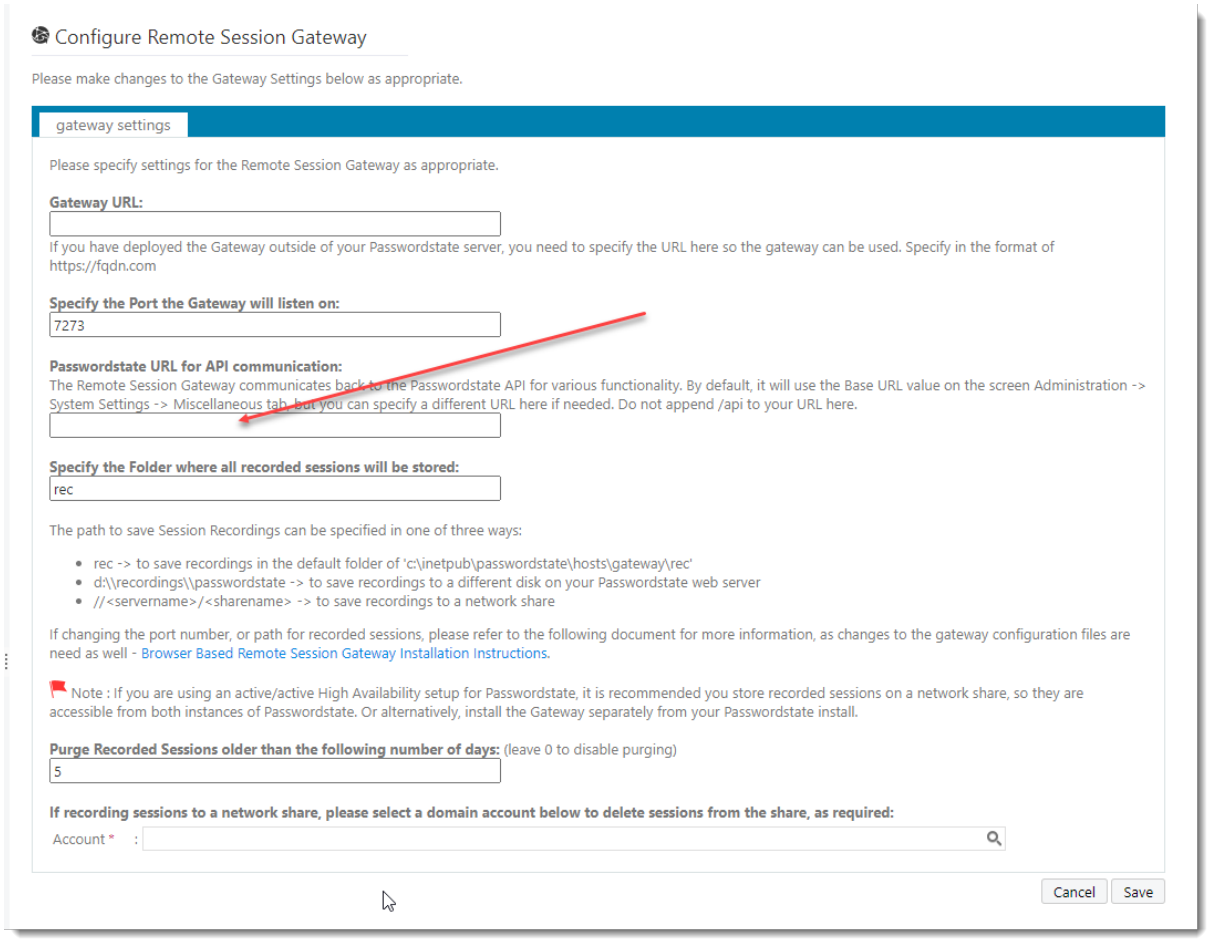


Passwordstate URL used by the Gateway

When connecting to the Gateway that is installed with the Remote Site Locations agent, the gateway must make several calls back to the Passwordstate API - for functional, and security reasons.

By default, it will communicate on the Base URL setting you have set on the screen Administration -> System Settings -> Miscellaneous tab.

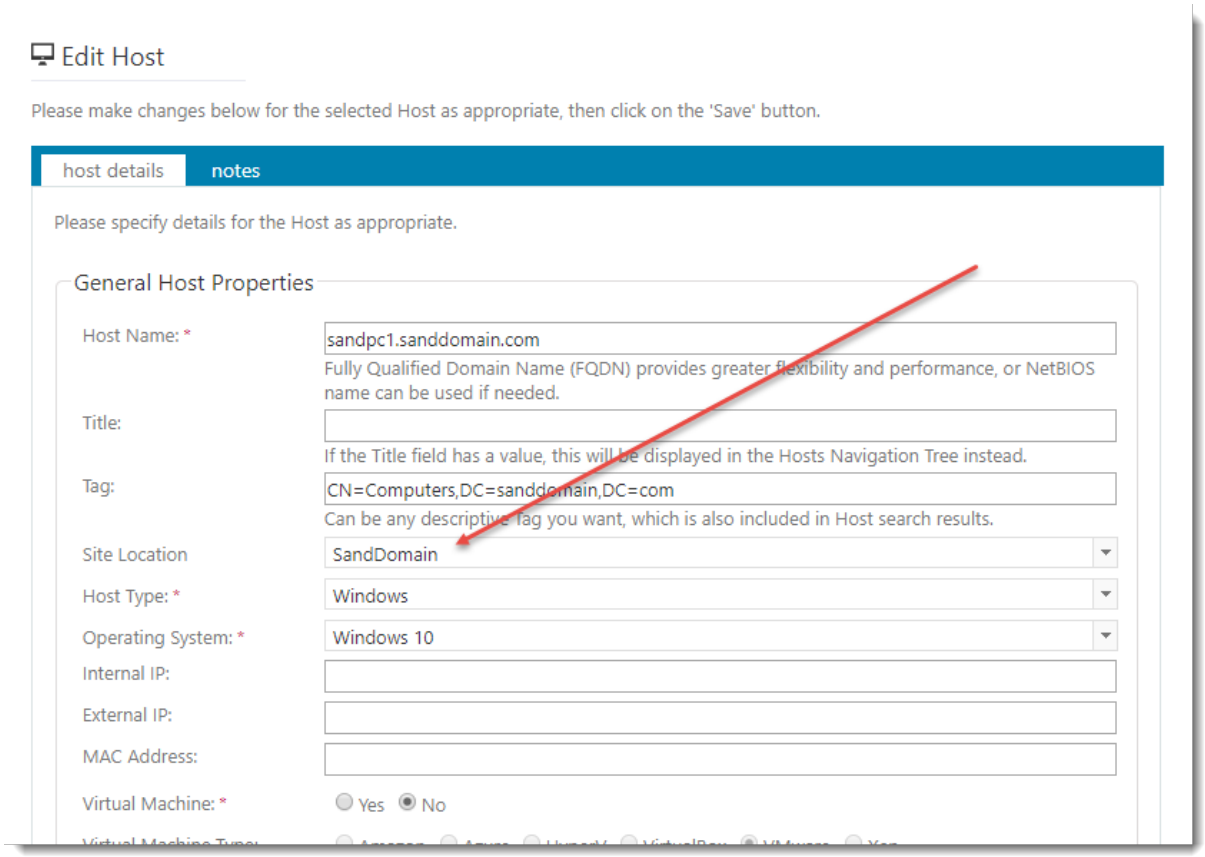
If, for whatever reason, you need the Gateway to communicate back to the Passwordstate API using a different URL, you can specify this on the screen Administration -> Remote Session Management -> Browser Based Gateway Settings, as per the screenshot below.



Remote Sessions to Host

Now from within Passwordstate, performing remote sessions to Hosts is as simple as making connections to your own internal hosts. What's required is:

- Your Host records must be "tagged" to the correct Remote Site Location - screenshot below
- You must have access to the Web Based Remote Session Launcher in Passwordstate - please refer to the **Passwordstate Security Administrator's Manual** if you do not have access to this. Access can be granted on the page **Administration** -> **Feature Access** -> **Remote Sessions** tab
- Then you can authenticate with any of the supported methods to the Host. For more information on authenticating, please refer to the **Passwordstate User Manual** in the Help Menu, under the section **Hosts** -> **Hosts Navigation Tree** -> **Remote Session to a Host**



5 Remote Site Tables

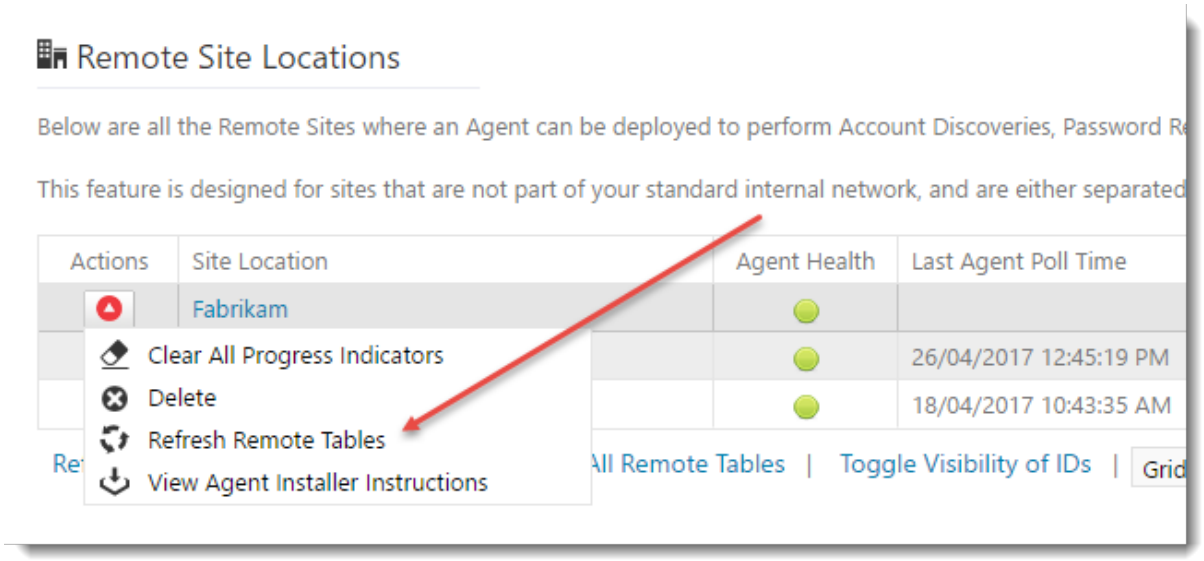
With each Agent install, there are certain tables in an SQLite database which will be populated with data via your Passwordstate API.

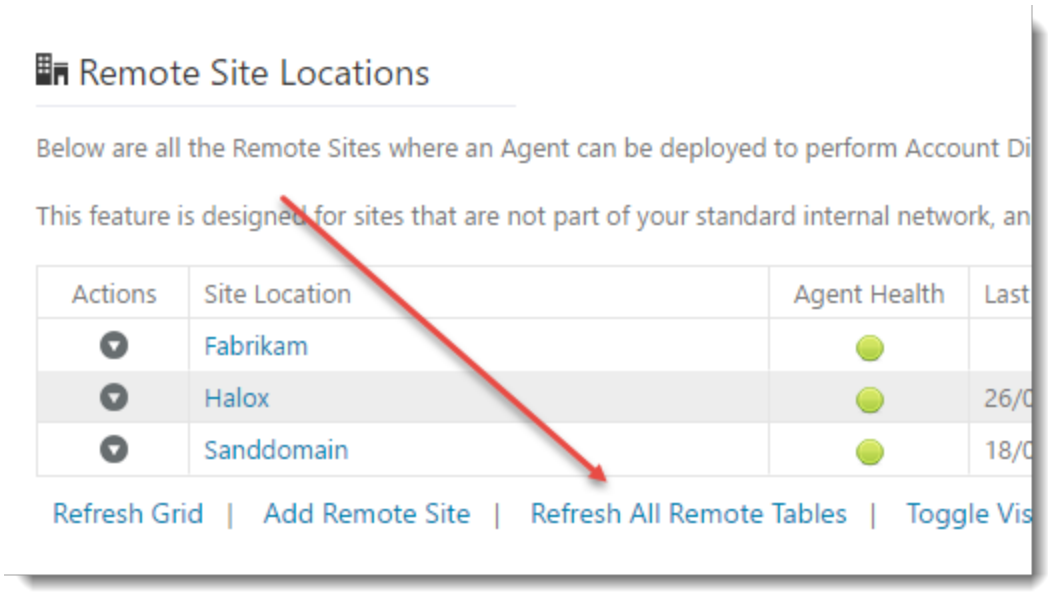
When you first install the Agent, these tables will be populated accordingly when the Passwordstate Agent Windows Service first starts, and they will also be refreshed at the beginning of the Maintenance Window you specify for each of the Remote Site Locations.

Below are a list of tables which are refreshed regularly, but if you change the contents of these tables within your install of Passwordstate, it is recommended you manually refresh the remote site tables manually, or wait until the next Maintenance Window for them to automatically be refreshed. You can manually refresh these tables on a per site basis, or for all sites at once as per the options below - when the Agent next polls (every 5 minutes by default), then the tables will be refreshed.

Table Name	Used For	When Data For These Tables Could Change
AccountTypes	Performing Discovery Jobs	During an upgrade
DiscoveryScripts	Performing Discovery Jobs	During an upgrade
HostTypes	Performing Password Resets	During an upgrade, or if you change any within the Administration area

Table Name	Used For	When Data For These Tables Could Change
OperatingSystems	Performing Discovery Jobs	During an upgrade, or if you change any within the Administration area
Scripts	Performing Password Resets	During an upgrade, or if you change any within the Administration area
ValidationScripts	Performing Account Heartbeats	During an upgrade, or if you change any within the Administration area





6 Remote Agent Logging

Once the Remote Agent is installed and functioning, it can provide logging information in a variety of ways:

- In the Agent folder, generally in the path of C:\Program Files (x86)\Passwordstate Agent, there is a Logs folder. In this folder, the following logs will be created to assist with any troubleshooting activities:
  - Discovery - Account and Host Discovery activities
  - Heartbeat - Account and Host Heartbeat activities
  - PasswordResets - Password Reset information
  - General - All other logging which do not fit into one of the categories above

Logs will be kept for a maximum of 2 weeks, then automatically deleted.

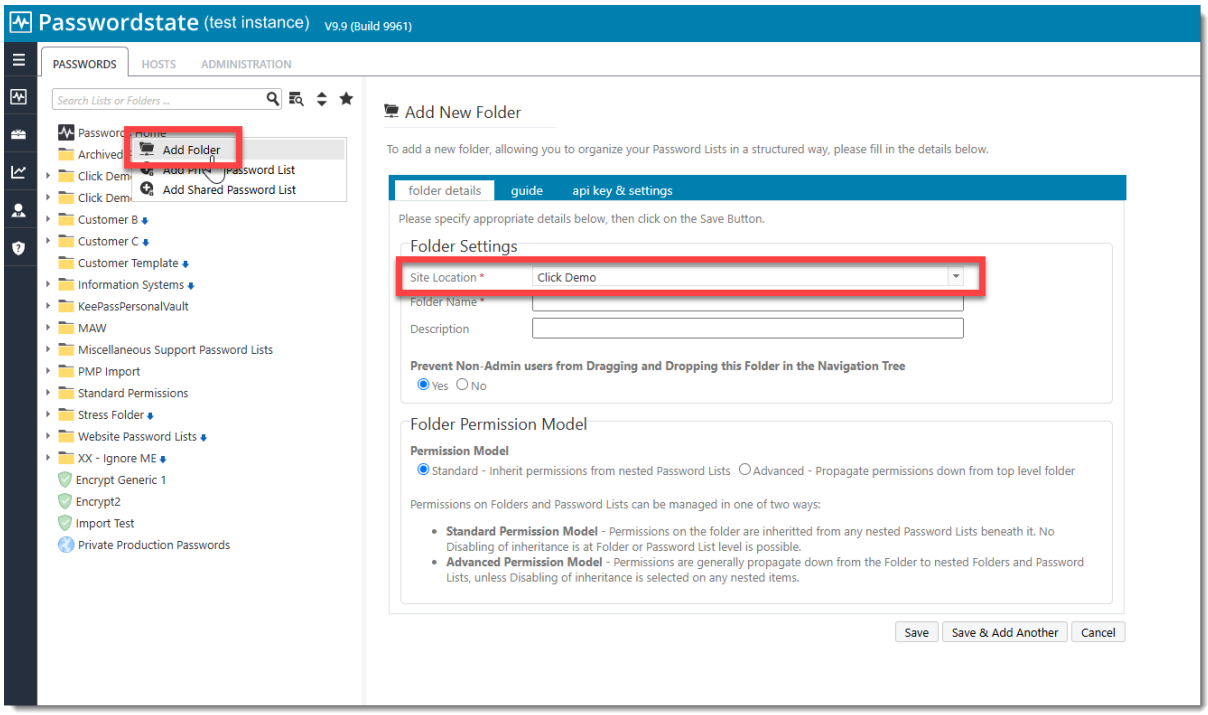
- If the Agent is able to communicate back to your Passwordstate API, any errors will also be logged to the screen Administration -> Passwordstate Administration -> Error Console
- And when the Agent reports back information around Discovery, Resets, etc, it will add Auditing data for the site as well - which can be reported against in various screens within Passwordstate

7 Tagging Data with a Site Location

Once you have added one or Remote Sites on the screen Administration -> Remote Site Administration -> Remote Site Locations, then it is possible to 'tag' different data within Passwordstate to be associated with the site. Following are a list of areas this can be done:

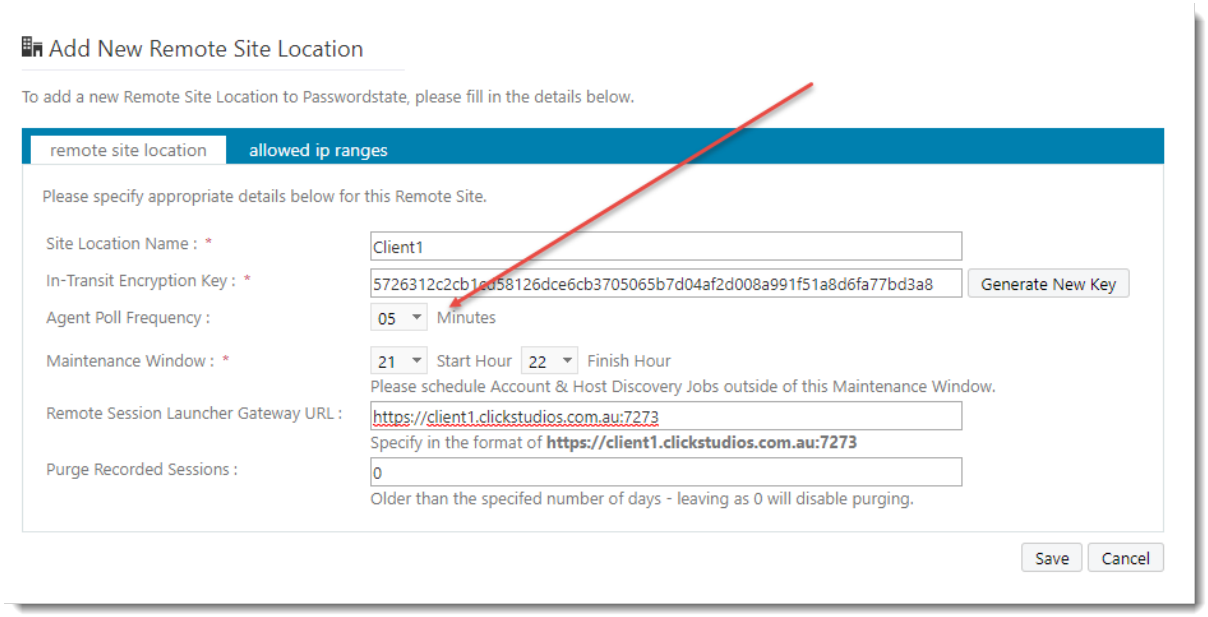
- Active Directory Domains
- Privileged Account Credentials
- Folders and Password Lists
- Hosts and Host Folders
- Discovery Jobs
- Remote Session Credentials (for the Remote Session Launcher feature)
- User Accounts (so clients can login and get read access to their passwords, without consuming a license)
- Scheduled Reports (based on Auditing data)

An example of tagging a new folder with a Remote Site can be seen below. Anything you add into this folder will automatically be tagged with the Remote Site:



8 Forcing An Agent Poll

Each Agent that you deploy can have it's own 'Agent Poll Frequency' set - by default, it is every 5 minutes for each Site Location. Below is a screenshot of where this can be changed.



If for testing/debugging purposes you do not wish to wait for this Poll Frequency, you can make a change to the PasswordstateAgent.exe.config file at the remote site agent end, to force a poll every minute.

What you need to do is modify the highlighted flag below to True, and then within one minute it will pick up this change and force an Agent poll – the longest you will need to wait is one minute. Remember to set it back once you have finished testing/debugging. Also, if the Agent Poll is still in progress the next time it checks in one minute, it will not perform another Poll – the previous one first needs to finish.