GEORGIA SOFTWORKS

GSW Business Tunnel for Windows

Commercial SSH Tunnel for Windows

User Manual

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GEORGIA SOFTWORKS

GSW Business Tunnel

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User's Manual, Version 1.28.0002, February 10, 2017


"SSH Tunneling at its Finest"
GSW Busi
Tunnel
The Georgia SoftWorks Business Tunnel

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Terms and Typographic Conventions

Italics:	Used to emphasize certain words, especially new terms or phrases when they are introduced.
Initial Caps Bold:	Words that appear in initial caps boldface represent menu options, buttons, icons or any object that you may click.
`Courier`:	This font represents anything you must type. Courier is used for examples.
"<**enter**>"	This represents the enter key.

Terms/Abbreviations

GSW Business Tunnel	GSW software that provides secure connectivity over an insecure network.
Windows	Refers to Microsoft Windows Desktop and Server Operating Systems through Server 2016.
Port Forwarding	This action redirects insecure traffic through the secure tunnel. Port Forwarding is to assign all traffic originally directed to a port to be redirected to a different port. Software ports are numbered connections that a computer uses to sort types of network traffic.
SSH Tunnel	Encapsulating data using the SSH protocol before sending it to the SSH server.

Features at a Glance

Georgia SoftWorks Business Tunnel – SSH Strength

- Set and Forget
- Gain Security Conformance by using Strong SSH Security
- Elliptic curve cryptography support is built-in
- Secure Access for Browsing, Email, RDP etc. from remote locations including hotels, airports, hospitals, coffee shops, fast food restaurants etc.
- Support for all Windows operating systems from Windows XP through Windows 2012 Server
- Easy to understand and use Tunnel Manager
- Create/Edit/Delete Tunnels and Channels
- View Tunnel Activity and status information
- View Channel Activity and status information
- View User Activity and status information
- Anonymous Browsing
- Easy to Install and Use
- Administrator Friendly
- Transparently encrypt another applications data stream
- Strong Authentication, Encryption and Integrity Checking

Overview

"Set It and Forget It"

Thank you for purchasing the industrial grade Georgia SoftWorks Business Tunnel for Windows.

Business Tunnel - Business Sense

Provide secure access and reliable connectivity for traveling employees, branch offices, remote developers and work at home colleagues (and much more) to services at work and away using SSH tunneling. The GSW Business Tunnel offers a business sense approach to SSH Tunneling delivering commercial reliability, configuration and management. Harness the power of SSH Tunneling without the past complexities and frustrations associated with port forwarding or the expense and training for VPN's.

The GSW Business Tunnel provides a graphical user interface for configuration, activation, management and monitoring of SSH tunnels and their associated channels. Each SSH tunnel may have multiple channels configured. A tunnel is the secure connection between the GSW Business Tunnel software and a SSH Server. You then create one or more channels within the tunnel that can be associated with various protocols such as HTTP, POP, SMTP, RDP, etc. This will facilitate a secure channel to perform various activities such as browsing the internet or a company intranet, or checking email etc. where it is otherwise difficult, expensive or not possible.

Persistent Connection – Set It and Forget It

With the GSW Business Tunnel you create a secure *persistent* connection (tunnel) between the computer initiating the tunnel and a computer running a SSH Server. The GSW Business Tunnel runs as a service that provides a level of robustness and features not available in stand-alone applications. The administrator of the tunnel can set it up (configure the tunnel) and forget about it. It just runs. Although typical networks may momentarily drop connections, the GSW Business Tunnel will automatically reestablish the tunnel, completely transparent to the user. You can "Set it and Forget it".

The Best Security with built in Elliptic Curve Cryptography

Quickly gain security conformance with the GSW Business Tunnel by using strong SSH Security when browsing the internet, intranets, sending/receiving email, using remote desktop and many other services.

NSA endorsed and NIST recommended elliptic curve cryptography support is built-in providing some of the strongest authentication and encryption available.

Configure your firewall to block all incoming connections, but still allow secured access to company services from remote employees without reconfiguring or weakening your firewall. The Business Tunnel is configured from the company to ensure access only from approved locations.

Enhance security by providing connectivity to only the services required instead of opening up access to all services as is often done. Secure typically nonsecure protocols by encapsulation within the GSW Business Tunnel.

Additionally, the Business Tunnel can secure customer TCP connections for all kinds of legacy applications and bring them to compliance with security requirements.

Business Tunnel – the Sensible Solution

The GSW Business Tunnel Management Tool offers an innovative approach in creating, operating, organizing and monitoring secure tunnels bringing them into use by mainstream business. There are no lengthy or complicated command lines that must be entered over and over again, as can often be the case.

The GSW Business Tunnel is lightweight, has a small footprint and is a minimally invasive solution.

You will be amazed how your current understanding of port forwarding can easily be utilized with the GSW Business Tunnel for Windows.

Installation

Run the `SSHTunnel.exe` program.

If you have User Account Control enabled you may get a prompt that says "Do you want to allow the following program to make changes to this computer?" Click `Yes`.

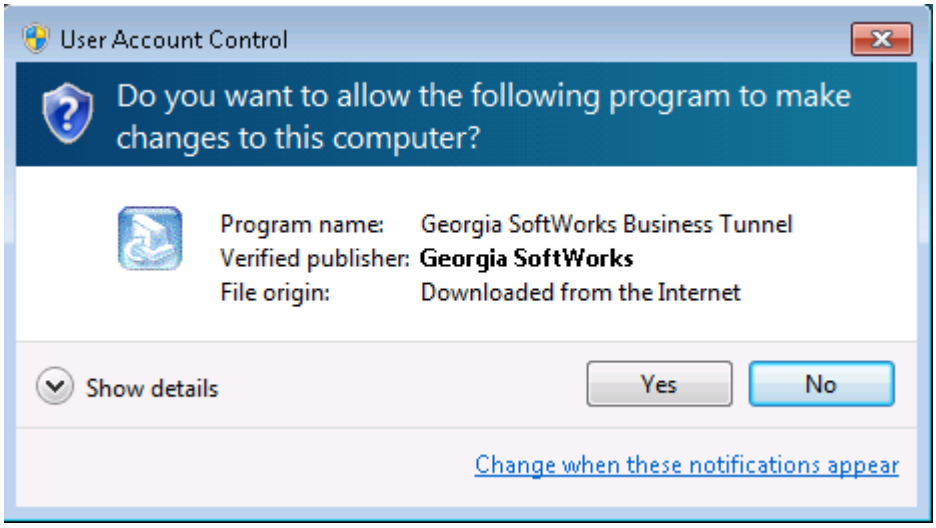


Figure 1: User Account Control

You will see a GSW Business Tunnel progress meter.

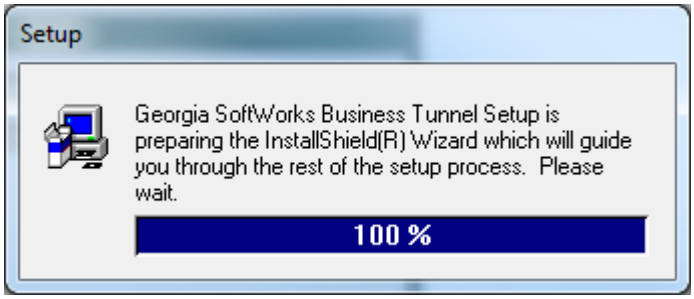


Figure 2: Installation Progress Meter

The Welcome screen of the setup program is displayed and you are reminded and urged to exit all Windows programs before continuing. You are also reminded that you must have administrative privileges to install this program. Click **Next.**

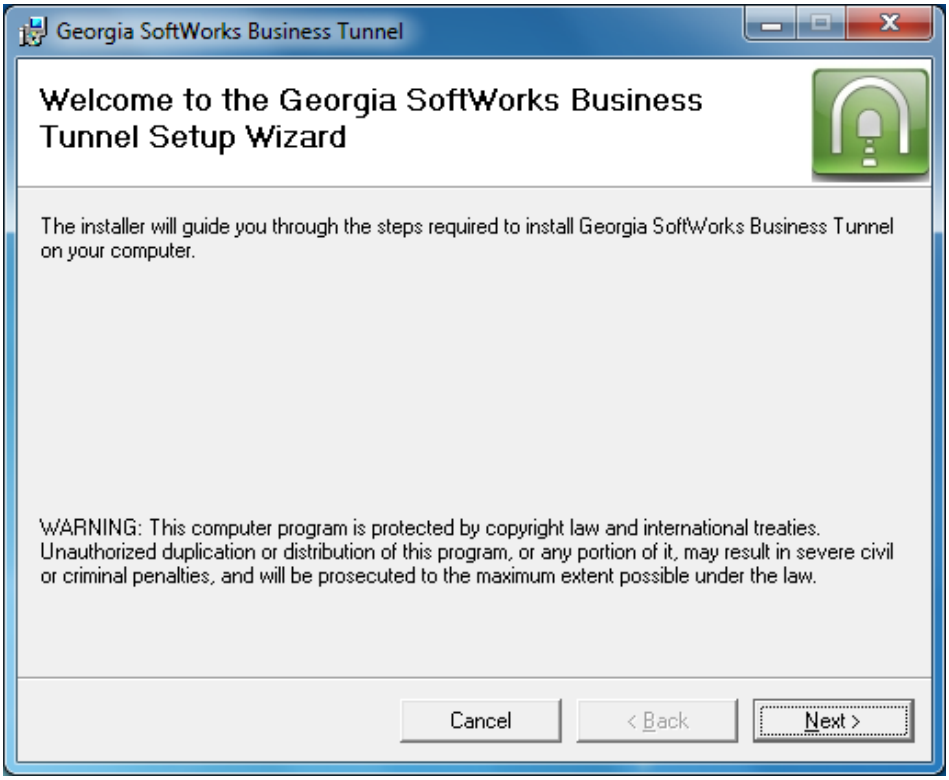


Figure 3: GSW Business Tunnel Setup Welcome Dialog

A screen is displayed indicating the directory where the Georgia SoftWorks Business Tunnel will be installed. The default is `C:\Program Files (x86)\Georgia SoftWorks\Georgia SoftWorks Business Tunnel` on 64-bit machines. On 32-bit machines the default is `C:\Program Files\Georgia SoftWorks\Georgia SoftWorks Business Tunnel`

You may change the installation directory at this time. *Note: If you install on a drive other than the system drive and have NTFS on the installation drive, then you must make sure that the system has full permissions to get to the installation directory and subdirectories.* Click **Next**.

If you would like to use a different Program Folder Name, then enter it here. Then Click **Next**.

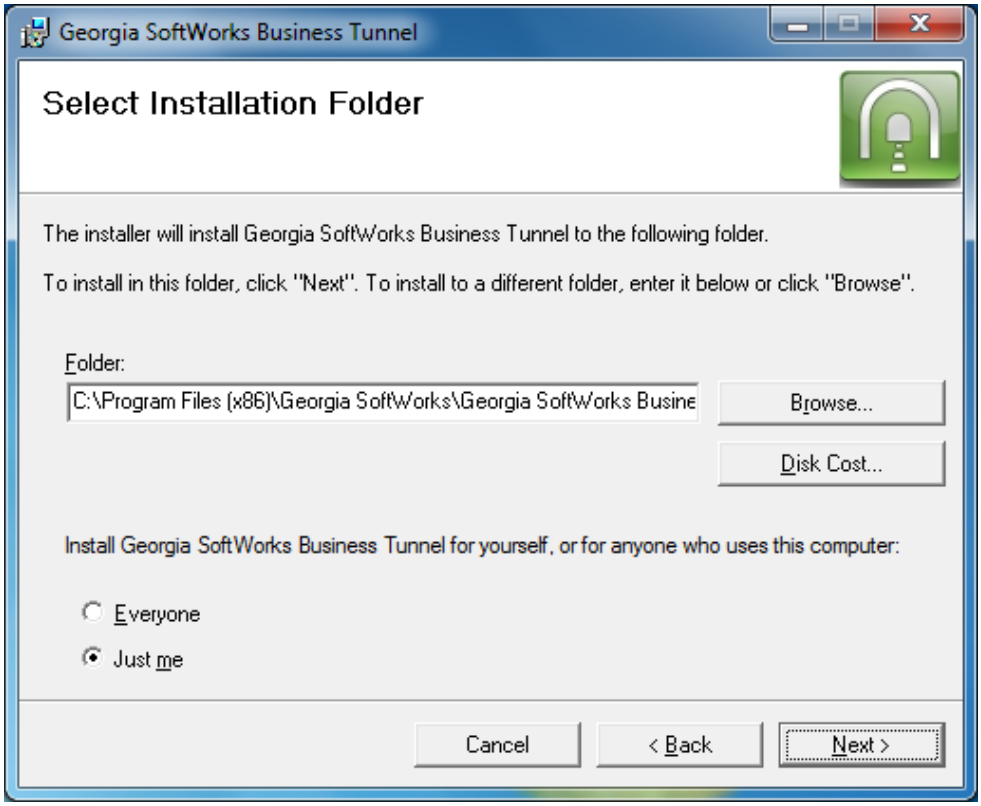


Figure 4: GSW Business Tunnel Choose Destination Location

The Installation Confirmation screen is displayed. The GSW Tunnel is ready to be installed on your computer. Click **NEXT .**

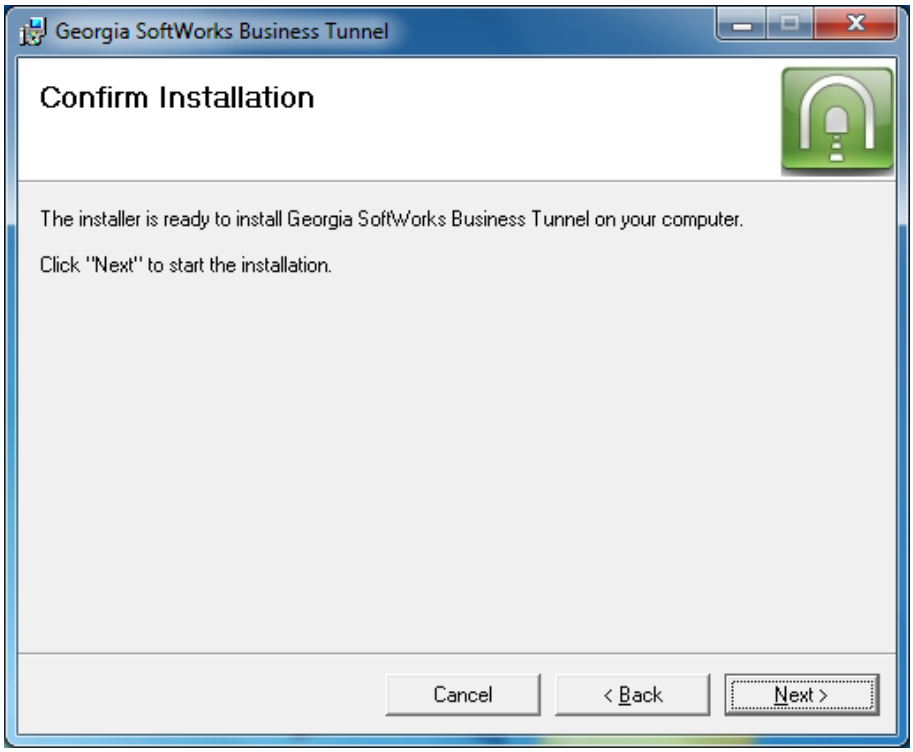


Figure 5: GSW Business Tunnel Installation Confirmation

The Installation Complete screen is displayed. The GSW Tunnel service has been installed and is automatically started. Click **CLOSE**

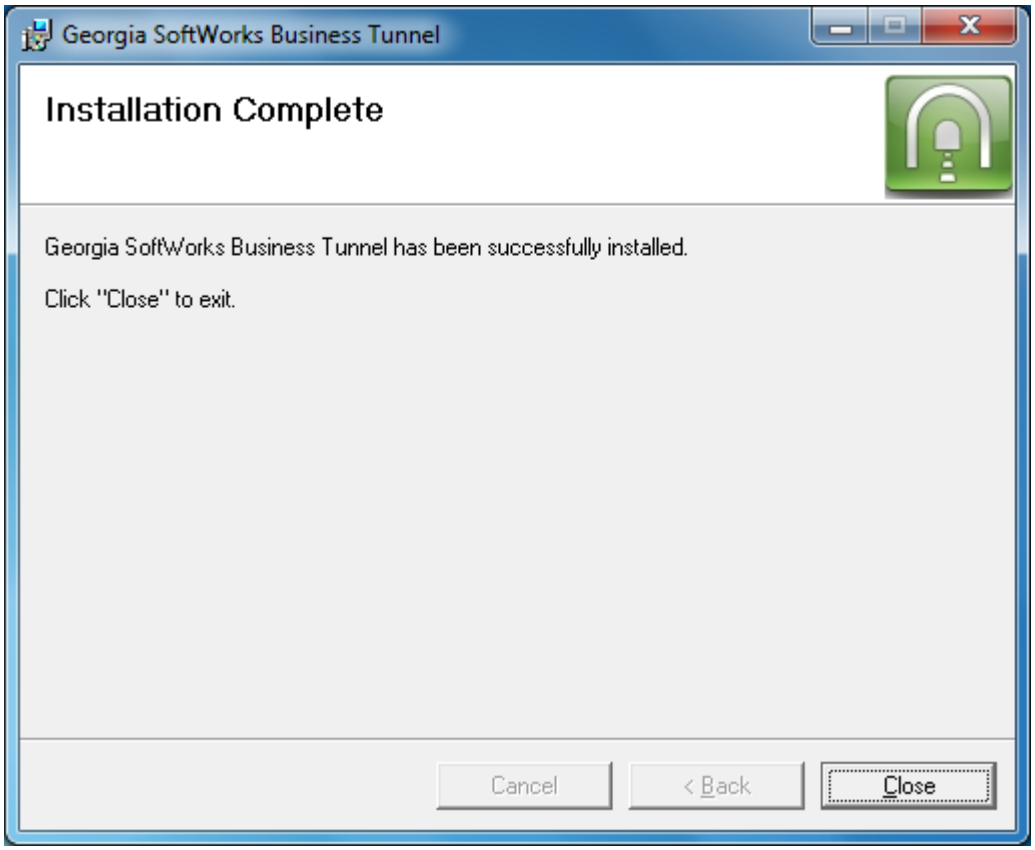


Figure 6: GSW Business Tunnel Installation Setup Succeeded

Please view the readme.txt file as it may contain late breaking information about the GSW Business Tunnel that has not yet made it into the User Manual. Release notes are contained in the readme.txt

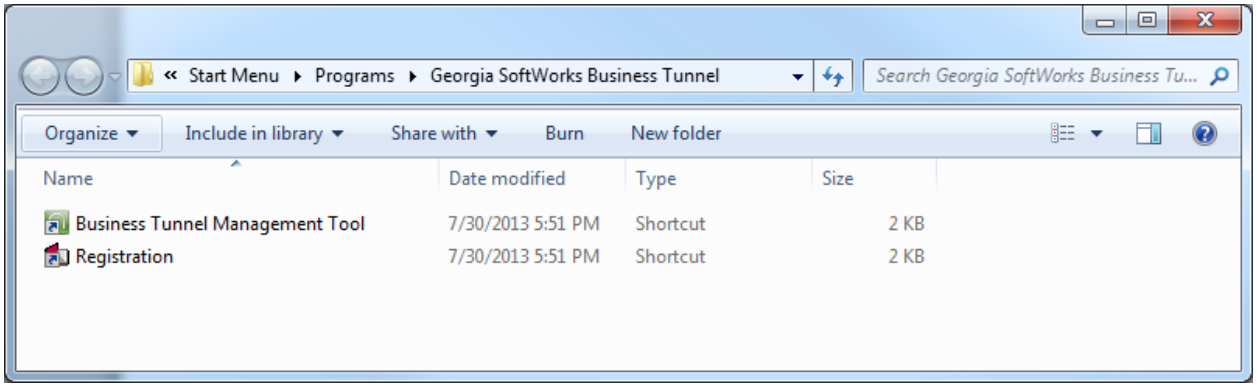


Figure 7: GSW Business Tunnel Program Group

Installation is complete. The next step is to register your software.

Registration

Note: Do not use Windows Terminal Services/Remote Desktop to perform registration.

Software Registration

To run the Georgia SoftWorks Business Tunnel for Windows you must first register the software[1]. This entails just a few steps that involve obtaining the Product ID and providing this identification to Georgia SoftWorks so a **Serial Number** can be generated. - **NOTE:** Read System Signature chapter at the end of manual.

How to Register the Software

To run the registration program -

1. Select the *Start* button on the taskbar, select *All Programs*, then *Georgia SoftWorks Business Tunnel and* then *Registration*.

The registration screen is displayed. The Registration software automatically fills in the Product Information fields as shown in Figure 8.

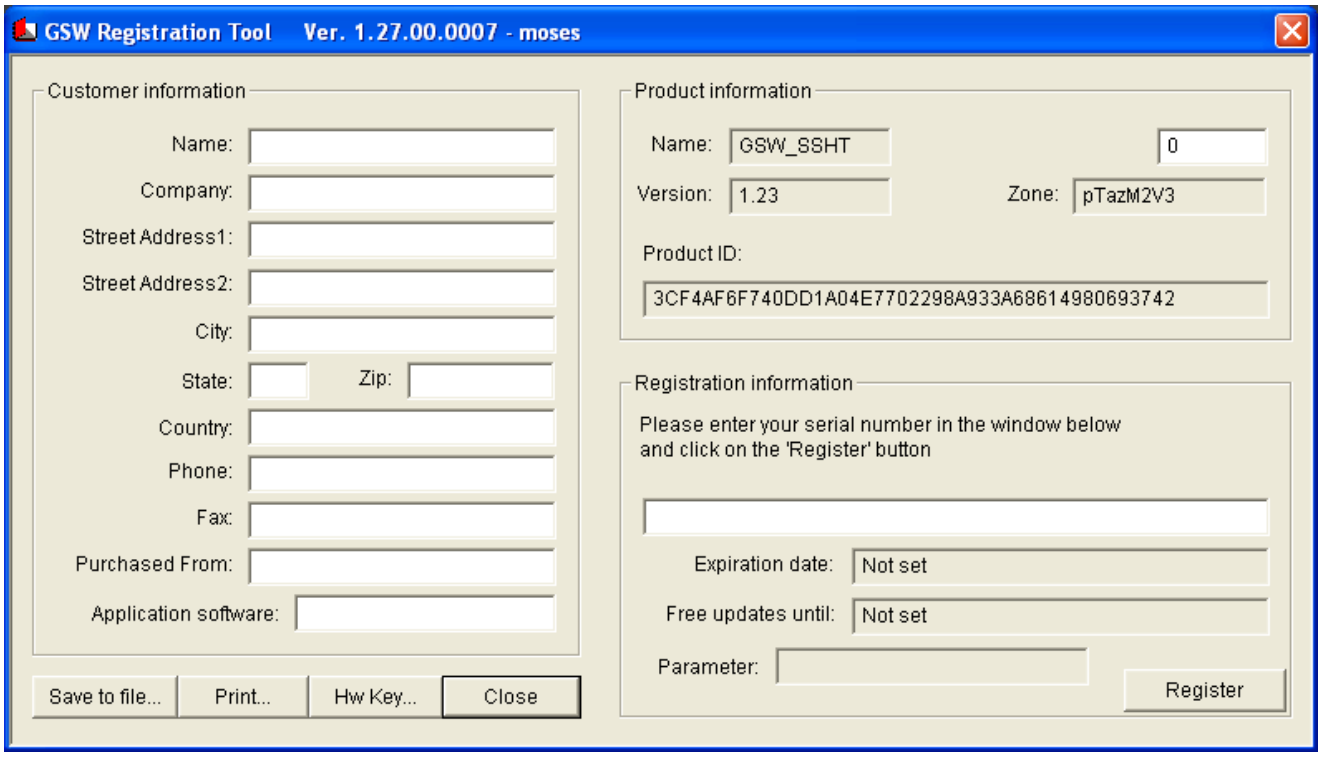


Figure 8: Registration: Initial Screen

[1] You can obtain a temporary serial number for trial access in certain situations.

Please complete the *Customer Information* including the *Purchased From* field in the Registration Screen. Enter the name of the software that will be your primary application to use with GSW Business Tunnel in the *Application software* field.

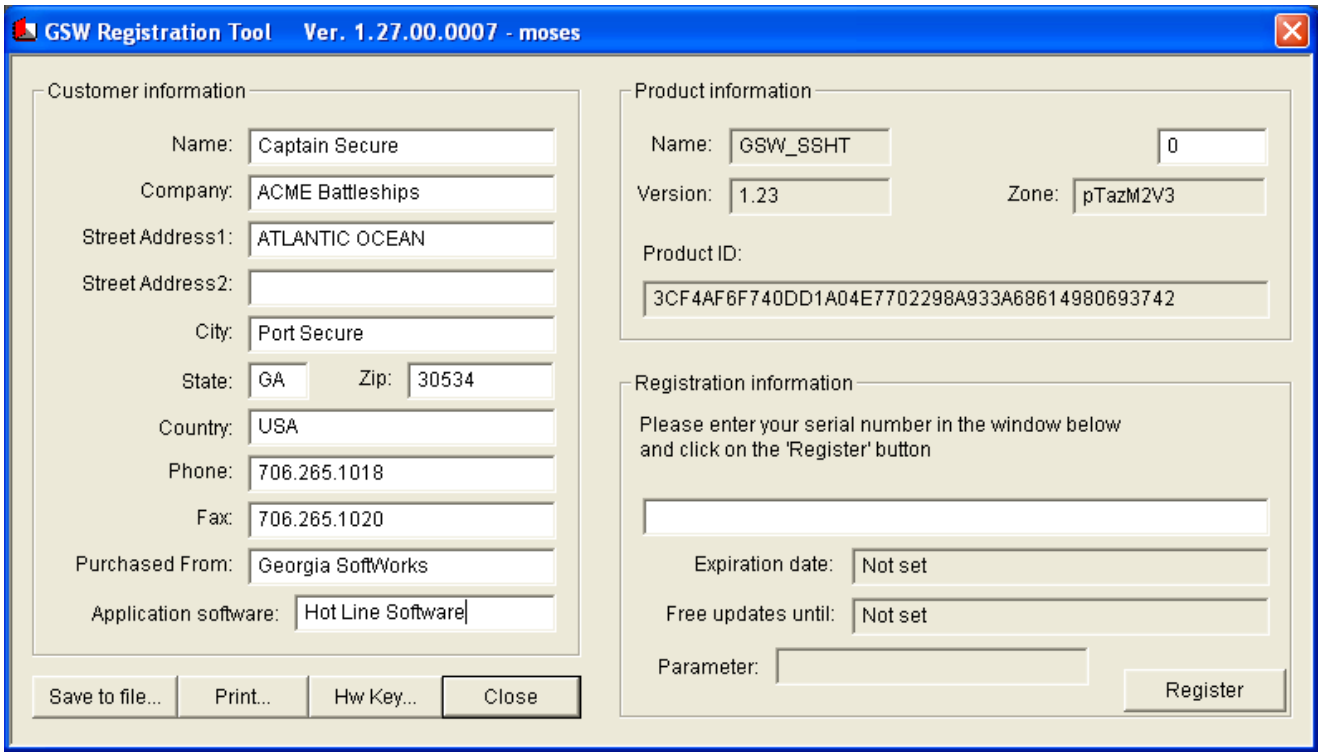


Figure 9: Registration: Customer Information Entry

1. The registration information must be provided to Georgia SoftWorks to obtain the Serial Number. Several methods are available for your convenience. Use the Save to file button to save the registration information to a text file.

    a. Save the information to a file and attach it to a Support Ticket. - *Preferred and fastest method.*

    OR

    b. Print the information and Fax it to Georgia SoftWorks

    Please print (using the **Print** button on the registration screen) this information and fax to Georgia SoftWorks: +1 706.265.1020

    c. Call us at +1 706.265.1018

You may close the registration program at this time. Once Georgia SoftWorks receives the information, we can generate a Serial Number on demand. We will reply back via the ticket system, email or fax.

2. When the Serial Number is provided, run the Registration Program again and enter the Serial Number. The easiest method to get the Serial Number is to highlight the returned Serial Number and copy (`ctrl-c`). Then position the mouse in the Serial Number field in the Registration Information box and paste (`ctrl-v`).

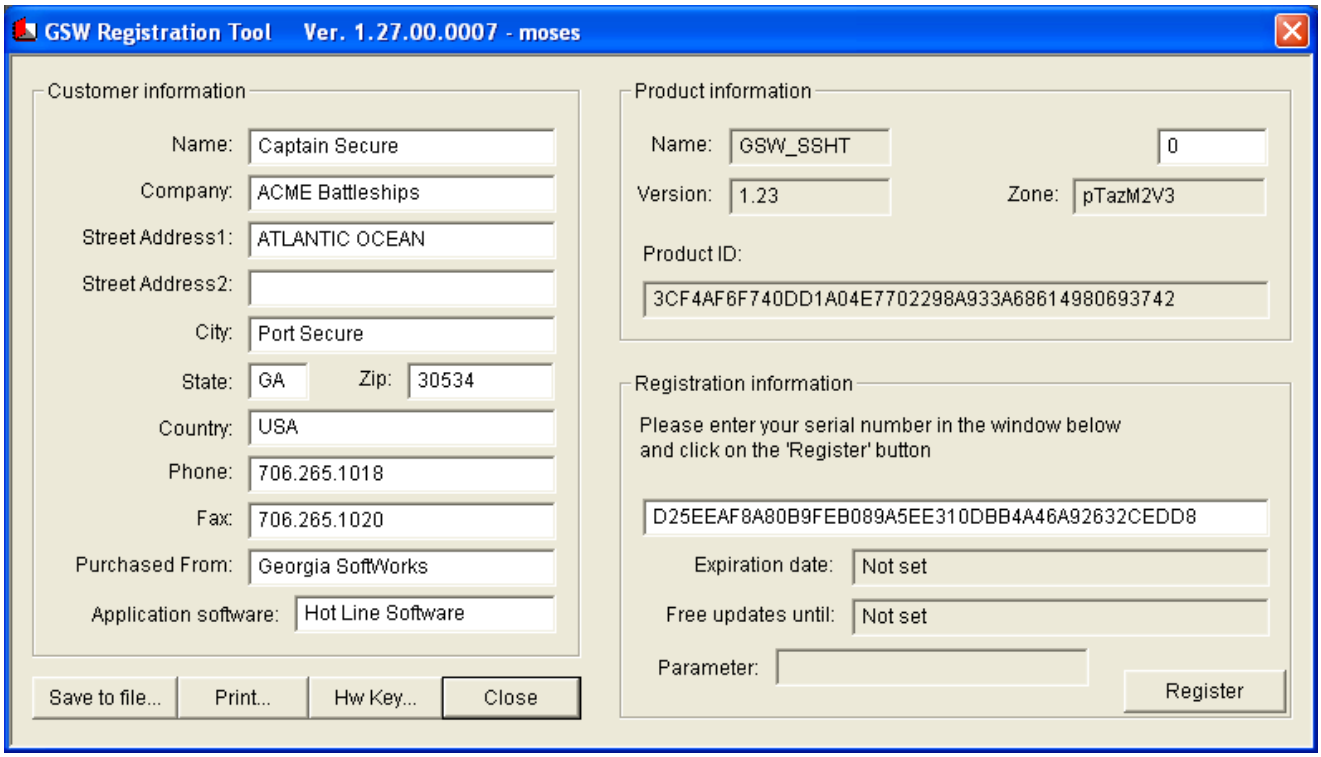


Figure 10: Registration: Serial Number Entered

3. Click Register.

Figure 11: Registration Successful

4. Click OK.

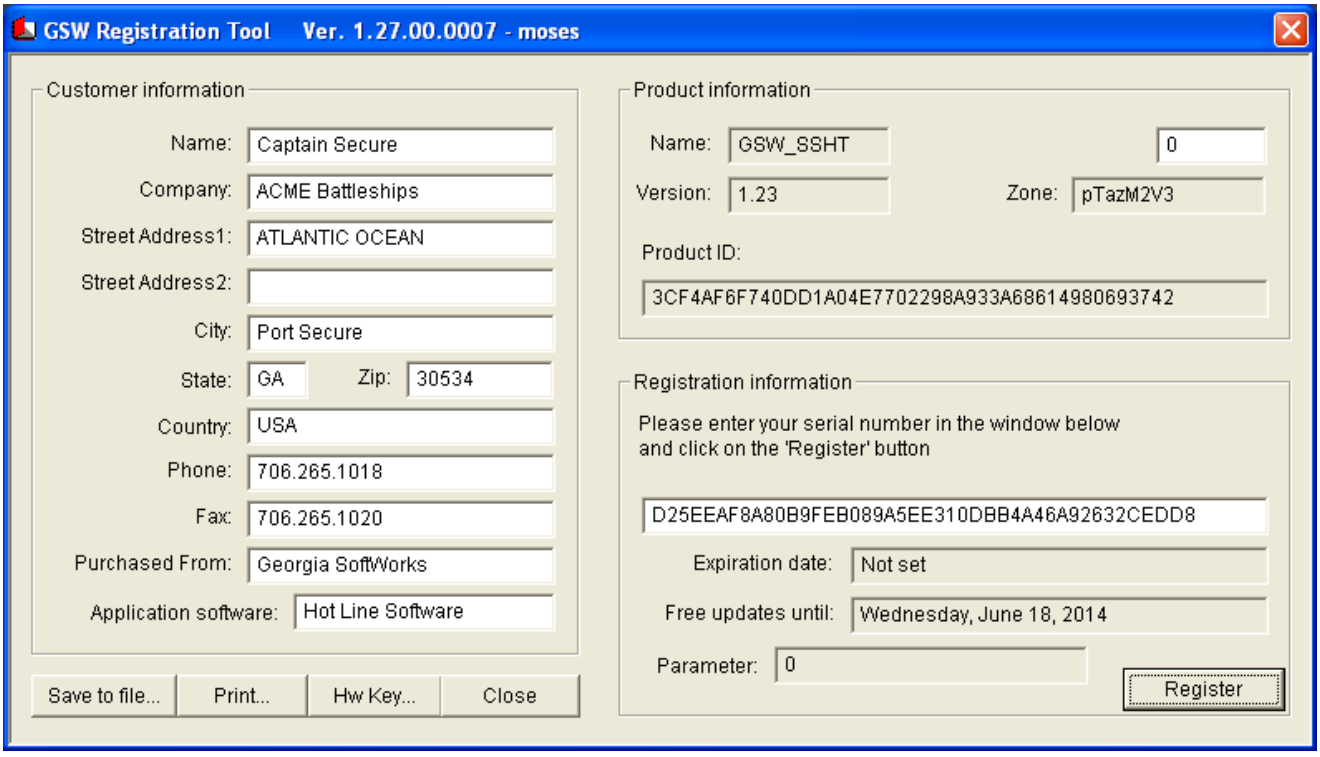


Figure 12: Registration: Complete

Now the software is registered.

You may now run the Georgia SoftWorks Business Tunnel for Windows. Note that you will be able to obtain Free Updates until the date specified.

Tunnel Management Tool Configuration Overview

"*Set It and Forget It*"

Below is the GSW Business Tunnel Management Tool screen.

Notice that the Tunnel Management Tool has a pane on the left that allows you to select Configuration or Activity. The contents of the pane on the right are context sensitive and change based on the Configuration or Activity item selected.

Selecting `Configuration` → `Tunnels` displays the tools to list, create, edit and delete tunnels and their associated channels. The Local Ports in use by the tunnels can be viewed by:

`Configuration` → `Local Ports` Usage

Activity monitoring can be done by selecting the Tunnel, Channel or User under Activity.

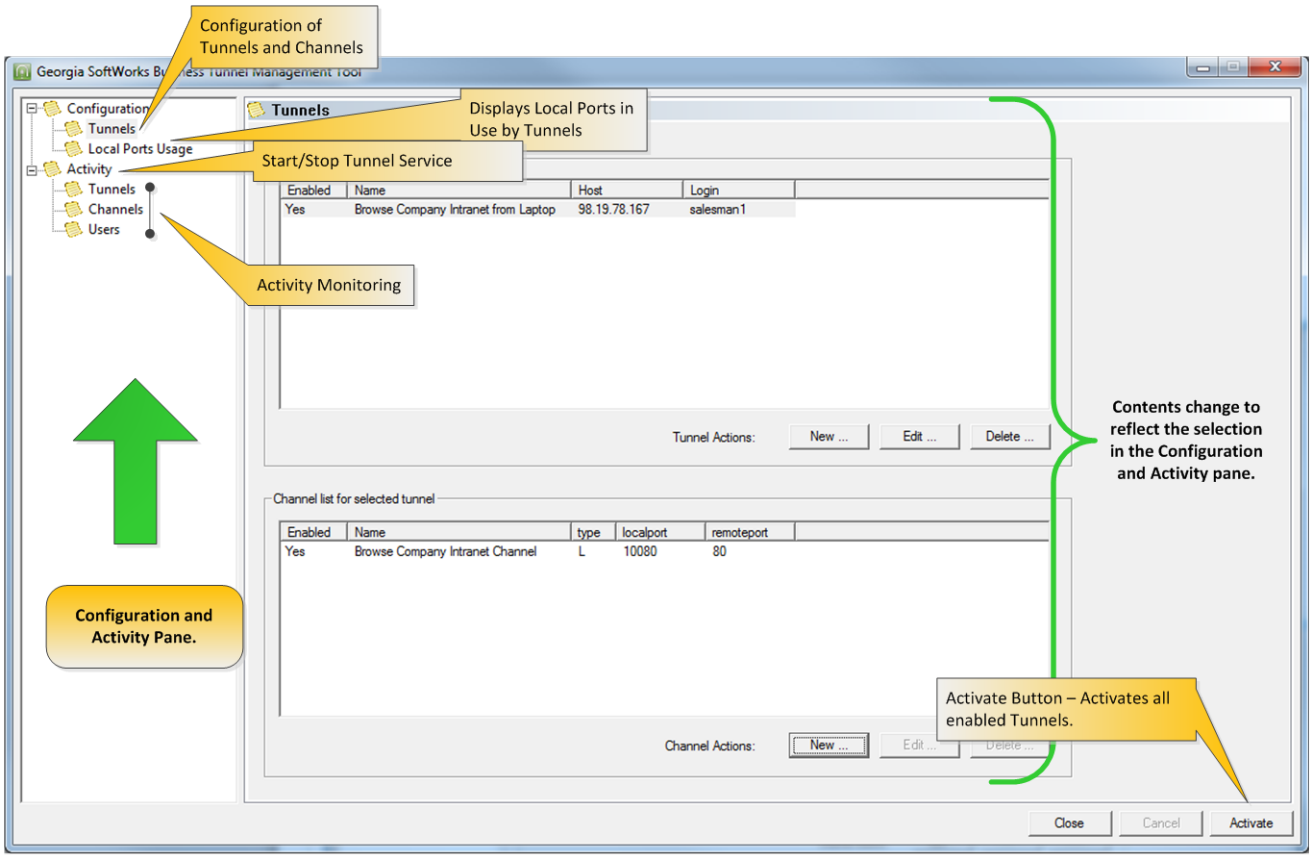


Figure 13: GSW Business Tunnel Management Tool Screen Sections

Configuration Pane

When Configuration is selected in the pane on the left, the right pane shows a configuration summary of the GSW Business Tunnel. Quickly see the number of tunnels and channels configured and the number that are active. The GSW Business Tunnel Software Version is also displayed.

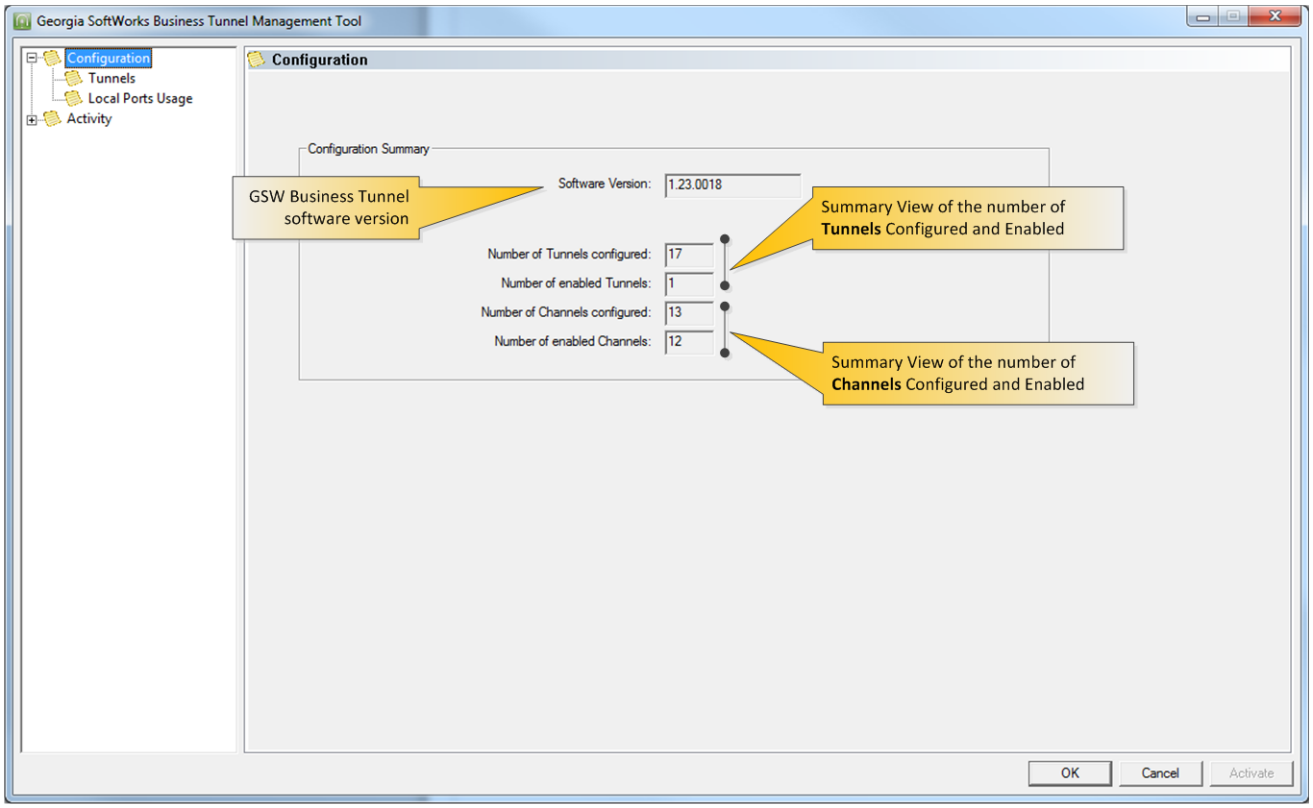


Figure 14: GSW Business Tunnel Configuration Summary

Workflow to Create a Working Business Tunnel

The workflow to create a tunnel consist of three steps

- Configuring the tunnel
- Configuring one or more channels for the tunnel
- Activating the tunnel

Configuring the Tunnel

The tunnel configuration dialog is where you define and configure each tunnel. Each tunnel must connect to a SSH Server. This can be the Georgia SoftWorks SSH Server or any other quality SSH Server. Specifying the location and authentication information so a tunnel can connect to the SSH Server is a main aspect of the tunnel configuration.

Additional information such as the compression level, the protocol, the encryption algorithms and if a proxy is used is configured in the tunnel settings.

The tunnels also have an Enabled/Disabled setting. This allows tunnels to be configured in advance and enabled only when needed.

Configuring Channels for the Tunnel

Each tunnel must have at least one channel to operate. However, you may configure many channels for a single tunnel.

A channel specifies the type of port forwarding, the local address/port and remote address/port to use to access a specified service on a host. Services such as POP, SMTP, RDP and HTTP are specified in the channel configuration. The tunnel's channel configuration also has an Enabled/Disabled setting. This allows channels to be configured in advance and enabled only when needed.

Activating the Tunnel

Any time a Tunnel or Channel is created or modified, the Business Tunnel must be activated before any configuration changes can be used to establish the tunnel. When the Business Tunnel is activated, all enabled tunnels and any associated enabled channels start running and can be used.

Activating the Tunnel restarts the GSW Business Tunnel Service. Please note that this will stop and restart any tunnels and associated channels currently in operation.

At this point you are ready to use the GSW Business Tunnel to gain SSH secured access to a service.

Additional configuration may have to be performed to browsers, email programs, etc. to utilize the tunnel. Please see the link to examples on page 56.

Exceeding the number of licensed tunnels

If you have enabled more tunnels than your license allows and you click `Activate` or `Stop` and `Start` the Business Tunnel service you will get an error message indicating that some of your tunnels were not started because of your licensing limits.

For example, when four tunnels are enabled and the license is for three, the message in Figure 15 is displayed when the Activate button is clicked or the service is restarted.

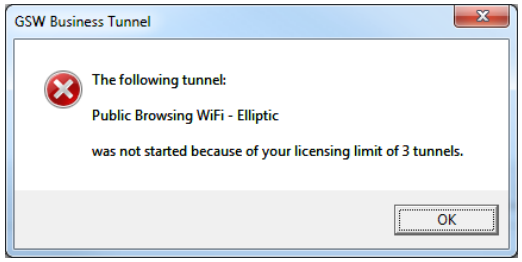


Figure 15: Tunnels activated exceeds tunnels licensed

The corrective action is to either enable only the number of tunnels your license allows or to purchase an upgrade for the Business Tunnel to a license that allows a larger number of simultaneous enabled tunnels.

Please note that you can configure as many tunnels as needed. This way you can preconfigure all the various tunnels you may need and simply disable / enable the ones needed at the specific time.

Tunnel Pane Overview

When `Configuration` → `Tunnels` is selected in the pane on the left, the top half of the Tunnels pane on the right displays a summarized list of configured tunnels. The bottom half displays the list of channels associated with the selected tunnel. All columns are sortable by clicking on the column title in the standard Windows fashion.

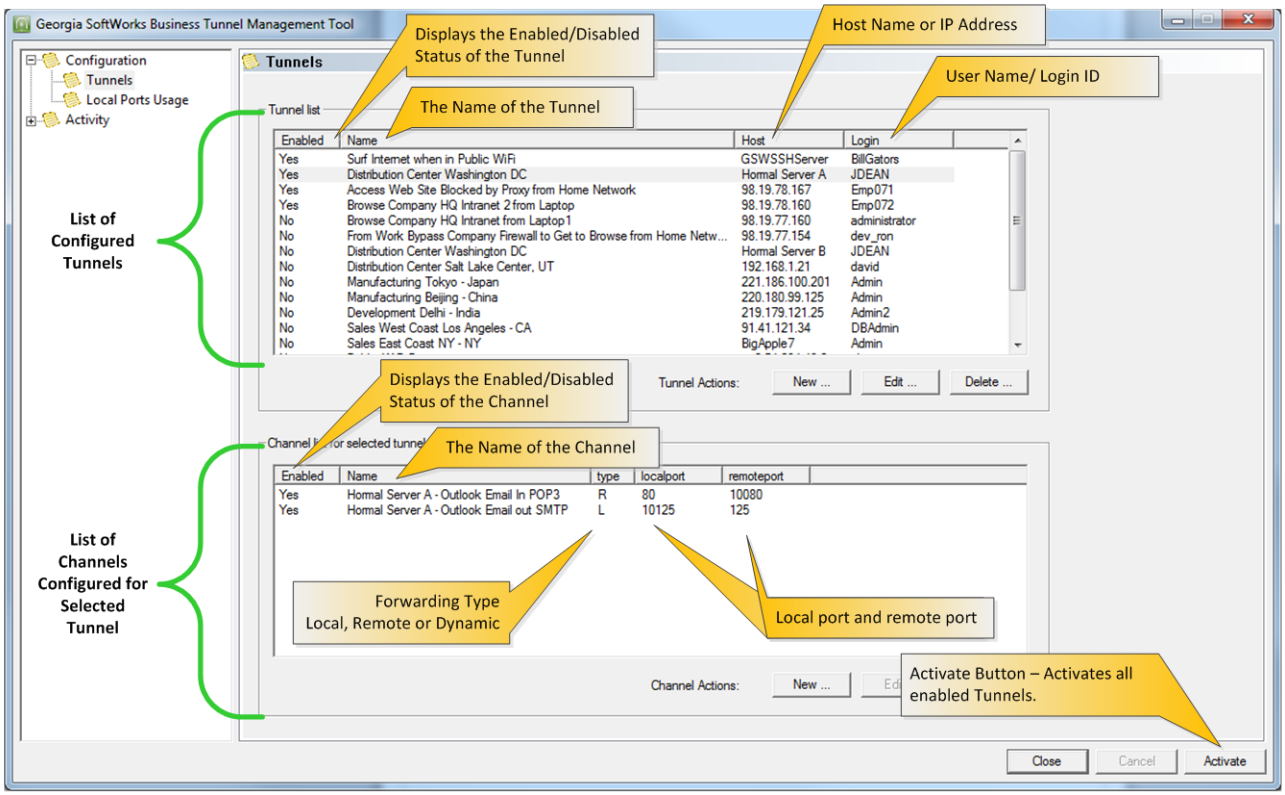


Figure 16: Tunnel and Channel list

A Tunnel is created by clicking on the '**New**...' button. Tunnels can be created, edited or deleted.

One or more channels can be added to a tunnel. Channels can be created, edited or deleted.

To add channels to a tunnel

- Select a tunnel in the Tunnel list
- Click '**New...**' in the "Channel list for selected tunnel frame"

Activate Button

After you create, edit, or delete a tunnel/channel, click **Activate** to restart the Tunnel Service. The Tunnel Service must be restarted for your configuration changes to take effect.

Close Button

This will close the GSW Business Tunnel Management Tool. All activated tunnels will continue to run.

Create a Tunnel

Click '**New**...' in the Tunnel list frame. The Tunnel Settings configuration dialog opens.

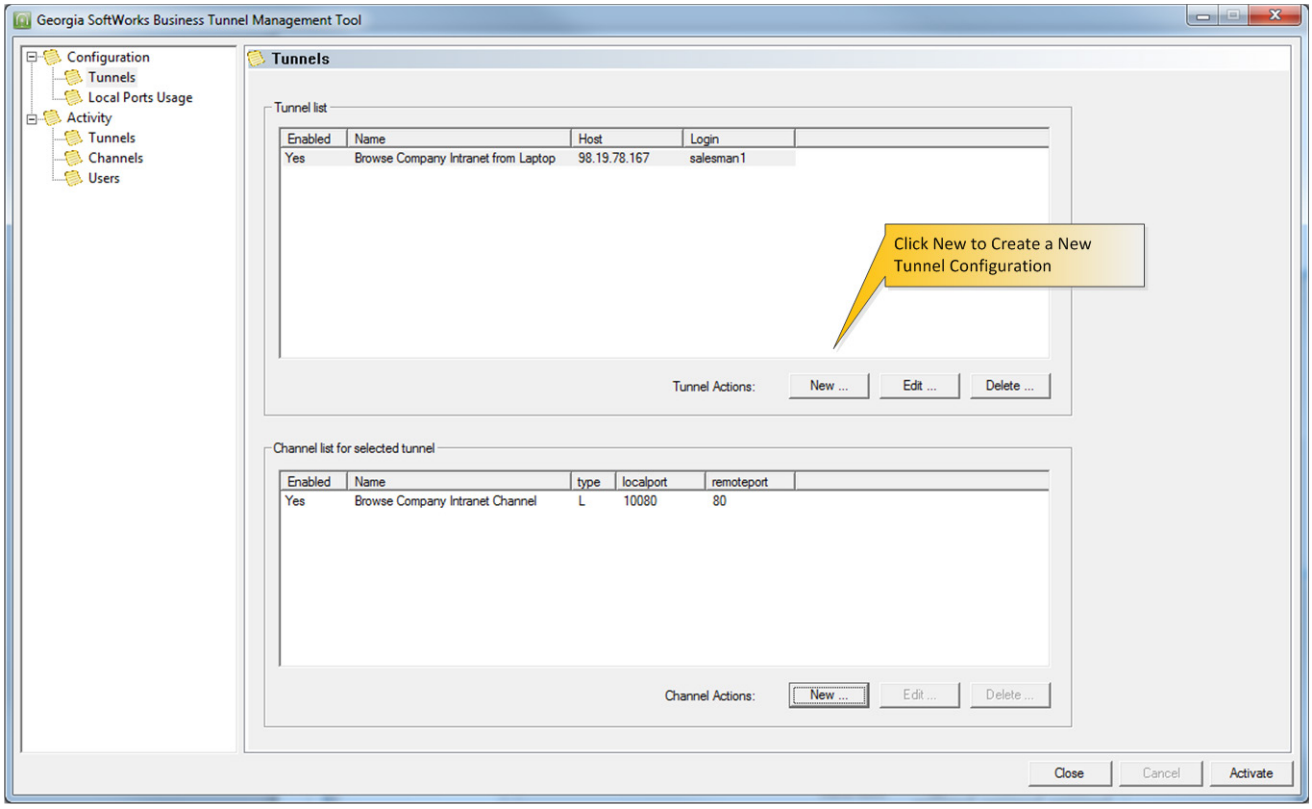


Figure 17: Create a New Tunnel

Configuration – Tunnel Settings

The tunnel settings are grouped into four sections.

- Enable/Disable this tunnel
- SSH Host Info
- Authentication
- More Details

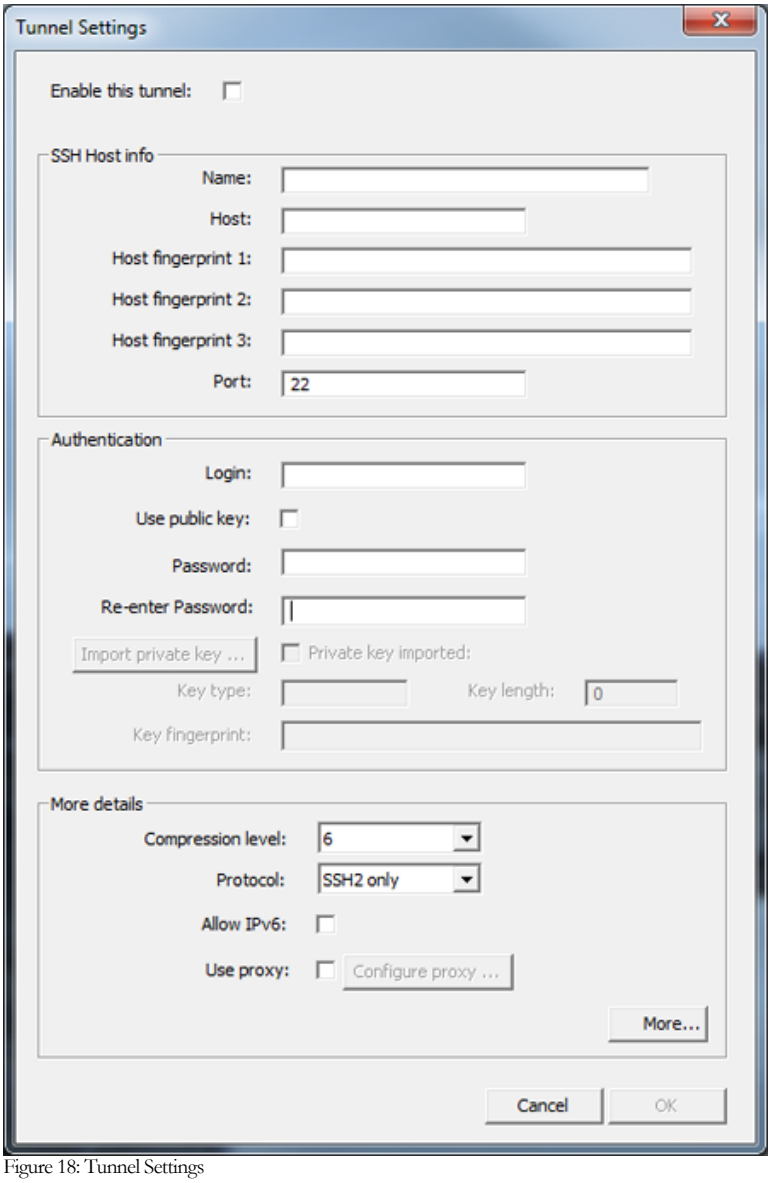


Figure 18: Tunnel Settings

Please note that the OK button will not become active if there is incorrect or missing configuration data.

Enable this Tunnel

The `Enable This Tunnel` section enables/disables the tunnel.

Tunnels may be configured in advance and not enabled until needed.

A new or modified tunnel configuration will not be used unless it is *enabled* and *activated*.

Enabled means the checkbox is checked in the tunnel configuration.

Activated means the Business Tunnel Service is restarted. This can be accomplished several ways.

- Clicking the Activate button on the Tunnel/Channel Pane Summary Screen (page 17)
- Stopping and re-starting the Business Tunnel Service on the Activity Monitoring screen (page 52)

Where

Enable this Tunnel is a checkbox is a toggle that enables/disables the Tunnel.

Required: Yes

Default: Enabled

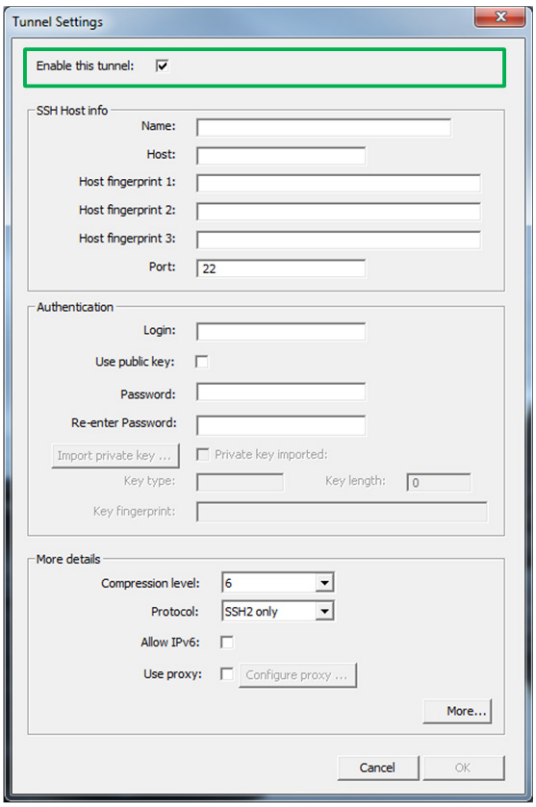


Figure 19: Enable this Tunnel

Please note that enabled tunnels will not connect until Activated (see page 17).

SSH Host info

The SSH Host info configuration section of the GSW Business Tunnel allows you to configure information required to locate and verify the host to where the tunnel will establish a connection.

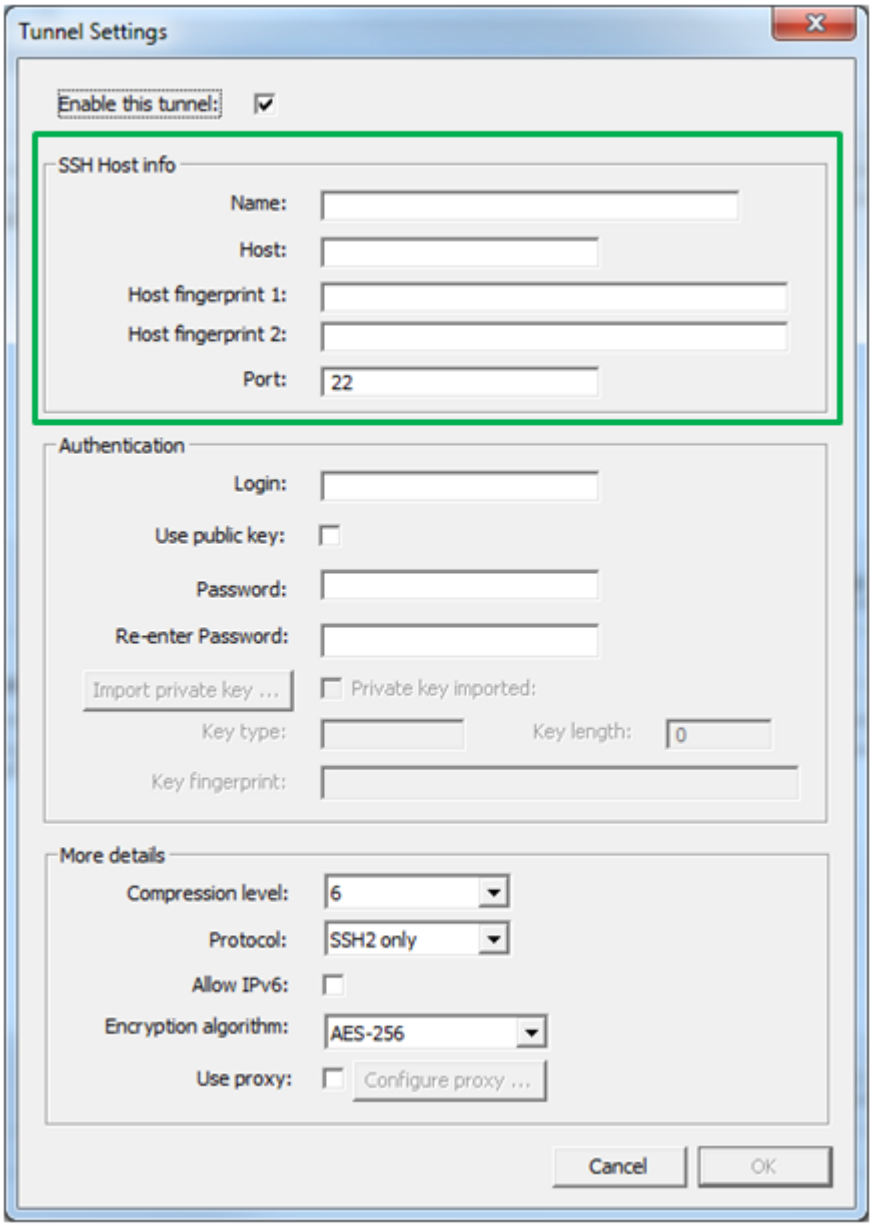


Figure 20: SSH Host Info

The SSH Host info section allows configuration of:

- Name

- Host
- Host Fingerprint 1:
- Host Fingerprint 2:
- Port:

Where

Name is a name that you give to the tunnel. It is recommended to name the tunnel something that associates it with its purpose. For example, the name 'Browse company intranet from Laptop' may be a good reminder that you would use this tunnel when you are away from work but you need to browse the company intranet. This name is used in the Activity panes.

Required: **Yes**

Default: N/A

Host is the IP address or DNS name of the SSH Server where the tunnel will connect.

Required: **Yes**

Default: N/A

Host Fingerprint 1, Fingerprint 2 and Fingerprint 3 are unique SSH Server fingerprints that can be used to verify the server's fingerprint.

Host Fingerprint 1, Fingerprint 2 and Fingerprint3 are unique SSH Server fingerprints that can be used to protect you against a network attack known as spoofing: secretly redirecting your connection to a different computer, so that you send your password to the wrong machine. Using this technique, an attacker would be able to learn the password that guards your login account, and could then log in as if they were you and use the account for their own purposes. To prevent this attack, each server has one, two or three unique identifying codes, called host fingerprints. These fingerprints are created in a way that prevents one server from forging another server's fingerprint. So if you specify fingerprint(s), then connect to a server and it sends you a different fingerprint from the one you were expecting the GSW Tunnel will fail the connection. On Unix systems you can get the host fingerprints by running the commands:

```
ssh-keygen -l -f /etc/ssh/ssh_host_rsa_key
ssh-keygen -l -f /etc/ssh/ssh_host_dsa_key
```

The output will look like this example:

```
ubuntu@ip-10-73-31-151:~$ ssh-keygen -l -f /etc/ssh/ssh_host_rsa_key
2048 e9:dd:b6:7c:8a:da:41:b4:5e:7d:9a:e7:bc:bd:a2:ac  root@ip-10-73-31-151
(RSA)

ubuntu@ip-10-73-31-151:~$ ssh-keygen -l -f /etc/ssh/ssh_host_dsa_key
```

```
1024 e6:86:ed:b2:7f:a5:dd:37:14:fe:eb:70:43:ea:dc:00  root@ip-10-73-31-151
(DSA)

e9:dd:b6:7c:8a:da:41:b4:5e:7d:9a:e7:bc:bd:a2:ac and
e6:86:ed:b2:7f:a5:dd:37:14:fe:eb:70:43:ea:dc:00 are the host fingerprints to
```
be pasted into Host Fingerprint 1 and Fingerprint 2 fields.

Required: **No**

Default: N/A

Port is the SSH port of the SSH Server.

Required: **Yes**

Default: **22**

Authentication

The Authentication configuration section of the GSW Business Tunnel allows you to configure information required to authenticate access to the SSH Host described above.

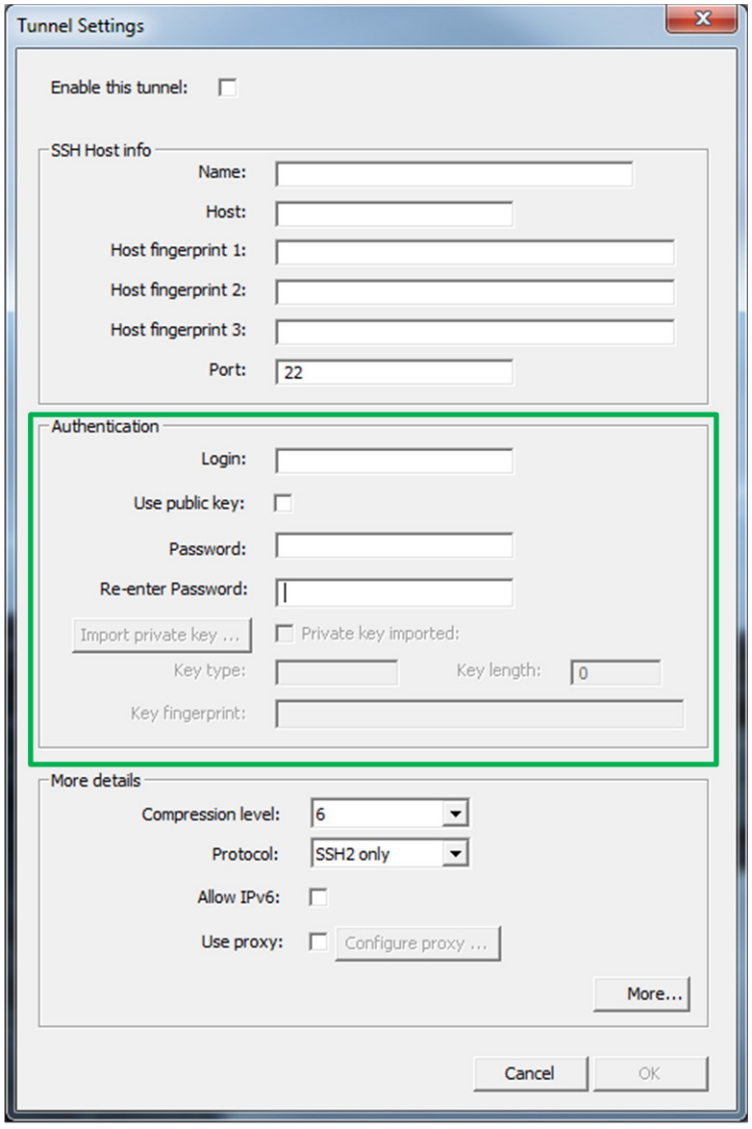


Figure 21: Authentication Tunnel Configuration

The Authentication section allows configuration of:

- Login
- Use public key
- Password
- Import Private key

Where

Login is a Login Id or user name that is required to connect to the SSH Server.

Required: Yes

Default: N/A

Use public key allows you to specify public key authentication for SSH Server instead of username/password authentication. Check this box to use public key authentication.

Required: N/A

Default: N/A

Password/Re-enter Password allows you to specify the Password associated with the Login Id.

When creating or editing a tunnel, if the Password and Re-enter password do not match, the OK button at the bottom of the page will not be enabled or you will get the text warning "mismatch" as shown below.

Figure 22: Password mismatches warning

Required: Only when user name/password authentication is configured

Default: N/A

Import Private Key allows you to import a Private Key file.

Required: Only if public key authentication is selected

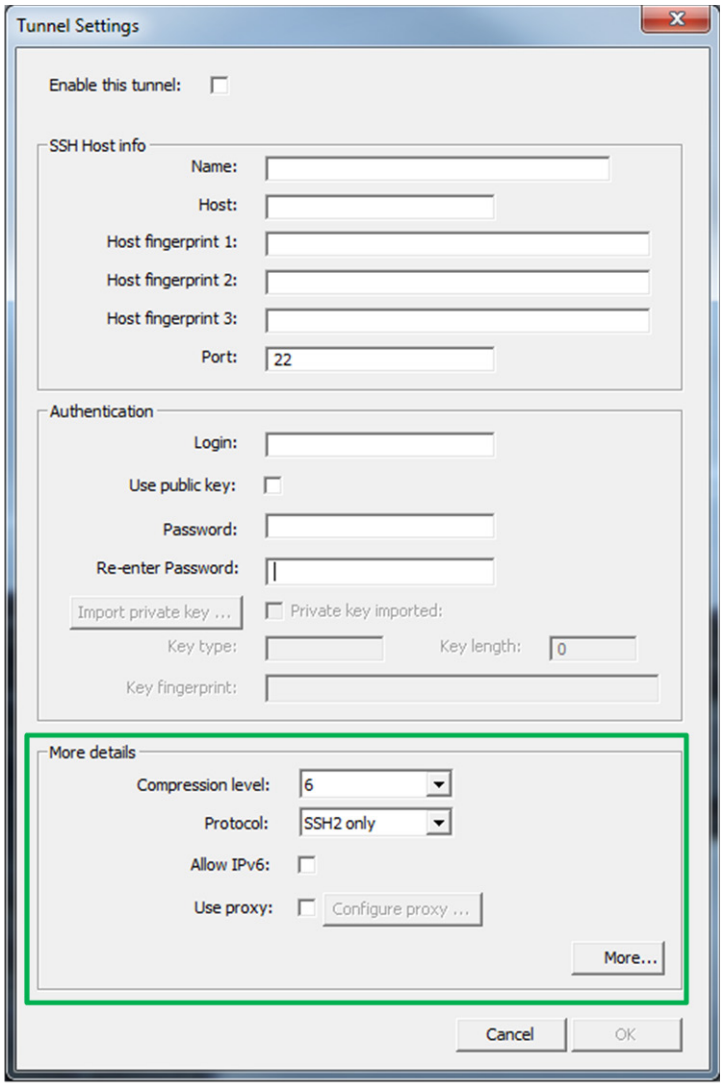
Default: N/A

Private Key Imported will be checked if the Private Key file is successfully imported. This is a read-only field.

Private Key Type, Private Key and Key Fingerprint will display the values based on the imported private key. These are read-only fields.

More details

The More details configuration section of the GSW Business Tunnel allows you to configure information associated with compression, protocol, encryption and proxy settings for the tunnel.



The More details section allows configuration of:

- Compression level
- Protocol
- Allow IPv6 addresses
- Use Proxy
- Advanced configuration section options are available by the More... button

Where

Compression is level of compression that is requested. No compression and levels 1 through 9 are available. Level 1 is the least amount of compression (fastest) and level 9 is the most amount of compression (slowest). Level 6 is the default.

Required: N/A

Default: 6

Allow IPv6 is a checkbox that specifies to allow IPv6 addressing in addition to IPv4. The default for IPv6 is disabled.

Required: No

Default: Disabled

Protocol is the protocol to use. Options available are Negotiate, SSH1 or SSH2. SSH2 is recommended and also the default. Other values are provided for backward compatibly with less secure SSH1 solutions.

Required: Yes

Default: SSH2

Use Proxy specifies if the Tunnel is to use a Proxy when connecting to the host. If checked, the "**Configure Proxy**..." button is enabled. Use Proxy is disabled by default.

Required: Yes

Default: Disabled (do not use proxy)

Configure Proxy

When the GSW Business Tunnel is unable to establish a direct connection to the SSH Server, the proxy option may be used. For example, if the Business Tunnel does not have access to the internet, but a proxy machine does then you can use the proxy.

When the Configure Proxy button is clicked, the following proxy configuration screen is displayed.

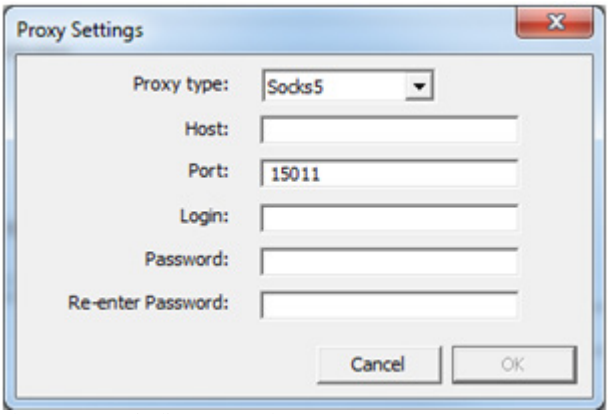


Figure 23: More details - Proxy Settings

The Tunnel Proxy Settings section allows configuration of:

- Proxy Type
- Host
- Port
- Login
- Password

Where

Proxy Type is the proxy type.

This is used to specify the appropriate protocol based on the type of remote proxy. Socks 4, Socks 4a, Socks 5 and WEBStandard are available. Use the type as required by the proxy you are using.

Required: N/A

Default: Socks5

Host IP address or DNS name of the proxy.

This specifies the hostname of the proxy to use.

Required: Yes

Default: N/A

Port is the port number to use to access the proxy.

The Port number specifies the port to use when connecting to a proxy. The value for web proxies is 80, and often 8000 or 8080. When Socks (4 and 5) is used 1080 is common.

Required: Yes

Default: 15011

Login is a Login Id or user name that is required for authentication on the proxy.

This is the user name used on the proxy server for authentication.

Required: Yes

Default: N/A

Password/Re-enter Password allows you to specify the password associated with the Login Id.

This is the password used on the proxy server for authentication.

Required: No

Default: N/A

More… allows configuration of advanced features. In most cases these values should never be changed. However in special cases fine tuning is available to knowledgeable administrators.

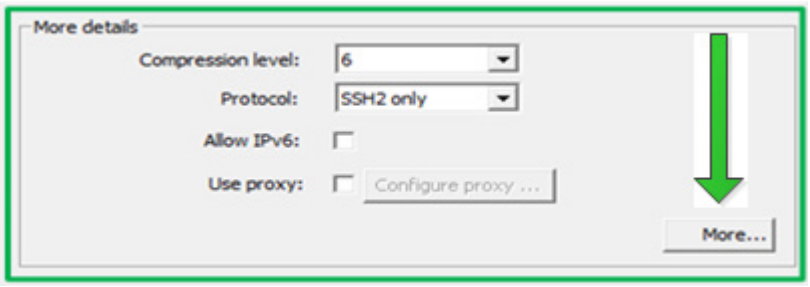


Figure 24: More details – More… Advanced configuration options

SSH – 2 algorithms preferences

specifies the preferences for Ciphers, Host Key Algorithms, Key Exchange Algorithms, MACs and Channel window size.

However in special cases fine tuning is available to knowledgeable administrators.

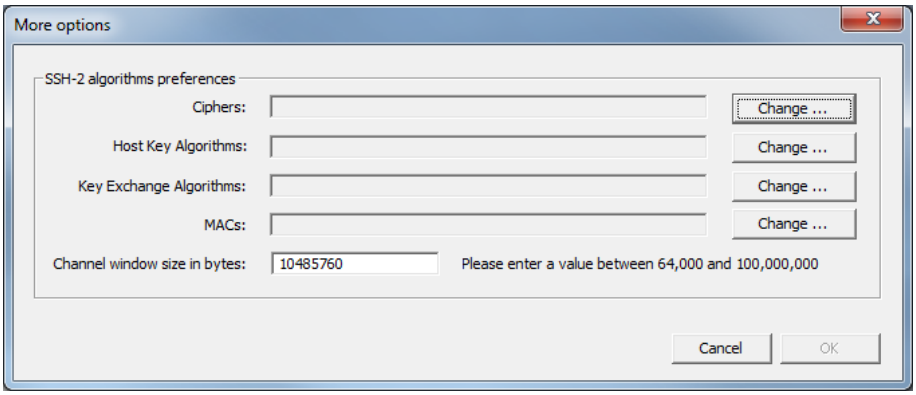


Figure 25: Advanced SSH-2 algorithms preferences

Please note that when configuration changes are made the OK button becomes active.

The configuration changes are not saved until you click OK which returns you to the Tunnel Settings screen and you **click OK** on the **Tunnel Settings** screen.

Ciphers are symmetric key encryption algorithms used by the SSH Transport Protocol to encrypt SSH traffic. The GSW Business Tunnel allows specification of the ciphers to use and the order preference when negotiating with the SSH Server..

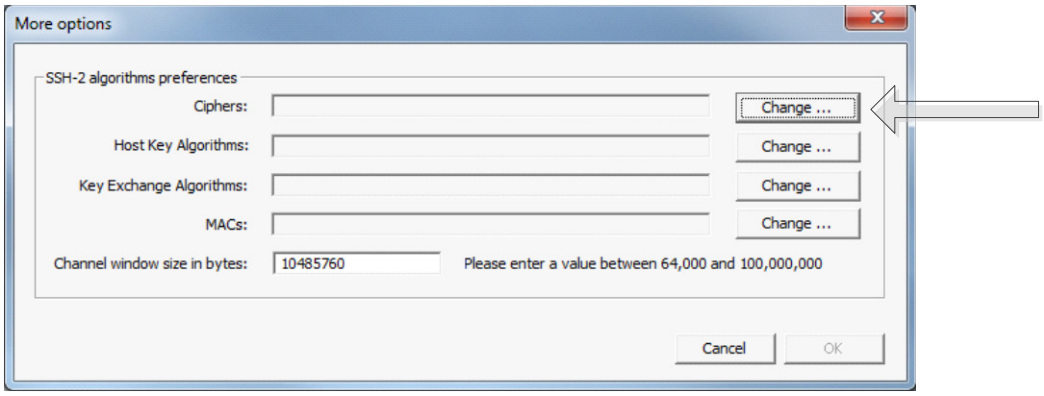


Figure 26: Change Ciphers used to negotiate with the SSH server

Click on the Change… button and a dialog opens that shows the Available ciphers on the left and the Selected ciphers on the right. The Selected ciphers are the ones the Business Tunnel will presented to the SSH server. If the SSH server does not offer any of the specified ciphers then the Business Tunnel will not allow a connection to that SSH server. The Cipher dialog is shown:

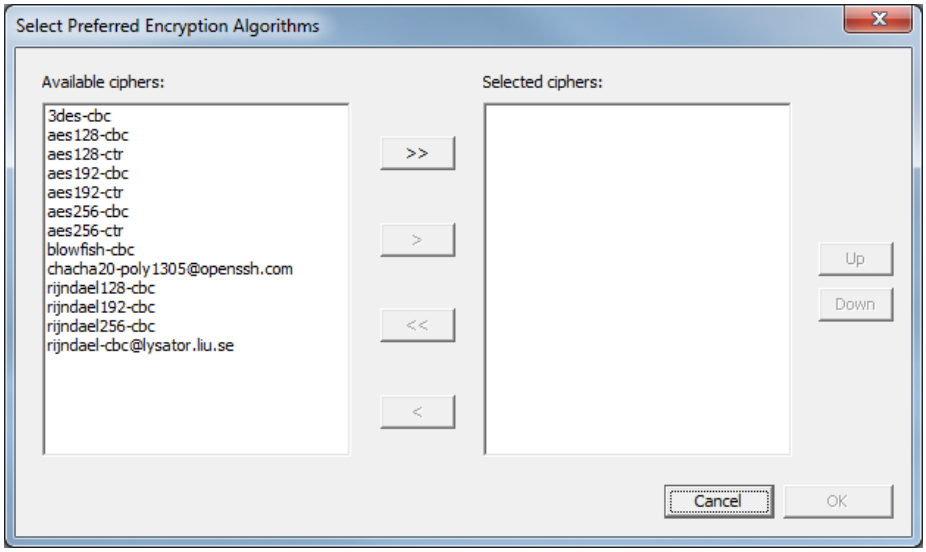


Figure 27: Choose Available Ciphers

Select ciphers from the Available ciphers list on the left. You can select one cipher at a time and move it to the list of Selected ciphers on the right by clicking on the Greater Than ">" sign button. You can select all the available ciphers by clicking on the double Greater Than ">>" sign button. You can remove selected ciphers one at a time or all selected ciphers in the same manner by clicking on the Less Than "<" or double Less Than "<<" sign buttons.

The screen below shows all the available ciphers as selected.

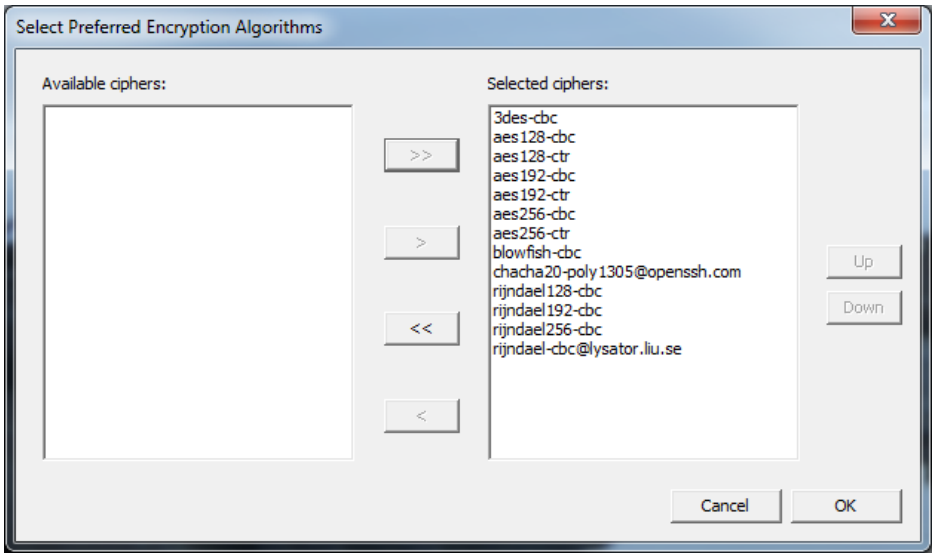


Figure 28: All Available Ciphers have been chosen.

The order of the selected ciphers set the preference that the Business Tunnel will use when negotiating with the SSH Server. The first in the list is the first preference, the second the next and so on. The details of the selection process are governed by the SSH Transport Layer specification RFC 4253. Discriminating users should consult RFC 4253 for the details.

The order preference of ciphers can be changed by selecting the cipher and using the Up or Down button. In the example below the `aes256-ctr cipher` is selected. Use the `Up` button to move it higher on the preference list. Make it your first preference by moving it up to the top of the list. Each time you click Up it moves the selected cipher up one.

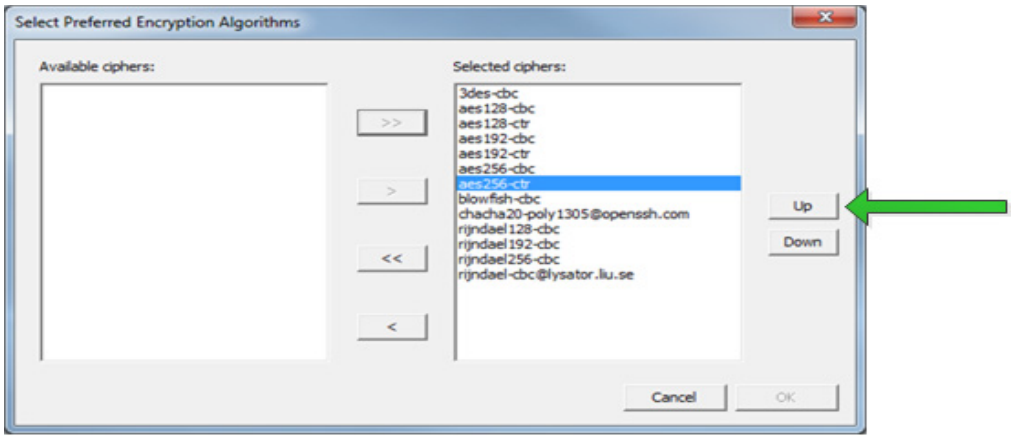


Figure 29: Set Cipher order preference.

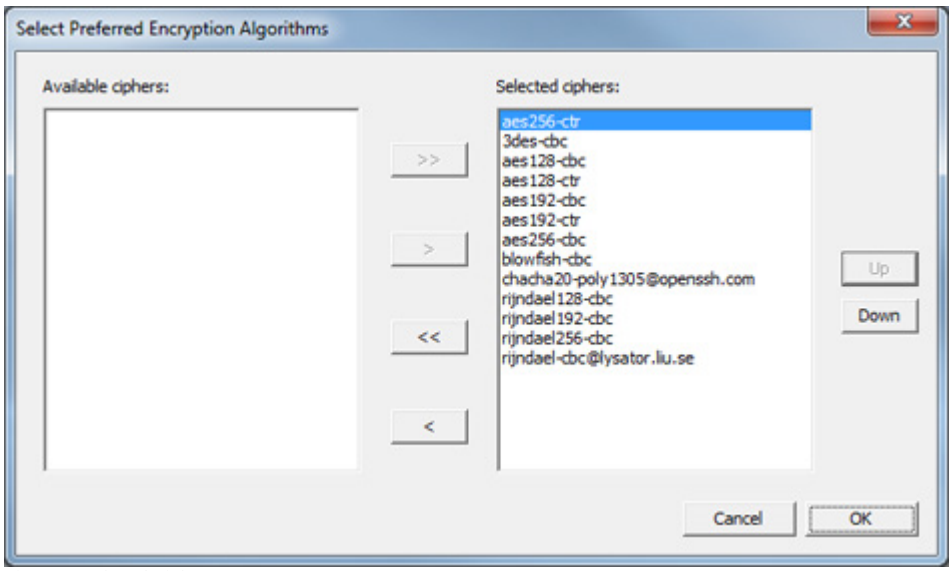


Figure 30: Selected Ciphers

Be sure to click the OK button when you are done choosing the ciphers.

You will be returned to the SSH-2 algorithms preferences dialog. The selected ciphers are displayed as shown below. If ***no*** Ciphers are shown then the default of all available ciphers is in effect.

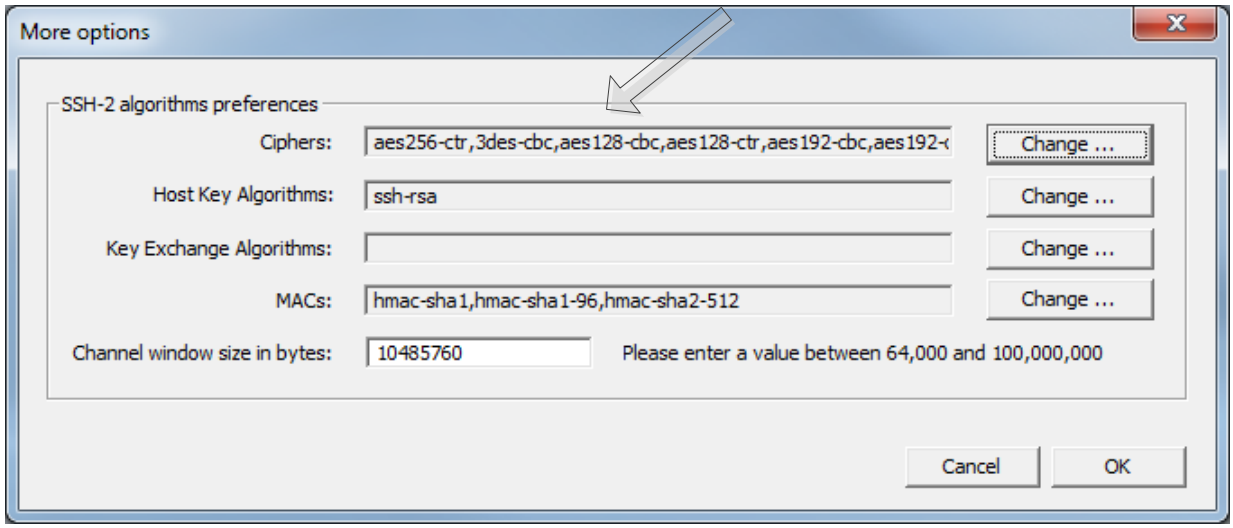


Figure 31: Selected Ciphers are displayed.

Host Key Algorithms are used to authenticate the server to the client. The Business Tunnel will propose algorithms when negotiating with the SSH Server. The GSW Business Tunnel allows specification of the allowed Host Key Algorithms and the order preference.

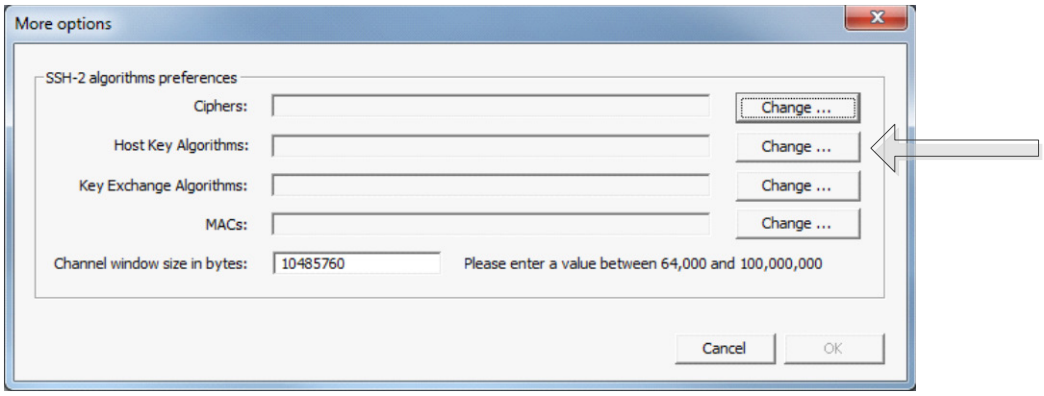


Figure 32: Change Host Key Algorithms used to negotiate with the SSH server

Click on the Change… button and a dialog opens that shows the Available host key algorithms on the left and the Selected host key algorithms on the right. The Selected Host key algorithms are the ones that the SSH Server may use with the GSW Business Tunnel. If the SSH server does not offer any of the specified Host key algorithms then the Business Tunnel will not allow a connection to that SSH server. The Host Key Algorithm dialog is shown:

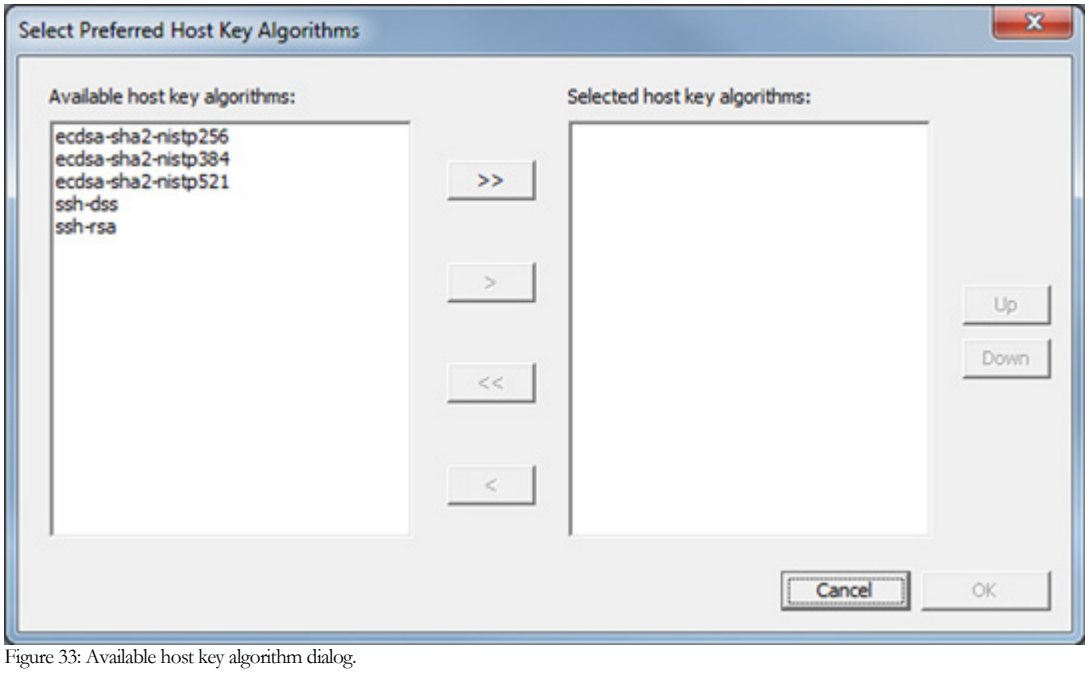


Figure 33: Available host key algorithm dialog.

Select Host Key Algorithms from the Available host key algorithm list on the left. You can select one algorithm at a time and move it to the list of Selected host key algorithms on the right by clicking on the Greater Than ">" sign button. You can select all the available host key algorithms by clicking on the double Greater Than ">>" sign button. You can remove selected host key algorithms one at a time or all selected host key algorithms in the same manner by clicking on the Less Than "<" or double Less Than "<<" sign buttons.

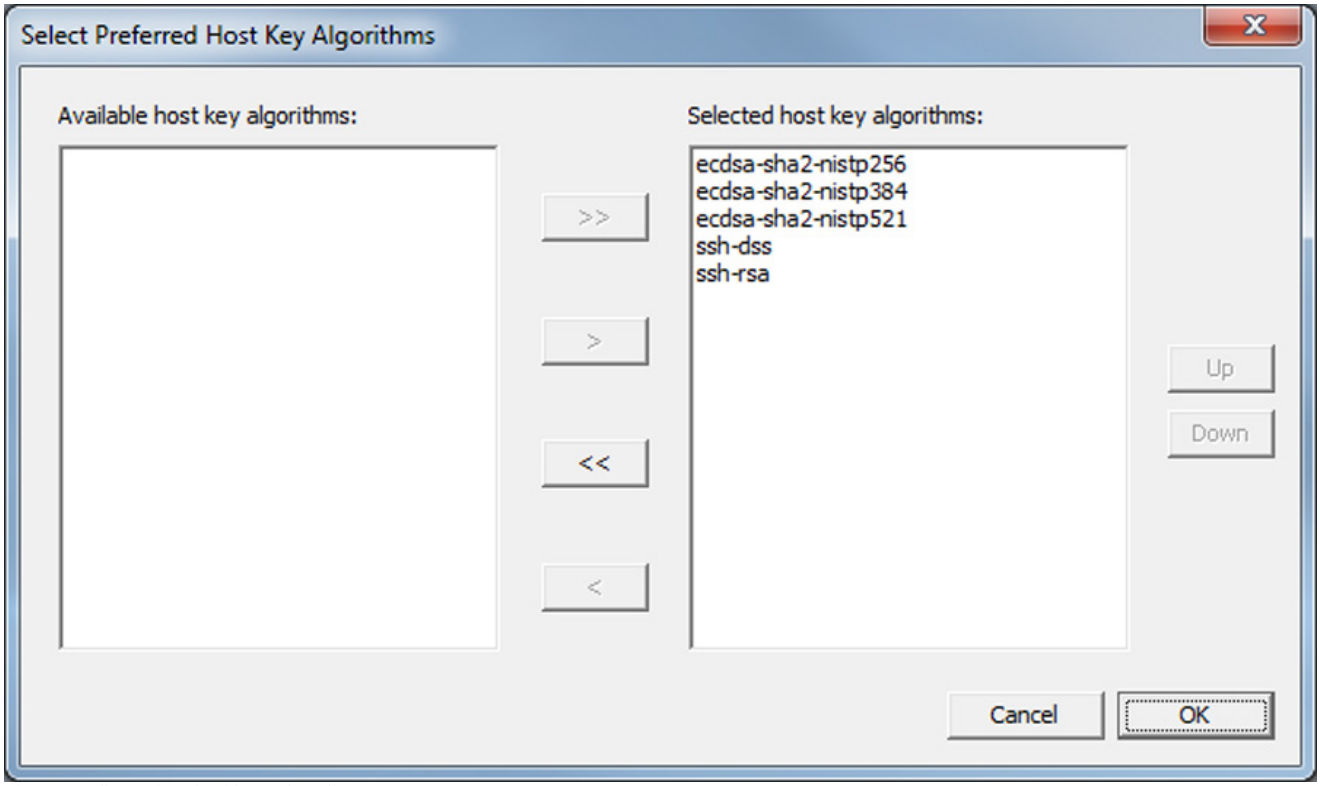


Figure 34: All Host key algorithms selected.

The order of the selected Host key algorithms set the preference that the Business Tunnel will use when negotiating with the SSH Server. The first in the list is the first preference, the second the next and so on. The details of the selection process are governed by the SSH Transport Layer specification RFC 4253. Discriminating users should consult RFC 4253 for the details.

The order preference of Host key algorithms can be changed by selecting the Host key algorithm and using the Up or Down button. In the example below the `ecdsa-sha-nistp521`selected to move to the top. Use the `Up` button to move it higher on the preference list. Make it your first preference by moving it up to the top of the list. Each time you click Up it moves the selected host key algorithm up one.

You can reorder by choosing items in the selected host key algorithm list and using the Up

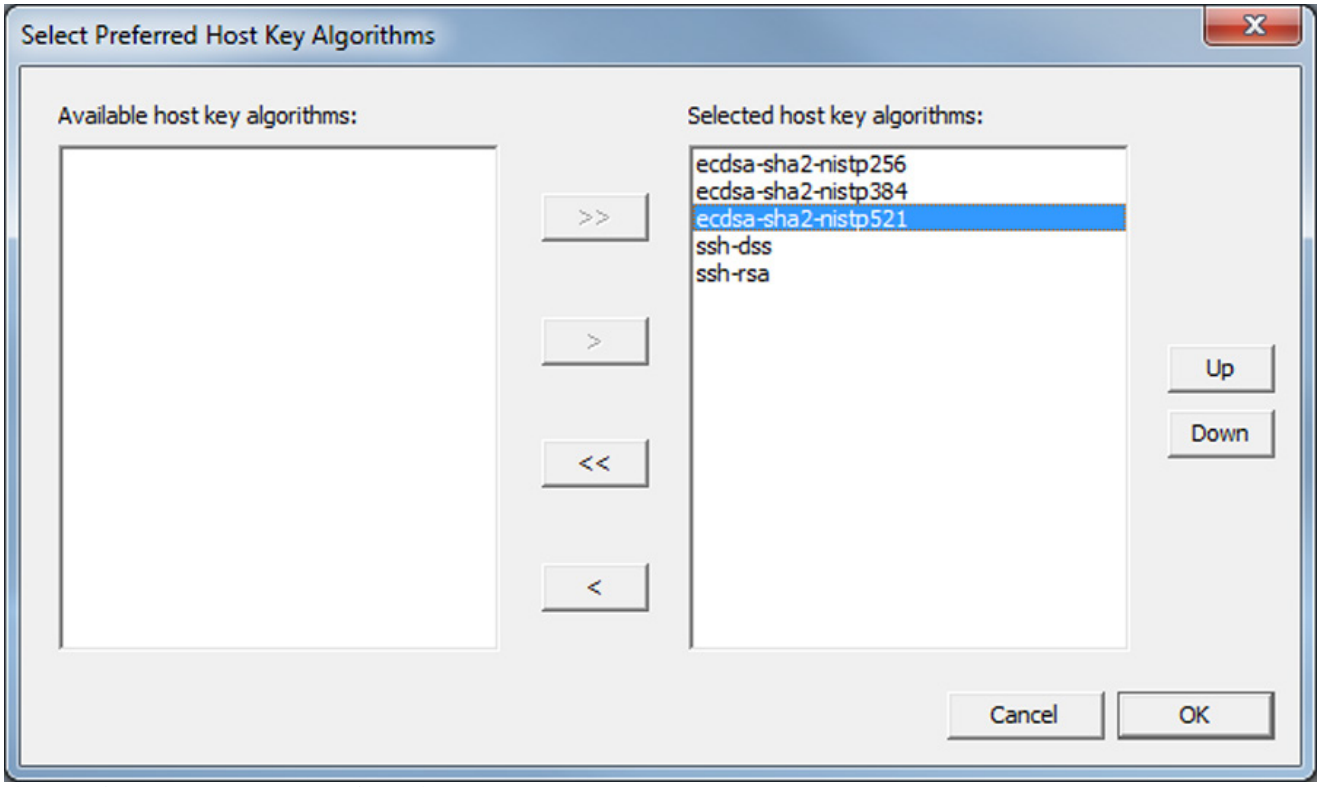


Figure 35: Select `dsa-sha-nistp521` and use up button to move.

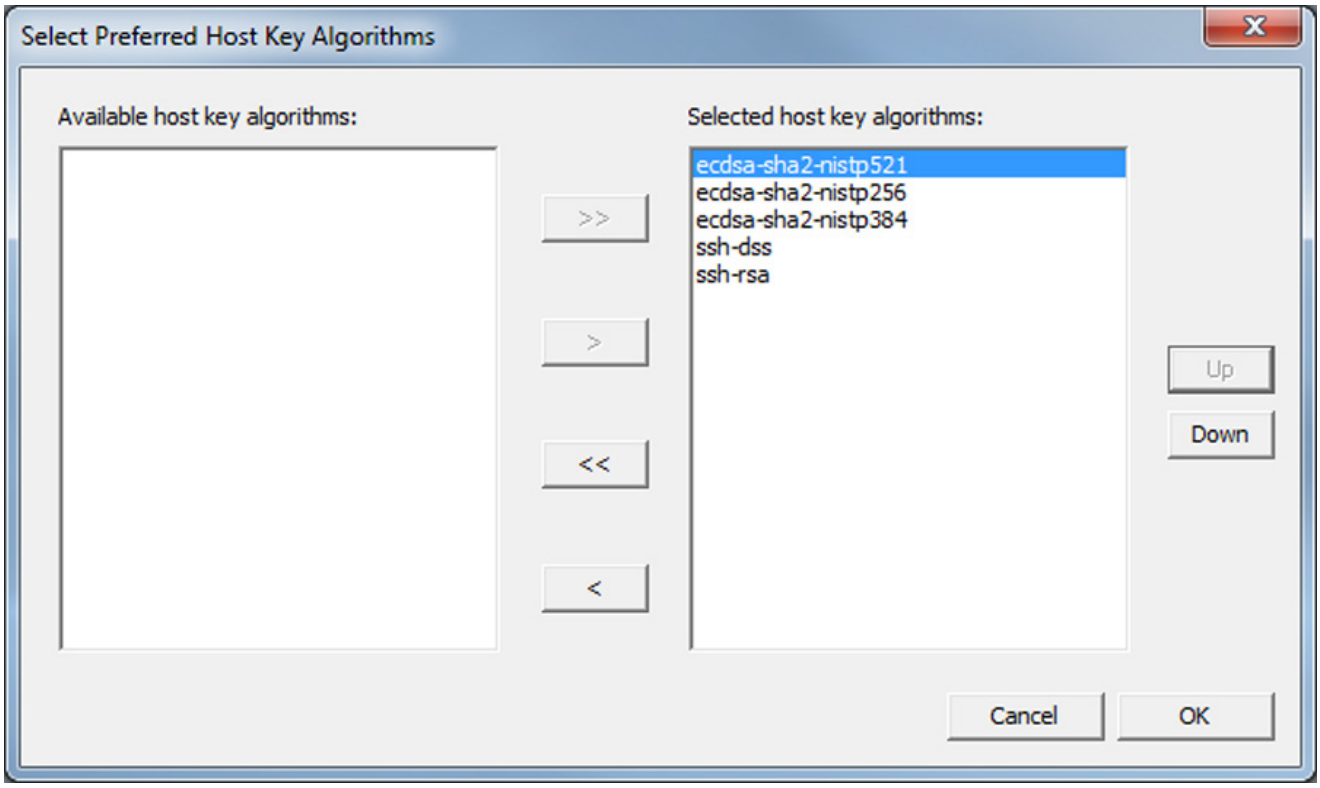


Figure 36: Move `ecdsa-sha-nist521` to top of selected host key algorithms.

Be sure to click the OK button when you are done choosing the Host Key Algorithms.

You will be returned to the SSH-2 algorithms preferences dialog. The selected Host Key Algorithms are displayed as shown below. If ***no*** Host Key Algorithms are shown then the default of all available Host Key Algorithms is in effect.

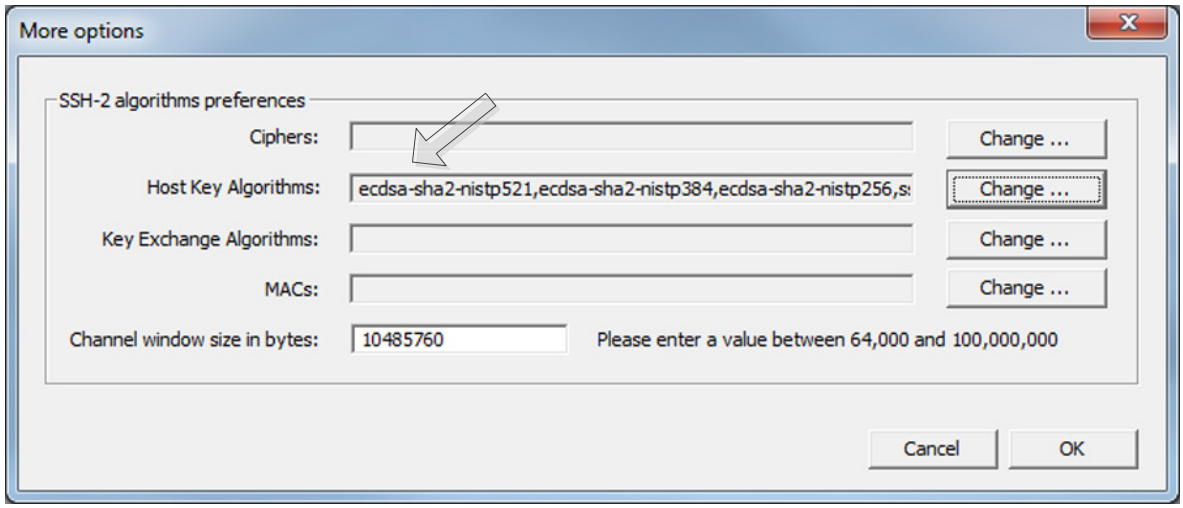


Figure 37 Selected Host Key Algorithm is displayed.

Key Exchange Algorithms are used to establish the shared secret needed to create the encryption key used by ciphers. The Business Tunnel will propose algorithms when negotiating with the SSH Server. The GSW Business Tunnel allows specification of the allowed Host Key Exchange algorithms and the order preference.

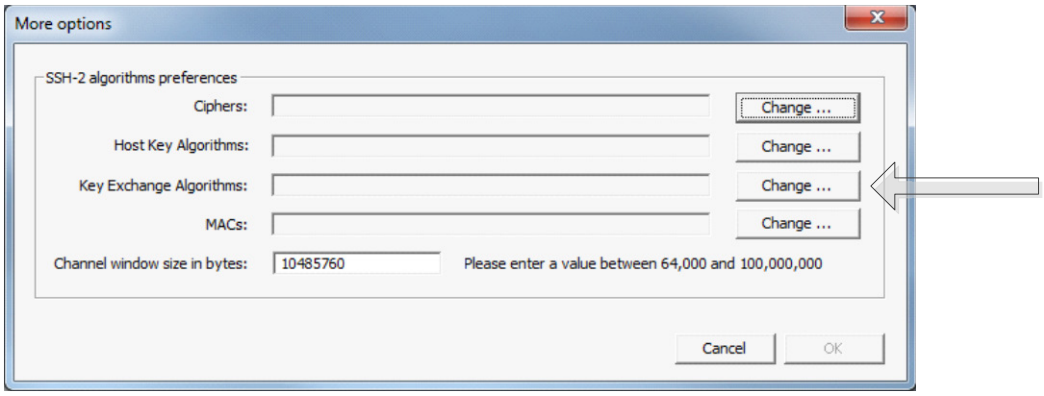


Figure 38: Change Key Exchange Algorithms used to negotiate with the SSH server

Click on the Change… button and a dialog opens that shows the Available host key exchange algorithms on the left and the Selected key exchange algorithms on the right. The Selected key exchange algorithms are the ones that the SSH Server may use with the GSW Business Tunnel. If the SSH server does not offer any of the specified key exchange algorithms then the Business Tunnel will not allow a connection to that SSH server. The Key Exchange Algorithm dialog is shown:

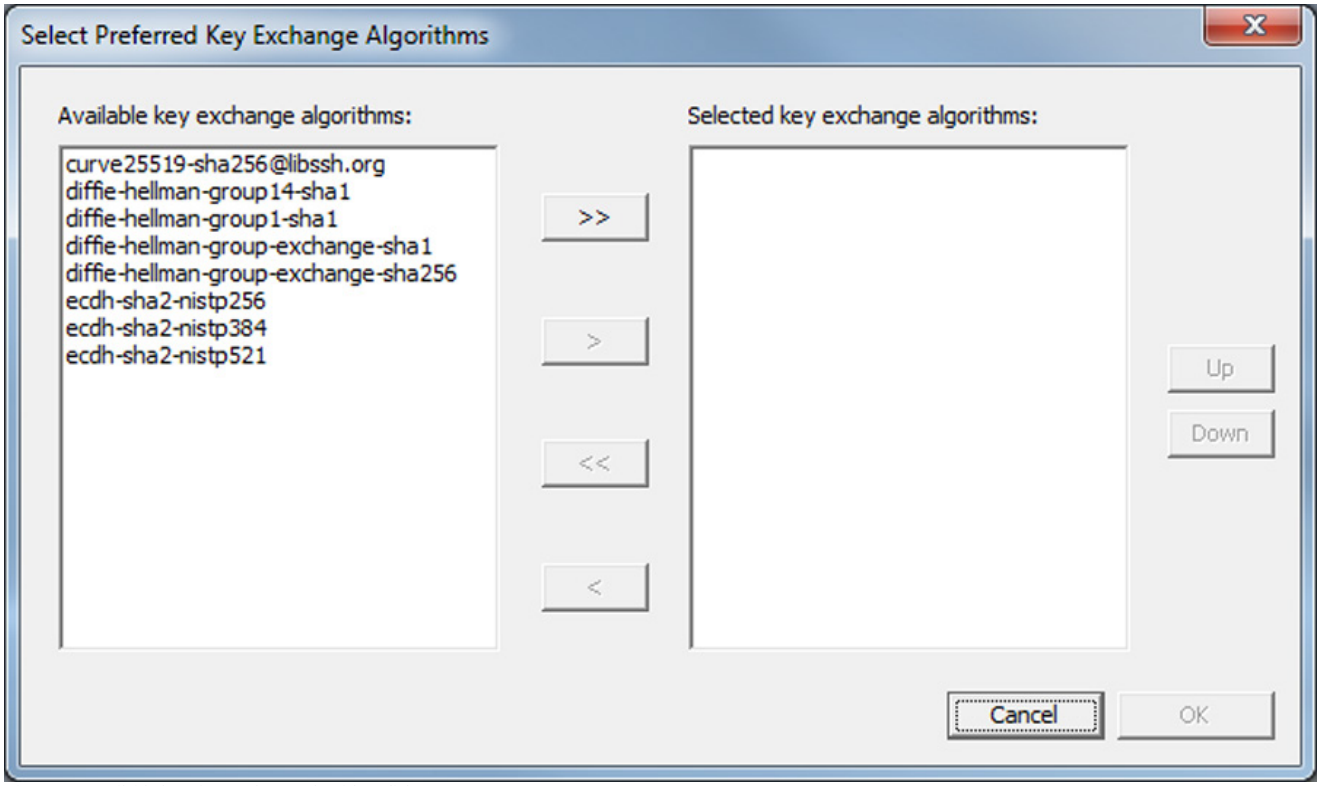


Figure 39: Available host key exchange algorithm dialog.

Select Key Exchange Algorithms from the Available key exchange algorithm list on the left. You can select one algorithm at a time and move it to the list of Selected key exchange algorithms on the right by clicking on the Greater Than ">" sign button. You can select all the available key exchange algorithms by clicking on the double Greater Than ">>" sign button. You can remove selected key algorithms one at a time or all selected key algorithms in the same manner by clicking on the Less Than "<" or double Less Than "<<" sign buttons.

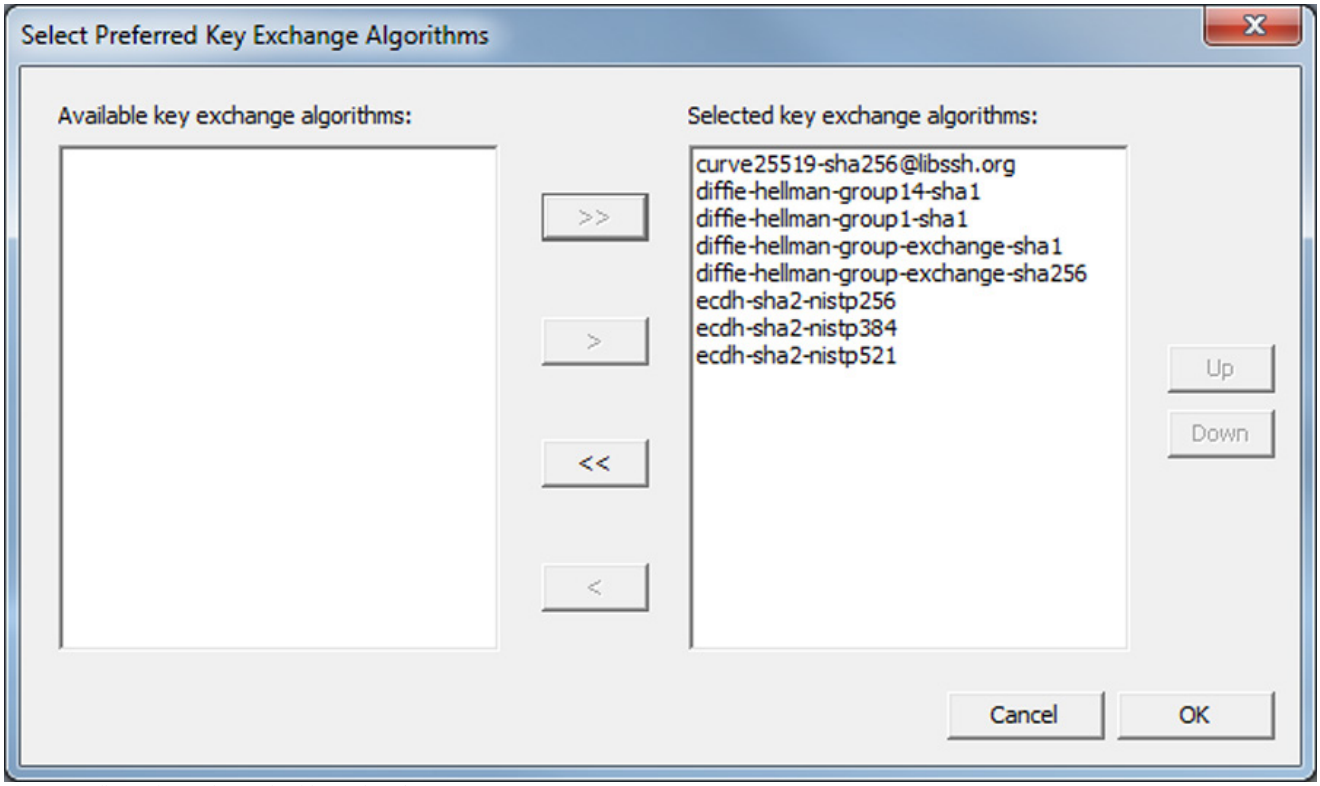


Figure 40: All Host key exchange algorithms selected.

The order of the Selected key exchange algorithms set the preference that the Business Tunnel will use when negotiating with the SSH Server. The first in the list is the first preference, the second the next and so on. The details of the selection process are governed by the SSH Transport Layer specification RFC 4253. Discriminating users should consult RFC 4253 for the details.

The order preference of Key exchange algorithms can be changed by selecting the Key exchange algorithm and using the Up or Down button. In the example below the key exchange algorithm `curve25519-sha256@libssh.org` is moved to the bottom.

First select the algorithm to move.

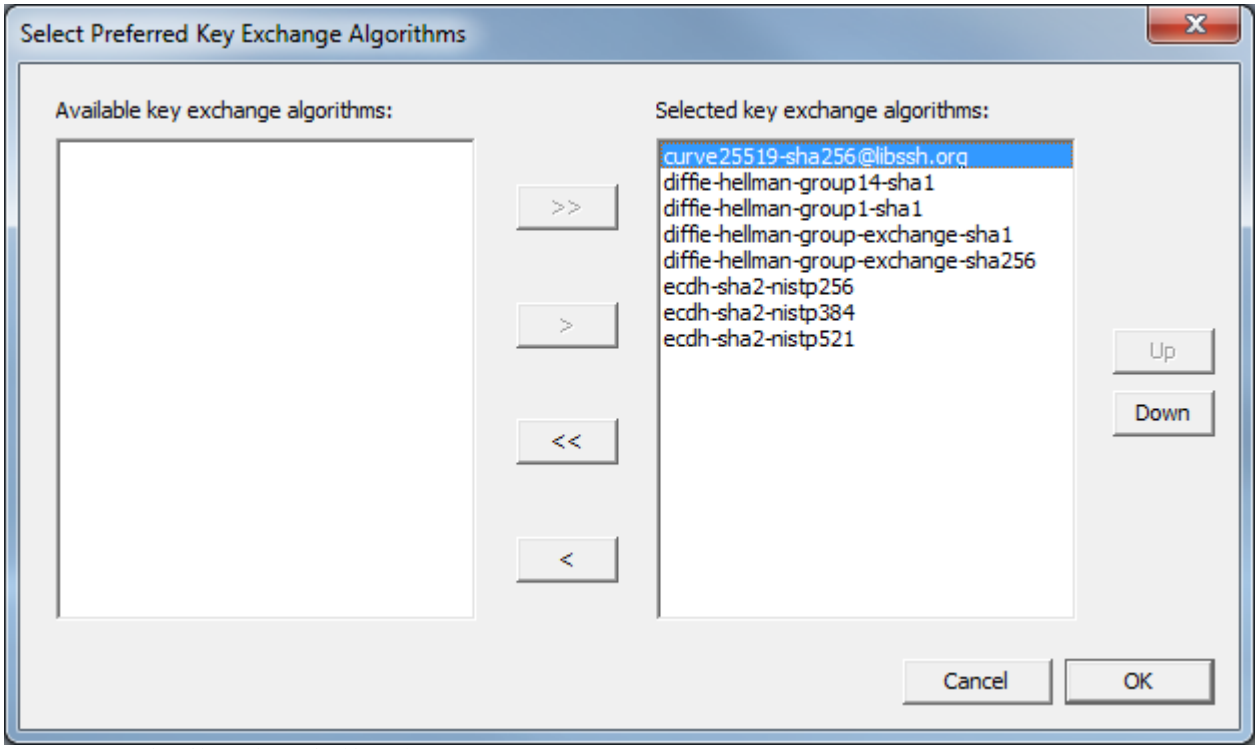


Figure 41: Move selected key exchange algorithm to bottom.

Use the down button to move it lower on the preference list.

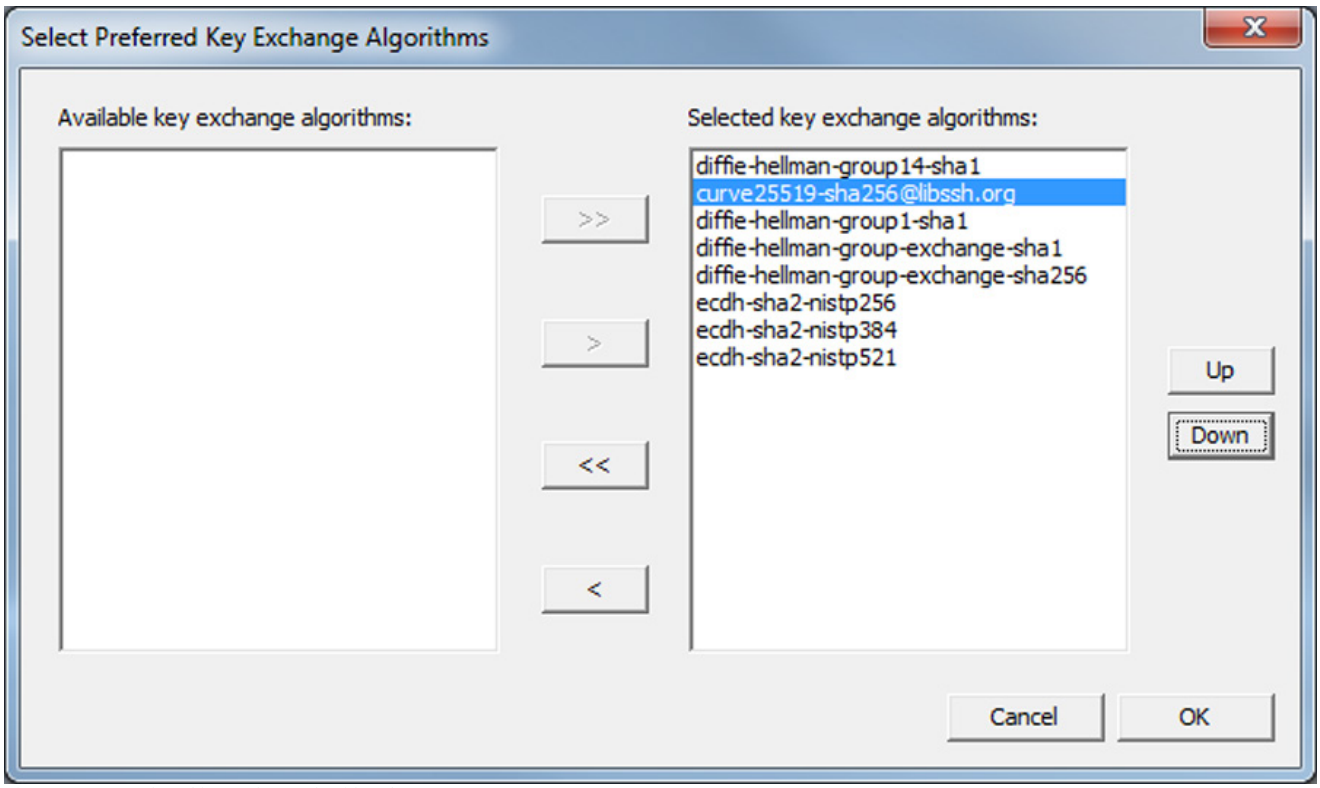


Figure 42: Move selected key exchange algorithm down one.

Click down again to move it further down the list.

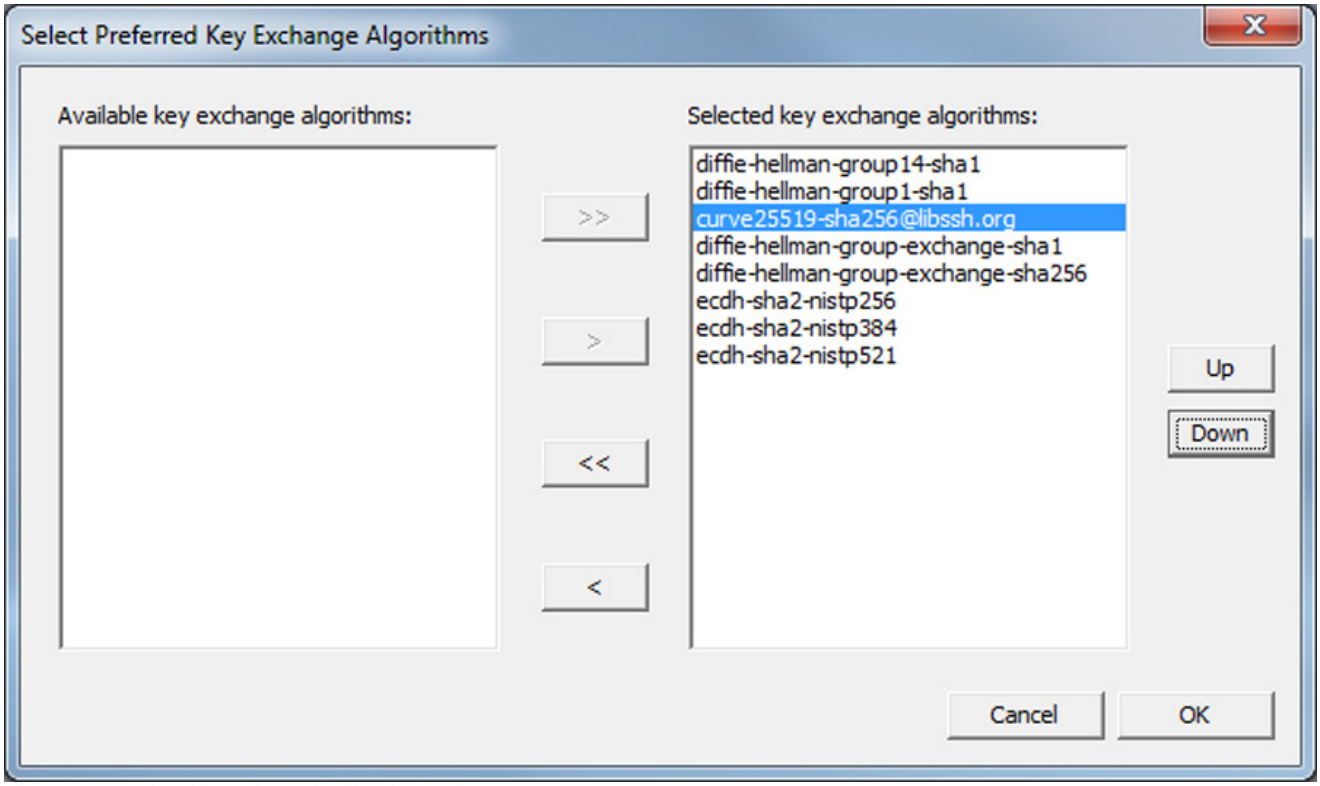


Figure 43: Move selected key exchange algorithm down again.

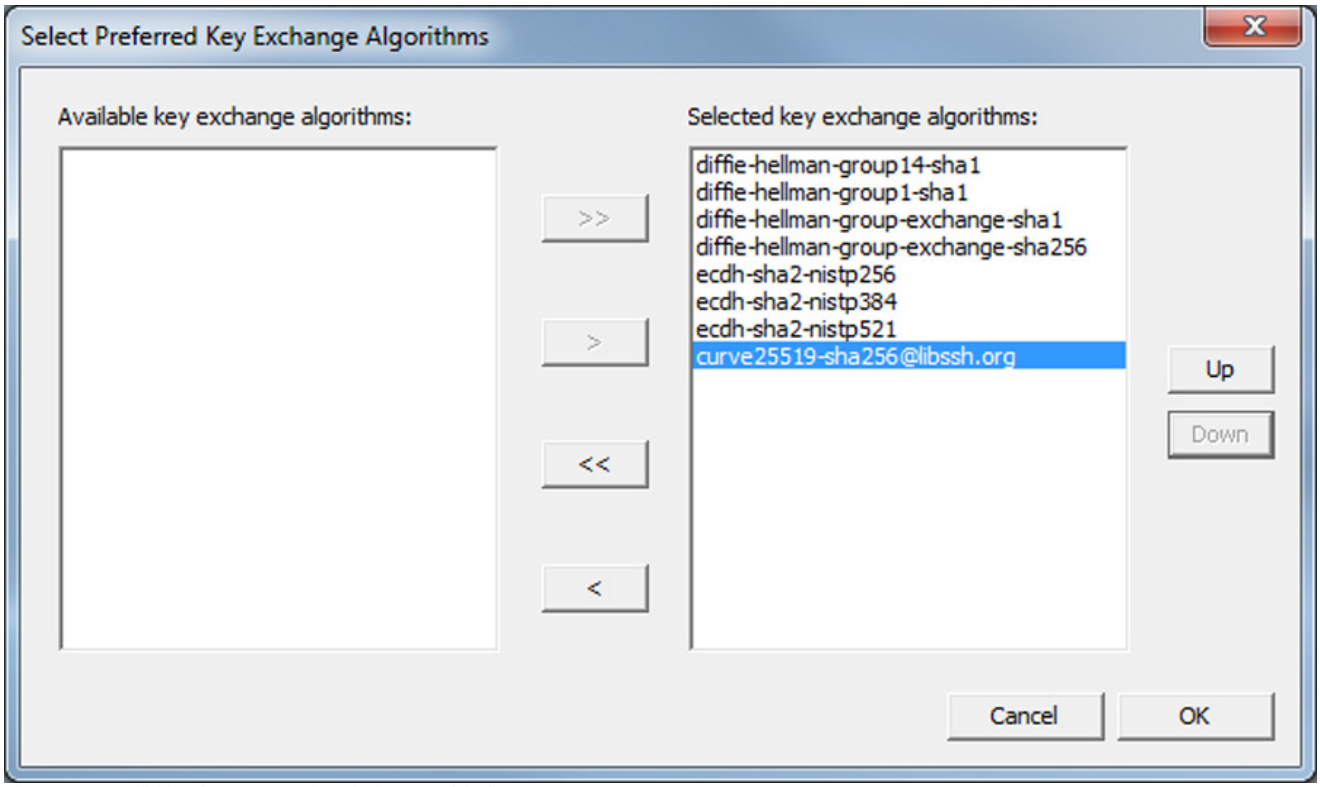


Figure 44: Keep clicking down to move it to the bottom of the list.

Be sure to click the OK button when you are done choosing the Key Exchange Algorithms.

You will be returned to the SSH-2 algorithms preferences dialog. The selected Key Exchange Algorithms are displayed as shown below.

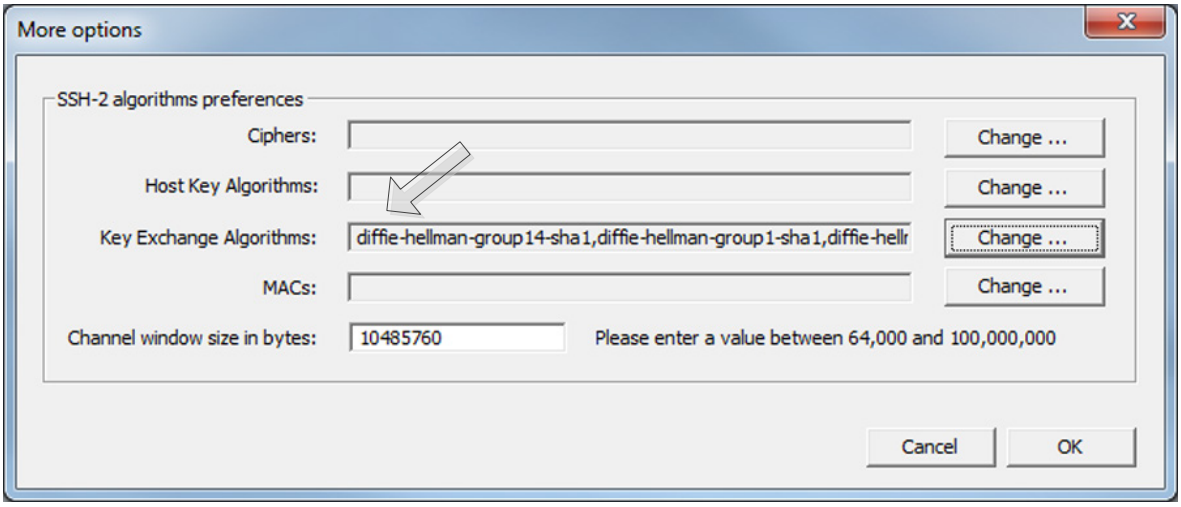


Figure 45 Selected Key Exchange Algorithms are displayed. .

If ***no*** Host Key Algorithms are shown then the default of all available Host Key Algorithms is in effect.

*MACs (*Message Authentication Codes) is used for protecting data integrity by including it in each packet. It is computed from a shared secret, packet sequence number and the contents of the packet.

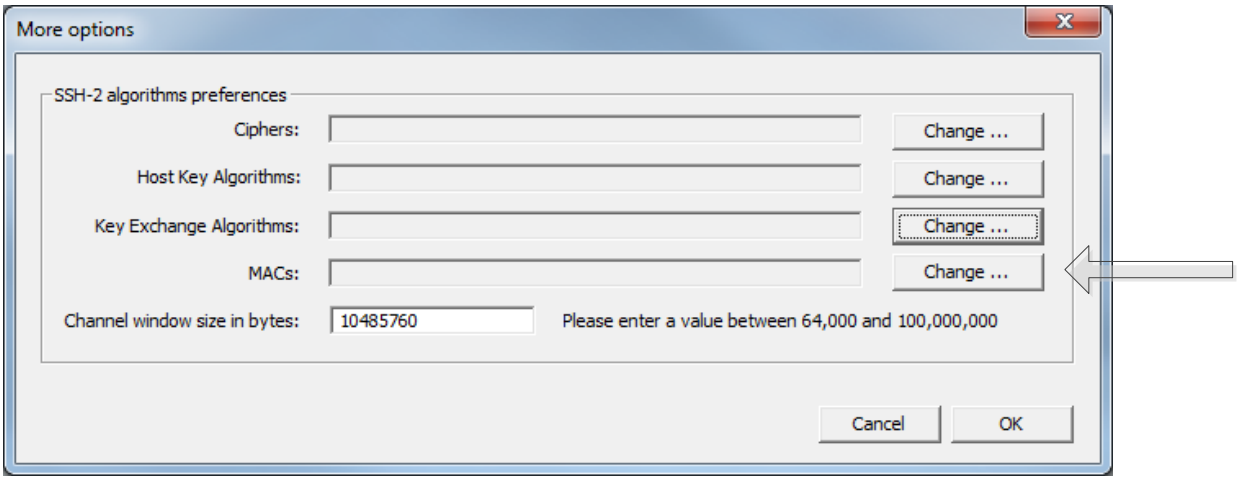


Figure 46: Change Message Authentication Codes used to negotiate with the SSH server

Click on the Change… button and a dialog opens that shows the Available MACs on the left and the Selected MACs on the right. The Selected MACs are the ones that the SSH Server may use with the GSW Business Tunnel. If the SSH server does not offer any of the specified MACs then the Business Tunnel will not allow a connection to that SSH server. The MACs dialog is shown:

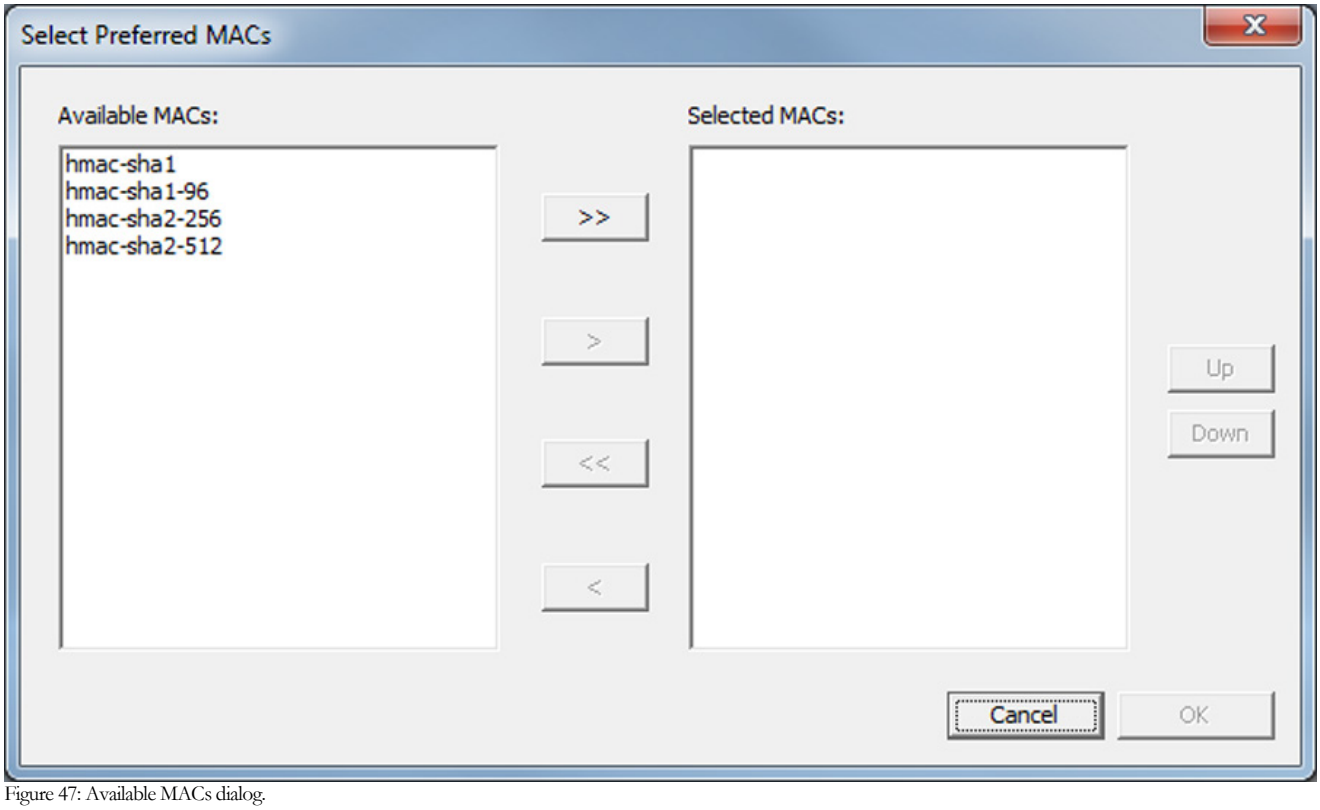


Figure 47: Available MACs dialog.

Select MACs from the Available MACs algorithm list on the left. You can select one MAC at a time and move it to the list of Selected MACs on the right by clicking on the Greater Than ">" sign button. You can select all the available MACs by clicking on the double Greater Than ">>" sign button. You can remove selected MACs one at a time or all selected MACs in the same manner by clicking on the Less Than "<" or double Less Than "<<" sign buttons.

In this example insist that `hmac-sha2-512` is used. So just click on the one from the available MACs.

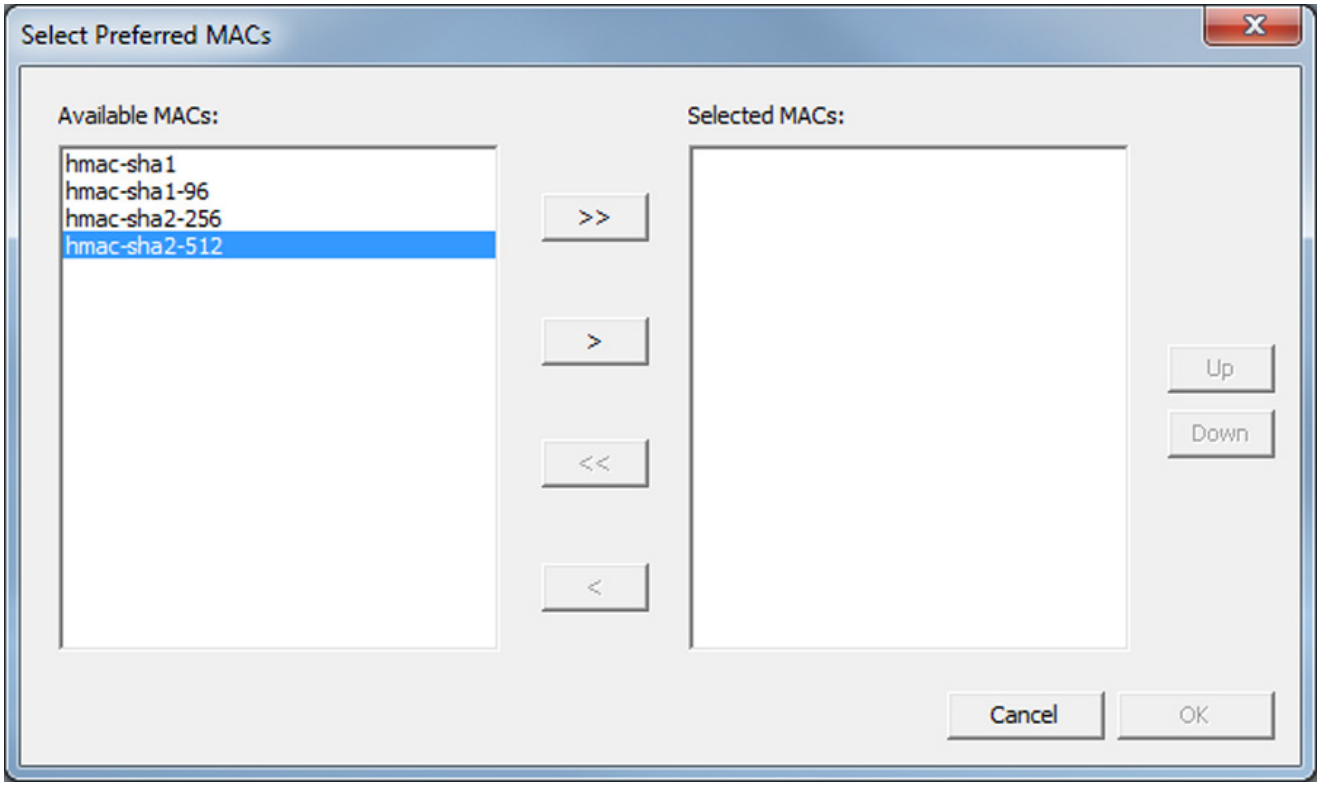


Figure 48: All MACs are selected.

Click on the single Greater Than ">" sign to move it to the Selected MACs on the right side of the dialog.

The only selected MACs is `hmac-sha2-512`. If the server does not offer `hmac-sha2-512` then a connection is not allowed.

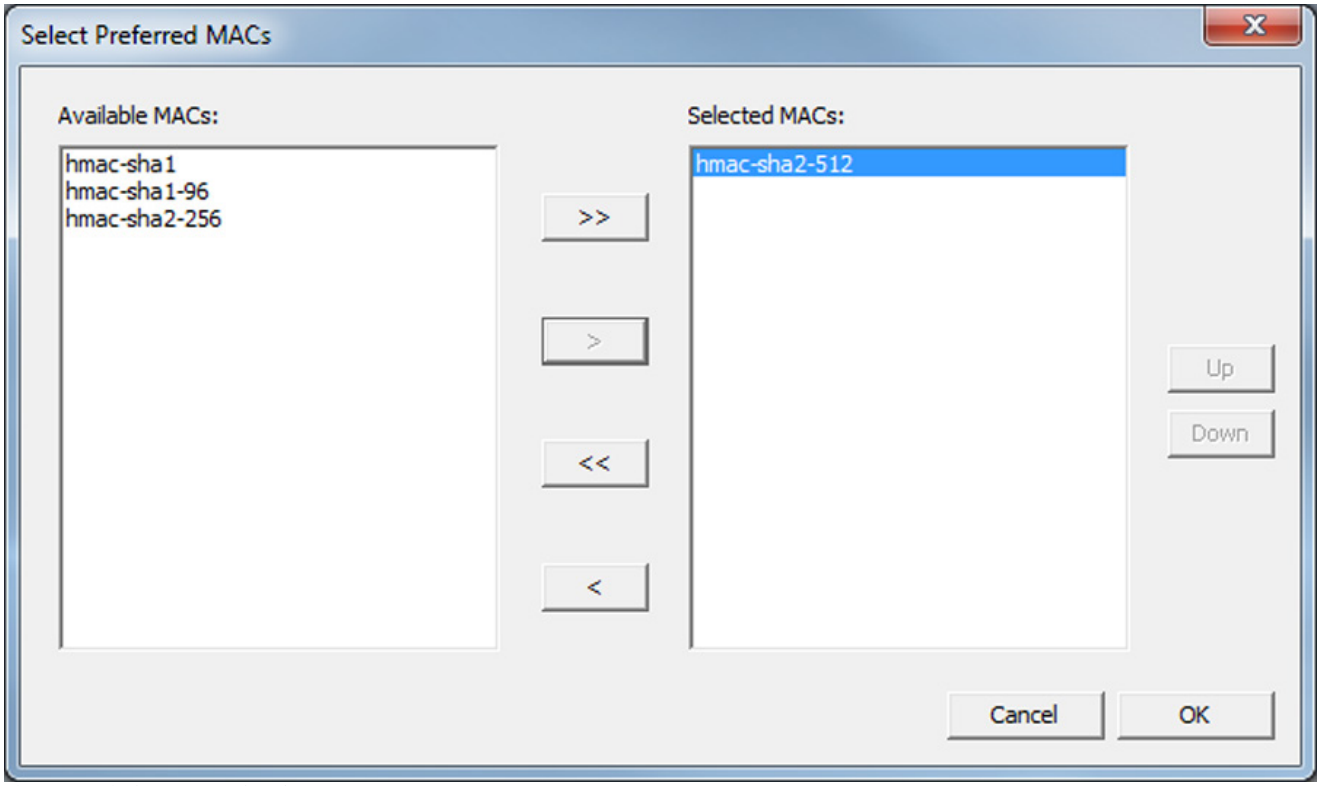


Figure 49: A single MAC are selected.

The order of the selected MACs set the preference that the Business Tunnel will use when negotiating with the SSH Server. If more than one MAC is in the Selected MACs list the first in the list is the first preference, the second, the next and so on. The details of the selection process are governed by the SSH Transport Layer specification RFC 4253. Discriminating users should consult RFC 4253 for the details.

Be sure to click the OK button when you are done choosing the MACs.

You will be returned to the SSH-2 algorithms preferences dialog. The selected Host Key Algorithms are displayed as shown below.

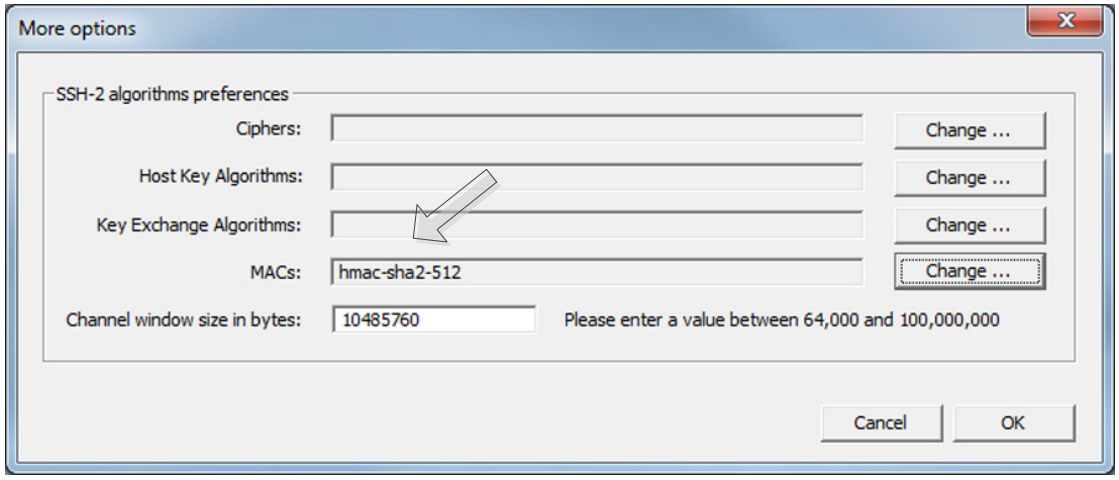


Figure 50 Selected Message Access Code(s) are displayed. .

If ***no*** MACs are shown then the default of all available All Available MACs is in effect.

Channel window size in bytes is used to specify the number of bytes in the SSH windows that allowed to be transmitted before an acknowledgment is expected.

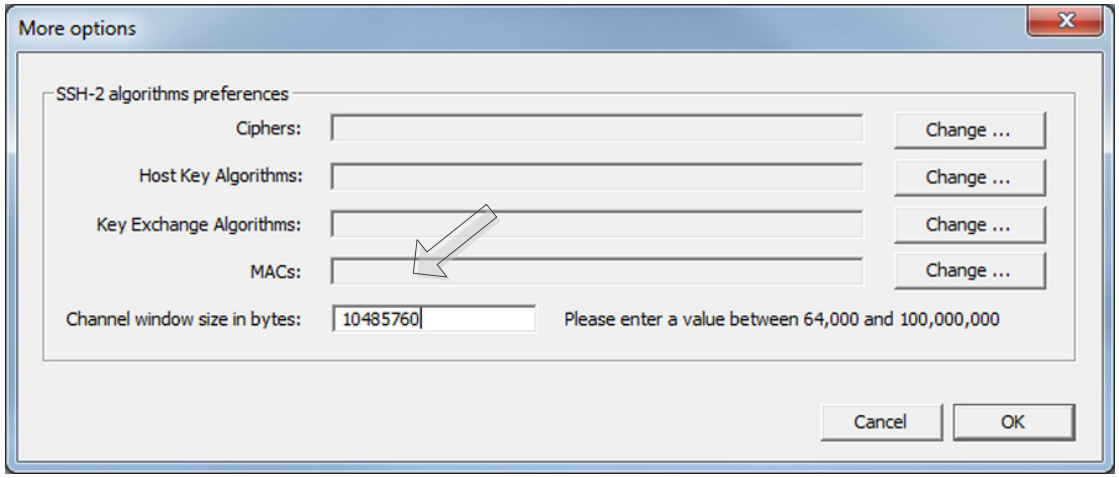


Figure 51 Channel window size in bytes.

Add to the Tunnel List

When done configuring the tunnel, click OK to add it to the Tunnel List.

Note: The tunnel is not activated until you click Activate on the Tunnel Management Tool.

Configuration – Channel Settings

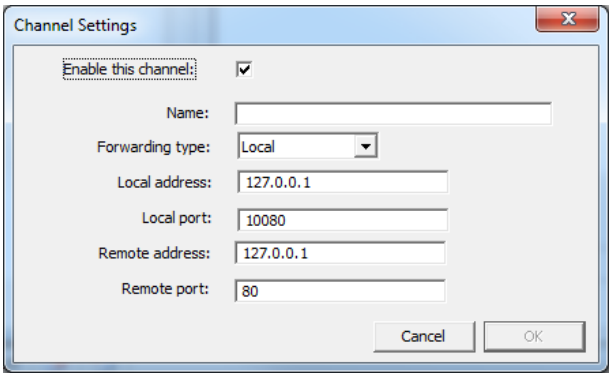


Figure 52: Channel Configuration

Channel configuration consists of:

- Enable/Disable this Channel
- Name
- Local Address
- Local Port
- Remote Address
- Remote port

Where

Enable this Channel is a checkbox is enables/disabled the channel.

Required: Yes

Default: Enabled

Please note that enabled channels are not available for use until the associated tunnel is Activated (see page 17).

Name is a name that you give to this Channel. It is recommended to name the channel something that associates it with its purpose within the tunnel. For example, the name 'Get Email from Server from Work' may be a good reminder

Required: Yes

Default: N/A

Forwarding Type is the

Local Port Forwarding – makes a port on a computer accessible to the SSH Server (the host that you are connecting) available on your local machine running the tunnel.

Remote Port Forwarding – makes a port on a computer accessible to the computer running the Business Tunnel available on the remote server.

Dynamic Port Forwarding – opens a SOCKS 4/5 proxy on your local computer and forwards all the data to the SSH Server

Required: Yes

Default: Local

Local Address value is dependent on the type of forwarding selected

Local Forwarding:
Same as Dynamic Forwarding

Dynamic Forwarding:
This is the address where the client software will be configured to connect to. You can specify 127.0.0.1 if you do not want to share your channel with other computers. You can specify 0.0.0.0 if you want to share your channel with all client computers on all of your IP addresses. Or you can specify one of your IP addresses for other computers to use.

Remote Forwarding:
This is the address where client software would originally attempt to connect to if tunnel was not used. The forwarded connection will be going to this address through the channel you are about to create.

Required: Yes

Default: `127.0.0.1`

Local Port value is dependent on the type of forwarding selected

Local Forwarding:
This is the port where client software will be configured to connect to. You will put a port number that is currently not used on the computer running the GSW Tunnel. A good rule of thumb is to add 10,000 to the port number you intend to forward. For example, if you forward telnet (port 23) put 10023 here.

Dynamic Forwarding:
This is the port where client software will be configured to connect to. You will put a port number that is currently not used on the computer running the GSW Tunnel.

Remote Forwarding:

This is the port number where client software would originally attempt to connect to if tunnel was not used. The forwarded connection will be going to this address through the channel you are about to create.

Required: **Yes**

Default: `10080`

Remote Address is the

Local Forwarding:

This is the address where the client software would originally connect to if tunnel was not used

Dynamic Forwarding:

Not Used

Remote Forwarding:

This is the address where the client software will be configured to connect to on the remote end of the tunnel. You can specify 127.0.0.1 if you do not want to share your channel with other computers. You can specify 0.0.0.0 if you want to share your channel with all client computers on all of your IP addresses. Or you can specify one of your IP addresses for other computers
to use.

Required: **Yes (only for Local and Remote Forwarding)**

Default: `127.0.0.1`

Remote Port is the

Local Forwarding:

This is the port number where the client software would originally attempt to connect to if tunnel was not used. The forwarded connection will be going to this address through the channel you are about to create.

Dynamic Forwarding:

Not Used

Remote Forwarding:

This is the port where the client software will be configured to connect to. You will put a port number that is currently not used on the computer running the SSH server. A good rule of thumb is to add 10,000 to the port number you intend to forward. For example, if you forward telnet (port 23) put 10023 here.

Required: **Yes (only for Local and Remote Forwarding)**

Default: `80`

Local Ports Usage

The Local Port Usage provides a quick view of the local ports configured.

Due to the number of ports available on a system it is convenient to quickly identify what ports you have configured and which tunnel and channel they are associated.

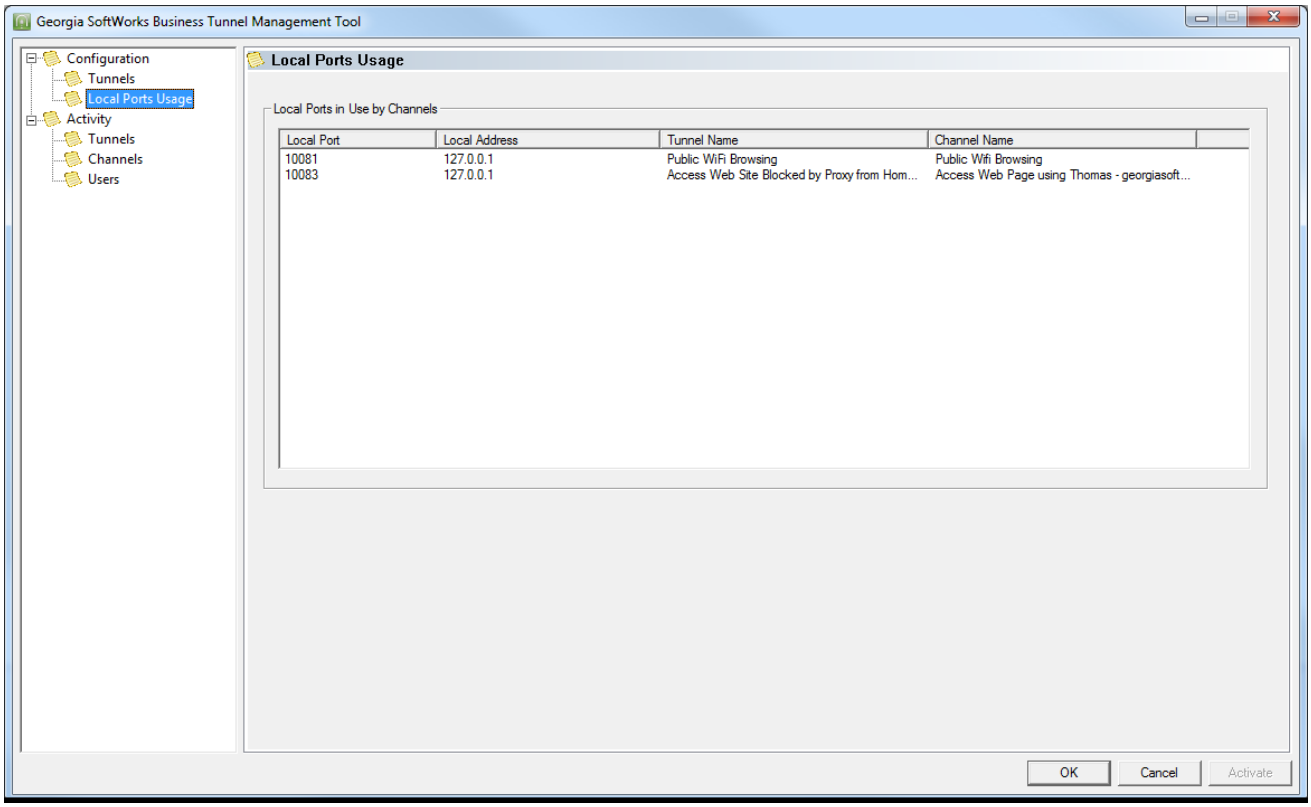


Figure 53: Local Port Usage

Activity Monitoring

The GSW Tunnel service can be stopped and started here. `Stop service` will stop all tunnels/channels. `Start service` will start all enabled tunnels/channels.

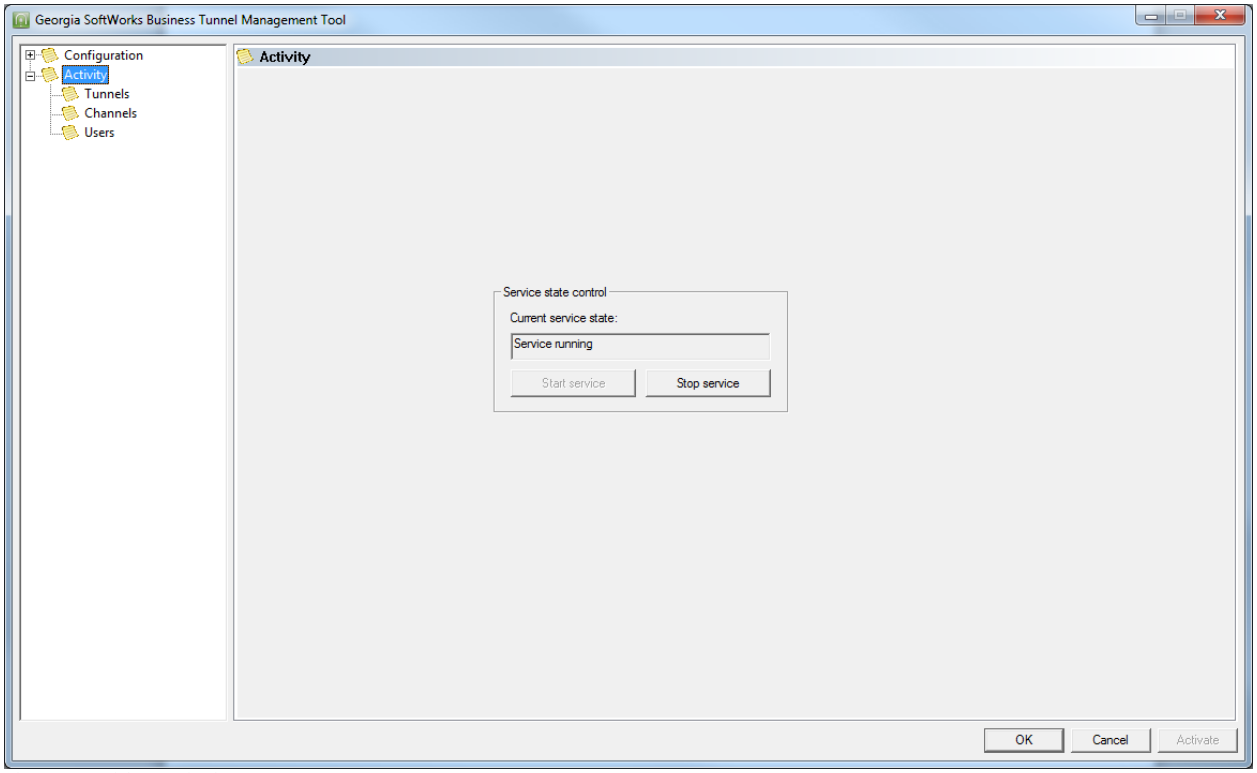


Figure 54: Activity Monitoring

Stopping the tunnel service clears the Activity counts for the tunnel and channel screens.

Tunnel Activity

Tunnel activity displays activity associated with the selected tunnel.

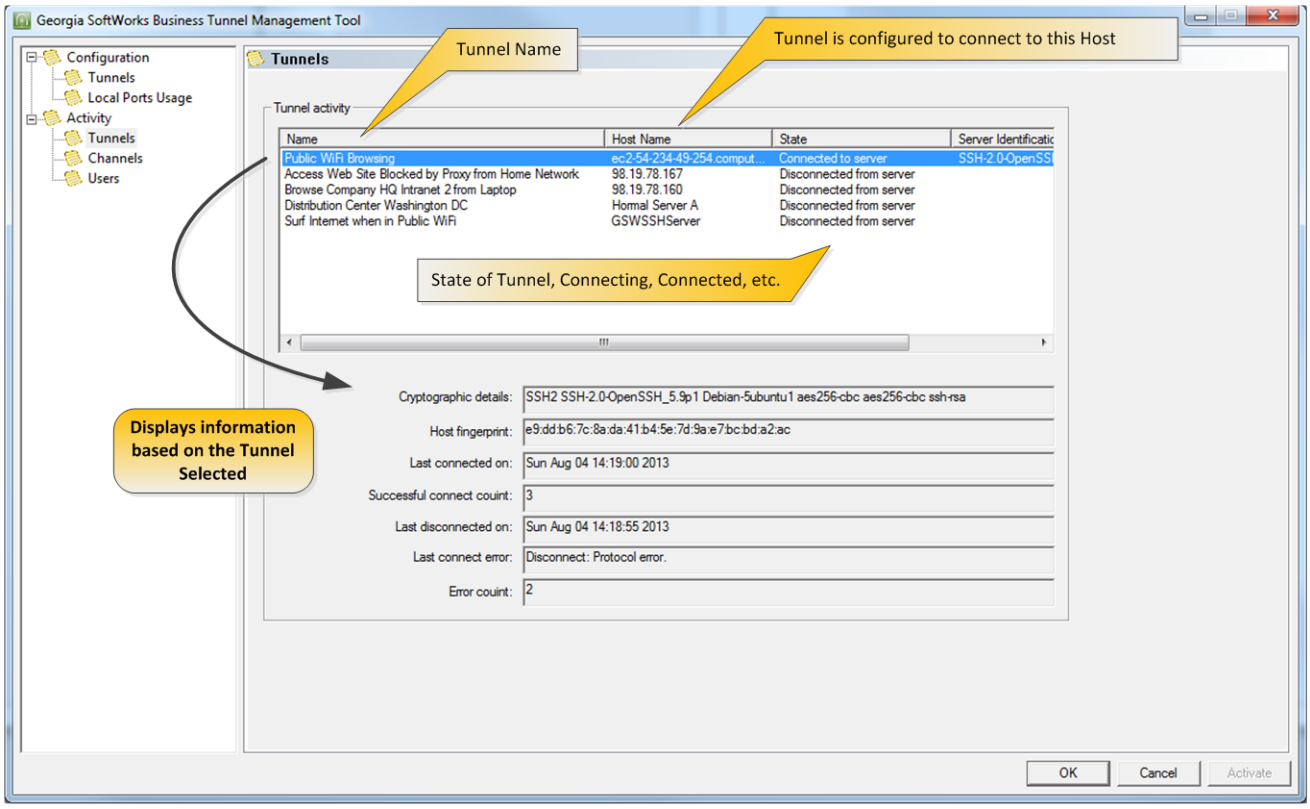


Figure 55: Activity Monitoring - Tunnels

Channel Activity

Channel activity displays all channel activity.

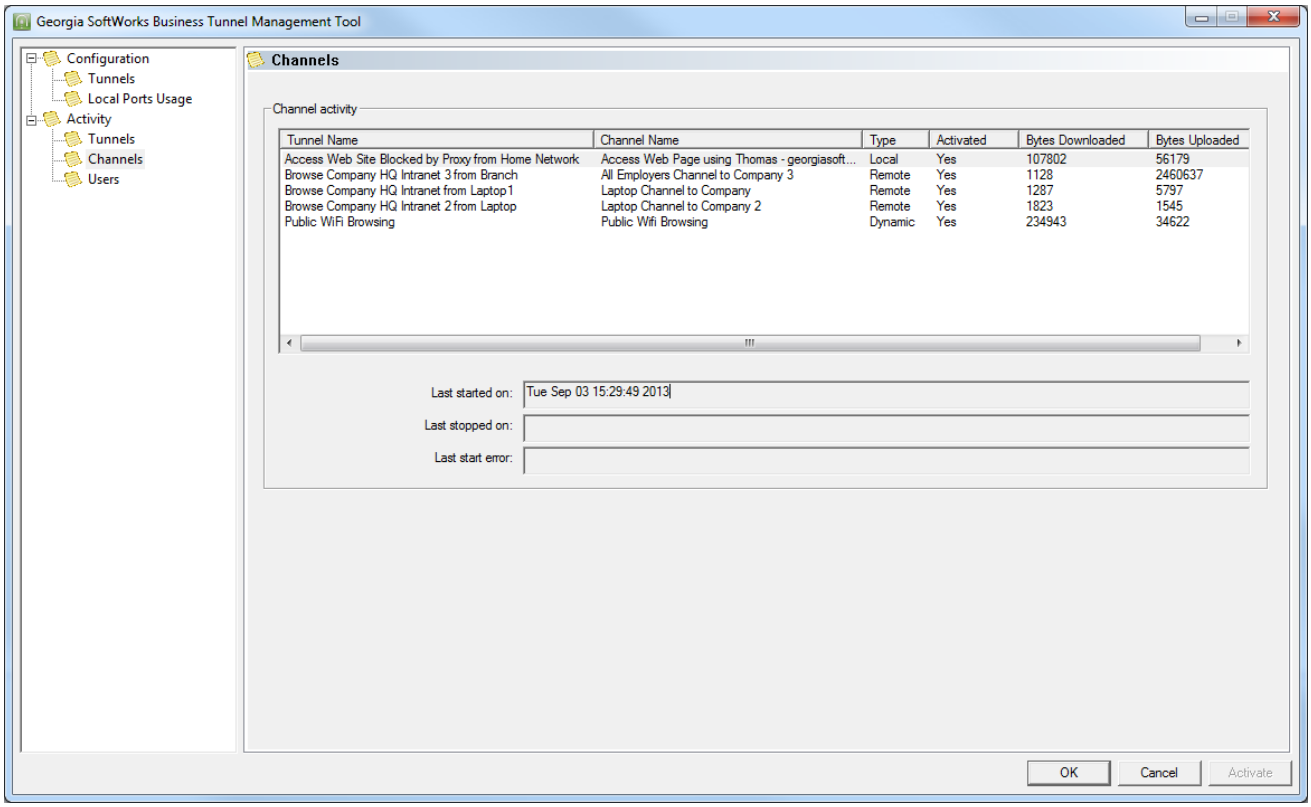
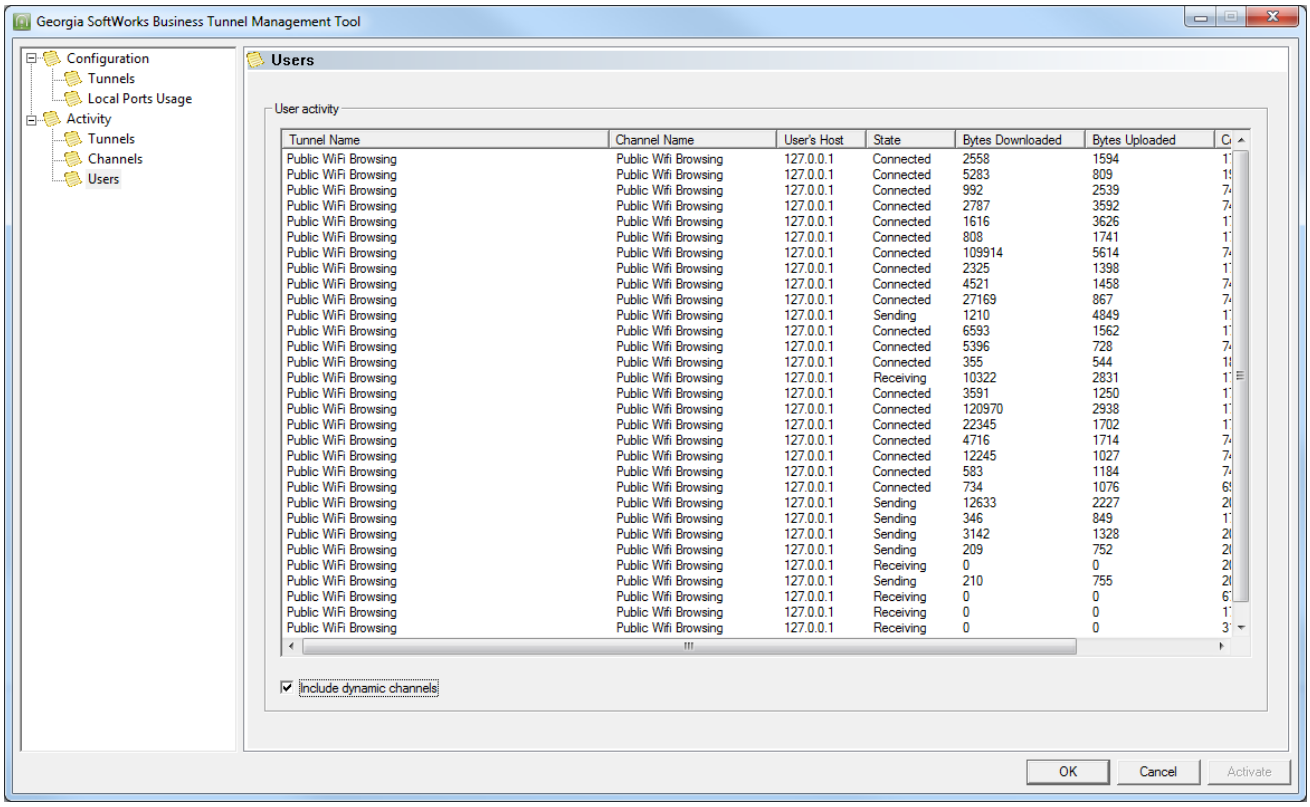


Figure 56: Activity Monitoring - Channels

User Activity

User activity displays activity associated with Users. Note that Users are computers.



Tunnel Name	Channel Name	User's Host	State	Bytes Downloaded	Bytes Uploaded
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	2558	1594
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	5283	809
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	992	2539
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	2787	3592
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	1616	3626
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	808	1741
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	109914	5614
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	2325	1398
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	4521	1458
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	27169	867
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Sending	1210	4849
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	6593	1562
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	5396	728
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	355	544
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Receiving	10322	2831
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	3591	1250
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	120970	2938
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	22345	1702
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	4716	1714
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	12245	1027
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	583	1184
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Connected	734	1076
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Sending	12633	2227
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Sending	346	849
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Sending	3142	1328
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Sending	209	752
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Receiving	0	0
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Sending	210	755
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Receiving	0	0
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Receiving	0	0
Public WiFi Browsing	Public Wifi Browsing	127.0.0.1	Receiving	0	0

Figure 57: Activity Monitoring - User

Example Configurations

For those not yet familiar with SSH Tunneling, Georgia SoftWorks has put together a set of "cook book" examples that may be helpful in configuration of your tunnel and channels.

A pdf document with all of the examples can be viewed here:

http://www.georgiasoftworks.com/docs/tunnel/Example_guide_businesstunnel.pdf

On each example page there is an example ID, a description and a document number.

Example ID is a unique number that identifies a specific example.

The **Description** gives a brief description of the "Use Case" for the Business Tunnel.

The **document number** is a letter (D, L or R) followed by a number. The D, L or R signifies if this example uses Dynamic, Local or Remote Port forwarding. The number is the enumerated value signifying the example number of that type. That is Example D01 is Dynamic port forwarding example 01. D02 is Dynamic port forwarding example 02.

	View All Examples in a single PDF			
		Forwarding Type/Example Number (ex: D01) Dynamic Example 01 D - Dynamic L - Local R - Remote		
	Example ID		**Description**	**Service**
1	BT_0001_09282013	D01	Browse internet securely by tunneling through a generic SSH server on Amazon cloud	HTTP
2	BT_0002_11152013	D02	Securely connect to your home computer from work & use it to browse the internet	HTTP
3	BT_0013_11152013	D03	Securely Connect to your home computer from anywhere to Browse the Internet	HTTP
4	BT_0003_11152013	L01	Make a telnet connection secure using the GSW Business Tunnel	HTTP
5	BT_0004_11152013	L02	Securely Access Blocked Website from Headquarters (Blocked by Proxy Filter)	HTTP
6	BT_0005_11152013	L03	Securely access blocked Website via Home due to company proxy filter	HTTP
7	BT_0006_11152013	L04	Securely Access Email (Send/Receive) from anywhere	POP/SMTP
8	BT_0007_11152013	L05	Securely Remote Desktop to Work from Anywhere	RDP
9	BT_0008_11152013	R01	Securely browse the company intranet from home, even though company does not allow incoming connections	HTTP
10	BT_0009_11152013	R02	Browse the company IntrAnet from Sales Branch – Single Employee	HTTP
11	BT_0010_11152013	R03	Browse the company IntrAnet from Sales Branch – Multiple Employees	HTTP
12	BT_0009_11152013	R04	Browse the Company IntrAnet from Home	HTTP
13	BT_0012_11152013	R05	Browse the company IntrAnet from Sales Branch using address 0.0.0.0	HTTP

	Tunnel Notes			
	Example ID		**Description**	
1	NT_0001_09282013	N01	Open Windows Firewall to allow access to a SSH SSH Server	

System Requirements

The GSW Business Tunnel must be installed on a computer running the Windows operating system including

Windows Server 2012, Windows Server 2008 R2, Windows Server 2008, Windows Server 2003

Windows 8, Windows 7, Windows XP

Both x86 and x64 systems

The GSW Business Tunnel is a client side tool and has low CPU and RAM requirements so it can easily run on workstation class computer. We do not make any direct CPU requests to reserve memory from the non-paged pool. It is suggested to use 2GB RAM and CPU running at 1.5 GHz or more.

The GSW Business Tunnel must have access and authentication credentials to a SSH Server. The SSH Server must have local and remote port forwarding capabilities. There is no operating system requirement for the SSH Server; however the GSW SSH Server is an excellent choice when using a Windows Operating System.

Concurrent Tunnels License

The GSW Business Tunnel is licensed to have a maximum number of Tunnels activated at a single time. You may have as many configured as you need. This suits most users as you may have many configurations ready but only need to activate a subset of the total at any one time.

GSW Business Tunnels are sold in packages with the ability to have up to

3 concurrent tunnels active

5 concurrent tunnels active

10 concurrent tunnels active

25 concurrent tunnels active

50 concurrent tunnels active

100 concurrent tunnels active

on a single computer (laptop, VM, server etc.)

If the number of tunnels activated is greater than the number purchased, a log entry is generated and only the number of tunnels licensed will be activated.

System Signature - IMPORTANT PLEASE READ

NOTE: This section only applies to Software Registration

The registration software obtains a system signature that is unique to your system. This signature is an added security measure to inhibit unauthorized personnel from obtaining working copies of the GSW Business Tunnel.

The signature is comprised of hardware and software identifiers existing on your system which make the target system unique. These identifiers are hashed into a Product ID so a Serial Number can be generated from this Product id.

If major hardware components of your system are removed replaced or modified your Serial Number may discontinue to work and you may need a new Serial Number to obtain access to the GSW Business Tunnel. Please contact Georgia SoftWorks Technical Support if needed.

Technical Support

In order to keep Technical Support **Free,** please help minimize the cost.

- Gather all relevant system and environment information.
- Write your question down. This not only helps us but also helps you articulate the question better.

If the question is not an emergency, please use the GSW Support Ticket System.

http://www.georgiasoftworks.com/support_ost/index.php

We try to respond within 24 hours.

Otherwise **Call +1 706.265.1018 EST, M-F 9:00 a.m. to 5:00 p.m. and have your Product ID ready**