GEORGIA SOFTWORKS

Universal Terminal Server for Windows
Vista/7/8/10/2003/2008/2012/2016/2019

For GSW Telnet Server and GSW SSH Server

User's Guide

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GEORGIA SOFTWORKS

Georgia SoftWorks Universal Terminal Server for Windows 7/8/10/2003/2008/2012/2016/2019

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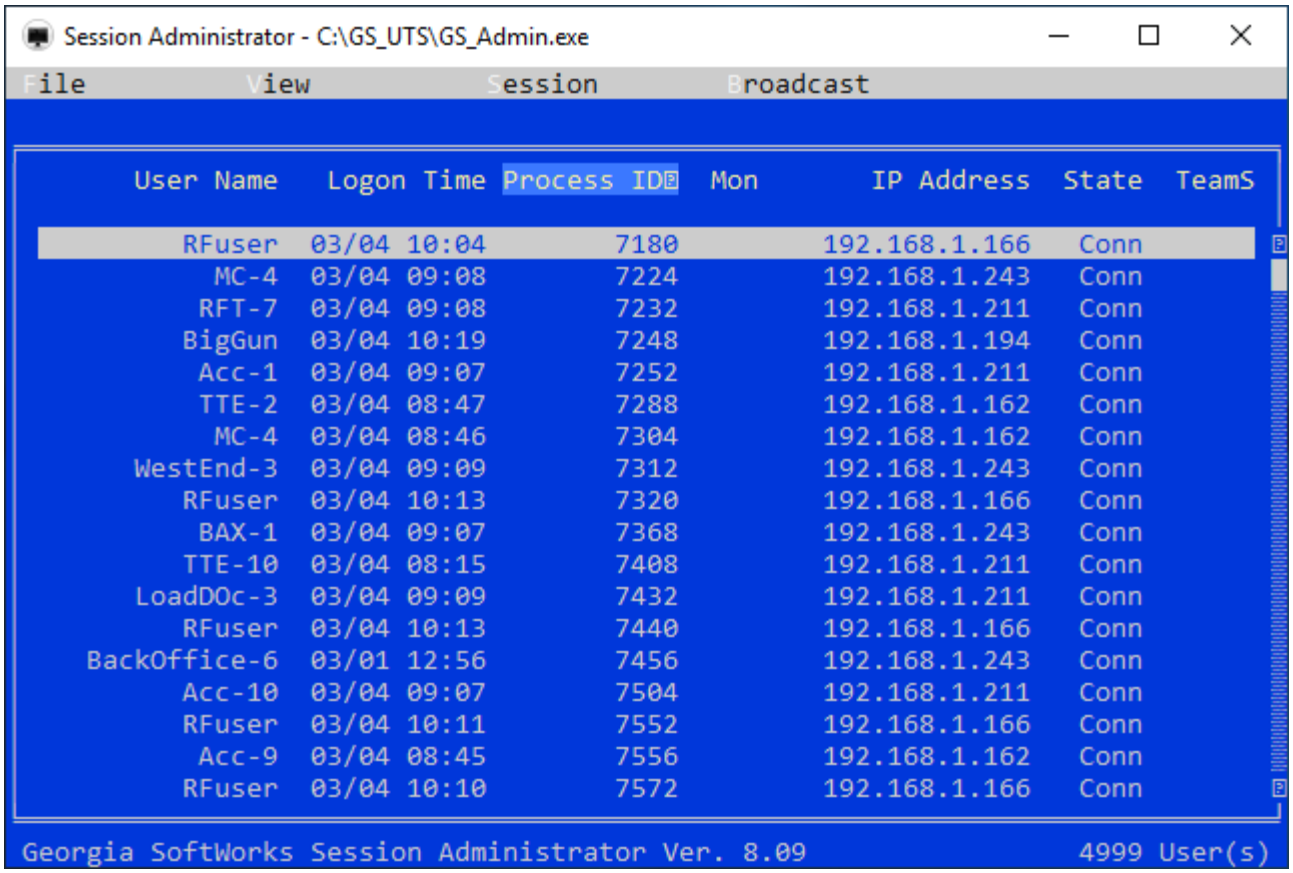

Actual screen shot in the GSW Lab of 4999 sessions connected during testing!

User's Guide, Version 8.10.0003, August 12, 2020

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Typographic Conventions

Italics:	are 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.
"<**enter**>"	This represents the enter key.

Definitions for this document

WINDOWS	Unless otherwise noted, refers to Microsoft Windows operating systems listed below. - Windows 7/8/10/VISTA/2008/2008 R2/2012/R2/2016/2019, - Windows 2003 versions.
ARMv4+	The plus "+" indicates to include later versions such as ARMv4, ARMv5, ARMv7 etc.
ARMv4i+	The plus "+" indicates to include later versions of ARMv4i
GSW	Georgia SoftWorks
Session	Refers to either a Telnet or SSH Session depending on the product purchased.
SSH	Refers to Secure Shell Version 2 (SSHv2) unless otherwise noted.
TS	Georgia SoftWorks Team Services
User's Guide	User's Guide and User's Manual are used interchangeably
UTS	Universal Terminal Server

FEATURES AT A GLANCE
DO IT RIGHT OR NOT AT ALL

Security Pack - *The Only Secure telnet server!*

- Encrypted Login and Data Stream
- Single Sign-on through NTLM and Kerberos - SSH
- Certificate Based Logon - SSH
- Strong 128-bit Encryption available – Telnet
- Super Strong AES256 supported – SSH
- FIPS 140-2 Compliant Option available – SSH
- Optional Connection Restrictions
  - User ID, IP Address & Counts, TOD, Client or Encryption Type
- Integrated with Windows Security
- Elliptic Curve Cryptography support – SSH Desktop Client

Performance Pack - *Fast, Fast, Fast - Incredible*

Keep Network Traffic and ISDN cost down

- **Automatic Logon**
- Slow Link, Internet Support
- Proprietary Performance Algorithms, Data Compression
- Incredible client performance
- Automatic Logon
- DOSBoss - DOS Application Booster!
- GSW UTS 64-bit platform Edition

Failure/Recovery Pack - *Multiple Advanced Failure Detection Methods*

- Complete Session Cleanup & NTVDM Cleanup
- Server-Side Inactivity Timer, Client Site Heartbeat
- Session Saver- Resume work in progress after link failure
- Graceful Termination of DOS Applications
  - Upon abnormal termination of Client
  - On Link or Remote Computer Failure

Configurable child process termination upon session completion

Legacy Pack

- Full DOS Legacy Support
- MOUSE
- DOS Character Mode Color Graphics
- Function Keys, Special Characters
- Automatic Screen Sizing, Alt key support for all emulations

Works Great with Other Applications!

- Works GREAT with HighJump software
- Works GREAT w/ **SAPConsole** + Portable Printing
- Compatible with VMWare ESX, Microsoft HyperV
- GSW Mobile and Desktop Clients – Support Vangard Voice Systems AccuSpeech® technology.

Compatibility Pack

- RFC 854 Compliant – Connect from 3rd Party Clients
- RF Terminals, Wireless, Bar Code Scanners + more
- Multinational Character Support including Double-Byte and Unicode characters. Traditional & Simplified Chinese support
- GSW Mobile Clients Support for Simplified Chinese font GB!
- GSW Telnet Client for Pocket PC 2003 class of devices
- GSW SSH/Telnet Client for Windows CE .Net V4.2/5/6.
- IPv6 Supported
- Windows Powershell® and custom shell support
- Microsoft Pseudo Console (ConPTY) support
- Device String data from GSW ConnectBot

Utilities Pack

- File Transfers via Telnet/SSH
- Change Password
- Remote Reboot/Shutdown, Terminate Telnet Sessions
- Configurable Port Numbers, Default Domains
- Execute commands on the client from a Telnet/SSH Session !

Emulations Pack

- SCO Console, DEC VT 100/220/320/420
- Wyse 50/60, Symbol 3 x 40 series
- IBM 3101, IBM 3151, Perfect PC
- Automatic Logon, Color Re-Mapping
- Character Display Translation

Power Features Pack

- **Team Services** - Breakthrough collaboration technology for Telnet/SSH. Share, Transfer, Swap, Recover Sessions!
- Session Administration –
  - Session Monitoring
    - ✓ Security - Monitor other telnet users. Observe dynamic screen activity exactly as it appears on their screen!
    - ✓ Quality Assurance - Remotely monitor data entry by employees
    - ✓ Training - Senior application users remotely help trainee's
    - ✓ Debugging - Developers remotely observe phenomenon described by users.
  - Session Shadowing
    - ✓ Session monitoring with Interactive Input!
  - Command Line Options for programmatic control of Session Administration
- Logon/Termination Scripting: User, IP or Global Based.
  - ✓ Allow a user to automatically enter a specific directory or application upon connection.
  - ✓ Optionally restrict users to a specific application
  - ✓ Run TSRs and Set Environment Variables upon connection, Disconnect network drives etc. upon termination
- **GUI Configuration Tool** – Use convenient graphical user interface for configuration and configuration management.
- True Client-Side Printing - Printing the way you want it!
  - Print to the most convenient printers, at the server, at the client, across the Internet and more! Up to 9 printers per user!
- Event Logging. Import useful User activity information for reporting into your application.
- High Performance Client that can be installed at as many locations as you choose at no extra cost!
- Automatic Version Update of the GSW Clients
- Broadcast Messages can be sent to one or ALL Sessions.

The Real Pioneers - Often copied but never equaled

Georgia SoftWorks: The True Innovators when it comes to SSH/Telnet for Windows.

Great ideas that Georgia SoftWorks has pioneered for the GSW UTS for Windows!

- Microsoft Pseudo Console (experimental – but really nice)
- IPv6 Support
- Certificate Based Logon for SSH with GUI Mapping tool. Many-to-one and one-to-one
- Public Key to User Account Mapping with the GSW Mapping Tool
- GSW Team Services - Breakthrough Collaboration Technology for Telnet/SSH
- GSW UTS Mobile Clients Support Simplified Chinese with font GB!
- GSW Mobile SSH2/Telnet Clients for Pocket PC 2003 & CE .NET 4.2/5.0 class of devices
- Automatic upgrade of GSW Windows Clients from GSW UTS Server
- File Transfer – Transfer files between the Server and Client via telnet!
- Session Saver - Reconnect to session after Link Failure and automatically resume work in progress!
- Auto Logon - RF Terminals and Telnet clients can quickly connect with minimal prompting. SSH when using GSW clients.
- Session Shadowing - Interactive Input to other Telnet/SSH sessions
- Execute Commands on the Client from within the Telnet/SSH Session!
- DOSBoss - MS DOS Application Performance Booster
- 128 BIT Strong Complete Data Stream Encryption – Telnet
- AES256 Super Strong Encryption – SSH
- Complete Data Stream Encryption
- Session Monitor - Observe screen activity of other Telnet/SSH sessions
- True Client-Side Printing (Multiple Printers per session, Open Print Method (No client or OS restrictions)
- Working JAVA Client/Applet
- MOUSE Support
- Incredible performance algorithms never thought to be possible with Windows Telnet/SSH
- Failure Detection and Recovery Methods
  - Graceful Termination of DOS Applications and Win32 Console Applications
  - Complete Session Cleanup, Complete NTVDM Cleanup
  - Server-Side Inactivity Timer, Server-Side Heartbeat
  - Client-Side Heartbeat
- Special Bell Processing
- Expired Password Handling
- Perfect PC emulation where all keys and key combinations are handled
- Color to Monochrome mapping provided. Very useful for RF Terminals

Georgia SoftWorks takes Telnet/SSH for Windows NT/XP/VISTA/2000/2003/7/8/10/2008/2008 R2/2012/R2/2016/2019

We have a philosophy of continuous improvement and we are committed to:

- Continuing to be the leader in innovation with Telnet/SSH servers for Windows
- Providing the fastest, most robust and secure terminal server for Windows
- Meeting the demands of industrial and commercial applications with a rock-solid dependable product
- Providing a level of customer service not experienced before with Telnet/SSH for Windows

User's Guide

Speed, Robustness and Ease of Use define the character of the Georgia SoftWorks Universal Terminal Server software for Windows 7/8/10/VISTA/2008/R2/2012/R2/2016/2019, NT/XP/2000/2003

The Georgia SoftWorks Universal Terminal Server is the industrial quality software foundation supporting the suite of GSW server products including the GSW Telnet Server, the GSW SSH Server, the Session Administrator and numerous remote access utilities.

Thank you for purchasing the Georgia SoftWorks Universal Terminal Server Software for Windows. You will be pleased with the performance and robustness provided with this product. Ease of use will be a significant time saver when using the Georgia SoftWorks Universal Terminal Server software. Complicated keyboard sequences are not required to map to the actual keys you want to send. The GSW UTS was developed to meet a need in the market that allows users to operate in a fast, reliable and uncomplicated fashion.

Windows is transformed into a truly multi-user environment with the GSW UTS software. Remote administration, full support for DOS Legacy applications, superior user control, *Session Monitoring/Shadowing* and Data Stream Encryption will allow you to utilize Windows as never before. True Client-Side printing is also available for a Windows Telnet/SSH Server for the first time with the Georgia SoftWorks Universal Terminal Server. Session Saver and Pass-through printing **are excellent features for RF hand held terminal** applications.

RF Terminal environments will perform exceptionally well with the GSW UTS due to a rich set of standard features such as Session Saver, Pass-through printing, Automatic Logon, logon scripting, configurable timers and other features optimized specifically for RF terminal access.

GSW Team Services provides your mobile device users a breakthrough in telnet/SSH technology that shatters all prior usability and efficiency standards by allowing for unprecedented user collaboration and cutting the costs of hardware. Team Services empowers the mobile device users to share resources, transfer, swap, share and recover mobile device sessions from the mobile device!

The GSW Mobile and Desktop clients are voice enabled to provide support to Vangard Voice Systems AccuSpeech® Mobile technology.

With IPv6 support you are ready for migration to IPv6 addresses with your network. Operation is available in IPv6, IPv4 or mixed.

SAPConsole environments will enjoy the ease of operation with the GSW UTS as well as specialized SAPConsole features that include mobile printing, Session Monitoring and a streamlined interface with the GSW Rocket Terminal Engine[1]. Special Bell processing has been improved to provide to sound the bell even after Session Saver reconnects.

[1] Rocket Terminal Engine is compatible with SAPConsole versions 6.2 and earlier

Product Description

The Georgia SoftWorks Universal Terminal Server offers industrial quality Windows Telnet or SSH Services designed and built for the most demanding industrial and commercial applications.

The GSW Universal Terminal Server is the core software that provides the performance, reliability, consistency and powerful features required for demanding industrial and commercial applications. The GSW UTS is highly optimized and modular in design to integrate with protocol interfaces allowing access with remote clients. The standard protocol interface for the GSW UTS is the Telnet Interface; however, an optional SSH interface (GSW SSH Shield) is available. The SSH interface also has a Federal Information Processing Standards Publication (FIPS) 140-2 compliant option available for purchase.

When the GSW UTS is coupled with the GSW Telnet Interface software the resulting package is the GSW Telnet Server. When the GSW UTS is coupled with the GSW SSH Interface software the resulting package is the GSW SSH Server. The mechanism to couple the GSW SSH Interface is to obtain and install the GSW Telnet Server and then install the GSW SSH Shield. The installation of the GSW SSH Shield disconnects the Telnet Interface and installs the SSH Interface software resulting in the GSW SSH Server.

The features described in the User's Guide apply to all interfaces offered unless specifically noted.

The GSW UTS and Client software is the fastest and most robust Telnet/SSH Server for Windows on the market. Full support for DOS Legacy applications including DOS character mode graphics, function keys, mouse and special characters allows you to work in a local mode when at a remote location.

The GSW UTS provides a level of robustness that is a cut above the competition. **Industrial** quality orphaned session detection and elimination *including* NTVDM's and attempted *graceful termination* of DOS legacy applications upon link and client PC failures are features pioneered by the GSW UTS software for Windows.

Logon Scripting provides system administrators with unmatched control over user connections. One function of *Logon Scripting* allows the user to automatically enter specific applications upon connection. *Logon Scripting* can also restrict the user to only execute a specific application. *Logon Scripting* can do much more (see page 218)!

Server Software

The GSW UTS Server is the software installed on your Windows computer. This software is responsible for establishing connections and spawning *agent* processes that manage each SSH2/Telnet session. The Georgia SoftWorks Universal Terminal Server software enforces the number of allowed simultaneous sessions.

Agent Process

A SSH2/Telnet session is created each time a connection is established. A connection is established when a user logs on to the Windows system using a SSH2/Telnet Client. For each session that is created the GSW UTS software spawns an *agent process*. The agent process is responsible for managing and communicating with the user session. Screen optimizations are performed by the agent process to facilitate faster data transfers. The capability of a configurable *server-side heartbeat timer* exists for use by the agent process to help identify link or remote PC failures. In addition, the configurable *server-side inactivity timer* exists to help identify abandoned sessions so that they can be properly terminated and made available to other users.

Client Software

The Georgia SoftWorks Windows SSH2/Telnet clients are proprietary software that run on remote PCs and Pocket PC class devices and utilizes advanced features offered in the GSW UTS server software. The advanced features are propriety extensions that enable a wide range of functionality including mouse operation, enhanced printing methods, automatic update of client software and much more! Well-designed optimizations are included that enable the GSW Server software for Windows to be the fastest SSH2/Telnet software available on the market.

The client software contains a configurable heartbeat timer that notifies the agent process of its presence. This mechanism helps to identify link or remote PC failures. It is recommended that the Georgia SoftWorks Client software be used although it is not required. The Georgia SoftWorks Windows Telnet Server is RFC 854 compliant which allows any 3rd Party Telnet Client to be used. The GSW SSH Server allows connections from any third party SSH compliant client.

The Georgia SoftWorks Windows clients offer the Enhanced printing method as a component of True Client-Side Printing (Page 226). This allows users to print to their local printer even when connected across the Internet or RAS.

The Hostname or IP address is displayed in the title bar of the Georgia SoftWorks Windows Clients to provide an easy method of identifying to which host you are connected. Many command line parameters are provided to enhance the convenience and power of the client. Please see page 77 for detailed descriptions of these parameters.

The GSW Windows SSH2/Telnet Clients automatically update to the appropriate version for the GSW UTS Server when connected[2].

The GSW clients are available on a wide variety of operating system platforms ranging from Windows to Pocket PC 2003. See the table on page 25 for a detailed list of GSW Windows clients available for each platform.

[2] This feature is operational with version 6.26.003 and above.

For Android customers, GSW ConnectBot is a GSW Android SSH/Telnet Client product that can be purchased separately. It has the strongest security of any commercially available SSH client for Android. Learn more about it here (https://www.georgiasoftworks.com/connectbot-client-android)

Georgia SoftWorks UTS Product Configurations

GSW UTS Components Overview

The Georgia SoftWorks Universal Terminal Server is the core server software module that provides the reliability, consistency, robustness and powerful features that has distinguished GSW Server Products. The design of the GSW UTS facilitates integration of protocol and application interfaces producing industrial quality server products.

The protocol and application interfaces available for the GSW UTS are the GSW Telnet Interface and the GSW SSH Interface. The GSW UTS is not sold as a standalone product. The standard protocol interface provided is the GSW Telnet Interface.

Protocol Interfaces other than the telnet interface require an application interface installer to add the interface to the GSW UTS. The application interface installer for SSH is the GSW SSH Shield. When the SSH application interface installer installs the SSH Interface the Telnet Interface is disabled.

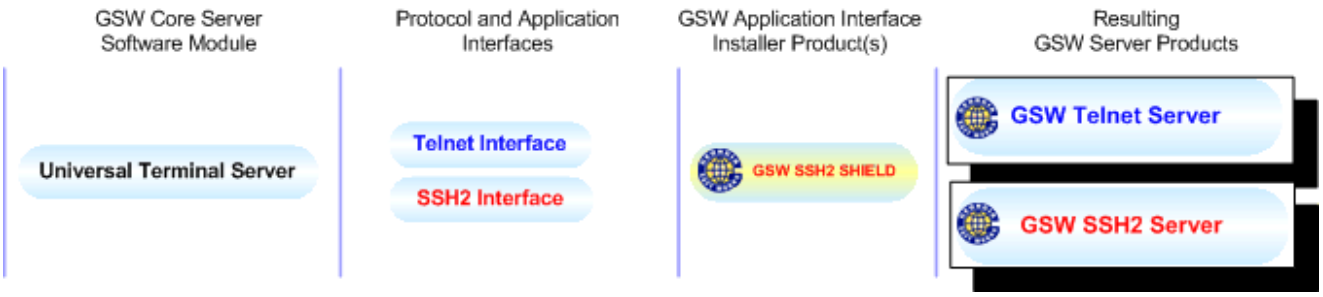

Figure 1: GSW UTS Components Overview

The features, utilities and clients are provided by the GSW UTS. Unless noted all features and utilities are available to all GSW Server Products.

The GSW UTS supports a wide set of emulations that allows connections from most third-party clients. Compliant 3rd party clients can exist on any operating system. Of course, GSW Windows Clients are offered at no additional cost for Windows operating systems, Pocket PC 2003 class devices and other Windows RF devices. A list of these Windows Operating Systems is on page 25 .

GSW Also offers GSW ConnectBot, a client for Android, which is available for purchase.

GSW UTS – Telnet Server

The standard protocol interface included with the GSW Universal Terminal Server is the Telnet Interface. No application or protocol interface installer is required.

The product purchased is the GSW Telnet Server. The installation setup is quick and easy. You can be up and running in the matter of minutes.

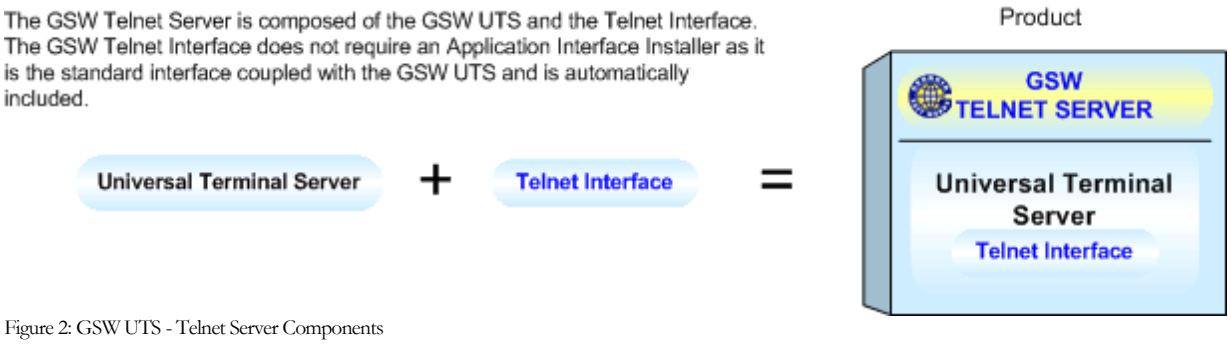

Figure 2: GSW UTS - Telnet Server Components

GSW UTS – SSH Server

The GSW SSH Server is obtained by purchasing the GSW Telnet Server and the GSW SSH Shield. The GSW Telnet Server provides the GSW UTS and the SSH Shield is the application and interface installer for the GSW SSH interface.

First the GSW Telnet Server is installed. Next the GSW SSH Shield is installed. Again, the installation is quick and easy.

NOTE: When the SSH Interface is installed the GSW Telnet Interface is un-installed. This is done for security reasons as many view telnet as unsecured and thus should not be available to malicious third parties.

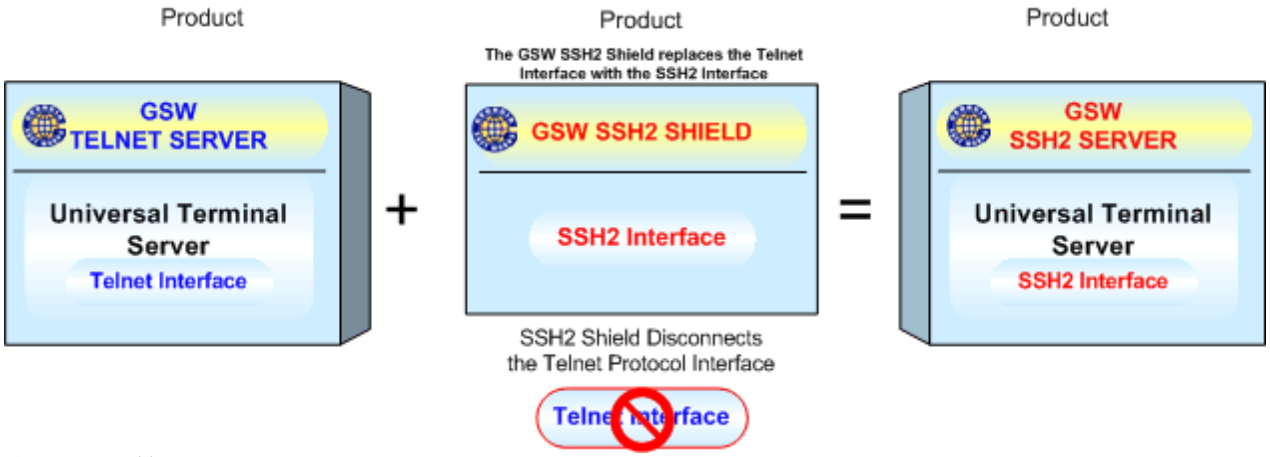

Figure 3: GSW UTS - SSH Server Components

Installation

Installation is simple and quick. The same installation program installs the server software and the client software. The installation software will prompt you for a *full* or *client only* installation if on a Windows system and automatically install client software if on a Windows 95/98 system.

GSW UTS 32-bit and 64-bit Editions

As 64-bit computing rapidly progresses towards mainstream computing, Georgia SoftWorks provides a 64-bit edition of the GSW UTS Telnet Server named the Georgia SoftWorks UTS x64[3]. This edition is for 64-bit editions of Microsoft operating systems (Windows 7/8/10/VISTA/2008/R2/2012/R2/2016/2019 and Windows XP/2000/2003). The GSW UTS x64 provides all the performance benefits and addressing capabilities expected when running on 64-bit platforms. Additionally, extraordinary high session counts can be attained with the GSW UTS when running on 64-bit platforms.

The GSW UTS 32-bit edition runs on 64-bit platforms as well as on 32-bit platforms. When running a GSW UTS 32-bit version on a 64-bit platform significant performance benefits are also realized.

If the application that you are accessing via the UTS is a 64-bit application then use the UTS x64.

When using the GSW Directed Terminal Input Output (DTIO) Engine, it is recommended to use the same platform edition of the GSW DTIO and GSW UTS. For example, use the GSW DTIO x64 with the UTS x64.

Both the GSW UTS and GSW UTS x64 editions are included on the CD when purchased. Simply navigate to the corresponding folder to run the setup program. If the software is a downloaded rather than using a CD then be sure to download the desired edition.

The GSW UTS 32-bit edition installs trouble free on either platform. The GSW UTS x64 will install only on a 64-bit platform. If you accidentally try to install the GSW UTS x64 on a 32-bit platform you will be alerted and setup will exit.

Figure 4: 32-bit platform alert.

The GSW Desktop client provided with all editions is a 32-bit client and will install on both 32-bit and 64-bit platforms.

[3] The GSW UTS 32-bit edition maintains the original name – GSW UTS.

Server Installation

From Windows perform the following:

Run the gsw_x64.exe program. (recommended)

The Welcome screen of the setup program I displayed. Remember that you must have administrative privileges to install this program. Click **Next.**

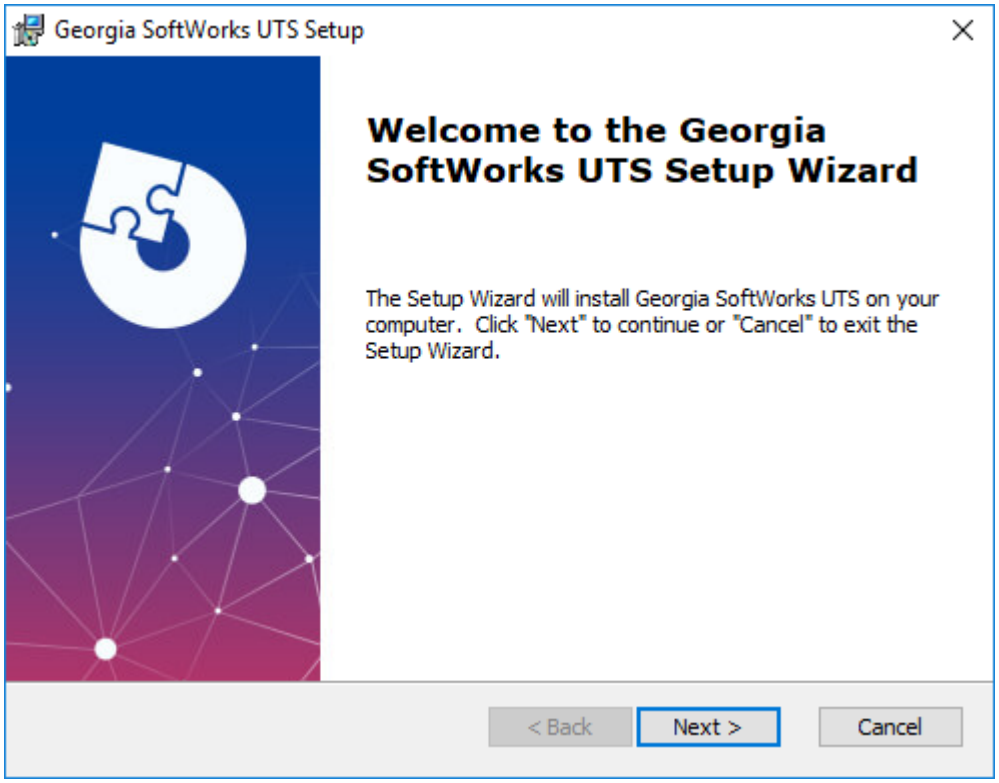

Figure 5: GSW UTS x64 Initial Setup Dialog - Welcome

Power Users: **.msi** is also provided for administrators using mass deployment tools, for example GPO. Additionally .msi files are suitable for creating customized deployment configurations using Microsoft Orca and MSI transforms.

Note: You cannot install the same UTS version with both the .exe and .msi setup package programs. If you start with one, stick with it.

2. A screen is displayed indicating the directory that the Georgia SoftWorks Telnet Server will be installed. The default is C:\gs_uts. 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**.

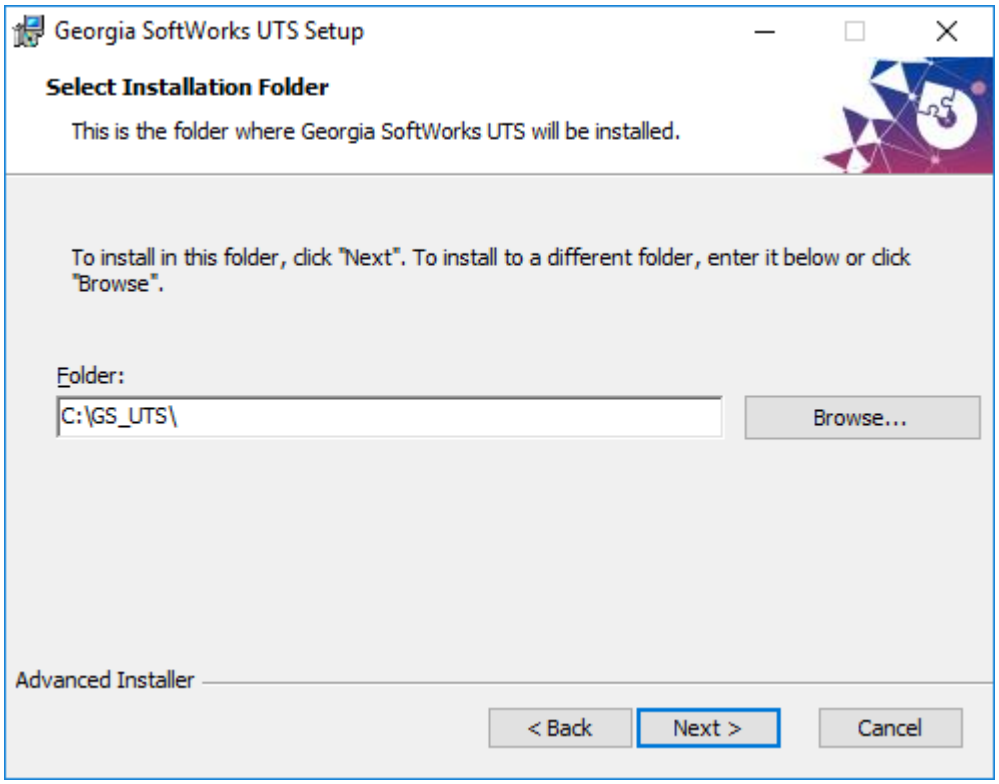

Figure 6: GSW UTS Installation Path

4. The Ready to Install dialog is displayed.

Click **Install**.

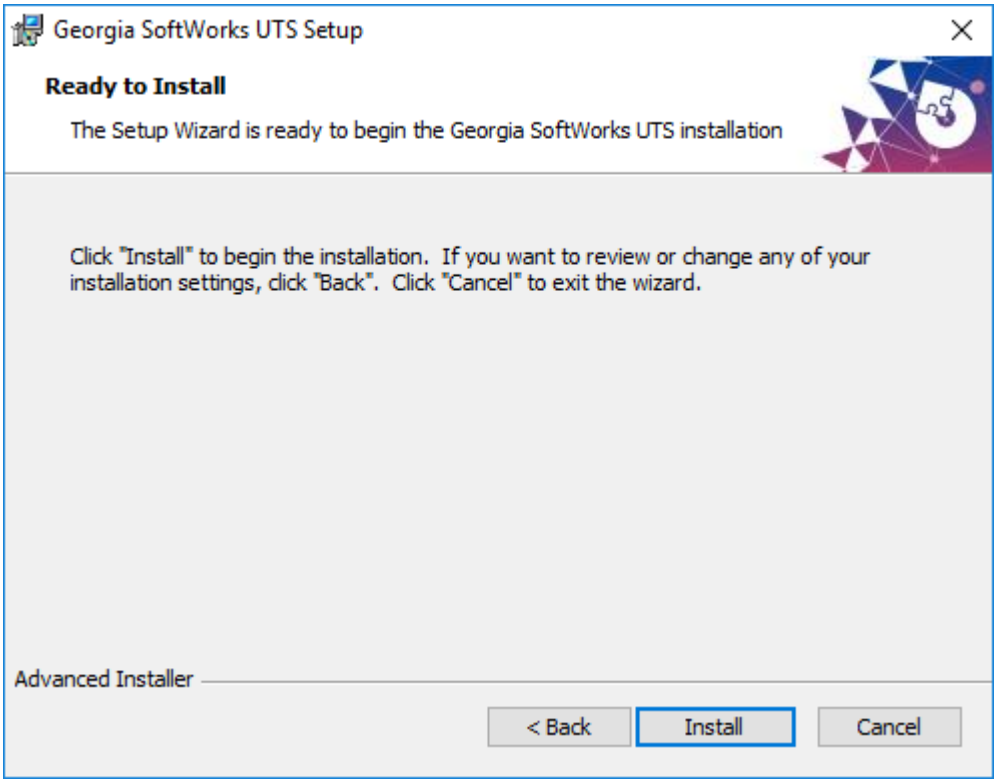

Figure 7: GSW UTS Installation Progress Meter

A progress meter window is displayed indicating the installation progress

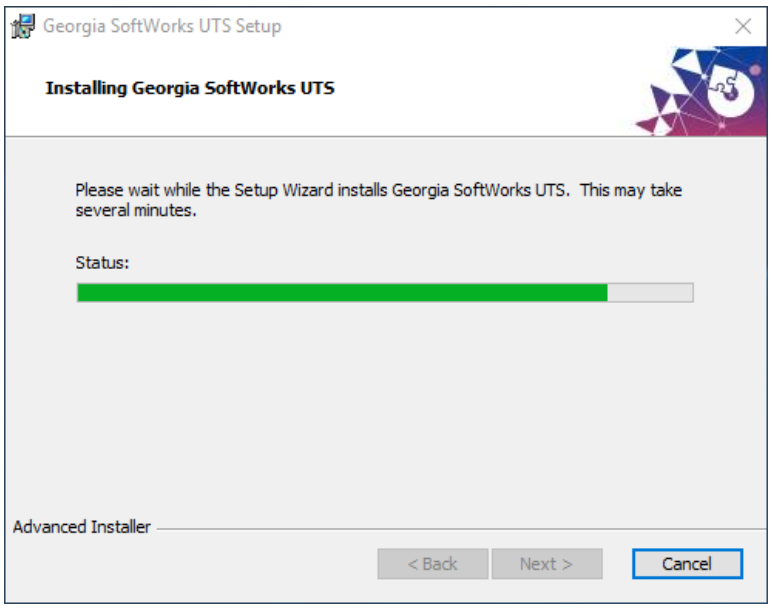

Figure 8: UTS Installation Progress meter

5. The Setup Succeeded screen is displayed. Click **Finish**. The service has been installed and is automatically started.

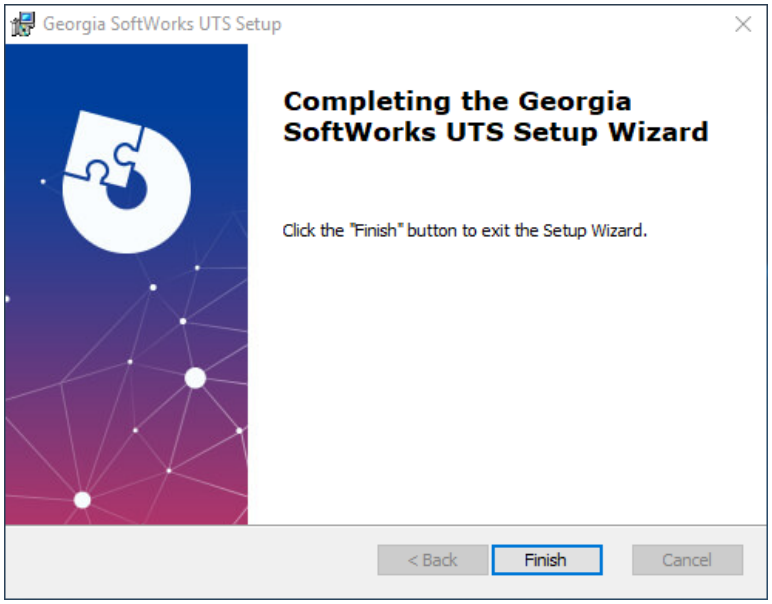

Figure 9: GSW UTS Installation Setup Succeeded

Please view the readme.txt file as it may contain late breaking information about the telnet server that has not yet made it into the user guide. Release notes are also contained in the ReadMe file. *NOTE: TCP/IP must be installed and operational. TCP/IP comes as part of Windows.*

6. A "Georgia SoftWorks UTS Program Group" is created.

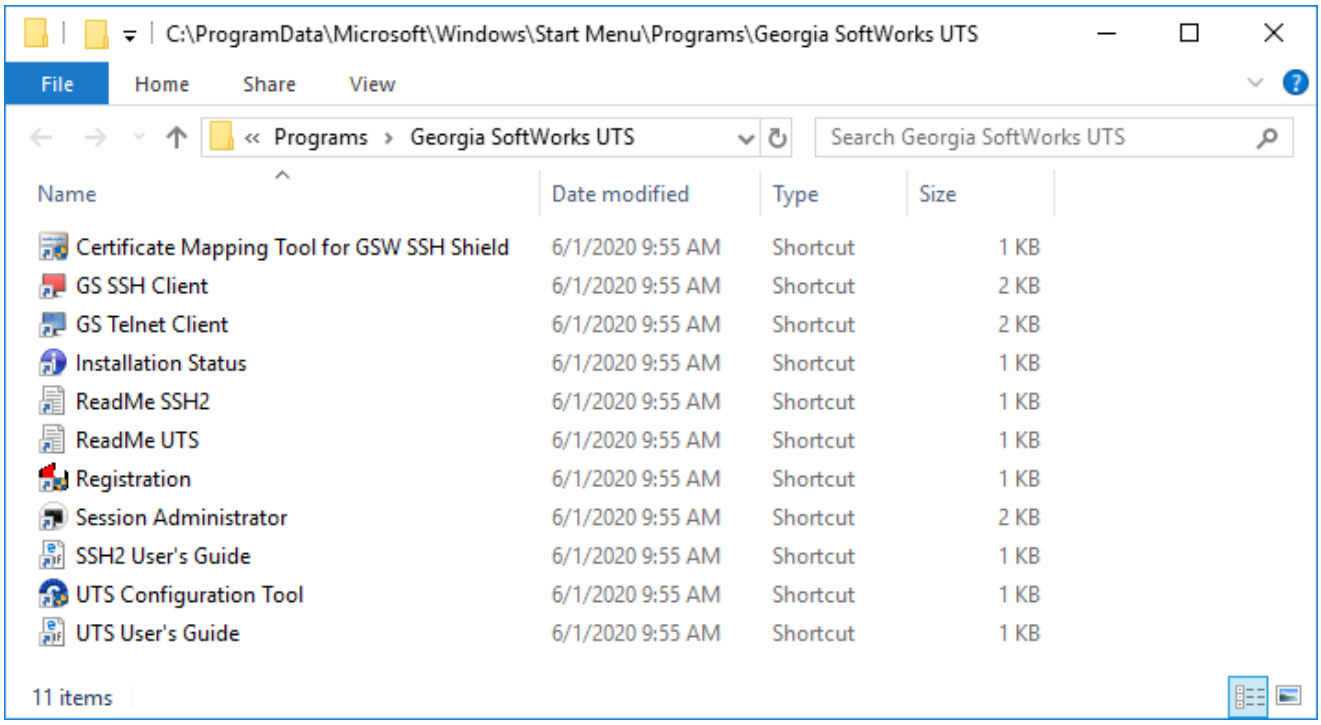

Figure 10: UTS Program Group

The items in the shortcuts in the Program Group are:

- Certificate Mapping Tool for GSW SSH Shield – Certificate to User account mapping for SSH customers.
- GS SSH Client – This is the Desktop GSW SSH Client. Use if the GSW SSH Server is installed.
- GS Telnet Client – This is the Desktop GSW Telnet Client. Use if the GSW Telnet Server is installed.
- Installation Status – This displays the GSW UTS version, the service status and if the GSW SSH Server is installed. The version and service status are also displayed for the GSW SSH Server.
- ReadMe SSH/ReadMe UTS – ASCII text file containing current release notes and other late breaking important information for both the GSW UTS and SSH Servers.
- Registration – Registration utility used to permanently activate the GSW UTS software.
- Session Administrator – Powerful tool for monitoring/shadowing sessions, broadcasting and more.
- SSH Users Guide
- UTS Configuration Tool
- UTS Users Guide – The complete User Guide in MS Word format for the UTS and SSH.

You can view the GSW Software Installation Status by double clicking on Installation Status.

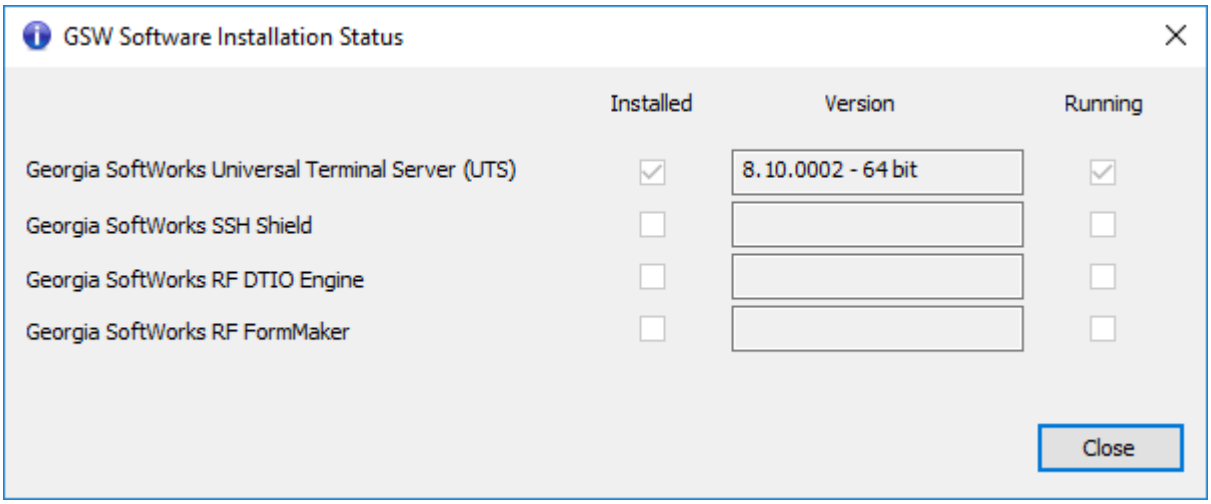

Figure 11: GSW Software Installation Status

This information indicates that the GSW UTS is installed and running. The version is also displayed and will indicate if the 64-bit edition is installed. The GSW SSH Server (SSH Shield) is also installed.

The installation status also indicates that the Georgia SoftWorks RF Directed Terminal Input/output (DTIO) Engine is not installed. This item will only be checked as installed and running if it was purchased and installed. GSW RF DTIO boosts performance and can increase the number of sessions that an application can handle in many environments. Please visit GSW website for more information on the RF DTIO Engine.

Registration

Note: If you are performing a fresh install of the 30-day trial copy, you **do not need to register** the software. Skip the registration steps.

Note: For UTS versions 7.51 and older, do not use Remote Desktop or Windows Terminal Server to perform software registration.

Two options exist for registering the license for the GSW UTS Server software. The first option is a software method that is sent to GSW using the GSTicket system. Instructions for the software registration are below. The second option is a Floating License (hardware key) that can be installed on a USB or Parallel port on the server. The registration instructions for the Floating license are on page 21.

Software Registration

To run the Georgia SoftWorks UTS Server for Windows you must first register the software. *This registration is **NOT** required if you purchased the Floating License (Page 16)*. 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 User's Guide.

How to Register the Software

To run the registration software either -

1. Click on the Registration Shortcut in the GSW UTS program group **OR**

2. Select the *Start* button on the task bar, select *Programs*, then *Georgia SoftWorks UTS* and then *Registration*.

The registration screen is displayed. The Registration software automatically fills in the Product Information fields as show in Figure 12.

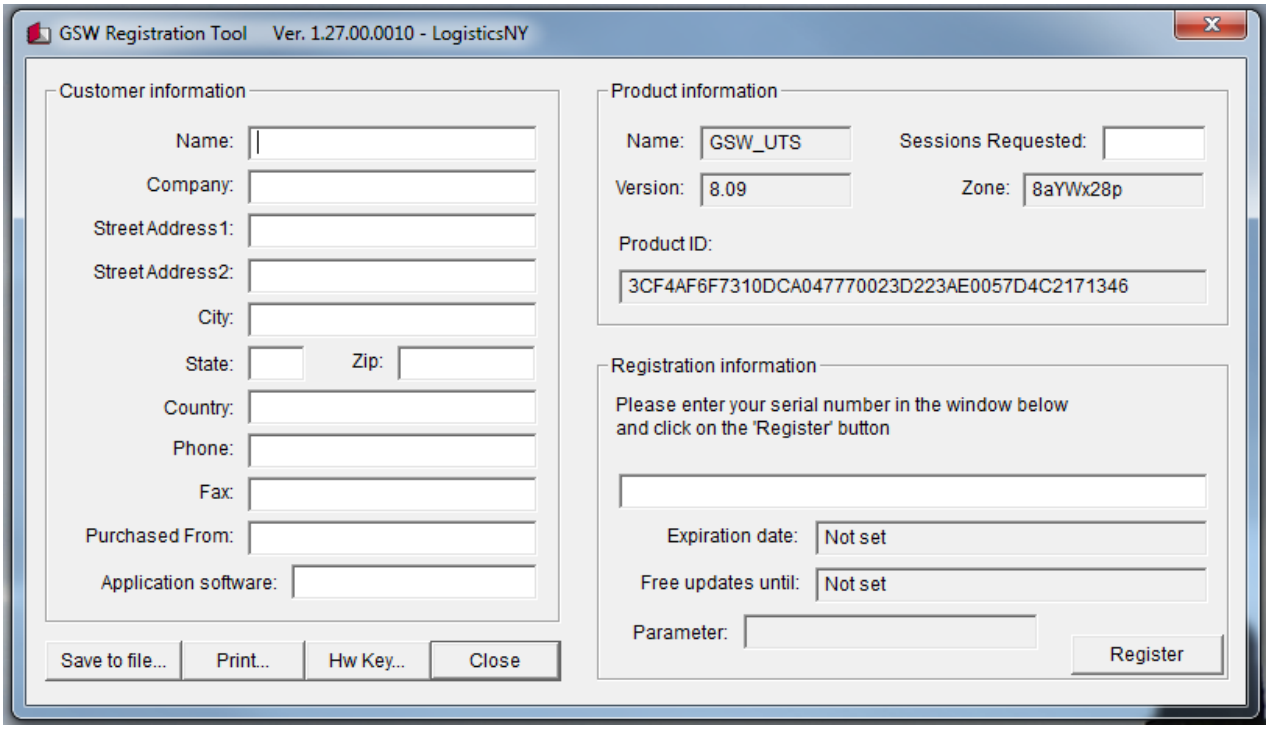

Figure 12: Registration - Initial Screen

Please complete the *Customer Information*, the *Purchased From* and the *Sessions Requested* fields in the Registration Screen. Enter the name of the software that will be your primary application to use with Telnet/SSH in the *Application software* field. Examples could be HighJump, SAP, QAD, Catalyst, System Administration, etc.

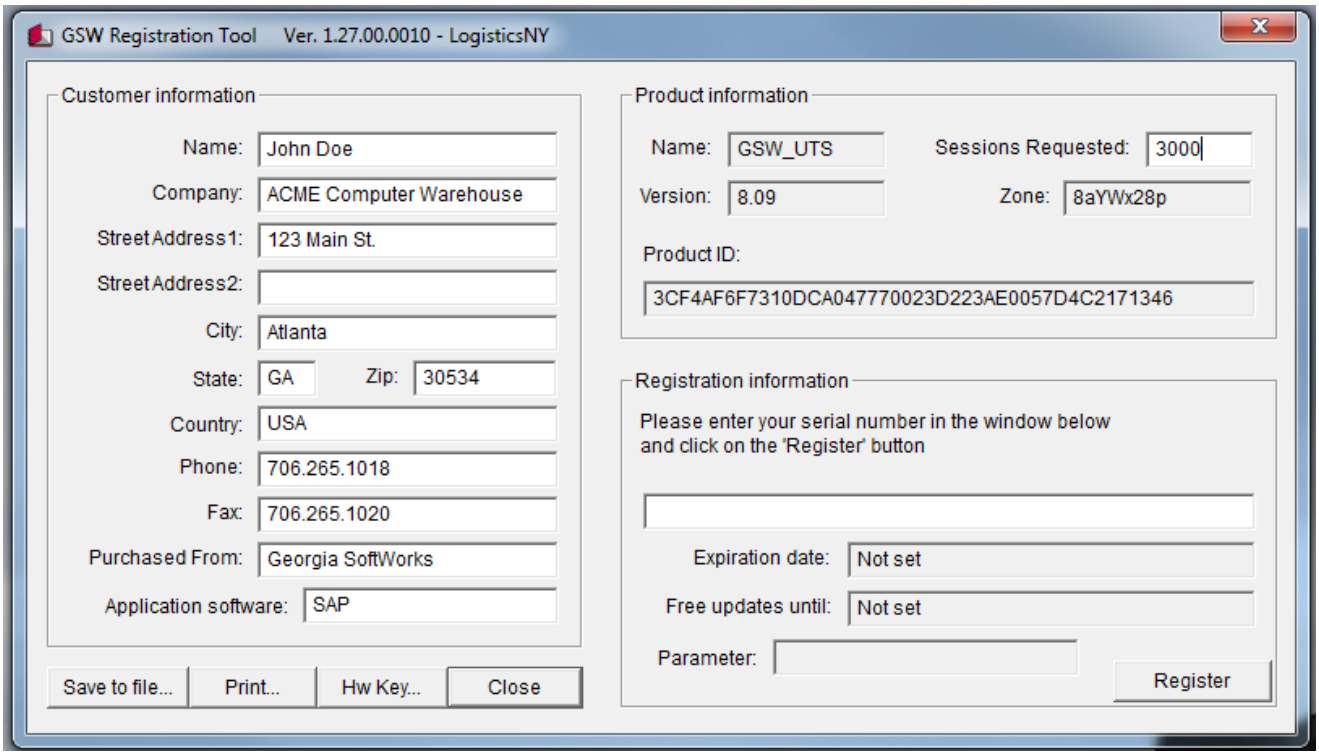

Figure 13: Registration: Customer Information Entry

Save the file using the "Save to file" button.

The registration information must be provided to Georgia SoftWorks to obtain the Serial Number. Several methods are available for your convenience.

a. Go to: https://www.georgiasoftworks.net/support_gsw/open.php to submit a ticket for Registration. Complete necessary fields and attach the file you saved in the previous step. - *Preferred method* – Fastest response time.

OR

b. Email the file to registration@georgiasoftworks.com

c. Print the information and Fax it to Georgia SoftWorks- 706.265.1020

Once Georgia SoftWorks receives the information, we can generate a Serial Number on demand and will send it to you. You may close the registration program at this time.

3. When the Serial Number is provided, Run the Registration Program again (by right clicking and **Run as Administrator**) 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`).

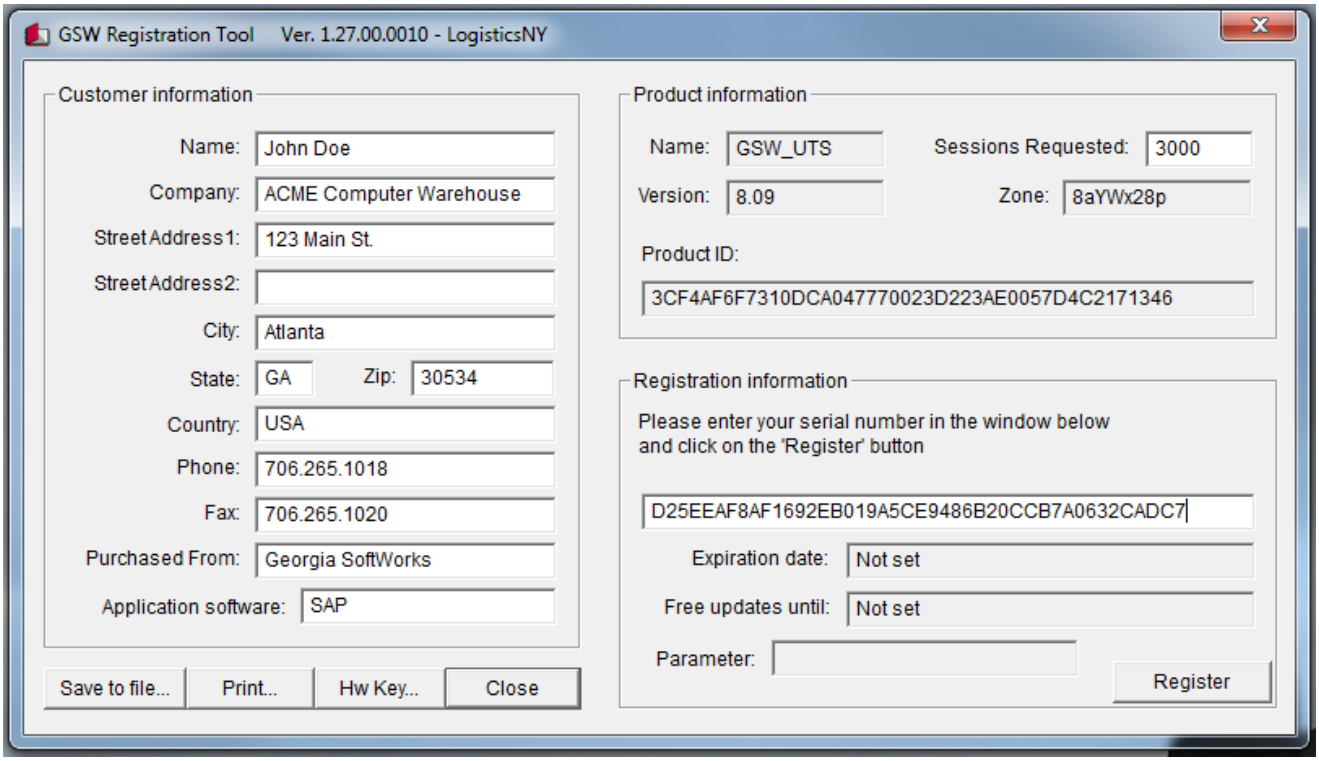

Figure 14: Registration - Serial Number Entered

4. **Click Register**.

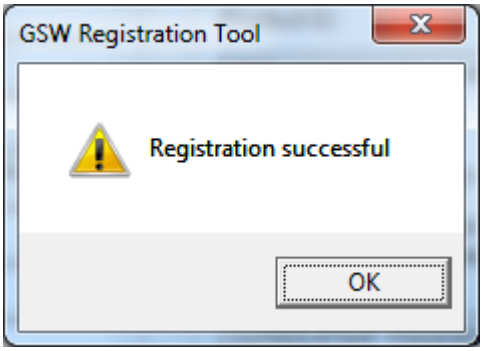

Figure 15: Registration Successful

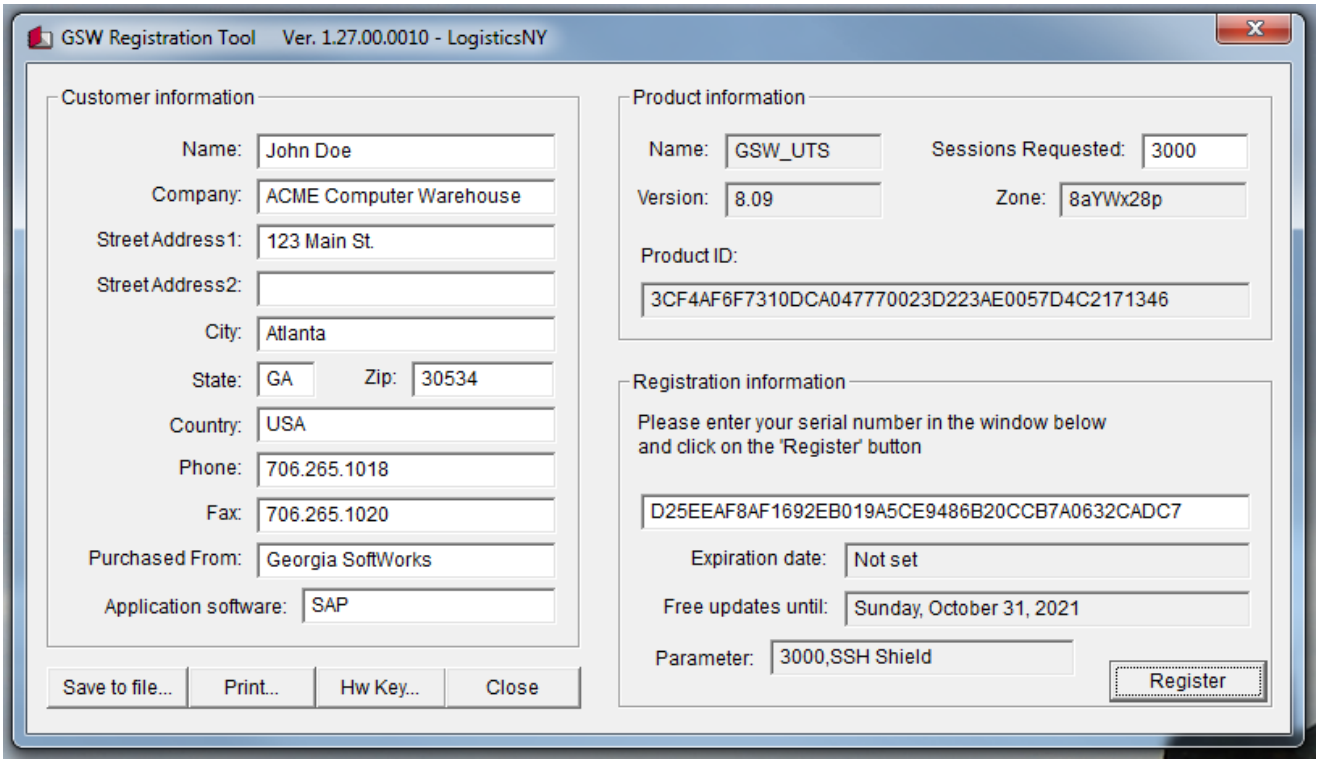

Figure 16: Registration: Complete

Now the software is registered. You may now run the Georgia SoftWorks Windows Telnet Server. Note that you will be able to obtain Free Updates until the date specified.

IMPORTANT: READ SYSTEM SIGNATURE CHAPTER AT END OF USER'S GUIDE (PAGE 420).

Registration Using a Floating License – (Hardware Key)

Georgia SoftWorks offers an *optional* Floating License for customers that require the flexibility to rapidly move the telnet server from one machine to another. *If you did not purchase the Floating License - skip this section and go to the machine specific license on page 16.*

With the Floating License No registration is required for the telnet server to operate.

Common scenarios where the Floating License is useful include:

- **Laboratory usage in a development or test environment** where the telnet server is required for short periods of time on any particular machine and then moved to a new machine.
- **Backup Servers in a production environment**. Typically, additional telnet servers are purchased for backup systems. However, with a Floating License the Hardware Key can be quickly moved from the primary machine to the backup without any other registration requirements.
- **Environments where a failed server must be replaced or rebuilt and immediately restored to operation with full telnet capability**.

The Georgia SoftWorks floating license is a hardware key that can be ordered for a USB Port or a Parallel port.

Parallel Port Floating License	USB Floating License
 Figure 17: Floating License – Parallel Port	 Figure 18: Floating License - USB Port
The Parallel Port Floating License is a Pass Through allowing normal function of the port.	Not attached to a Server
The Parallel Port Floating License connects to a female parallel port on the server and does not impact functionality of the port for other uses. It acts pass though allowing normal connections to the other side of the key.	 USB LED Lights when Installed

Table 1 - Floating Licenses - Parallel and USB Ports

The SSH2/Telnet server will recognize the presence of the key and activate the software for the correct number of sessions and the proper date for which free version upgrades can be obtained. It does not matter which parallel or USB port on the server the Hardware Key is installed, as all ports will be scanned for the installation of the key.

The Floating License currently is installed using the manufacturer SafeNet, previously Aladdin of the hardware key setup program. It is described below. The name of the hardware key is HASP4 and you will see it displayed in the setup screens. The best drivers for the HASP4 are the HASP HL drivers.

Floating License – Hardware Key Installation Instructions

Note: If you are using a *USB Floating License on a Windows NT system* - run the file aksnt4usb.exe prior to the following steps.

1. Copy the files from the Floating License folder (hardkey) to the hard drive on your server.

2. Run the HASPUserSetup.exe program and follow the installation instructions. After installation of the hardware key install the GSW Telnet Server as described on page 9 (if it is not already installed). See the GSW SSH Server User's Guide for installation instructions of the GSW SSH Server.

3. 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`

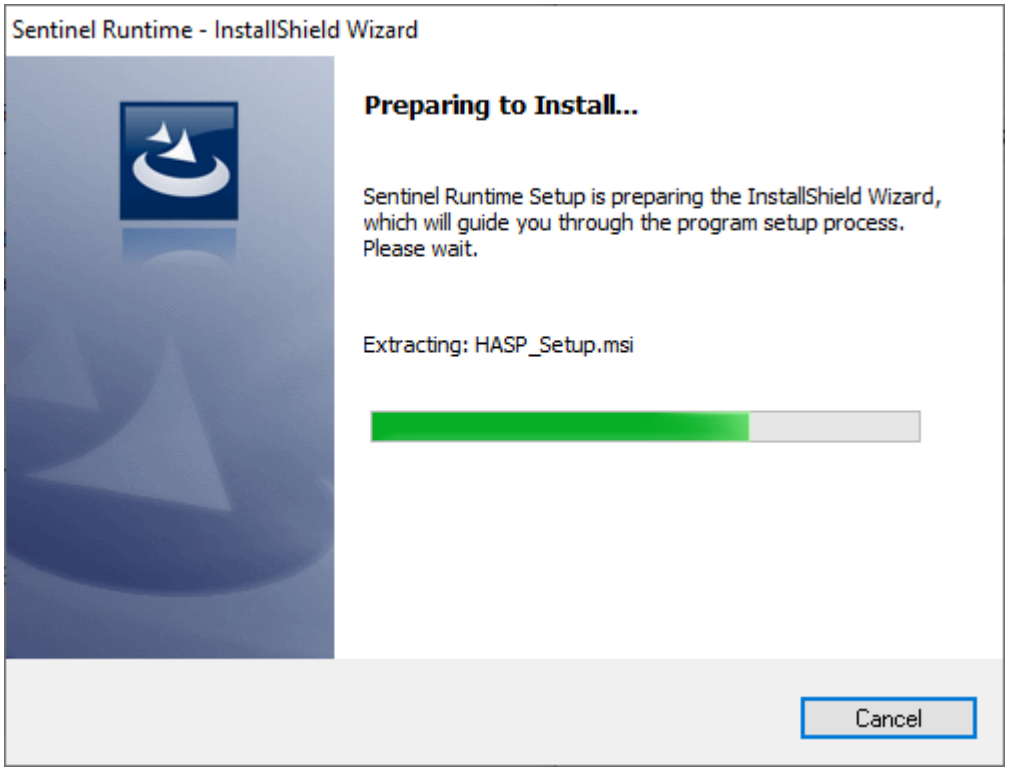

Figure 19: Hasp Preparing to Install

4. You will first see the gemalto (formerly SafeNet) initial Welcome Screen.

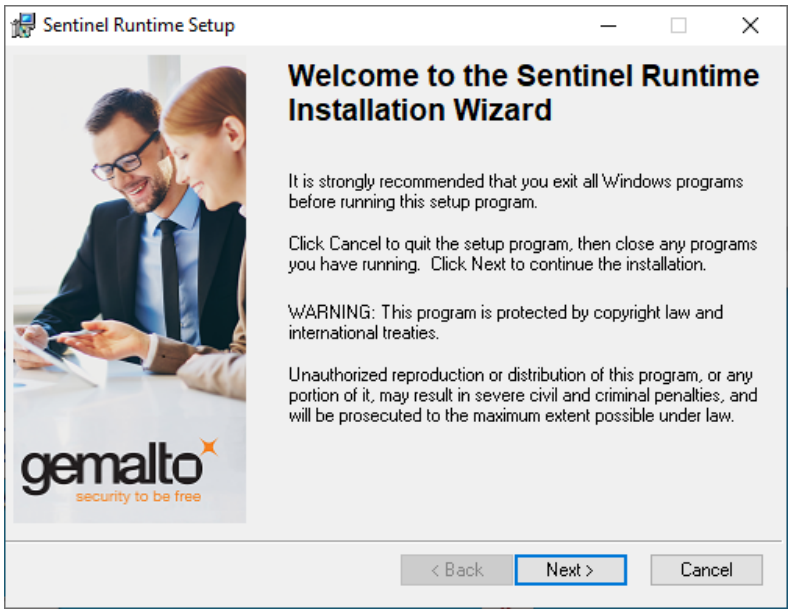

Figure 20: Sentinel welcome screen

Click Next

5. The next screen displayed is the gemalto License Agreement screen.

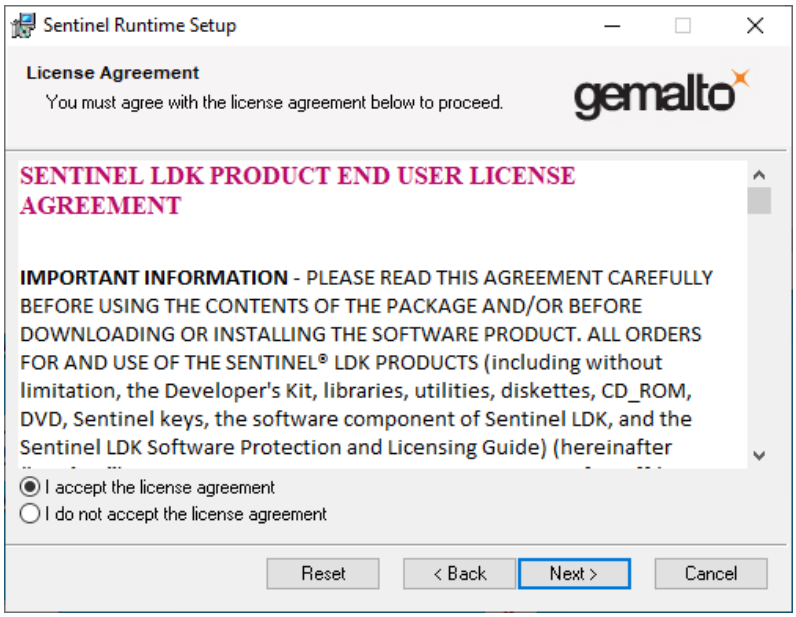

Figure 21: SafeNet License Agreement

Read the license agreement and select “I accept the license agreement”

Click Next

6. Ready to Install Sentinel Runtime Setup

   Click Next.

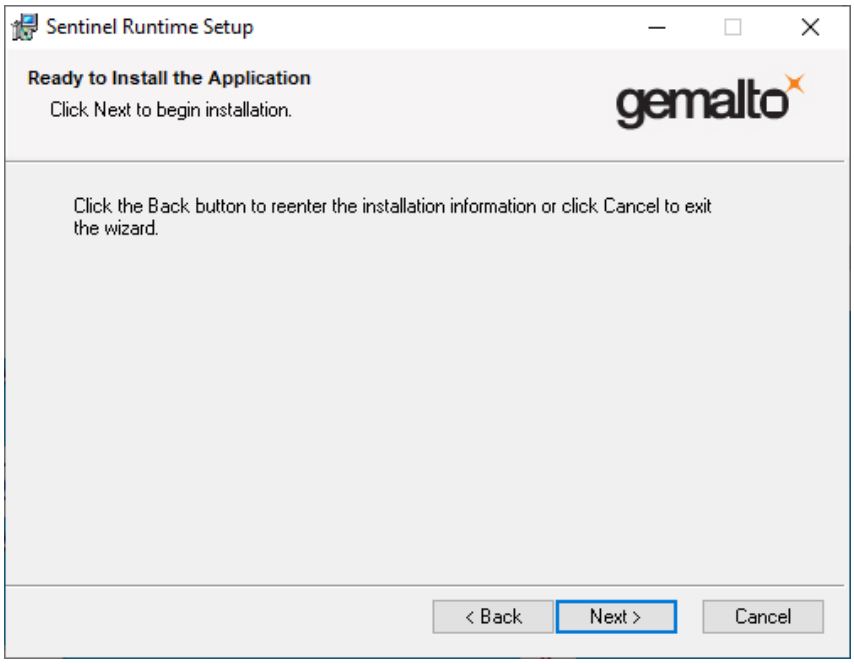

Figure 22: gemalto Sentinel Runtime Setup

7. Install Drivers - Progress bar, updating system.

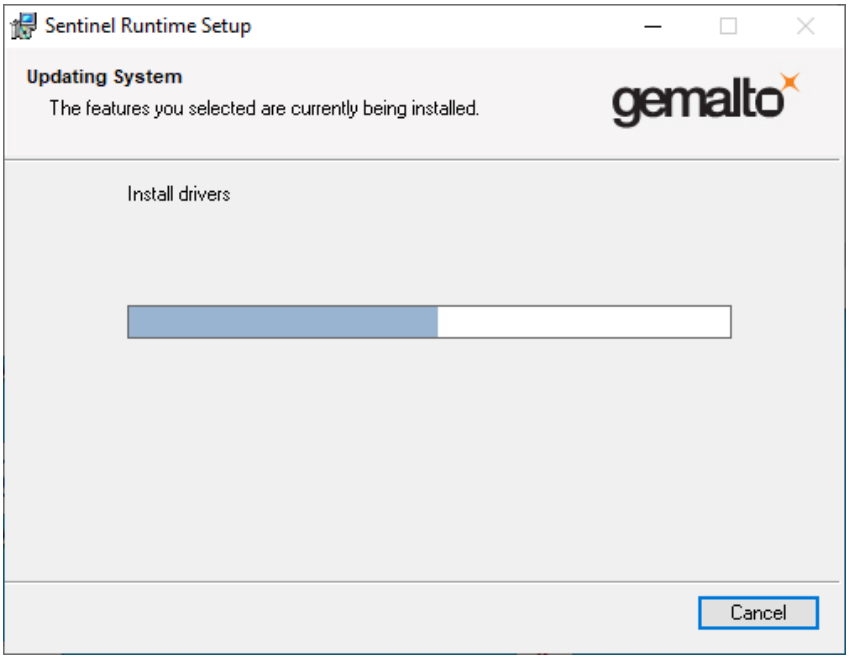

Figure 23: gemaltor Sentinel Runtime Setup Progress bar

8. Gemalto Sentinel Successfully Installed.

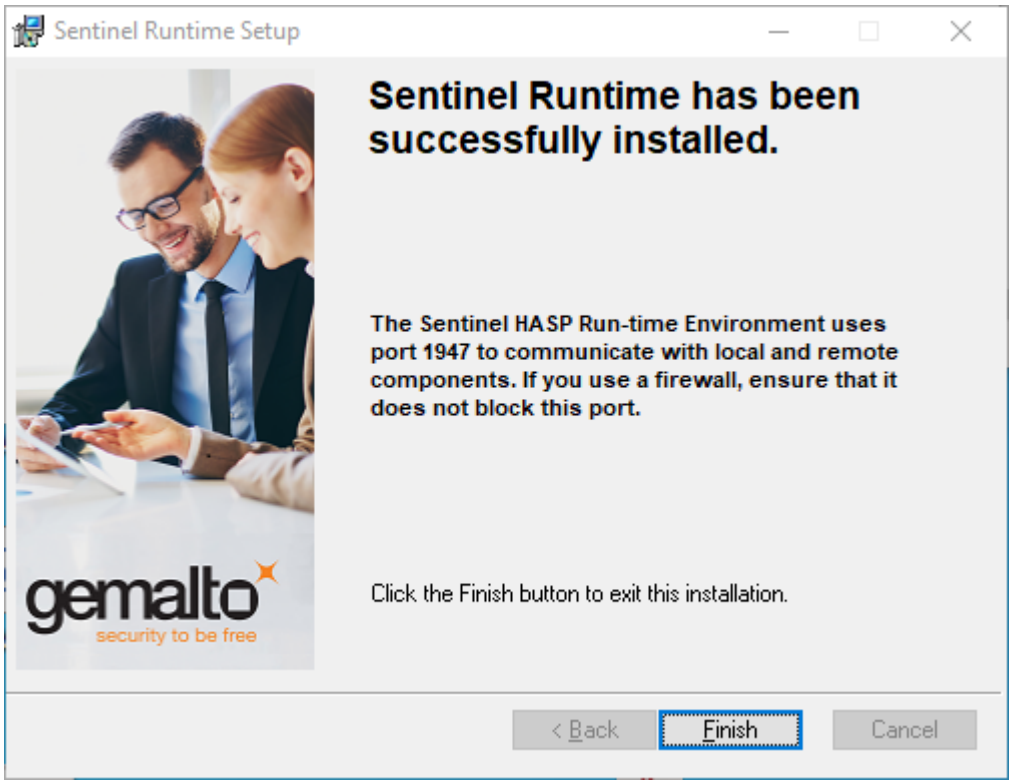

Figure 24: SafeNet Validating Install

Click Finish.

9. Plug the hardware key onto the parallel or USB port on the server.

   NOTE: On some systems you may have to reboot the server after installation. If the Floating License is not recognized (by the UTS) after installing the driver, please reboot the server.

Uninstall Floating License – (Hardware Key)

In the event that you need to uninstall the Floating License (SafeNet HaspHL) please use the Windows Control Panel Add/Remove Programs administrative utilities.

NOTE: Removing or uninstalling the Floating License will disable the GSW UTS Server.

GSW UTS CLIENTS

In addition to the GSW UTS clients the Georgia SoftWorks UTS Server is compatible with all Telnet or SSH compliant third-party clients.

All the powerful and popular GSW Client options and features described in the GSW UTS are available both for the GSW Telnet Server and GSW SSH Server except where specifically noted. Georgia SoftWorks offers Telnet/SSH Clients for the following platforms:

Operating System	GSW Telnet Client	GSW SSH Client	Client Type
Window 98/ME	Yes	Yes	**GSW DESK TOP CLIENT**
Windows NT 4.0	Yes	Yes	
Windows 2000	Yes	Yes	
Windows XP	Yes	Yes	
Windows 2003	Yes	Yes	
Windows Vista	Yes	Yes	
Windows 2008/2012/2016/2019	Yes	Yes	
Windows 7/8/10	Yes	Yes	
			GSW Mobile Pocket PC Device Clients
Windows CE .NET 4.2/5/6+	Yes	Yes	GSW Windows CE .NET 4.2/5/6+ Client
Pocket PC 2003	Yes	Yes	GSW PPC2003 Client
Windows Mobile 2003	Yes	Yes	GSW PPC2003 Client
Windows Mobile WM5, WM6+			GSW WM56 client or PPC2003 client
LXE MX3X Teklogix 7535 devices Teklogix 8525 Symbol MC9060G Intermec CK30, CV60 (All of these devices when Running Windows CE .NET 4.2/5/6+)	Yes	Yes	GSW Windows CE .NET 4.2/5/6+, WM6+ Clients
			GSW Java Clients
Java Client	Yes	No	
Java Applet	Yes	No	

Table 2 - GSW SSH Client Platforms

Both the Windows SSH and the Telnet clients are included with the Georgia SoftWorks UTS. Please note that only the clients appropriate for the server purchased will be able to connect. In other words, if you have a Telnet Server, only GSW Telnet and compliant third-party clients will connect. If you have the GSW SSH Server only GSW SSH and compliant third-party clients will be able to connect.

NOTE: SSH clients can NOT connect to the Telnet Server and Telnet clients cannot connect to the SSH Server.

For Android customers, GSW ConnectBot is a GSW Android SSH/Telnet Client product that can be purchased separately. It has the strongest security of any commercially available SSH client for Android. Learn more about it here (https://www.georgiasoftworks.com/connectbot-client-android)

GSW Clients and Operating Systems Diagram

The following diagram may be helpful in visualizing the GSW Client to use with various Windows Operating Systems.

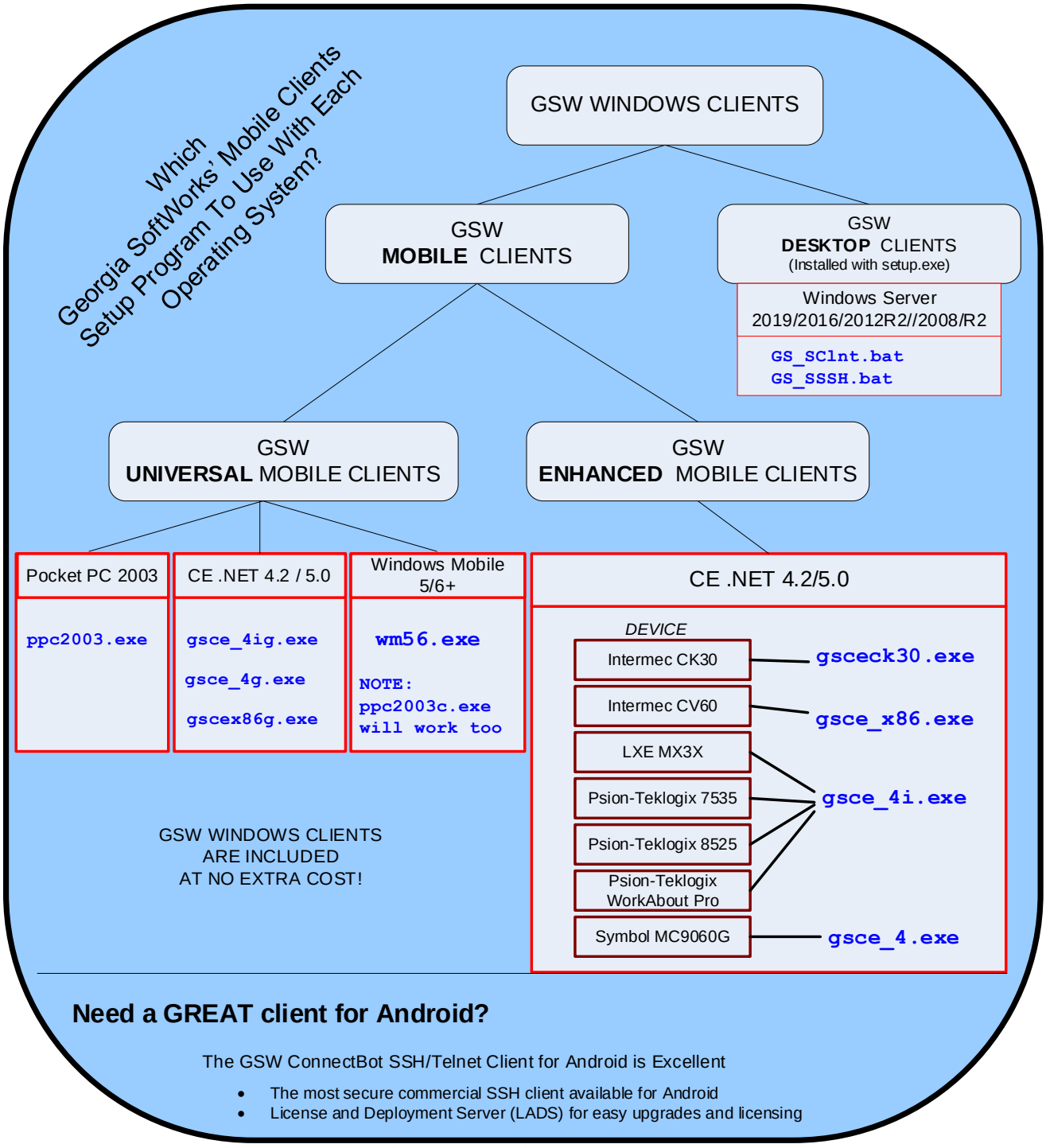

Figure 25: GSW Client and Operating System Diagram

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GSW Client Support for Voice Enabled Control

Georgia SoftWorks has collaborated with Vangard Voice Systems, Inc. to develop and implement the required software to enable the UTS Mobile and Desktop clients to operate with AccuSpeech® Mobile, their enterprise voice solution. Vangard Voice System's solution creates a custom voice-user interface for controlling existing mobile, devices, application and business processes. Configuration is simple.

The robust, full featured GSW UTS installed at thousands of mission critical location around the world, coupled with Vangard's AccuSpeech® Mobile provides a reliable and innovative solution that is nothing less than a quantum leap in mobile workforce productivity.

The GSW Windows Clients are now voice enabled for operation with AccuSpeech Mobile so workforces can voice-collect, access and transact information, while performing and focusing on the task at hand.

GSW UTS Windows Mobile and Desktop clients support Vangard Voice Systems, Inc. AccuSpeech® Mobile on Windows and are enabled by GSW Client configuration.

UTS and GSW Windows clients version 8.04 or higher is required for Vangard Voice AccuSpeech support.

Configuration of the GSW UTS clients to enable operation with Vangard Voice AccuSpeech Mobile is described on page 307.

GSW Desktop Clients

Installation Steps

The GSW Desktop (Telnet and SSH) clients are automatically installed on the computer that the UTS is installed.

To install the GSW Desktop clients on other Windows computers the following:

Run the `gsw_uts_clients.exe` (recommended) or `gsw_uts_clients.msi` program. They are located in the GS_UTS Desktop folder.

The Welcome screen of the setup program is displayed. Remember that you must have administrative privileges to install this program. Click **Next.**

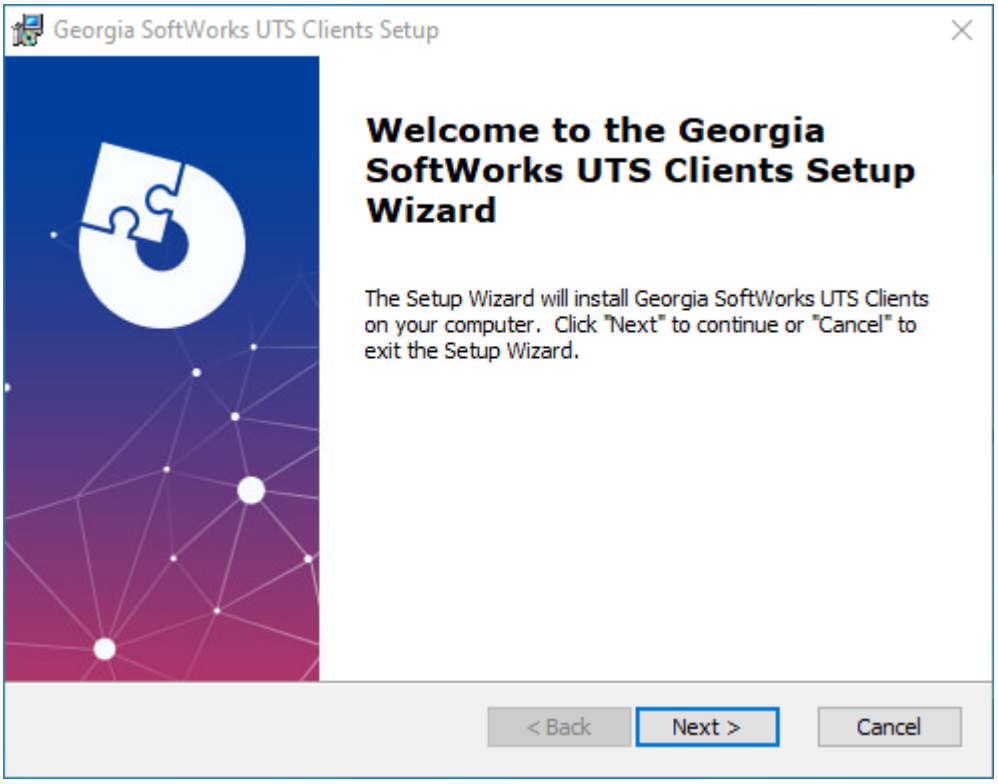


Figure 26: GSW UTS client Initial Setup Dialog - Welcome

Power Users: **.msi** is also provided for administrators using mass deployment tools, for example GPO. Additionally .msi files are suitable for creating customized deployment configurations using Microsoft Orca and MSI transforms.

Note: You cannot install the same UTS Clients version with both the .exe and .msi setup package programs. If you start with one, stick with it.

2. A screen is displayed indicating the directory that the Georgia SoftWorks desktop clients will be installed. The default is C:\gs_uts. 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 **Continue**.

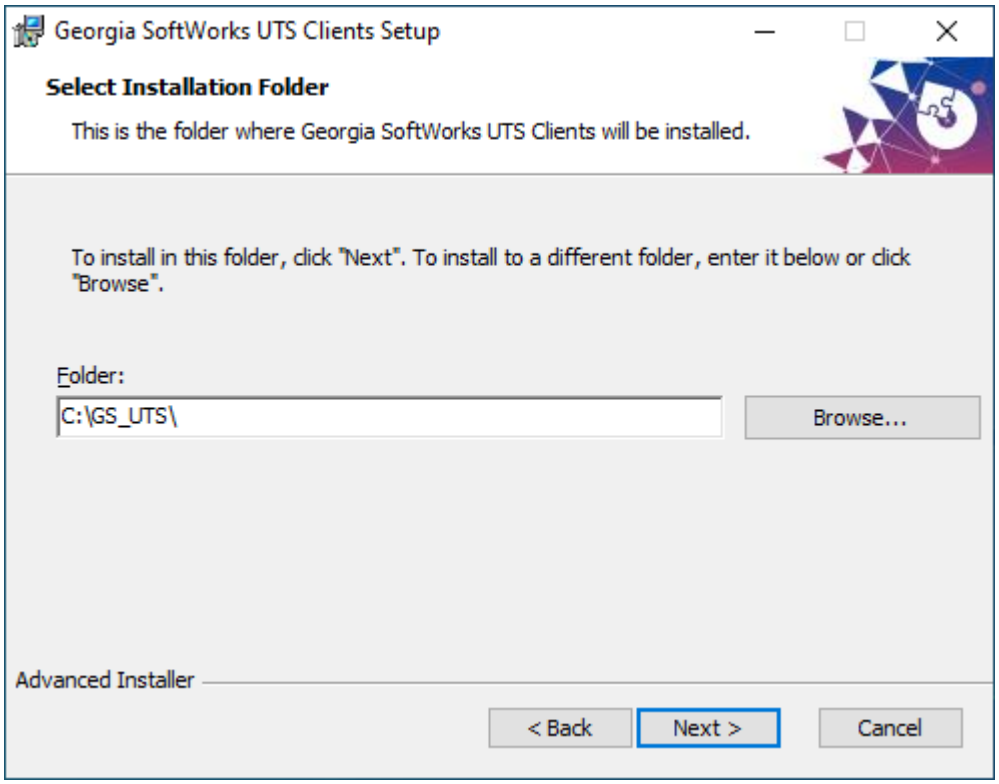


Figure 27: GSW UTS Desktop Client Installation Path

4. The Ready to Install dialog is displayed.

Click **Install**.

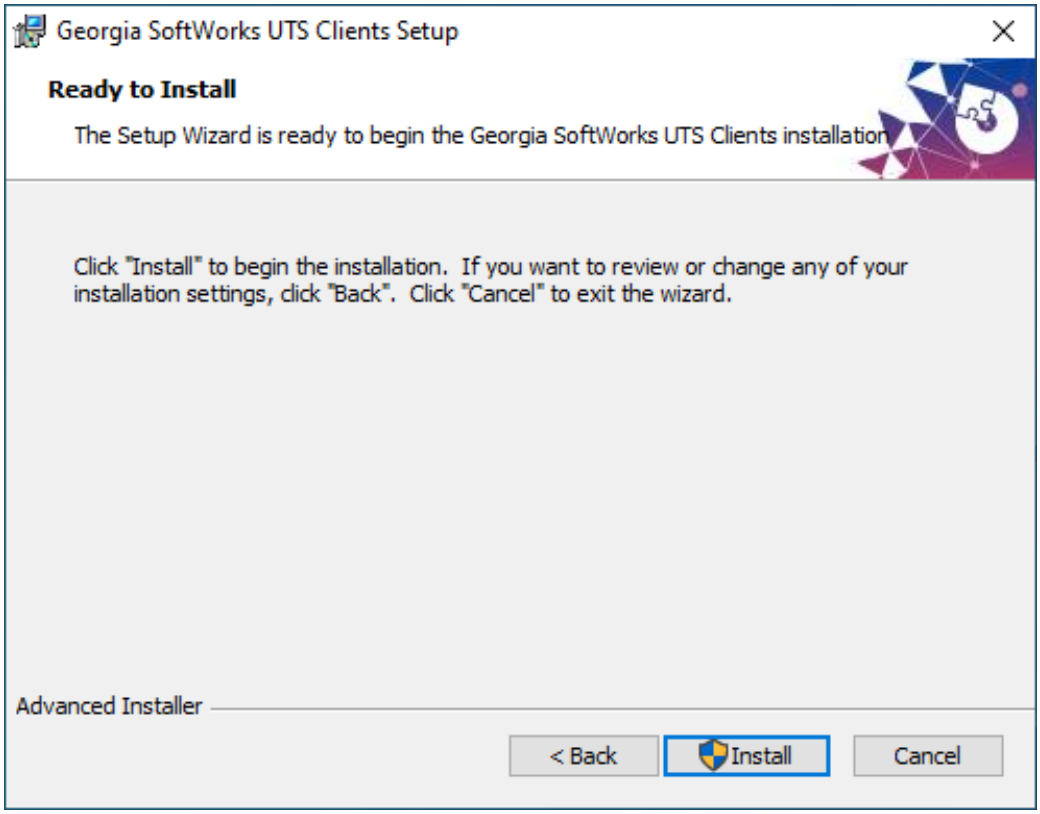


Figure 28: GSW UTS Clients "Ready to Install" dialog

Click **Install**.

You will get a User Account Control prompt asking if you want to allow Georgia SoftWorks UTS to make changes to this device. (your computer).

Click **Yes**

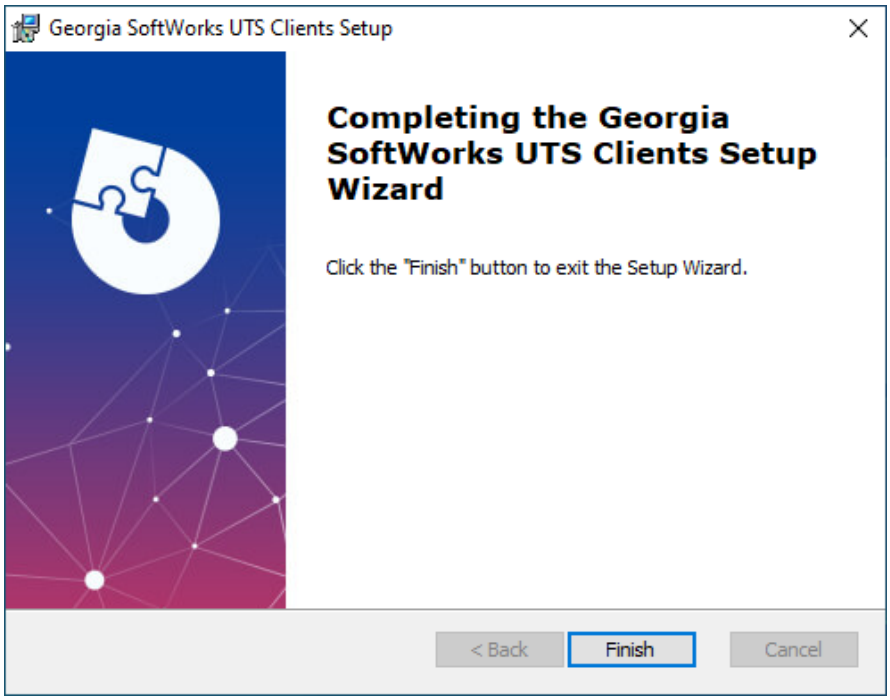


Figure 29: GSW UTS Clients Install is complete.

Click **Finish**.

You can now use the GSW Telnet / SSH Clients.

A program group will be created.

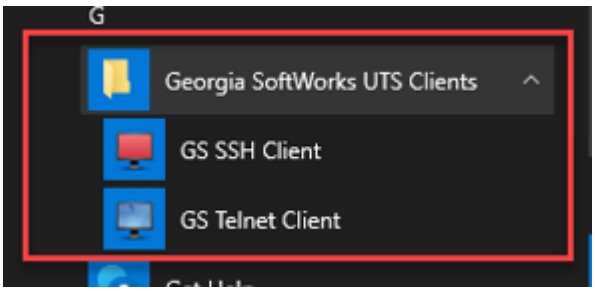


Figure 30: GSW UTS Desktop programs group.

UN-Install

To uninstall the Georgia SoftWorks Windows Software, use the Windows Apps & Features Uninstall.

GSW Mobile Clients

Georgia SoftWorks provides mobile clients for PPC 2003, Windows Mobile and Windows CE .NET 4.2/5.0+ class devices. As with the GSW desktop clients, the GSW Windows Mobile Clients are no extra cost, which can amount to a substantial savings. For Android customers, GSW ConnectBot is an Android client product which can be purchased separately. GSW Windows Mobile Clients are categorized into Universal Mobile Clients and Enhanced Mobile Clients. An overview of each follows.

GSW Universal Mobile Clients Overview

GSW Universal Mobile Clients eliminate the need for operation verification for specific devices by GSW. The Universal Mobile Client can simply be installed by the customer. This opens a broad range of compatible devices while maintaining the rich feature set provided by GSW Mobile Clients.

Universal Mobile Clients for Windows CE .NET 4.2/5/6+

The GSW Universal Mobile Clients for Windows CE .NET 4.2/5/6+ are designed to be compatible with all Windows CE .NET 4.2/5/6+ systems running on ARMv4+, ARMv4i+ and x86 based devices. Each device type requires a particular Universal Mobile Client. The Mobile Client and the location of its setup program are identified in the table on page 34.

GSW Universal Mobile Clients for Windows Pocket PC, Windows Mobile 2003/WM5/WM6+

The GSW Universal Mobile Client for Pocket PC 2003 is designed to be compatible with all Pocket PC and Windows Mobile systems running on ARMv4+ based devices. The Windows Pocket PC and Windows Mobile devices that are based on the ARMv4+ architecture each require a particular Mobile Client. The Mobile Client and the location of its setup program are identified in the table on page 33.

In some cases, for particular devices there may be features available that may not be obvious. When appropriate we have provided special instructions on how to take advantage of those features. Additionally, there may be devices that have been verified for correct operation. Please review page 36 to see if your particular device has special instructions, tips or has been officially qualified.

In many mission critical environments operation verification by GSW may be a requirement. If your company would like operation verification please contact us at sales@georgiasoftworks.com or call 706.265.1018 for more information.

GSW Enhanced Mobile Clients for Windows CE .NET 4.2/5/6+ Overview

In addition to the Universal GSW Mobile Clients, specialized or *Enhanced Clients* are available for many devices that take advantage of **device specific** features. Device specific features range from special key and light operation to application locking features. Each Enhanced Mobile Client has a *Tips* section that should be reviewed. To determine if your device has Enhanced Mobile Client please see the table on page 35.

GSW Enhanced Mobile Clients with verified operation on Windows CE .NET 4.2/5/6+ devices include the Intermec CK30, CK31, CV60, LXE MX3X, Symbol MC 9060G MC9090G, Psion-Teklogix 7535, Psion-Teklogix 8525, Psion-Teklogix WORKABOUT Pro. Other CE .NET V4.2/5.0+ based devices may be compatible but have not been certified as of this writing.

If you have a device that has unique capabilities and would like custom client features please contact us at sales@georgiasoftworks.com or call 706.265.1018 for more information.

Select the correct GSW Windows Mobile Client

- If your device is running Android, then look at the GSW ConnectBot for Android. It has the strongest SSH security of any commercial SSH client for Android available. It operates as a 3rd party client meaning it will connect with any telnet/ssh server that is protocol compliant.
- If your device is a Windows Mobile 5, 6+ then use the GSW mobile client setup program `WM56c.exe. However, the ppc2003c.exe will also run fine.`
- If your device is a PPC 2003/Windows Mobile then use the GSW mobile client setup program `ppc2003c.exe`
- If your device is running Windows CE .NET 4.2/5/6+, look at the table on page 35 to determine if an Enhanced GSW Mobile Client is available. If so, then use the GSW Enhanced Mobile Client Setup Program Identified in the table and be sure to look to see if any *Tips* are available for that client.
- If your device is running Windows CE .NET 4.2+ and an Enhanced GSW Mobile Client is not available then you can use a Universal GSW Mobile Client.
    - If your device type is ARMv4i+ then use `gsce_4ig.exe`
    - If your device type is ARMv4+ then use `gsce_4g.exe`
    - If your device type is X86 then use `gscex86g.exe`
    - If you do not know the device type then
        - First - Try the `gsce_4ig.exe` client, if that does not work - then
        - Next – Use the `gsce_4g.exe` client, if that does not work - then
        - Last – Use the `gscex86g.exe` client

	GSW Mobile Client Installation Programs		
	GSW mobile clients are located in a subfolder on the CD or where the download was unzipped with one of the following names		
	GSW Universal Mobile Clients		
	Operating System	Device Type	**GSW Client Setup Program location / name**
	Windows CE .NET 4.2/5/6+	ARMv4+	/clients/gsce_4g.exe
		ARMv4i	/clients/gsce_4ig.exe
		X86	/clients/gscex86g.exe
	PPC 2003	ARMv4+	/clients/ppc2003c.exe
	Windows Mobile 5,6+		/clients/wm56c.exe or
			/clients/ppc2003c.exe

Table 3 - GSW Mobile Client Setup Program Locations

Note: ARMv4+ includes ARMv4, ARMv5, and ARMv7 etc.

	GSW Enhanced Mobile Clients for Windows CE .NET 4.2/5/6 Devices		
	Operating System	Device Type	**GSW Client Setup Program location / name**
	Windows CE .NET 4.2/5/6+	ARMv4+	/clients/gsce_4.exe
		ARMv4i	/clients/gsce_4i.exe
		ARMv4i	/clients/gsceck30.exe
		X86	/clients/gsce_x86.exe
	NOTE: See the table (page 35) for Enhanced Mobile Clients to determine if your devices can use one of the above clients.		

Table 4 - GSW Mobile Client Setup Program Locations - continued

Installation steps

1. Install current version of the Georgia SoftWorks UTS Server (Version 6.50 or higher).
2. Determine the location and name of the GSW Mobile Client Setup program for your device. See page 33.
3. Copy the appropriate setup executable to the computer which established partnership with your device.
4. Turn on your device.
5. Start the Mobile Device Center or Active Sync on the device and connect.
6. Run the self-extracting executable on the computer selected in Step 3.
7. Confirm the prompts asking to continue with the installation.
8. You should see the setup program launched on your device.
9. Press the OK button on the device to complete the installation.

Please review any Tips for your device in the Enhanced (page 35) and Universal clients section (page 36).

Enhanced GSW Windows Mobile Clients List

GSW has Enhanced Mobile Clients for the following devices that take advantage of unique features on the listed devices. **Be sure to review the Tips section for each device**.

Enhanced GSW Mobile Client Names for Windows CE .NET V4.2/5/6 Devices			
	Device Model	**Device Type**	**GSW Client**
	Intermec CK30/CK31 *Tips for CK30/CK31 Devices on page 58*	ARMv4i	`gsceck30.exe`
	Intermec CV60 *Tips for CV60 Devices on page 60*	X86	`gsce_x86.exe`
	LXE MX3X *Tips for LXE MX3X Devices on page 63*	ARMv4i	`gsce_4i.exe`
	Psion-Teklogix 7535 *Tips for Psion-Teklogix 7535 on page 61*	ARMv4i	`gsce_4i.exe`
	Psion-Teklogix 8525 *Tips for Psion-Teklogix 8525 on page 61*	ARMv4i	`gsce_4i.exe`
	Psion-Teklogix WORKABOUT Pro *Tips for Psion-Teklogix WORKABOUT PRO on page 61*	ARMv4i	`gsce_4i.exe`
	Symbol MC 9060G/9090G *Tips for SYMBOL MC 9060G / **MC9090 devices** on page 62*	ARMv4	`gsce_4.exe`

Table 5 - Enhanced GSW Mobile Clients

continued on next page

Universal GSW Windows Mobile Clients Special Tips or Qualifications List

The GSW Universal Mobile Clients operate on ARMV4, ARMV4I and X86 devices. In some cases, special instructions or tips may exist to take advantage of unique features or provide ease of use pointers for that particular device. If there are *special tips* or a *particular device has been verified for correct operation* then it will be listed in the table below.

Devices Qualified with Universal GSW Mobile Client for CE .NET V4.2 +			
	Device Model	**Device Type**	**GSW Client**
	PSC Falcon 4410 Tips for PSC Falcon 4410 *on page 65*	ARMv4i	`gsce_4ig.exe`
	Datalogic Elf CE 6.0	ARMv5	`gsce_4g.exe`
	Datalogic Falcon X3 CE 6.0	ARMv5	`gsce_4g.exe`
	Honeywell Dolphin 6500 CE 5.0	ARMv5	`gsce_4g.exe`
	Honeywell LXE Thor CE 6.0	X86	`gsce_x86.exe`

Table 6 – Devices qualified with Universal GSW mobile clients for Win CE

continued on next page

Devices Qualified with Universal GSW Mobile Client for CE .NET V4.2+			
Device Type	**GSW Client**		
	Janam XG100 CE 6.0	ARMv5	`gsce_4g.exe`
	Motorola MC9190 CE 6.0	ARMv5	`gsce_4g.exe`
	Motorola Psion Teklogix Omni XT10 CE 6.0	ARMv7	`gsce_4ig.exe`

Table 7 - Devices qualified with Universal GSW mobile clients for Win CE

continued on next page

Devices Qualified with Universal GSW Mobile Client for Windows Mobile			
	Device Model	**Device Type**	**GSW Client**
	Bluebird Pidion BIP-6000 Windows Mobile 6.1 Pro	ARMv5	`ppc2003c.exe`
	Intermec CK71 Windows Mobile embedded 6.1 Classic	ARMv7	`ppc2003c.exe`
	Intermec CN3 Windows Mobile 5.0	ARMv5	`ppc2003c.exe`
	Honeywell Dolphin 9950 Windows Mobile 6.1 Classic	ARMv5	`ppc2003c.exe`
	Nautiz X4	ARM Cortex-A53	`Windows Mobile 6.5`

Table 8 - Devices qualified with Universal GSW mobile clients for Win Mobile

continued on next page

Devices Qualified with for Correct Operation with GSW UTS			
	Device Model	**Device Type**	**Operating System/Client**
	Bluebird Pidion BIP-6000 Android 2.3.7	ARMv5	Android 2.3.7 gsw-connectbot.apk
	MobileDemand xTablet T7000 Windows 7	X86	Windows 7
	Nautiz X2	Texas Instruments AM3715	Android 6.0 gsw-connectbot.apk
	Algiz 10X	X86	Windows 10
	Widefly WF 68 Mobile Computer	Intel	Android 6.0 gsw-connectbot.apk

Table 9 - Other devices that operate with the GSW UTS

continued on next page

Devices Qualified with GSW UTS			
Device Type	**Device Model**	**Device Type**	**Operating System**
	Janam XG100 CE 6.0	ARMv5	Windows gsce_4g.exe
	Janam XG200	Qualcomm Snapdragon	Android gsw-connectbot.apk
	Janam XM75	Qualcomm Snapdragon	Android gsw-connectbot.apk
	Janam XT2	Qualcomm Snapdragon	Android gsw-connectbot.apk
	Janam XT100	Qualcomm Snapdragon	Android gsw-connectbot.apk
	Janam XG3	Arm Cortex A53	CE 5.2 ppc2003c.exe

Table 10: Janam devices qualified with GSW UTS

continued on next page

Devices Qualified with GSW UTS			
Device Type	**Device Model**	**Device Type**	**Operating System**
	Cipher Labs 9700 Series	Arm Cortex A53	Android gsw-connectbot.apk
	Cipher Labs RS30	Arm Cortex A53	Android gsw-connectbot.apk
	Cipher Labs RS50	Arm Cortex A53	Android gsw-connectbot.apk
	Cipher Labs RS31	CPU Cortex A53 Quad-core 1.3GHz	Android gsw-connectbot.apk
	Cipher Labs RS51	Octa-core 1.8GHz	Android 8.0 with GMS gsw-connectbot.apk
	Cipher Labs RK 25	Quad-core 1.4 GHz Cortex A53	Android gsw-connectbot.apk

Table 11 -Cipher Labs qualified devices

continued on next page

Devices Qualified with UTS			
Device Type	**Device Model**	**Device Type**	**Operating System**
	Juniper Archer 3	1.2GHz quad-core ARM Cortex A9 i.MX6	Android gsw-connectbot.apk
	Juniper Mesa 3	Qualcomm® Snapdragon™ Octa-core Kryo™ 260	Android gsw-connectbot.apk
	Nautiz X6	Qualcomm® Snapdragon 626 MSM8953 Pro, 8 cores 2.2 GHz	Android gsw-connectbot.apk
	Keyence BT-AT700	Qualcomm Octa-core	Android gsw-connectbot.apk

Table 12 – Nautiz X6 and Keyence BTAT700 qualified devices

If your device is not in the list above and it is an Android device the GSW ConnectBot will most likely be your best choice. If your device is not in the list above and it is an ARMv4+, ARMv4i+ or X86 devices, it is likely that a Universal GSW Mobile Client will operate. Please use the steps in section above (page 33) to determine the correct mobile client.

Extended Features for Windows CE .NET 4.2/5/6+ Devices

In order to facilitate the varied commercial requirements GSW has provided extended features for the GSW Mobile Clients for Windows CE .NET 4.2/5/6. These additional features offer useful flexibility and efficiency for both the device user and the System Administrator. The table below provides a brief description of the features. The details on configuration and enabling the options follow.

	Mobile Feature Name	Brief Description
1	Stay Connected	Automatically attempts to reconnect when a session becomes disconnected
2	Allow Suspend	Power Saving Feature
3	Beep Sound	Correct Operation of Beep Sound
4	Menu Accelerators / Shortcuts	Function keys provide quick access to common menu commands
5	Free Function Keys	Function Keys, F1-F12 are freed (released) from operating system control and are available for the application
6	Raster Font Selection	Additional Raster fonts available - 9x16,10x12,10x13,12x16
7	Simplified Chinese font	GSW Mobile Clients support Simplified Chinese Font GB (True Type)
8	Select Configuration	Several configurations are allowed. This provides a quick way to select the desired configuration.
9	Portable Session Configuration	File format for Session Configuration allows easy cloning of sessions
10	Last Active Session Memory	After a restart the client returns to the last active session
11	No Scrollbars option	Save Space on Screen. Especially useful on devices with small screens. Also supported on Pocket PC 2003 devices.
12	Automatic Logon	Automatically logon without Host, Domain, Username, Password prompting
13	Keyboard Marcos	Remap Function and Special Keys to send a sequence of characters.
14	Configuration and Application Persistence	Save Mobile Client Configuration Across Reboots • Allows for ease of configuration deployment to multiple devices
15	Toggle Status & Task Bar display	Use View menu item to enable or disable the display of the status bar and/or the task bar.

Table 13 - GSW Mobile CE .NET 4.2/5.0 Client Extended Features

Stay Connected

Automatically attempts to reconnect as soon as a session is disconnected. Operates as if the connect button was pressed.

Stay Connected is enabled by selecting the option `Stay Connected`.

```
Session|Settings|Session|Stay connected
```

To break out of the automatic connection loop press

```
ctrl-shift-b
```

Allow Suspend – Power Saving Feature

To facilitate the fastest possible operation, the default GSW Mobile Client operation disables mechanisms that allow the device to suspend. There may be scenarios that require the device to Suspend. You can configure the GSW Mobile Client Software to allow the device to Suspend by setting the option `Allow Suspend`

```
Session|Settings|Session|Allow suspend
```

Beep sound – Correct Operation

No configuration is required.

Menu Accelerators / Shortcuts

In order to provide a more convenient method of configuration for the administration the following accelerator keys are available.

Note: The following Accelerators are available for all CE .Net 4.2 devices.

```
F2 – Save Session Settings

F5 – File|Session Configurations …

F6 – Session|Connect

F7 – Session|Settings

F8 – File|Exit
```

Simplified Chinese Font Support

The GSW SSH/Telnet mobile clients support Simplified Chinese fonts. Follow the steps below to setup the GSW mobile client:

1. GSW Universal Terminal Server and GSW Mobile Clients must be V7.51 or higher.
2. Install the Simplified Chinese font GB (**True Type**) on the mobile device.
3. Open the GSW SSH/Telnet client on the mobile device and navigate to:
   `Sessions -> Settings`
   Select the Font tab and select the GB font.

The Simplified Chinese font does not have to be installed on the Universal Terminal Server. **Note**: The GB font will not display in the GSW **Desktop** SSH/Telnet client or Session Administrator. GSW engineering has verified correct operation with the GB (True Type) font.

Select Configuration for Session

You can create and save a number of Session Configurations settings that you can use as needed. The Select Configuration option displays the saved Session Configurations that reside in the same folder as the GSW Mobile client software. This folder may vary from device to device so please see the tips section (in this user's guide) for your specific device to determine its location. Put another way, Session Configurations are not displayed if they do not reside in the same folder that the GSW Mobile Client software resides.

You select the desired Session Configuration by using the associated function key (`F5`). Display the Select Session Configuration by using the menu bar.

`File | Select Configuration ...`

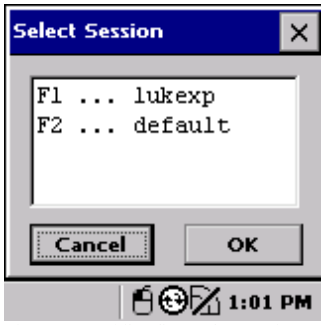


Figure 31: Mobile Client Select Session

Portable Session Configuration – A Real Time Saver!

The file format of the Session Configuration is such that it can be used to clone or duplicate the session configuration on other devices. Session device settings are kept completely in files with no external references. This provides a portable configuration file that can be used when setting up other devices. This can be a significant time saver when 40, 100 or more devices are being set up.

The configuration files have the gswtc extension. The file has an "`ini`" format with Username, Host, etc.

See also the section on application persistence capabilities to view the usefulness of the GSW automatically created CAB files when deploying GSW Mobile Clients (page 53).

Last Active Session Memory

After a restart the client returns to the last active session. This works if default. gswtc is not present (otherwise `default. gswtc` is loaded).

No Scrollbars Option

Set this option to eliminate the use of scroll bars to save screen space. The application should display itself in the top-left corner of the screen. For example, this is the position that SAPConsole assumes. Of course, this assumes that the application does not require scroll bars.

Normally Scrollbars are enabled.

The No Scrollbars option is enabled by selecting the option `No scrollbars`. `Session|Settings|Session|No scrollbars`

Check the "`No scrollbars`" box to eliminate scrollbars as shown below.

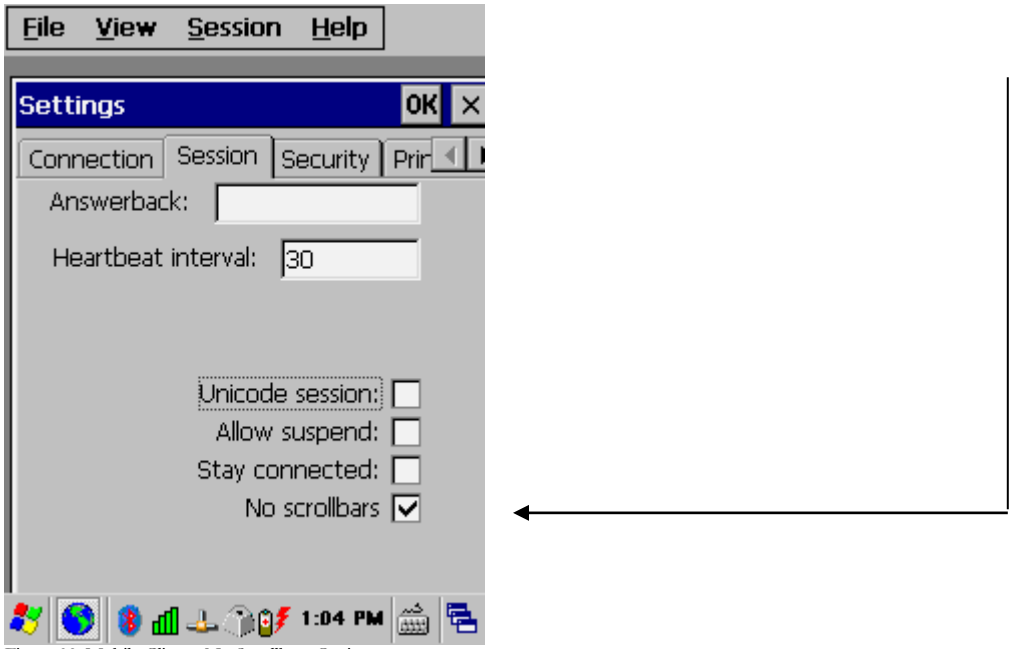


Figure 32: Mobile Client - No Scrollbars Option

Hide Status Bar and/or Task Bar

Use the view menu item to toggle the display of either the status bar and/or the task bar. Set this option just see the information you need to see.

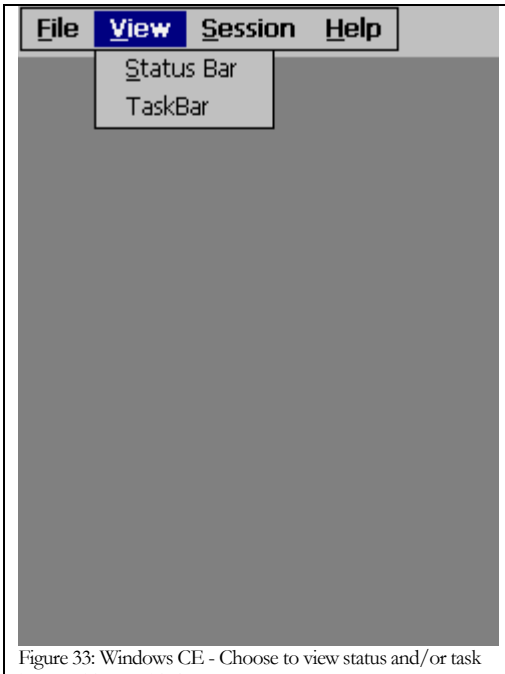


Figure 33: Windows CE - Choose to view status and/or task bars. Neither enabled.

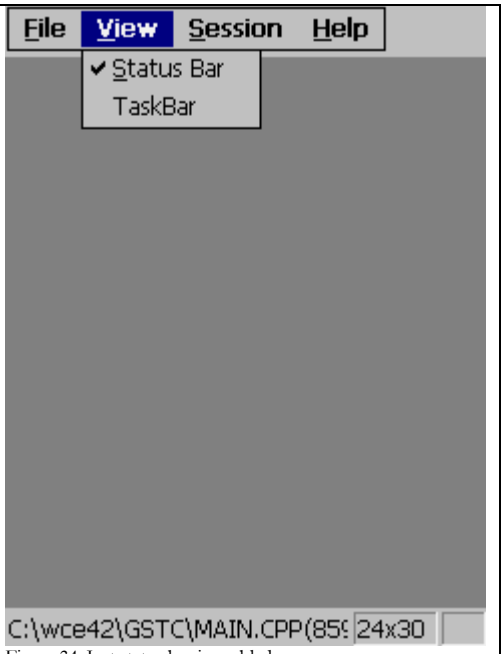


Figure 34: Just status bar is enabled

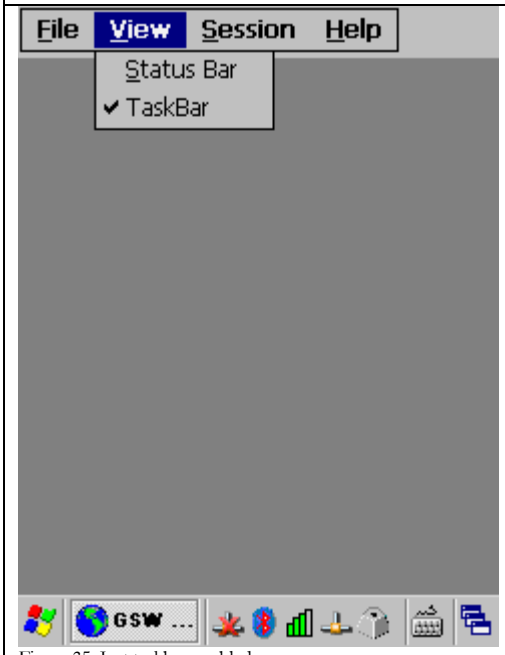


Figure 35: Just taskbar enabled

Table 14: Both status and task bar are enabled

No Scrollbars Option

Set this option to eliminate the use of scroll bars to save screen space. The application should display itself in the top-left corner of the screen. For example, this is the position that SAPConsole assumes. Of course, this assumes the application does not require scroll bars.

Normally Scrollbars are enabled.

The No Scrollbars option is enabled by selecting the option `No scrollbars`.

`Session|Settings|Session|No scrollbars`

Check the "`No scrollbars`" box to eliminate scrollbars as shown below.

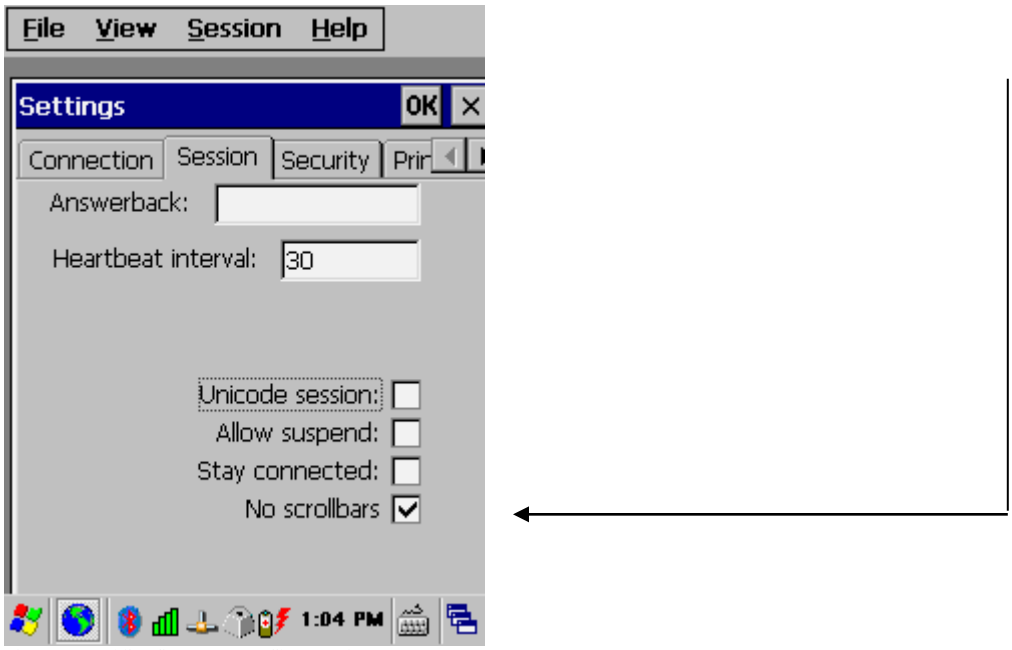


Figure 36: Mobile Client - No Scrollbars Option

Automatic Logon for Mobile Clients

Set this option to enable the GSW Mobile client for Automatic Logon. The GSW Server Side Automatic Logon configuration must also be completed (See page 111).

Critical Note 1: Make sure that Automatic Logon entries for GSW Mobile clients are made in the `gs_auto.txt` configuration file.

Critical Note 2: IP addresses configured for Automatic Logon for GSW Clients must NOT overlap with IP Addresses configured for Automatic Logon for 3rd party clients.

The Automatic Logon option is enabled by selecting the option Automatic logon.
`Session|SettDjsexton1`
`ings|Session|Automatic logon`

Check the "`Automatic logon`" box to enable the client for Automatic Logon as shown below.

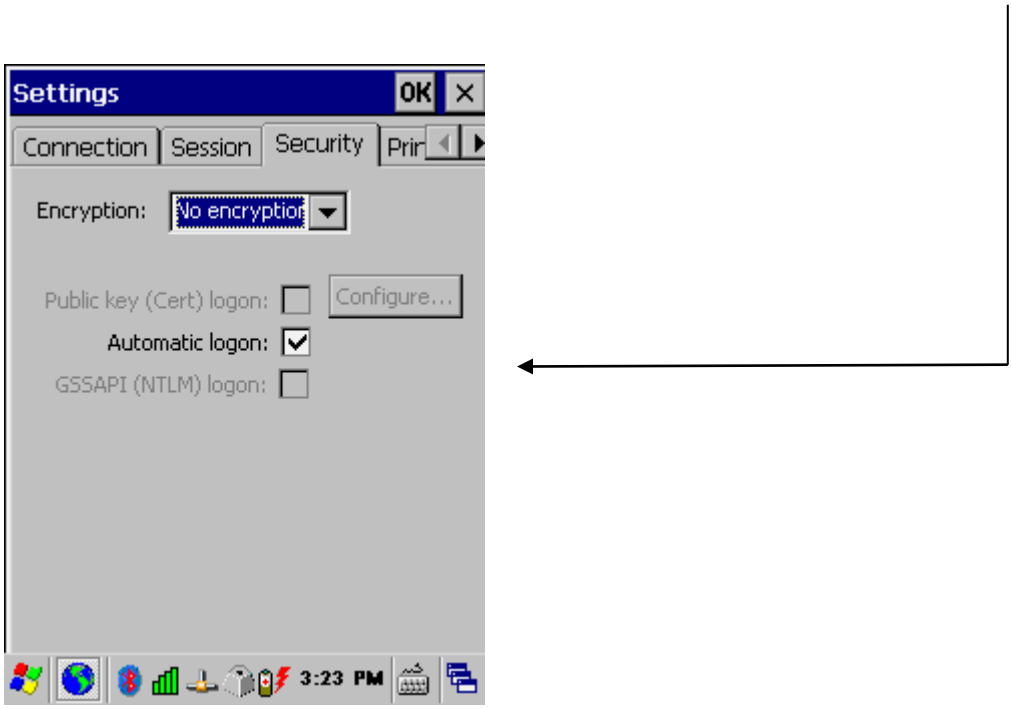


Figure 37: Mobile Client – Automatic Logon Option

Keyboard Macros

Keyboard macros are a powerful and time saving feature that lets the administrator define custom keys on the device when the session is active[4]. Macros are used for remapping Function keys (`F1 – F12`) to keystroke sequences. Macros definitions have the form:

```
Function Key=Keystroke Sequence
```

Where

Function Key is `F1` through `F12`

and

Keystroke Sequence follows the same format as the GSW Termination strings (page 158).

The keys that can be remapped are

Function Keys: `F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12`

Configuration

The keyboard macros are defined in the session configuration files. These have gswtc extensions. The configuration files have the "`Windows ini`" format. A new section [`Macros`] needs to be manually added to the configuration file.

For example, to remap all Functions Keys to send capital `F`, followed by function key index and the enter key you would add the following section to the configuration file on the device (usually `default.gswtc`).

```
[Macros]
F1=shift-f,1,ENTER
F2=shift-f,2,ENTER
F3=shift-f,3,ENTER
F4=shift-f,4,ENTER
F5=shift-f,5,ENTER
F6=shift-f,6,ENTER
F7=shift-f,7,ENTER
F8=shift-f,8,ENTER
F9=shift-f,9,ENTER
F10=shift-f,1,0,ENTER
F11=shift-f,1,1,ENTER
F12=shift-f,1,2,ENTER
```

[4] Keyboard Macro's are different than Keyboard Accelerators. Accelerators are available on the device when there is no session (outside the session).

Break-Out Sequence

Disconnects the session. There may be times when you want to disconnect the session. To disconnect the client from the server, enter the `Break-Out` sequence.

After the session is disconnected, further behavior on the session observes the rules configured on the server such as Graceful Termination, Session Saver, etc. The Break-Out is accomplished by entering the sequence

```
ctrl-shift-d
```

Note: Do not confuse this sequence which disconnects the session with the `Ctrl-Shift-b` sequence (see page 43)

Extended Features for Pocket PC 2003 and Windows Mobile 2003/WM5/WM6+ Devices

	Mobile Feature Name	Brief Description
1	Keyboard Macros	Remap Function and Special Keys to send a sequence of characters.
2	Free Function Keys	Function Key's (F1-F12) are freed (released) from Operating System control and are available for the application.
3	Application Launch Bypass	Interoperation with application launch utilities such as Intermec's iLaunch.
4	Simplified Chinese font	GSW Mobile Clients support Simplified Chinese Font GB (True Type).

Table 15 - GSW Mobile PPC 2003 and Windows Mobile 2003/WM5+ Client Extended Features

Keyboard Macros

GSW has provided Keyboard Macros for the GSW Mobile Clients for Windows Pocket PC 2003 and WM5/WM6+. They operate the same as described for the Windows CE .NET 4.2/5.0+ mobile clients.

Free Function Keys

Allows Function keys `F1-F12` to be used by the application. Windows Pocket PC, Mobile and CE .NET operating systems may take control of one or more of the function keys making them unavailable to the application software.
All GSW Mobile Clients free the function keys from the operating system so they can be used by the application. To restore operating system control of the function keys, reboot the device.

Application Launch Bypass

GSW Telnet/SSH client for PPC2003 and Windows Mobile 5/6+ may be configured so it will easily interoperate with application launch utilities like Intermec's iLaunch, such that the client will terminate immediately when the session ends. Additionally, if the feature is enabled the client will turn off all menu options except 'Disconnect'.

The configuration is performed by setting the value of a new parameter 'Bypass' that resides in the "`cppc2003.ini`" file in the section called 'Settings'

Possible Values are:

0 – disabled (default)
1 – enabled

If the Bypass parameter is not present in the file, then the default value used is: 0 (disabled).

Simplified Chinese Font Support

Simplified Chinese fonts are supported when using the GSW Mobile Clients for Windows Pocket PC 2003/WM5/WM6+ (Windows Mobile). The setup is the same as described for the Windows CE .NET 4.2/5.0+ mobile clients.

Configuration and Application Persistence

It can be frustrating and time consuming if your configuration information is lost over a reboot which is common with Windows CE and Pocket PC operating systems. GSW has provided a reliable mechanism to ensure that the GSW Mobile Client application and configuration can be persistent across all types of reboots. Instructions vary depending of the type of GSW mobile client being used. Please review the appropriate section for your client.

- GSW Enhanced Mobile Clients:
  Follow the Tips section for your device. Do not follow the Configuration Persistence configuration below for the GSW Universal Mobile Clients. See page 35 for Enhanced Client Tips.

- GSW Pocket PC 2003 Universal Mobile Clients:
  Follow the instructions on page 56.

- GSW Universal Mobile Clients for Windows CE .NET 4.2+
  Follow the instructions below.

GSW Universal Mobile Client Persistence

In brief, the steps are simply to configure the device, save the configuration and move our .CAB files to a persistent folder.

Mobile Client Configuration Persistence

The GSW Mobile Client configuration is saved as a .cab file, which is a compressed archive package definition format.

For each created Session Configuration there will be a corresponding CAB file. For example, if a session was saved with the name `'lukexp.gswtc'` then a corresponding cab file with the name `'lukexp.cab'` is automatically created.
Non session specific configuration data is stored in the CAB file `c735x.cab`. When these files are placed in the persistent CAB folder on your device the GSW mobile client configuration is restored upon reboot. The persistent CAB folder location is device manufacturer and model specific.

Mobile Client Application Persistence

The GSW Mobile Client application is available as a .cab file, which is a compressed archive package definition format. The .cab file location and name of the application is

Location (on your PC)	CAB File Name
C:\Program Files\Georgia SoftWorks Universal Telnet and SSH Client for Windows CE ARM4\	WCEG_4.ARMV4_G.CAB
C:\Program Files\Georgia SoftWorks Universal Telnet and SSH Client for Windows CE ARM4I\	WCEG_4I.ARMV4I_G.CAB
C:\Program Files\Georgia SoftWorks Universal Telnet and SSH Client for Windows CE X86\	WCEG_X86.INTEL_X86_G.CAB

Table 16 - GSW Mobile Client Application CAB File Location

When this file is placed in the persistent CAB folder on your device the GSW mobile client application is restored upon reboot. The persistent CAB folder location is device manufacturer and model specific.

Mobile Client Persistence Instructions

Once you have the GSW Mobile Client configuration set for your implementation you should save the configuration.

Step 1: Install and run the GSW Mobile Client

Step 2: Configure the GSW Mobile Client as required for your environment

Step 3: When satisfied with the configuration from within the GSW Mobile Client perform the menu item

```
File|Save
```

And save the settings in location below.

```
\Program Files\GSW_Clnt\default.gswtc
```

The file below will automatically be generated upon the Save command

```
\Program Files\GSW_Clnt\default.cab
```

Step 4: From within the GSW Mobile Client, switch to 'User Mode' using the menu item `File|Security`

Figure 38: Switch from Administrator to User Mode

Step 5: On the device launch the File Manager and copy the configuration and application .cab files

```
\Program Files\GSW_Clnt\default.cab
\Program Files\GSW_Clnt\c753x.cab
```

to the Persistent CAB folder.

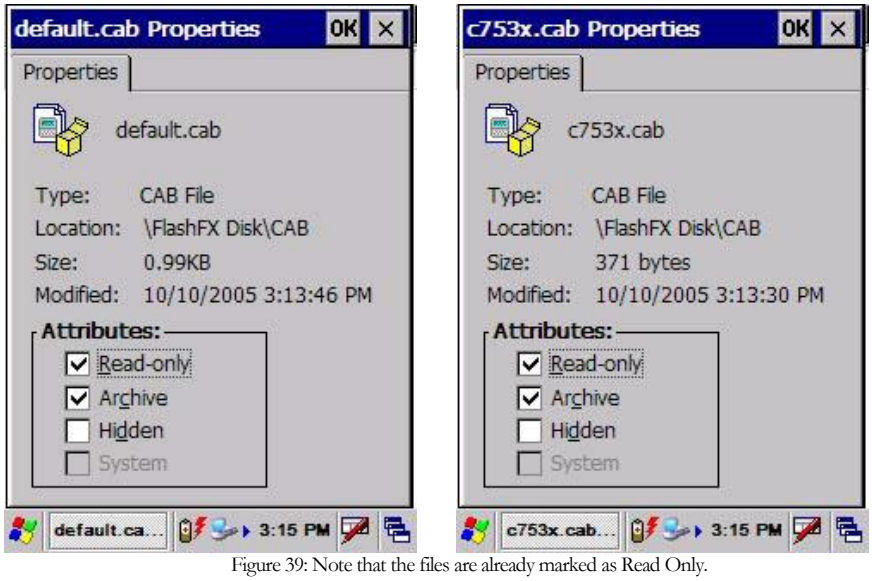


Figure 39: Note that the files are already marked as Read Only.

Mark the files as `Read Only`.
In this case the persistent CAB folder location is `\FlashFX Disk\CAB`, however the persistent folder is device manufacturer and model specific.

Step 6: Copy the application cab file defined in the Application Persistence section (page 53) to the Persistence folder on the device. Mark it as `Read Only`

Step 7: Now you should be able to cold boot the device and the client should automatically launch with the correct configuration.

GSW Pocket PC 2003 Universal Mobile Client Persistence

PPC 2003 Configuration Persistence

The GSW Mobile Client configuration is saved as a .cab file, which is a compressed archive package definition format.

For each created session configuration there will be a corresponding CAB file. For example, if a session was saved with the name `'lukexp.gswtc'` then a corresponding cab file with the name `'lukexp.cab'` is automatically created.
Non session specific configuration data is stored in the CAB file `cppc2003.cab`. When these files are placed in the persistent CAB folder on your device the GSW mobile client configuration is restored upon reboot. The persistent CAB folder location is device manufacturer and model specific.

PPC 2003 Application Persistence

The GSW Mobile Client application is available as a .cab file, which is a compressed archive package definition format. The .cab file location and name of the application is

Location (on your PC)	CAB File Name
C:\Program Files\Georgia SoftWorks Universal Telnet and SSH Client for PPC2003\CPPC2003.PPC2003_ARM.CAB	

Table 17 - GSW PPC 2003 Mobile Client Application CAB File Location

When this file is placed in the persistent CAB folder on your device the GSW mobile client application is restored upon reboot. The persistent CAB folder location is device manufacturer and model specific.

PPC 2003 Persistence Instructions

Once you have the GSW Mobile Client configuration set for your implementation you should save the configuration.

Step 1: Install and run the GSW Mobile Client

Step 2: Configure the GSW Mobile Client as required for your environment

Step 3: When satisfied with the configuration from within the GSW Mobile Client perform the menu item

```
File|Save
```

And save the settings in location below

```
\My Documents\default.gswtc
```

The file below will automatically be generated upon the Save command.

```
\My Documents\default.cab
```

Step 4: On the device launch the File Manager and copy the configuration and application .cab files

```
\My Documents\default.cab
\Program Files\Georgia SoftWorks\CPPC2003\cppc2003.cab
```

to the Persistent CAB folder

Mark the files as `Read Only`

The persistent folder is device manufacturer and model specific

Step 5: Copy the application cab file defined in the Application Persistence section (page 56) to the Persistence folder on the device. Mark it as `Read Only`

Step 6: Now you should be able to cold boot the device and the client should automatically launch with the correct configuration

Tips for Intermec CK30 / CK31

Following are a few **Tips** when installing the GSW SSH/Telnet Windows Client for the above device running Windows CE .NET Version 4.2+

1. **Menu Accelerators / Shortcuts**

   As of this writing the Intermec CK30/CK31 does not provide mouse/stylus capability via a touch screen. In order to provide a more convenient method of configuration the following accelerator keys are available. They are available for all Mobile Clients for Windows CE .NET 4.2+ but are especially useful for the Intermec CK30/CK31.

   `F2 – Save Session Settings`

   `F5 – File|Session Configurations …`

   `F6 – Session|Connect`

   `F7 – Session|Settings`

   `F8 – File|Exit`

2. **Persistence over a 'Cold Reset'**

   After initial installation, please complete these steps as well as anytime the configuration changes.

   Once the connection settings are configured and tested you can ensure that these settings will still exist after a 'Cold Reset' of the Intermec CK30/CK31. This is done by saving the file system and registry to flash memory. This is accomplished by performing the following steps.

   `System Main Menu|Configuration Utility|File Backup|Backup the File System`
   and
   `System Main Menu|Configuration Utility|Save to Flash`

3. **Startup – Default Connection Settings**

   - The file "`\CK_FFS\Georgia SoftWorks C753X\default.gswtc`" is loaded on startup if found.
   - If the security level is '`user`' then the GSW SSH/Telnet Client will attempt to connect.

4. **Application Protection**

   Use the `File|Security` dialog as described in the Application Protection (page 70) section.

5. **Warm boot the device after you install the client. The GSW Mobile Client will automatically launch.**

6. **The GSW Mobile Client is also accessible via**

   `System Main Menu|GSW Client`

7. **How to disable the automatic launch of the TE2000 client**

   a. Either delete or rename the file `\Windows\StartUp\TE2000.lnk`

   b. Run

      `System Main Menu|Configuration Utility|File Backup`

8. **BEEP Sound – Complete beep operation. Extended features available for SAP - See below.**

9. **LED Color / Blink and beep Association – For use with SAP, SAPConsole**

   Using the ABAP Code Generate Bell you can associate different light-blink-colors based on the notify_bell_signal value. You can control the number of beeps, the color of the led (green/orange) and the number of blinks.

   Example: `notify_bell_signal = XYZ`

   ```
   Where
        X = Number of beeps
        Y = Color of LED
             1 = green (left most light),
             2 = orange (right most light)
        Z = Number of blinks
   ```

   Each blink is turned on for the same time as the beep

10. **Scrolling and Mouse Support**

    The Intermec CK30 / CK31 does provide screen scrolling and mouse support via keyboard control. The `Alt-Down` combination puts the CK30 / CK31 into a "Screen Scrolling and Mouse Mode" and brings up a pointer that can be manipulated by numeric keys. Please see the Intermec manual for further details. To dismiss the pointer, enter the `Alt-Down` again.

    Note: Keyboard data entry functionality is not fully available when in the "Screen Scrolling and Mouse Mode". Simply put, dismiss the pointer prior to entering text.

Tips for Intermec CV60

Following are a few **Tips** when installing the GSW SSH/Telnet Client for the above device running Windows CE .NET Version 4.2+

1. **Persistence over a 'Cold Reset'**

   After initial installation, please run **START | Shutdown** on the device.

   Shutdown saves the device registry to persistent storage.

2. **Uses Standard Accelerators and Shortcuts for all CE .NET 4.2 devices (page 44).**

3. **Startup – Default Connection Settings**

   - The file "`\Application Data\Georgia SoftWorks C753X\default.gswtc`" is loaded on startup if found.
   - If the security level is '`user`' then the GSW SSH/Telnet Client will attempt to connect.

4. **Application Protection**

   Use the `File|Security` dialog as described in the Application Protection (page 70) section.

5. **Warm boot or cold boot the device after you install the client. The GSW Mobile Client will automatically launch.**

6. **The GSW Mobile Client is also accessible through**

   `'Program Files' and a Desktop shortcut`

7. **How to disable the automatic launch of the TE2000 client**

   a. Either delete or rename the file `\Windows\StartUp\TE2000.lnk`

8. **BEEP Sound – Complete beep operation.**

Tips for PSION-TEKLOGIX WORKABOUT Pro, 7535 and 8525 devices

Following are a few **Tips** when installing the GSW SSH/Telnet Client for the above devices running Windows CE .NET Version 4.2+

1. **Persistence over a 'Cold Reset'**

   By default, the GSW Telnet Client is installed to a persistent directory. The directory is

   `\Flash Disk\Georgia SoftWorks C753X`

   - **User Fonts** – Your fonts need to reside in two locations.

     \Windows\Fonts

     And ***ALSO***

     `\Flash Disk\Georgia SoftWorks C753X`

2. **Use Standard Accelerators and Shortcuts for all CE .NET 4.2+ devices (page 44).**

3. **Startup – Default Connection Settings**

   - The file "`\Flash Disk\Georgia SoftWorks C753X\default.gswtc`" is loaded on startup if found.

   - If the security level is '`user`' then the GSW SSH/Telnet Client will attempt to connect.

4. **Additional Files**

   The setup program will install the file "`\Flash Disk\StartUp\reinst.bat`".

   Please do not delete or modify this file as it is required for persistence and automatic startup of the client.

5. **Application Protection**

GSW Telnet supports the security settings available on the Psion-Teklogix devices. The settings are available via `Start|Security`

Tips for SYMBOL MC 9060G / MC9090 devices

Following are a few **Tips** when installing the GSW SSH/Telnet Client for the above devices running Windows CE .NET Version 4.2+

1. **Persistence over a 'Cold Reset'**

   By default, the GSW Telnet Client is installed to a persistent directory. The directory is

   `\Application\Georgia SoftWorks C753X`

   - **User Fonts** – Your fonts need to reside in two locations.

     \Windows\Fonts

     And ***ALSO***

     `\Application\Georgia SoftWorks C753X`

2. **Uses Standard Accelerators and Shortcuts for all CE .NET 4.2+ devices (page 44).**

3. **Startup – Default Connection Settings**

   - The file "`\Application\Georgia SoftWorks C753X\default.gswtc`" is loaded on startup if found.

   - If the security level is '`user`' then the GSW SSH/Telnet Client will attempt to connect.

4. **Additional Files**

   The setup program will install the file "`\Application\StartUp\reinst.bat`".

   Please do not delete or modify this file as it is required for persistence and automatic startup of the client.

5. **Application Protection**

   Use the `File|Security` dialog as described in the Application Protection (page 65) section.

Tips for LXE MX3X Devices

Following are a few **Tips** when installing the GSW SSH/Telnet Client for the LXE MX3X running Windows CE .NET Version 4.2+

`Note:` Please verify that you are running version MX3XGC4201C or later of the LXE firmware. You can view the version on your device by

`Start|Settings|Control Panel|About|Versions`

1. **Persistence over a 'Cold Reset'**

   By default, the GSW Telnet Client is installed to a persistent directory. The directory is

   `\System\Georgia SoftWorks C753X`

   - **User Fonts** – Your fonts need to reside in two locations.

     `\Windows\Fonts`

     And ***ALSO***

     `\System\Georgia SoftWorks C753X`

2. **Uses Standard Accelerators and Shortcuts for all CE .NET 4.2+ devices (page 44).**

3. **Startup – Default Connection Settings**

   - The file "`\System\Georgia SoftWorks C753X\default.gswtc`" is loaded on startup if found.

   - If the security level is '`user`' then the GSW SSH/Telnet Client will attempt to connect.

4. **Additional Files**

   The setup program will install the file "`\System\autoexec.bat`".

   Please do not delete or modify this file as it is required for persistence and automatic startup of the client.

5. **Application Protection**

   The **LXE MX3X** provides Applock application security software. The GSW SSH/Telnet Mobile clients are compatible with Applock and may be launched from Applock.

   In the Applock configuration you must specify which application is to be launched and you must specify a full path to the application. Please specify the following path in the dialog.

   `\Windows\GSW_lnch.exe`

Before configuring the system for Applock, pre-configure all the settings (in particular the `default.gswtc` file) and then go to `File|Security` and configure the security to the *user* level and press OK.

Tips for PSC Falcon 4410

Following are a few **Tips** when installing the GSW SSH/Telnet Client for the above device running Windows CE .NET Version 4.2+

The PSC Falcon 4410 has the capability for full application lockout. The steps for implementation of this feature follows.

1. **Application Protection**

Step 1: Run `gsce_4ig.exe` on your PC and install the GSW Universal Mobile Client for ARMV4I.

Step 2: Configure the GSW Mobile Client as required for your environment

Step 3: When satisfied with the configuration from within the GSW Mobile Client perform the menu item

```
File|Save
```

and save the settings in

```
\Program Files\GSW_Clnt\default.gswtc.
```

And this will automatically generate the file

```
\Program Files\GSW_Clnt\default.cab
```

Step 4: From within the GSW Mobile Client, switch to 'User Mode' using the menu item

```
File|Security
```

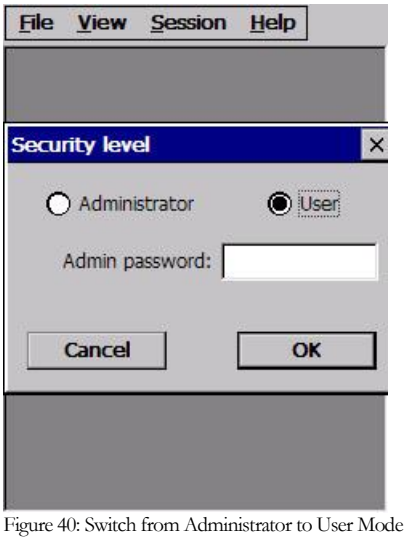


Figure 40: Switch from Administrator to User Mode

Step 5: On the device launch the File Manager and create the Folder

```
\FlashFX Disk\CAB
```

And copy the device files

```
\Program Files\GSW_Clnt\default.cab
\Program Files\GSW_Clnt\c753x.cab
```

to the folder created above.

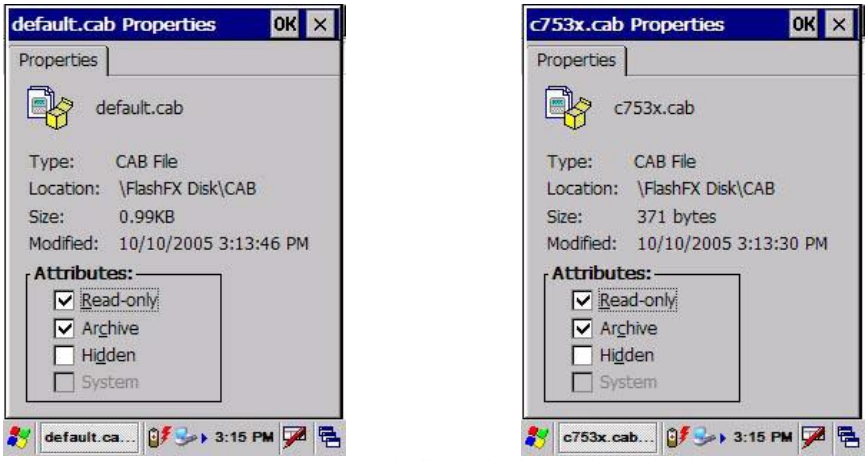


Figure 41: Note that the files are already marked as Read Only.

Step 6: Copy the file

```
C:\Program Files\Georgia SoftWorks Universal Telnet and
SSH Client for Windows CE ARM4I\WCEG_4I.ARMV4I_G.CAB
```

From your PC (the PC used in Step 1) to

`\FlashFX Disk\CAB on` your Falcon 4410 device, and mark it *Read Only*

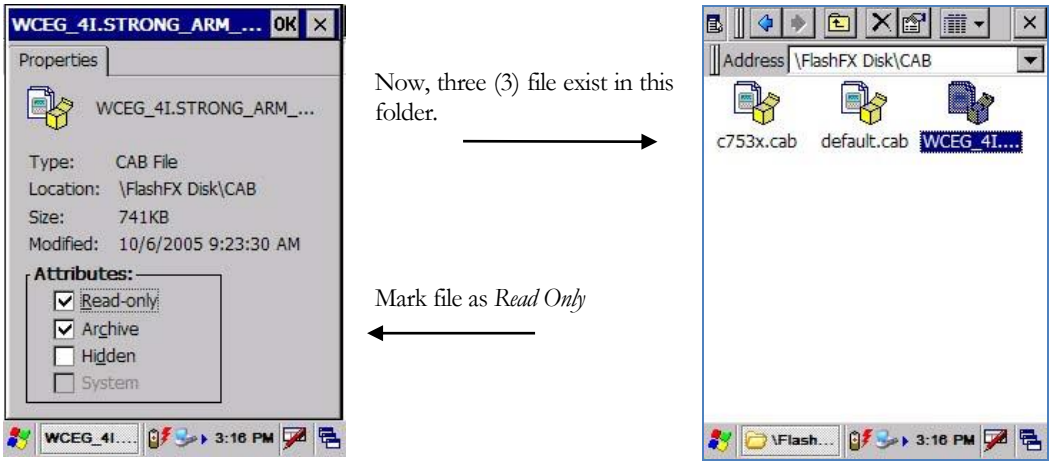


Figure 42: File copy from PC to Device

Step 7: On the device go to:

`Start|Programs|Falcon Management|FDU Admin Tool`

And set the configuration options as shown using the different Tabs below.

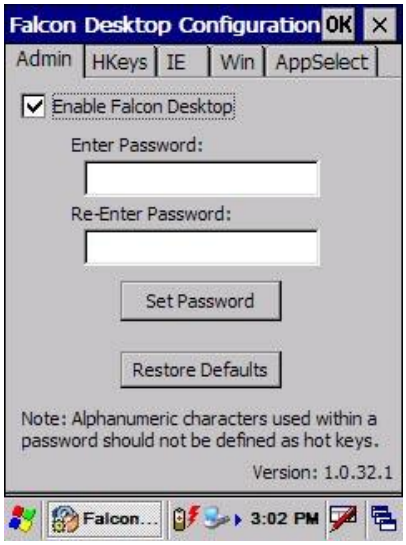


Figure 43: Falcon 4410 Application Title

A. Make sure that the Enable Falcon Desktop checkbox is checked.

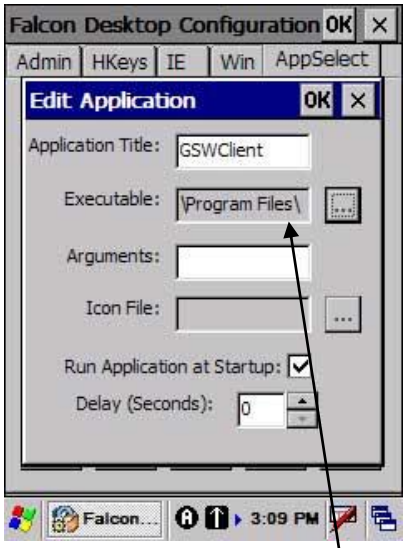


Figure 44: Falcon 4410 Application Title

B. Enter the Application Title

C. Next Click on the '…' button. When you click the button, it opens up the File Selection dialog below.

D. Navigate to the GSW_Lnch.exe in the folder \Program Files\GSW_Clnt Select the GSW_Lnch.exe Click OK and the filename of the Executable is filled in.

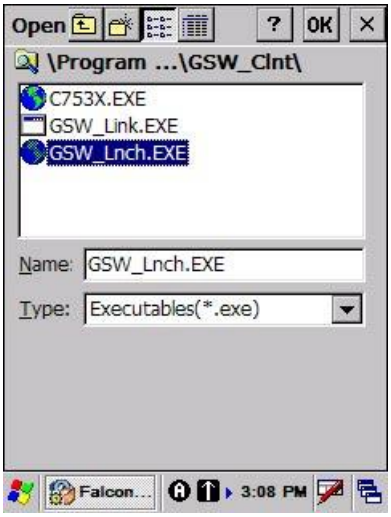
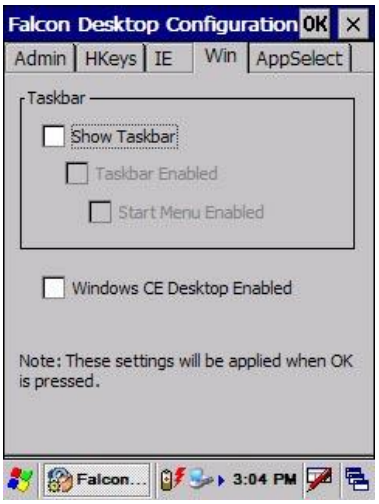


Figure 45: File Selection Dialog

Next Select the Win tab and make sure that the `Show Taskbar` checkbox is clear.



E. Select the Win Tab and make sure that the Show Taskbar checkbox is clear.

F. Also make sure that the Windows CE Desktop Enabled checkbox is clear.

Figure 46: Falcon Clear Win Tab Checkboxes

Make sure the two checkboxes are clear.

Step 8: Cold boot the device.
The GSW Mobile Client will automatically launch and connect after the boot.

Application Protection

Many times, System Administrators request the capability to protect certain configuration values associated with the application from being inadvertently or accidentally modified by users. Georgia SoftWorks Mobile Clients either provide this functionality or integrates and cooperates with devices that contain this feature.

The GSW Mobile Clients accomplish this protection by recognizing a *user* and a password protected *administrator* security level. If the device provides a *user* and *administrative* level, the GSW Mobile client integrates and cooperates with the device feature. Otherwise the GSW Mobile Client provides a *user* and *administrative* security level.

The *administrator* security level is allowed unrestricted access to the application. The *user* security level is not allowed to modify the configuration values or exit the GSW Mobile Client application.

The System Administrator can protect access to operations and values associated with the following menu items.

- `File|New, File|Open, File|Exit`
- `Session|Settings`

Upon selecting the menu item `File` you will notice that while at the *user security level* the menu items `New`, `Open` and `Exit` are disabled. The same is true for the `Session|Settings` menu item.

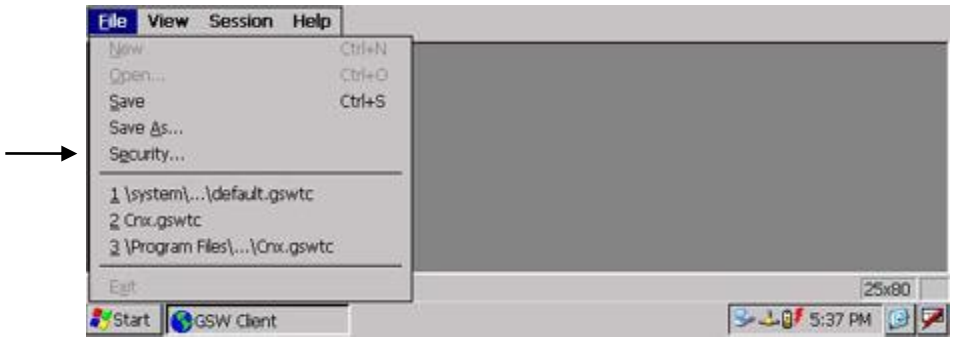


Figure 47: GSW Mobile Client Security Levels

Only the *administrator security level* has access to these items.

When using the GSW Mobile Client Application Protection you can enable the *administrator* security level by selecting the menu item `File|Security` as shown above. `The File|Security` menu item is enabled on Intermec, LXE and Symbol devices. The `File|Security` menu item is disabled on Psion-Teklogix devices because the GSW Mobile Client uses Psion-Teklogix security levels and is settable under `Start|Security`.

Upon selecting the Security menu item, the Security level dialog is presented.

Figure 48: GSW Mobile Client Security Level Selection

To switch from User to Administrator Security level you select `Administrator` and enter the Admin Password. The Admin Password is `7062651018.` Click OK. This will enable all configuration and operations for the Administrator.

To switch from *Administrator* to *User* Security level, select `User` and click OK. A user password is not required.

Please see the tips section for these mobile device clients for any special tips for Application Protection.

- Intermec CK30 / CK31
- Intermec CV60
- LXE M3X3
- Psion-Teklogix 7535, Psion-Teklogix 8525
- Symbol MC 9060G / MC9090G
- PSC Falcon 4410

Backup and Restore the Georgia SoftWorks SSH/Telnet Server

At certain times you may encounter a scenario where your system needs to be rebuilt and you want to transfer the GSW and its settings. This entails two steps.

1. Back up the GSW UTS installation directory and all of its subdirectories.
2. Back up the following registry key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters

   If you are using the SSH Server then you need to also back up the following registry key.

   HKEY_LOCAL_MACHINE\SOFTWARE\GeorgiaSoftWorks\GSW_SSHD\Parameters

   On 64-bit operating systems the key will be:

   HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\GeorgiaSoftWorks\GSW_SSHD\Parameters

On the rebuilt system you will need to:

1. Restore the GSW UTS Installation directory as on the original system.
2. Re-run the GSW UTS setup program.
3. If using the GSW SSH Server, re-run the GSW SSH SHIELD setup.
4. Restore the registry keys that were backed up in step 2 above.
5. Re-register the software using the standard registration procedure or install the Floating license.

How to use the GSW Universal Terminal Server for Windows

Georgia SoftWorks Client

Note: The example below is for the GSW Telnet Server however the same procedures apply to the GSW SSH Client unless noted.

Follow these instructions to open the Georgia SoftWorks Client window.

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **Programs**
3. Move the mouse cursor to "Georgia SoftWorks UTS" entry.
4. Click to the right where you see **"GS Telnet Client"**

At this point, the Client window is open and you will get the host prompt (Figure 49).

Host

At this prompt, you should enter the hostname that you wish to connect. The hostname is the name your Windows computer is referenced by via TCP/IP. This can be a text string or an actual IP address. This name will appear in the client windows title bar.

Example:

Host: `Soloman`

`OR` (if you know the IP address you can enter the address)

Host: `100.100.100.101`

`Or`

Host: `<ENTER>`

This will connect to the local host. You must be at the server for this to work (Useful for testing).

Figure 49: Host Prompt

After the Host is found you will see the Georgia SoftWorks Telnet Server connection banner[5]. The connection banner contains the version of the telnet server as well as the number of sessions available and connected. You are then presented with the Windows logon prompt.

Login ID

At this prompt you should enter a valid Windows login id.

Example:

Login: `JohnSmith`

[5] The SSH Server has a different connection banner than the Telnet Server. See the User Manual for the SSH Connection Banner.

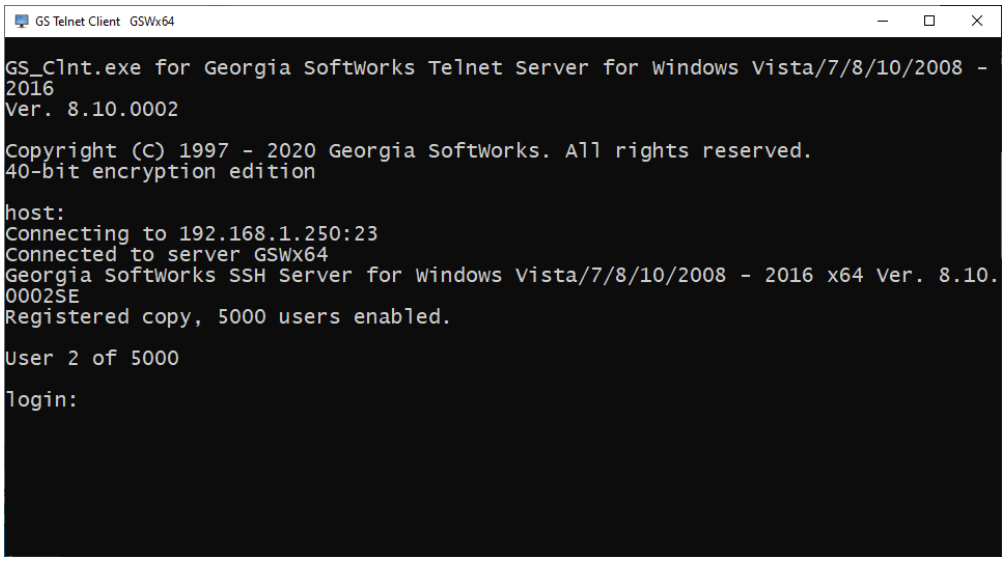


Figure 50: Logon Prompt

Below is a screen shot of the GSW SSH Connection Banner.

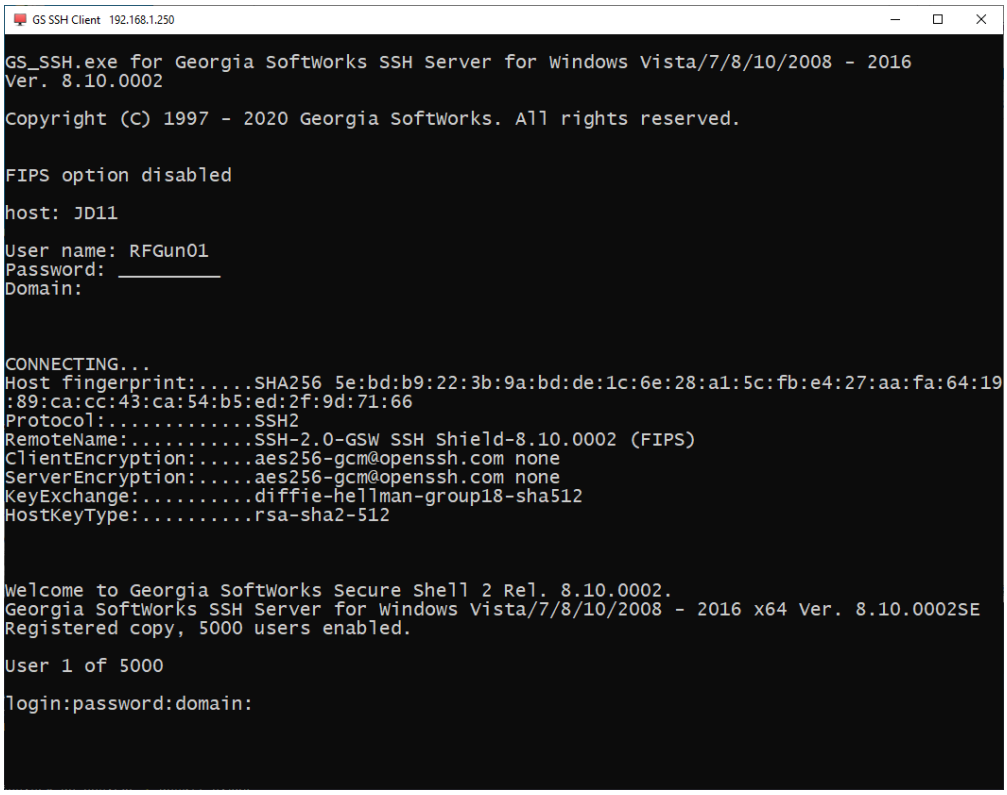


Figure 51: SSH Connection Banner

This is the password associated with the Login ID. It will not be displayed when typed.

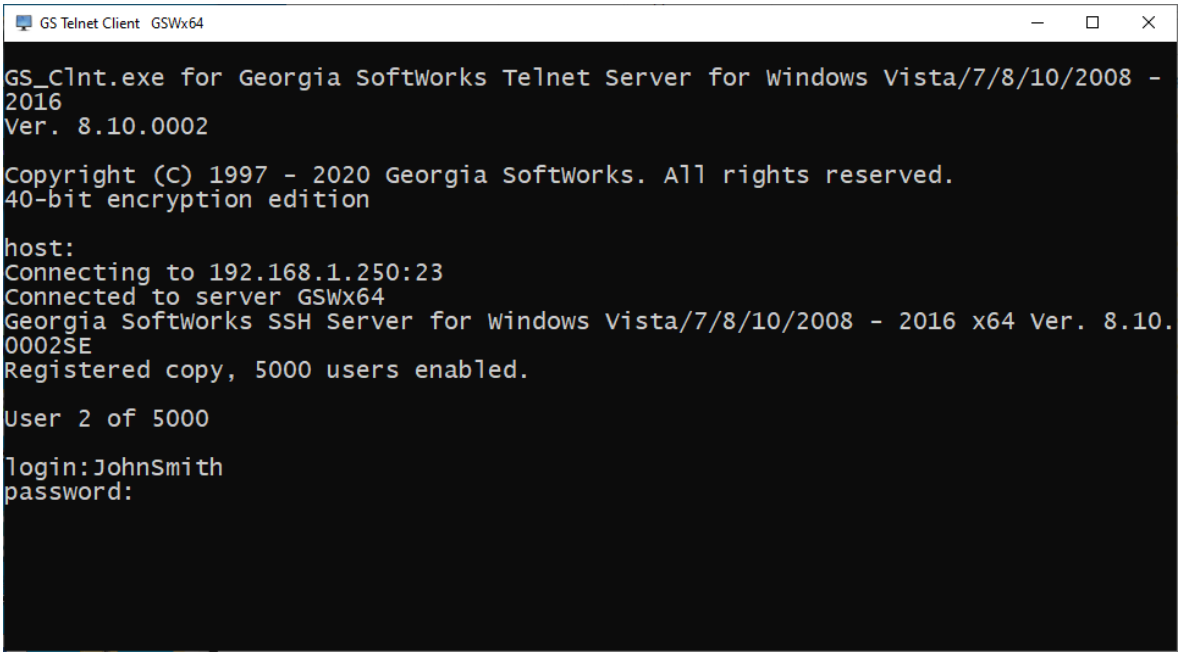


Figure 52: Password Prompt

Domain Name

This is an optional field. If you do not wish to connect to a specific domain then you may simply press "<**enter**>". Otherwise type in the domain you want to connect. You may eliminate the domain prompt either by using command line options or by setting a default domain on the Windows Server. To set the default domain for all users follow the instructions on page 282. The Georgia SoftWorks Telnet Client Command line options are described next.

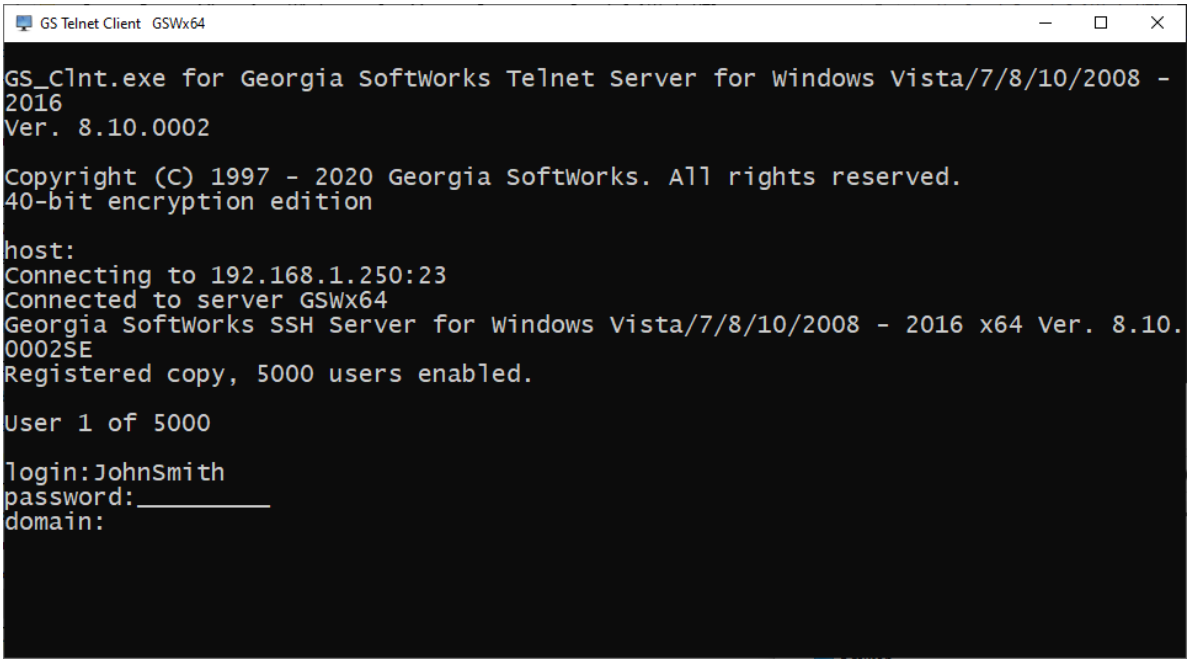


Figure 53: Domain Prompt

Georgia SoftWorks Desktop Client Command line options – Description

In addition to superior Perfect PC terminal emulation the Georgia SoftWorks Telnet and SSH Clients have powerful command line options facilitating faster, easier and more flexible connections. Many of these options such as the Host, Username, Password and Domain can be used to eliminate prompting by the client or server when connecting to the UTS Server. The following optional command line parameters may be used[6].

Parameter	Description
-4 or -6	Restricts protocol to IPv4 addresses or IPv6 addresses. Otherwise both are supported.
-a	This specifies that this Georgia SoftWorks Client can AutoLogon (page 110)
-b	Answerback Text passed to the Server and stored in the Environment variable gwtn_answerback. See page 82 for more details and PPC configuration.
-c	TELNET client only: Specifies that the client uses Encryption. This option works only in conjunction with corresponding settings on the server. See page 93 on setting up encryption.
-cCertificateName	SSH client only. Specifies the Certificate name for certificate-based authentication. This feature is integrated with Microsoft Certificate Stores.
-dDomain	Specifies the domain of the user. Use '.' if you want to use default domain or no domain
-f[index] or -F[index]	This allows additional form feed control capabilities. With some applications unexpected form feeds will be generated at the end of the document causing misalign output and paper waste. If this behavior is noticed then the -f option may help in suppressing the extra form feeds. Optional index is the virtual printer index. This option uses the copy command to print.
-hHostname	This specifies host name to connect to.
-Hheartbeat Time	Specifies our client-side heartbeat. You need that parameter for the session cleanup! See page 156.
-i	Enable SSH client to use FIPS 140-2 when connecting to SSH server. Note: SSH Server must be installed and FIPS must be Enabled. Only valid with SSH client.
-I	SSH client only. Activates public key authentication by specifying the path to the private key file. *-Ipath_to_private_key_file*
-k	Disables the mouse in the telnet or SSH session
-m	SSH client only. Specifies Single Sign-On through Kerberos over GSSAPI
-n	SSH client only. Specifies Single Sign-On through NTLM over GSSAPI
-pPassword	SSH and Telnet client: Specifies password for the user. Use '.' if user has no password. Notice that this is a lowercase "p". SSH Client only: If public key authentication is activated then this is the password for a password protected private key file.
-PportNumber	Specifies the port number to use for telnet or SSH. This port must also be set on the Server in the services file. Notice this is an uppercase "P"
-r1=printername -r2=printername … -r9=printername	This specifies Printer1, Printer 2, and Printer 3 … Printer 9 for Enhanced Mode client-side printing. No spaces are allowed in the printer name. Please see page 226 for more information.
	Continued on Next Page

[6] Note: Dash '-' and Slash "/" character are interchangeable when specifying command line parameters.

-scmddelay	This specifies the Command Output Display Delay time (Milliseconds) for the results data displayed in the gs_clnt.exe/gs_ssh.exe window as a result of executing a Client Side Command (page 261) from within a telnet or SSH session. A primary function of the Client software is to display and refresh the Telnet or SSH Session Window based on Server Output. So, when a Client-Side Command displays results in the Session Window, a time is specified for the display of the Client-Side Command Output in the gs_clnt.exe/gs_ssh.exe window before the display of server-side data is resumed. The default is 2000[ms] (two seconds).
-uUserName	Specifies the name of the User
-U	Enable Unicode character processing for input and output. See page 252.
-vPathXMLFile	Enable Vangard Voice, specifies path to Vangard XML file See page 314.
-xClient Caption String	The User has additional control over the caption text displayed in the Title bar of the client window when using the Georgia SoftWorks Telnet or SSH Client. This helps identify specific sessions especially when multiple sessions are opened simultaneously. No spaces are allowed in the Client Caption string. See example on next page for further details
-XClient Title Bar String	SSH and Telnet can change the Title Bar content. Note: This clears the Title Bar and displays the Title Bar String. It overrides the "-x" Client Caption String.
-z	Disable the Automatic Update of the Georgia SoftWorks Telnet or SSH Client.
Long Options	*The "+" plus sign designates "Long Option" parameters*
	The list of algorithms that can be used are in the GSW SSH User's Manual.
+Ciphers=	SSH client only - The list of Ciphers provided to the server for Cipher negotiation
+KexAlgorithms=	SSH client only – The list of Key Exchange algorithms provided to the server for Key Exchange Algorithm negotiation
+HostKeyAlgorithms=	SSH client only – The list of Host Key Algorithms provided to the server for Host Key Algorithm negotiation
+Macs=	SSH client only – The list of Message Authentication Codes (MACs) provided to the server for Message Authentication Code negotiation

Table 18 - GSW Telnet and SSH Client Command Line Options

EXAMPLE - GEORGIA SOFTWORKS CLIENT CAPTION STRING

-xClient Caption String

The User has additional control over the caption text displayed in the title Bar of the client window when using the Georgia SoftWorks clients. This helps identify specific sessions especially when multiple sessions are opened simultaneously.

The command-line option

```
-xText
```

specifies a text string that is displayed in the caption section of the title bar on the client window. The text is appended to the caption after space as x:Text. For instance, if the option -xDavid was entered the title bar in the client window would be displayed as show below (soloman is the hostname).

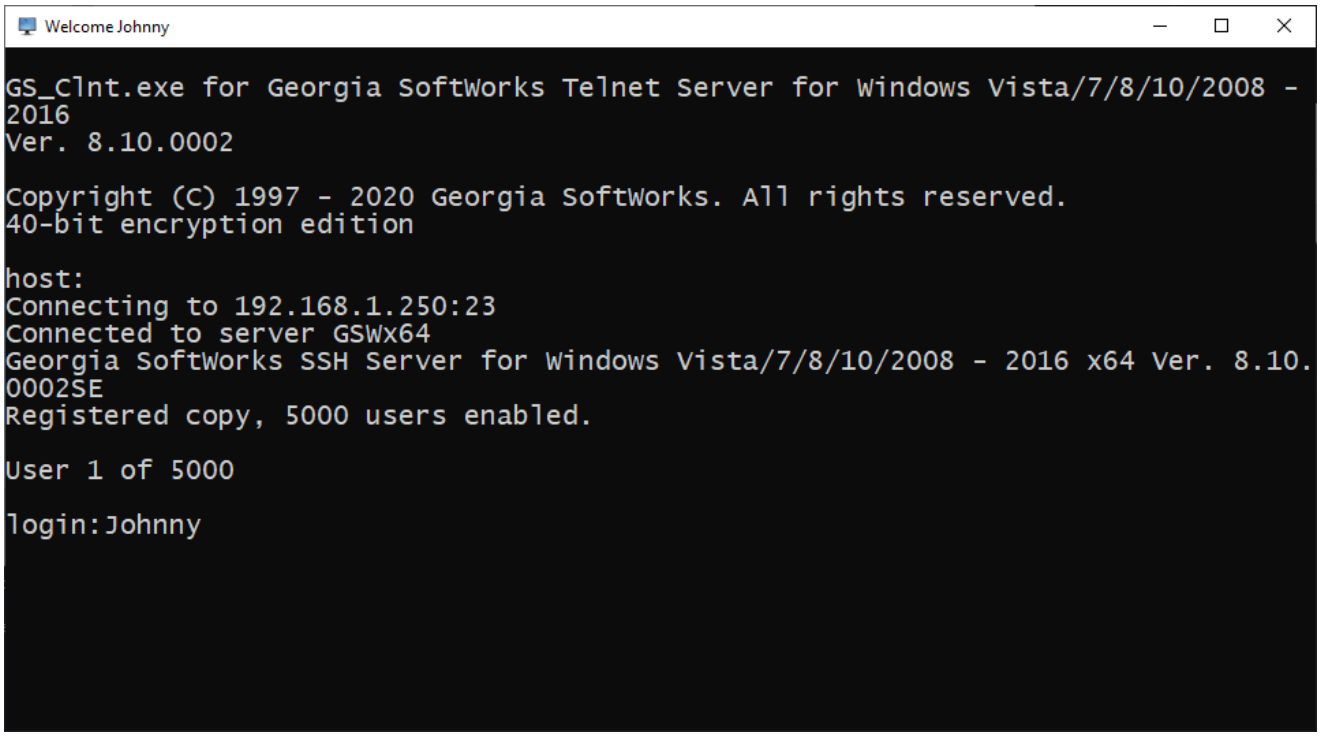


Figure 54: Client Title Bar Caption

GSW Telnet and SSH Client command line options - Usage

Following is an example for specifying client command line parameters. The *GS SSH2/Telnet Client* shortcut invokes the batch file `GS_SClnt.bat (for Telnet) or GS_SSSH.bat` (for SSH) which in turn launches the Georgia SoftWorks SSH2/Telnet Client. The GS_SClnt.bat and GS_SSH.bat files reside in the GS_UTS installation directory. The contents of the batch files look as follows.

```
@echo off
:start

@if exist once1.bat do call once1.bat
@if exist once1.bat do del once1.bat

@gs_clnt.exe[7]

@if errorlevel 2 goto copy
@exit

:copy
@copy gs_clnt.new gs_clnt.exe > gsnull.txt

@if exist once2.bat do call once2.bat
@if exist once2.bat do del once2.bat

@goto start
```

The line ***@gs_clnt.exe*** is the line that launches the Georgia SoftWorks Telnet Client. For SSH the client name is **gs_ssh.exe**.

Command Line Parameters will be added to this line in the batch file.

In most cases the `GS_SClnt.bat/GS_SSH.bat` files will be modified to provide the parameters in a transparent manner to the user.

EXAMPLE - GEORGIA SOFTWORKS SSH2/TELNET CLIENT COMMAND LINE OPTIONS

Host:	soloman
Heartbeat:	150
UserName:	johndoe
Password:	fastest
Domain:	Use the default domain.
Encryption:	Yes
Client Caption:	System1

[7] The SSH client name is gs_ssh.exe

The Command Line Parameters used are:

```
-H150 -hsoloman -ujohndoe -c -pfastest -d. -xSystem1
```

Note: The last dot is for the default domain

And thus the `GS_SClnt.bat` file will be modified as shown below adding the command line parameters.

```
@echo off
:start

@if exist once1.bat do call once1.bat
@if exist once1.bat do del once1.bat

@gs_clnt.exe -H150 -hsoloman -ujohndoe -c  -pfastest -d. -xSystem1
@if errorlevel 2 goto copy
@exit

:copy
@copy gs_clnt.new gs_clnt.exe > gsnull.txt

@if exist once2.bat do call once2.bat
@if exist once2.bat do del once2.bat

@goto start
```

Automatic Update of Georgia SoftWorks SSH2/Telnet Client

Always use the matching version of the Georgia SoftWorks SSH2/Telnet Client with the Georgia SoftWorks UTS Server.

When a Georgia SoftWorks Client connects to the GSW Universal Terminal Server, the GSW UTS is able to determine the version of the GSW Windows Client that is connecting. If the version of the GSW SSH2/Telnet Client is different than the GSW UTS version, the GSW UTS updates the remote (client) computer with the appropriate GSW Client for that version of the GSW UTS Server.

As new versions of the software are released, occasionally matching versions of the GSW Windows Client and UTS is required to take advantage of certain features. Sometimes this required the System Administrator to either visit the remote site or via telephone walk remote users through instructions to install or update the GSW Client software.

Additionally, System Administrators may be administering many GSW Universal Terminal Servers distributed throughout a large region. Different versions of the GSW UTS may be installed at different sites. Regardless of the version installed the Administrator will be able to automatically use the appropriate version of the GSW Windows Client.

Note: This feature requires the minimum GSW Telnet Server **and** Client version 6.26.

Important Note to Customers of Versions Prior to 6.26

Previous versions of the GSW Telnet Client invoked the client executable directly from the shortcut.

Starting with Version 6.26 the short cut invokes the batch file GS_SClnt.bat which launches the Georgia SoftWorks Telnet Client. The batch file must be invoked for the Automatic Client Update to occur.

If you want to disable the Automatic Update of the GSW SSH2/Telnet Client then use the `-z` command line option.

When the Remote User connects to the GSW UTS Server computer and the versions do not match the User will see the following screen. The Text Upgrade initiated is displayed. While the appropriate client is being transferred a series of periods is displayed indicating the progress of the transfer.

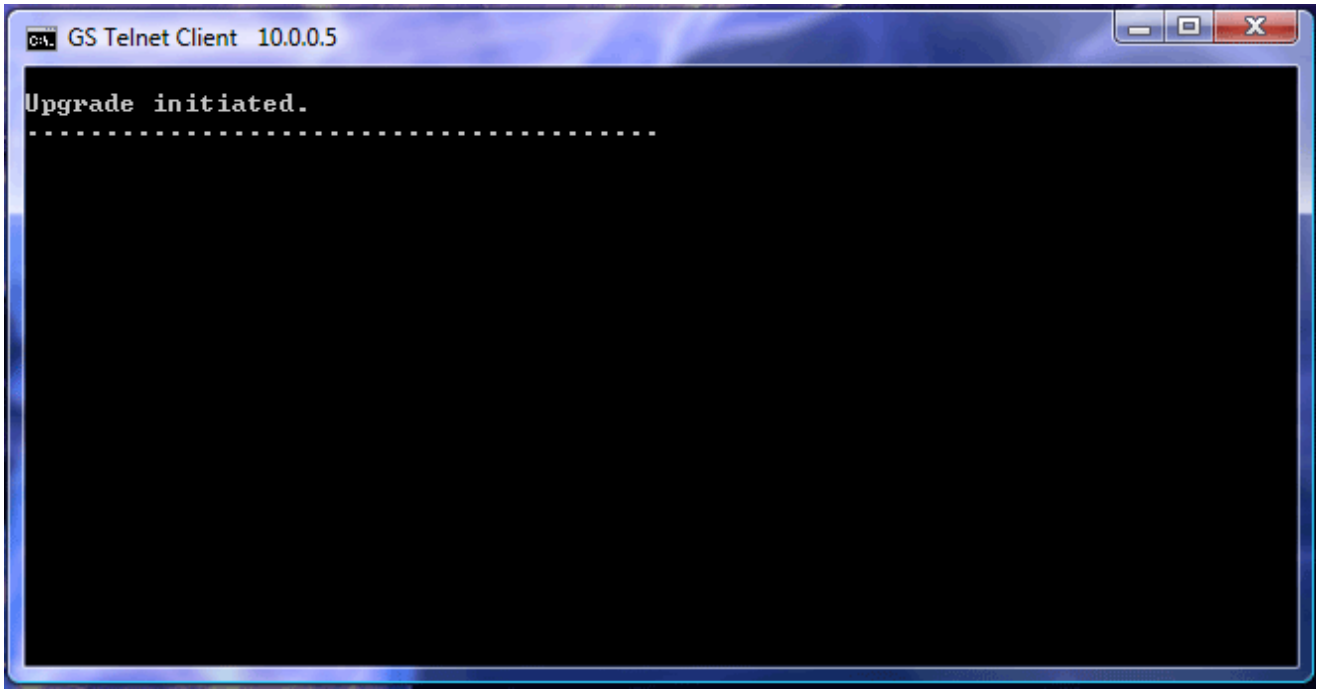


Figure 55: Automatic GSW Client Upgrade Initiated

Once the transfer of the client is complete you will see a screen similar to the one below displayed requesting a key to be pressed to continue.

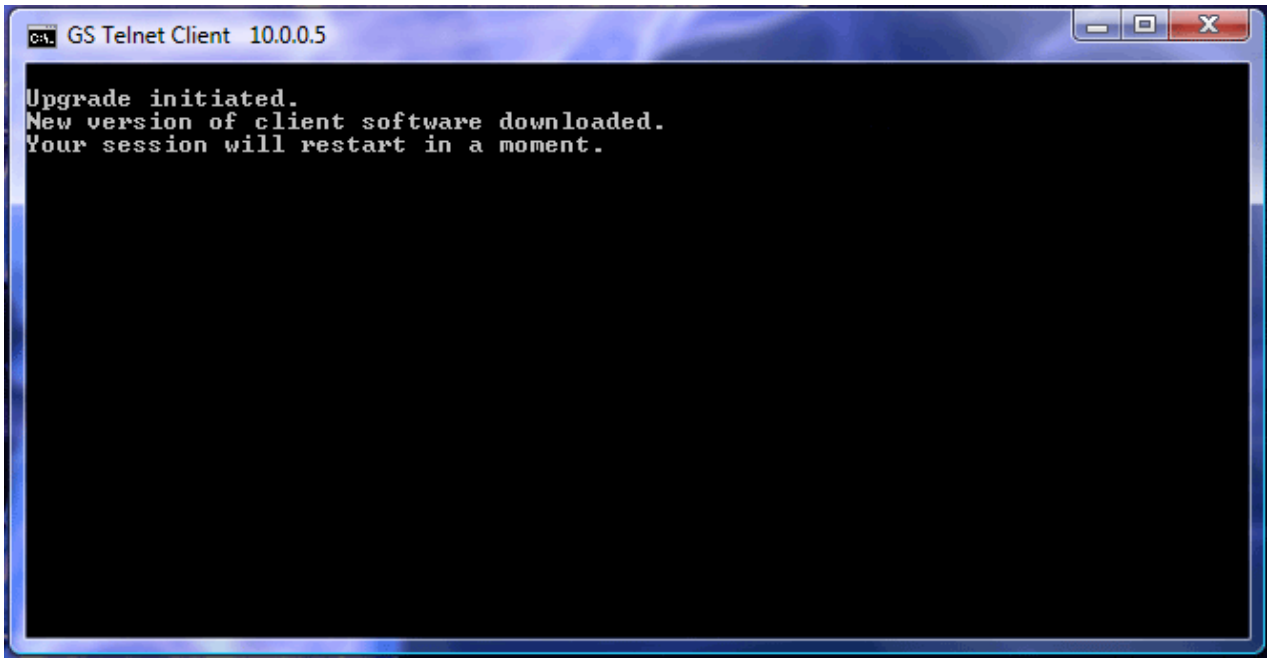


Figure 56: Automatic Client Upgrade – Session Restart

After the session is restarted you will be prompted again for the Host. Proceed and log on as usual with the proper GSW Client version for the GSW UTS Server for which you are connected.

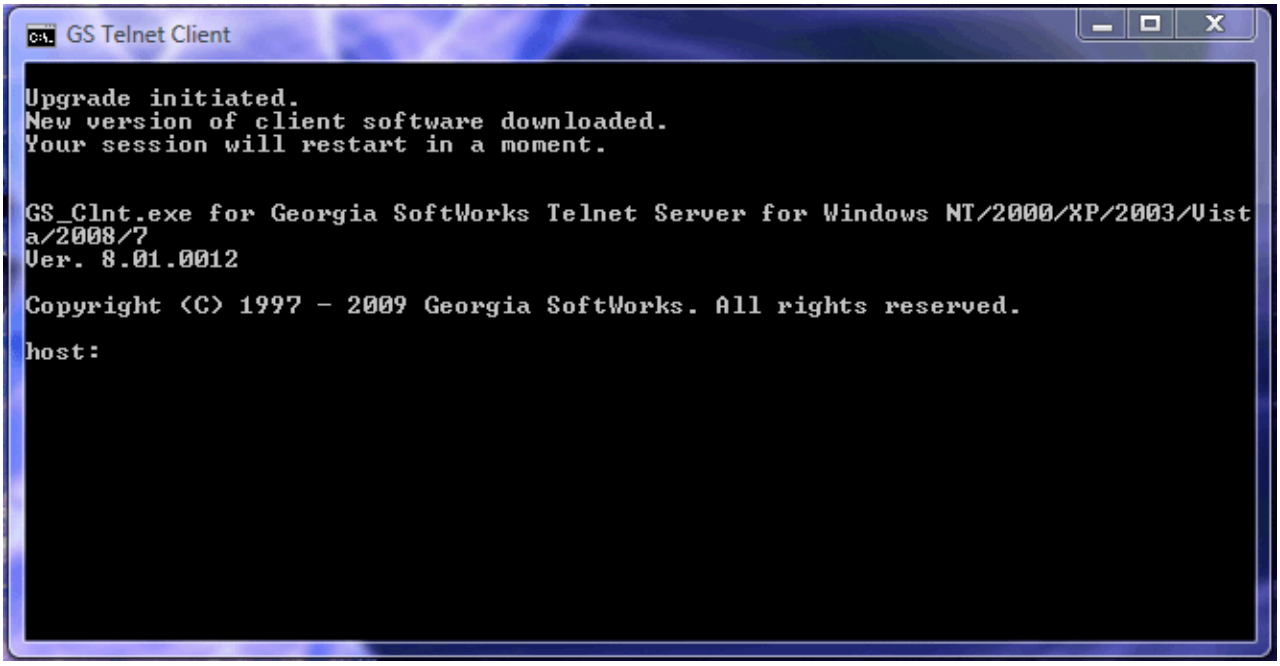


Figure 57: Automatic Client Upgrade - Host Prompt

Developer Tip: If a client-side application must launch the Georgia SoftWorks Client then the application should check the return code from the call to gs_clnt.exe/gs_ssh.exe. If the rerun code is two (2) then the client and server versions are different and newer client was copied to the file gs_clnt.new. It should be renamed and copied to gs_clnt.exe/gs_ssh.exe and then launched.

Application Title Display

Use the GSW GUI Configuration Tool – See Client Control page 408
Or use legacy style below

You may want the Application Title to display in the title bar of the Georgia SoftWorks Client Windows Title. This capability is *disabled* by default. To enable you should set the `gwtn_show_console_title` environment variable in your logon script (Learn more about logon scripts on page 408).

The environment variable for displaying the Application Title in the Georgia SoftWorks Client Window title bar is:

`gwtn_show_console_title`

Possible values are `Y` (or 'N', or 'y' or 'n')

`Y` – Enable the display of the application title in the Georgia SoftWorks Client Window Title

`N` – Disable the display of the application title in the Georgia SoftWorks Client Window Title (*default*)

For example, to enable the display of the Application Title in the Georgia SoftWorks Client you would enter:

`set gwtn_show_console_title=Y`

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_show_console_title=Y` is correct

`set gwtn_show_console_title = Y` is not correct.

Desktop Client Display 'X' in Top Right Corner

Use the GSW GUI Configuration Tool – See Client Control page 408
Or use legacy style below

You may not want the 'x' (close button) to display in the top-right title bar of the Georgia SoftWorks Desktop Client. If the 'x' is pressed in the top-right corner then the connection between the client and server is abnormally closed. The session may get suspended if the system is configured to do so. The administrator may require a specific method for the user to exit the application and thus may want to eliminate the 'x' (close button) as an option for the user.

The 'x' is displayed (*enabled)* by default. To disable you should set the `gwtn_clnt_no_x` environment variable in your logon script (Learn more about logon scripts on page 218).

The environment variable for disabling the display of the 'x' in the Georgia SoftWorks Desktop Client window title bar is:

gwtn_clnt_no_x

Possible values are '`Y`' or '`N`', or '`y`' or '`n`'.

`Y` – Disable the display of the 'x' in the title bar in the Georgia SoftWorks Desktop Client window Title

`N` – Enable the display of the 'x' in the title bar in the Georgia SoftWorks Desktop Client window Title (*default*)

For example, to disable the display of the 'x' in the Georgia SoftWorks Desktop Client you would enter:

```
set gwtn_clnt_no_x=Y
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_clnt_no_x=Y` is correct

`set gwtn_clnt_no_x = Y` is not correct.

Answerback Text

The User can pass a text string (up to 20 characters) from the client to the server when connecting. The received text string is stored the environment `gwtn_answerback`. The command-line option

```
-bText
```

specifies a text string that is passed to the server. For Example, the command line parameter

```
-bdelta187
```

would be available on the server in the environment variable `gwtn_answerback`. The example below shows both the client MAC address and the Answerback text.

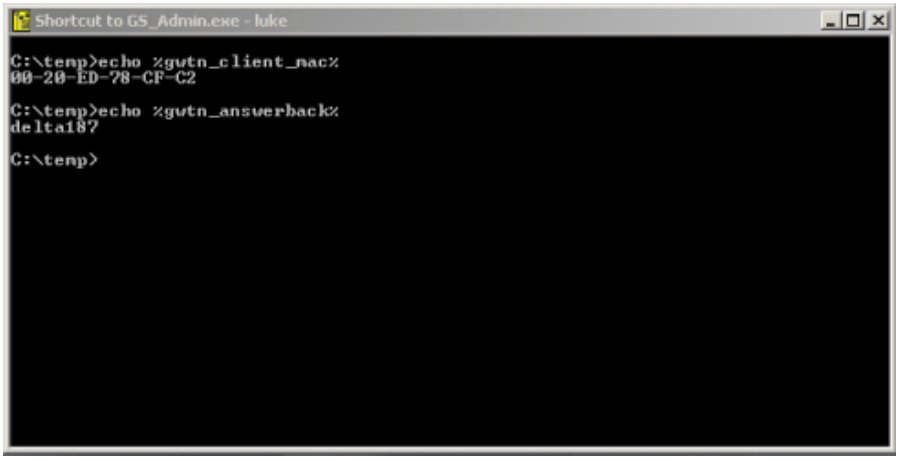


Figure 58: Answerback and MAC Address environment variable

GSW Mobile Device (Windows Mobile and Windows CE .NET V4.2/5.0+) client's configuration.

Below is a screen shot of the GSW Mobile Device configuration for the Answerback text.

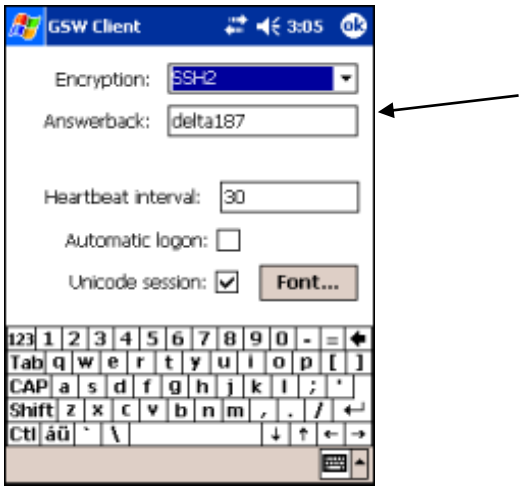


Figure 59: GSW PPC Client Answerback text configuration

Desktop Keyboard Macros

Keyboard macros are a powerful and time saving feature that lets the administrator define custom keys on the device when the session is active[8]. Macros are used for remapping Function keys (`F1 – F12`) to keystroke sequences. Macros definitions have the form:

```
Function Key=Keystroke Sequence
or
Function Key=(shift:ctrl:alt) Keystroke Sequence
```

Where

Function Key is F1 through `F12`

and

`(shift:ctrl:alt)`

This is optional extended syntax that provides the capability to specify the `Shift`, `Ctrl` and `Alt` key states. You may want to have a `Shift F1` or `a Ctrl F1, Shift Alt F2,` etc. and the syntax of (`Shift:Ctrl:Alt`) is a fast way to specify if the key is pressed. To indicate a key is pressed is by using the value `1` and so specify that it is not pressed is to use the value `0`.

For example

`(1:0:0)` specifies that the SHIFT key is pressed but not the CTRL or ALT.
`(0:1:0)` specifies that the CTRL key is pressed but not the SHIFT or ALT.
`(0:0:1)` specifies that the ALT key is pressed but not the SHIFT or CTRL.
Or combinations can be specified:
`(1:1:0)` specifies that the SHIFT key and CTRL keys are pressed but not the ALT.
Whitespace is optional.

See the example in the configuration section below for detailed examples.

and

Keystroke Sequence follows the same format as the GSW Termination strings (page 158).

The keys that can be remapped are

Function Keys: `F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12`

Configuration

The keyboard macros are defined in the session configuration files. The session configuration file for the desktop client is `GSWClnt.ini`.
For mobile clients the file name is up to the administrator as long as the extension is `.gswtc`.

The configuration files have the "`Windows ini`" format.

[8] Keyboard Macro's are different than Keyboard Accelerators. Accelerators are available on the device when there is no session (outside the session).

A new section [Macros] needs to be manually added to the configuration file.

For example, to remap all Functions Keys to send capital F, followed by function key index and the enter key you would add the following section to the configuration file GSWClnt.ini.

```
[Macros]
F1=shift-f,1,ENTER
F2=shift-f,2,ENTER
F3=shift-f,3,ENTER
F4=shift-f,4,ENTER
F5=shift-f,5,ENTER
F6=shift-f,6,ENTER
F7=shift-f,7,ENTER
F8=shift-f,8,ENTER
F9=shift-f,9,ENTER
F10=shift-f,1,0,ENTER
F11=shift-f,1,1,ENTER
F12=shift-f,1,2,ENTER

F1=(1:0:0)SHIFT-S, SHIFT-F, 1
F2=shift-f,2,ENTER
F3=shift-f,3,ENTER
F4=shift-f,4,ENTER
F5=shift-f,5,ENTER
F6=shift-f,6,ENTER
F7=shift-f,7,ENTER
F8=shift-f,8,ENTER
F9=shift-f,9,ENTER
F10=shift-f,1,0,ENTER
F11=shift-f,1,1,ENTER
F12=shift-f,1,2,ENTER
```

Terminating a session

Type **exit** at the client window prompt (command prompt) followed by the ENTER key and the session will terminate and the window will clear and then close. If you are unable to get to the command prompt then you should use the client self-termination (see below).

Client Self-Terminate a Session

The client user can terminate their session by entering Ctrl-X followed by F9.

In situations where the client user believes that the application has hung or is not responding, the user can self-terminate the session without getting the system administrator involved.

Please note that the Team Services Hotkey (see page 143) must be enabled. It is enabled by default. If it is disabled then the ability for a client to self-terminate is also disabled.

Connecting using a 3rd Party Client

Please see the section on Emulations for descriptions in connecting to the Georgia SoftWorks UTS for Windows using 3rd party clients (page 166).

Feature Packs - Overview

The Georgia SoftWorks Windows Universal Terminal Server is *packed* with features. The aggregation of the features is geared toward industrial and commercial application. The features logically group into units called packs. All feature packs are included with the Georgia SoftWorks UTS at no extra cost!

Security Pack – (see page 92)

The Security Pack provides the system administrator with confidence that the Windows System and the data transferred remains secure. Encryption, access and usage restrictions are among security features implemented.

Performance Pack – (see page 109)

Advanced proprietary algorithms, optimizations and compressions provide for the fastest SSH2/Telnet Server for Windows on the market.

GSW Team Services – (see page 117)

Allow mobile users to quickly share resources to improve productivity while keeping cost down without requiring system administrator / IT intervention.

Failure Detection/Recovery Pack – (see page 149**Error! Bookmark not defined.**)

Industrial and commercial applications demand sophisticated failure detection and recovery methods. Georgia SoftWorks recognized the requirement and has unequaled capabilities in this area.

Legacy Pack – (see page 163)

Proper operation with Legacy applications is the foundation of a quality SSH2/Telnet server. The Georgia SoftWorks Telnet Universal Terminal Server for Windows will meet or exceed all expectations with respect to running character oriented and legacy applications.

Emulation Pack – (see page 166)

The Emulation Pack provides all the popular emulations required by most 3rd party clients. Not only are the emulations provided but they are implemented correctly.

Power Features Pack – (see page 187)

The Georgia SoftWorks UTS provides the most powerful, needed and useful features on the market.

Compatibility Pack – (see page 244)

RFC 854 compliance provides access from other platforms allowing the Telnet Server to be utilized by a variety of users.

RF Terminal Features - (See page 244)

Utility Pack – (see page 259)

Several utilities are provided for the telnet user to simplify and ease the use of SSH2/Telnet.

Security Pack

Georgia SoftWorks provides *unmatched security* when using our Telnet Server for Windows. It is the **only** Telnet Server that offers complete **Data Stream Encryption**. The Georgia SoftWorks Telnet server has been submitted to the United States Department of Commerce and has obtained the proper license exceptions so it can be legally exported around the world[9].

Data Stream encryption can be enabled on a global or a per user basis with undetectable performance loss. This is useful if users are running accounting, banking, medical or other applications that contain sensitive data.

*Logon **only** encryption* may also be employed. This protects User Ids, Passwords and other logon data.

The Georgia SoftWorks Universal Terminal Server is integrated with Windows Security. All Windows security concepts apply. The Georgia SoftWorks UTS allows the system administrator to optionally restrict telnet access based on User ID or IP address. These are additional security measures above the normal Windows security. The system administrator can specify the users that are allowed to logon via telnet

Security Pack	**Configurable**	**GSW Windows Clients**	**3rd Party Client**
Encrypted Data Stream - Telnet Server Specific	Yes	Yes	No
Encrypted Data Stream – Strong 128 Bit* - Telnet Server Specific	Yes	Yes	No
Encryption - *Enable or Disable based on IP Address – Telnet Specific*	Yes	Yes	
SSH Strong Encryption - AES-256 (End to End – Authentication and Data Stream) - GSW SSH Server	**Yes**	**Yes**	**Yes**
Encrypted Logon Session - Telnet Server Specific	Yes	Yes	No
FIPS 140-2 Compliant Option – SSH Server	**Yes**	**Yes**	No
AES-256 Encrypted Logon Session – SSH Server	**Yes**	**Yes**	**Yes**
Connection Restrictions			
- User Id	Yes	Yes	Yes
- IP Address	Yes	Yes	Yes
- 3rd Party Clients	Yes	Yes	Yes
- Connection count	Yes	Yes	Yes
- Connection count by User ID	Yes	Yes	Yes
- Connection count by IP Address	Yes	Yes	Yes
Encrypted Sessions Only – Telnet Server	Yes	Yes	No
Encrypted Sessions Only – SSH Server	**Yes**	**Yes**	**Yes**
Specific application	Yes	Yes	Yes
Expired Password Handling	N/A	Yes	Yes
Integrated with Windows Security	N/A	Yes	Yes
* Must have the SE (Strong Encryption) version of the software			

Table 19 - Security Pack

[9] Certain Generic Export Restrictions apply to some countries.

Encrypted Data Stream – Telnet Server

Encryption of the Data Stream for Telnet on Windows is another feature *pioneered* by Georgia SoftWorks. Complete Data Stream encryption is available on a global or per user basis when using the Georgia SoftWorks Telnet Client. For encryption to work both the sending and receiving ends of the data must know to encrypt and decrypt the data. Since third party clients would not be aware of encryption or decryption, data stream encryption is only available with the Georgia SoftWorks Telnet Client.

The Setup for Data Stream Encryption requires:

1. The encryption parameter must be passed when invoking the Georgia SoftWorks Telnet Client
2. The setting of an environment variable on the server in either a Global or User login script
3. The registry variable EnableEncryption is set to `1`.
4. The proper Microsoft Windows operating system DLLs and API's are installed on both the client and server systems.

Data Stream Encryption Client Parameters

The parameter `-c` should be passed when invoking the Georgia SoftWorks Windows Telnet Client. This can be passed from the command line via the following command:

```
gs_clnt.exe -c
```

The shortcut may be modified to pass Data Stream Encryption parameter.

Data Stream Encryption Server Environment variable.

An environment variable must be set on either a Global or Per User basis to activate Data Stream Encryption.

Use the GSW GUI Configuration Tool – Global 370 or Per User 408
Or use legacy style below

The environment variable for the complete data stream encryption is:

gwtn_encrypt_session

in the Logon Script for a particular user (or the Global Logon Script for all users.).

NOTE: No spaces are allowed when setting environment variables.

For example: To Activate Data Stream Encryption the following line should be present in the logon script.

`set gwtn_encrypt_session=1` is correct

`set gwtn_encrypt_session = 1` is not correct

For example: To De-activate Data Stream Encryption the following line should be present in the logon script.

set gwtn_encrypt_session=0 is correct

Enable Encryption Server Registry variable

The variable `EnableEncryption` is a registry key value. This Registry key enables or disables the ability to activate Encryption. If it is disabled then all encryption environment variables are ignored. Also, the client command line parameter **must not be used** when the registry value is disabled. The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\EnableEncryption

The default value is 0(That is disabled.) The value 1 enables the ability to use Encryption. The value 0 disables the ability to use encryption.

This is how to change the registry key for Encryption.

Note: You must be on the Windows system that the Georgia SoftWorks Telnet Server is installed. However, you may connect to the Windows Registry from a remote location.

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\EnableEncryption

6. Select the menu item **Edit** and then click on **Modify**
7. Enter the new value for the EnableEncryption and click **OK**

The new EnableEncryption value will take effect for all new connections.

Proper Operating System DLL's

Encryption requires specific operating system Dll's (that are present on most systems) to exist to run the telnet client and server.

These files come with Windows NT 4.0/XP/VISTA/2000/2003/2008/W7/W10 and are included in Microsoft Internet Explorer Version 3.0 and above. If you do not have these system files encryption will not operate.

If you have Windows 95 then you must have Windows 95 OSR2 (OEM Service Release 2) or later (or Windows 95 with IE 3.02 or later). Windows 98 and newer versions have all the required files.

Georgia SoftWorks Telnet Server SE: 128-bit Strong Complete Data Stream Encryption.

Some applications require extremely strong Complete Data Stream Encryption. For these customers, Georgia SoftWorks offers their Telnet Server in a Strong Encryption (SE) version. This utilizes a full 128-bit data stream RSA encryption algorithm.

NOTE: 128-Bit Complete Data Stream is the default version when shipped on a CD.

The Georgia SoftWorks configuration needed to run the 128-bit encryption is the same as for the 40-bit encryption. The system requirements needed to run the encryption are slightly different. In order to run the 128-bit encryption the system requires either:

Server or Client Requirements

- Windows NT 4.0 with domestic version of SP 3 or domestic version of SP4 or
- Windows 7/8/10/VISTA/2008/R2/2012/2016/2019, XP/2000/2003

Additional Client Options

- Windows 95 with domestic version of Microsoft Internet Explorer 4.0. or
- Windows 98 with domestic version of Microsoft Internet Explorer 4.0.
- Windows ME with domestic version of Microsoft Internet Explorer 4.0

If you have further questions about of ensuring that your computer systems can accommodate 128-bit encryption please see the Microsoft Web site.

Both the client and server must meet the system requirements for the SE version. Also, both the Client and server must be of the SE version.

Encrypted Logon Sequence

You may choose to only encrypt the logon sequence when using the Georgia SoftWorks Telnet Client. This entails the same steps as described with Complete Data Stream encryption *except* there are no environment variables to set in the logon scripts.

Encryption Based on IP Address

In certain situations, it may be desirable to have encryption enabled or disabled based on the IP Address of the connecting telnet session. Complete Encryption (both Logon and Data Stream) can be enabled/disabled based on the IP address using the configuration text file `gs_ipenc.txt`[10]. The Data Stream Encryption Client-side parameter must also be used when configuring encryption based on IP addresses as described on page 93.

When configured the settings in the `gs_ipenc.txt` file overrides the normal encryption registry and environment settings.

The order of the fields in the `gs_ipenc.txt` file is as follows:

Field	Description
IP Address	The IP address/IP Address Range of the client
Enable or Disable Encryption Value	0=Disable, 1=Enable

Table 20 – Encryption based on IP Address - `gs_ipenc.txt` when using GSW Clients

For example, the following entry in the file:

```
168.92.55.4 0
```

disables logon and session encryption for GSW Telnet Clients connecting from `168.92.55.4`

Another Example:

```
205.20.63.* 1
```

enables logon and session encryption for GSW Telnet Clients connecting from `205.20.63.*`

NOTE1: The IP address must start in the first column. IP Address Ranges and wildcards are allowed. Please see the file gs_ipenc.txt for further details.

NOTE2: For security reasons it is prudent to set the file `gs_ipenc.txt` to allow only SYSTEM – Read Access. NO other accounts should be allowed to access this file.

NOTE3: This feature is for power users that have a thorough understanding of the network and system security issues and topics.

[10] Located in the root installation folder of the GSW UTS Server.

Encryption – SSH Server

The GSW SSH Server offers very strong end-to-end encryption for all data. This includes the authentication and data stream. Please see the GSW SSH User's Guide for more information on the SSH Server encryption.

Encryption – FIPS 140-2

A Federal Information Processing Standards Publication (FIPS) 140-2 compliant option is available and may be purchased for the GSW SSH Server. This standard specifies the security requirements that will be satisfied by a cryptographic module utilized within a security system protecting sensitive or valuable data. This option is available to Federal agencies, including the US Military. It may also be purchased by other organizations such as state governments, educational and research institutions, commercial businesses and other entities with the need or desire to comply with this security requirement for cryptographic modules standard. Please see the GSW SSH User's Guide for more information on the SSH Server FIPS option.

When the FIPS 140-2 option is enabled on the GSW SSH server, FIPS 140-2 compliant connections can be identified by using the Session Administrator.

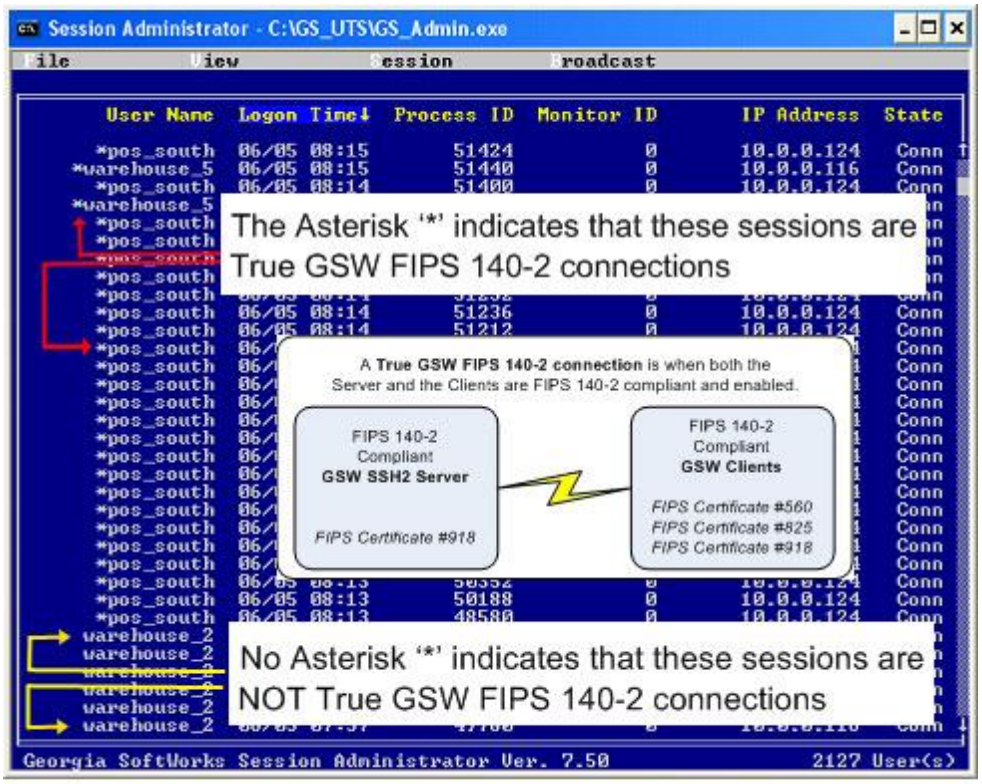


Figure 60: Session Administrator view FIPS 140-2 sessions

A True GSW FIPS 140-2 connection is identified by an asterisk "*" prepended to the *username* in the session administrator. This means that a GSW FIPS 140-2 compliant client is connected to a FIPS 140-2 compliant server. Both ends are compliant and thus you can have confidence that this is a GSW True FIPS 140-2 compliant connection. Usernames without an asterisk "*"cannot be confirmed as FIPS 140-2 compliant.

Connection Restrictions

The system administrator may restrict access to the SSH2/Telnet Server based on a variety of criteria advancing the level of security.

Restrict access based on User ID

The system administrator may optionally restrict connections via SSH2/Telnet based upon the *user id*. This is useful when you have a defined set of users that you would allow access to the Windows Server via SSH2/Telnet . If the system administrator decides to limit the users allowed to logon via SSH2/Telnet then the **local** group *Gwtn Users* must be created. If this group exists then only members of this group will be allowed to logon via SSH2/Telnet . If this group does not exist then all users that can logon locally can log on via SSH2/Telnet. Once the group *Gwtn Users* is created, each user allowed to logon via SSH2/Telnet must be added to this group[11]. Windows does not instantaneously update the group membership after the user manager is closed. You will have to restart the Windows server after creating the group and adding users.

Restrict access based on IP Address

The system administrator may optionally restrict connections via telnet based upon the Host IP address. Remote access may be limited only to specific IP addresses. The system administrator may also restrict specific IP addresses from connecting via SSH2/Telnet.

Restrictions based on IP address are enforced when the file `thosts` exists. The IP addresses of interest are listed in the `thosts` file. In short, only IP addresses listed in the `thosts` file are allowed to connect via telnet/SSH. The provision also exists to exclude specific IP addresses from connecting via SSH2/Telnet. A keyword [Exclude] is used that indicates all IP Addresses listed in the file should be excluded from logon via SSH2/Telnet.

How to set up Host IP Address Restriction.

Use the GSW GUI Configuration Tool – Edit thosts file 371
Or use legacy style below

You must create the file:

```
thosts
```

The file must reside in the Georgia SoftWorks Universal Terminal Server installation directory. The directive [EXCLUDE] indicates if the IP Addresses should be excluded from connection.

NOTE: The System account must have permission to read the `thosts` file.

The rules are simple for setting up the `thosts` file.

1. It is a text file

2. The # character is the comment character

[11] Only Individual Users can be added to Gwtn Users. Groups can not be added to the group.

3. [EXCLUDE] directive placed in the 1st line will force the interpretation as the exclusion file, otherwise only IP addresses listed are allowed.

4. Data after the IP address is ignored and therefore can be used for additional comment data.

Following are example `thosts` files.

EXAMPLE - IP RESTRICTION: RESTRICT CERTAIN HOSTS FROM CONNECTING.

Bill and Tom have machines that are in a public location and are not secure. The system administrator does not want to allow SSH2/Telnet access from those machines. However, Bill and Tom have other machines that need SSH2/Telnet access to the server. This is how to set up the thosts file to exclude those particular machines.

Information needed:

IP address of Bill's machine: 198.68.20.21

IP address of Tom's machines: 198.68.22.25

Edit the file `thosts` and add the following lines.

[EXCLUDE]

```
# Here is the list of hosts that are not allowed to log in via SSH2/Telnet

198.68.20.21          Bob's machine

198.68.22.25          Tom's machine
```

Now let's look at the contents of the file.

The [EXCLUDE] directive specifies that all IP addresses listed in the thosts file are not allowed to connect via telnet.

The next line is a comment reminding the System Administrator that the following Host IP addresses will not be allowed to connect via SSH2/Telnet .

Next is the list of Host IP addresses to exclude. The list can be as long as you desire.

EXAMPLE - RESTRICTION: ALLOW ONLY SPECIFIC HOSTS TO CONNECT

ACME Accounting has 3 remote locations. For the machines at each location there may be dozens of different users that may be connecting at different times of the day. The system administrator only wants to allow SSH2/Telnet connections from the 3 remote locations.

However, the ACME remote Location 3 office is temporally closed and is under remodeling. Therefore, the system administrator wants to easily comment remove them from the "allowed" list and quickly add them back as soon as the office reopens.

Information needed:

IP address of ACME accounting location 1 machine: 198.68.35.21

IP address of ACME accounting location 2 machines: 198.68.35.25

IP address of ACME accounting location 3 machines: 198.68.35.26

Edit the file `thosts` and add the following lines.

```
# Here is the list of hosts that are allowed to log in via SSH2/Telnet
#
198.68.35.21          ACME accounting location 1 machine
198.68.35.25          ACME accounting location 2 machine
#Let's not allow location 3 until the office reopens.
#198.68.35.26          ACME accounting location 3 machine
#
```

Restrict users access to a specific application

The system administrator may optionally limit a user to run a specific application. This is accomplished using the `c_start.bat` file logon scripting technique. A detailed example and description is on page 219.

Restrict connections from 3rd Party Clients

This feature allows connections only from the Georgia SoftWorks SSH2/Telnet Client. This is another level of security that the system administrator can configure. Many times, the system administrator will not want users using any generic client to connect to his or her system.

The variable `EnableRFC854Clients` is a registry key value. This Registry key enables or disables the ability to restrict connection from 3rd party clients. If it is disabled then only users using the Georgia SoftWorks SSH2/Telnet client are allowed to connect. The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\EnableRFC854Clients

The default value is 1(That is enabled.) The value 1 enables the ability for connection from all telnet/SSH clients. The value 0 restricts connection to the Georgia SoftWorks Telnet/SSH client.

This is how to change the registry key for 3rd Party Client Restriction.

Note: You must be on the Windows system that the Georgia SoftWorks Windows UTS is installed. However, you may connect to the Windows Registry from a remote location.

1. Click the **Start** button at the bottom left corner of your screen.

2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\EnableRFC854Clients

6. Select the menu item **Edit** and then click on **Modify**
7. Enter the new value for the `EnableRFC854Clients` and click **OK**

The new value will take effect for all new connections.

Restrict access based the number of connections

Use the GSW GUI Configuration Tool – Set Max Sessions 372
Or use legacy style below

This feature specifies the total number of connections allowed. This is another level of security that the system administrator can configure. Many times, the system administrator may want to limit the total number of connections to be a smaller value than the number of connections purchased.

The variable `MaxSessions` is a registry key value. This Registry key enables or disables the ability to restrict connection to the number of sessions specified. If it is disabled (0xffffffff) then all of the sessions purchased are available, otherwise then the `MaxSessions` Registry value is compared to the number of sessions purchased. The smaller of the two numbers is used as the number of sessions to allow. The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\MaxSessions

The default value is `0xffffffff` (That is disabled). Other values limit the number of connections allowed to the value chosen.

This is how to change the registry key to limit the number of connections.

Note: You must be on the Windows system that the Georgia SoftWorks Universal Terminal Server is installed. However, you may connect to the Windows Registry from a remote location.

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\MaxSessions

6. Select the menu item **Edit** and then click on **Modify**

7. Enter the new value for the `MaxSessions` and click **OK**

The new value will take effect for all new connections.

Restrict Number of connections by a Specific User ID

Use the GSW GUI Configuration Tool – Set Max Sessions 372
Or use legacy style below

The system administrator may want to limit the number of simultaneous logons for specific User Ids. This is especially useful for ASP environments where an entire company, department or group is assigned a single User Id that everyone shares. The system administrator may want to limit the number of simultaneous connections for that company for a variety of reasons that range from server resource allocation to purchased access.

Restrictions based on the number of User Id sessions are enforced when the file `gs_l_usr.txt` exists. The User Id's with connection restrictions counts are listed in the `gs_l_usr.txt` file. For each entry in the `gs_l_usr.txt` file two fields are specified: The User ID and the Count.

How to set up User ID Count Restriction
Notice the file in the GSW UTS installation directory:

```
gs_l_usr.txt
```

The file must reside in the Georgia SoftWorks Universal Terminal Server installation directory.

NOTE: The System account must have permission to read the `gs_l_usr.txt` file.

This file is used for configuration of the User ID Count Restrictions.

The rules are simple for setting up the `gs_l_usr.txt` file.

- It is a text file
- The # character is the comment character
- Each entry must start in the first column.
- Each entry consists of the User ID and the Count
- The User ID and the Count are separated by a single space

Following is an example for using the `gs_l_usr.txt` file.

EXAMPLE – USER ID COUNT RESTRICTION

ACME ASP is an Application Service Provider (ASP) where they have a Specialized Database Lookup Application (SDLA) located on a server at their headquarters. They sell access to the SDLA to companies where pricing is based on the number simultaneous connections. Each company accesses the SDLA via the Internet from undetermined or varying locations. Each company that purchases access to the SDLA is provided a User ID on the ACME server, that everyone from their company shares.

Currently AMCE has sold access to the SDLA to six companies. Four companies purchased three connections each; the remaining two companies purchased twelve connections each.

ACME wants to restrict each company to the number of sessions that they have purchased.

The ACME System Administrator can configure the `gs_l_usr.txt` file that specifies the number of sessions allowed for each User ID.

The Information for each company is:

Company Name	User Id Assigned to Company	Number of Concurrent Sessions
BigBrain Intelligence	**bbrain**	**12**
Vigorous Investments	**viginv**	**3**
Sweet Apple Suppliers	**sweeta**	**3**
Warehouse Storage	**warstore**	**3**
Sure Shipping Co	**surship**	**3**
Wireless Security	**Wiresec**	**12**

Figure 61: Security: Restriction based on User ID Count.

This is how to set up the gs_l_usr.txt file to limit the number of connections for each company.

Edit the file `gs_l_usr.txt` and add the following lines. (Be sure to start in column one)

```
bbrain 12
viginv 3
sweeta 3
warstore 3
surship 3
Wiresec 12
```

Each time a logon request occurs the GSW Universal Terminal Server determines the number of active sessions associated with that User ID. If the count of active sessions exceeds the configured count in the `gs_l_usr.txt` file then the logon is denied.

A sample `gs_l_usr.txt` file with examples is installed with the software. It can be easily modified and used for your purposes.

Restrict Number of connections from a Specific IP-Address

Use the GSW GUI Configuration Tool – Set Max Sessions 372
Or use legacy style below

The system administrator may want to limit the number of simultaneous logons from specific IP Addresses. This is especially useful for ASP environments where many users access the GSW UTS from locations that can be identified by a specific IP Address. The system administrator may want to limit the number of simultaneous connections for a variety of reasons that range from server resource allocation to purchased access.

Restrictions based on the number of sessions originated from specific IP Addresses are enforced when the file `gs_l_ip.txt` exists. IP Addresses with connection restrictions counts are listed in the `gs_l_ip` file. For each entry in the `gs_l_ip` file two fields are specified: The IP Address and the Count.

How to set up IP Address Count Restriction.
Notice the file in the GSW UTS installation directory:

```
gs_l_ip.txt
```

The file must reside in the Georgia SoftWorks Windows Universal Terminal Server installation directory.

NOTE: The System account must have permission to read the `gs_l_ip.txt` file.

The file `gs_l_ip.txt` is used for configuration of the IP Address Count Restrictions.

The rules are simple for setting up the `gs_l_ip.txt` file.

- It is a text file.
- The # character is the comment character.
- Each entry must start in the first column.
- Each entry consists of the IP Address (or IP Address Range) and the Count.
- The IP Address and the Count are separated by a single space.

Following is an example for using the `gs_l_ip.txt` file.

EXAMPLE – IP ADDRESS COUNT RESTRICTION

ACME ASP is an Application Service Provider where they have a Medical Database Lookup Application (MDLA) located on a server at their headquarters. They sell access to the MDLA to companies where pricing is based on the number simultaneous connections. Due to the sensitive nature of Medical information access is only granted from specific locations that can be associated with known IP Addresses. In addition, each User has access to private medical information based on their User ID. The typical ACME customer may have 300 users that need access to the MDLA but no more than 20 will be using the system at any given time.

Currently AMCE has sold access to the MDLA to four companies. Two companies purchased twenty connections each; the remaining two companies purchased twenty-five connections each.

ACME only wants to restrict each company to the number of sessions that they have purchased.

The ACME System Administrator can configure the gs_l_ip.txt file that specifies the number of sessions allowed for each User ID. The Information for each company is:

Company Name	IP Address or Range		Number of Concurrent Sessions
Heath Matters Inc.	**192.71.34.107**		**20**
Live Long Insurance	**170.40.255.231**		**25**
Grow Tall Pharmaceutical (They want access from any the following IP Addresses to work.)	164.10.15.210 164.10.15.211 164.10.15.212 164.10.15.213 164.10.15.214 164.10.15.215 164.10.15.216 164.10.15.217 164.10.15.218 164.10.15.219	164.10.15.220 164.10.15.221 164.10.15.222 164.10.15.223 164.10.15.224 164.10.15.225 164.10.15.226 164.10.15.227 164.10.15.228 164.10.15.229 164.10.15.230	**20**
Sharp Doctors for You (Sharp Doctors for You has a large range of IP Addresses that are valid.)	205.20.63.0 Through 205.20.63.255		**25**

Figure 62: Security: Restriction based on Count. from IP Address

This is how to set up the gs_l_ip.txt file to limit the number of connections for each company.

Edit the file gs_l_ip.txt and add the following lines.

```
192.71.34.107 20
170.40.255.231 25
164.10.15.210-164.10.15.230 20
205.20.63.* 25
```

Each time a logon request occurs the GSW Universal Terminal Server determines the number of active sessions associated with that the originating IP Address. If the count of active sessions exceeds the configured count in the gs_l_ip.txt file then the Logon is denied.

Note 1: *An Address range is specified in line 3*

164.10.15.210-164.10.15.230 20

This translates to include all IP Addresses between:

164.10.15.**210** and 164.10.15.**230**

Note 2: *An Address Wilde Chard is specified in line 4*

205.20.63.* 25

```
This translates to include all IP Addresses no matter what the values for
the last field. The list below helps visualize the IP addresses included.

                              164.10.63.0
                              164.10.63.1
                              164.10.63.2
                                   …
                            164.10.63.253
                            164.10.63.254
                            164.10.63.255
```

A sample `gs_l_ip.txt` file with examples is installed with the software. It can be easily modified and used for your purposes.

Restrict connection to only encrypted sessions – Telnet

Use the GSW GUI Configuration Tool – Telnet Encryption see page 370
Or use legacy style below

This feature allows connections only from the encrypted Georgia SoftWorks Telnet Client. This is another level of security that the system administrator can configure. Many times, the system administrator wants to ensure that ALL connections to the GSW UTS are encrypted.

Note: This feature is only relevant for Telnet. By the nature of SSH all connections are encrypted.

The variable `RequireEncryptedSession` is a registry key value. This Registry key enables or disables the ability to restrict encrypted only sessions. If it is disabled then only users using the Georgia SoftWorks Telnet client are allowed to connect. The key is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\RequireEnctyptedSession
```

The default value is 0(Disabled.) The value 1 only allows encrypted session to connect. The value 0 allows both encrypted and un-encrypted sessions to connect to the Georgia SoftWorks Telnet client. This value must be left set to 0 (the default) if running the GSW SSH Server.

*Use of this feature **overrides** user settings in the logon script and force clients to use encrypted session data stream.*

Please make sure the registry parameter:

EnableEncryption

is set to 1 and that the Georgia SoftWorks Telnet Client uses the `/c` command line option.

After you complete your settings you will notice the following:

a. 3rd party clients will report disconnected session before the user even tries to type his logon name.

b. GS clients which do not have `/c` option will fail to connect.

This is how to change the registry key for connection by only Encrypted Sessions.

Note: You must be on the Windows system that the Georgia SoftWorks Windows UTS is installed. However, you may connect to the Windows Registry from a remote location.

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\RequireEncryptedSession

6. Select the menu item **Edit** and then click on **Modify**

7. Enter the new value for the `RequireEncryptedSession` and click **OK**

Expired Password Handling

The Georgia SoftWorks Universal Terminal Server has *pioneered* and introduced another expected but missing feature in the Windows world. Typically, when a user password is expired connections are simply refused by Windows SSH2/Telnet servers. This is not the case with the Georgia SoftWorks Universal Terminal Server. The user is prompted for the new password just as if they were logged on locally to the Windows Server.

Integrated with Windows Security

The Georgia SoftWorks Universal Terminal Server for Windows is integrated with Windows security, adhering to the native security already existing on Windows.

Performance Pack

The Georgia SoftWorks SSH2/Telnet Server is the *fastest* SSH2/Telnet Server available for Windows . The Georgia SoftWorks UTS is designed to work in the most demanding industrial and commercial applications. This means that it must have reliable and consistent operation all of the time. It does not matter if there is one connection or 100 connections. It is dependable, reliable, consistent and robust.

Performance Pack	Configurable	Georgia SoftWorks Client	3rd Party Client
Fast, Fast, Fast!		Yes	Yes
Compression for slow speeds	N/A	Yes	No
Slow Link, Internet Support	N/A	Yes	Yes
Proprietary performance algorithms	N/A	Yes	Yes
Proprietary code optimizations	N/A	Yes	Yes
DOSBOSS - MS DOS application performance booster!	Yes	Yes	Yes
Automatic Logon	Yes	Yes	Yes (page 183)
GSW UTS x64 native 64-Bit Software	N/A	N/A	N/A
RF DTIO Interface	Yes	Yes	Yes

Table 21 - Performance Pack

Fast, Fast, Fast

The Georgia SoftWorks UTS provides incredibly fast screen updates, in fact the fastest on the market. Several optimizations have been implemented with respect to screen updates. For example, when data is sent from the server to the client only the screen data that has changed is sent.

Keyboard response is also incredibly fast. When you type a character, it is displayed immediately. A fast typist will have to work hard to outrun the keyboard response of the Georgia SoftWorks Universal Terminal Server.

Compression for slow link speeds

The Georgia SoftWorks Universal Terminal Server for Windows compresses data to increase the overall throughput of data. *Incredible* performance optimizations are utilized when using the Georgia SoftWorks SSH2/Telnet Clients.

Slow link and Internet optimizations

Many access the host system via slow dialup links or by the Internet. Significant performance optimizations are realized when using any SSH2/Telnet client.

Proprietary performance algorithms and code optimizations.

To accomplish the desired performance, the GSW SSH2/Telnet Server designers used object oriented C++ for the foundation of the software, providing a modular, easily extensible and maintainable design. In addition to sophisticated performance algorithms, all time critical sections of the software are written in highly optimized C code.

DOSBoss MSDOS Application performance booster.

The Georgia SoftWorks DOSBoss **dramatically** improves system performance in situations when MSDOS applications are running under Microsoft Windows NT. In fact, some say it is incredible!

NOTE: DOSBoss will only run on 32-bit platforms.

Many MSDOS applications run under Windows but do not perform well, especially when multiple instances of them are being used at the same time (This is without SSH2/Telnet in the picture). This is because MSDOS applications do not know about Windows and assume they are the only application(s) running on the computer. As a result, the MSDOS applications are not always Windows friendly.

For example, start 3 instances of the Microsoft Edit program in 3 separate command prompt windows. Next start the Performance monitor. You will notice the CPU usage is very high even though you are not actively using the editors. Your computer does not perform well when the CPU usage is high. This problem occurs with many MSDOS applications.

To enable the Georgia SoftWorks DOSBoss put the following line at the beginning of your logon script:

```
<telnet_dir>\dosboss
```

where <telnet_dir> stands for the Georgia SoftWorks Telnet Server Directory, for example:

```
c:\gs_uts\dosboss
```

The above activates the DOSBoss with default parameters that satisfies most users requirements.

Note for power users

You can specify additional command line parameters for the DOSBoss. Valid command lines are:
`/cnn` - specifies the count of time slices to release. Default is `/c3`.
In the case where DOSBoss is already loaded the installed instance will change its parameter(s) to the new value(s).

`/h` - to display the help message
`/r` - uninstall the resident part of the program (Do not use with `/c` option)
`/s` - show statistics of the resident portion (DOSBoss must be loaded first)

Examples:

```
DOSBoss /c5 /s          ' Set time slices to release to 5, dump statistics
DOSBoss /r /s           ' uninstall the DOSBoss, dump statistics.
DOSBoss /h                      ' display the help message
```

Automatic Logon – Autologon

This feature allows you to pre-configure a list of IP addresses that will be able to connect and log on without any User ID, Password or Domain prompting when using the *Georgia SoftWorks SSH2/Telnet Clients or 3rd Party Telnet Clients.*

Autologon is useful in many situations; however, the real power of this feature is realized when coupled with the Session Saver (page 149) for fast and easy connection establishment. For example, when a connection is broken due to a link failure you can reconnect without the time consuming UserID, Password and Domain prompts and resume work exactly where you left off before the link failure.

The configuration procedure for Automatic Logon is different for GSW Windows Clients and Third-Party Clients. A list of IP address can be associated with either GSW Windows Clients or 3rd Party Clients but NOT both.

Automatic Logon for GSW Clients is configured using the `gs_auto.txt` file. Automatic Logon for Third Party Clients is configured using the `gs_logon.txt` file.

Automatic Logon for GSW Telnet and SSH Clients is configured using the `gs_auto.txt` file.
Automatic Logon for Third Party Telnet Clients is configured using the `gs_logon.txt` file.
Automatic Logon for Third Party SSH Clients requires the use of Public/Private key authentication. For more information please contact Georgia SoftWorks support

The format of the files is exactly the same but it is important to remember which files are used for each client type.

Note: An IP address **cannot** be associated with **both** a **GSW Client** **and a** **Third-Party Telnet Client**. No overlap between IP Address ranges defined in the `gs_auto.txt and gs_logon.txt` is allowed. Unpredictable results will occur.

Autologon with GSW Windows Clients

Use the GSW GUI Configuration Tool – Automatic Logon see page 368
Or use legacy style below

For correct operation of the AutoLogon feature when using the Georgia SoftWorks SSH2/Telnet Client two steps must occur.

First, the Georgia SoftWorks Telnet/SSH Client must be enabled for automatic logon.

- GSW **Desktop** Clients – Automatic Logon is enabled using the command line parameter **–** when initiating the client (See page 77).

- GSW Windows **Mobile** Clients – Automatic Logon is enabled by checking the Autologon checkbox on the Session | `Settings` | `Session` menu options. (see page 49)

Second, a server-side configuration text file is used for specifying the IP address that will AutoLogon. The name of the file for the Georgia SoftWorks SSH2/Telnet Client is `gs_auto.txt` and is installed in the GSW UTS Root Directory. All Clients connecting with IP addresses specified in the `gs_auto.txt` file must be GSW Clients AND the IP Addresses CAN NOT also be used in the 3rd Party Automatic Logon configuration text file. No overlap between IP Address ranges defined in the gs_logon.txt and gs_auto.txt is allowed.
The order of the fields in the `gs_auto.txt` file is as follows:

Field	Description
IP Address	The IP address of the client
Domain	Specify the dot '.' character if no domain is used.
User Name	The User ID for the connection
Password	The Password

Table 22 – Automatic Logon Specifications `gs_auto.txt` when using GSW Clients

An IP address can be associated to *AutoLogon* with a **Georgia SoftWorks** OR a **3rd Party Telnet Client** but **NOT both**. No overlap between IP Address ranges defined in the `gs_auto.txt` and `gs_logon.txt` is allowed.

For example, the following entry in the file:

```
63.80.112.70 . rayr  sharpbook
```

Instructs the system that when a user connects from the IP Address `63.80.112.70` that the connection should be authenticated as `'./rayr'` with the password set to '`sharpbook`'.

The '#' character in the first column designates a comment line.

NOTE1: The IP address must start in the first column. IP Address Ranges and wildcards are allowed.

NOTE2: For security reasons it is prudent to set the file `gs_auto.txt` to allow only SYSTEM – Read Access. NO other accounts should be allowed to access this file.

NOTE3: The format of this file is the same as `gs_logon.txt`, the automatic logon configuration file used with 3rd party clients. Only the name of the file is different.

Automatic Logon 3rd Party Clients

Use the GSW GUI Configuration Tool – Automatic Logon see page 368
Or use legacy style below

This feature allows you to pre-configure a list of IP addresses that will be able to connect and log on without any User ID, Password or Domain prompting when using 3rd Party **Telnet** Clients.

Autologon is useful in many situations; however the real power of this feature is realized when coupled with the Session Saver (page 149) and/or used with RF Data collection devices for fast and easy connection establishment. For example, when a connection is broken due to a link failure you can reconnect without the time consuming UserID, Password and Domain prompts and resume work exactly where you left off before the link failure.

A server-side text file is used for specifying the IP addresses that will AutoLogon. The name of the file is `gs_logon.txt` and is installed in the UTS Root Directory. No client configuration is required for 3rd party telnet clients.

The order of the fields in the **`gs_logon.txt`** file is as follows:

Field	Description
IP Address	The IP address of the telnet client
Domain	Specify the dot '.' character if no domain is used.
User Name	The User ID for the connection
Password	The Password

Table 23 - Automatic Logon Specifications `gs_logon.txt` when using 3rd Party Clients

An IP address can be associated to *AutoLogon* with a Georgia SoftWorks **OR** a 3rd Party Telnet Client but **NOT both**. No overlap between IP Address ranges defined in the `gs_logon.txt` and `gs_auto.txt` is allowed.

For example, the following entry in the file:

```
63.80.112.70 . rayr  sharpbook
```

Instructs the system that when a user connects from the IP Address 63.80.112.70 that the connection should be authenticated as `'./rayr'` with the password set to '`sharpbook`'.

The '#' character in the first column designates a comment line.

NOTE1: The IP address must start in the first column. IP Address Ranges and Wildcards are allowed.

NOTE2: For security reasons it is prudent to set the file gs_logon.txt to allow only SYSTEM – Read Access. NO other accounts should be allowed to access this file.

NOTE3: The format of this file is the same as `gs_auto.txt`, the automatic logon configuration file used with the Georgia SoftWorks Telnet/SSH clients. Only the name of the file is different.

Automatic Logon Summary

Automatic Logon requires Server-Side Configuration and Client-Side Configuration for GSW Clients.

Server-Side Configuration		
	Automatic Logon Configuration File on Server	
	GSW Windows Client	Third Party Client
Edit specific Server File that contains Automatic Logon Information	`gs_auto.txt`	`gs_logon.txt`

Table 24 - Automatic Logon Configuration Files

Client-Side Configuration for Automatic Logon

<table>
<tr><th colspan="3">Client-Side Configuration</th></tr>
<tr><th>GSW Desktop Client</th><th>GSW Mobile Client</th><th>Third Party
Telnet Client</th></tr>
<tr><td>Add the command line parameter
-a when initiating the client (page 77). This tells the client not to send logon information to the server.</td><td>Check the Box in the configuration options screen (page 49).</td><td rowspan="2">None Required</td></tr>
<tr><td>Example in the <code>GS_SClnt.bat</code> file

<pre>@echo off
:start
@if exist once1.bat do call
once1.bat
@if exist once1.bat do del once1.bat

@gs_clnt.exe -a

if errorlevel 2 goto copy
@exit
:copy
@copy gs_clnt.new gs_clnt.exe >
gsnull.txt
@if exist once2.bat do call
once2.bat
@if exist once2.bat do del once2.bat
@goto start</pre></td><td> 
</td></tr>
</table>

Table 25 - Automatic Logon Client-Side Configuration

GSW UTS x64 Native 64-Bit

Georgia SoftWorks created a native build optimized for 64-bit platforms. Indeed many 32-bit applications will run on a 64-bit platform including the standard GSW UTS, but our philosophy of continuous improvement demands that we put forth the effort to make the software native on the powerful 64-bit platform. This eliminates potential compatibility issues of non-native code running while taking full advantage of the performance and addressing opportunities afforded by the 64-bit platform.

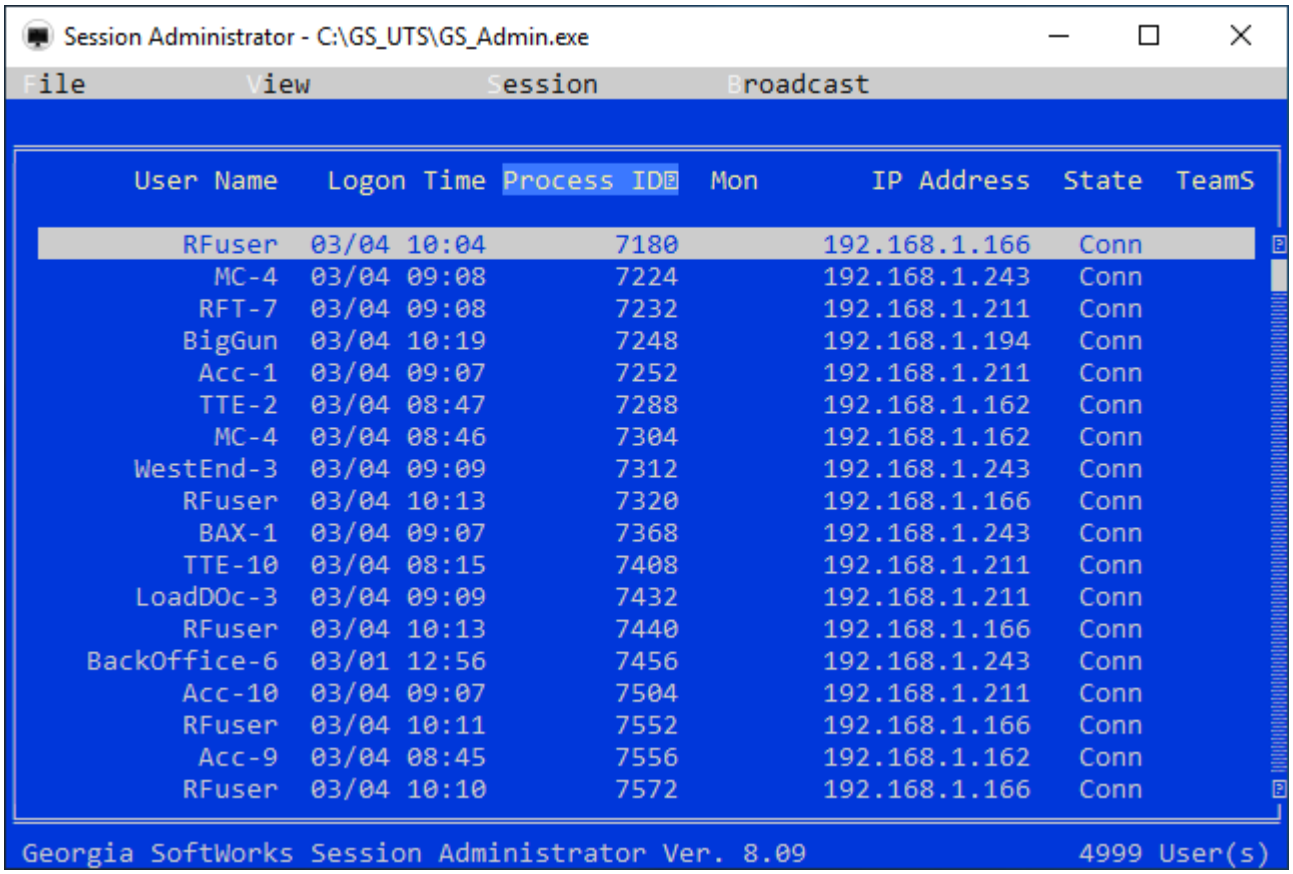


Figure 63: Extraordinary High Session Count (Actual Screen Shot)

The above is a screen shot of gs_admin when GSW Engineering performed burst connection testing with the GSW UTS x64. This is where hundreds of connections are initiated rapidly over and over taxing the system until several thousand connections are maintained. Even though this test goes beyond what is considered real world it provides information as to the benefits of a 64-bit system as well as the glimpse of the extensive testing performed to ensure the GSW UTS meets and exceeds the demands of commercial environments. At this point in testing GSW UTS x64 the screen shot was taken from GS_Admin with over 4999 connections.

This particular test was performed on a modest 2 GHz dual processor Xeon with 6 GB RAM running Windows 2008 Server. We have observed over 2400 sessions on a modest 2 GHz dual processor Xeon with 2 GB RAM running Windows XP!

RF DTIO Interface

The GSW UTS has a built-in interface to work with the GSW RF Directed Terminal Input/output Engine. The GSW Directed Terminal I/O Engine is an add-on component that intercepts a specific set of terminal input/output operating system calls initiated by your application and directs terminal I/O through a specialized high-performance interface within the GSW Universal Terminal Server (UTS).

A new performance standard is realized when using the GSW Directed Terminal I/O Engine with the GSW UTS for Windows. Large systems will experience a dramatic performance improvement as well as a substantial increase in the number of sessions on a server.

The GSW DTIO Engine is specialized software, focused on a narrow set of goals. The objectives are to provide significant performance improvements and a higher number of sessions on a server than previously possible due to processing bottlenecks and CPU Limitations

Please visit the GSW website for more information on the GSW RF DTIO Engine.

Team Services

Team Services is about collaboration and efficiency

GSW Team Services provides your mobile device users a breakthrough in telnet/SSH technology that shatters all prior usability and efficiency standards by allowing for unprecedented user collaboration and cutting the costs of hardware. The implications are enormous. GSW Team Services has the potential to radically transform the client/server applications universe from isolated and fragile sessions to the world of persistence and creative collaboration of empowered users.

Team Services furnishes your mobile device users with innovative session management tools that are initiated from the client. Team Services is fast and easy to use.

GSW Team Services empowers the mobile device users to share resources, transfer, swap, share and recover mobile device sessions from the mobile device! This provides your mobile device users the capability to quickly solve common mobile device session and device problems without having to perform administrative operations on the server or needing to involve Information Technology (IT) personnel.

- Empowers Mobile Device User – session management operations initiated from the mobile device. This is a breakthrough feature!
- No system administrator intervention required.
- Works with GSW and 3rd party clients.
- Incredible Features – Sharing, Swapping, Transfer and Recovery of sessions.
- Fast and Easy - No technical degree required and the fastest way to resume work.

Team members helping team members. Instead of purchasing multiple types of devices per user; or all high-end devices for the occasional need for high end features, team members can maximize device utilization by quickly sharing or swapping devices without even having to log off or involving the system administrator.

Often user(s) needs to use a different or an additional device, while preserving their session. GSW Team Services Transfer, Swap and Share operations addresses this need.

- **Transfer** – Transfer (move) your session to another team member's device. Terminates the existing session on the second device when the transfer is complete.
- **Swap** – (Swap devices but keep your session) Transfer your session to another team member's device and at the same time Transfer their session to your device.
- **Share** – Two devices share the same session. Either device may be used within a single session. This is similar to the GSW Session Administrator Shadowing feature, except Share is initiated from the client. The Share Team Service can be used when a forklift operator has a vehicle mount device and also needs a wireless mobile device, both using the same session. It can also be used for training and assistance. The range of possibilities for Team Service Share is so powerful it is limited only by your imagination.

Recover dropped sessions. It doesn't matter if the session is dropped due to battery failure, device destruction, network problems or simply because the user went out of range. With GSW*, the session is maintained on the server* and with Teams Services the session can be **recovered** from the same or ***another*** **team member's device**. Of course, you will resume work at the exact point where you were when the session dropped.

GSW Team Services increases productivity by allowing your team members to minimize down time when ordinary work flow interruptions occur and resume work with unmatched speed and ease.

Strict Teams. Often workflows are specific to distinct groups (or teams) and the administrator wants to allow only members within that group to have the capability initiate Team Services operations SHARE, SWAP, TRANSFER and RECOVER.

With Strict Teams, system administrators can create multiple **Teams such** that only members within each team can participate in Team Services operations with other members of their team. This is particularly useful in Application Server Environments and in situations when the pool of SSH/Telnet users span multiple departments, locations or companies.

Individuals may be assigned to more than one team, allowing flexibility such as supervisors overseeing multiple teams or specifying floating individuals for overflow situations.

- Only users defined as part of a team can participate in Team Services operations with other members in the team.
- Organize groups, departments, locations into Teams such that they can help each other, but not impact other Teams.

Configuration instructions and examples are contained in the `tsgroups.txt` file. This file resides in the GS_UTS installation root folder.

Team Services General Operation

Overview

Team Services operations are straightforward to understand and use. Below is an overview for using GSW Team Services. In this document GSW Team Services is often abbreviated "TS".

The Team Services Transfer, Swap and Share operations requires the team member who originates the operation *first* communicate with the 2nd team member[12] in order to request that the 2nd team member put their device (session) in the proper Team Service Accept mode for the operation. The 2nd team member must affirm that they are willing to accept a Transfer, Swap or Share. This way the 2nd team member's session is not unknowingly altered without expressly consenting to the operation.

The 2nd team member initiates Team Services and enters the "Accept Mode" for the specific Team Service to consent to the operation. This is done by pressing the corresponding function key for the Team Service operation. Session Identification information is displayed and can be quickly communicated to the originating team member.

The originating team member then enters Team Services, selects the Team Service operation, identifies the 2nd team member's session and completes the operation.

The entire process can take less than 60 seconds.

In summary, the **Transfer**, **Swap** and **Share** Team Service operations each have an Accept Mode and a Team Services Operation.

The **Recover** Team Service does not have an Accept Mode. You could consider a suspended session as consenting by default.

The Transfer, Swap and Share Team Service general procedural flow is:

1. One team member (originator) requests a 2nd team member to participate in a Team Service operation.
2. The 2nd team member puts their session in Accept Mode for the Team Service operation.
3. Team member (originator) starts Team Service operation.
4. Team member (originator) identifies 2nd team member's session, selects and completes operation.

The Recover Team Service operation general procedural flow is:

1. Team member initiates the Team Service Recover option.
2. Team member identifies the suspended session, selects and completes operation.

Team Services state and status information is displayed in the Session Administrator. This allows the administrator to know which devices are sharing, waiting for Team Service Transfers, Swaps, Shares and etc. Please view page 145 for more information on the Session Administrator and Team Services.

[12] In some cases a single Team Member serves both roles as the originating team member and the 2nd team member.

Enter Team Services Tasks by typing *Ctrl-x* (see page 121 for more details) or the configured hot key. The Team Services Tasks menu is show below.

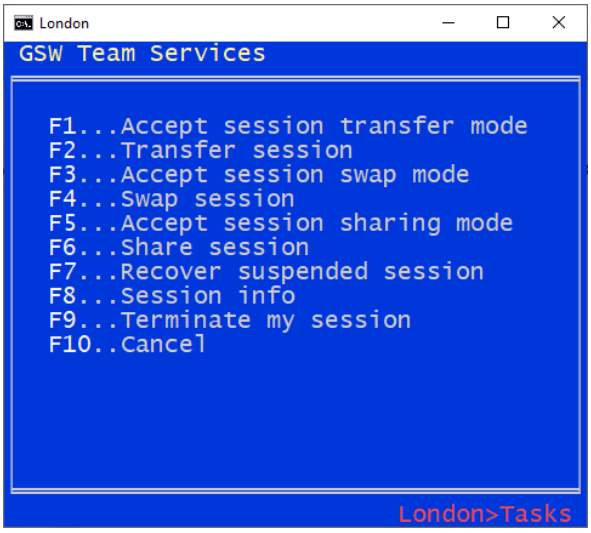


Figure 64: Team Services Tasks Menu

Each of the Team Service tasks is initiated by using a function key on the device. Team Service tasks that require an Accept mode use a pair of function keys, one for the *Accept* and the other for the *Team Service tasks*. When Accept Mode for a Team Service is performed, the client device display is similar to Figure 65.

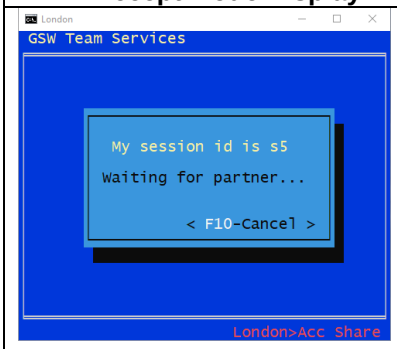
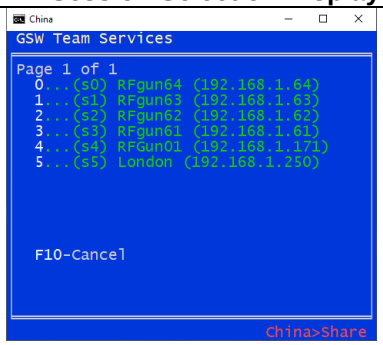
Accept Mode Display		Session Selection Display
	On the left we see the display after a user has entered Accept Mode for Team Service Share. Note that the Session Id is `s5`. On the right we see the display after the Team Service operation Swap is entered. A list of all sessions available for a Swap is displayed. Note: Only sessions in Accept Swap mode are displayed. So, there will be no confusion swapping with someone that did not consent to a swap.	

Figure 65: Accept Mode Display

Figure 66: Session Selection Display

The associated Team Service operation displays a list of sessions available for that operation similar to Figure 66. The session is selected for the operation by entering the displayed line number for that session. For example, to swap with session `s5` the user would enter a `2` since that is the line number for session `s5`.

The Transfer operation uses the F1 key for Transfer Accept Mode and the F2 key to perform the Transfer operation. The Swap operation uses the F3 key for the Swap Accept Mode and the F4 key for the Swap operation. The Share operation uses the F5 key for Accept Share Mode and the F6 key for the Share operation.

		2nd Team Member	Originating Team Member
Team Services Operation	**Description**	**Accept Mode**	**Operation**
Transfer	Transfers your session to another device	F1	F2
Swap	Transfers your session to another device Transfers the other session to your device	F3	F4
Share	One session is shared by two devices	F5	F6
Recover	Recovers a suspended session to your device	n/a	F7
My TS Info	Display Session ID, User Name, IP Address	n/a	F8
Reserved		n/a	F9
Cancel	Cancel Team Services Operation, Exit Menu	n/a	F10
Enter Team Services	Open Team Services Menu	Configurable hot key	

Table 26 - Teams Services Function Keys

A configurable hot key is used to enter GSW Team Services. The default hot key is *Ctrl-x*. When initiated, Team Services presents the user with a menu that is used to transfer a session, recover a session, swap sessions, share a session etc. Learn more about the configurable hot key on page 143.

Dynamic non-cryptic text abbreviations for small screens

Devices come with a variety of screen sizes offering large display areas on stationary or truck mount devices and smaller display areas on smaller hand held mobile devices. With GSW Team Services the text is automatically adjusted based on the number of columns and rows defined with the "Mode Con" command (page 298) in your logon script. If there are not enough columns to display the complete Team Service text then intelligent abbreviations are used so you can view the essential information in the *normal font for your application*.

This works well with the small hand held mobile device displays as well as the larger truck mount displays. No magnifying glass is required to read the text, nor do you have to be a detective to decipher the meaning of the abbreviations.

The three most used Team Services screens are:

- Team Services Main Menu
- Team Services "Accept Mode" Display
- Team Services "Select Session" Menu

Below is an example of the full text of the Team Services tasks menu on the left and the abbreviated text on the right. In order to maximize the readability alternate abbreviations are used based on the number of columns and rows defined.

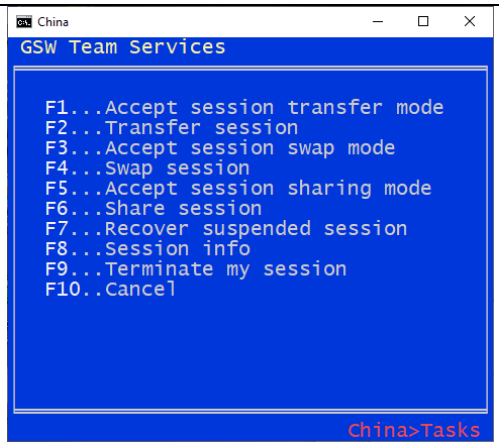
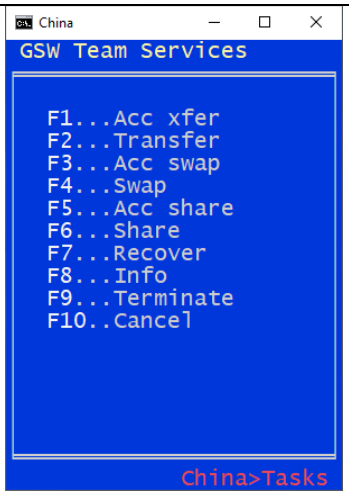
Team Services Main Menu		Abbreviated Team Services Tasks
	Set the number of columns and rows for your application and GSW Team Services will display all the text or abbreviate it based on your configuration.	

Table 27 - Team Services Tasks Menu Abbreviations

Note that "Accept" is abbreviated "Acc", and "transfer" uses the common abbreviation "xfer" while the words "session", "mode" and "suspended" are completely omitted.

Below is an example of the Team Services Accept Transfer mode display. The Accept modes for the other operations are similar. The unabbreviated version is on the left and the abbreviated version is on the right.

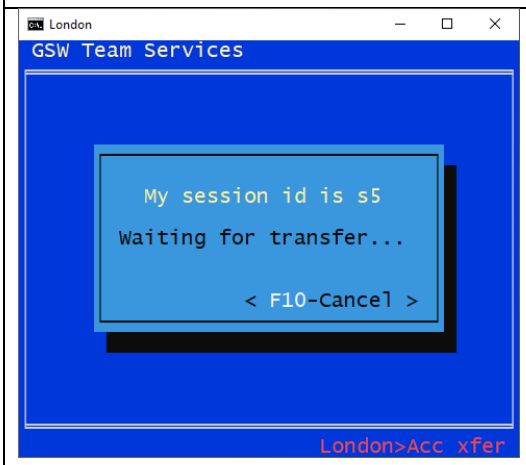
Accept Transfer Mode Display		Abbreviated Accept Transfer Mode Display
	An unabbreviated "Waiting for transfer" dialog is shown on the left. On the right is simply the session id (s5) and "Waiting..."	

Table 28 - Team Services Accept Mode Abbreviations

Note that the text "My session id is" and "for transfer" is omitted yet the essential session id (s5) is presented as well as the "Waiting..." text providing a reminder to the user.

The TS Select Session display is shown below.

There are a few items to note.

- If more than one page is required to display all the available sessions then the function key `F2` is used to display the next page. F1 navigates to the previous page. This is true for both the abbreviated and unabbreviated lists.
- Each page has a `Page x of y` count display, where **x** is the page you are viewing and `y` is the total number of pages.
- On each page the line numbers corresponding to the session id are zero based. Below on page 1, line 0 corresponds to session id (`s0`). On page 2, line 0 corresponds to session id (`s5`).

Accept Transfer Mode Display	Abbreviated Select Session Display	

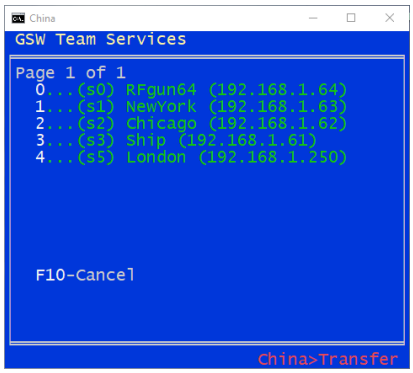
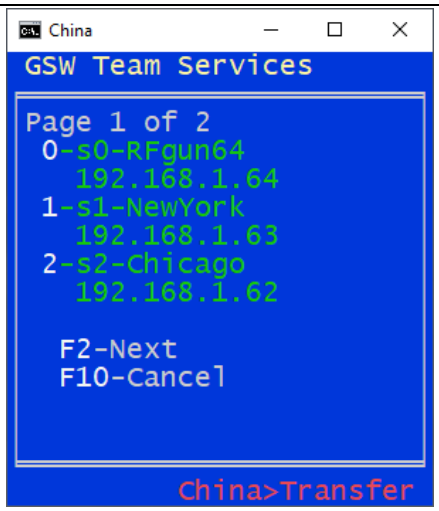
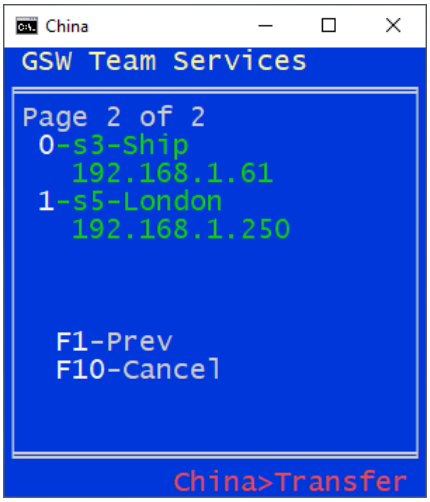

		

Figure 67: Unabbreviated Select Session	Figure 68: Abbreviated Select Session Page 1 of 2	Figure 69: Abbreviated Select Session Page 2 of 2

Table 29- Team Services - Select Session Display

Team Services Tasks

Transfer

The Team Services Transfer operation takes a session on one device and moves it to a 2nd device. It terminates the existing session on the 2nd device. The session will resume exactly where it was when the transfer occurred.

In the diagram below we have two people, Barry and Sam. Each has a session and a device. Sam is going to lunch and Barry wants to use Sam's wireless mobile device to scan some items his truck mount device cannot reach. With TS Transfer, Barry can transfer his session to Sam's device without even logging off.

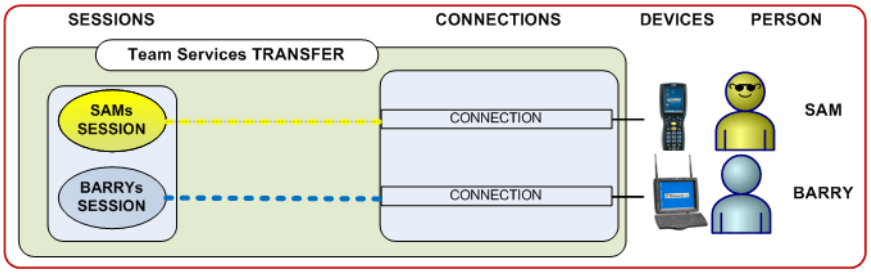


Figure 70: Before Team Service - TRANSFER

The TS Transfer example is described below.

SAM

Figure 71: Enters Team Services (`Ctrl-x`)

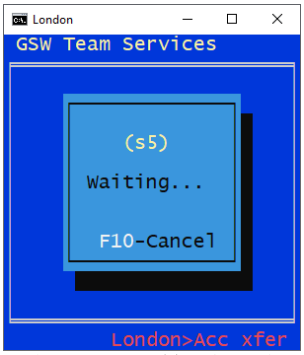


Figure 72: Accept Transfer Mode (`F1`). Note session id is s5

BARRY

Figure 73: Enters Team Services (`Ctrl-x`) & presses `F2`

Figure 74: Session `s5` is not listed on page 1 so Barry presses `F2`.

Barry asks Sam if he can Transfer to his device. Sam consents and enters Team Services (Figure 71) and presses `F1` to enter Accept Transfer mode. Sam's display shows he is session id "`s5`" (Figure 72) .

Barry enters Team Services on his truck mount device (Figure 73) and presses `F2` to initiate the Transfer operation. Figure 74 shows a list of sessions in Accept Transfer mode. Barry does not see session s5 so he presses F2 to go to the next page. Now he sees session `s5` is listed by line number `0` (Figure 75) . He presses 1 to complete the transfer to session `s5`. Sam's session is terminated and Barry's session is on Sam's mobile device and Barry can resume exactly where he left off.

Figure 75: Presses 1 to select session `s5`

Notice that Barry is now on the mobile device and is still using his original session. He did not have to log off or get administrative assistance.

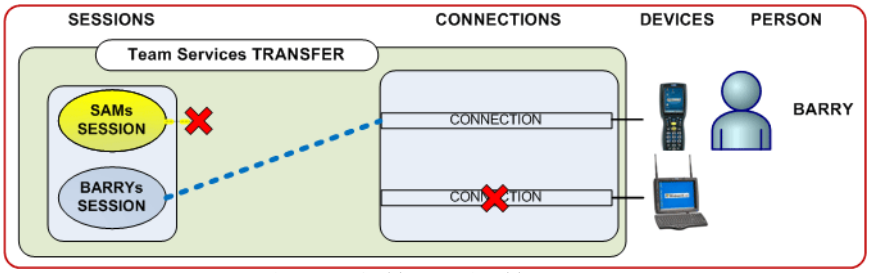


Figure 76: After Team Service - TRANSFER

The session Sam was using is terminated during the process, freeing Sam to take his lunch break.

Swap

The Team Services Swap operation takes two sessions on two devices and moves the session on the 1st device to the 2nd device and moves the session on the 2nd device to the 1st device. Each session is preserved and will resume exactly where it was when the swap occurred.

In the diagram below we have two people, Doug and Andy. Each has a session and a device. Doug wants to use Andy's wireless mobile device to scan some items his truck mount device cannot reach. Andy still needs to work but can finish his work with the truck mount. With TS Swap, Doug can transfer his session to Andy's device, while simultaneously transferring Andy's session to Doug's truck mount device. Both can continue their work in the application and not even have to log off.

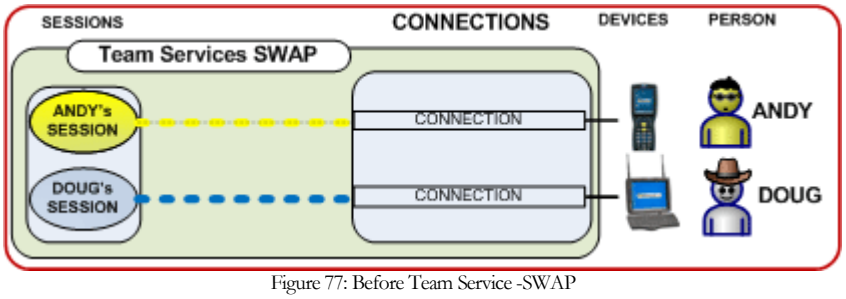


Figure 77: Before Team Service -SWAP

Doug asks Andy if they can Swap devices. Andy consents and enters Team Services and presses F3 to enter Accept Swap mode. Andy's display shows he is session id "s5".

ANDY

Figure 78: Enter Team Services (Ctrl-x)

Figure 79: Accept Swap Mode (F3) Note the session id is s5

DOUG

Figure 80: Enter Team Services (Ctrl-x) & press F4

Figure 81: Selects 2 to Swap with s5

Doug enters Team Services on his truck mount device and presses F4 to initiate the Swap operation. Figure 81 shows a list of sessions in Accept Swap mode. Doug sees s5 is listed by the number 2. He presses 2 to complete the swap with session s5. Andy's session is moved to the truck mount device and Doug's session is on the mobile device and both can resume exactly where he left off.

Notice in the following diagram that Doug is now using the mobile device yet he is still using his original session. Likewise, Andy is now using the truck mount device and is still using his original session as well.

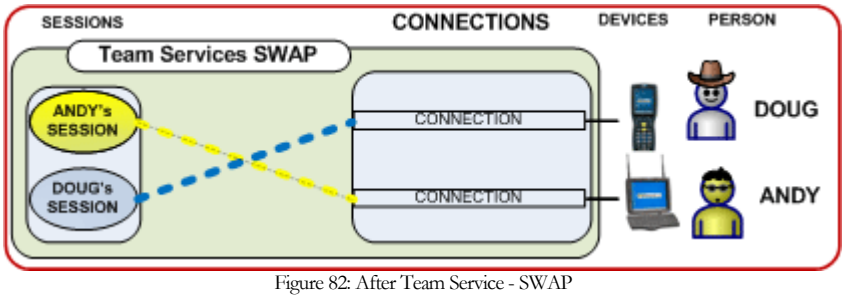


Figure 82: After Team Service - SWAP

If in Andy and Doug want their original devices back, they can just perform a TS Swap again!

Share

The Team Services Share operation allows two devices to share a single session. Input from either device is sent to the session. Output from the session is displayed on both devices. This is similar to the Session Administrator "Shadow" feature (page 195) but developed for Team Members.

This feature has several applications. One is to allow a single user to work with two devices in the same session. Another application is when one team member needs to help another team member. Share can also be used for quality control purposes. You may have ideas for your own environment.

In the diagram below we have two devices and one person - Tom. Tom's device is a truck mount device. He is the only one working in the warehouse today and ***also*** wants to have a wireless mobile device to scan items his truck mount device cannot reach. Tom needs all his work be in a single session and he does not want to log on and off each time he uses each device. Tom can use the TS Share feature and have two devices connected to a single session. With each scan he can use the most convenient device.

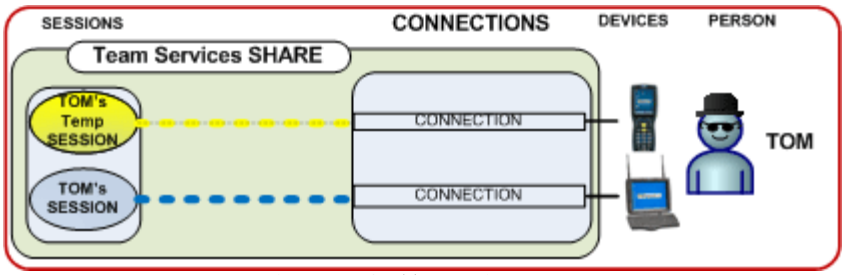


Figure 83: Before Team Service -SHARE

Tom obtains the wireless mobile device. He is already connected with his truck mount device. Tom wants to allow his truck mount device session to be *shared*. From the truck mount device, he enters Team Services (Figure 84) and then initiates the task `Accept Share` by pressing **F5**. The truck mount device display shows his session id is "`s5`" and waiting for a partner (Figure 85).

Tom's Truck Mount Device

Figure 84: Enters Team Services (`Ctrl-x`)

Figure 85: Accept Share Mode (F5) Note session id is `s5`

Wireless Mobile Device

Figure 86: Enters Team Services (`Ctrl-x`) & presses `F6`

Figure 87: Selects 2 to Share session id `s5`

Tom takes the wireless mobile device and connects creating a temporary session. Tom enters Team Services on his wireless mobile device and presses **F6** to initiate the `Share` task (Figure 86). The list of sessions in Accept Share mode is shown (Figure 87). Tom sees `s5` is listed by the number 2. He presses **2** to join session

`s5`. Tom's mobile device is now connected to the same session as the truck mount device. The result is shown in Figure 88.

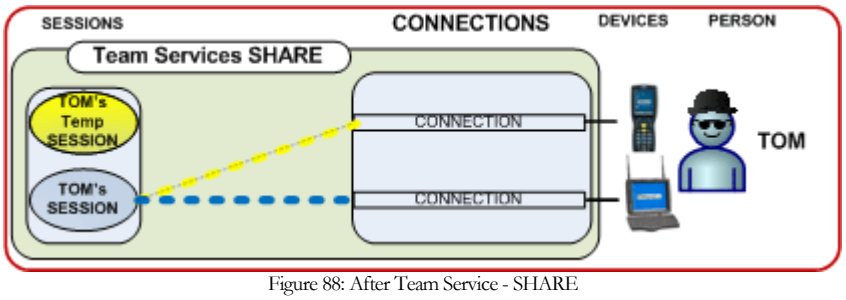


Figure 88: After Team Service - SHARE

Undo Share

Tom's original temporary session is maintained and he can return to it by *undoing* the share by pressing *control-x* from the wireless mobile device[13]. The truck mount device continues in its session. This is shown in Figure 89.

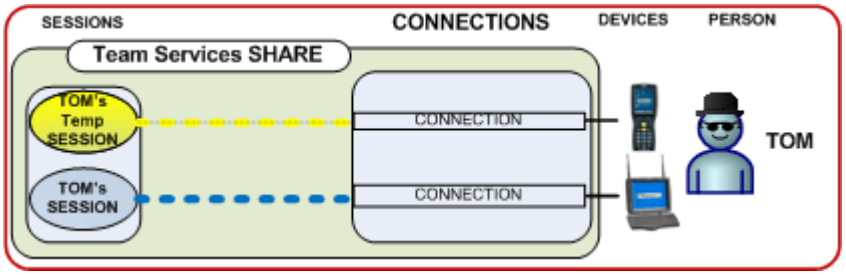


Figure 89: Undoing the Share

This can be useful when a Team Member is working and needs to temporally join another team member's session (for assistance, support, quality assurance, etc.) and then needs to resume his work.

Note: If you **exit**[14] the session (from either device) the truck mount session is closed and the mobile device is returned to its original session as shown below.

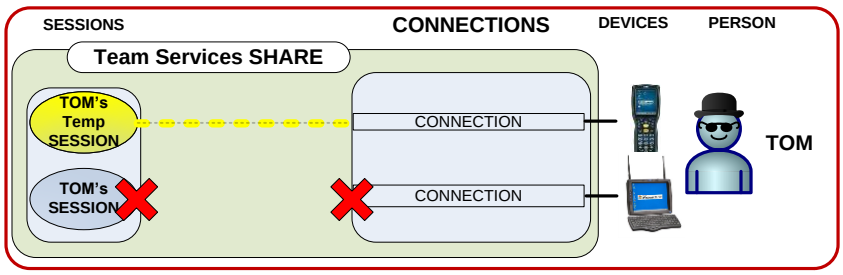


Figure 90: `Exit` typed in Share

[13] Pressing control-x from the truck mount device does not undo TS Sharing.

[14] Either by typing EXIT or any other means of closing the session.

Recover

The Team Services Recover operation allows a suspended session to be recovered to another device. This differs from the Session Saver Auto-Reconnect which allows the same device to recover a suspended session.

In the diagram below we have two devices and two team members. Amos is working, but laid his device down to look behind a crate. Barry, just learning to drive the fork lift, ran over Amos's device. Amos was in the middle of some critical work and cannot afford to lose his session. Team Services can Recover Amos's session to a different device.

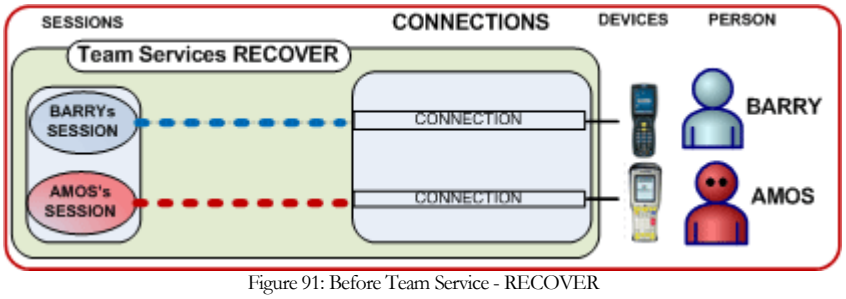


Figure 91: Before Team Service - RECOVER

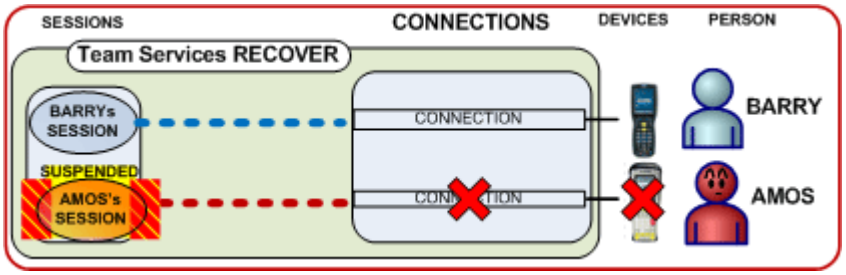


Figure 92: After Accident but before Team Service -RECOVER

After Amos's device is destroyed, his session is suspended but recoverable with TS. Barry has an extra wireless mobile device. Amos obtains the wireless mobile device. On the mobile device Amos enters Team Services Recover by pressing `F7`. The mobile device display shows a list of suspended sessions (Figure 94).

Wireless Mobile Device

Figure 93: Enters Team Services (`Ctrl-x`)

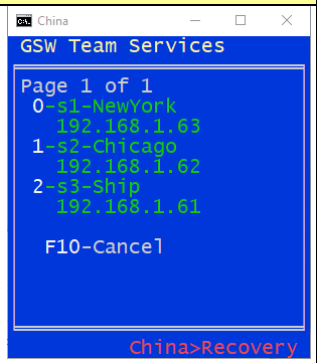


Figure 94: List of Suspended Sessions (`F7`) and select session.

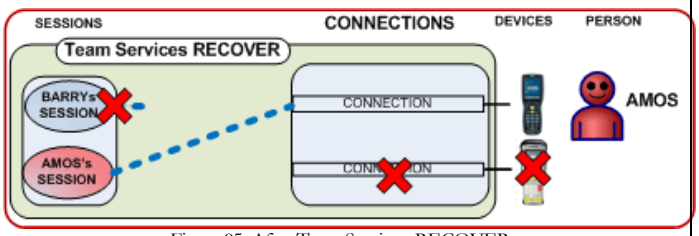


Figure 95: After Team Service - RECOVER

Amos is able to identify his session as `s0` by the User Id and the IP Address. Amos presses number `0` to recover session `0` (`s0`). Amos can continue his work exactly where he left off.

Session Information

Often it is useful to obtain Session Information about your current session. Team Services "Session Info" can be viewed using the `F8` key.

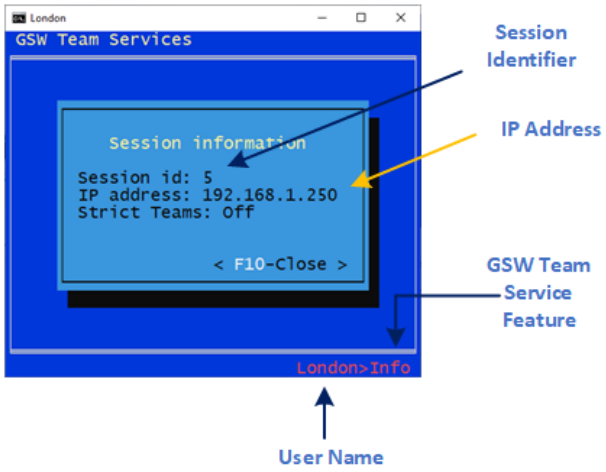


Figure 96: Team Services - Session Information

The session information displayed consists of:

- Session Id Number
  The Session Id is a unique number assigned to the session by GSW Team Services.

- IP Address
  The IP Address of the client device.

- User Id
  The User Id is displayed in the bottom right corner of the screen. In Figure 96 the User Id is "`london`"

Open Team Services Tasks Menu

The GSW Team Services Tasks menu provides the user access to the Team Services operations.

Enter GSW Team Services by entering the hot key combination from the device. The default key combination is `Ctrl-x`. This can be changed to meet your requirements (see page 143). To enter the hot key - depress *Ctrl* then *x*, and then release the keys. The Team Services Tasks menu is displayed.

Figure 97: Team Services Tasks Menu

Function Key	Team Service Operation		
F1	Accept Transfer Mode		
F2		Transfer	
F3	Accept Swap Mode		
F4		Swap	
F5	Accept Share Mode		
F6		Share	
F7	Recover		
F8	My Team Service Information		
F9	Terminate my session		
F10	Cancel Team Service Operation		
Configured hot key	Opens Team Services Menu		

Table 30- Team Services Menu

Strict Teams Configuration

Often with multiple users, departments, locations, customers it is beneficial to organize users into distinct teams for participation in Team Services. This strict team grouping prevents users from accidently sharing, swapping, transferring or recovering sessions with users outside their assigned group.

Configuration of Strict Teams is performed through the `tsgroups.txt` file.

The order of the fields in the `tsgroups.txt` file is as follows:

Field	Description
Team Name	Unique name assigned to a team
User Domain Name	Domain Name. Exactly as specified during logon
User Logon Name	Logon name. Exactly as specified during logon.

Table 31 – Team Services - Strict Teams

Using a simple example, if you have seven (7) users with three (3) in receiving and four (4) in shipping then you may want to have two strict teams. Matt, David and Luke are in receiving and Diane, Naomi, Doug and Phillip are in shipping. You want to create two teams with the names Receiving and Shipping.

```
Team Name       User Domain Name      User Logon Name
receiving       highjumpserver_1            matt
receiving       highjumpserver_1            david
receiving       highjumpserver_1            luke
shipping        highjumpserver_1            diane
shipping        highjumpserver_1            naomi
shipping        highjumpserver_1            doug
shipping        highjumpserver_1            phillip
```

You would modify the tsgroups.txt file by adding the lines as follows:

```
receiving,highjupserver_1,matt
receiving,highjupserver_1,david
receiving,highjupserver_1,luke
shipping,highjupserver_1,diane
shipping,highjupserver_1,naomi
shipping,highjupserver_1,doug
shipping,highjumpserver_1,phillip
```

The '#' character in the first column designates a comment line.

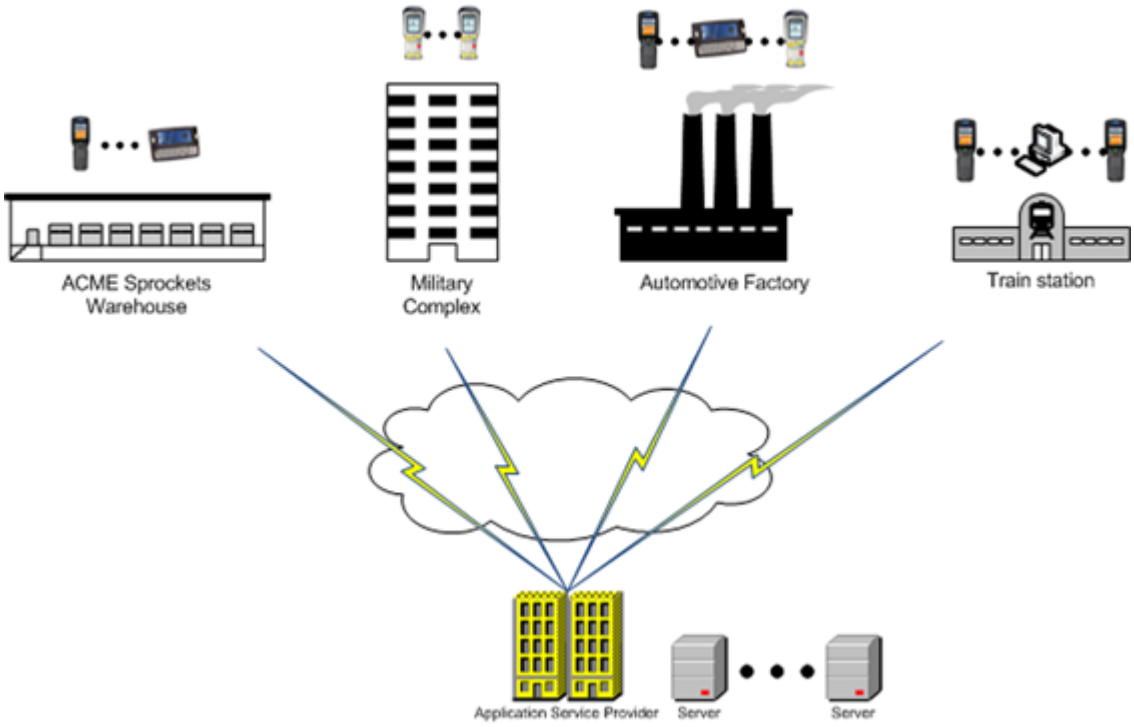
NOTE1: The team name must start in the first column.

NOTE2: The '#' character in the first column designates a comment line.

EXAMPLE - STRICT TEAMS - MULTIPLE COMPANIES IN AN ASP ENVIRONMENT

You are an Application Service Provider and your customers want to use Team Services and it is critical that they do not accidentally Share, Transfer, Swap or Recover sessions from the other companies.

You can organize each company as its own Strict Team and they will only be able to participate in Team Services with members in their company. You can even organize multiple Strict Teams within each company to further segregate team members.



Team Name	User Domain Name	User Logon Name
acme_sprockets	acme_server_1	acme_user_a
...	...	...
acme_sprockets	acme_server_1	acme_user_z
army_complex1	army_intelligence	army_user_1
...	...	...
army_complex1	army_intelligence	army_user_1000
auto_factory	sports_cars_7	emerson
...	...	...
auto_factory	sports_cars_7	elliot
train_station	public_trans_rr	train_point_1
...	...	...
train_station	public_trans_rr	train_point_400

You would modify the `tsgroups.txt` file by adding the lines as follows:

```
acme_sprockets,acme_server_1,acme_user_a
#Add a line for each Team Members at Acme Sprockets
acme_sprockets,acme_server_1,acme_user_z
army_complex1,army_intelligence,army_user_1
#Add a line for each Team Members at Army Complex
army_complex1,army_intelligence,army_user_1000
auto_factory,sports_cars_7,emerson
#Add a line for each Team Members at the Automotive Factory
auto_factory,sports_cars_7,elliot
train_station,public_trans_rr,train_point_1
#Add a line for each Team Members at the train station
train_station,public_trans_rr,train_point_400
```

Team Services Configuration and Security

Use the GSW GUI Configuration Tool – Team Services Global see page 379, Per User - 414
Or use legacy style below

In some environments it may not be appropriate for all users to have access to all GSW Team Services. The system administrator may configure the default access settings for each individual Team Service operation using Registry parameters.

NOTE: For new installations of the GSW UTS the Registry parameters enable all Team Services by default.

- For **upgrades** from a **pre-Team Services version** (pre v8.01) of the UTS, Team Services is disabled by default for security reasons[15]. You must enable Team Services for operation.

The registry key location is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\
```

The parameters, types and values are noted below:

Team Service	Registry Parameter	Type	Values
Transfer	TSEnableTransfer	DWORD	0=disable 1=enable
Swap	TSEnableSwap	DWORD	0=disable 1=enable
Share	TSEnableShare	DWORD	0=disable 1=enable
Recovery	TSEnableRecovery	DWORD	0=disable 1=enable
Other Team Service Configuration			
	TSHotKeyCtrl	DWORD	0=disable 1=enable
Enter TS hot key	TSHotKeyVK	DWORD	See Section on page 143
Left Justify TS Dialog/Text	TSLeftJustify	DWORD	0=disable 1=enable

Table 32 - Team Services Registry Parameters Sizes and Values

These default settings can be overridden using environment variables in global or per user logon scripts.

For example, you may want to have Team Services disabled except for certain users. This can be accomplished by disabling each Team Service with Registry parameters and then overriding them for specific users in their logon scripts.

The environment variables for Team Services are shown below.

Team Service	Environment Variable	Values
Transfer	gwtn_ts_enable_transfer	'Y' or 'N', or 'y' or 'n'
Swap	gwtn_ts_enable_swap	'Y' or 'N', or 'y' or 'n'
Share	gwtn_ts_enable_share	'Y' or 'N', or 'y' or 'n'
Recovery	gwtn_ts_enable_recovery	'Y' or 'N', or 'y' or 'n'
Other Team Service Configuration		
Enter TS hot key		
Left Justify TS Dialog/Text	gwtn_ts_left_justify	'Y' or 'N', or 'y' or 'n'

[15] Team Services can allow Team Members to observe other Team Members Sessions (e.g.: Share).

Table 33 - Team Services Environment Variables

.

Team Services Recovery

Team Services Recovery works together with Session Saver and thus Session Saver must be configured for Team Services Recovery to operate.

The variable `TSEnableRecovery` is a registry key value. This registry key sets the default behavior for all users.

`0` disables Team Services Recovery for all users.

`1` enables Team Services Recovery for all users.

The key is: `TSEnableRecovery DWORD`

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\TSEnableRecovery

An environment variable may be set on either a Global or Per User basis to **override** the default configuration specified by the Registry parameters described above.

The environment variable for Team Services Recovery is:

`gwtn_ts_enable_recovery`

Possible values are `Y` (or '`N`', or '`y`' or '`n`')

This allows you to have a set of users that can have different Team Services privileges than specified in the Registry key value.

NOTE: No spaces are allowed when setting environment variables.

For example: To enable Team Services Recovery the following line should be present in the user's logon script.

`set gwtn_ts_enable_recovery=Y` is correct

`set gwtn_ts_enable_recovery = Y` is not correct

Team Services Transfer

The variable `TSEnableTransfer` is a registry key value. This registry key sets the default behavior for all users.

`0` disables Team Services Transfer for all users.

`1` enables Team Services Transfer for all users.

The key is: `TSEnableTransfer DWORD`

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\TSEnableTransfer

An environment variable may be set on either a Global or Per User basis to **override** the default configuration specified by the Registry parameters described above.

The environment variable for Team Services Transfer is:

`gwtn_ts_enable_transfer`

Possible values are `Y` (or 'N', or 'y' or 'n')

This allows you to have a set of users that can have different Team Services privileges than specified in the Registry key value.

NOTE: No spaces are allowed when setting environment variables.

For example: To enable Team Services Transfer the following line should be present in the user's logon script.

`set gwtn_ts_enable_transfer=Y` is correct

`set gwtn_ts_enable_transfer = Y` is not correct

Team Services Swap

The variable `TSEnableSwap` is a registry key value. This registry key sets the default behavior for all users.

`0` disables Team Services Swap for all users.

`1` enables Team Services Swap for all users.

The key is: `TSEnableSwap DWORD`

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\TSEnableSwap

An environment variable may be set on either a Global or Per User basis to **override** the default configuration specified by the Registry parameters described above.

The environment variable for Team Services Swap is:

`gwtn_ts_enable_swap`

Possible values are `Y` (or 'N', or 'y' or 'n')

This allows you to have a set of users that can have different Team Services privileges than specified in the Registry key value.

NOTE: No spaces are allowed when setting environment variables.

For example: To enable Team Services Swap the following line should be present in the user's logon script.

`set gwtn_ts_enable_swap=Y` is correct

`set gwtn_ts_enable_swap = Y` is not correct

Team Services Share

The variable `TSEnableShare` is a registry key value. This registry key sets the default behavior for all users.

`0` disables Team Services Share for all users.

`1` enables Team Services Share for all users.

The key is: `TSEnableShare DWORD`

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\TSEnableShare

An environment variable may be set on either a Global or Per User basis to **override** the default configuration specified by the Registry parameters described above.

The environment variable for Team Services Share is:

`gwtn_ts_enable_share`

Possible values are `Y` (or '`N`', or '`y`' or '`n`')

This allows you to have a set of users that can have different Team Services privileges than specified in the Registry key value.

NOTE: No spaces are allowed when setting environment variables.

For example: To enable Team Services Share the following line should be present in the user's logon script.

`set gwtn_ts_enable_share=Y` is correct

`set gwtn_ts_enable_share = Y` is not correct

Team Services Left Justify

Use the GSW GUI Configuration Tool – Team Services see page 379
Or use legacy style below

Team Services Left Justify specifies the placement of the Team Services dialog information. If you are not using the "mode con" command you may see some screens displayed with part of the information hidden as show in Figure 98. This can be corrected using Left Justify as shown in Figure 99.

Figure 98: Left Justify Disabled

Notice when Team Services Left Justify is enabled the dialog box and the text at the bottom are in the viewable display.

Note: this is usually not required if you are using the "mode con" command

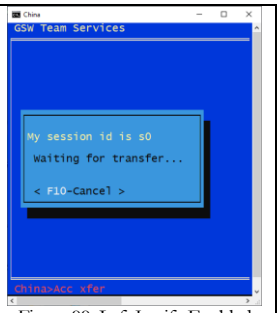


Figure 99: Left Justify Enabled

Table 34 - Team Services Left Justify

The variable `TSLeftJustify` is a registry key value. This registry key sets the default behavior for all users.

`0` disables Team Services Left Justification for all users.

`1` enables Team Services Left Justification for all users.

The key is: `TSLeftJustify DWORD`

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\TSLeftJustify

An environment variable may be set on either a Global or Per User basis to **override** the default configuration specified by the Registry parameters described above.

The environment variable for Team Services Left Justify is:

`gwtn_ts_left_justify`

Possible values are `Y` (or '`N`', or '`y`' or '`n`')

This allows you to have a set of users that can have different Team Services privileges than specified in the Registry key value.

NOTE: No spaces are allowed when setting environment variables.

For example: To enable Team Services Share the following line should be present in the user's logon script.

`set gwtn_ts_left_justify=Y` is correct

`set gwtn_ts_left_justify = Y` is not correct

Team Services HOT KEY

Use the GSW GUI Configuration Tool – Team Services see page 379
Or use legacy style below

The Team Services menu is entered by a hot key sequence. The default Team Services hot key sequence is `Ctrl-x,` that is, depress *Ctrl* then *x*, and then release the keys.

Both elements in the sequence are configurable because your application may already have Ctrl-x defined or there may be a more convenient key or key sequence for your environment.

TSHotKeyCtrl

You can configure the TS hot key sequence to use the control key or not use the control key.

The variable `TSHotKeyCtrl` is a registry key value. This registry key sets the default behavior for all users.

`0` disables the requirement for the CTRL key to be pressed to activate the TS Menu.

`1` enables the requirement for the CTRL key to be pressed to activate the TS Menu. (default)

The key is: `TSHotKeyCtrl DWORD`

`HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\TSHotKeyCtrl`

TSHotKeyVK

You can configure the TS hot key sequence to use a different key instead of ***x.*** The ***x*** is represented in our settings by its virtual key code and the common values are listed in the tables below. The values in the table are specified in hexadecimal. In the registry editor when entering a value for `TSHotKeyVK` be sure that the base is set to hexadecimal.

The variable `TSHotKeyVK` is a registry key value. This registry key sets the default behavior for all users.
The key is: `TSHotKeyVK DWORD`
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\TSHotKeyVK
`Default Value: 0x58`

Virtual Key	Code		Virtual Key	Code		Virtual Key	Code		Virtual Key	Code
VK_SPACE	0x20		VK_0	0x30		VK_A	0x41		VK_N	0x4E
VK_PRIOR	0x21		VK_1	0x31		VK_B	0x42		VK_O	0x4F
VK_NEXT	0x22		VK_2	0x32		VK_C	0x43		VK_P	0x50
VK_END	0x23		VK_3	0x33		VK_D	0x44		VK_Q	0x51
VK_HOME	0x24		VK_4	0x34		VK_E	0x45		VK_R	0x52
VK_LEFT	0x25		VK_5	0x35		VK_F	0x46		VK_S	0x53
VK_UP	0x26		VK_6	0x36		VK_G	0x47		VK_T	0x54
VK_RIGHT	0x27		VK_7	0x37		VK_H	0x48		VK_U	0x55
VK_DOWN	0x28		VK_8	0x38		VK_I	0x49		VK_V	0x56
			VK_9	0x39		VK_J	0x4A		VK_W	0x57
						VK_K	0x4B		VK_X	0x58
						VK_L	0x4C		VK_Y	0x59
						VK_M	0x4D		VK_Z	0x5A

Table 35 - Virtual Key Codes

Virtual Key	Code		Virtual Key	Code
VK_NUMPAD0	0x60		VK_F1	0x70
VK_NUMPAD1	0x61		VK_F2	0x71
VK_NUMPAD2	0x62		VK_F3	0x72
VK_NUMPAD3	0x63		VK_F4	0x73
VK_NUMPAD4	0x64		VK_F5	0x74
VK_NUMPAD5	0x65		VK_F6	0x75
VK_NUMPAD6	0x66		VK_F7	0x76
VK_NUMPAD7	0x67		VK_F8	0x77
VK_NUMPAD8	0x68		VK_F9	0x78
VK_NUMPAD9	0x69		VK_F10	0x79
VK_MULTIPLY	0x6A		VK_F11	0x7A
VK_ADD	0x6B		VK_F12	0x7B
	0x6C		VK_F13	0x7C
VK_SUBTRACT	0x6D		VK_F14	0x7D
VK_DECIMAL	0x6E		VK_F15	0x7E
VK_DIVIDE	0x6F		VK_F16	0x7F
			VK_F17	0x80
			VK_F18	0x81
			VK_F19	0x82
			VK_F20	0x83
			VK_F21	0x84
			VK_F22	0x85
			VK_F23	0x86
			VK_F24	0x87

Table 36 - Virtual Key Codes - continued

Session Administrator support for Team Services

Session Administrator support Team Services - States

Team Services status and state information is available in the GSW Session Administrator. The last column in the Session Administrator is labeled **TeamS** for Team Services.

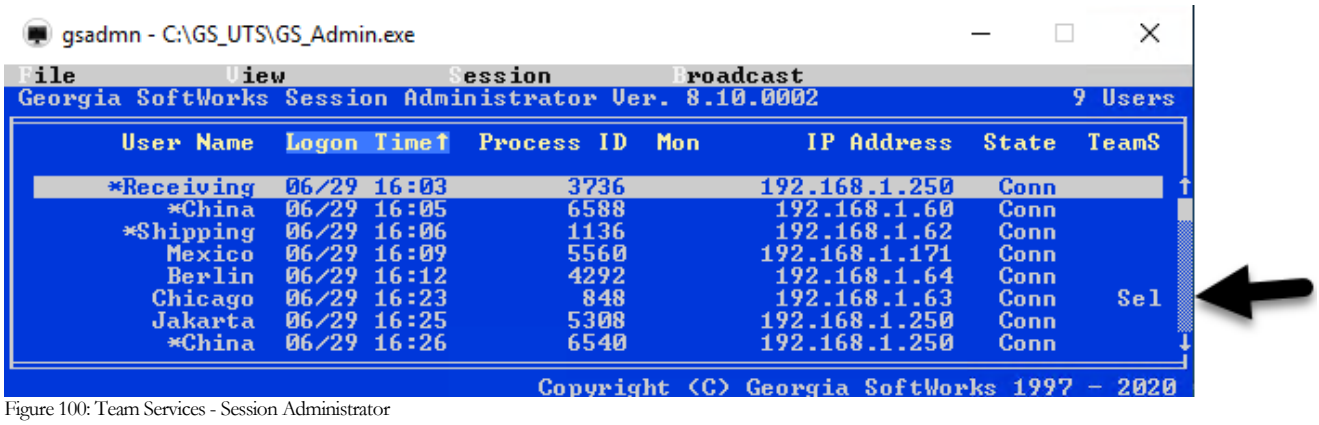


Figure 100: Team Services - Session Administrator

The TeamS column indicates the state or status of the session. Below are the various states and their descriptions.

State	Description	Reason
Sel	User is in the Team Services Menu	hotkey
AXfer	User has consented to Accept a Transfer	F1
Xfer	User is selecting the session for Transfer	F2
ASwap	User has consented to Accept a Swap	F3
Swap	User is selecting a session to Swap	F4
AShr	User has consented to Accept a Share	F5
Shr	User is selecting a session to partner	F6
Shr!	The originator of a TS Share	(session is shared)[16]
Recov	User is selecting a session to Recover	F7

Table 37 - Team Services State Table

The System Administrator can view the states of sessions as Team Service operations are occurring.

[16] You can view the partner session in the Session Administrator by sorting on the Monitor ID

System Administrator support for Team Services - Share

When sessions are shared by Team Services the TeamS column and the Mon column are of interest. The partnered (or shared) sessions will have the same Monitor ID. The TeamS state of one session will be blank and the other will show Shr! The session showing Shr! is the originating Team Service session (the one that performed the F6) and the blank state is the session that performed the Accept Share (F5).

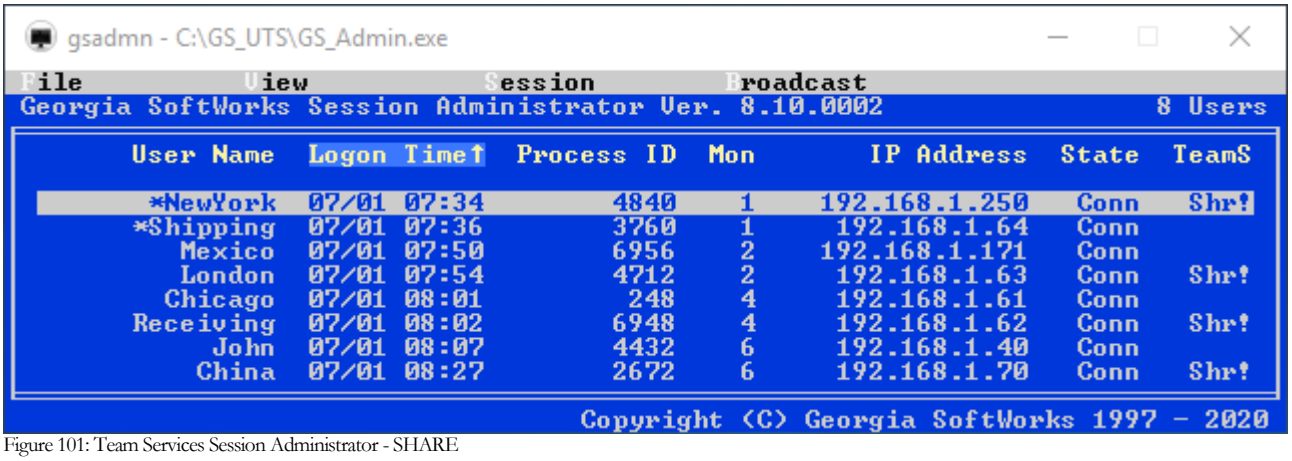


Figure 101: Team Services Session Administrator - SHARE

The Session Administrator may not have both partners of the share next to each other like in the figure above. However, you can sort by Monitor ID as show below which will group partners.

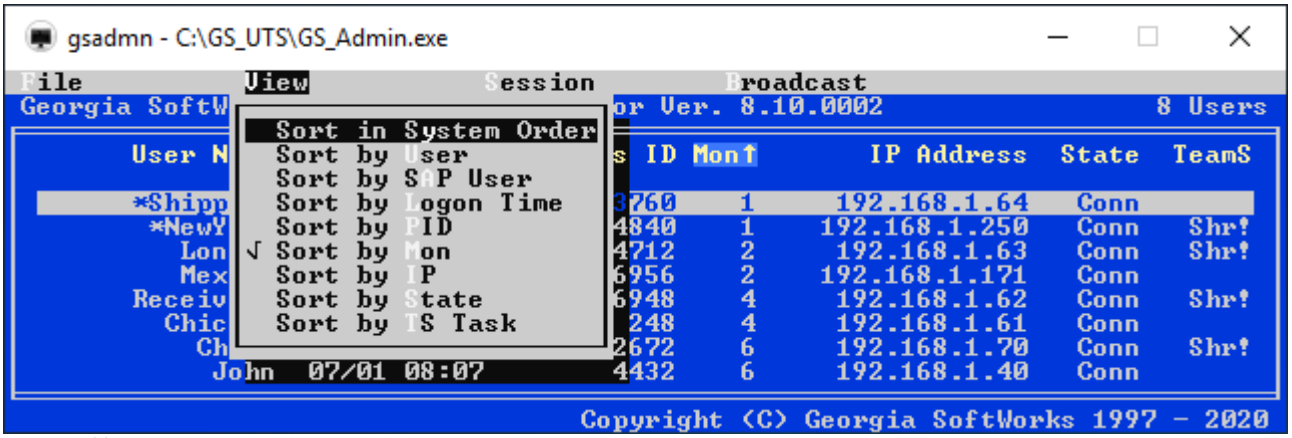


Figure 102: Team Services Session Administrator - Sort

Team Services Troubleshooting

There are just a few items to note when troubleshooting Team Services.

- When you are performing Team Services Transfer, Swap or Share and you are in the menu where you select the session - Only sessions in the appropriate Accept Mode are displayed. For example, for Transfer, only sessions in Accept Transfer Mode are displayed. For Swap, only sessions in Accept Swap Mode are displayed, etc.

- When you are performing Team Services Recover and you are in the menu where you select the session to recover - Only suspended sessions are displayed.

- Check that the Team Services Registry settings are correct.

- Check that the logon script's Team Service environment variables are correct.

There are some session configuration items that must be the same for sessions participating in Team Services.

- The SSH settings must be the same (SSH in use or not in use)
- GSW Encryption settings must be the same (GSW Encryption in use or not in use)
- FIPS settings must be the same (FIPS in use or FIPS not in use)

Additionally, some configuration items and/or requirements for sessions participating in ***specific*** Team Services operations are:

Recovery

- Session Saver must be configured (page 149)
- Session must be in suspended state
- Client types must match (GSW or 3rd Party)
- Unicode Settings must match

Transfer

- Session must be in Accept Transfer mode
- Client types must match (GSW or 3rd Party)
- Unicode Settings must match

Share

- Session must be in Accept Share mode
- Session must not already be monitored or shared

Swap

- Session must be in Accept Swap mode
- Client types must match (GSW or 3rd Party)
- Unicode Settings must match

A quick way for the System Administrator to identify the Client, Unicode and SSH settings for a given session is to use the Session Administrator. Select the session and then use the menu item Session->Details. You will see a display similar to the one below.

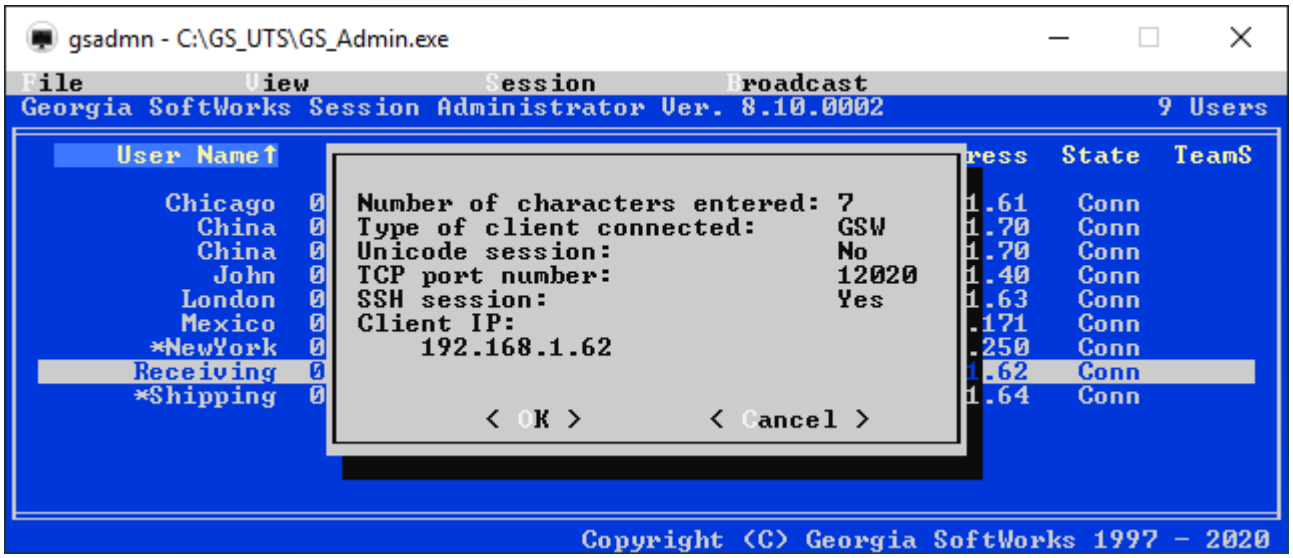


Figure 103: Team Services - Session Details

You can identify if a client is a GSW FIPS session by the '*' prepended to the User Name in the User name column.

Failure Detection and Recovery Pack

For Industrial applications excellent failure detection and recovery is expected and required. This is one area that separates the toys from the tools. *Georgia SoftWorks **pioneered** every feature listed on this page.* Some have been copied but none have been equaled. The ability to operate in industrial and commercial environments was a design goal from the beginning not an afterthought. Commercial applications require that remote link, PC and Client failures be detected and handled as to not impact the other users of the system.

Failure/Recovery Pack	Configurable	Georgia SoftWorks Client	3rd Party Client
Session Saver	Yes	Yes	Yes
Complete Session Cleanup	Yes	Yes	Yes
Complete NTVDM Cleanup	Yes	Yes	Yes
Server-Side Inactivity Timer	Yes	Yes	Yes
Server-Side Heartbeat	Yes	Yes	Yes
Client-Side Heartbeat	Yes	Yes	No
Graceful Termination of DOS Applications	Yes	Yes	Yes
Termination Scripts	Yes	Yes	Yes
Termination of Child Processes	Yes	Yes	Yes

Table 38 - Failure/Recovery Pack

Session Saver

Georgia SoftWorks has again pioneered another outstanding feature for Windows 7/8/10/NT/XP/VISTA/2000/2003/2008/R2/2012/2016/2019 Servers. This feature Saves the Telnet/SSH Session in the event of a link or client failure and allows users to reconnect to the same session the next time they log in and *resume the work in progress, exactly where they left off.* Extremely useful when connectivity is across the Internet or with Radio Frequency Barcode/Scanner applications where it is important to continue work in progress, even after a connectivity failure. If a reconnection is not performed within a specified time period then Graceful Termination will initiate. For the fastest reconnection and minimal prompting, you may want to couple the Session Saver with AutoLogon (page 183). Especially useful in RF Data collection applications.

Upon a client or link failure, the SSH2/Telnet session and associated NTVDM are normally terminated eliminating any orphaned sessions. This is the default behavior. However, there are times when it may be desirable to *Save the Session* giving the user the opportunity to reconnect to the session to resume work in progress. This session is termed to be *Saved* or *Suspended*[17]. This feature can be enabled as described below.

Three methods exist to connect to a Suspended session. They are the *Session Reconnect Method* and the *Attach Method* and using Team Services Recover (page 131).

The Session Reconnect Method is defined to automatically recognize when a User or User from a specific IP address is Logging In and to determine if they have any Saved or Suspended sessions. If so, then the telnet/SSH server will automatically reconnect the user to their existing *Saved Session.*

[17] These terms are used interchangeably

The *Attach Method* is defined to allow a User that is a member of the **Gwtn Monitors** group to identify any Suspended sessions and to Attach (connect) to that session. Please see the Session Monitor for more information on this method (page 187).

The Session Reconnect method can be configured on either a global or per user basis by utilizing Logon Scripts (page 215).

The environment variables for the Session Reconnect are:

gwtn_reconnect_timeout

Specifies the time that a broken session will wait for the original user to reconnect. This variable does not have to be set, the default value is 0. It must be set to non-xzero for Session-Reconnection to operate.

gwtn_reconnect

Selects the criterial to use for a reconnect. There are four possible values for gwtn_reconnect. The first two should be used with version 8.09 and higher.

Possible values are:

- **auto_by_user_and_ip_always**-
  Reconnect based on User ID and IP Address always.
  Always returns to the same session or process ID.
- **auto_by_user_ always**
  Reconnect based on User ID always.
  Always returns to the same session or process ID.

- **auto_by_user_and_ip**[18]
  Reconnect based on User Id and IP Address
- **auto_by_user**[19]
  Reconnect based upon User Id

Note: The User should be using the same terminal emulation during a reconnect that they were using when the failure occurred.

[18] Only use this if you are using a version prior to 8.09.0001 OR if you planning to reconnect to multiple sessions using the same user_id and IP address.

[19] Only use this if you are use a version prior to 8.09.0001 OR if you are planning to reconnect to multiple sessions using the same User Id.

Session Reconnection Timeout

Use the GSW GUI Configuration Tool – Failure Detection/Recovery see page 416
Or use legacy style below

A system administrator may not want Suspended sessions to stay around indefinitely. The amount of time in minutes that a user's session can be available for Session Reconnection is specified by the environment variable **gwtn_reconnect_timeout.** Once this timer has expired for a user then Graceful Termination initiates.

This environment variable must to be set because the default is 0 minutes, which is disabled. This environment variable is ignored if the **gwtn_reconnect** environment variable is not set.

For example, to set the Session Reconnection Time to 1 hour you would enter:

```
set gwtn_reconnect_timeout=60
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

```
set gwtn_reconnect_timeout=60
```
is correct

```
set gwtn_reconnect_timeout = 60
```
is not correct

Reconnection based on User ID – Used for Unique User Logons.

Use the GSW GUI Configuration Tool – User Failure Detection/Recovery see page 416
Or use legacy style below

Let's look at an example. User "Bob" is using a RF Hand Held terminal and is performing a multi-point inspection of an item. Bob is navigating though many screens, logging data during the inspection. Half way through the inspection the Hand Held terminal fails. It would be great if Bob could simply grab a spare Hand Held Terminal, log in and continue his work in progress.

This is possible with Reconnection based on User ID. The SSH2/Telnet server will determine if there are any Suspended sessions for user Bob. If there are Suspended sessions then the SSH2/Telnet server will automatically connect Bob to the existing session. The screen will be exactly in the same condition as it was when Bob was previously connected and Bob can continue work in progress!

For example, to enable Session Reconnection you would enter:

```
set gwtn_reconnect=auto_by_user_always
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

```
set gwtn_reconnect=auto_by_user_always
```
is correct

set gwtn_reconnect = auto_by_user_always is not correct

Note: If there is a need to make more than one Telnet / SSH connection using the same username, or if using a version prior to 8.09.0001 use **auto_by_user.**

Reconnection based on IP Address and User ID.

Use the GSW GUI Configuration Tool – User Failure Detection/Recovery see page 416
Or use legacy style below

There may be times when you have permanent IP addresses and you only want users from machines at those locations to be able to reconnect to Suspended sessions for security or other reasons. In this situation you may consider reconnection based on IP address AND User Id.

Let's look at an example. User "Jane" is using a Medical Application from a secure location. The medical application can only be used at this specific location for security reasons. She is almost completed entering a new patient when a circuit breaker trips. It would be nice if when the circuit breaker was reset, she could login and automatically continue her work in progress.

This is possible with Session Reconnection based on IP Address and User ID. The SSH2/Telnet server will determine if there are any Suspended sessions for user "Jane" from the IP address from which she is connecting. If there are Suspended sessions for that user AND that IP address then the SSH2/Telnet server will automatically connect Jane to the existing Saved session. The screen will be exactly in the same condition as it was Jane was last connected and she can continue her work in progress!

For example, to enable this type of Session reconnection you would enter:

set gwtn_reconnect=auto_by_user_and_ip_always

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

set gwtn_reconnect=auto_by_user_and_ip_always is correct

set gwtn_reconnect = auto_by_user_and_ip_always is not correct

Note: If there is a need to make more than one Telnet / SSH connection using the same username and IP, or if using a version prior to 8.09.0001 use **auto_by_user_and_ip.**

Session Saver Required Session License Count

Use the GSW GUI Configuration Tool – User Failure Detection/Recovery see page 416
Or use legacy style below

When configured to use the Session Saver Reconnect Method it is important to make sure that the number of sessions purchased[20] will accommodate the Session Saver requirements. With Session Saver configured the UTS will save a session that was abnormally disconnected and wait for the user to reconnect. If the user reconnects during the configured window of time then the UTS will present the user with his former session.

The UTS Session Saver must temporarily use two (2) sessions, the one saved in memory and the new session being connected in the reconnection process. Once the user is reconnected to his former session then the UTS will close the second session and return its associated license to the pool of available licenses. Please note that each of the sessions counts towards the license count purchased, even though the second session is used only for a temporary time. Once the user is reconnected to his former session then the UTS will close the second session.

When using the Session Reconnect Method the system administrator must ensure that there are enough sessions available for Session Saver to have a session for the transitory logon session used to reconnect to the saved session.

Please note that a one (1) session license will not be able to use Session Saver with the Session Reconnect Method because the suspended session will use the only license purchased.

Complete Session Cleanup

The Georgia SoftWorks UTS for Windows provides features that ensure that all SSH2/Telnet sessions are properly terminated, even during abnormal client and link failures. Many internal session cleanup methods are automatic; others are configurable using the different Inactivity and Heartbeat timers, termination strings and scripts. Properly terminating telnet sessions ensure that all sessions are available for use and that problems do not accumulate over a long term.

Complete NTVDM Cleanup

The Georgia SoftWorks Universal Terminal Server has employed very complex and sophisticated proprietary algorithms to detect, identify and eliminate "orphaned" NTVDM's[21] directly initiated by applications when using SSH2/Telnet. In many cases orphaned NTVDM's or processes can consume all of the server's processing power rendering the server crippled or useless. Realizing that NTVDM cleanup is essential in industrial, commercial and mission critical applications, a great amount of design and development resources were expended to ensure proper operation in this area.

Server-Side Inactivity Timer

Use the GSW GUI Configuration Tool – Global Failure Detection/Recovery see page 376
Or use legacy style below

Server-Side Inactivity Timer allows implementing an optional administrative policy to terminate sessions after a period of inactivity.

Note: For RF Users with devices that have *Power Save* or *Sleep Mode* enabled please see page 245 for suggested settings.

[20] Which we will call the total pool of license (sessions) available

[21] Please see the discussion on NTVDM's on page 229.

For example; ACME Company purchased Georgia SoftWorks Telnet Server with a single session. User Bob connects a session locks his office and goes home. No one else can connect due to the licensing limit.

If data (keyboard or mouse events) is not received from a client within the specified server-side inactivity time then the client session is terminated. This feature is useful to ensure that an abandoned 3rd party client session is terminated properly, releasing the telnet session for others to use. The Server-Side Inactivity Timer is used *only* if the *client*-side heartbeat is not used.

This timer is a registry key value and is in seconds. The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\InactivityTimeout

The default value is 0xffffffff that is -1. (That is disabled.)

This is how to change the registry key for the Server-Side Inactivity Timer.

Note: You must be on the Windows system that the Georgia SoftWorks UTS for Windows is installed. However, you may connect to the Windows Registry from a remote location.

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\InactivityTimeout
6. Select the menu item **Edit** and then click on **Modify**
7. Enter the new value for the `InactivityTimeout` and click **OK**

The new InactivityTimeout will take effect for all new connections that do not have a client heartbeat configured.

The below variable can be defined within the User's Logon Script.

Example:

`set gwtn_inactivity_timeout=7200` is correct

`set gwtn_inactivity_timeout = 7200` is not correct

Server-Side Heartbeat Timer (Global)

Use the GSW GUI Configuration Tool – Global Failure Detection/Recovery see page 376
Or use legacy style below

The *Server-Side Heartbeat Timer* is used for setting the frequency in seconds which to poll the 3rd party client for presence. If the client is not present then Graceful Termination is initiated.

This timer is a registry key value and is in seconds. The key is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\ClntChkTimeout
```

The default value is 30. (That is 30 seconds)

You may disable this timer by setting it to `0xffffffff`.

Note: For RF Users with devices that have *Power Save* or *Sleep Mode* enabled please see page 245 for suggested settings.

This is how to change the registry key for the Server-Side Heartbeat Timer.

Note: You must be on the Windows system that the Georgia SoftWorks UTS for Windows is installed. However, you may connect to the Windows Registry from a remote location.

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\ClntChkTimeout

6. Select the menu item **Edit** and then click on **Modify**
7. Enter the new value for the `ClntChkTimeout` and click **OK**

The new Server-Side Heartbeat Timer will take effect for all new connections.

Server-Side Heartbeat Timer (by User)

Use the GSW GUI Configuration Tool – Local User Failure Detection/Recovery see page 416
Or use legacy style below

Server-Side Heartbeat Time by user functions identically to Server-Side Heartbeat (Global), but supersedes any global setting allowing more granular control. The *Server-Side Heartbeat Timer* is used for setting the frequency in seconds which to poll the 3rd party client for presence. If the client is not present then Graceful Termination is initiated.

The below variable can be defined within the User's Logon Script.

Example:

set gwtn_serverside_heartbeat=15 is correct

set gwtn_serverside_heartbeat = 15 is not correct

Server-Side Heartbeat for Third Party Clients

There may be situations where a System Admin might want to assign a different value for Server-side Heartbeat for a specific user or device. With the new user definable **Gwtn_Serverside_Heartbeat** variable set in a user's logon script; you can supersede the default globally defined value so the client has its own Server-side Heartbeat.

This is extremely useful in situations where a System Admin is testing a new device or has a device that they wish to test new values without affecting other devices.

Example:

gwtn_serverside_heartbeat=15

In the above setting the UTS server would send a Heartbeat pulse once every 15 seconds to test for the presence of the device.

Client-Side Heartbeat Timer for GSW Windows Clients

To aid in the detection of failed links or failed remote PC's the Georgia SoftWorks Client software supports a Client Timeout value. The client will send a heartbeat to the server at specified time intervals. At installation, this value is set to 30 seconds. This can be changed using the shortcut properties.

If the server does not receive data from the client in the specified time, the connection is terminated. The data can be keyboard, or mouse input as well as the heartbeat. When keyboard or mouse data is transmitted, or when a heartbeat detected the server's timer is restarted.

The heartbeat time is specified as an *optional* command line argument in seconds.

EXAMPLE - SET THE GEORGIA SOFTWORKS SSH2/TELNET CLIENT-SIDE HEARTBEAT

```
Gs_clnt.exe[22] /H1800
```

specifies a heartbeat time of 30 minutes (1800 seconds = 30 minutes). Normally there is no need to change this value. To disable the Client-Side Heartbeat set it to –1.

To change the Client Heartbeat modify the command line parameter as described in the section on GSW Telnet and SSH Client command line options - Usage page 80.

[22] The file name for the GSW SSH client is gs_ssh.exe

Note: If an Inactivity Timeout occurs and the Session Saver is active the Session will be suspended; otherwise graceful termination will be initiated if specified.

Max Heartbeat Delay

MaxHeartBeatDelay registry value is the maximum delay the server will wait for Georgia SoftWorks Clients to send the UTS server a client-side heartbeat. If the server does not receive a heartbeat before this value is reached it will suspend the client session when Session Saver is configured. The default value is 60 seconds.

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\MaxHeartBeatDelay

Graceful Termination of DOS Applications

Use the GSW GUI Configuration Tool – Local User Failure Detection/Recovery see page 416
Or use legacy style below

The Georgia SoftWorks Windows Universal Terminal Server is outstanding in the case of a link or remote PC failure we attempt to gracefully terminate the executing DOS application, therefore saving important data that may otherwise be lost. Many applications are terminated by sending a sequence of characters to the application such as ESC-ENTER. Applications may have specific sequences. We allow a termination string to be defined as an environment variable in the `k_start.bat` or `c_start.bat` file. When a session is to be terminated due the client heartbeat timer expiring or the server-side inactivity timer expiring then the defined termination string will be sent to the associated application. Approximately 3 seconds later the session is terminated if still running.

The termination string is a comma delimited list of keystrokes that you want to send to the shell (or your application) before it is terminated due to either the Client Heartbeat timeout or the Server-Side Inactivity timeout. No extra white space is allowed. The string is not case sensitive. For example, you must specify `'shift-c'` to produce a capital 'C'.

Note: *Termination String Syntax is also used with GSW Mobile Client Macros when remapping function keys.*

The following control key designators are defined.

- shift-
- alt-
- ctrl-

The following special characters are defined.

- ESC
- ENTER
- TAB
- PGUP
- PGDOWN
- HOME
- END
- LEFT
- RIGHT

- UP
- DOWN
- DEL
- BACKSPACE
- COMMA
- F1
- F2 and so on through F12

Also, a special operator is defined.

- Sleep*xx*

This special operator will *pause* the output to the shell for *xx* seconds. This gives the application time to process the input. This is very useful when saving files to disk and for applications that flush the keyboard buffer. By default, a 1-second pause is injected between keystrokes, however some specific cases may require the use of the `Sleep`*xx* operator to introduce additional delay.

To ensure graceful termination you may want to enter the string "`e,x,i,t,ENTER`" to exit the shell. Once the specified application is terminated by the user-specified string, the above string will complete the graceful termination process. This string sends the command *exit* and then *enter*[23] which are the commands to terminate a session. You must be sure that the user defined termination string does indeed terminate the application before sending the "`e,x,i,t,ENTER`" string otherwise unintended characters will be sent to the application.

EXAMPLE - GRACEFUL TERMINATION: AMORTIZATION PROGRAM - LINK FAILURE.

We will continue to use the amortization program from the previous example. However, we will assume that a standard menu exists for the application. A *File* menu item exists that is invoked by *alt-f*. The list of items in the *File* menu list includes *s* for saving the work and *alt-f* for opening the file menu list again and then *x* for exiting the application. Next follows the ",e,x,i,t,ENTER" to gracefully close the shell.

Step 1. Create batch file c_start.bat

Step 2. Add this line to c_start.bat

```
d:\amor\amortize.exe
```

Step 3. Add this line to c_start.bat (note: there are no spaces in following the "=")

```
SET LRA_TERMINATION=alt-f,s,sleep5,alt-f,x,e,x,i,t,ENTER
```

Step 4. Save file and exit.

[23] Remember that the string *ENTER* is a Graceful Termination special character.

Now when the User ID "bill" connects to the Windows system via SSH2/Telnet the application amortize.exe will automatically be executed. If the session is terminated due to system timeouts the termination string *alt-f,s,sleep5,alt-f,x* will cause the following sequence of events to occur.

First *Alt-f* to be sent to the application (This opens the file menu).

Second *s* is sent to the application (for saving the file).

Third, the Sleep5 causes 5-second pause to allow the application time to save the files,

Fourth *alt-f* to open the file menu list again,

Fifth an *x* is sent to the application to exit.

Finally, ",e,x,i,t,ENTER" is send to the shell which terminates the session.

Other examples of termination string definitions are[24]:

```
SET LRA_TERMINATION=alt-f,x,e,x,i,t,ENTER

SET LRA_TERMINATION=F2,alf-f,x,e,x,i,t,ENTER

SET LRA_TERMINATION=ESC,ENTER,e,x,i,t,ENTER
```

[24] There are no spaces in the string following the "=" sign. Some printers and displays make it difficult to observe.

Termination Scripts

Termination scripting is analogous to the Logon Scripting except it is executed when the SSH2/Telnet session is terminated. The commands within the file `cleanup.bat` are invoked upon termination of a SSH2/Telnet session. This is invoked with both normal and abnormal terminations. Cleanup scripting is available on both a global and per user basis as with Logon Scripting.

NOTE: No applications that require user input are allowed in the cleanup scripts.

It is especially useful for properly un-mapping network connections such as drives. If you do not un-map drives when terminating the session, you may be unable to connect to them the next time you logon. The cleanup.bat file allows automatic un-mapping of drives upon termination of the telnet session.

EXAMPLE - TERMINATION SCRIPT: CLEANUP.BAT FILE UNMAPPING THE "F" NETWORK DRIVE

The system administrator has setup user "Adam's" logon script to map drive "`f`" as a network drive. In user "Adam's" cleanup.bat script the system administrator will un-map the drive when the session is terminated.

Step 1. Create directory

c:\gs_uts\scripts\Adam

Step 2. Create batch file cleanup.bat

Step 3. Add the following line.

```
net use f:  /d
```

Step 4. Save file and exit.

This will un-map the f drive after the session is terminated.

NOTE: Please see the section on logon scripting to determine the location for the cleanup script files. (Page 218)

Termination of Child Processes

Use the GSW GUI Configuration Tool – User Failure Detection/Recovery see page 416
Or use legacy style below

You have the capability to specify that all child processes started in the session will be terminated when the session ends. Terminating child processes upon a session ending is the desired behavior. However, scenarios do exist where you want the session to terminate but you would like spawned child processes to continue. In either case Graceful Termination is attempted first. This feature is not available in Windows NT because the necessary operating system infrastructure did not exist until Windows 2000 and later (Windows XP/VISTA/7/8/10/2000/2003/2008/R2/2012/2016/2019).

The environment variable for controlling the termination of child processes for a session is:

gwtn_job_control

For example, to select automatic termination of all child processes you would enter:

```
set gwtn_job_control=y
```

in the Logon Script for a particular user.

And to disable automatic termination of all child processes started in the session you would enter:

```
set gwtn_job_control=n
```

in the Logon Script for a particular user.

The default setting is enabled.

Legacy Pack

The Georgia SoftWorks UTS Server for Windows provides full support for DOS Legacy applications. When you run DOS legacy applications using the GSW UTS it is as if you are running them locally. We support DOS Character Mode Color graphics including the line and box characters.

With our client you can use the MOUSE just as you do locally. This was another feature **pioneered** by Georgia SoftWorks. The function keys and special characters also work and display as expected.

Legacy Pack	Configurable	Georgia SoftWorks Clients	3rd Party Client
Mouse	Yes	Yes	Yes**
DOS Character Mode Color Graphics	N/A	Yes	Yes*
Function Keys	Yes	Yes	Yes*
Special Characters	Yes	Yes	Yes*
Screen Sizes other than 25 x 80	Yes	Yes	Yes*
Alt key support for all emulations	Yes	Yes	Yes
Control-C Configuration	Yes	Yes	Yes*

Table 39 - Legacy Pack

* As supported by the Terminal emulation mode

** If supported by the third-party client

Mouse

Use the GSW GUI Configuration Tool - Emulations Summary *(page 381)*
Or use legacy style below

When using the Georgia SoftWorks SSH2/Telnet Windows Clients the Mouse works as if you are sitting locally at the server. No configuration is required.

The GSW also provides mouse support when using GSW ConnectBot client for Android and other 3rd party ssh/telnet clients that support mouse operation, e.g. PuTTY.

See page 177 to learn more about mouse operation with 3rd party clients.

DOS Character Mode Color Graphics

DOS Character Mode Color Graphics is fully supported. This includes the full range of DOS Character mode Colors. All of the 256 possible background/foreground color combinations are supported.

Function Keys

The function keys work as expected. With the Georgia SoftWorks Universal Terminal Server for Windows the function keys operate as if you are sitting at the server and running the application locally. For 3rd Party clients the function keys are supported as per the emulation specified. Please note that some function keys are not supported by various emulations.

Special Characters

All characters with character codes between 0x00 through 0xFF are supported and displayed properly when using the Georgia SoftWorks SSH2/Telnet Clients and conforming third party client emulations.

Screen Sizes other than 25 x 80

You may place the `Mode` command (as described on page 298) in a logon script to set screen sizes. Please note that most UNIX Telnet/SSH client's default to 24 rows while Windows and DOS applications default to 25 rows. Thus you may have to adjust your UNIX SSH2/Telnet client row count settings to see all the rows of your Windows or DOS application. Alternatively, you may need issue the `mode con: lines=24` command. Note: if you issue this command you will not see the last row of your application.

Alt Key Support for all emulations

Alt keys are completely supported. For 3rd party client Alt key operations see page 172.

Control-C Configuration Support for all SSH2/Telnet Clients

Use the GSW GUI Configuration Tool – Control-C see page 410
Or use legacy style below

There are different expectations as to the function of the behavior when <control-c> is depressed. The Georgia SoftWorks Universal Terminal Server allows configuration of the behavior for <control-c> by setting an environment variable in a logon script.

The environment variable for the <control-c> behavior is:

gwtn_ctrl_c_mode

The modes of control-c behavior are:

- **key** – <control-c> will be sent to the application as a character value of decimal 3
- **event** – <control-c> will be sent to the application as a signal/event which can be trapped.
- **auto** – The SSH2/Telnet Server will attempt to get the application's <control-c> settings and send either *event* or *key*, whichever appears to be appropriate. Sometimes the SSH2/Telnet server will make the wrong choice and you will have to override with an explicit setting. This is the **default** setting when the **gwtn_ctrl_c_mode** is not set.

For example, to select Event Mode <control-c> behavior you would enter:

```
set gwtn_ctrl_c_mode=event
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_ctrl_c_mode=event` is correct

`set gwtn_ctrl_c_mode =` `event` is not correct

Emulation Pack

When using 3rd party clients, comprehensive terminal emulations are a must. Not just offering a wide range of terminal emulations but they are also correctly implemented!

Emulation Pack	Configurable	Georgia SoftWorks Client	3rd Party Client
SCO Console	N/A	N/A	Yes*
DEC VT100/220/320/420	N/A	N/A	Yes*
Wyse 50, Wyse 60	N/A	N/A	Yes*
AT386	N/A	N/A	Yes*
IBM 3101, IBM 3151	N/A	N/A	Yes*
AlphaCom	N/A	N/A	Yes*
PDCurses for VT-220/320/420	N/A	N/A	Yes*
Perfect PC	N/A	Yes	No

Table 40 - Emulation Pack

* As supported by the terminal emulation mode

3rd Party Clients

The Georgia SoftWorks UTS for Windows will work with any RFC 854/SSH compliant 3rd party client. Please see the vendor's instructions for configuration of the 3rd party client.

The procedure for connecting with a 3rd party client is similar to connecting with the Georgia SoftWorks client (see page 73).

Terminal Emulation

Use the GSW GUI Configuration Tool – User Emulations - Terminal Emulations see page 409
Or use legacy style below

Upon connecting with a 3rd party client, you will be prompted to select a terminal emulation mode. Choose the desired emulation by selecting the appropriate number. *Be sure to set the 3rd party client emulation mode to the same emulation as the one selected on the server.* The terminal emulation options available are:

- DEC VT-100
- DEC VT-220/320/420
- SCO Console
- AT386
- Wyse 50
- Wyse 60
- IBM 3101
- IBM 3151
- AlphaCom - This is chosen when using the AlphaCommunicator Telnet Client.
- PDCurses for VT-220/320/420

Enter 0 for DEC VT-100 emulation, 1 for DEC VT-220/320/420, 2 for SCO Console emulation, 3 for AT386, 4 for Wyse 50, 5 for Wyse 60, 6 for IBM 3101, 7 for IBM 3151, 8 for AlphaCom emulation, 9 for PDCurses for VT-220/320/420

If you do not want to be prompted for the emulation mode each time you log on using a 3rd party client then you may set an environment variable on a per user basis using Logon Scripting (described later in the User's Guide – Page 218).

The environment variable for the terminal emulation is:

gwtn_term

For example, to select SCO Console emulation you would enter:

```
set gwtn_term=2
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_term=2` is correct

`set gwtn_term =` 2 is not correct

Graphic Characters

Use the GSW GUI Configuration Tool – User Terminal Emulations see page 409
Or use legacy style below

Third party clients do not always handle graphic characters and commands as expected. The Georgia SoftWorks Universal Terminal Server for Windows is flexible in providing options for handling graphic characters with 3rd party clients. If you are unsure of which graphics mode to select then feel free to experiment to determine the best mode for your 3rd party client. Note that the typical progression is the order that the selections are presented. The first works for all, the next is more specialized and so on.

Note: The graphics mode prompts vary depending on the terminal emulation chosen.

Graphics Option Text	Description
Replace PC graphics characters with star characters:	This simply replaces PC graphics characters with the "asterisk" character
Translate PC Graphics characters	For VT emulation's the system converts the PC Graphic Characters to ACS and will temporally invoke Special Graphics character sets[25]. PC Graphics without ACS equivalents will be converted to the "asterisk" character
SCO Console special handling	For SCO Console, the system will inject appropriate escape
Pass PC Graphics characters without changes	This will pass any characters >= 0x80 without any changes
Pass all characters from PC Screen without changes.	This will pass ALL characters from the screen. Your client software may have trouble handing ASCII values for some of the control characters like 0x08 (backspace)
Georgia SoftWorks MSDOS Telnet Client	This is used when using the unsupported Georgia SoftWorks modified CUTCU/CUTE (NCSA) utilities for MSDOS. For more details visit this web page: GSW - Other Utilities
User Defined Character Translation	Used in conjunction with the file GS_Xchar.txt for character translation. See page 183
Use UTF-8 encoded characters	All characters above and including 0x80 hex are encoded using the UTF-8 standard. See page 251
Simplified Chinese - GB2312 (EUC)	Used when connecting using emulator configured to receive and send Simplified Chinese.
Traditional Chinese - BIG5	Used when connecting using emulator configured to receive and send Traditional Chinese

Table 41 - Graphics option choices.

If you do not want to be prompted for the graphics mode each time you log on using a 3rd party client then you may set an environment variable on a per user basis using Logon Scripting.

The environment variable for the graphics mode is:

gwtn_graphics

[25] Note: Double line box characters will be converted to single line box characters.

The value for the environment variable will be the enumerated number associated with the graphics option when prompted. For example, in the screen shot below the graphic options are listed with enumerated values ranging from 0 to 8.

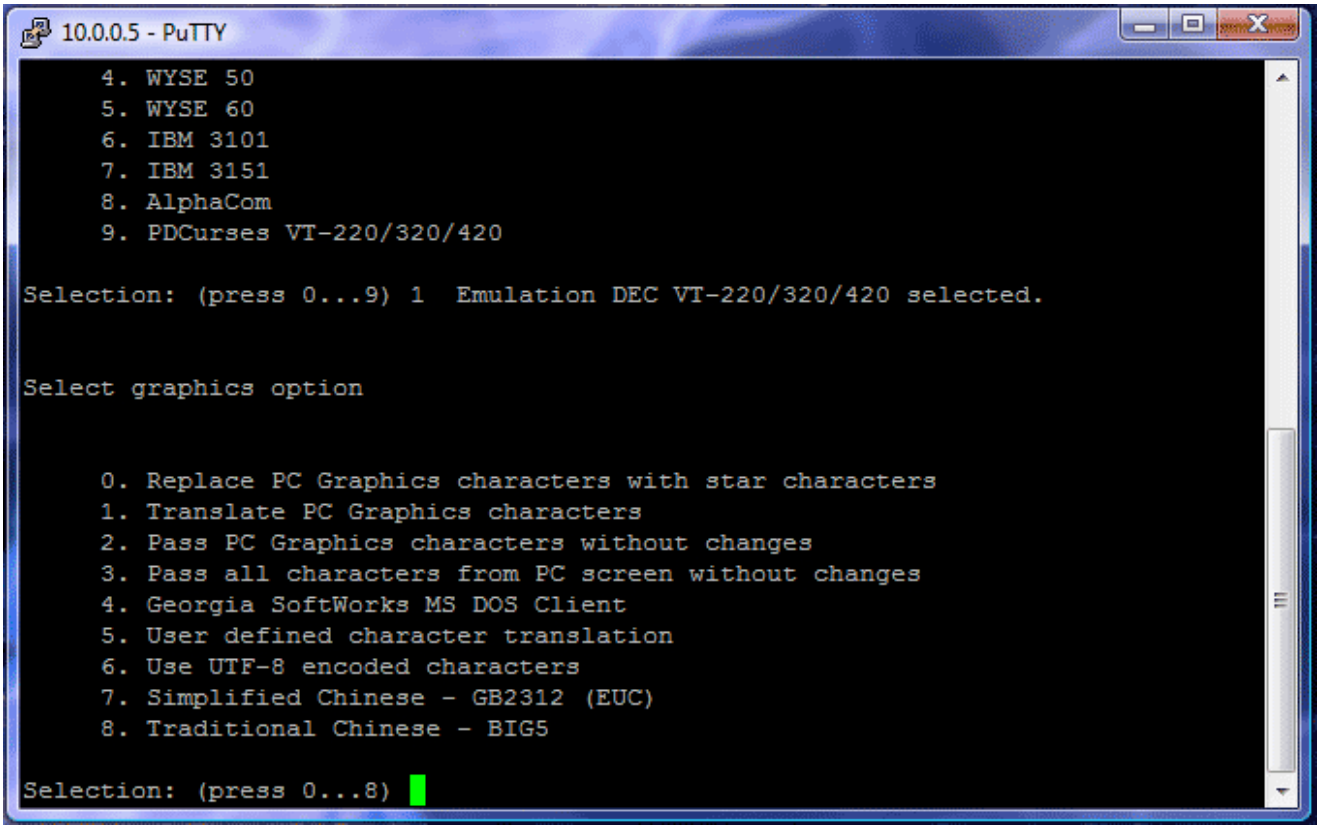


Figure 104: Select graphics option for 3rd party client.

For example, to select *star* graphics character substitution you would enter:

```
set gwtn_graphics=0
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables. For example, when setting the environment variable to select "Pass PC Graphics characters without changes" you would use the following syntax.

`set gwtn_graphics=2` is correct

`set gwtn_graphics = 2` is not correct

Color or Monochrome Presentations

Use the GSW GUI Configuration Tool – User Emulations - Terminal Emulations see page 409
Or use legacy style below

Many times, programs are developed to work with monochrome monitors or terminals. In this situation you can choose between a color and monochrome presentation. After the graphics mode options are presented the color or monochrome options are presented. The prompt

Do you want ANSI Colors? [Y/N]:

If you want a Color presentation choose "Y". If you want a Monochrome presentation choose "N".

If you do not want to be prompted for the Color or Monochrome presentation each time you log on using a 3rd party client then you may set an environment variable on a per user basis using Logon Scripting (Page 218). The environment variable for the Color or Monochrome presentation is:

gwtn_color

For example, to select a color presentation you would enter:

```
set gwtn_color=1
```

in the Logon Script for a particular user.

And to select a monochrome presentation you would enter:

```
set gwtn_color=0
```

in the Logon Script for a particular user.

Color Mapping for Monochrome

Use the GSW GUI Configuration Tool – Global Emulations see page 389
Or use legacy style below

If the monochrome mode is selected, the color mapping is performed as described below. For each character on the screen:

If background intensity is set then the blink attribute is set.

If foreground intensity is set then the bold attribute is set.

If the character is blue then the underscore attribute is set.

If background intensity is greater than foreground intensity then the inverse attribute is set as follows:

$$I = .3 * R + .6 * G + .1B$$

The intensity bit is not used in the above calculation. The attributes are additive.

Modification of Color Mapping for Monochrome

Use the GSW GUI Configuration Tool – Global Emulations see page 389
Or use legacy style below

Certain color combinations displayed by the application do not display in a satisfactory way when converted to monochrome. This may be especially true when using monochrome RF devices. The Georgia SoftWorks SSH2/Telnet Server provides a mechanism to allow custom color mapping to monochrome displays.

The SSH2/Telnet Server upon startup reads the file "colormap.txt". This file defines the color to monochrome mappings. The text file contains 256 rows that represent all foreground and background color combinations and associated default monochrome mappings.

You may edit the file and alter the monochrome mappings to obtain the desired effects. You can then experiment to get the exact mappings desired. The format of the text file follows.

Legend: I: Intensity R: Red, G: Green, B: Blue

#Foreground				Background				Your monochrome(re)mapping			
#I	R	G	B	I	R	G	B	BLINK	INT	UND	INV
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	0	0	0	1	0
0	0	1	0	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0
0	1	0	1	0	0	0	0	0	0	0	0
0	1	1	0	0	0	0	0	0	0	0	0
0	1	1	1	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	1	0	0
1	0	0	1	0	0	0	0	0	1	1	0
1	0	1	0	0	0	0	0	0	1	0	0
1	0	1	1	0	0	0	0	0	1	0	0
1	1	0	0	0	0	0	0	0	1	0	0
1	1	0	1	0	0	0	0	0	1	0	0
1	1	1	0	0	0	0	0	0	1	0	0
1	1	1	1	0	0	0	0	0	1	0	0

… and so forth for all 256 possible mappings ….

#Foreground				Background				Your (re)mapping			
#I	R	G	B	I	R	G	B	BLINK	INT	UND	INV
0	0	0	0	1	1	1	1	1	0	0	1
0	0	0	1	1	1	1	1	1	0	1	1
0	0	1	0	1	1	1	1	1	0	0	1
0	0	1	1	1	1	1	1	1	0	0	1
0	1	0	0	1	1	1	1	1	0	0	1
0	1	0	1	1	1	1	1	1	0	0	1
0	1	1	0	1	1	1	1	1	0	0	1
0	1	1	1	1	1	1	1	1	0	0	0
1	0	0	0	1	1	1	1	1	1	0	1
1	0	0	1	1	1	1	1	1	1	1	1
1	0	1	0	1	1	1	1	1	1	0	1
1	0	1	1	1	1	1	1	1	1	0	1
1	1	0	0	1	1	1	1	1	1	0	1
1	1	0	1	1	1	1	1	1	1	0	1
1	1	1	0	1	1	1	1	1	1	0	1
1	1	1	1	1	1	1	1	1	1	0	0

```
The first and last 16 table entries are pictured above. Please see the file
colormap.txt to see all 256-table entries.
```

Alt Keys

Use the GSW GUI Configuration Tool – Global Emulations – Character Emulation - see page 382
Or use legacy style below

Many applications take advantage of the "Alt" key. However, many keyboards and terminal emulations do not support the "Alt" key. The Georgia SoftWorks Universal Terminal Server for Windows allows the "Alt" key sequence to be transmitted to an application by providing a substitute key sequence (the Alt Prefix) for the "Alt" key. The default Alt Prefix is "Ctrl-b".

For example, in order to transmit "`Alt-f`" you will type:

`Ctrl-b` and then `f`.

(Depress *Ctrl* then *b*, release the keys and then depress *f*).

In order to really type in the AltPrefix character from the keyboard you will have to type it twice, like Ctrl-b `Ctrl-b` to get the `Ctrl-b`.

A different *Alt Prefix* can be configured using "AltPrefix" parameter in the registry editor. The default value is set to two 0x02 which is the ASCII value of `Ctrl-b`, other values are as follows:

AltPrefix Value	Key Sequence entered by User
0x01	`Ctrl-a`
0x02	`Ctrl-b`
0x04	`Ctrl-d`
0x06	`Ctrl-f`
0x0e	`Ctrl-n`
0x0f	`Ctrl-o`
0x10	`Ctrl-p`
0x12	`Ctrl-r`
0x14	`Ctrl-t`
0x15	`Ctrl-u`
0x16	`Ctrl-v`
0x17	`Ctrl-w`
0x19	`Ctrl-y`

Table 42 - Alt Prefix values

This is how to change the registry key for the AltPrefix.

Note: You must be on the Windows system that the Georgia SoftWorks UTS for Windows is installed. However, you may connect to the Windows Registry from a remote location.

The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\AltPrefix

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\AltPrefix
6. Select the menu item **Edit** and then click on **Modify**
7. Enter the new value for the `AltPrefix` and click **OK**

The new AltPrefix will take effect for all new sessions.

ESC Delay

Use the GSW GUI Configuration Tool – Global Emulations – Character Emulation – page 382
Or use legacy style below

Third party clients will send *escape sequences* on certain occasions. For example, when a function or arrow key is depressed a sequence of data is transmitted that starts with the escape character (`0x1b`). When the escape character is received, the server must determine if this escape is part of an escape sequence or simply an *escape* key. The server uses the **ESC Delay** value to determine how long to wait for the next character after an escape is received to consider it part of an escape sequence. If a character is not received within this time then the escape is considered to be an escape key, otherwise it is the start of an escape sequence.

The default value is 5 (500ms). You may want to increase this value if you see that escape sequences are not going through and being displayed on the screen rather than being interpreted. For example, if you type F10 and see odd character starting with "]" or "[". This is most likely to happen with terminal servers or other slow links like RAS.

This is how to change the registry key for the Escape Delay.

Note: You must be on the Windows system that the Georgia SoftWorks UTS for Windows is installed. However, you may connect to the Windows Registry from a remote location.

The key is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\ESCDelay
```

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\ESCDelay
6. Select the menu item **Edit** and then click on **Modify**
7. Enter the new value for the ESCDelay and click **OK**

Enable NAWS

Use the GSW GUI Configuration Tool – Global Emulations - Character Emulation – Negotiate Windows Size - see page 384
Or use legacy style below

Enable **N**egotiate **A**bout **W**indow **S**ize (NAWS) telnet option for 3rd party clients.
This registry parameter `EnableNAWS` allows the NAWS option to be enabled.

Default Value is 0 which disables the NAWS option.

NOTE: This is a change from previous behavior when NAWS was always on since Version 6.50.0035 of February 10, 2005. The change is because some of the 3rd party telnet clients handle NAWS incorrectly and cause endless looping.

The registry value is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\EnableNAWS
```

Set this value to 1 to enable NAWS option. The change of this value takes effect for the next session connected.

NOTE: The GSW SSH/Telnet clients handle window size automatically regardless of the parameter value.

Device Telemetry Data and Client Information – 3rd Party Clients

Use the GSW GUI Configuration Tool - Emulations Summary *(page 381)*
Or use legacy style below

This feature is available to work with GSW ConnectBot – SSH/Telnet client for Android.

When enabled, a number of environment variables can be accessed by the application to obtain device and client information. The device and client information can be used by the application in any manner deemed useful. The uses range from reports to application logic decisions based on device specific specifications such as display density etc. This setting is configurable on a Global or User basis.

See how to use the GSW Configuration GUI to enable Device and Client information. (See page 385).

To manually enable 3rd party mouse support, set the following environment variable in the user's logon script.

`gwtn_enable_3rd_party_config_strings`

Possible values are '`Y`' or '`N`', or '`y`' or '`n`'.

`Y` – Enable 3rd party Device and Client information strings

`N` – Disable 3rd party Device and Client information strings (*default*)

For example, to enable support for 3rd party Device and Client information strings put the following

`set gwtn_enable_3rd_party_config_string=Y`

in the Logon Script. This can be done on a global or per user basis.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_enable_3rd_party_config_string=Y` is correct

`set gwtn_enable_3rd_party_config_string = Y` is not correct

When enabled a variable will be added to the users Logon Script as follows:

```
set gwtn_enable_3rd_party_config_strings=y
```

The list of variables enabled a variable will be added to the users Logon Script. The number of variables provided is device dependent.

To find the list of available variables you can use the command "`set gwtncl_`" from within an SSH or Telnet session. See the example below.

Example output:

```
gwtncl_clnt_side_ip=192.168.1.205
gwtncl_device=sr6755_65u_m
gwtncl_display=MRA58K dev-keys
gwtncl_display_density=xhdpi
gwtncl_display_dimensions=1280x720
gwtncl_error=0
gwtncl_gswcb_build_type=release
gwtncl_gswcb_version=2.4.1
gwtncl_host=android-build3
gwtncl_id=MRA58K
gwtncl_mac=E4-FB-8F-07-00-61
gwtncl_manufacturer=Mobiwire
gwtncl_model=RS50
gwtncl_product=full_sr6755_65u_m
gwtncl_serial=FD117A0014615
gwtncl_version=23
gwtncl_version_codename=REL
gwtncl_version_release=6.0
gwtncl_version_security_patch=2017-08-05
```

Send Screen Size to 3rd Party Client

Use the GSW GUI Configuration Tool - Emulations Summary *(page 381)*
Or use legacy style below

Default: `Enabled`

The GSW UTS sends Screen Size information to 3rd party clients.

Note: Supported by modern emulation clients, for example GSW ConnectBot or PuTTY. Older clients will silently ignore this option.

The number of rows and columns used by the server and the client must be the same or a severe misoperation may occur. This parameter ensures the number of rows and columns used in the server-side session is passed to the 3rd party client software automatically. This includes changes to the number of rows and columns made dynamically by your logon script or application. This parameter normally should be enabled.

See how to use the GSW Configuration GUI to enable global Send Screen Size to 3rd Party Client by going to page 387

NOTE: The setting of this environment variable OVERRIDES what is specified in the Configuration GUI. This provides better granularity with respect to each client.

Possible values are '`Y`' or '`N`', or '`y`' or '`n`'.

`Y` – Enable 3rd party send screen size support (default)

`N` – Disable 3rd party send screen size support

For example, to enable support for 3rd party send screen size support put:

```
set gwtn_enable_send_screen_size_to_3rd_party=Y
```

in the Logon Script. This can be done on a global or per user basis.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_enable_send_screen_size_to_3rd_party=Y` is correct

`set gwtn_enable_send_screen_size_to_3rd_party = Y` is not correct

Enable Pseudoconsole

Use the GSW GUI Configuration Tool - Emulations Summary *(page 381)*
Or use legacy style below

Pseudoconsole support is a very powerful feature and brings many of the capabilities presented by Microsoft in so called Windows Terminal to SSH and Telnet. Microsoft is very enthusiastic about Windows Terminal (https://github.com/microsoft/terminal) but at the time of this writing we have to treat our Pseudoconsole support as experimental for the following reasons

1. Microsoft's executable called conhost.exe located in the System32 folder is fundamental to the correct operation of our Pseudoconsole support but unfortunately, even with latest Windows Service Packs, it's version very seriously lags behind the version deployed with Windows Terminal and called OpenConsole.exe. The conhost executable located in the System32 is automatically used by the Command Prompt and consequently by SSH and Telnet. For our development and testing we renamed OpenConsole.exe (from the Windows Terminal folder) to conhost.exe and replaced existing conhost.exe in the System32 folder. This procedure is neither recommended nor supported by Microsoft.

2. Microsoft Windows Terminal download is supported only under Windows 10 and no Windows Servers are officially supported. For our testing on Windows 2019 we replaced the conhost executable in the System32 folder of Windows 2019 and achieved correct operation.

3. Microsoft Windows Terminal is a fairly new product with changing behavior/features. We may be unable to timely address potential future problems without Microsoft's help.

Default is `disabled`

Enables new console features that are available in Windows 10 and Windows Server 2019 also known as Conhost V2. These new capabilities include support for 24-bit color, reverse video, bold text, underscored text and applications sending (Unix style) escape sequences to directly manipulate the screen. Please see Microsoft Windows Terminal documentation for more details. Please make sure that this option is disabled on Windows machines that do not support Pseudoconsole.

See how to use the GSW Configuration GUI to enable Pseudoconsole global support by going to page 388

NOTE: This logon script variable overrides the global setting found in the 'Global per system" area.

To manually enable Pseudoconsole support, set the following environment variable in the user's logon script.

`gwtn_enable_pseudoconsole`

Possible values are 'Y' or 'N', or 'y' or 'n'.

`Y` – Enable Pseudoconsole support

`N` – Disable Pseudoconsole support (*default*)

For example, to enable Pseudoconsole support put:

```
set gwtn_enable_pseudoconsole=Y
```

in the Logon Script. This can be done on a global or per user basis.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_enable_pseudoconsole=Y` is correct

`set gwtn_enable_pseudoconsole = Y` is not correct

Mouse – 3rd Party Mouse Support

Use the GSW GUI Configuration Tool - Emulations Summary *(page 381)*
Or use legacy style below

The GSW UTS also provides mouse support when using GSW ConnectBot client for Android and other 3rd party ssh/telnet clients that support mouse operation, e.g. PuTTY.

When enabled, users using a touchscreen/mouse capable device will be able to select and use the features of the mouse enabled application as expected. In the case of touch screens, touch events will be translated to mouse events. This setting can be configured on a Global or per User basis. The per User basis can be used to easily handle a mix of clients where some of them support mouse and others do not.

See how to use the GSW Configuration GUI to enable 3rd Party Mouse support by going to page 388

To manually enable 3rd party mouse support, set the following environment variable in the user's logon script.

gwtn_enable_3rd_party_mouse

Possible values are 'Y' or 'N', or 'y' or 'n'.

Y – Enable 3rd party client mouse support

N – Disable 3rd party client mouse support (*default*)

For example, to enable support for 3rd party mouse support put:

set gwtn_enable_3rd_party_mouse=Y

in the Logon Script. This can be done on a global or per user basis.

NOTE: No spaces are allowed when setting environment variables.

For example:

set gwtn_enable_3rd_party_mouse=Y is correct

set gwtn_enable_3rd_party_mouse = Y is not correct

Domain Specification using 3rd Party Clients

Please see the section 3rd Party Client - Default Domain Override on page 283 for further information.

Color Re-mapping – All Clients

This feature allows you to re-map (or change) the colors the user will see when using the Georgia SoftWorks Universal Terminal Server. Modify your application colors so they are easy to read on a gray scale device without any source code changes. Also, re-map your application colors to fit a customer's look and feel without source changes.

A text file is used for specifying the colors to re-map. The name of the file is `gs_color.txt` and is installed in the GSW UTS root directory. If you want different color mappings on a 'per user' basis then place the gs_color.txt file in the user's directory in the Scripts folder (see Logon Scripting on page 218). The first column lists the original attribute bytes and the second column lists translated attributes. Attributes not included in this file are left un-translated. The '#' character in the first column designates a comment line.

Attribute	Attribute Bit Value	Description
FOREGROUND_BLUE	0x0001	Text Color contains blue
FOREGROUND_GREEN	0x0002	Text Color contains green
FOREGROUND_RED	0x0004	Text Color contains red.
FOREGROUND_INTENSITY	0x0008	Text Color is intensified.
BACKGROUND_BLUE	0x0010	Background color contains blue.
BACKGROUND_GREEN	0x0020	Background color contains green.
BACKGROUND_RED	0x0040	Background color contains red
BACKGROUND_INTENSITY	0x0080	Background color is intensified.

Table 43 - Color Re-Mapping

Using the Attribute Bit Values from Table 43 we can create all possible color codes.

Foreground Color Value	Description		Background Color Value	Description
00	Black foreground		00	Black background
01	Blue foreground		10	Blue background
02	Green foreground		20	Green background
03	Cyan foreground		30	Cyan background
04	Red foreground		40	Red background
05	Magenta foreground		50	Magenta background
06	Brown foreground		60	Brown background
07	White foreground		70	White background
08	Gray foreground		80	Gray background
09	Bright blue foreground		90	Bright blue background
0A	Bright green foreground		A0	Bright green background
0B	Bright cyan foreground		B0	Bright cyan background
0C	Bright red foreground		C0	Bright red background
0D	Bright magenta foreground		D0	Bright magenta background
0E	Yellow foreground		E0	Yellow background
0F	Bright white foreground		F0	Bright white background

Table 44 - All Possible Color Codes

Attribute values are created by **adding** the foreground value to the background value.

For example: 93 means cyan text on bright blue background.

EXAMPLE - COLOR TRANSLATION TABLE ENTRIES:

Example 1: Change white on blue characters to red on white use this entry:

17 74

Example 2: To change white on black characters to bright white on black use this entry.

07 0F

Automatic Logon 3rd Party Telnet Clients - AutoLogon

Use the GSW GUI Configuration Tool – Global Automatic Logon - see page 368
Or use legacy style below

This feature allows you to pre-configure a list of IP addresses that will be able to connect and log on without any User ID, Password or Domain prompting when using 3rd Party Clients.

AutoLogon is useful in many situations; however the real power of this feature is realized when coupled with the Session Saver (page 149) and/or used with RF Data collection devices for fast and easy connection establishment. For example, when a connection is broken due to a link failure you can reconnect without the time consuming UserID, Password and Domain prompts and resume work exactly where you left off before the link failure.

Please see page 111 for details on Automatic Logon and page 113 Automatic Logon with 3rd Party Clients.

Character Display Translation: 3rd Party Clients

Use the GSW GUI Configuration Tool – Global Emulations see page 391
Or use legacy style below

You may have a special situation or advanced application where it would be useful to translate characters sent to the terminal to a different character or string of characters. Normally you do not need to get familiar with this section however the capability is present for advanced requirements.

This feature allows you to translate (or replace) the characters the user will see on 3rd Party Clients and RF Terminals when using the Georgia SoftWorks Universal Terminal Server. You may translate a single character to ***one*** or ***more*** (up to 10 characters) other characters.

A text file is used for specifying the characters to translate. The name of the global file is `gs_xchar.txt` and is installed in the SSH2/Telnet server's root directory. Each row in the file specifies a character to translate and the replacement character(s). Characters not included in the file are left un-translated. The specifications of the characters are byte values in hexadecimal each separated by a single space. The '#' character in the first column designates a comment line.

The first value in each row specifies the character to be translated. The character or list of characters that replace the original character follows.

For example, the following entry in the file will replace all lower-case letter 'a" with upper case 'A' when sent to the terminal.

```
61 41
```

Note: Remember that **hex 61** is ASCII lowercase **a** and **hex 41** is ASCII uppercase **A**

Another example: The following entry in the file will replace the PC bottom right corner character with the string using the DEC Special Graphics character set.

```
bc 0e 6a 0f
```

Terminal Initialization: 3rd Party Clients

Use the GSW GUI Configuration Tool – Global Emulations see page 392
Or use legacy style below

You may have a special situation or advanced application where you need to send a specific terminal initialization sequence to a 3rd party client. Normally you do not need to get familiar with this section however the capability is present for advanced requirements.

This feature allows you to send an additional sequence of characters to the 3rd party client at the start of each session. You may send one or ***more*** (up to 10 per row) initialization characters to the 3rd party client.

A text file is used for specifying the initialization characters to send. The name of the global file is `gs_tinit.txt` and is installed in the GSW UTS root directory. Each row in the file specifies up to ten characters to send to the 3rd party client. The specifications of the characters are byte values in hexadecimal each separated by a single space. The '#' character in the first column designates a comment line.

Each row must start in the first column.

For example:

```
1b 2e 25
```

will load the Portuguese character set into G2 for vt-220 terminal.

Backspace on Delete – For 3rd Party Clients

Use the GSW GUI Configuration Tool – User Emulations - see page 409
Or use legacy style below

Configuration of whether a backspace is performed when a delete key is used is done with the `gwtn_backspace_on_delete` environment variable in your logon script (page 218).

The default setting is 'N' which means that the delete key does not perform a backspace action, which is the standard delete key in Windows.

The environment variable for specifying if a backspace is performed on delete is:

gwtn_backspace_on_delete

Possible values are '`Y`' or '`N`', or '`y`' or '`n`'.

`Y` – Perform a backspace on delete

`N` – Do not perform a backspace on delete (*default*)

For example, to perform a backspace on delete:

```
set gwtn_backspace_on_delete=Y
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_backspace_on_delete=Y` is correct

`set gwtn_backsoace_on_delete = Y` is not correct

Two Cells per Unicode Character – For 3rd Party Clients

Use the GSW GUI Configuration Tool – User Emulations - see page 409
Or use legacy style below

Characters that occupy two-character cells in Microsoft Windows command prompt will also occupy two-character cells in third party clients is *enabled* by default.

This setting is important when working with Far East versions of Microsoft Windows.

To enable/disable you set the `gwtn_two_cells_per_uc` environment variable in your logon script (page 218).

The environment variable for specifying (enabling/disabling) that characters which occupy two-character cells in Microsoft Windows will also occupy two-character cells in 3rd party clients is:

gwtn_two_cells_per_uc

Possible values are '`Y`' or '`N`', or '`y`' or '`n`'.

`Y` – Enable occupying two cells in 3rd party clients (*default*)

`N` – Disable occupying two cells in 3rd party clients

For example, to enable you would:

```
set gwtn_two_cells_per_uc=Y
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_two_cells_per_uc=Y` is correct

`set gwtn_ two_cells_per_uc = Y` is not correct

Power Features Pack

As you would expect the most powerful and useful features are **standard** with the Georgia SoftWorks UTS for Windows. Everything from True Client-Side Printing, Logon scripting, Session Monitoring and Session Shadowing to Programmatic access to the server. These are not marketing or sales features but useful and powerful features requested and used by SSH2/Telnet users around the world.

Power Features Pack	Configurable	GSW Clients	3rd Party Client
Session Administrator – - Observe/Sort client Sessions - **Monitor** client Sessions - **Shadow** client Sessions - **Attach** to client Sessions - Terminate client Sessions - Send / Broadcast Message to client Session(s) - Details - Get info on Session - Launch via Command Line	Yes	Yes	Yes
Event and Activity Logging	Yes	Yes	Yes
Logon Scripting	Yes	Yes	Yes
Programmatic Access to server	Yes	Yes	Yes
True Client-Side Printing	Yes	Yes	Yes
- Enhanced Method	Yes	Yes	No
- Open Method	Yes	Yes	Yes
- Default Method	Yes	Yes	Yes
Client Identity Uniqueness	Yes	Yes	Yes

Table 45 - Power Features Pack

Session Administrator

Included with the Georgia SoftWorks Universal Terminal Server for Windows is a powerful administrative, development and training tool - the Session Administrator. The session administrator is a standalone utility that allows users within a certain group to perform many useful tasks associated with the active SSH2/Telnet sessions on their system. You may Observe, Monitor, Shadow, Attach and Terminate other SSH2/Telnet sessions. Observe the connection state, the Team Services State, logon time. Etc.

Monitoring and Shadowing are features pioneered by Georgia SoftWorks for SSH and Telnet Servers. With *Monitoring* you can connect to existing SSH2/Telnet sessions and observe the screen exactly as the client sees the screen. You may *Shadow* as session in the event you need *interactive input capabilities* with that session. You may use this utility as a local Windows user or as a user connected via SSH2/Telnet .

Session Monitoring Privileges

To use the GS Administrator a user[26] must belong to the **local** group *Gwtn Monitors*. The system administrator must first create the group *Gwtn Monitors*. Next all users allowed to use the Session Administrator must be added to the group. Windows does not instantaneously update the group membership after the user manager is closed. Windows will update the group memberships if you logoff/logon the desktop. In the event that this does not work you may have to restart the Windows server after creating the group and adding users.

[26] Note: Only "Users" can be added to the group GWTN MONITORS. Other groups can not be added to GWTN MONITORS.

The standard Windows graphical User Management tools can be used to create the local group *Gwtn Monitors* and add users to the group. Tools to perform these actions are also available from the command line and you may find that they are faster and easier to use.

To add the group from the command line please **log on as an administrator**[27], open a Command Prompt window on the server and run the following command:

```
net   localgroup   "Gwtn Monitors" /ADD
```

To add a user to the group, run the following command:

```
net   localgroup   "Gwtn Monitors" username   /ADD
```

(`username` parameter must be replaced with the actual name of the user who will be allowed to run the GSW Session Administrator)
You need to restart the server after this command completes successfully.

To find out who is allowed to run the GSW Session Administrator use the command:

```
net   localgroup   "Gwtn Monitors"
```

The command will provide the listing of the members of `'Gwtn Monitors'`.

[27] You must have administrative privileges to create groups and add users to groups.

Starting the Session Administrator

The name of the session administrator utility is **gs_admin.exe** and resides in the UTS installation directory. The Georgia SoftWorks Universal Terminal Server program group has an entry to start the Session Administrator. It may also be started from the command line locally or via SSH2/Telnet.

When the session administrator is executed a window is opened that dynamically displays all SSH2/Telnet sessions. For each session the Logon Id, the Logon time, the Process ID, the Monitor ID, the IP address and the Connection State are displayed. The menu bar contains the items *File* and *Sessions*. The bottom right corner of the *Session Administrator* displays the number of SSH2/Telnet Sessions that are currently active.

For each SSH2/Telnet session the following information is displayed:

User Name - Login ID of the Windows user[28]

Logon Time - Date and time the user logged on to the system via SSH2/Telnet.

Process ID - Process ID assigned to the SSH2/Telnet Session

Monitor ID - Process ID of the GS_Admin that is monitoring the session. This indicates that this session is being monitored or shadowed.

IP Address - IP address of the computer where the client is located.

State - Connection State of the SSH2/Telnet session.

Defined States are:

Logon - A User is in the process of logging in via SSH2/Telnet.

Conn - SSH2/Telnet session is Connected

Disc - A User is disconnecting

NoRsp - The Application has not responded to the data in its input queue

Susp - A SSH2/Telnet Session is Suspended. That means the *Session Reconnect* (page 149) feature is enabled and the client or link has failed leaving the session Suspended. A Suspended session can be reconnected to via the Auto-Reconnect feature or via the Attach feature of the Session Administrator. A Suspended session can be terminated via the Terminate feature of the Session Administrator or when the **gwtn_reconnect_timeout** timer expires.

TeamS - The GSW Team Services state.

[28] Note: When used with the GSW Rocket Terminal Engine the SAP User Name is also displayed.

Observing SSH2/Telnet Sessions

Using the Session Administrator allows observation of all telnet sessions on the SSH2/Telnet Server. Relevant information is displayed in an easy to read format.

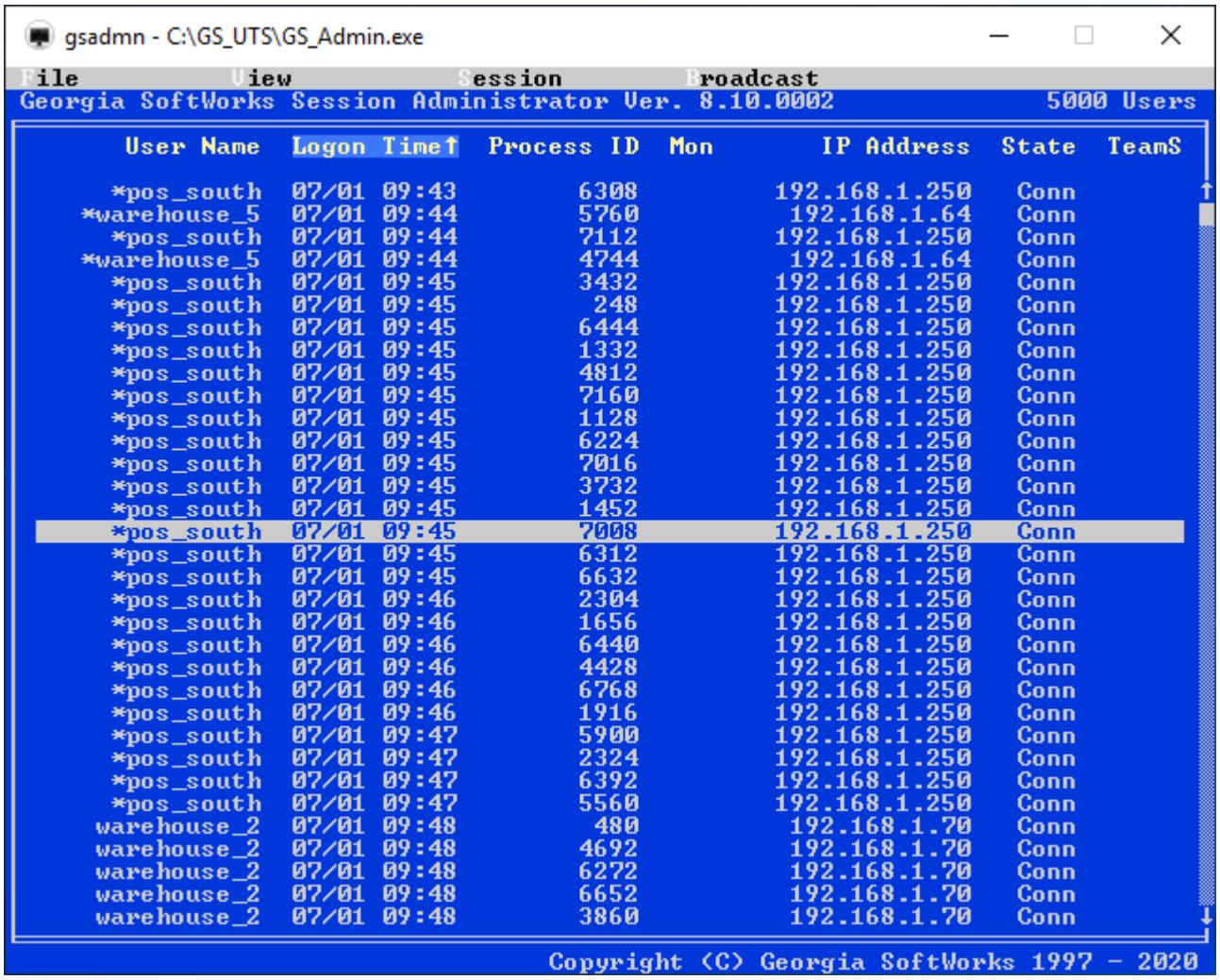


Figure 105: GSW Session Administrator - Observing Telnet Sessions

The initial display is sorted by the *Logon Time* for each session (Note the Arrow adjacent to the Logon Time heading). The session that has been logged on the longest is displayed first and the most recent is displayed last. The display may be sorted by User Name, Logon Time, Process ID, IP Address or State. You can use the *View* menu item to select the column to sort on, or you may click on the column heading.

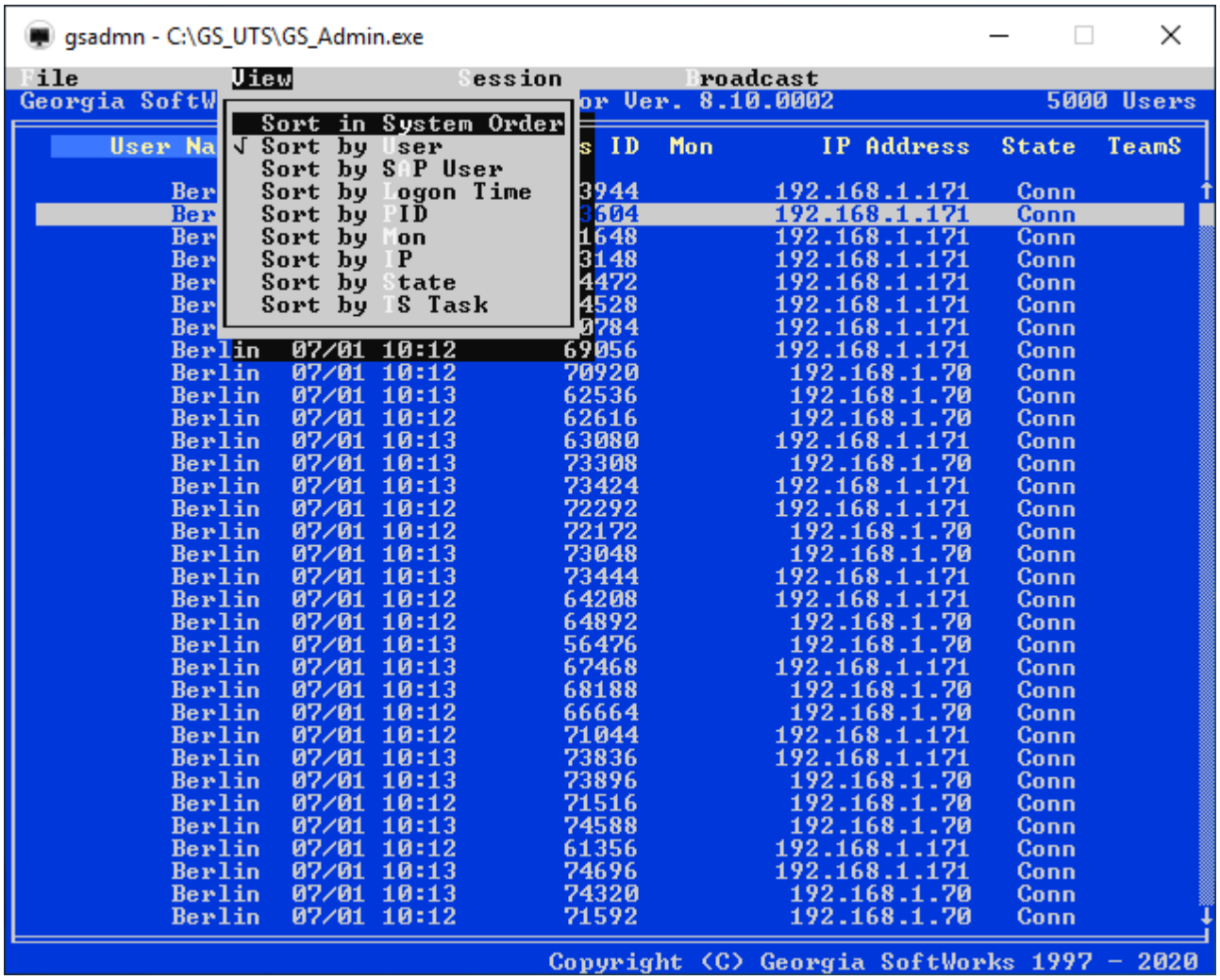


Figure 106: GSW Admin - Menu Sort Options

You may also reverse the sort by re-checking the User Name menu item or by clicking the column heading again. Click the heading to toggle between the ascending and descending sort order. Again, note the arrow beside the column heading to indicate the sort order.

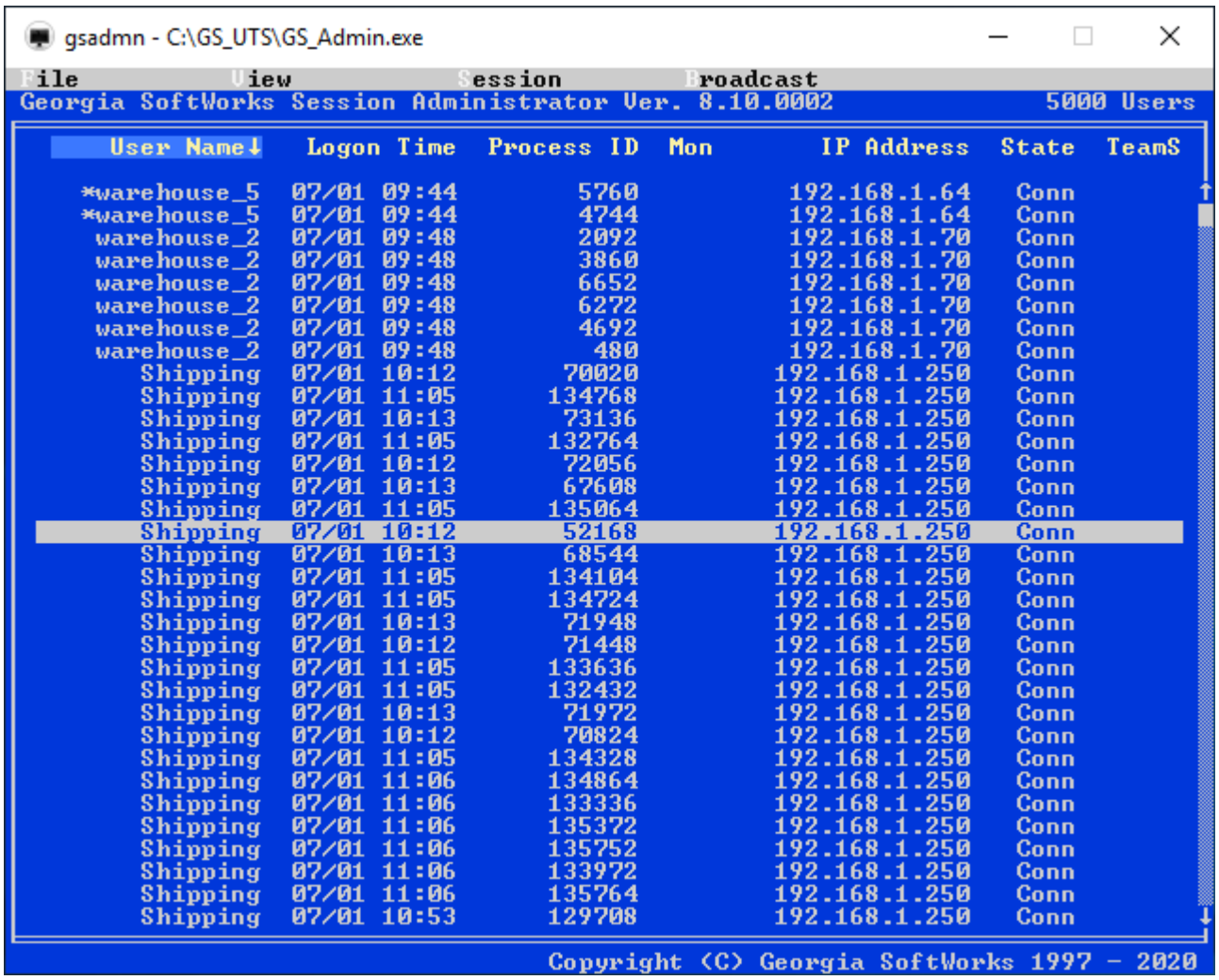


Figure 107: Session Administrator - Descending Sort Order

Monitoring SSH2/Telnet Sessions

Session Monitoring is the method used to locally observe the display on a remote SSH2/Telnet session. As the data displayed on the remote SSH2/Telnet client, an exact copy is sent to the Session Monitor too. The display is exactly the same as the display being presented to the remote session. Session Monitoring is transparent to the client being monitored and does not impact their performance.

To select a SSH2/Telnet session to monitor first highlight the session to monitor. This is accomplished either by moving the up/down arrow keys or clicking on the particular session[29]. Once selected either depress <ENTER> or click the menu item *Session* (see Figure 108) to display the drop-down item *Monitor*. You may now select *Monitor*.

You are now connected to the other telnet session, observing the screen activity exactly is appears to the other user. You may monitor only. No input is allowed to the other session. To end monitoring the other telnet/SSH session depress <ESC>. You are returned to the Session Administrator Screen.

Notice that the graphics, the colors, the lines, checks and boxes are all displayed correctly.

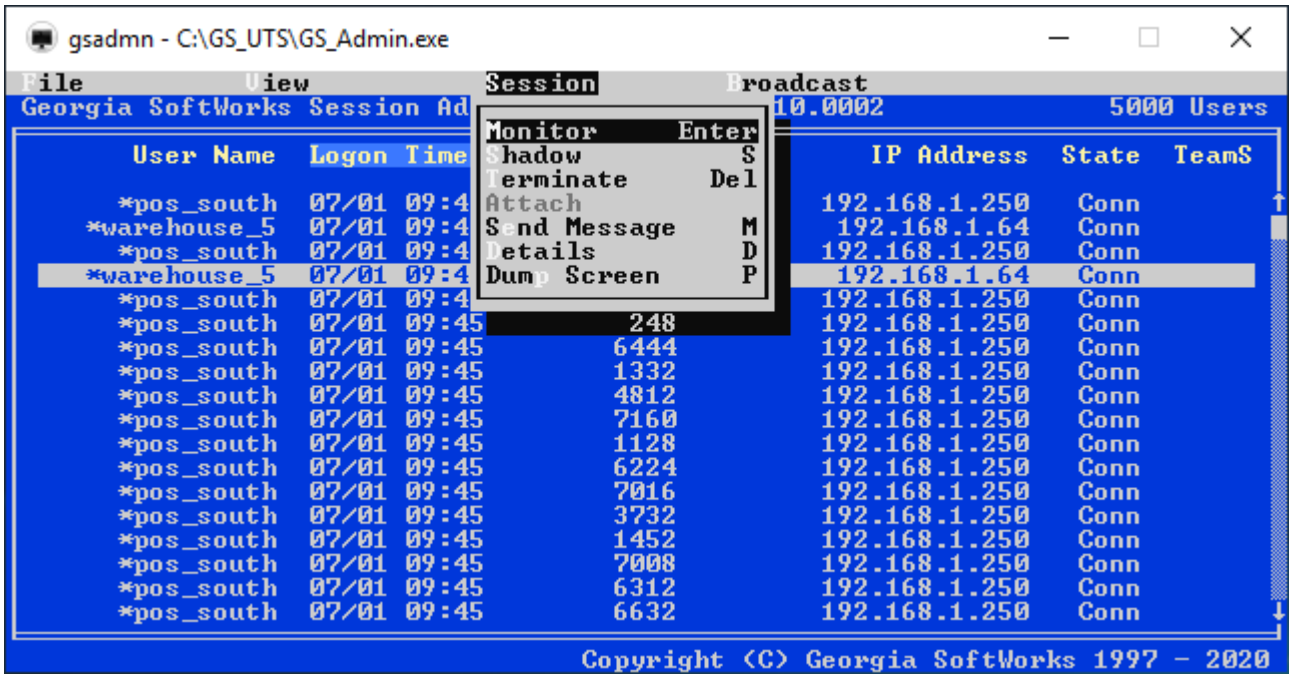


Figure 108: Session Administrator - Select Session to Monitor

[29] Hint: The fastest method is to simply double click on the session to immediately start monitoring.

If User John was using Norton Command and his screen was displaying the following:

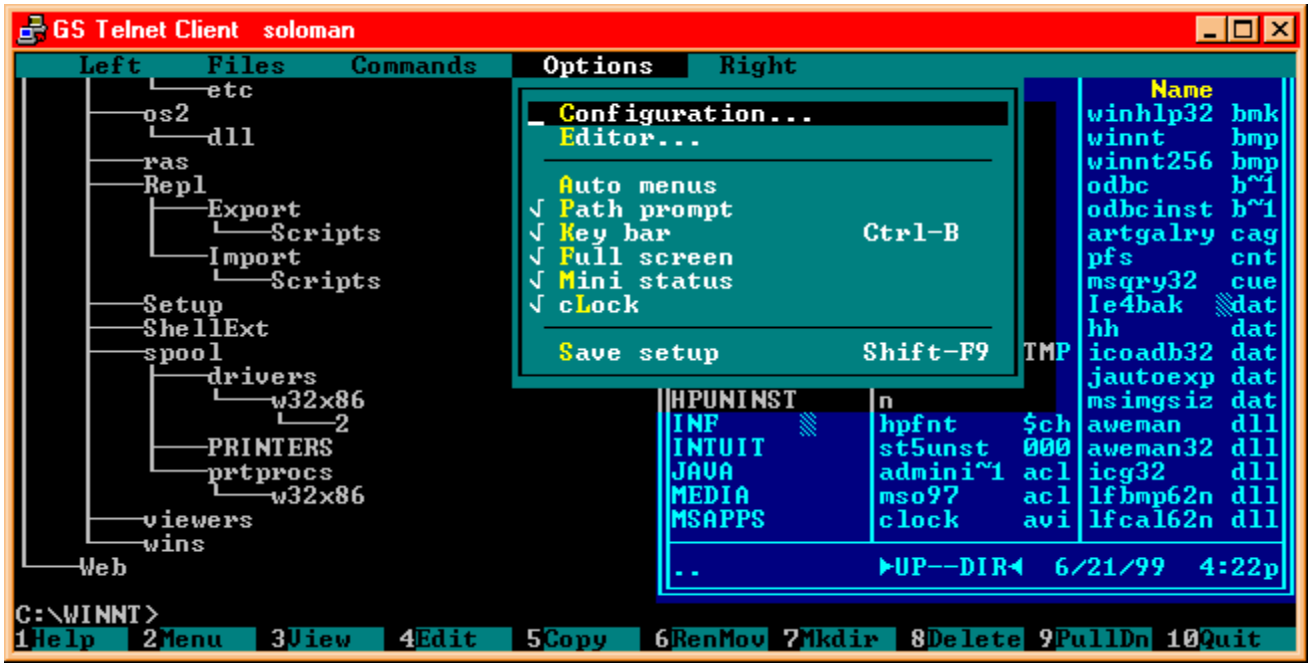


Figure 109: Session Administrator: Client Session

Then the monitor screen would look as follows:

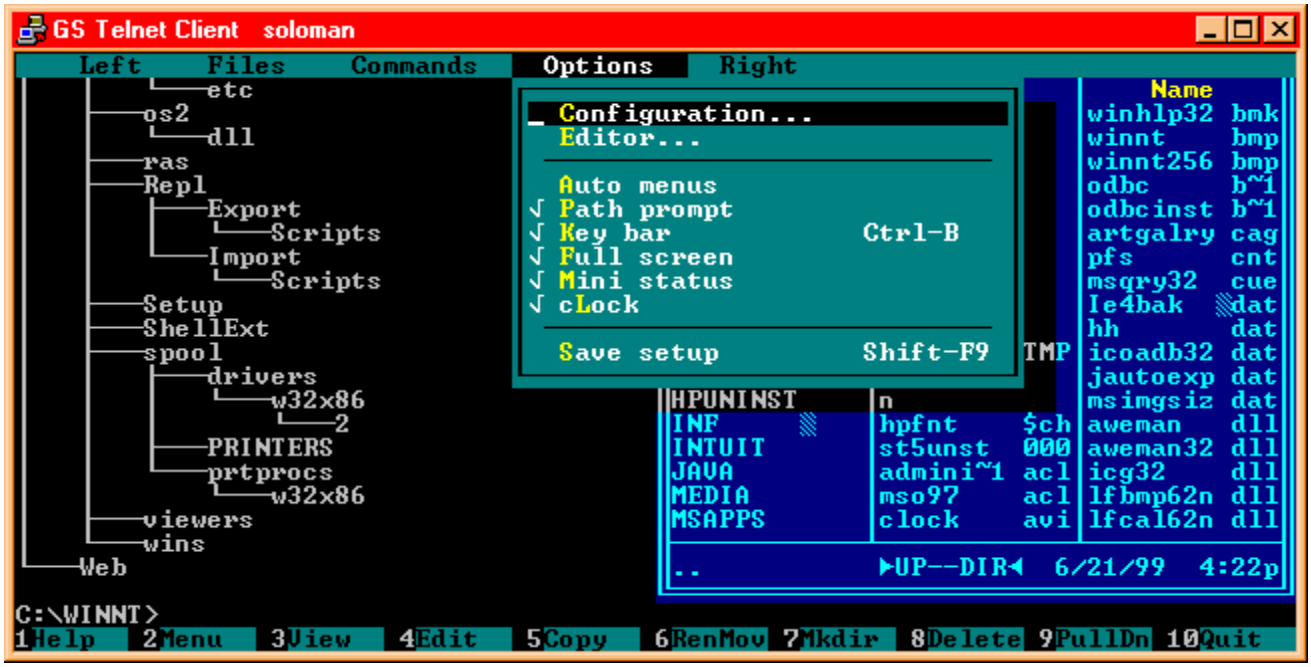


Figure 110: Session Administrator Monitor Session

Yes, the screen displays look exactly the same and that is the way it is supposed to work. The Monitor's screen displays the screen activity exactly as it appears on the session being monitored!

Shadowing SSH/Telnet Sessions

Shadowing is similar to Monitoring except **interactive input is allowed**. This means that you can provide input to another SSH2/Telnet session. This is a powerful training and Quality Assurance tool. A user may need assistance in using their application and you can shadow their SSH2/Telnet session providing input where they have difficulty.

To select a SSH2/Telnet session to Shadow first highlight the desired session. This is accomplished either by moving the up/down arrow keys or clicking on the particular session. Once selected click the menu item *Session* (see Figure 108) to display the menu drop down items. You may now select *Shadow*. As a shortcut you may simply press "S".

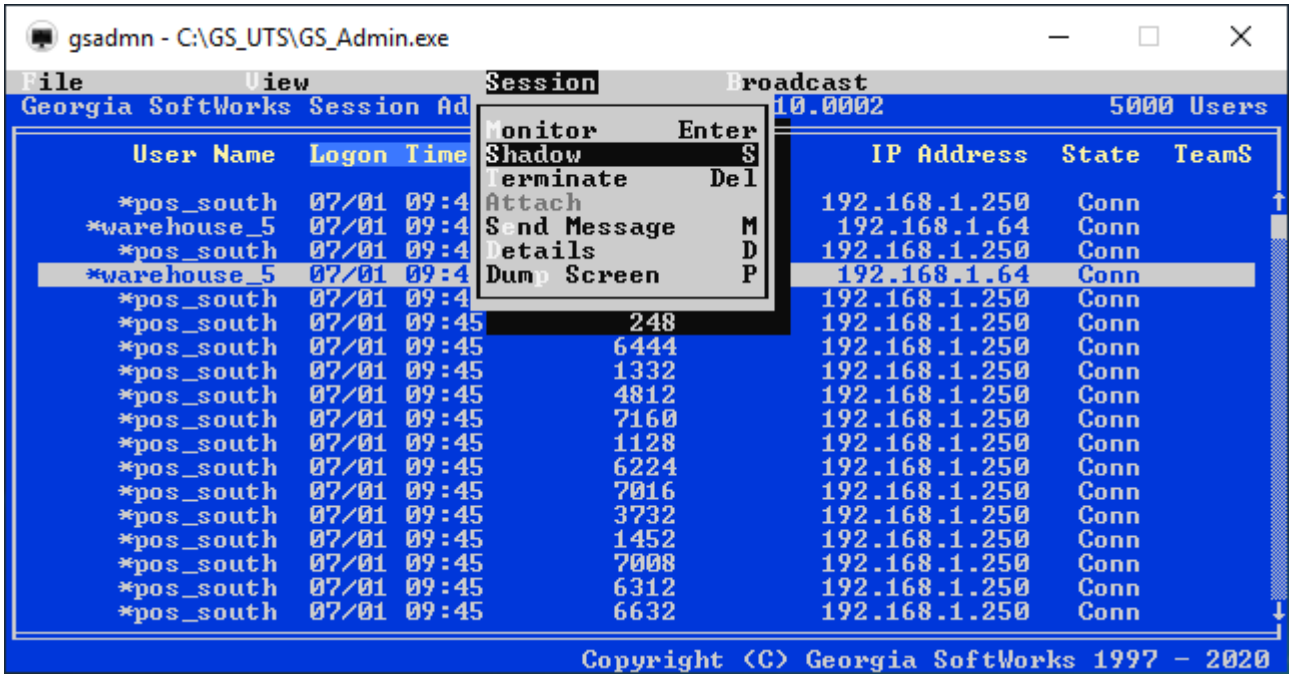


Figure 111: Session Administrator - Shadowing

You are now connected to the other SSH2/Telnet session, observing the screen activity exactly is appears to the other user. Both you and the original user are now able to enter data into the session. To end shadowing the other SSH2/Telnet session, depress `<ctrl-z>`. You are returned to the Session Administrator screen.

SSH FIPS 140-2 Sessions

The GSW SSH Server has a FIPS 140-2 option available for purchase. The Session Administrator can be used to verify that a GSW SSH FIPS 140-2 compliant client is connected to the GSW SSH FIPS 140-2 compliant server. These connections are identified by an asterisk "*****" prepended to the User Name in the Session Administrator as shown below.

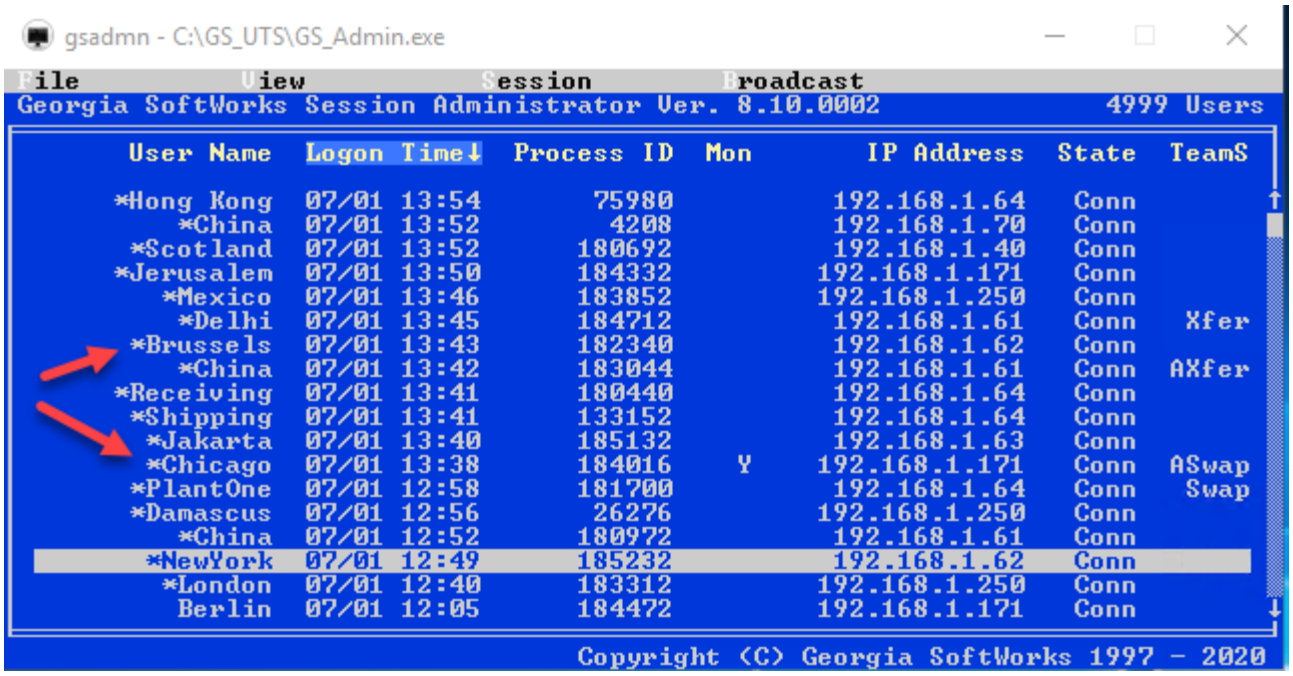


Figure 112: FIPS 140-2 compliant connections

Terminating SSH2/Telnet Sessions

To select a SSH2/Telnet session to terminate first highlight the session to terminate. This is accomplished either by moving the up/down arrow keys or clicking on the particular session. Once selected either depress <DEL> or click the menu item *Session* to display the drop-down item *Terminate*. You may now select *Terminate*.

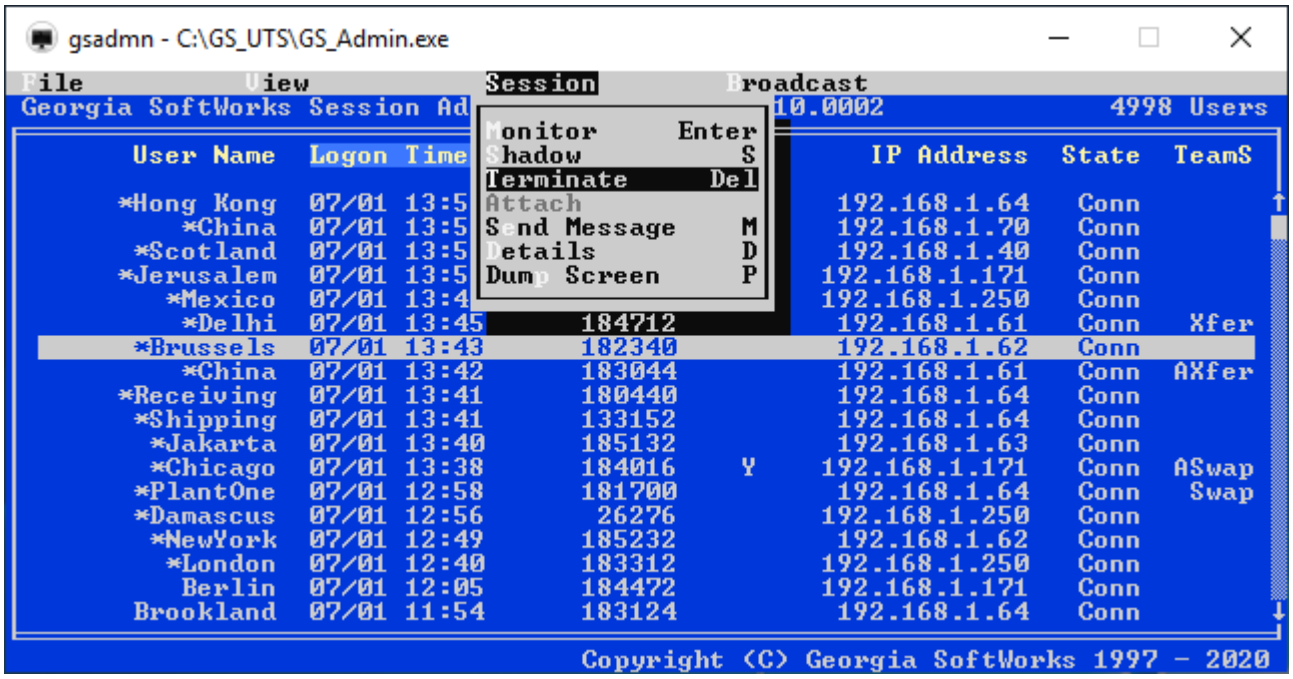


Figure 113: Session Administrator: Terminate another session

You will be prompted to make sure that you want to terminate the session. Graceful Termination (page 158) will take place upon terminating the session.

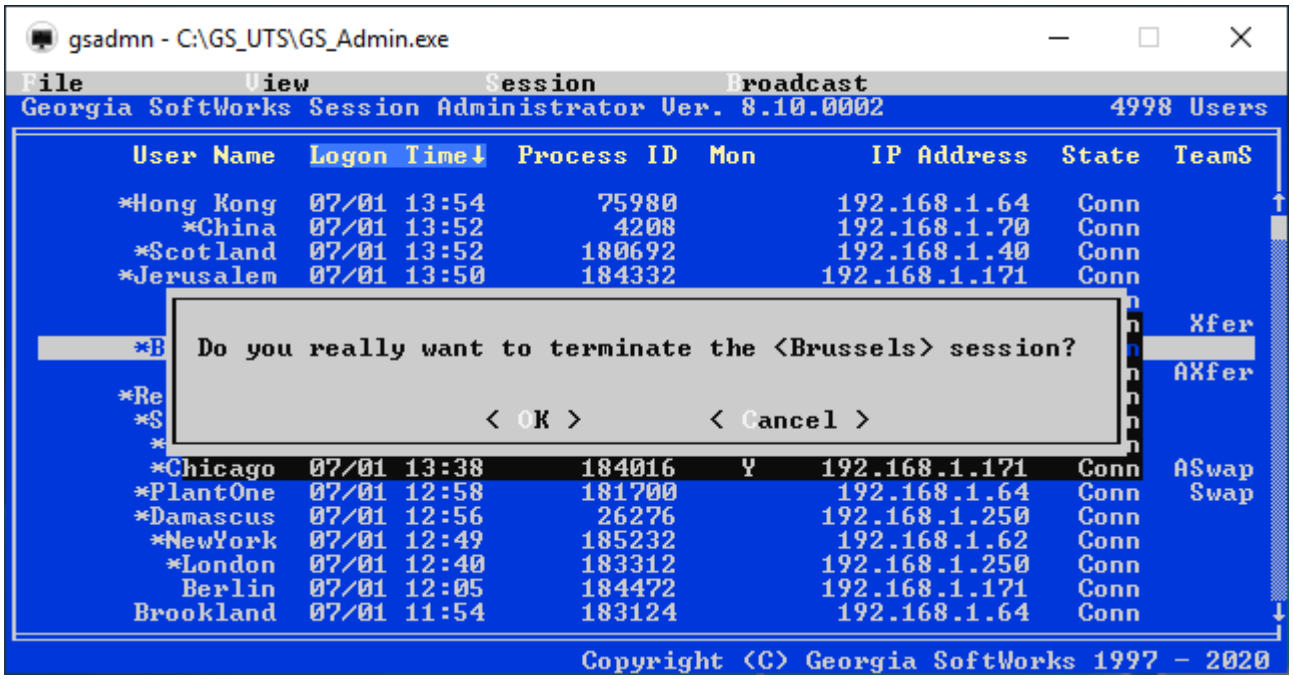


Figure 114: Session Administrator Terminate another session verification prompt

Attach to a Suspended (Saved) Session

As a member of the group GWTN MONITORS you may need to know if there are any Suspended sessions. Suspended Sessions are created when the Session Saver (see page 149) feature is enabled and a client or link has failed, and the user has not yet reconnected to their Saved session.

Using the *Attach* feature of the Session Administrator tool you can *Attach* (or connect) to a Suspended session and complete their work in progress. The Attach actually terminates your current session and transfers control to you. You are now operating within the Suspended Session. The Suspended session state changes back to "Conn" and will no longer be suspended.

NOTE: For the Attach to work you must be invoking the Session Administrator from a SSH2/Telnet session.

To select a SSH2/Telnet session to Attach first highlight the desired Suspended session. This is accomplished either by moving the up/down arrow keys or clicking on the particular session. Once selected, open the Session drop down and select the menu item *Attach*.

Note: Attach will not be available as a choice if the session selected in not in the Suspended state or if you are not connected via a SSH2/Telnet connection.

Select *Attach*. You are now *Attached* to the Suspended session. You will observe the screen exactly as the user was seeing it when their session was broken due to client or link failure. Interactive Input capabilities are available to resume work in progress.

When you exit the SSH2/Telnet Session, you are not returned to the Session Administrator tool, but are disconnected just as the user of the original session would have been had they exited the SSH2/Telnet session.

Send a Broadcast Message to SSH2/Telnet Sessions

The capability to send a message to either a single or all SSH2/Telnet sessions is available via the Session Administrator. This is useful in many situations when the system administrator needs to communicate information to one or all users usually regarding system status or maintenance. This saves the system administrator time because the need to make multiple phone calls or physically contacting the users is not necessary.

An example could be that the system administrator would want to notify all users to be logged off by a certain time due to system maintenance. Another example may be to send a message to a specific user requesting that they help another user.

Broadcast a message to ALL SSH2/Telnet Sessions

To send a message to all currently active SSH2/Telnet sessions either depress <ALT-B> or click the menu item **Broadcast** to display the drop down item **Send**. You may now select **Send**.

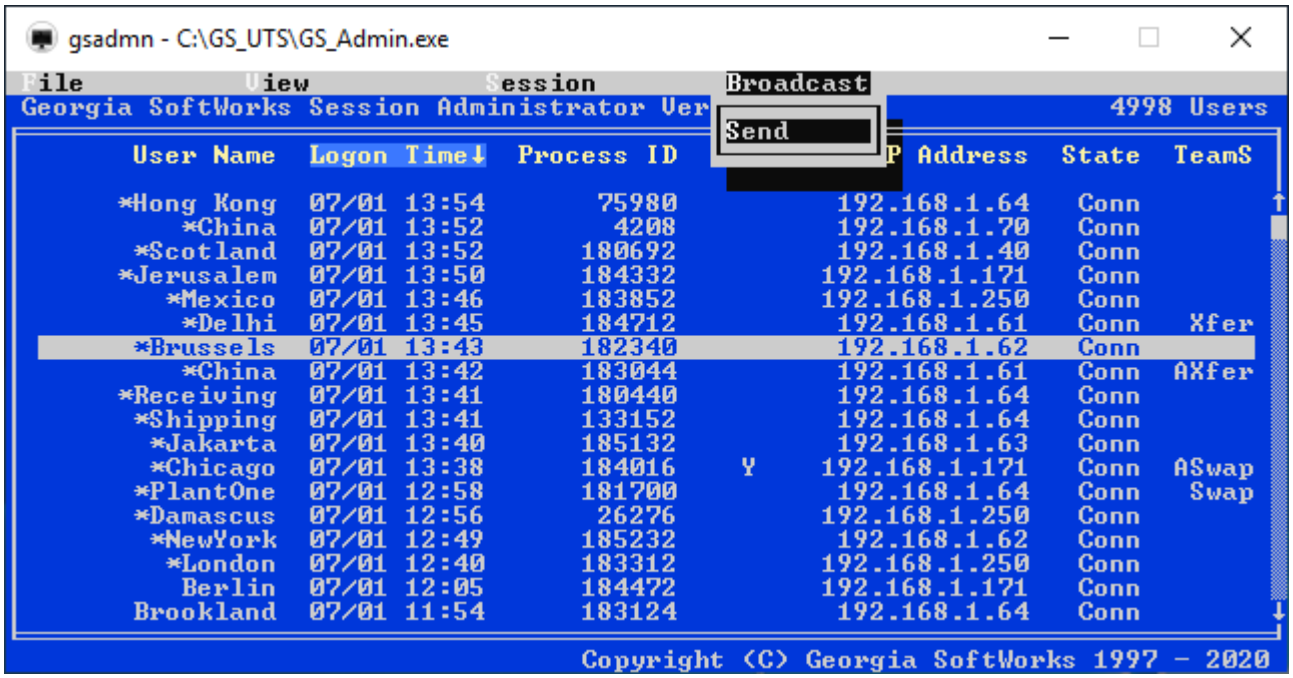


Figure 115: Broadcast a message to all telnet sessions

Note: In the figure above - even though a single session is highlighted the Broadcast message will go to ALL SSH2/Telnet sessions.

Upon selecting the menu item **SEND** you will see a screen similar to the figure below.

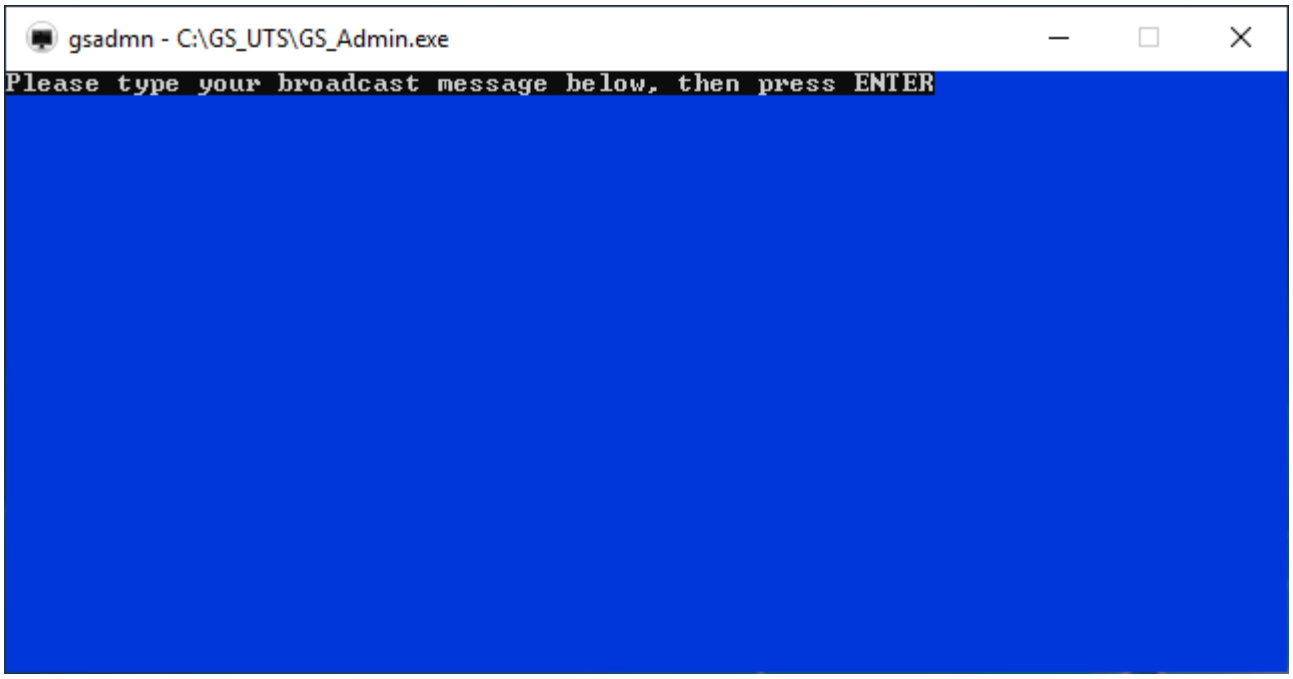


Figure 116: Enter broadcast message prompt.

Enter the text (up to a max of 320 characters) that you would like to send to all active SSH2/Telnet sessions.

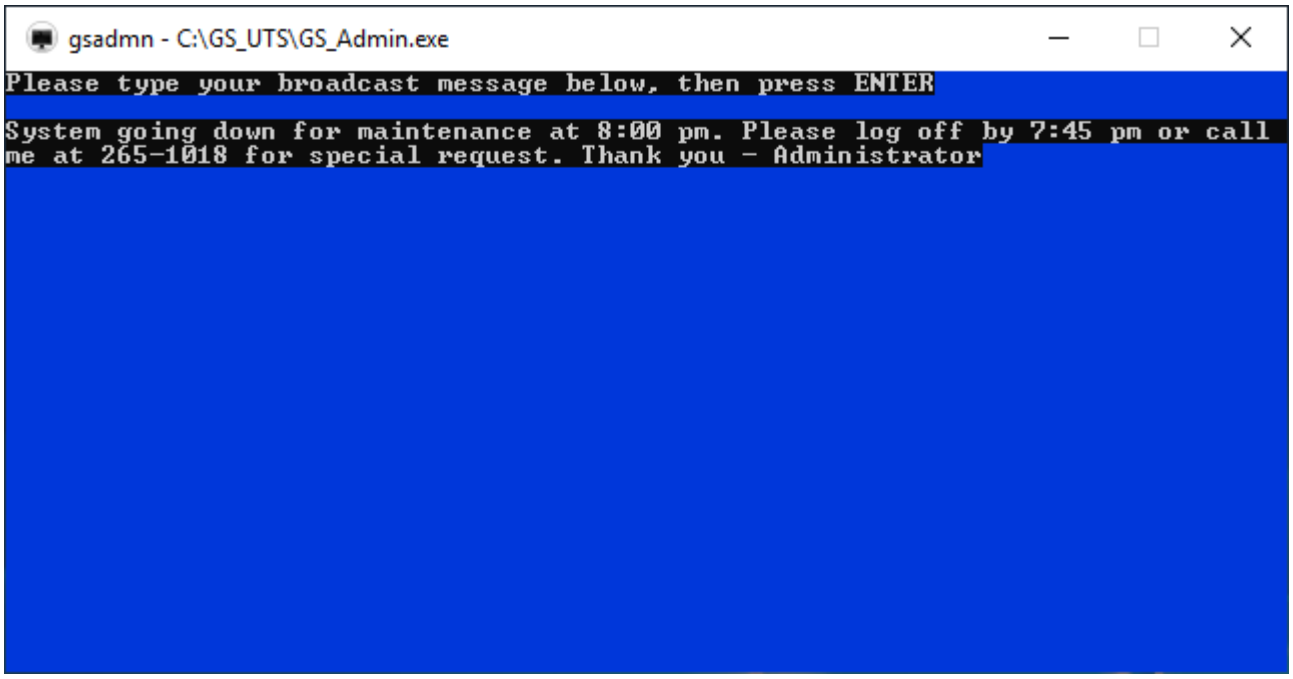


Figure 117: Enter text of broadcast message.

Press <ENTER>

At this point you have an opportunity to abort or confirm the sending of the broadcast message.

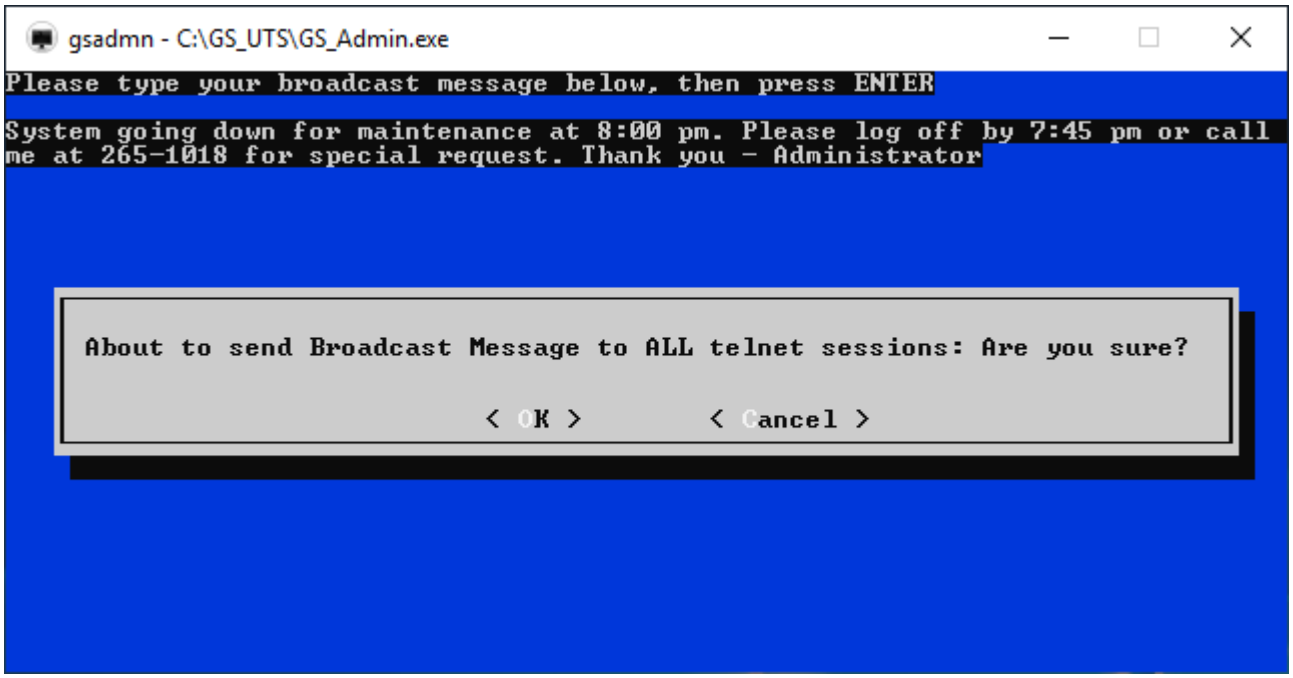


Figure 118: Send broadcast message confirmation prompt.

Selecting <OK> will send the broadcast message to all active SSH2/Telnet sessions. The message will be displayed on the ***client terminal*** similar to the figure below. (Selecting <Cancel> will abort the broadcast message.)

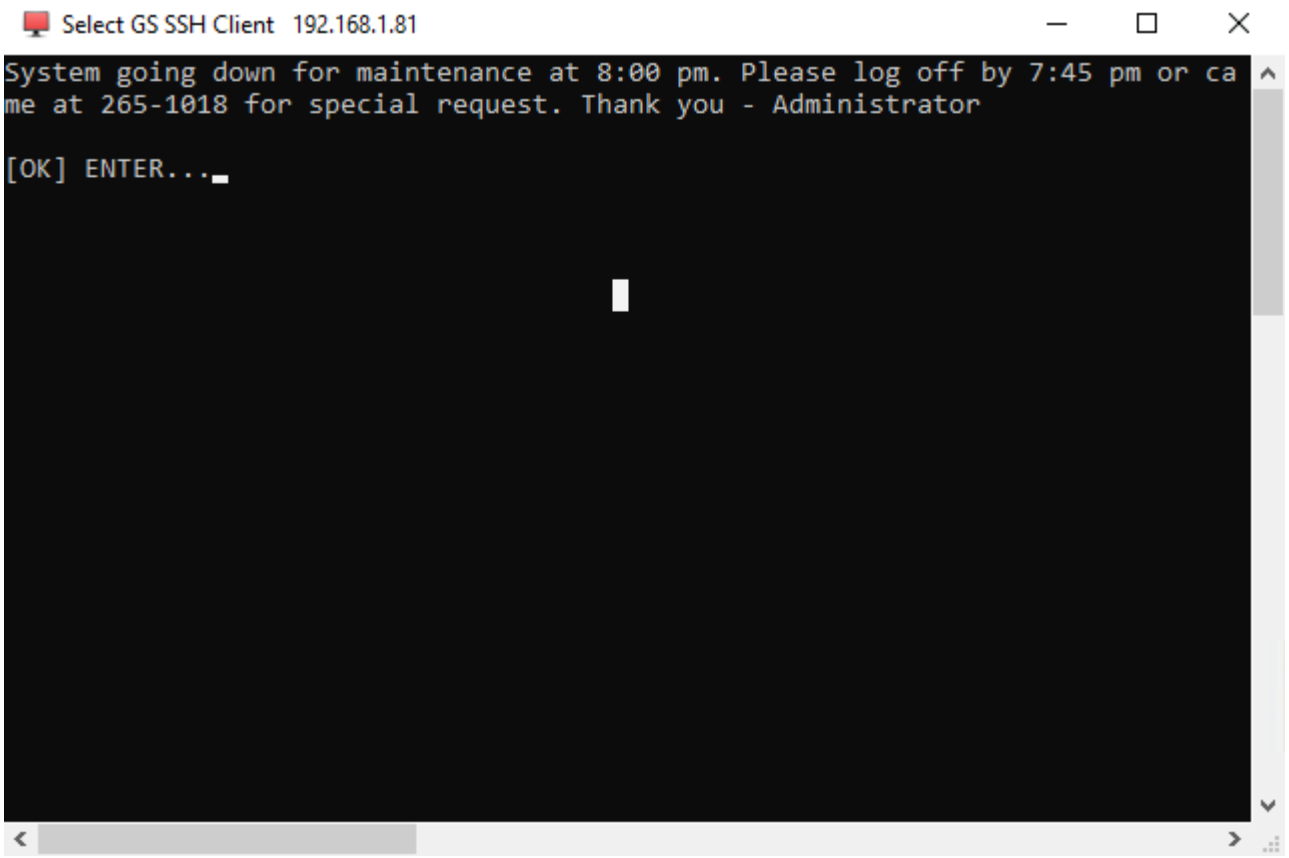


Figure 119: Broadcast message display on client terminal.

The exact display of the broadcast message will conform to the specific terminal display characteristics in a typical manner. If the display has fewer columns, then the message will wrap at the end of each row, etc.

The broadcast message will remain on the client terminal until the message is acknowledged. The SSH2/Telnet client terminal display will return to the exact terminal display prior to the reception of the broadcast message after the broadcast message is acknowledged the message by depressing <RETURN> or <ENTER>.

If multiple broadcast messages are sent before previous messages are acknowledged, only the message acknowledged and the last broadcast message sent will be displayed to that particular SSH2/Telnet client. The intermediate messages will not be displayed to that session.

Broadcast a message to A SINGLE Telnet Session

There will be times that you will want to send a message to a specific SSH2/Telnet session rather than to all the active SSH2/Telnet sessions. To send a message to a single SSH2/Telnet session you must first select the user to send the message.

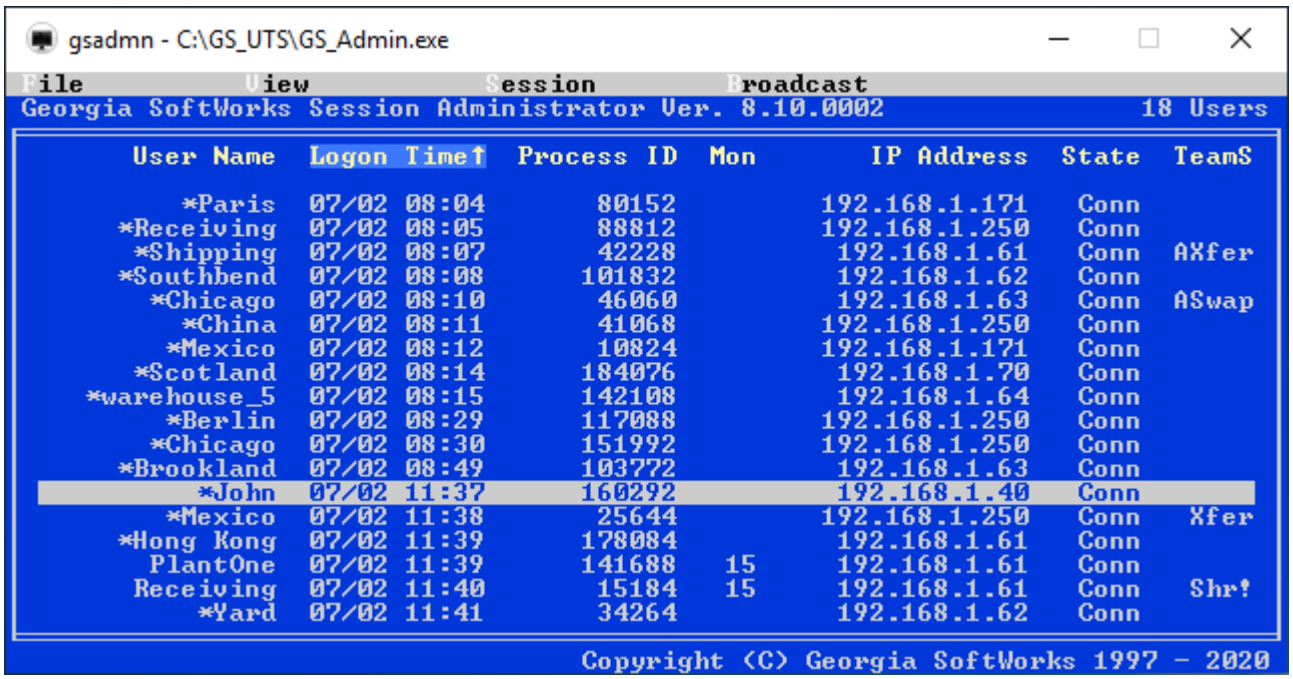


Figure 120: Select a specific user to send a message.

In the case above we are selecting the user name "doug" to send the broadcast message. Once we have selected the user then we select the Session menu either by entering <ALT-S> or clicking the menu item Session. This will display the drop down which contains the item *Send Message (See* Figure 121 *)*.

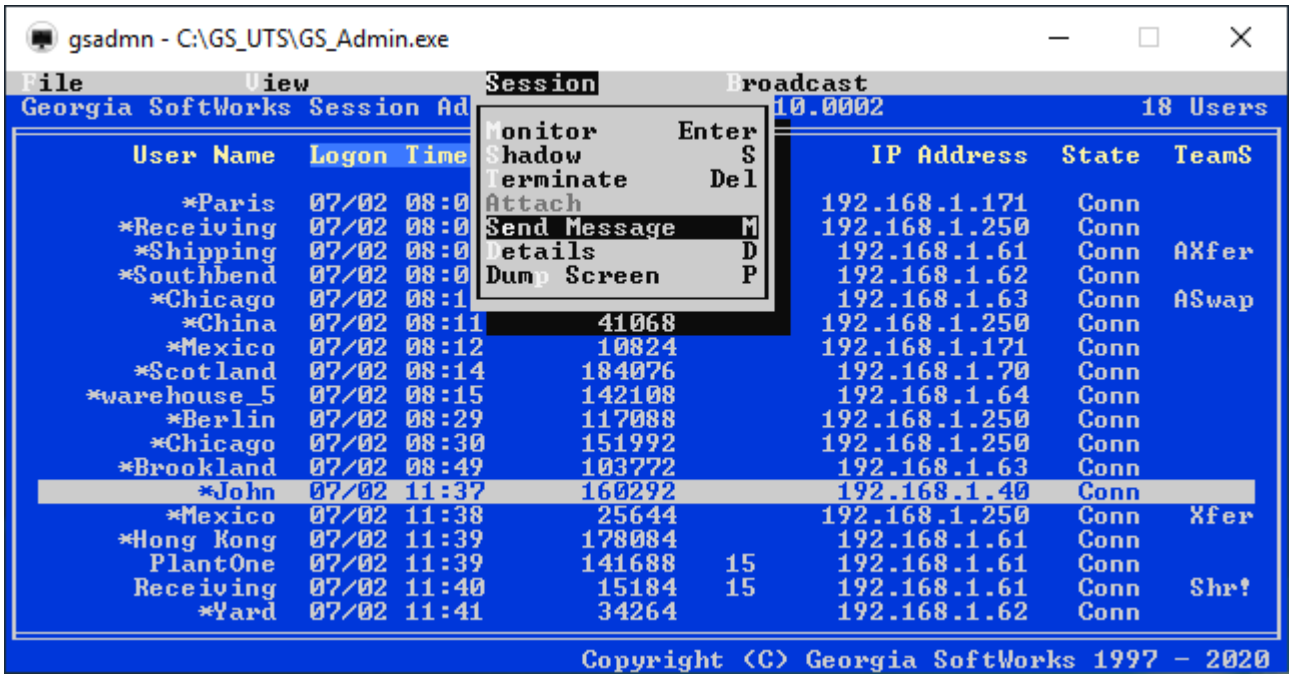


Figure 121: Send a message to a specific user - Send Message dropdown.

Upon selecting `Send Message` you will see a screen similar to the figure below allowing entry of the message text. Note that the *User Name* (doug) of the user that will receive the broadcast message is identified in the prompt.

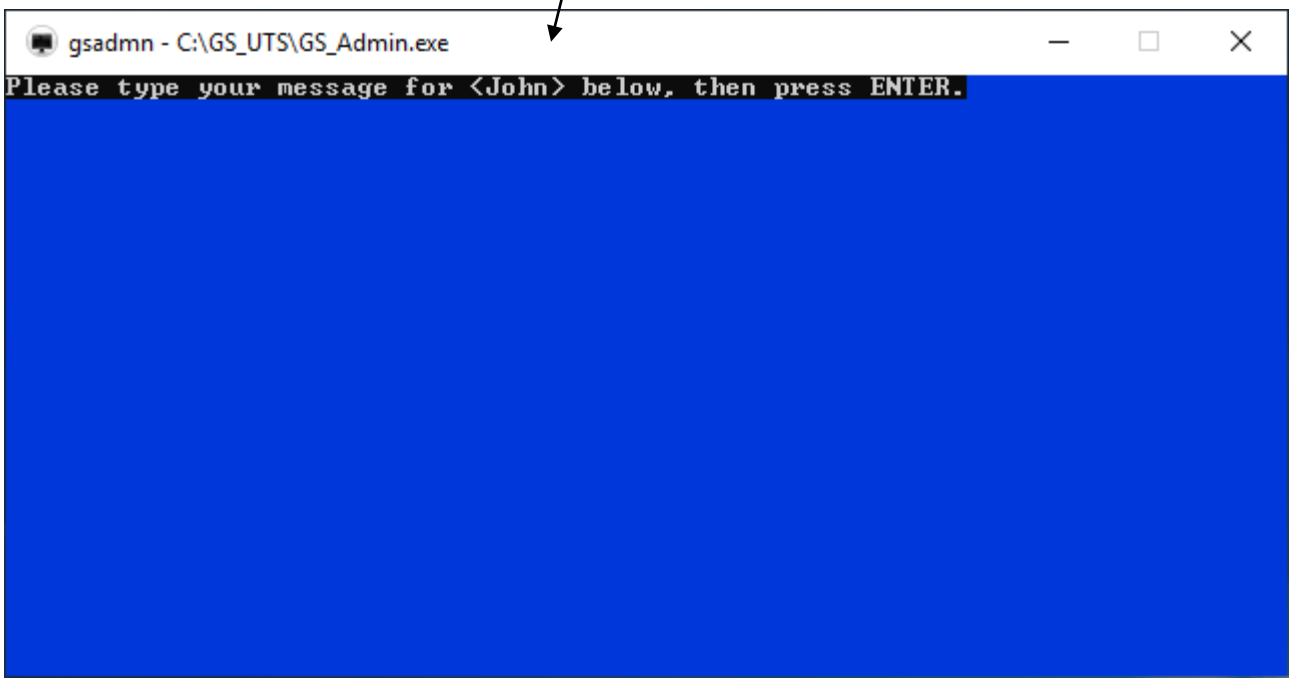


Figure 122: Enter broadcast message prompt destined to a specific user.

Enter the text that you would like to send to user *doug* and press enter when the message is complete.

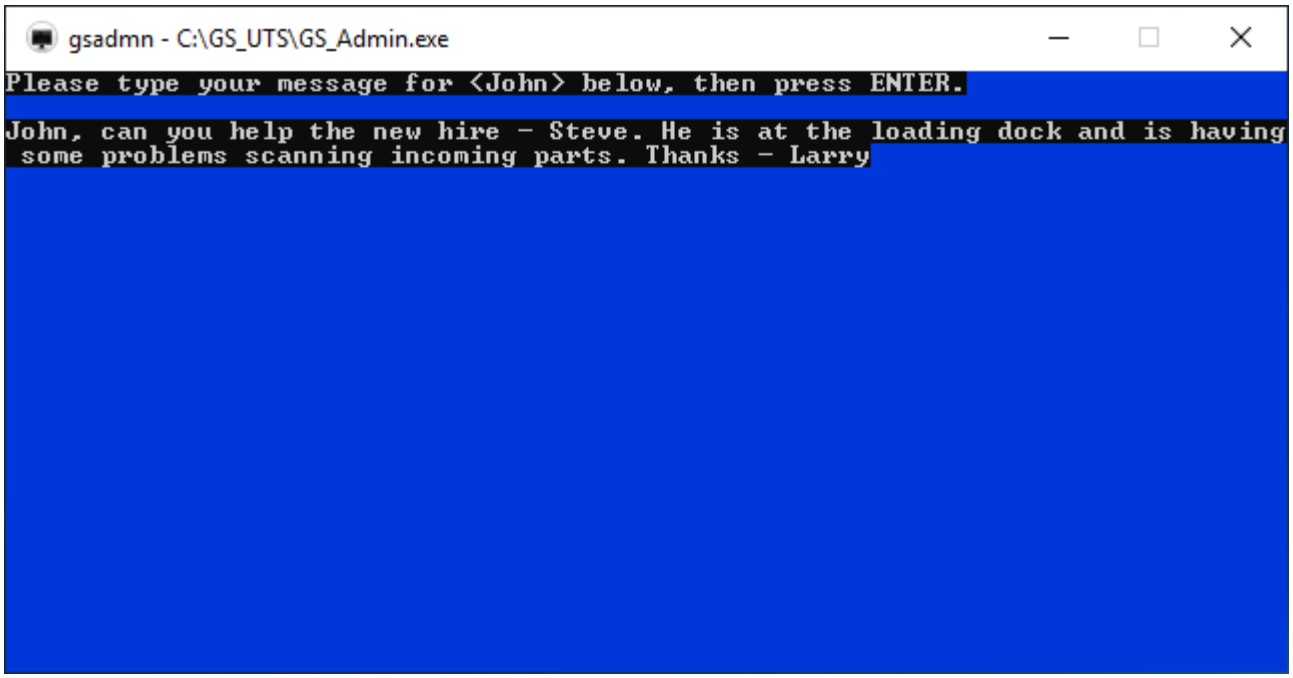


Figure 123: Entering the broadcast message text to a single user.

At this point you have an opportunity to abort or confirm the sending of the broadcast message.

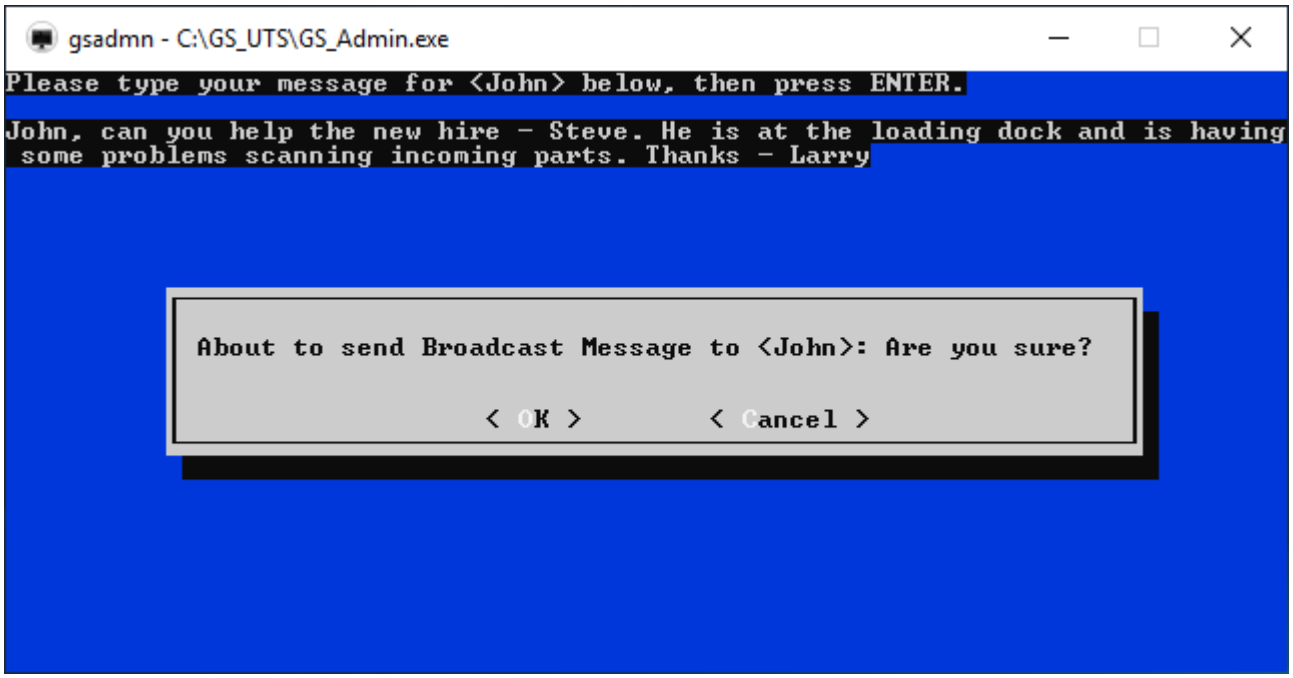


Figure 124: Send broadcast message to a specific user confirmation prompt.

Selecting <OK> will send the broadcast message to SSH2/Telnet user *doug*. Selecting <Cancel> will abort the broadcast message. The message will be displayed on the client terminal similar to the figure below.

Schedule a Broadcast Message

You can schedule a broadcast message using Georgia SoftWorks Broadcast command line utility and your favorite scheduling program.

The GSW Broadcast utility allows you to send a message to ALL active SSH2/Telnet sessions or to a specific session. You can identify the specific SSH2/Telnet session by User Name and/or IP Address. The text of the message that is sent is specified in an ASCII text file.

```
GS_BCast [-iip_address] [-uuser_name] file_path
```

Command: GS_BCast

Description: Command line utility that Broadcasts (sends) a text message to one or all active SSH2/Telnet sessions.

Syntax: `GS_BCast [-iip_address] [-uuser_name] <file_path>`

Arguments: There are 2 optional arguments and 1 required argument.

1. [-i*ip_address*] The -i parameter is followed by the IP address corresponding to the SSH2/Telnet session (or sessions) to send the broadcast message. (Optional)

2. [-u*user_name*] The –u parameter is followed by the user name corresponding to the SSH2/Telnet session (or sessions) to send the broadcast message. (Optional)

3. <file_path> - the path to the ASCII text file that contains the broadcast message. (Required)

If the -i and –u arguments are omitted then the broadcast will be sent to all active SSH2/Telnet sessions. These arguments may be combined (as a Logical "OR" condition) to provide more flexibility in choosing the destinations for the broadcast message.

EXAMPLE – THE GSW BROADCAST UTILITY (SCHEDULE A BROADCAST MESSAGE)

Send the broadcast message contained in the ASCII text file "systemdown.txt:" which resides in the directory "C:\mybroadcastmessages\systemdown.txt" to all telnet sessions.

```
GS_BCast C:\mybroadcastmessages\systemdown.txt
```

EXAMPLE – THE GSW BROADCAST UTILITY – TO A SINGLE USER

Send the broadcast message contained in the ASCII text file "givemeacall.txt:" which resides in the directory "C:\mybroadcastmessages\givemeacall.txt" to user "*doug*"

```
GS_BCast -udoug C:\mybroadcastmessages\givemeacall.txt
```

The real power of the GSW Broadcast utility is that you can use your favorite scheduling program to schedule execution of the GSW Broadcast utility at a later time.

Georgia SoftWorks does not support nor endorse any scheduling programs. The ones mentioned below are listed as examples of scheduling utilities or programs that can be used to launch the GSW Broadcast utility. Most any scheduling program can be used to schedule the execution of the GSW Broadcast utility.

AT command – Native on Windows

The "AT" scheduling utility is available on Windows NT/2000/XP from the command shell. *The syntax of the AT command as described in the "Help AT" on Windows XP:*

The AT command schedules commands and programs to run on a computer at a specified time and date. The Schedule service must be running to use the AT command.

```
AT [\\computername] [ [id] [/DELETE] | /DELETE [/YES]]
AT [\\computername] time [/INTERACTIVE]
    [ /EVERY:date[,...] | /NEXT:date[,...]] "command"
```

\\computername	Specifies a remote computer. Commands are scheduled on the local computer if this parameter is omitted.
id	Is an identification number assigned to a scheduled command.
/delete	Cancels a scheduled command. If id is omitted, all the scheduled commands on the computer are canceled.
/yes	Used with cancel all jobs command when no further confirmation is desired.
time	Specifies the time when command is to run.
/interactive	Allows the job to interact with the desktop of the user who is logged on at the time the job runs.
/every:date[,...]	Runs the command on each specified day(s) of the week or month. If date is omitted, the current day of the month is assumed.
/next:date[,...]	Runs the specified command on the next occurrence of the day (for example, next Thursday). If date is omitted, the current day of the month is assumed.
"command"	Is the Windows NT command, or batch program to be run.

Graphical Utility for Windows 2000

Windows 2000 provides a graphical scheduling Wizard that gives you the options of scheduling tasks to run one time only, daily, weekly, or monthly either when your computer boots up or whenever you log on. The Wizard also gives you the option of setting a time for the program to start. To run the Windows 2000 scheduling Wizard:

Step 1. Click on Start, Settings and then Control Panel.

Step 2. Double-click on Scheduled Tasks.

Step 3. Double-click on Add Scheduled Task to add a new task.

Step 4. Windows 2000 will run the Scheduled Task Wizard. The Wizard will walk you through scheduling a program to run.

Note 1: Go to the Advanced Properties to specify the command line arguments.

	Note 2: This utility also exists on Windows XP. The path to open the Wizard is slightly different.

Table 46 - GSW Broadcast Command Utility - Example Scheduling Programs

Exiting the Session Administrator

You may exit the Session Administrator either by the File then Exit Menu item or depressing the <ESC> key

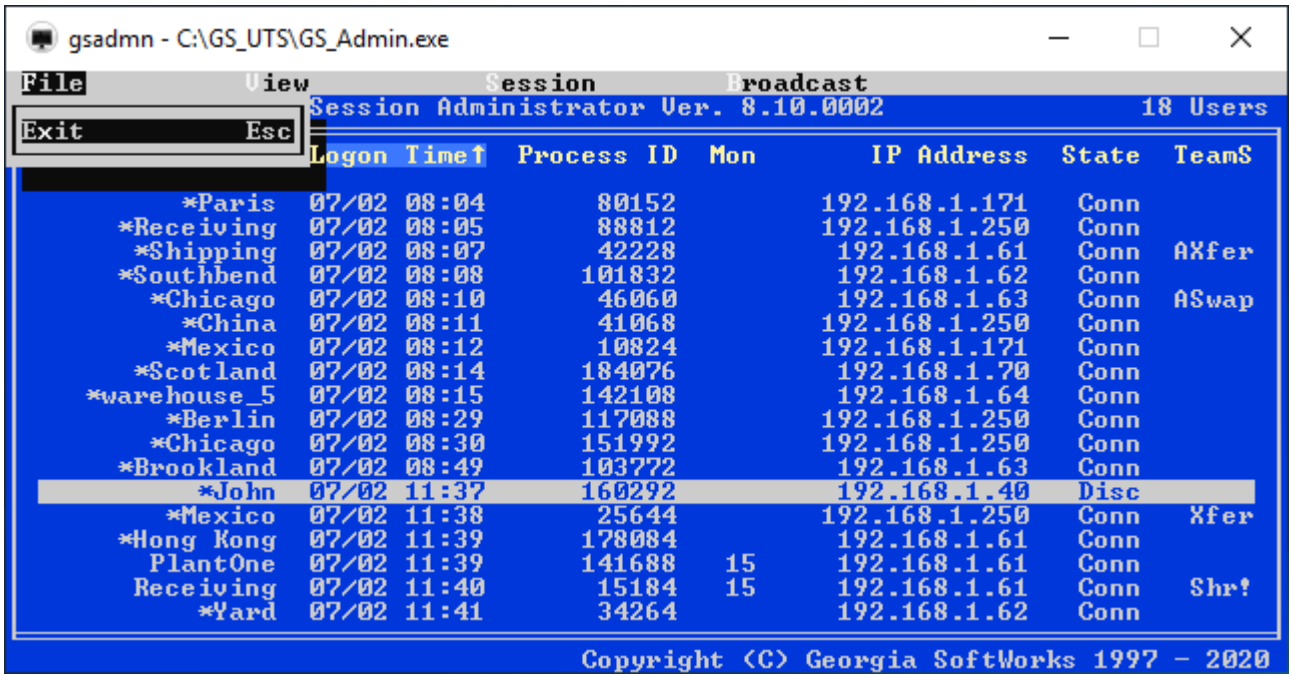


Figure 125: Session Administrator – Exiting

GS_ADMIN Command Line Options

Many of the Session Administrator features are available from the command line. The features available include Monitoring, Shadowing, and Terminating Session(s). Additionally, you can create an ASCII text file on demand that will contain a snapshot of the information contained on the Session Administrator main screen.

The GS_ADMIN command line utility provides the capability to launch Session Monitoring or Session Shadowing etc. from your own application. Command line arguments are used to specify the operation (feature) and the session to perform the operation on.

Command: GS_ADMIN

Description: Command line utility that performs GS_ADMIN functions.

The gs_admin command line utility has three possible syntaxes.

Syntax 1: GS_ADMIN `[/m|/s|/t] [/pPID]|[ [/iIP]|[/uUser] ] [/k]`

Syntax 2: GS_ADMIN `[/T] [/k]`

Syntax 3: GS_ADMIN `[/I[Infofilename]] [/k]`

Arguments: The number of arguments depends on the operation selected.

```
/m    is for monitoring
/s    is for Shadowing
/t    is to terminate a specific session
/T    is to terminate all sessions
/p    select by Process ID (PID)
/i    select by client's IP Address
/u    Select by user's name
/k    keep running gs_admin after completion of the operation
      This argument is valid with all 3 syntax formats.
/I    is to create a snapshot of the SSH2/Telnet Status information in
      the file gs_ainfo.txt (default) or specified filename.
```

Syntax 1 is used to Monitor, Shadow or terminate a specific session

Syntax 2 is used to Terminate ALL SSH2/Telnet sessions

Syntax 3 is used to obtain a snapshot of the SSH2/Telnet server status information.

Note: Syntax formats not listed have undetermined results.

Syntax 1 – Monitoring/Shadowing/Terminating a specific session

Choose the operation (monitor, shadow, terminate) for the SSH2/Telnet session.

Next select one of the following `[/pPID]|[ [/iIP]|[/uUser] ]` to Filter the session.

```
/pPID       Filter based on Process ID (PID). Where PID is the
            Process Id of the desired session. Each session will have
            a unique process id.
OR

/iIP        Filter based on the IP address
/uUser      Filter based on the User Name
```

Note: You may use either or both of the IP Address and User Name filter arguments.

EXAMPLE – THE GSW GS_ADMIN COMMAND LINE UTILITY – SYNTAX 1 - MONITOR

The following is the syntax to use the GS_ADMIN command line utility to launch the Session Monitor for User "Doug".

```
GS_ADMIN /m /uDoug
```

EXAMPLE – THE GSW GS_ADMIN COMMAND LINE UTILITY – SYNTAX 1- SHADOW

The following is the syntax to use the GS_ADMIN command line utility to launch the Session Shadowing for for User "david" with IP Address 10.110.244.103.

```
GS_ADMIN /s /udavid /i10.110.244.103
```

EXAMPLE – THE GSW GS_ADMIN COMMAND LINE UTILITY – SYNTAX 1 - TERMINATE

The following is the syntax to use the GS_ADMIN command line utility to terminate Session with user name Doug.

```
GS_ADMIN /t /uDoug
```

Syntax 2 – Terminate All Telnet/SSH Sessions

The `/T` operation does not use any additional arguments. This command terminates all SSH2/Telnet sessions.

EXAMPLE – THE GSW GS_ADMIN COMMAND LINE UTILITY – SYNTAX 2 - TERMINATE ALL SESSIONS

The following is the syntax to use the GS_ADMIN command line utility to terminate ALL SSH2/Telnet sessions.

```
GS_ADMIN /T
```

Syntax 3 – Obtain a snapshot of the SSH2/Telnet Server Status

The /I operation creates the file gs_ainfo.txt that contains the current status information for the GSW SSH2/Telnet Server. The file is created in the root GSW SSH2/Telnet Server installation folder. The file contains similar information as displayed in the Session Administrator main screen.

EXAMPLE – THE GSW GS_ADMIN COMMAND LINE UTILITY – SYNTAX 3 – STATUS #1

The following is the syntax to use the GS_ADMIN command line utility to create the GSW SSH2/Telnet Server Status Information file.

```
GS_ADMIN /I
```

You can also specify the filename and path for the information file.

EXAMPLE – THE GSW GS_ADMIN COMMAND LINE UTILITY – SYNTAX 3 - STATUS #2

The following is the syntax to use the GS_ADMIN command line utility to create the GSW SSH2/Telnet Status information file and put it in the file folder `c:\telnetstatus\time` with the filename `mondaynoon.txt`

```
GS_ADMIN /IC:\telnetstatus\time\mondaynoon.txt
```

Information File Layout

The file uses standard Windows *ini* format rules.

```
[File Info]
Version=1.1
GSWTelnetServerVersion=8.09.0003
CreationTime=10/31/18 07:20:28

[Counters]
UserCount=4

[Users]
User0=HW-1,10/31/18 06:55:19,13200,0,127.0.0.1:62718,Conn,N
User1=HW-2,10/31/18 06:55:38,7660,0,127.0.0.1:62722,Conn,N
User2=HW-5,10/31/18 06:55:41,9644,12008,127.0.0.1:62723,Conn,N
```

```
User3=johnny,10/31/18 07:20:06,12300,0,192.168.1.56:0,Conn,Y
```

Note: User field layout meanings
Fields under [Users] are comma separated as follows:
User-name, Date Time , Client Process ID, Process ID of GS_Admin.exe if client is being monitored or shadowed, IP-socket , state, FIPS Y/N

Session Monitoring Uses

There are many uses for session monitoring. A few are listed.

- Quality Assurance - A supervisor can monitor data entry of employees.
- Training - A senior application user can remotely help a trainee understand and use an application.
- Debugging - A developer can remotely observe an application phenomenon that a user is describing.
- Administrative - A system administrator can ensure that users are using/setting up resources properly.
- Security - Administrator monitor users that are using SSH2/Telnet.
- Terminating Sessions that have been abandoned.
- Terminating Sessions that are connected to applications which are behaving abnormally etc.
- Attaching to Suspended Sessions
- Shadowing another Session

GSW Event Logging

The Georgia SoftWorks SSH2/Telnet Server for Windows provides the System Administrator with useful SSH2/Telnet Server Activity information that can be used for generating reports. The System Administrator can enable or disable various events that are logged. The logged information is in an easy to import ASCII comma delimited format.

Two files are of interest

1. The log definition file: `gsw_ldef.txt` *and*

2. The actual log file `gsw_elog.txt`

Event Log Definition File:

The configuration file `gsw_ldef.txt` specifies the events that are maintained in the log file. This file resides in the SSH2/Telnet server installation directory. Usually this is c:\gs_uts. Each event that can be logged is listed together with its description.

The format of this file is:

Event ID <space> Group ID <space> Description of the event

The "#" character is the comment symbol. Insert a "#" character in column 1 of a line to disable the logging of a specific event. Enabling or Disabling the logging of specific events are the only allowed modifications to this file.

The Default configuration for `gsw_ldef.txt` is:

```
1  100 Session Created
2  100 Session Suspended
3  100 Session Reconnected
4  100 Session Exited Normally
5  100 Session Exited Abnormally
6  100 Logon Failed
7  200 Print Job Redirected
8  400 File transferred (put)
9  400 Print File transferred (get)
10 500 Command execution event sent to client
```

If you do not want to log Print Jobs and Failed Logons you would insert the # as the first character of those events.

```
1 100 Session Created
2 100 Session Suspended
3 100 Session Reconnected
4 100 Session Exited Normally
5 100 Session Exited Abnormally
#6 100 Logon Failed
#7 200 Print Job Redirected
8  400 File transferred (put)
9  400 Print File transferred (get)
10 500 Command execution event sent to client
```

NOTE: The event ids and descriptions in the file cannot be changed.

Event Log File

The log file is a comma-delimited text file where the activity events are actually stored. By default, the maximum size of log file `gsw_elog.txt is` 1 megabyte. Once the file has reached the maximum size the file is renamed to `gsw_elog.bak` and starts logging in a new `gsw_elog.txt.` This actually provides up to 2 megabytes of log information to the administrator. The size of the `gsw_elog.txt` can be changed in the registry (See page 214).

The GSW Event Log resides in the "Log" subdirectory of the Installation folder in a comma-delimited file with the name `gsw_elog.txt.`

Georgia SoftWorks Event Log File Name: `gsw_elog.txt`

The format of the comma-delimited file is as follows.

Field Description	Data Type	Description
Event ID	Integer	
Event Group ID	Integer	Useful for Filtering with Reports
Login Id	Text	Quoted Text Field
Domain	Text	Quoted Text Field
Session ID	Text	Quoted Text Field
Time Stamp	Date/Time	YYYY-MM-DD HH:MM:SS
Client Type	Integer	0 = 3rd Party, 1 = Georgia SoftWorks
Encrypted Session	Integer	0 = Not Encrypted, 1 = Encrypted
Event Specific Integer	Integer	
Event Specific Text	Text	Quoted Text Field
IP Address	Text	IP Address associated with the event

Table 47 - GSW Event Log File Format

An example of the data in the gsw_elog.txt file may look like:

```
7,200,'Laura','.','1E339C27B99',2000-09-15 15:42:22,1,0,1326,'','192.168.1.186'

1,100,'Rebecca','.','1E439C27BCD',2000-09-15 15:43:09,1,0,0,'192.168.1.188','192.168.1.188'

6,100,'Joseph','.','5A39C27C2C',2000-09-15 15:44:52,1,0,1326,'','192.168.1.185'

1,100,'Anna','.','17F39C27C39',2000-09-15 15:45:03,1,0,0,' '192.168.1.184','192.168.1.184'

1,100,'benjamin','.','12C39C27C66',2000-09-15 15:45:47,1,0,0,' '192.168.1.183','192.168.1.183'

4,100,'John','.','1E439C27BCD',2000-09-15 15:46:07,1,0,0,'','192.168.1.180'

5,100,'Wally','.','12C39C27C66',2000-09-15 15:46:37,1,0,0,'','192.168.1.182'

1,100,'Luke','.','12C39C27C66',2000-09-15 15:46:51,1,0,0,'192.168.1.181','192.168.1.181'

2,100,'RaySpurg','.','12C39C27C66',2000-09-15 15:47:00,1,0,0,'','192.168.1.179'

3,100,'Doug','.','12C39C27C66',2000-09-15 15:47:12,1,0,0,'','192.168.1.178'

3,100,'Wanda','.','17F39C27C39',2000-09-15 15:47:20,1,0,0,'','192.168.1.189'
```

Defined Events are:

Event Id	Event Group ID	Name
1	100	Session Created
2	100	Session Suspended
3	100	Session Reconnected
4	100	Session Exited Normally
5	100	Session Exited Abnormally
6	100	Logon Failed
7	200	Print Job Redirected
8	400	File Transferred via GS_PUT
9	400	File Transferred via GS_GET
10	500	Command execution event sent to client

Table 48 - Defined Log Events

Modify the Log File Size

Use the GSW GUI Configuration Tool – Global Power Features see page 380
Or use legacy style below

This is how to change the registry key for the size of the Log File. The size is specified in bytes and the default is 1000000.

Note: You must be on the Windows system that the Georgia SoftWorks SSH2/Telnet Server is installed. However, you may connect to the Windows Registry from a remote location.

The key is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\ActivityLogFileLength
```

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\ActivityLogFileLength

6. Select the menu item **Edit** and then click on **Modify**
7. Enter the new value for the `ActivityLogFileLength` and click **OK**

If users are already connected the UTS service should be restarted for the new value to properly take effect.

GSW Session Logging

Use the GSW GUI Configuration Tool – Global Power Features – Event Logging - see page 380
Or use legacy style below

The Georgia SoftWorks SSH2/Telnet Server for Windows provides a session log file that is used by GSW Technical Support when troubleshooting is required. The file is not intended to be used by customers and is formatted and uses special terms for engineering.

There are times when the maximum file size may need to be adjusted due to resource or troubleshooting reasons.

Modify the Session Log File Size

This is how to change the registry key for the size of the Session Log File. The size is specified in bytes and the default is 1000000.

Note: You must be on the Windows system that the Georgia SoftWorks SSH2/Telnet Server is installed. However, you may connect to the Windows Registry from a remote location.

The key is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\AgentLogFileLength
```

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\AgentLogFileLength
6. Select the menu item **Edit** and then click on **Modify**
7. Enter the new value for the `AgentLogFileLength` and click **OK**

If users are already connected the UTS service should be restarted for the new value to properly take effect.

Enable/Disable Session Long Format Logging

Use the GSW GUI Configuration Tool – User Power Features – Event Logging - see page 415
Or use legacy style below

An environment variable is available on User - per session basis to enable brief or long format logging. If enabled only system startup and tear down and some runtime events are logged (such as user resizing window). Long format logging is the default.

The environment variable for the brief or long format session logging is:

`gwtn_enable_session_log`

in the Logon Script.

Possible values are '`Y`' or '`N`', or '`y`' or '`n`'.

`Y` – Enable long format logging (*default*)

`N` – Disable long format logging

For example, to enable long format session logging:

`set gwtn_enable_session_log=Y`

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

`set gwtn_enable_session_log=Y` is correct

`set gwtn_enable_session_log = Y` is not correct

Enable/Disable International Character Translation Logging - For Third Party Clients

Use the GSW GUI Configuration Tool – User Power Features – Event Logging - see page 415
Or use legacy style below

An environment variable is available on User - per session basis to enable/disable International character translation of UTS-8, GB2312, and Big5 logging. This adds diagnostic information to the log file gs_agnt.log and is available for diagnostic purposes by GSW Technical support. It is *disabled* by default.

The environment variable for International Character Translation logging is:

gwtn_log_char_xlat

in the Logon Script.

Possible values are 'Y' or 'N', or 'y' or 'n'.

Y – Enable International Character Translation Logging

N – Disable International Character Translation Logging (*Default*)

For example, to enable International Character Translation Diagnostic Data Logging:

```
set gwtn_log_char_xlat=Y
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

`set gwtn_log_char_xlat=Y` is correct

`set gwtn_log_char_xlat = y` is not correct

Logon Scripting

Use the GSW GUI Configuration Tool – Users – per session - Logon Script - see page 365
Or use legacy style below

Logon Scripting is an advanced feature that allows the system administrator unmatched control over the user sessions. Associated with each User Login is a directory that will execute batch files upon connection[30]. Logon Scripting provides automatic execution of the batch file upon the login of the user. Logon scripts are often used to map drives, establish network connections, change directories, set environment variables, run TSRs and launch applications. When an application is launched via a logon script the User is automatically deposited into the application upon successful logon.

One of two optional batch files can be executed. One is named `k_start.bat` and the other is `c_start.bat`. Each batch file provides a unique behavior upon completion of the batch file.

- `k_start.bat` - This file runs upon connection and after its completion the user may get the system prompt.

- `c_start.bat` - This file runs upon connection and after its completion the session terminates. *This can be used to restrict the user to a certain application.* Even if the user executes a `control-c` or something similar this will not allow access other than what is specified in the batch file on the Windows computer.

Logon Scripts can be defined on a User, Global, or IP address basis. If a logon has IP Address based Logon scripts defined then they are executed. Otherwise the GSW Universal Terminal Server determines if a User ID based logon script exists. If so then it is executed. Otherwise if a Global Logon scripts exists then it is executed.

USER Logon Scripts

A different Logon script can be set up for each User Id. This allows Users to have individually defined batch files to accommodate different requirements of Users. The batch files are **created** and set up by the system administrator for each user in the system. They must be in the directory

"InstallationPath\scripts\DomainUsers\UserLoginID or

"InstallationPath\scripts\LocalUsers\UserLoginID or

"InstallationPath\scripts\UserLoginID

Of course, *InstallationPath* and *UserLoginID* are replaced with the actual values.

If both `k_start.bat` and `c_start.bat` exist then only `c_start.bat` is executed. You may call `k_start.bat` from `c_start.bat`. If the UserLogonID script folder does not exist, then the GSW UTS will determine if a Global Logon script exists.

[30] If the batch files exist.

The system administrator must ensure that the directory permissions for the above files and directories are correct. Remember the user and the SYSTEM must be able to read the batch file. They are executed in the security context of the user.

EXAMPLE - LOGON SCRIPTING: AUTOMATIC EXECUTION OF A PROGRAM UPON CONNECTION

Here is an example script to allow automatic execution of a Physician's Office Application "medical.exe" upon connection for the user login id (nurse). The Physician's office application is in the directory c:\medical.

Step 1. Create directory

```
c:\gs_uts\scripts\LocalUsers\nurse
```

Step 2. Create batch file `k_start.bat`

Step 3. Add line to k_start.bat

```
c:\medical\medical.exe
```

Step 4. Save file and exit.

Now when the User login id "nurse" connects to the Windows system via SSH2/Telnet the application medical.exe will automatically be started. When the user exits the medical package, the Windows Command line prompt is displayed allowing other activity to occur.

EXAMPLE - LOGON SCRIPTING: USER RESTRICTED TO EXECUTE ONLY A SPECIFIC PROGRAM.

Here is an example script that will allow the User login id (bill) only to execute the amortization program amortize.exe. The amortization program resided in the directory d:\amor

Step 1. Create directory

```
c:\gs_uts\scripts\DomainUsers\bill
```

Step 2. Create batch file c_start.bat

Step 3. Add line to `c_start.bat`

```
d:\amor\amortize.exe
```

Step 4. Save file and exit.

Now when the User Login ID "bill" connects to the Windows system via SSH2/Telnet the application amortize.exe will automatically be executed. When the user exits the amortization package, the SSH2/Telnet session will terminate.

Global Logon Scripts

There are situations where the system administrator may want to have the same logon script executed by all the users upon connection. Instead of **creating** a logon script for each and every user, a single logon script can be **created** that will be executed by all users upon connection. The Global Logon script operates in the same manner as a normal logon script except for the location of the script files. The system administrator may put the `k_start.bat` or `c_start.bat` file in the subdirectory SCRIPTS (under the install directory). The server looks first for `k_start.bat` or `c_start.bat` in user's subdirectory and will not use the global script if it can find user's script.

EXAMPLE - GLOBAL LOGON SCRIPTING: AUTOMATIC EXECUTION OF A PROGRAM UPON CONNECTION BY ALL USERS

Here is an example script to allow automatic execution of a Physician's Office Application "medical.exe" upon connection for *ALL* users that do not have a `c_start.bat` or `k_start.bat` in their logon script directory. The Physician's office application is in the directory `c:\medical`.

Step 1. Create batch file `k_start.bat` in the SCRIPTS directory (under the install directory).

Step 2. Add line to `k_start.bat`

```
c:\medical\medical.exe
```

Step 3. Save file and exit.

Now when any user (unless they have their own login script in their logon script directory) connects to the Windows system via SSH2/Telnet the application medical.exe will automatically be started. When the user exits the medical package, the Windows command line prompt is displayed allowing other activity to occur.

IP Address Based Logon Scripts

The capability to define different logon scripts based on the IP Address of the client logging on is another advanced feature pioneered by GSW. System Administrators may have specific mapping requirements or specific applications that must be launched depending on the location of the User that is logging on. In many cases it is easier to identify the location by IP addresses rather than User IDs. Another case may be where a User is routinely working in different locations with specific logon script requirements for each location. Another could be where different devices access different applications, regardless of the user connected. There are many other cases where IP Address based logon scripting can be used.

Associating the Logon Script to use with the IP Address is configured using the `gs_ip_rt.txt file`. IP Addresses can be specified as individual IP address or IP address ranges. Additionally, wildcards can be used. For each entry in the `gs_ip_rt.txt` file two fields are specified: The IP Address (or range) and the name of the login script to use. A file `gs_ip_rt.txt` is installed when the GSW UTS is installed. It contains examples that are commented out to help you get started.

Notice the file in the GSW UTS installation directory:

```
gs_ip_rt.txt
```

The file must reside in the Georgia SoftWorks Windows Universal Terminal Server installation directory.

NOTE: The System account must have permission to read the `gs_ip_rt.txt` file.

The file `gs_ip_rt.txt` is used for configuration of the association of IP Addresses and Logon Scripts.

The rules are simple for setting up the `gs_ip_rt.txt` file.

- It is a text file
- The # character is the comment character
- Each entry **must** start in the first column.
- Each entry consists of the IP Address (or IP Address Range) and the associated logon script filename (page 222). The logon script file must be located in the GSW UTS scripts folder.
- The IP Address and the Logon Script are separated by a single space.

IP Address Syntax. Use the industry standard 4-part (dot-decimal) syntax: format `nnn.nnn.nnn.nnn` when specifying the IP Address.

Example: `10.1.1.1`

An example entry in the `gs_ip_rt.txt` file would look like:

```
10.1.1.1 k_logon70.bat
```

The above entry would instruct the system that when a user connects from the IP address `10.1.1.1` the logon script `k_logon70.bat` should be used.

IP Address Range Syntax: An IP address range is specified as two IP addresses separated by the dash character '-'. No spaces are allowed. Below are two examples.

Example A: `10.1.1.1-10.1.10.210`

Example B: `192.68.22.10-192.68.22.99`

An example IP Address range entry in the `gs_ip_rt.txt` file would look like:

```
192.68.22.10-192.68.22.99 k_buildingN.bat
```

The above entry would instruct the GSW UTS that when user connects from any IP address that falls in the range from `192.68.22.10` to `192.68.22.99` the logon script `k_buildingN.bat` should be used.

IP Address Wild Cards: An IP address wild the IP Address.

Example A: `10.0.0.*`

Example B: `192.*.*.5`

Example C: `*`

Wild Cards can be used in IP Address Ranges too.

Logon Script Filename: The logon script filename associated with the IP address can be any name that you choose however it must start with either a `k_` or a `c_`. The '`k_`' and '`c_`' correspond to the analogous behavior as the `k_start.bat` and `c_start.bat` (See page 215).

EXAMPLE – IP BASED LOGON SCRIPTING

The ACME Company has a New York location and a Mexico location. The New York location has a north building that has a receiving dock, a manufacturing floor and a shipping dock. Each area uses different applications to update a common database. The Receiving dock uses fork lifts with vehicle mounted RF devices. The application used by the receiving dock is a custom developed application. The ACME manufacturing floor workers use hand held RF devices, mostly basic scanner guns. The Quality Assurance Engineers on the manufacturing floor use Pocket PC 2003 devices to enter comments and other information. The Quality Assurance Engineers use a different application than the manufacturing floor workers. The New York Shipping dock workers use hand held RF devices, again mostly basic scanner guns. Like before they have yet another custom application. The shipping dock workers and the manufacturing floor workers are multi-talented and can perform either duty. The ACME Mexico location in Seaside ships partially assembled components to the New York locations.

All the locations are connected to a single server running the 100 session copy of the GSW UTS. The system administrator needs to launch a different application for each group described above.

This is can be accomplished using GSW UTS Logon Scripting based on IP Addresses. We can start editing the `gs_ip_rt.txt` file, but first let's make a chart of the locations, the IP addresses and the logon scripts.

The chart on the next page contains the information needed to set up the IP Based Logon scripting.

Location Name	IP Address or Range		Logon Script
ACME New York North Building Receiving Dock	164.10.15.1 164.10.15.211 164.10.15.212 164.10.15.213 164.10.15.214 164.10.15.215 164.10.15.216 164.10.15.217 164.10.15.218 164.10.15.219	164.10.15.220 164.10.15.221 164.10.15.222 164.10.15.223 164.10.15.224 164.10.15.253 164.10.15.226 164.10.15.254 164.10.15.228 164.10.15.229 164.10.15.255	c_nynrcv.bat
ACME New York North Building Manufacturing Floor Guns	164.10.16.1 164.10.16.10 164.10.16.11 164.10.16.12	164.10.16.23 164.10.16.23 164.10.16.24 164.10.16.25	c_nynman.bat
ACME New York North Building Manufacturing Floor Quality Assurance Guns	164.10.16.50 164.10.16.60 164.10.16.70 164.10.16.80	164.10.16.90 164.10.16.100	c_nynqua.bat
ACME New York North Building shipping Guns	164.14.12.210 164.14.102.211 164.14.245.212 164.14.246.213 164.14.247.214	164.14.15.220 165.14.19.1 165.14.150.222 165.14.151.223 165.14.178.224	c_nynsh.bat
ACME Mexico Seaside Plant shipping Guns	242.10.150.5 242.10.160.5 242.10.170.5 242.10.180.5 242.10.190.5	242.10.191.5 242.10.192.5 242.10.192.5 242.10.194.5	c_mexpl.bat

Table 49 - IP Based Logon Scripting Information Table

This is how to set up the `gs_ip_rt.txt` file to associate IP Addresses and Logon Scripts.

Edit the file `gs_ip_rt.txt` and add the following lines.

```
#ACME North Building Receiving Dock
164.10.15.1 c_nynrcv.bat
164.10.15.211-164.10.15.255 c_nynrcv.bat
#
#ACME North Building Manufacturing Floor
164.10.16.1-164.10.16.25 c_nynman.bat
#
#ACME North Building Manufacturing Floor Quality Assurance
164.10.16.50-164.10.16.100 c_nynqua.bat
#
#ACME North Building Manufacturing Floor Shipping
164.14.*.* c_nynshi.bat
#
#ACME Seaside Plant Shipping Guns
242.10.*.5 c_mexpl.bat
```

Each time a User Logs on, the GSW Universal Terminal Server identifies the IP address of the User and executes the associated logon script.

A sample gs_ip_rt.txt file with examples is installed with the software. It can be easily modified and used for your purposes. This is a copy of the file.

```
# Georgia SoftWorks UTS IP-based selection of logon scripts
# Copyright (C) 2004 Georgia SoftWorks
# All Rights Reserved
#
# This file allows you to map client IP addresses to logon scripts.
# The order of fields is as follows:
#
#       IP address OR IP address range OR IP address with wildcards
#       k_logon_script_name OR c_logon_script_name
#
# The 'k_' and 'c_' correspond to behavior analogous to k_start.bat and
# c_start.bat respectively.
#
# Each entry must start in the first column.
#
# For example, the following entry below
# (the comment '#' character must be removed to activate the entry)
#
#63.80.112.70 k_logon70.bat
#
# instructs the system that when a user connects from the IP address
# 63.80.112.70 he should use the logon script k_logon70.bat
#
#
# IP address ranges
#
# An IP address range is specified as two IP addresses separated by
# the dash character '-'.
#
# Examples of IP address ranges
#
# 10.1.1.1-10.1.10.210
# 192.68.22.10-192.68.22.99
#
#
# IP address with wildcards
#
# An IP address with wildcards is specified by using the star character
# '*' instead of a number as one of four segments of an IP address or
# all four segments.
#
# Examples of IP addresses with wildcards
#
# 10.*.*.*
# 192.*.*.22
# fe80::5efe:192.168.1.*%2
# fe80::230:48fe:*:*%6
#  *
#
# Note:
# For security reasons this file's permissions should be set to allow only
#
# SYSTEM - read access
#
# No other accounts should be allowed to access this file.
```

Programmatic Access to the SSH/Telnet Server

Note: Programming skills may be required to understand the following section.

Developers may take advantage of the programmatic interface to the Georgia SoftWorks SSH2/Telnet Server for Windows. Programmatic, language independent access to the SSH2/Telnet Server allows developers to write an application that (when run under the SSH2/Telnet Server environment) takes control of its input and/or output from/to the client. This can be utilized to create a custom or highly specialized communications application. The SSH2/Telnet Server still maintains critical functionality such as logon, security, application launch and termination. Normally the application before it terminates will release control to the SSH2/Telnet server.

The SSH2/Telnet Server communicates with the client through a WINSOCK socket. A protocol/mechanism is provided that allows a custom application to take and release control of the socket. Objects involved in taking and releasing control of the socket are passed through environment variables as are described below.

- GWTN_HSOCKET - This environment variable holds the value of the handle of the open socket. Note: Never close or otherwise destroy the socket.

- GWTN_GET_I - This environment variable holds the name of the WIN32 event that when signaled notifies the SSH2/Telnet server that the custom application wants to *take* control of the *input from* the client.

- GWTN_RLS_I - This environment variable holds the name of the WIN32 event that when signaled notifies the SSH2/Telnet server that the custom application wants to *release* control of the *input from* the client.

- GWTN_GET_O - This environment variable holds the name of the WIN32 event that when signaled notifies the SSH2/Telnet server that the custom application wants to *take* control of the *output to* the client.

- GWTN_RLS_O - This environment variable holds the name of the WIN32 event that when signaled notifies the SSH2/Telnet server that the custom application wants to *release* control of the *output to* the client.

- GWTN_ACK - This environment variable holds the name of the WIN32 event that when signaled notifies the custom application that the request is granted.

Note1: All of the above-mentioned events are autoreset events.

Note2: The above environment variables are automatically injected into the session's environment and will vary from session to session. Please do not attempt to modify those variables or set them in the autoexec files or Control Panel/System/Environment.

Please see the file `interface.c` included on the installation disks for a code sample. `interface.c` contains a short program that takes control of the input and output and echoes characters to the client until a lowercase *q* is encountered.

True Client-Side Printing - Printing the way you want it!

The Georgia SoftWorks SSH2/Telnet Server for Windows, *True Client Side Printing* allows documents to be printed at locations that are easily accessible by each user. Traditionally, default printing using SSH2/Telnet is always local to the server. This can be inconvenient to the user. Georgia SoftWorks overcomes the traditional problem by providing *True Client-Side Printing - printing the way you want it.*

Multiple (up to 9) printers may be used on a *per user basis*. Georgia SoftWorks offers several printing methods for the SSH2/Telnet user that will address most printing requirements. They are

- **Default** - Works as if the SSH2/Telnet user is sitting at the Windows server.
- **Enhanced** - Printer output is sent to the printers accessible by the client computer when using the Georgia SoftWorks SSH2/Telnet client. The printer is considered accessible if it is configured as one of your printers visible in the Printers Applet in the Control Panel.
- **Open** - allows SSH2/Telnet user to configure the printing command used when printing.
- **Passthrough** – allows print jobs to be redirected to RF Devices supporting escape sequence-based printing.
- **SAP** – Allows SAP print jobs to be redirected to RF Devices (printer). See page 323 for details.

Default Printing

The Default Printing method uses standard server printing facilities. When a SSH2/Telnet user prints, the printer output destination is exactly the same as if the user is sitting at the server and initiated the print. The destination may be local to the server or any remote printer that has been captured by the `net use` command. No setup is required for Default printing.

Enhanced Printing

Enhanced printing is an advanced feature of the Georgia SoftWorks SSH2/Telnet desktop clients that allows printers accessible to the user's client computer to be used when printing with SSH2/Telnet. The Client computers default printer is used if no SSH2/Telnet client command line parameters are specified. The SSH2/Telnet user can override the default printer using command line arguments when initiating the client. Also, multiple printers can be utilized by configuring additional client-side printers as described below.

Open Printing

The Open printing method allows the SSH2/Telnet user to specify the printing command that SSH2/Telnet will use when processing print jobs. For example, if the user wants to send output to a shared[31] printer then the "print /d" command can be configured. Another example is sending output to a printer with an IP address that is on the network but is not shared or visible to the server. In this case the SSH2/Telnet user would specify the "lpr" printing command. Other valid print commands can be configured as the user's requirements dictate. Please be knowledgeable with the printing commands you select.

Use the GSW GUI Configuration Tool – True Client Side Printing Global see page 378, User see page 413
Or use legacy style below

[31] A shared printer is one that is visible by the server

Setting up True Client-Side Printing

There are up to three steps in setting up *True Client-Side Printing*[32].

- Defining Virtual Printer(s) on the Server - This is the same for all printing methods.
- Adding the Georgia SoftWorks printer redirection commands to a logon script. This is specific to the printing method chosen.
- When using the Enhanced Printing method these steps must be performed.
    - Provide command line parameters when invoking the Georgia SoftWorks SSH2/Telnet Client when using the Enhanced Printing method and
    - Map the destination printer using the Net Use LPT command on the client machine

A Virtual Printer(s) is defined that redirects the output from your application. The Georgia SoftWorks SSH2/Telnet Server queries the Virtual Printer queue for new print jobs. When a print job enters the Virtual Printer queue the originating user of the job is identified. Once the user is known the associated printer is referenced and the print job is redirected to the proper printer.

Create a virtual printer on the server.

In creating a Virtual Printer, the key information is the *Printer Name*, the *Share Name* and the P*ort*. Up to three (3) Virtual Printers may be defined on the server. (This will allow up to three (3) printers to be used for *each* client.). A Printer Index is used to identify and correlate the various printer setups. The printer indexes are 1, 2 and 3. For the Virtual Printer Setup the *Printer Name* and *Share Name* require printer indexes. The following setup is for a single printer (Printer Index 1).

1. Click the **Start** button at the bottom left corner of your screen.
2. Select **Settings** then **printers**.
3. Double click on Add Printer. (The add printer window opens).
4. Select **My Computer** and Click on Next
5. Select one of the unused *lpt* or *com* ports. Do NOT enable print pooling. Click Next.
6. From the Manufactures list select **Generic**
7. From the Printers select **Generic/Text Only**. Click Next
8. Name your printer **GwtnPrinter1**. NOTE: This name is required. Click Next
9. Select Shared and name the printer **GwtnPrinterShare1**. NOTE: This name is required. Click Next
10. After the printer is created, double click on the printer icon.

[32] No setup is required for Default printing.

11. Pause the printer by selecting the menu item *Printer* and selecting *Pause Printer*. This printer must remain paused at all times. This printer cannot be used by any other service except Georgia SoftWorks.

Now your virtual printer is created and is ready for use by SSH2/Telnet . However, you must be sure to set the redirection commands in logon scripts.

If you need to support more than one client-side printer per user at a time then repeat steps 1 through 11 using the other two Printer Indexes. This involves replacing the *printer name* in step 8 with GwtnPrinter2, GwtnPrinter3, GwtnPrinter4, GwtnPrinter5, GwtnPrinter6, GwtnPrinter7, GwtnPrinter8 or GwtnPrinter9 and the *share name* in step 9 with GwtnPrinterShare2, GwtnPrinterShare3, GwtnPrinterShare4, GwthPrinterShare5, GwtnPrinterShare6, GwthPrinterShare7, GwtnPrinterShare8, or GwthPrinterShare9.

Set virtual printer redirection commands in logon script.

For each user that is using the Georgia SoftWorks True Client-Side Printing redirection commands must be added to their logon script. First the Virtual Printer must be associated with the printer device that the user wants to use. This is the device that the application will select when printing. This can be accomplished with the "net use" command. It is of the form:

```
net use lpt x: \\servercomputername\GwtnPrinterShare y
```

Where

- lpt***x*** is the printer port that the application sends the printer output (typically lpt1 for Dos applications)
- \\servercomputername\GwtnPrinterShare***y*** is the specification for the virtual printer. The printer share would be either GwtnPrinterShare1, GwtnPrinterShare2, GwtnPrinterShare3 etc.

The next is an environment variable that indicates the True Client-Side Printing method chosen. The environment variable is:

```
GWTN_LOCAL_PRINT_METHOD
```

and valid values are:

- `Open`
- `Enhanced`

The syntax is:

```
set GWTN_LOCAL_PRINT_METHOD=Open    or

set GWTN_LOCAL_PRINT_METHOD=Enhanced
```

If the environment variable does not exist then the True Client printing method is the **`Default`** printing method. This prints as if the user is sitting local at the server. There is no setup required for the Default printing method.

The **Open** print method allows the administrator to determine the print command used by SSH2/Telnet when printing. There are unlimited applications for this printing method. Common uses involve printing *to shared or network printers.*

The **Enhanced** print method allows any printers accessible to the client system (for example the default printer) to be easily used by SSH2/Telnet. A common use for Enhanced printing is when connecting to the server across the Internet or via RAS.

Enhanced Print Method

The Enhanced Print Method is very useful to users that connect across the Internet or via RAS. Enhanced printing may also be used in many other scenarios. The Enhanced True Client Side Printing Method is a feature of the Georgia SoftWorks SSH2/Telnet Clients and is not available with 3rd party clients. Print output is sent to the client's computer default or local printer(s). Client parameters also exist that allow printers other than the default printer to be used with Enhanced printing.

Note: It is required that each user be logged in only once for the Enhanced Print method to operate correctly. That means that each workstation/RF device must use a different User Id when connecting to the server.

The first example describes the basic Enhanced Printing setup and the second example describes using multiple client-side printers and the third describes the override feature.

EXAMPLE - ENHANCED PRINTING: PRINTING TO MY LOCAL PRINTER WHEN CONNECTED ACROSS THE INTERNET OR RAS

I have sales people that SSH2/Telnet to the server to get reports from a variety of locations. They carry laptops with portable printers and SSH2/Telnet to the server either through the Internet or via RAS. They need to get customer and shipping information printed. The sales application software that they use prints to **lpt3**. How do they have printer output sent to their laptop portable printers?

This is an excellent opportunity for the Georgia SoftWorks Enhanced True Client Printing Method.

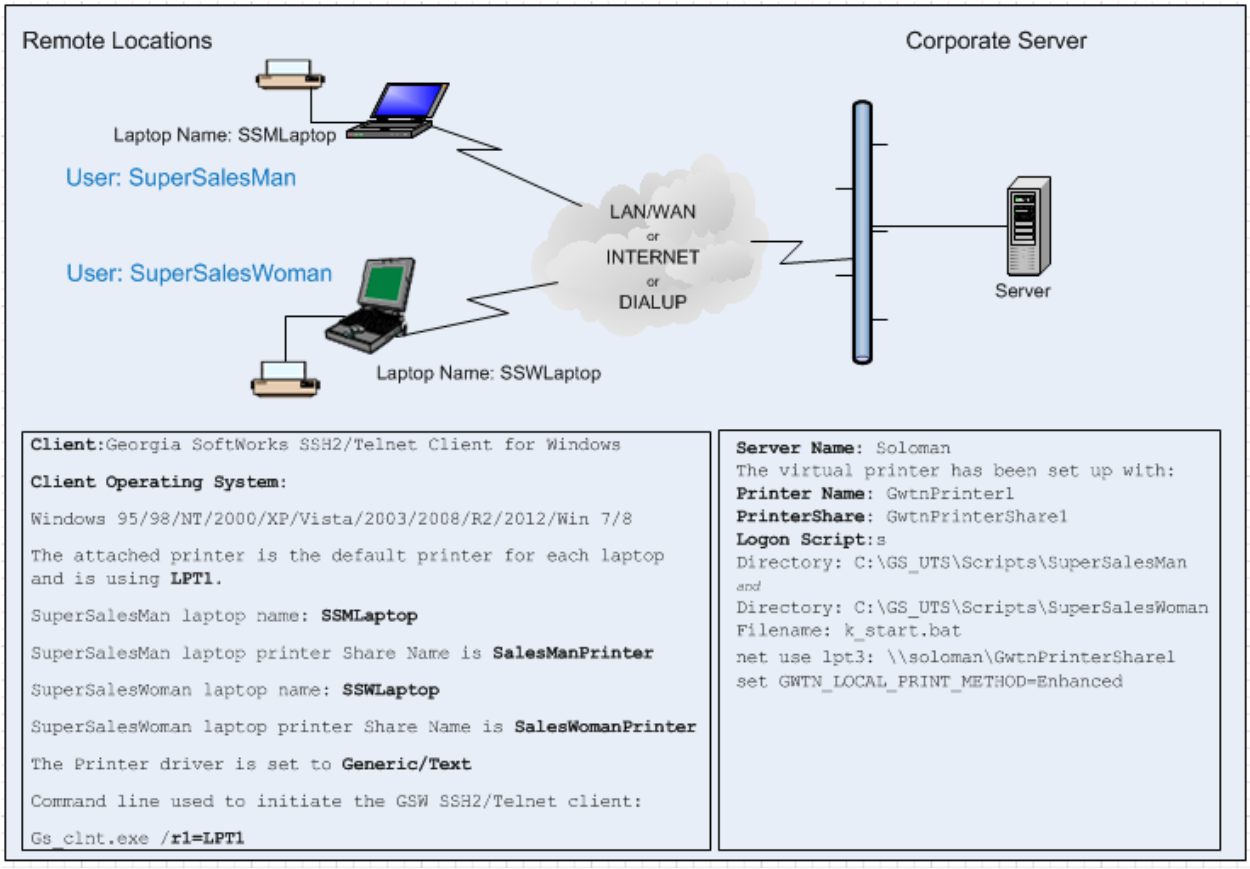


Figure 126: True Client-Side Printing: Printing across the Internet or RAS

Note: The Logon Scripts can be implemented in a variety of ways depending on the requirements. For example, a global logon script could be created for all telnet users. In the example above we used user specific scripts for each salesperson that might use telnet.

Important Information

User Name(s):	SuperSalesMan and SuperSalesWoman
Server Computer Name:	soloman
Telnet Client:	Georgia SoftWorks SSH2/Telnet Client
Client Operating System:	Windows 95 through Win Server 2019

The only requirement is that the Georgia SoftWorks SSH2/Telnet Client must be used. Of course, the Virtual printer must be defined as described in the Virtual Printer section. The logon script for each user needs to have the following commands:

On the Server edit the user's logon script `k_start.bat` and add the following commands:

```
net use lpt3: \\soloman\GwtnPrinterShare1

set GWTN_LOCAL_PRINT_METHOD=Enhanced
```

NOTE: The above commands must appear in the logon script. It is not sufficient to set these at the command prompt or in another batch file.

On the SuperSalesMan laptop open a command shell and enter the command:

```
Net Use LPT1: \\SSMLaptop\SalesManPrinter /persistent:yes
```

On the SuperSalesWoman laptop open a command shell and enter the command:

```
net use LPT1: \\SSWLaptop\SalesWomanPrinter /persistent:yes
```

Remember we are using the laptops default printer.

The `/persistent:yes` retains the LPT port mapping across reboots.

Initiate the Client session as:

```
gs_clnt.exe /r1=LPT1
```

The portable printer must be connected to the laptop and be the default printer for that system. It is recommended that the printer driver for the default printer be set to **Generic/Text**.

When the salesman prints to lpt3 the output will appear on the default printer connected to the salesman's client computer. This same methodology is used for either a single or multiple sales people. If the client needs to support more than one printer at a time please read the section on Multiple Client-Side Printers - Carefully.

EXAMPLE - ENHANCED PRINTING: MULTIPLE CLIENT-SIDE PRINTERS

Setting: remote Physician's office. They have a dot matrix printer that is used for insurance forms and a laser printer for formal letters. The medical software application exists at the main office on a Windows server and they are using SSH2/Telnet to access the application. Here an office manager in a physician's office needs to be able to access two different printers from his client machine. The Medical application is using LPT1 to print the forms and LPT2 for the formal letters.

The main office configured the server machine to have two virtual printers. One is named GwtnPrinter1 and the other is named GwtnPrinter2 (As required by the virtual printer specifications. (See page 227)).

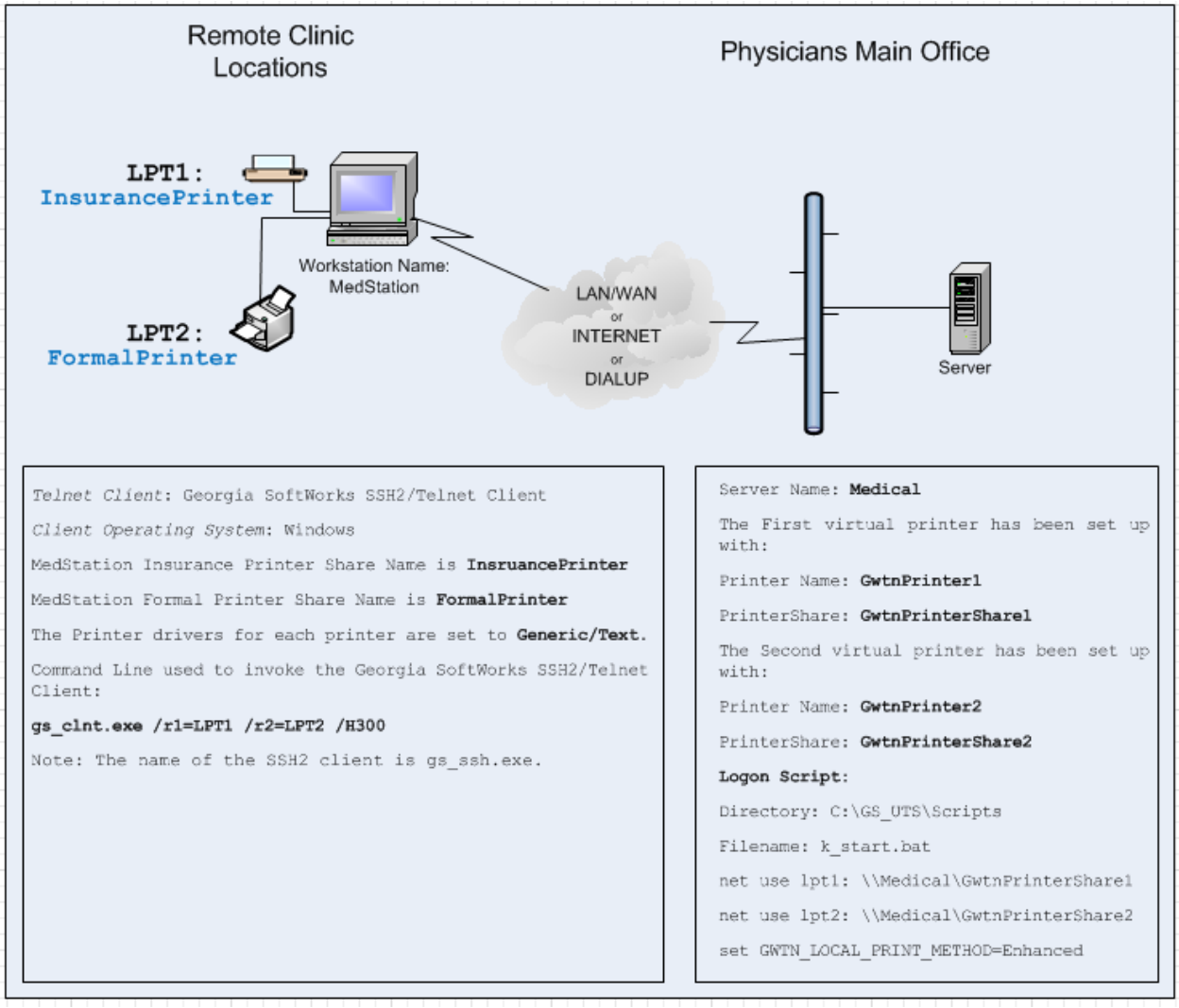


Figure 127: True Client-Side Printing: Using Multiple Client-Side Printers per User

Note the correlation between client-side command line parameters "**/r**x" and the Printer Share and Printer names on the server.

Important Information

Server Computer Name:	Medical
Telnet Client:	Georgia SoftWorks Telnet Client

Client Operating System:	Windows 98-2008R2 and Windows 7
Dot Matrix Printer Name:	InsurancePrinter
Laser Printer Name:	FormalPrinter
Virtual Printer to Use:	1 and 2

On the server in the user's logon script add the following commands:

```
net use lpt1: \\MedServer\GwtnPrinterShare1
net use lpt2: \\MedServer\GwtnPrinterShare2
set GWTN_LOCAL_PRINT_METHOD=Enhanced
```

NOTE: The above commands must appear in the logon script. It is not sufficient to set these at the command prompt or in another batch file.

On the MedStation workstation open a command shell and enter the command:

```
net use LPT1: \\medstation\InsurancePrinter /persistent:yes
net use LPT2: \\medstation\FormalPrinter /persistent:yes
```

The `/persistent:yes` retains the LPT port mapping across reboots.

Initiate the Client session as:

```
gs_clnt.exe /r1=InsurancePrinter /r2=FormalPrinter /H300
```

Note: The name of the SSH client is gs_ssh.exe.

EXAMPLE - ENHANCED PRINTING: OVERRIDE

This is a variation of the previous examples. Here the salesman has access to a color printer. Our salesmen carry laptops (running Windows 95/98) with portable printers and they SSH2/Telnet to the server either through the Internet or via RAS. They need to get customer and shipping information printed. The sales program that they use prints to lpt3. A salesman is at the customer's office and wants to get a color printout of a sales report. The customer has a color printer handy. They connect the color printer and install the proper driver. It is not the default printer. How can the salesman print to the non-default color printer?

This is an excellent opportunity for the Georgia SoftWorks Enhanced True Client Printing Method with client override. A command line parameter when initiating the Georgia SoftWorks SSH2/Telnet client allows printers other than the default printer to be used.

The Parameter is:

On Windows 95/98

`/rx=printername` or

`/rx=\\computername\printersharename` or

`/rx=lpty:`

`/rx=comy:`

On Windows

`/rx=\\computername\printersharename` or

`/rx=lpty:`

`/rx=comy:`

Where *x* is (1,2,3,4,5,6,7,8,9) the Printer Index number and

Where y is (1,2,3,4) the com port or lpt port number.

Diagram continued on next page.

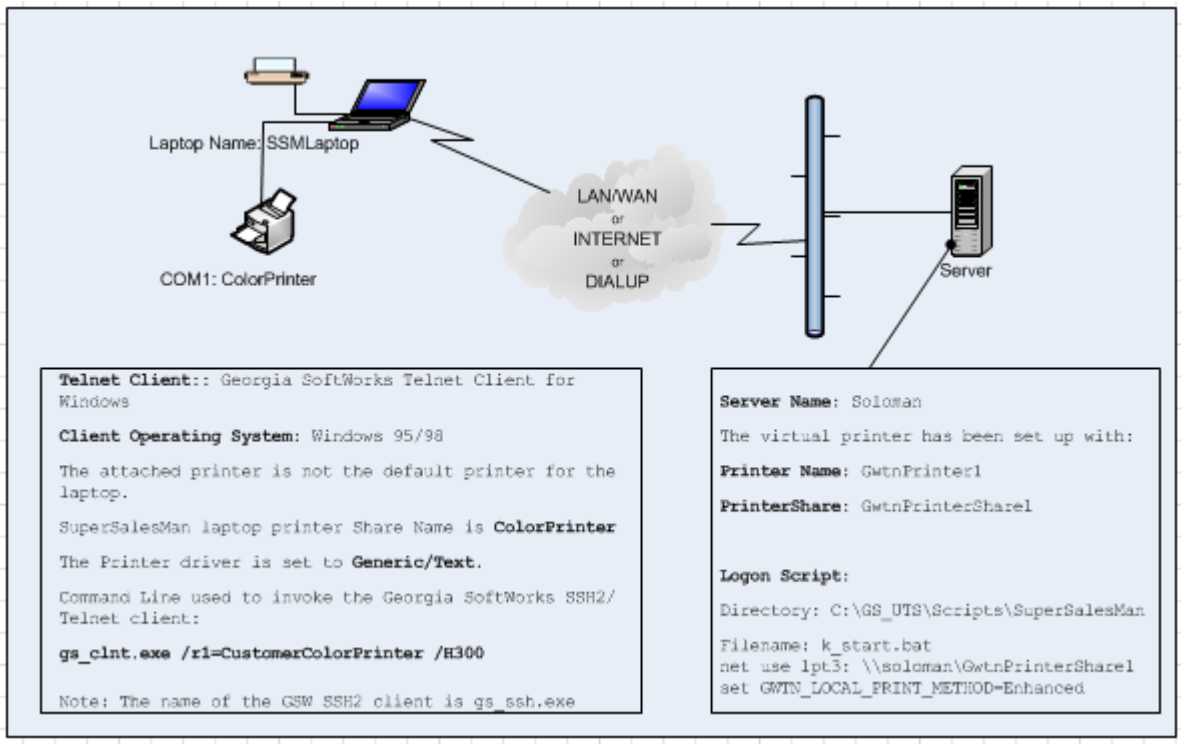


Figure 128: True Client-Side Printing: Enhanced Printing Override

Important Information

User Name:	SuperSalesMan
Server Computer Name:	soloman
Telnet Client:	GSW SSH2/Telnet Client for Windows
Client Operating System:	Windows 95/98
Color Printer Name:	CustomerColorPrinter
Color Printer Share:	ColorPrinter
Virtual Printer to Use:	1

The only requirement is that the Georgia SoftWorks SSH2/Telnet for Windows client is being used. Of course, the Virtual printer must be defined as described in the Virtual Printer section. The logon script for user SuperSalesMan needs to have the commands described below. Edit the user's logon script `k_start.bat` and add the following commands:

```
net use lpt3: \\soloman\GwtnPrinterShare1

set GWTN_LOCAL_PRINT_METHOD=Enhanced
```

NOTE: The above commands must appear in the logon script. It is not sufficient to set these neither at the command prompt nor in another batch file.

On the SuperSalesMan laptop open a command shell and enter the command:

```
net use COM1: \\SSMLaptop\ColorPrinter /persistent:no
```

Remember we are not using the default printer but a customer printer.

The `/persistent:no` removes the COM port mapping at the next reboot.

Initiate the client session as:

```
gs_clnt.exe /r1=COM1 /H300
```

When the salesman prints to lpt3 for user SuperSalesMan the output will appear on the color printer.

Open Print Method

The Open Print Method is extremely powerful allowing the user to configure any valid printing command to be used when printing via SSH2/Telnet.

NOTE: It is required that each user be logged in only once for Open Print method to operate correctly. This means that each workstation/RF device must use a different User Id when connecting to the server.

The printing command and other parameters are configured by setting the print command environment variable. The environment variables are:

```
GWTN_LOCAL_PRINT_CMD1

GWTN_LOCAL_PRINT_CMD2

GWTN_LOCAL_PRINT_CMD3

...

GWTN_LOCAL_PRINT_CMD9
```

They correspond to the handling of print jobs sent to GwtnPrinter1, GwtnPrinter2, GwtnPrinter3 … GwtnPrinter9

And the syntax of the command is:

```
set GWTN_LOCAL_PRINT_CMDx=PrintCommand %s
```

Where

- `PrintCommand` is any valid printing command and arguments

- `%s` is the Georgia SoftWorks argument placeholder for the print job[33].
- *x* is the printer index created on the server.

The print method and capture is determined by setting the environment variable GWTN_LOCAL_PRINT_CMDx. The most commons commands are the "`print /d:`" or the "`lpr`" printing commands. Other printing commands may be used, as the user's needs dictate. If the client printer is a shared printer (that is visible from the server) then you should use the "`print /d:`" command. The `lpr` command should be used when the host provides a *lpd* service. The user should be knowledgeable of the print command selected. The syntax of the "`print /d:`" command could be:

```
set GWTN_LOCAL_PRINT_CMDx=print /d:\\clientcomputername\sharename %s
```

Note: the %s is typed exactly as it appears. Do not replace the %s with a file name. The system replaces the %s with the current NT-generated spool file as you print to your printing port. Note: You are not printing to that temporary file from your application - the system does this behind the scenes. Enhanced and Open printing methods allow you to print to the printer port as you normally would.

Where

- `\\clientcomputername\sharename` is the network path to the destination printer.
- `%s` is the Georgia SoftWorks file placeholder

The syntax of the `lpr` print command could be:

```
set GWTN_LOCAL_PRINT_CMDx=lpr -S  Server -P printer %s
```

where

- `Server` is the name or ip address of the host providing the *lpd* service
- `Printer` is the name of the `printer queue`
- `x is the printer index`

Other arguments are available for the ***lpr*** command. Please see the help for the *lpd* service that you are using.

EXAMPLE - OPEN PRINTING: PRINT TO A CLIENT COMPUTER'S SHARED PRINTER

In my office I have a computer and a printer connected. I also am using a 3rd party SSH2/Telnet client. My system is on the network and my shared printer is visible to the server. I use SSH2/Telnet to connect to the

[33] The %s usually will be at the end but for some print commands may have to be placed somewhere inside the command, not necessarily at the end.

company server and I run accounting applications. The accounting application uses LPT1 as the printer port. How can I use the printer in my office when I print from the accounting applications?

Important Information

User Name:	Smarts
Client Computer Name:	SmartsComputer
PrinterShareName:	SmartsPrinter
Server Computer Name:	soloman
SSH2/Telnet Client:	Any - No Restriction
Operating System:	Any - No Restriction

The only requirement is that the printer be visible to the server. In other words, the printer at the client computer must be shared. Of course, the Virtual printer must be defined as described in the Virtual Printer section. The logon script for user Smarts should have the following commands:

Edit the user's logon script k_start.bat. and add the following commands:

```
net use lpt1: \\soloman\GwtnPrinterShare1

set GWTN_LOCAL_PRINT_METHOD=Open

set GWTN_LOCAL_PRINT_CMD1=print /d:\\SmartsComputer\SmartsPrinter %s
```

NOTE: The above commands must appear in the logon script. It is not sufficient to set these at the command prompt or in another batch file.

When the accounting application prints to lpt1 the output will appear on the printer in Ms. Smart's office. This same methodology can be used for as many users as you wish.

EXAMPLE - OPEN PRINTING: PRINT TO A NETWORK PRINTER

In our building we have two workgroups. Each workgroup has their network printer in a common area. Both workgroups have 25 users that SSH2/Telnet to the main server from UNIX workstations and run a database application. We print reports on lpt2. How can we get the reports to be printed on the correct network printer for each workgroup? This is an excellent case for the Open True Client-Side Printing method using the *lpr* command.

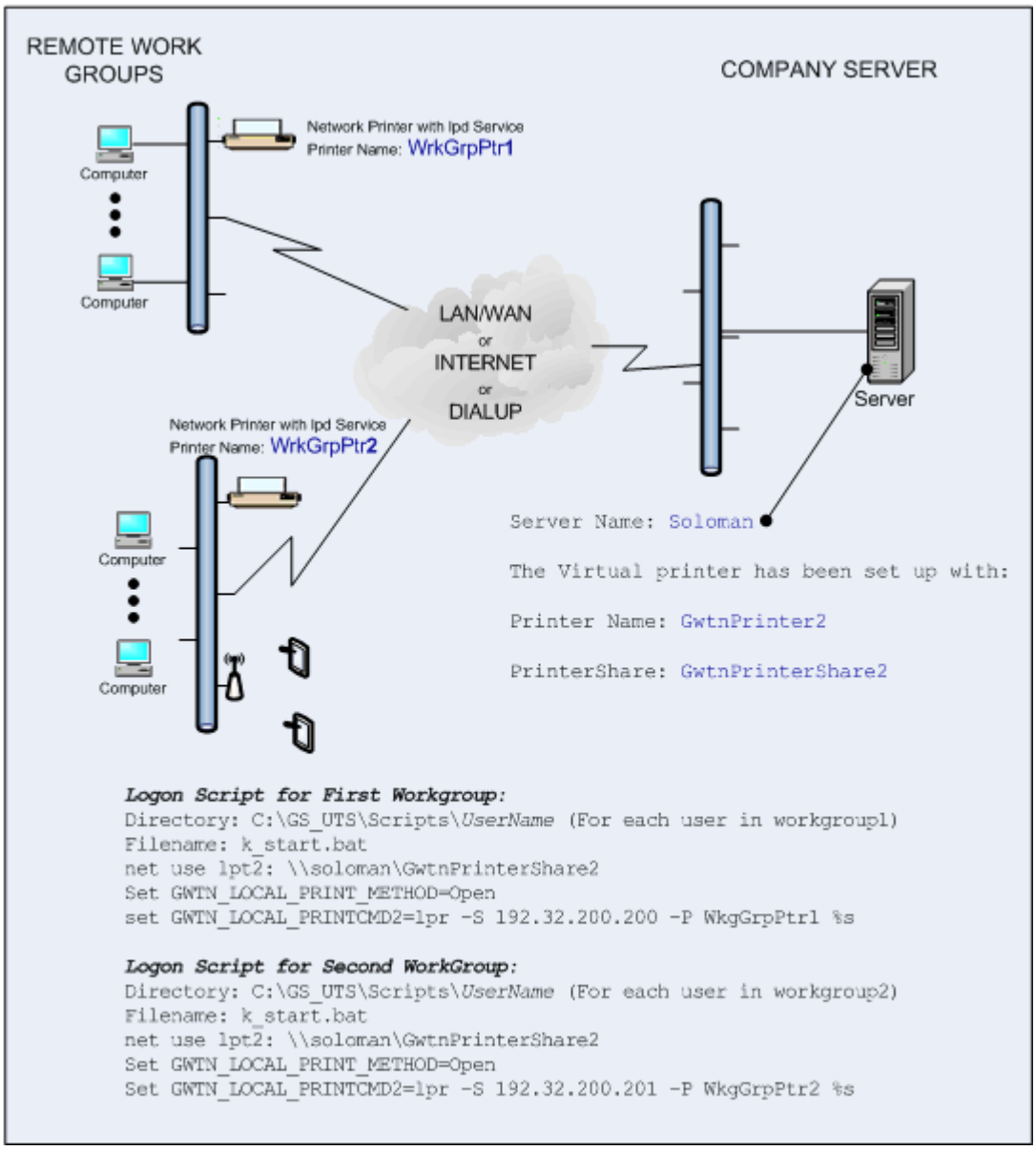


Figure 129: True Client-Side Printing: Open Print Method

(Continued on next page)

Important Information

IP Address of the first Host providing the lpd service: 192.32.200.200

Printer Name: WrkGrpPtr1

IP Address of the second Host providing the *lpd* service: 192.32.200.201

Printer Name: WrkGrpPtr2

Server Computer Name: soloman

Telnet/SSH Client: Any - No Restriction

Operating System: Any - No Restriction

The only requirement is that a *lpd* service exists for the printer to be used. In this case the network printer provides the service. Of course, the Virtual printer must be defined as described in the Virtual Printer section. The logon script k_start.bat for users in workgroup 1 need to have the following commands:

```
net use lpt2: \\soloman\GwtnPrinterShare2

Set GWTN_LOCAL_PRINT_METHOD=Open

set GWTN_LOCAL_PRINT_CMD2=lpr -S 192.32.200.200 -P WkgGrpPtr1 %s
```

The logon script k_start.bat for users in workgroup 2 need to have the following commands:

```
net use lpt2: \\soloman\GwtnPrinterShare2

Set GWTN_LOCAL_PRINT_METHOD=Open

set GWTN_LOCAL_PRINT_CMD2=lpr -S 192.32.200.201 -P WkgGrpPtr2 %s
```

NOTE: The above commands must appear in the logon script. It is not sufficient to set these at the command prompt or in another batch file.

When the database application prints to lpt2 the output will appear on the correct network printer for each workgroup. The logon script for each user in the Work Group will need to be modified to contain the same commands. This same methodology can be used for as many users as you wish.

Passthrough Print Method

Pass-through printing is available for 3rd Party Clients that support Pass-through printing. An example of a 3rd Party SSH2/Telnet client that supports Pass-through printing is AlphaCommunicator. Most 3rd party telnet clients for RF terminals also support Pass-through printing making the Georgia SoftWorks SSH2/Telnet Server for Windows the **ONLY** SSH2/Telnet server that can accommodate Pass-through printing.

Note: It is required that each user be logged in only once for the Pass-through Print method to operate correctly. This means that each workstation/RF device must use a different User Id when connecting to the server

Interested in printing to portable printers when in SAPConsole? See page 323

The required Georgia SoftWorks SSH2/Telnet Server setup for Pass-through printing is exactly the same as the Enhanced Print Method (page 226) with the following differences.

- There is no client parameter setup
- `set GWTN_LOCAL_PRINT_METHOD=PASSTHROUGH`
- Optionally set `GWTN_FF_IN_PASSTHROUGH`
- Optionally set `GWTN_PP_PRINT_BUFFER_SIZE`

Other than that, the setup for Pass-through printing is identical.

Passthrough Printing - FormFeed Control

NOTE: Some third party SSH2/Telnet client[34]s exhibit printing problems when a form feed is sent at the end of the print job. The problems may manifest by simply not printing and/or the form feed being converted to NULLs. If you are experiencing this problem you can use the following environment variable for controlling the trailing form feeds at the end of a print job when using Pass-through printing.

The environment variable for the enabling or disabling the trailing form feed in Pass-through printing is:

`gwtn_ff_in_passthrough`

For example, to ***disable*** the trailing form feed you would enter:

`set gwtn_ff_in_passthrough=n`

in the Logon Script for a particular user.

To enable trailing form feeds in Pass-through printing you would set the environment variable to `y` or simply not include the environment variable in the logon script as trailing form feeds are enabled by default.

NOTE: No spaces are allowed when setting environment variables.

For example:

[34] Has been observed in a SSH/Telnet client on a version of the Palm OS.

`set gwtn_ff_in_passthrough=y` is correct

`set gwtn_ff_in_passthrough =` `y` is not correct

Passthrough Printing – Print Data Buffer Size

The GWTN_PP_PRINT_BUFFER_SIZE environment variable can be used to eliminate the condition where the user must hit <ENTER> multiple times for a print job to complete due to some clients prompting the user after each data block is received rather than just printing the data.

The environment variable for specifying the Print Data Buffer Size for passthrough printing is:

`gwtn_pp_print_buffer_size`

The default print data block (buffer) size is 500 bytes.

For example, to ***specify*** a Print Data Buffer Size of 2000 bytes you would enter:

`set gwtn_pp_print_buffer_size=2000`

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_pp_print_buffer_size=2000` is correct

`set gwtn_pp_print_buffer_size =` `2000` is not correct

Client Identity and Uniqueness

Knowing the exact identity of the client device connected is useful in many environments and required in others.

Several mechanisms can be used to obtain specific information about the client.

- Client MAC Address.
- Client IP Address
- Client Answerback Text
- Client IP Logon Scripting
- User Logon Scripting

Using one or more of the mechanisms listed above usually provides the capability to refine the client identity to the granularity needed.

Client Media Access Control (MAC) Address.

This is a hardware address that uniquely identifies each client device in a network. The only way to change the MAC address is to swap out or replace client hardware. The client MAC Address of the client is available on the server within the session through the environment variable `gwtn_client_mac` (page 333).

Client IP Address

A unique IP Address is defined for each device on a network. In many cases the System Administrator can change the IP Address with Network Management Software. Regardless, the IP address of the client is available on the server within the session through the environment variable `gwtn_client_ip` (page 333).

Client Answerback Text

The GSW Desktop and Mobile Clients (Pocket PC 2003, Windows CE .NET V4.2+) provide the capability to pass a text string to the server. The Desktop clients use a command line parameter and the GSW mobile clients provide a configuration field on the client for defining the Answerback text (page 87). The Answerback text is available on the server within the session through the environment variable `gwtn_answerback` (page 333)

Client IP Logon Scripting

This is a powerful feature that allows different logon scripts to be launched based on the IP address of the client connecting (page 220).

User Name Logon Scripting

This is a powerful feature that allows different logon scripts to be launched based on the User Name of the client connecting (page 218).

Compatibility Pack

The Georgia SoftWorks Telnet Server allows connection with any RFC 854 compliant 3rd party client. This includes generic UNIX, MAC, Windows CE, NT, XP, VISTA, 2000, 2003, 2008, R2, 2012, 2016, 2019 Wireless clients and more! Most telnet clients are RFC 854 compliant. Many Network Terminal and terminal servers are as well.

The Georgia SoftWorks SSH Server allows connection with any SSH compliant 3rd party client. This includes generic UNIX, MAC, Windows CE, NT, Wireless clients and more!

Compatibility Pack	Configurable	Georgia SoftWorks Windows Clients	3rd Party Client
RFC 854 Compliant	N/A	No	Yes
Connect from 3rd Party Clients	Yes	N/A	Yes
Connect from Unix	Yes	N/A	Yes
Connect from Windows 3.1	Yes	N/A	Yes
Connect form Windows 95/98	Yes	Yes	Yes
Connect from Windows Servers	Yes	Yes	Yes
Connect from Windows CE	Yes	Yes	Yes
Connect from Macs	N/A	N/A	Yes
Connect from Wireless, RF Terminals and Scanners		Depends on RF Terminal	Yes
Connect from Terminal Servers		N/A	Yes

Table 50 - Compatibility Pack

RF Terminals – Bar Code Scanners

The Georgia SoftWorks SSH2/Telnet Server for Windows works well with RF Wireless systems, in particular hand held and vehicle mounted units. By using SSH2/Telnet the RF Wireless Hand Held application developer is able to create more generalized applications that will easily work with a variety of manufactures hardware. In addition to development and maintenance cost savings for application developers, this added flexibility allows heterogeneous systems to exist allowing customers to utilize existing hardware.

Encryption is available with Telnet when using the GSW Telnet clients. GSW provides clients for the PPC2003, Windows Mobile and many CE 4.2+ class devices (see 32).

Unmatched security with the strongest encryption is available when using the SSH server with ALL SSH clients.

Georgia SoftWorks is committed to providing the best SSH2/Telnet solution for the RF Wireless market. Some tailored features include:

- Performance. Fast Fast Fast!
- Logon Scripting to automatically launch your application upon connection. See Page 218.
- **Session Saver** – After client or link failures reconnect to a Saved session and resume work in progress exactly where you left off! (See page 149)

- **Automatic Logon** – Quickly re-establish the session by pre-configuring the Host, Domain, User Id and Password. When coupled with Session Saver you are back in operation with minimal time lost! (See page 183)

- Environment variables to eliminate most prompting. See page 166.

- Refresh the screen by entering "<ctrl> R.". Many times, RF systems may drop a packet of data and the screen will need to be refreshed.

- Settable screen size to accommodate screens smaller than 25 x 80. See section on Modes on page 298.

- Extremely flexible Color to Monochrome mappings. See page 170

- Extremely flexible Color to Grayscale mapping. See page 171

- Multiple Levels of failure detection. Including configurable timers. See Page 149.

- Pass-through Printing. See page 241.

The Georgia SoftWorks SSH2/Telnet Server for Windows is industrial quality and is suitable for demanding RF Hand held Terminal applications such as in warehousing, manufacturing, grocery stores and more!

RF Devices using Power Save or Sleep Mode

Use the GSW GUI Configuration Tool –Global – Failure Detection/Recovery - page 376
Or use legacy style below

If the RF devices are using a power save or sleep mode then the GSW SSH2/Telnet Server should be configured such that the sessions associated with the 'sleeping' device are not disconnected. Below are the registry changes you need to make if you have the Power Save mode enabled on your RF devices:

1. Inactivity Timeout

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\InactivityTimeout
```

Please set to decimal `3600`.

2. Server-Side Heartbeat.

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\ClntChkTimeout
```

Please set to hexadecimal `ffffffff`.

The changes will prevent your RF devices from 'timing out' when left inactive.

TCP Receive Windows Size

Use the GSW GUI Configuration Tool –User - Windows see page 407
Or use legacy style below

This parameter provisions the maximum TCP receive windows size on a per session basis. The TCP Receive Window specifies the number of bytes a sender may transmit without receiving an acknowledgment. In general, larger receive windows will improve performance over high delay, high bandwidth networks. For greatest efficiency, the receive windows should be an even multiple of the TCP Maximum Segment Size (MSS).

Some RF Terminals may experience connectivity problems because they time out before data transmission reaches them. In this scenario you may want to reduce the value of the TCP Windows Size parameter. Reducing the value of **TCP Windows Size** causes an acknowledgment for data received to be sent to the RF Terminal sooner. A quicker acknowledgment lowers the possibility that the RF Terminal will time out while waiting for an acknowledgment. However, it also increases the amount of network traffic and causes slower throughput.

The environment variable for the TCP Window Size is:

```
gwtn_tcpwindowsize
```

For example, to set the TCP Windows Size to 5000 you would enter:

```
set gwtn_tcpwindowsize=5000
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_tcpwindowsize=5000` is correct

`set gwtn_tcpwindowsize = 5000` is not correct

To use the default value (dependent on the network type) remove the environment variable from you logon script.

TCP Maximum Retransmission Count

Command: gs_tcp

Description: Command line Utility that sets the TCP Retransmission Count

This utility provisions the maximum retransmission count for TCP session data. This specifies the number of times TCP will retransmit an individual data segment (not connection request segments) before aborting the

connection. The default value is 5. We suggest that the value be increased to 8 when sessions are frequently disconnected because of timeouts.

Syntax: `gs_tcp [new_count|0]`

Arguments: The number of retransmissions TCP will retransmit an individual data segment (not connection request segments) before aborting the connection. If no argument is provided then the **current value is displayed**.

Note: Administrative privileges are required to run this command.

Warnings: The system must be rebooted for the change to take effect.

Note: To restore the system default (usually set to 5), invoke the utility with the TCP Retransmission Count value equal to 0.

EXAMPLE - PROVISION TCP MAXIMUM RETRANSMISSION COUNT

Provision the TCP Retransmission Count to 8. At the command line enter:

```
Gs_tcp 8
```

Create User Profile

Use the GSW GUI Configuration Tool –User - Windows see page 407
Or use legacy style below

This setting determines system specific behavior in the situation where a user logs on and their HKEY_CURRENT_USER registry key does not have a user specific registry hive to map to. The hive will be created or not based on the value of `gwtn_create_profile`. To specify you should set the `gwtn_create_user_profile` environment variable in your logon script (page 218).

The environment variable for specifying a user specific registry hive mapping is:

`gwtn_create_user_profile`

Possible values are 'Y' or 'N', or 'y' or 'n'.

Y – Create a user specific registry hive mapping if the HKEY_CURRENT_USER does not have a specific registry hive to map (*default*)

N – Do not create a user specific registry hive mapping. Use HKEY_USERS\.DEFAULT

For example, to enable a user specific registry hive mapping in the case where HKEY_CURRENT_USER does not have a specific registry hive to map to:

`set gwtn_create_user_profile=Y`

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

set gwtn_create_user_profile=Y is correct

set gwtn_create_user_profile = Y is not correct

Custom Shell Path

Use the GSW GUI Configuration Tool –User - Windows see page 407
Or use legacy style below

The UTS uses the Microsoft command-line interpreter `cmd.exe` (often called the "Command Prompt") as the default shell.

You can override this behavior and specify a path to a custom shell executable. For example, you may want to use Windows Powershell as the default shell. In this case you would enter the path such as:

```
C:\Windows\system32\WindowsPowerShell\v1.0\powershell.exe
```

For those migrating from cmd.exe to another shell please remember that each shell has its own commands to interface with the operating system. Commands used to make or change directories; launch applications, etc. in the `cmd.exe` shell will not work when using the PowerShell or another shell.

You will need to use new *cmdlets* or *scripts* that can be processed by your selected shell.

When you use a shell other than `cmd.exe`, the UTS logon script files (`k_start.bat` and `c_start.bat`) are still used but only act as configuration place holders by the GSW UTS GUI. All other entries are ignored.

Power users can also automatically launch an application instead of a shell with the Custom Shell Path such as SAPConsole, QAD or HighJump by specifying the path to the executable.

Refresh Character

Use the GSW GUI Configuration Tool –Global – Emulations – Character Emulation- see page 382
Or use legacy style below

The Refresh Character will cause SSH2/Telnet to repaint the screen data. This is useful in environments that may occasionally drop characters such as some RF Terminals. The refresh character may be modified to suit your application. This is modified through a registry key value.

This refresh character is a registry key value. The key is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\RefreshChar
```

The default value is `0x12` that is `<ctrl-r>`.

This is how to change the registry key for the Refresh Character.

Note: You must be on the Windows system that the Georgia SoftWorks Windows SSH2/Telnet Server is installed. However, you may connect to the Windows Registry from a remote location.

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\RefreshChar
6. Select the menu item **Edit** and then click on **Modify**
7. Enter the new value for the RefreshChar and click **OK**

The new RefreshChar will take effect for all new connections.

Unicode – UTF-8 Encoding

The Unicode Standard is a character coding system designed to support the processing and display of the written texts of many international languages around the world. GSW offers UTF-8 encoding (**U**CS **T**ransformation **F**ormat) for improved international character set support when using the GSW SSH2/Telnet Client and 3rd Party SSH2/Telnet Clients. Of course, the 3rd party SSH2/Telnet client must also support UTF-8 Encoding.

Below is an example of the character sets supported with UTF-8 Encoding when using the Kermit 95 SSH2/Telnet client with the GSW SSH2/Telnet Server.

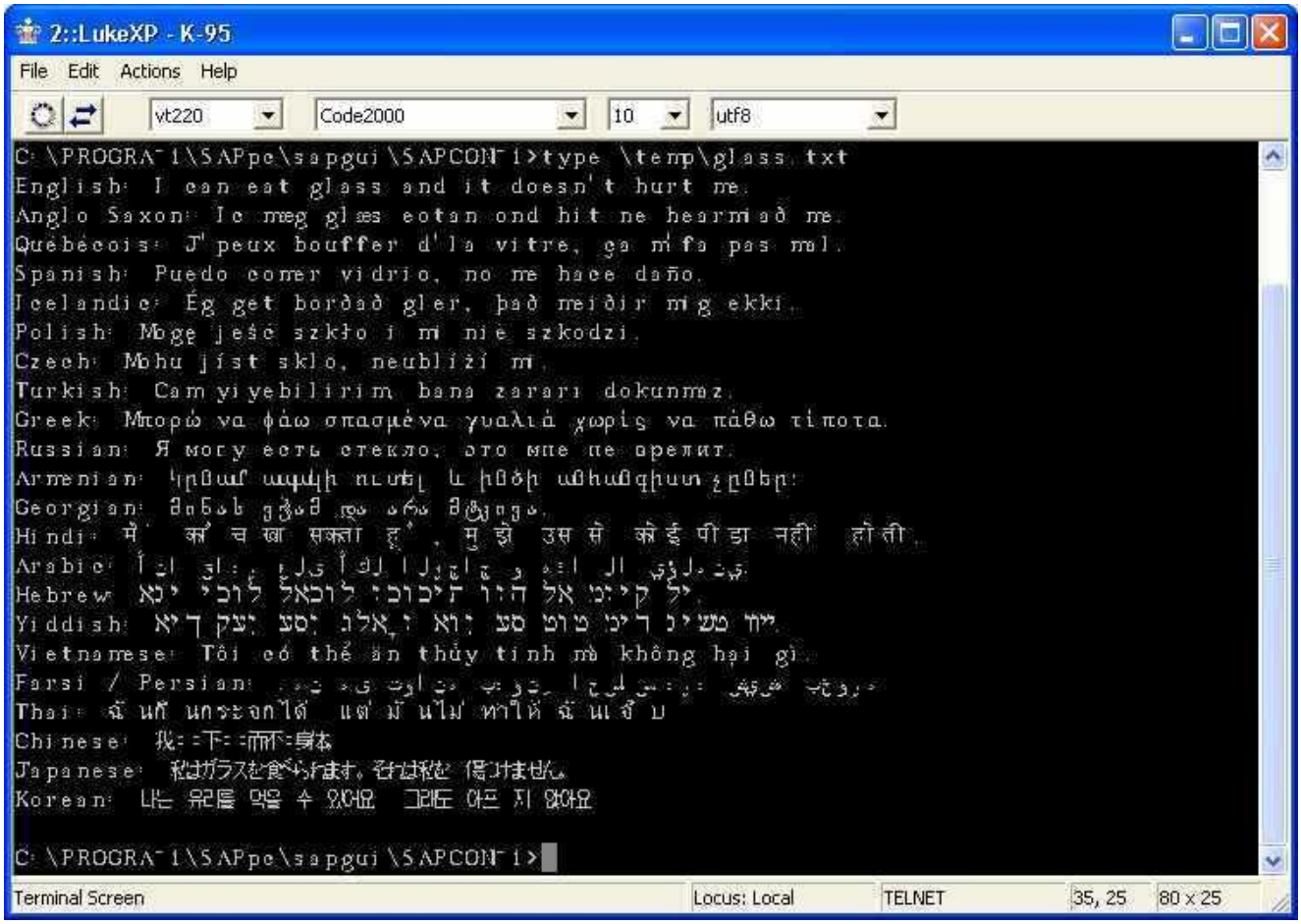


Figure 130: Unicode - UTF-8 Encoding with 3rd party telnet/SSH client.

Unicode Character Support with the GSW Windows SSH2/Telnet Client

It is easy to use Unicode Character Support with the GSW SSH2/Telnet Client. This feature is available on the Windows platforms. It is not available on the lower end (Windows 3.1/95/98/ME) platforms.

Follow the two steps below to enable Unicode Character Support for the GSW SSH2/Telnet Client.

1. You must use the –U command line option to enable Unicode character processing for input and output for the GSW Telnet/SSH Client. See page 80 for information on GSW SSH2/Telnet Client command line options.

2. Modify the properties of the Command Prompt window to select a font which supports Unicode characters, for example Lucida Console. Left Click and Select Properties.

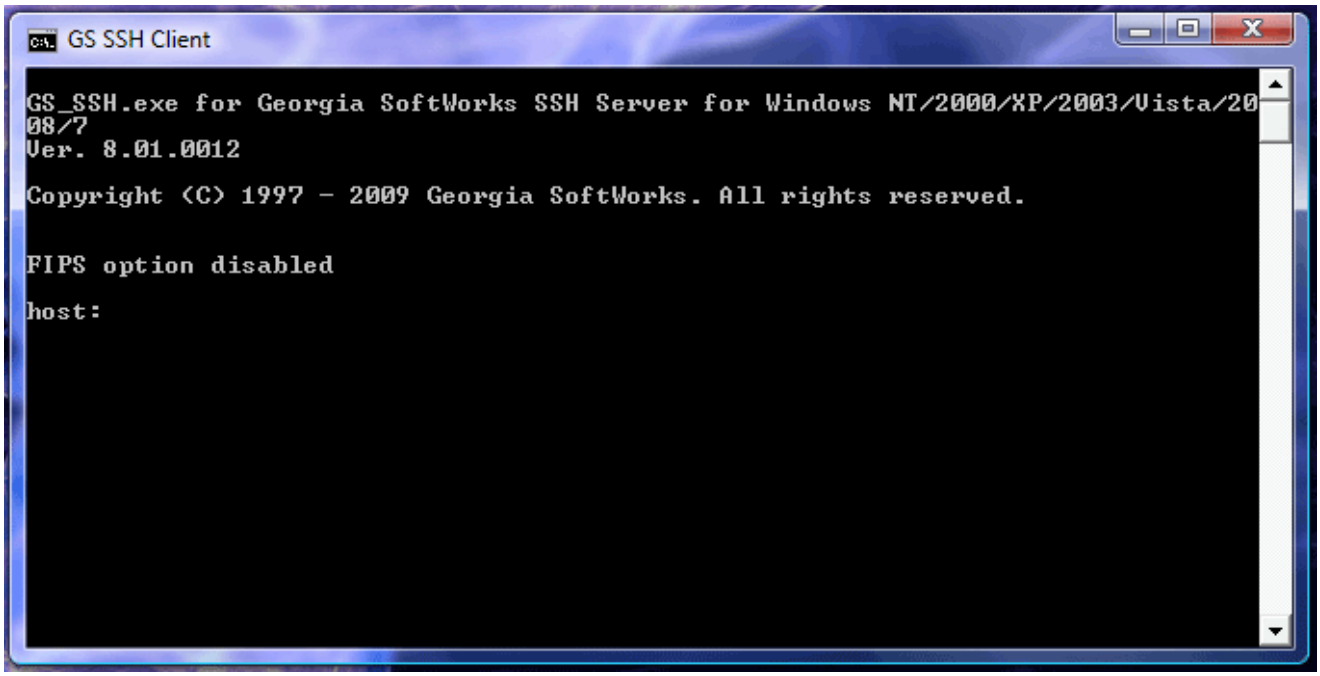


Figure 131: Unicode - GSW Client - Command Prompt Window - Properties

Upon selecting properties, you will get a window similar to the below on the left. Select the appropriate font for your application, for example. Lucida Console and click OK. Now you can display Unicode characters.

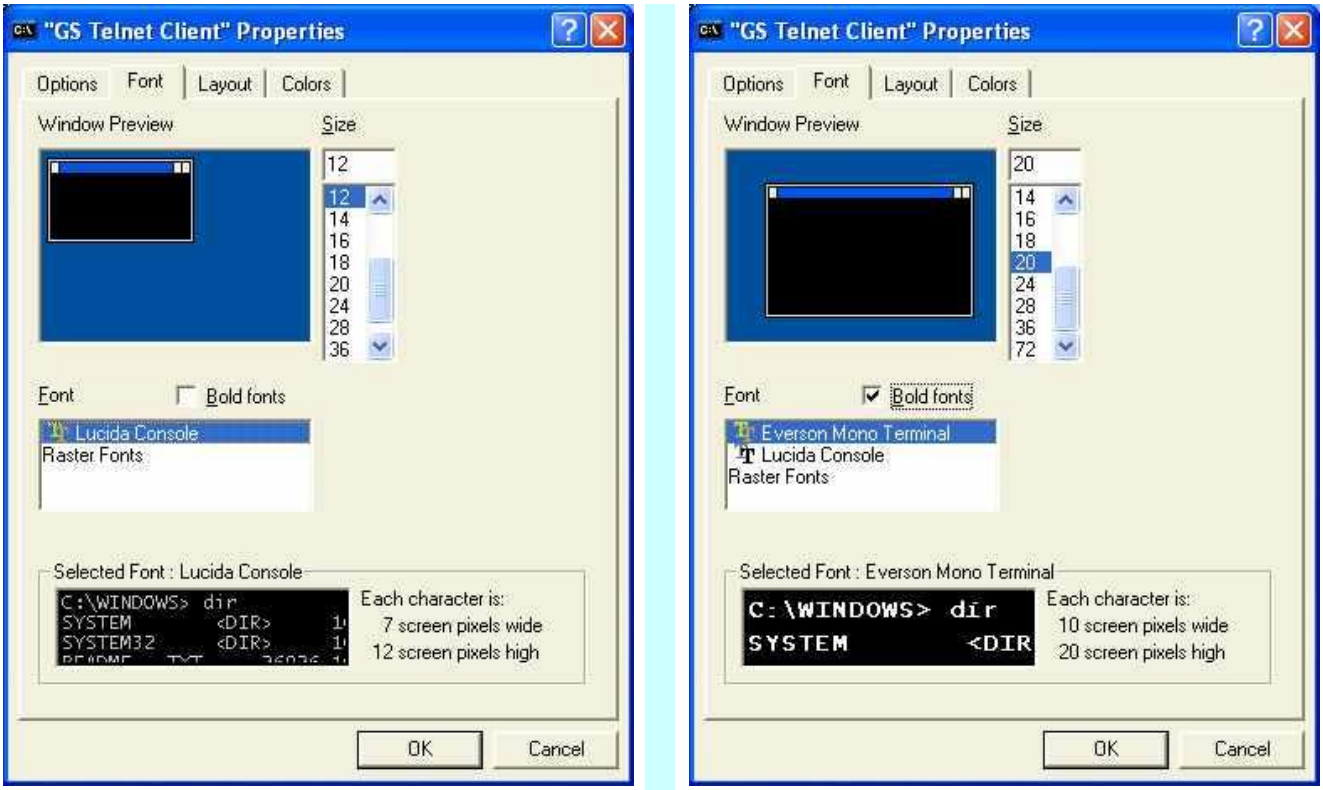


Figure 132: Unicode - GSW Client - Select Font

You may need to add fonts to your Command Prompt properties. Fonts must meet certain criteria to be available in the Command Prompt window. Details on adding fonts to the Command Session (Command Prompt) can be found by reviewing Microsoft Knowledge Base article - KB247815.

If we want to add the Everson Mono Terminal to the Command Prompt, we follow the instructions as specified in the Knowledge Base. The next time we view the Command Prompt Properties we observe that the Everson Mono Terminal is now available for selection.

After selecting the Everson Mono Terminal font, the following text can be displayed.

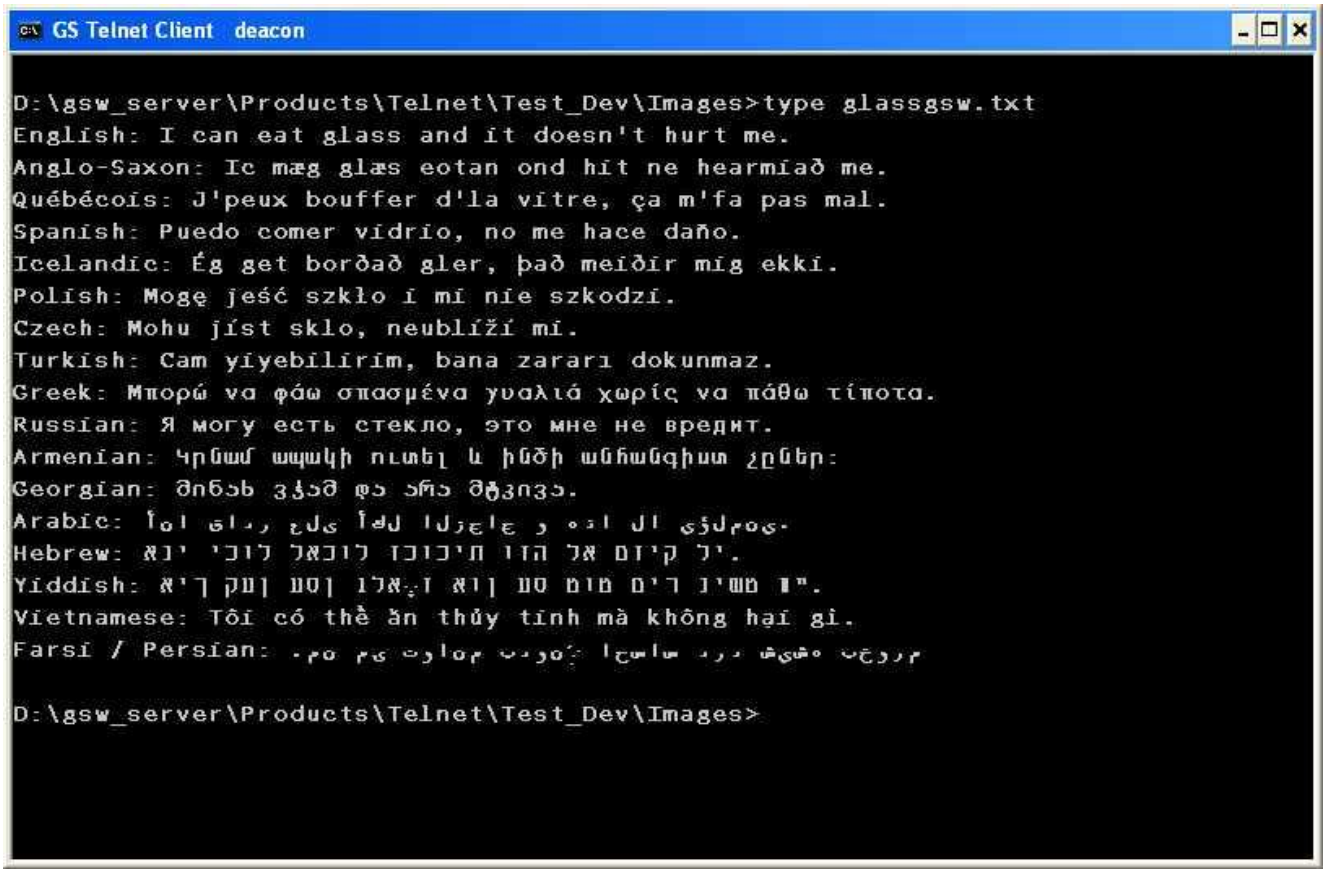


Figure 133: Unicode - GSW Client with Unicode Screen Shot

UTF-8 Encoding with 3rd party telnet/SSH clients

UTF-8 Encoding is easy to configure for 3rd party clients.
Perform the following steps to enable Unicode/UTF-8 encoding for 3rd party clients.

1. Be sure that your 3rd Party client **supports** and is **configured** for UTF-8 Encoding. Some examples of SSH2/Telnet clients that support UTF-8 encoding are Kermit 95 version 2.0 and above, Anzio or PuTTY.

2. When connected to the SSH2/Telnet Server select

   One of the following emulation modes.
   DEC VT-220/320/420
   or
   DEC VT-100
   and graphic option:

   Use UTF-8 encoded characters

Now you are set up for UTF-8 Encoding with 3rd Party Clients.

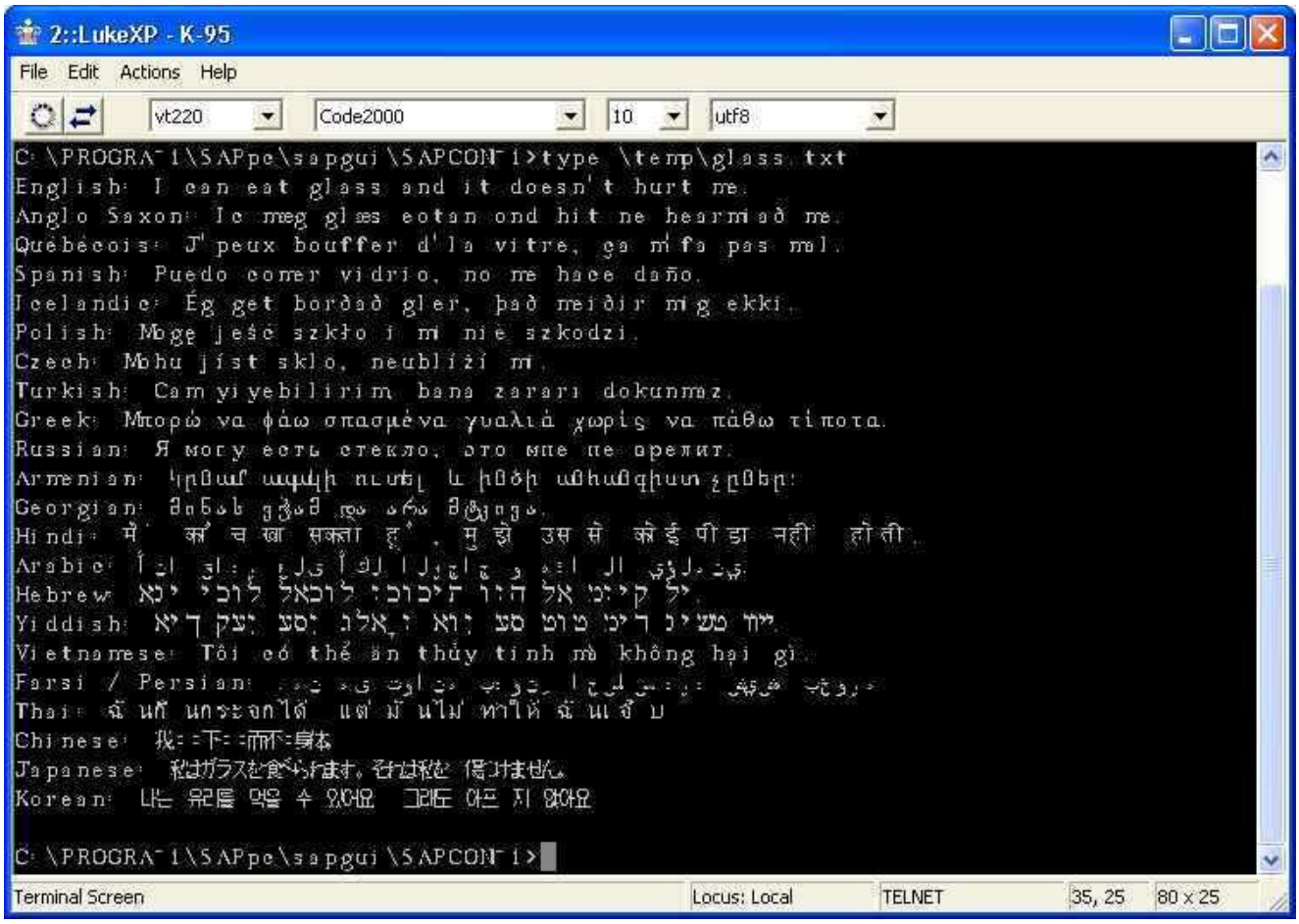


Figure 134: 3rd Party Client - UTF-8 Encoding Display

Telnet IP Protocol

Use the GSW GUI Configuration Tool –Global - Protocols see page 394
Or use legacy style below

The Telnet IP protocol version can be selected to either use IPv4, IPv6 or both.

This Telnet IP Protocol is defined using a registry key value. The key is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\Protocol
```

Possible values are 'ipv4', 'ipv6' or 'both'.

`ipv4` – Use IP version 4

`ipv6` – Use IP version 6

`both` – Use both IP version 4 and IP version 6 (*default*)

The default value is `IPv4`

This is how to change the registry key for the Telnet Protocol.

Note: You must be on the Windows system that the Georgia SoftWorks Windows SSH2/Telnet Server is installed. However, you may connect to the Windows Registry from a remote location.

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\Protocol
6. Select the menu item **Edit** and then click on **Modify**
7. Enter the new value for the Protocol and click **OK**

The new Protocol will take effect for all new Telnet connections.

SSH IP Protocol

Use the GSW GUI Configuration Tool –Global - Protocols see page 394
Or use legacy style below

The SSH IP protocol version can be selected to either use IPv4, IPv6 or both.

This SSH IP Protocol is defined using a registry key value. The key is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\szProtocol
```

Possible values are 'ipv4', 'ipv6' or 'both'.

`ipv4` – Use IP version 4

`ipv6` – Use IP version 6

`both` – Use both IP version 4 and IP version 6 (*default*)

The default value is `IPv4`

This is how to change the registry key for the SSH Protocol.

Note: You must be on the Windows system that the Georgia SoftWorks Windows SSH2/Telnet Server is installed. However, you may connect to the Windows Registry from a remote location.

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\szProtocol
6. Select the menu item **Edit** and then click on **Modify**
7. Enter the new value for the Protocol and click **OK**

The new SSH Protocol will take effect for all new SSH connections.

UTS Protocol

Use the GSW GUI Configuration Tool –Global - Protocols see page 394
Or use legacy style below

The UTS protocol can be specified to use Telnet, SSH or Both. You must be registered to use SSH before it can be selected.

The UTS Protocol is defined using three registry key values. The keys are:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\LsnOnLoopbackOnly

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\AllowTelnetWithSSH

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\UseGSW_SSHD
```

As shown in the table below, set the registry key values to obtain the desired protocol.

PROTOCOL	LsnOnLoopbackOnly	AllowTelnetWithSSH	UseGSW_SSHD
Telnet	0	0	0
SSH	1	0	0
Both	0	1	1

Table 51 - Registry Key Values for UTS Protocol Table

The default UTS protocol is Telnet when SSH is not installed.

The default UTS protocol is SSH when SSH is installed.

NOTE 1: Other combinations are undefined and are not supported by the UTS configuration.

NOTE 2: Enabling Telnet and SSH may compromise security goals. You must understand the ramifications if you enable both Telnet and SSH.

The new UTS Protocol will take effect for all new connections.

Utility Pack

Utility Pack	Configurable	Georgia SoftWorks Client	3rd Party Client
Change Password	Yes	Yes	Yes
Connection Banner	Yes	Yes	Yes
Execute Command on Client	Yes	Yes	No
File Transfer	Yes	Yes	No
Launch GUI Application	Yes	Yes	Yes
Remote Reboot of Server	Yes	Yes	Yes
Remote Shutdown of Server	Yes	Yes	Yes
Remote Registration	Yes	Yes	Yes
Special Bell Processing	Yes	Yes	Yes
Special Bell Process for SAPConsole	Yes	Yes	Yes
TTY Name	Yes	Yes	Yes

Table 52 - Utility Pack

The Georgia SoftWorks SSH2/Telnet server provides utilities for the users' convenience. The utilities reside in the installation directory. The utility names are not case sensitive. Arguments such as Windows passwords are case sensitive.

Change Password command line utility

Many times, a user wishes to change their password. A convenient method is to use the Georgia SoftWorks Change Password command line utility.

Command: `GS_ChPwd`

Description: Command line utility that changes a user's password

Syntax: `Gs_ChPwd <user> <\\computer | domain> <newpassword> <oldpassword>`

Arguments: There are 4 required arguments.

a. `<user id>` The user id for which to change the password

b. `<computer name or domain>` - The computer name or domain

c. `<new password>` - the new password

d. `<old password>` - the old password.

EXAMPLE - UTILITIES: CHANGE PASSWORD

The user "smith" wants to change his password on the computer "soloman" from "fast" to "superfast".

```
Gs_ChPwd  smith \\soloman superfast  fast
```

Connection Banner

A custom banner can be displayed to the client upon connection to the host. The connection banner is useful for displaying security and legal notices and other information that the user should see BEFORE logging on to the host.

To enable a connection banner, perform the following steps.

1. Create the text of the banner in an ASCII text file.
2. Save the file and name it `banner.txt`
3. Place the file in the directory `<telnet_server_root_path>`[35]

When a user connects, the SSH2/Telnet server looks for the existence of the file banner.txt in the SSH2/Telnet root directory and displays the text before the LOGIN prompt is issued.

Please make sure that the complete text can be displayed on a single console screen to ensure easy readability.

[35] This is the installation directory for the telnet server.

Execute Application on Client from within a SSH2/Telnet Session

Bridge the Gap between GUI processing and a character-oriented protocol.

An incredibly powerful utility that facilitates client-side processing of server-side files when using the Georgia SoftWorks SSH2/Telnet Client. The Georgia SoftWorks SSH2/Telnet Server provides the capability to **execute commands on the client computer while in the SSH2/Telnet session**. This is accomplished through a utility:

```
gs_exec client_side_command_line
```

This capability is fully developed when coupled with the Georgia SoftWorks File Transfer Utilities (gs_put and gs_get).

Execution of commands on the client can be used to accomplish:

1. Edit server files[36] using a local GUI editor like MS Word.
2. Run programs on the client that prompts the user for data and transfers the results back to the server.
3. Automate file transfer from the server to the client, run program that uses transferred file for input and then transfer the output data of the program back to the server.
4. Useful in situations where you want to do part of the processing on the server and part on the client.
5. Initiate program on client and transfer results to server when complete.
6. Periodic initiation of client-side program processing transferred data and/or transferring data when complete.
7. View graphic images on the client using a program such as Corel Draw or Microsoft Photo Editor when the image resides on the server.
8. Run file or system level commands on the client synchronously with the server-side script.
9. AND MUCH MUCH MORE!

Command: `gs_exec`

Description: Command line utility that executes commands on the client from within a SSH2/Telnet session.

Syntax: `gs_exec <client_side_command_line>`

Arguments: There is 1 required argument.

[36] Or any file accessible from the server!

a. `<client_side_command_line>` The command to execute on the client computer.

This command is any valid command on the client computer. It can contain command arguments just as if entered on the client.

NOTE: Path information as argument data must be from the Clients perspective.

If the program selected to run is a GUI program then a new Window is opened. If the program selected is not a GUI program and has character output then the output data it is displayed in the SSH2/Telnet Window for 2000 ms (two Seconds) or the time specified by the `/scmddelay` *gs_clnt.exe* command line option (Page 78).

Typically, a script or batch file is created that will transfer the server file to the client; run the client-side command using the gs_exec command, and then transfer the file back to the server when completed.

EXAMPLE - UTILITIES: EXECUTE PROGRAM ON CLIENT – LOCAL EDIT USING GUI EDITOR

A company brochure that resides in a file that contains graphic images and rich test exists on Server that the user would like to edit using the client copy of Microsoft Word.

The file can be transferred using the gs_put utility, then MS Word is invoked using the gs_exec utility, and when the editing is complete, the file is transferred back to the server using the gs_get utility. The following commands reflect the sequence of commands that detail the steps.

```
gs_put d:\xfer\cbroch.doc c:\received\cbroch.doc
gs_exec winword c:\received\cbroch.doc
gs_get c:\received\cbroch.doc d:\xfer\cbroch.doc
```

These commands can be included in a batch file such that the "Local Edit" capability is more "generic" and easily invoked.

Create a batch file (let's call it ledit.bat)

```
gs_put d:\xfer\%1 c:\received\%1
gs_exec winword c:\received\%1
gs_get c:\received\%1 d:\xfer\%1
```

Assumptions:
File on server is always in `d:\xfer\` folder
File to be edited on client is always in c:\received folder.

When connected via SSH2/Telnet to the server; when in the d:\xfer folder the user can simply type:

```
ledit cbroch.doc
```

to transfer the file to the client and run MS Word. When completed in MS Word the file is automatically transferred back on the server.

A car dealership headquarters has images of motor vehicles in the database. A local dealer can easily display the images (pictures) to prospective buyers via SSH2/Telnet .

The file can be transferred using the gs_put utility, then the default image view can be invoked allowing the image to be viewed without required knowledge of the graphics display program. On the Windows OS the file type[37] extension will invoke a default executable. In the following two lines, the first line transfers the file to the client and the second line will invoke the default image display program, which will display the image.

```
gs_put d:\auto_database\corvette_1993.jpeg c:\viewcar\corvette_1993.jpeg
gs_exec c:\viewcar\corvette_1993.jpeg
```

Again, these commands can be included in a batch file such that the "View Image" capability is more "generic" and easily invoked.

Create a batch file (let's call it vimage.bat)

```
gs_put d:\auto_database\%1 c:\viewcar\%1
gs_exec c:\viewcar\%1
```

Assumptions:
Image files on server is always in `d:\auto_database\` folder
Image file to be viewed on client is always in `c:\viewcar` folder.
A default image viewer exists for .jpeg extensions

When connected via SSH2/Telnet to the server and positioned in the d:\auto_database folder the user can simply type:

```
vimage corvette_1993.jpeg
```

to transfer the file to the client and display the image.

[37] In this example, our file type has a .jpeg extension

The User needs to transfer a file from the client to the server but does not remember the exact filename. To quickly obtain a directory listing they can simply run:

```
gs_exec dir
```

This will display the directory contents without having to open a new window on the client. The contents of the directory (folder) are quickly displayed in the SSH2/Telnet Window for 2000 ms (two seconds) or the time specified by the `/scmddelay` *gs_clnt.exe* command line option

File Transfer command line Utility

SSH2/Telnet file transfer capabilities are available with Windows when using the Georgia SoftWorks SSH2/Telnet Server and GSW Windows Clients.

File transfer via SSH2/Telnet is convenient as there is no need for an FTP server to be installed and you are not limited by file sizes as with many email attachments.

Secure file transfer with **Telnet** is possible with the GSW Telnet Server and GSW Windows Clients. When encryption is enabled file, transfers are encrypted (see page 94)!

Secure file transfer with **SSH** using very strong encryption is always enabled when using GSW SSH clients.

GS_PUT - Transfer from Server to Client

Efficient file transfers from the server to the client computer are easily accomplished when using the Georgia SoftWorks SSH2/Telnet Client.

A utility called GS_PUT is included in the SSH2/Telnet server installation directory.

Command: `gs_put`

Description: Command line utility that copies a file from the Server to the Client device/computer.

Syntax: gs_put [/s] [/e[<log_file_path]] <source_file_path> <destination_file_path>

Arguments: There are 2 required arguments and 2 optional arguments.

Required Arguments

a. `<source_file_path>` The file path to the file on the server

(Uses Server computer drive letters and directories)

b. `<destination_file_path>` The file path for the destination on the client

(Uses Client computer drive letters and directories)

Optional Arguments

c. `/s` Silent mode operation for GS_Put

Disables the display of file transfer progress or other non-error information messages to user

d. `/e[log_file_path]` Silent mode for error messages to the user

The `/e` argument is used to disable the display of error messages to the user

If the optional file path is included then the error messages are sent to the specified file on the Server. **Note**: No spaces are allowed between the `/e` and the log file path.

EXAMPLE - UTILITIES: FILE TRANSFER SERVER TO CLIENT

```
gs_put f:\corba\hints\dealers.docx c:\books\dealers.docx
```

This will copy the file `f:\corba\hints\dealers` from the server to the client computer and save it as `c:\books\dealers.docx`. You will see the progress and completion messages.

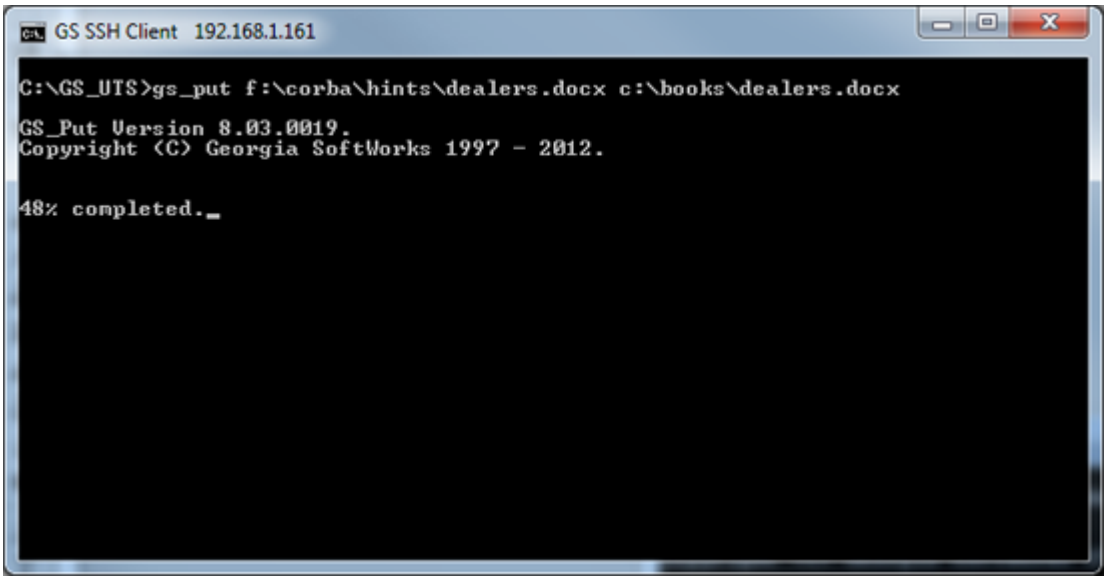


Figure 135: File Transfer GS_Put Progress Status

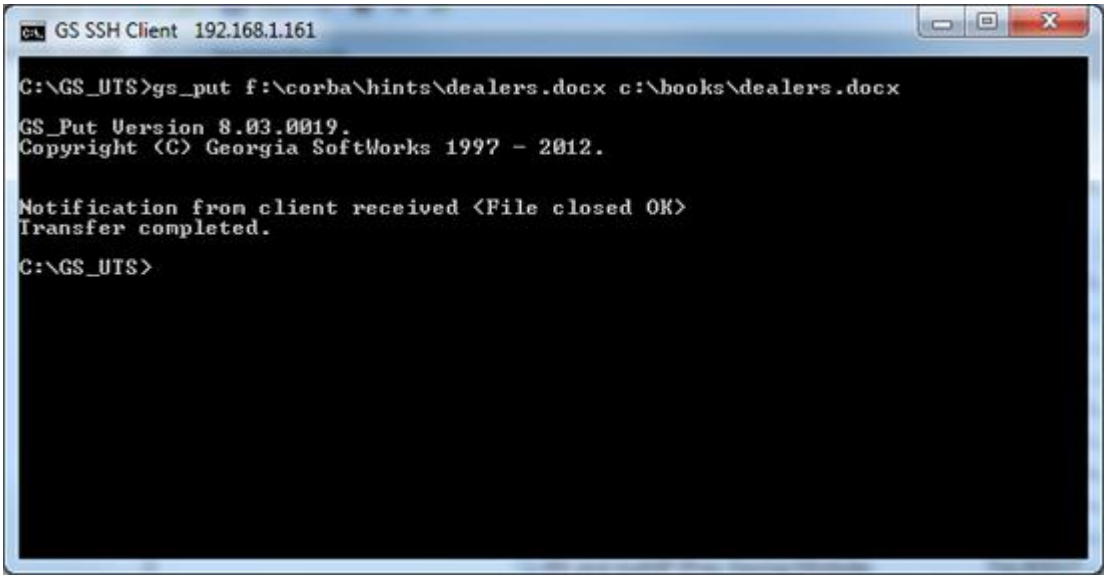


Figure 136: File Transfer GS_Put - Transfer Complete

EXAMPLE - UTILITIES: FILE TRANSFER SERVER TO CLIENT – SILENT MODE

```
gs_put /s f:\corba\hints\dealers.docx c:\books\dealers.docx
```

When the silent mode option is used the user will not see the progress or completed informative messages. Below is an example.

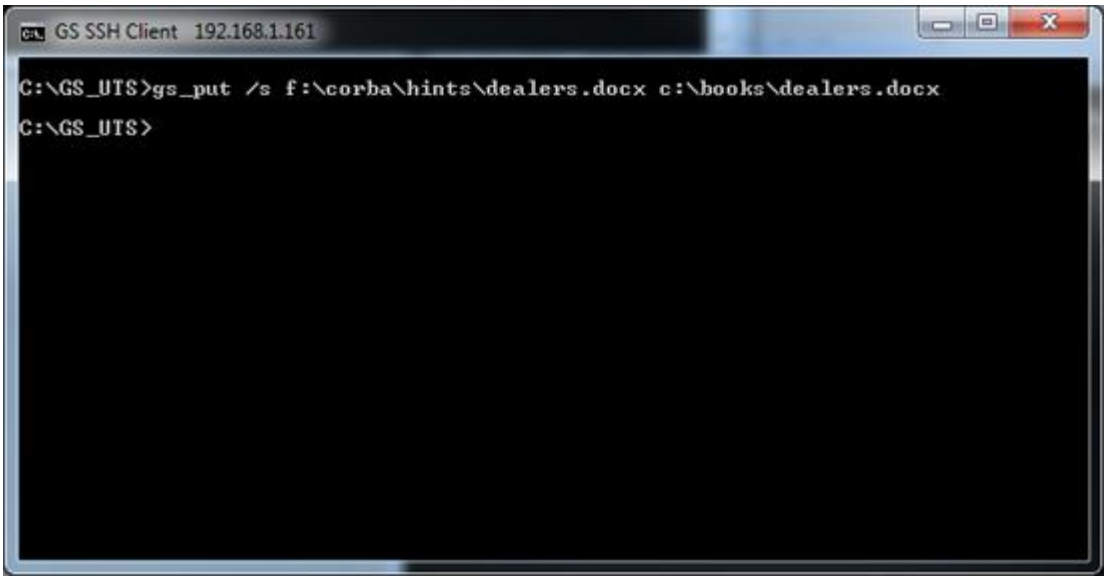


Figure 137: File Transfer GS_Put - Silent Mode

Even though `/s` silent mode option is used error messages will still be displayed to the user. For example, the destination file path was misspelled below and the error message is displayed to the user.

```
gs_put /s f:\corba\hints\dealers.docx c:\nooks\dealers.docx
```

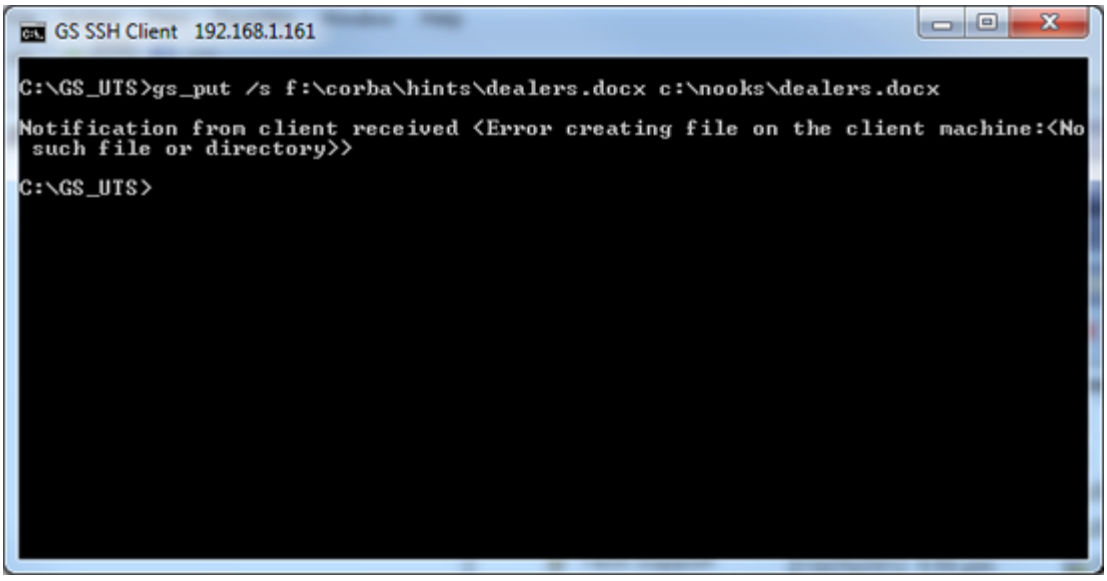


Figure 138: File Transfer - GS_Put - Error Message Displayed

EXAMPLE - UTILITIES: FILE TRANSFER SERVER TO CLIENT – SILENT MODE ERRORS

In some cases, the administrator may want to suppress displaying error messages to the user.

This can be accomplished using the silent mode for errors `/e` argument.

```
gs_put /s /e f:\corba\hints\dealers.docx c:\nooks\dealers.docx
```

Using the previous example with the `/e` argument results in the display show below.

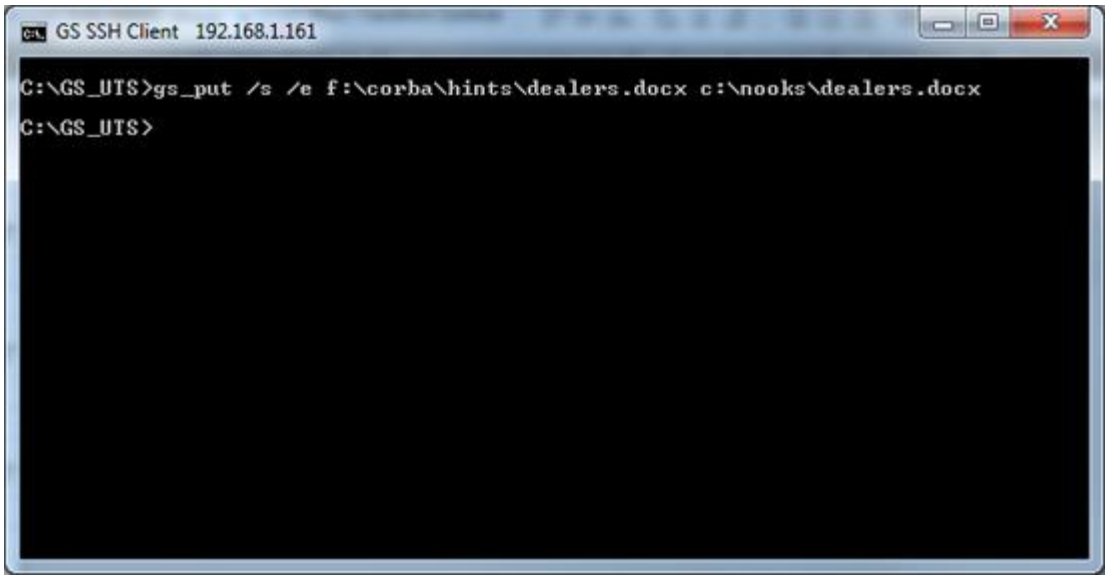


Figure 139: File Transfer - GS_Put - Error Message Suppressed

Even though an error occurred due to the misspelled file name, no error message is displayed to the user.

Taking this example one step further, the administrator can have the error messages sent to a log file by including a file path to the `/e` argument. The administrator must provide a log file name and path.

For example

```
gs_put /s /ef:transferlog\tlog.txt f:\corba\hints\dealers.docx c:\nooks\dealers.docx
```

This will send any error messages to the server file `tlog.txt` at the specified path on the `f:` drive. If the file does not exist it will automatically be created.

……. Continued on Next Page

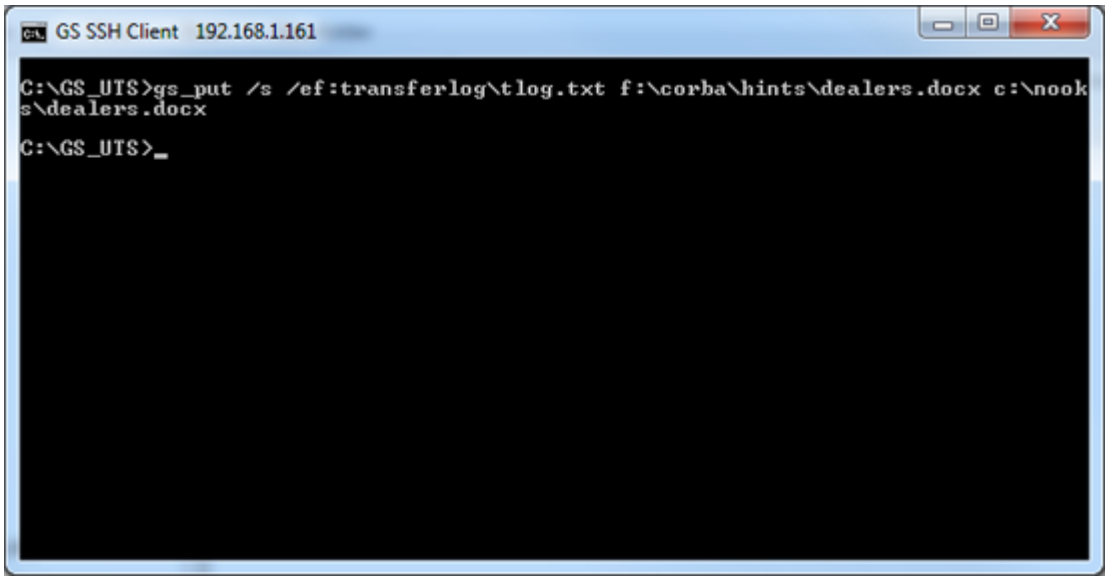


Figure 140: File Transfer - GS_Put - Send Error Messages to a File

A screen shot of the error message in the log file is shown below.

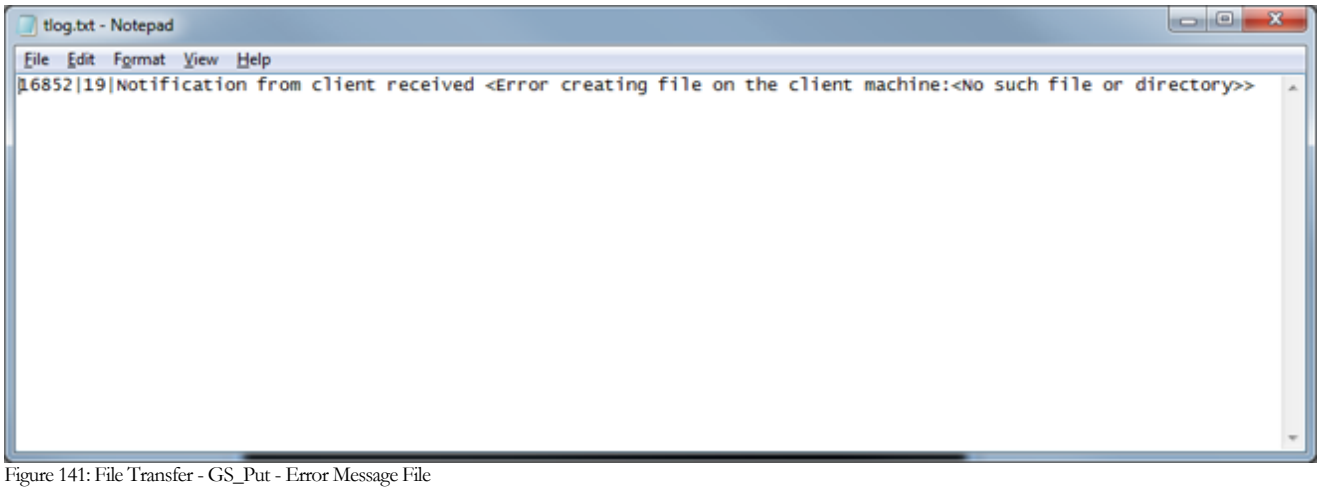


Figure 141: File Transfer - GS_Put - Error Message File

NOTE: You must use the Georgia SoftWorks SSH2/Telnet client to use the GS_PUT file transfer utility.

The gs_put errorlevels are described later in this section (page 271).

GS_GET - Transfer from Client to Server

Efficient file transfers from the Client to the Server computer are easily accomplished when using the Georgia SoftWorks SSH2/Telnet Client.

A utility called GS_GET is included in the SSH2/Telnet server installation directory.

Command: gs_get

Description: Command line utility that copies a file from the Client to the Server Computer.

Syntax: gs_get <source_file_path> <destination_file_path>

Arguments: There are 2 required arguments.

a. <source_file_path> The file path to the file on the client

(Uses Client computer drive letters and directories)

b. <destination_file_path> The file path for the destination on the server

(Uses Server computer drive letters and directories)

Optional Arguments (Please see GS_Put for examples of the optional arguments)

c. /s Silent mode operation for GS_Get

Disables the display of file transfer progress or other non-error information messages to user

d. /e Disable the display of error messages to the user

e. /e[log_file_path]

Disable the display of error messages to the user but send them to the specified file. Use server drive letters.

EXAMPLE - UTILITIES: FILE TRANSFER CLIENT TO SERVER

```
gs_get c:\books\dealers.doc d:\corba\hints\dealers.doc
```

This will copy the file `c:\books\dealers.doc` from the client computer and save it as `d:\corba\hints\dealers.doc` on the server.

NOTE: You must use the Georgia SoftWorks SSH2/Telnet Client to use the GS_GET file transfer utility.

The gs_get errorlevels are described later in this section (page 273).

GS_PUT Error Values

gs_put.exe uses the shell errorlevel variable to report transfer results to the shell. The shell errorlevel variable reports transfer results to the shell. The errorlevel variable is usually used in batch files in automated processing environments.

Error Level	ERROR VALUE	DESCRIPTION
0	ERROR_SUCCESS	Transfer Successful
1	ERROR_SHARED_MEMORY	Transfer aborted: Internal shared memory could not be accessed
2	ERROR_USAGE	Transfer aborted: Command line invalid.
3	ERROR_SOURCE_FILE	Transfer aborted: Source file could not be accessed.
4	ERROR_INFO_SLOT_ENV	Transfer aborted: Internal environment variable was not found.
5	ERROR_INVALID_INFO_SLOT	Transfer aborted: Internal environment variable had invalid value.
6	ERROR_SYNC_OBJECTS	Internal – report to GSW
7	ERROR_GET_MUTEX	Internal – report to GSW
8	ERROR_ABANDONED	Internal – report to GSW
9	ERROR_SET_EVENT	Internal – report to GSW
10	ERROR_OS1	Internal – report to GSW
11	ERROR_OS2	Internal – report to GSW
12	ERROR_WAIT	Internal – report to GSW
13	ERROR_UNEXPECETED_NOTIFICATION	Transfer aborted: Unexpected notification from the agent
14	ERROR_SET_CONTROL_HANDLER	Transfer aborted: The CTRL-C handler could not be set.
15	UNDEFINED	
16	ERROR_INVALID_CLNT	Transfer aborted: Client software is not the GSW Windows Client.
17	ERROR_GET_GSCLNT	Transfer aborted: Client type could not be determined.
18	ERROR_DISK_FULL	Transfer aborted: Disk is full on client.
19	ERROR_STDIO	Transfer aborted: Call to the standard C Library failed
20	ERROR_WIN32	Transfer aborted: WIN32 Subsystem Error
21	ERROR_SYNC	Transfer aborted: Session encountered unrecoverable synchronization errors. User needs to establish a new session before a file transfer can be used again.
22	UNDEFINED	
23	ERROR_TCP_SEND	Transfer aborted: Connection broken during transfer.
24	ERROR_ABORTED_BY_USER	Transfer aborted: User pressed CTRL-C or CTRL-Break
25	ERROR_SESSION_SUSPENDED	Transfer aborted: Session became suspended.

Table 53 - GS_PUT Error Levels

The usage of the *errorlevel* variable in an automated file transfer batch file might have the form:

EXAMPLE - UTILITIES: GS_PUT ERRORLEVEL USAGE IN BATCH FILE

```
@:begin
c:\GS_UTS\gs_put d:\corba\hints\dealers.doc c:\books\dealers.doc
@if errorlevel 25 goto ERROR_SESSION_SUSPENDED
@if errorlevel 24 goto ERROR_ABORTED_BY_USER
@if errorlevel 23 goto ERROR_TCP_SEND
@if errorlevel 21 goto ERROR_SYNC
@if errorlevel 20 goto ERROR_WIN32
@if errorlevel 19 goto ERROR_STDIO
@if errorlevel 18 goto ERROR_DISK_FULL
...
@if errorlevel  3 goto ERROR_SOURCE_FILE
@if errorlevel  2 goto ERROR_USAGE
@if errorlevel  1 goto ERROR_SHARED_MEMORY
@if errorlevel  0 goto ERROR_SUCCESS

@:ERROR_SESSION_SUSPENDED
```

```
@echo ERROR_SESSION_SUSPENDED
@goto exit
@:ERROR_ABORTED_BY_USER
@echo ERROR_ABORTED_BY_USER
@goto exit

@:ERROR_TCP_SEND
@echo ERROR_TCP_SEND
@goto exit

@:ERROR_SYNC
@echo ERROR_SYNC
@goto exit

@:ERROR_WIN32
@echo ERROR_WIN32
@goto exit

@:ERROR_STDIO
@echo ERROR_STDIO
@goto exit

@:ERROR_DISK_FULL
@echo ERROR_DISK_FULL
@goto exit
•••
@:ERROR_SOURCE_FILE
@echo ERROR_SOURCE_FILE
@goto exit

@:ERROR_USAGE
@echo ERROR_USAGE
@goto exit

@:ERROR_SHARED_MEMORY
@echo ERROR_SHARED_MEMORY
@goto exit

@:ERROR_SUCCESS
@echo FILE TRANSFER SUCCESSFUL


@:exit
```

NOTE: An expanded example template of the above example is located in the SSH2/Telnet Server installation folder.

GS_GET Error Values

gs_get.exe uses the shell errorlevel variable to report transfer results to the shell. The shell errorlevel variable reports transfer results to the shell. The errorlevel variable is usually used in batch files in automated processing environments.

Error Level	ERROR VALUE	DESCRIPTION
0	ERROR_SUCCESS	Transfer Successful
1	ERROR_SHARED_MEMORY	Transfer aborted: Internal shared memory could not be accessed
2	ERROR_USAGE	Transfer aborted: Command line invalid.
3	ERROR_TARGET_FILE	Transfer aborted: Target file could not be accessed.
4	ERROR_INFO_SLOT_ENV	Transfer aborted: Internal environment variable was not found.
5	ERROR_INVALID_INFO_SLOT	Transfer aborted: Internal environment variable had invalid value.
6	ERROR_SYNC_OBJECTS	Internal – report to GSW
7	ERROR_GET_MUTEX	Internal – report to GSW
8	ERROR_ABANDONED	Internal – report to GSW
9	ERROR_SET_EVENT	Internal – report to GSW
10	ERROR_OS1	Internal – report to GSW
11	ERROR_OS2	Internal – report to GSW
12	ERROR_WAIT	Internal – report to GSW
13	ERROR_UNEXPECETED_NOTIFICATION	Transfer aborted: Unexpected notification from the agent
14	ERROR_SET_CONTROL_HANDLER	Transfer aborted: The CTRL-C handler could not be set.
15	ERROR_INVALID_CLNT	Transfer aborted: The transfer software is not the GSW Windows Client.
16	ERROR_GET_GSCLNT	Transfer aborted: Client software type cannot be determined.
17	UNDEFINED	
18	ERROR_DISK_FULL	Transfer aborted: Disk is full on client.
19	ERROR_STDIO	Transfer aborted: Call to the standard C Library failed
20	ERROR_WIN32	Transfer aborted: WIN32 Subsystem Error
21	ERROR_SYNC	Transfer aborted: Session encountered unrecoverable synchronization errors. User needs to establish a new session before a file transfer can be used again.
22	UNDEFINED	
23	ERROR_TCP_SEND	Transfer aborted: Connection broken during transfer.
24	ERROR_ABORTED_BY_USER	Transfer aborted: User pressed CTRL-C or CTRL-Break
25	ERROR_SESSION_SUSPENDED	Transfer aborted: Session became suspended.

Table 54 - GS_GET Error Levels

The usage of the *errorlevel* variable in an automated file transfer batch file might have the form:

An example for GS_GET

EXAMPLE - UTILITIES: GS_GET ERRORLEVEL USAGE IN BATCH FILE

```
@:begin
c:\GS_UTS\gs_get %1 %2
@if errorlevel 25 goto ERROR_SESSION_SUSPENDED
@if errorlevel 24 goto ERROR_ABORTED_BY_USER
@if errorlevel 23 goto ERROR_TCP_SEND
@if errorlevel 21 goto ERROR_SYNC
@if errorlevel 20 goto ERROR_WIN32
@if errorlevel 19 goto ERROR_STDIO
@if errorlevel 18 goto ERROR_DISK_FULL
@if errorlevel 16 goto ERROR_GET_GSCLNT
@if errorlevel 15 goto ERROR_INVALID_CLNT

@if errorlevel 14 goto ERROR_SET_CONTROL_HANDLER
```

```
@if errorlevel 13 goto ERROR_UNEXPECTED_NOTIFICATION
@if errorlevel 12 goto ERROR_WAIT
@if errorlevel 11 goto ERROR_OS2
@if errorlevel 10 goto ERROR_OS1
@if errorlevel  9 goto ERROR_SET_EVENT
@if errorlevel  8 goto ERROR_ABANDONED
@if errorlevel  7 goto ERROR_GET_MUTEX
@if errorlevel  6 goto ERROR_SYNC_OBJECTS
@if errorlevel  5 goto ERROR_INVALID_INFO_SLOT
@if errorlevel  4 goto ERROR_INFO_SLOT_ENV
@if errorlevel  3 goto ERROR_TARGET_FILE
@if errorlevel  2 goto ERROR_USAGE
@if errorlevel  1 goto ERROR_SHARED_MEMORY


@if errorlevel 0 goto ERROR_SUCCESS

@:ERROR_SESSION_SUSPENDED
@echo ERROR_SESSION_SUSPENDED
@goto exit

@:ERROR_ABORTED_BY_USER
@echo ERROR_ABORTED_BY_USER
@goto exit

@:ERROR_TCP_SEND
@echo ERROR_TCP_SEND
@goto exit

@:ERROR_SYNC
@echo ERROR_SYNC
@goto exit

@:ERROR_WIN32
@echo ERROR_WIN32
@goto exit

@:ERROR_STDIO
@echo ERROR_STDIO
@goto exit

@:ERROR_DISK_FULL
@echo ERROR_DISK_FULL
@goto exit

@:ERROR_GET_GSCLNT
@echo ERROR_GET_GSCLNT
@goto exit

@:ERROR_INVALID_CLNT
@echo ERROR_INVALID_CLNT
@goto exit


@:ERROR_SET_CONTROL_HANDLER
@echo ERROR_SET_CONTROL_HANDLER
@goto exit
```

```
@:ERROR_UNEXPECTED_NOTIFICATION
@echo ERROR_UNEXPECTED_NOTIFICATION
@goto exit

@:ERROR_WAIT
@echo ERROR_WAIT
@goto exit

@:ERROR_OS2
@echo ERROR_OS2
@goto exit

@:ERROR_OS1
@echo ERROR_OS1
@goto exit

@:ERROR_SET_EVENT
@echo ERROR_SET_EVENT
@goto exit

@:ERROR_ABANDONED
@echo ERROR_ABANDONED
@goto exit

@:ERROR_GET_MUTEX
@echo ERROR_GET_MUTEX
@goto exit

@:ERROR_SYNC_OBJECTS
@echo ERROR_SYNC_OBJECTS
@goto exit

@:ERROR_INVALID_INFO_SLOT
@echo ERROR_INVALID_INFO_SLOT
@goto exit

@:ERROR_INFO_SLOT_ENV
@echo ERROR_INFO_SLOT_ENV
@goto exit

@:ERROR_TARGET_FILE
@echo ERROR_TARGET_FILE
@goto exit

@:ERROR_USAGE
@echo ERROR_USAGE
@goto exit

@:ERROR_SHARED_MEMORY
@echo ERROR_SHARED_MEMORY
@goto exit

@:ERROR_SUCCESS
@echo ERROR_SUCCESS
@goto begin

@:exit
@goto begin
```

Reboot Windows Server computer command line utility.

The System Administrator may need to reboot a Windows system remotely. The Georgia SoftWorks SSH2/Telnet Server provides a command line utility that reboots a Windows computer.

Command: GS_Rbt

Description:

Reboot a Windows computer. The computer will reboot about 40 seconds after the command is executed. GUI users will receive a notification.

Syntax: `Gs_Rbt [Computer]`

Arguments: There is 1 optional argument

> [computer name] - the name of the computer to reboot... If the computer name is omitted then the Windows computer that the command is executed will reboot.

Notes: Administrative privileges are required to run this command.

Warnings: The system administrator must be sure that they want to reboot, as all user sessions will be disconnected.

EXAMPLE - UTILITIES: REBOOT WINDOWS

Reboot the computer soloman

```
Gs_Rbt soloman
```

You will then be prompted with:

```
You have requested to shutdown soloman.

If you continue all applications with unsaved data will be forcibly
closed in 40 seconds.

Do you really want to continue? [Yes/No]
```

You must type either `Yes` or No and press `<enter>`. "Y" or "N" is not valid.

In approximately 40 seconds the Windows computer will reboot.

Shutdown command line utility for Windows

The System Administrator may need to shut down a Windows system remotely. The Georgia SoftWorks SSH2/Telnet Server provides a command line utility that will shut down a Windows computer.

Command: GS_Shutd

Description:

Shutdown a Windows computer. The computer will shut down in about 40 seconds after the command is executed. GUI users will receive a notification.

Syntax: Gs_Shutd [Computer]

Arguments: There is 1 optional argument

> [computer name] - the name of the computer to shut down. If the computer name is omitted then the Windows computer that the command is executed will be shutdown.

Notes: Administrative privileges are required to run this command.

Warnings: The system administrator must be sure that they want to shut down, as all user sessions will be disconnected.

EXAMPLE - UTILITIES: SHUTDOWN WINDOWS SYSTEM

Shutdown the computer soloman

```
Gs_Shutd soloman
```

You will then be prompted with:

```
You have requested to shutdown soloman.

If you continue all applications with unsaved data will be forcibly
closed in 40 seconds.

Do you really want to continue? [Yes/No]
```

You must type either `Yes` or No and press `<enter>`. "Y" or "N" is not valid.

In approximately 40 seconds the Windows Computer will shut down.

Remote Registration Utility

Apply the serial number from a remote location via SSH2/Telnet .

In some instances, you may need to apply the serial number from a remote location. The Georgia SoftWorks Remote Registration Utility provides the capability. This can be done when upgrading to a new version or permanently activating a trial version of the software.

Syntax is:

```
GS_RR serial_number
```

Where `serial_number` is the serial number is obtained from Georgia SoftWorks.

NOTE: You must have SSH2/Telnet connectivity to the server, either during the trial period or an already registered installed copy.

To run the Remote Registration utility:

1. Send the Product ID to Georgia SoftWorks as defined on page 16.
2. Georgia SoftWorks will email or fax the serial number back to you. The serial number will look something like: `D25EEAF8AF1692EB0F9A5DE28520FD8407F8632CC5D8`
3. Connect to the Server via SSH2/Telnet that you want to register.
4. Change to the SSH2/Telnet installation root folder. This is the folder where the SSH2/Telnet server was installed.
5. Run the Remote Registration Utility.

   EXAMPLE - REMOTE REGISTRATION VIA SSH2/TELNET .

   At the command prompt enter:

   ```
   gs_rr D25EEAF8AF1692EB0F9A5DE28520FD8407F8632CC5D8
   ```

   and press <ENTER>.

   You will receive a Banner String followed by three dots. The text wait is displayed while the serial number is being validated.

Upon completion the message "Registration Successful" will be displayed.

Special Bell Processing

Use the GSW GUI Configuration Tool –Global Bell Control see page 393
Or use legacy style below

The Georgia SoftWorks SSH2/Telnet Server can intercept a special character written to the application's screen and send a bell character to the terminal (in the place of the intercepted character). The number of times that the bell will sound is also configurable. The default count is 1. The Special Character, Location and Bell Count, are defined using Registry Values.

Usually the application can identify a normally unused position on the screen that can be used for the placement of the special character.

This location is specified in the registry as described below.

Registry Parameters are located:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters

BellX - column of the bell character, initialized to 0xffffffff, which makes it inactive.

BellY - row of the bell character, initialized to 0xffffffff, which makes it inactive.

BellChar - value of the bell character, initialized to 0x87

BellCnt - value for the number of times that the bell will sound, initialized to 0x01

All four parameters work for all types of clients, including the `gs_admin`. In order to disable the feature: set BellX or BellY to `0xffffffff`.

NOTE 1: `The Special Character will be automatically replaced with a space character on the screen.`

NOTE 2: `The top left screen position is defined as 1,1.`

EXAMPLE - CONFIRM OPERATION OF SPECIAL BELL PROCESSING

Perform these steps for a quick test to verify that the Special Bell Processing is operating. This example is useful for testing purposes.

Objective: The Bell will sound when the character 5 is entered on the 15th column of the 3rd row on the screen.

As indicated above user the registry editor to set values for the BellX to 15 (0f), BellY to 3 (03) and BellChar to '5' (35).

Next start a SSH2/Telnet session. At the command prompt, clear the screen go to 3rd line and start typing character 5 until you get to column 15. When you get to the 15th column you should hear the bell and the digit 5 will not be visible because SSH2/Telnet server will replace it with space.

GSWBELL - Special Bell Processing for SAPConsole

Special Bell processing is available for SAPConsole users.

For expected Bell Operation after Session Saver Reconnects the SAPConsole must be launched via the Gswbell utility. Use the appropriate command for your UTS edition (32-bit or 64-bit)

Command: `gswbell for x86 (32-bit) UTS edition`

Command: `gswbell_x64 for x64(64-bit)UTS edition`

Description:

GSWBell is a command line program that is usually entered in your GSW UTS logon scripts. Please review Logon Scripting. A command line argument is used to specify the SAPConsole. Gswbell will launch SAPConsole.

Syntax: `Gswbell <sapconsole file path>sapcnsl.exe [Sapconsole arguments]`

Arguments: Optional arguments

> Any SAPConsole arguments are simply added to the command line in the format required by the SAPConsole

Notes: Administrative privileges are required to run this command.

EXAMPLE - UTILITIES: GSWBELL FOR SAPCONSOLE

Launch SAPConsole with GSWBell utility

C:\gs_uts\`Gswbell c:\sap\sapcnsl.exe`

TTY Name

The Georgia SoftWorks SSH2/Telnet Server creates a `tty` name on a per session basis. This is available for viewing or use by customer created programs.

The environment variable created is:

`gwtn_tty`

And is set to */dev/ttypmmm*, where *mmm*

represents the socket number (handle) for user's session.

Client Scroll Bars

You may enable scroll bars on the Windows client window. This is accomplished by changing the buffer size for the DOS window. You must be careful that the application can handle a modified buffer size. Unpredictable display results will occur if this is not the case.

For GSW Mobile Client scrollbar options please see page 45.

Setting a Default Domain

Use the GSW GUI Configuration Tool –Global Emulations see page 383
Or use legacy style below

In some instances the System administrator may want to eliminate the prompting for a domain when the user is connecting to the SSH2/Telnet server. This can be accomplished by setting the default domain registry variable. This works for 3rd party clients only. Use the command line parameters to set the default domain for the Georgia SoftWorks SSH2/Telnet Client. (See page 76)

This is accomplished as follows.

The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\Domain

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDIT`
4. Click **OK**
5. Select Registry Key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\GS_Tnet\Parameters\Domain
6. Select the menu item **Edit** and then click on **Modify**
7. Enter the new value for the `Domain` and click **OK**

The new Domain will take effect for all new sessions.

This registry value is initialized to "UNKNOWN" which disables a default domain. The empty string means the default domain. This is equivalent to pressing enter when prompted. This will eliminate prompting for users of all clients.

3rd Party Client - Default Domain Override

The user may override the default domain when using a 3rd party client when connecting via Telnet or SSH. When a default domain is set the GSW UTS does not prompt for the domain and automatically applies the domain set in the registry.

If the user needs to override the default domain, then the optional syntax described below can be used when logging on to the UTS to select a different domain.

The domain can be specified (along with the username) when the user is prompted for the Windows User Name. The domain override syntax is different depending if you are connecting via Telnet or SSH.

TELNET

When connecting via Telnet the syntax is the domain name followed by the backslash followed by the username.

```
domainname\username
```

SSH

When connecting via SSH the syntax is the username followed by the "AT" sign followed by the domain name.

```
username@domainname
```

Setting the Telnet Port or Multiple Ports

The default port for telnet is port 23 and NO configuration is required unless you want to change or add telnet ports.

Note: These features are available for the Telnet Server only.

Use an Alternative Telnet Port.

To use a different telnet port (other than the default) for the GSW Telnet Server you need to create an entry like:

```
gstnet          55555/tcp
```

in the *Services* file on the server and restart the GSW Telnet Server. Replace the 55555 with another port number if necessary. You will have to explicitly specify the alternate port number when starting the connection from 3rd party clients and the Georgia SoftWorks Telnet Client (page 77).

On Windows the services file is located in the directory:

```
<Windows Root>\system32\drivers\etc
```

The file is named *Services*.

Configure Multiple Telnet Ports

The capability exists to configure up to 100 ports for the Georgia SoftWorks Telnet Server to listen on. Use the etc/services file to configure port names[38] **`gstnet1`** through **`gstnet100`**.

The following example will configure 5 Telnet Ports.
Edit the file *Services* file as described above. Add the following entries. Notice that you may use any of the one hundred port names and that they do not have to be in order.

```
gstnet1             23/tcp
gstnet2             14002/tcp
gstnet5             14005/tcp
gstnet6             14006/tcp
gstnet10            14010/tcp
```

Telnet will now listen on the above five ports.

To further take advantage of this feature you can use the environment variable:

```
gwtn_server_port
```

to access the port number associated with your current session.

[38] For backward compatibility `gstnet1` is the same as `gstnet`, `lratnet`, and `telnet`. If `gstnet1` is found then `gstnet`, `lratnet` and `telnet` are not considered.

To view the port number associated with your session at the command prompt enter:

```
echo %gwtn_server_port%
```

If you have multiple telnet ports configured you may want to have a different task process the information that comes in on each port. Here is an example of a logon script which uses the port information to branch to different tasks based on the port number.

```
@if %gwtn_server_port%==23 goto label23
@if %gwtn_server_port%==14002 goto label14002
@if %gwtn_server_port%==14005 goto label14005
@if %gwtn_server_port%==14006 goto label14006
@if %gwtn_server_port%==14010 goto label14010
@echo port not found
@pause
@goto labelend

@:label23
@echo About to run app23
@pause
@rem Put your code to run23 app here
@goto labelend

@:label14002
@echo About to run app14002
@pause
@rem Put your code to run14002 app here
@goto labelend

@:label14005
@echo About to run app14005
@pause
@rem Put your code to run14005 app here
@goto labelend

@:label14006
@echo About to run app14006
@pause
@rem Put your code to run14006 app here
@goto labelend

@:label14010
@echo About to run app14010
@pause
@rem Put your code to run14010 app here
@goto labelend

@:labelend
```

Georgia SoftWorks Java Telnet Applet

Note: This feature applies to the Telnet Server only.

The Georgia SoftWorks Java Client (GSJC) is an applet that allows you to add web-based capabilities to your MS DOS or Win32 Console application. Leverage platform independence for remote access to the Georgia SoftWorks Telnet Server by providing access from the most popular browsers such as MS IE and Netscape.

Allow telnet connectivity from any platform with TCP/IP based connectivity and a Java 1.1 (or higher) enabled browser. This can include platforms ranging from RF Terminals to mainframe computers.

Many of the powerful features found in the standard Georgia SoftWorks telnet client such as Mouse support, DOS Character Mode Color Graphics, excellent keyboard support and client-side printing are now available in the GSJC.

This section contains information which webmasters need to create web pages including the Georgia SoftWorks Java Telnet Client.

Required Java support

Java language 1.1 or higher enabled browser.

The above includes Internet Explorer 4.0 and higher, Netscape Communicator 4.7 and higher.

Required Files for the GSJC.

The Georgia SoftWorks Java Client may be distributed as a .jar file, .cab file, or a set of class files.

Required Files

- `gsjc.jar` - This is the Java archive file for all browsers supporting .jar files. For example: Netscape Communicator or Internet Explorer with the Java Plug-In (JRE 1.2)

OR

- `gsjc.cab` - This is the cabinet file used for Internet Explorer Browsers when Java Plug-In is not used.

Client-Side Printing - All Browsers

Client-side printing requires the Java 1.2 Plug-In (JRE 1.2)
(Unless you are using IE 4.0+)

- Java 1.2 Plug-In - This is required for client-side printing.

Required Files for Client-Side Printing with Internet Explorer 4.0+

If you are using Internet Explorer 4.0 or higher you can simply use the gsjc.cab file INSTEAD of the gsjc.jar and the Java 1.2 Plug-In is not required.

Client-Side Printing Capabilities:

Client-Side Printing is implemented through the print command applet parameter. This parameter specifies the print command that is used locally (client machine) to print the spool file[39]. The print command specified depends on the printing facilities available to your client machine.

For example:
AIX UNIX will use the "lpr" command and
Windows 98 will use the "copy" command and
Windows will use the "print" command.

If the print commands parameter is not specified the behavior is as follows.
Windows will print on the default printer using the print command. Other operating systems will attempt to print using the Java graphics engine (which does not always produce expected results).

The full capabilities that exist with the standard Georgia SoftWorks Telnet Client are available.

[39] The spool file is the "data to print" received from the server.

GSJC Applet parameters

Applet parameters are provided to supply configuration information to the telnet server just as with the standard Georgia SoftWorks Telnet Client. The parameters include:

NOTE: The syntax provided is an example and is different based on the type of browser interpreting the commands.

Optional Parameter: port
Description: host's port to connect to. (see page 296)
Default: Port 23
Syntax : <PARAM NAME=port VALUE="23">

Optional Parameter: user
Description: NT/2000/XP User ID
Default: No default. The user will be prompted (see page 78)
Syntax: <PARAM NAME=user value="Smith">

Optional Parameter: password
Description: Password for NT/2000/XP User ID
Default: No default. User will be prompted (see page 77)
Syntax: <PARAM NAME=password value="mypassword">
Note: Security may be compromised if this parameter is used.

Optional Parameter: domain
Description: NT/2000/XP Domain for the user (see page 77)
Default: No Default, user will be prompted
Syntax: <PARAM NAME=domain value="mydomain">

"" uses the default domain.

Optional Parameter: address
Description: Indicates the address of the host computer to connect.
Default: No default. User will be prompted (see page 73)
Syntax: <PARAM NAME=address value="Host IP Address">

Optional Parameter: useTopLeftLocation
Description: Places the work area in the top left corner of the rectangle specified for the applet.
Default: The default value is FALSE indicating that the work area is centered inside the applet's rectangle.
Syntax: <PARAM NAME=useTopLeftLocation value="True|False">

Optional Parameter: useMSDOSFrame
Description: Specifies if the classic MSDOS frame will be drawn around the work area of the applet.
Default: The default value is TRUE.
Syntax: <PARAM NAME=useMSDOSFrame value="True|False">

Optional Parameter: useBorders
Description: Specifies if borders will be drawn around the applet. FALSE specifies that no boarders shall be drawn and all non-work areas of the applet will be eliminated.
Default: The default value is TRUE.
Syntax: <PARAM NAME=useBorders value="True|False">

Optional Parameter: useBoldFont
Description: Tells the applet to use the bold font.
Default: True
Syntax: <PARAM NAME=useBoldFont value="True|False">

Optional Parameter: bkgColor
Description: Background color for the area around the GSJC Window.
Default: 000080 (This is blue)
Syntax: <PARAM NAME=bkgColor value="000080">
The format is RRGGBB in hex.

Optional Parameter: HBTime
Description: Heartbeat Time in seconds. (see page 156)
Default: 20
Syntax: <PARAM NAME=HBTime value="20">

Optional Parameter: useEncryption
Description: Enables Encryption and forces Login Encryption. (see page 95)
Default: FALSE
Syntax: <PARAM NAME=useEncryption value="true">
Additionally, Complete Date Stream Encryption can be enabled via the logon scripts as per our standard method. (see page 93).

Optional Parameter: printCommand
Description: Specifies the print command used by the client computer in conjunction with Enhanced printing.
Default: NT Systems will use print.exe
Non-NT systems will use java printing through the graphics engine.
Syntax: <PARAM NAME=printCommand value="command.com /C copy ??? lpt1:">

the ??? is a wildcard which will be replaced during printing by the actual print file name. The above example assumes a printer on lpt1. The example works on Win95/98. Please see the Enhanced printing (Page 226) documentation for further examples and details.

Provisioning of the User, Password and Domain parameters by the applet will eliminate prompting for these values by the Georgia SoftWorks Telnet Server.

Sample web page for systems with Java Plug-In installed.

```
<HTML>
<HEAD>
<META NAME="GENERATOR" Content="Microsoft Visual Studio 6.0">
</HEAD>
<BODY>
<OBJECT classid="clsid:8AD9C840-044E-11D1-B3E9-00805F499D93"
  WIDTH=640
  HEIGHT=520
  codebase="http://java.sun.com/products/plugin/1.2/jinstall-12-
win32.cab#Version=1,2,0,0">

  <PARAM NAME=JAVA_CODE VALUE=GSJC.class >
  <PARAM NAME=CABBASE VALUE=GSJC.CAB >
  <PARAM NAME="type" VALUE="application/x-java-applet;version=1.2">

  <PARAM NAME=port VALUE="23">
  <PARAM NAME=user value="test1">
  <PARAM NAME=password value="test1">
  <PARAM NAME=domain value="">
  <PARAM NAME=bkgColor value="008000">
  <PARAM NAME=HBTime value="20">
  <PARAM NAME=useEncryption value="false">

  <COMMENT>
    <EMBED type="application/x-java-applet;version=1.2"
    WIDTH=640
    HEIGHT=520
    CODE=GSJC.class
    archive=gsjc.jar

    port="23"
    user="test1"
    password="test1"
    domain=""
    bkgColor="000080"
    HBTime="20"
    UseEncryption="false"



    pluginspage="http://java.sun.com/products/plugin/1.2/plugin-install.html">
      <NOEMBED>
  </COMMENT>
        No Java support for applet.
      </NOEMBED>
    </EMBED>
</OBJECT>

</BODY>
</HTML>
```

Sample web page for systems with MS IE 4.0 and higher.

```
<HTML>
<HEAD>
<META NAME="GENERATOR" Content="Microsoft Visual Studio 6.0">
</HEAD>
<BODY>

<!-- Insert HTML here -->
      <applet
            code=GSJC.class
            name=GSJC
            width=640
            height=520 >
            <param name=cabbase value=gsjc.cab>
            <param name=port value="23">
            <param name=user value="test1">
            <param name=password value="test1">
            <param name=domain value="">
            <param name=bkgColor value="008080">
            <param name=HBTime value="20">
            <param name=useEncryption value="false">

      </applet>

</BODY>
</HTML>
```

Sample web page for systems with Netscape Communicator.

```
<HTML>
<HEAD>
<META NAME="GENERATOR" Content="Microsoft Visual Studio 6.0">
</HEAD>
<BODY>

<!-- Insert HTML here -->
      <applet
            code=GSJC.class
            name=GSJC
            archive VALUE=gsjc.jar
            width=640
            height=520 >
            <param name=port value="23">
            <param name=user value="test1">
            <param name=password value="test1">
            <param name=domain value="">
            <param name=bkgColor value="008080">
            <param name=HBTime value="20">
            <param name=useEncryption value="false">

      </applet>

</BODY>
</HTML>
```

Sample web page for systems with other browsers.

The page below may be needed for browsers, which do not support cab files and jar files.

```
<HTML>
<HEAD>
<META NAME="GENERATOR" Content="Microsoft Visual Studio 6.0">
</HEAD>
<BODY>

<!-- Insert HTML here -->
      <applet
            code=GSJC.class
            name=GSJC
            width=640
            height=520 >
            <param name=port value="23">
            <param name=user value="test1">
            <param name=password value="test1">
            <param name=domain value="">
            <param name=bkgColor value="008080">
            <param name=HBTime value="20">
            <param name=useEncryption value="false">

      </applet>

</BODY>
</HTML>
```

Applet size

Applet uses size specified through the width and height parameters. The telnet window uses Java's "courier" font of size, which gives best fit for the applet dimensions, specified. Some experimentation may be necessary to get desired appearance.

Georgia SoftWorks Java Telnet Client

Note: This feature applies to the Telnet Server only.

The Georgia SoftWorks Java Telnet Client (GSJC) is a standalone application that allows telnet connectivity to the Georgia SoftWorks Telnet Server without a browser.

Using the Georgia SoftWorks Java Client provides many of the powerful features such as Complete Data Stream Encryption, Mouse support, DOS Character Mode Color Graphics, excellent keyboard support and client-side printing. Additionally, this is accomplished without any web server setup. The client-side parameters are passed from the command line or menu options at the client computer.

Required Java Support

Java language 1.1 or higher.

Required Files for the GSJC.

The following files should be installed in a directory or folder.

Writer.class
Console.class
GetOpt.class
GS_Crypt.class
GS_NullCrypt.class
GS_CryptixCrypt.class
GS_Print.class
GSJC$1.class
GSJC$2.class
GSJC$dlgConnectCancelHandler.class
GSJC$dlgConnectOKHandler.class
GSJC$mniConnectHandler.class
GSJC$mniDisconnectHandler.class
GSJC$mniExitHandler.class
GSJC$mniUseEncryptionHandler.class
GSJC.class
Reader.class
SpChars.class
Telnet.class
Console$1.class
buttons.gif
msdos.gif

Additionally, a path must be set to give access to the `JavaSoft\Jre\1.2\bin` directory or folder.

Invoking the GSJC

For Example: **`java GSJC -utest1 -ptest1 -d. -c -h209.86.40.83`**
Command lines parameters are the same as with the standard Georgia SoftWorks Telnet Client. (See page 77)

Encryption

Encryption requires the use of JRE 1.2 (Java 2) and Cryptix libraries. These are available from Cryptix, which is an international volunteer effort to produce robust, open-source cryptographic software libraries.

Cryptix products are free, both for commercial and non-commercial use and are being used by developers all over the world.

www.cryptix.org

The product required is called Cryptix. JCE was planned for official release in February 2000.
Download the cryptix-jce-20000211.zip from http://www.cryptix.org/products/jce/
After you unzip the cryptix files, copy these two files:

```
cryptix-jce-api.jar
cryptix-jce-provider.jar
```

to your `jre/lib/ext` directory.

Frequently Asked Questions

My MSDOS applications execute very slow, even on a high-performance system. Is there anything I can do?
Yes, you can use the Georgia SoftWorks DOSBOSS to boost the performance of your MSDOS application when running under NT. (Page 109)

Can I use a port other than port 23 for the Telnet Server?
Yes, you can use an alternative port for the Georgia SoftWorks Telnet Server.

Note: This feature applies to the Telnet Server only.
You will need to create an entry like:

```
gstnet          55555/tcp
```

in the *Services* file on the server and restart the GSW Telnet Server. Replace the 55555 with another port number if necessary. You will have to explicitly specify the alternate port number when starting the connection from 3rd party clients and the Georgia SoftWorks Telnet Client (page 77).

On Windows the services file is located in the directory:

<Windows Root>\system32\drivers\etc

The file is named *Services.*

Can I SSH2/Telnet to the SSH2/Telnet server and then SSH2/Telnet to another server?
The short answer is Yes. If you SSH2/Telnet to the GSW SSH2/Telnet Server and you then want to SSH2/Telnet to another GSW SSH2/Telnet server you simply run the gs_clnt.exe/gs_ssh.exe program at the DOS command line. However if you want to SSH2/Telnet to a non-Georgia SoftWorks SSH2/Telnet server you will need a 3rd party DOS client that can be executed from the command line.

Very interesting opportunities exist with this capability. For example, a user may want secure access to their corporate network from remote locations such as a customer site or hotel. They can connect to the GSW SSH Server from the remote site. Once the secure connection has been established to the SSH server, they can now telnet to a telnet server on the corporate network. There are many possibilities mixing and matching this type of arrangement. Remember that you can only use a Telnet client to connect to a Telnet Server and only use a SSH client to connect to a SSH Server.

I can't logon fromSSH2/Telnet, what should I do?
The typical rule is that if you can log in locally to the Windows machine then you can logon from SSH2/Telnet. Make sure that you can logon locally. Users must have "log on Locally" access permissions. From "User Manager" or "User Manager for Domains" choose the menu item "Policies" which is a drop down. From the drop down choose "User Rights". A "User Rights Policy "dialog appears allowing you to add the "Log on Locally" Right for the group.

However, if the local group *Gwtn Users* exists you must be a member of this group to logon via SSH2/Telnet . If you continue to have trouble please see the technical support (page 424) section of this User's Guide to expedite resolution of the issue.

I am the Administrator but gs_admin.exe says I do not have permission to run Session Administrator.
To use the GSW Session Administrator a user must belong to the local group *Gwtn Monitors*. The system administrator must first create the group *Gwtn Monitors*. Next all users allowed to use the Session Administrator must be added to the group. Windows does not instantaneously update the group membership after the user manager is closed. Windows will update the group memberships if you logoff/logon the desktop. In the event that this does not work you may have to restart the Windows server after creating the group and adding users.

I want to set the background color on the client Window and make it distinct from the standard MSDOS Windows.
You need to use the COLOR Command in a logon script. Here is the syntax:

```
COLOR [attr]
```

Sets the default console foreground and background colors.

`attr` Specifies color attribute of console output

Color attributes are specified by TWO hex digits -- the first corresponds to the background; the second the foreground. Each digit can be any of the following values:

0 = Black	8 = Gray
1 = Blue	9 = Light Blue
2 = Green	A = Light Green
3 = Aqua	B = Light Aqua
4 = Red	C = Light Red
5 = Purple	D = Light Purple
6 = Yellow	E = Light Yellow
7 = White	F = Bright White

If no argument is given, this command restores the color to what it was when CMD.EXE started. This value either comes from the current console window, the /T command line switch or from the DefaultColor registry value.

The COLOR command sets ERRORLEVEL to 1 if an attempt is made to execute the COLOR command with a foreground and background color that are the same.

Example: "`COLOR fc`" produces light red on bright white

I want to change the size of the window. The client is set to 80x40 but when it connects to the server it reverts back to 80x25.
The mode command will address this issue.

Mode con[:] [cols=c] [lines=n]

Try putting

```
mode con: LINES=40
```

in your logon script.

How do I eliminate prompting for the various settings when using 3rd party clients?
Environment and registry variables exist such that when defined will be used as defaults eliminating the prompting for those values when connections are established. The environment variables can be set in either Global or Per User Logon Scripts. For a list of the environment variable please see the section on 3rd party clients (page 166) in the User's Guide and/or the section on Environment (page331) and Registry variables (page 334).

Can I eliminate prompting for the Host, UserID and Password?
When using the Georgia SoftWorks SSH2/Telnet Client the Host, User ID and Password can be specified as a command line options. You can modify the command line options by editing the file `GS_SClnt.bat`. Please see page 76 for the section in the User's Guide on

Georgia SoftWorks Desktop Client Command line options.

Can I eliminate prompting for the Domain?
Yes. For all 3rd party clients, a registry variable can be set that will contain the default domain for all connections. This is described on page 282. When using the Georgia SoftWorks SSH2/Telnet client you may use command line options to set the default domain to eliminate prompting. This is described on page 77.

Can I connect from older systems with DOS or Windows 3.1?
Yes, however you must have a 16-bit client. The Georgia SoftWorks SSH2/Telnet Client is 32 bit and requires Windows 95/98 or Windows . Several 16-bit clients can be found on the Internet.

Can I have the user deposited into a specific directory upon connection?

Use the GSW GUI Configuration Tool –User – Login Script see page 406
Or use legacy style below

Yes. You may set the environment variable **gwtn_home_dir** in the logon script on either a global or per user basis.

```
set gwtn_home_dir=d:\users\tom
```

Can I restrict user access to specific directories?
In order to restrict user's access to specific directories you must first make sure that all of your drives use NTFS. Next use Windows Explorer|File|Properties|Security|Permissions to grant or deny access to specific drives, directories, or files.

Is there any way to get the bell to sound on the client?
For customers that have control over the development of their own applications the answer is yes. Please see page 278 for detailed instructions.

Is there any way to get the bell to sound on the client when using SAPConsole after a reconnect?
Please see page 280 for special bell processing utility Gswbell.exe when using SAPConsole.

Can I start and stop services when connected via SSH2/Telnet ?
Yes. The commands "`net start`" and "`net stop`" provide this ability. Please execute the "`net start ?`" or "net stop ?" from a Windows command prompt for the details on the "`net`" commands and parameters.

Can I configure user information when connected via SSH2/Telnet ?
Yes. The commands "`net user ...`", "`net account ...`" etc. provide this capability. Please execute the "`net user ?`" or "`net account ?`" from a Windows command prompt for the details on the "`net`" commands and parameters.

Control-C is not working as expected. What can I do?
Several valid behaviors exist for Control-C. The Georgia SoftWorks SSH2/Telnet Server allows explicit configuration of the behavior for control-c on either a global or per user basis by using the environment variable **gwtn_ctrl_c_mode** (see page 164).

I changed the IP Address of my Server and SSH2/Telnet does not work anymore.
After changing the IP address, you should stop and start the SSH2/Telnet Server. This can be done through the Windows Control Panel. If this does not help you must reboot the server.

I get extra form feeds when printing from certain applications when using the Enhanced Print mode. What can I do?
The client-side printing option *-f* may help suppress additional form feeds. Please see page 80.

How can I print to Portable Printers when I am using SAPConsole?
Using the GSW True Client-Side Printing you CAN print to portable printers when in SAPConsole. Please see page 316.

Why do my print jobs print on somebody else's printer?
It is required that each user be logged in only once for the Enhanced, Open and Pass-through Print methods to operate correctly. That means that each workstation/RF device must use a different User Id when connecting to the server. When a print job for one of these print methods is redirected, the redirection is based on the owner of the print job. The owner is the same as the User Id, thus if more than one User Id is connected then the print job is redirect and the destination selected will at best be random.

I want to modify the polling interval that the gs_agent polls the GwtnPrinerx print queues. Is this possible?

Use the GSW GUI Configuration Tool –User – Power Features - Printing see page 406
Or use legacy style below

Yes. You may set the environment variable `gwtn_local_print_poll_interval` in the logon script on a per user basis.

```
set gwtn_local_print_poll_interval = x
```

Where x specifies the poll interval in seconds with which the gs_agent polls the GwtnPrinterx print queues. Values range from 1 to 10 seconds where the default is 5 seconds.

I am using FoxPro and my system is running out of memory. Upon inspection of the Task Manager I can see that my NTVDMs are consuming all available memory. What should I do?
The solution for many customers is to limit the memory which FoxPro can use per instance. This can be done via the config.fp or config.fpw file. The memory may be limited using the MEMLIMIT command. More information can be found by view Microsoft Knowledge Base article 123281. There is abundant information on this topic on the internet using search engines.

One or more keys are not working properly under VT220 Emulation. Please Advise.

VT220 Terminal Emulators from different vendors may not have standard key mappings.

For each key that does not work please verify that the escape sequence programmed in your terminal emulator matches the table below. Most of the emulators (the program running on your *RF device*, *client PC or terminal*) provide the capability to edit the escape sequence sent when a specific key is pressed.

The table below shows the escape sequences that the GSW SSH2/Telnet Server expects to receive from the terminal running the VT220 emulation.

Georgia SoftWorks SSH2/Telnet Server https://www.georgiasoftworks.com/ Industry Standard VT220 Key Mapping					
	Key Code	**Action**		**Key Code**	**Action**
	ESC [D	Cursor left		ESC O P	F1
	ESC O D	Cursor left		ESC O Q	F2
	ESC [B	Cursor down		ESC O R	F3
	ESC O B	Cursor down		ESC O S	F4
	ESC [A	Cursor up		ESC [M	F5
	ESC O A	Cursor up		ESC [1 5 ~	F5
	ESC [C	Cursor right		ESC [1 7 ~	F6
	ESC O C	Cursor right		ESC [1 8 ~	F7
	ESC O l	Keypad STAR		ESC [1 9 ~	F8
	ESC O m	Keypad MINUS		ESC [2 0 ~	F9
	ESC O M	Keypad ENTER		ESC [2 1 ~	F10
	ESC O n	Keypad DELETE		ESC [2 3 ~	F11
				ESC [2 4 ~	F12
	ESC O p	Keypad 0_INS		ESC [2 5 ~	SHIFT-F1
	ESC O q	Keypad 1_END		ESC [2 6 ~	SHIFT-F2
	ESC O r	Keypad 2_DOWN		ESC [2 7 ~	SHIFT-F3
	ESC O s	Keypad 3_PAGEDOWN		ESC [2 8 ~	SHIFT-F4
	ESC O t	Keypad 4_LEFT		ESC [K	SHIFT-F5
	ESC O u	Keypad 5		ESC [3 1 ~	SHIFT-F6
	ESC O v	Keypad 6_RIGHT		ESC [3 2 ~	SHIFT-F7
	ESC O w	Keypad 7_HOME		ESC [3 3 ~	SHIFT-F8
	ESC O x	Keypad 8_UP		ESC [3 4 ~	SHIFT-F9
	ESC O y	Keypad 9_PAGEUP		ESC [3 5 ~	SHIFT-F10
	ESC [U	Page down		ESC [3 6 ~	SHIFT-F11
	ESC [6 ~	Page down		ESC [3 7 ~	SHIFT-F12
	ESC [H	Home			
	ESC [1 ~	Home			
	ESC [V	Page up			
	ESC [5 ~	Page up			
	ESC [2 ~	Insert			
	ESC [3 ~	Delete			
	ESC [4 ~	End			
	ESC [Z	Tab Backward			

Table 55 - VT220 Industry Standard Key Mapping

Discussion: Orphaned NTVDM's and Windows SSH2/Telnet Servers

What are NTVDM's and why are they important for Windows SSH2/Telnet Servers?

NTVDM's are Windows Virtual DOS Machines. For Windows to run DOS programs, Windows creates a Windows VDM that provides a DOS environment for the DOS program to reside.

When are NTVDM's created?

When DOS applications are executed a NTVDM is created. A normal SSH2/Telnet scenario is to connect to a Windows system and run a DOS application. Windows will create a NTVDM. This is all fine and normal.

What are Orphaned NTVDM's?

Normally during a SSH2/Telnet session running a DOS application, upon completion of the application the user will exit the application properly. In this situation the NTVDM is properly terminated. However, problems occur when a SSH2/Telnet session running a DOS application abnormally terminates.
The SSH2/Telnet session will normally terminate however the NTVDM will not terminate. This leaves what is called an orphaned NTVDM. Some term this *rouge* or *phantom* NTVDMs or processes.

Why is this a concern?

These *orphaned* NTVDM's are a serious problem to the Windows System. They will start consuming all the processing resources of the Windows system that results in the severe degradation of all other processes on the system. This is not just a slight slowing down of the system but a slowing down to the point of the system being useless by most users' standards. The most common way to clear the NTVDM is to reboot the Windows system. However, if you are skilled you can kill the orphaned processes.

What types of events cause orphaned NTVDM when using SSH2/Telnet?

Any abnormal termination of a client can cause an orphaned NTVDM. One easy way to create an NTVDM with SSH2/Telnet simply to power off the Client PC while running a DOS program via SSH2/Telnet. For example:

1. SSH2/Telnet from a remote Client PC to a Windows System.
2. Run a DOS application. (Such as Edit, Norton Commander etc.).
   At this point a NTVDM is created. You can observe this on the SSH2/Telnet Server by:
   a. Typing Ctrl-Alt-Delete on the server and select the Task List
      1. Select processes and observer the NTVDM that was created.
3. Power down the Client PC.

4. On the SSH2/Telnet Server, observe that the NTVDM is still running. In many cases you will notice that after a few minutes the processing percentage will increase to 90+%.

Having multiple SSH2/Telnet sessions connected running DOS applications when an abnormal termination occurs can exacerbate this problem.

Frequent scenarios for abnormal terminations

1. Power Failure for Client PC.
    1. Power Hit in building
    2. Breaker trip, Client PC or Power strip accidentally unplugged
2. Client PC powered down without properly exiting the DOS application
3. Client PC OS locks up
4. Link Failure

What can be done about Orphaned NTVDM's?

The Georgia SoftWorks SSH2/Telnet Server for Windows automatically provides advanced detection and elimination for orphaned NTVDM's. Unlike others that claim to handle this serious problem, the Georgia SoftWorks SSH2/Telnet Server actually detects and eliminates these process consuming tasks in a remarkably quick time minimizing the impact on other users and tasks on the system. The Georgia SoftWorks SSH2/Telnet Client accomplishes detection via the configurable heartbeat timer and third party SSH2/Telnet clients utilize the configurable Server Side Heartbeat Timer. Upon detection sophisticated algorithms are used to identify orphaned NTVDM and eliminate them.

Discussion: PIFs and your MS-DOS application's Performance

Information derived and extracted from the Microsoft Knowledge base.

Windows provides a fully integrated command prompt that enables you to launch both Windows-based and MS-DOS-based applications. Although the concept of running an MS-DOS-based application in a Windows-based environment may be familiar to you, Windows handles this somewhat differently than Windows (16-bit) does.

The essential difference lies in the command prompt itself; under Windows, the command prompt is a 32-bit Windows based application, not the virtual MS-DOS machine you would expect from Windows. Under Windows, until you start an MS-DOS-based application, no virtual MS-DOS machine is created. Furthermore, once you start an MS-DOS-based application, its virtual MS-DOS machine is used for all subsequent MS-DOS-based applications started from the same command prompt.

As in Windows, each MS-DOS-based application can have a program information file (PIF). If there is no PIF for a particular application, the default PIF, _DEFAULT.PIF, is used. Because Windows only uses the PIF from the first application started in any given command prompt, you may need to take special care in the way you start your applications. For example, if you design a PIF that allocates some EMS memory, it is important that you start the associated application first; otherwise, the EMS memory may never be allocated. You may start a Windows command prompt and then run the MS-DOS command, MEM, to see how much memory you have free. Because MEM is another MS-DOS-based application, Windows creates a virtual MS-DOS machine, probably using _DEFAULT.PIF. After MEM finishes, you start the application you created the PIF for. Unfortunately, because _DEFAULT.PIF doesn't instruct Windows to allocate EMS memory, your application reports that it can find no EMS memory. Rechecking the PIF you created does not solve the problem. You need to start another command prompt and then make sure to start your EMS-requiring application first, before you start any other MS-DOS-based applications.

There is one more difference to be aware of: each PIF contains a pointer to AUTOEXEC and CONFIG files. Usually these default to the Windows versions, AUTOEXEC.NT and CONFIG.NT. If you want to change environment variables for your MS-DOS-based applications, you need to point their PIFs to different files or modify the default ones. (To see these files and their locations, run PIF Editor and choose Windows NT.)

If you are not satisfied with the performance of your MS-DOS-based applications on Windows NT, try the following:

Windows keeps the same setting in the property (right click) of the MS-DOS-based applications.

• If the application is in a window and the video display performance is slow, try full-screen mode. Windows “screen folder” provides this setting.
• Disable the Compatible Timer Hardware feature in the _DEFAULT.PIF or the application's program information file (PIF) under the NT-specific section of PIF Editor. Since this feature causes a decrease in performance, it should be used only if it is required to make an application to run with Windows NT. Windows “program folder” under “Windows” section provides this setting.

•If the application is in a window and seems to pause periodically, try disabling Idle Detection in the Advance section of that application's PIF. Windows “misc folder” provides this setting in a form of a slider bar called “idle sensitivity”.

•If the MS-DOS-based application can be configured for printing, choose LPT1, LPT2 over parallel port. Most of the applications use Int17 to print when configured for LPT<x>. If you select parallel port mode, these applications print directly to printer ports. Parallel mode is significantly slower in Windows compared to Windows 3.1.

Vangard Voice Systems AccuSpeech with the GSW UTS

Note: Vangard Voice AccuSpeech® (Mobile) software must be installed and verified to be operational prior to any attempt to configure GSW Windows Clients to use it. Additionally, Vangard Voice AccuSpeech® (Mobile) should be configured to operate in the Half-Duplex mode. Please contact Vangard Voice or authorized party to ensure proper installation and configuration of AccuSpeech® for the application you intend to voice enable. Assistance with Vangard Voice AccuSpeech ca® (Mobile) n be found at 949.435.1001.

Configure Voice Vangard AccuSpeech Recording Mode to Half Duplex

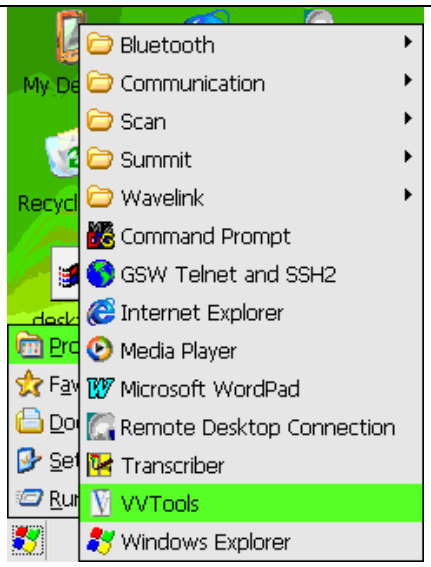


Figure 142: Open VVTools

Figure 143: VVTools - Select Half Duplex

Figure 144: VVTools - Click Register Mode

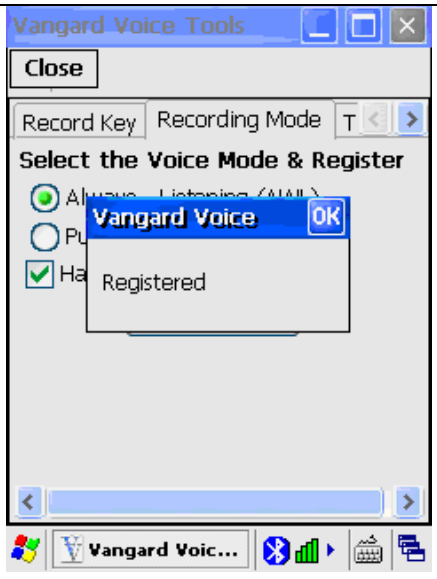


Figure 145: VVTools - Done, Click Close

GSW Mobile Client configuration for Vangard Voice AccuSpeech

GSW UTS Mobile clients support Vangard Voice Systems, Inc AccuSpeech® Mobile on Windows CE and Windows Mobile Operating Systems. Support is enabled by simple GSW Windows Client configuration steps described below. UTS and GSW Mobile client's version 8.04 or higher is required for Vangard Voice AccuSpeech support.

WINDOWS CE CONFIGURATION

When using Windows CE, you will navigate to the correct configuration screen, enable Vangard Voice support and provide the path to the Vangard Voice AccuSpeech® Mobile XML file.

Step 1: Enable Vangard Voice AccuSpeech® Mobile support in the GSW mobile client for Windows CE

On the Windows CE device open the GSW Mobile Client and using the dropdown

select `Session -> Settings`.

GSW Mobile Client for Windows CE

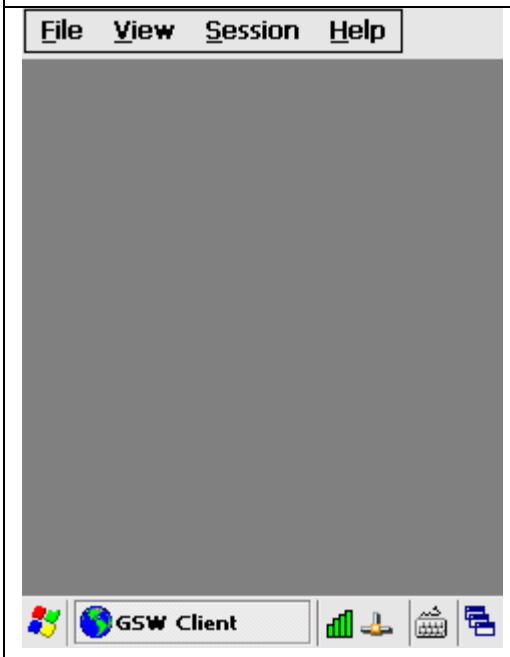


Figure 146: Open GSW Mobile Client for Win CE

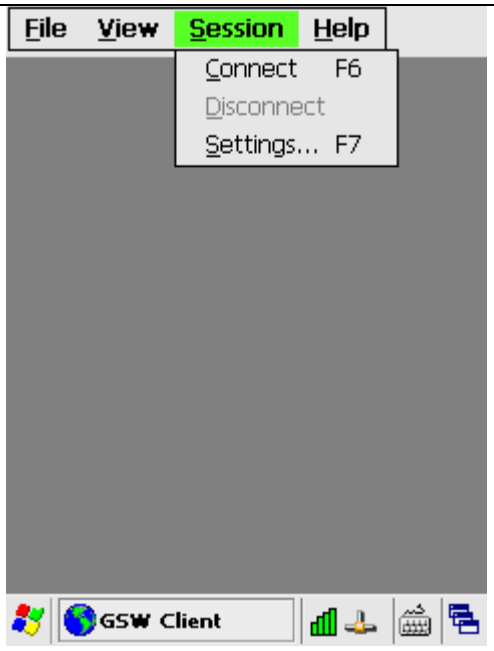


Figure 147: Select Settings to enable Vangard Voice support

Scroll right with arrows and you will see the Vangard Voice Tab. Check enable Vangard Voice

GSW Mobile Client for Windows CE

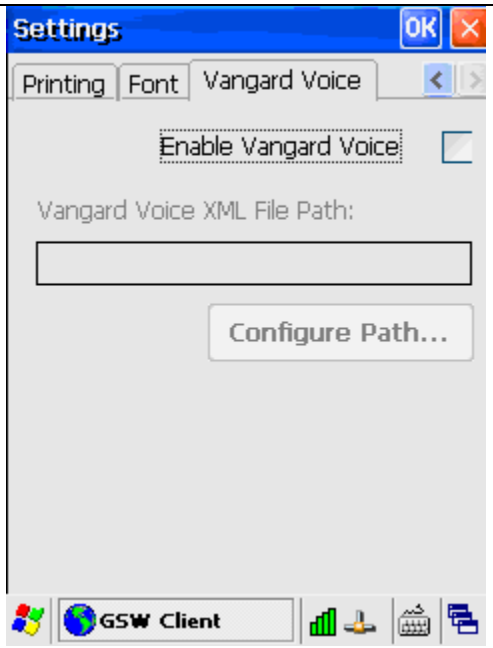


Figure 148: Vangard Voice tab on GSW Mobile Client for Win CE

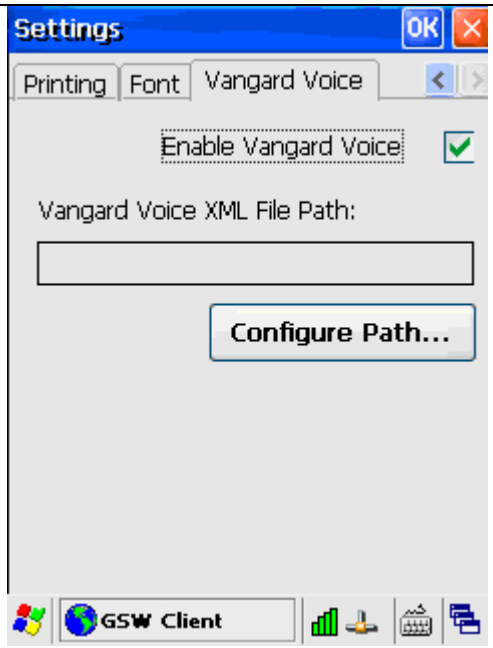


Figure 149: Click the Checkbox to enable

Step 2: Configure the path to the Vangard Voice AccuSpeech® Mobile XML file

Click on Configure Path button.

Browse to the folder where the Vangard Voice AccuSpeech® Mobile XML file is located, specified by Vangard Voice installation. In the example below it is in the Program Files folder and named `SamplApp.xml`. Select the file and click OK.

GSW Mobile Client for Windows CE

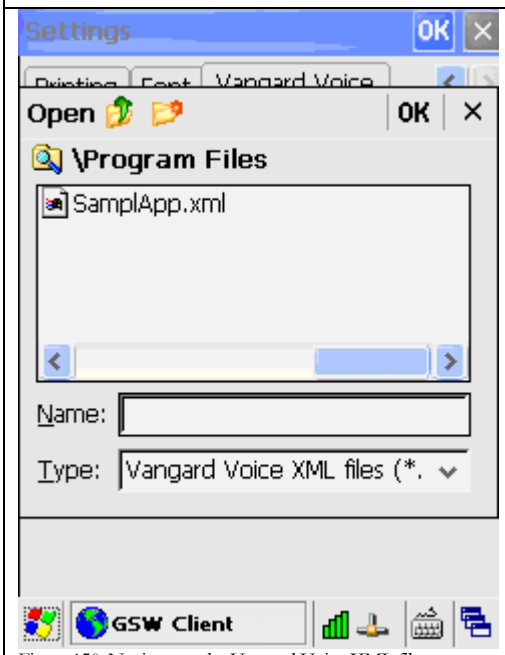


Figure 150: Navigate to the Vangard Voice XML file

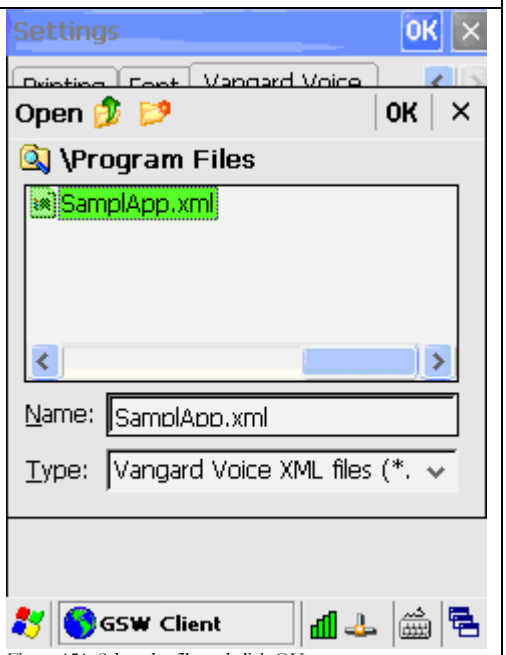


Figure 151: Select the file and click OK

.

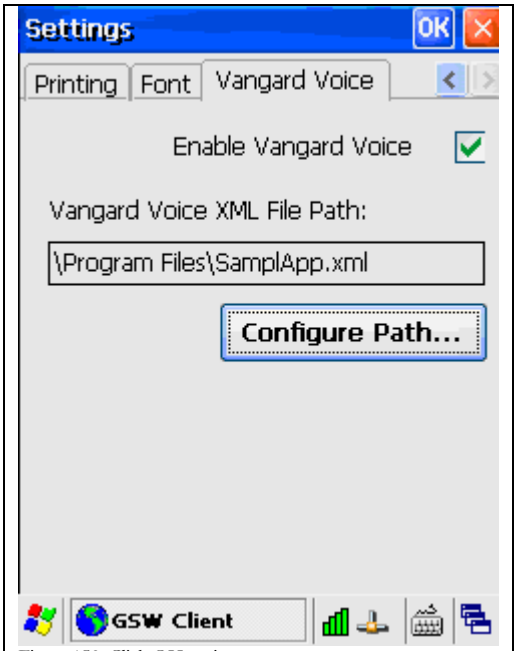


Figure 152: Click OK again

Be sure to save the GSW Mobile client configuration.

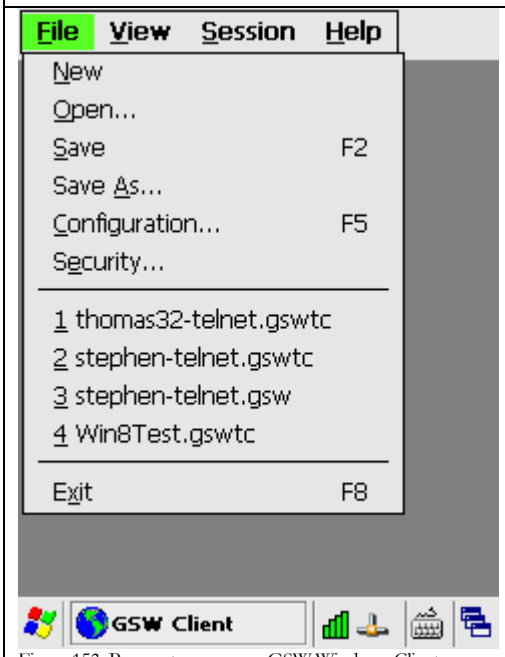


Figure 153: Be sure to save your GSW Windows Client configuration

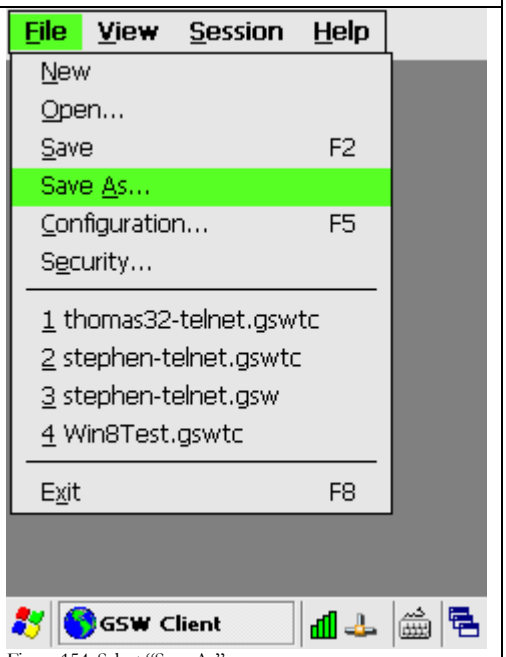


Figure 154: Select "Save As"

Figure 155: Select GSW configuration file name, Click OK

The configuration is completed. Simply connect to the UTS and start talking!

WINDOWS MOBILE CONFIGURATION

To enable Vangard Voice when using the GSW Windows Mobile Client is simply modifying a line in the GSW Windows Mobile configuration file. This is accomplished by first copying the configuration file to a workstation (PC) where editing is easier than on a device. Next, add the Vangard Voice Enabling configuration line. This is done by setting the environment variable VVPath to the path of the Vangard Voice XML configuration file. Then save the file and copy it back to the device.

Step 1: Make sure the GSW mobile client is not running

- Close the client.
- On the Windows Mobile Device – Open Task Manager and stop the GSW Windows Client.

Step 2: Copy the GSW Windows Mobile client configuration file to a workstation.

On the Windows Mobile device open File Explorer and copy the GSW Mobile Client configuration file (which has a `.gswtc` extension and identified by the Globe Icon) to a workstation (PC).

Step 3: Edit the file (in this example it is `named default.gswtc`) using an editor such as notepad.exe to add the path to the Vangard Voice AccuSpeech Mobile XML file (that is located on the device)

The path to the Vangard Voice AccuSpeech Mobile XML file is added to the configuration file in the `Session Section` identified by the word `Session` enclosed in square brackets is `[Session]`. Add the line anywhere in the [Session] section. The path is specified by Vangard Voice installation.

Use the syntax as follows:

Syntax :`VVPath=<file_path>`

`Example: VVPath=\SamplApp.xml`

GSW Mobile Client for Windows Mobile

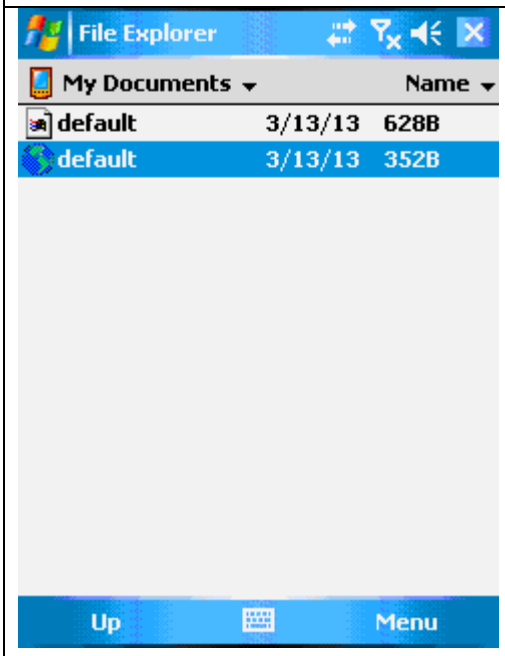


Figure 156: Select the GSW Windows Mobile client configuration file. Note the Globe Icon.

Copy the file to a workstation for editing.

Figure 157: Edit the GSW Mobile Client configuration file.

Copy the file back to the device to the appropriate folder on the device.

The configuration is completed.

Simply make a connection with the GSW Mobile client to the UTS and start talking.

GSW Desktop Client configuration for Vangard Voice AccuSpeech

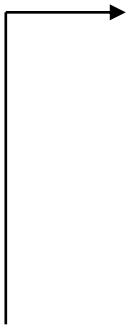
Configuration of the desktop client is easy and requires the addition of a command line parameter that specifies the path to the Vangard Voice XML file. (Learn more about desktop client parameters on page 77)

Notes:

- The UTS and Desktop client version must be 8.04 or greater.
- Vangard Voice runtime must be installed and XML file must reside on the client machine.

Step 1: Open the desktop client batch file

Following is an example for specifying client command line parameters. The *GS SSH2/Telnet Client* shortcut invokes the batch file `GS_SClnt.bat (for Telnet) or GS_SSSH.bat` (for SSH) which in turn launches the Georgia SoftWorks SSH2/Telnet Client. The GS_SClnt.bat and GS_SSSH.bat files reside in the GS_UTS installation directory. The contents of the batch files look as follows.



```
@echo off
:start

@if exist once1.bat do call once1.bat
@if exist once1.bat do del once1.bat

@gs_clnt.exe

@if errorlevel 2 goto copy
@exit

:copy
@copy gs_clnt.new gs_clnt.exe > gsnull.txt

@if exist once2.bat do call once2.bat
@if exist once2.bat do del once2.bat

@goto start
```

The line ***@gs_clnt.exe*** is the line that launches the Georgia SoftWorks Telnet Client. For SSH the client name is **gs_ssh.exe**.

Step 2: Add the command line parameter and save the file

The Command Line Parameter used is:

Add the parameter **-vxml_file_path**

Where

v is the command line parameter to enable Vangard Voice AccuSpeech Mobile support for GSW desktop clients

xml_file_path is full path to the Vangard Voice AccuSpeech XML file

And thus the GS_SClnt.bat file will be modified as shown below adding the command line parameters.

```
@echo off
:start

@if exist once1.bat do call once1.bat
@if exist once1.bat do del once1.bat

@gs_clnt.exe -v"c:\Program Files\Vangard Voice\grammar\testGrammar.xml"
@if errorlevel 2 goto copy
@exit

:copy
@copy gs_clnt.new gs_clnt.exe > gsnull.txt

@if exist once2.bat do call once2.bat
@if exist once2.bat do del once2.bat

@goto start
```

Save the file and desktop client configuration is complete.

SAPConsole with the Georgia SoftWorks Telnet/SSH Server

SSH2/Telnet Connectivity for SAPConsole is not just a Good solution it is the Best Solution!

The speed and efficient bandwidth utilization for telnet/SSH connectivity to Windows cannot be beat! If SAPConsole and SSH2/Telnet Connectivity are important to your business then your only choice is the Georgia SoftWorks SSH2/Telnet Server.

The Georgia SoftWorks SSH2/Telnet Server **IS** the **Industrial Grade SSH2/Telnet** Server for your SAPConsole RF Application.

The reliability, consistency, performance and features of the GSW SSH2/Telnet Server are unequaled and requirements for today's commercial RF Applications.

- Works great out the box with SAPConsole
  - Use the 3rd SSH2/Telnet Client for your hardware
  - If you have Windows Pocket PC 2003 devices then you can use the GSW SSH2/Telnet Client for Pocket PC 2003 class machines.
- Easy to install
- The Georgia SoftWorks Industrial Grade SSH2/Telnet Server for Windows is installed on every continent on the planet (..except Antarctica☺)

You can also obtain the GSW Telnet/SSH Server from SAP/SAPConsole Experts who can assist with your decision process. See our web site for more information.

This special section contains information on:

Using the GSW SSH2/Telnet client for Pocket PC 2003, Windows Mobile class devices (Page 32).
How to Print Labels on a Portable Printer using SAPConsole (Page 323)
How to automatically launch SAPConsole from a SSH2/Telnet Session (Page 321)
SAPConsole and the Georgia SoftWorks Rocket Terminal Engine. (Page 330)
SAP User Name displayed when using gs_admin. (Page 322)
SAP Special Bell Processing when used with SAPConsole (page 280)

SAPConsole with the GSW Pocket PC 2003 SSH2/Telnet Client

Configuration Steps for the GSW Pocket PC 2003 SSH2/Telnet Client.

If you are using the GSW SSH2/Telnet Client for Pocket PC 2003, Windows Mobile class machines then the following configuration steps may be helpful. Installation of the GSW SSH2/Telnet Client on Pocket PC 2003 class is described on page 33 .

1. On the Pocket PC device select one of the following depending on the class of device.

   For Pocket PC 2003: `Start|Programs|GSW SSH2/Telnet`

   This selection will launch the Georgia SoftWorks SSH2/Telnet client.

2. When your run the Georgia SoftWorks SSH2/Telnet client you will be prompted for the connection info as on the picture left below:

Figure 158: SAPConsole - PPC 2003 Configuration. Host Prompt

Figure 159: SAPConsole - PPC 2003 Configuration - Options Screen

3. Click the Options button to verify the connection options.

4. Press the OK button to leave the Options screen.

5. Press the OK button again to accept the connection info and connect to the server.

6. Wait for the Georgia SoftWorks SSH2/Telnet Client to connect to the server.

You should see the SAP logon screen similar to one on the picture below left.

Figure 160: SAPConsole - PPC 2003 Configuration. Logon Screen

Figure 161: SAPConsole - PPC 2003 Configuration - Save Changes

….Continued on next page

7. Use SAP.
   Below is an example of the GSW SSH2/Telnet Client for Pocket PC 2003/Windows Mobile class devices. Notice that the function keys are available as well as proper placement of the text and fields.

Figure 162: SAP - GSW SSH2/Telnet Client for PPC 2003 - Function Keys

8. Quit SAP application.

9. The GSW Pocket Windows Mobile SSH2/Telnet Client will prompt you to save your connection settings so you will not need to reenter them for the next connection. See picture on the right above.

10. Click the 'Yes' button.

11. You will be prompted to select the file name

Figure 163: SAPConsole - PPC 2003 Configuration File Name Prompt

Figure 164: SAPConsole - PPC 2003 Select Configuration Prompt

12. Next time you use the GSW Pocket PC 2003/Windows Mobile SSH2/Telnet Client you will be presented with the screen like the figure on the right above.

13. Simply click on the connection info file and you will get connected.

How to Automatically Launch SAPConsole from A SSH2/Telnet Session

In most instances you will want SAPConsole to automatically launch when the SSH2/Telnet session is connected. This is easily done via the GSW Logon Scripts[40].

For SAPConsole 64-bit:

```
c:

cd "\Program Files\SAP\Console"

sapcnsl
```

For SAPConsole 32-bit:

```
mode con: lines=16 cols=20

c:

cd "\Program Files (x86)\SAP\Console"

sapcnsl
```

If your screen size is not `16x20` then adjust the `mode` statement to correspond to your screen size.

[40] Detailed information on logon scripts can be found on page 205

SAP User Name displayed in GSW Session Administrator.

When using the GSW Rocket Engine (version 1.39.0002 or later), the SAP User Name will be displayed in addition to the Windows user name when using the GSW Session Administrator.

Windows User Name: `luke`

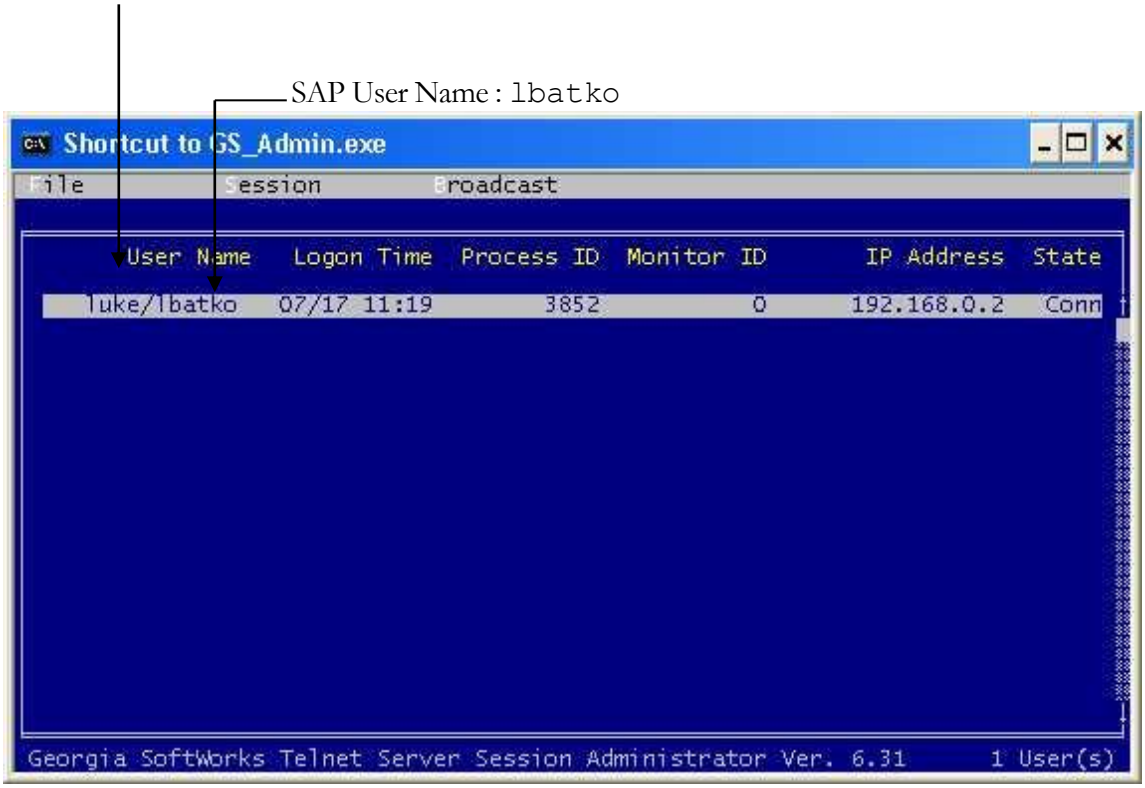


Figure 165: SAP User Name displayed in GSW Session Administrator

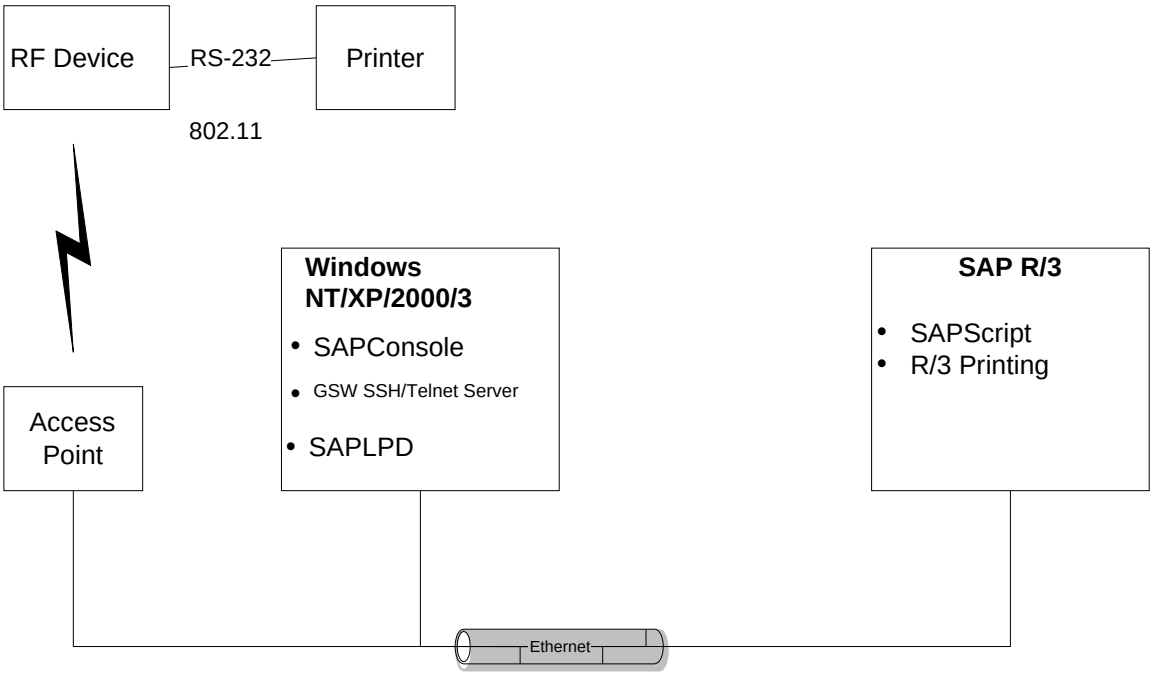
Mobile Device Printing with SAPConsole

One of the limitations of using SAPConsole is an ability to utilize local printers attached to an RF device. Georgia SoftWorks provides a native method of printing to serial (or tethered) printers. Using SAPConsole and the Georgia SoftWorks SSH2/Telnet Server, printing to tethered printers from R/3 becomes possible.

Some important aspects of this solution include:

- No special software is required on the RF device. Most RF emulation clients already support pass though printing.
- No special software is added to SAPConsole or R/3.
- This solution only works with the Georgia SoftWorks SSH2/Telnet Server.
- To utilize mobile printing, a user must have the same username for R/3 andSSH2/Telnet .
- The SSH2/Telnet Server can support each user type, mobile printing and non-printing clients. A different server is not required for RF users that do not require mobile printing.
- Mobile printers are seen by R/3, but are not controlled by R/3 (e.g. offline, paper out, etc.)
- The SAP printing application SAPLPD is required, and should be configured to run as a service on the SAPConsole machine.
- The capability to design labels and the R/3 business logic to print the labels are not part of this particular solution.
- All labels are created using sapscript (or 3rd party software that integrates with sapscript).

SAPConsole Mobile Printing Components



1. SAPConsole
   Standard SAPConsole installed from SAPGUI CD.

2. Georgia SoftWorks SSH2/Telnet Server
   - Configured for local printing.

3. SAPLPD
   - A known method of printing to local client printers that is supported by R/3. SAPLPD is installed by default with SAPGUI on SAPConsole machine.

4. Sapscript
   - All labels printed on a tethered printer are in fact, a sapscript form. Newer methods, such using BAR-ONE for R/3 from Zebra, allow WYSIWYG label designs to be uploaded into a sapscript form. Creating labels this way does not require learning the printer's command language.

5. R/3 Printing
   - Utilizes standard R/3 printing capabilities. All setup is completed in transaction SPAD. To R/3, a tethered printer appears like a local printer attached to the SAPConsole machine.

Configuration Details

Steps To Configuration

1. Install and Configure Georgia SoftWorks SSH2/Telnet Server
2. Configure SSH2/Telnet Server for Mobile printing
3. Configure each SAPConsole user for local printing
4. Install and configure SAPLDP on SAPConsole machine
5. Configure mobile printers in R/3
6. Modify RF device configuration to allow printing
7. Create sapscript form containing barcode label for mobile printer
8. Determine or create R/3 printing logic. (e.g. an R/3 transaction to print label using the proper sapscript form)

Install and Configure Georgia SoftWorks SSH2/Telnet Server

1. Install SSH2/Telnet Server as per instructions in the User's Guide. There are no special installation options for mobile printing.

2. Create a Windows account for each user that will utilize mobile printing. The username **MUST** match the user's SAP R/3 login name.

3. Create "script" subdirectory (e.g. C:\GS_UTS\script\rfuser for user rfuser) and create the k_start.bat (login script) file for each user

Configure SSH2/Telnet Server for Mobile printing

1. Create a "virtual printer" on the SAPConsole machine.

In creating a "Virtual Printer" (or local mobile printer) the key information are the *Printer Name*, the *Share Name* and the P*ort*. The following steps are required to setup the printer:

- Click the **Start** button at the bottom left corner of your screen.
- Select **Settings** then **printers**.
- Double click on Add Printer. (The add printer window opens).
- Select **My Computer** and Click on Next
- Select the lpt1 port. Do NOT enable print pooling. Click Next.
- From the Manufactures list select **Generic**
- From the Printers select **Generic**/**Text Only**. Click Next
- Name your printer **GwtnPrinter1**. NOTE: This name is required. Click Next
- Select Shared and name the printer **GwtnPrinterShare1**. NOTE: This name is required. Click Next
- After the printer is created, double click on the printer icon.
- Pause the printer by selecting the menu item *Printer* and selecting *Pause Printer.* This printer must remain paused at all times. This printer cannot be used by any other service except Georgia SoftWorks Telnet/SSH Server.

Configure each SAPConsole user for local printing

1. Add the following line to each login script (k_start.bat) file for each user requiring mobile printing:

   set GWTN_LOCAL_PRINT_METHOD=SAP

Install and configure SAPLDP on SAPConsole machine

5. SAPLPD is installed automatically when SAPGUI is installed. If it is not already on the SAPConsole machine, it must be installed.

6. Using instsrv.exe and svrany.exe utilities from Windows resource kit configure SAPLPD to run as a service. Two steps are required to run saplpd as a service.

   a. The syntax for using these utilities is as follows:

      instsrv saplpd.exe c:\path\srvany.exe

      Note: the instsrv.exe and saplpd.exe should be in the current directory.

7. Add a registry key. In registry key HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\SAPLPD create a new sub-key named Parameters. In the Parameters key, create a new entry name Application. The value of this field is the part to the saplpd.exe file (e.g. c:\sappc\saplpd.exe).

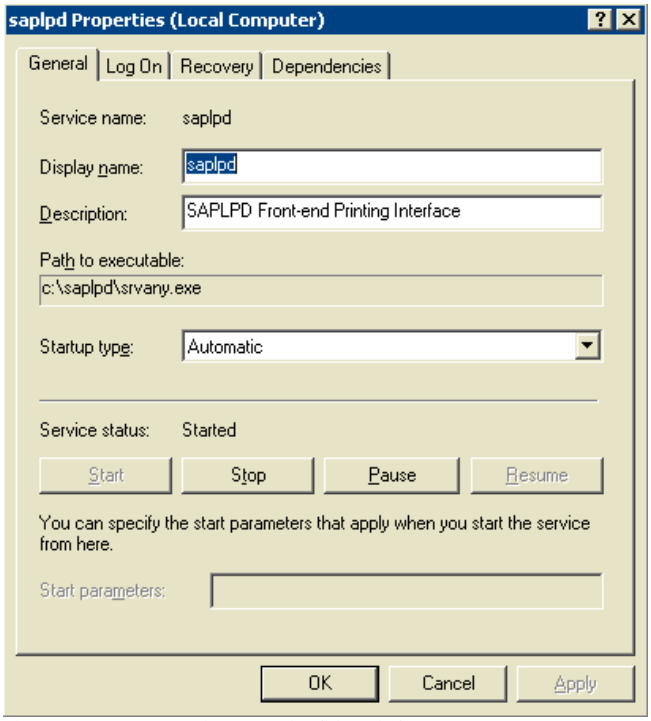


Figure 166: SAPLPD service, properties dialog window

Configure mobile printers in R/3

If all the users use the same printer only one mobile printer needs to be created in R/3. If multiple printers are desired, each printer should use the same "host spool access method" and "destination host" values specified below.

1. Create the mobile printer in R/3 using transaction SPAD

    - The device type should be ASCIIPRI or other device type for the particular printer being used.
    - The "Host spool access method" is set to "Print using SAP protocol" (type S).
    - The "Destination host" is set to the machine running the Georgia SoftWorks SSH2/Telnet Server (This can be network name or IP address). *Note: SAPLPD will need to be running on the host, or the SPAD transaction may not allow creation of the printer.*
    - Set the "Host printer" to GwtnPrinter1
    - Leave all other fields as the default. Do not select cover page or specify tray information

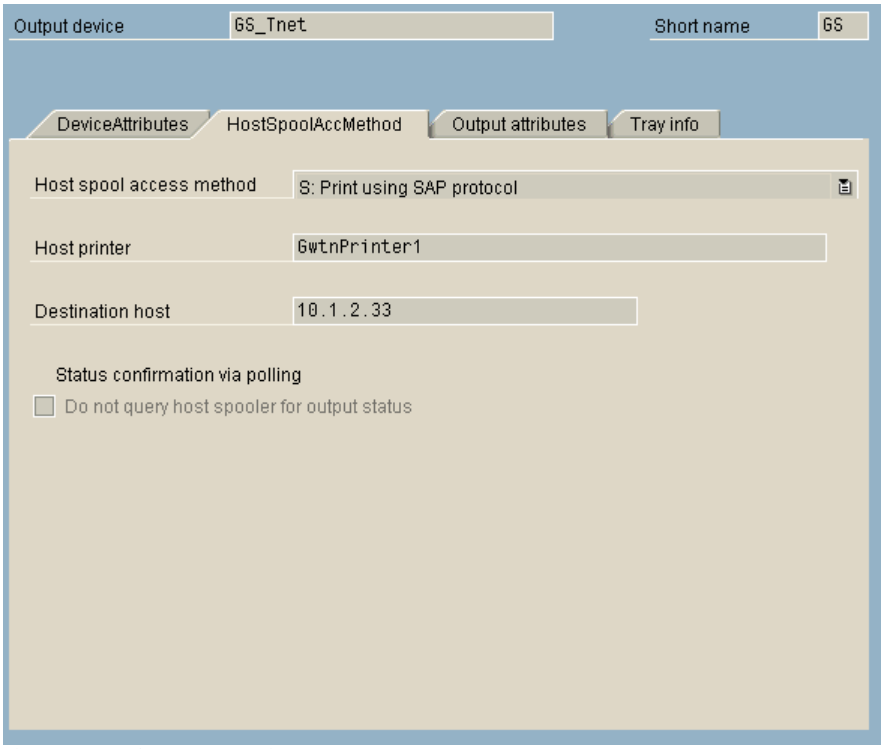


Figure 167: Sample SPAD transaction screen

Modify RF device configuration to allow printing

Each RF device and terminal emulation client has its own configuration to allow printing. Some devices allow more control over printers. For this application, the printer should be "dumb" and the RF device should not intercept or interpret any control characters. Lastly, the serial port parameters must be configured to match the printer's settings.

Create sapscript form containing barcode label for mobile printer

Create SAPScript form for label(s). Either manually or with BAR-ONE for R/3, create sapscript form(s) that represent labels to be printed on mobile printers.

Determine or create R/3 printing logic

This section varies and is left up to each individual organization. At a basic level, a SAPConsole transaction outputs data to a mobile printer defined in R/3. This can be accomplished with or without sapscript.

SAPConsole and the GSW Rocket Terminal Engine.

Maximize your SAPConsole and GSW SSH2/Telnet Server performance while adding important features by obtaining the Georgia SoftWorks Rocket Terminal Engine.

What is the GSW Rocket Terminal Engine?

Answer: The Rocket Terminal Engine is a HIGH-Performance replacement for the SAPConsole VTIO Terminal Engine.

Why do I need a replacement?

Answer: Performance, Savings and Features

Sounds like Sales Talk?

Answer: The benefits are truly outstanding!

Performance:

Very Large number of sessions with expected performance.
Reduce the number of systems required for your application
Enable Application where not possible before

Savings:

Save the price of extra computer(s) hardware.
Save the price of extra computer(s) software
Save the continuing maintenance cost of hardware and software

Powerful and Useful Features such as:

Adjusted Logon Screen Size
Adjusted Logoff screen size
Configurable screen size
Capability to adjust the "Off Screen Fields" back on to the screen
Flexible translation of screen attributes with powerful new options not available in the SAPConsole VTIO Terminal Engine.
Full Support of SAPConsole Profiles

Contact Georgia SoftWorks for more information on the Rocket Terminal Engine!

Contact GSW Sales

Or call
Tel: 706.265.1018

Environment Variables Set by the User

Many environment variables exist for the user's convenience. They are available to use in local and global login scripts to set defaults to eliminate prompting as well as setting values for special uses. The details are described it the appropriate section in the User's Guide however we have included a quick reference list here.

gwtn_backspace_on_delete – Specifies if the delete key performs a backspace action (page 185).

gwtn_color - Sets Color or Monochrome presentation for 3rd party clients (page 170).

gwtn_create_profile – Specifies if a user specific registry hive will be created (page 247).

gwtn_clnt_no_x – Specifies if the GSW Desktop clients display the 'x' in the top-right corner (page 86).

gwtn_ctrl_c_mode - Sets <control-c> behavior (page 164).

gwtn_enable_pseudoconsole–Enables/Disables the "new" Microsoft pseudoconsole.
(Global or Per User) (page 178).

gwtn_enable_send_screen_size_to_3rd_party – Enables/Disables sending screen size to 3rd party clients (Global or Per User) (page 177).

gwtn_enable_session_log – Enables/Disables long format session logging (Global or Per User) (page 216).

gwtn_enable_3rd_party_config_strings – Enables/Disables GSW ConnectBot Device and Client information strings (Global or Per User) (page 385).

gwtn_enable_3rd_party_mouse – Enables/Disables support for 3rdparty mouse operation (Global or Per User) (page 388).

gwtn_encrypt_session – Activates Data Stream Encryption for the session (Global or Per User) (page 93).

gwtn_ff_in_passthrough – Enables/Disables the trailing form feed in pass-through printing (page 241)

gwtn_graphics - Sets the graphics mode for 3rd party clients (page 168).

gwtn_home_dir – Selects the home directory that the User will be deposited into upon connection (page 299).

gwtn_inactivity_timeout – User defined inactivity timeout (page 153).

gwtn_job_control – Specifies to automatically terminate all child processes when a session ends (page 162).

gwtn_log_char_xlat – Log International character translation of UTS-8, GB2312, and Big5 (page 217).

gwtn_local_print_poll_interval – Specifies the poll interval with which the gs_agent polls the GwtnPrinterx print queues. Values range from 1 to 10 seconds where the default is 5 seconds. (page 301)

gwtn_local_print_cmd*x* - Indicates the printing command/index used by the Open Print Method (page 236).

gwtn_local_print_method - Indicated the True Client-Side Printing method chosen (page 226).

gwtn_pp_print_buffer_size – Specifies the print data buffer size for passthrough printing. (page 242).

gwtn_reconnect - Enable Session Saver (page 149).

gwtn_reconnect_timeout - Specifies how long a session will exist in minutes before Graceful Termination will initiate when it is enabled (page 151).

gwtn_serverside_heartbeat – User defined server-side heartbeat for 3rd party clients (page 155).

gwtn_show_console_title – Displays application title on the Georgia SoftWorks SSH2/Telnet Client Window (page 85).

gwtn_term - Sets terminal emulation for 3rd party clients (page 166).

gwtn_tcpwindowsize - Sets the TCP Receive Window Size (page 246).

gwtn_ts_enable_recovery - Sets Team Service Recovery override (page 138).

gwtn_ts_enable_share - Sets the Team Service Share override (page 141).

gwtn_ts_enable_swap - Sets the Team Service Swap override (page 140).

gwtn_ts_enable_transfer - Sets the Team Service Transfer override (page 139).

gwtn_ts_hotkey - Sets the HotKey to enter Team Services (page 143).

gwtn_two_cells_per_uc – Specifies if characters that occupy two-character cells in MS Windows command prompt will occupy two-character cells in 3rd party clients (page 186).

lra_termination - Define the termination string that is sent to an application upon detected failures (page 158).

Environment Variables Set by the Telnet/SSH Server

Many environment variables are set by the SSH2/Telnet server and are available to the User or Programmer.

gwtn_agntpid - Process id of the Agent Process handling the user session.

gwtn_answerback – Answerback text passed from the GSW Client (page 87).

gwtn_client_ip - IP address of the client computer/device.

gwtncl_clnt_side_ip – Client's IP address as seen by the client's device.

gwtncl_*var_name* **–** Where *var_name* is the name of the variable. GSW ConnectBot for Android Device and Client information strings (pages 175, 385).

gwtncl_hal_uuid – Hardware Abstraction Layer Universally Unique identifier. No two devices will have the same gwtncl_hal_uuid.

gwtn_client_mac – MAC (Media Access Control) address of the client computer/device.

gwtn_gsclnt – Set to 1 or 0 depending if a GSW or 3rd Party client is connected. If GSW then the value is 1 otherwise the value is 0

gwtn_hsocket - Socket handle of client session

gwtn_server_port –SSH2/Telnet Port associated with the session (page 284)

gwtn_tty - The Georgia SoftWorks SSH2/Telnet Server creates a `tty` name on a per session basis (page 281).

gsw_uts_root - The installation path for the GSW UTS.

Registry Variables

Many registry variables exist for provisioning the system. Registry variables are an excellent method for the system administrator to configure software as to utilize already learned skills by the system administrator. There is no need to learn yet another interface to provision the software. Here is a list of the registry variables and a brief description of their use. Please see the appropriate section in the User's Guide for complete descriptions.

Almost all Registry values used by the Georgia SoftWorks SSH2/Telnet Server for Windows are stored in the following Registry path. If the registry path is different it will be noted. For SSH Specific Registry settings please see the GSW SSH Server User's Guide.

- `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters`

ActivityLogFileLength - Set the Session Activity Log File Size – For use by GSW Tech Support (page 214).

AgentLogFileLength - Set the Event Log File Size (page 215).

AllowTelnetWithSSH – UTS Protocol selection (page 258)

AltPrefix - Configure a different Alt Prefix (page 172)

BellX - column of the bell character, initialized to 0xffffffff, which makes it inactive (page 279).

BellY – row of the bell character, initialized to `0xffffffff`, which makes it inactive.

BellChar – value of the bell character, initialized to 0x87 (page 279)
BellCnt – number of times the bell will sound, initialized to 0x01 (page 279).

ClntChkTimeout - Server-Side Heartbeat. Set the frequency in seconds which to poll the 3rd party client for presence (page 154).

Domain - Set the default Domain for 3rd Party Clients. This is used to eliminate the prompting for the domain (page 282).

dwLogonTimeout – The maximum time a client is allowed to complete authentication.

Enable3rdPartyCursorSize– Allows applications to control Windows Cursor Size for 3rd party clients.

EnableEncryption – Enables the ability to activate Data Stream Encryption (page 94).

EnableRFC854Clients - Allows/Disallows connection from 3rd Party Clients. (page 100)

EnableNAWS – Enables Negotiate about Windows Size telnet option (page 175).

EnablePseudoconsole – For Windows systems with Windows Terminal installed. Enables Pseudoconsole. Data: 0 is disabled, 1 is enabled. Default is `disabled`. (page 178)

EnableSendScreenSizeTo3rdParty– Allows applications to send the screen size to 3rd party clients. Data: 0 is disabled, 1 is enabled. Default is `Enabled`. (page 177)

ESCDelay - Determine how long to wait for the next character after an escape is received to consider is part of the escape sequence (page 174).

InactivityTimout - Server-Side Inactivity Timer. Set the time in seconds that defines the maximum allowed inactivity period (page 153).

LogonInactivityTimeout – Specifies how long a telnet session will wait for a user to provide credentials before the session is disconnected. The value is in seconds and the default is 150.

LsnOnLoopbackOnly – UTS Protocol selection (page 258)

Max3rdPartyLogonAttempts – Specifies the maximum number of Telnet logon attempts before the session is disconnected. The default is 3.

MaxHeartBeatDelay – Adjusts time interval that the server will wait for the GSW client heartbeat (page 157).

MaxSessions – Limit the total number of sessions for the SSH2/Telnet server (page 101)

Path – Contains the installation path of the UTS. Please note the registry path below.

- `HKEY_LOCAL_MACHINE\SOFTWARE\Georgia SoftWorks\Georgia SoftWorks UTS`

Protocol – Defines the Telnet IP protocol (page 256)

RefreshChar - Defines a character that refreshes the screen. The default is 0x12 (page 250)

RequireEncryptedSession - Restricts connection to only encrypted sessions (page 107)

szProtocol – Defines the SSH IP protocol (page 257)

TSEnableRecovery - Enables/disables Team Services Recovery (page 138)

TSEnableShare - Enables/disables Team Services Share (page 141)

TSEnableSwap - Enables/disables Team Services Swap (page 140)

TSEnableTransfer - Enables/disables Team Services Transfer (page 139)

TSLeftJustify - Enables/disables Left Justification for Team Services dialogs / text (page 142)

TSHotKeyCtrl - Enables/disables requirement for CTRL KEY Team Services Menu (page 143)

TSHotKeyVK - Defines the virtual key code for the Team Services Menu (page 143)

UseGSW_SSHD – UTS Protocol selection (page 258)

Version – Contains the version of the UTS. Please note the registry path below.

- `HKEY_LOCAL_MACHINE\SOFTWARE\Georgia SoftWorks\Georgia SoftWorks UTS`

Configuration Text Files used by the SSH2/Telnet Server

The Georgia SoftWorks SSH2/Telnet server utilizes several ASCII text files for configuration.

banner.txt – Contains text to display to client before the logon prompt (page 260).

colormap.txt – Defines color to monochrome mappings (page 171).

gs_auto.txt – Automatic logon Pre-configuration file for GSW Client (page 111).

gs_ip_rt.txt – IP Based Login Scripting file (page 220).

gs_ipenc.txt – Encryption based of IP address scripting file (page 96).

GS_SClnt.bat – Batch file that launches the GSW SSH2/Telnet Client (page 80).

gs_sssh.bat – Batch file that launches the GSW SSH Client (page 80).

gs_color.txt – Specifies colors to re-map (page 181).

gs_lb.txt – Specifies the IP Addresses of your load balancers. See text file for more detail.

gsw_ldef.txt - Specifies events that maintained in the log file (page 212).

gs_logon.txt – Automatic logon Pre-configuration file for 3rd party clients (page 183).

gs_tinit.txt – Initialization characters to send to 3rd party client. (page 184).

gs_xchar.txt – Character translations definitions when sent to terminal/display (page 183).

thosts – Restrict Access based on IP address (page 98).

gs_l_usr.txt – Limit the number of connections by specific User ID (page 102).

gs_l_ip.txt – Limit the number of Connections from specific IP Addresses (page 104).

tsgroups.txt – Configure Strict Teams for Team Services (page 134).

GSW UTS Configuration Tool

Georgia SoftWorks is pleased to introduce the GSW UTS Configuration Tool. The GSW Configuration Tool provides the user with a Graphical User Interface that is:

Intuitive

- Windows Explorer style tree view allowing you to navigate to the object of interest
- Familiar to use operations such as copy/paste/rename/delete/export/import are applied to configurations on user or system basis
- Easy to identify icons, color and shape coordinated to easy identification

Time Saving

- Create new user configurations by copy/paste
- Create default configurations for objects
- Quickly view the configuration summary data
- Minimizes configuration errors
- Flexible and enhances organization
- Incredible granularity for configuration settings
- Provides templates for storing configurations (Global System and Per User)
- Import/Export of configurations
- Visualize Domain, Domain user, Local User

Powerful

- Administrators have the ability to create multiple configuration templates, providing quick configuration implementation as well as consistency.

Overview

Configuration of the UTS is primarily composed of scripts, registry variables, environment variables, text files and operating system configuration.

The GSW Configuration Tool allows the use of a graphical user interface to set configuration parameters that reside in the registry in addition to creation of folders, scripts and the modification of UTS environment variables. Additionally, the GSW Configuration Tool provides access to text file configurations via notepad.exe.

The UTS Configuration Tool is organized based on either Global or Per Session configuration items.

> **Global** – per system configuration modifies the registry variables or allows editing of text files used for provisioning the UTS. These text files and registry variables are configuration items that are UTS wide in nature and apply to all UTS Users.
>
> **User** – per session configuration sets environment variables or allows editing of text files used for provision the UTS on a per session basis.

Both Global and User configurations provide the capability to create templates. Templates allow the administrator to create configurations and store with names of their choosing. The administrator may want certain configurations for specific locations, departments, users or circumstances. Templates allow the administrator to create and save the various configurations. The saved configuration can simply be copied to the Global Active Configuration (in the per system case) or to the specific User configuration (in the Per User case) when needed. There is no need to reconfigure from scratch or remember all the details each time.

Default configurations can be applied to

- All Users (All Domains, Domain Names, Local Users)
- All Domains
- All Users in a Domain Name
- All Local Users

The administrator can define a default configuration at none, some or all of the objects listed above. If a configuration does not exist for a specific user then the "configuration tree" is traversed to determine if a default configuration exists. The administrator can set a few default configurations for most users and then have specific configurations for specific cases. This minimizes the configuration required and ensures that the proper configuration is used.

Launch the GSW Configuration Tool

From the Start Button, select the Georgia SoftWorks UTS and then select the GSW Configuration Tool.

The initial display will be similar to the figure below.

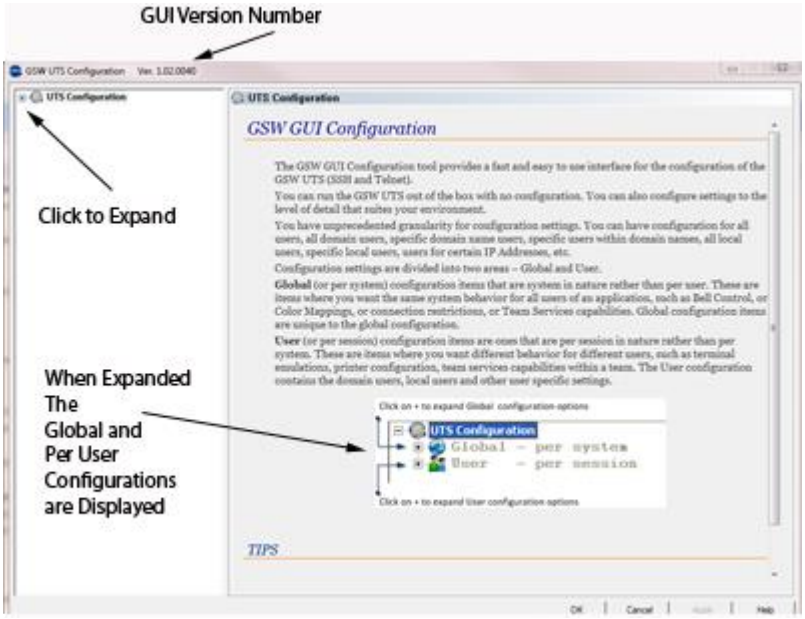


Figure 168: Initial Configuration Screen

Navigating is intuitive and similar to Windows Explorer. Use the mouse and click on the '+' to expand items and the '-' to collapse them.

Global or User objects are displayed on the left pane and context appropriate configuration, status or description is displayed on the right pane.

As you expand items you will notice a variety of icons that are associated with configurable objects from either an organizational or directly configurable viewpoint.

UTS Configuration Tool ICONS

The following table lists each icon and a brief description.

	ICON	DCA[41]	DESCRIPTION
1			Georgia SoftWorks UTS Configuration Tool – tree root.
2			Global – per system UTS Configuration Settings.
3			This icon represents the Active System Configuration for the UTS. Expand to see configurations (property pages[42]) for the Active Configuration.
4			This icon represents all the UTS System Templates. Expand to see all the individual System Templates.
5			This icon represents a specific UTS System Template. The template name is displayed to the right of the icon and the template configuration items (property pages) are available by expanding the object.
6			Configuration Page – (property pages). A configuration object may have several property pages. Property pages may have property pages too.
7			User – per session configuration.
8			Represents ALL users in all domains.
9			Represents ALL users in the specific domain name. Domain name is displayed to right of the icon.
10			A specific User within a specific domain. Expand to see property pages.
11			This icon represents ALL Local Users. Expand to see configurations for each specific local user.
12			This icon represents a specific local user. The user name is displayed to the right of the icon and the specific user configuration is available by expanding the object.
13			This icon represents the default configuration associated with the parent object.
14			This icon represents ALL IP Address/Range based User Configurations. Expand to see configurations for each specific IP Address/Range.
15			The dark IP icon represents a specific IP address/Range based User Configuration. The name of the IP Address/Range configuration is displayed to the right of the icon and the specific IP Address user configuration property pages are available by expanding the object.
16			This icon represents ALL Grandfathered Users. Expand to see configurations for each specific local user.
17			This icon represents a specific Grandfathered User. The user name is displayed to the right of the icon. Expand to see property pages.
18			This icon represents User Templates. Expand to see configurations for each specific user template.
19			This icon represents a specific User Template. The template name is displayed to the right of the icon and the template configuration is available by expanding the object.

[41] DCA – Default Configuration Allowed. Items in this column may have a default configuration that applies to all child objects. If a default configuration is defined, the then black circle with the white check is overlaid in the right corner of the icon.

[42] A Property Page is a screen that allows the administrator to view/edit the configuration (properties) of an item.

GSW UTS Configuration Tool *Right Click* Operations

Navigation within the UTS Configuration Tool offers time saving right-click operations. Different objects have different operations available. Some operations are only available at appropriate times. For example, if an object has a paste operation, it will only be available if a copy has first been performed.

The table below lists the Right Click operations available for Global – per system configuration.

	ICON	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
1	 GSW GUI Root											
2	 Global Configuration Root											
3	 Active Global Configuration	✓	✓			✓	✓					✓
4	 All Global Templates		✓				✓					
5	 Global Template	✓	✓	✓	✓	✓	✓					✓
6	 Property Page	✓	✓									✓

Table 56: UTS Configuration Tool – Global Configuration Right Click Operations

User - per session - *Right Click* Operations

	ICON	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
7	 User - per session										✓	
8	 All Domains								✓		✓	
9	 Specific Domain		✓	✓	✓					✓	✓	
10	 Domain User	✓	✓	✓	✓	✓	✓					✓
11	 All Local Users		✓							✓	✓	
12	 Local User	✓	✓	✓	✓	✓	✓					✓
13	 Default Configuration	✓	✓	✓	✓	✓	✓					✓
14	 All IP Address /Ranges		✓				✓	✓				
15	 IP Address /Range	✓	✓	✓	✓	✓	✓					✓
16	 All Grandfathered Users											
17	 Grandfathered User	✓	✓	✓	✓	✓	✓					✓
18	 All User Templates		✓				✓	✓				
19	 User Template	✓	✓	✓	✓	✓	✓					
	 Property Page	✓	✓									✓

Table 57 - UTS Configuration Tool – User Configuration Right Click Operations

Configuration Tool Tree View Hierarchy

The root of the UTS Configuration tool is identified below in Figure 169

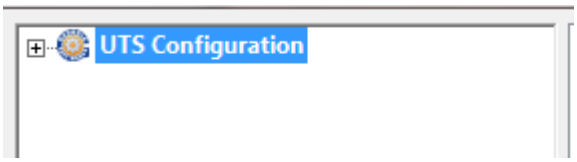


Figure 169: UTS Configuration Tool - Root

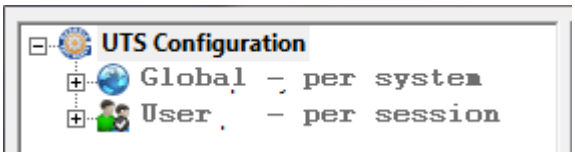


Figure 170: Root Expanded

When expanded the configuration objects for Global and User – per session are displayed as show in Figure 170

UTS Configuration Tool - Root

GSW GUI Root		Georgia SoftWorks UTS Configuration Tool –root.

This is the GSW UTS Configuration Tool root.

Click '+' to expand to see the Global per system and User – per session objects.

Click '-' to collapse

Right Click Operation: None

Property Pages: None

Global – per system

 Global Configuration Root		Global – per system UTS Configuration Settings.

This is the root of the Global – per system UTS configuration object.

Click '+' to expand to see the Active Configuration and the UTS System Templates objects as shown in Figure 171.

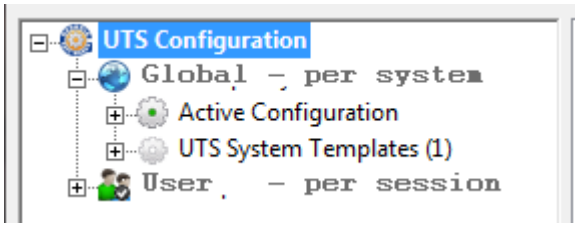


Figure 171: Global - per system expanded

Click '-' to collapse

Right Click Operation: None

Property Pages: None

Active Global Configuration		This icon represents the Active System Configuration for the UTS. Expand to see configurations (property pages) for the Active Configuration.

This is the Active (live) configuration being used for the UTS.

Click '+' to expand to see the configuration (property pages) for the Active Configuration as shown in Figure 172.

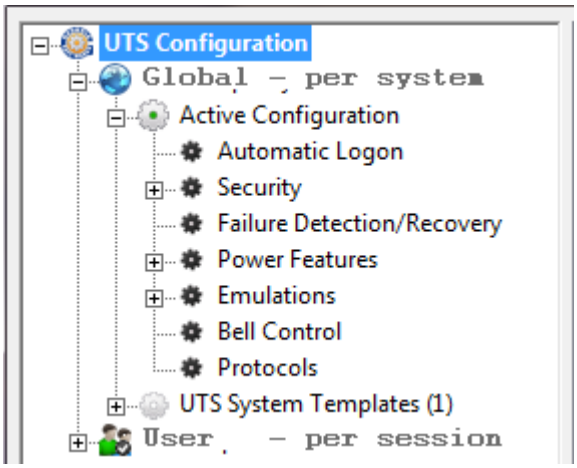


Figure 172: Active Configuration Expanded

Click '-' to collapse

Right Click Operation:

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
Active Global Configuration	✓	✓			✓	✓					✓

Copy: The Active configuration can be copied and pasted to a UTS System Template.

Paste: A copied UTS System Template can be pasted over the Active Configuration. All contents of the Active Configuration are replaced.

Export: The Active configuration can be exported to XML format file. This is useful for backing up the Active configuration or deployment to additional servers.

Import: The Active configuration can be imported from a saved XML file. This is useful for restoring the Active configuration or for deploying additional servers.

UTS System Templates Configuration Root

 All Global Templates		This icon represents all the UTS System Templates. Expand to see all the individual System Templates.

This is the root for the UTS System Templates

Click '+' to expand to see each system template defined. In the example below (Figure 173) there are two templates defined. One named `atlanta_master` and the other is `london_master`.

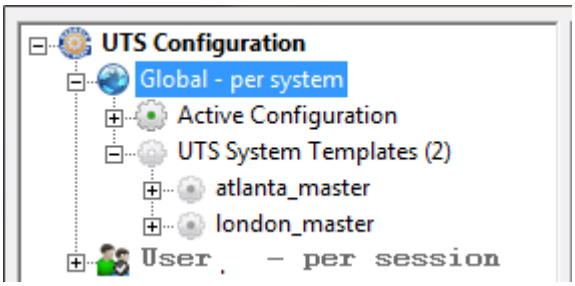


Figure 173: UTS System Templates - Expanded

Click '-' to collapse

Right Click Operation:

		Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
 All Global Templates			✓				✓					

Paste: A copied UTS System Template or Active Configuration can be pasted creating a new UTS System Template.

Import: A xml format file containing a Global – per system configuration can be imported creating a new UTS System Template.

UTS System Template

Global Template		This icon represents a UTS System Template. The template name is displayed to the right of the icon.

This is the root for a specific UTS System Template.

Click '+' to expand to see the property pages for the UTS System Template as show in Figure 174.

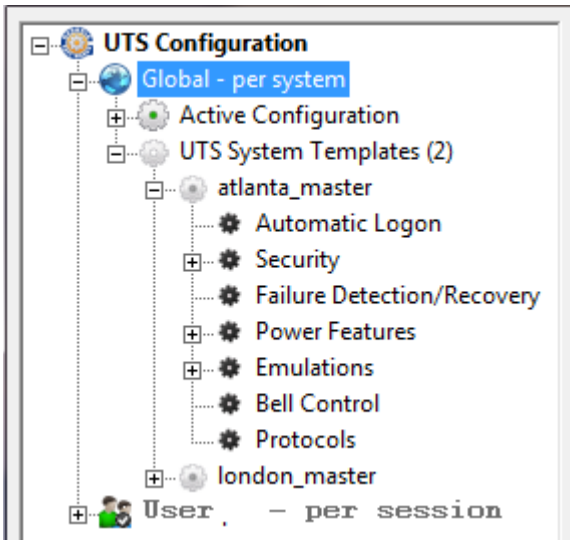


Figure 174: Specific System Template Expanded

Click '-' to collapse

Right Click Operation:

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
Global Template	✓	✓	✓	✓	✓	✓					✓

Copy: The UTS System Template can be copied and pasted to a UTS System Template or Active Configuration.

Paste: A copied UTS System Template or Active Configuration can be pasted over the UTS System Template. All contents of the System Template are replaced.

Rename: Change the name of a UTS System Template.

Delete: Remove the UTS System Template.

Export: The UTS System Template can be exported to XML format file. This is useful for backing up the UTS System Template configuration or deployment to additional servers.

Import: The UTS System Template can be imported from a saved XML file. This is useful for restoring the UTS System Template configuration or for deploying additional servers.

User – per session

User – Per Session configurations are configurations that can apply to a session. The logon script is the fundamental requirement for a User – per session configuration.

 User Per Session		User – per session configuration
		User – per session configuration with a default configuration defined.

This is the root of the User – per session configuration object.

Folder: `[UTS Installation Folder]\scripts`

Click '+' to expand to see the Domains, Local Users, IP Address/Range, Grandfathered Users, User Template objects and default User configuration (if it exists).

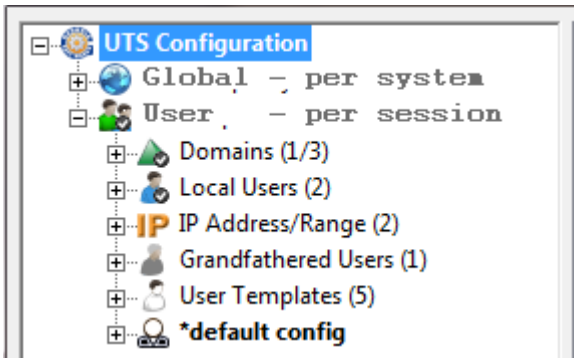


Figure 175: User - per session object expanded

Click '-' to collapse

Right Click Operation: Create Default Configuration

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
 User - per session											

Create Default Configuration:

A default User – per session configuration is created that will apply to any session if that session does not have a specific configuration or one of its parent objects does not have a default configuration.

Domains

 All Domains		Represents ALL users in all domains
		Represents ALL users in all domain with a default configuration defined.

This is the root of the User – per session All Domains configuration object.

Folder: `[UTS Installation Folder]\scripts\DomainUsers`

Click '+' to expand to see the specific Domain Names and the default domains configuration (if it exists). The example below (Figure 176) shows one domain name GSWATLANTA and a default configuration defined.

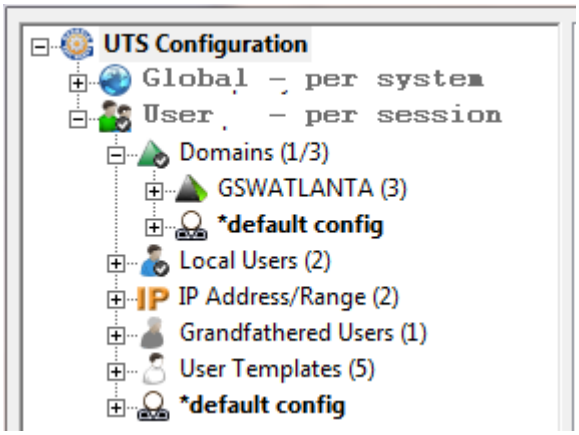


Figure 176: Domains Expanded

Click '-' to collapse

Right Click Operation: Add Domain and Create Default Configuration

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
 All Domains								✓		✓	

Add Domain Name:

Add a Domain Name to the UTS Per-session configuration. This creates a folder with the name specified for the domain[43].

[43] This creates a domain name for the UTS configuration tool only and not for the operating system.

Create Default Configuration:

A default User – per session configuration is created that will apply to any session if that session does not have a specific Domain User configuration or specific Domain Name default configuration.

DOMAIN NAME

 Specific Domain		Represents ALL users in the specific domains
		Represents ALL users in the specific domain with a default configuration defined.

This is the root of the User – per session All Domains configuration object.

Folder: `[UTS Installation Folder]\scripts\DomainUsers\[Domain Name]`

Click '+' to expand to see the specific Domain Name Users and the specific Domain Name default configuration (if it exists).

Click '-' to collapse

Right Click Operation: Paste, Rename, Delete, Add User and Create Default Configuration

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
 Specific Domain		✓	✓	✓					✓	✓	

Add User: Add a User to the UTS Domain Name Per-session configuration. This creates a folder with the name specified for the User.

Paste: Paste a copied User (User name or Template) to this specific Domain Name. This creates a folder with the name specified for the User**.**

Rename: Rename a Domain Name.

Note: If you rename a Domain Name then all associated Domain Users that are connected will get an error. This is because the path to the folder is changed and the running logon script will try to path to the original location. Please make sure that all users are logged off or can safely be disconnected when renaming a domain name. If the Domain Name folder contains User Folders then they are moved to the path associated with the new name.

Delete: Delete a Domain Name.

Note: If you Delete a Domain Name then all associated Domain Users that are connected will get an error. This is because the folder that contains the Domain Name and Domain Users is deleted thus altering the path. The running logon script will try to path to the original location. Please make sure that all users are logged off or can safely be disconnected deleting a domain name.

DOMAIN USER - SPECIFIC

 Domain User		A specific User within a specific domain. Expand to see property pages

This is the User Name for the specific Domain.

Folder: `[UTS Installation Folder]\scripts\DomainUsers\[Domain Name]\[User Name]`

Click '+' to expand to see the property pages for the specific user.

Click '-' to collapse

Right Click Operation: Paste, Rename, Delete, Add User and Create Default Configuration

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
 Domain User	✓	✓	✓	✓	✓	✓					✓

Copy: Copy the User configuration to an UTS copy buffer. This configuration can then be pasted either creating a new User Configuration object or overwriting and existing object.

Paste: Paste a copied User (User name or Template) to this specific Domain Name. This creates a folder with the name specified for the User**.**

Rename: Rename a Domain User[44].

Delete: Delete a Domain User (see footnote 44)

Export: Export the Domain User configuration to a XML formatted file.

Import: Import the Domain User configuration from a XML formatted file.

[44] Make sure that the Domain User is logged off or can safely be disconnected when Deleting or Renaming the User configuration

Local Users

 All Local Users		This icon represents ALL Local Users. Expand to see configurations for each specific local user

This is the root of all Local Users.

Folder: `[UTS Installation Folder]\scripts\LocalUsers`

Click '+' to expand to see the list of Local User Names.

Click '-' to collapse

Right Click Operation: Paste, Add User and Create Default Configuration

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
 All Local Users											

Paste: Paste a copied User (User name or Template) configuration to the Local Users object. This creates a folder with the name specified for the User**.**

Add User: Add a User to the UTS Local User – per session configuration. This creates a folder with the name specified for the User.

Create Default Configuration:

A default Local User – per session configuration is created that will apply to any session if that session does not have a specific Local User configuration.

LOCAL USER - SPECIFIC

 Local User		A specific Local User

This is the User Name for a specific Local User.

Folder: `[UTS Installation Folder]\scripts\LocalUsers]\[User Name]`

Click '+' to expand to see the property pages for the specific user.

Click '-' to collapse

Right Click Operation: Paste, Rename, Delete, Add User and Create Default Configuration

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
 Local User	✓	✓	✓	✓	✓	✓					✓

Copy: Copy the User configuration to an UTS copy buffer. This configuration can then be pasted either creating a new User Configuration object or overwriting and existing object.

Paste: Paste a copied User (User name or Template) to this specific Name. This creates a folder with the name specified for the User**.**

Rename: Rename a User[45].

Delete: Delete a Local User (see footnote 45)

Export: Export the Local User configuration to an XML formatted file.

Import: Import the Local User configuration from an XML formatted file.

[45] Make sure that the Local User is logged off or can safely be disconnected when Deleting or Renaming the User configuration

IP Address/Ranges

IP All IP Address /Ranges		This icon represents ALL IP Address/Range based User Configurations

Folder: `[UTS Installation Folder]\scripts\`

Click '+' to expand to see the specific IP Address/Range logon scripts.

Click '-' to collapse

Right Click Operation: Paste, Rename, Delete, Add User and Create Default Configuration

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
IP All IP Address /Ranges		✓				✓	✓				

Paste: Paste a copied User (User name or Template) to this specific IP Address/Range Logon Script. This creates a folder with the name specified for the IP Address/Range logon script**.**

Export: Export the configuration to an XML formatted file.

Import: Export the User configuration to an XML formatted file

Specific IP Address/Range

IP IP Address /Range		This icon represents a User Configurations that is associated with an IP Address/Range

Folder: `[UTS Installation Folder]\scripts\`

Click '+' to expand to see the property pages for the specific user configuration.

Click '-' to collapse

Right Click Operation: Paste, Rename, Delete, Add User and Create Default Configuration

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
IP Local User	✓	✓	✓	✓	✓	✓					✓

Copy: Copy the User configuration to an UTS copy buffer. This configuration can then be pasted either creating a new User Configuration object or overwriting and existing object.

Paste: Paste a copied Logon Script User (User name or Template) to this specific Name. This creates a folder with the name specified for the Logon Script**.**

Rename: Rename a IP Address/Range Logon Script[46].

Delete: Delete IP Address/Range Logon Script (see footnote 46)

Export: Export the Logon Script User configuration to an XML formatted file.

Import: Import the Logon Script User configuration from an XML formatted file.

[46] Make sure that the Users associated with this IP Address Range are logged off or can safely be disconnected when Deleting or Renaming the IP Address/Range based User configuration

Grandfathered Users

 All Grandfathered Users		This icon represents ALL Grandfathered Users.

This is the root for all Grandfathered Users. Grandfathered users are users defined in a previously installed version (8.02 or earlier) of the UTS. Folders with the name of a user in the scripts folder that contain logon script are considered Grandfathered Users.

Their logon scripts remain in the scripts folder until the administrator moves them to either a Domain User or Local User. Additionally, if the administrator manually creates[47] folder is and logon script in the scripts folder then they will show up as Grandfathered users.

Folder: `[UTS Installation Folder]\scripts\`

Click '+' to expand to see the list of Grandfathered Users.

Click '-' to collapse

Right Click Operation:

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
 All Grandfathered Users											

[47] Using tools such as Notepad.exe and Windows Explorer

GRANDFATHERED USER - SPECIFIC

 Grandfathered User		A specific Local User

This is the User Name for a specific Grandfathered User.

Folder: `[UTS Installation Folder]\scripts\LocalUsers]\[User Name]`

Click '+' to expand to see the property pages for the specific user.

Click '-' to collapse

Right Click Operation: Paste, Rename, Delete, Add User and Create Default Configuration

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
 Grandfathered User	✓	✓	✓	✓	✓	✓					✓

Copy: Copy the user configuration to an UTS copy buffer. This configuration can then be pasted either creating a new User Configuration object or overwriting and existing object.

Paste: Paste a copied User (User name or Template) to this specific Name. This creates a folder with the name specified for the User**.**

Rename: Rename a User[48].

Delete: Delete a User (see footnote 48)

Export: Export the Local User configuration to an XML formatted file.

Import: Import the Local User configuration from an XML formatted file.

[48] Make sure that the Grandfathered User is logged off or can safely be disconnected when Deleting or Renaming the Grandfathered User configuration

User Templates

 All User Templates		This is all user templates. Expand to see list of User Templates

This is the root for all User Templates.

Folder: `[UTS Installation Folder]\scripts\Templates\User\`

Click '+' to expand to see the user templates.

Click '-' to collapse

Right Click Operation: Paste, Import and New

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
 All User Templates		✓				✓	✓				

Paste: Paste a copied User (User name or Template) to this specific User Template. This creates a folder with the name specified for the User Template**.**

Import: Import the User configuration from an XML formatted file.

New: Create a new User Template. This creates a folder with the name specified for the Template.

USER TEMPLATE - SPECIFIC

 User Template		A specific Local User

This is the User Template Name for a specific User.

Folder: `[UTS Installation Folder]\scripts\Templates\User\[Template Name]`

Click '+' to expand to see the property pages for the specific user template.

Click '-' to collapse

Right Click Operation: Paste, Rename, Delete, Add User and Create Default Configuration

	Copy	Paste	Rename	Delete	Export	Import	New	Add Domain	Add User	Create Default Configuration	Contain Property Pages
 User Template	✓	✓	✓	✓	✓	✓					✓

Copy: Copy the User configuration to an UTS copy buffer. This configuration can then be pasted either creating a new User Configuration object or overwriting and existing object.

Paste: Paste a copied User (User name or Template) to this specific Name. This creates a folder with the name specified for the User**.**

Rename: Rename a User Template.

Delete: Delete a User Template.

Export: Export the User Template configuration to an XML formatted file.

Import: Import the User configuration from an XML formatted file.

GUI Migration for Existing Users

For those customers that are used to the pre-GUI method of configuration the UTS you have two options

- Continue to use the legacy UTS configuration

  The advantage to using the legacy configuration is that you do not have to change your methods or procedures for configuring the UTS.

  Additionally, most items the UTS can be configured via SSH and Telnet.

  There are new features that include Domain Names, Grandfathered Users, etc. that can still be fully utilized with the legacy configuration techniques.

- Migrate to the GUI

  The advantage to migrating to the GUI is that you gain all the benefits of the Graphical User Interface including minimal training of new administrators on editing the registry, adding environment variables to scripts etc.

Common Questions about Migrating to the UTS GUI Configuration

1. How much effort is it going to require migrating to the GUI?

   Not much at all. The GUI will come up and run out of the box with no changes. All your existing users will show up as Grandfathered Users. It is recommended that you move the users to either the Local Users or Domain Name Users categories.

2. Can I still configure items the old way after I convert?

   Yes. You can switch back and forth as you desire.

3. Do I have to restart the services after making a change?

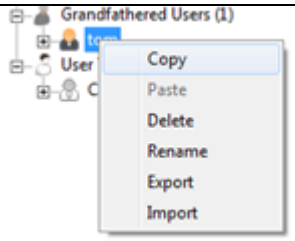
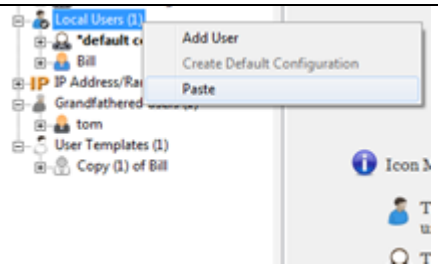
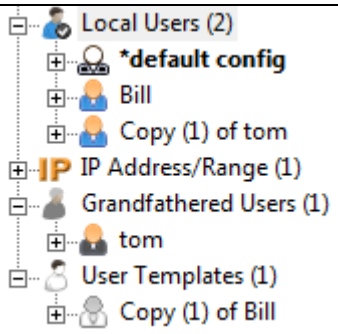
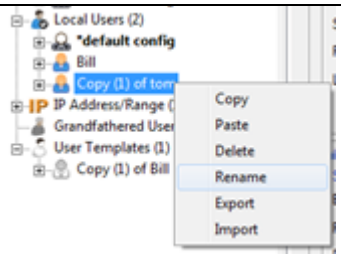
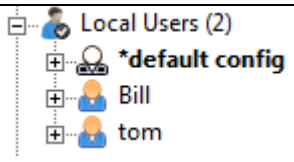
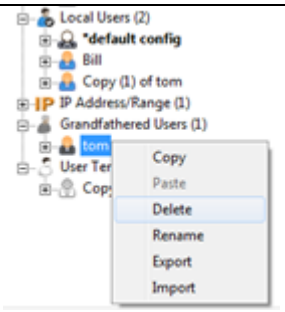
   Yes. If it is a Global – per system configuration item

   No. If it is a User – per session configuration item

Logon Script Migration

Logon scripts (user configurations) created in pre-GUI versions[49] of the UTS will appear under Grandfathered Users in the GUI version. It is recommended to move Grandfathered User configurations to either a Domain User or Local User configuration location.

Example: Move the Grandfathered configuration to a Local User

Right click Grandfathered User configuration "tom" and select copy	Right Click on Local Users and select paste	After pasting the result will show Copy (1) of tom
 Figure 177: Grandfathered User - Copy	 Figure 178: Grandfathered User - Paste	 Figure 179: Grandfathered User - after copy
Right click on "Copy (1) of tom" and select Rename	Type in the new name "tom"	Don't forget to delete the Grandfathered User Tom.
 Figure 180: Local User - Rename	 Figure 181: Local User - After Rename	 Figure 182: Grandfathered User - Delete

The same process is used to move a Grandfathered User to a Domain Name User.

Registry Setting Migration

Registry settings apply to the Global – per system configuration and as such there is no required migration.

Environment Variable Migration

Environment variable settings apply to the User – per session configuration and show up in as part of the Grandfathered Users configuration. They are migrated as described in the Logon Script Migration (see page 363)

[49] Logon scripts created manually in post-gui versions will also show up in the Grandfathered Users

Scripts Folders

The UTS installation folder contains a folder named `scripts`. This folder and its subfolders contain batch files (scripts) for user sessions. Pre-GUI versions of the UTS used subfolders with the User Name to associate the script with the user. Post-GUI versions have three subfolders in the script folder.

- DomainUsers
- LocalUsers
- Templates

DOMAIN USERS

The DomainUsers folder may contain a default configuration (if configured) for all domains. Additionally, subfolders will exist with the name of any domain names configured.

Each Domain Name folder may contain a default configuration (if configured) for all users within that domain name. Additionally, subfolders will exist with the name of each user configured for that domain.

Each user name folder will contain scripts associated with that domain user name.

LOCAL USERS

The LocalUsers folder may contain a default configuration (if configured) for all Local Users. Additionally, subfolders will exist with the name of any local User Names configured.

Each user name folder will contain scripts associated with that local user name.

TEMPLATES

The Templates folder contains two subfolders

- System – contains templates for Global – per system configurations

  Each system template contains an XML file with the name of the template. This can be copied to the active configuration or another system template.

- User – contains templates for User – per session configurations

  Each template will be a logon script (batch file). This script can be copied to any User – per session configuration.

Logon Scripts (Batch Files)

Logon scripts are automatically created with the configuration GUI. A logon script is created each time a User – Per Session *property page*[50] is created. This includes:

-  Domain User
-  Local User
-  IP Address/Range User[51]
-  Grandfathered User[52]
-  User Template
-  Default Configuration

For legacy Logon Script description see page 218

Registry Settings

Registry settings apply to the Global – per system configuration.

The GSW Configuration Tool eliminates the manual configuration of registry through the GUI. One or more registry settings can be accomplished through a single GUI setting.

Environment Variables

Environment variable settings apply to the User – per session configuration.

The GSW Configuration Tool eliminates the manual configuration of environment variables through the GUI. One or more environment variables can be accomplished through a single GUI setting.

Text Files

Text files associated with the Global or User configurations can be accessed through the GUI. The GUI will launch notepad.exe as the editor that allows you to edit and save the text file configurations.

---

[50] A Property page is a screen that allows the administrator to view /edit the configuration (properties) of an item.

[51] IP Address/Ranges are specified by the text file gs_ip_rt.txt that references an existing Logon Script.

[52] Grandfathered Users cannot be created with the GUI. They are automatically created when migrating from a pre-GUI version of the UTS.

Global – Active Configuration

The Global – per system Active Configuration Summary provides the administrator with a quick view of most of the Global – per system configuration settings on the right side of the display. Some configuration values are stored in text files and they can be viewed by clicking on a button to open the text file.

On the left side of the display are categories that organize the Active configuration settings into similar groups.

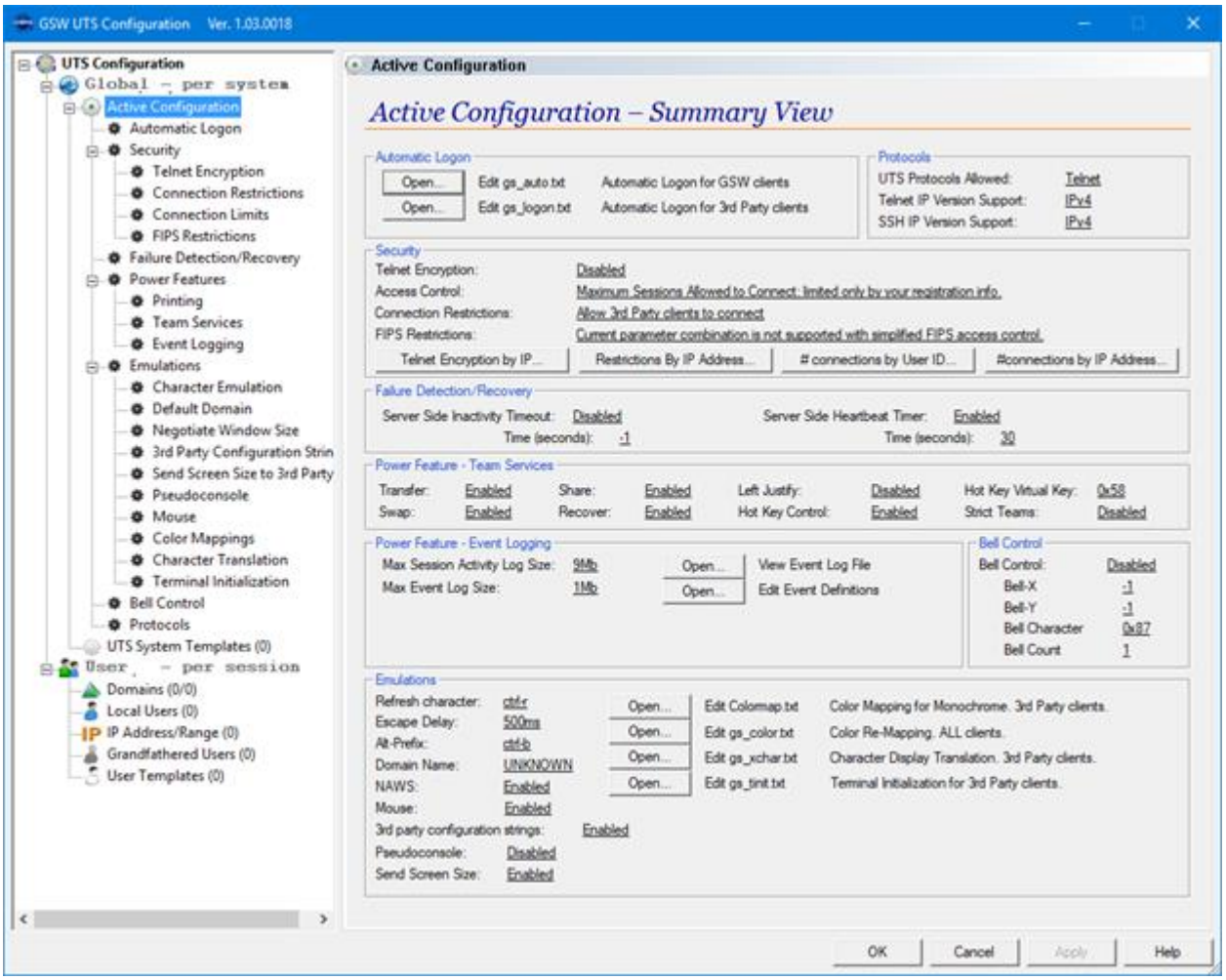


Figure 183: Global - per system Active Configuration Summary View

From the Active Configuration Summary view it is easy to determine which property page to use to edit the configuration setting. Each configuration setting resides within a frame with a label. For example: Automatic Logon is a label on the frame around the configuration settings associated with Automatic Logon. On the left side of the display is the property page icon with Automatic Logon as the name. Clicking on the property page Automatic Logon will display the properties associated with Automatic Logon on the right side of the display.

Similarly, the Failure Detection/Recovery frame on the display on the right contains the configuration settings associated with Failure Detection/Recovery and on the left side of the display is the property page icon with Failure Detection/Recovery as the name. Click on the property page Failure Detection/Recovery will display the properties associated with Failure Detection/Recovery on the right side of the display.

There are a few exceptions to this direct association due to screen space but will still be easy to find.

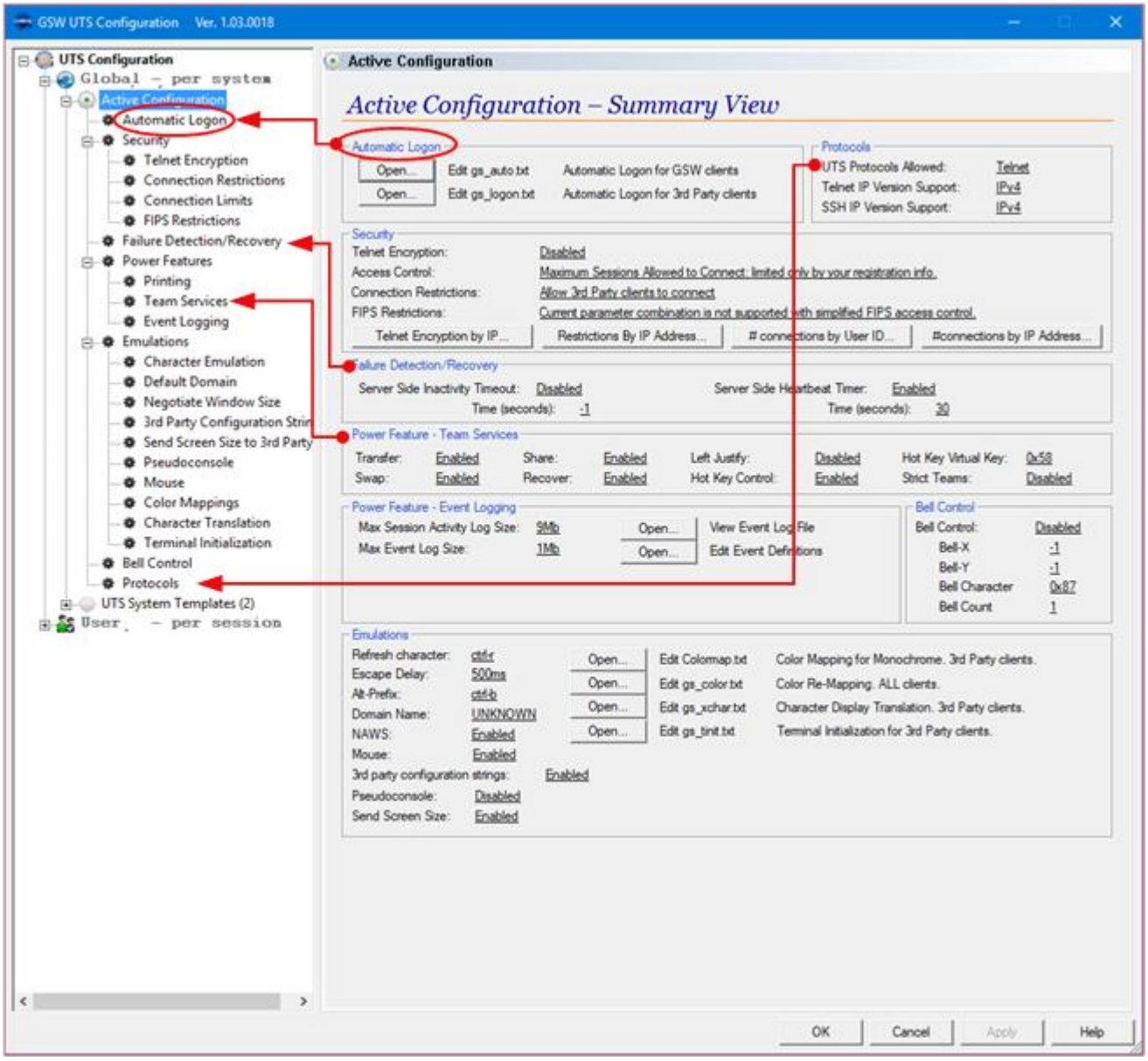


Figure 184: Active Configuration Summary View - Property Page and Frame Relationship

Automatic Logon

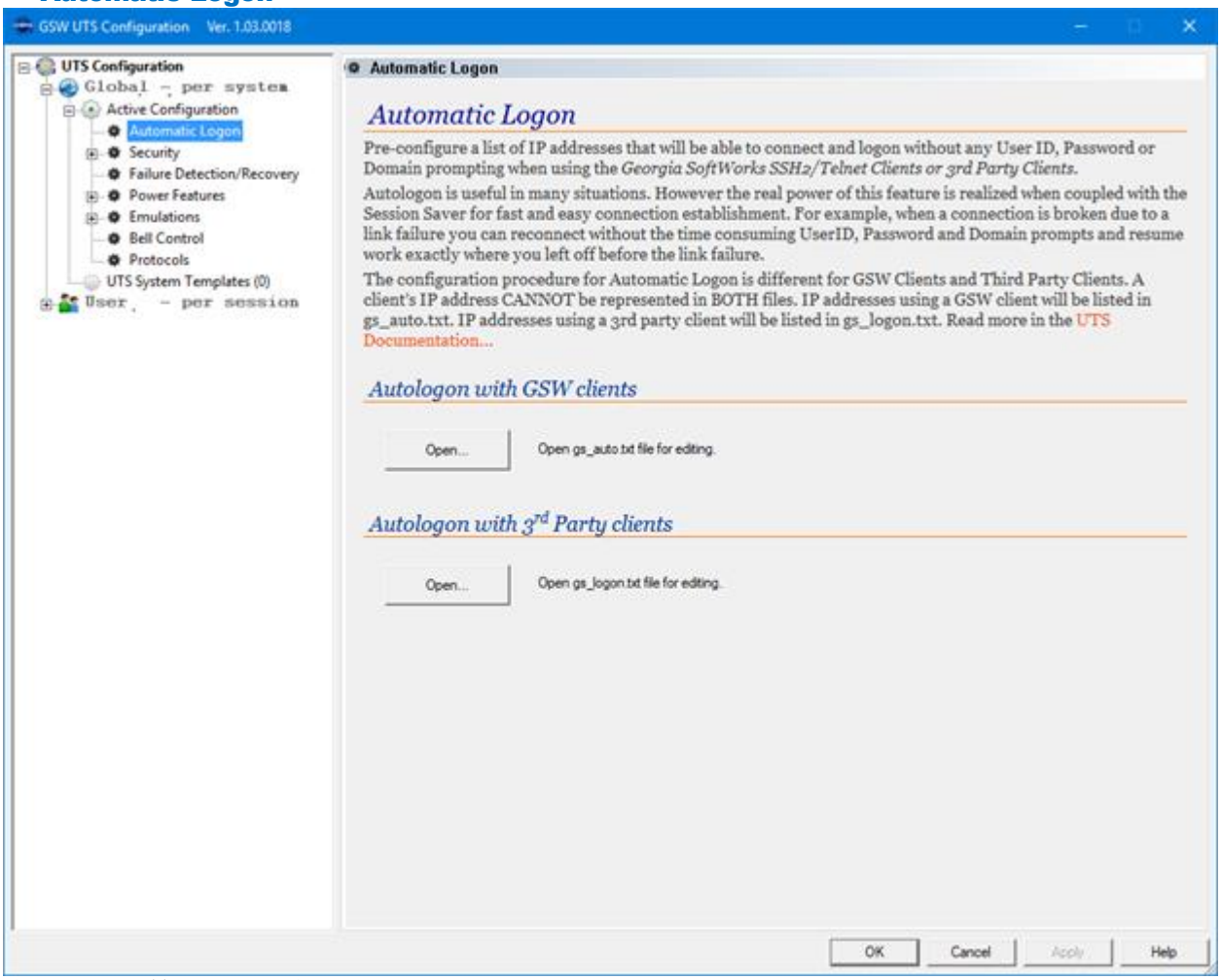


Figure 185: GSW UTS GUI - Automatic Logon

Please see page 111 for details about Automatic Logon.

Security Summary

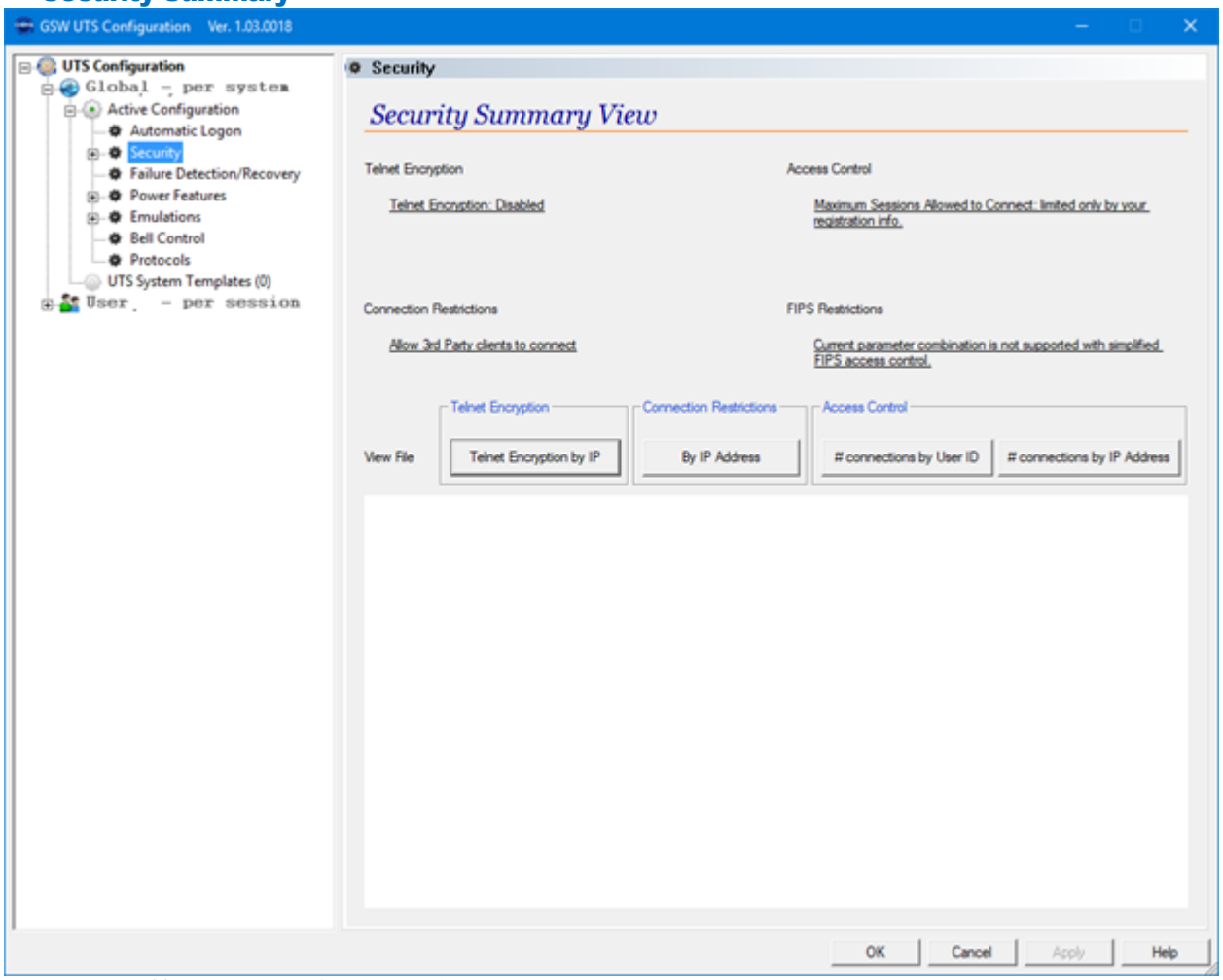


Figure 186: GSW UTS GUI - Active Configuration - Security Summary

The Security Summary View provides a quick view of the:

- Telnet Encryption (See page 93)
- Access Control (98)
- Connection Restrictions (See page 98)
- FIPS Restrictions (See page 97)

and allows viewing of the relevant text files

- Telnet Encryption by IP Address (See page 96)
- Connection Restrictions by IP Address (See page 104)
- Access control for the number of connections by a User ID (See page 102)
- Access control for the number of connections by an IP Address (See page 104)

Security - Telnet Encryption

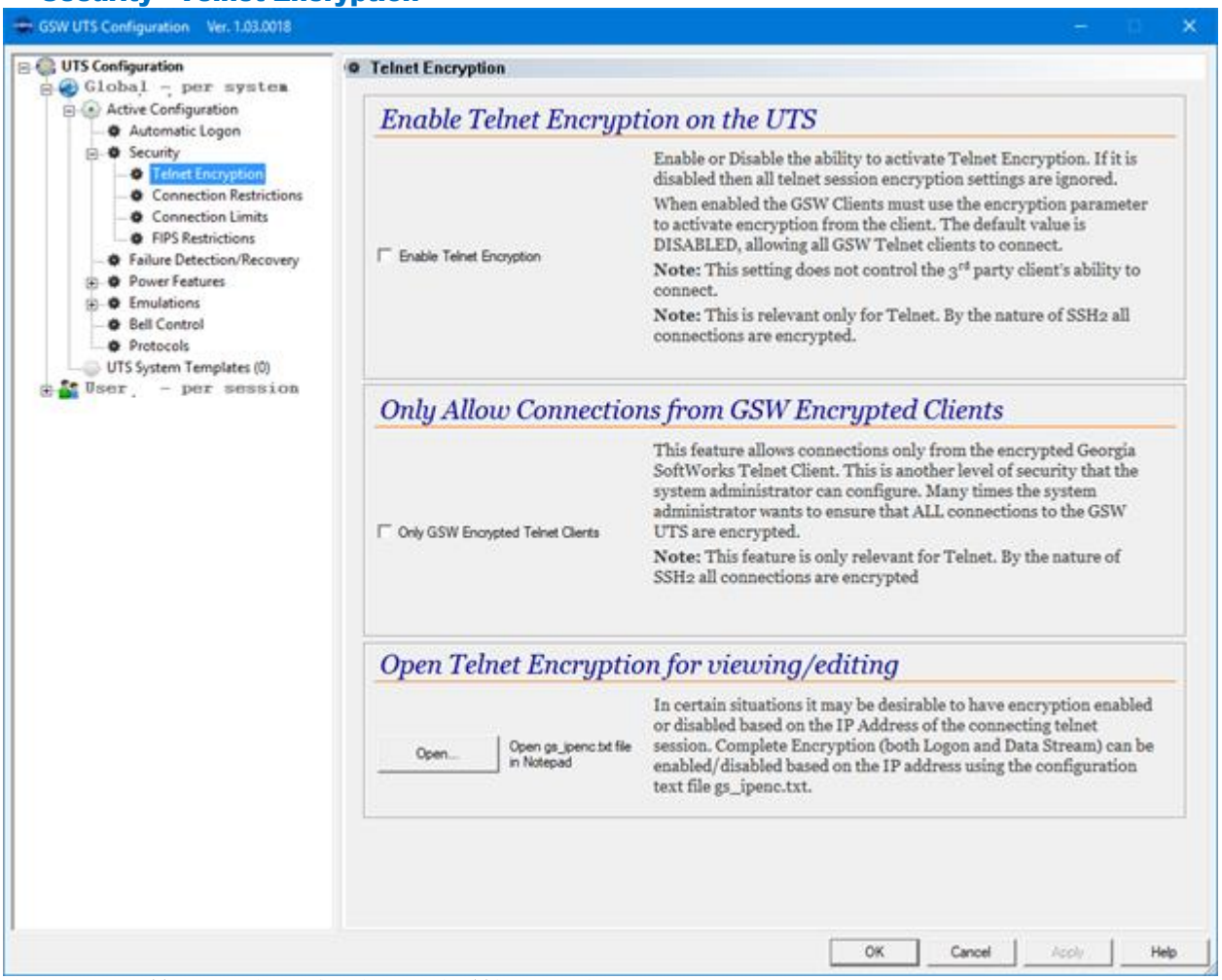


Figure 187: GSW UTS GUI - Active Configuration - Security - Telnet Encryption

The Telnet Encryption configuration screen provides configuration of:

- Enable Telnet Encryption – (See page 94)
- Only GSW Encrypted Telnet Clients – (See page 107)

And

Opening and editing the text file to enable or disable telnet encryption based on IP Address.

- gs_ipenc.txt – (See page 96)

Security – Connection Restrictions

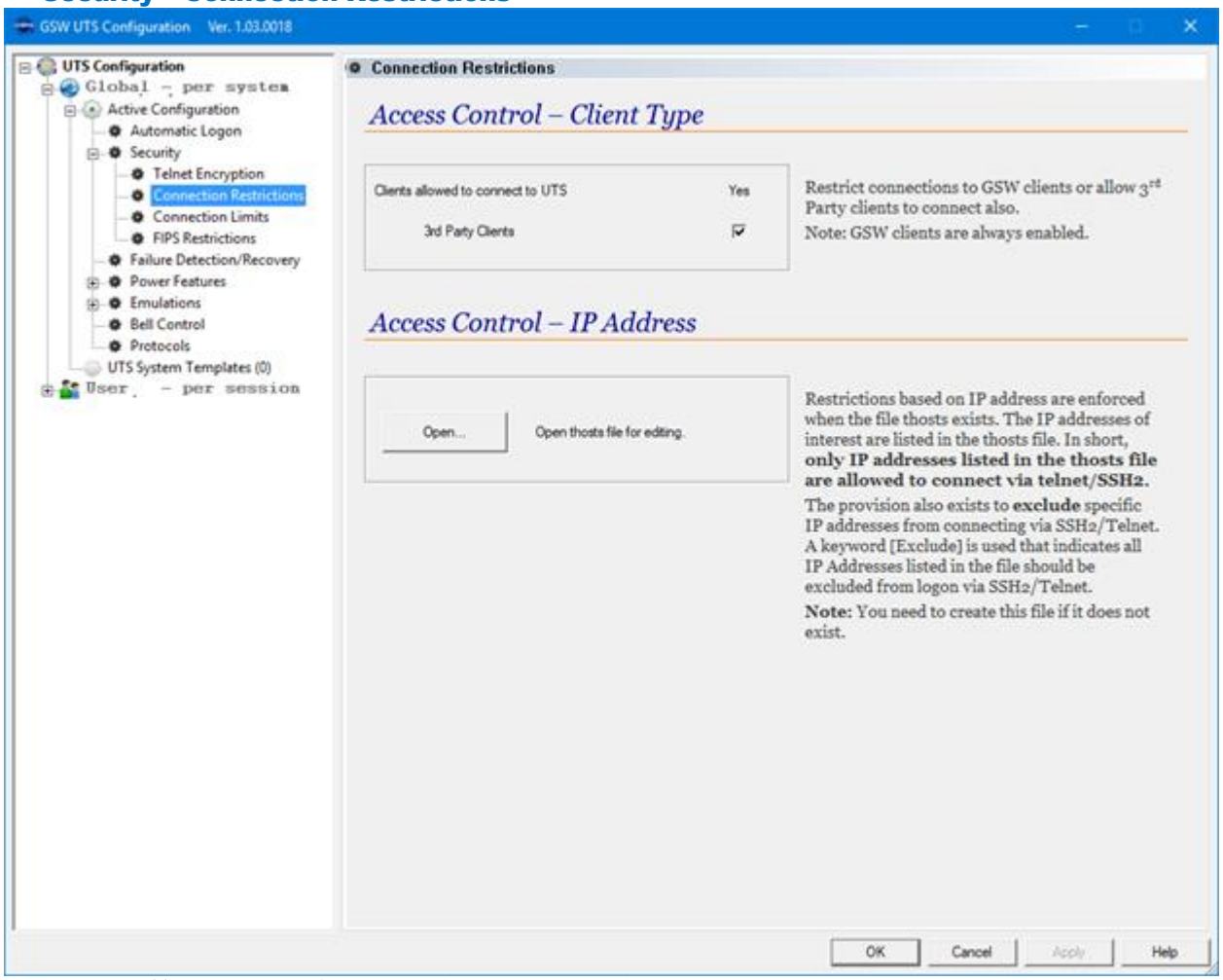


Figure 188: GSW UTS GUI - Active Configuration - Security - Connection Restrictions

The Connection Restrictions configuration screen provides configuration of:

- Allow 3rd Party clients to connect to the UTS – (See page 100)
- Opening and editing the text file to enable or disable telnet encryption based on an IP Address. gs_ipenc.txt – (See page 96)

Security – Connection Limits

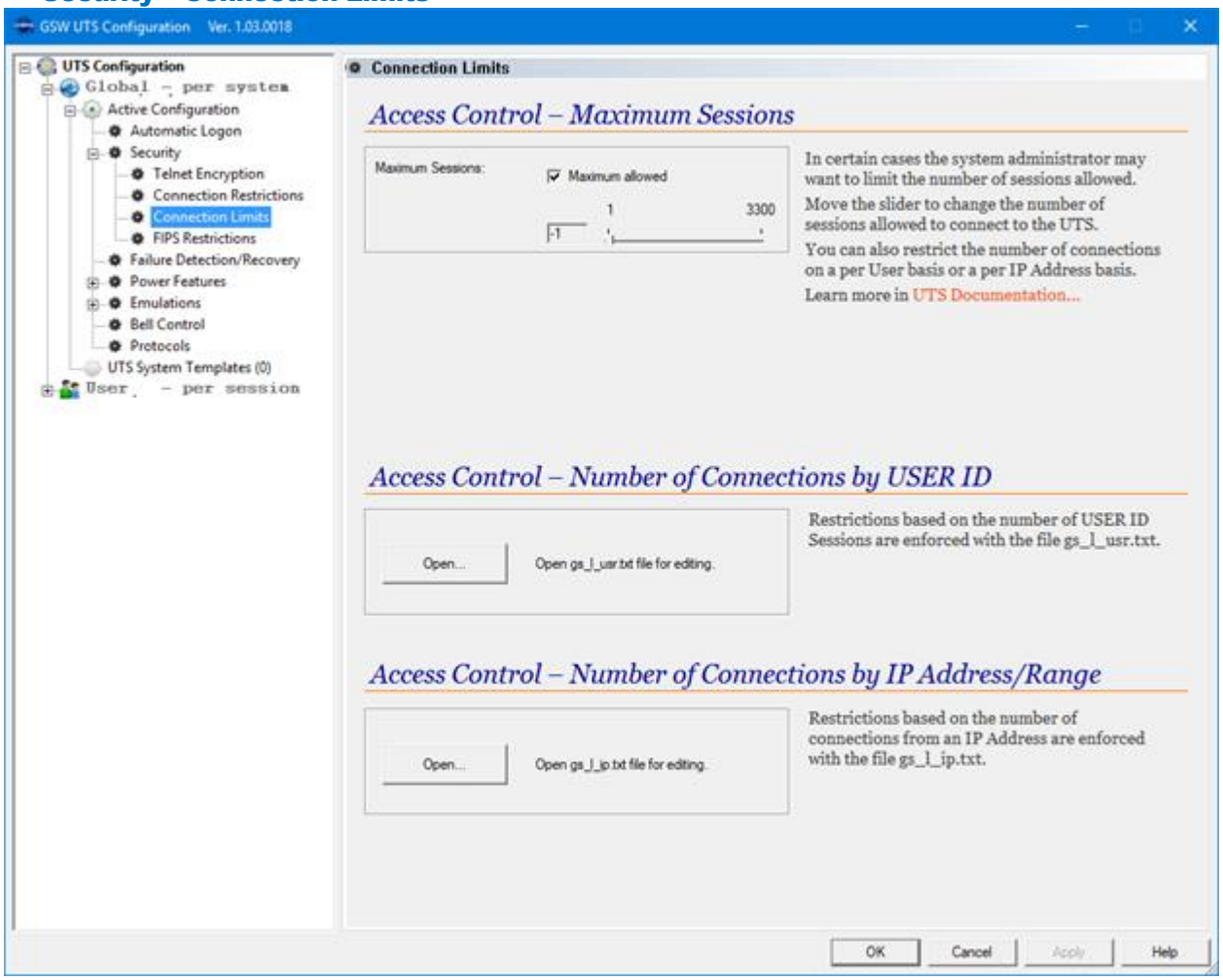


Figure 189: GSW UTS GUI - Active Configuration - Security - Connection Limits

The Connection Limits screen provides configuration of the:

- Maximum Sessions allowed (See page 101)

and allows viewing of the relevant text files

- Access control for the number of connections by a User ID (See page 102)
- Access control for the number of connections by an IP Address (See page 104)

Security – FIPS Restrictions

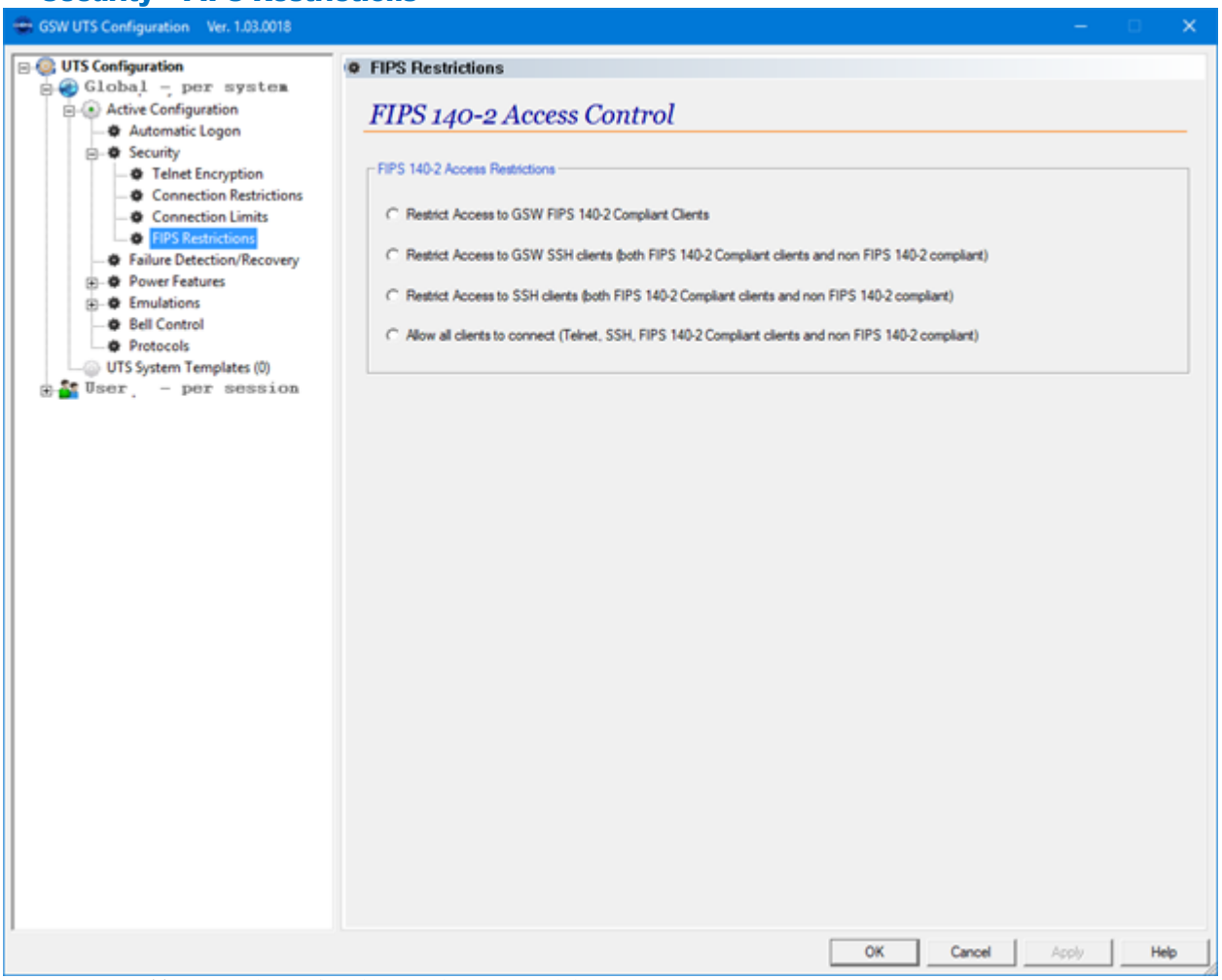


Figure 190: GSW UTS GUI - Active Configuration - Security - FIPS Restrictions

The FIPS 140-2 Restrictions screen provides configuration for access control of FIPS clients.

RESTRICT ACCESS TO GSW FIPS 140-2 CLIENTS

This feature allows connections only from the Georgia SoftWorks FIPS 140-2 SSH Clients. This is a high level of security that the system administrator can configure. Many times, the system administrator will insist that END to END FIPS 140-2 compliance is the only allowable option.

The variables GSW_FIPSOnly, EnableRFC854Clients, AllowTelnetWithSSH and LcnOnLoopbackOnly are registry key values. Used in conjunction, with specific values, these Registry keys enable or disable the ability to restrict connection only by GSW FIPS 140-2 compliant clients. The keys are:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\AllowTelnetWithSSH

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\EnableRFC854Clients

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\GSW_FIPSOnly

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\LsnOnLoopBackOnly
```

Set each registry key value to the following:

AllowTelnetWithSSH=0

EnableRFC854Clients=0

GSW_FIPSOnly=1

LsnOnLoopBack=1

RESTRICT ACCESS TO GSW SSH CLIENTS

(both FIPS 140-2 compliant clients and non FIPS 140-2 compliant)

The variables GSWFIPSOnly, EnableRFC854Clients and AllowTelnetWithSSH are registry key values. Used in conjunction, with specific values, these Registry keys enable or disable the ability to restrict connection only by GSW SSH clients. The keys are:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\AllowTelnetWithSSH

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\EnableRFC854Clients

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\GSW_FIPSOnly

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\LsnOnLoopBackOnly
```

Set each registry key value to the following:

AllowTelnetWithSSH=0

EnableRFC854Clients=0

GSW_FIPSOnly=0

LsnOnLoopBack=1

RESTRICT ACCESS TO SSH CLIENTS

(both FIPS 140-2 compliant clients and non FIPS 140-2 compliant)

The variables GSWFIPSOnly, EnableRFC854Clients and AllowTelnetWithSSH are registry key values. Used in conjunction, with specific values, these Registry keys enable or disable the ability to restrict connection only by GSW SSH clients. The keys are:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\AllowTelnetWithSSH

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\EnableRFC854Clients

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\GSW_FIPSOnly

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\LsnOnLoopBackOnly
```

Set each registry key value to the following:

AllowTelnetWithSSH=0

EnableRFC854Clients=1

GSW_FIPSOnly=0

LsnOnLoopBack=1

ALLOW ALL CLIENTS TO CONNECT

(Telnet, SSH, both FIPS 140-2 compliant clients and non FIPS 140-2 compliant)

The variables GSWFIPSOnly, EnableRFC854Clients and AllowTelnetWithSSH are registry key values. Used in conjunction, with specific values, these Registry keys enable or disable the ability to restrict connection only by GSW SSH clients. The keys are:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\AllowTelnetWithSSH

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\EnableRFC854Clients

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\GSW_FIPSOnly

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\LsnOnLoopBackOnly

Set each registry key value to the following:

```
AllowTelnetWithSSH=0

EnableRFC854Clients=1

GSW_FIPSOnly=0

LsnOnLoopBack=1
```

Failure Detection / Recovery

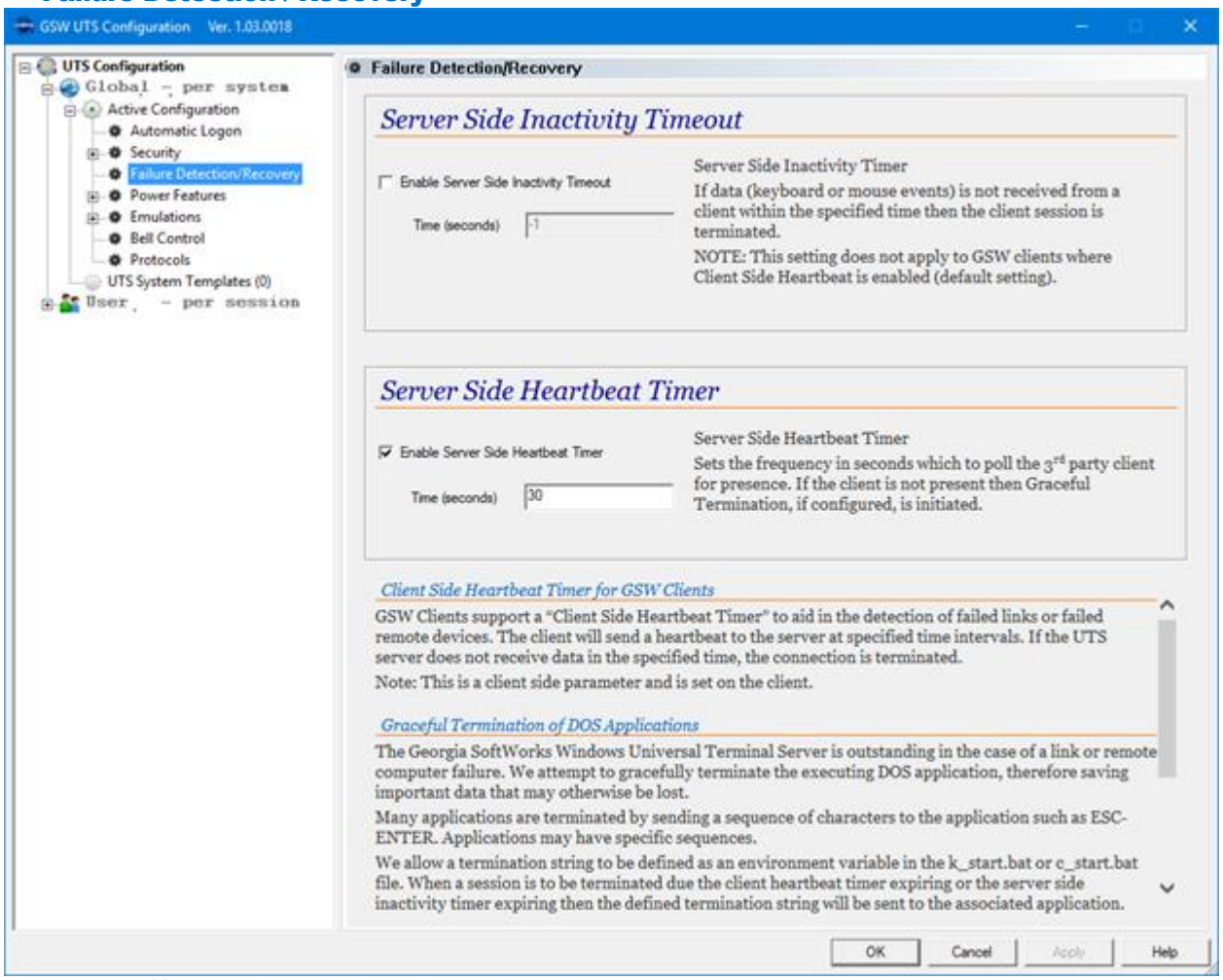


Figure 191: GSW UTS GUI - Active Configuration - Failure Detection and Recovery

The Failure Detection/Recovery screen provides configuration of the:

- Server-Side Inactivity Timeout (See page 153)
- Server-Side Heartbeat Timer (See page 155)

Power Features Summary

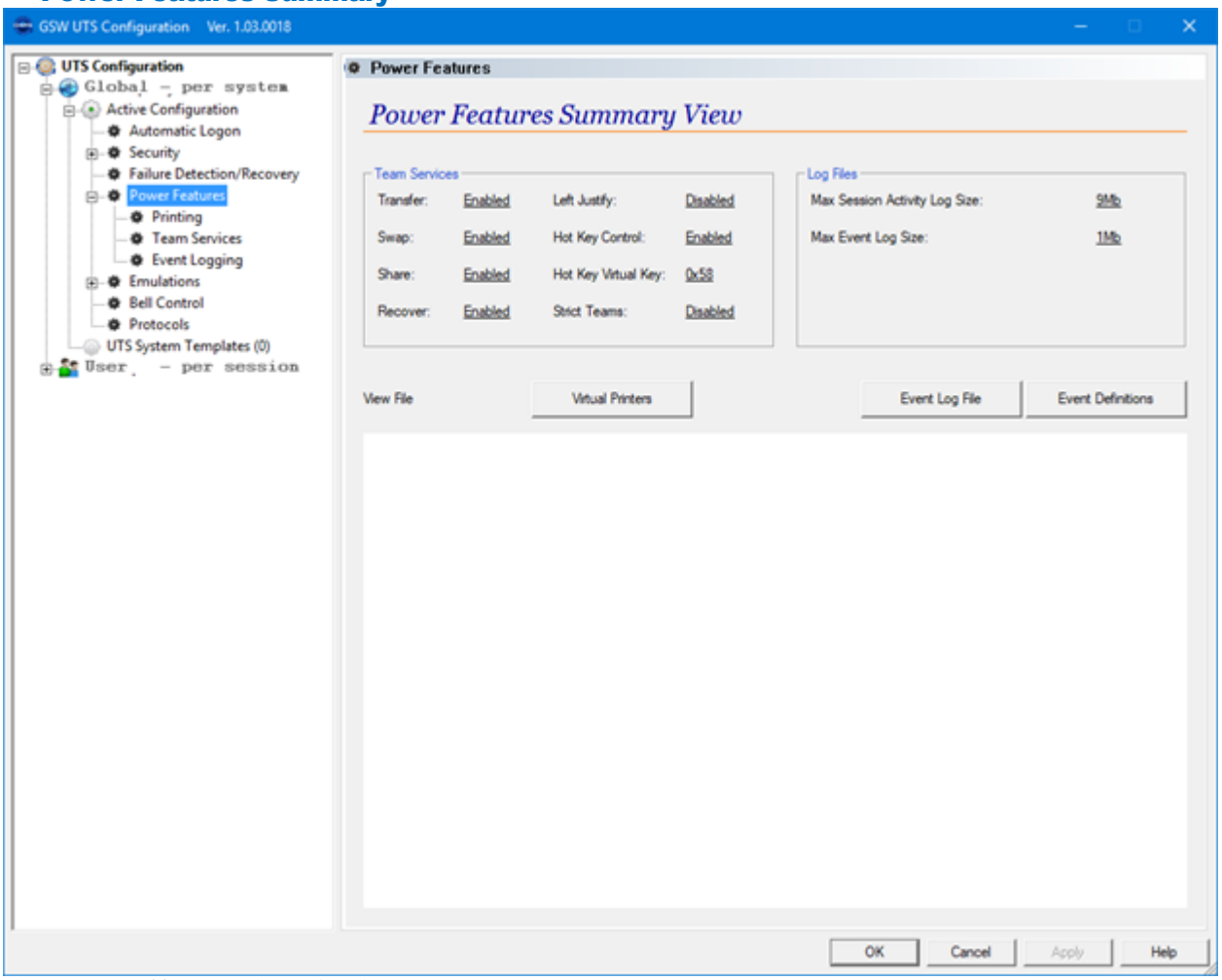


Figure 192: GSW UTS GUI - Active Configuration - Power Features Summary

The Power Features Summary View provides a quick view of the

- Team Services configuration (See page 117)
- Log Files configuration
  - Max Session Activity Log File Size (See page 215)
  - Event Log File Size (214)

and allows viewing of the relevant system printer configuration

- Virtual Printers (See page 227)

and allows viewing of the relevant text files

- Event Log File (See page 213)
- Event Definitions File (See page 212)

Power Features – Printing

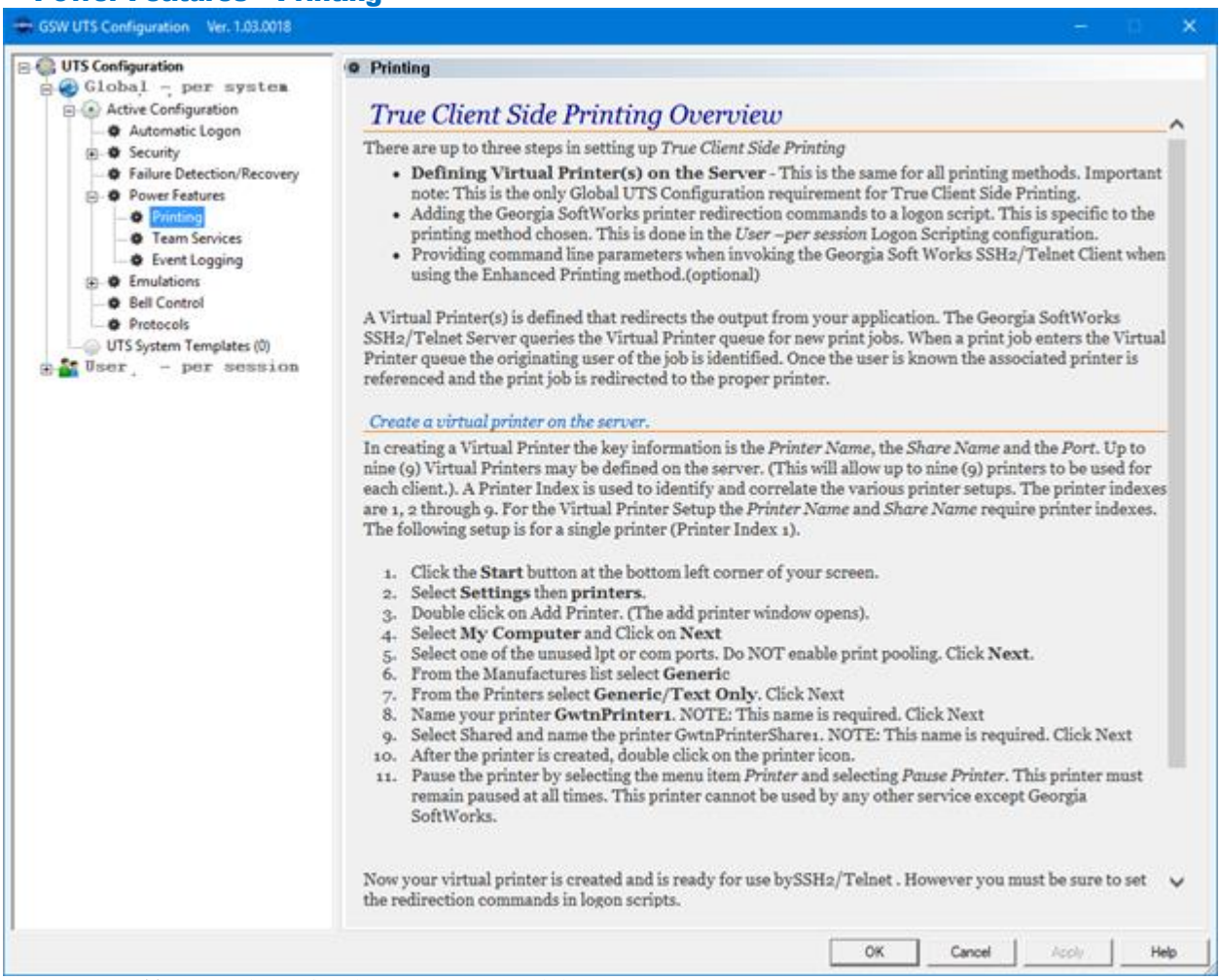


Figure 193: GSW UTS GUI - Active Configuration - Power Features - Printing

The True Client-Side Printing Overview briefly describes the steps to set up client-side printing. For a full description please see page 226.

Power Features – Team Services

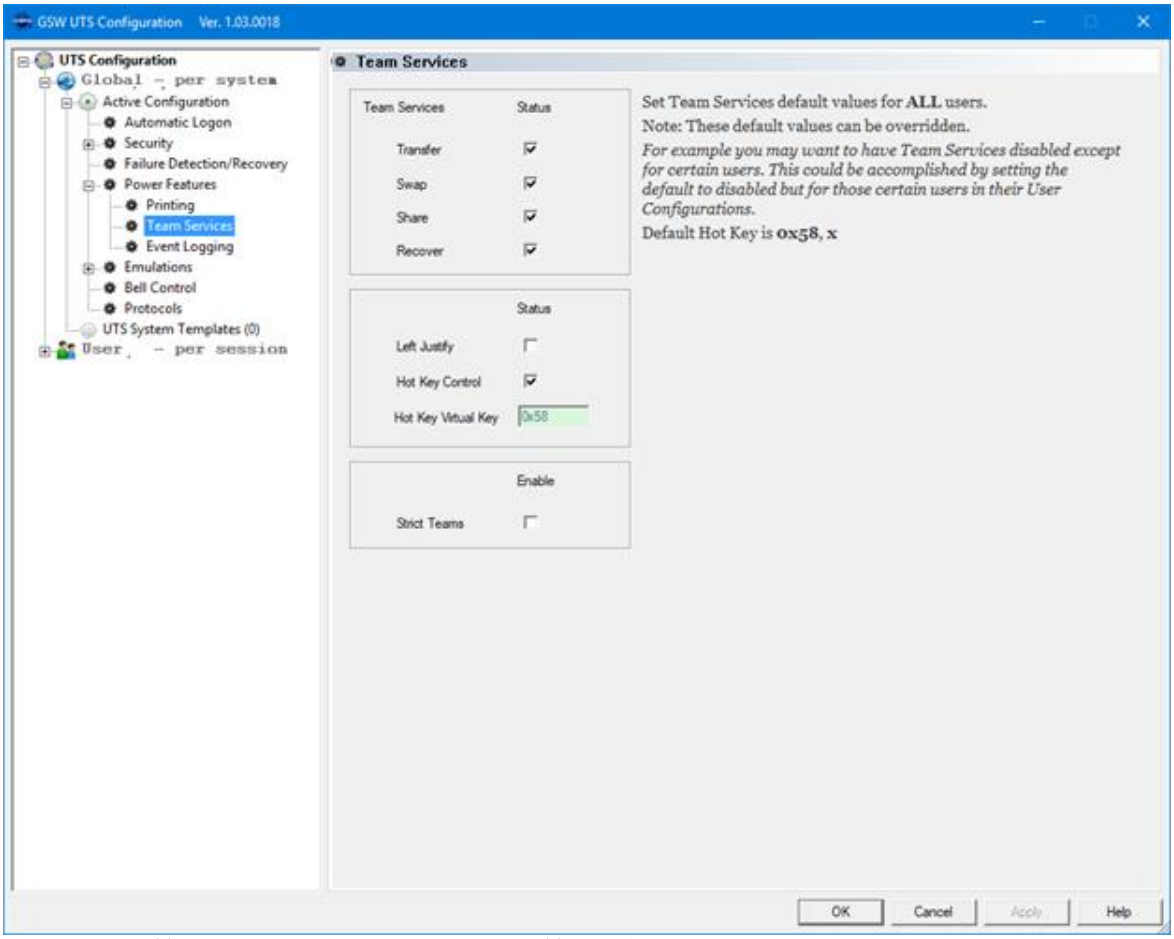


Figure 194: GSW UTS GUI - Active Configuration - Power Features - Team Services

The Team Services configuration screen provides configuration for the Team Services default values. Note that default values can be overridden on a per user basis.

- Team Services General Operation (See page 117)
- Team Services Transfer (See page 139)
- Team Services Swap (See page 140)
- Team Services Share (See page 141)
- Team Services Recover (See page 138)
- Team Services Left Justify (See page 142)
- Team Services Hot Key Control (See page 143)
- Team Services Hot Key Virtual Key (See page 143)
- Strict Teams (See page 134)

Power Features – Event Logging

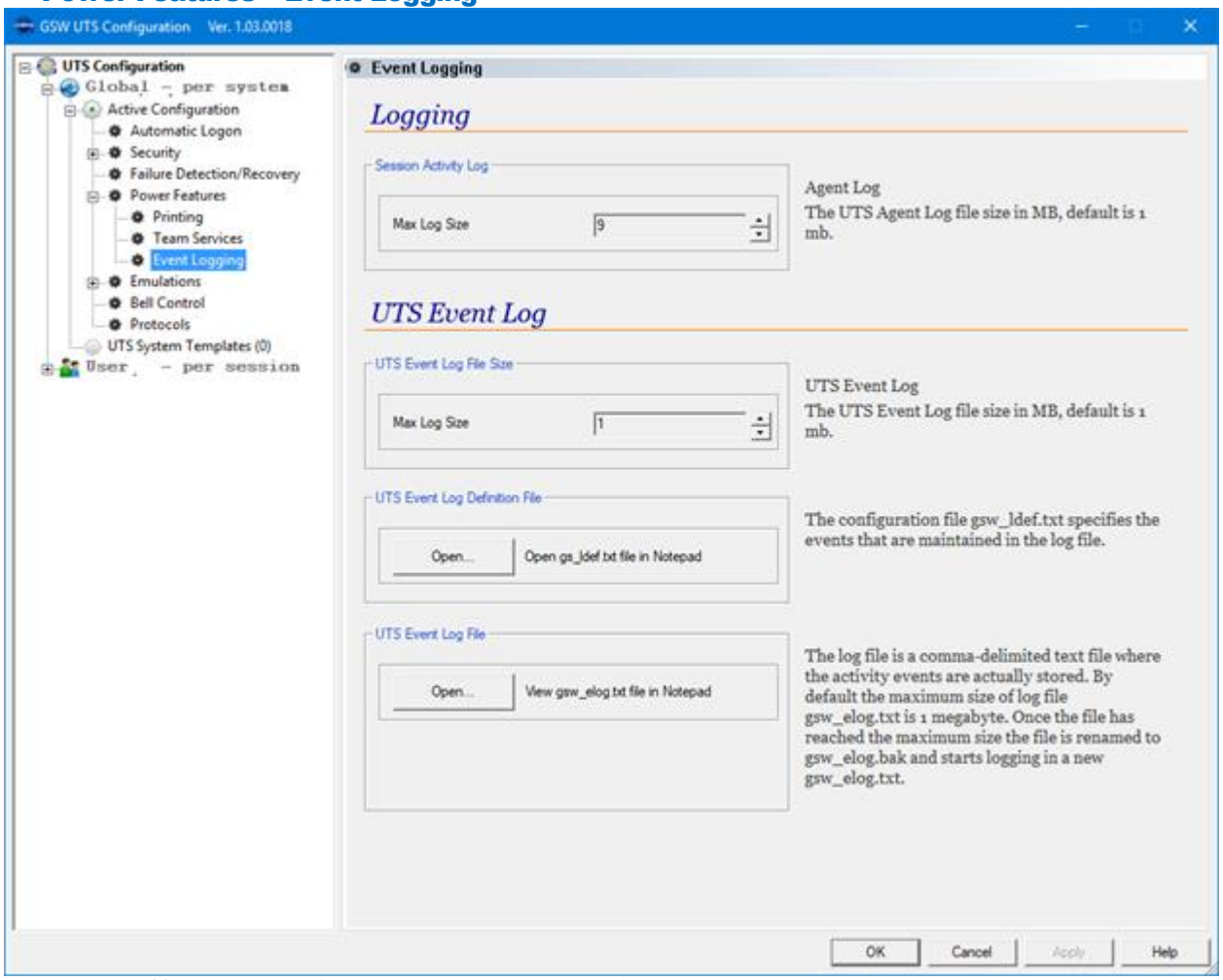


Figure 195: GSW UTS GUI - Active Configuration - Power Features - Event Logging

The Event Logging configuration screen provides configuration for:

- Session Activity Log - Max Log Size (215)
- UTS Event Log File Size – Max Log Size (See page 214)

and allows viewing of the relevant text files

- UTS Event Log Definition File (See page 213)
- UTS Event Log File (See page 212)

Emulations Summary

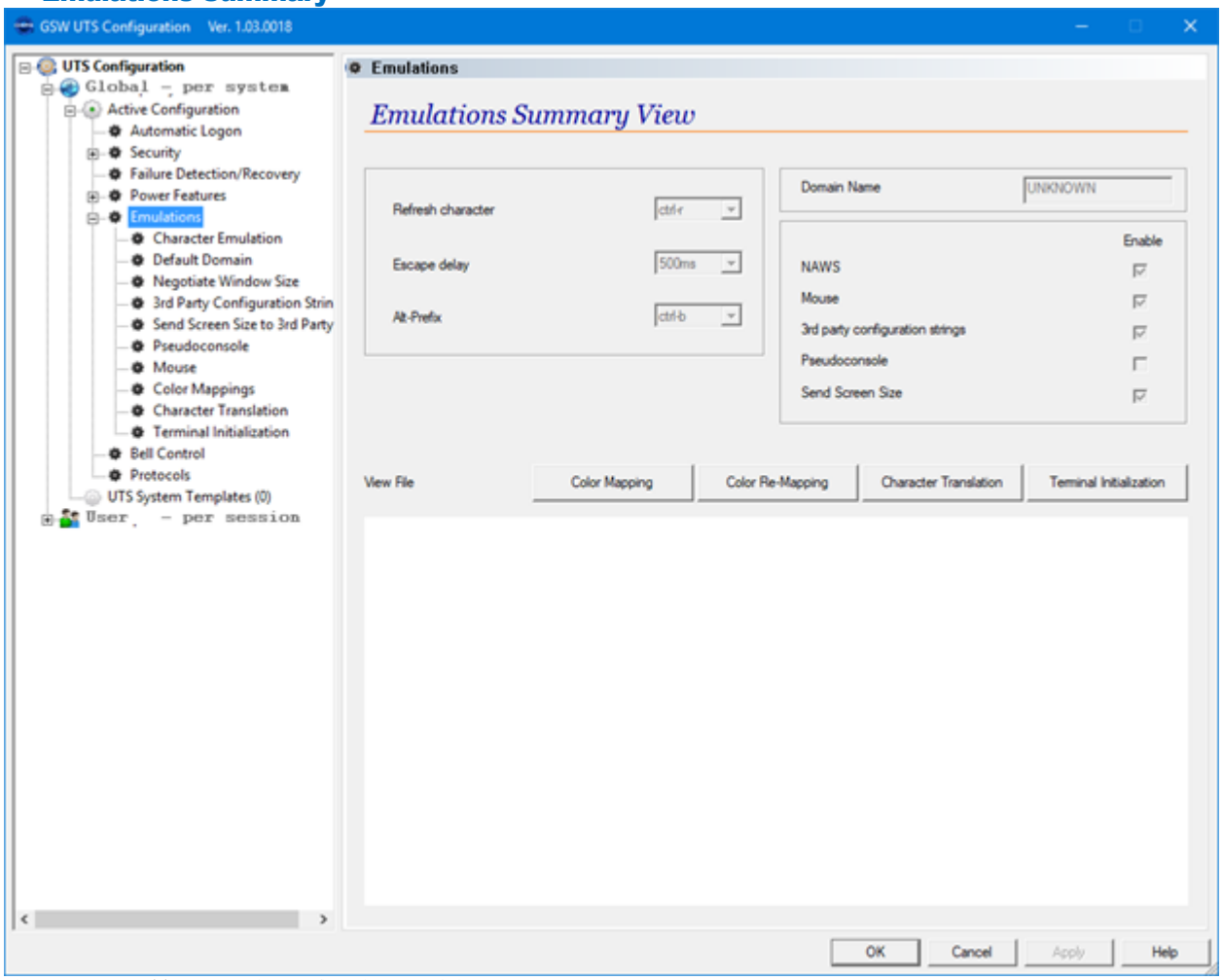


Figure 196: GSW UTS GUI - Active Configuration - Emulations Summary

The Emulations Summary View provides a quick view of the configuration for:

- Refresh Character (See page 250)
- Escape Delay (See page 174)
- Alt-Prefix (See page 172)
- Domain Name (See page 282)
- NAWS (Negotiate Windows Size Telnet Option) (See page 175)
- 3rd Party Configuration Strings (See page 175)
- Send Screen Size to 3rd Party clients. (See page 177 , for Logon Script override)
- Enable Pseudoconsole (See page 178, for Logon Script override)
- 3rd Party Mouse Support – (See page 163)
- Device and client configuration strings (See page 175)

and allows viewing of the relevant text files

- Color Mapping (See page 170)
- Color Re-Mapping (See page 181)
- Character Translation (See page 183)
- Terminal Initialization (See page 184)

Emulations - Character Emulation

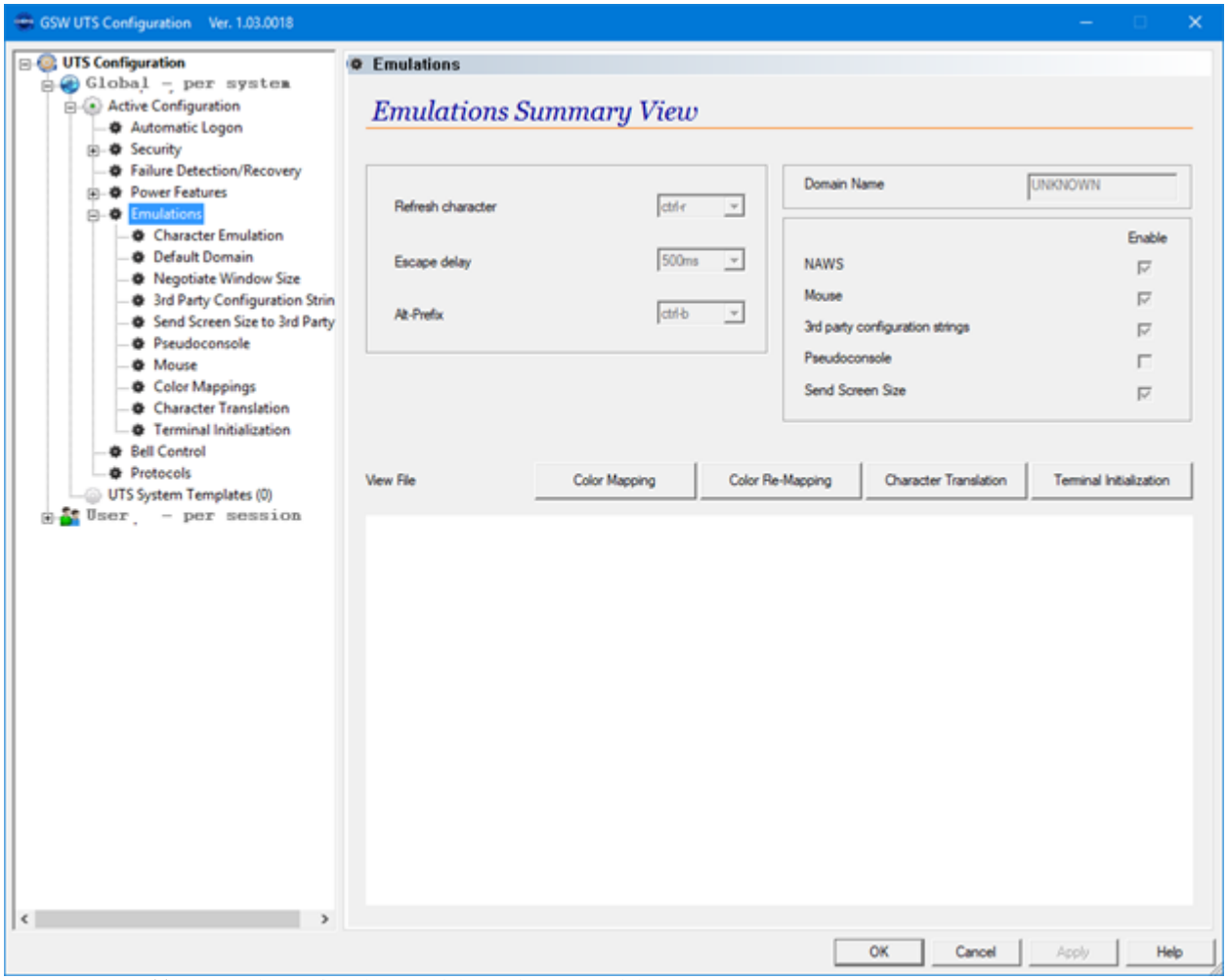


Figure 197: GSW UTS GUI - Active Configuration - Emulations - Character Emulation

The Character Emulation screen provides the configuration for:

- Refresh Character (See page 250)
- Escape Delay (See page 174)
- Alt-Prefix (See page 172)

Emulations – Default Domain

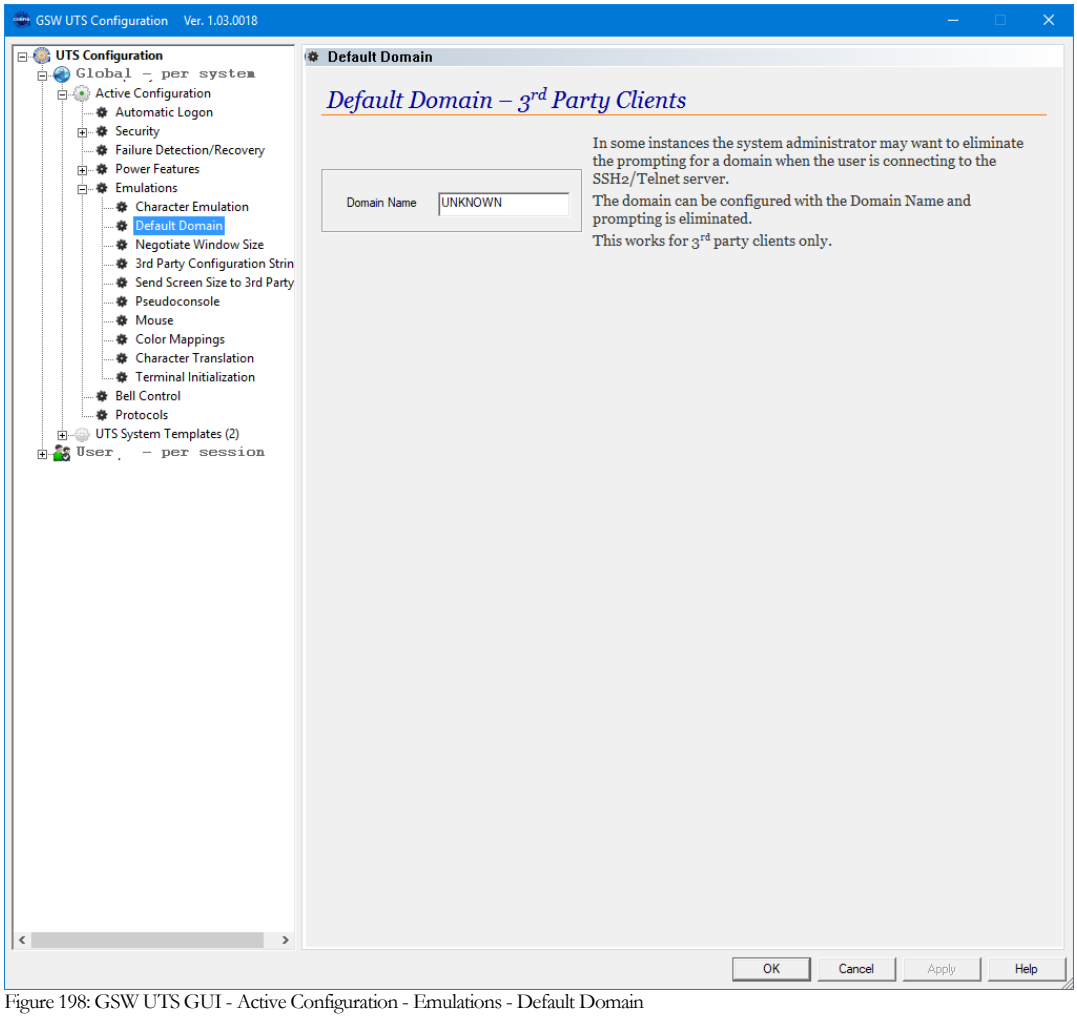


Figure 198: GSW UTS GUI - Active Configuration - Emulations - Default Domain

The Emulations Default Domain screen provides configuration for:

- Domain Name (See page 282)

Emulations – Negotiate Windows Size

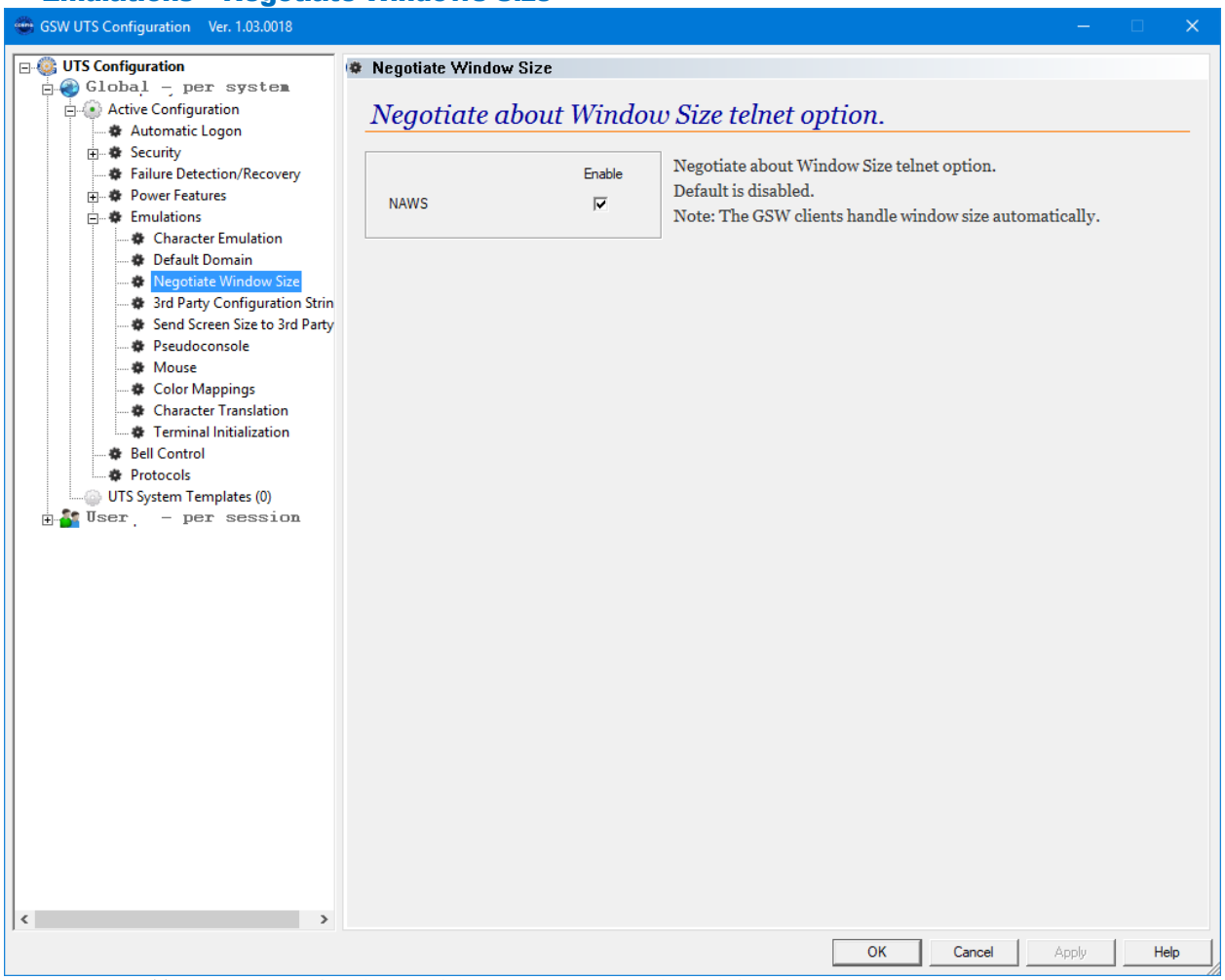


Figure 199: GSW UTS GUI - Active Configuration - Emulations - NAWS (Negotiate About Windows Size)

The Emulations Negotiate Windows Size screen provides configuration for:

- NAWS (Negotiate Windows Size Telnet Option) (See page 175)

Emulations – GSW ConnectBot Device and Client Info (Strings)

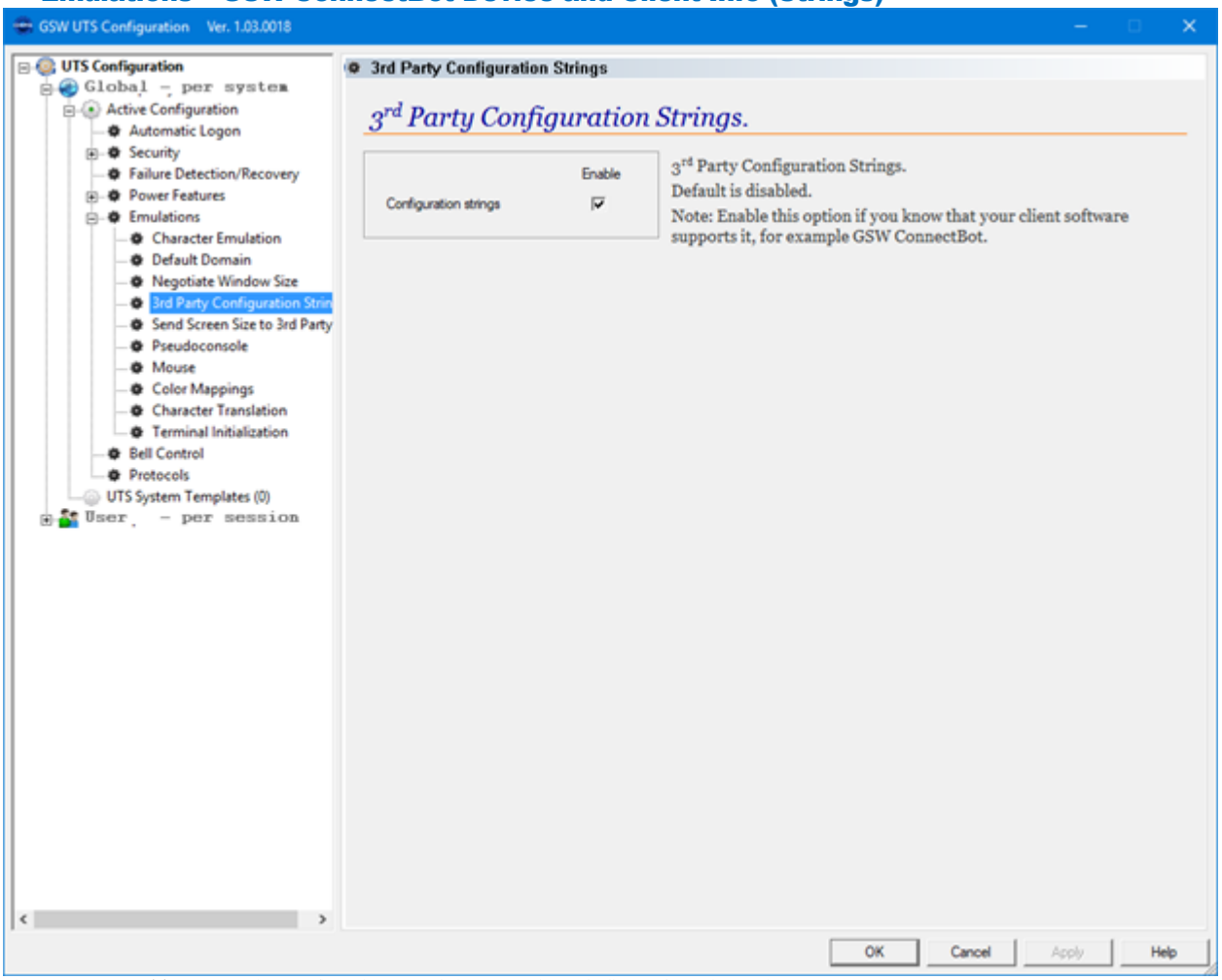


Figure 200: GSW UTS GUI - Active Configuration - Emulations – Device and Client Information (Strings)

Currently this feature is available to work with GSW ConnectBot – SSH/Telnet client for Android.

When enabled, a number of environment variables can be accessed by the application to obtain device and client information. This setting is configurable on a Global or User basis. The device and client information can be used by the application in any manner deemed useful. The uses range from reports to application logic decisions based on device specific specifications such as display density etc.

When enabled a variable will be added to the users Logon Script as follows:

```
set gwtn_enable_3rd_party_config_strings=y
```

The number and list of variables available is device dependent.

To view the list of available variables you can use the command line "set gswncl_"command from within a SSH or Telnet session. See the example below.

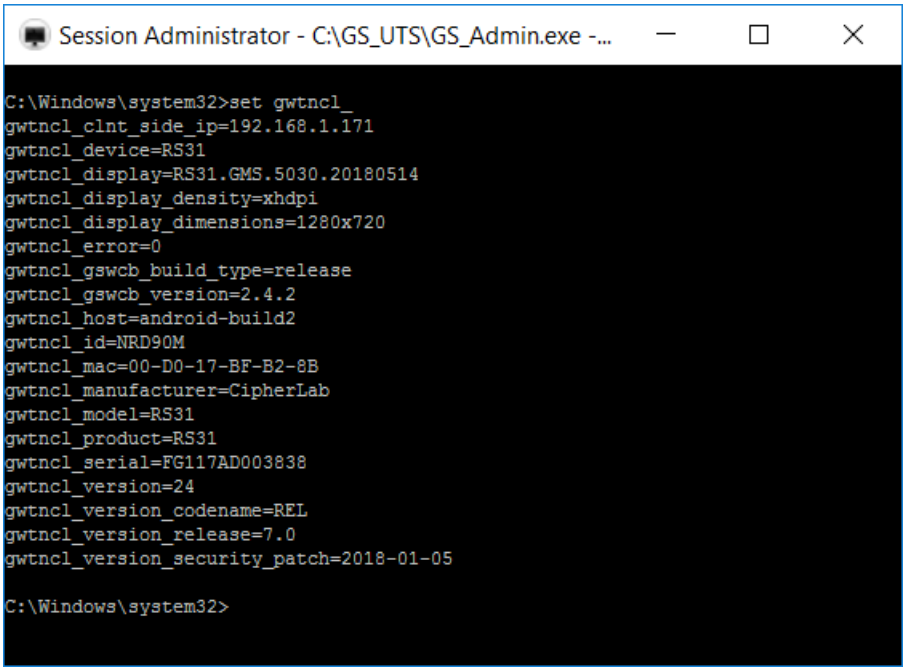


Figure 201: Device and Client Information Set gwtncl_ cmd

To manually configure Device and Client information strings see page (See page 175)

Emulations – Send Screen Size to 3rd Party Clients

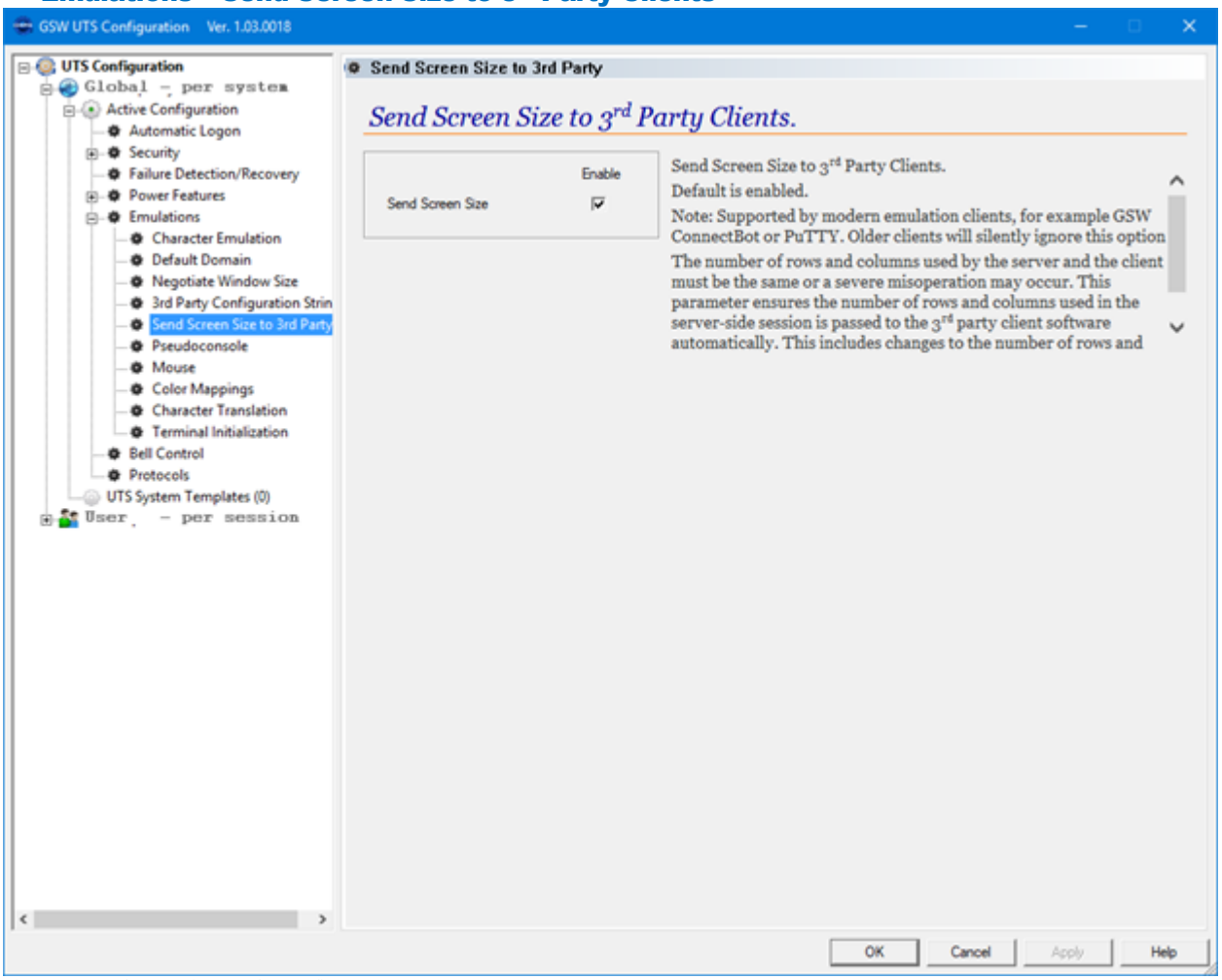


Figure 202: Send screen size to 3rd party client

Default is `Enabled`.

The GSW UTS will send screen size information to 3rd party clients. The number of rows and columns used by the server and the client must be the same or a severe misoperation may occur. This GLOBAL parameter ensures that the number of rows and columns used in the server-side session is passed to the 3rd party client software automatically.

Sometimes, certain client features may require this parameter is disabled. The logon scripts can override the global setting. For example, if you are using any of the GSW ConnectBot features that require the client screen size parameters to be 0,0, then you will want to disable this parameter using the Logon script.
See page 177, to see how to use a Logon Script override.

If the GSW ConnectBot (or any other) client is setting the screen size to non-zero values, then the Send Screen Size to 3rd Party client value should stay Enabled.

Emulations – Pseudoconsole

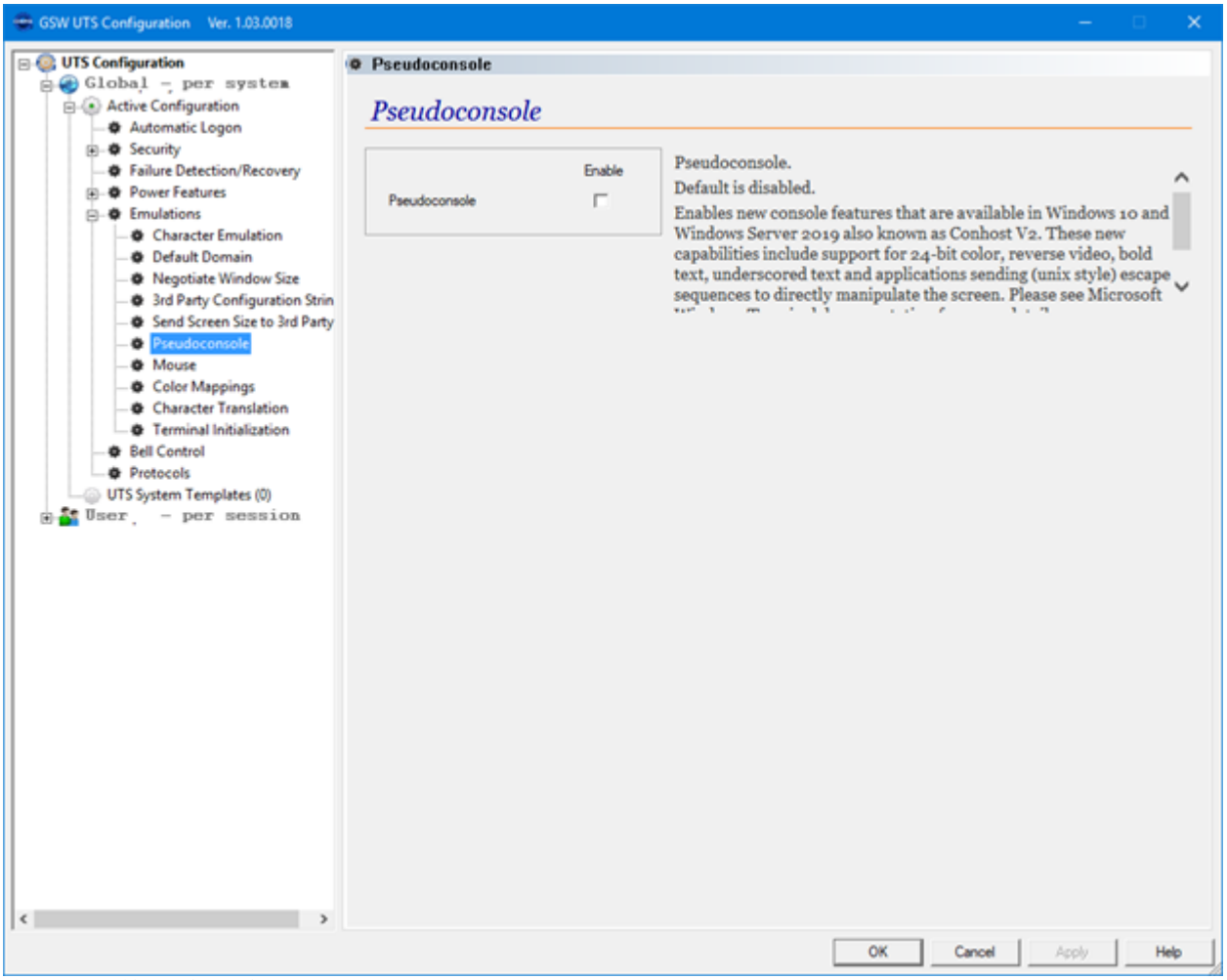


Figure 203: Enable Pseudoconsole

Default is `disabled`

Enables new console features that are available in Windows 10 and Windows Server 2019 also known as Conhost V2 (ConPty). These new capabilities include support for 24-bit color, reverse video, bold text, underscored text and applications sending (Unix style) escape sequences to directly manipulate the screen. Please see Microsoft Windows Terminal documentation for more details. Please make sure that this option is disabled on Windows machines that do not support Pseudoconsole.

This GLOBAL parameter can be overridden using a logon script.

Please see page 178 to see how to use a logon script for this purpose.

Emulations – 3rd Party Mouse Support

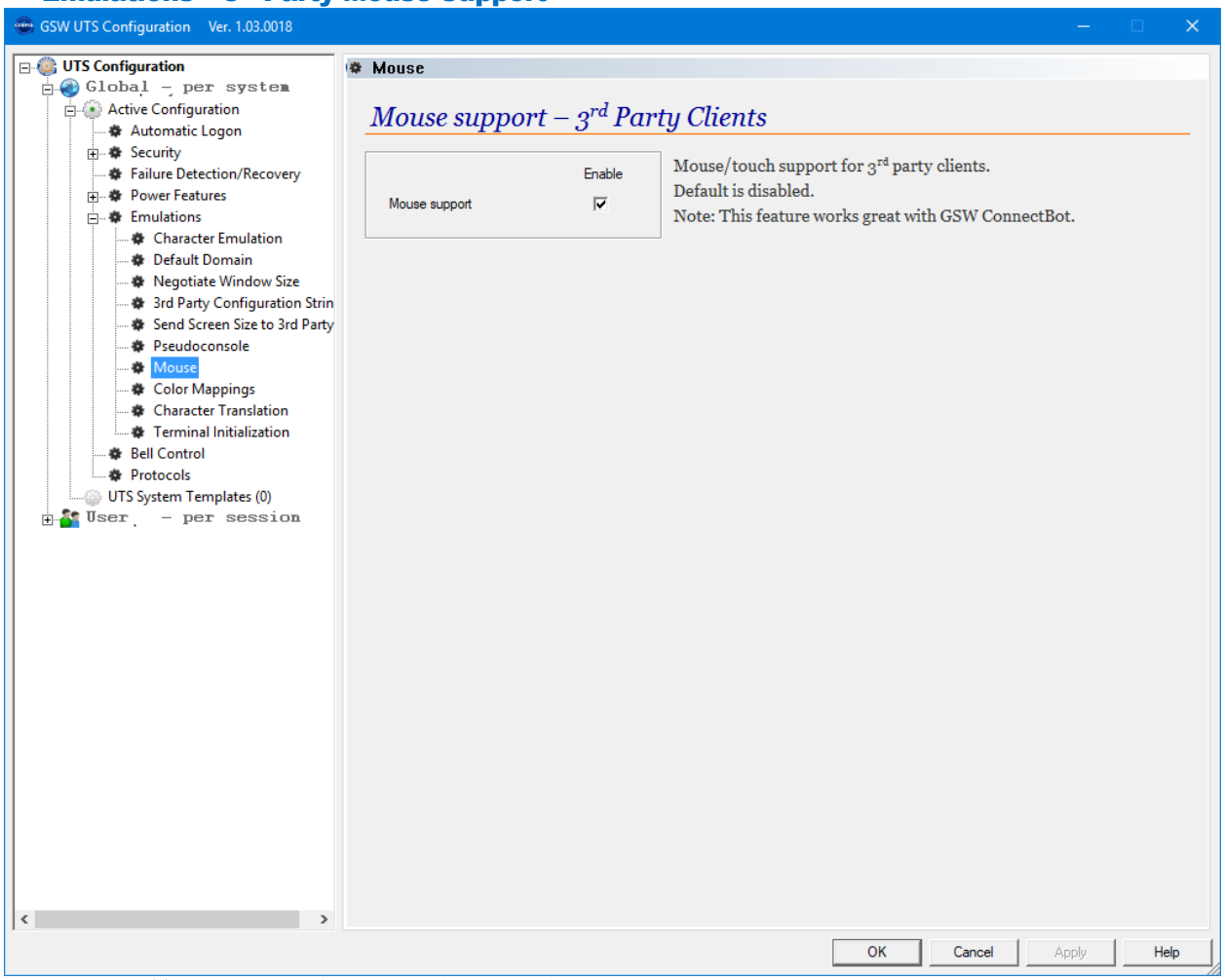


Figure 204: GSW UTS GUI - Active Configuration - Emulations – Enable 3rd Party Mouse

This feature works with GSW ConnectBot SSH/Telnet client for Android and other 3rd party clients supporting mouse, e.g. PuTTY.

When enabled, users using a touchscreen/mouse capable device will be able to select and use the features of the mouse enabled application as expected. In the case of touch screens, touch events will be translated to mouse events. This setting can be configured on a Global or per User basis.

The per User basis can be used to easily handle a mix of clients where some of them support mouse and others do not.

To manually configure Mouse Support for 3rd party clients, see page (See page 163)

Emulations – Color Mappings

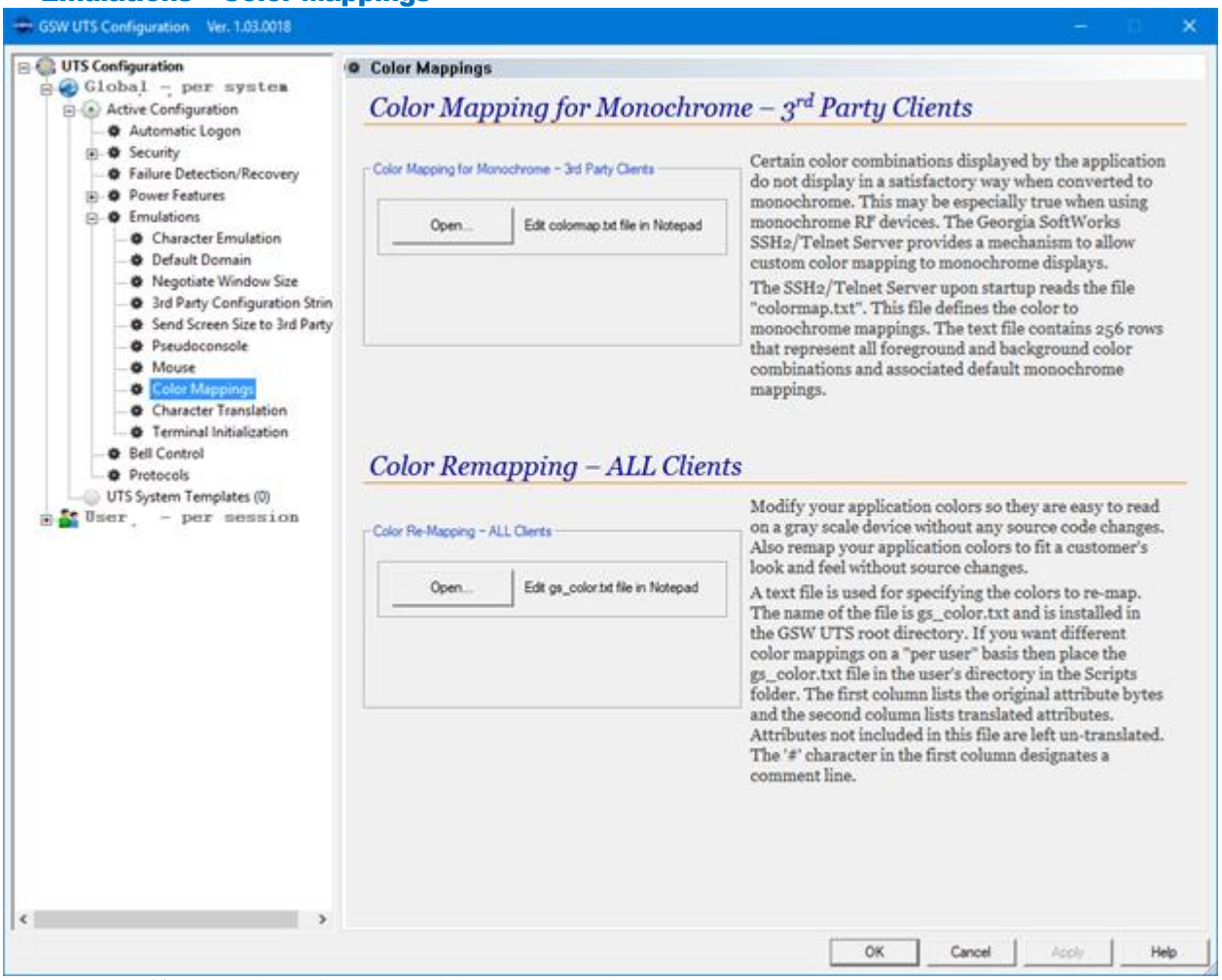


Figure 205: GSW UTS GUI - Active Configuration - Emulations - Color Remapping

The Emulations Color Mappings screen allows viewing/editing of the relevant text files:

- Color Mapping (See page 170)
- Color Re-Mapping (See page 181)

Emulations – Character Translation

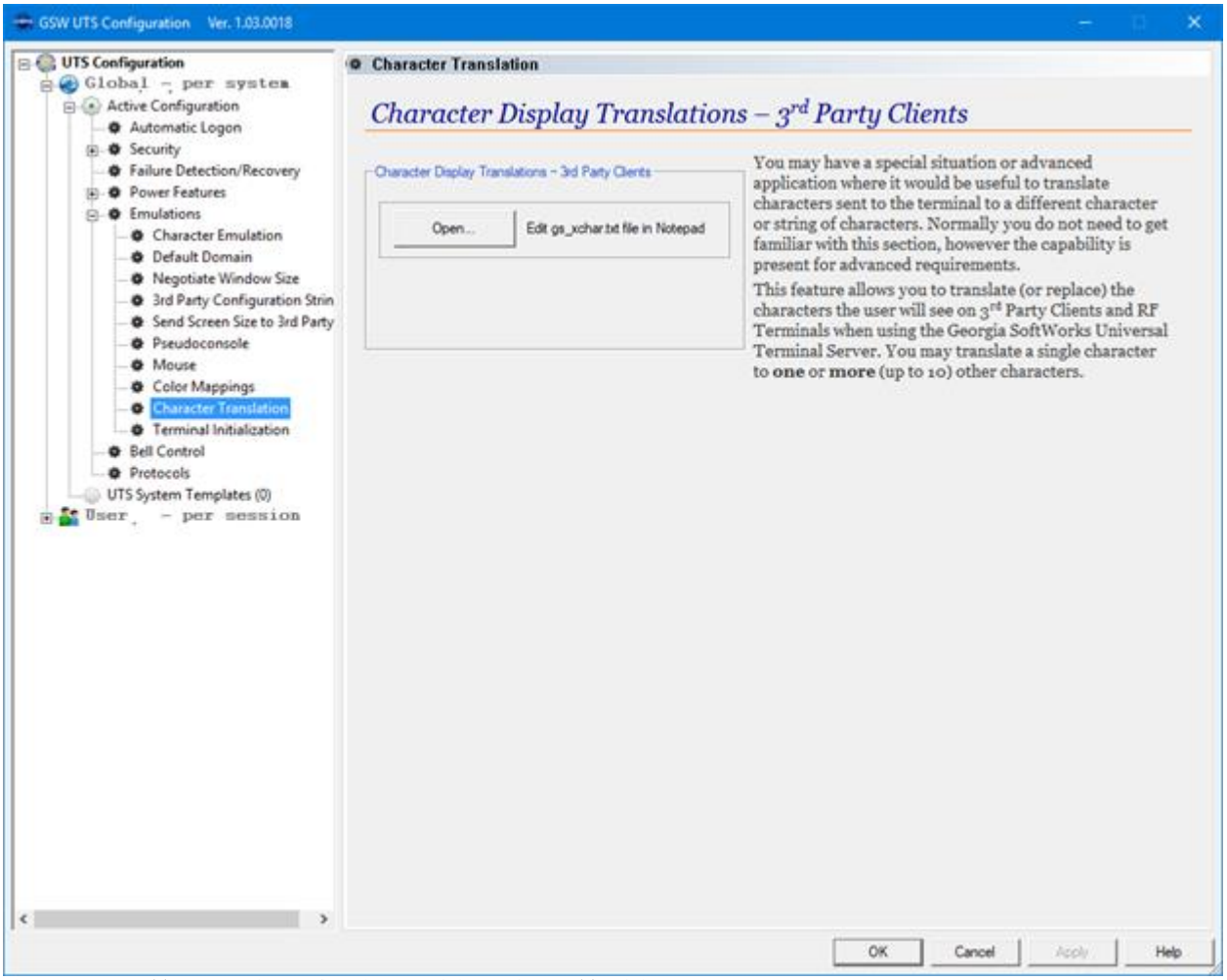


Figure 206: GSW UTS GUI - Active Configuration - Emulations - Character Translation

The Emulations Character Translation screen allows viewing/editing of the relevant text files:

- Character Translation (See page 183)

Emulations – Terminal Initialization

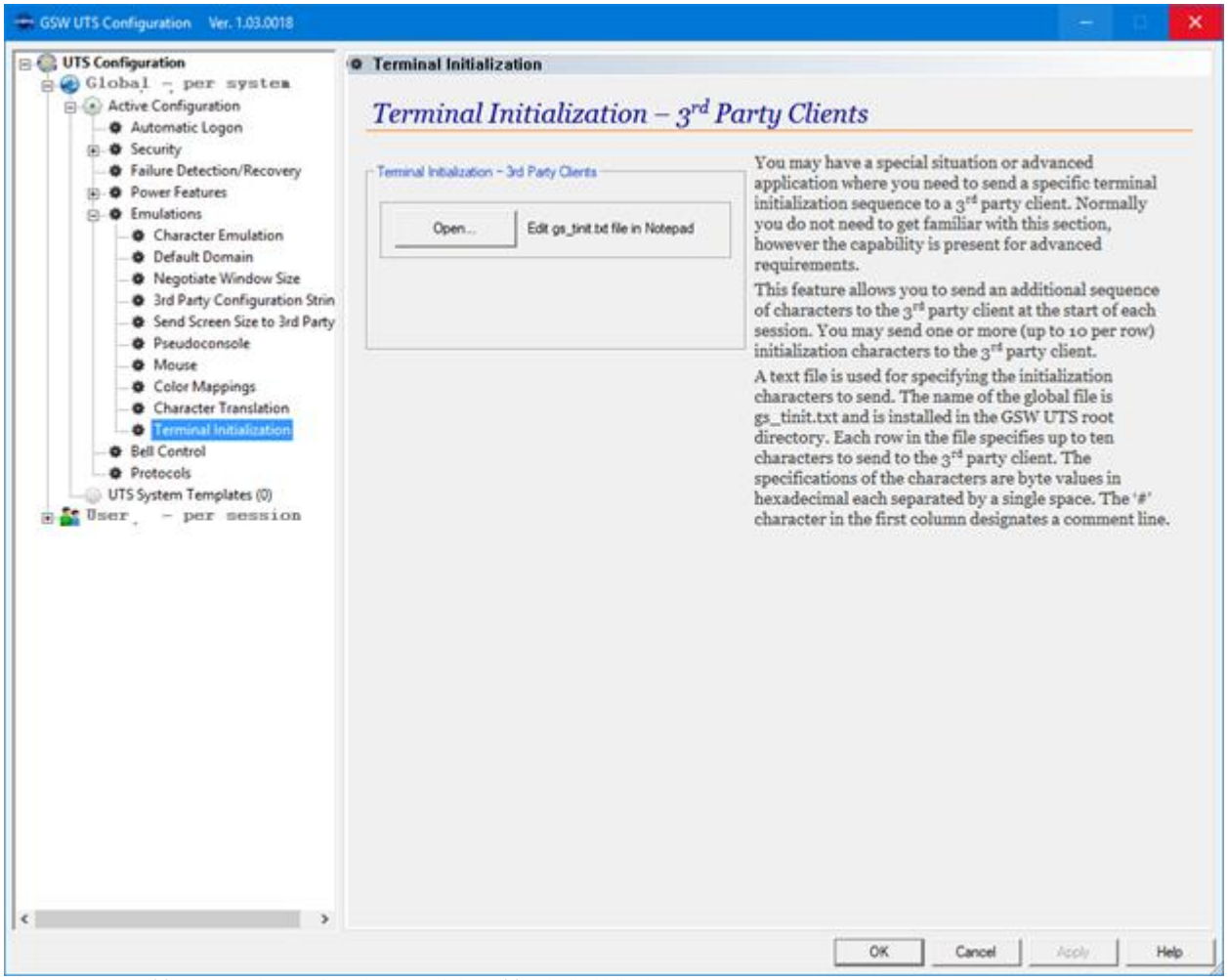


Figure 207: GSW UTS GUI - Active Configuration - Emulations - Terminal Initialization

The Emulations Terminal Initialization screen allows viewing/editing of the relevant text files:

- Terminal Initialization (See page 184)

Bell Control

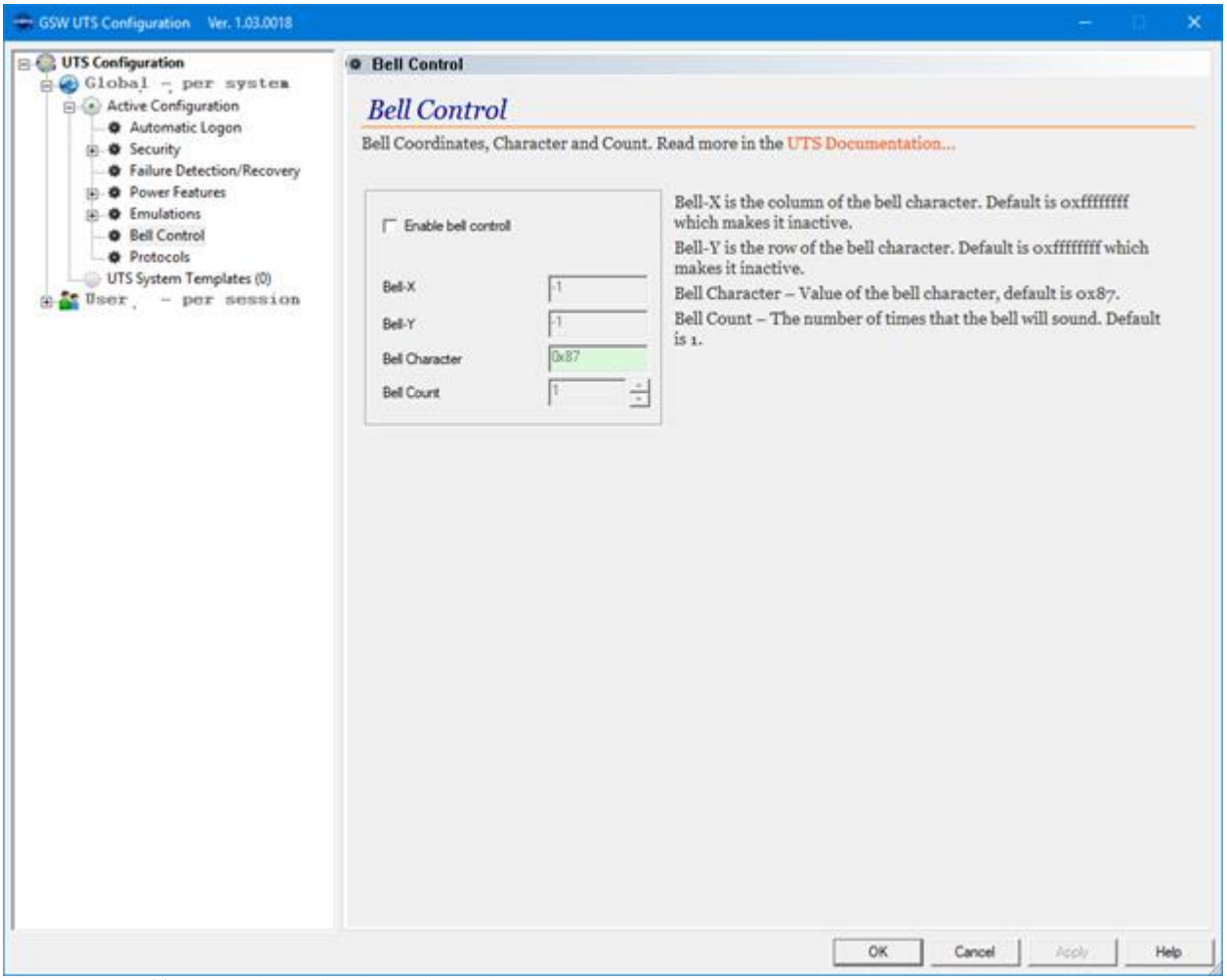


Figure 208: GSW UTS GUI - Active Configuration - Bell Control

The Bell Control screen provides configuration of the:

- Enable Bell Control (See page 279)
- Bell-X (See page 279)
- Bell-Y (See page 279)
- Bell Character (See page 279)
- Bell Count (See page 279)

Protocols

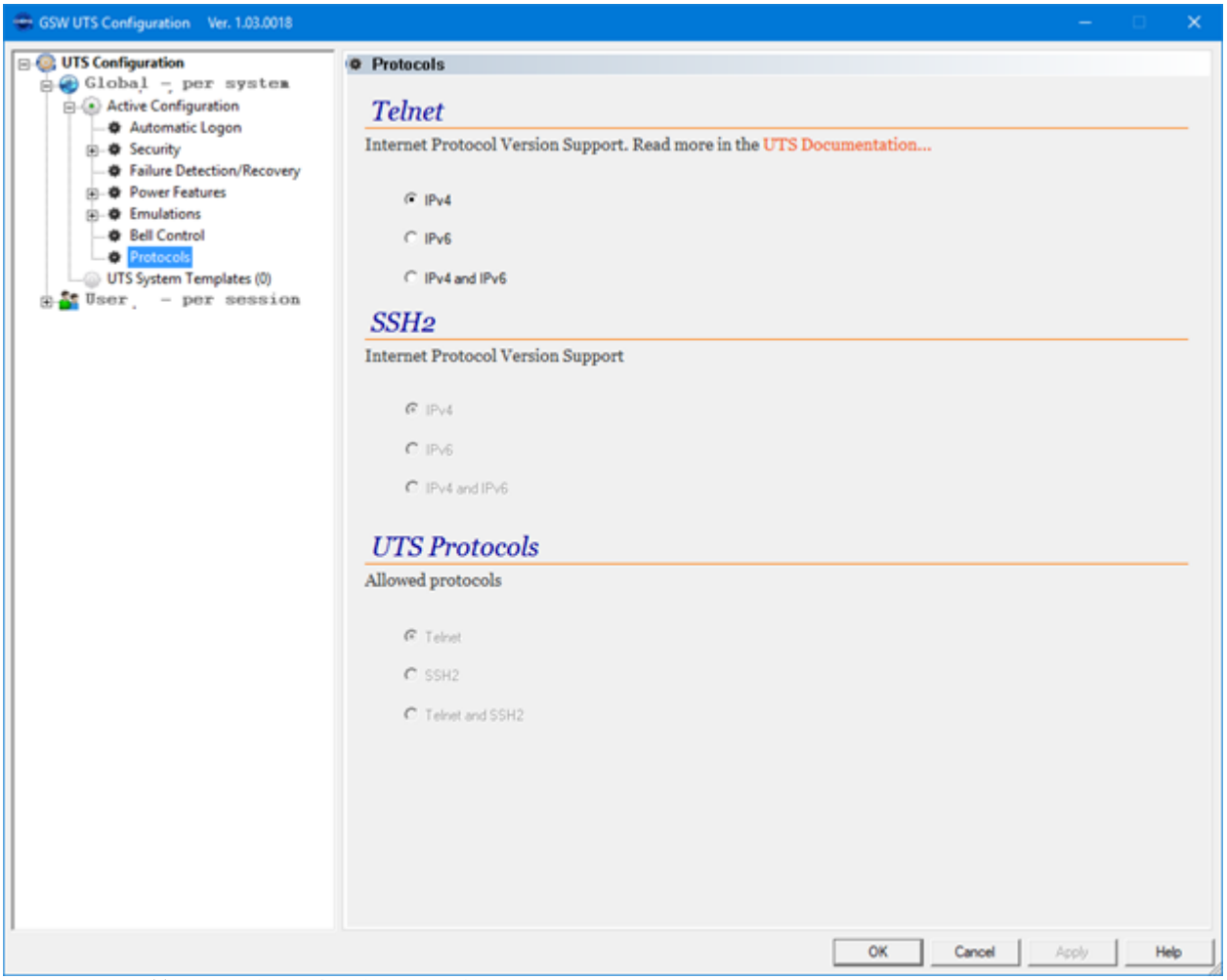


Figure 209: GSW UTS GUI - Active Configuration - Protocols

The Protocols screen provides configuration of:

- Telnet Internet Protocol Version Support (See page 256)
- SSH Internet Protocol Version Support (See page 257)
- UTS Protocols – Allowed Protocols (See page 258)

Note: The UTS Service needs to be restarted before any of the protocol changes will occur.

UTS System Templates

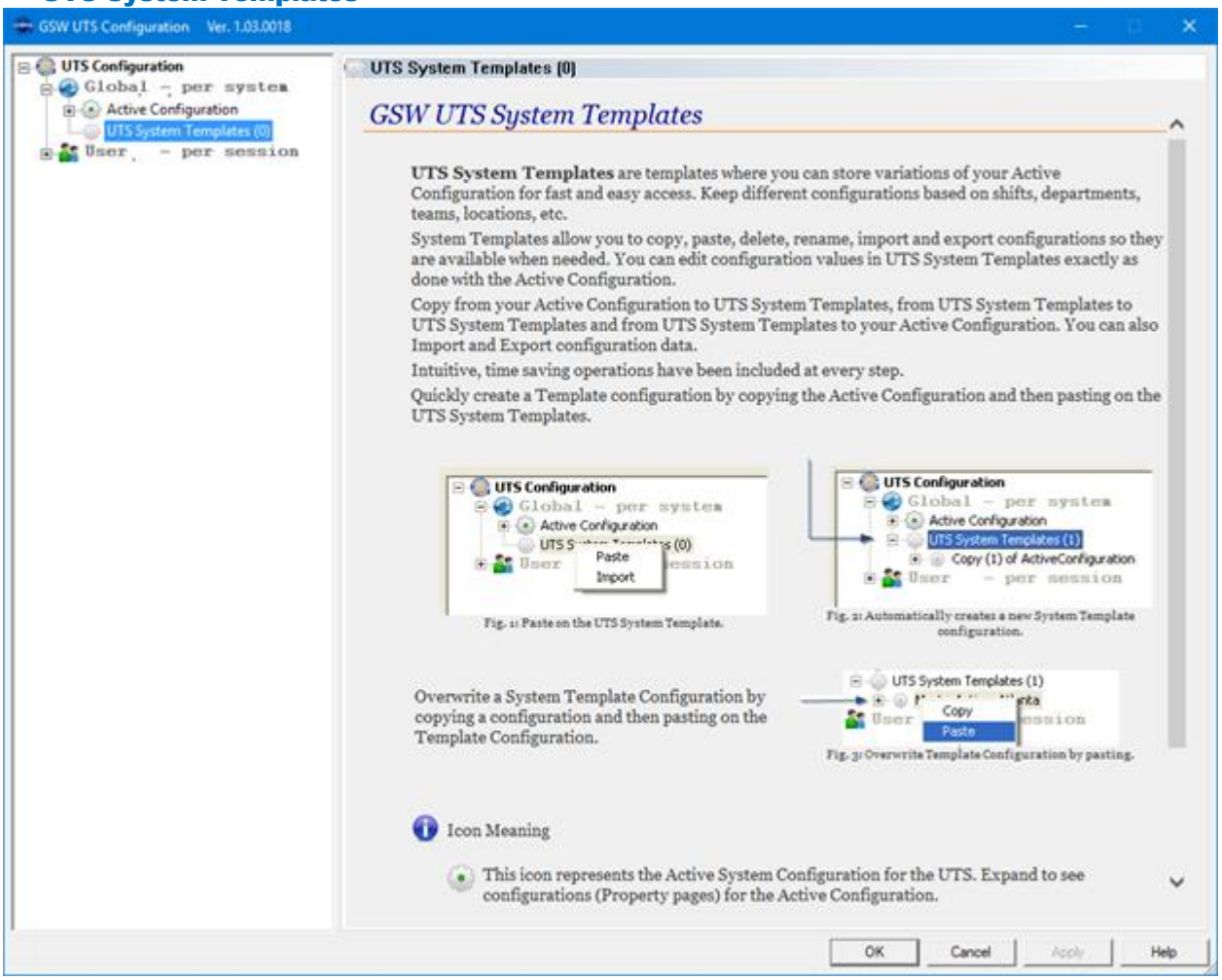


Figure 210: Global - System Templates

UTS System allows you to create and store variations of your active configuration for fast and easy access.

NOTE: Text files used for configuration are not available in Templates.

> If you want to ensure configuration text files are associated with a specific template, then you should manually backup the text file(s) with a corresponding name.

UTS System Template - Individual

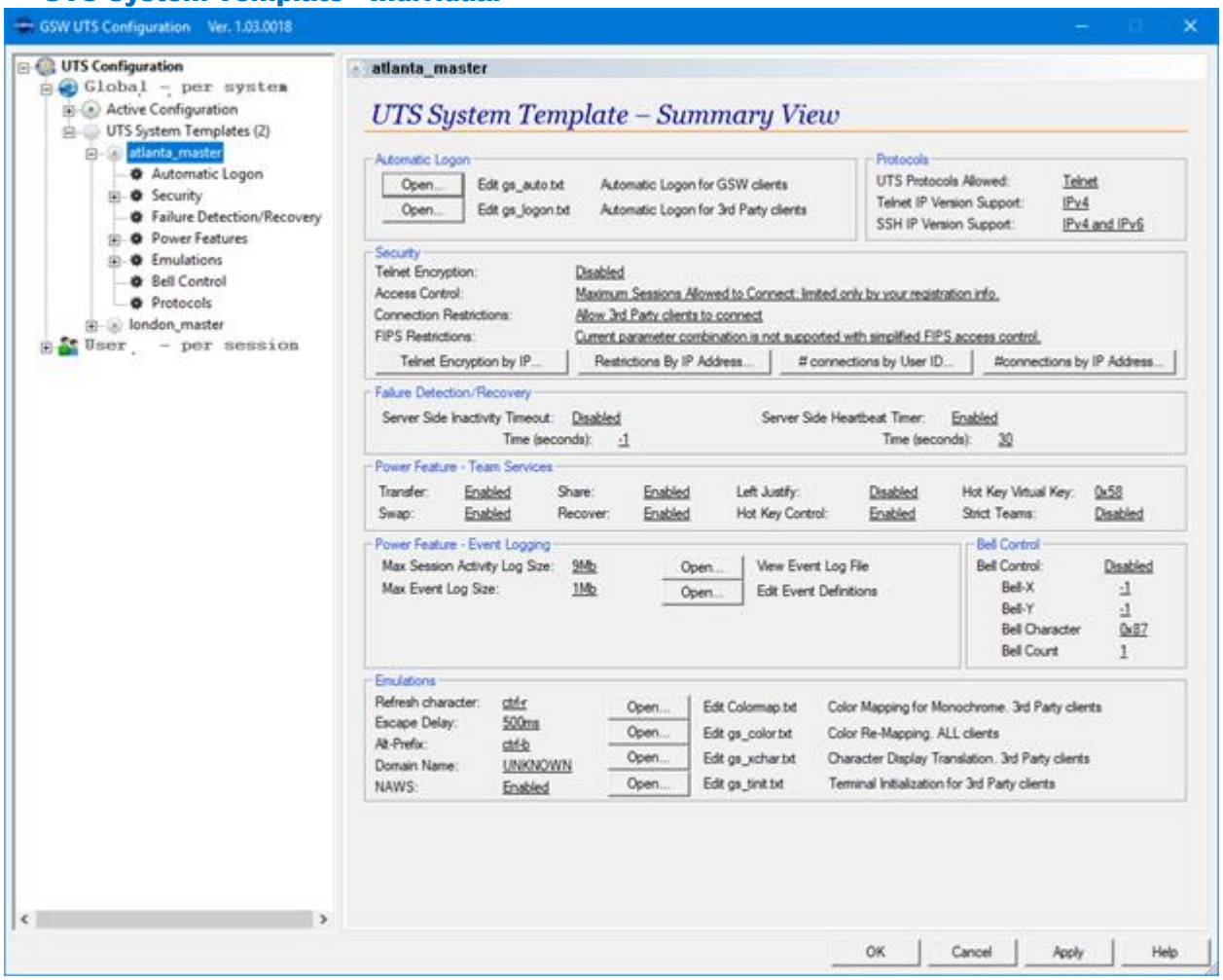


Figure 211: Global - System Template - Individual

Each Template is of the same format as the Active Configuration. Please see the Active Configuration for details.

NOTE: Text files used for configuration are not available in Templates.

> If you want to ensure configuration text files are associated with a specific template, then you should manually backup the text file(s) with a corresponding name.

User – per session Configuration – Features

Overview

Each session has an associated configuration. This is true of sessions initiated by Domain Users, Local Users, Grandfathered Users, and IP Address/Range connections.
Each of the session configurations is termed "User – per session" or "User" configuration.

The GSW Configuration GUI Tool allows the administrator to organize the configurations based on Domains, Domain Names, Domain Name Users, Local Users, IP Address Ranges, Grandfathered Users and User Templates. Additionally, a default configuration may be specified for different objects.

This provides a powerful user configuration hierarchy that can be traversed and the UTS will apply the appropriate configuration. It is important to understand the configuration hierarchy.

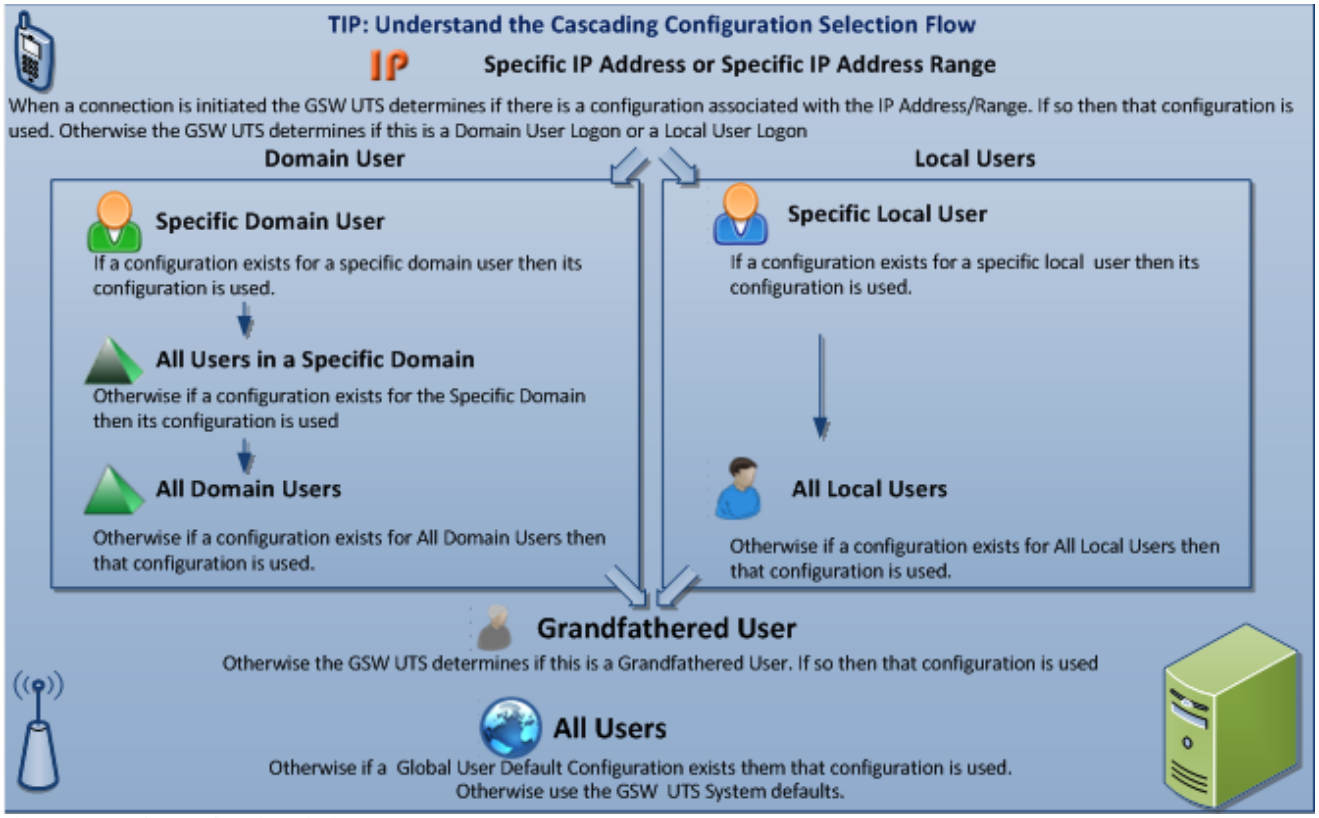


Figure 212: Cascading Configuration Selection

As pointed out above, when a connection is initiated the UTS checks for an existing configuration is in the IP Address/Range objects. If a matching configuration[53] is not found then the UTS determines if the connection is either a Domain User or Local User.

If it is a domain user, then the UTS determines if there is a matching Domain User within the matching Domain Name. If not, then the UTS determines if a Default configuration exists for the specific Domain Name. If not, then the UTS determines if there is a Default configuration for All Domain Users. If not then the UTS checks to see if there is a configuration match with Grandfathered User[54]. If there is no match then the

[53] A matching IP configuration means that the IP address has a matching entry in GS_IP_Rt.txt file.

[54] A configuration match means that there is a folder in the scripts folder named with the same name as the user name.

UTS checks if there is a Default configuration for All Users, and if there is still no match then the UTS system defaults are used.

Continuing from above if the connection being initiated is not a domain user then the UTS but a local user then the UTS determines if there is a matching Local User configuration. If no match exists, then the UTS determines if a Default configuration exists for all Local Users. If not then the UTS checks for a configuration match[55] with Grandfathered User. If there is no match then the UTS checks if there is a Default configuration for All Users, and if there is still no match then the UTS system defaults are used.

[55] A configuration match means that there is a folder in the scripts folder named with the same name as the user name.

Default Configurations

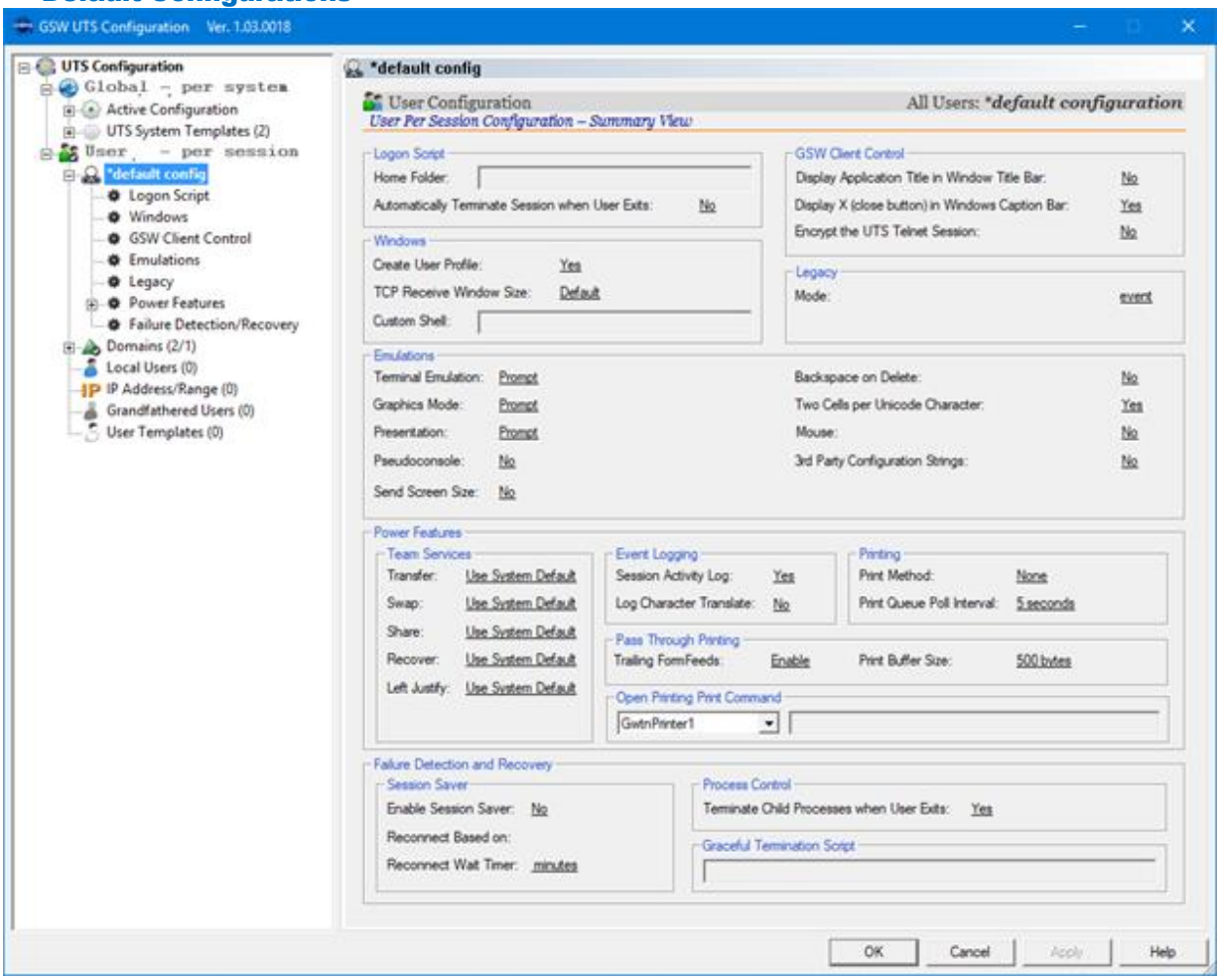


Figure 213: GUI Tool - User Default Configuration

Default configurations may be created for the objects listed in Table 58. You can quickly determine if a default configuration exists for an object by viewing if it has the black circle with a white check in the bottom right of the icon as shown below.

	ICON	Create Default Configuration	
7	 User - per session		If a session for a user (domain or local) is initiated and there no specific configuration for that user and there is not a default configuration for in the Specific Domain or All Domains (for domain user) or All Local Users (for a local user) then use the User - per session default configuration.
8	 All Domains		If a session for a domain user is initiated and there is not a specific configuration for that domain user and there is not a default configuration for that domain name, then use the ALL Domains Default configuration.
9	 Specific Domain		If session for a specific domain name is initiated and there is not a specific configuration for that domain user, then use the Specific Domain Name Default Configuration
11	 All Local Users		If a local user session is initiated and there is not a specific configuration for the user, then use the All Local Users Default Configuration

Table 58- Objects that may have a Default Configuration

A default configuration is a user configuration. It is configured in the same way as a user configuration. A default configuration is created by right clicking and selecting "Create Default Configuration".

Domains

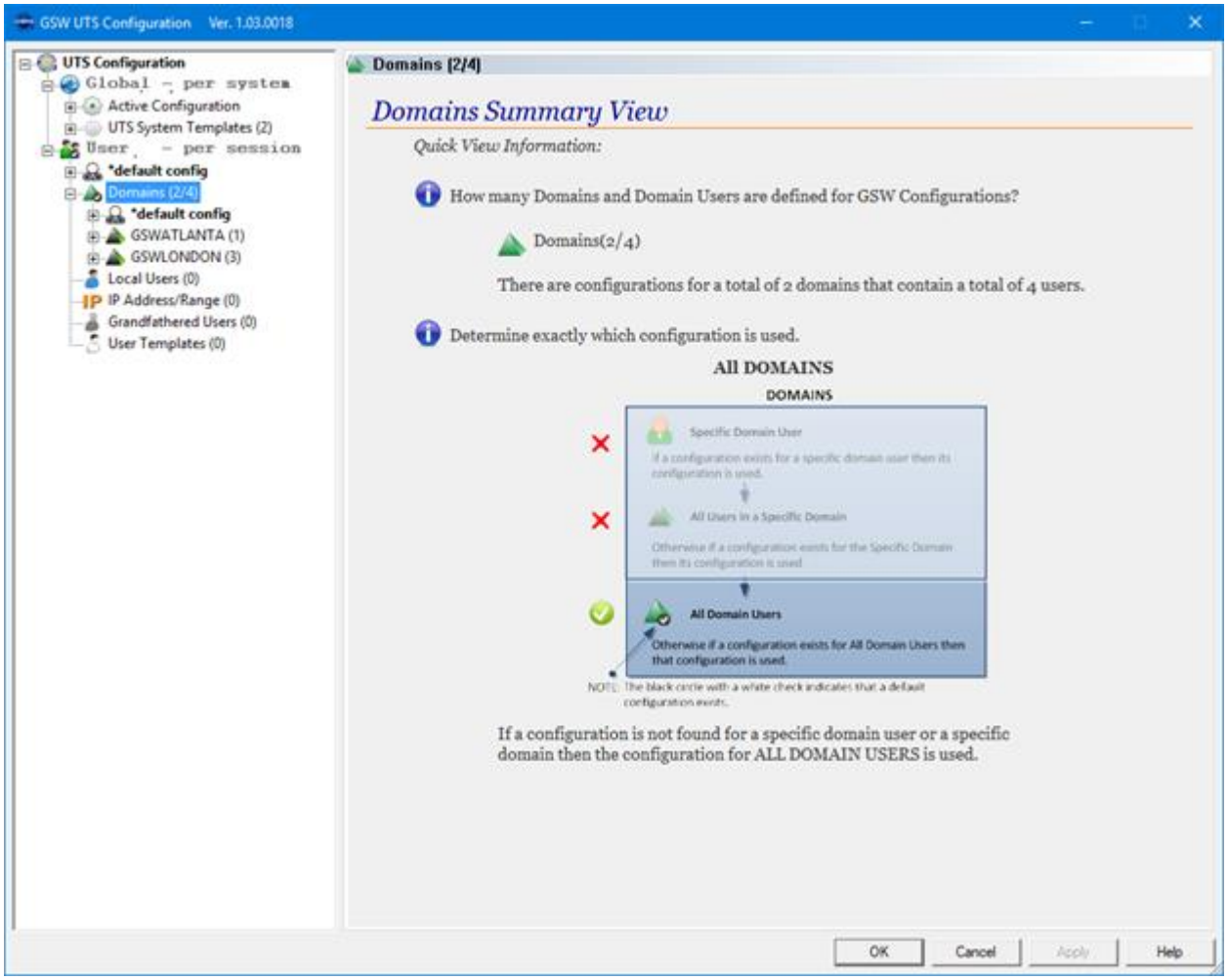


Figure 214: GUI Tool - Domains

The Domains screen allows you to view quick status information such as how many domains configurations are defined, how many users are defined for each domain. Additionally, the administrator may perform right click operations at the Domain level such as adding, deleting domains, creating default configurations etc.

Domain Name

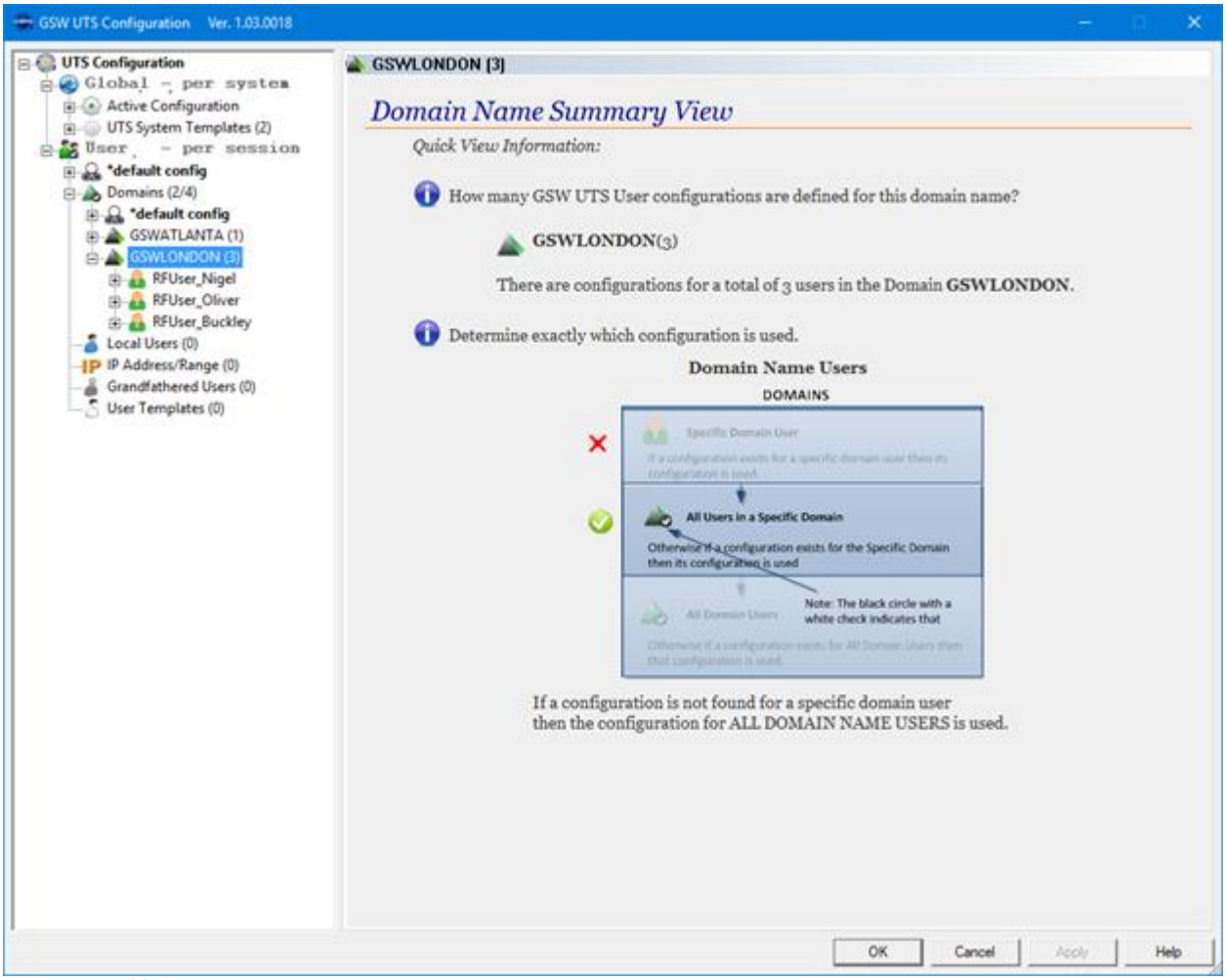


Figure 215: GUI Tool - Domain Names

The Domain Name screen allows you to view quick status information such as how many user configurations are defined for this domain name. The administrator may also perform right click operations at the Domain Name level such as adding, deleting users for this Domain Name, creating default configurations, etc.

Domain Name – User and Summary

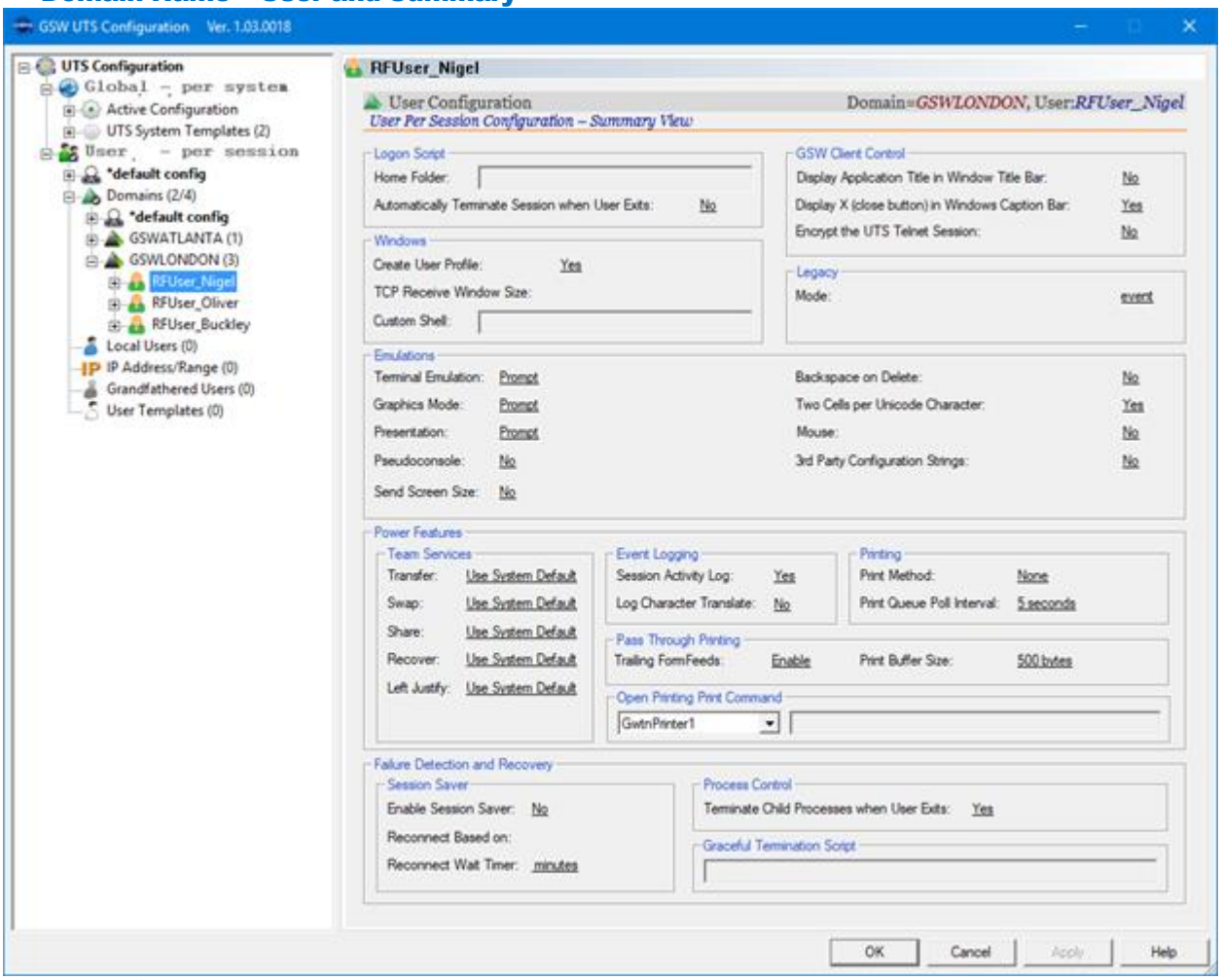


Figure 216: Domain Name User

The configuration summary description for a Domain Name User, Local User, Grandfathered User and User Template are the same. Differences are noted in the overview section of each object.

Please see the Local User Configuration for details on the property pages for Users on page 405.

Local Users

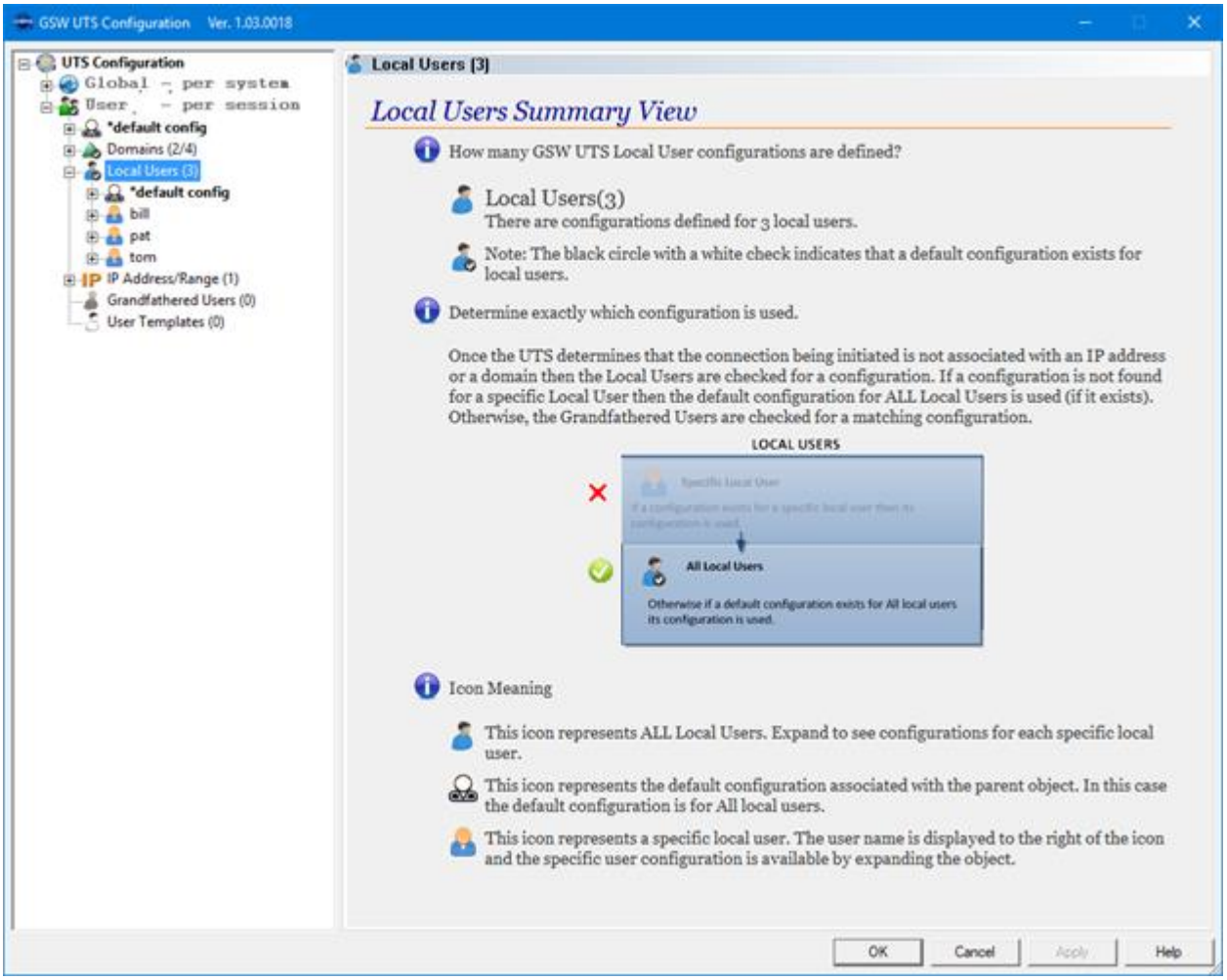


Figure 217: GUI Tool - Local Users

When expanded the Local Users Summary View provides the administrator with the number of Local Users that have a configuration defined, the Local User names and if a default configuration exists for the Local Users object.

Expand each Local User to access their configuration property pages.

Local User - Summary

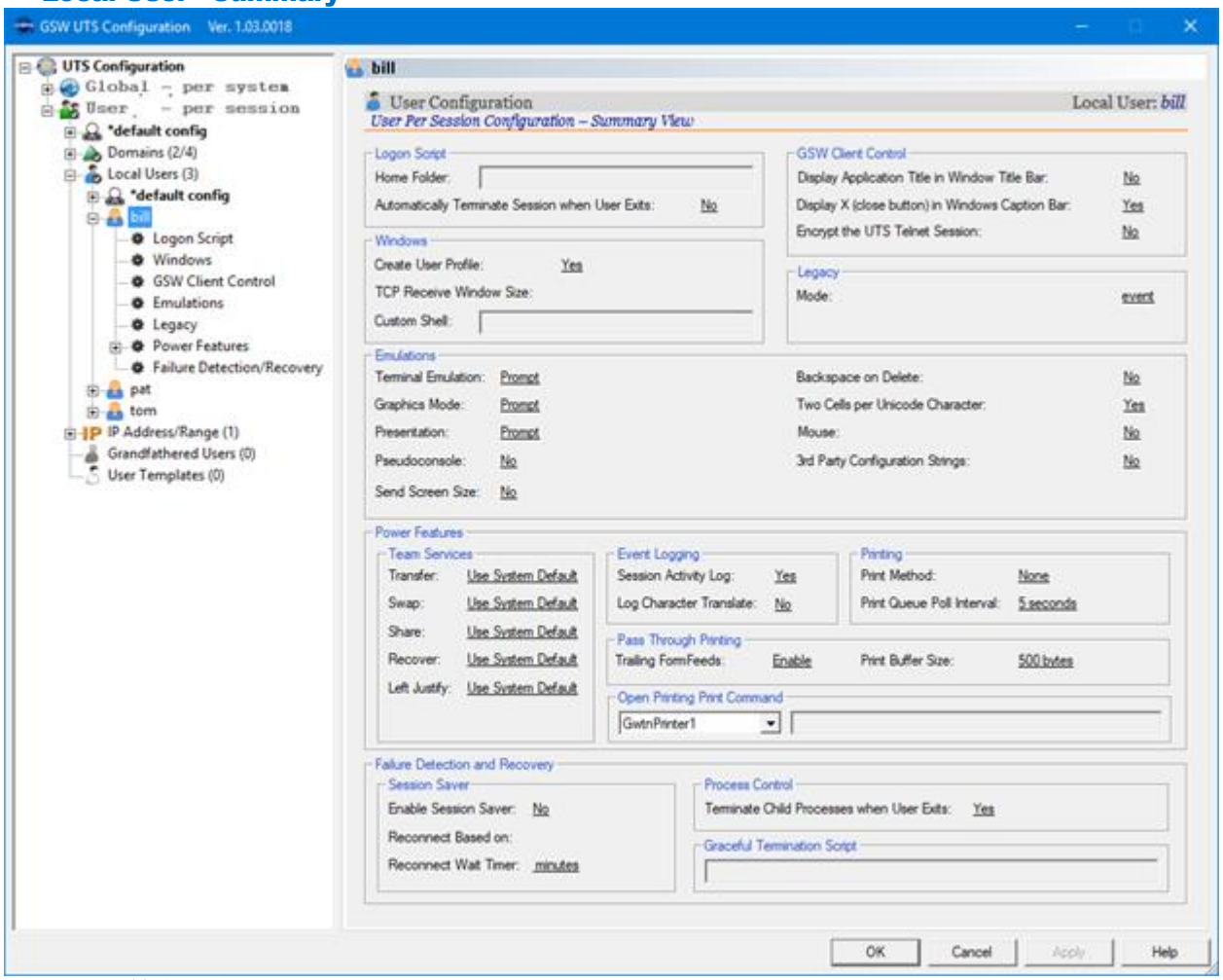


Figure 218: GUI Tool - Local User Summary

The Local User Summary provides the administrator with a quick view (on the right side of the display) of most of the Local Users configuration settings. From the User Summary view it is easy to determine which property page to use to edit the configuration setting. Each configuration setting resides within a frame with a label. For example: Logon Script is a label on the frame around the "Home Folder" configuration setting. On the left side of the display is the property page icon with Logon Script as the name. The Home Folder property is available in the Logon Script property page. Simply click on the Logon Script property page to display its properties for editing. There are a few exceptions to this direct association due to screen space but will still be easy to find.

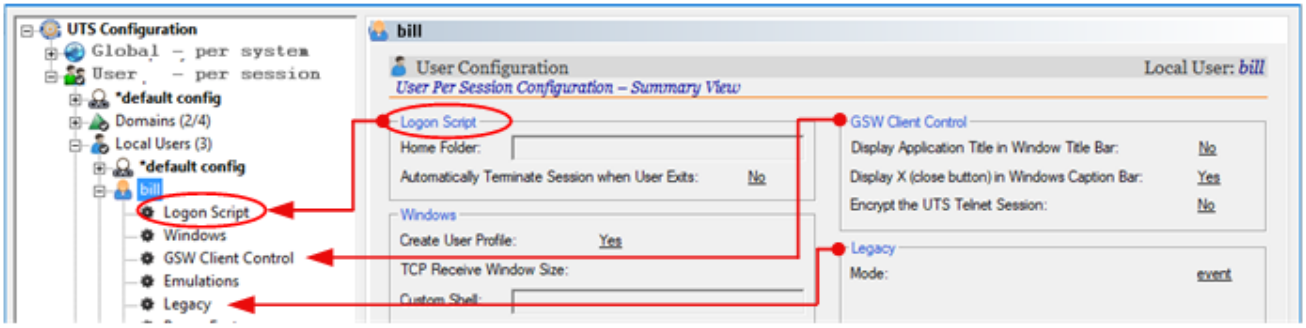


Figure 219: User Configuration Summary Labels and Property Page association.

Local User – Logon Script

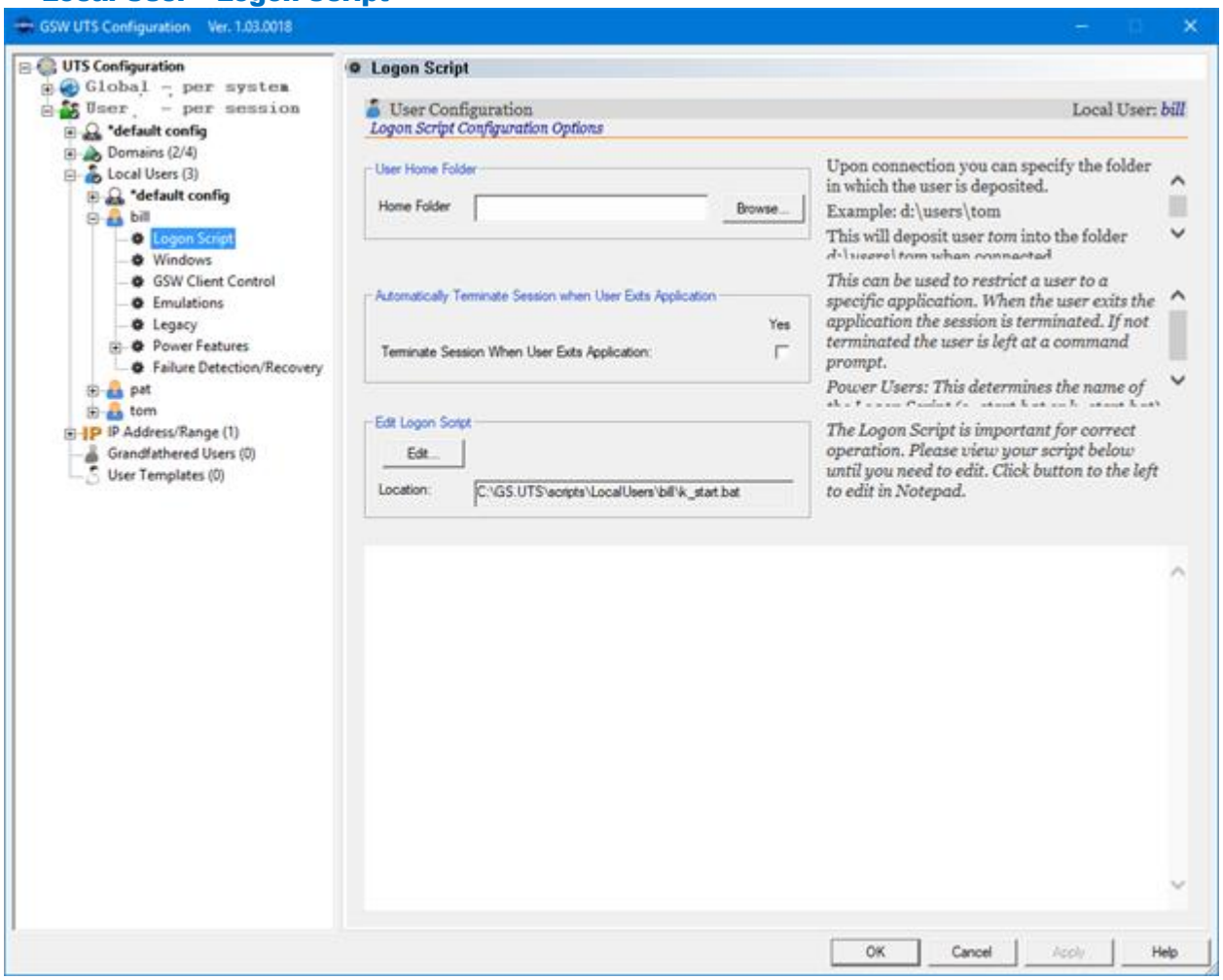


Figure 220: GUI Tool - Local User Logon Script

The Logon Script provides configuration for:

- Home Folder (See page 299)
- Automatically Terminate Session when User Exits Application (See page 218 and page 100)

and allows editing of the batch text file

- Logon Script Batch File (See page 218)

Local User - Windows

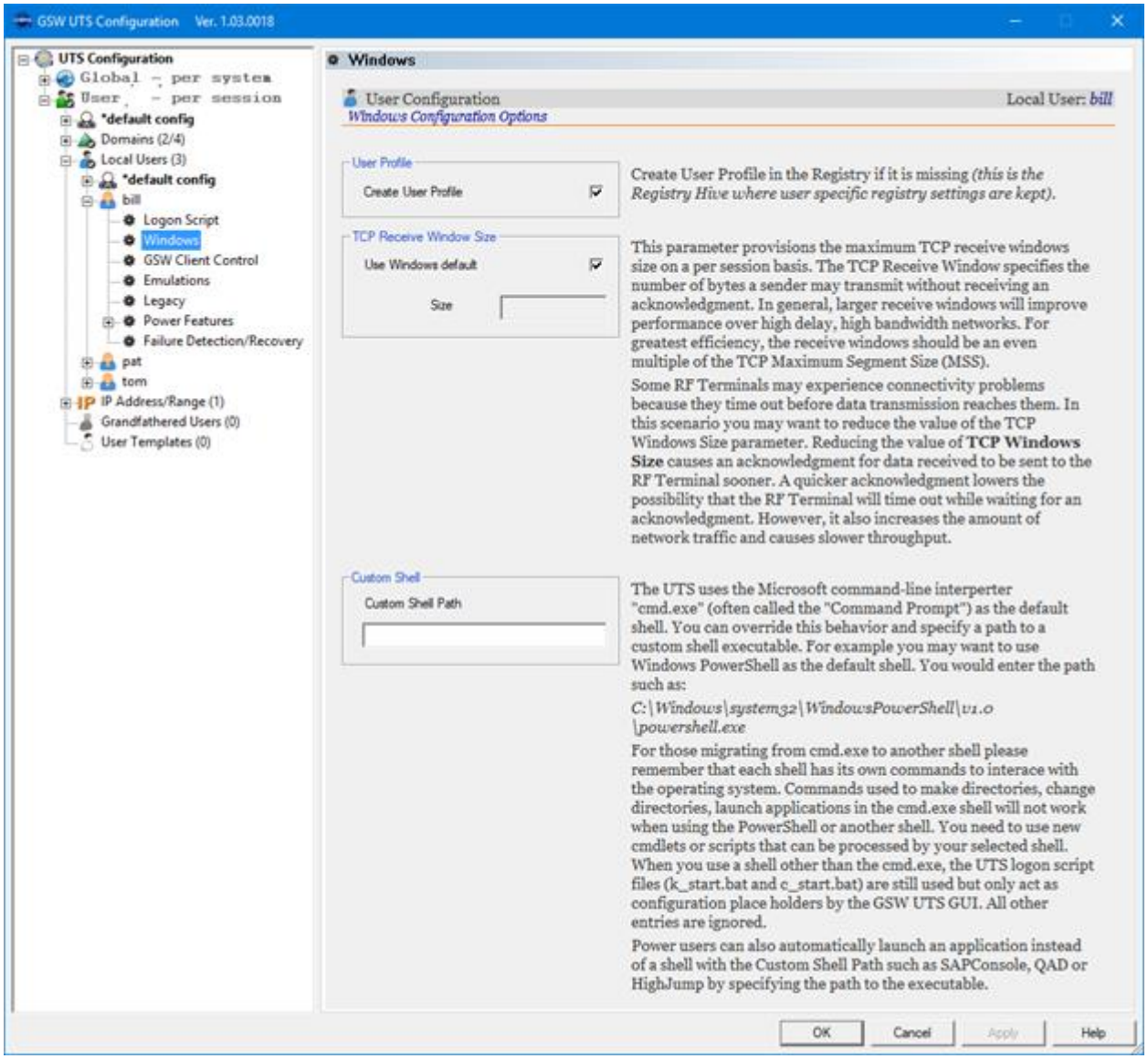


Figure 221: GUI Tool - Local User Windows

The Windows Configuration options provides configuration for:

- Create User Profile (See page 247)
- TCP Receive Window Size (See page 246)
- Custom Shell Path (See page 249)

Local User – GSW Client Control

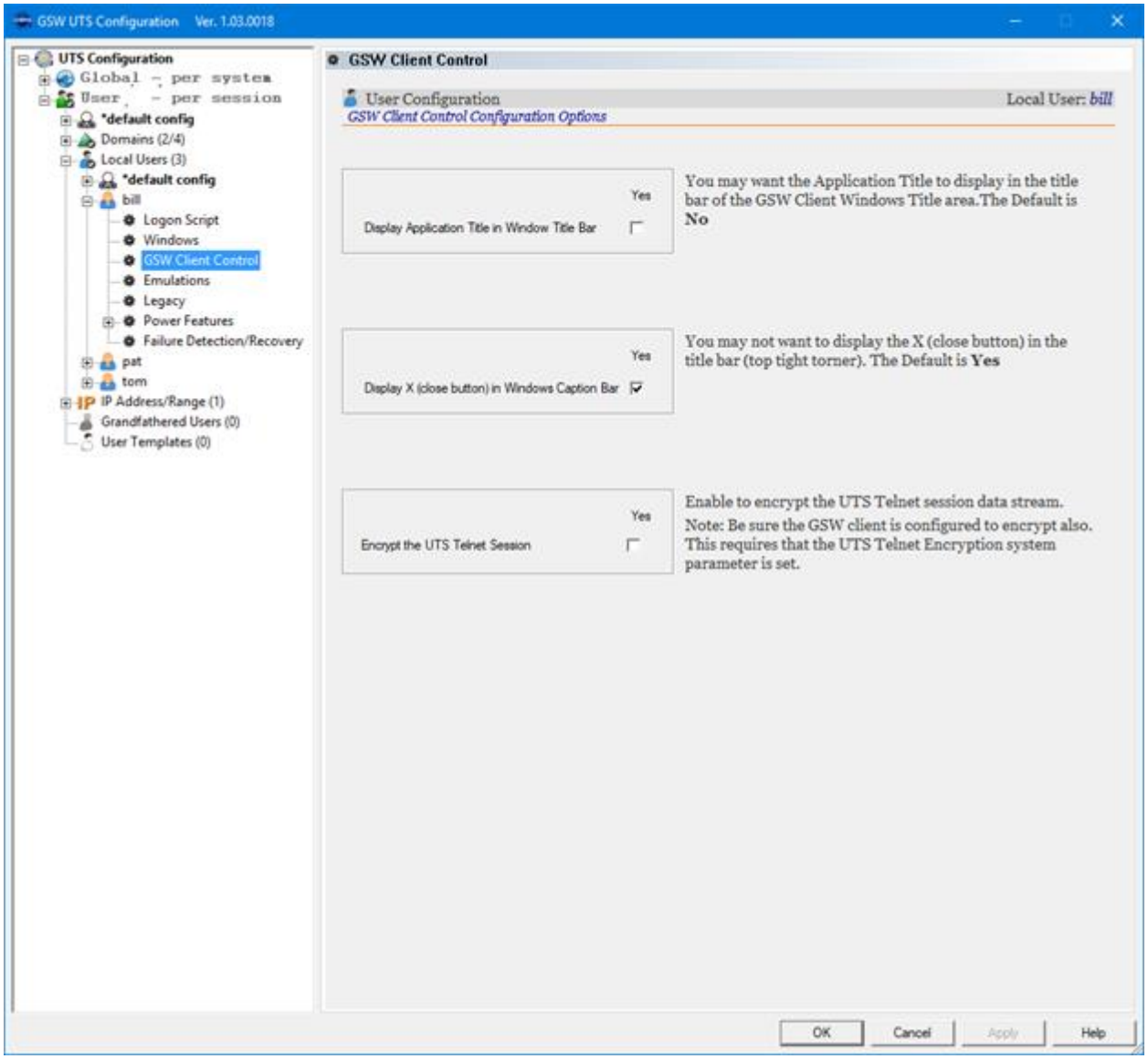


Figure 222: GUI Tool - Local User GSW Client Control

The GSW Client Control provides configuration for:

- Display Application Title in Window Title Bar (See page 85)
- Display X (close button) in Windows Caption Bar (See page 86)
- Encrypt the UTS Telnet Session (See page 93)

Local User – Emulations

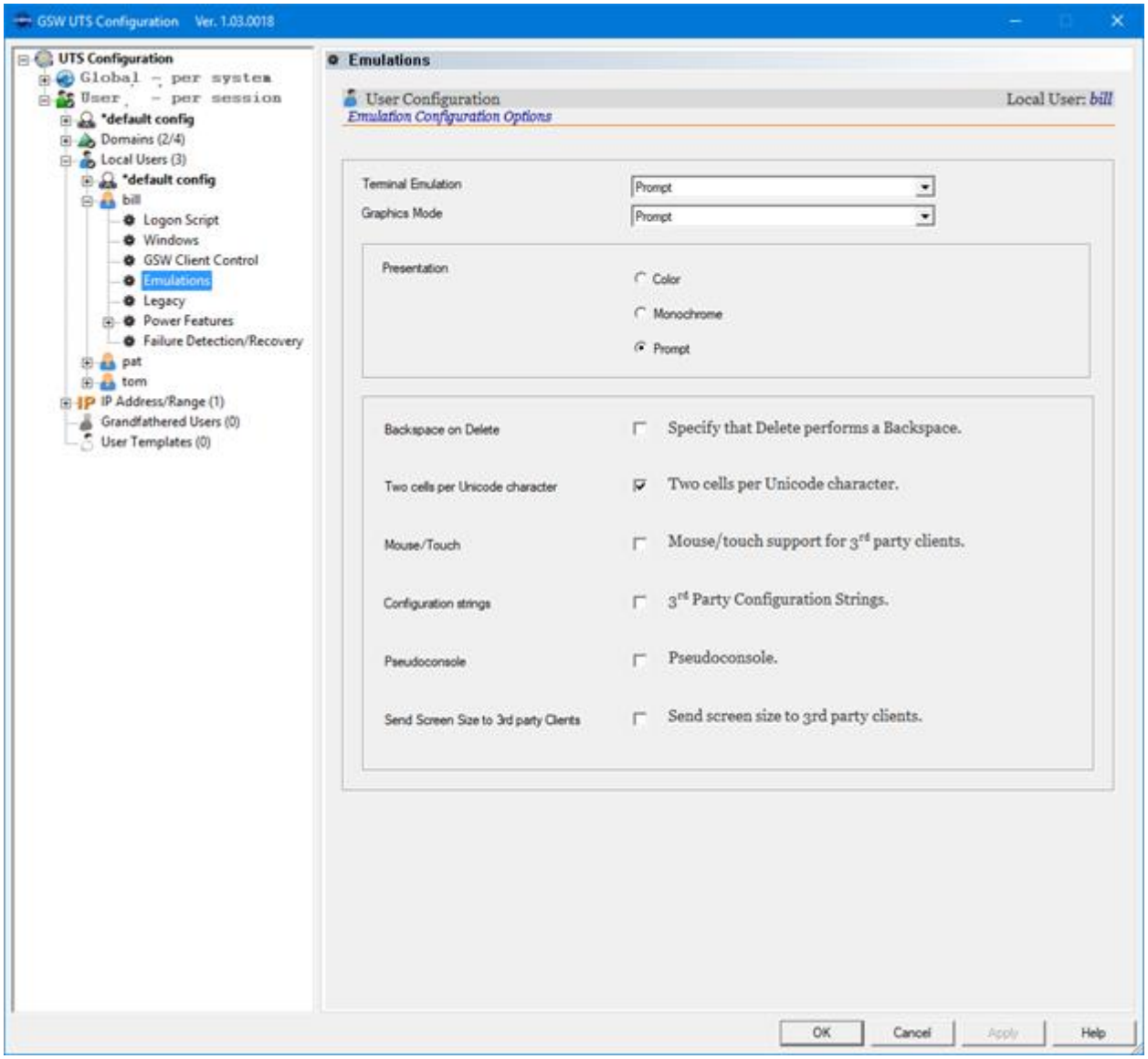


Figure 223: GUI Tool - Local Users - Emulations

The Emulation page provides configuration for:

- Terminal Emulation (See page 166)
- Graphics Mode (See page 168)
- Presentation (Color, Monochrome or Prompt) (See page 170)
- Backspace on Delete (See page 185)
- Two cells per Unicode character (See page 186)

Local User – Legacy

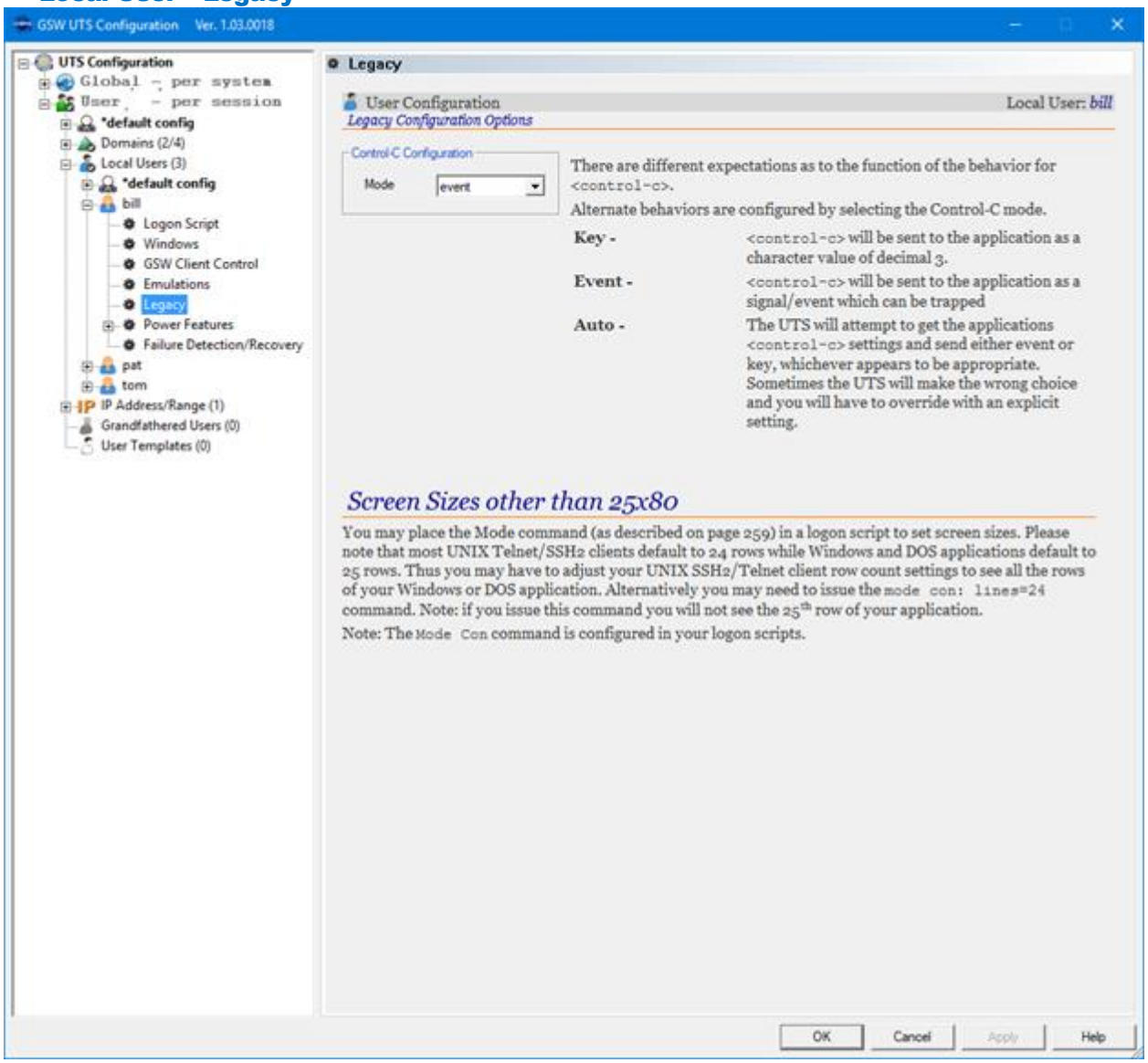


Figure 224: GUI Tool - Local Users - Emulations

The Legacy page provides configuration for:

- Control-C (See page 164)

Local User – Power Features – Summary

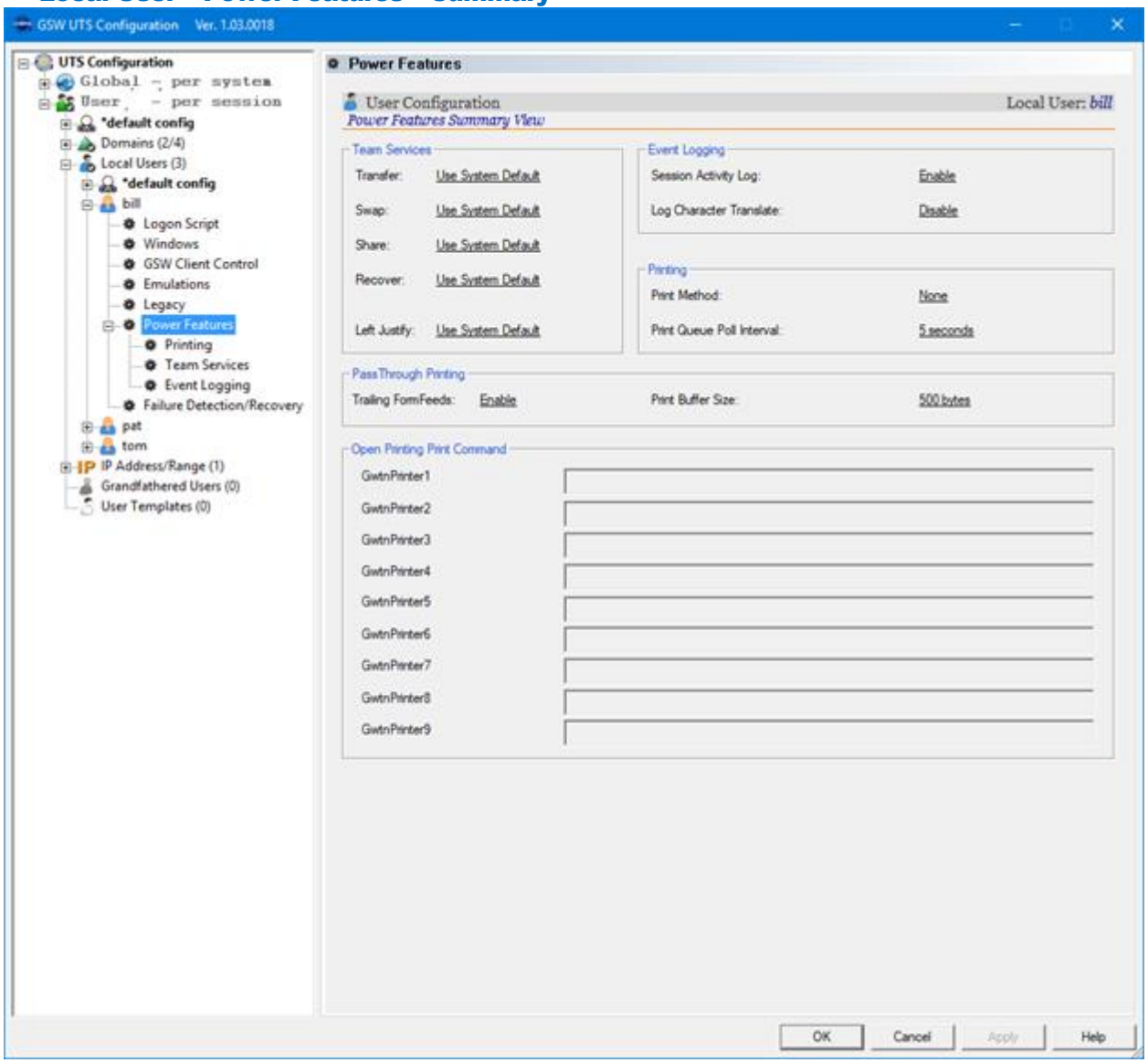


Figure 225: GUI Tool - Local Users – Power Features Summary

The Power Features Summary View provides a quick view of the

- Team Services configuration (See page 117)
- Log Files configuration
  - Session Activity Log (See page 215)
  - Log Characters Translate (See page 217)
- Printing Configuration
  - Print Method (See page 226)

- Print Queue Poll Interval (see page 331)
- Pass Through Printing – Trailing Form Feeds and Print Buffer Size (See page 241)
- Open Printing Print Command (See page 236)

Local User – Power Features - Printing

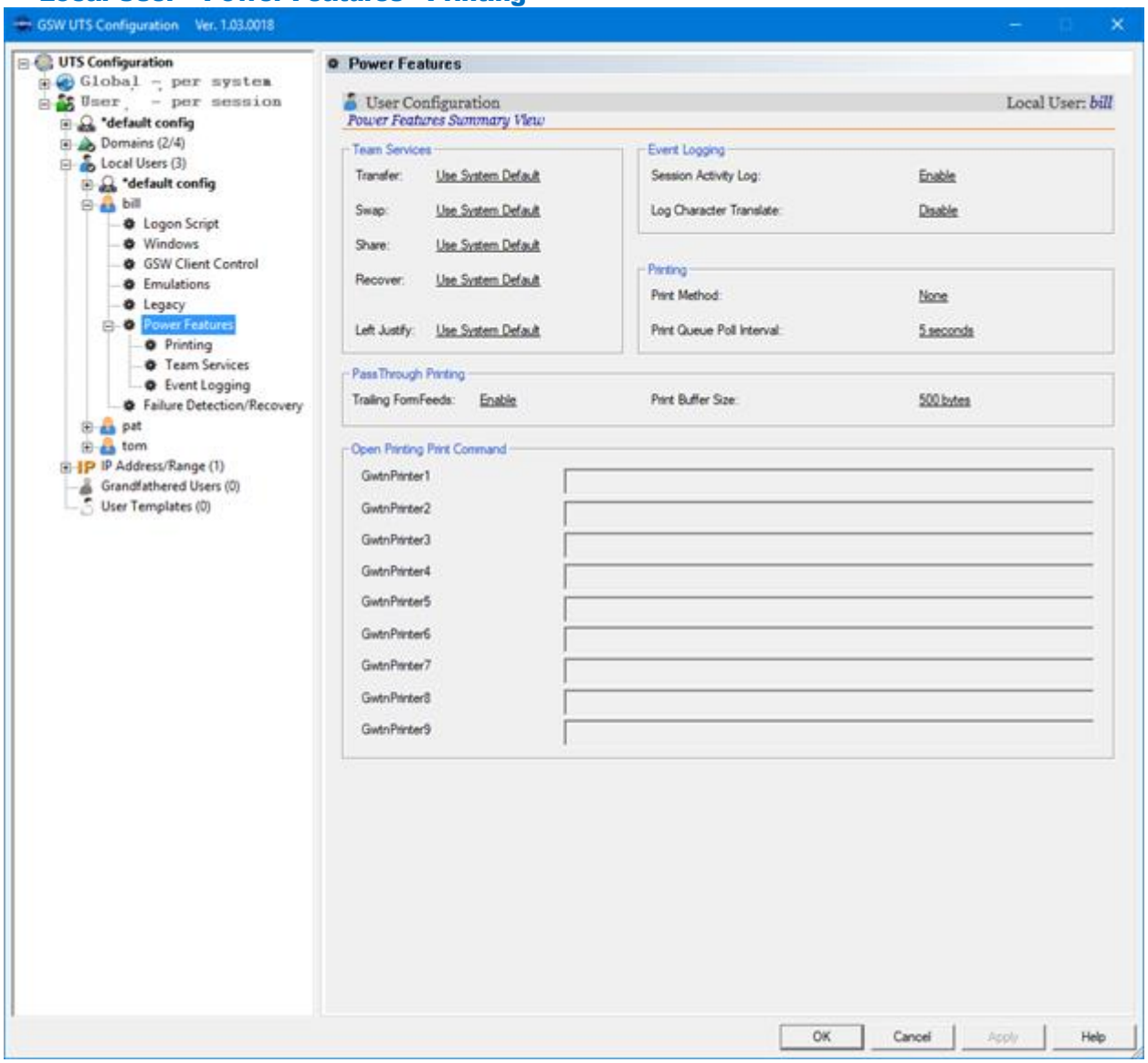


Figure 226: GUI Tool - Local Users – Power Features - Printing

The Power Features Printing provides configuration of:

- Print Method (See page 226)
- Print Queue Poll Interval (See page 331)
- Pass Through Printing – Trailing Form Feeds and Print Buffer Size (See page 241)
- Open Printing Print Command (See page 236)

Local User – Power Features – Team Services

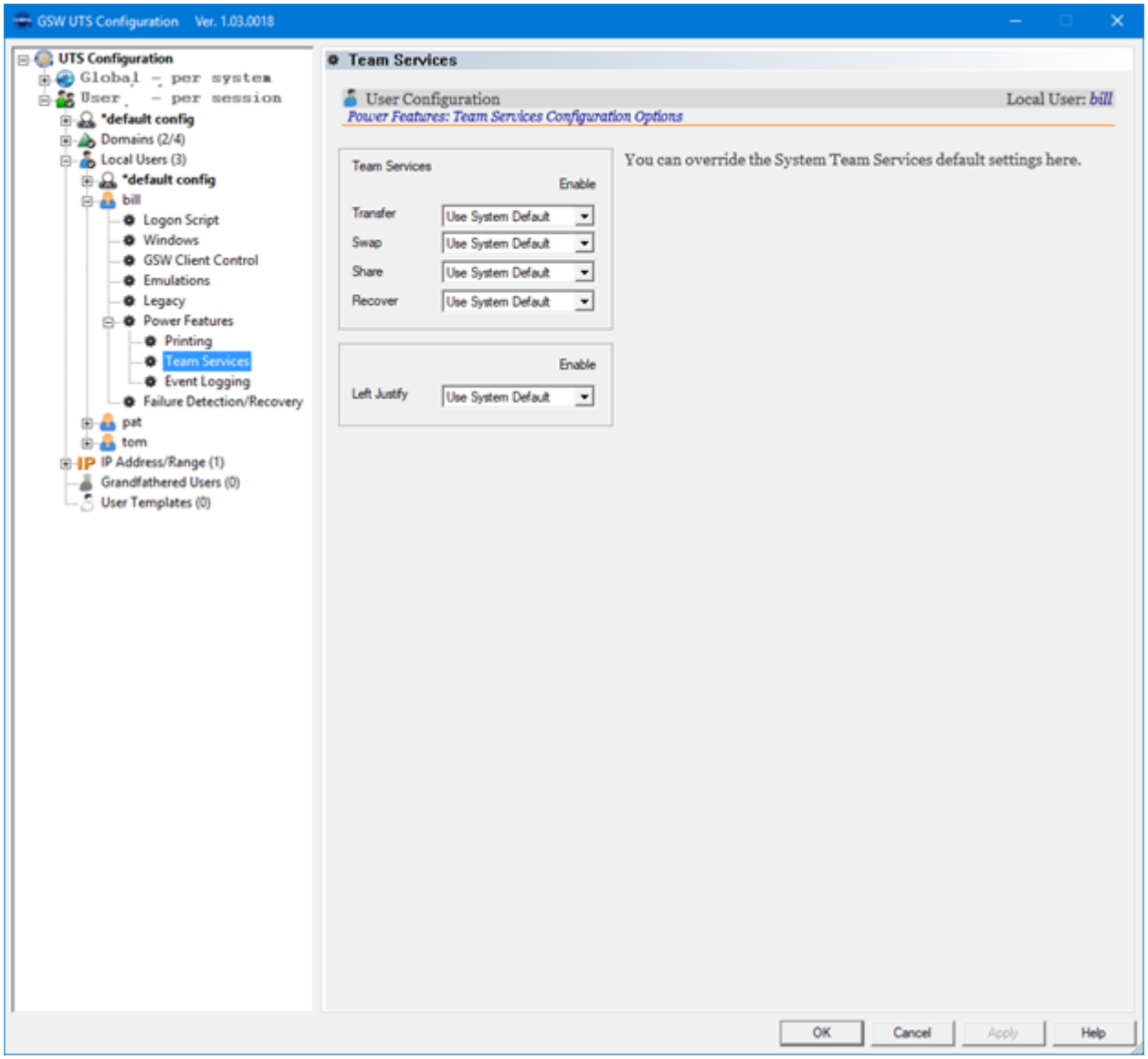


Figure 227: GUI Tool - Local Users – Power Features – Team Services

The Power Features – Team Services provides configuration of:

- Team Services Override Overview (See page 137)
- Override Transfer (See page 139)
- Override Swap (See page 140)
- Override Share (See page 141)
- Override Recover (See page 138)
- Override Left Justify (See page 142)

Local User – Power Features – Event Logging

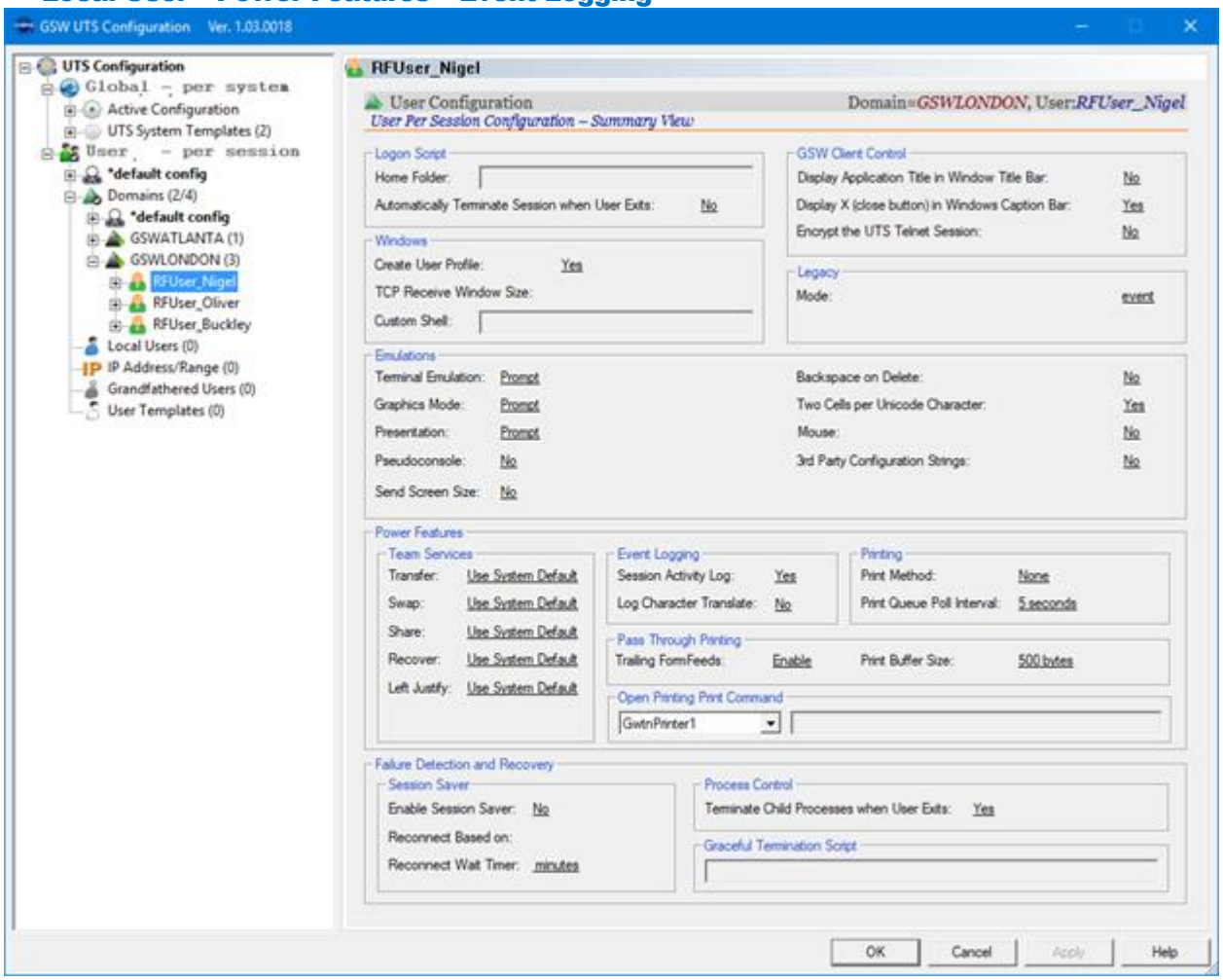


Figure 228: GUI Tool - Local Users – Power Features – Event Logging

The Power Features – Event Logging provides configuration of:

- Session Log Enable (See page 215)
- Log Character Translate (See page 217)

Local User – Failure Detection/Recovery

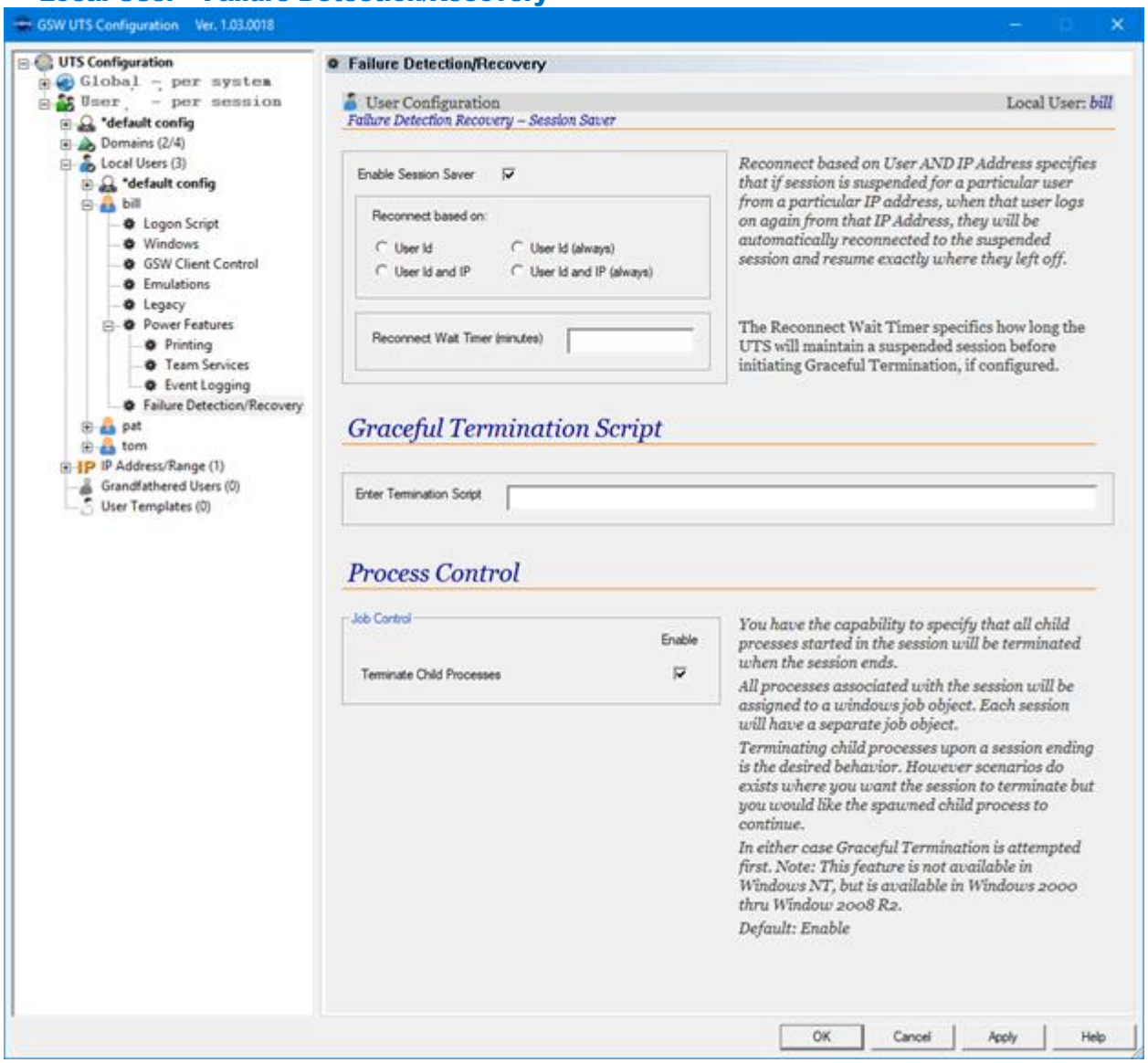


Figure 229: GUI Tool - Local Users – Failure Detection/Recovery

The Failure Detection and Recovery configuration of:

- Enable Session Saver (See page 149)
- Reconnect Based on…. (See page 151)
- Graceful Termination Script (See page 158)
- Process Control (See page 162)

IP Address Range

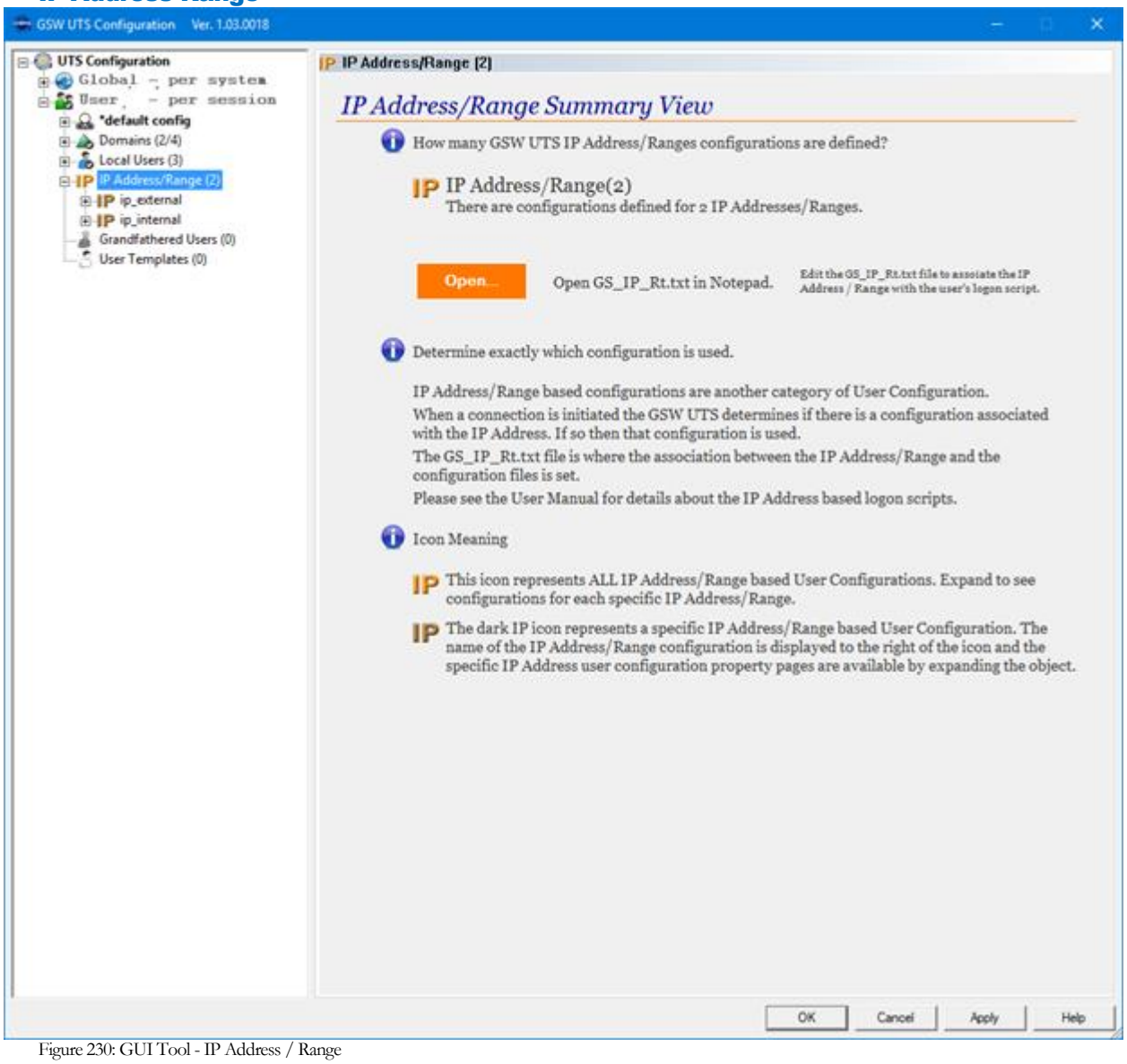


Figure 230: GUI Tool - IP Address / Range

The IP Address/Range Summary View and Specific IP Address/Range provides configuration of:

- IP Address Range Logon Scripts (See page 220)
- User Configuration for IP Address

The association between the logon script and the IP address is specified in the GS_IP_Rt.txt file.

Note: IP Address/Ranges user configurations contain the same property pages as all session users. Each page is described in the Local Users section (For details on each property page please see page 405)

Grandfathered Users

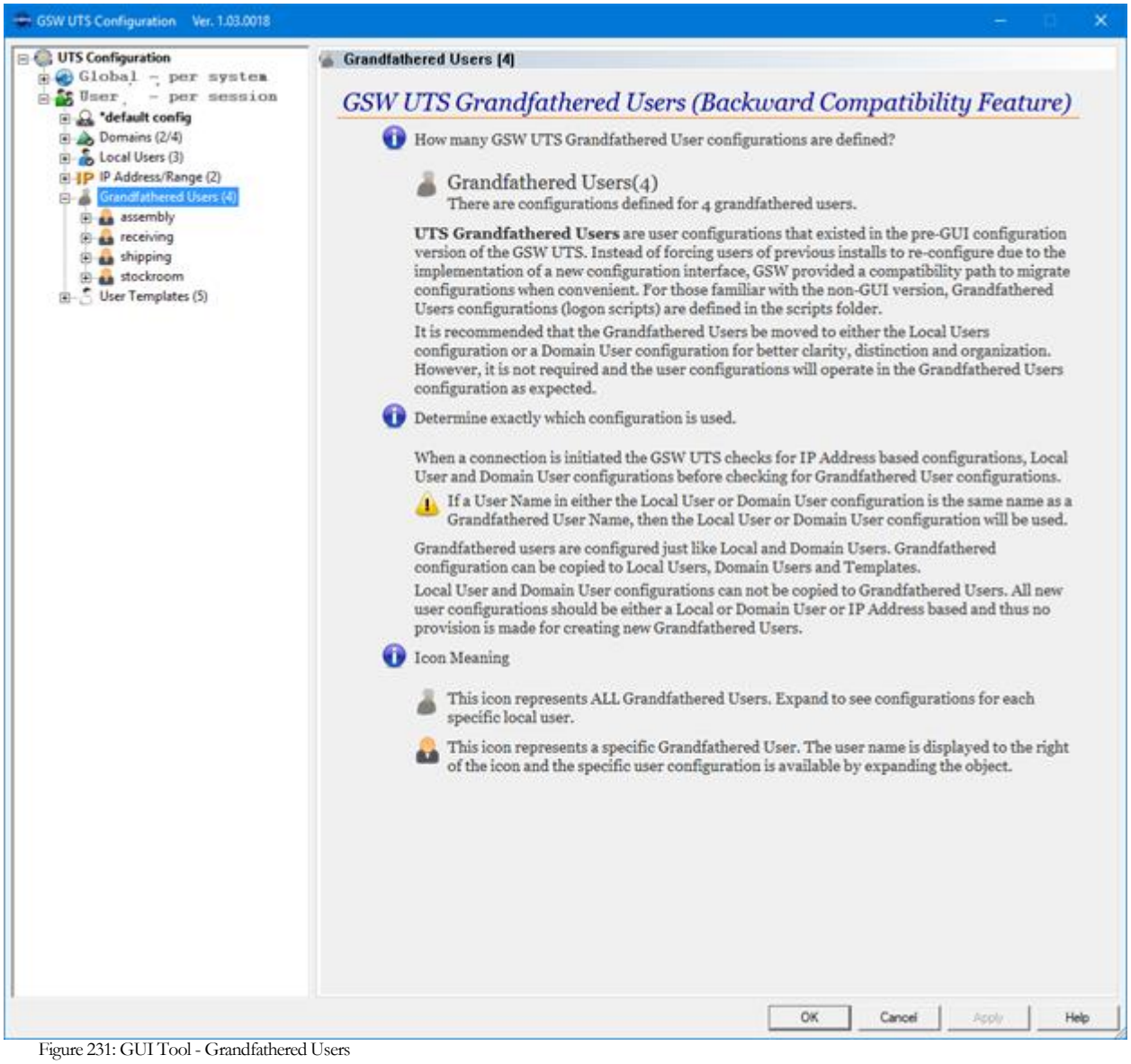


Figure 231: GUI Tool - Grandfathered Users

The Grandfathered Summary View and Specific Grandfathered User configuration provides:

- User Configuration for the Grandfathered User

Note: Grandfathered Users contain the same property pages as all session users. Each page is described in the Local Users section (For details on each property page please see page 405)

User Templates

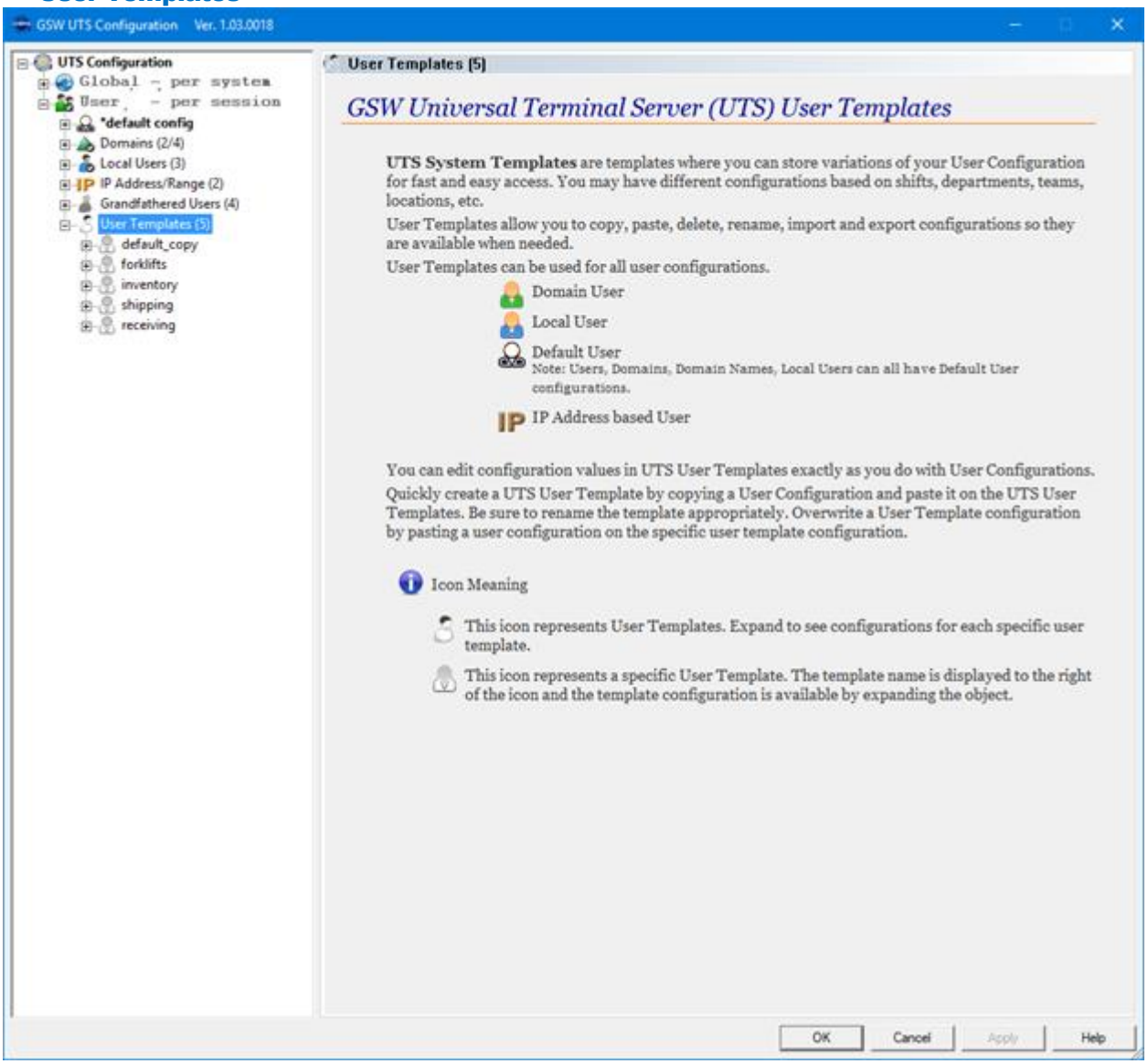


Figure 232: GUI Tool - User Templates

The User Templates View and Specific User Templates configuration provides:

- User Configuration for the User Templates
- Note: User Templates contain the same property pages as all session users. Each page is described in the Local Users section (For details on each property page please see page 405)

.

System Signature - IMPORTANT PLEASE READ

The registration software obtains a system signature that is unique to your system. This signature is an added security measure to inhibit unauthorized personal to obtain working copies of the Georgia SoftWorks SSH2/Telnet Server for Windows.

The signature is comprised of hardware and software identifiers that exist on your system that make the target system unique. These identifies are hashed into a Product ID and 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 Georgia SoftWorks SSH2/Telnet Server for Windows. If this occurs, please re-register the product (See page 16). Please contact Georgia SoftWorks Technical Support if needed.

Specifications

GSW SSH2/Telnet Server Operating System Platforms

The Georgia SoftWorks SSH2/Telnet Server operates on:
Windows Versions: Windows 7/8/10/VISTA/Server 2008/Server 2008 R2/Server 2012, Server 2016, Server 2019, NT/XP/2000/Server 2003

The Georgia SoftWorks Telnet Server operates with 3rd Party RFC 854 Telnet clients and GSW Telnet Clients.

The Georgia SoftWorks SSH Server operates with 3rd Party SSH compliant clients and GSW SSH Clients.

GSW Telnet Client Operating System Platforms

Desktop Clients

The Georgia SoftWorks Desktop SSH2/Telnet Client operates on Windows 95/98/ME[56], Windows NT, Windows 2000, Windows 2003, Windows Vista, Windows 7/8/10, 2008, 2008 R2, 2012, 2016, 2019 and Windows operating System Versions.

Desktop Client Device
Including but not limited to

- MobileDemand xTablet T7000 (Windows 7)

Mobile Windows Clients

Georgia SoftWorks Telnet Clients for Windows CE are available for

- Pocket PC 2003 class devices
- Windows CE .NET 4.2/5/6
- Windows Mobile 5+

Georgia SoftWorks SSH Clients for Windows CE are available for

- Many Windows CE Version 4.2/5/6 class devices
  Including but not limited to:
  - Datalogic Elf, Falcon X3
  - Honeywell LXE MX3X, LXE Thor, Dolphin 6500
  - Intermec CK30
  - Janam XG100
  - Psion-Teklogix 7535, Psion-Teklogix 8525, Omni XT10
  - Motorola MC9190, Symbol MC 9060G,
  - PSC Falcon 4410

- Many Windows Mobile versions class devices
  Including but not limited to:
  - Bluebird Pideon BIP-6000

[56] Unicode is not supported

    - Intermec CK71
    - Honeywell Dolphin 9950
- Pocket PC 2003 class devices

Mobile Android Client

Georgia SoftWorks also offers the GSW ConnectBot for Android. In addition to being full featured industrial grade Telnet/SSH client, it has the strongest SSH security of any SSH client commercially available. Also available is a license server that makes licensing and upgrades smooth and easy. Learn more about the GSW ConnectBot.

Please see the GSW SSH User's Guide for FIPS 140-2 client requirements

Java Clients/Applets

Georgia SoftWorks Java Client and the Georgia SoftWorks Java applet – Telnet Only

Please read the section on the GSW Telnet Java Client (page 294) and the section on the GSW Telnet Java Client applet (page 286) to see the requirements for correct operation.

GSW SSH2/Telnet Server System Requirements

Memory:

GSW recommends 16 MB of RAM per session in order to utilize all the features offered in the GSW SSH2/Telnet Server. If you are using SAPConsole the recommendation is an additional 16 MB of RAM per session for a total 32+ MB RAM per session. It is recommended to use the Windows Task Manager to determine the SAPConsole memory requirements for your system.

Processor

Processor requirements vary based on the primary or main application running on the host system. In general, the processor requirements for running the number of instances of the primary application will be sufficient for most customers. However, the type of application will ultimately determine the SSH2/Telnet processor requirements. The usage patterns including the number of users who actively input text and the frequency of screen updates should be taken into consideration. If minimal and exact sizing is required the best course of action is to download the Free trial copy of the GSW SSH2/Telnet Server and empirically determine the requirements using the actual application.

Disk Requirements

At least 60 MB of Disk space are recommended for the program, User's Guide and log files.

Technical Support Contact Information

In order to keep basic Technical Support Free please help us to keep our cost down.

1. Gather all relevant system information.

2. Write your question down. This not only helps us but also helps you in articulating the question.

Please open a support ticket at GSW Support and include all relevant information described below in the Technical Support Tips below.

Or Call 706.265.1018 EST, M-F 9:00 a.m. to 5:00 p.m. and have your Product ID ready. Tech Support tickets and phones are monitored after hours at various times.

If it is an emergency please call after submitting a ticket. If no one immediately answers please leave a message and you will be contacted.

Technical Support Tips:

To expedite support for suspected problems please perform the following test steps below to help us diagnose the issue.

1. Disconnect all users. Make sure that no other user connects at the time of the test.

2. Wait 5 minutes

3. Delete all log files from the GSW SSH2/Telnet Server installation 'Log' subdirectory on the computer running the GSW SSH2/Telnet Server. (Usually c:\GS_UTS\Log)

4. To expedite resolution, reboot the server if possible.

5. Duplicate the problem.

6. Open a ticket at GSW Support and include:

    a. A description of the problem, including User ID's, Domain and IP Addresses.

    b. Attach all files in the Georgia SoftWorks `log` folder. It is usually located at c:\gs_uts\log but may be different depending on the installation folder selected.

    c. The logon script associated with the user experiencing the problem. (That is the `c_start.bat` or the `k_start.bat` file that resides in the scripts folder in the GSW SSH2/Telnet Installation directory.

    d. And of course, your contact information.

Open or check status of a support ticket: at GSW Support

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