Win323

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Introduction

The Win323 Call Generator is a high performance H.323 signaling and media load generator that is fully compliant with the ITU H.323 specification. Win323 is capable of generating many simultaneous calls using Commercial Off-the-Shelf (COTS) hardware. This allows you to determine the investment you are willing to make to achieve the performance level you desire. Using a standard single processor desktop computer, Win323s performance rivals that of much more expensive solutions that require highly specialized hardware to achieve similar results.

Win323 goes one step above the others by providing real-time call flow analysis of H.323 signaling, tracking errors over extended periods of testing, and allowing you to control the level of verbosity of logged events. These capabilities are invaluable in determining endpoint compliance, detecting network failures and latency and generally troubleshooting H.323 network paths.

Win323 allows you to construct test scenarios which model the real world environment by giving you the flexibility to control all aspects of your calls. Win323s intuitive user interface allows you to generate test scripts (call files) containing thousands of calls in less than one minute. Call files and individual call attributes can easily be modified or fine tuned using a simple, familiar spreadsheet type interface. Win323 call files can also be exported to your favorite spreadsheet program, which could allow advanced users to generate their own templates to further refine or model testing scenarios.

Win323 is the ideal tool for generating H.323 and media traffic loads without requiring special hardware investments. Win323 can be an invaluable tool to aid in the testing and debugging of new or recently deployed H.323 networks. Best of all, Win323 users can begin generating real world scenarios within minutes of installing the software!

The Win323 software is copy protected and is licensed for use on a single machine. Please make sure that you install Win323 on the machine you intend to use it on. Installation of Win323 on multiple machines is not possible without authorization from Touchstone.

The following pages will demonstrate how to install, setup, and get started with Win323. Please read the following pages carefully. They are the keys to your success.

Note: Win323 is designed for the advanced 32 bit and 64 bit Windows operating systems. The following operating systems are supported:

> Windows 2000 Professional, Windows 2000 Server, Windows XP Professional, Windows 2003 Server, Windows 2008 Server, Vista, Window 7.Win323's capabilities automatically scale with the hardware on which it is installed.

Minimum recommended configuration:

- 2.4 MHz Pentium 4 Processor
- 512MB Ram
- 60 GB hard drive
- 1280x1024

Win323 is optimized for 1280 x 1024 displays.

The Win323 software is copy protected and is licensed for use on a single machine. Please make sure that you install Win323 on the machine with which you intend to use it. Installation of Win323 on multiple machines is not possible without authorization from Touchstone.

The following pages will demonstrate how to install, setup, and get started with Win323.

Installation Types

Win323 on CD-ROM

If you received Win323 on CD-ROM, please follow the following procedure:

- Insert the Win323 CD in your CD-ROM drive.
- The installation program should start automatically. If it does not, use Windows Explorer to browse the CD and double-click the Setup.exe file.
- Continue to the next section.

Win323 via E-Mail

If you received Win323 via E-Mail, please follow the following procedure:

- Double-click on the e-mail attachment.
- Select "Save to Disk" option and select a temporary folder to store the self-extracting file.
- Use Windows Explorer to browse to the folder you saved the self-extracting file in.
- Double-click the self-extracting file. Select a folder to extract the files to.
- Use Windows Explorer to browse to the folder you extracted the files in and double-click the Setup.exe file.
- Continue to the next section in this document.

Win323 via the Internet

If you downloaded Win323 via the internet, please use the following procedure:

- Win323's setup.exe is compressed using WinZip. Download Win323.zip and extract the setup.exe to a temporary location on the destination computer.
- Double-click on the Setup.exe file.
- Continue to the next section in this document.

Installing Win323 for Limited Users

Prior to Installation of any Touchstone Software

For any Touchstone Technologies software installation the user MUST BE logged on as the Administrator and / or have Administrator rights.

If Touchstone Technologies Software is going to be installed on a computer that has multiple users including users with limited rights the minimum setting required to run the software is a "Power User". The basic "User" setting does not have enough rights to run the programs no matter how it is installed.

For limited user account installations please follow the following procedure precisely.

Procedure

To install Touchstone Technologies Test Tools with limited user accounts follow the below procedure:

1. Log on as Administrator.
2. Run the setup.exe file of choice.
3. During the Installation wizard a screen will be display whose subject heading is "Customer Information". Please make sure the "Anyone" radial button is selected before clicking the Next button.
4. At the Destination Folder screen make sure to enter a different path by using the Change button.
5. Change the Installation directory to the units shared directory, (i.e. C:\Documents and Settings\All Users\Win323)
6. Continue following the instructions until the installation is finished.

Changing a User's Rights

If a user's account is set to a "Limited" or basic "User" rights, Touchstone Technologies software will not run. The minimum rights setting must be "Power User". To change a user's rights, follow the procedure below.

1. Log on as administrator.
2. On the desktop right click on My Computer, select "Manage".
3. Select "Local User & Groups"; then select "Users" to view list.
4. Right click on the user of choice, and then select properties.
5. Select "Member of Tab", and then click on "Add".
6. Click on the "Advanced" button, and then click on "Find Now" button.
7. Select "Power User" from list.
8. Click "OK", "OK", and "OK" to close windows.

Important Note

All Touchstone applications that need to be run by users who do not have administrative rights have to be installed in My Computer\Shared Documents folder.

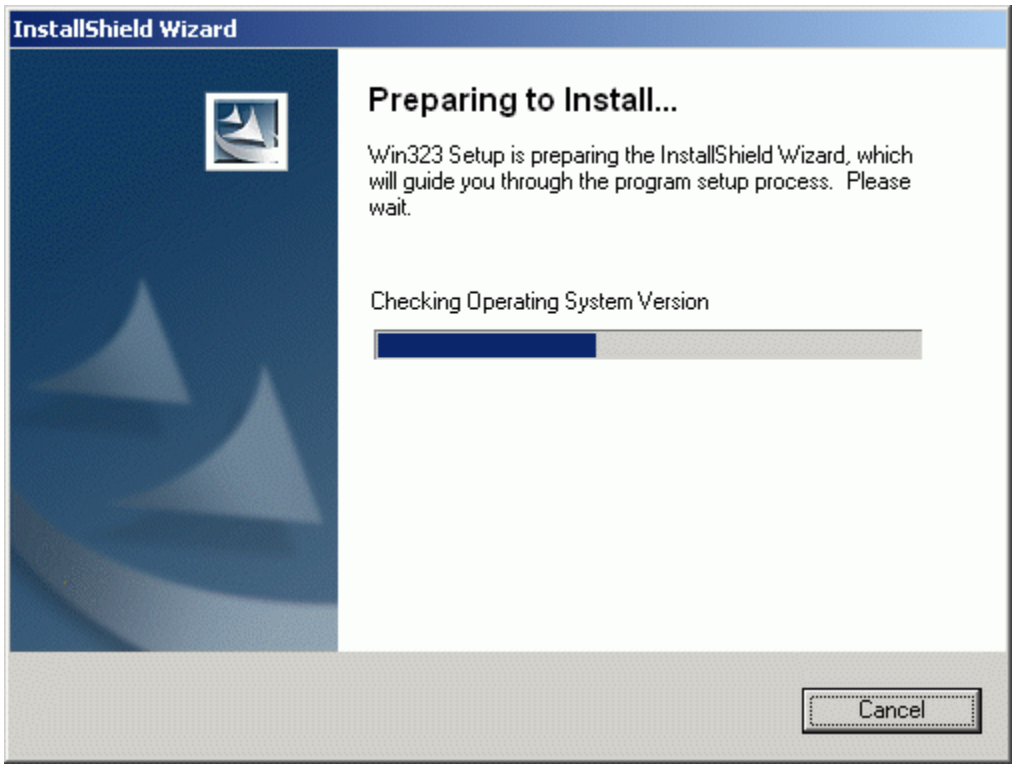
This folder can be located either thru My Computer or thru explore at "C:\Documents & Settings\All Users\Win323".

Win323 Installation

The following screens will appear during the installation process. Please follow the directions carefully using the Next button to navigate forward and the Back button to return to a previous page.

Install Screen 1 - Preparing Setup Wizard

Wait for the wizard to complete or press the Cancel to quit the installation.

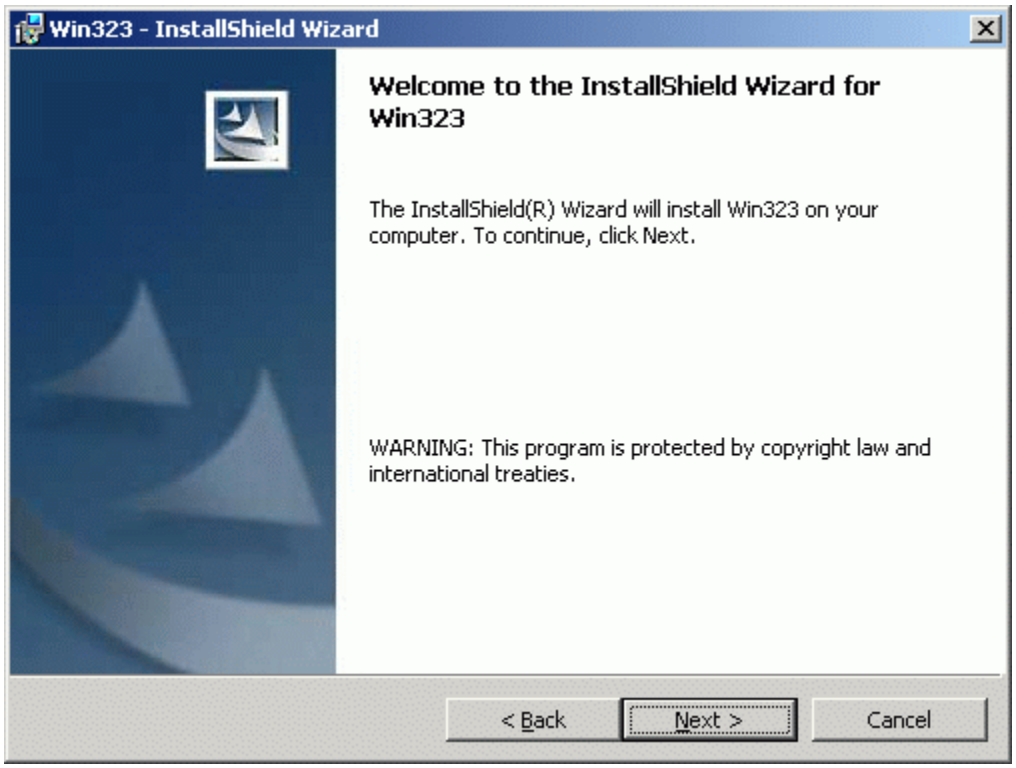


Install Screen 2 - Beginning the Installation

Press the Next button to continue the installation or Cancel to quit.

Install Screen 3 - Beginning the Installation

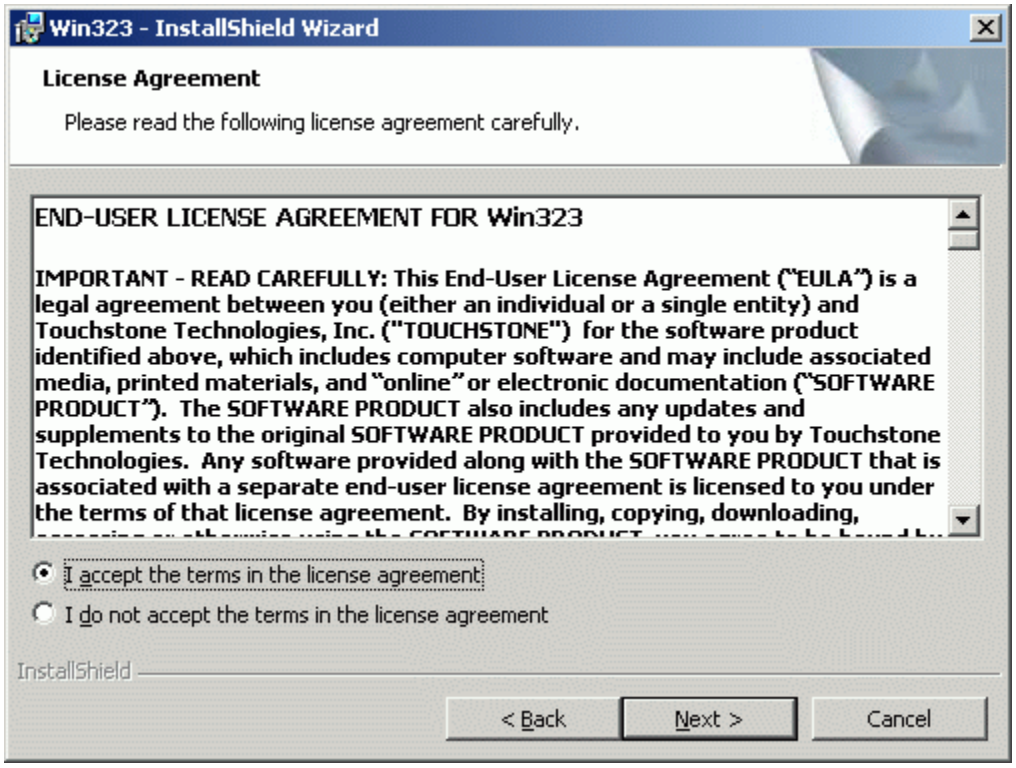
Press the Next button to continue the installation or Cancel to quit.



Install Screen 4 - End-User License Agreement

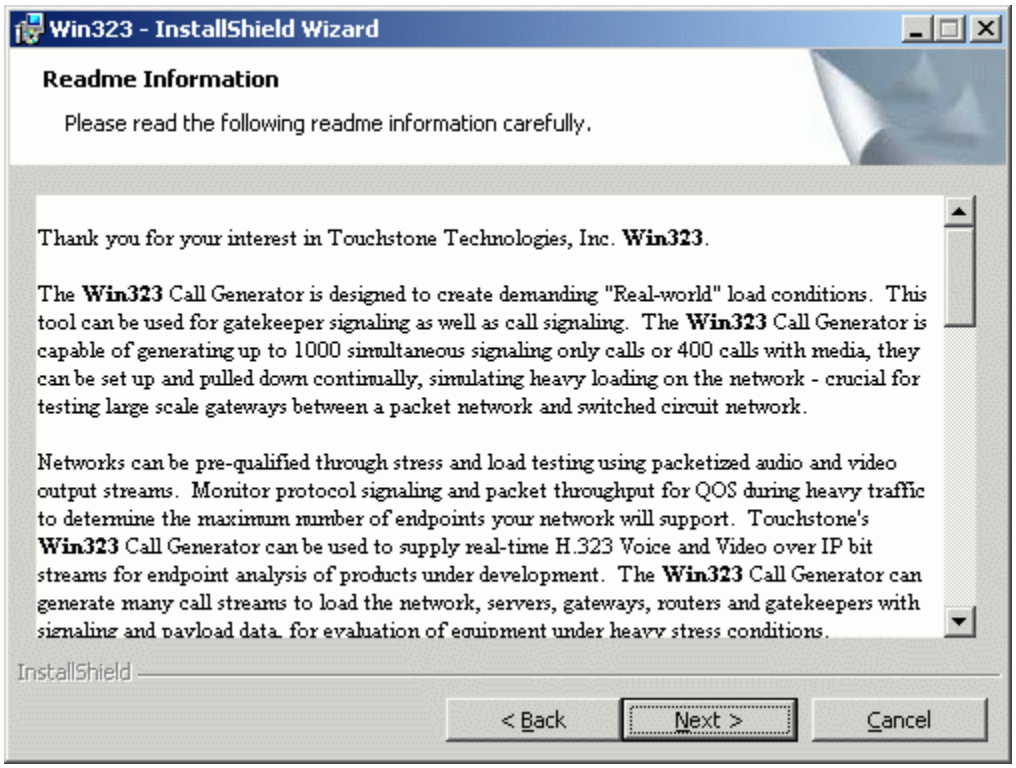
Carefully read the End-User License Agreement. If you accept the terms, select the I Accept option, if you do not, select the 'I do not accept option.'

Press the Next button to continue the installation or Cancel to quit.



Install Screen 5 - Readme Information

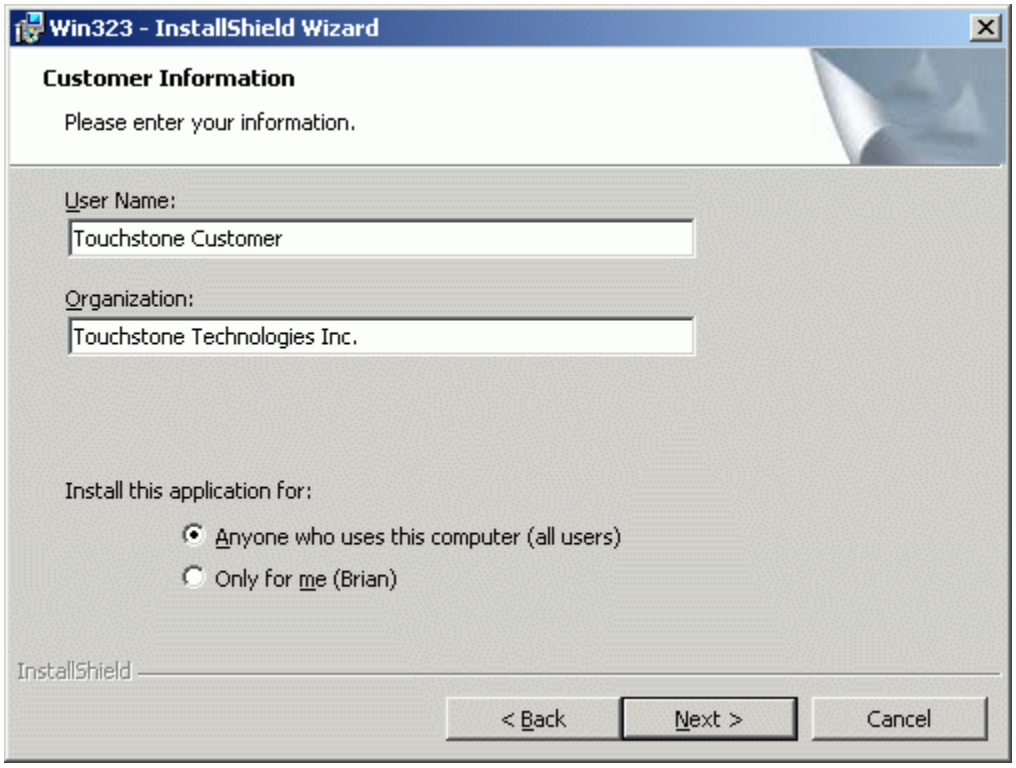
Press the Next button to continue the installation or Cancel to quit.



Install Screen 6 - Customer Information

Please fill in your customer information and select the appropriate security option.

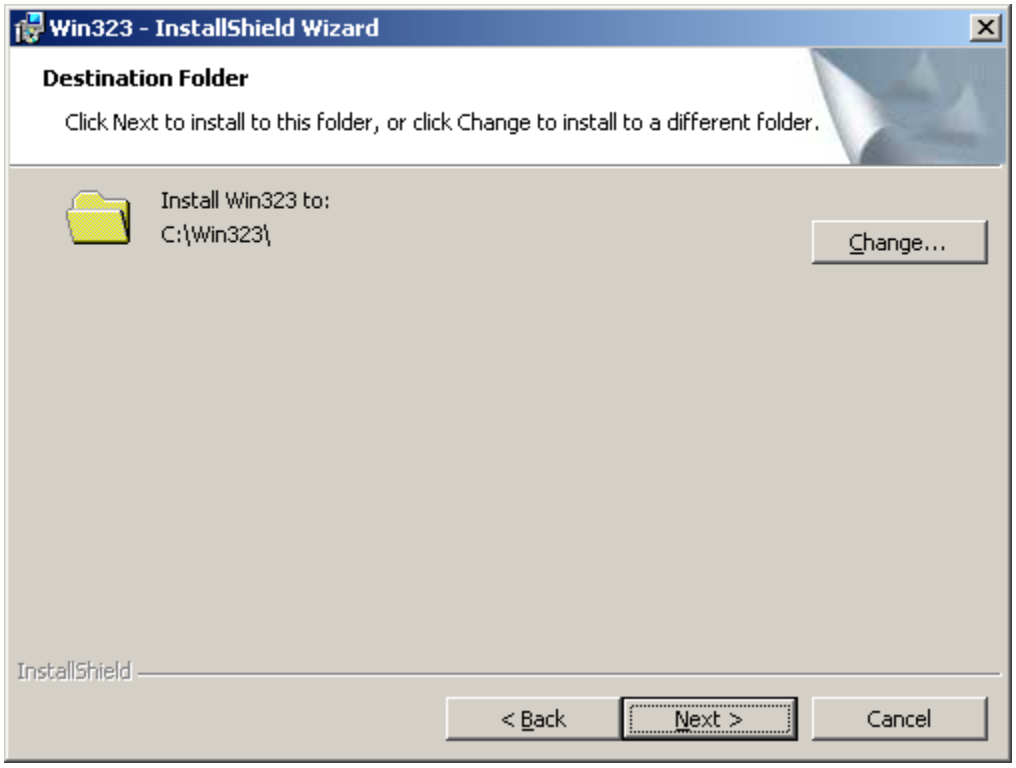
Press the Next button to continue the installation or Cancel to quit.



Install Screen 7 - Destination Folder

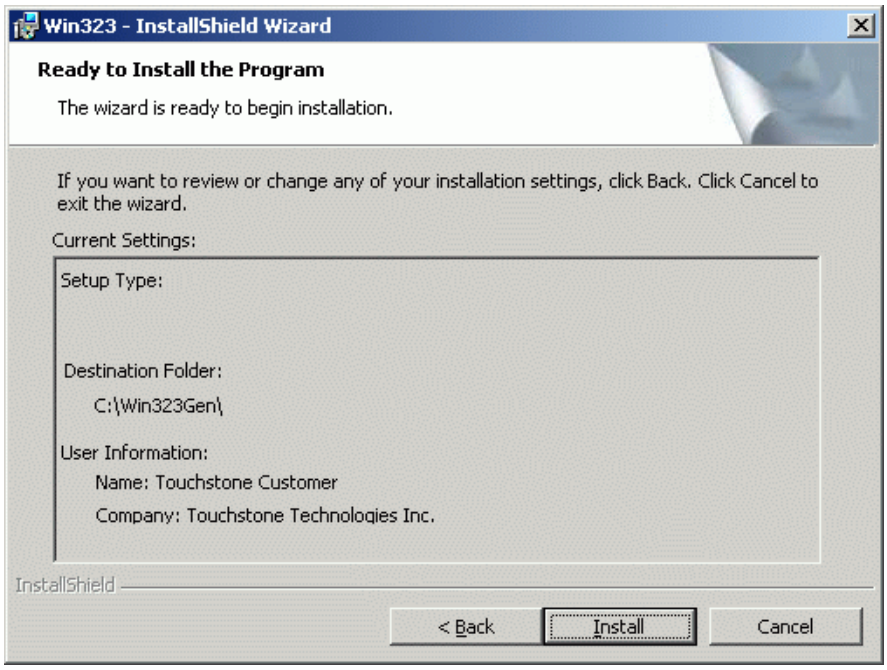
Please select the folder in which you would like to install Win323 and its components.

Press the Next button to continue the installation or Cancel to quit.

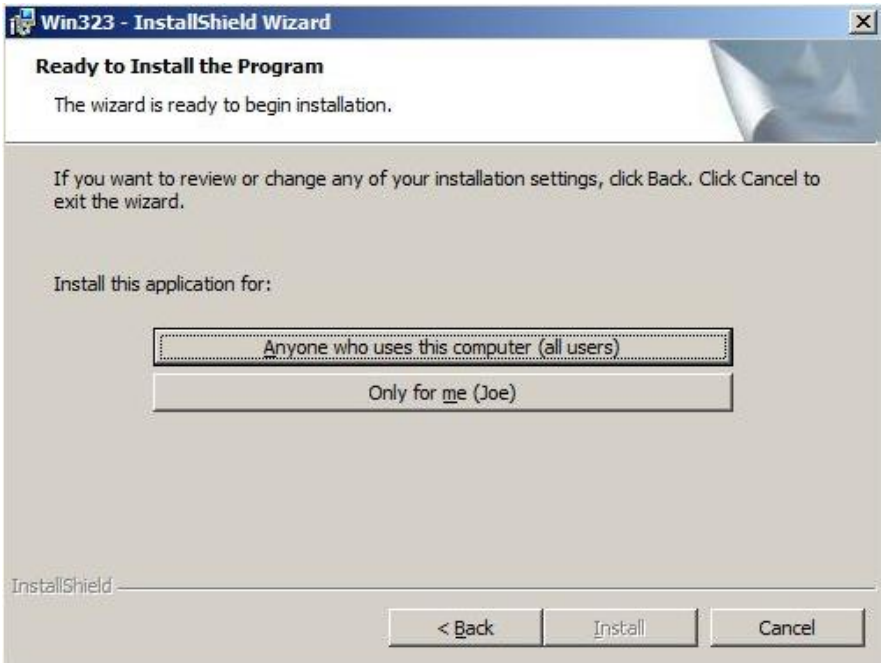


Install Screen 8 - Ready to Install

Press the Install button to continue the installation or Cancel to quit.



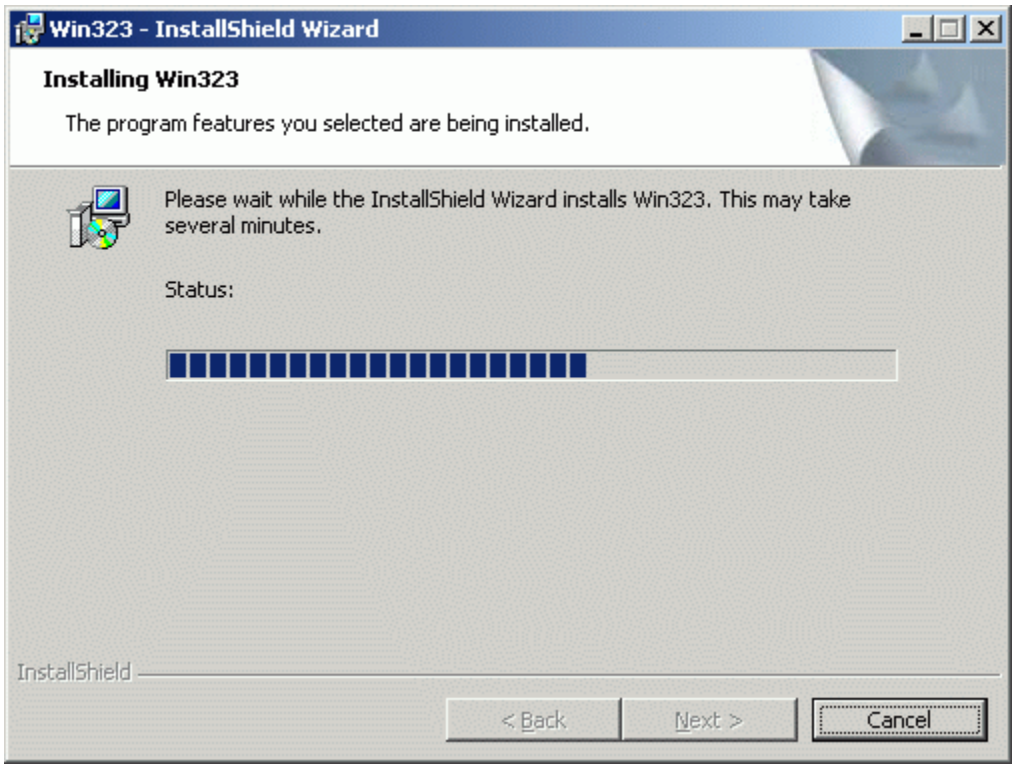
For Windows 7 or Windows Server 2008, the screen below will appear. Please select "All Users" and press Install.



Install Screen 9 - Installing Win323

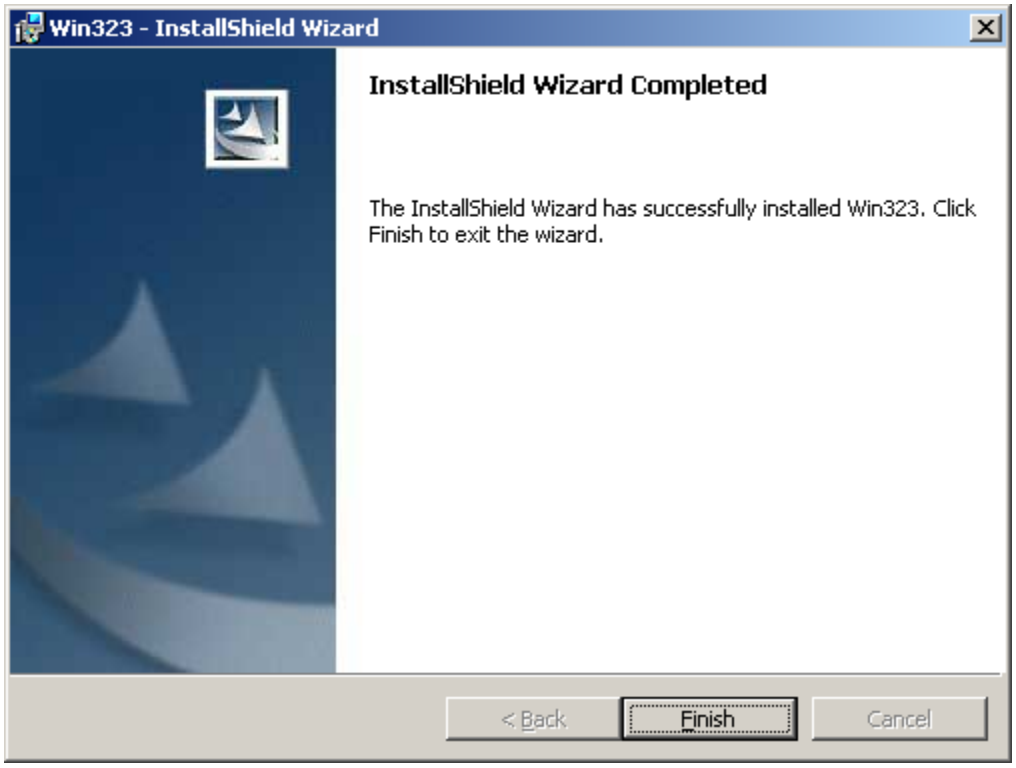
This screen will appear during the installation to inform you of the progress.

Typically this screen will only appear for a very brief period of time.



Install Screen 10 - Installation Complete

This screen will appear at the completion of the installation process. Any errors that may have occurred will be reported at this time. Should you encounter any errors, please contact Touchstone for technical assistance at +267.222.8687 or support@touchstone-inc.com.



Press the Finish button to complete the installation.

CrypKey Installation

After you press Finish button, CrypKey will automatically get installed on your machine. Once it gets installed the screen below will popup. Hit OK to Proceed.

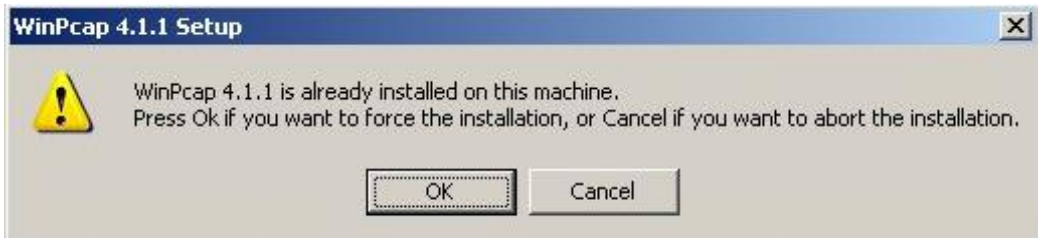
In future, if you want to transfer the license to another machine, please see Appendix A, which gives you the step by step procedure for the license transfer.

Once you hit OK, you should be given an option to start the installation of WinPcap Driver. If you receive the below error, please click OK and go to Win323 application directory, locate "WinPcap_4_1_1.exe" setup and start the installation manually.

WinPcap Installation

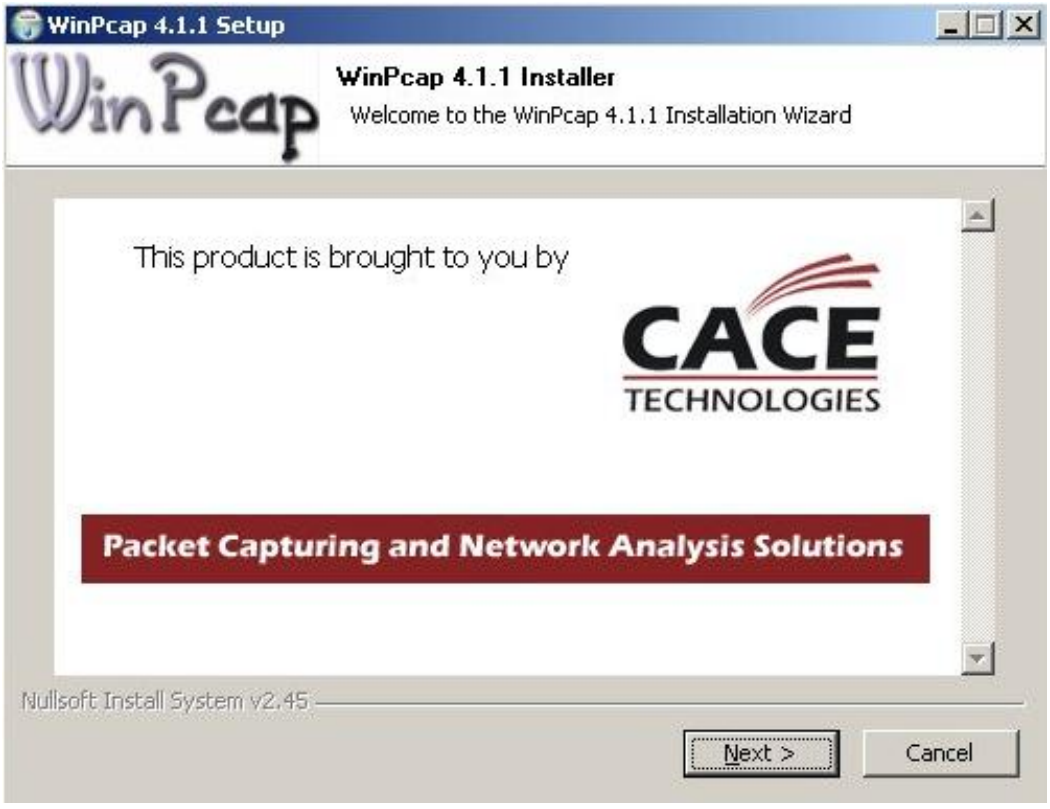
Before the installation is complete, it is necessary to install the WinPcap driver. If you have installed other products that use this driver (such as Ethereal), you will probably need to restart the computer after installation. The following screens will appear during the WinPcap installation process. Please follow the directions carefully using the "Next" button to navigate forward and the "Back" button to return to a previous page.

If you get below pop up, please press OK to force install the WinPcap Driver.



WinPCap Install Screen 1 - WinPcap Installer

Press the "Next" button to continue or the "Cancel" to quit the installation.



WinPCap Install Screen 2 - Welcome to the installation Wizard

Press the "Next" button to continue or the "Cancel" to quit the installation.

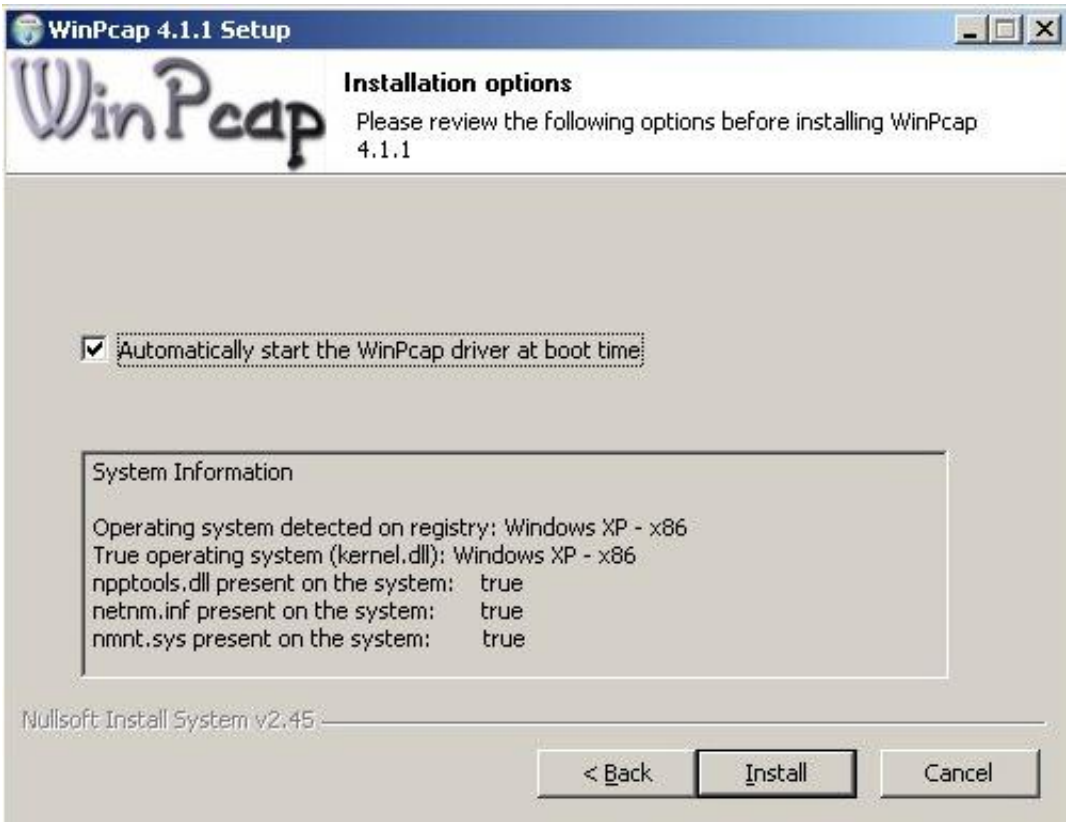
WinPcap Install Screen 3 - End-User License Agreement

Carefully read the License Agreement. If you accept the terms, press the "I Agree" button, if you do not, press the "Cancel" button.

Press the "Next" button to continue the installation or "Cancel" to quit.

WinPcap Install Screen 4 - Installation Progress

This screen will appear during the installation process. Press Install.



WinPcap Install Screen 5 - Installation Complete

The following screen will appear at the completion of the WinPcap installation.

Press the Finish button to complete the installation.

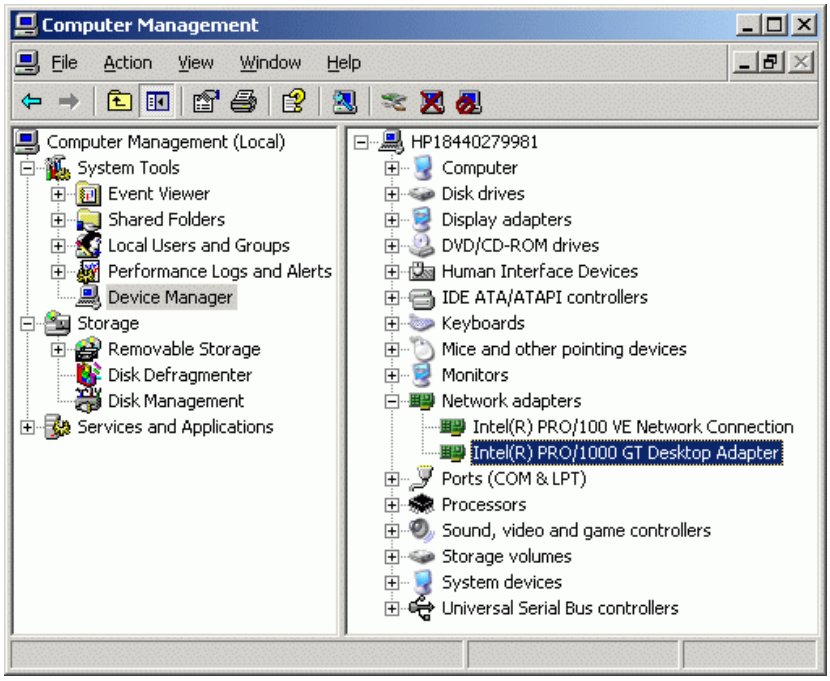
Choosing a Network Card

It has been found through extensive testing that different network adapters have a wide range of performance values.

The recommended NIC card is the Intel Pro/1000 GT Desktop Adapter. The manufacturer product code for this network card is PWLA8391GT.

Custom Driver Settings

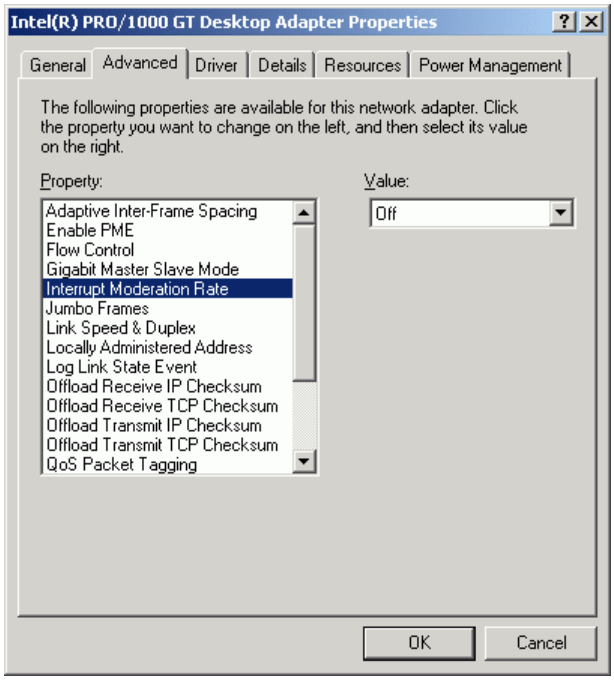
Open the Computer Management Console and select the Intel Pro 1000 GT network adapter.



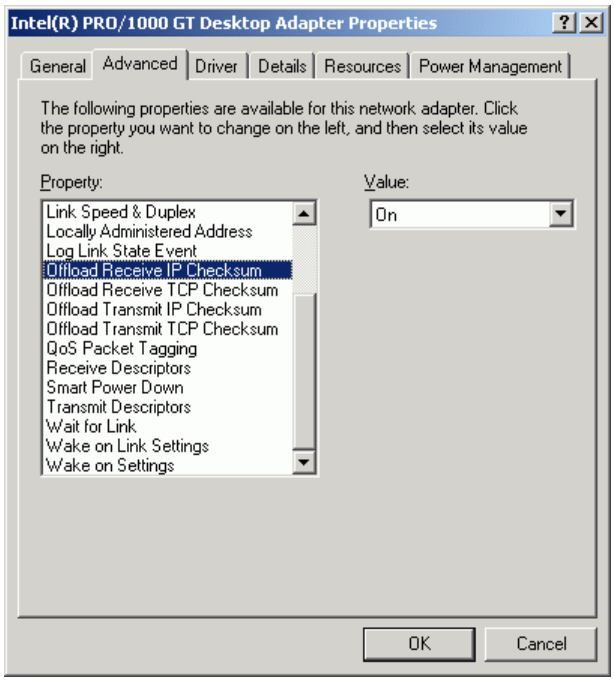
Right click on the Intel Pro/1000 GT adapter and select properties from the shortcut menu. With the properties displayed select the Advanced tab.

The following changes will increase the performance of this network adapter.

Set the Interrupt Moderation Rate to OFF.



Make sure all four of the offload properties are set to ON.



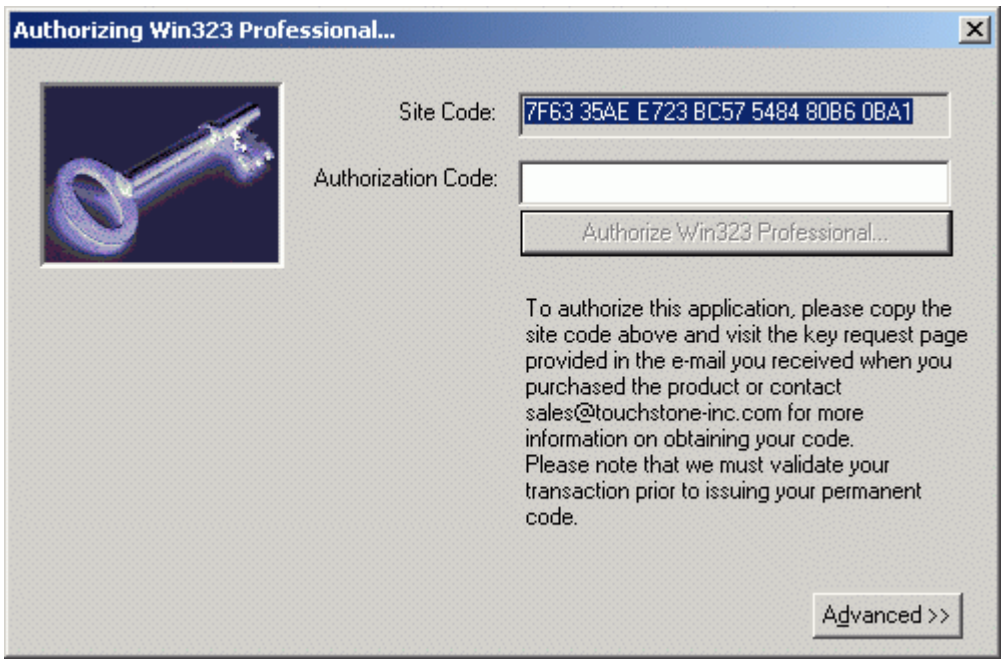
Running Win323 for the First Time

Win323 software is copy protected and is licensed for use on a single machine. The first time you run Win323, you will be provided with a site code. You must contact Touchstone in order to obtain the authorization code to enable the software.

Once the software is authorized, it may not be installed on any other machines without a new authorization code from Touchstone. If you have installed the software on a machine in error, do not authorize that installation. Re-install it on the appropriate machine prior to contacting Touchstone for the authorization code.

Obtaining the Win323 Authorization Code

When you first run Win323 the following authorization dialog will appear:



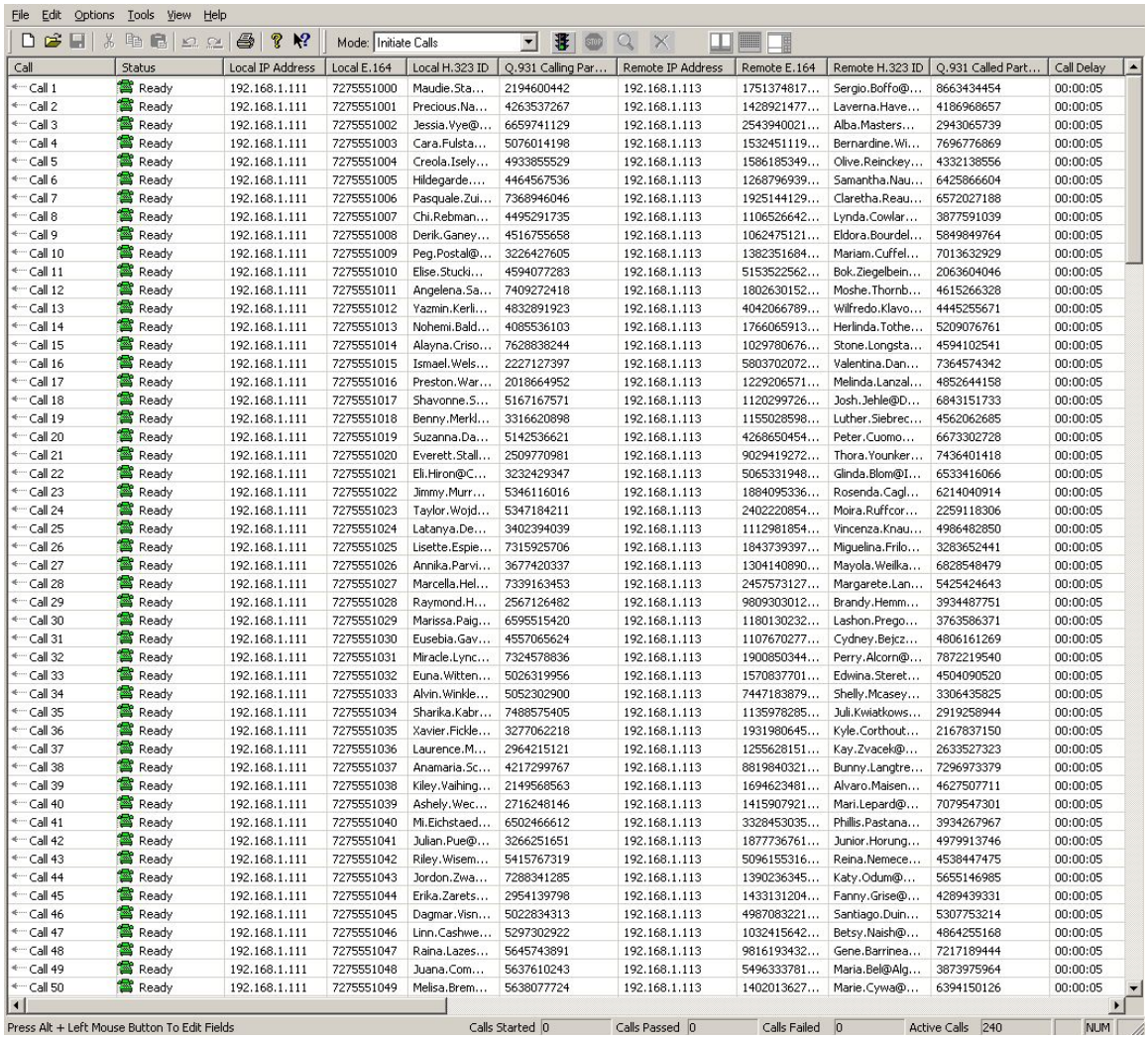
In the field labeled Site Code a series of numbers and letters will appear. To authorize the application, contact Touchstone with the **exact** value of the site code field. Touchstone will provide the code to enter in the Authorization Code field. You must enter this **exactly** as it is provided to you in order to enable the software. It is strongly suggested that you copy the site code into an email that you send to Touchstone, and paste the authorization code from the email you receive from Touchstone. Once you have enabled the software, you are just moments away from being able to construct your first test scenarios!

Overview

Win323's main user-interface is divided into three main components:

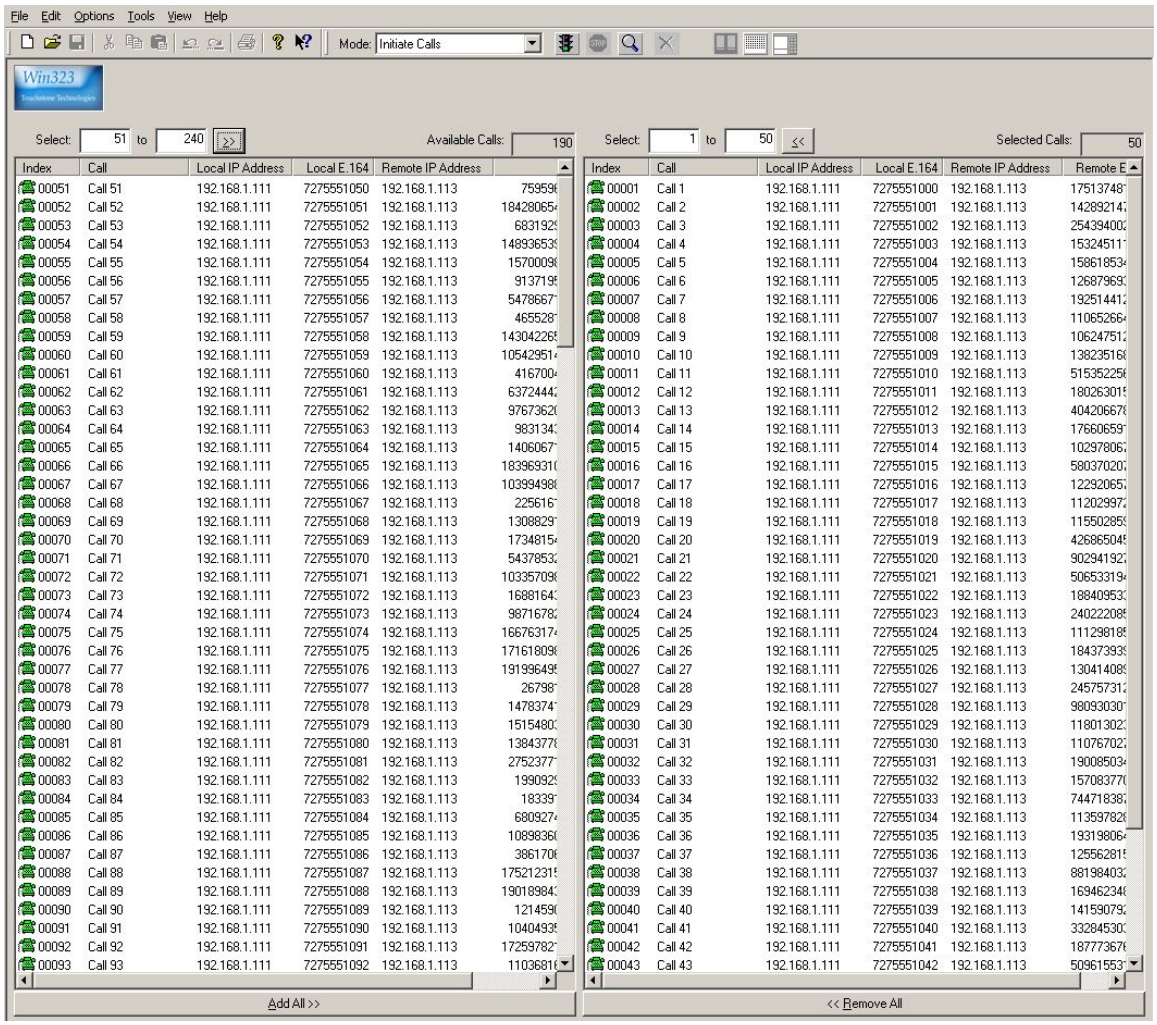
The Edit View

This spreadsheet - like view allows quick, intuitive editing of fields, columns or blocks of data.



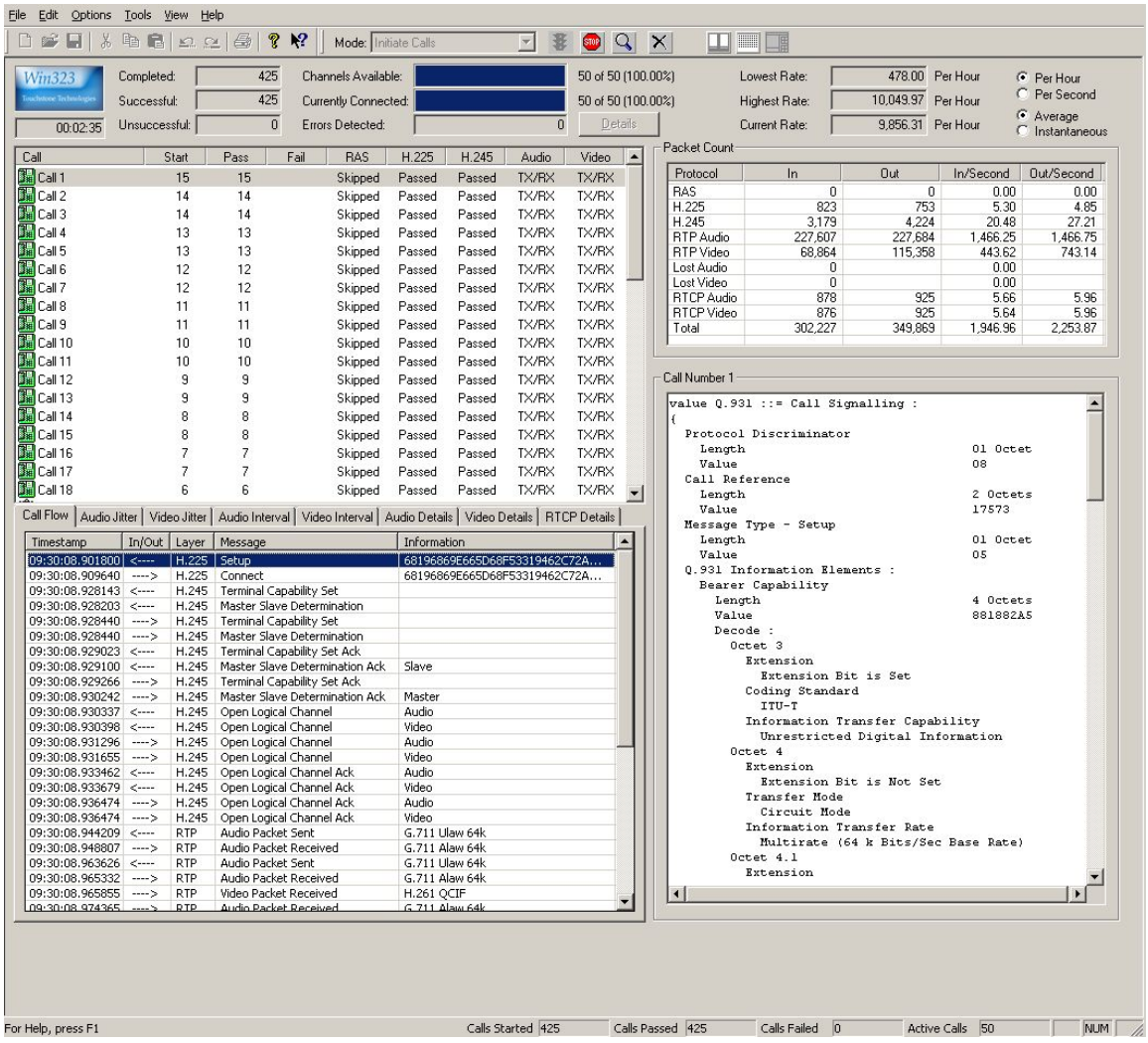
The Main View

This multi-column view is the main control panel for defining the contents of a session (i.e. selecting the calls to be run) and launching additional or stopping calls within that session.



The Detail View

This view presents the session detail information. Active calls, call flows and media stream QoS details are provided within its tabular style interface.



Files Used By Win323

Call Files

Typically, call files are generated and edited via the Edit View. Win323 call files are ASCII text files with field value separated by tab characters. This format allows users desiring so to use commercial spreadsheets, word processors or scripting tools such as PERL to generate call files that match their specific scenario requirements. Call files represent the individually controllable attributes of calls within a session.

Parameter Files

Parameter files contain the session and system settings that are common for all the calls in a session. The attributes of the parameter file in conjunction with the call file determine the characteristics of a session.

Session Settings File

This file contains the user-defined preferences as well as application state information.

Setting up Win323

Win323's factory defaults are set to allow you to get up-and-running quickly in point-to-point mode. You should review these settings by accessing the Options | Settings menu option and reviewing each of the tabs. The online help provides specific information on the each of the fields. We highly recommend that you run calls between two Win323s to ensure that the network connections are functioning and that the settings are configured properly.

When you enter Win323 for the first time or when you select New Call File, Win323 provides the call generation screens to allow you to define the call file properties. This is the quickest and easiest way to enter calls in just a few minutes. You may of course, cancel out of this screen and enter the information freeform if desired.

User Interface

Modes of operation

The first step in preparing to run Win323 is to determine which mode you would like to operate in.

Win323 offers the following modes of operation:

Initiate Calls

This mode initiates (places) calls during the session. The selected calls are placed in a start queue, which can have a garden hose effect on call start-up. This queue can run wide-open, without putting any limit on the number of calls, which can start simultaneously, or it can let a prescribed number start in any given second. Calls may also have their own individual start delays to form a more random pattern, simulating real-world conditions.

In initiate mode, each call will run once, indefinitely, or a specific number of times until stopped by the user for the duration you have entered.
You may stop or terminate the calls at any time.

Answer Calls

This mode registers calls with a gatekeeper first, and then responds to inbound calls during the session. The selected calls are started immediately and look for inbound Setups messages on the IP address and port that they registered with the gatekeeper.

In answer mode, each call will run once, indefinitely or a specific number of times until stopped by the user for the duration you have entered.

You may stop or terminate the calls at any time.

Unattended Answer Calls

This mode responds to unscripted inbound calls arriving on the well-known H.225 port for any IP address on the PC. No scripted calls may be selected during this time.

You may stop the active calls at any time. To terminate the Unattended Answer Mode press the 'Terminate All Calls' button.

Gatekeeper Calls

This mode registers and unregisters with a gatekeeper during the session. The selected calls are placed in a start queue, which can have a garden hose effect on call start-up. This queue can run wide-open, without putting any limit on the number of calls, which can start simultaneously, or it can let a prescribed number start in any given second.

Calls may also have their own individual start delays to form a more random pattern, simulating real-world conditions.

In gatekeeper mode, each call will run once, indefinitely or a specific number of times until stopped by the user for the duration you have entered.

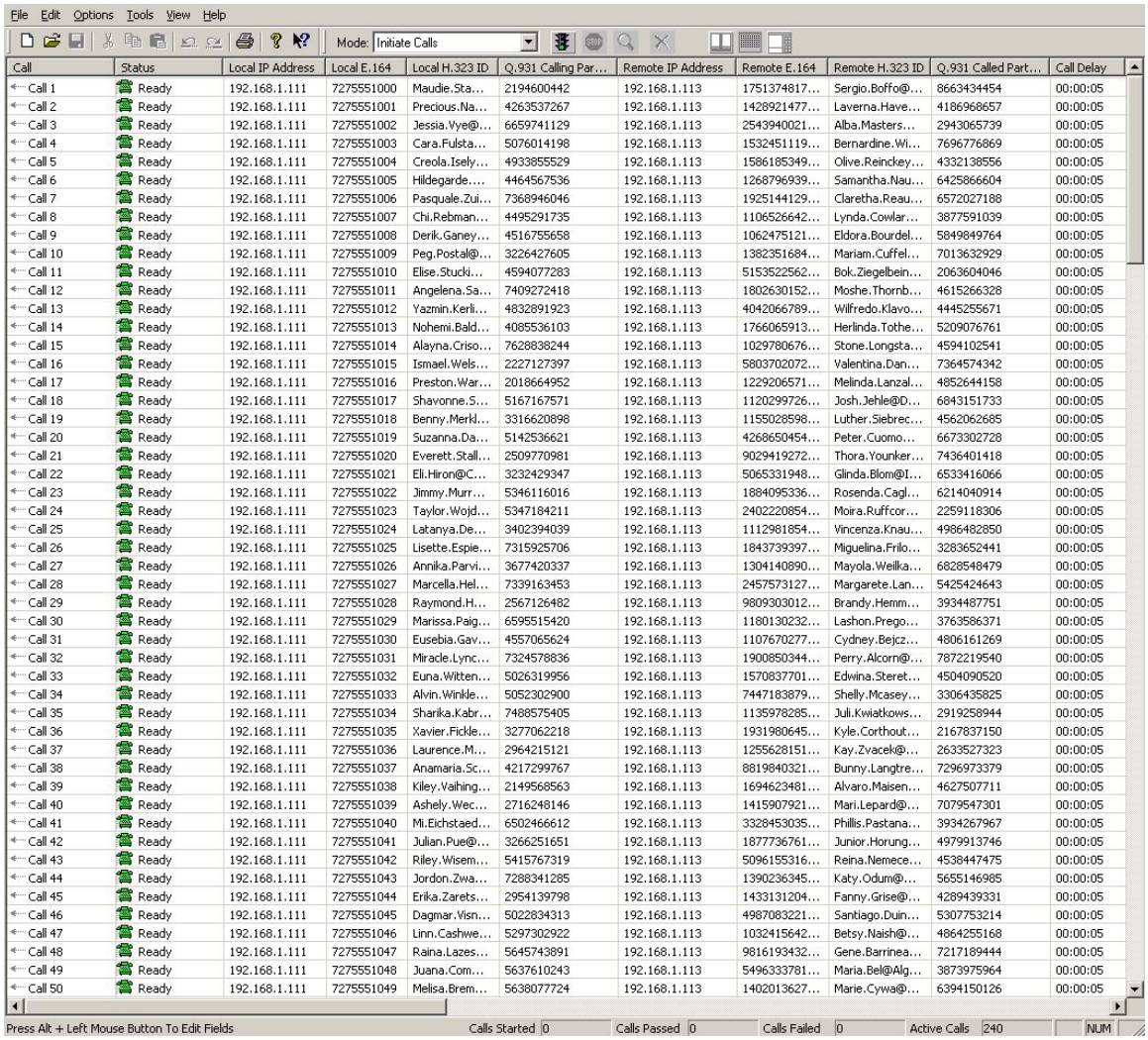
You may stop or terminate the calls at any time.

Gatekeeper Emulation

In this mode, Win323 serves as a simple gatekeeper and listens on the well-known port for the currently selected IP address. It responds to all mandatory RAS messages and can keep track of thousands of registered endpoints.

The Edit View

This is the view designed to facilitate editing individual call parameters and manipulating call files. This view has a spreadsheet style interface.



Call	Status	Local IP Address	Local E.164	Local H.323 ID	Q.931 Calling Par...	Remote IP Address	Remote E.164	Remote H.323 ID	Q.931 Called Part...	Call Delay
Call 1	Ready	192.168.1.111	7275551000	Maudie.Sta...	2194600442	192.168.1.113	1751374817...	Sergio.Boffo@...	8663434454	00:00:05
Call 2	Ready	192.168.1.111	7275551001	Precious.Na...	4263537267	192.168.1.113	1428921477...	Laverna.Have...	4186968657	00:00:05
Call 3	Ready	192.168.1.111	7275551002	Jessia.Vye@...	6659741129	192.168.1.113	2543940021...	Alba.Masters...	2943065739	00:00:05
Call 4	Ready	192.168.1.111	7275551003	Cara.Fulsta...	5076014198	192.168.1.113	1532451119...	Bernardine.Wi...	7696776869	00:00:05
Call 5	Ready	192.168.1.111	7275551004	Creola.Isely...	4933855529	192.168.1.113	1586185349...	Olive.Reinckey...	4332138556	00:00:05
Call 6	Ready	192.168.1.111	7275551005	Hildegarde....	4464567536	192.168.1.113	1268796939...	Samantha.Nau...	6425866604	00:00:05
Call 7	Ready	192.168.1.111	7275551006	Pasquale.Zui...	7368946046	192.168.1.113	1925144129...	Claretha.Reau...	6572027188	00:00:05
Call 8	Ready	192.168.1.111	7275551007	Chi.Rebman...	4495291735	192.168.1.113	1106526642...	Lynda.Cowlar...	3877591039	00:00:05
Call 9	Ready	192.168.1.111	7275551008	Derik.Ganey...	4516755658	192.168.1.113	1062475121...	Eldora.Bourdel...	5849849764	00:00:05
Call 10	Ready	192.168.1.111	7275551009	Peg.Postal@...	3226427605	192.168.1.113	1382351684...	Mariam.Cuffel...	7013632929	00:00:05
Call 11	Ready	192.168.1.111	7275551010	Elise.Stucki...	4594077283	192.168.1.113	5153522562...	Bok.Ziegelbein...	2063604046	00:00:05
Call 12	Ready	192.168.1.111	7275551011	Angelena.Sa...	7409272418	192.168.1.113	1802630152...	Moshe.Thornb...	4615266328	00:00:05
Call 13	Ready	192.168.1.111	7275551012	Yazmin.Kerli...	4832891923	192.168.1.113	4042066789...	Wilfredo.Klavo...	4445255671	00:00:05
Call 14	Ready	192.168.1.111	7275551013	Nohemi.Bald...	4085536103	192.168.1.113	1766065913...	Herlinda.Tothe...	5209076761	00:00:05
Call 15	Ready	192.168.1.111	7275551014	Alayna.Criso...	7628838244	192.168.1.113	1029780676...	Stone.Longsta...	4594102541	00:00:05
Call 16	Ready	192.168.1.111	7275551015	Ismael.Wels...	2227127397	192.168.1.113	5803702072...	Valentina.Dan...	7364574342	00:00:05
Call 17	Ready	192.168.1.111	7275551016	Preston.War...	2018664952	192.168.1.113	1229206571...	Melinda.Lanzal...	4852644158	00:00:05
Call 18	Ready	192.168.1.111	7275551017	Shavonne.S...	5167167571	192.168.1.113	1120299726...	Josh.Jehle@D...	6843151733	00:00:05
Call 19	Ready	192.168.1.111	7275551018	Benny.Merkl...	3316620898	192.168.1.113	1155028598...	Luther.Siebrec...	4562062685	00:00:05
Call 20	Ready	192.168.1.111	7275551019	Suzanna.Da...	5142536621	192.168.1.113	4268650454...	Peter.Cuomo...	6673302728	00:00:05
Call 21	Ready	192.168.1.111	7275551020	Everett.Stall...	2509770981	192.168.1.113	9029419272...	Thora.Younker...	7436401418	00:00:05
Call 22	Ready	192.168.1.111	7275551021	Eli.Hiron@C...	3232429347	192.168.1.113	5065331948...	Glinda.Blom@I...	6533416066	00:00:05
Call 23	Ready	192.168.1.111	7275551022	Jimmy.Murr...	5346116016	192.168.1.113	1884095336...	Rosenda.Cagl...	6214040914	00:00:05
Call 24	Ready	192.168.1.111	7275551023	Taylor.Wojd...	5347184211	192.168.1.113	2402220854...	Moira.Ruffcor...	2259118306	00:00:05
Call 25	Ready	192.168.1.111	7275551024	Latanya.De...	3402394039	192.168.1.113	1112981854...	Vincenza.Knau...	4986482850	00:00:05
Call 26	Ready	192.168.1.111	7275551025	Lisette.Espie...	7315925706	192.168.1.113	1843739397...	Miguelina.Frilo...	3283652441	00:00:05
Call 27	Ready	192.168.1.111	7275551026	Annika.Parvi...	3677420337	192.168.1.113	1304140890...	Mayola.Weilka...	6828548479	00:00:05
Call 28	Ready	192.168.1.111	7275551027	Marcella.Hel...	7339163453	192.168.1.113	2457573127...	Margarete.Lan...	5425424643	00:00:05
Call 29	Ready	192.168.1.111	7275551028	Raymond.H...	2567126482	192.168.1.113	9809303012...	Brandy.Hemm...	3934487751	00:00:05
Call 30	Ready	192.168.1.111	7275551029	Marissa.Paig...	6595515420	192.168.1.113	1180130232...	Lashon.Prego...	3763586371	00:00:05
Call 31	Ready	192.168.1.111	7275551030	Eusebia.Gav...	4557065624	192.168.1.113	1107670277...	Cydney.Bejcz...	4806161269	00:00:05
Call 32	Ready	192.168.1.111	7275551031	Miracle.Lync...	7324578836	192.168.1.113	1900850344...	Perry.Alcorn@...	7872219540	00:00:05
Call 33	Ready	192.168.1.111	7275551032	Euna.Witten...	5026319956	192.168.1.113	1570837701...	Edwina.Steret...	4504090520	00:00:05
Call 34	Ready	192.168.1.111	7275551033	Alvin.Winkle...	5052302900	192.168.1.113	7447183879...	Shelly.Mcasey...	3306435825	00:00:05
Call 35	Ready	192.168.1.111	7275551034	Sharika.Kabr...	7488575405	192.168.1.113	1135978285...	Juli.Kwiatkows...	2919258944	00:00:05
Call 36	Ready	192.168.1.111	7275551035	Xavier.Fickle...	3277062218	192.168.1.113	1931980645...	Kyle.Corthout...	2167837150	00:00:05
Call 37	Ready	192.168.1.111	7275551036	Laurence.M...	2964215121	192.168.1.113	1255628151...	Kay.Zvacek@...	2633527323	00:00:05
Call 38	Ready	192.168.1.111	7275551037	Anamaria.Sc...	4217299767	192.168.1.113	8819840321...	Bunny.Langtre...	7296973379	00:00:05
Call 39	Ready	192.168.1.111	7275551038	Kiley.Vaihing...	2149568563	192.168.1.113	1694623481...	Alvaro.Maisen...	4627507711	00:00:05
Call 40	Ready	192.168.1.111	7275551039	Ashely.Wec...	2716248146	192.168.1.113	1415907921...	Mari.Lepard@...	7079547301	00:00:05
Call 41	Ready	192.168.1.111	7275551040	Mi.Eichstaed...	6502466612	192.168.1.113	3328453035...	Phillis.Pastana...	3934267967	00:00:05
Call 42	Ready	192.168.1.111	7275551041	Julian.Pue@...	3266251651	192.168.1.113	1877736761...	Junior.Horung...	4979913746	00:00:05
Call 43	Ready	192.168.1.111	7275551042	Riley.Wisem...	5415767319	192.168.1.113	5096155316...	Reina.Nemece...	4538447475	00:00:05
Call 44	Ready	192.168.1.111	7275551043	Jordon.Zwa...	7288341285	192.168.1.113	1390236345...	Katy.Odum@...	5655146985	00:00:05
Call 45	Ready	192.168.1.111	7275551044	Erika.Zarets...	2954139798	192.168.1.113	1433131204...	Fanny.Grise@...	4289439331	00:00:05
Call 46	Ready	192.168.1.111	7275551045	Dagmar.Visn...	5022834313	192.168.1.113	4987083221...	Santiago.Duin...	5307753214	00:00:05
Call 47	Ready	192.168.1.111	7275551046	Linn.Cashwe...	5297302922	192.168.1.113	1032415642...	Betsy.Naish@...	4864255168	00:00:05
Call 48	Ready	192.168.1.111	7275551047	Raina.Lazes...	5645743891	192.168.1.113	9816193432...	Gene.Barrinea...	7217189444	00:00:05
Call 49	Ready	192.168.1.111	7275551048	Juana.Com...	5637610243	192.168.1.113	5496333781...	Maria.Bel@Alg...	3873975964	00:00:05
Call 50	Ready	192.168.1.111	7275551049	Melisa.Brem...	5638077724	192.168.1.113	1402013627...	Marie.Cywa@...	6394150126	00:00:05

To enter 'edit mode', position your cursor over a data cell (any cell except 'Status'), hold down the 'Alt' key and press the left mouse button. You may now edit the value within that field. To move between fields, you may use the following keys:

Tab: This moves one column to the right (wrapping to the next line at the end).

Shift + Tab: This moves one column to the left (wrapping to the previous line at the beginning).

Down Arrow: This moves one row down (wrapping to the first line at the end).

Up Arrow: This moves one row up (wrapping to the last line at the top).

Any of the previous actions validate (and if successful, update) the data in the current cell prior to navigation.

To exit the edit mode and update the data, press the enter key. Changes in the data will be validated upon exiting.

To exit edit mode and discard the data, press the escape (Esc) key.

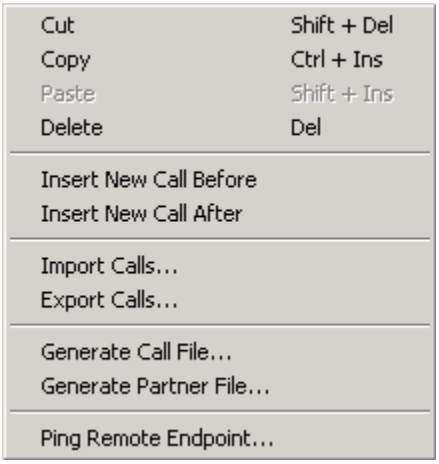
To edit an entire column of data, press the column-heading button. To edit selected values within a column, select the desired rows and press the column-heading button.

To insert a new row, highlight a row that you want the new row inserted BEFORE and press the insert (Ins) key.

To delete a row or rows, highlight the item(s) to be deleted and press the delete (Del) key.

All editing actions are supported by full multi-level undo and redo functions.

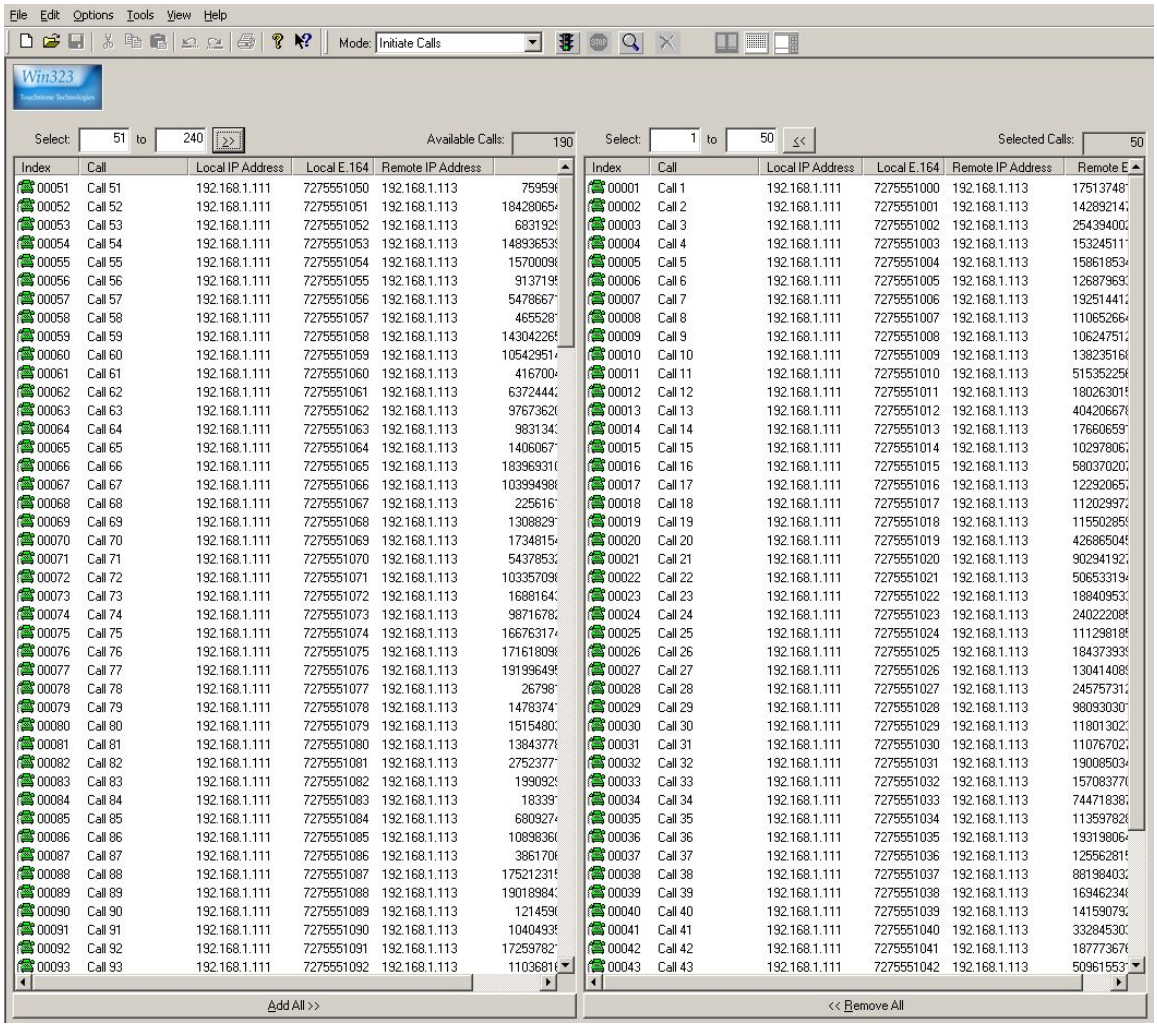
The following menu of options is available by right-clicking the mouse anywhere within the spreadsheet:



Note: If Calls are started from the Edit View, only those calls will be started, not the calls from the Main View.

The Main View

This is the view designed to facilitate starting and stopping call sessions. This view has two main columns, available calls on the left and selected calls on the right. When you first load Win323, all calls in the call file will be in the left column (available calls).



To move all calls to the selected column, you may simply press the Add All>> button. To move them back again, simply press the <<Remove All button.

There are a number of ways to move individual or groups of calls; each user will develop their own personal preference**.**

Both columns offer extended selection (i.e. you may select a disjointed group of calls by holding down the control (Ctrl) key and pressing the left mouse button).

Drag and Drop: Select one or more calls from either list and 'drag and drop' them onto the target list.

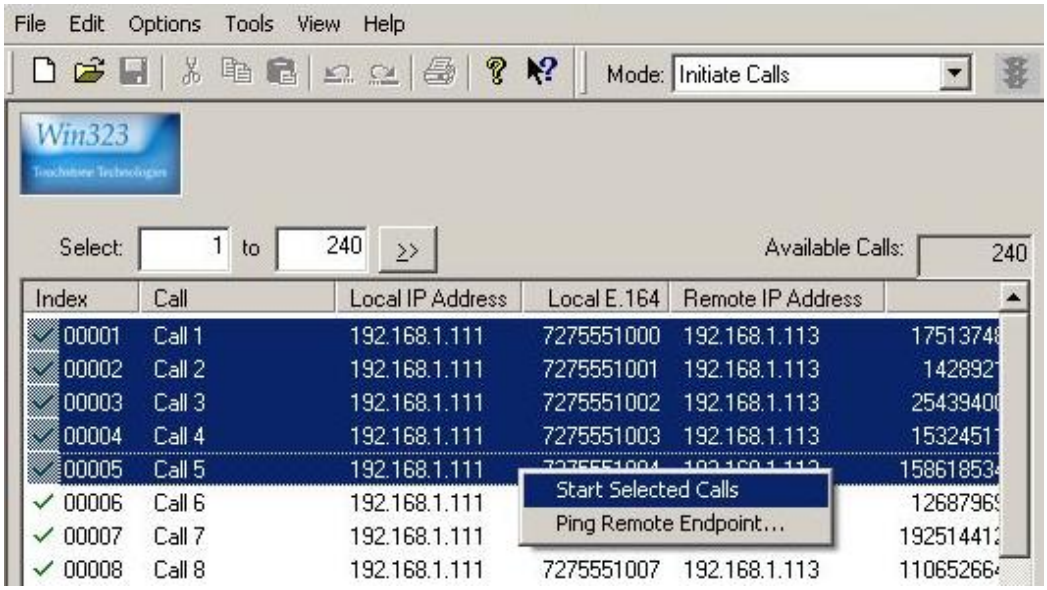
Double click the selected calls: This moves the entire group to the opposing list.

Select a sequence of calls: Enter the call range you would like to move in the 'Select: [x] to [y]' fields and press the [>>] or [<<] buttons.

Both columns offer extended selection (i.e. you may select a disjoint group of calls by holding down the control (Ctrl) key and pressing the left mouse button). When you have the appropriate calls for your session in the selected list and have set the application mode, you are ready to begin your session. Simply press the green traffic light to start the calls.

Available Calls Shortcut Menu

Select desired calls then right click on the selected calls to display the shortcut menu.

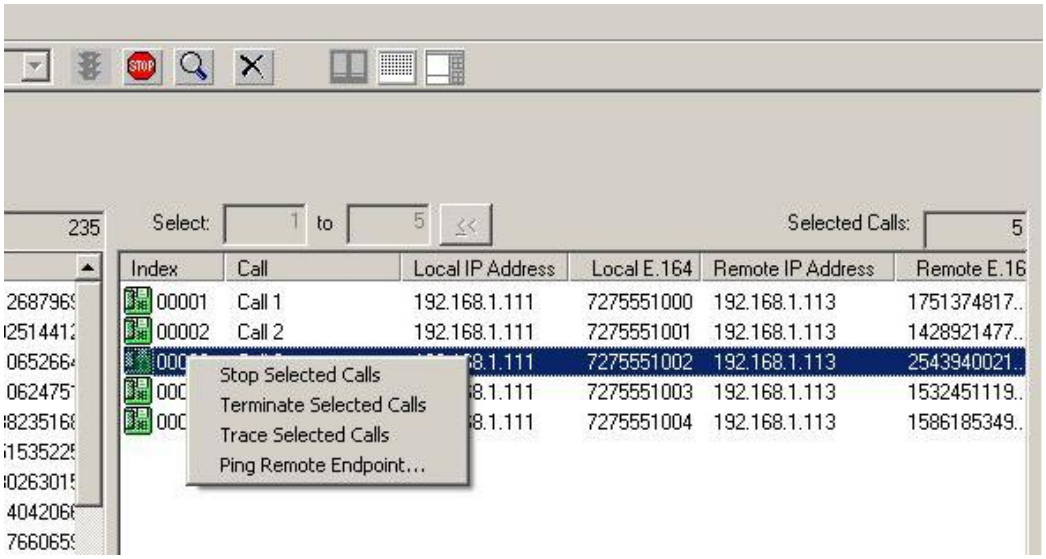


Start Selected Calls: The available calls column offers the additional way of starting calls. Just select the calls you want to start and right click the mouse within the selection. Then click Start Selected Calls.

Ping Remote Endpoint: Allows you to run a ping utility to test line-of-sight availability of a device or address on the network.

Selected Calls Shortcut Menu

The Selected Calls column offers the additional way of stopping calls. With calls running select desired calls then right click on the selected calls to display the shortcut menu.



Stop Selected Calls: Just select the calls you want to stop and right click the mouse within the selection. Then click Stop Selected Calls.

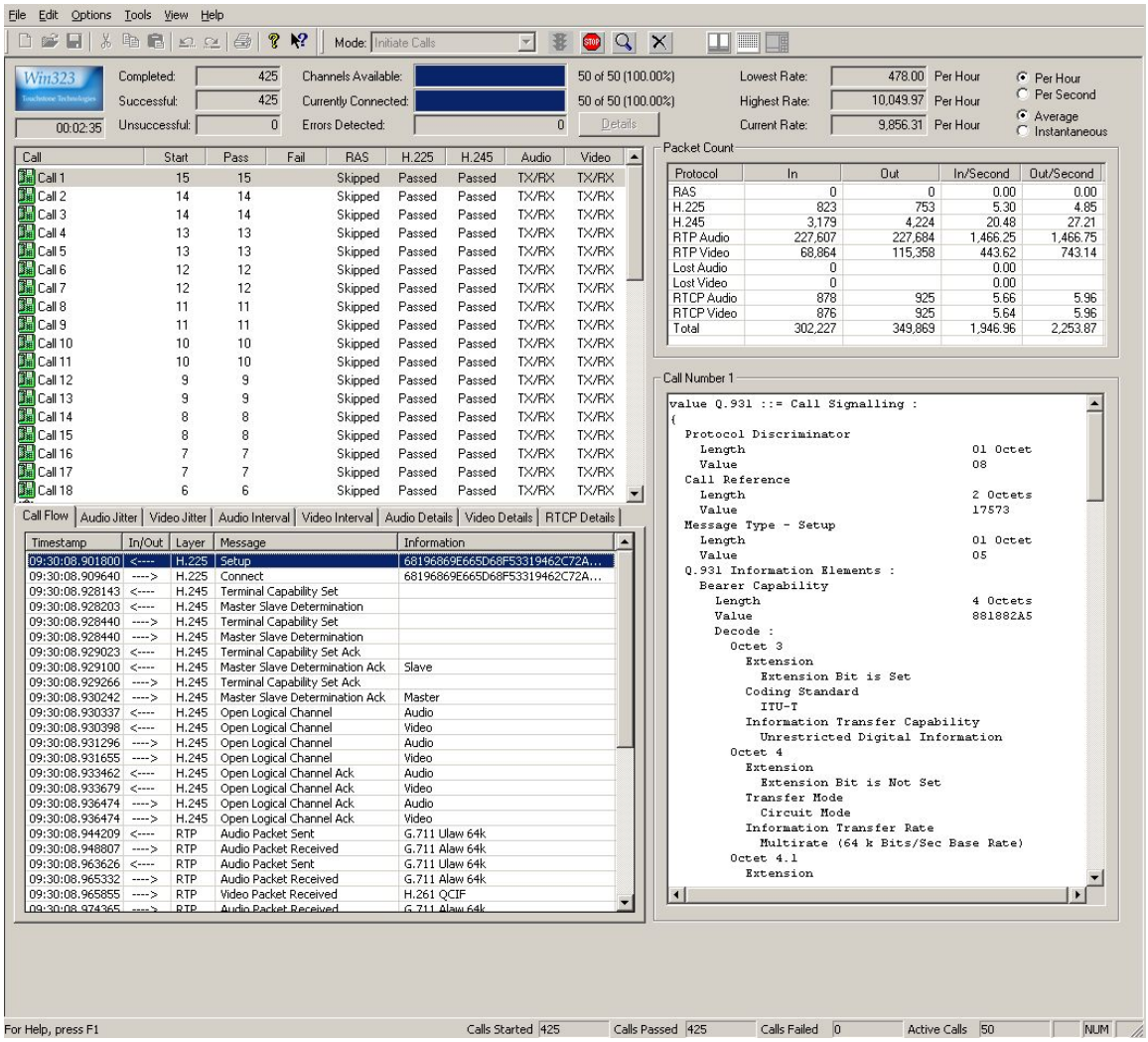
Terminate Selected Calls: Select the calls you want to terminate and right click the mouse within the selection. Then click Terminate Selected Calls.

Trace Selected Calls: This option allows the user to create a protocol trace file of the call. Each protocol message in the call will be printed to a file on the disk. A complete ASN.1 decode is done for RAS, H.225, and H.245. The first five RTP packets in each media stream are decoded as well as the first five RTCP packets.

Ping Remote Endpoint: Allows you to run a ping utility to test line-of-sight availability of a device or address on the network.

The Detail View

This is the view designed to facilitate monitoring individual calls and overall session status. The values on this screen are updated once every second.



There are four main sections of this screen.

Section One: The upper left section contains information on the Call name, Started calls, Passed calls, Failed calls, and the status of each protocol layer is displayed for each active call. When a particular call in this section is clicked, information about that call is displayed in section three.

Section Two: The upper right section provides the overall total number of packets by protocol that have been sent and received.

Section Three: The lower left section contains seven tabs that contain detailed information of the call selected in section one.

These tabs are:

Call Flow: Shows each signaling packet associated with the call. When the user selects a packet from the call flow list, the decode of that packet is displayed in section four.

Note: The display is limited to 25 instances of each type of packet. For example, only the first 25 Round Trip Delay packets will be displayed.

Audio Jitter: Shows a real time graph of the audio jitter of the call.

Video Jitter: Shows a real time graph of the video jitter of the call.

Audio Interval: Shows a real-time graph of the audio latency of the call.

Video Interval: Shows a real-time graph of the video latency of the call.

Audio Details: Shows a summary of the audio RTP stream of the call.

Video Details: Shows a summary of the video RTP stream of the call.

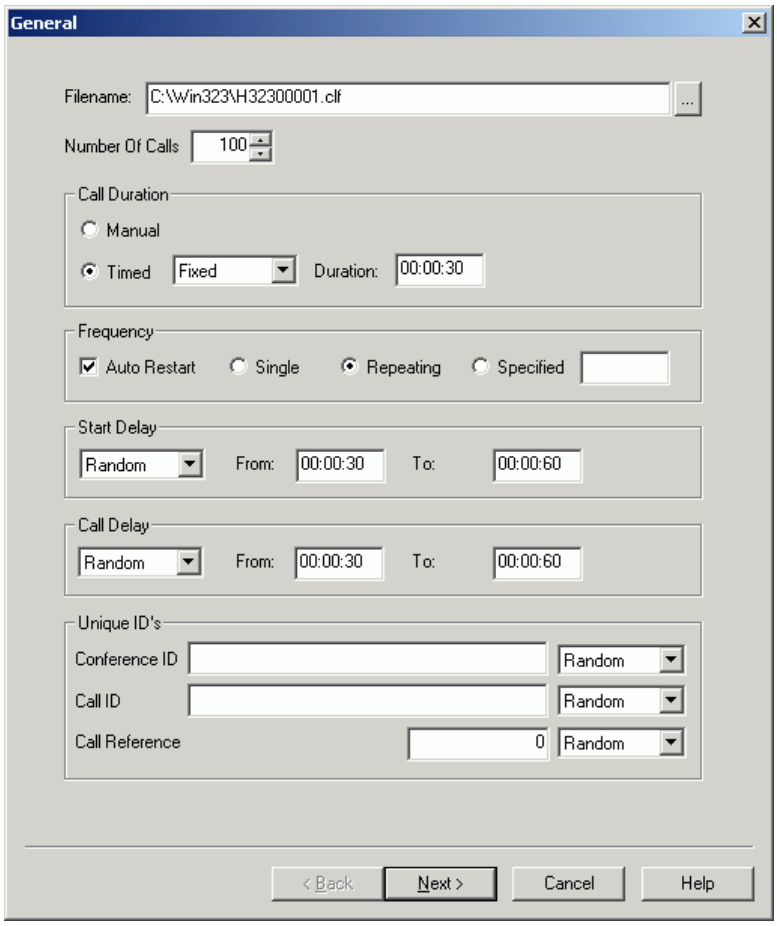
RTCP Details: Shows a summary of the audio and video RTCP streams of the call.

Section Four: The lower right section provides a detailed display of the packet that has been highlighted in the call flow list.

Creating Call Files

When running in initiate call, answer call or gatekeeper call mode, it is necessary to create a call file and select one or more calls to run. The simplest way of creating a call file is to use the Generate Call File option. Call files may be created by hand if so desired. This would be accomplished via the edit view.

Win323 provides an easy, fill-in-the-blank method of generating large test files quickly. When this option is selected from the file menu or the edit view, the following dialog will appear:



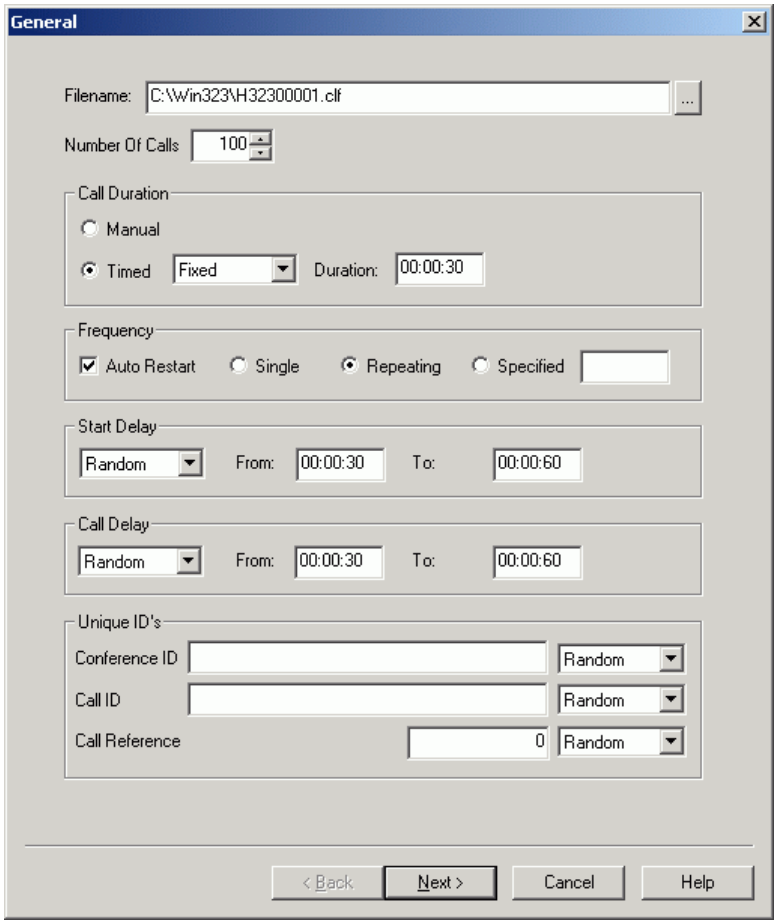
There are four (4) screens in this dialog, which create all the major fields within the call file. These pages include:

- General Page
- Local Page
- Remote Page
- Gatekeeper Page

All fields on these pages must be completed. Default values are provided in the fields for which they are appropriate.

General Page

This screen contains the general information pertaining to the test script.



This screen contains the information pertaining to the general properties of the test script. The fields included on the general page are:

Filename: Fill in the name of the file or use the Browse button located on the right side of the field to select an existing file to overwrite.

Number of Calls: Enter the number of calls you would like this script to contain.

Call Duration: This field may be one of two settings, either manual or timed. If you select timed, you may generate the values as fixed, incremental or random. The appropriate fields will appear as the selection changes. All visible fields must be filled out.

Frequency: This determines how many times the calls will be run.

> Auto Restart: If checked, the calls will automatically restart when they have completed.
> Single: Calls will run once.
> Repeating: Calls will continue to run until the user stops the call.
> Specified: Calls will run N number of times, then terminate.

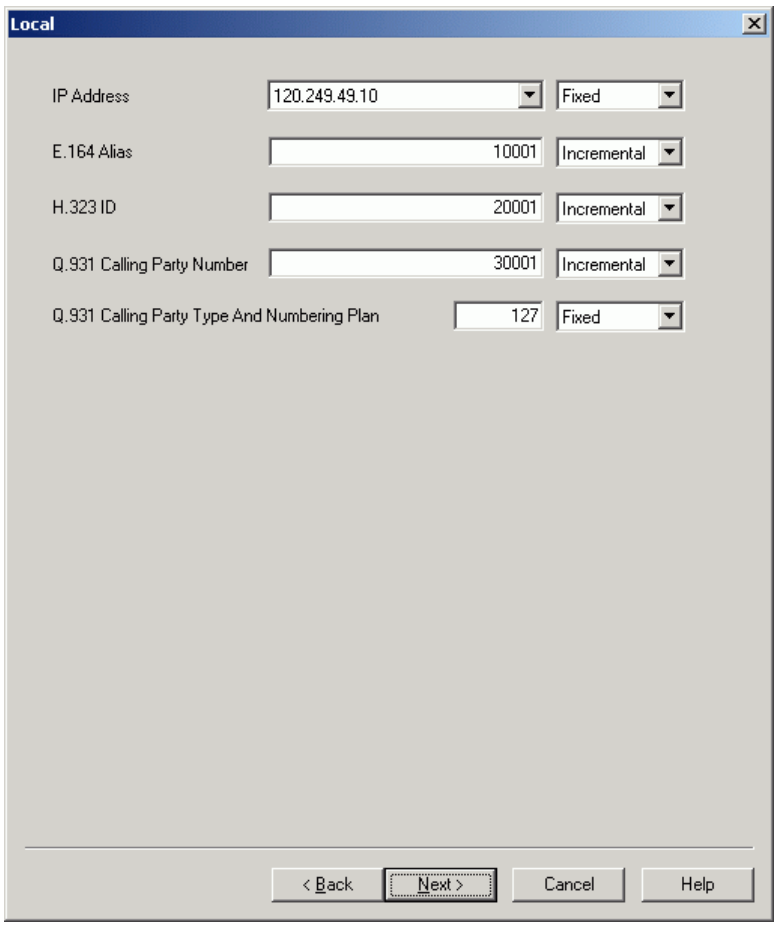
Start Delay: This is the delay, on a per-call basis, that will occur prior to starting a call for the first time in a session. The choices are None, Fixed, Incremental, and Random.

Call Delay: This is the delay, on a per-call basis, that will occur prior to starting a call each successive time in a session. The choices are None, Fixed, Incremental, and Random.

Unique IDs: There are three identification fields that the user may specify values for; the Conference ID, the Call ID and the Call Reference Value. These three IDs are used in various protocol messages of the call. The user may specify fixed, incremental or random values for these IDs.

Local Page

This screen contains the information pertaining to the local properties of the test script.



The fields included on the local page are:

IP Address: Enter the local IP address to be used for the calls. This may be either fixed or incremental.

E.164 Alias: Fill in the value of the local E.164 alias. Choose incremental to generate incremental value (e.g. 1234, 1235, etc.), fixed to set all IDs to the same value (not a good idea, but possible) or random to generate a random ID for each call or choose none.

H.323 ID: Fill in the value of the local H.323 ID alias. Choose incremental to generate incremental value (e.g. Harry1, Harry2, etc.), fixed to set all IDs to the same value (not a good idea, but possible) or random to generate a random ID for each call or choose none.

Q.931 Calling Party Number: Enter the Calling Party Number for the call. This may be fixed, incremental, random or none.

Q.931 Calling Party Type And Numbering Plan: Enter the Calling Party Type and Calling Party Numbering Plan as specified in Q.931 section 4.5.10, octet 3. This entry is optional and will override the value that is specified in the parameter file.

Seven bits are used to encode this information. Bit 8 is zero. Enter the decimal number of the bit combination wanted.

The Type of Number is set in bits 7 to 5 as follows:

Bits	
7 6 5	
0 0 0	Unknown
0 0 1	International Number
0 1 0	National Number
0 1 1	Network Specific Number
1 0 0	Subscriber Number
1 1 0	Abbreviated Number
1 1 1	Reserved for Extension

The Numbering Plan Identification is encoded in bits 4 to 1 as follows:

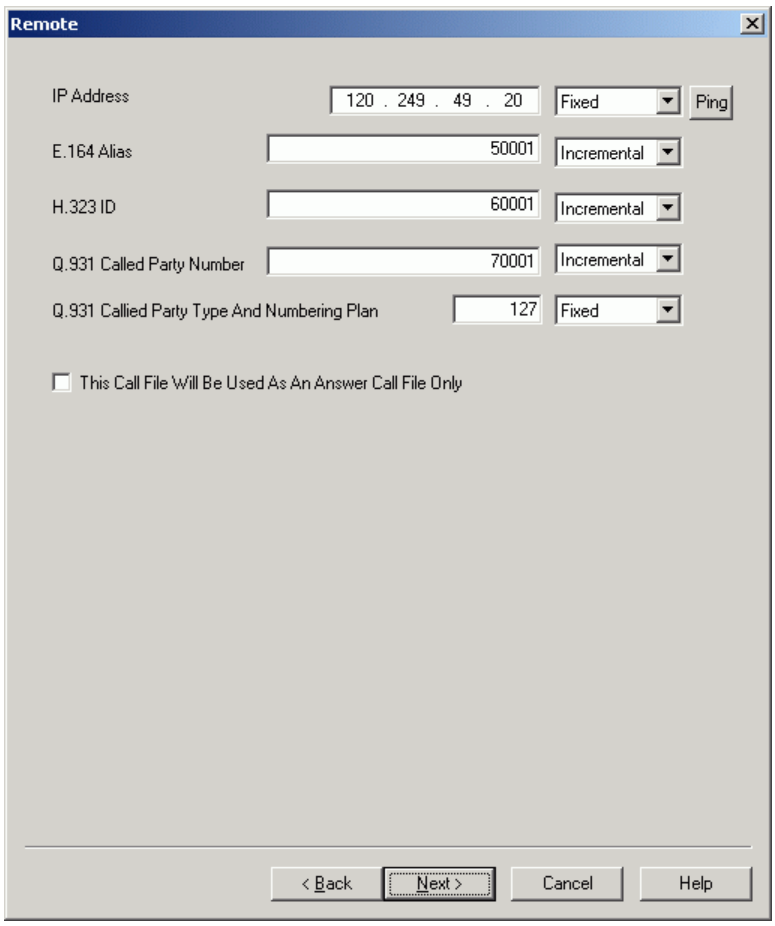
Bits	
4 3 2 1	
0 0 0 0	Unknown
0 0 0 1	ISDN/telephony numbering plan
0 0 1 1	Data numbering plan
0 1 0 0	National Number
1 0 0 0	National standard numbering plan
1 0 0 1	Private numbering plan
1 1 1 1	Reserved for extension

Examples:

Decimal Value	Hex Value	Bit Value	Type of Number	Numbering Plan
0	0	000 0000	Unknown	Unknown
20	14	001 0100	International	Telex
105	69	110 1001	Abbreviated	Private

Remote Page

This screen contains the information pertaining to the remote properties of the test script.



The fields included are:

IP Address: Enter the remote IP address to be used for the calls. This may be either fixed or incremental.

Ping: Allows you to run a ping utility to test line-of-sight availability of a device or address on the network.

E.164 Alias: Fill in the value of the remote E.164 alias. Choose incremental to generate incremental value (e.g. 1000, 1001, etc.), fixed to set all IDs to the same value (not a good idea, but possible) or random to generate a random ID for each call.

H.323 ID: Fill in the value of the remote H.323 ID alias. Choose incremental to generate incremental value (e.g. Harry1, Harry2, etc.), fixed to set all IDs to the same value (not a good idea, but possible) or random to generate a random ID for each call.

Q.931 Called Party Number: Enter the Called Party Number for the call. This may be fixed, incremental or random.

Q.931 Called Party Type And Numbering Plan: Enter the Called Party Type and Calling Party Numbering Plan as specified in Q.931 section 4.5.8, octet 3. This entry is optional and will override the value that is specified in the parameter file.

Seven bits are used to encode this information. Bit 8 is not entered. Enter the decimal number of the bit combination wanted.

The Type of Number is set in bits 7 to 5 as follows:

Bits	Description
7 6 5	
0 0 0	Unknown
0 0 1	International number
0 1 0	National number
0 1 1	Network specific number
1 0 0	Subscriber number
1 1 0	Abbreviated number
1 1 1	Reserved for extension

The Numbering Plan Identification is encoded in bits 4 to 1 as follows:

Bits	Description
4 3 2 1	
0 0 0 0	Unknown
0 0 0 1	ISDN/telephony numbering plan
0 0 1 1	Data numbering plan
0 1 0 0	Telex numbering plan
1 0 0 0	National standard numbering plan
1 0 0 1	Private numbering plan
1 1 1 1	Reserved for extension

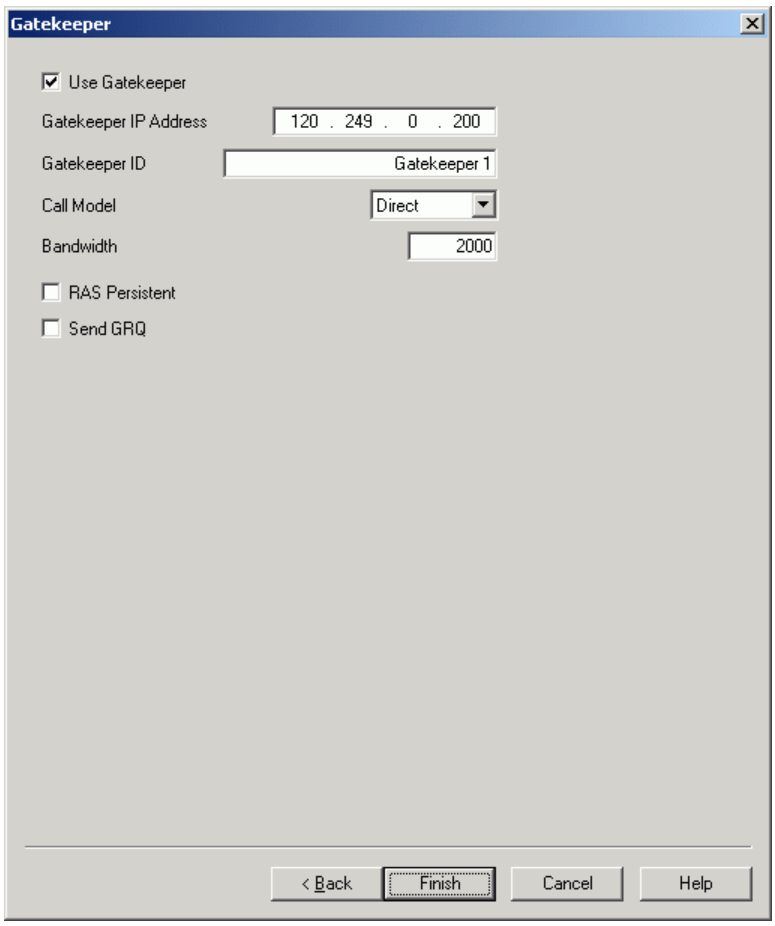
Examples

Decimal Value	Hex Value	Bit Value	Type of Number	Numbering Plan
1	1	000 0001	Unknown	ISDN
40	28	010 1000	National	National
67	43	100 0011	Subscriber	Data

This Call File Will Be Used As an Answer Call File Only: If this option is checked, the above information does not have to be entered. If it is not selected, at least one of the above fields must be filled out.

Gatekeeper Page

This screen contains the information pertaining to the Gatekeeper properties of the test script.



The fields included are:

Use Gatekeeper: If selected, the calls will use a gatekeeper.

Gatekeeper IP Address: The IP address if that gatekeeper.

Gatekeeper ID: The gatekeepers ID string.

Call Model: Can be either Direct or Gatekeeper Routed.

Bandwidth: The bidirectional bandwidth requested for each call.

RAS Persistent: If this option is selected, each call will do a Registration Request with the gatekeeper once, and then begin making calls. Successive

calls will begin with an Admission Request and end with a Disengage Request. When the call finally completes (due to an error, operator stop, or gatekeeper command), the call will do an Unregistration Request. If this option is not selected (RAS Non-Persistent), each call will start with a Registration Request and end with an Unregistration Request every time.

Send GRQ: If selected, each call will start with a Gatekeeper Request.

Generating Partner Files

Win323 provides an automated method of generating a mirror-image of the test script for use by another Win323 endpoint. This file is usually referred to as a partner file.

When this option is selected from the file menu or the edit view the following occurs:

You will be presented with the Save As dialog box.

Win323 will automatically swap the following fields:

Local and remote addresses.
Local and remote E.164 and H.323 IDs.

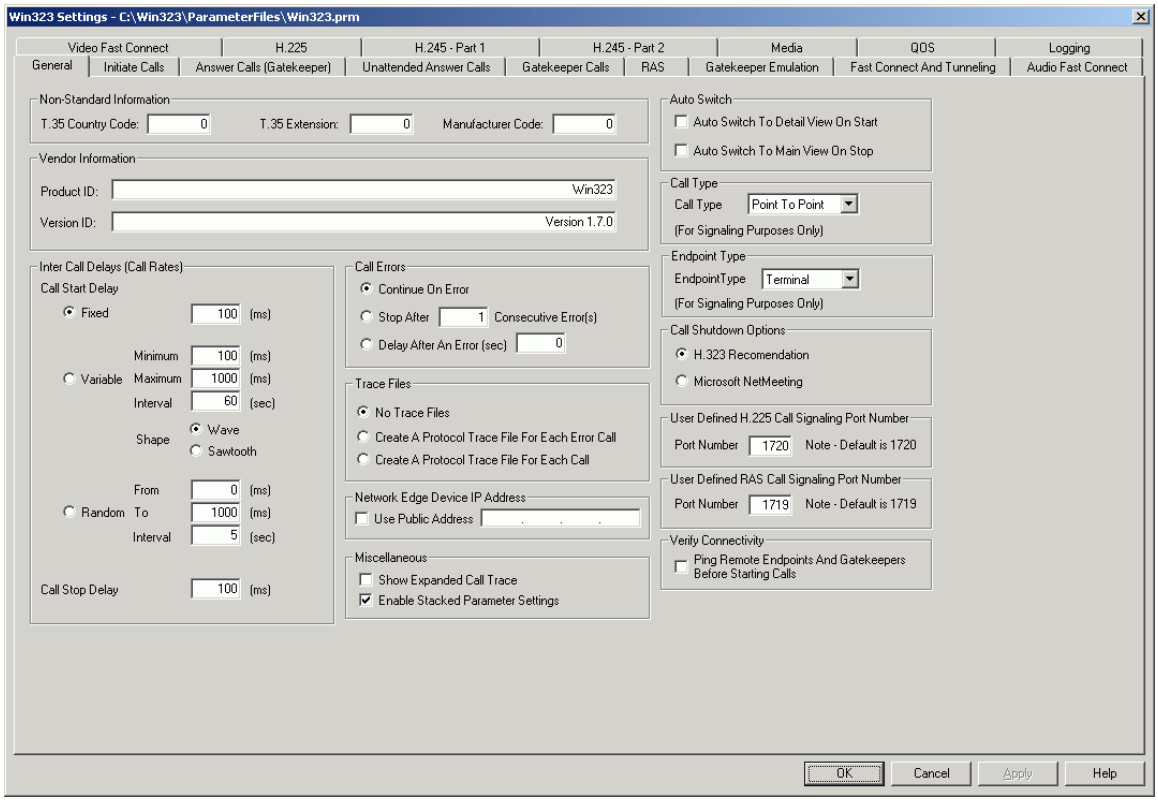
You will then be given the opportunity to load the partner file for use or viewing.

Settings

Win323 provides parameter file editing through the Options | Settings menu choice. The following section describes these screens and settings in detail.

Use this command to view or change parameters in the current parameter file and session settings file.

General



Non-Standard Information

T.35 Country Code: The Country Code as specified in T.35. Any number can be entered.
T.35 Extension: The Extension as specified in T.35. Any number can be entered.
Manufacturer Code: A number that indicates a certain manufacturer. Any number can be entered.

Vendor Information

Product ID: A character string that indicated the name of the product. Any string can be entered.
Version ID: A character string that indicated the version of the product. Any string can be entered.

Inter Call Delays (Call Rates)

Start Delay: This delay is used to regulate the amount of time between the starting and restarting of two or more different calls. The Start Delay is the way to adjust the call start rate. When two or more calls are starting for the first time or have completed and are restarting, Win323 uses the Start Delay to start each call. This delay is measured in milliseconds. For example, if three calls want to start or restart and the Start Delay is 500 milliseconds, call 1 will be started immediately, call 2 will be started 500 ms after call 1, and call 3 will be started 500 ms after call 2. There are three ways to specify the restart delay:

Fixed: When Fixed is selected, the start delay between calls remains constant.

Variable: When Variable is selected, the start delay is gradually adjusted as the calls are running. The user must enter the minimum and maximum delays that Win323 should use and the time Interval that it will take to go from the minimum to the maximum delay. For example, if the user enters a minimum delay of 100 ms and a maximum delay of 200 ms and a time interval of 60 seconds, Win323 will initially set the start delay to 100 ms and gradually increase it to 200 ms. The time it takes to go from 100 ms to 200 ms will be 60 seconds. When the maximum delay value has been reached, if the user has selected Wave Shape, the start delay will be gradually decreased until the minimum delay value is again reached. If the user has selected Sawtooth Shape, the start delay will immediately be set to the minimum value.

Random: When Random is selected, the start delay is a randomly generated number. The user must enter the From and To limits that Win323 should use to generate the number and the time Interval that that delay will be used. For example, if the user enters a From delay of 100 ms and a To delay of 200 ms and a time interval of 60 seconds, Win323 will initially set the restart delay to 150 ms (From + To / 2) for 60 seconds. Next the program will generate a random number between 100 ms and 200 ms and use that delay for another 60 seconds. Win323 will continue to generate random numbers and uses them for 60 seconds. For

Example: If the user enters a minimum delay of 100 ms and a maximum delay of 1000 ms and a time interval of 30 seconds, Win323 will initially set the start delay to 550 ms for 30 seconds. Then it will generate a new random number and set the delay for another 30 seconds.

Stop Delay: This delay is used to regulate the amount of time between the stopping of two or more different calls. The Stop Delay is the way to adjust the call stop rate. When Win323 is ready to stop two or more calls (because the user pressed the Stop Button), it uses the Stop Delay between the actual stopping of each call. This delay is measured in milliseconds. For example, if the user stops three calls and the Stop Delay is 500 milliseconds, call 1 will be stopped immediately, call 2 will be stopped 500 ms after call 1 stops, and call 3 will be stopped 500 ms after call 2 stops. The Stop Delay only applies when the user stops calls using the Stop Button.

Call Errors: These options allow the user to select what happens when a call detects an error. There are three options allowed.

Continue on Error: Terminates the call and immediately restart the call (if the call is repeating).
Stop on Error: Terminates the call and does not restart it (even if the call is repeating).
Delay after Error: Delays N seconds before restarting the call (if the call is repeating).

Trace Files: This option allows the user to create a protocol trace file of the call. Each protocol message in the call will be printed to a file on the disk. A complete ASN.1 decode is done for RAS, H.225, and H.245. The first five RTP packets in each media stream are decoded as well as the first five RTCP packets.

No Trace Files: This option turns off all tracing.
Create A Protocol Trace File For Each Error Call: When this option is selected, a trace file will be created for calls that have errors.
Create A Protocol Trace File For Each Call: When this option is selected, a trace file will be created for calls all errors.

The name of the trace file that will be created is formatted as follows:

Protocol_Trace_Call_N_HHMMSSXXX.trc

Where N = Call Number, and HHMMSSXXX = Hour, Minute, Second, and Millisecond the trace file was created. See the Protocol Trace example.

Network Edge Device IP Address: If calls are being made through a non H.323 aware network edge device (gateway, router, etc), Win323 can substitute the outside IP address of the edge device for the inside IP address of the edge device within the ASN.1 encoded messages Setup, Call Proceeding, Alerting, Connect, and Open Logical Channel.

Miscellaneous

> Show Expanded Call Trace: If this option is selected, additional trace messages will be displayed on the Call Flow tab on the Details View.
> Enable Stacked Parameter Settings: If this option is selected, the Parameter File configuration tabs (Options | Settings menu) will be displayed as a stacked display. If not, the configuration tabs will be displayed horizontally with scroll buttons.

Auto Switch: There are two options that the user may use to switch views automatically.

> Auto Switch To Detail View On Start: With this option set, when the start button is pressed, Win323 switches to the Detail view.
> Auto Switch To Main View On Stop: With this option set, Win323 switches back to the Main view when all calls have terminated.

Call Type: This drop down list box allows the user to select the Call Type parameter that is used in the H.225 and RAS protocol layers. This parameter is used for signaling purposes only, not to control any behavior of the program.

The choices are:

> Point To Point
> One To N
> N To One
> N To N

Endpoint Type: This drop down list box allows the user to select the Call Endpoint parameter that is used in the H.225 and RAS protocol layers. This parameter is used for signaling purposes only, not to control any behavior of the program. The choices are:

> Gatekeeper
> Gateway
> MCU
> Terminal

Call Shutdown Options: This option allows the user to specify how to terminate each call. Several vendors have chosen to speed up this process by closing H.245 and H.225 at once. Win323 now allows the user to select which termination method to use. H.323 Recommendation uses the recommended termination method, while Netmeeting uses the faster termination method.

> H.323 Recommendation: Specifies the protocol sequence that a call should use when it terminates. The call should sequentially close the H.245 channel, then the H.225 channel, and then the RAS channel (if there is a gatekeeper involved).
> Microsoft Netmeeting: Uses the faster termination method.

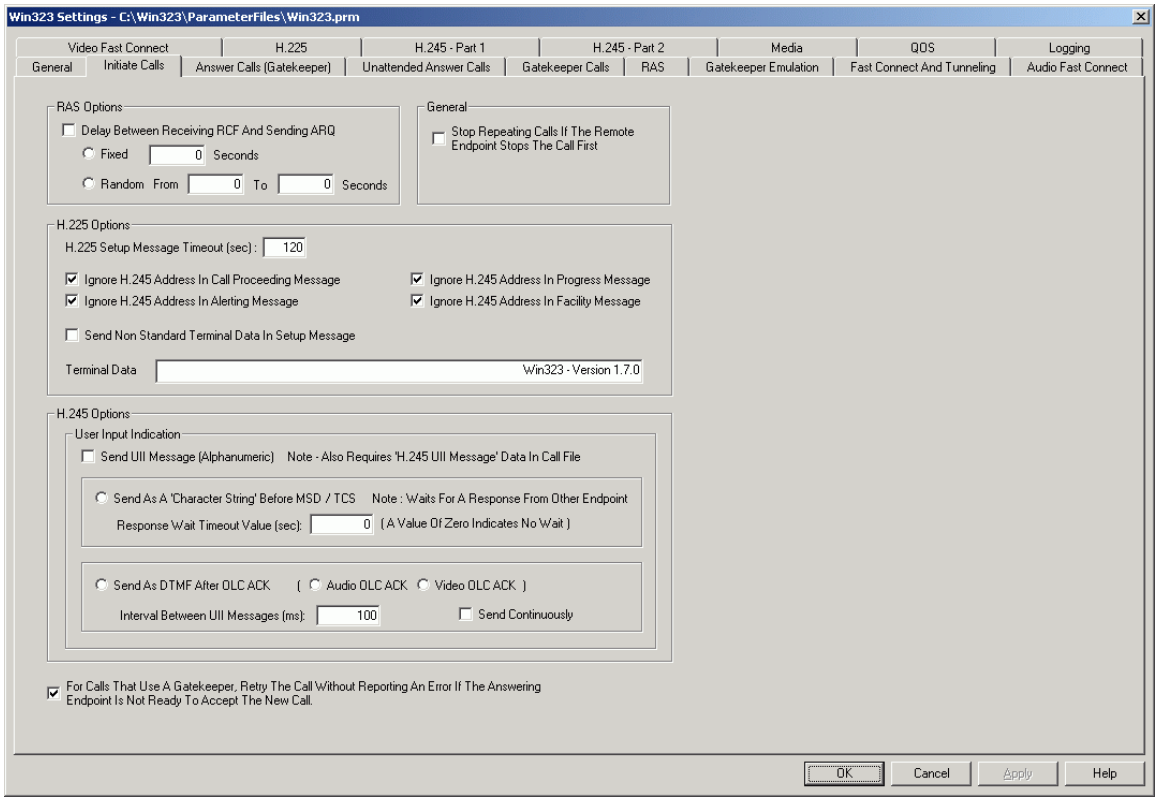
User Defined H.225 Call Signaling Port Number: This option allows the user to select the port that will be used for H.225 call signaling. Normally, this number should be set to 1720, which is the well-known H.225 port. This will be used as the remote port number for all Initiate calls on the tool. In addition, this is the port that Unattended Answer calls will listen on to accept Unattended Answer calls.

User Defined RAS Call Signaling Port Number: This option allows the user to select the port that will be used for RAS call signaling. Normally, this number should be set to 1719, which is the well-known RAS port. This will be used as the remote port number for all Initiate and Answer calls on the tool. In addition, this is the port that Gatekeeper Emulation Mode will listen on to accept RAS request messages.

Verify Connectivity:

> Ping Remote Endpoints and Gatekeepers before Starting Calls: Selecting this option causes Win323 to verify that there is a valid network connection to each endpoint and gatekeeper entered in the call file. When the user presses the Start button a ping is sent to each unique IP address in the call file and Win323 waits for a reply.

Initiate Calls



RAS Options: Used to set RAS options for Initiate calls only.

> Delay Between Receiving RCF And Sending ARQ: This option allows the initiating endpoint to create a delay after it receives the RCF message but before it sends the ARQ message. There are two types of delay:
>
> > Fixed N Seconds: Each call will wait N seconds before sending ARQ.
> > Random From N to M Seconds: Each call will wait a random number of seconds (between N and M) before sending ARQ.

General: Used to set General options for Initiate calls only.

> Stop Repeating Calls If The Remote Endpoint Stops The Call First: If this option is selected, the call initiator will stop repeating a call if the remote endpoint terminates the call.

H.225 Options: Used to set H.225 options for Initiate calls only.

H.225 Setup Message Timeout: This option specifies the time Win323 will wait for the Connect message, after sending the Setup message. If this timer expires before the Connect message is received, and an error is reported.
Ignore H.245 address in Call Proceeding Message: Tells Win323 not to open an H.245 channel if it detects an H.245 address in the Call Proceeding message.
Ignore H.245 address in Alerting Message: Tells Win323 not to open an H.245 channel if it detects an H.245 address in the Alerting message.
Ignore H.245 address in Progress Message: Tells Win323 not to open an H.245 channel if it detects an H.245 address in the Progress message.
Ignore H.245 address in Facility Message: Tells Win323 not to open an H.245 channel if it detects an H.245 address in the Facility message.
Send Non Standard Terminal Data In Setup Message: If this option is selected the Non Standard Terminal Data field of the Setup message is filled in with the T.35 Country Code, the T.35 Extension, and Manufacturer Code (from the General page) and the data from the Terminal Data field.

H.245 Options: Used to set H.245 options for Initiate calls only.

User Input Indication

Send UII Message: This option is used in conjunction with the UII Message Data column in the call file. This option tells Win323 how to send the UII Message, the data in the call file tells Win323 what to send in the UII message.

Send As A Character String Before MSD / TCS: If this option is selected, the call file data is sent all at once as the first H.245 message. Win323 then waits for the first H.245 Message from the remote endpoint. The data in the UII Message Data column may be any alphanumeric data.

Wait Timeout Value: The length of time Win323 will wait for a response from the remote endpoint before continuing the call.

Send As DTMF After OLC ACK: If this option is selected, the call file data is sent a digit at a time in each UII message. The data in the UII Message Data column may be any alphanumeric data. The format of the UII data in the call file is as follows:

Audio OLC ACK: The DTMF digits will be sent after the receipt of the Audio OLC ACK.
Video OLC ACK: The DTMF digits will be sent after the receipt of the Video OLC ACK.
Interval Between UII Messages: This is the delay in milliseconds between each DTMF digit that is sent.
Send Continuously: If checked, when all of the UII Data digits have been sent, Win323 will start the sequence over again. If not checked, the data digits will be sent only once.

Note: The data entered into the call file for DTMF simulation must be in the following format:

P#;D;P#;D: Where P means pause, # means the number of milliseconds to pause, and D means the data to send.

Example 1: The string P1000;12345; means pause for 1000 milliseconds, and then send 1 2 3 4 5 in five UII messages.
Example 2: The string P5000;joe;P4000;6632;P1000;42; means pause for 5000 milliseconds, then send j o e in three UII messages, pause 4000 milliseconds, then send 6 6 3 2 in four UII messages, pause 1000 milliseconds, and then send 4 2 in two UII messages.
Example 3: The string P0;888; means pause for 0 milliseconds, and then send 8 8 8 in three UII messages.

For Calls That Use A Gatekeeper.....:

When making a call with Win323 that involves a gatekeeper, it is very important to keep in mind that the Answering endpoint must be ready to receive the call when the Originating endpoint places the call.

Normally, a call start delay of a few seconds on the originating side is all that it takes to ensure that the answering side is ready. The amount of time that the originating side needs to delay depends on several factors such as the speed of the gatekeeper, the call load, the amount of media being sent and received, etc.

Since RAS messages are sent via UDP, it is possible that they may get lost. This is ordinarily not a problem, since the gatekeeper or endpoint simply re-transmits the message after a fixed period of time. However, if re-transmissions occur while the answering side is closing down or starting up, it is very possible that it will not be ready in time to answer the initiators call. Also, if you have entered large RAS timeout values for request messages the answer side will probably not be ready if it re-transmits these messages.

If the Answer side is not able to accept a new call it will report the following warning:

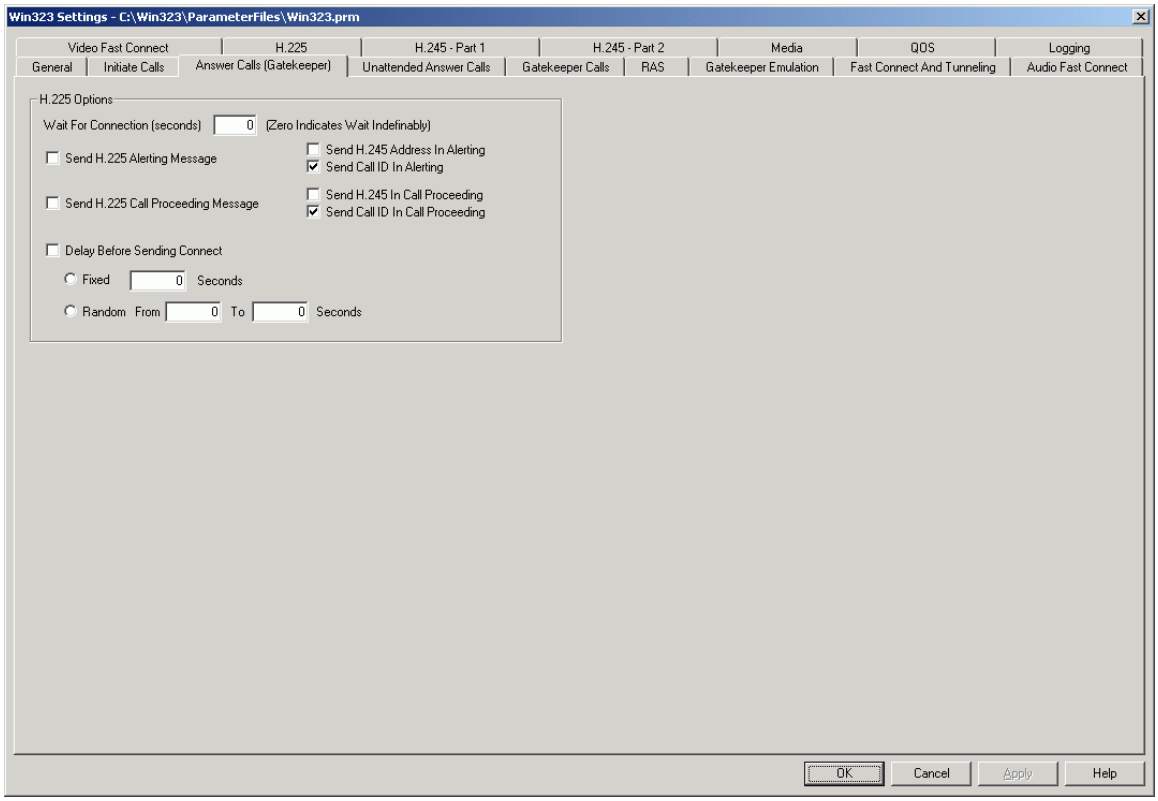
> Call XXX: An Initiate Call Is Attempting To Connect To An Existing Answer Call Before The Call Is Terminated. Sending Release Complete

The originating side report one the following errors:

> Call XXX: Could Not Issue Setup Message - Remote Socket Is Closed.
> Call XXX: A RAS admission reject was received-Reason Called Party Not Registered.
> Call XXX: Setup Timeout Waiting For the Connect Message.
> Call XXX: Received Release Complete - In Conference, No Address In Alternative Address.

If you are getting these messages you must increase the initiate call start delay in your call file and/or decrease the timeout values for the RAS request messages. These values must be found experimentally.

Answer Calls (Gatekeeper)



H.225 Options: Used to set H.225 options for Answer calls only.

Wait For Connection: After an Answer call registers with the gatekeeper, this option will specify how long it will wait for a call to be received.

Send H.225 Alerting Message: If selected, an Alerting message is sent.

Send H.245 Address In Alerting: If selected (and Send H.225 Alerting Message is selected), the H.245 channel address is sent in the Alerting message.
Send Call ID In Alerting: The Call ID will be sent in the Alerting message.

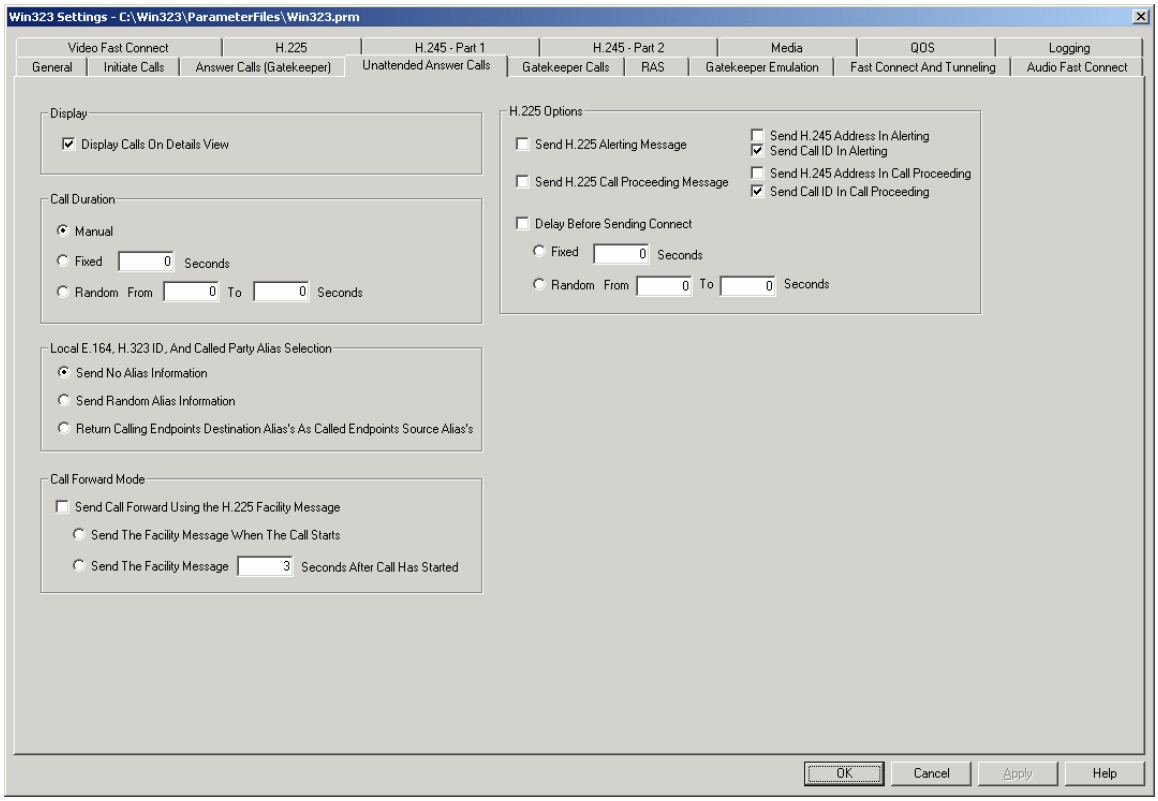
Send H.225 Call Proceeding Message: If selected, a Call Proceeding message is sent.

> Send H.245 In Call Proceeding: If selected (and Send H.225 Call Proceeding Message is selected), the H.245 channel address is sent in the Call Proceeding message.
> Send Call ID In Call Proceeding: The Call ID will be sent in the Call Proceeding message.

Delay Before Sending Connect: This option causes the answering endpoint to create a delay before it sends the Connect message. There are two types of delay:

> > Fixed N Seconds: Each call will wait N seconds before sending Connect.
> > Random From N To M Seconds: Each call will wait a random number of seconds (between N and M) before sending Connect.

Unattended Answer Calls



Display

Display Calls On Detail View: If checked new calls will be displayed in the unattended answer mode. If unchecked no calls will be displayed in unattended answer mode, this lowers the load on the installed computer's hardware.

Call Duration: This option allows the user to select how long an Unattended Answer call will run. There are three ways to specify the duration:

Manual: If this option is selected, the call will run until the Initiate endpoint terminates the call.
Fixed N Seconds: If this option is selected, each Unattended Answer call will run for N seconds, or until the Initiate endpoint terminates the call.
Random from N To M Seconds: If this option is selected, each Unattended Answer call will run for a random number (between N and M) of seconds, or until the Initiate endpoint terminates the call.

Local E.164 And H.323 ID Alias Selection: These options allow the user to select what aliases (if any) Unattended Answer calls will use as their local aliases.

Send No Alias Information: If this option is selected, no E.166 or H.323 ID alias will be sent.
Send Random Alias Information: If this option is selected Win323 will generate a random E.164 and H.323 ID alias for each Unattended Answer call.
Return Calling Endpoints Destination Alias's as Called Endpoints Source Alias: If this option is selected, Win323 will use the destination aliases (if present) sent to it from the originating endpoint.

Call Forward Mode: This option allows the user to put Win323 in Call Forward mode. In this mode, when a new call is accepted, an H.225 Facility message is sent to the originating endpoint. The Facility message will indicate Facility Call Deflection and will specify the IP address and port should call next. The user must also select when to send the Facility and what forwarded port to use.

Send Call Forward Using the H.225 Facility Message: This checkbox enables / disables all other Call Forward options.

Send The Facility Message When The Call Starts: If this option is selected, the Facility message will be returned in response to the Setup message sent from the originating endpoint.
Send The Facility Message NNNN Seconds After Call Has Started: If this option is selected, the Facility message will be returned NNNN seconds after the Connect message is sent.

H.225 Options: Used to set H.225 options for Unattended Answer calls only.

Send H.225 Alerting Message: If selected, an Alerting Message is sent.

Send H.245 in Alerting: If selected (and Send H.225 Alerting Message is selected), the H.245 channel address is sent in the Alerting Message.
Send Call ID In Alerting: The Call ID will be sent in the Alerting message.

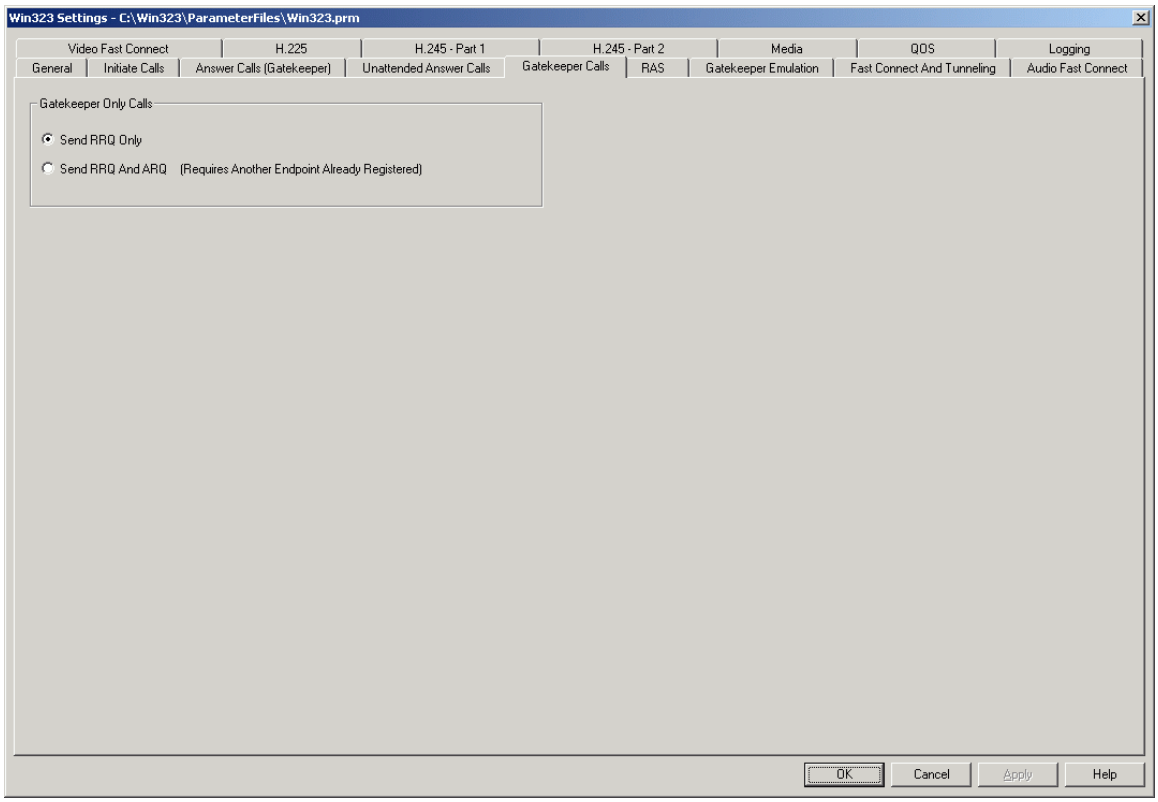
Send H.225 Call Proceeding Message: If selected, a Call Proceeding Message is sent.

> Send H.245 Address In Call Proceeding: If selected (and Send H.225 Call Proceeding Message is selected), the H.245 channel address is sent in the Call Proceeding message.
> Send Call ID In Call Proceeding: The Call ID will be sent in the Call Proceeding message.

Delay Before Sending Connect: This option causes the answering endpoint to create a delay before it sends the Connect message. There are two types of delay:

> Fixed N Seconds: Each call will wait N seconds before sending Connect.
> Random from N to M Seconds: Each call will wait a random number of seconds (between N and M) before sending Connect.

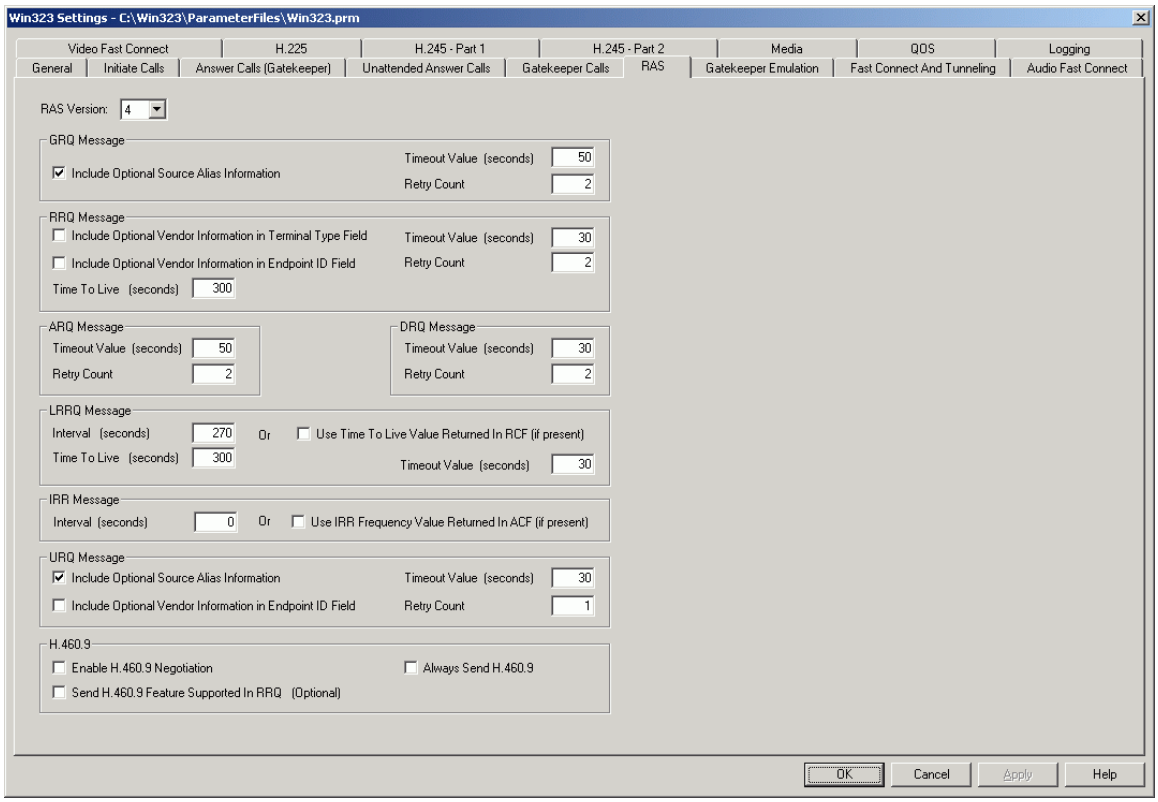
Gatekeeper Calls



Gatekeeper Only Calls: Used to set RAS options for Gatekeeper calls only.

> Send RRQ Only: If selected, Win323 issues a Registration Request message, and an Unregistration Request message.
>
> Send RRQ And ARQ: If selected, Win323 issues a Registration Request message, an Admission Request message, a Disengage Request and an Unregistration Request message.
>
> Note: This option requires that a remote endpoint already be registered for each call you start.

RAS



RAS Version: Used to set the vintage of the RAS layer.

GRQ Message

Include Optional Source Information: If selected, the E.164 and / or H.323 ID Alias will be sent in the GRQ.
Timeout Value: The time to wait for a response from the gatekeeper before retrying the message.
Retry Count: The number of times to retry the message before indicating an error.

RRQ Message

Include Optional Vendor Information In The Terminal Type Field: If selected, the vendor information will be added to the terminal type field of the message.
Include Optional Vendor Information In The Endpoint Field: If selected, the vendor information will be added to the endpoint field of the message.
Time To Live: The value for the time to live field.

Timeout Value: The time to wait for a response from the gatekeeper before retrying the message.
Retry Count: The number of times to retry the message before indicating an error.

ARQ Message

Timeout Value: The time to wait for a response from the gatekeeper before retrying the message.
Retry Count: The number of times to retry the message before indicating an error.

DRQ Message

Timeout Value: The time to wait for a response from the gatekeeper before retrying the message.
Retry Count: The number of times to retry the message before indicating an error.

LRRQ Message

Interval: The time interval between LRRQ messages. OR
Use Time To Live Value Returned in RCF (if present): If selected and there is a 'Time To Live' value returned in the last RCF, that values will be used instead of the 'Interval' value above.
Time To Live: The value for the time to live field.
Timeout Value: The time to wait for a response from the gatekeeper before retrying the message.

IRR Message

Interval: The time interval between IRR messages.
Use IRR Frequency Value Returned in ACF (if present): If selected and there is an 'IRR Frequency' value returned in the ACF, that values will be used instead of the 'Interval' value above.

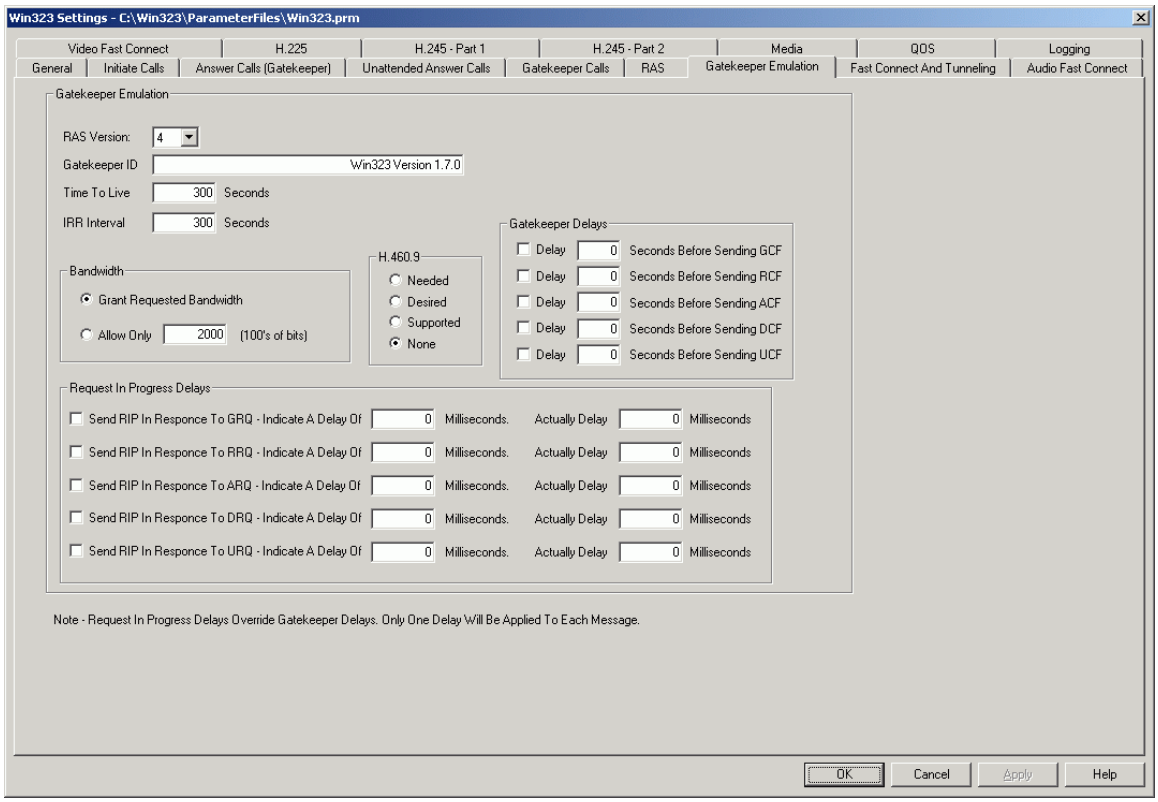
URQ Message

Include Optional Source Information: If selected, the E.164 and / or H.323 ID Alias will be sent in the URQ.
Include Optional Vendor Information in Endpoint ID Field: If selected, the vendor information will be added to the endpoint ID field of the message.
Timeout Value: The time to wait for a response from the gatekeeper before retrying the message.
Retry Count: The number of times to retry the message before indicating an error.

H.460.9

Enable H.460.9 Negotiation: If this box is selected, H.460.9 will be negotiated with the gatekeeper.
Send H.460.9 Feature Supported in RRQ (Optional): If selected, the endpoint will indicate that it supports H.460.9 in the RRQ message.
Always Send H.460.9: H.460.9 QoS information will always be sent whether or not the gatekeeper wants it.

Gatekeeper Emulation



Gatekeeper Emulation

RAS Version: Used to set the vintage of the RAS layer.

Gatekeeper ID: Used to set the Gatekeeper ID field in the GCF and RCF message.

Time To Live: Used to set the TTL field in the RCF message.

IRR Interval: Used to set the IRR interval in the RCF message.

Bandwidth: Used to set the Bandwidth in the RCF message.

Grant Requested: If selected, Win323 will grant whatever bandwidth the endpoint requests.
Allow Only: Specifies a fixed bandwidth allowed for each endpoint.

H.460.9: This option specifies what the gatekeeper will send to each endpoint as far as H.460.9 is concerned. The options are:

Needed
Desired
Supported
None

Delays: Win323 can introduce artificial delays before sending confirm messages to a requesting endpoint. The delay for each type of message can be selected and configured individually.

Delay N Seconds before Sending GCF: Actual delay value to wait before sending GCF.

Delay N Seconds before Sending RCF: Actual delay value to wait before sending RCF.

Delay N Seconds before Sending ACF: Actual delay value to wait before sending ACF.

Delay N Seconds before Sending DCF: Actual delay value to wait before sending DCF.

Delay N Seconds before Sending UCF: Actual delay value to wait before sending UCF.

Request In Progress Delays: Win323 can send RIP messages to a requesting endpoint. The RIP message is used when a response cannot be generated by the gatekeeper within a typical retry timeout period. The RIP message specifies the period (in the Delay field) after which a response should have been generated.

Send RIP In Response To GRQ: The user can indicate if RIP will be sent in response to a GRQ, the time value in the RIP, and the actual time the gatekeeper will delay before it sends the GCF.

Send RIP In Response To RRQ: The user can indicate if RIP will be sent in response to a RRQ, the time value in the RIP, and the actual time the gatekeeper will delay before it sends the RCF.

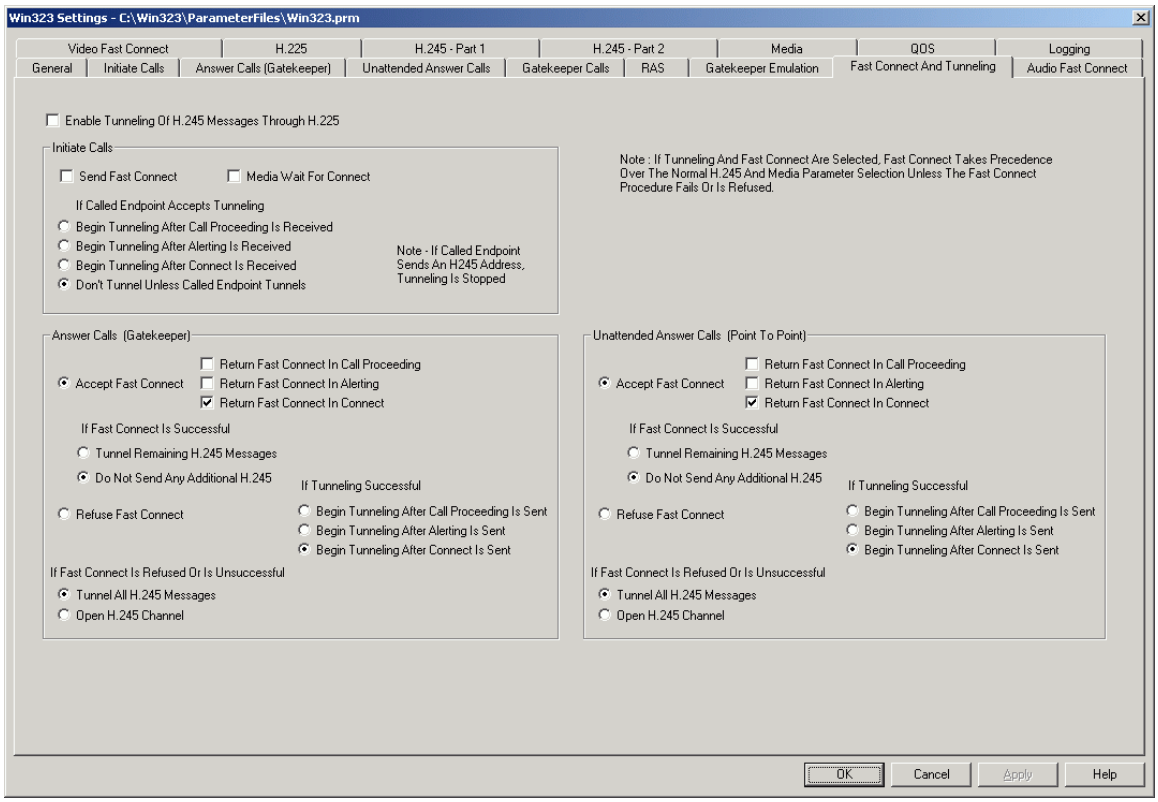
Send RIP In Response To ARQ: The user can indicate if RIP will be sent in response to an ARQ, the time value in the RIP, and the actual time the gatekeeper will delay before it sends the ACF.

Send RIP In Response To DRQ: The user can indicate if RIP will be sent in response to a DRQ, the time value in the RIP, and the actual time the gatekeeper will delay before it sends the DCF.

Send RIP In Response To URQ: The user can indicate if RIP will be sent in response to a URQ, the time value in the RIP, and the actual time the gatekeeper will delay before it sends the UCF.

Note: Request In Progress Delays override gatekeeper delays. Only one delay will be applied to each message.

Fast Connect and Tunneling



Note: If Tunneling and Fast Connect are selected, Fast Connect takes precedence over the normal H.245 and media parameter section unless the Fast Connect procedure fails or is refused.

Enable Tunneling Of H.245 Messages Through H.225: If selected, Win323 will attempt to establish calls using tunneling procedures.

Initiate Calls: These options are for initiate calls only.

Send Fast Connect: If selected, fast connect will be sent in the H.225 Setup message.

Media Wait For Connect: If selected, the Media Wait For Connect flag will be sent in the Setup Message.

If the called endpoint accepts tunneling:

Begin Tunneling After Call Proceeding Is Received: Begins tunneling after the Call Proceeding message is received

Begin Tunneling After Alerting Is Received: Begins tunneling after the Alerting message is received.
Begin Tunneling After Connect Is Received: Begins tunneling after the Connect message is received.
Don't Tunnel Unless Called Endpoint Tunnels: If selected, the initiating endpoint waits to see if the answering endpoint wants to proceed with tunneling or if fast connect was sufficient.

Answer Calls (Gatekeeper): These options are for answer calls only.

Accept Fast Connect: If selected, Answer calls will attempt to negotiate the fast connect procedure.

Return Fast Connect In Call Proceeding: If selected and fast connect has been successfully negotiated, the fast connect elements will be returned in the Call Proceeding message.
Return Fast Connect In Alerting: If selected and fast connect has been successfully negotiated, the fast connect elements will be returned in the Alerting message.
Return Fast Connect In Connect: If selected and fast connect has been successfully negotiated, the fast connect elements will be returned in the Connect message.

If Fast Connect Is Successful

Tunnel Remaining H.245 Messages: If selected, the remaining H.245 messages will be tunneled.
Do Not Send Any Additional H.245: If selected, no more H.245 messages will be sent.

Refuse Fast Connect: If selected, Fast Connect negotiation will not be attempted.

If Fast Connect Is Refused or Unsuccessful

Tunnel All H.245 Messages: If selected, all H.245 messages will be tunneled.
Open H.245 Channel: If selected, An H.245 channel will be opened.

If Tunneling is Successful

Begin Tunneling After Call Proceeding Is Sent: If selected, begins tunneling after the Call Proceeding message is sent.

Begin Tunneling After Alerting Is Sent: Begins tunneling after the Alerting message is sent.
Begin Tunneling After Connect Is Sent: Begins tunneling after the Connect message is sent.

Unattended Answer Calls: These options are for unattended answer calls only.

Accept Fast Connect: If selected, Unattended Answer calls will attempt to negotiate the fast connect procedure.

Return Fast Connect In Call Proceeding: If selected and fast connect has been successfully negotiated, the fast connect elements will be returned in the Call Proceeding message.
Return Fast Connect In Alerting: If selected and fast connect has been successfully negotiated, the fast connect elements will be returned in the Alerting message.
Return Fast Connect In Connect: If selected and fast connect has been successfully negotiated, the fast connect elements will be returned in the Connect message.

If Fast Connect Is Successful

Tunnel Remaining H.245 Messages: If selected, the remaining H.245 messages will be tunneled.
Do Not Send Any Additional H.245: If selected, no more H.245 messages will be sent.

Refuse Fast Connect: If selected, Fast Connect negotiation will not be attempted.

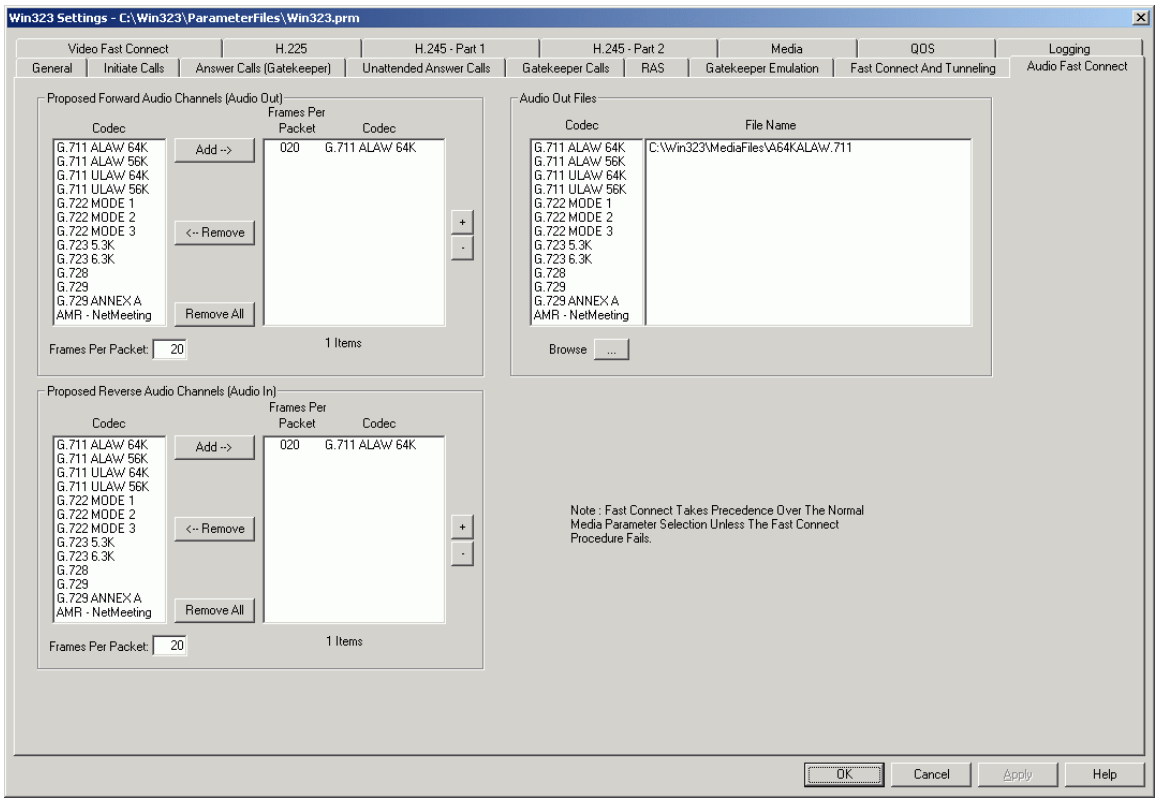
If Fast Connect Is Refused or Unsuccessful

Tunnel All H.245 Messages: If selected, all H.245 messages will be tunneled.
Open H.245 Channel: If selected, An H.245 channel will be opened.

If Tunneling is Successful

Begin Tunneling After Call Proceeding Is Sent: If selected, begins tunneling after the Call Proceeding message is sent.
Begin Tunneling After Alerting Is Sent: Begins tunneling after the Alerting message is sent.
Begin Tunneling After Connect Is Sent: Begins tunneling after the Connect message is sent.

Audio Fast Connect



Fast Connect elements consist of a sequence of Open Logical Channel structures describing media channels which the calling endpoint proposes to send and receive, including all of the parameters necessary to immediately open and begin transferring media on the channels.

The calling endpoint initiates the Fast Connect procedure by sending a Setup message containing the Faststart element to the called endpoint.

When the called endpoint desires to proceed with the Fast Connect procedure, it sends a H.225.0 call signaling message (Call Proceeding, Progress, Alerting, or Connect) containing a Faststart element selecting from amongst the Open Logical Channel proposals offered by the calling endpoint. The calling endpoint shall process each of these messages until it determines that Fast Connect is accepted or refused.

The called endpoint may refuse to use the Fast Connect procedure, either because it does not implement it or because it intends to invoke features that require use of the procedures defined in ITU-T Rec. H.245.

To setup the Audio Fast Connect parameters in Win323, you must do three things.

- Create a prioritized list of one or more proposed forward audio channels.
- Create a prioritized list of one or more proposed reverse audio channels.
- Create a list of audio test pattern files.

Proposed Forward Audio Channels (Audio Out): To create a prioritized list of proposed forward audio channels:

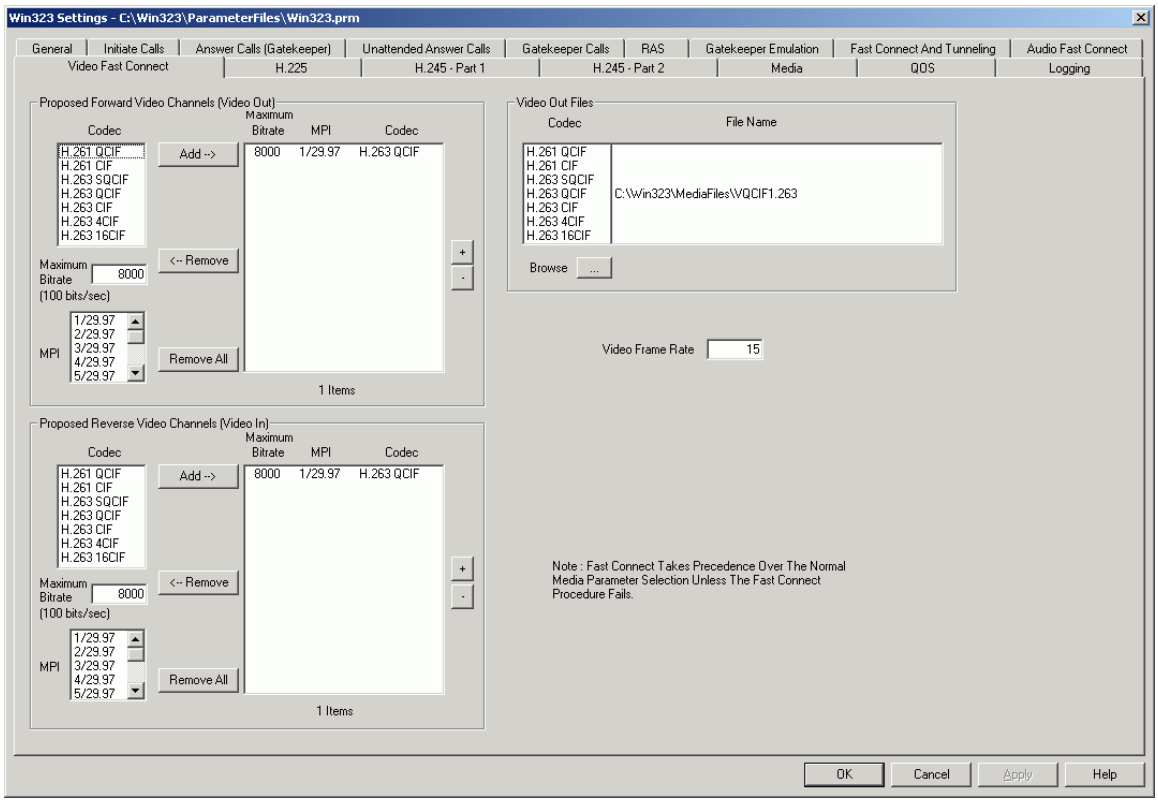
- Select an audio codec from the Codec list.
- Set the number of audio frames you want to send in each RTP packet in the Frames per Packet box.
- Click the Add button.
- Continue the above three steps until your list is complete. (Only one entry is required.)
- The position of an entry in the list is its priority, i.e. the entry at the top of the list has the highest priority, and the entry at the bottom of the list has the lowest priority.
- To remove an item in the list, select it and click the Remove button.
- To remove all items from the list, click the Remove All button.
- To change the priority (position) of an item in the list, select it and click the + button (to increase its priority) or the - button (to decrease its priority).

Proposed Reverse Audio Channels (Audio In): To create a prioritized list of proposed reverse audio channels:

- Select an audio codec from the Codec list.
- Set the number of audio frames you want to receive in each RTP packet in the Frames per Packet box.
- Click the Add button.
- Continue the above three steps until your list is complete. (Only one entry is required.)
- The position of an entry in the list is its priority, i.e. the entry at the top of the list has the highest priority, and the entry at the bottom of the list has the lowest priority.
- To remove an item in the list, select it and click the Remove button.
- To remove all items from the list, click the Remove All button.
- To change the priority (position) of an item in the list, select it and click the + button (to increase its priority) or the - button (to decrease its priority).

Audio Out Files: You must assign a test pattern file for each audio codec type you have entered in the Proposed Forward Audio Channels list. Select the codec type and click the Browse button to select the file.

Video Fast Connect



Fast Connect elements consist of a sequence of Open Logical Channel structures describing media channels which the calling endpoint proposes to send and receive, including all of the parameters necessary to immediately open and begin transferring media on the channels.

The calling endpoint initiates the Fast Connect procedure by sending a Setup message containing the Faststart element to the called endpoint.

When the called endpoint desires to proceed with the Fast Connect procedure, it sends a H.225.0 call signaling message (Call Proceeding, Progress, Alerting, or Connect) containing a Faststart element selecting from amongst the Open Logical Channel proposals offered by the calling endpoint. The calling endpoint shall process each of these messages until it determines that Fast Connect is accepted or refused.

The called endpoint may refuse to use the Fast Connect procedure, either because it does not implement it or because it intends to invoke features that require use of the procedures defined in H.245.

To setup the Video Fast Connect parameters in Win323, you must do three things.

- Create a prioritized list of one or more proposed forward video channels.
- Create a prioritized list of one or more proposed reverse video channels.
- Create a list of video test pattern files.

Proposed Forward Video Channels (Video Out): To create a prioritized list of proposed forward video channels:

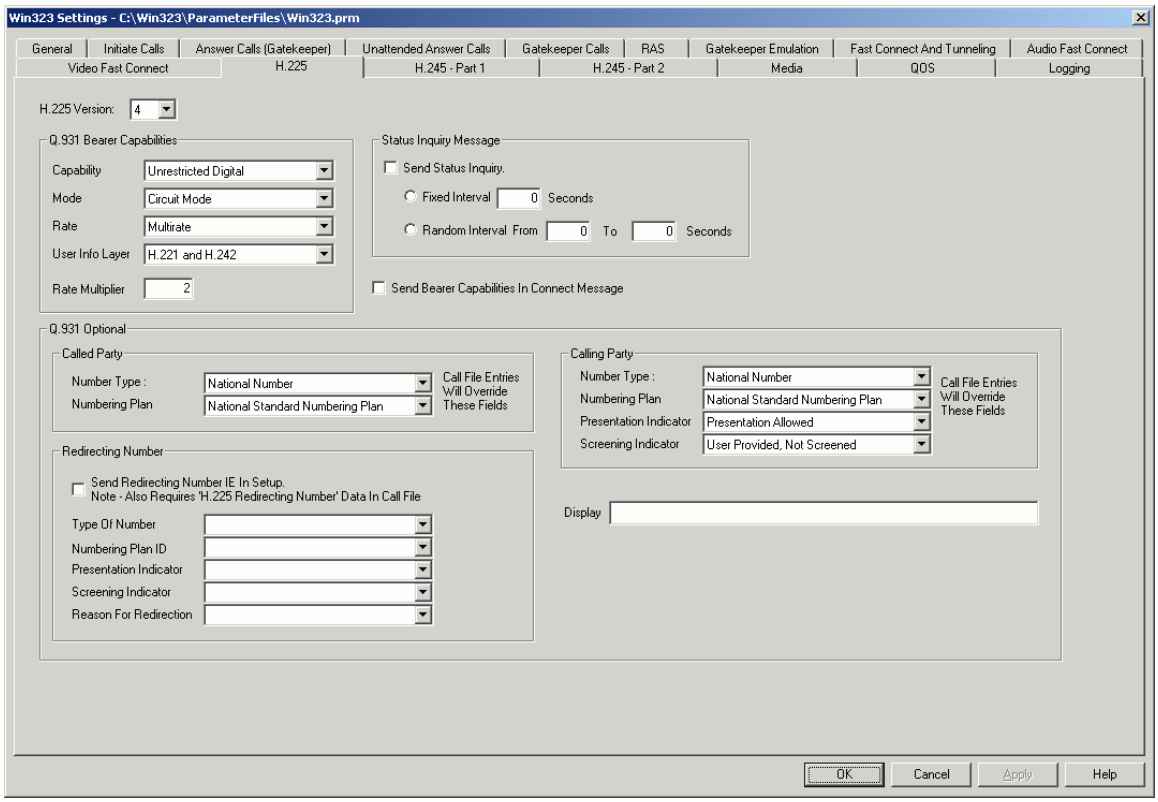
- Select a video codec from the Codec list.
- Set the maximum bit rate in the Maximum Bitrate box.
- Select the minimum picture interval from the MPI box.
- Click the Add button.
- Continue the above four steps until your list is complete. (Only one entry is required.)
- The position of an entry in the list is its priority, i.e. the entry at the top of the list has the highest priority, and the entry at the bottom of the list has the lowest priority.
- To remove an item in the list, select it and click the Remove button.
- To remove all items from the list, click the Remove All button.
- To change the priority (position) of an item in the list, select it and click the + button (to increase its priority) or the - button (to decrease its priority).

Proposed Reverse Video Channels (Video In): To create a prioritized list of proposed reverse video channels:

- Select a video codec from the Codec list.
- Set the maximum bit rate in the Maximum Bitrate box.
- Select the minimum picture interval from the MPI box.
- Click the Add button.
- Continue the above three steps until your list is complete. (Only one entry is required.)
- The position of an entry in the list is its priority, i.e. the entry at the top of the list has the highest priority, and the entry at the bottom of the list has the lowest priority.
- To remove an item in the list, select it and click the Remove button.
- To remove all items from the list, click the Remove All button.
- To change the priority (position) of an item in the list, select it and click the + button (to increase its priority) or the - button (to decrease its priority).

Video Out Files: You must assign a test pattern file for each video codec type you have entered in the Proposed Forward Video Channels list. Select the codec type and click the Browse button to select the file.

H.225



H.225 Version: Used to set the vintage of the H.225 layer.

Q.931 Bearer Capabilities: Using the drop down boxes, the user can build the Q.931 Bearer Capabilities Information Element.

> Capacity: Information Transfer Capacity.
> Mode: Transfer Mode.
> Rate: Information Transfer Rate
> User Info Layer: User Information Layer 1 Protocol.
> Rate Multiplier: Rate Multiplier.

Status Inquiry Message: This option allows the user to send Status Inquiry messages and specify how frequently between them. There are two ways to specify how often this message is sent:

> Fixed Interval: Status Inquiry messages will be sent every N seconds.
> Random Interval: Status Inquiry messages will be sent between N and M seconds.

Send Bearer Capabilities In Connect Message: If selected, the Bearer Capabilities from this screen will be sent in the Connect message.

Q.931 Optional: These drop down boxes are used to add additional optional Q.931 information elements.

Called Party

Party Number Type
Party Numbering Plan

Calling Party

Party Number Type
Calling Party Numbering Plan
Calling Party Presentation Indicator
Calling Party Screening Indicator

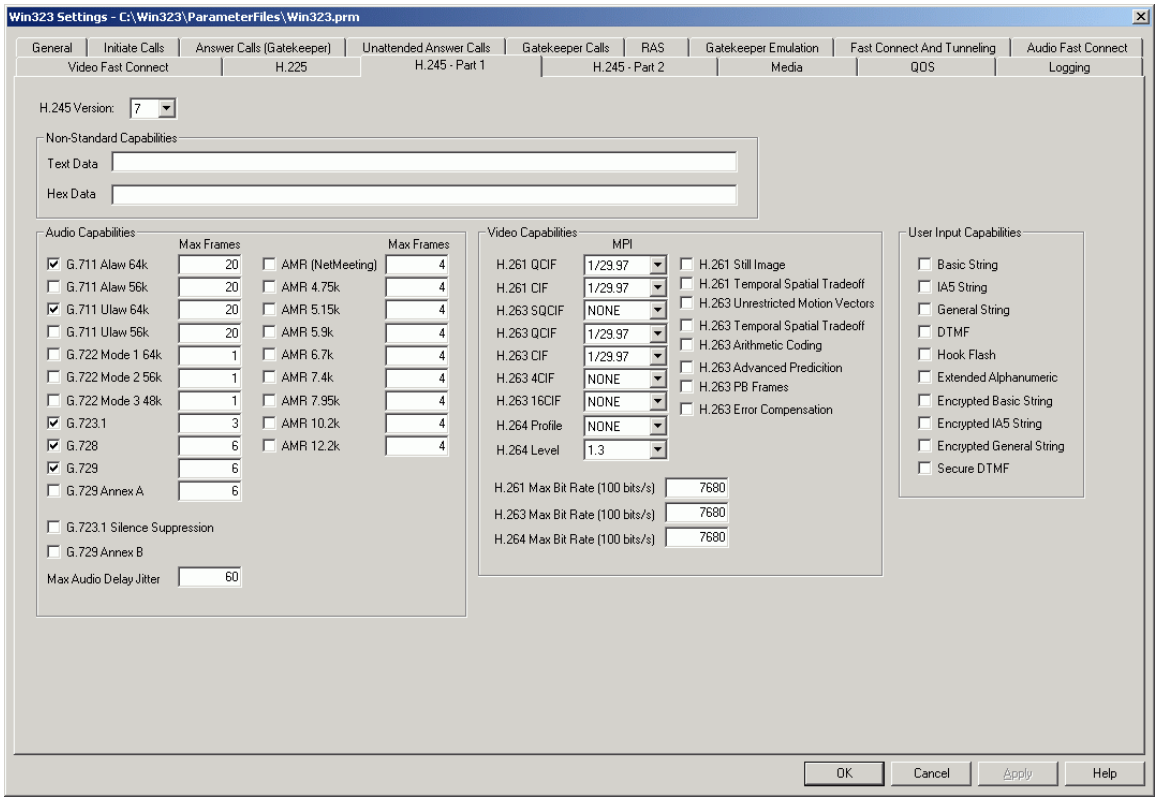
Redirecting Number: Using the drop down boxes, the user can build the Q.931 Redirecting Number Information element.

Send Redirecting Number IE In Setup: If this box is selected, the Re-Directing Number Information Element will be sent in the Setup.
Type Of Number: Select Type of Number.
Presentation Indicator: Select Presentation Indicator.
Screening Indicator: Select Screening Indicator.
Reason for Redirection: Select Reason for Re-Direction.

Note: The call file must contain the actual redirecting number in the H.225 Redirecting Number column to actually send the data).

Display: A text message to be used in the Q.931 Display field.

H.245 - Part 1



H.245 Version: Used to set the vintage of the H.245 layer.

Non-Standard Capabilities: Use to pass non-standard capabilities to the remote endpoint.

> Text Data: This capability can be entered as text.
> Hex Data: This capability can be entered as an even number of hexadecimal digits.

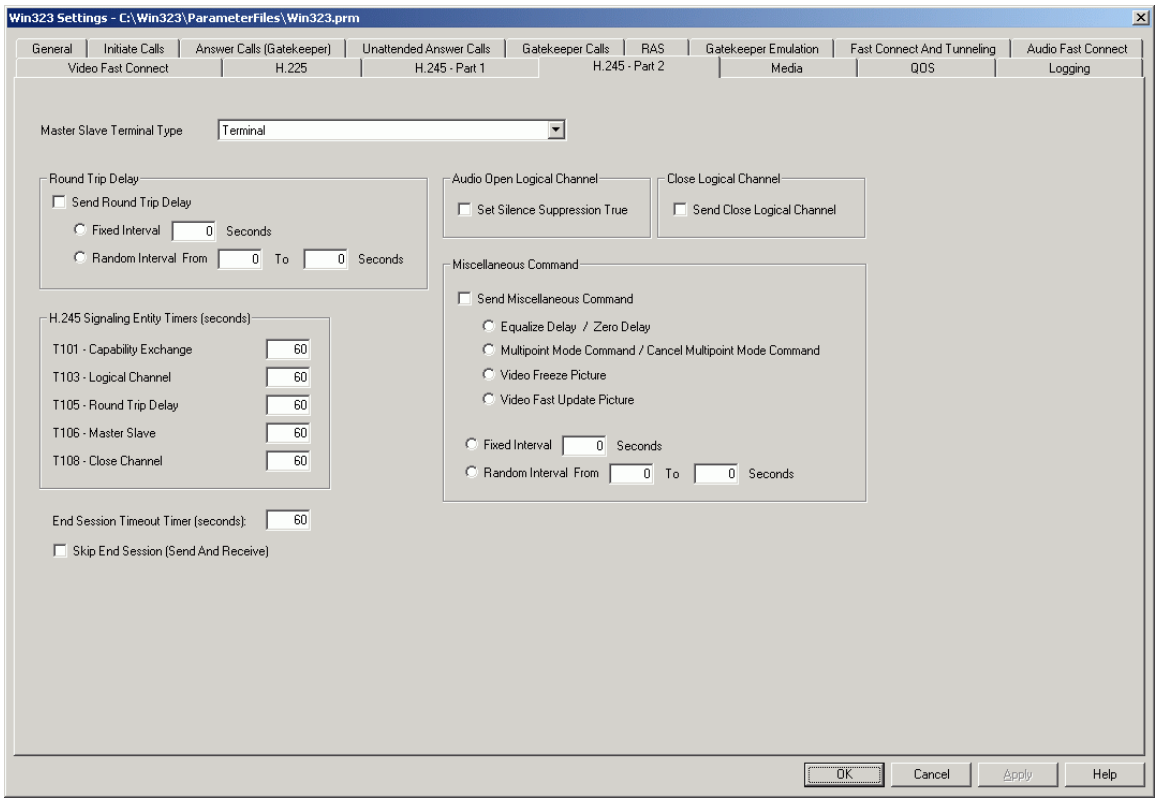
Audio Capabilities: Used to select which audio capabilities are included in the Terminal Capability Set (TCS) message sent to the remote endpoint.

Video Capabilities: Used to select which video capabilities are included in the Terminal Capability Set (TCS) message sent to the remote endpoint.

User Input Capabilities: Used to select which User Input capabilities are included in the Terminal Capability Set (TCS) message sent to the remote endpoint.

Note: These parameters are used for signaling purposes only, they do not imply additional functionality in Win323 other than sending H.245 UII messages with DTMF characters.

H.245 - Part 2



Master Slave Terminal Type: Used to set the terminal type in the Master Slave Determination (MSD) message.

Round Trip Delay

> Send Round Trip Delay: If selected, Round Trip Delay (RTD) messages will be sent. There are two ways to specify how often this message is sent.
>
> > Fixed Interval: RTD messages will be sent every N seconds.
> > Random Interval: RTD messages will be sent between N and M seconds.

H.245 Signaling Entity Timers: Used to set the timeout values for the messages that are sent at the H.245 layer.

End Session Timeout Timer: Used to set the timeout value of the End Session message.

Skip End Session (Send And Receive): If this box is selected, Win323 will not send or wait for End Session Commands. The H.225 Release Complete message will terminate the call.

Audio Open Logical Channel

Set Silence Suppression True: If selected the Silence Suppression True field in the Audio Open Logical Channel message will be set to TRUE.

Close Logical Channel

Send Close Logical Channel: If selected, the endpoint that terminates the call will first issue a Close Logical channel for each open media channel.

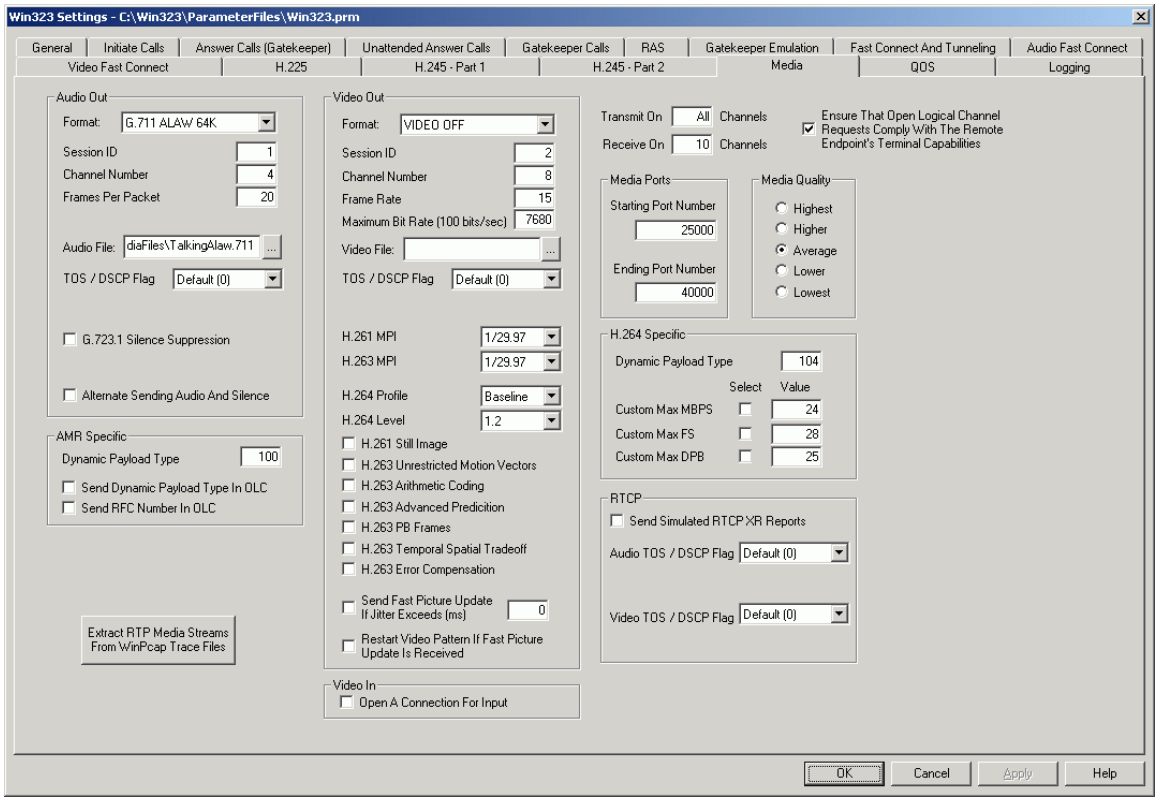
Miscellaneous Command

Send Miscellaneous Command: If this box is selected, H.245 Miscellaneous commands will be sent to the remote endpoint.

Equalize Delay / Zero Delay: Alternately send the Equalize Delay Command and the Zero Delay Command.
Multipoint Mode Command / Cancel Multipoint Mode Command: Alternately send the Multipoint Mode Command and the Cancel Multipoint Mode Command.
Video Freeze Picture: Send the Video Freeze Picture Command.
Video Fast Update Picture: Send the Video Fast Update Picture Command.

Fixed Interval: Send these commands at a fixed interval.
Random Interval From: Send these commands at random intervals.

Media



Audio Out: Used to select which audio parameters to send.

Format: This drop down box allows the user to choose the algorithm.
Session ID: Use to enter the session ID. Audio is normally 1.
Channel Number: Used to enter the Logical Channel number.
Frames per Packet: Used to indicate how many frames of audio data will be sent in each RTP packet.
Audio File: Used to enter the file name of the test pattern to send. The button to the right of the field provides browse capabilities.
TOS / DCSP Flag: Used to enter the TOS / DSCP flag byte in the IP header of each audio RTP packet. Choose from the drop down list of entries. If "Other" is selected, another entry box is displayed to allow the user to enter something other than the standard choices. (See table below.)
G.723.1 Silence Suppression: Used to set the Silence Suppression bit in the Open Logical Channel message.
Alternate Sending Audio And Silence: If this box is selected, the audio will alternate between the audio pattern and silence.

AMR Specific: Used to select parameters used when sending AMR media streams.

> Dynamic Payload Type: Used to indicate what the RTP payload type will be when sending AMR.
> Send Dynamic Payload Type In OLC: If selected, the payload type entered above will be included in the OLC message.
> Send RFC Number in OLC: If selected, the optional RFC field that contains the RFC number will be included in the OLC.

Audio In: Used to open an audio socket for input.

> Note: This may be hidden. This option is hidden when the audio out format is NOT set to AUDIO OFF.
>
> Open A Connection For Input: When the audio out format is set to any value other than None, a socket is opened for sending and receiving audio. If the audio out format is set to None, the user can choose whether or not to open a receive only socket. Selecting this option will allow Win323 to receive media if the remote endpoint wants to open an audio channel. Not selecting this option this will save system resources and speed up call startup and shutdown, but will result in Win323 sending an Open Logical Channel Reject message if the remote endpoint wants to open a audio channel.

Video Out: Used to select which video parameters to send.

> Format: This drop down box allows the user to choose the algorithm.
> Session ID: Use to enter the session ID. Video is normally 2.
> Channel Number: Used to enter the logical channel number.
> Frame Rate: Used to indicate how many frames of video will be sent per second.
> Maximum Bit Rate: Used to set the Maximum Bit Rate field of the Open Logical Channel message, in units of 100 bits/second.
> Video File: Used to enter the file name of the test pattern to send. The button to the right of the field provides browse capabilities.
> TOS / DCSP Flag: Used to enter the TOS / DSCP flag byte in the IP header of each video RTP packet. Choose from the drop down list of entries. If "Other" is selected, another entry box is displayed to allow the user to enter something other than the standard choices. (See table below.)
> H.261 MPI: The Minimum Picture Interval signaled in the Open Logical Channel.
> H.263 MPI: The Minimum Picture Interval signaled in the Open Logical Channel.
> H.264 Profile: The profile of the H.264 stream. Select from list.

H.264 Level: The level of the H.264 stream. Select from list.
H.261 Still Image: Used to set the Still Image Transmission bit in the Open Logical Channel message.
H.263 Unrestricted Motion Vectors: Used to set the Unrestricted Vector bit in the Open Logical Channel message.
H.263 Arithmetic Coding: Used to set the Arithmetic Coding bit in the Open Logical Channel message.
H.263 Advanced Prediction: Used to set the Advanced Prediction bit in the Open Logical Channel message.
H.263 PB Frames: Used to set the PB Frames bit in the Open Logical Channel message.
H.263 Temporal Spatial Tradeoff: Used to set the Temporal Spatial Tradeoff Capability bit in the Open Logical Channel message.
H.263 Error Compensation: Used to set the Error Compensation bit in the Open Logical Channel message.
Send Fast Picture Update If Jitter Exceeds N ms: If the jitter value of the video received from the remote endpoint exceeds N milliseconds, an H.245 Miscellaneous Command message specifying Fast Picture Update will be sent.
Restart Video Pattern If Fast Picture Update Is Received: If this option is set and an H.245 Miscellaneous Command message specifying Fast Picture Update, the video test pattern will be restarted at the beginning.

Video In: Used to open a video socket for input.

Note: This may be hidden. This option is hidden when the video out format is NOT set to VIDEO OFF.

Open A Connection For Input: When the video out format is set to any value other than None, a socket is opened for sending and receiving video. If the video out format is set to None, the user can choose whether or not to open a receive only socket. Selecting this option will allow Win323 to receive media if the remote endpoint wants to open a video channel. Not selecting this option this will save system resources and speed up call startup and shutdown, but will result in Win323 sending an Open Logical Channel Reject message if the remote endpoint wants to open a video channel.

Transmit On / Receive N Channels: These fields determine the number of calls that transmit/receive data. If a specific number is entered, then that many calls, in sequence starting with the first call you selected to run, transmit and/or receive data accordingly. If "all" is entered, then all of the calls you have selected to run will transmit and/or receive data accordingly.

Ensure That Open Logical Channel Requests Comply With The Remote Endpoint's Terminal Capabilities: If selected, the values that the user has entered for the H.245 Open Logical Channel Message will not violate the remote endpoint's Terminal Capabilities. For example, if the remote endpoint does not advertise G.728 in his TCS and the user selects G.728 audio out, no audio channel will be opened. For example, if the remote endpoint advertises it can receive H.263 at a max bitrate of 1280 (128 kbs) and the user has entered a max bitrate of 7680 (768 kbs) the OLC will specify a max bitrate of 1280 (128 kbs). If this option is not selected, the values entered by the user will be the ones sent in the OLC.

Media Ports: Used to set the upper and lower bounds for the RTP and RTCP ports that are used for audio and video connections in this instance of Win323. Only ports 25000 to 65534 are valid.

> Starting Port Number: This is the first port that Win323 will use for media.
> Ending Port Number: This is the last port that Win323 will use for media.
>
> Note: If you run multiple instances of Win323 on a PC, make sure that the port range does not overlap. For example, with the first instance of Win323 select a range of 25000 to 30000 ports and a range of 30002 to 40000 ports for the second instance.
>
> Note: Please make sure that you have included enough ports for all the calls in your call file. If you are sending audio, include at least two times the number of calls, if you are sending audio and video, include at least four times the number of calls.

Media Quality: These three selections (Higher, Average, Lower) allow the user to control how much of the PCs resources will be focused on sending RTP. If there only a few calls running, the Quality can be set to Higher, if there are many calls running, the Quality should be set to Lower. Attempting to send high quality while running many calls will cause call signaling to suffer. The number of calls vs. the quality is directly proportional to the horsepower of the PC you are using.

H.264 Specific: Used to select parameters used when sending H.264 media streams. See H.241 for details.

> Dynamic Payload Type: Used to indicate what the RTP payload type will be when sending H.264.
> Custom Max MBPS: This parameter permits a decoder to signal that it is capable of decoding video at a higher rate than required by the signaled Level. Encoders may use this knowledge to, for example, send pictures of a given size at a higher frame rate. It is the maximum macroblock processing rate, in units of 500 macroblocks per second. This parameter is optional.

Custom Max FS: This parameter permits a decoder to signal that it is capable of decoding larger picture sizes than required by the signaled Level. Encoders may use this knowledge to, for example, send larger pictures at a proportionally lower frame rate. It is the maximum frame size, in units of 256 luma macroblocks. This parameter is optional.
Custom Max DPB: This parameter permits a decoder to signal that it has more than the minimum amount of decoded picture buffer memory required by the signaled Level. Encoders may use this knowledge to construct coded video streams with improved compression. It is the maximum decoded picture buffer size, in units of 32768 bytes. This parameter is optional.

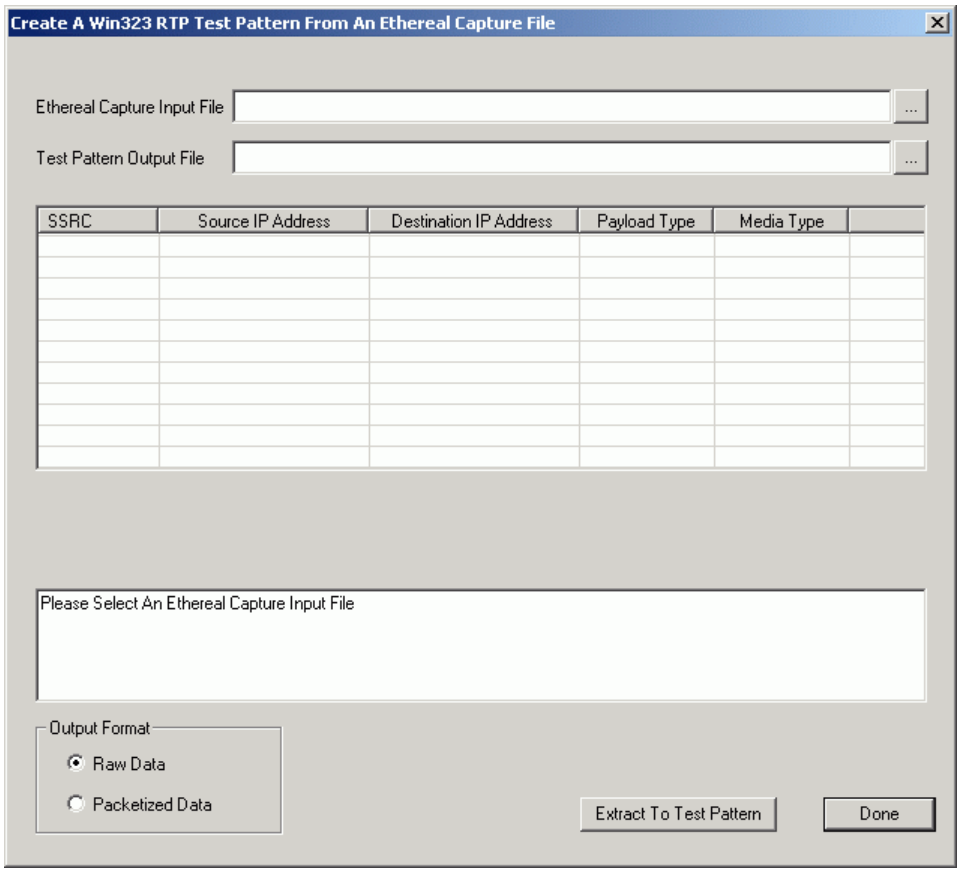
RTCP

Send Simulated RTCP XR Reports: If this box is selected, simulated RTCP XR reports will be sent in RTCP packets.
Audio TOS / DCSP Flag: Used to enter the TOS / DSCP flag byte in the IP header of each audio RTCP packet. Choose from the drop down list of entries. If "Other" is selected, another entry box is displayed to allow the user to enter something other than the standard choices. (See table on page 140.)
Video TOS / DCSP Flag: Used to enter the TOS / DSCP flag byte in the IP header of each video RTCP packet. Choose from the drop down list of entries. If "Other" is selected, another entry box is displayed to allow the user to enter something other than the standard choices. (See table on page 140.)

Extract Media Streams From Ethereal Traces

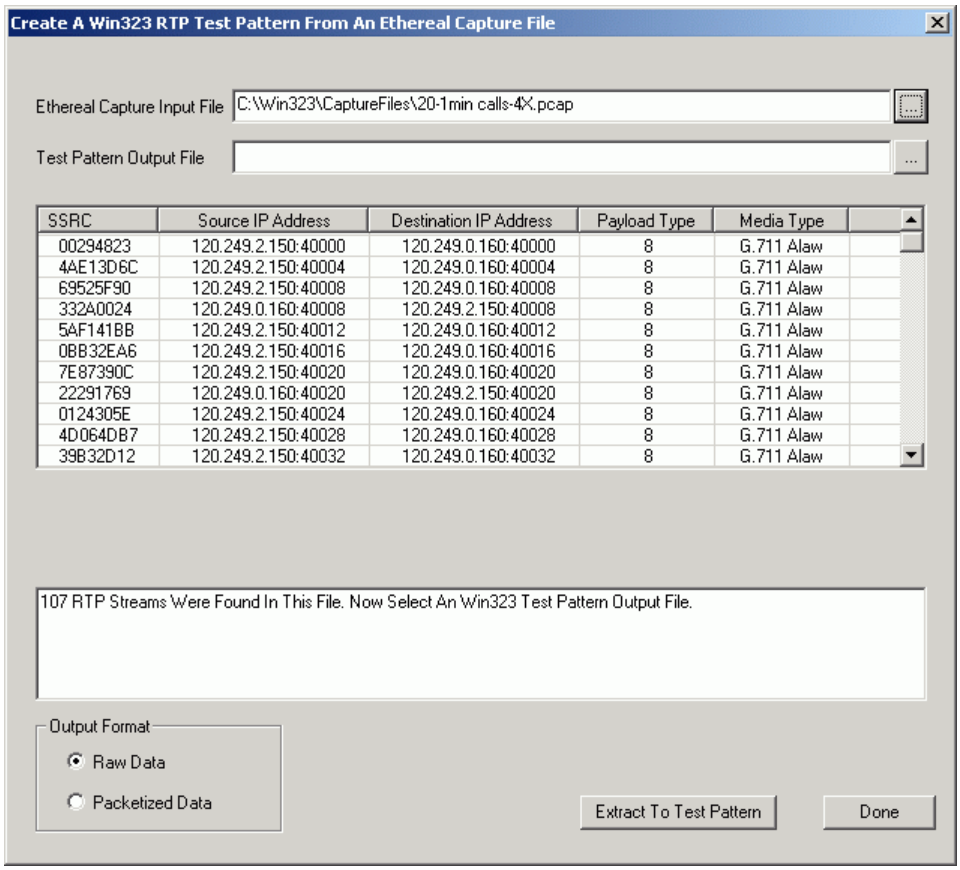
Step One

This option allows a user to extract RTP media streams suitable for use in Touchstone Technologies call generators from Ethereal Capture files. Pressing this button brings up the following dialog:



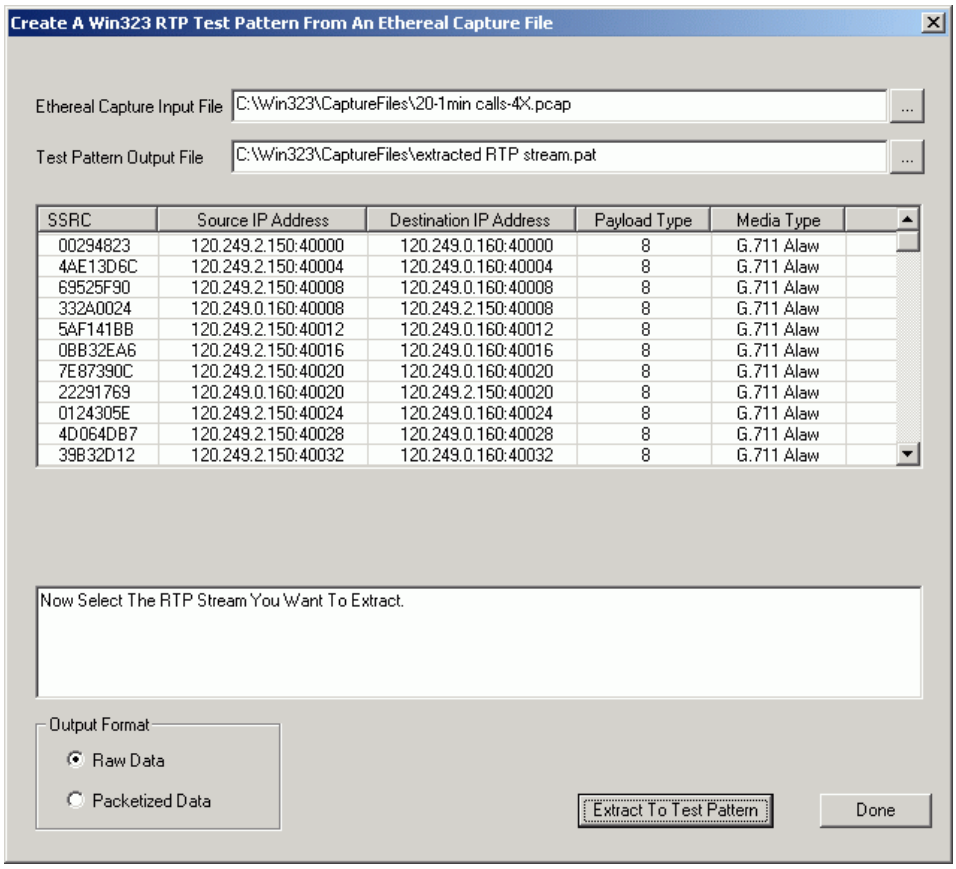
Step Two

Next, you will be prompted to select an Ethereal Capture file for input. After the file is read in and scanned, a list of the media streams contained in the capture file will be displayed.



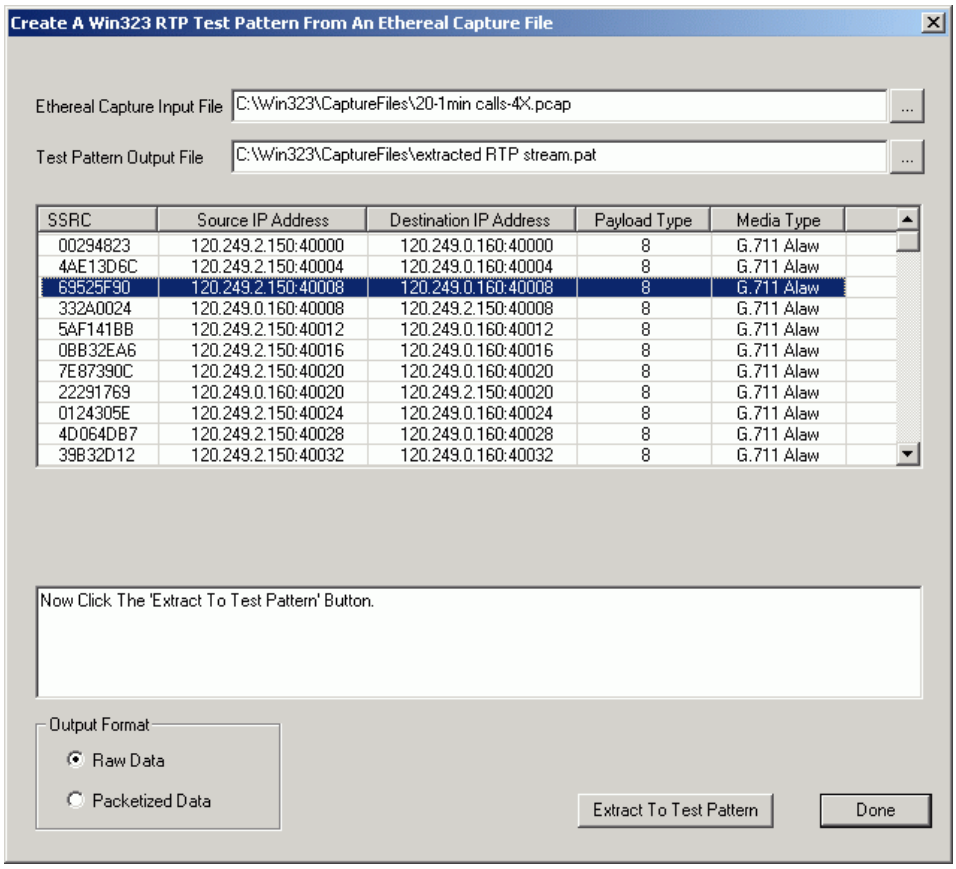
Step Three

You now must specify the name of the test pattern output file.



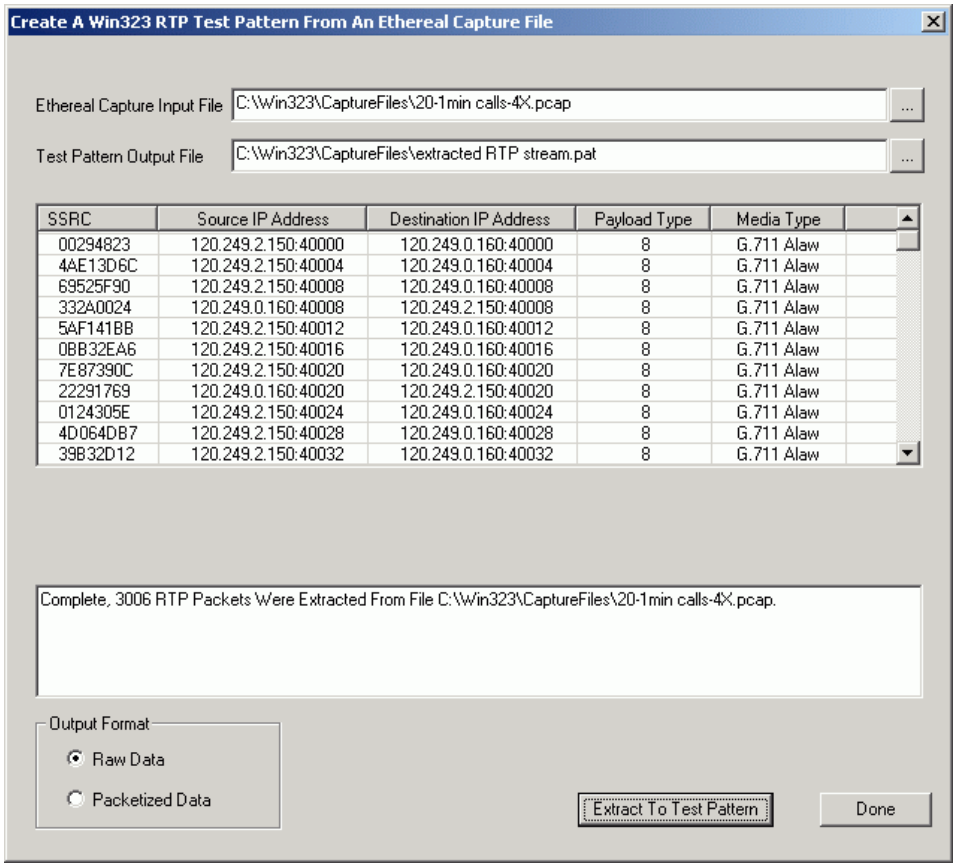
Step Four

Then you must select which stream from the list you want to extract.



Step Five

Finally, you must select the format the stream (raw or packetized) and click the 'Extract to Test Pattern' button to create the test file.



When all streams have been extracted, click the 'Done' button.

Test Pattern File Names

The audio test pattern files that are installed with Win323 are as follows:

A12K.amr	AMR, 12 kbs, only compatible with MS Netmeeting
A16K.728	G.728, 16 kbs
A53K.723	G.723, 5.3 kbs, speech
A63K.723	G.723, 6.3 kbs, speech
A64KALAW.711	G.711 Alaw, 64 kbs, tone
A64KULAW.711	G.711 ulaw, 64 kbs, tone
A64KMOD1.722	G.722 mod 1, 64 kbs
A8K.729	G.729, 8 kbs
AMR1220a.AMR	AMR, 12.20 kbs
AMR1220b.AMR	AMR, 12.20 kbs
TalkingAlaw.711	G.711 Alaw, 64 kbs, speech

The video test pattern files that are installed with Win323 are as follows:

VSQCIF1.261	H.261, Sub QCIF
VQCIF1.261	H.261, QCIF
VQCIF2.261	H.261, QCIF
VQCIF3.261	H.261, QCIF
VQCIF1.263	H.263, QCIF
VQCIF2.263	H.263, QCIF
VQCIF3.263	H.263, QCIF
VQCIF4.263	H.263, QCIF
VCIF1.261	H.261, CIF
VCIF2.261	H.261, CIF
VCIF3.261	H.261, CIF
VCIF1.263	H.263, CIF
VBPL13.264	H.264, Baseline Profile, Level 1.3

Additional video test pattern files that when combined with 64 kbs of audio will produce approximately a 384 kbs call:

C3846415.263	H.263 CIF, 15 frames/second
C3846430.263	H.263 CIF, 30 frames/second
Q3846415.263	H.263 QCIF, 15 frames/second
Q3846430.263	H.263 QCIF, 30 frames/second

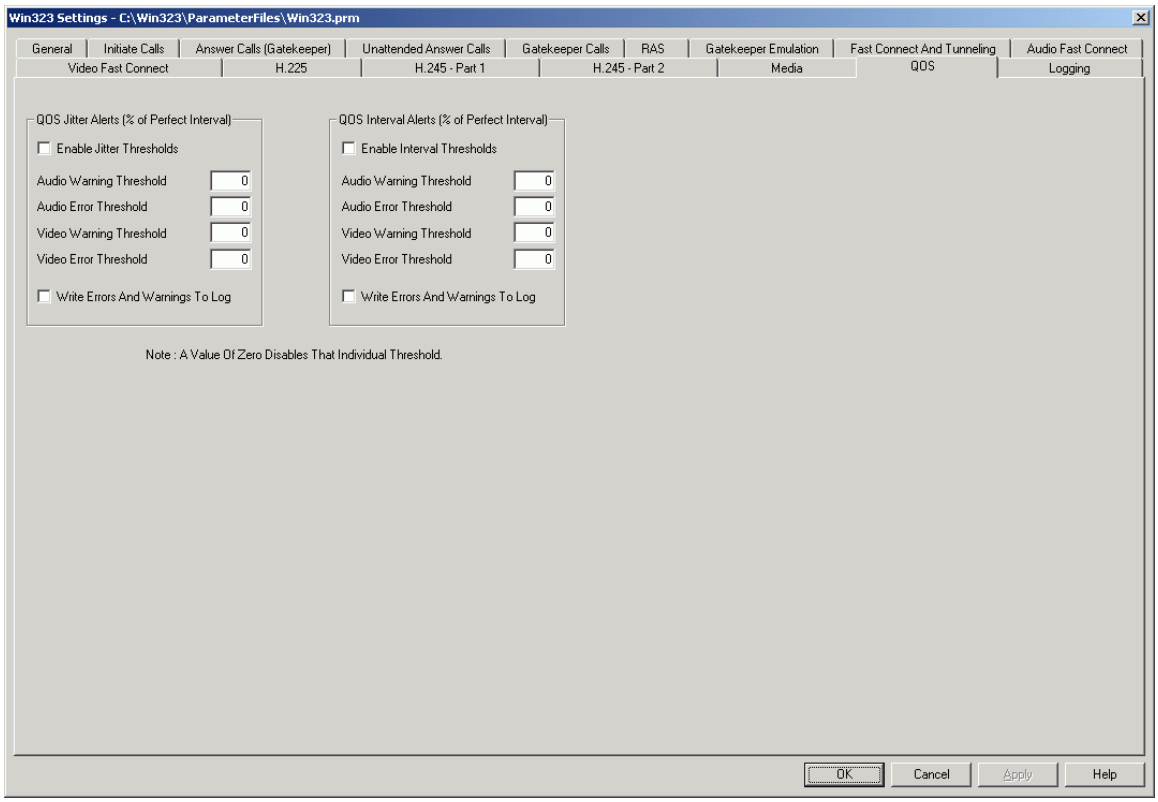
Additional video test pattern files that when combined with 16 kbs of audio will produce approximately a 512 kbs call:

C5121615.263	H.263 CIF, 15 frames/second
C5121630.263	H.263 CIF, 30 frames/second
Q5121615.263	H.263 QCIF, 15 frames/second
Q5121630.263	H.263 QCIF, 30 frames/second

Additional video test pattern files that when combined with 64 kbs of audio will produce approximately a 768 kbs call:

C7686415.263	H.263 CIF, 15 frames/second
C7686430.263	H.263 CIF, 30 frames/second
Q7686415.263	H.263 QCIF, 15 frames/second
Q7686430.263	H.263 QCIF, 30 frames/second

QOS



QOS Jitter Alerts: This option allows the user to be visually alerted whenever the audio or video jitter exceeds the value specified by the user. There is a warning threshold and an error threshold. If the jitter measurement for a particular stream exceeds the warning threshold, its bar graph turns yellow, the call status icon changes, and a warning message may be written to the log. If the jitter measurement for a particular stream exceeds the error threshold, its bar graph turns red, the call status icon changes, and an error message may be written to the log.

Jitter is an estimate of the statistical variance of the RTP data packet inter-arrival time, measured in milliseconds. The inter-arrival jitter is defined to be the mean deviation of the difference in packet spacing at the receiver compared to the sender for a pair of packets.

The threshold numbers are entered as a percentage of the ideal interval. For example if the interval for a audio stream should be 60 ms and the user enters a Warning threshold of 5 (%) and an Error threshold of 10 (%), a Warning alarm will be generated when the jitter goes above 3 ms and an Error alarm will be generated when the jitter goes above 6 ms. The call icon will change when an

alarm is generated and a log message will be written if the user selects that option.

Enable Jitter Thresholds: If selected thresholds are enabled.

> Audio Warning Threshold: The jitter measurement that will trigger a warning.
> Audio Error Threshold: The jitter measurement that will trigger an error.
> Video Warning Threshold: The jitter measurement that will trigger a warning.
> Video Error Threshold: The jitter measurement that will trigger an error.
> Write Errors and Warning to Log: If selected, jitter errors and warnings will be written to the log file.

QOS Interval Alerts (% Of Perfect Interval): This option allows the user to be alerted whenever the audio or video latency exceeds the value specified by the user. There is a warning threshold and an error threshold. If the latency measurement for a particular stream exceeds the warning threshold, its bar graph turns yellow, the call status icon changes, and a warning message may be written to the log. If the latency measurement for a particular stream exceeds the error threshold, its bar graph turns red, the call status icon changes, and an error message may be written to the log.

The numbers are entered as a percentage of the ideal latency. For example if the latency for a video stream should be 66 ms and the user enters a warning threshold of 5 (%) and an error threshold of 10 (%), a warning alarm will be generated when the latency goes above 69 ms or below 62 ms and an error alarm will be generated when the latency goes above 72 ms or below 59 ms. The call icon will change when an alarm is generated and a log message will be written if the user selects that option.

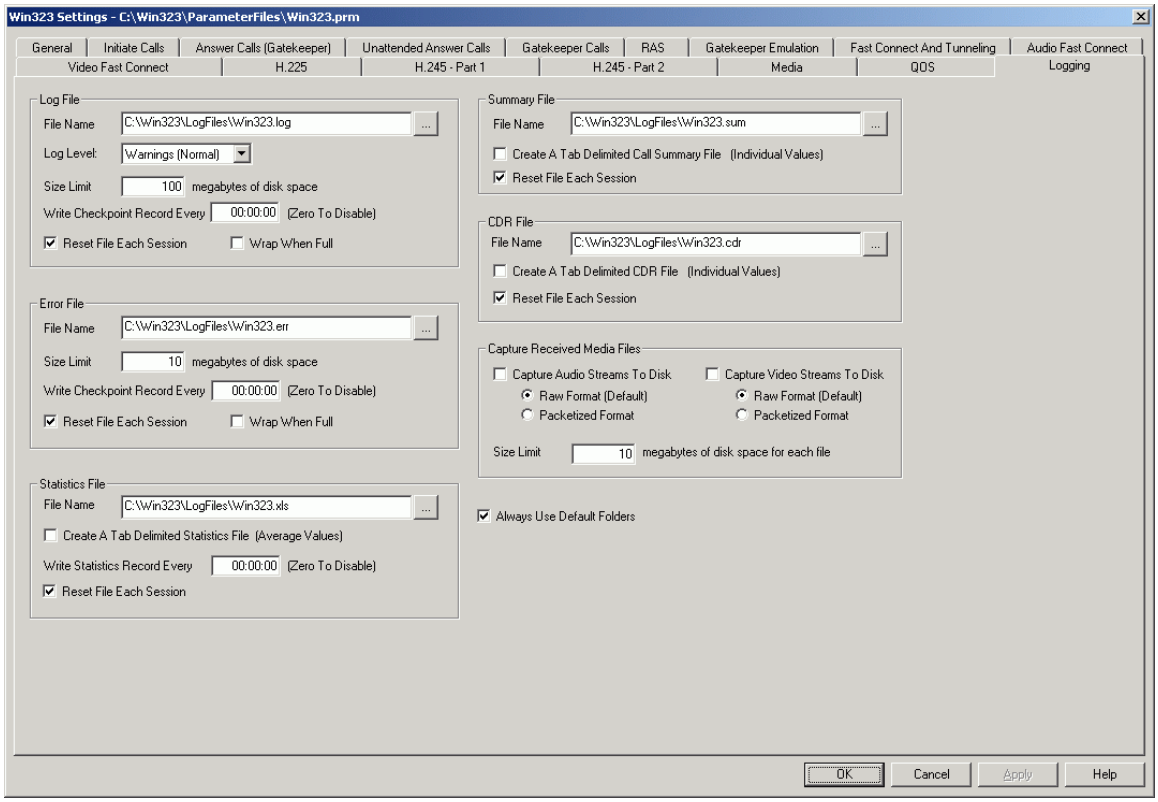
Latency is the inter-packet delay of a media stream. For audio, it is the time interval from one packet to the next. The audio algorithm and the number of frames per packet will define what the latency should be. For video, latency is the time interval from one frame to the next. All video streams have the same latency.

Enable Interval Thresholds: If selected thresholds are enabled.

Audio Warning Threshold: The interval measurement that will trigger a warning.
Audio Error Threshold: The interval measurement that will trigger an error.
Video Warning Threshold: The interval measurement that will trigger a warning.
Video Error Threshold: The interval measurement that will trigger an error.
Write Errors and Warning to Log: If selected, Interval Errors and Warnings will be written to the Log file.
Write Errors and Warning to Log: If selected, Interval Errors and Warnings will be written to the Log file.

Logging

Use this command to view or change the global logging settings. The following dialog will appear:



Log File

File Name: This field represents the name and location of the current Log file. If there is no path specified, the log file resides in the originally installed Win323 directory (the same directory as the Win323.exe file). The button to the right of the field provides browse capabilities.

Log Level: This field represents the level at which logging will occur during the operation of the application. The following levels are available:

All: This option logs everything. It will generate a very large amount of information and should not be used when running at high call rates or over extended periods of time due to negative performance impact and disk space requirements.
Trace: This option generates messages for the following levels: Trace, Debug, Information, Warnings and Errors. Use this option for debugging Win323 when looking for a known application error. It generates a very large amount of information and should not be

used when running at high call rates or over extended periods of time due to negative performance impact and disk space requirements.
Debug: This option generates messages for the following levels: Debug, Information, Warnings and Errors. Use this option for debugging Win323 when looking for possible application error. It generates a large amount of information and should not be used when running at high call rates or over extended periods of time due to negative performance impact and disk space requirements.
Information: This option generates messages for the following levels: Information, Warnings and Errors. Use this option for debugging problems that may be due to error conditions on the remote connection. It generates information on connections, request and responses for each call. This mode may be run at high call rates or over extended periods of time.
Warnings: This option generates messages for the following levels: Warnings and Errors. Use this option for normal testing.
Errors: This option generates error messages only. Use this option to minimize the size of the log file.

Size Limit: The option allows the user to specify the maximum size the log file may grow to. This number is in megabytes.

Write Checkpoint Record Every HH:MM:SS: This is the time interval between writing checkpoint records to the log file. A value of 00:00:00 will disable writing checkpoint records.

Reset File Each Session: This option clears the log file upon re-starting Win323 if the previous instance had exited normally. In the event of an abnormal termination, the previous instances log file contents will be preserved.

Wrap When Full: If this option is selected, when the log file reaches the 'Size Limit' from above, logging continues at the beginning of the file, overwriting the oldest data. If this option is not selected, logging stops when the 'Size Limit" is reached.

Error File

File Name: This field represents the name and location of the current Error file. If there is no path specified, the Error file resides in the Win323 install directory (the same directory as the Win323.exe file). The button to the right of the field provides browse capabilities.

Size Limit: The option allows the user to specify the maximum size the log file may grow to. This number is in megabytes.

Write Checkpoint Record Every HH:MM:SS: This is the time interval between writing checkpoint records to the error log. A value of 00:00:00 will disable writing checkpoint records.

Reset File Each Session: This option clears the error file upon re-starting Win323 if the previous instance had exited normally. In the event of an abnormal termination, the previous instances error file contents will be preserved.

Wrap When Full: If this option is selected, when the error file reaches the 'Size Limit' from above, logging continues at the beginning of the file, overwriting the oldest data. If this option is not selected, logging stops when the 'Size Limit" is reached.

Statistics File

File Name: This field represents the name and location of the current Statistics File. If there is no path specified, the Statistics file resides in the Win323 install directory (the same directory as the Win323.exe file). The button to the right of the field provides browse capabilities.

Create A Tab Delimited File Of Runtime Statistics: If this option is selected, run time statistics are logged to the disk. Pre-selected program metrics are written to a disk file (default: Win323.xls) periodically. These metrics will demonstrate how the system under test is performing. Each metric is the average value of a particular measurement. For example, one metric is the average value of all ARQ to ACF response times. At the conclusion of the run, this file may be loaded into a spreadsheet program and graphs can be generated. At the present time, the particular metrics that are captured are preset. In a future release, if there is further interest in these types of measurements, the user will be able to select which metrics are saved.

Write Statistics Record Every HH:MM:SS: This is the time interval between writing statistic records to the statistics file. A value of 00:00:00 will disable writing statistic records.

Reset File Each Session: This option clears the statistics file upon re-starting Win323. Otherwise the previous file contents will be preserved.

Note: Both the checkbox and time interval must be set to generate the statistics file.

Summary File

File Name: This field represents the name and location of the current Summary File. If there is no path specified, the Summary file resides in the Win323 install directory (the same directory as the Win323.exe file). The button to the right of the field provides browse capabilities.

Create A Tab Delimited Call Summary File: If this option is selected, call statistics are logged to the disk. Pre-selected program metrics will be written to a disk file (default: Win323.Sum) when each call terminates. These metrics will demonstrate how the system under test is performing. Each metric is the exact value for the particular measurement. For example, one metric is the between ARQ and ACF for the call. At the conclusion of the run, this file may be loaded into a spreadsheet program and graphs can be generated. At the present time, the parameters that are captured are fixed. In a future release, if there is further interest in these types of measurements, the user will be able to select what is saved.

Reset File Each Session: This option clears the summary file upon re-starting Win323. Otherwise the previous file contents will be preserved.

CDR File

File Name: This field represents the name and location of the current CDR File. If there is no path specified, the CDR file resides in the Win323 install directory (the same directory as the Win323.exe file). The button to the right of the field provides browse capabilities.

Create A Tab Delimited Call CDR File: If this option is selected, call definition records are logged to the disk. Information about each call is written to a disk file (default: Win323.Cdr) when each call terminates. Call start and stop times are recorded as well as the call duration. Source and destination parameters are also listed.

Reset File Each Session: This option clears the CDR file upon re-starting Win323. Otherwise, new summary information will be appended to the file.

Capture Received Media Files

Capture Audio Streams to Disk: If this option is selected the data from the received audio stream for each active call is captured from the RTP payload and saved to a separate file on the disk. If the calls repeat, the new data is appended to the file. The user may set a size limit to these files. This limit works the same way as Log file and Error file limit. The name of the trace file is formatted as follows:

Audio_Capture_Call_N_HHMMSSXXX.Ext

Where N = Call Number, HHMMSSXXX = Hour, Minute, Second, and Millisecond the trace file was created, and Ext = the file extension equal to the payload type of the media (*.729, *.723l, *.711, etc).

Raw Format (Default): If this option is selected, only the payload bytes of the RTP stream will be written to the file. The RTP headers will be stripped off.

Packetized Format: If this option is selected, each RTP packet will be written to the file in its entirety (header and payload).

Capture Video Streams to Disk: If this option is selected the data from the received video stream for each active call is captured from the RTP payload and saved to a separate file on the disk. If the calls repeat, the new data is appended to the file. The user may set a size limit to these files. This limit works the same way as Log file and Error file limit. The name of the trace file is formatted as follows:

Video_Capture_Call_N_HHMMSSXXX.Ext

Where N = Call Number, HHMMSSXXX = Hour, Minute, Second, and Millisecond the trace file was created, and Ext = the file extension equal to the payload type of the media (*.261cif, *.263qcif, etc).

Raw Format (Default): If this option is selected, only the payload bytes of the RTP stream will be written to the file. The RTP headers will be stripped off.

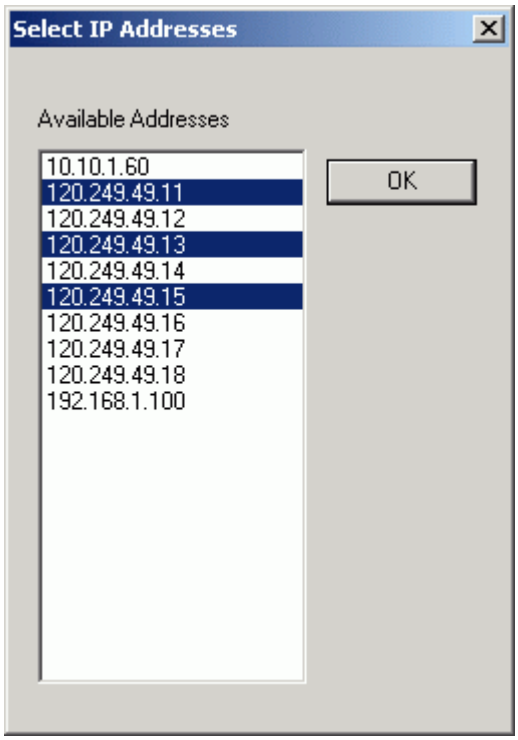
Packetized Format: If this option is selected, each RTP packet will be written to the file in its entirety (header and payload).

Size Limit: The option allows the user to specify the maximum size the media file may grow to. This number is in megabytes.

Always Use Default Folders: If this option is selected, Win323 will use the default folder for that file type as the initial folder in a file open or save dialog. If this option is not selected, Win323 will use the last accessed folder as the initial folder in the file open or save dialog. For example, if this option is checked, when the file open dialog is clicked for a call file, the initial folder in the dialog will be '\Win323\CallFiles\', or for a parameter file, the initial folder in the dialog will be '\Win323\ParameterFiles\'

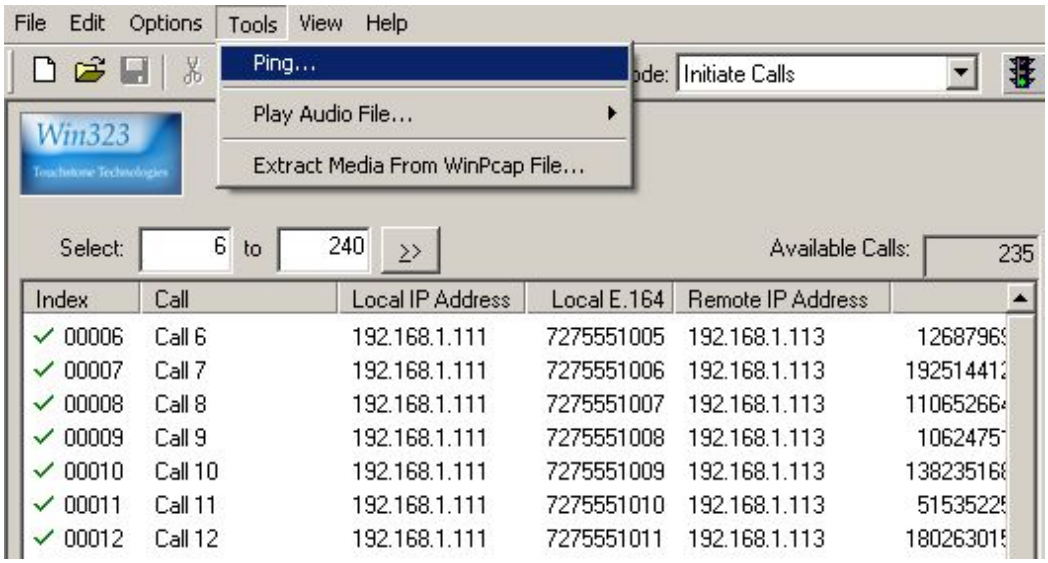
Set Local IP Addresses

Use this command to select the IP addresses that will be used by Win323 in this session. This dialog displays the list of IP addresses that are configured on this computer that may be used to place or receive calls. The user selects the ones he wants to use from this set and clicks OK. No calls may be placed using the unselected IP addresses and no calls will be accepted from the unselected addresses. If no addresses have previously been entered, this dialog is displayed when the application is started. This option can found under Options tab.



Tools

The Tools menu offers the following commands:



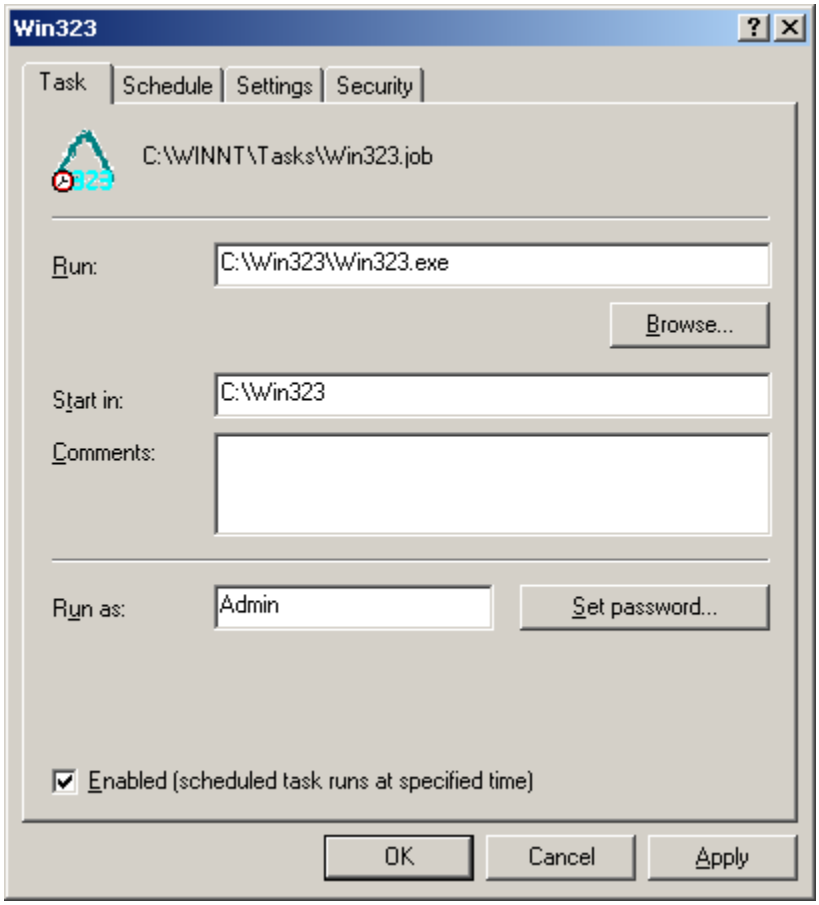
Ping: Allows you to run a ping utility to test line-of-sight availability of a device or address on the network.

Play Audio File: Allows you to play a previously captured G.711 Alaw or Ulaw file using Windows Media Player.

Extract Media from WinPcap File: This utility allows you to "RIP" media streams from a WinPCAP (Ethereal/WireShark) capture file for later replay by the generator.

How To Schedule Win323 Sessions

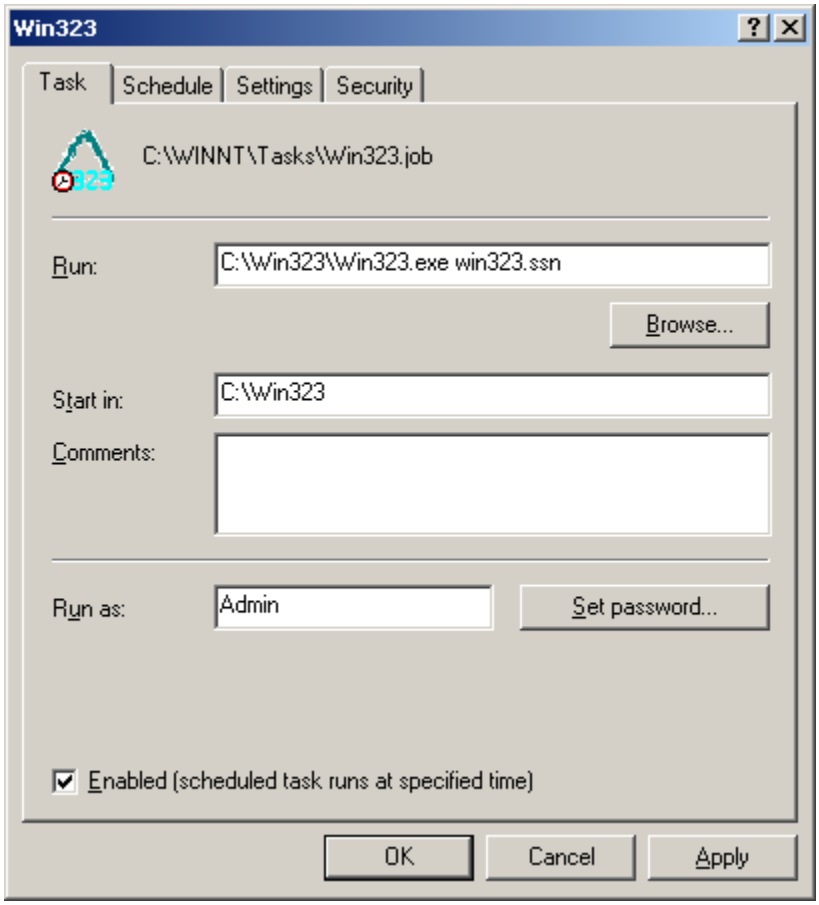
The Microsoft Task Scheduler can be used to start and stop Win323 sessions automatically. To use this easy way of running single or recurring Win323 sessions, first familiarize yourself with the Task Scheduler. A Win323 task is set up just like any other application task would be, beginning with clicking the Add Scheduled Task icon. Proceed by entering the time(s) and date(s) you want to schedule the session(s). Finally, the newly scheduled task will look something like this:



Now you must add a parameter to the 'C:\Win323\Win323.exe' command line. The parameter you must add to the command line is the name of a session settings file. A session settings file name has an extension of 'ssn.' It contains the parameters that are related to the operation of the application. This includes all of the names of the files that are used by Win323. A session settings file contains all of the required parameters and files that Win323 requires.

Note: there is a parameter in the session settings file called Session Time Limit. If this value is other than zero (00:00:00), the Win323 session will last for that duration (zero means infinite).

The new command line would look like this:



When this scheduled Win323 runs, the program settings and files named in Win323.ssn will be used for this session.

Note: Ordinary DOS batch files can be used to run Win323 the same way as the Microsoft Scheduler.

For example, the batch file Win323.bat:

```
cd c:\win323
win323gen slowtest.ssn
win323gen fasttest.ssn
```

Will run Win323 twice, the first time using the settings from slowtest.ssn and the second time using the settings from fastest.ssn.

Examples

Parameter File

The following is a portion of a parameter file:

[Parameters]
Version=Win323 Version 2.0
T.35 Country Code=0
T.35 Extension=0
Manufacturer Code=0
Product ID=Win323
Version ID=Version 2.0
Call Start Separation=100
Call Stop Separation=100
Fixed Restart Delay=TRUE
Call Restart Separation=100
Variable Restart Delay=FALSE
Minimum Restart Delay=100
Maximum Restart Delay=1000
Delay Period=60
Smooth Delay=TRUE
Sawtooth Delay=FALSE
Random Restart Delay=FALSE
Random From Delay=0
Random To Delay=1000
Random Delay Period=5
Continue On Error=TRUE
Stop On Error=FALSE
Delay After Error=FALSE
Delay After Error Value=0
Consecutive Error Count=1
Call Shutdown Style=1
Mirror RTP Streams=FALSE
Call Type=1
Endpoint Type=4
H.225 Remote Call Signaling Port Number=1720
RAS Gatekeeper Registration And Status Port=1719
Ping Remote Endpoints And Gatekeepers=FALSE
Auto Switch To Detail View=FALSE
Auto Switch To Main View=FALSE
Show Expanded Call Trace=FALSE
Use Public IP Address=FALSE
Public IP Address=
RAS Want Delay Between RCF And ARQ=FALSE
RAS Fixed Delay Between RCF And ARQ=FALSE

RAS Random Delay Between RCF And ARQ=FALSE
RAS Delay Between RCF And ARQ=0
RAS From Delay Between RCF And ARQ=0
RAS To Delay Between RCF And ARQ=0
H.225 Setup Timeout Value=120
H.225 Ignore H.245 Address In Call Proceeding=TRUE
H.225 Ignore H.245 Address In Alerting=TRUE
H.225 Ignore H.245 Address In Progress=TRUE
H.225 Ignore H.245 Address In Facility=TRUE
H.225 Send Terminal Data In Setup Message=FALSE
H.225 Terminal Data In Setup Message=Win323 - Version 2.0
H.245 Send User Input Indication=FALSE
H.245 Send User Input Indication As DTMF=FALSE
H.245 Send User Input DTMF After Audio OLC ACK=FALSE
H.245 Send User Input DTMF After Video OLC ACK=FALSE
H.245 Send User Input Indication As Destination Alias=FALSE
H.245 User Input Indication Continuous=FALSE
H.245 User Input Indication Interval=100
H.245 Send User Input Indication As Destination Alias Timeout=0

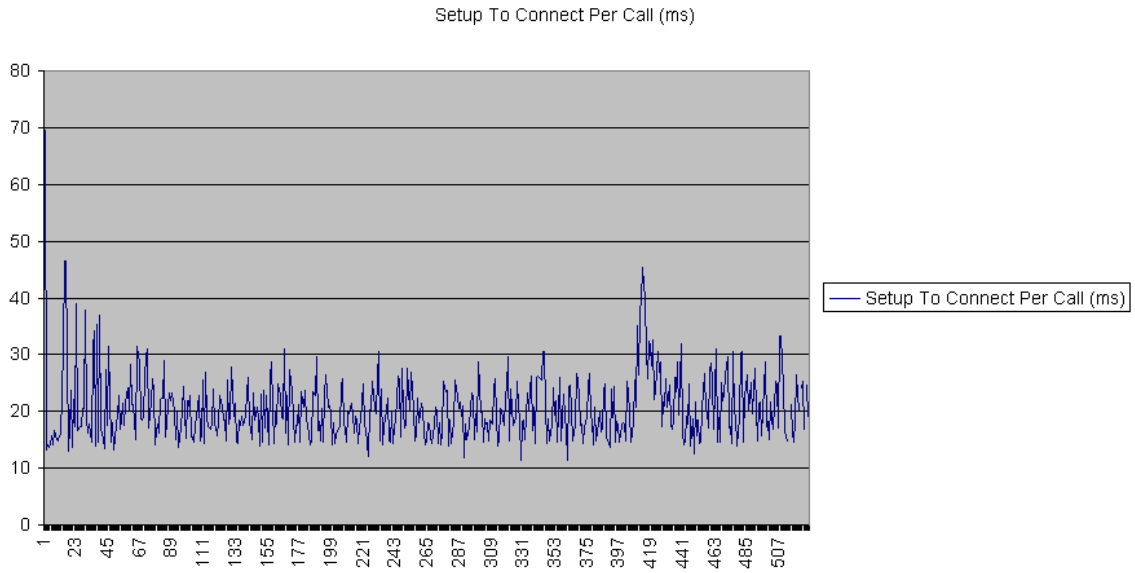
Session Settings File

The following is an example of session settings file:

[SessionData]
Version=Win323 Version 2.0
CallFile=C:\Win323\CallFiles\BKK_00001.clf
ParamFile=C:\Win323\ParameterFiles\Win323.prm
LogFile=C:\Win323\LogFiles\Win323.log
ErrFile=C:\Win323\LogFiles\Win323.err
StatisticsFile=C:\Win323\LogFiles\Win323.xls
SummaryFile=C:\Win323\LogFiles\Win323.sum
CDRFile=C:\Win323\LogFiles\Win323.cdr
Application Window Pos=
Local IP Address Count=1
Local IP Address 1=192.168.1.111
Session Time Limit=00:00:00
Session Checkpoint Time=00:00:00
Session Error Checkpoint Time=00:00:00
Session Statistics Interval=00:00:00
TerminalMode=0
LogLevel=4
Log File Size Limit=102400000
Error File Size Limit=10240000
Trace Files Size Limit=10240000
Last View Type=3
Reset LogFile=TRUE
Reset ErrFile=TRUE
Reset Statistics File=TRUE
Reset Summary File=TRUE
Reset CDR File=TRUE
Wrap LogFile=FALSE
Wrap ErrFile=FALSE
Save Run Time Statistics=FALSE
Save Run Time Call Summary=FALSE
Save Run Time CDR=FALSE
Exited Cleanly=FALSE
Enable Stacked Tabs=TRUE
First Demonstration=FALSE

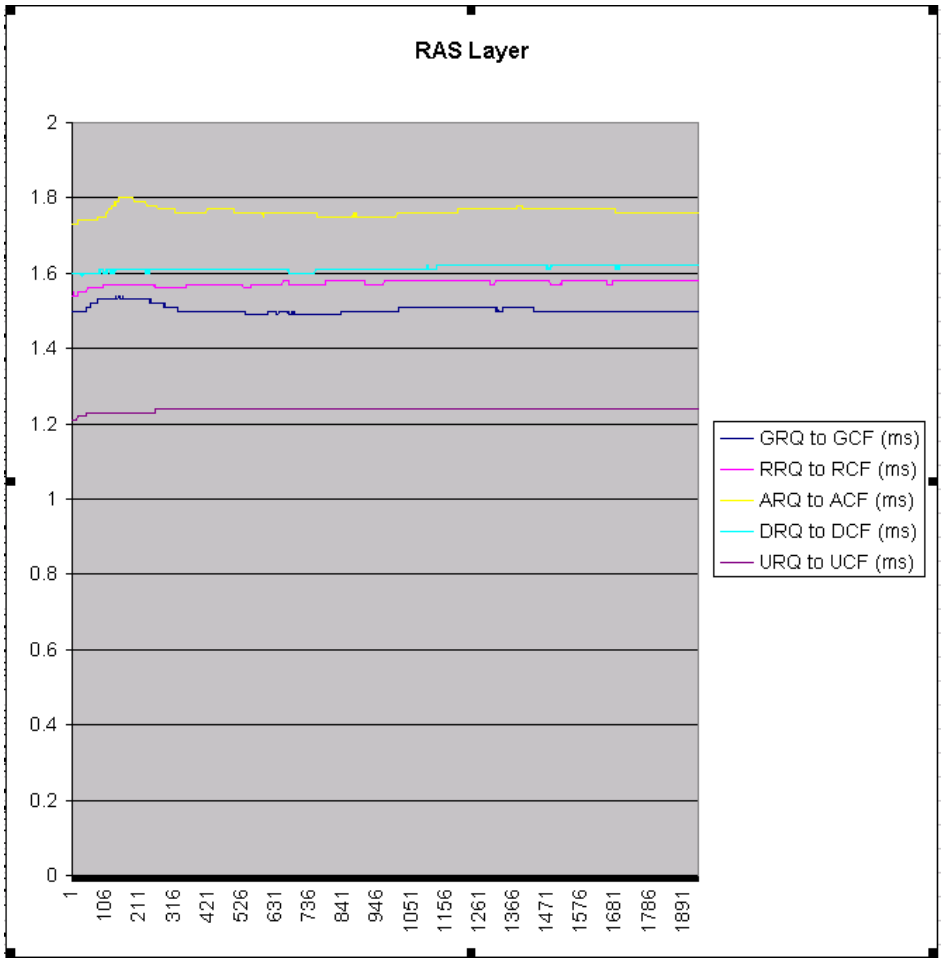
Summary File Display

This is a graph (taken from a summary file loaded into Microsoft Excel) of the actual time it took from sending the Setup message to receiving the Connect message for approximately 530 calls.



Statistics File Display

This is a graph (taken from a statistics file loaded into Microsoft Excel) of the actual time it took for GRQ to GCF, RRQ to RCF, ARQ to ACF, DRQ to DCF, and URQ to UCF messages for approximately 1900 minutes.



Trace File Example

This is an example of a Setup message taken from a typical trace file.

```
Date                        = 03/29/05
Time                        = 13:08:13.824996
Protocol Layer              = H.225

Source IP Address           = 120.249.50.1
Source Port                 = 5640
Source E.164 Alias          = 8558
Source H.323 ID Alias       = Joe1

Destination IP Address      = 120.249.50.100
Destination Port            = 1720
Destination E.164 Alias     = 12199
Destination H.323 ID Alias = Harry1

Conference ID               = 2900E6EAE9371CF11A14764C0D74F059
Call ID                     = B4502692B4890C6EBCE5DF8215545BEC
Call Reference Value        = 9851

value Q.931 ::= Call Signalling :
{
  Protocol Discriminator
    Length                                  01 Octet
    Value                                   08
  Call Reference
    Length                                  2 Octets
    Value                                   9851
  Message Type - Setup
    Length                                  01 Octet
    Value                                   05
  Q.931 Information Elements :
    Bearer Capability
      Length                                4 Octets
      Value                                 88D800A5
      Decode :
        Octet 3
          Extension
            Extension Bit is Set
          Coding Standard
            ITU-T
          Information Transfer Capability
            Unrestricted Digital Information
        Octet 4
          Extension
            Extension Bit is Set
          Transfer Mode
            Packet Mode
          Information Transfer Rate
            Multirate (64 k Bits/Sec Base Rate)
        Octet 4.1
          Extension
            Extension Bit is Not Set
          Rate Multiplier = 0
```

```
        Octet 5
          Extension
            Extension Bit is Set
          Layer 1 Identification
            Layer 1 Protocol Indication
          Information Layer 1 Protocol
            H.221 and H.242
    Calling Party Number Idenitfier
      Length                            11 Octets
      Value                             A83532303837...
      Decode :
        Octet 3
          Extension
            Extension Bit is Set
          Type Of Number
            National Number
          Numbering Plan
            National Standard Numbering
    Called Party Number Idenitfier
      Length                            11 Octets
      Value                             A83535353936...
      Decode :
        Octet 3
          Extension
            Extension Bit is Set
          Type Of Number
            National Number
          Numbering Plan
            National Standard Numbering
    User To User
      Length                            165 Octets
      Value                             A505...
      Decode :
        Protocol Discriminator
          Length                        01
          Value                         05
        H.225 ASN.1
          Decode :
}

value H323-UserInformation ::=
{
  h323-uu-pdu
  {
    h323-message-body setup :
    {
      protocolIdentifier { 0 0 8 2250 0 4 },
      sourceAddress
      {
        dialedDigits : "8558",
        h323-ID : "Joe1"
      },
      sourceInfo
      {
        vendor
        {
          vendor
```

```
          {
            t35CountryCode 0,
            t35Extension 0,
            manufacturerCode 44252
          },
          productId "Win323",
          versionId "Version 1.4.0"
        },
        terminal
        {
          nonStandardData
          {
            nonStandardIdentifier h221NonStandard :
            {
              t35CountryCode 0,
              t35Extension 0,
              manufacturerCode 44252
            },
            data '57696E33323347656E202D205665727369 ...'H
          }
        },
        mc FALSE,
        undefinedNode FALSE
      },
      destinationAddress
      {
        dialedDigits : "12199",
        h323-ID : "Harry1"
      },
      destCallSignalAddress ipAddress :
      {
        ip 120.249.50.100,
        port 1720
      },
      activeMC FALSE,
      conferenceID '2900E6EAE9371CF11A14764C0D74F059'H,
      conferenceGoal create : NULL,
      callType pointToPoint : NULL,
      sourceCallSignalAddress ipAddress :
      {
        ip 120.249.50.1,
        port 5640
      },
      callIdentifier
      {
        guid 'B4502692B4890C6EBCE5DF8215545BEC'H
      },
      mediaWaitForConnect FALSE,
      canOverlapSend FALSE
    }
  }
}


Length = 205
```

```
0802267B 05040488 D800A56C 0BA83532 30383737 32353532
700BA835 35353936 39303732 337E00A5 0500B806 0008914A
00040201 80B88B40 03004A00 6F006500 3122C000 00ACDC08
57696E33 32334765 6E0C5665 7273696F 6E20312E 332E3350
0000ACDC 1957696E 33323347 656E202D 20566572 73696F6E
20312E33 2E330002 0200454C C4050048 00610072 00720079
00310078 F9326406 B8002900 E6EAE937 1CF11A14 764C0D74
F05900CD 0C000007 0078F932 01160811 00B45026 92B4890C
6EBCE5DF 8215545B EC010001 00
```

Checkpoint Record

A checkpoint record is written to the log file once a minute. This record provides a summary of the current Win323 session. This is an example of a checkpoint record.

```
*******************************************************************************************************************************

                                        C H E C K P O I N T

                   Run Time = 0 Days   0 Hours   10 Minutes   38 Seconds

        Calls Run =  9023     Calls Passed =  8823     Calls Failed =     0     Errors =     0

        Low Call Rate = 47,985.68     Current Call Rate = 49,780.44     High Call Rate = 50,082.40

        Minimum Call Startup Time  =       118.75 ms     Minimum Call Shutdown Time  =        0.44 ms
        Average Call Startup Time  =      3455.89 ms     Average Call Shutdown Time  =     7317.75 ms
        Maximum Call Startup Time  =      4780.05 ms     Maximum Call Shutdown Time  =     8770.14 ms

        GRQ's Sent =        0    GCF's Received =        0    GRJ's Received =       0    GRQ Timeouts =        0
        RRQ's Sent =        0    RCF's Received =        0    RRJ's Received =       0    RRQ Timeouts =        0
        ARQ's Sent =        0    ACF's Received =        0    ARJ's Received =       0    ARQ Timeouts =        0
        DRQ's Sent =        0    DCF's Received =        0    DRJ's Received =       0    DRQ Timeouts =        0
        URQ's Sent =        0    UCF's Received =        0    URJ's Received =       0    URQ Timeouts =        0

        Setups's Sent              =     9014         Setup's Received            =       0
        Call Proceedings's Sent    =        0         Call Proceeding's Received  =    9014
        Alertings's Sent           =        0         Alerting's Received         =    9012
        Connects's Sent            =        0         Connect's Received          =    9012
        Release Completes's Sent   =     8877         Release Complete's Received =     364
        Setup Timeouts's           =        0         Release Complete Timeout's  =       0

        MSD's Sent                 =      168         MSD's Received              =    8989
        MSD ACK's Sent             =     8990         MSD ACK's Received          =    8989
        MSD Timeouts               =        0
        TCS's Sent                 =     8974         TCS's Received              =    8992
        TCS ACK's Sent             =     8992         TCS ACK's Received          =    8974
        TCS Timeouts               =        0
        Audio OLC's Sent           =     8962         Audio OLC's Received        =    8972
        Audio OLC ACK's Sent       =     8972         Audio OLC ACK's Received    =    8962
        Video OLC's Sent           =     8962         Video OLC's Received        =    8972
        Video OLC ACK's Sent       =     8972         Video OLC ACK's Received    =    8962
        OLC Timeouts               =        0
        Audio CLC's Sent           =     8900         Audio CLC's Received        =       0
        Audio CLC ACK's Sent       =        0         Audio CLC ACK's Received    =    8899
        Video CLC's Sent           =     8900         Video CLC's Received        =       0
        Video CLC ACK's Sent       =        0         Video CLC ACK's Received    =    8899
        CLC Timeouts               =        0
        UII's Sent                 =        0         UII's Received              =       0
        RTD's Sent                 =        0         RTD's Received              =       0
        END SES's Sent             =     8877         END SES's Received          =    8877
        END SES Timeouts           =        0

*******************************************************************************************************************************
```


Appendix A

Transferring a License

The method of transferring a license is the same for all Touchstone Technologies products. For demonstration purposes Win323 will be used to explain the license transfer procedure.

At the time of installation there are two options for licensing Win323. The first is to have a new key issued from Touchstone Technologies, and the second is to transfer a license from an existing Win323 application to the newly installed version of Win323. Touchstone's software licenses are fully transferable from PC to PC within a customer's physical location. To transfer a license to a different location, please contact Touchstone Technologies at (267) 222-8687.

A floppy diskette or USB memory device is required to transfer a license.

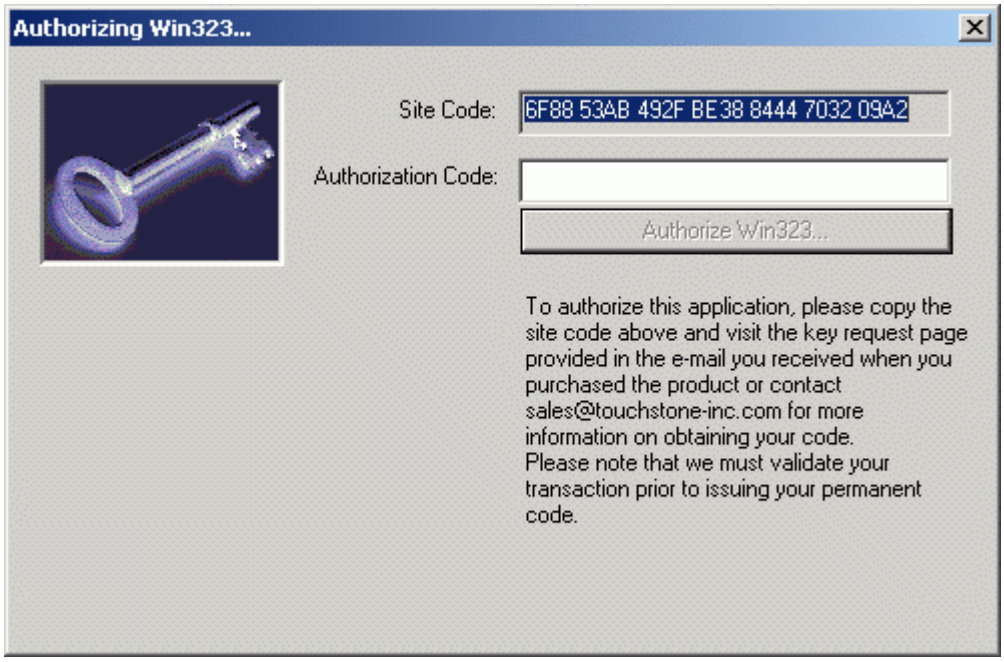
There are three basic steps in transferring a license:

- Initialize transfer media on the PC with newly installed Win323.
- Export license from the PC with the originally installed Win323.
- Import license to the PC with newly installed Win323.

Note: Touchstone Technologies licenses will have to be re-issued if:

- The original installation directory of Win323 is:
    - Copied or moved to a new directory on the original PC.
    - Copied or moved to a different PC.
    - Renamed
- One of the hidden files (deltapts.ckn or deltapts.inf) is deleted or modified.
- The license service (crypserv.exe) is stopped or uninstalled.

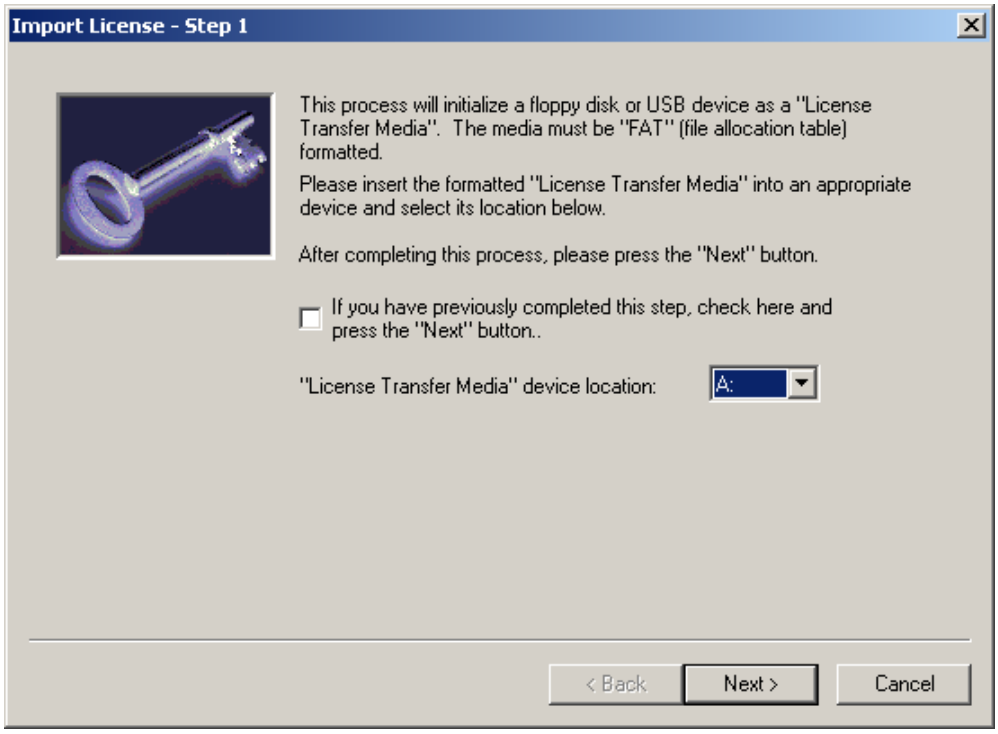
After a new installation is finished and the application is run for the first time an Authorizing Win323 screen will appear, click on the Advanced button, an expanded dialog will be displayed:



Press the Import License button to begin the license transfer procedure.

Step One - Import License, Media Initialization

The first step of the Import License transfer requires initialization of a diskette or USB device that will be used as the License Transfer Media.

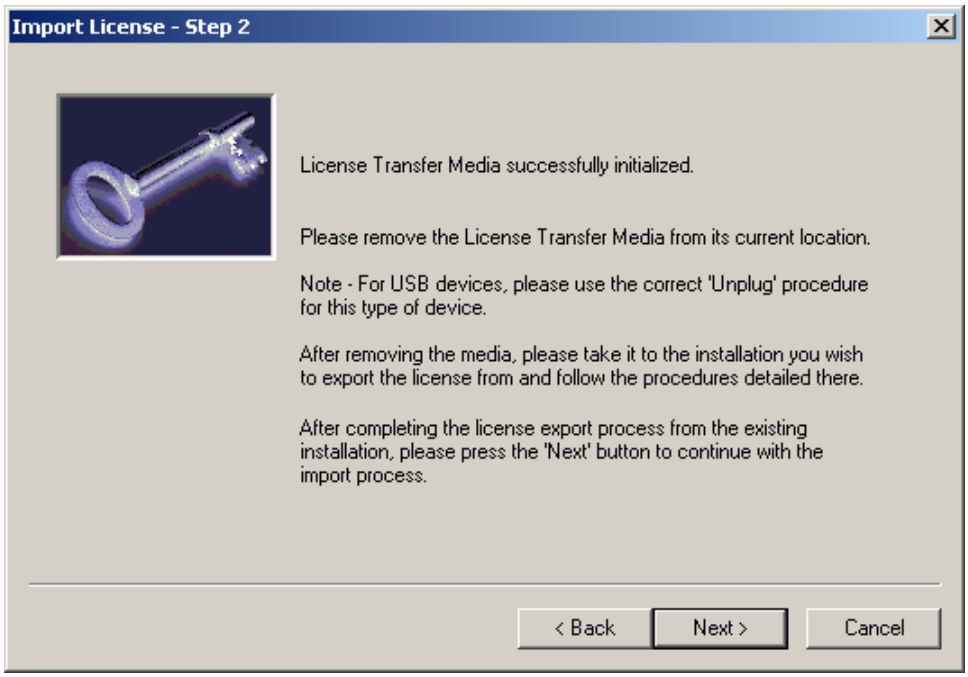


To initialize the transfer media, select the drive to be used as the transfer device, insert the transfer media and press the Next button.

Note: If you have completed this step from a previous execution of Win323 and already have the initialized transfer media, click the checkbox and then click the Next button.

When step one is complete the transfer media is initialized.

The Import License step two dialog will then appear:



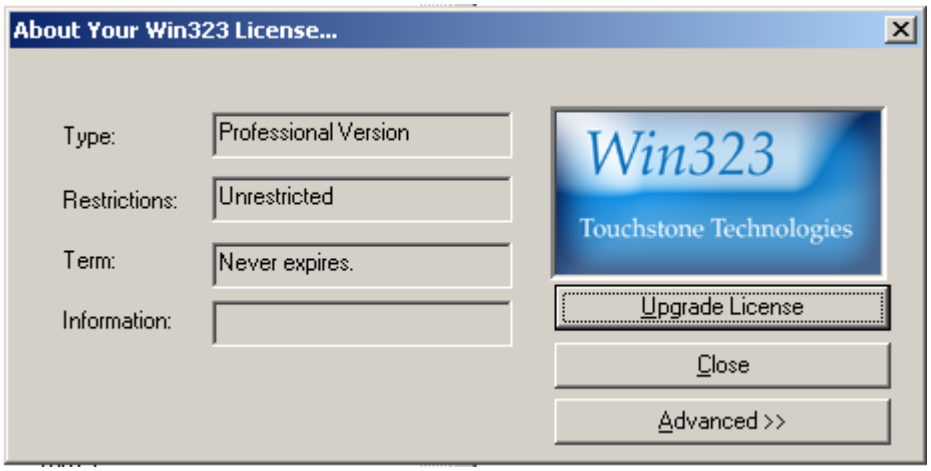
The next step is to eject or unplug the transfer media and take it to the PC that has the license you want to remove.

Note: For USB devices please follow the correct unplug procedure for your device.

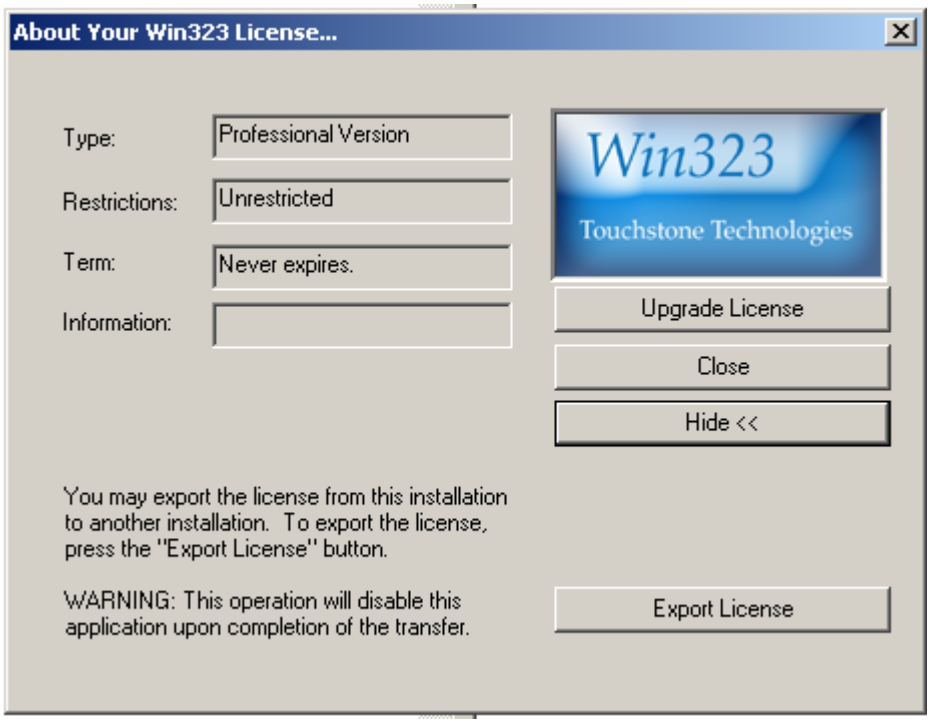
Step Two - Export License

On the PC that you have selected to remove the Win323 license, click on the Help menu and then select Licensing Information.

The following dialog will appear:



Please press the Advanced button.

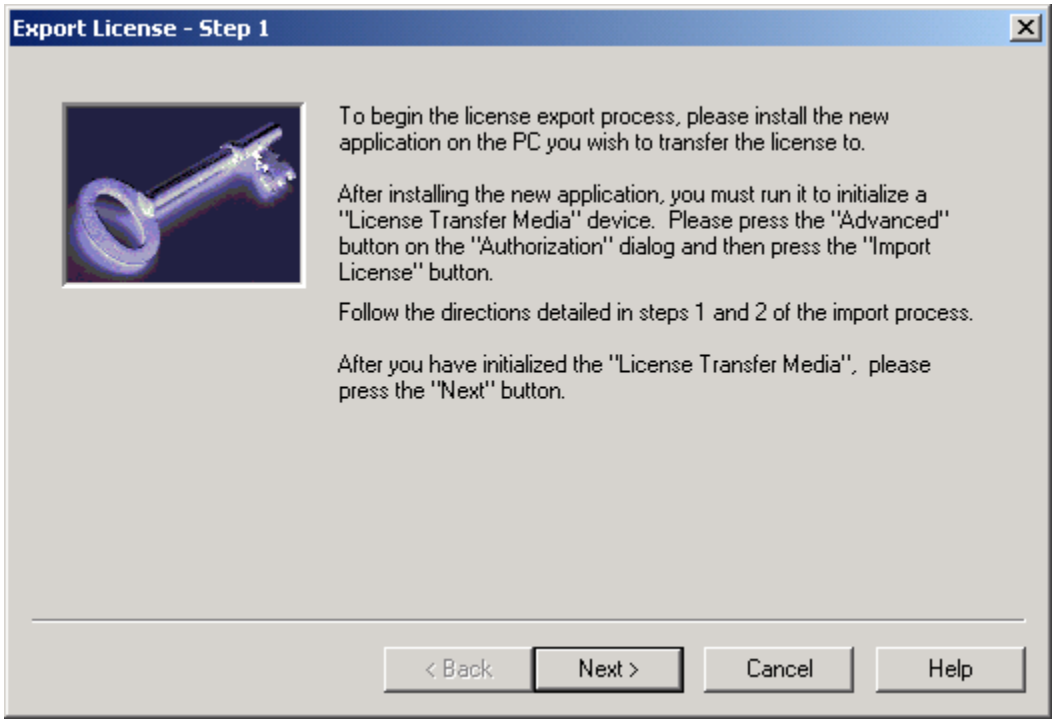


A warning dialog will be displayed next. This box has a warning to read the procedure carefully and that the version of Win323 running will be disabled after the procedure is completed.

If you are certain you want to transfer this license, press Yes, if not, press No.

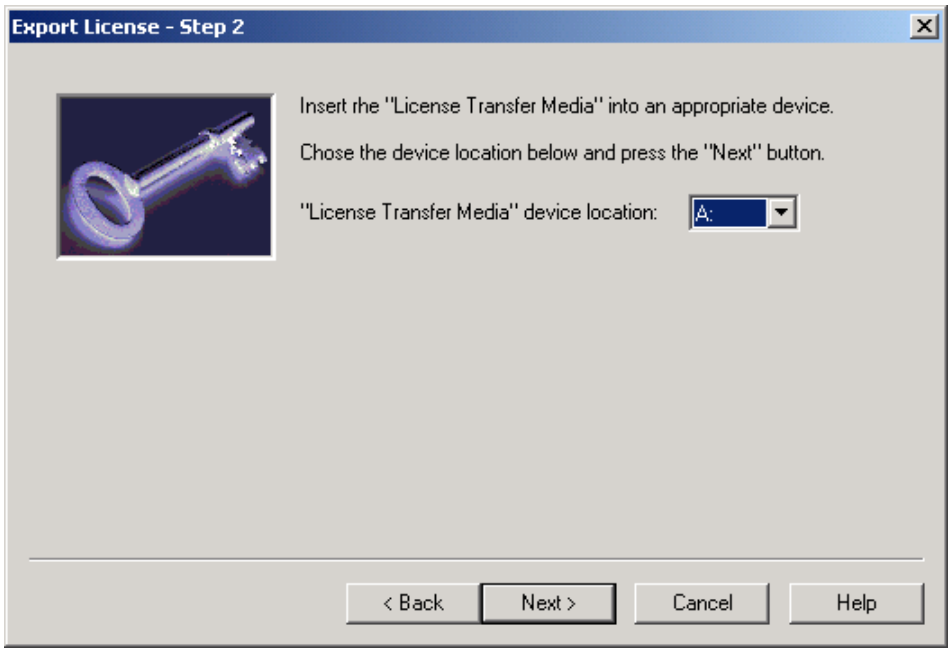
The existing Win323 application will not be uninstalled nor will any Win323 files be removed from the Win323 directory, the software will just be disabled. Later if you wish, you can re-enable the application with a new license from Touchstone or with a Win323 license transferred from another PC.

Step one of the export procedure displays the following dialog:



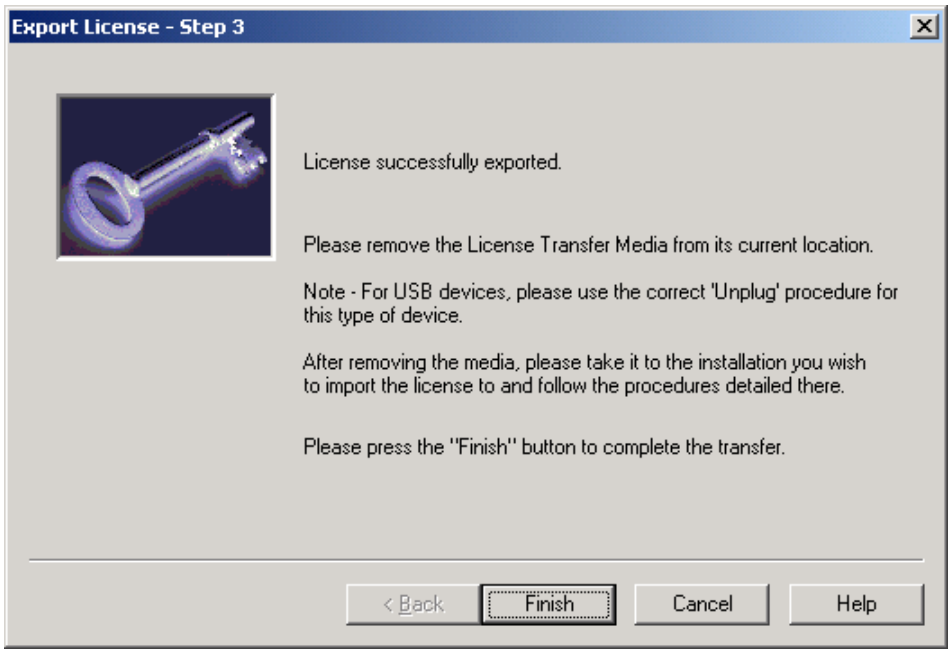
Click the Next button.

Step two of the license export procedure displays the following dialog:



Insert the transfer media that was initialized from Step One - Media Initialization, select the drive to be used as the transfer device and press the Next button.

When the license has been successfully exported, the following dialog will appear:



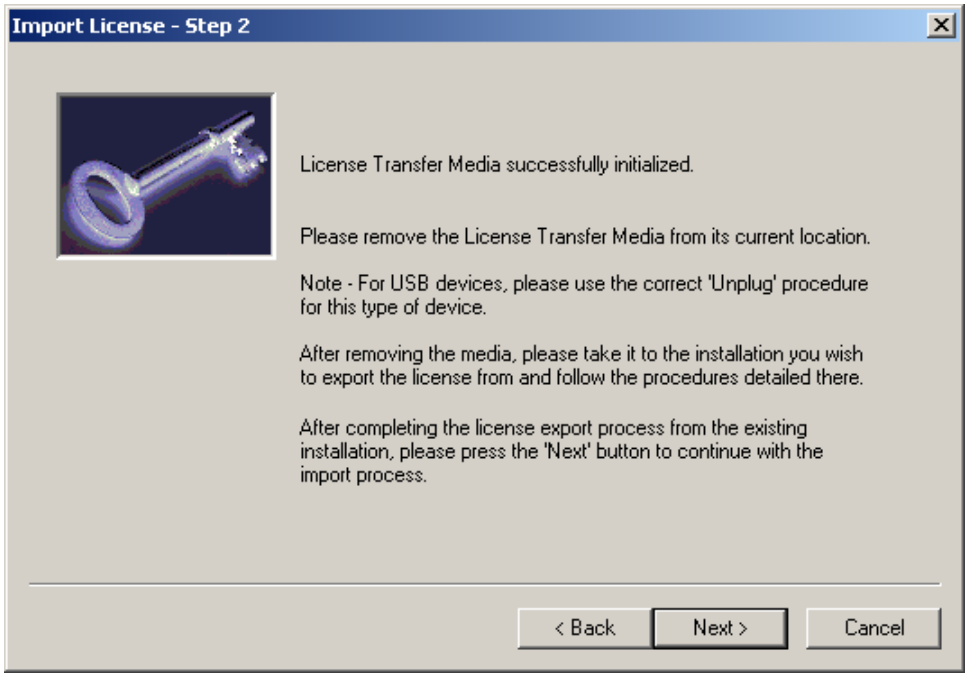
When the Finish button is pressed, the application will terminate. This completes the license export.

Remove and take the License Transfer Media to the newly installed Win323.

Note: For USB devices please follow the correct unplug procedure for your device.

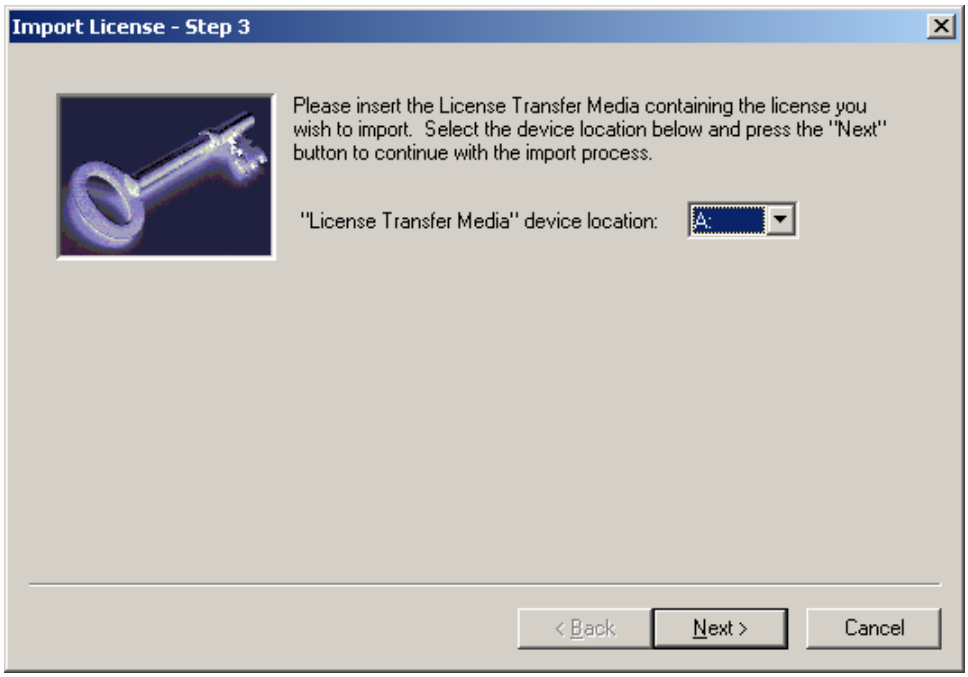
Step Three - Install exported license

The PC with the newly installed version of Win323 should still have the following screen displayed, Import License - Step 2:



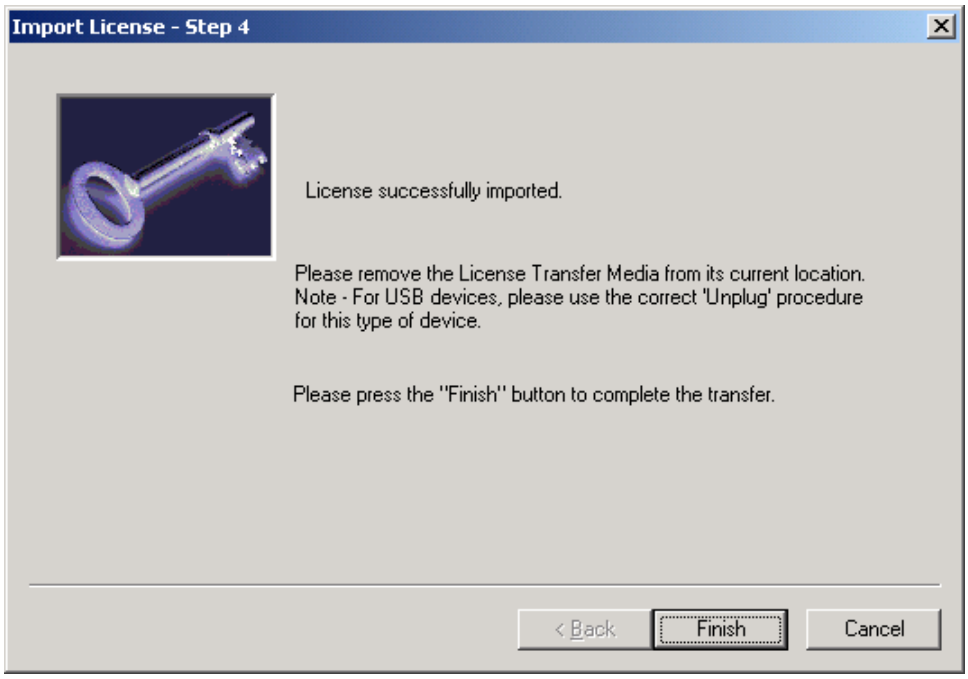
After the export procedure is complete, and you have the license on the transfer media, insert or plug in the media and then press the Next button.

Select the proper License Transfer Media:



Press the Next button when done.

When the license has been successfully imported, the following dialog will appear:



The newly installed Win323 is now fully enabled and ready to run when you press the Finish button.

License Transfer Instruction Chart

Action	New Installation	Existing Installation
1.Install New Software	Select the machine on which you would like to install the new instance of the product and follow the installation instructions. Once installed, run the application and the licensing dialog will appear.	
2. Initialize License Transfer Media	When the new installation asks for the Authorization code, press the 'Advanced' button then, press the 'Import License' button. This will bring up a dialog that asks you to initialize a 'License Transfer Media Device'. This device may be a diskette or USB device. Enter the letter of the drive where the transfer media is located and press the 'Next' button. Once you have pressed the 'Next' button, you may remove the License Transfer Device. You must then take that diskette or USB device to the PC that has the license you want to export.	

Action	New Installation	Existing Installation
3. Export License		Run the application on the PC that has the license you want to export, go to the Help menu and press Licensing Information. Press the 'Advanced' button to reveal the advanced options. Once visible, press the 'Export License' button. Follow the step-by-step directions to export the license onto the License Transfer Media Device. Remove the License Transfer Media Device. The existing installation is now deactivated. Return to the new installation.
4. Import License	Insert your License Transfer Device into the appropriate device. Follow the instructions to import the license. The new installation is now activated.	

FAQ

The following are **F**requently **A**sked **Q**uestions about Win323:

Q: Must I set up my call file with E.164 or H.323 ID aliases for point-to-point calls?
A: No. Alias names are only required when using a gatekeeper. Point-to-point calls require only IP address; aliases are optional.

Q: How can I send DTMF digits?
A: The H.245 UII message is used to send simulated DTMF digits after an Audio or Video logical channel is opened. The alphanumeric characters are sent one at a time. The sequence may be sent once or they can be looped continuously for the duration of the call. The user specifies the time delay before starting the UII message sequence and the time interval between UII messages. The actual alphanumeric character sequences that are sent are specified in the call file. Therefore each call can have a different sequence.

Q: What call measurements can be taken with Win323?
A: There are two ways you can take specific call measurements. The first way is to generate a 'Statistics' file. This file contains the *average* values of 25 measurements taken by Win323. These measurements include the time from GRQ to GCF, RRQ to RCF, Setup to Connect, and TCS to TCS ACK among others. These measurements represent the *average* values take over all the calls that have run so far in this session and are written to the file periodically. The second way to take specific call measurements is to generate a "Summary' file. This file contains the same measurements as stated above but is written to the file on a call-by-call basis.

Q: What about call delays?
A: It is important to understand the various delays used by Win323 when generating calls. There are four delays that apply to the starting, restarting, and stopping of calls. Two of these are on the Options: Settings: General menu. They are: Start Delay and Stop Delay. The third and fourth delays are in the call file and are called the Call Start Delay and the Call Delay.

The two easiest of these to understand are the Call Start Delay and the Call Delay. The first time a call is started, the first thing it does is look at the Call Start Delay parameter. This parameter tells the call how long (in seconds) it must wait to start its protocol exchange. The call is active and ready to run, but will wait 'Call Start Delay' seconds before it will actually start sending H.323 messages. On subsequent iterations of this call it will wait 'Call Delay' seconds before it starts sending H.323 messages. Each call in the Call File can have a different Call Start Delay and Call Delay. At the call level, the only two delays are the Call Start Delay and the Call Delay. For example, if a call has a 5 second call start delay and a 10 second call delay, the first time the call is started, it will wait 5

seconds before sending the initial protocol exchange. Thereafter, the when the call is restarted, it will wait 10 seconds before sending the initial protocol exchange. When setting up Initiate / Answer calls (i.e. calls that use a gatekeeper), it is advisable to set the Call Start Delay and the Call Delay on the Answer side to a lower value than the Initiate side, to give the Answer side time to get ready for the next call.

The other two delays apply at the Win323 level, (which controls all of the calls). They are used to control burst rate of protocol exchanges. The Start Delay is used to regulate the amount of time between the starting or the restarting of different calls. When Win323 has two or more calls to start (because the user pressed the Start Button) or because the call has completed and wants to restart, it uses the Start Delay between each call. This delay is measured in milliseconds. For example, if Win323 has three calls to start and the Start Delay is 100 milliseconds, call 1 will be started immediately, call 2 will start 100 ms after call 1, and call 3 will start 100 ms after call 2. The Stop Delay is used to regulate the amount of time between the stopping of different calls. When Win323 has two or more calls to stop (because the user pressed the Stop Button), it uses the Stop Delay between each call. This delay is measured in milliseconds. For example, if Win323 has three calls to stop and the Stop Delay is 500 milliseconds, call 1 will be stopped immediately, call 2 will stop 500 ms after call 1, and call 3 will stop 500 ms after call 2. The Stop Delay only applies when the user stops calls using the Stop Button.

Q: How can I simulate many different endpoints registering with a gatekeeper?
A: Most gatekeepers today recognize distinct endpoints by their IP address and port number. Win323 uses a different port number for each registration that it makes with a gatekeeper. Therefore, if you run a call file with 500 calls, the gatekeeper will see 500 distinct registrations.

Error Codes

When an error occurs during a call, an error message is written to the log file.

The following table is a list of the error messages and their error number generated by Win323.

Number	Message
	Call Layer
10001	Timeout During Protocol Exchange. Call Did Not Connect
10002	Start Call States Are Incorrect (X) - RAS State = X - H.225 State = X - H.245 State = X
10003	Could Not Create All Of The Sockets Required For This Call
	RAS Layer
20001	RAS Received An Incorrect Gatekeeper Confirm Message H.225 Object Identifier
20002	A RAS Gatekeeper Reject Was Received - Reason =
20003	RAS Received An Incorrect Registration Confirm Message H.225 Object Identifier
20004	A RAS Registration Reject Was Received - Reason =
20005	A RAS Unregistration Reject Was Received - Reason =
20006	RAS Received An Invalid Port Number Of Zero For The Destination Call Signal Address In The Admission Confirm.
20007	A RAS Admission Reject Was Received - Reason =
20008	A RAS Disengage Reject Was Received - Reason =
20009	Could Not ASN.1 Decode An Incoming RAS Message :
20010	A RAS Gatekeeper Request Timeout Occurred
20011	A RAS Registration Request Timeout Occurred
20012	A RAS Admission Request Timeout Occurred
20013	A RAS Disengage Request Timeout Occurred
20014	A RAS Unregistration Request Timeout Occurred
20015	RAS - Local Socket Unexpectedly Closed
20016	RAS - Remote Socket Unexpectedly Closed
20017	Could Not ASN.1 Encode The RAS Gatekeeper Request Command :
20018	Could Not ASN.1 Encode The RAS Registration Request Command :
20019	Unable To Create The RAS Admission Request Command - No Registration Confirm Endpoint Information Was Received
20020	Could Not ASN.1 Encode The RAS Admission Request Command :
20021	Unable To Create The RAS Unregistration Request Command - No Registration Confirm Endpoint Information Was Received
20022	Could Not ASN.1 Encode The RAS Unregistration Request Command :
20023	Could Not ASN.1 Encode The RAS Unregistration Confirm Command :
20024	Unable To Create The RAS Disengage Request Command - No Registration Confirm Endpoint Information Was Received
20025	Could Not ASN.1 Encode The RAS Disengage Request Command :
20026	Could Not ASN.1 Encode The RAS Disengage Confirm Command :
20027	Unable To Create The RAS Information Request Response Command - No Registration Confirm Endpoint Information Was Received
20028	Could Not ASN.1 Encode The RAS Information Request Response Command :
20029	Unable To Create The RAS Lightweight Registration Request Command - No Registration Confirm Endpoint Information Was Received
20030	Could Not ASN.1 Encode The RAS Lightweight Registration Request Command :
20031	Could Not Issue Gatekeeper Request Message

Number	Message
20032	Could Not Issue Registration Request Message
20033	Could Not Issue Admission Request Message
20034	Could Not Issue Unregistration Request Message
20035	Could Not Issue Unregistration Confirm Message
20036	Could Not Issue Disengage Request Message
20037	Could Not Issue Disengage Confirm Message
20038	Could Not Issue Information Request Response Message
20039	Could Not Issue Lightweight Registration Request Message
20040	RAS Socket Create Failed - IP Address XXX Port XX - Error Code = XXXX
20041	RAS - TCP/IP Error : XX (Function) - Local IP Address XXX : Port XX - Remote IP Address XXX : Port XX - Error Text
20042	Could Not ASN.1 Encode The H460 Qos Monitoring Report For The IRR Command :
20043	Could Not ASN.1 Encode The H460 Qos Monitoring Report For The DRQ/DCF Command :
	H.225 Layer
30001	A Q.931 Protocol Error Occurred - User Info Protocol Indicator Is Incorrect - Ignoring Message
30002	The Length Of The Q.931 User To User Information Element Is Incorrect - Ignoring Message
30003	Received Incorrect Setup Message H.225 Object Identifier
30004	Received Incorrect Release Complete Message H.225 Object Identifier
30005	Received Incorrect Call Proceeding Message H.225 Object Identifier
30006	Received Incorrect Connect Message H.225 Object Identifier
30007	Received Incorrect Alerting Message H.225 Object Identifier
30008	Call ID Returned In H.225 Release Complete Is Incorrect
30009	A Q.931 Protocol Error Occurred - Received Call Reference Value Incorrect. Ignoring Message.
30010	A Q.931 Protocol Error Occurred - Call Reference Length Incorrect - Ignoring Message
30011	A Q.931 Protocol Error Occurred - Protocol Discriminator Incorrect - Ignoring Message
30012	Call ID Returned In H.225 Call Proceeding Message Is Incorrect
30013	Call ID Returned In H.225 Connect Message Is Incorrect
30014	Conference ID Returned In H.225 Connect Message Is Incorrect
30015	Call ID Returned In H.225 Alerting Message Is Incorrect
30016	Received H.225 Release Complete Message - No Reason, No Cause
30017	Received Incorrect Facility Message H.225 Object Identifier
30018	Call ID Returned In H.225 Facility Message Is Incorrect
30019	Conference ID Returned In H.225 Facility Message Is Incorrect
30020	Call ID Returned In H.225 Progress Message Is Incorrect
30021	Could Not ASN.1 Decode An Incoming H.225 Message :
30022	H.225 Release Complete Message Could Not Be Sent And Was Not Received
30023	H.225 Was Unable To Establish A Remote Endpoint Connection Address From ACF
30024	No H.245 Address / Faststart Elements Were Returned In Response To The Setup Message
30025	The H.245 Address Was Not Returned In Response To The Setup Message
30026	H.225 - Local Socket Was Closed Before Setup Message Could Be Sent
30027	H.225 - Local Socket Was Closed After Setup Message Was Sent But Before Connect Was Received
30028	H.225 - Local Socket Was Closed After Connect Was Received
30029	H.225 - Remote Socket Was Closed Before Setup Message Could Be Sent

Number	Message
30030	H.225 - Remote Socket Was Closed After Setup Message Was Sent But Before Connect Was Received
30031	H.225 - Remote Socket Was Closed After Connect Was Received
30032	H.225 - Remote Socket Was Closed After Connect Was Received
30033	Could Not ASN.1 Encode The H.225 Setup Message :
30034	Could Not ASN.1 Encode The Release Complete Message :
30035	H.225 Local Socket Closed - Terminating Persistent Mode
30036	H.225 - Local Socket Was Closed Before Setup Message Was Received
30037	H.225 - Local Socket Was Closed Before Connect Could Be Sent
30038	H.225 - Local Socket Was Closed After Connect Was Sent
30039	H.225 - Remote Socket Was Closed Before Setup Message Was Received
30040	H.225 - Remote Socket Was Closed Before Connect Could Be Sent
30041	H.225 - Remote Socket Was Closed After Connect Was Sent
30042	Could Not ASN.1 Encode The H.225 Call Proceeding Message :
30043	Could Not ASN.1 Encode The H.225 Alerting Message :
30044	Could Not ASN.1 Encode The H.225 Connect Message :
30045	Could Not ASN.1 Encode The H.225 Facility Message :
30046	Could Not Issue Call Proceeding Message
30047	Could Not Issue Alerting Message
30048	Could Not Issue Connect Message
30049	Could Not Issue Status Message
30050	Could Not Issue Status Inquiry Message
30051	Could Not Issue Facility Message
30052	Could Not Issue Release Complete Message
30053	Could Not Issue Setup Message
30054	H.225 - TCP/IP Error : XX (Function) - Local IP Address XXX : Port XX - Remote IP Address XXX : Port XX - Error Text
30055	H.225 Socket Create Failed - IP Address XXX Port XX - Error Code = XXXX
30056	H.225 Socket Connect Failed - Local IP Address XXX Port XX - Remote IP Address XXX Port XX - Error Code = XX
30057	H.225 Socket Listen Failed - Local IP Address XXX Port XX - Remote IP Address XXX Port XX - Error Code = XX
	H.245 Layer
40001	H.245 Could Not ASN.1 Encode The Terminal Capability Set Message:
40002	Received An Incorrect Terminal Capability Set Message H.245 Object Identifier
40003	Received An Invalid H.245 Request Message
40004	Received An Invalid H.245 Response Message
40005	Received An Invalid H.245 Command Message
40006	Received An H.245 Function Not Supported Message
40007	Received An Invalid H.245 Indication Message
40008	Received An Invalid H.245 Message
40009	Could Not ASN.1 Decode A H.245 Message :
40010	H.245 Terminal Capability Set Timeout
40011	H.245 Master Slave Determination Timeout
40012	H.245 Close Logical Audio Channel Timeout
40013	H.245 Close Logical Video Channel Timeout
40014	The Call Was Terminated Before The H.245 Completed Successfully - Sent An End Session Message, But Did Not Receive And End Session From The Other Endpoint
40015	H.245 Could Not ASN.1 Encode The Master Slave Determination Message :
40016	H.245 Could Not ASN.1 Encode The Open Logical Channel Message:
40017	H.245 Could Not ASN.1 Encode The Open Logical Channel Acknowledge Message:

Number	Message
40018	H.245 Could Not ASN.1 Encode The Open Logical Channel REJ Message:
40019	H.245 Could Not ASN.1 Encode The Close Logical Channel Message:
40020	H.245 Could Not ASN.1 Encode The Close Logical Channel Acknowledge Message:
40021	H.245 Could Not ASN.1 Encode The User Input Indication Message:
40022	H.245 Could Not ASN.1 Encode The Miscellaneous Message:
40023	Could Not Issue Terminal Capability Set Message
40024	Could Not Issue Terminal Capability Set Acknowledge Message
40025	Could Not Issue Master Slave Determination Message
40026	Could Not Issue Master Slave Determination Acknowledge Message
40027	Could Not Issue Open Logical Channel Message For Audio
40028	Could Not Issue Open Logical Channel Message For Video
40029	Could Not Issue Open Logical Channel Acknowledge Message For Audio
40030	Could Not Issue Open Logical Channel Acknowledge Message For Video
40031	Could Not Issue Open Logical Channel Reject Message
40032	Could Not Issue Close Logical Channel Message For Audio
40033	Could Not Issue Close Logical Channel Message For Video
40034	Could Not Issue Close Logical Channel Acknowledge Message For Audio
40035	Could Not Issue Close Logical Channel Acknowledge Message For Video
40036	Could Not Issue User Input Indication Message (As Destination Alias)
40037	Could Not Issue User Input Indication Message (As DTMF)
40038	Could Not Issue Round Trip Delay Message
40039	Could Not Issue Round Trip Delay Response Message
40040	Could Not Issue End Session Message
40041	Could Not Issue Miscellaneous Command Message
40042	Received A Master Slave Determination Reject Message
40043	Received A Terminal Capability Set Reject Message
40044	H245 - TCP/IP Error : XX (Function) - Local IP Address XXX : Port XX - Remote IP Address XXX : Port XX - Error Text
40045	H.245 Socket Create Failed - IP Address XXX Port XX - Error Code = XXXX
40046	H.245 Socket Connect Failed - Local IP Address XXX Port XX - Remote IP Address XXX Port XX - Error Code = XX
40047	H.245 Socket Listen Failed - Local IP Address XXX Port XX - Remote IP Address XXX Port XX - Error Code = XX
	RTP Layer
50001	RTP Audio Socket Create Failed - IP Address XXX Port XX - Error Code = XXXX
50002	RTP Video Socket Create Failed - IP Address XXX Port XX - Error Code = XXXX
	RTCP Layer
60001	RTCP Audio Socket Create Failed - IP Address XXX Port XX - Error Code = XXXX
60002	RTCP Video Socket Create Failed - IP Address XXX Port XX - Error Code = XXXX

Winsock Error Codes

The following table is a list of common Winsock error codes and their description.

Windows Sockets	Code	Error Description
WSAEINTR	10004	Interrupted system call.
WSAEBADF	10009	Bad file number.
WSEACCES	10013	Permission denied.
WSAEFAULT	10014	Bad address.
WSAEINVAL	10022	Invalid argument.
WSAEMFILE	10024	Too many open files.
WSAEWOULDBLOCK	10035	Operation would block.
WSAEINPROGRESS	10036	Operation now in progress. This error is returned if any Windows Sockets API function is called while a blocking function is in progress.
WSAEALREADY	10037	Operation already in progress.
WSAENOTSOCK	10038	Socket operation on nonsocket.
WSAEDESTADDRREQ	10039	Destination address required.
WSAEMSGSIZE	10040	Message too long.
WSAEPROTOTYPE	10041	Protocol wrong type for socket.
WSAENOPROTOOPT	10042	Protocol not available.
WSAEPROTONOSUPPORT	10043	Protocol not supported.
WSAESOCKTNOSUPPORT	10044	Socket type not supported.
WSAEOPNOTSUPP	10045	Operation not supported on socket.
WSAEPFNOSUPPORT	10046	Protocol family not supported.
WSAEAFNOSUPPORT	10047	Address family not supported by protocol family.
WSAEADDRINUSE	10048	Address already in use.
WSAEADDRNOTAVAIL	10049	Cannot assign requested address.
WSAENETDOWN	10050	Network is down. This error may be reported at any time if the Windows Sockets implementation detects an underlying failure.
WSAENETUNREACH	10051	Network is unreachable.
WSAENETRESET	10052	Network dropped connection on reset.
WSAECONNABORTED	10053	Software caused connection abort.
WSAECONNRESET	10054	Connection reset by peer.
WSAENOBUFS	10055	No buffer space available.
WSAEISCONN	10056	Socket is already connected.
WSAENOTCONN	10057	Socket is not connected.
WSAESHUTDOWN	10058	Cannot send after socket shutdown.
WSAETOOMANYREFS	10059	Too many references: cannot splice.
WSAETIMEDOUT	10060	Connection timed out.
WSAECONNREFUSED	10061	Connection refused.
WSAELOOP	10062	Too many levels of symbolic links.
WSAENAMETOOLONG	10063	File name too long.
WSAEHOSTDOWN	10064	Host is down.
WSAEHOSTUNREACH	10065	No route to host.
WSASYSNOTREADY	10091	Returned by WSAStartup(), indicating that the network subsystem is unusable.
WSAVERNOTSUPPORTED	10092	Returned by WSAStartup(), indicating that the Windows Sockets DLL cannot support this application.

WSANOTINITIALISED	10093	Winsock not initialized. This message is returned by any function except WSAStartup(), indicating that a successful WSAStartup() has not yet been performed.
WSAEDISCON	10101	Disconnect.

Differentiated Services Code Point (DSCP)

Win323 can optionally set the TOS / DSCP flag in the IP header for audio and video RTP and RTCP media streams. The default value is zero for this field. Any or all the fields can be set independently.

The following are standard values for this field:

DSCP Value	Binary Value	Decimal Value	IP Header Byte Value Decimal	IP Header Byte Value Hex
Default	000000	0	0	0
CS1 (DSCP8)	001000	8	32	20
AF11 (DSCP10)	001010	10	40	28
AF12 (DSCP12)	001100	12	48	30
AF13 (DSCP14)	001110	14	56	38
CS2 (DSCP16)	010000	16	64	40
AF21 (DSCP18)	010010	18	72	48
AF22 (DSCP20)	010100	20	80	50
AF23 (DSCP22)	010110	22	88	58
CS3 (DSCP24)	011000	24	96	60
AF31 (DSCP26)	011010	26	104	68
AF32 (DSCP28)	011100	28	112	70
AF33 (DSCP30)	011110	30	120	78
CS4 (DSCP32)	100000	32	128	80
AF41 (DSCP34)	100010	34	136	88
AF42 (DSCP36)	100100	36	144	90
AF43 (DSCP38)	100110	38	152	98
CS5 (DSCP40)	101000	40	160	A0
EF (DSCP46)	101110	46	184	B8
CS6 (DSCP48)	110000	48	192	C0
CS7 (DSCP56)	111000	56	224	E0

CS = Class Selector
AF = Assured Forwarding
EF = Expedited Forwarding

Example Call and Parameter Files

To aid with the configuration of Win323 for different types of H.323 equipment, the application comes with pre-configured call and parameter files. The name of the file indicates the configuration that it will emulate.

For example, the parameter file 'Phone.prm' will configure Win323 to act like a basic voice phone. The parameter file 'TunnelPhone.prm' will act like a speech phone that supports H.225 tunneling. There are also parameter file for sending low and high bandwidth video.

These files are stored in a separate 'Examples' folder and should be copied into the parameter or call file folder before being modified.

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