



## PRODUCT EVALUATION

### inSORS Grid 2 Multimedia Conferencing & Collaboration Software

## Company Overview

Based in Chicago, inSORS Integrated Communications ([www.insors.com](http://www.insors.com)) develops, markets, and supports rich media collaboration software solutions for the enterprise. Using an IP network, the Company's primary product, dubbed the inSORS Grid 2 (IG2) platform, provides individuals and groups the ability to meet in small or large numbers via video and audio modes of interaction with full support for data collaboration. The company was founded in 1998 by individuals from outside the videoconferencing industry who based their product designs on an entirely new view of how enterprises and government agencies want their collaboration services to work. The company sells primarily direct and has specialists focused on certain market segments, including energy, government, and education. inSORS claims an impressive list of clients, including Battelle, Boeing, BT, CapGemini, Chevron Texaco, Ford, Halliburton, Landmark, Motorola, SAIC, and TechTeam Global.

## IG2 Summary

The inSORS Grid 2 (IG2) product is a client-server-based solution for real-time audio-video-data collaboration. Beyond that simple statement however, IG2 is really like no other solution that Wainhouse Research is aware of.

- IG2 handles multiple audio, video, and data streams as individual streams, giving every user in a conference the ability to turn on or off each stream individually. This can save on bandwidth and screen real estate, but it also provides unique advantages in situations where not all audio or video streams are desirable and where not all audio streams should be mixed (multi-language conferences or simultaneous translation sessions)
- Recording of meetings is built in. The recording preserves the characteristics of the live meeting by keeping all streams separate.
- The room system is capable of handling multiple cameras and delivering simultaneous video feeds. Hence camera 1 might be zoomed in on participants A and B while camera #2 might be zoomed in on participants C and D with camera #3 zoomed in on the current presenter. This give remote audiences clear close ups and preserves the advantage of videoconferencing in large group or room environments.
- The user interface provides an enormous number of options for conferencing and collaboration so that users can find and use the

operational mode that is most comfortable for themselves or that meets the criteria of the meeting.

- The data collaboration function is optimized for PowerPoint presentations and for screen sharing, the two most popular collaboration modes, rather than application sharing. File transfer is also supported
- IG2 is secure and traverses NAT and firewall boundaries.
- IG2 is available for single person use on laptops as well as in pre-packaged configurations suitable for executive stations or for shared conference rooms (with large multiple flat screen displays or projectors). The user interface is the same for both personal and room systems.
- In our tests, IG2 consumed about 50% of a Pentium-M-1500MHz laptop's CPU resources.

While many other companies have tested the waters for desktop (personal) videoconferencing, room video solutions, as well as audio and web conferencing, IG2 is unique in that the application is equally at home on the laptop as well as in shared facilities ranging from small conference rooms to large auditoriums. The basic functionality provided by IG2 is audio and visual connections between two or more endpoints (the number of endpoints is limited only by bandwidth), with presentation tools that accommodate a wide range of meeting styles. The client and server application run on industry standard platforms.

## **IG2 Architecture Overview**

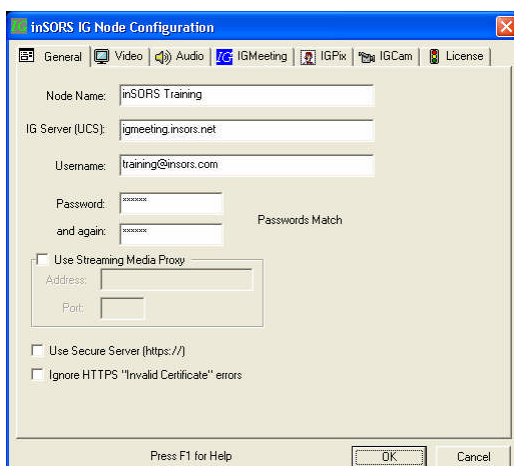
IG2 is deployed in a client-server architecture. inSORS' Unified Collaboration Server (UCS) runs on commodity hardware and supports all the functionality of the client applications. The UCS can be a single server or a grid of servers, a concept from which the product derives its name. The grid architecture enables enterprises to minimize WAN traffic by localizing inter-campus meetings; it also gives the enterprise deployment a modular and smooth scalability.

In addition to connecting all the endpoints running the client software, the UCS can dial out to H.323 endpoints, although with limited video capabilities (384 kbps, H.261 only as of this evaluation). The UCS also connects to industry-standard gateways to provide connections to PSTN telephones and ISDN videoconferencing systems.

The client-side software consists of three elements:

- IG Node Configuration (IGNC) is a separate application used to set up the inSORS environment. Similar in concept to the "tools" or "preferences" menu in many Windows applications, this software may be used sparingly after the initial installation. IGNC is not needed to launch or control collaborative sessions.
- IGMeeting resides in the system tray and is used to launch meetings.
- IGClient is the software interface all participants see and use while in meetings. IGClient serves as the basic control panel for any IG2 session.

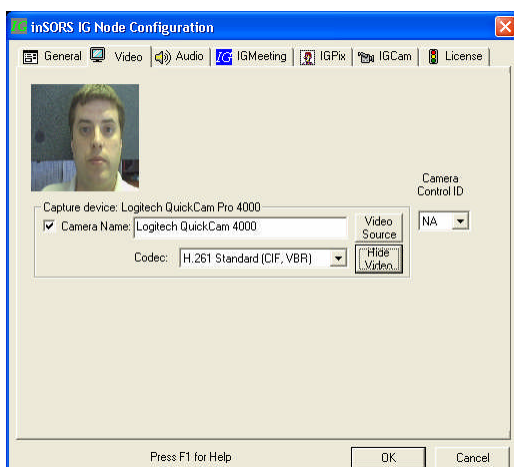
# IG Node Configuration



IG Node Configuration (IGNC) presents the user with a very logical layout of items to configure before setting out. By simply stepping through the seven tabs as the top of the window, the user enters in all the relevant data to set media parameters, devices, and preferences. The installation manual provides a nice explanation of each check box and option. inSORS also posts several short training videos on the company web

site.

IG2 includes settings for networks using a streaming proxy server. This is important because video images are encoded using one of several different codecs and compressed to a video stream which is then converted into RTP/UDP/IP packets and sent to the IP network. Audio is handled in an analogous fashion. It is this basic streaming architecture that gives each end user so much control over his environment and that separates IG2 from much of the competition.



Each endpoint, and in fact each camera on each endpoint, is given a name in IGNC, an innovation that makes downstream operations and control much clearer for all meeting participants. In the video setup tab the user selects from one H.261 and three H.264 options with the software giving guidance on bandwidth needs for each selection. The video codec can be changed on the fly (from another menu) while in a call, a capability that can be

quite useful. A “show video” check box allows users to see that their cameras are indeed working.

The IGMeeting tab is where users configure the default configuration for the IGMeeting application itself. The application has a built-in presence engine and the user presence preferences are set here.

Perhaps the most interesting field in the IGMeeting set up, however, is the “default conference mode.” With IG2, users can join a meeting in one of five

modes, dubbed channels by inSORS (a term we find misleading); not all endpoints in a meeting need be using the same mode.

- VideoConference (send and receive all audio, video, data)
- VideoConferenceViewer (receive-only audio, video, data)
- VideoConferenceSelective (start by receiving no video but add each video stream as needed)
- Web+Audio Conference (video disabled)
- Web Conference (audio and video disabled)

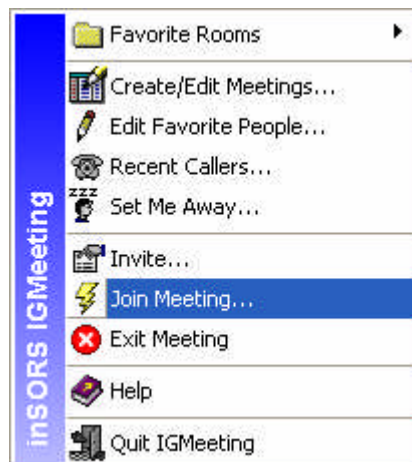
While first-time users may find the three video options confusing, the feature becomes intuitive and natural after the first few sessions. The “videoconference selective” option is particularly powerful when large numbers of endpoints are involved in a single meeting and the user wants to bring in only selected ones or if multiple languages are involved in a single meeting (simultaneous translation) or if bandwidth is a concern since the user can build-up video by video until his limit is reached.

IGPix is the capture function that enables users to send snapshots of their desktop or selected windows. IG Pix can be disabled in this setup menu, configured to make a sound on update, show or not show a warning (handy to prevent inadvertent sending of confidential information), or set to disable scaling, a setting that will cause PowerPoint files to be sent in full resolution rather than resized automatically to the size of the IG Pix display window.

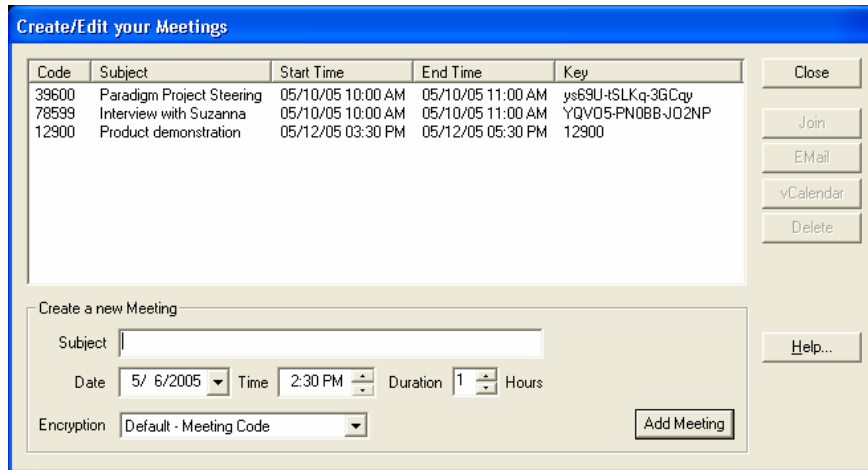
IGCam is used only for configuring PTZ cameras.

Once the IG Node Configuration tabs are set, the user is ready to launch or join meetings.

## IGMeeting



IGMeeting (IGM) is the system tray tool that provides basic entry and exit tools as well as the ability for a person to control his “presence” status and buddy list (favorites), see a list of recent callers, and perform other housekeeping functions. Users can create a scheduled meeting (which works automatically through email and/or the VCalendar function), an ad-hoc meeting with instant invitations, or join a meeting in a permanent virtual space (useful for long-standing projects or teams).



A user can have multiple meetings scheduled, with invitations sent by email (one click access) or by VCalendar to allow other users to input meeting details into their personal scheduling software. (Users without the client installed can access the data conference via a browser.) As shown in the diagram, scheduled meetings (and instant meetings as well) are automatically encrypted. An encryption key can be entered manually for meetings in permanent virtual spaces. Audio, video, and data traffic (all of which are RTSP streams) are all encrypted with the meeting code used as the default encryption key. Traffic can also be encrypted to a higher level by using IPSEC or other VPN encryption methods. For NAT-firewall traversal, IG2 network administrators need to allow outbound traffic on ports 80 and 554 with RTSP inspection enabled in their security devices. All sessions are initiated from inside the firewall.

The “Join Meeting” item on the menu brings up a drop-down menu that provides the five “channel” options to restrict the content displayed in the meeting (these five options are described above) as well as three “join” buttons. Join Existing Meeting will join the meeting with the ID entered (from an invitation); Join Last Meeting connects the user to the last meeting he was using: an error message appears if the meeting has ended. “Join New Meeting” creates an empty instant meeting based on default settings set individually by each user. The person can then invite other users.

The “invite” option is used to launch an ad hoc meeting. The system brings up a buddy list with the familiar click and “control-click” functions to select meeting invitees.

Persons invited to a meeting are greeted by a pop up announcing the invitation and the name of the inviter and given the opportunity to accept or decline. After accepting, they can enter the meeting using their default mode or they can change to one of the other four modes possible within IG2.

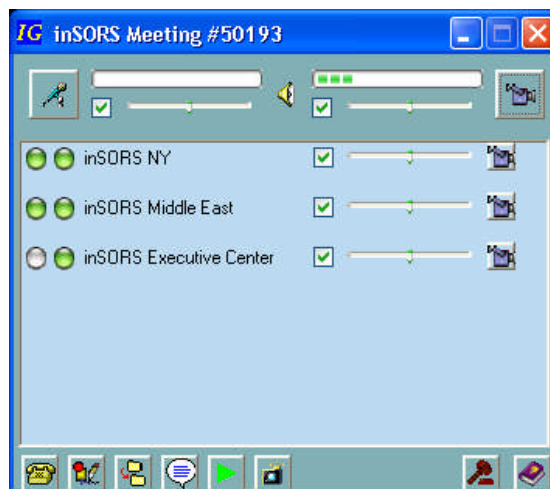
During installation, the user is asked whether IGMeeting should be added to his start-up applications.

## IGClient

IGClient (IGC) is the user interface when in an IG2 meeting. IGC provides a full range of controls and functions usable by anyone in the meeting, not just the meeting host or originator. IGC highlights how IG2 is different from any traditional videoconferencing solution as well as from other desktop collaboration applications. The amount of control available to each individual meeting participant is astonishing.

The top blue-green section of the IGC window allows each user to make settings for his own system: mute microphone or adjust microphone volume, mute or adjust speaker volume, and change video settings. The video settings function includes the ability to send or not-send video as well as send or not-send the user's desktop. Sending the desktop as video is similar in concept to the H.239 functionality supported by room systems (often referred to as People + Content). Other IG2 video settings include adjust brightness, set video window layout, change cameras, codec settings, bandwidth, frame rate, etc.

The middle section of the window shows who else is in the meeting. For each meeting participant red-green circles indicate the health of the send/receive streams while check boxes and sliders enable each individual receiver to mute or adjust and speaker's audio. The camera icon for each meeting participant enables the user to stop receiving the video stream from any camera at any site (useful when bandwidth must be conserved) or to pan-tilt-zoom if the remote camera has those functions enabled. The size and the screen location of each video window being received are individually adjustable.



The bottom pane in the window provides access to six important collaborative tools. IG Dialer enables the user to invite any PSTN phone or H.323 video system into the call. H.323 compatibility is limited to H.261 send-receive video only. Room videoconferencing systems can see IG video and vice versa, but do not receive any of the IGpix data streams. IG Whiteboard brings up a fully-

functional whiteboard. Any meeting attendee using IGC can participate in the whiteboard discussion by clicking on this icon. Starting a whiteboard session does not automatically launch the whiteboard on other machines. The whiteboard can be locked so that only one user can modify the contents.

IG File allows users to transfer files to other meeting participants. Users may opt to keep a list of files often transferred (these are saved on the server for immediate future access). When authorized, meeting participants can download the enabled files. IG2 does not support what is commonly referred to as file sharing by many other products. IG Chat launches a chat session which can involve all meeting participants or just private chat with a single individual. Chat messages go only to people with their chat window open. Users can page a meeting participant to invite them to join a text chat.

The record button records all audio, video, and data streams individually. On playback, a user has access to all the standard live meeting controls (mute any audio or video, move and resize windows, etc). One of the more interesting capabilities of IG2 is the ability to play a recording during a meeting. The effect is to bring in the archived audio-video streams as if they were live and mix them with the real-time participants in a seamless fashion.

IGPix can capture images from the entire desktop, a selected open window, or from PowerPoint and sends the images automatically (recipients do not have to take any action) to other IG2-enabled meeting participants. (The URL is constant and different for each publisher, but a password is needed for each session.) Windows are updated manually by clicking on an update button; however PowerPoint files that are set to “show” mode are updated automatically every time a slide is advanced. Opening a PowerPoint file while in an IG2 session and changing to “show” mode automatically begins sending the images. A single click on an eraser icon will clear IGPix contents instantly.

IGPix also places the images in a URL that can be accessed by anyone with a browser. Hence, people without IG2 installed can join a meeting using PSTN audio (dial-out and dial-in are supported) and a web browser to view the data. IG2 users can easily email the IGPix URL by clicking on the camera icon, then selecting the tools icon in the sub-menu, and then clicking on the email button.

## **Analysis & Opinion**

IG2 is designed from the top down to be a collaboration tool. The application is very different from any traditional videoconferencing experience; it is also different from any other collaboration product or service we have tried. With IG2, there is no distinction between host capabilities and participant capabilities; any meeting participant can invite anyone to a meeting, transfer a file, show a document, launch a whiteboard session, or begin a PowerPoint presentation. One-on-one sessions can take place with equal “control” rights no matter who launched the meeting. This paradigm is especially useful in standing meeting rooms provided by IG2 that support a team collaboration environment.

The IG2 paradigm is that of a “meeting room,” not that of a “conference call.” For example, in a two-person meeting (or any meeting for that matter), the

meeting does not end when someone exits or quits. Each participant must exit himself; this is unlike a phone call or video call where hanging up terminates the connection. Other desktop collaboration software and services provide a “meeting has ended” message; there is no corollary in IG2; some may find this confusing if they are accustomed to videoconferencing or other collaboration applications.

On a technical front, IG2 is very different as well. Audio, video, and data from each meeting participant is sent as RTSP streams, providing a near-endless set of controls for each meeting participant. For video, each camera in the session sends a stream to the UCS server and each participant can request or mute each individual video stream. For audio, each participant sends an audio stream to the server and the server mixes audio individually for each receiver and sends a single audio stream to each endpoint.

Consider the case of a four-participant meeting where one of the four is sending data. The IG2 server would be receiving four audio streams, four video streams, and one data stream. Each participant might elect to receive (or mute) the three video streams from the other three participants. The video streams can be selected and de-selected on the fly. Three of the participants would receive the remote data presentation. And each of the four would receive a single 64 kbps or 128 kbps audio stream consisting of an individually created mix (with volume controls) of however many of the other audios he chose to receive. Each video stream and the one audio stream being received will require its own bandwidth. Flexibility and power come at a price.

As a room system, IG2 provides a very unique capability – support for up to four cameras where the video from all four is sent *simultaneously*. This capability enables different cameras to zoom in on different participants, providing the details so valuable in a videoconference, without the need for constant panning. It also avoids the commonly used solution in room videoconferences of zooming out so that all participants are in the field of view, but each face is so small as to be nearly useless. Since each camera is individually named, each participant in a call can decide which of any or all camera feeds from the room system he wishes to receive.

### **What We Liked**

- Software architecture cleanly separates set-up functions vs. control functions in easily understood design.
- Intuitive controls for microphones, speakers, cameras. Total flexibility to mute some meeting participants or shut down distracting video. Each endpoint can “pull” whatever data it wants.
- Capability of room system to send multiple video streams, enabling close ups of multiple participants within a group setting.
- Ability to show selected application windows as well as the desktop. The application windows may be sent as snapshots, in which case updates are



controlled manually by the sending party, or the entire window may be sent as a video stream, in which case changes are automatically transmitted. This capability provides extreme flexibility at the risk of some user confusion. Sending data as a video stream is unusual

- Automatic updating of PowerPoint files when in presentation mode.
- Recording function with “real-time” controls on playback and the ability to bring recording into a live meeting. This integrated recording capability is of great use to virtual teams operating across time zones.
- Multiple ways to enter a meeting, providing immediate audio-video and bandwidth control.
- Ability for browser-only participants to join data conference using snapshot mode of “sharing.”
- Built-in encryption and NAT-firewall traversal.
- Built-in file transfer and flexible chat.
- Good lip synch, high quality audio, and built-in preference given to audio stream over video stream under congestion conditions.

#### **What We Didn't Like**

- Connections with H.323 room video systems are made via H.261 video, resulting in lower quality images when displayed on room video systems able to handle higher quality video.
- IG2 consumes reasonable LAN bandwidth and needs careful consideration when wide area networks are involved. A point-to-point call using two-way audio and video (H.264-CIF) together with IG2 overhead consumes approximately 750 kbps of aggregate bandwidth, certainly not a problem on today's 100 Mbps Ethernet pipes, but potentially troublesome on a shared T1.

#### **Summary**

IG2 provides a rich collaboration environment that can join together multi-camera conference rooms, individual laptop users with or without single cameras, and PSTN phone users with and without web access. While the user interface is very different from most other Windows applications and might seem a bit “geeky” at first, the client software is actually very straightforward to use.

The collaboration functions have an egalitarian design, with each meeting participant given equal rights to invite others, transfer documents, launch PowerPoint presentations, or share screens and windows without requiring host permission. The collaboration functions themselves address the main requirements of enterprise users, which is not “file sharing” but rather a “see-what-I-see” capability. One consequence of this design where all functions are available to all meeting participants is that there is no simplified “attendee” interface as is the case with common web conferencing products and services.

IG2 delivers the utmost power and flexibility in an enterprise collaboration deployment. IG2's use of streaming protocols gives each individual meeting

participant near total control of his environment. In addition, the ability to mute individual audio and video streams makes the application particularly well suited for multi-lingual meetings and other specialized applications. Because of the applications power, egalitarian interface, collaboration functionality, and ability to provide individuals with a very high level of customized control, we believe IG2 will be especially appealing to:

- Technically adept power users
- Distributed teams that collaborate over PC-based documents
- Project managers and other information workers where the ability to archive and replay meetings effortlessly is a key functionality
- Large meetings, conferences, convocations where many locations are involved in a common collaboration session and users need the ability to turn on and off individual audio and video streams during the meeting (or replay)
- Any enterprise looking for a secure video collaboration solution
- Any enterprise wishing to have a room collaboration solution and a personal collaboration solution with a common interface

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