

IxMobile Video Telephony



IxMobile is a complete 3G-324M/H.324M and H.323 diagnostic solution that provides interoperability testing, troubleshooting, service optimization and video telephony call traffic monitoring capabilities. It is a versatile 4 in 1 tool, providing capabilities for emulation, analysis, monitoring and QoS with call reporting.

IxMobile is an essential tool for network equipment manufacturers, handset manufacturers, and mobile operators deploying multimedia services over 3G networks.

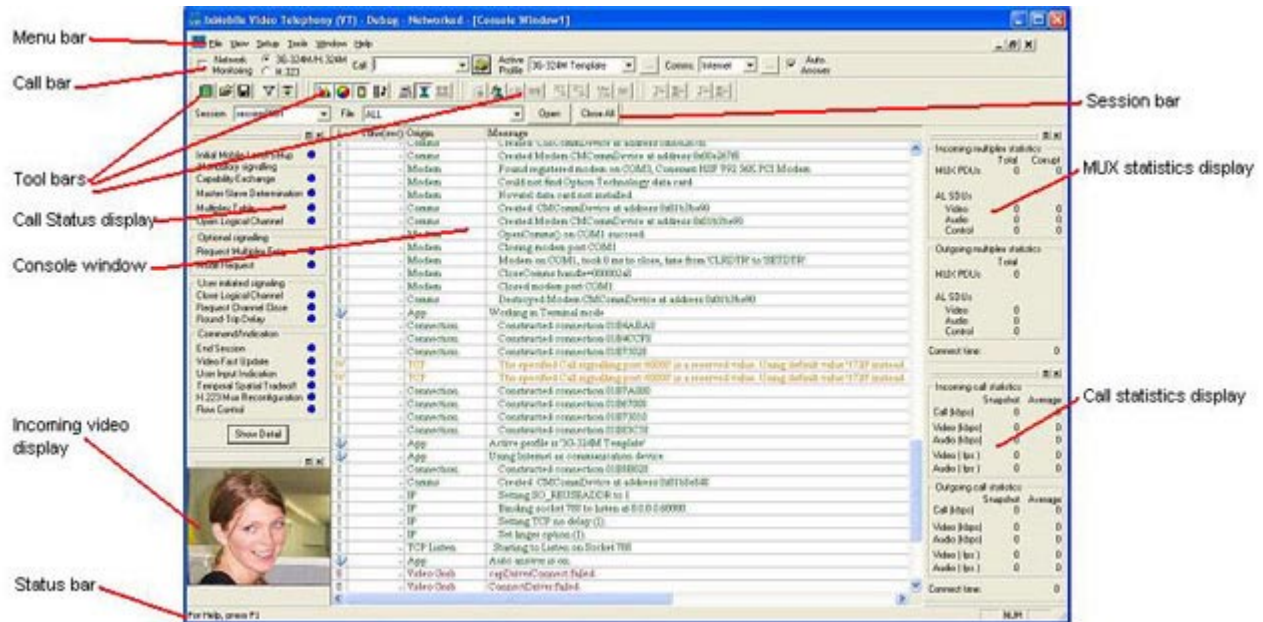
- When used as an emulator, it provides facilities for diagnosing, analyzing, and troubleshooting all aspects of video telephony calls, including call control, connection setup and tear down, bitstream multiplexing, command & control, and voice/video codecs configuration and performance.
- When IxMobile is used with a 3G data card, it can be used for drive testing network performance because of its mobility.
- When used as a monitor, it allows diagnosis of issues in production networks.

IxMobile Features & Applications

Features/Application	Benefits
Terminal Emulation	<ul style="list-style-type: none"> • Use as 3G-324M/H.324M or H.323 User Equipment (UE) • Use for compliance testing of 3G-324M UEs
Protocol, Analysis & Troubleshooting	<ul style="list-style-type: none"> • Trace, analyze, capture and playback 3G-324M/H.324M and H.323 bitstreams. • Call control, connection setup and tear down • Extensive debug, trace and logging capabilities
Profiles	<ul style="list-style-type: none"> • User customizable terminal emulation Profiles can emulate any positive or negative Video Telephony test scenario. • Standard library of Profiles provided for each protocol (3G-324M/H.324M and H.323) • Complete GCF* video telephony test cases Profile library provided
Expected Events Lists	<ul style="list-style-type: none"> • User specified events lists may be used to determine test cases results • Each Profile may include one or many Expected Events Lists • An event may be: User defined real-time question, Rx/Tx Message, system log message, warning message, error message, etc...
Reporting	<ul style="list-style-type: none"> • In addition to many levels of logging available, reports are also offered for the following: <ul style="list-style-type: none"> • Detailed Call Report • Multiple Call Summary Report • GCF* 'video telephony test cases' Report
Automation	<ul style="list-style-type: none"> • Automated interface for Terminal Emulation testing supports making or receiving calls.
Playback of 3G-324M/H.324M and H.323 bitstreams	<ul style="list-style-type: none"> • Playback of 3G-324M/H.324M and H.323 bitstreams captured by other systems or by IxMobile Benchtop with monitoring option
Network Monitoring (non-invasive) (IxMobile Benchtop only)	<ul style="list-style-type: none"> • Capture, record and playback of 3G-324M bitstreams



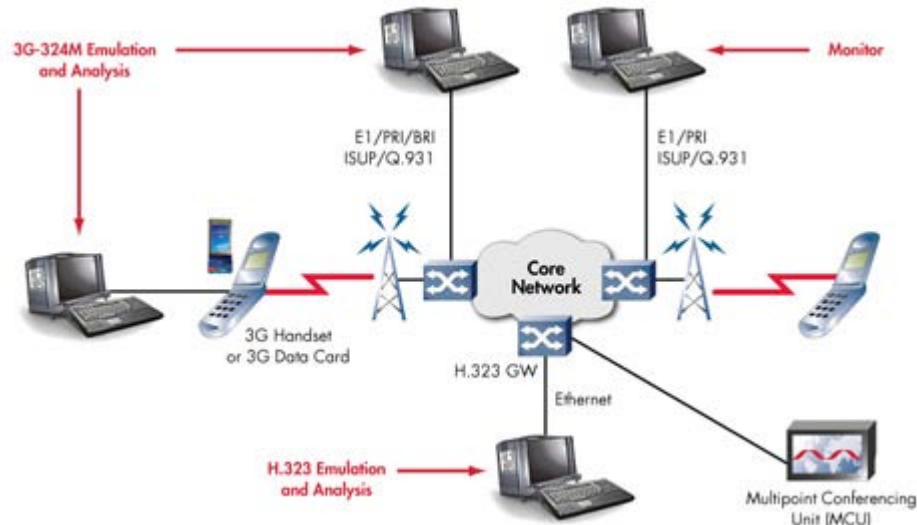
Measurement of Video Telephony Key Performance Indicators	<ul style="list-style-type: none"> Measure key performance data and QoS delivery across networks.
Built-in Media Codecs	<ul style="list-style-type: none"> Audio: GSM-AMR, G.723.1, and G.711 (for H.323) Video: MPEG4, H.263, and H.261 (for H.323)



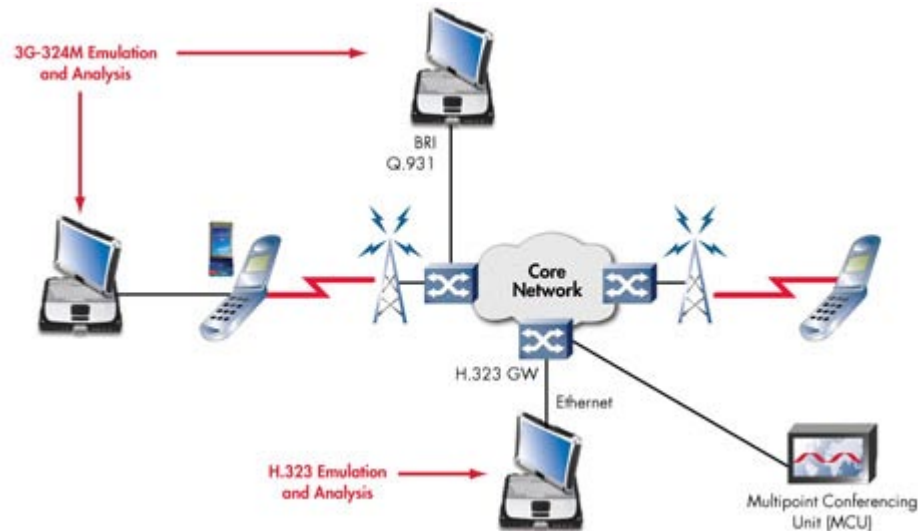
** IxMobile is not endorsed by the GCF. It has been officially validated by an independent third party testing organization to support at least 80% of the test cases prescribed by the GCF for video telephony certification of handsets. This level of validation allows IxMobile to be used for GCF certification of handsets for video telephony.*

Typical Test Configurations

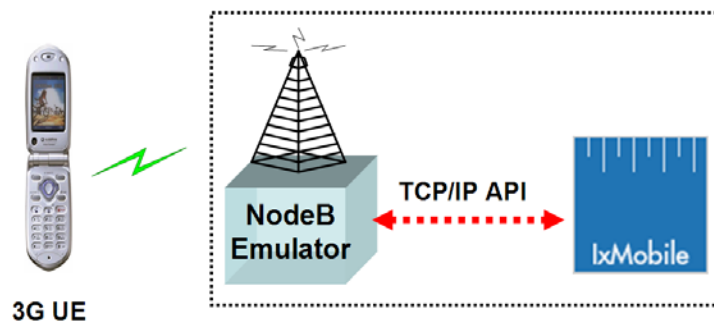
IxMobile Benchtop usage scenarios



IxMobile Portable usage scenarios:



IxMobile Conformance Edition usage scenario:



IxMobile may be installed directly on the NodeB Emulator, or as a separate unit.

Feature Summary

General Features

- Fully Compliant with ITU-T H.324M and 3G-324M (3GPP, FOMA, 3GPP2) and 3GPP TS 26.110, 3GPP TS 26.911, and 3GPP TR 26.911
- Fully compliant with ITU-T H.323 v2
- Support for ISUP and Q.931 emulation and monitoring
- Non-intrusive offline monitoring of call traffic (premium option). Along with ability to save and playback bitstreams. This is very useful to solve interoperability problems between 2 handsets.
- Support for a wide range of test cases, including negative tests



- Enables analyzing and troubleshooting problems with all aspects of an 3G-324M/H.324M or H.323 call including:
 - Mobile level detection
 - Transport of multiplexed PDUs
 - Exchange of H.245 SRP frames
 - Terminal Capability Exchange
 - Master Slave Determination
 - Opening of Logical Channels for voice and video
 - Multiplex table entries
 - Media Exchange
- Call progress indicator aka “traffic lights” for quick scan of problems in protocol implementation
- Allows for insertion of errors in bitstreams for error condition simulation
- Allows save and replay of multiplexer bitstream files, voice and video files as well as the complete 3G-324M/H.324M bitstream (monitoring option only). This facilitates analyzing/diagnosing problems as well as inspecting media quality.
- Automatic wizard style setup, including detection of communications, voice, video and network interfaces
- Live statistical display of connection statistics and round trip delay
- Full call and call suite reports
- Provides support for testing 3G-324M/H.324 baseline (mobile level 0) and mobile extension levels 1, 2 and 3 (annexes A., B and C of H.223). Supports dynamic mobile switching modes. Supports interoperability testing of level switching amongst multiple mobile levels
- Support for single duplex channel for single channel loop back testing modes.

Logging and Trace Features

- Live as well as offline post call filtering and analysis
- Individual log files for Command and Control (H.245) and Multiplexer (H.223) messages
- Save incoming/outgoing bitstreams from various subsystems (e.g. multiplex PDUs/SDUs, H.245 messages), in both raw and decoded formats
- Support for monitoring triggers to automate the determination of the call user plane circuit
- Customizable filters for console messages based on severity and types
- Trace for communication interface, H.223, CCSRL, and H.245 messages in ASN.1 and binary formats
- Call data to determine network Key Performance Indicators
- Full reports, including Key Performance Indicator trends and channel usage graphs

Call setup, H.245 Command & Control Features

- Support for WNSRP
- Support for Answer Fast Plus
- Dial-in capability with automatic video & audio play (from files or live media)
- Automatic or manual configuration for master or slave mode
- Automatic or manual opening and closing of logical channels
- Supports 3G-324M/H.324M bit order reversal
- Supports H.245 User Input Indication (UII) messages
- Supports user-defined multiplexer table entries for 3G-324M/H.324M
- Save transmitted and received ASN.1 messages in text and binary formats
- Set SRP/NSRP retries count and mobile level switching time-out values
- Set maximum size for CCSRL PDU size
- Supports grouping of H.245 messages

H.223 Multiplexer Features

- Save H.223 Tx/Rx MUX-PDUs and SDUs with time stamp and optional sequence numbers
- Read and send H.223 multiplexed data from file
- Set Mobile level (0, 1 or 2); Support for optional header for Annex B of H.223
- Set bitstream bit-reversal and ignore MUX-PDU parity checks for troubleshooting non-compliant terminals



Codec Features

- Includes support for an extensive range of high performance codecs, including optimizations for MMX and XMM:
 - Video: H.263/H.263+, MPEG4-Video (CIF, QCIF and SQCIF). MPEG4-AIR support. Support for MPEG4 error resiliency and H.263 Profile 3 (Annex I, J, K, T).
 - Audio: GSM-AMR and G.723.1, silence suppression support, all bit-rates.
- Support for changing codec parameters.
- Set video & audio sources and format: live, raw / encoded format file.
- Support H.263 features: advanced INTRA coding, Deblocking Filter, Slice Structured mode, Modified Quantization

Software Only Editions

IxMobile offers two, distinct software only editions:

- The IxMobile Standard Edition offers the same functionality as the integrated solutions while supporting the ISDN BRI and 3G Data Card interfaces only.
- The IxMobile Conformance Edition offers no direct physical interface support. Instead, the IxMobile Conformance Edition is designed to communicate through a TCP/IP communications interface, to an air interface (NodeB) emulator, in order to conformance test handsets.

Benchtop and Portable Comparison

As an integrated, hardware and software solution, IxMobile comes in two flavors, distinguished by the hardware platform: the IxMobile Benchtop, and the IxMobile Portable. They are comparable in all features and functionality, except that the IxMobile Portable does not support the ISDN PRI (E1) interface and monitoring. The following table shows the differences in functionality and features:

	IxMobile Portable	IxMobile Benchtop
E1 with ISUP	No	Yes (with E1/PRI option)
ISDN PRI	No	Yes (with E1/PRI option)
ISDN BRI	Yes	Yes
3G Data Card	Yes	Yes
3G Handset as a modem	Yes	Yes
Ethernet (TCP/IP)	Yes	Yes
Serial (V.80) and USB	Yes	Yes
Video Input	USB Camera	USB Camera
Audio I/O	Headset	USB Phone
Monitoring	No	Yes (with Monitoring and E1 options)
Dimensions	1.9"(H) x 10.7"(W) x 8.5"(D) 4.5 lbs 4.8cm(H) x 27.2cm(W) x 21.6cm(D) 2 kg	10.2"(H) x 15.8"(W) x 6.7"(D) 18 lbs 25.9cm(H) x 40.1cm(W) x 17cm(D) 8.2 kg
Power Supply	Lithium Ion Battery Pack AC Adaptor: AC 100-240V 50/60 Hz, Auto Sensing/Switching Worldwide Power Supply	Universal 300 Watt, 100-240V AC 50/60 Hz Power Supply
Other Features	Notebook/tablet PC with touch screen	Multi-speed CD ROM drive

Product Ordering Information

935-0001

IxMobile Benchtop with PRI Interface

935-0002

IxMobile Benchtop with BRI Interface

935-0003



IxMobile Benchtop with PRI Interface and Call Monitoring

935-0004

IxMobile Benchtop with PRI Interface and Call Monitoring, and BRI Interface

935-0091

USB Phone for IxMobile Benchtop

935-0092

Hard Shell Case for IxMobile Benchtop

935-0201

IxMobile Portable with BRI Interface

935-0202

IxMobile Portable with 3G UMTS Data Card

935-0203

IxMobile Portable with BRI Interface and 3G UMTS Data Card

935-0402

IxMobile, Software, Conformance Edition

935-0403

IxMobile, Software, Standard Edition

935-0293

ISUP Feature Upgrade for Benchtop models 935-003 and 935-004

909-0424

Extended Integrated HW/SW Warranty - 12 Months

909-0367

Extended SW Warranty – 12 months

