Product Description

T.38 is a standard by International Telecommunication Union (ITU) for real-time fax communication over IP networks. Under the T.38 protocol, fax signals and data from the local fax terminal are packed as Internet Fax Protocol (IFP) packets at the local gateway to be sent over the IP network. The gateway at the remote end of the IP network, unpacks the IFP payload relayed over network and either regenerates the fax signals for transmission to the remote fax machine, or directly processes the signals as an Internet Aware Fax (IAF).

Figure 1 shows the network topology for a T.38 connected network. Each T.38 device on the IP network acts as either a gateway, or an IAF device. Gateways may connect to fax machines directly, or over the PSTN. The T.38 and fax module in this document will operate in connection with a gateway and act together as an IAF such that no fax machine is required.
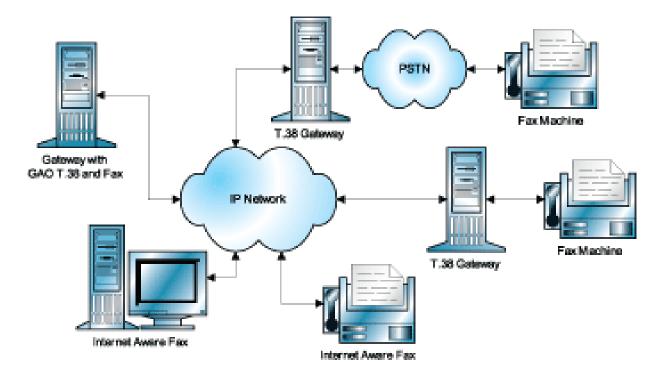

Figure 1: T.38 Network Topology

As shown in Figure 4, the interface with the IP network is provided by the local gateway and is mostly independent of the T.38 solution. The standard transport layer protocol that will be used by the gateway is either UDP + RTP, UDP + UDPTL or TCP.

TCP Sessions

In a TCP session, the GAO T.38 solution will exchange IFP packets with the application that is the TCP payload as shown in Figure 2. It is the responsibility of the TCP stack to create or remove the TCP and IP headers, and to ensure proper delivery and error correction of the TCP packet.

Figure 2: TCP Packet

UDP Sessions

In a UDP session, the GAO T.38 solution will exchange packets with the application that contains UDPTL headers, the IFP packet and either UDPTL redundancy or UDPTL forward error correction. These packets are the UDP payload as shown in Figure 3. It is the responsibility of the UDP stack to create or remove the UDP and IP headers, and to handle any other UDP based protocols such as RTP. The GAO T.38 solution will handle packet re-ordering and error detection or correction in the UDPTL module as per the T.38 standard.
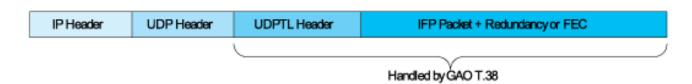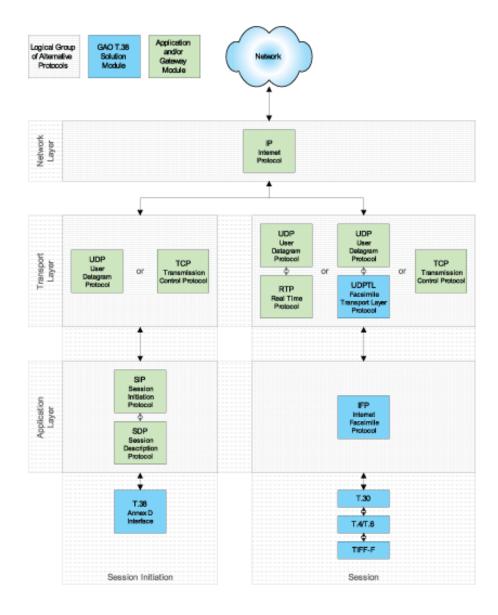

Figure 3: UDP Packet

Session Initiation

Session initiation is not included in T.38, and must be provided external to the GAO T.38 solution. Standard session initiation protocols include SIP + SDP, and H.323. The GAO T.38 solution has an interface that allows SDP to be configured for initiating a T.38 session with SIP + SDP according to T.38 Annex D. The SIP + SDP stack works along side of the T.38 network stack to manage the session.

The image data will be supplied from a specified TIFF Class F (TIFF-F) file formatted with T.4 (MH or MR) or T.6 (MMR) data. The GAO IAF solution can convert the TIFF file between the formats to match the capabilities of the remote fax machine.

Leadership in Embedded Communications Software

With over a decade of experience, GAO leads the embedded communications software market by providing comprehensive modem, fax, speech, and telephony technologies; broad technical expertise; and unsurpassed support to our world-class customers including electronics, communications, and semiconductor companies across the globe. GAO's software integrates easily with MP3, MPEG, TCP/IP, and most popular real-time operating systems.

Rigorous Testing

GAO's testing facilities are equipped with state-of-the-art test equipment. Our software is rigorously tested on TAS, Consultronics, Rochelle, Advent and Telegra equipment under various channel models according to the relevant ITU or TIA standards. All GAO's speech software has passed the test vectors specified by the ITU. Our telephony software meets all appropriate TIA, EIA, BellCore, and Mitel standards.

GAO Group *Celebrating Over 15 Years of Innovation* GAOResearch.com GAOTek.com GAOComm.com GAOInstruments.com GAORFID.com GAORFIDAssetTracking.com GAOFiberOptics.com GAOEmbedded.com	Toll Free (USA & Canada) **1-877-585-9555** All Other Areas 416-292-0038 Ext. 206 for Sales sales@gaoresearch.com