



Fax-Over-IP Protocols: SIP–T.30–T.38

The ITU-T T.38 recommendation specifies the communication protocol to be used between a facsimile gateway or between multiple gateways, and an IAF (Internet Aware Fax device) connected via an Internet network for the purpose of transferring faxes between G3FEs (Group 3 Fax Equipments) connected to facsimile gateways via PSTN (Public Switched Telephone Network) or between G3FEs and IAFs.

Enea[®] has integrated the signaling and fax transmission protocols that are required in an IAF device in one single package named Enea[®] IAF-Bricks.

This ground-breaking IAF communication package implementation addresses the requirements of Fax-over-IP enabled applications such as IAF terminals, Fax servers, and Fax-over-IP front-ends.

Enea IAF-Bricks features

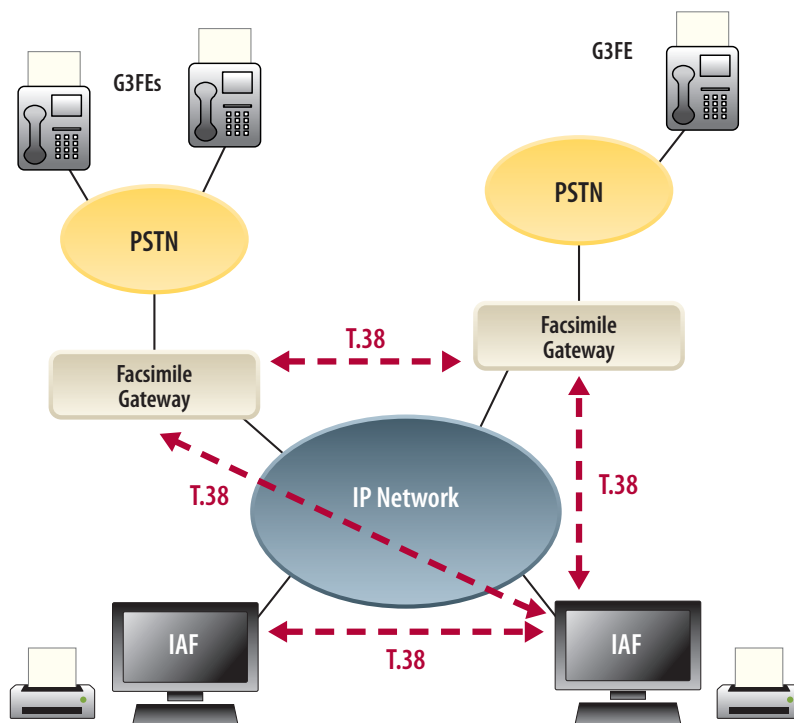
Enea's IAF-Bricks is a portable software package written in 'C' that integrates the following communication protocols:

- SIP Session Initiation Protocol as specified by IETF relevant RFCs including RFC 3362 for support of T.38 in SIP. Enea's SIP protocol implementation is available as a standalone software product named Enea SIP-Bricks and widely used in Terminals, Servers (registrar, redirect or unified messaging servers) as well as in Proxy.
- T.38 Fax-over-IP transport protocol as defined by ITU-T. Enea's T.38 protocol is already in use in residential gateways, media gateways and fax servers.
- T.30 fax group 3 protocol supporting ECM (Error Correction Mode). Enea has an unrivaled expertise in fax group 3 protocols and solutions which are used by leading manufacturers worldwide.

In addition Enea IAF-Bricks includes a coordination layer that relieves application from driving protocols and dramatically accelerates time to market of innovative Fax-over-IP systems.

The Enea IAF-Bricks API is designed to let applications focus solely on fax file management which greatly simplifies control of a Fax-over-IP session towards gateways and other Fax-over-IP equipment. It provides application flexibility for sending faxes page by page and includes multiple, optional reports to monitor fax sessions. Configuration of IP addresses to operate multiple, parallel fax sessions is straightforward to manage. Enea's audit built-in logging mechanism is included providing a dynamic tool to trace internal operations of IAF-Bricks package as well.

Enea IAF-Bricks is designed to interface UDP/TCP/IP through BSD-like sockets. Interfaces to many commercial operating systems are provided, including Microsoft Windows[®], Linux, Solaris[®], Enea OSE[®], VxWorks[®], pSOS[®], and AMX[®].



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Enea IAF-Bricks supports multi-threaded architectures and can optionally be completed with Enea's RTP-Bricks package. Enea IAF-Bricks is designed for the OEM market and provided as a source code license. It scales easily from small embedded systems to large servers supporting thousands of simultaneous sessions.

Quick start projects are available for Windows and Linux operating systems including technology license, makefiles and basic operational application example.

Enea also provides a T.38 gateway portable software package named Enea T.38GW-Bricks which includes T.38 and SIP protocols, T.38 gateway functions and fax softmodem technology as a cost effective solution for fax and media gateway development.

Enea IAF-Bricks Software Architecture

- SM: System Management
- TCP/UDP/IP: TCP/UDP/IP protocol stacks

- Socket Adaptation: BSD socket like interface
- T.38: T.38 IFP Internet Fax protocol module
- T.30: Fax group 3 T.30 protocol with or without Error Correction Mode (ECM)
- CF: Control function to control fax group 3 session
- SIP: SIP (Session Initiation Protocol) protocol module

Enea IAF-Bricks compliance

The protocols integrated in Enea IAF-Bricks are compliant with the following set of standards and recommendations.

T.38

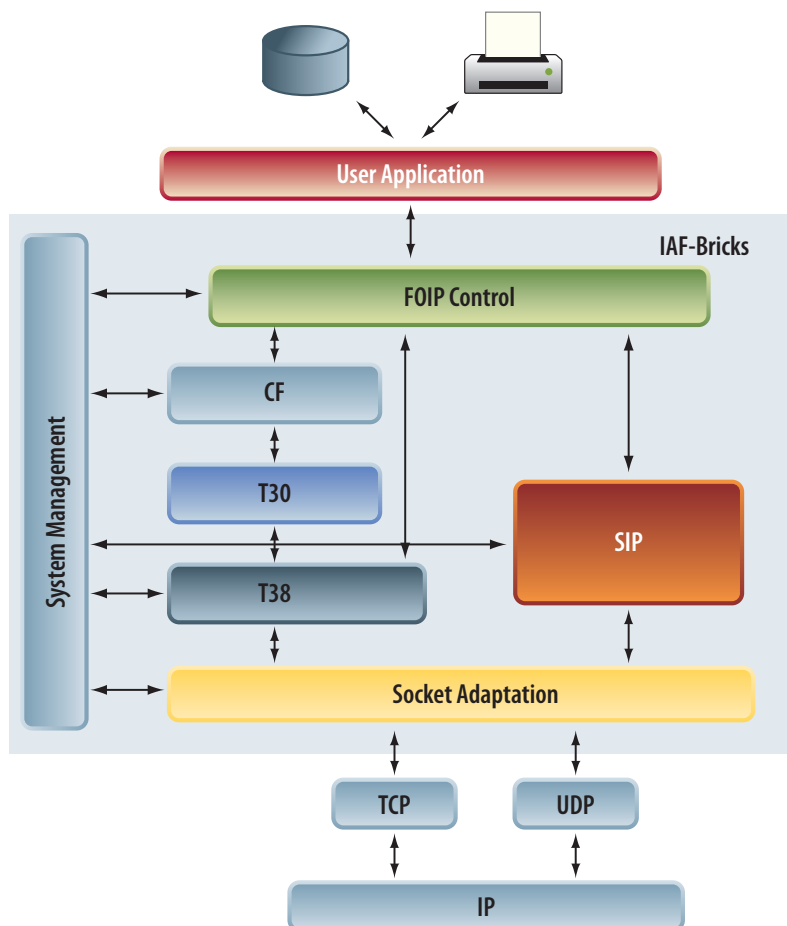
- ITU-T T.38 recommendation (30/2002)
- ITU-T T.38 Amendment 3 'Implementation guidelines'

T.30 fax group 3 protocol

- ITU-T T.30 recommendation including full support of Error Correction Mode (ECM)
- ITU-T T.4 and T.6 recommendations

SIP

- RFC 3261: SIP Session Initiation Protocol (SIP)
- RFC 3263: Session Initiation Protocol (SIP): Locating SIP Servers
- RFC 2327: SDP Session Description Protocol
- RFC 3420: Internet media type message/ipfrag
- RFC 2976: The SIP INFO method
- RFC 2806: URLs for telephone calls
- RFC 3108: Conventions for the use of the Session Description Protocol (SDP) for ATM bearer connections
- RFC 3204: MIME media types for ISUP and QSIG Objects
- RFC 3262: Reliability of provisional responses in SIP
- RFC 3264: An offer/answer model with the Session Description Protocol (SDP)
- RFC 3265: SIP-Specific event notification
- RFC 3310: HTTP digest authentication using AKA
- RFC 3311: The SIP update method
- RFC 3313: Media authorization
- RFC 3323: A Privacy mechanism for SIP
- RFC 3325: Asserted identity within trusted networks
- RFC 3326: The reason header field
- RFC 3327: Extension header field for registering non-adjacent contacts (Path)
- RFC 3372: SIP for Telephones (SIP-T): Context and architectures
- RFC 3428: The SIP message method
- RFC 3455: Private header extensions to SIP for 3GPP
- RFC 3515: The SIP refer method
- RFC 3581: An extension to SIP for symmetric response routing
- RFC 3608: SIP extension header field for service route discovery during registration



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- RFC 3842: A message summary and message waiting indication event package for SIP
- RFC 3856: SIP extensions for presence
- RFC 3891: The SIP "replaces" header
- RFC 3892: The SIP referred-by mechanism
- RFC3959–Early session disposition type for SDP
- RFC 4028: Session timers in SIP
- ITU-T T.38 Annex D and RFC 3362 for support of T.38 in SIP
- IETF draft-levy-sip-diversion
- Draft-ietf-sipping-kpml

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