Fusion Embedded™ PPPoE

PPP over Ethernet (PPPoE) is a protocol that allows devices connected over Ethernet to establish PPP links with one another. PPPoE is a protocol layer with its own header, which encapsulates the PPP protocol layer and is itself encapsulated within the Ethernet layer. Using PPPoE, multiple PPP sessions can be multiplexed between the same client/server pair over Ethernet.

PPPoE allows ISPs, or other access providers, to provide broadband access (e.g., DSL or cable modem) to a customer whose premises are populated with multiple client hosts connected by Ethernet, using the ISP's existing PPP dial-up network access and billing infrastructure (e.g., RADIUS servers). The PPPoE protocol is a client/server protocol, and operates in two phases, Discovery and Session.

The Discovery Phase
A PPPoE client host "discovers" one or more PPPoE servers that can provide the needed service, and requests a PPP session with one of them. The client and server learn each other's unique Ethernet MAC addresses, and the server assigns a unique PPP session ID (for multiplexing purposes). This phase is analogous to the serial device drivers on each end of a dial-up connection establishing their physical link.

The Session Phase
During this phase, PPPoE-encapsulated PPP frames are passed between the server and client and passed up to the PPP layer, where they are processed exactly as if they were being carried over a serial device.

Fusion Embedded PPPoE implements both the client and server side of the protocol.

The application interface consists of a Host API (the client side) and an Access Concentrator AP (the server side). The Host API function (fns_pppoe_start_host) allows the application program to start a Host PPPoE session. This function will bring up the specified Ethernet interface, then try to initiate a PPPoE session using the specified service name. Parameters for IP Address, Network mask, LCP Options, and IPCP Options are used during the establishment of a PPP session. Use of these parameters is optional.

The Access Concentrator API function
(fns_pppoe_ac_set_service) is used to implement a PPPoE Access Concentrator. This function allows the application programmer to specify services that the Access Concentrator is supporting.

Features
- Conforms to RFC 2516 "A Method for Transmitting PPP over Ethernet (PPPoE)"
- Allows broadband Internet access (for example, DSL) via bridged Ethernet, while preserving the traditional dial-up paradigm for assigning IP addresses to clients and performing authentication and billing
- Ideal for use in end devices or, in combination with Fusion Embedded NAT and DHCP server, in small home/office (SOHO) routers
- Integrates seamlessly with Fusion Embedded PPP and TCP/IP
- Provides both host (client) and server functionality
- Support for multiple concurrent PPPoE sessions
- Built-in simple configuration API for basic operation. Fusion Embedded PPP API can be used with
- PPPoE for more advanced configuration options
- PPPoE pseudo devices are created dynamically at run-time for increased flexibility (one binary on multiple platforms)

Fusion Embedded Protocols

Networking

POP3	PPP	IPv6	SMTP	RTP
SDP	PPPoE	IPv4	SNMP	RTCP
IGMP	NAT	FTP	DHCP	TFTP
CIFS	SIP	RTSP	RIP	SNTP
Telnet	STUN	DNS		