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ML-PPP/PPP Source Code

TsLink3 Multi-link Point-to-Point Protocol (ML-PPP) and Point-to-Point Protocol (PPP) protocol stacks are delivered as source code to give you full flexibility and accelerate development and interoperability testing.

TsLink3 is architected for embedded and host-based applications in which performance and code size are important.

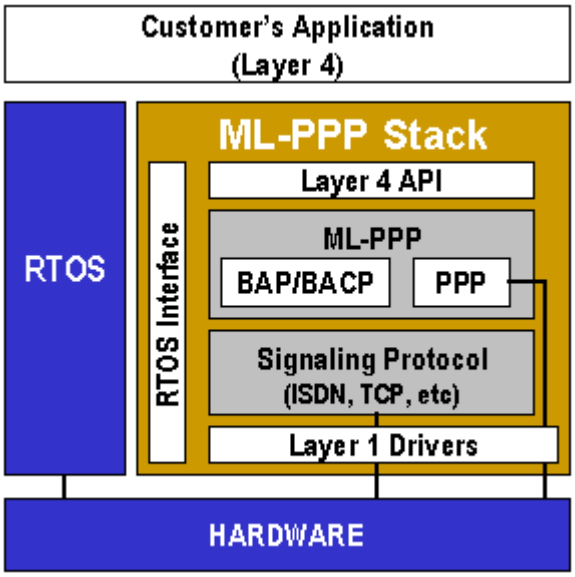
For:

- Base Stations
- Gateways
- Network interface cards
- Switches
- Terminal adapters
- Test equipment

"We appreciated TeleSoft's code flexibility and the reliability of the technical support. TeleSoft technical support ensures that customers can successfully integrate and adapt TsLink3 code for their own platform." – Digicom, Italy

Well-Structured, Maintainable Code

Maintainability and scalability are designed into each TsLink3 stack. Comprehensive comments and documentation support you or a colleague as your product goes forward. The value of TsLink3 stacks will be evident in each phase of your engineering schedule and the product life span.



Shorter Learning Curve & Faster Customization

- **Consistent use of IETF RFC state mechanisms ->** Clear, traceable protocol handshakes.
- **'C' switch statements that closely correspond to the ITU-T standard ->** Straightforward to locate the event/state action points in the ITU-T standard.
- **Adherence to ANSI 'C' standards ->** full portability.
- **OS-independence ->** Choice of RTOS, not locked into a single vendor.
- **Processor-independence ->** Mobility across CPU platforms.
- **Simple state machine design ->** Easy to understand protocol negotiation between peers.

Faster Debugging

- **Development and testing on TsLink3 hardware** -> Clean, proven "rock solid" code.

Smaller Code Inventory Required

- Co-resident T1, E1, R2, ISDN PRI and BRI switch variants, Frame Relay, X.25, PPP, and ML-PPP stacks.

ML-PPP/ PPP Features

- Network (NT)- and Terminal (TE)- Side Support
- Synchronous and asynchronous PPP inputs accepted
- Supports multiple LAN protocols (e.g., IP, IPX, AppleTalk, NETBEUI)
- Fully conformant with the Internet Engineering Task Force (IETF) standard as defined in the RFC specifications.
  - RFC 1990: PPP Multilink Protocol (MP) – *ML-PPP only*
  - RFC 2125: BAP/BACP– *ML-PPP only*
  - RFC 2684/1483: Multiprotocol Encapsulation over ATM –*PPP only*
  - RFC 2516: PPPoE Protocols –*PPP only*
  - RFC 2364: PPPoA Protocols –PPP only
  - RFC 2153: Point-to-Point Protocol (PPP)
  - RFC 1994: PPP CHAP Authentication Protocols (For sync-to-sync connections)
  - RFC 1974: STAC LVS Compression Control (No STAC)
  - RFC 1962: PPP Compression Control Protocol
  - RFC 1662: PPP in HDLC-like Framing
  - RFC 1638: PPP Bridging Control Protocol (BCP)
  - RFC 1332: PPP Internet Protocol Control Protocol (IPCP)

RFC Descriptions

RFC 1990, ML-PPP over 'n' ISDN B-Channels enables bundling of ISDN links to increase the number of B-channels available for aggregation, increasing the bandwidth supported for a single data session

RFC 2125, Bandwidth Allocation Control Protocol (BACP)— an industry-standard method to manage the dynamic bandwidth allocation in a multi-link bundle. Used in response to changing line or resource conditions between two peers to coordinate the addition and removal of individual links.

RFC2684, Multiprotocol Encapsulation over ATM LLC/SNAP— two encapsulation methods for carrying network interconnect traffic over AAL type 5 over ATM. The first method allows multiplexing of multiple protocols over a single ATM virtual connection whereas the second method assumes that each protocol is carried over a separate ATM virtual connection.

RFC2516, Point-to-Point Protocol over Ethernet PPPoE— provides the ability to connect a network of hosts over a simple bridging access device to a remote Access Concentrator by encapsulating PPP packets over Ethernet.

RFC2364, Point-to-Point Protocol over ATM PPPoA—provides the ability to establish a point-to-point relationship between peers using ATM Adaptation Layer 5 (AAL5) for framing PPP encapsulated packets.
RFC2153, Point-to-Point Protocol—provides a standard method for transporting multi-protocol datagrams over point-to-point links. PPP defines an extensible Link Control Protocol (LCP) for establishing, configuring, and testing the data-link connection; and a family of Network Control Protocols (NCPs) for establishing and configuring different network-layer protocols.
RFC1994, Challenge Handshake Authentication Protocol (CHAP)— the next best password scheme over PAP—a three-way handshake using a public domain encryption algorithm to securely pass user information across the link to authenticate a user with the server.
RFC1994, Password Authentication Protocol (PAP)—the basic internet password scheme—sends the user name and password in the clear to the server.
RFC1962, PPP Compression Control - provides the framework to link in a compression software package, such as STAC, for higher throughput on PPP links.
RFC 1662, Async-PPP to Sync ML-PPP converter allows PC based asynchronous PPP implementations (COM port-based products) to communicate with synchronous PPP based routers or bridges via ISDN terminal adapters
RFC1638, Bridging over PPP -allows digital products to send any LAN protocol over the link; required for LAN-LAN communication without IP.

RFC 1332, IP (both static and dynamic) over PPP allows ISDN products to send Internet Protocol (IP) over an ISDN link; required for communications with Internet-connected routers

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Special Features and Upgrade Modules

Universal Application Programming Interface (UAPI)

TsLink3 code includes a rich message-based Universal API (UAPI) which presents a simple interface for simple applications such as “signaling-only.” UAPI also provides the versatility and power needed to support more complex configurations which combine signaling with data protocols or with specialized hardware. The TsLink3 Universal API coupled with the straightforward structure of the TsLink3 protocol stack enables you to easily follow the API message flow through the code to determine where to make modifications required for your application.

The majority of simple “signaling-only” applications require a very small subset of the TsLink3 API messages and parameters – and the non-applicable messages can be disregarded and unused parameters set to zero. More complex applications benefit from the large set of messages and parameters that we provide as templates.

UAPI is common across all TeleSoft stacks which decreases the time and effort required to add upgrade modules to an existing TsLink3 stack and to develop with additional TeleSoft stacks.

High Availability (HA)

TsLink3 supports High Availability applications for high density switches with multiple modes of HA operation, including the seven key elements of HA. Please refer to the TeleSoft HA White Paper for details. Applications requiring HA will benefit from the TsLink3 stack capacity to support up to 64,000 simultaneous connections and up to 256 ports.

Software Tools

Internal Protocol State Logging Tool and Debugging Tool are invaluable aids during portation and integration, included with every TsLink3 stack at no additional charge.

Purchasing TsLink3 Software

TsLink3 Source Code is supplied in comprehensive, portable packages of 'C' source code modules and interfaces necessary to develop robust products.

Source Code packages provide source code from Layer 1 device driver software up through the Layer 3/Layer 4 interface of the OSI model.

Upgrade and Individual Modules

Completing the solution are upgrade- and individual-modules that increase your market opportunity by increasing your products' connectivity capabilities. Modules include PPP, ML-PPP, X.25, AO/DI, Frame Relay, T1 RBS, E1 CAS, R2, V.120, and Supplementary Services.

Technical and Custom Support

12-month maintenance extensions include code updates and quick-response technical support via E-mail, phone and fax.

Expert Consulting and Customization Services

Consult with our experienced engineers early to avoid expensive pitfalls later.

Documentation

Comprehensive documentation customized for your load. Available in a searchable soft format or in hardcopy. All nomenclature complies with ITU-T.

Price

Cost-effective one-time licensing fee; no royalties or user-fees for TsLink3 source code or the TsRITE operating system.

TeleSoft International specializes in the development of Intelligent WAN solutions specifically for OEMs. We supply source code for DSL, PPPoA, PPPoE, ISDN, Q.931, Q.921, QSIG, ML-PPP, PPP, Frame Relay, T1 RBS, E1 CAS, R2 and X.25 Protocol Stacks for license to manufacturers of telecommunications products around the world.

TeleSoft provides 'C' Language Source Code Stacks and Hardware Reference Designs backed up by comprehensive documentation and expert technical support. TeleSoft solutions accelerate time-to-market, minimize technology risk, and decrease the cost of both product development and product maintenance.
