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## X.25 Source Code

X.25 drivers, protocol stacks, source code libraries, and device drivers accelerate development and conformance testing of X.25 signaling products.

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

### For:

- Base stations
- Terminal adapters
- Network interface cards
- Test equipment

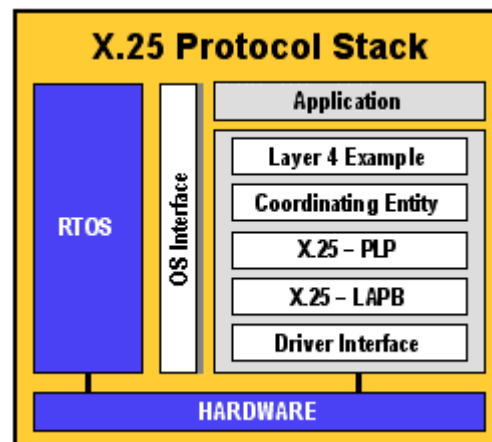
*“TeleSoft gets a very high grade for being solid, reliable, and dependable ... rock-solid throughout the whole project. Performance was also quite good. Didn’t have to touch the TeleSoft code.” – 3COM Primary Access, San Diego CA*

### 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

- **ITU-T primitives and software structure** -> Easy to relate TsLink3 code to other ITU-T based protocols (e.g., E1 CAS, X.25, FR).
- **ETSI/ECMA compliant code** -> interoperates with other equipment (e.g., PBX) that is ETSI/ECMA compliant.
- **‘C’ switch statements that closely correspond to the ITU-T standard** -> Straightforward to read and modify code, and 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 and change code for national-specific variants



## Faster debugging

- **Specific defined constants, comment strings and variable naming** -> Supports use of text search techniques to quickly locate a specific section of code and determine the side effects of changes that are being considered.
- **ITU-T primitives and software structure** -> Clear traceable dataflow.
- **Development and testing on TsLink3 hardware** -> Clean, proven "rock solid" code.

## Smaller inventory

- Each line can be configured at run-time for a different T1, E1, R2, PRI or BRI variant
- Co-resident T1, E1, R2, ISDN PRI and BRI switch variants, Frame Relay, X.25, PPP, and ML-PPP stacks.

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## X.25 FEATURES

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- X.25/X.31 Networking Layer comprises four modules:
  - Layer 3 Packet Layer Protocol (PLP) and Call Control (CC)
  - Coordinating Entity and Management Entity (CEME)
  - Layer 2 LAPB Module
  - Layer 1 Low-Level Driver (LLD) for HDLC device
- Fully conforms with:
  - ITU-T X.25 Packet Switching Protocol
  - ITU-T X.211 Physical Layer Service
  - ITU-T X.212 Link Layer Service
  - ITU-T X.213 Network Service
  - FED STD 1041 US Federal Govt. X.25
  - ISO 7776 X.25 DTE Frame Level Protocol (LAPB)
  - ISO 8348 Network Service Definition
  - ISO 8878 Connection Oriented Service over X.25
  - ISO 8881 Used for X.25 over LANs
- Supports Permanent Virtual Circuits (PVCs) and Switched Virtual Circuits (SVCs)
- Up to 4096 Virtual Circuits
- Multi-Port Support (multiple logical links per interface)
- Multiple Trunk Support
- Non-default data packet sizes
- X.31 access to ISDN B-channels
  - Supports X.31 call control through the ISDN network, removing the need for a permanent connection to an X.25 router
  - Supports BRI and PRI applications
  - Network (NT)- and Terminal (TE)-Side Support
- Packet switched ISDN D-channel access
- Internal Protocol State Logging and Debugging Tool
- X.25 configurable in Host (DTE) mode or Network (DCE) mode
- Conformance tested at Bellcore and AT&T Bell Labs
- Built-in simulation capability supports testing DTE and DCE endpoints without a router

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## Special Features and Upgrade Modules

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### **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.*