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## QSIG/PSS1 Source Code

QSIG, also known as Private Signaling System No.1 (PSS1), drivers, protocol stacks, source code libraries, and associated device drivers give the developer full flexibility to modify the QSIG/PSS1 code to meet their unique product requirements, and accelerate both development and successful conformance testing.

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

### For:

- Multi-vendor ISDN PBX based private networks
- Networking of remote ISDN PBXs
- Interconnecting servers
- Providing network-wide reach for applications
- Supporting mobility in corporate networks
- TransEuropean Trunked Radio (TETRA)

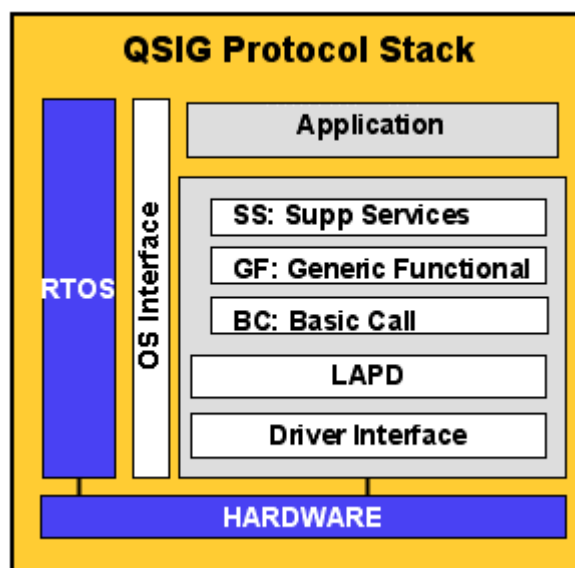
*“TeleSoft code reduced our time-to-market by at least two man years.” –  
Workstation Technologies, Irvine CA*

### 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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## QSIG Layer 3, Sublayers 1-3

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QSIG Basic Call (QSIG BC) is the first sublayer. QSIG BC extends the public ISDN access protocol for use in private ISDNs. Unlike DSS1, QSIG BC is a symmetrical protocol (i.e. both the user side and the network side of the interface are identical) which is designed for peer-to-peer operation. QSIG BC provides support for call setup, teardown, information, and maintenance. Conformant with ETS 300 171/172.

QSIG Generic Functional Procedures (QSIG GF) is the second sublayer. QSIG GF provides a standardized mechanism to exchange signaling information for the control of supplementary services and additional network features over a corporate network. QSIG GF protocol supports both a connection-oriented and a connectionless transport mechanism for call-independent supplementary services. QSIG GF enables transparent passage of facility and notify messages and forwards SS messages to the next network or terminal node in the circuit. Conformant with ETS 300 239.

QSIG Supplementary Services (QSIG SS) is the third sublayer. QSIG SS, only required in terminating nodes, defines specific QSIG procedures at the "Q" reference point for individual supplementary services. QSIG SS generates and interprets Supplementary Services messages.

The "terminating" or "terminal" node" is located at one of the ends of a circuit. The terminal node may either be a PBX/PABX/public switch that is providing the SS functions or an ISDN telephone.

QSIG Supplementary Services enabled by TsLink3 include:

- Calling Line Identification Presentation
- Calling Line Identification Restriction
- Multiple Subscriber Number
- Call Waiting
- Advice of Charge
- Call Hold
- Fast Select
- User to User Interface
- Caller ID
- Party Calling
- Call Forwarding

- Caller Deflection
- Completion of Calls to Busy Subscriber

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## QSIG Layer 2

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**QSIG Layer 2** conforms to the ETSI standard for the link layer, ETS 300 125.

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## QSIG Layer 1

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**QSIG Layer 1** is the physical layer which incorporates low level drivers for the required interface devices. Conforms to ETS 300 012. Please refer to ***TsLink3 Device Drivers*** for a listing of available drivers.

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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.*