TeleSoft International
Protocols for Developers

The TeleSoft Advantage

ROI

TCO

Proven advanced starting points

TsLink3 Voice Supplementary Services SDK   Source Code Stack

Voice Supplementary Services for Basic Rate (BRI), Primary Rate (PRI), and QSIG protocols expand the set of capabilities available with standard basic services. ETSI ISDN Supplementary Services are defined by the ITU-T Q.932 and ETS standards. North American ISDN Supplementary Services are defined by Telcordia, Lucent and Nortel specifications. QSIG Supplementary Services are defined by ECMA specifications.

The TsLink3 ISDN Supplementary Services/Q.932 Software Development Kit (SDK) source code modules are supplied in ANSI C source code software modules compliant with their respective specifications for PRI & BRI ISDN, and QSIG. Functionally, supplementary services translate requests and responses between ISDN terminal end points and Central Office (CO) or PBX switches in a standards-based form that that both switches understand.

Developers can accelerate project development and minimize technical risk by taking advantage of these proven Supplementary Service software modules. Usage of proven software modules enables a developer to focus on the actual applications without having to translate and direct the applications how to format the different Supplementary Services messages.

TsLink3 software SDKs are specifically architected for embedded and host-based applications where high performance and small code size are important.

Typical Applications:

♦ Multi-featured PBX/PABXs
♦ ISDN telephones
♦ ISDN terminals
♦ Gateways
♦ IADs
♦ Test equipment

TsLink3 Supplementary Services

BRI Switch Variants

EuroISDN ETSI BRI Supplementary Services		User/Network	ETS spec.
MSN	Multiple Subscriber Number	U/N	300 052
CW	Call Waiting	U/N	300 058
CLIP	Calling Line Identification Presentation (Caller ID)	U/N	300 092
CLIR	Calling Line Identification Restriction on a call basis	U/N	300 093
MCID	Malicious Call Identification	U	300 130
HOLD	Call Hold	U/N	300 141
AOC	Advice of Charge	U	300 182
3PTY	Three Party Conference	U/N	300 188
SUB	Subaddressing	U/N	300 059
UUS	User to User Signaling	U/N	300 286
CFB	Call Forwarding Busy	U/N	300 207
CFNR	Call Forwarding No Responding	U/N	300 207

CFU	Call Forwarding Unconditional	U/N	300 207
CD	Call Deflection	U/N	300 207
ECT	Explicit Call Transfer	U/N	300 369
TP	Terminal Portability	U	300 055

North America NI-1 BRI Supplementary Services		User/Network
EKTS	Electronic Key Telephone Service (US NI Spec Section 8.5) 　　- Basic EKTS 　　- CACH EKTS 　　- Feature Button Support	U
MLHG	ISDN Circuit-Mode Services for Voice Terminal 　　- Hold /Retrieve 　　- Multi-Line Hunt Group (MLHG)	U
SSUD	Supplementary Services User Display (US NI Spec Section 9)	U
SSSP	Supplementary Services State Processing	U
CH	Call Hold	U
3PC	Three Party Conference	U
CFBNR	Call Forwarding (Unconditional, Busy, Not Responding)	U
CD	Caller Deflection	U
ECT	Explicit Call Transfer	U
CRA	Compilation and Run-time Activation	U/N
CCP	Common Circuit-Switched Call Procedures - Terminal Initialization (US NI Spec Section 8.5)	U

PRI Switch Variants

EuroISDN ETSI PRI Supplementary Services		User/Network	ETS spec.
MSN	Multiple Subscriber Number	U/N	300 052
CW	Call Waiting	U/N	300 058
CLIP	Calling Line Identification Presentation (Caller ID)	U/N	300 092
CLIR	Calling Line Identification Restriction on a call basis	U/N	300 093
MCID	Malicious Call Identification	U	300 130
HOLD	Call Hold	U/N	300 141
AOC	Advice of Charge	U	300 182
3PTY	Three Party Conference	U/N	300 188
SUB	Subaddressing	U/N	300 059
UUS	User to User Signaling	U/N	300 286
CFB	Call Forwarding Busy	U/N	300 207
CFNR	Call Forwarding No Responding	U/N	300 207
CFU	Call Forwarding Unconditional	U/N	300 207

CD	Call Deflection	U/N	300 207
ECT	Explicit Call Transfer	U/N	300 369
MWI	Message Waiting	U	300 745
TP	Terminal Portability	U	300 055

North America NI-2 PRI Supplementary Services		**User/Network**	**Telcordia Spec**
I-CNAM	Calling Name	U/N	GR1367
MWN	Message Waiting Notification	U	GR2942
CD	Call Deflection	U	GR1310
CT	Call Transfer	U	GR579
TBCT	Two B Channel Transfer	U	GR2865

Lucent 5ESS PRI Supplementary Service		**User/Network**	**Lucent Spec**
TBCT	Two B Channel Transfer	U	GR2865

Nortel DMS100 PRI Supplementary Service		**User/Network**	**Nortel Spec**
RLT	Release Link Trunking	U	NIS A211-1

QSIG Variant

QSIG PRI Supplementary Services		**User/Network**	**ECMA Spec.**
CLIP	Calling Line Identification Presentation (Caller ID)	U/N	148/157
CLIR	Calling Line Identification Restriction (Caller ID Restriction)	U/N	148/157
DIV	Call Diversion Suite	U/N	173/174
MWI	Message Waiting	U/N	241/242
CT	Call Transfer	U/N	178/179
CFU	Call Forward Unconditionally	U/N	173/174
CFB	Call Forward on Busy	U/N	173/174
CFNR	Call Forward on No Reply	U/N	173/174
CD	Call Deflection	U/N	173/174
CNIP	Calling Name ID Presentation	U/N	163/164
CONP	Connected Name ID Presentation	U/N	163/164
CNIR	Calling ID Restriction	U/N	163/164
CONR	Connected ID Restriction	U/N	163/164

TeleSoft Advantages

TsLink3 software stacks are specifically architected for all types of embedded and host-based applications and are optimized for excellent performance and small code size.

Written in ANSI C and delivered as source code SDKs with a pre-ported interface to a defined RTOS of your choice, TsLink3 stacks give you an advanced starting point to shorten your development schedule, minimize technical risk and maintain the flexibility to exercise full control over your end product.
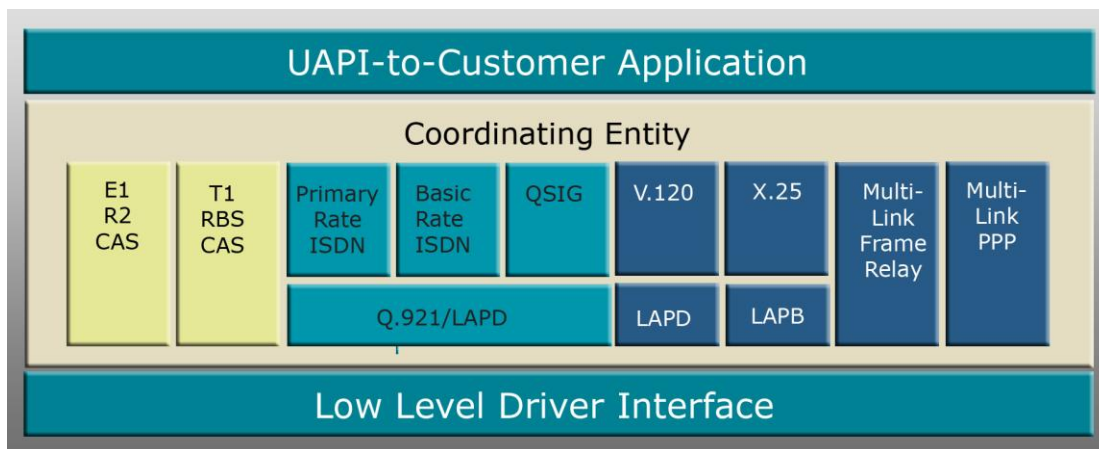
All TsLink3 protocol software stacks are based on a Standard Core Architecture (SCA) with a Universal API (UAPI) that enables easy migration between different stacks and portability to different software/hardware platforms.

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.

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.

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 High Availability, PPP, ML-PPP, X.25, MLPP, Frame Relay, T1 RBS, E1 CAS, R2, V.120, and Supplementary Services.

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

Well-Structured, Maintainable Code

Maintainability and scalability are designed into each TsLink3 stack. Comprehensive comments and documentation support you 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 – make it easy to relate TsLink3 code to other ITU-T based protocols.
♦   ETSI/ECMA compliant code - ensures interoperation 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 – provides for full portability.
♦   OS-independence - choice of RTOS, not locked into a single vendor.

- ♦ Processor-independence - enables mobility across CPU platforms.
- ♦ Simple state machine design - easy to understand and change code for national specific variants.
- ♦ Consult with our experienced engineers early to avoid expensive pitfalls later.

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 and robust 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, MLPP, PPP, and ML-PPP stacks.

Documentation

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

Technical and Custom Support

3-months included with each license. 12-month maintenance extensions include code updates and quick-response technical support via E-mail, phone and fax.

About TeleSoft International

TeleSoft International, Inc., is an industry-leading, US-based provider of field-proven, scalable, standards-based protocol stacks for developers. We specialize in telecom applications, licensing source code stacks to OEMs and ODMs worldwide for VoIP, ISDN, Q.931, Q.921, QSIG, Supplementary Services, ML-PPP, PPP, Frame Relay, T1 RBS, E1 CAS R2, and X.25.

Contact Us:
T: +1.512.373.4224
F: +1.512.788.5660
sales@telecom-intl.com