Datasheet

ISDN-BRICKS

ISDN-Bricks is a portable software package implementing the signaling protocols in user side endpoint equipment and in network side switches (Central Offices, Local Exchanges, PBX's) of Integrated Services Data Networks (ISDN).

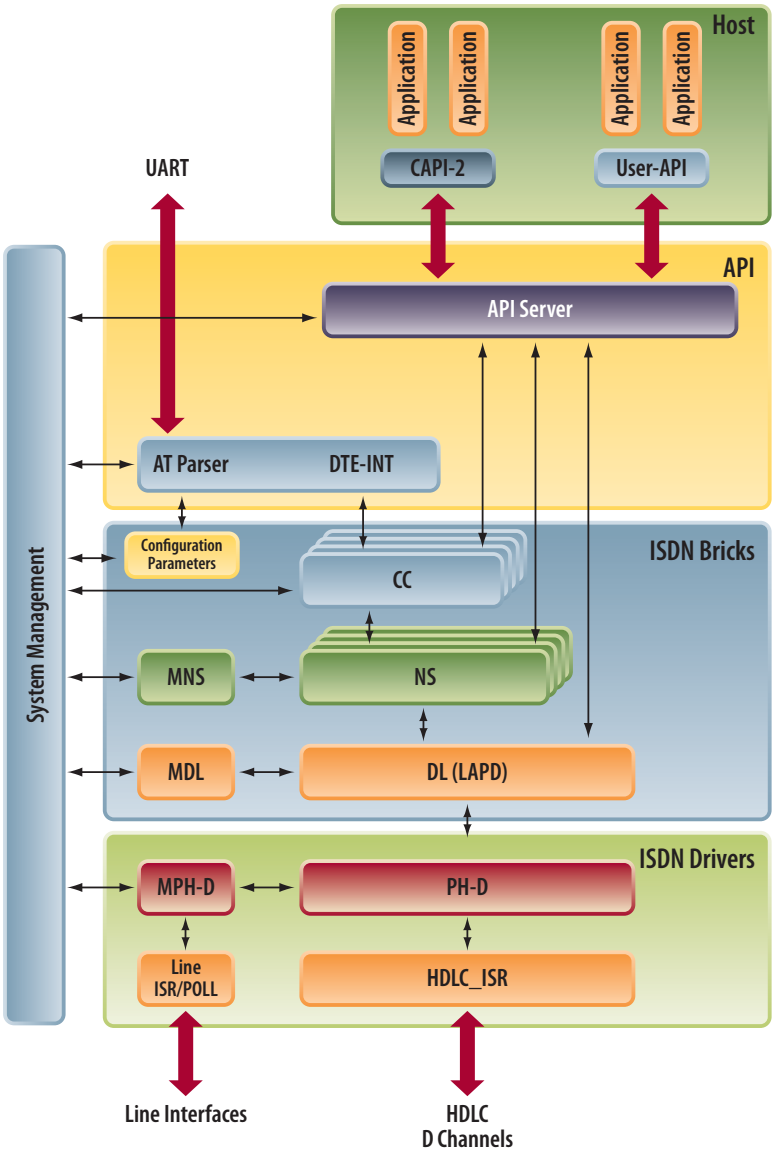
ISDN-Bricks is fully compliant with ITU-TS specifications Q.921, Q.931, and Q.932 and with ETSI standards ETS 300 125 and ETS 300 403. By supporting most of the variants in use, ISDN-Bricks covers the global requirements for ISDN signaling.

ISDN-Bricks also supports Basic Rate Interfaces (BRI) Uo and So as well as Primary Rate Interfaces (PRI) E1 and T1.

The ISDN-Bricks architecture is based on Enea's NETBRICKS architecture using object-oriented design techniques and a message-passing mechanism for inter-entity communication. ISDN-Bricks is designed to process a rough synchronous byte stream or to support an HDLC controller. Interfaces to many commercial operating systems are available, including AMX®, Nucleus®, Enea OSE®, PSOS+®, RTC®, VRTX®, VxWorks®, and others.

ISDN-Bricks is designed for the OEM market. Enea can develop custom products based on ISDN-Bricks technology according to customers' specifications. For more information please visit www.enea.com/netbricks.

ISDN-BRICKS SOFTWARE ARCHITECTURE



ISDN VARIANTS

ISDN-Bricks conforms to the following carriers' network specifications:

- France Telecom VN2, VN3, VN4, EuroISDN (EuroNumeris)
- Deutsche Telekom 1TR6 (FTZ 1987) and EuroISDN (BAPT223)
- TELECOM AUSTRALIA BRI and PRI
- Japan NTT INS-NET64 and INS-NET1500
- Japan KDD
- Swiss PTT SWISSNET-2
- Q.SIG BC and GF (special option)
- Hong Kong Telecom CR13
- Korea
- ETSI-1 and ETSI-2 for all EuroISDN carriers (NET3 and NET5) covering: Austria, Belgium, Denmark, Italy, Ireland, Norway, Portugal, Spain, Sweden, The Netherlands, and U.K

- North America:
  - AT&T 4ESS (PRI only) AT&T TR41459, August 1995
  - AT&T 5ESS5 Custom AT&T 801-802-100, June 1988
  - AT&T 5ESS9 National AT&T 235-900-341 Feb 94 and 235-900-342 Dec 94
  - AT&T 5ESS10 Custom AT&T 235-900-342 Dec 94 and 235-900-343 v3.01 March 96
  - Bellcore National 1 sr-nwt-001953 issue 1, June 91
  - Bellcore National 2 sr-nwt-002361 issue 1 Dec 92 and sr-nwt-002343 issue 1 June 93
  - Bellcore generic PRI TR-NWT-001268, Issue 1 Dec 91
  - Northern Telecom NIS s208-5 (BCS 32) issue 1.0 1990 and NIS a211-1 v3 Dec 1990
  - Support for NFAS, Maintenance, D channel backup for PRI in ATT 4ESS, ATT 5ESS9, AT&T 5ESS10, Northern Telecom, National ISDN 2

The variants are selectable at compile time (any between the available variants) and at configuration time on a per access base.

SUPPLEMENTARY SERVICES

ISDN-Bricks supports the following supplementary services at network signaling level:

ETSI: Basic release means that no specific option is required. Supplementary services means that the ETSI Supplementary services option is required.

NAME OF SUPPLEMENTARY SERVICE	ETSI STANDARD	STATUS
Multiple Subscriber Number (MSN)	ETS 300 050	Basic release
Call Waiting (CW)	ETS 300 056	Supplementary services option
Sub-addressing (SUB)	ETS 300 059	Basic release
Direct Dialing In (DDI)	ETS 300 062	Basic release
Calling Line Identification Presentation (CLIP)	ETS 300 089	Basic release
Calling Line Identification Restriction (CLIR)	ETS 300 090	Basic release
Connected Line Identification Presentation (COLP)	ETS 300 094	Supplementary services option
Connected Line Identification Restriction (COLR)	ETS 300 095	Supplementary services option
Closed User Group (CUG)	ETS 300 136	Supplementary services option
Call Hold (HOLD)	ETS 300 139	Supplementary services option
Advice Of Charge at call-setup time (AOC-S)	ETS 300 178	Supplementary services option
Advice Of Charge during the call (AOC-D)	ETS 300 179	Supplementary services option
Advice Of Charge at the end of a call (AOC-E)	ETS 300 180	Supplementary services option
Conference call, add-on (CONF)	ETS 300 183	Supplementary services option
Three-party (3PTY)	ETS 300 186	Supplementary services option
Call Forwarding Busy (CFB)	ETS 300 199	Supplementary services option
Call Forwarding Unconditional (CFU)	ETS 300 200	Supplementary services option
Call Forwarding No Reply (CFNR)	ETS 300 201	Supplementary services option
Call Deflection (CD)	ETS 300 202	Supplementary services option
Explicit Call Transfer (ECT)	ETS 300 367	Supplementary services option
User-to-User Signaling	ETS 300 102	Basic release
Call Suspension / Resuming (re-establishment)	ETS 300 102	Basic release

NORTH AMERICA:

- AT&T Custom 5ESS5, 5ESS10: HCDT = Hold Conference Drop Transfer, AT&T 801-802-100, June 1988 (5ess5), 235-900-343 v3.01 March 96 (5ess10).
- AT&T National (5ESS9), NI1, NI2: Hold, Retrieve. K-HOLD, K-RELEASE, K-SETUP, K-SETUP-ACK for EKTS (Electronic Key Telephone Service) support, AT&T 235-900-341 Feb 94 (5ess9), sr-nwt-001953 issue 1, June 91 (NI1), sr-nwt-002361 issue 1 Dec 92 (NI2).

FEATURES

ISDN-BRICKS consists of the following software components:

- MPH and PH : Physical framer and transceivers and HDLC drivers with an optional HDLC by software solution
- DL: Data Link
- NS: Network Signaling
- CC: Call Control

PH implements BRI layer 1:

- 'F' User side Finite State Machine
- 'G' Network side Finite State Machine
- 'J' Digital Section Finite State Machine
- 'ET' End Termination Finite State Machine
- Alarm reporting
- Statistics reporting
- Provisioning and re-provisioning
- Support for:
  - Alcatel Microelectronics: MT20172 (So/To), MT20276 (Uo 2B1Q) MT20277 (Uo 4B3T)
  - AMD 79C30 (So/Uo)
  - Dallas Semiconductor: 2152 (T1), 2154 (E1), 21x52 (T1), 21x54 (E1)
  - Infineon: SBCX (So/To), IEC-Q (Uo), QUAT-S (So/To), ISAC-S (So/To), IPAC (So/To), FALC (E1, T1, J1), QUAQ-FALC (4xE1, 4xT1, 4xJ1), ACFA/IPAT (E1, T1)
  - Lucent Microelectronics: SCNT1 (T7256)
  - Mitel MT8930 (So/To), MT89790 (E1), MT9079 (E1)
  - Motorola: MC145572 (Uo), MC145574 (So/To),
  - PMC-Sierra: Comet PM4351 (E1/T1), PM4314 (8xLIU) + PM6388 (8xE1)
  - STM: ST5421
  - VLSI Technology: VIP (So)
- Standard: ITU-TS I.430 (So/To), I.431 (E1), ANSI T1

PH implementations for a synchronous full duplex bit stream:

- Frame delimitation (HDLC frame)
- HDLC bit stuffing and un-stuffing
- CRC16 calculation and error detection
- Error Rate Monitoring (Alignment and Normal)
- Provisioning and re-provisioning
- PH and Management APIs
- Support for:
  - Alcatel Microelectronics MT20280 (3xHDLC), MT20285 (3xHDLC)
  - AMD 79C30
  - Dallas: DS21x54, DS21x52
  - Infineon ISAC-S, IPAC, FALC, QUAD-FALC, HSCX (2xHDLC), ESCC2 (2xHDLC), ESCC4 (4xHDLC), ESCC8 (8xHDLC), Munich-32 (32xHDLC), Munich-128 (128xHDLC)
  - Motorola MC683xx (2 ‡ 32xHDLC), Power QUICC I (4 ‡ 64xHDLC) and II (4 ‡ 256xHDLC)
  - PMC-Sierra: Comet PM4351 (3xHDLC), PM6388 (8xHDLC)
  - STM: 5451
  - Zilog Z85230
- Standard: ISO HDLC 3309

Data Link (DL) supports the following functions:

- TEI management
- Core DL
- Error correction
- Provisioning and re-provisioning
- APIs
- Standards: ITU-TS Q.921, ETSI ETS 300 125

Network Signaling (NS) supports the following functions:

- Access on demand
- Q.931 syntax encoder decode
- Q.931 finite state machine
- Provisioning and re-provisioning
- APIs
- Standards: ITU-TS Q.931, ETSI ETS 300 403

Call Control (CC) supports the following functions:

- Management of call parameters
- Provisioning and re-provisioning
- APIs
- Standards: ITU-TS Q.931 and ETSI ETS 300 403

ISDN-BRICKS SOFTWARE ARCHITECTURE

- System management entity SM
- ISDN drivers:
  - MPH Physical management entity (line interface)
  - PH entity (HDLC):
    - HDLC interrupt service routine
    - PH entity
- ISDN stack:
  - MDL Data Link Management entity
  - DL entity (LAPD)
  - MNS Network Signaling Management entity
  - NS Network Signaling entity
  - CC Call Control entity
- API:
  - API-SERVER entity
  - DTE-INT entity (AT parser)

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