BLACK BOX®
NETWORK SERVICES

E1/G.703 to IP Converter

POWER   ETHRX   ETHTX   E1RX   E1TX

E1 Over IP Interconnect for Voice and Data

The ICS101AE encapsulates full and fractional E1 and TDM circuits, along with their framing and signaling bits, into IP packets. The ICS101AE Over IP, E1 Over Ethernet connection provides for the transparent interconnection of PBXs, Telecom Switches and E1 based communication systems via LANs, WANs, MANs, and Wireless Ethernet. WAN Protocols, such as PPP and Frame Relay, that utilize HDLC framing are able to be encapsulated with HDLC Over IP.

E1 Private Line Services over IP

Businesses incur significant recurring monthly costs for rigid-bandwidth leased lines used purely for the interconnection of PBXs and telecom switches. The ICS101AE provides enterprises with the ability to interconnect their existing phone systems over flexible bandwidth lines that are used to carry data, voice,

and video. The Voice Only Leased Line Toll charges assessed by long distance and local carriers are eliminated by transporting voice and fax traffic across the enterprise intranet, LAN, Metropolitan-Area Network, or WAN.

- Corporate Branch Office Interconnect of Phone System over Enterprise WAN
- Education District Networking of Phone Systems

CLEC PBX Back Haul

The ICS101AE provides CLECs with a way to back haul a E1 DS0s from a customer's phone systems over their Internet connection. The back hauled DS0s are connected to the CLECs phone switch for connection to the Public Switched Telephone Networks. Competitive Local Exchange Carriers are able to provide customers with a very economical alternative to the local Phone Company since the Local Loop charges of around $40/line per month for each phone line are consolidated.

International Toll Bypass

The ICS101AE most dramatic cost savings is when it is used for the international interconnections of TDM based telecommunication equipment. The ICS101AE is interoperable with the TDM standard T1.

Transparent Interconnect

ICS101AE transparent operation maintains the proprietary signaling required to support PBX features such as call conferencing, call forwarding, caller ID and SS7. Legacy phone equipment investment is preserved. Transparent support for Modem, Fax, or Data circuits. The ICS101AE has a E1 interface that connects directly to the E1/DS1 interface of Phone Systems or E1 Data Communication Equipment.

Lossless Data Compression

The ICS101AE detects idle/redundant data within each DS0 resulting in a 40 to 1bandwidth savings. TDMoIP bandwidth is not consumed by silent or redundant circuits.

Management

Management of the ICS101AE is accomplished with a Command Line Interface that is accessed through a Console or Telnet connection. Templates of the most common configuration provide for an Edit and Paste configuration.

Specifications

IC101AE

LAN Network Interface —
- 10BASE-T Ethernet

LAN Network Protocols Supported —
- IP, TCP, UDP, ICMP, BOOTP

E1/Fractional E1 Specifications —
- Framing - CRC4 or FAS or UNFRAMED
- Coding - HDB3 or AMI
- Supports DS0 assignments from 1 to 31

E1 Over IP Protocol —
- TDM Over IP - TDMOIP
- Circuit Extension Services Over IP - CESOIP
- HDLC Over IP - HDLCOIP
- Frames Per Packet Configurable 8 to 40
- 1 millisecond 8 E1 frames
- 5 millisecond 40 E1 frames

Regulatory —
- Safety -IEC60950
- EMC - CFR 47 Part 15 Sub Part B:2002
  EN55022:1994+A1&A2
  EN55024, ICES-003 1997
  CISPR 22 Level A
- Telecom - TBR12, TBR13
- CE

Quality of Service Support —
- IP Type of Service (TOS) CLI configurable
- IANA Registered UDP Port 3175

TFTP Online Upgrade Capable (FLASH ROMs) —
- ICS101AE is fully operational during upgrade

Management
- Telnet support with Edit and Paste Template Files
- Console Port for Out of Band Management
- SNMP support (MIB I, MIB II)
- Remote configuration, monitoring, & reset

Power —
- 24VAC, 1.0A
- Optional 12-36 VDC 1.0A
- Optional -48V 0.25 Amp
International Adapters Available

IC104AE

LAN Network Interface —
- 10/100 BaseT Full/Half Ethernet
- Autonegotiation or Configurable Speed and Duplex

LAN Network Protocols Supported:
- IP, TCP, UDP, ICMP

Duplicate Packet Transmission:
- 1 to 4 Duplicates Provides for resilient performance through a lossy interconnect.

E1/Fractional E1 Specifications:
- One to Four Port CSU/DSU Models
- Connects directly to E1 Line or to a DS1 with a Crossover Cable
- Framing - CRC4, FAS or Unframed
- Coding - HDB3or AMI
- Supports DS0 assignments from 1 to
- DS0 Configuration x-y,z...

E1 Over IP Protocol:
- TDM Over IP
- Circuit Extension Services Over IP - CESOIP
- HDLC Over IP - HDLCOIP
- Frames Per Packet from 8 to 40
- Low Latency Mode:
  1 millisecond - 8 E1 frames
- Max Payload Mode:
  5millisecond - 40E1 frames

Regulatory:
- Safety -IEC60950
- EMC - CFR 47 Part 15 Sub Part B:2002
  EN55022:1994+A1&A2
  EN55024, ICES-003 1997
  CISPR 22 Level A
- Telecom - TBR12, TBR13
- CE

Lossless Data Compression:
- Detects idle and redundant data within each DS0 continuously
- Interconnect bandwidth is not consumed by silent or redundant data within the voice circuits
- Low Latency 8 to 1 Compression
- Maximum Compression setting 40 to 1

Quality of Service Support:
- IP Type of Service (TOS) CLI configurable
- IANA Registered UDP Port 3175 TFTP Online Upgrade Capable (FLASH ROMs)
- IPTube is fully operational during upgrade

TFTP Upgrade Capable (Flash ROMs):
- IC104AE is operational during upgrade

Management:
- Telnet support with Edit and Paste Templates
- Port for Out of Band Management
- SNMP support (MIB I, MIB II)
- Remote configuration, monitoring, & reset

Console Port:
- RJ45 to DB9 Female DCE adapter shipped with product. Enables direct connection to Com1.

Power:
- 15VDC, 1.6A; International Adapters Available
- 24-36 VDC Optional
- -48 VDC Optional
- Hot Standby with 2nd Power Module

Dimensions:
- 14" (L) x 5.5" (W) x 2.50" (H)

Ordering information

ITEM	CODE
E1 to IP Converter, 1-Port	ICS101AE
E1 to IP Converter, 4-Port	ICS104AE

Black Box Network Services - The world's largest network services company

We are, with 25 years of experience, the world leader in network infrastructure services.

On the Phone — no charge, answer calls in less than 20 seconds, find the right product with our technical experts.

On-site — superior design and engineering, Certified installations, end-to-end service.

On-line — receive technical knowledge on-line, including technology overviews, Black Box Explains and the Knowledge Box.

Most comprehensive TECHNICAL SUPPORT — our best Product! Free hotline TECH SUPPORT!

The world's best customer service — Custom design services and products, the best warranties, money-saving discount programs.

BLACK BOX exclusives — Certification Plus. Guaranteed-for-life products and services.