



voipXess PRI

The TDM demarcation point for enterprises & carriers

Istanbul, April 2016

- Introduction
- Solutions
- Products



VoIP gateways bridging the technologies

Enterprise

Easy migration from TDM to VoIP

VoIP, IP & TDM

Interoperability

Security

Backup



Carrier

VoIP, IP & TDM

Clear demarcation point

Interoperability

Security

Management

Enabling TDM to VoIP interconnection

- ISDN Migration
- Least Cost Routing
- Enterprise Session Border Controller
- Interconnection
- Media Gateway
- Emergency Backup

Yesterday ISDN - tomorrow VoIP

- Existing PBX infrastructures
 - IP/VoIP network ► lower operating costs & new services
 - New infrastructure ► high investments, migration hassles & usability changes
 - TDM offers ► broader product portfolio
 - Migration path ► Confidence in new technologies

How to migrate
customers?

ISDN migration is more than just changing an interface

- Optimized gateway *voipXess* for
 - Replacement of ISDN PRI lines
 - Integration of backup PRI lines
 - E-SBC
 - Low installation and operation costs
- ISDN is not always ISDN
 - Full ISDN quality with high precise 5ppm clock
 - All ISDN supplementary services
- Interworking
 - Number format adaptation
 - Supplementary services
 - End-to-End SIP Trunking

Deregulation means Least Cost Routing

- Deregulation of the telecom markets
 - Freedom of choice: price? Quality? Availability? VoIP? TDM?
 - Interoperability: signaling, media, cost centers, advice of charge
 - Management: cost centers, ensure savings vs. accounting

*How to integrate Least
Cost Routing?*

Least Cost Routing without any restrictions with *voipXess*

- Selection of any carriers
 - All VoIP & TDM carriers & all methods
 - Time dependent routing
 - Failover to multiple carriers
- Interoperability
 - Ensure signaling and media interoperability
- Cost centers
 - Cost accounting & advice of charge for hotels, hospitals etc.



Interoperability and security in today's VoIP networks

- Demarcation point
 - WAN vs. LAN
 - Interoperability
 - Security
 - Bandwidth control
 - Management

Who is responsible?

voipXess's E-SBC features ensuring secure VoIP networks



- Demarcation point
 - Physical ports for WAN & LAN
- Interoperability
 - Header & number manipulation
 - Normalization
 - Transcoding
- Security
 - Topology hiding for signaling & media
 - Encryption
 - IP & VoIP firewall
- Management
 - Bandwidth control & codec adaptation
 - Routing incl. LCR and failover
 - Emergency failover to TDM & LTE/UMTS
 - Provisioning & recording

Different networks - different signaling

- Interconnect different networks
 - Signaling protocols ► SIP, H.323, DSS1, Q.931, SS7
 - Interoperability ► signaling, media
 - Network topologies ► number of trunks, number of lines

*How to do the
interconnection?*

The ideal interconnection network element *voipXess*

- Topology conversion
 - VoIP ↔ TDM ↔ SS7
 - Signaling and/or trunking
- Routing
 - Call routing, LCR, QoS routing
 - Failover routing
 - RADIUS routing
- Signaling protocol conversion
 - SIP, H.323, DSS1, Q.931, SS7
 - Supplementary service interworking
- Media transcoding
 - G.711, G.729, G.726, T.38, ...



Next generation network interconnection for VoIP & TDM networks

- Scalable & carrier class Media Gateway
 - Multiple POPs ► trunking and/or signaling
 - Few E1s per POP ► high availability features
 - Media ► transcoding
 - Costs, power consumption, space ► optimized media gateways

Various POPs, Small
number of E1s

Small scalable media gateway solutions for trunking and signaling

- Topology conversion
 - VoIP ↔ TDM
 - Signaling and/or trunking
- Media transcoding
 - G.711, G.729, G.726, T.38, ...
- Gateway control
 - MGCP & SIGTRAN
- High availability
 - Redundant power supply
 - Distributed processor & IP/TDM architecture
- Optimized media gateway
 - 19'' 1U chassis for 2 to 8 E1s
 - Low power consumption

Voice is a mission critical communication service

- Temporarily unavailability of IP access
 - SIP trunking ► no incoming & outgoing external calls, no emergency calls
 - Hosted PBX ► no internal & external calls at all
 - Emergency ► defined procedures not working

*What happens if my IP
connection is down?*

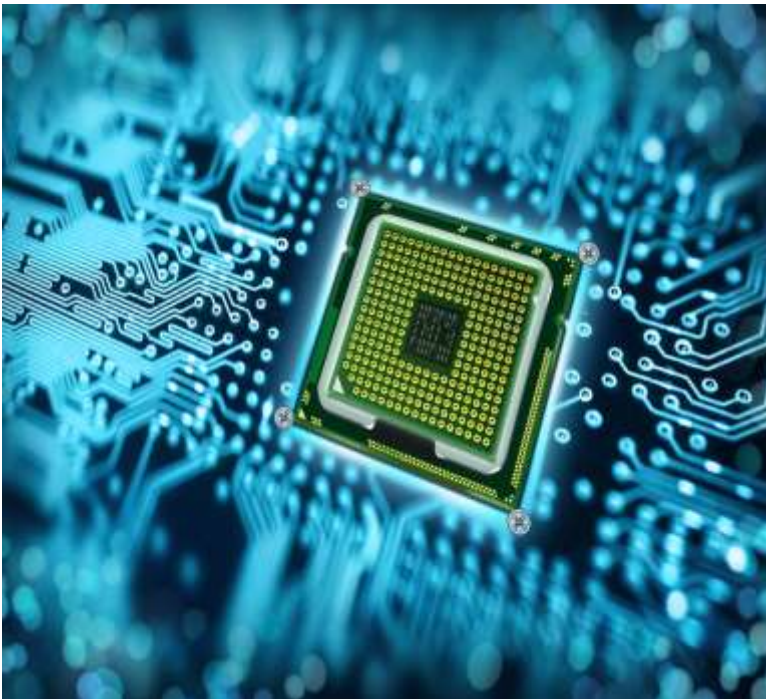
Integration of physical independent backup access with *voipXess*

- Backup using LTE & UMTS
 - Physically independent of fixed line networks
 - Easy integration in existing mobile networks
 - Establish IP access with high bandwidth throughput
- Backup using E1
 - Using separate TDM network for incoming & outgoing calls
- Routing
 - Automatic failover routing
 - Automatic use of available access lines
- Integrated registrar
 - Emergency failover for hosted PBX users
 - Provides voice services in case of hosted PBX is down

Bridging TDM and VoIP

- Architecture
- VoIP Gateways
- Media Gateways
- E-SBC

Up-to-date design and architecture providing services and features today and tomorrow



- Processor
 - Quad-core ARM processor (1 GHz)
 - 1 GB RAM plus 8 GB Storage
- Interfaces
 - 1 x 10/100/1000 Mbit/s Ethernet
 - 1 x 10/100 Mbit/s Ethernet
 - 2, 4 or 8 x E1/T1 with high precise 5ppm clock
- Optimized design
 - Power consumption less than 10 Watt
 - Automatic power savings while idle
 - Passive cooling – no moving parts

VoIP gateway product line *voipXess*

- Signaling & Media
 - SIP, H.323, DSS1, Q.931, SS7
 - G.711, G.729, G.726, T.38, VBD
- Call Routing
 - Multilevel alternative, SIP & QoS routing
 - RADIUS
- Call Manipulation
 - Header & number manipulation
 - Codec translation & transrating
- General
 - Low power consumption (less than 10W)
 - Integrated SIP registrar & location server
 - E-SBC support
 - ISDN suppl. services conversion & simulation
 - Remote provisioning

VARIANTS

Model	E1	CC
voipXess 30	1	30
voipXess LCR 30	2	30
voipXess 60	2	60
voipXess LCR 60	4	60
voipXess 120	4	240
voipXess 180	6	240

INTERFACES

Ethernet	1 x 10/100/1000 Base-T RJ-45 1 x 10/100 Base-T RJ-45
ISDN	2, 4 or 6 E1 interfaces High precise 5ppm clock
Power	100-240 VAC, 15W

PHYSICAL PARAMETERS

Size (W x H x D)	431 x 43 x 203mm
Material	ABS
Mounting	19" 1U rack

ENVIRONMENTAL CONDITIONS

Temperature	+5° C to +40° C
Humidity	5% to 80% (non-condensing)

CERTIFICATIONS

EMC, Safety, CE

Media gateway *voipXess* for trunking and signaling

- Signaling & Media
 - MGCP, SIGTRAN
 - G.711, G.729, G.726, T.38, VBD
- Media Transcoding
 - Codec translation & transrating
- High Availability
 - Optional redundant power supply
 - Distributed processor & IP/TDM architecture
 - Passive cooling – no moving parts
- General
 - Low power consumption (less than 10W)
 - High precise E1 clock (5ppm)
 - Full IP & firewall capabilities
 - Remote provisioning

INTERFACES

Ethernet	1 x 10/100/1000 Base-T RJ-45
	1 x 10/100 Base-T RJ-45
ISDN	2, 4 or 8 E1/T1 interfaces
	High precise 5ppm clock
Power	100-240 VAC, 15W
	Low power consumptions (< 10 W)

PHYSICAL PARAMETERS

Size (W x H x D)	431 x 43 x 203mm
Material	ABS
Mounting	19" 1U rack

ENVIRONMENTAL CONDITIONS

Temperature	+5° C to +40° C
Humidity	5% to 80% (non-condensing)

CERTIFICATIONS

EMC, Safety, CE

voipXess SBC for today's and tomorrow's voice & IP networks

- Signaling & Media
 - SIP, H.323, DSS1
 - G.711, G.729, G.726, T.38, VBD
- Call Engine
 - Header & number manipulation
 - Codec translation & transcoding
 - Multilevel alternative SIP & QoS routing
 - RADIUS
- Security
 - IP address & port blocking
 - Black / white list
 - Integrated firewall
- General
 - Low power consumption (less than 3W)
 - Integrated SIP registrar & location server
 - Optional LTE/UMTS & TDM backup

VARIANTS		
Model	CC	Codecs
voipXess SBC 30	500	30
voipXess SBC 60	500	60

OPTIONS	
voipXess PRI option	2 x E1 /T1 for TE/NT High precise 5ppm clock
voipXess LTE option	1 x LTE/UMTS up to 50 Mbit/s bandwidth

INTERFACES	
Ethernet	1 x 10/100/1000 Base-T RJ-45 1 x 10/100 Base-T RJ-45
Power	100-240 VAC, 5W

PHYSICAL PARAMETERS	
Size (W x H x D)	93 x 31 x 60mm
Material	ABS
Mounting	Desktop

ENVIRONMENTAL CONDITIONS	
Temperature	+5° C to +40° C
Humidity	5% to 80% (non-condensing)

CERTIFICATIONS	
EMC, Safety, CE	



**THANK YOU
FOR YOUR TIME**

LinkXess
intelligent access technologies