

# NetBorder™ EXPRESS

## T1/E1 SIP to TDM Gateway Cards

### Introducing the industry's first affordable TDM to SIP Gateway on a card.

Sangoma's NetBorder Express portfolio is a complete SIP-compliant VoIP Media Gateway solution, delivering cost effective solutions for developers, system integrators, and OEMs in a convenient PCI or PCI Express form-factor.

Empowered by Sangoma's NetBorder Express Software, NetBorder Express TDM to SIP Gateway Cards include G.168 Telco-Grade Echo Cancellation with 128 ms echo tails without call capacity reduction to provide optimum operating conditions for applications, such as Speech Recognition IVRs and International Toll Bypass. NetBorder Express cards also feature Sangoma's award-winning field upgradeable crash-proof firmware design.

NetBorder Express communicates with applications such as IP-PBXs, Speech Enabled IVRs, Conferencing Servers, Contact Center or Trunking Gateways directly with the ubiquitous SIP control protocol to reduce deployment time, complexity and cost for next generation network application deployments.

Available in one to eight ports of T1/E1, NetBorder Express Gateway Cards are an excellent value for installations ranging anywhere from 24 to 240 simultaneous calls. For larger systems, several gateway cards can be combined in the same server to support up to 960 simultaneous calls. (Analog and ISDN BRI Gateway cards are coming soon.)



Single Port T1/E1 NetBorder Express Gateway Card with PCI-Express Interface. Supports up to 30 Simultaneous Calls. (Part Number: NBE030FA101DE)

A simple ordering process, coupled with Sangoma's installation and basic configuration support, plus a lifetime hardware warranty make NetBorder Express the perfect gateway building block for even the smallest SMB on a limited budget. A flexible upgrade path to the full NetBorder Software Suite also translates into unparalleled price performance for the largest enterprise or contact center customer.

**Try it now: Turn your existing Sangoma T1/E1 card into a SIP to TDM gateway. Download a free trial version of NetBorder Express at: [www.sangoma.com/nbe\\_trial/](http://www.sangoma.com/nbe_trial/).**

### How to Order:

N° of T1/E1 Ports	Includes	BUS	SKU
1	NetBorder Express for up to 30 simultaneous calls, 1-port T1/E1 Card	PCI	NBE030-F-A101D
1	NetBorder Express for up to 30 simultaneous calls, 1-port T1/E1 Card	PCIe	NBE030-F-A101DE
2	NetBorder Express for up to 60 simultaneous calls, 2-port T1/E1 Card	PCI	NBE060-F-A102D
2	NetBorder Express for up to 60 simultaneous calls, 2-port T1/E1 Card	PCIe	NBE060-F-A102DE
4	NetBorder Express for up to 120 simultaneous calls, 4-port T1/E1 Card	PCI	NBE120-F-A104D
4	NetBorder Express for up to 120 simultaneous calls, 4-port T1/E1 Card	PCIe	NBE120-F-A104DE
8	NetBorder Express for up to 240 simultaneous calls, 8-port T1/E1 Card	PCI	NBE240-F-A108D
8	NetBorder Express for up to 240 simultaneous calls, 8-port T1/E1 Card	PCIe	NBE240-F-A108DE

Software Upgrades and Sangoma Hardware Add-ons are available. Ask your sales representative for details.

**Because it must work!**



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## Technical Specifications

### Hardware

- Available in 1 to 8 ports of T1 or E1.
- Choice of PCI with Autosense Compatibility for 5 V and 3.3 V busses or PCIe Interface with single lane bus.
- Fully compatible with all commercially available motherboards—PCI-standard interrupt sharing without manual tuning.
- G.168–2002 Echo Cancellation in hardware included. Supports 1024 taps/128 ms tail per channel on all channel densities with DTMF decoding and tone recognition, voice quality enhancement, acoustic echo control, and adaptive noise reduction.
- Optimized per channel DMA streams and hardware-level HDLC handling unload the host CPU.
- 32-bit bus master DMA data exchanges across PCI interface at 132 Mbytes/sec for minimum host processor intervention.
- Ring buffer DMA handling for minimum host intervention and guaranteed data integrity on high volume systems.
- Dimensions: 2U Form factor: 120 mm x 55 mm for use in restricted chassis.
- Includes premium quality RJ45 cables and short 2U mounting clips for installation in 2U rack-mount servers.
- Power: 800 mA peak, operational 300 mA max at +3.3 V or 5 V.
- Temperature range: 0–50°C.

### Firmware

- Downloadable, crash-proof (Back-up ROM) FPGA programming with multiple operating modes. Add new firmware features when they become available.

### Software

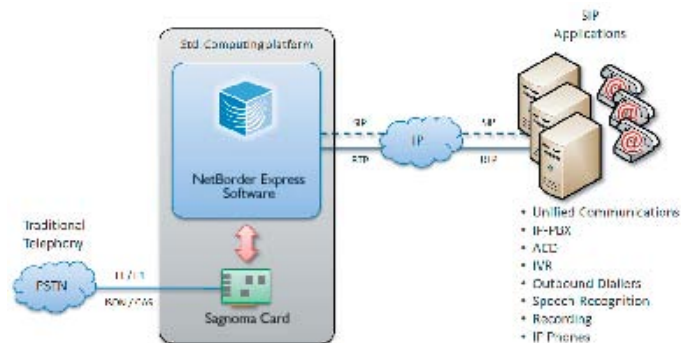
- Capacity from 24 up to 240 channels of simultaneous calls on a single card. Up to 960 per system.
- DTMF over RTP per RFC 2833. Custom tone detection and generation.
- RTP/RTCP per RFC 3550/3551.
- SIP Control Protocol per RFC 3261.
- PSTN protocol termination per ISDN PRI. Numerous variants including Euro ISDN, NI2, DMS, 5ESS. CAS and RBS signalling variants are coming soon.
- Open Protocol Translation and XML based routing rules.

### Operating Systems

- Windows® XP and Microsoft Server 2003.

### Management and Configuration

- Web Server, Web Services API, and configuration files for easy integration into OEM applications.



### T1/E1 Status Alarms

- RED: Telco Red Alarm Condition.
- OOF: Out of Frame.
- LOS: Receive Loss of Signal.
- AIS: Alarm Indication Signal.
- RAI: Remote Alarm Indication (Yellow Alarm).

### Diagnostic Tools

WANPIPEMON, System logs.

### Certification

- FCC Part 15 Class A, FCC Part 68, CISPR 22, EN 55022, Class A, CIPSR 24, AFIC-2016, IEC 60950. Technical certifications in Russia, Malaysia, and Australia.

### Warranty

Lifetime parts and labor on hardware. PLUS a 30-day “no questions asked” return policy.

### Production Quality

ISO 9002

09-2008