

Gateway to VoIP

Innovation in IP Communications

VoIP Gateways | Telecom Interface Boards | Media Processing | DataCom | Contact Center Software



©2012 Sangoma Technologies Inc.

This documentation is subject to change without notice, and Sangoma does not warrant that the material contained in this documentation is free of errors. Any errors found in this document should be reported to Sangoma in writing. *NetBorder* and *WANPIPE* are trademarks of Sangoma Technologies Inc. All other trademarks are the property of their respective owners.

Table of Contents

INTRODUCTION • Enabling Software-Based Communications	4
HARDWARE • Analog Telephony	5
HARDWARE • Digital Voice & Data Networking	7
HARDWARE • Digital Analog Hybrids / Transcoding	9
HARDWARE • Transcoding / Data Networking	10
HARDWARE • Data Networking	11
HARDWARE • Wireless / Specialty tools	12
MULTIPLEXERS • T3Mux	13
MEDIA GATEWAYS • NetBorder™	16
MEDIA GATEWAYS • SS7 Solutions	17
VOIP GATEWAYS • Vega Series / NetBorder Appliances	18
SUPPORT • Lifetime Warranty	19

Sangoma is the premium provider of voice and data connectivity components for software-based communication applications. Sangoma’s data cards, voice cards, gateways and connectivity software are used in leading PBX, IVR, contact center and data-communication applications worldwide. The product line represents a comprehensive toolset for deploying cost-effective, powerful, and flexible software communication applications.

SANGOMA’S MARKETS & CORRESPONDING PRODUCT LINES				
Routing/Data	Open Source Telephony	IP-PBX/IVR	Contact Center	Service Providers
<ul style="list-style-type: none"> Data Networking 	<ul style="list-style-type: none"> Analog Telephony Digital Telephony Digital-Analog Hybrids <ul style="list-style-type: none"> SS7 Transcoding Vega Series <ul style="list-style-type: none"> T3 Mux Wireless 	<ul style="list-style-type: none"> Analog Telephony Digital Telephony Digital-Analog Hybrids <ul style="list-style-type: none"> NetBorder™ CPA NetBorder™ Express <ul style="list-style-type: none"> Vega Series Wireless 	<ul style="list-style-type: none"> Analog Telephony Digital Telephony Digital-Analog Hybrids <ul style="list-style-type: none"> Netborder™ CPA NetBorder™ Express <ul style="list-style-type: none"> Transcoding Vega Series T3 Mux 	<ul style="list-style-type: none"> Analog Telephony Digital Telephony <ul style="list-style-type: none"> Transcoding <ul style="list-style-type: none"> SS7 Vega Series <ul style="list-style-type: none"> T3 Mux

Founded in 1984, Sangoma Technologies Corporation is publicly traded on the TSX Venture Exchange (TSX VENTURE: STC). With certifications and distribution partnerships around the world — Africa, Asia, Europe, Japan, Australia and both North and South America — Sangoma continues to bring innovation, scalability and higher density solutions to the global telecom market.

Sangoma’s optimized voice hardware quality, coupled with its innovative software building blocks, is unmatched and powering leading PBX, IVR and call center applications worldwide. Since 1984, Sangoma’s innovative product designs have provided the quality professionals trust. Choose the PSTN connectivity hardware with the most optimized, scalable, cross-platform device drivers available.

» **A200**

2 - 24 Port Expandable Analog Voice Card

A single PCI or PCI Express slot hosts the connection and ensures common synchronous clocking for all channels. Use this card in your PC to accommodate up to twenty-four simultaneous external calls.



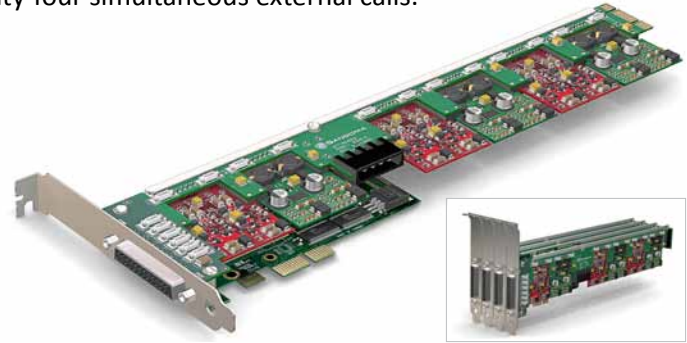
- Award-winning**
- Expandable**
- Echo Cancellation**
- Error-free Fax**

- Lifetime Warranty**
- Low Profile Option**
- Open Source Compatible**

» **A400**

2 - 24 Port Expandable Analog Voice Card

This voice card is the high-density version of the popular A200 model. You can use this card in your PC to accommodate up to twenty-four simultaneous external calls.



- Expandable**
- Echo Cancellation**
- Error-free Fax**

- Lifetime Warranty**
- Low Profile Option**
- Open Source Compatible**

» B600

Analog Voice Card

1 port of FXS and 4 ports of FXO. Introductory series optimized for small-budget installations. With B-Series hardware, Sangoma's premium audio and engineering quality is even more affordable.



-  Echo Cancellation
-  Error-free Fax
-  5 Year Warranty

-  Low Profile Option
-  Open Source Compatible

» USBfxo

2 Ports FXO in a convenient USB device. Part of the introductory series optimized for small-budget installations. Now, Sangoma's premium audio and engineering quality is even more affordable.



-  5 Year Warranty

-  Open Source Compatible

Sangoma's unmatched voice optimized hardware is powering leading PBX, IVR and call center applications worldwide. Sangoma's quality, reliability and support is well known in the developer community. Sangoma raised the bar in TDM voice communications with on-board, telco-grade, hardware echo canceller DSPs available on all voice cards and the most optimized, scalable, cross-platform device drivers available.

» A101

Single Port Digital Telephony Card

The Sangoma A101 Card supports **up to 30 simultaneous voice calls** or **2.048 Mbps** of full-duplex data throughput through a single T1, E1 or J1 line.



- Award-winning
- Echo Cancellation
- Lifetime Warranty

- Low Profile Option
- Open Source Compatible

» A102

Dual Port Digital Telephony Card

The Sangoma A102 Card supports **up to 60 simultaneous voice calls** over two T1, E1 or J1 lines or **up to 4.096 Mbps** of full duplex data throughput.



- Award-winning
- Echo Cancellation
- Lifetime Warranty

- Low Profile Option
- Open Source Compatible

» A104

Four Port Digital Telephony Card

Choose the Sangoma Quad Port A104 Card to support **up to 120 simultaneous voice calls** over four T1, E1 or J1 lines or **up to 8.192 Mbps** of full duplex data throughput.

» A108

Eight Port Digital Telephony Card






Choose the Sangoma Eight Port A108 Card to support **up to 240 simultaneous voice calls** over eight T1, E1 or J1 lines or **up to 16.384 Mbps** of full duplex data throughput.

» A500

Expandable 2 - 24 Port ISDN BRI Digital Telephony Card

Choose the Sangoma Expandable A500 BRI Card to support **up to 48 simultaneous voice calls** over **24 ISDN BRI** lines.



-  Award-winning
-  Echo Cancellation
-  Lifetime Warranty
-  Low Profile Option
-  Open Source Compatible

Introducing the world's first set of hybrid telephony cards for the PBX market. Providing a mix of analog and digital interfaces in a single card, it allows PBX vendors to deliver comprehensive connectivity options in very compact platforms.

» B601

Hybrid Voice Card



1 port of T1/E1/J1, 4 ports of FXO, and 1 Port of FXS. The B601 hybrid voice cards deliver customers a substantial cost savings by integrating both digital and analog interfaces on a single PCI or PCI Express slot.

» B700

FlexBRI Hybrid Voice Card



Ideal for small or home offices, Sangoma's industry-leading hybrid FlexBRI solution will seamlessly **integrate fax with your BRI** phone system using only one interface card.

- Award-winning
- Echo Cancellation
- Error-free Fax

- 5 Year Warranty
- Low Profile Option
- Open Source Compatible

Voice Transcoding

Convert simultaneous channels of transcoding from one type of codec (e.g. G.711) to another (e.g. G.729), without affecting latency or using up precious host CPU resources.

» D100

Transcoding Card

- 30 to 400 transcoding sessions
- G.711, G.722, G.722.1, G.723.1, G.726, G.729AB, GSM-FR, GSM-EFR, AMR, AMR-WB (G.722.2), iLBC, L8 (Linear 8K), L16 (Linear 16K)



- 5 Year Warranty

- Low Profile Option

» D150

Transcoding Card

- 30 to 400 transcoding sessions
- Compact 2U form-factor, stand-alone boxed enclosure, or PCI Mezzanine card option



» D500

Transcoding Card

- 400 to 2,000 transcoding sessions
- No Licensing Fees[†]
- Simple C API



Sangoma data hardware and WAN protocols have been field-tested against all major routers and data networks. For more than 10 years, Sangoma data solutions have been deployed amongst others in supervisory control and data acquisition applications (SCADA), point of sales/retail terminals, air traffic networking projects, and WAN routers. With unmatched debugging and diagnostic tools, Sangoma takes the guesswork out of WAN routing.

With their small footprint and wide protocol coverage, Sangoma's ADSL board is ideal for set top boxes, internet appliances and point of sales/retail terminals.

» S518

ADSL Modem Card



Fast, reliable and seamless broadband internet connection at speeds of **up to 8 Mbps** downstream and **1.5 Mbps** upstream.

5 Year Warranty
 Low Profile Option

[†]AMR codecs need to be indemnified by integrator

5 Year Warranty

Low Profile Option

» **A56**

56k/DDS Data Only Card



In rugged, extreme or remote environments, the A56 allows for integration of data inter-connect needs with applications, without an external router.

3 Year Warranty

Low Profile Option

» **A301**

T3/E3 Data Only Card



Ideal for installations that have outgrown their multiple T1 or DSL WAN links. ISPs or large enterprise sites can take advantage of T3/E3 connections, and benefit from data rates of up to 45 Mbps.

5 Year Warranty

Low Profile Option

Serial Data Card Interface

With support for X.25, datascopes, SNA, or a broadcast satellite feed — or for any other unique control and data acquisition project, such as radar control — Sangoma’s serial synchronous products can communicate and integrate mission-critical data to your applications.

» **A142**

Dual Serial Interface Card



- Two primary serial ports (V.35/X.21/RS232) to 8 Mbps
- Features added to support datascopes and applications

» **A144**

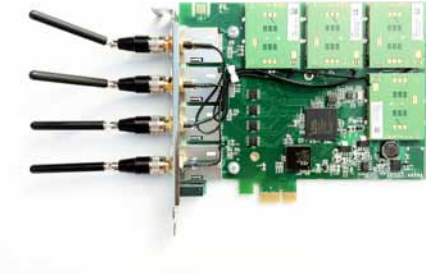
Quad Serial Interface Card



- Four primary serial ports (V.35/X.21/RS232) to 8 Mbps
- All four ports supported by one DB-78 connector
- Only one PCI or PCIe slot to support all four connections

Lifetime Warranty

Low Profile Option



» Wireless

W400 GSM Board for Voice and SMS

Use this simple USB clock to synchronize IP signals when you are not running PSTN hardware. It provides accurate clock timing for Asterisk and CallWeaver. Works with popular Open Source telephony projects.

- Assign PBX extensions and forward calls to mobile devices
- Send SMS messages over the GSM network
- Quick access to SIM cards on board

Sangoma complements its product line with specialty products, including a variety of telephony cables, fax synchronization cables, cabling tools, PCIe power adaptors, and line tapping utilities. These products are made available to ease the production and deployment of systems and applications based on Sangoma hardware.

» VoiceTime

USB Voice Synch Tool

Use this simple USB clock to synchronize IP signals when you are not running PSTN hardware. It provides accurate clock timing for Asterisk and CallWeaver. Works with popular Open Source telephony projects.



External USB Header



Internal USB Header

» T3Mux

M13 Multiplexer

T3Mux

The T3Mux is a M13 Multiplexer that interfaces with the DS3 network via two BNC coaxial connectors, one for Rx (Input) and one for Tx(Output). The T1 connectors are RJ48, there are two T1 ports per connector, each in a DSX pinout.

The T3Mux offers a simplified and user-friendly management console accessible via Ethernet or RS232. It features a VT100 terminal interface for system management, DS1 and DS3 Interface configuration.



» AGENT BRIDGE

Home Shoring

NetBorder™ AGENT BRIDGE

Enable Contact Center agents in remote locations quickly and cost effectively!

NetBorder Agent Bridge enables the fast and cost effective deployment of Contact Center agents at remote locations, whether at a small office behind a legacy PBX/key system or at home using regular phone lines.

The NetBorder solution is unique in its ability to bring the immediate benefits of enabling remote locations and home agents, without the significant time and costs of deploying Quality of Service (QoS) data networks all the way to the edge.

- *Native TDM or IP interface: NetBorder has its own cost effective gateway capability or can work with third party gateways*
- *Fast call connection time: agents are 'bridged' in and out of conversations with customers as calls get routed to them.*
- *Integrated reporting: remote agents appear the same way as 'brick and mortar' agents, yielding a unified view of the agents in the configuration and reports*

» CALL ANALYZER

Call Progress Analysis

NetBorder™ CALL ANALYZER

Fast and reliable real-time call classification and routing for the Outbound Contact Center.

Call Analyzer is a patent-pending Call Progress Analysis (CPA) engine that ensures fast and accurate automated call classification, even when reaching wireless phones, or systems with Color Ringback Tone. Improve the efficiency of your agents and make sure your customers interaction with your organization is of the highest caliber.

Call Analyzer's CPA engine quickly and accurately determines the outcome of call attempts. Whether it's voice mail, a live human, or a special intercept tone that answers the call, NetBorder Call Analyzer functions much like a human brain: it adapts to a wide variety of noise conditions, ringing patterns, and telecom network conditions.

NetBorder Call Analyzer delivers the highest quality CPA results, regardless of whether your system is running over a traditional telephony interface or in a pure VoIP network.

 Award-winning

The NetBorder suite allows SIP-based applications to seamlessly connect to external devices and networks. SIP application vendors worldwide use NetBorder Express for compact and cost effective TDM-to-SIP gateway capabilities, and use NetBorder Call Analyzer and NetBorder Agent Bridge to optimize operations of IP Contact Centers.

» NETBORDER EXPRESS

SIP to TDM Gateway

NetBorder™ EXPRESS



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

Our 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 our 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.

- Supports: Analog, Digital BRI, Digital T1/E1/J1 – PRI & R2
- Certified for Microsoft Lync 2010

 Award-winning



Sangoma's SS7 products allow system integrators and operators to build enhanced services in the most economical and flexible way. SS7 solutions leverage the power of open source telephony combined with cost effective hardware and software from Sangoma to provide the infrastructure required by today's most demanding applications.

» SS7

Signalling and Media Gateway



SS7 Media Gateway is a scalable, cost-effective solution that fully integrates with open-source software telephony engines like Asterisk® and FreeSWITCH, while providing the reliability of an embedded proprietary SS7 stack.

The Sangoma SS7 Media Gateway also acts as an SS7 to ISDN Converter to convert PRI or BRI to SS7 for PSTN access and enables an SS7 IVR to be built on top of SS7 TDM Lines.

Sangoma SS7 can be used as a:

- *VoIP to SS7 Gateway (So an SS7 link can talk to your VoIP system)*
- *SS7 to ISDN Converter (So SS7 links can communicate with PRI or BRI for PSTN Access)*
- *SS7 IVR*

» VEGA SERIES

Media Gateways

Our Vega VoIP Gateway portfolio supports analog, ISDN Basic Rate and ISDN Primary Rate interfaces for North American and European standards.

The Vega range allows businesses to reduce their telephony communications costs by routing inter-site calls over their given choice of IP network.



- **Vega50** Analog or BRI Gateway (2–10 Ports)
- **Vega100** E1/T1 Digital Gateway (1 E1/T1)
- **Vega200** E1/T1 Digital Gateway (2 E1/T1)
- **Vega400** E1/T1 Digital Gateway (4 E1/T1)
- **Vega5000** Analog Gateway (24 or 48 FXS & 2 FXO)

» SS7 APPLIANCE

SS7 to SIP

The NetBorder SS7 Gateway allows telecom service providers to introduce VoIP in networks with transcoding capabilities, with this elegant, self-contained, and cost-effective appliance.

Available in 2 form factors:



- **1U** (For up to 8 E1/T1)



- **2U** (For up to 32 E1/T1)



e^mpowered by
SANGOMA

» LIFETIME WARRANTY

30-DAY “NO-QUESTIONS-ASKED” RETURN POLICY

We are so confident in the quality of its premium voice and data cards, that if by some chance an issue arises with Sangoma hardware, engineers are available at no cost to guide you to a resolution. That level of support cannot be found elsewhere.

Sangoma A-Series hardware* comes with a lifetime warranty for replacement and repair from the date of registration. We rigorously test all cards to ensure our customers always receive the highest quality products.

The lifetime warranty program includes a no questions asked 30-day money back guarantee, Sangoma’s renowned free technical support, and free replacement in the unlikely event of a defect.

To qualify for Lifetime Warranty protection, the product must have been purchased from an Empowered by Sangoma partner and registered online. Look for companies proudly displaying an Empowered by Sangoma logo.

**With the exception of A56 and A301*



Innovation in IP Communications

For more information:

Call **+1 905 474 1990** x2 for Sales

Visit **sangoma.com**