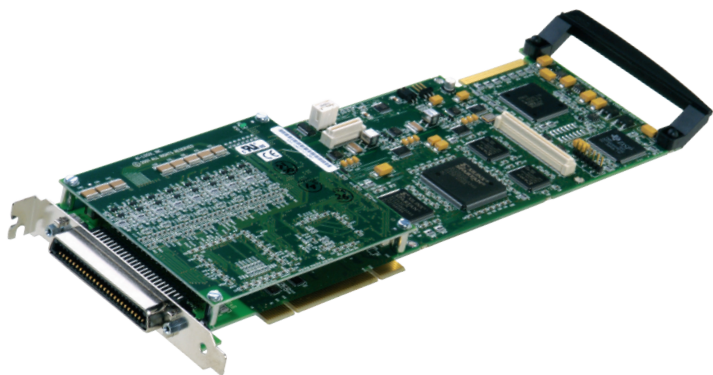# AudioCodes Enabling Technology Products

SmartWORKS™ NGX Single Card Solution to Passively Record Proprietary PBX Extensions

- **Multiple PBX Support**
- **Firmware Upgradeable to any PBX**
- **Wide Spectrum of Trigger Events**
- **Summation**
- **CODEC Support**

NGX Application Model
Applied Use: The SmartWORKS™ NGX is perfectly suited for information centers, financial trading centers or call centers where tapping behind a proprietary PBX is required.

The **SmartWORKS™ NGX** is an all-in-one resource for logging behind a PBX. Every key pressed, call taken, and telephone action performed by an agent is automatically decoded and sent to the recording application. A powerful set of features, combined with PBX integration, makes the NGX a true single slot solution for call logging application providers.

TAP ENVIRONMENT

The NGX is designed for tapping behind a proprietary PBX. Residing between the PBX and agent phones, the SmartWORKS™ NGX's high impedance receivers record both sides of a call without interrupting service. The NGX is available in 8, 16, and 24 port configurations. The SmartWORKS™ API supports a total of 512 channels per system. As a result, the SmartWORKS™ NGX is ideal for low to high-density environments.
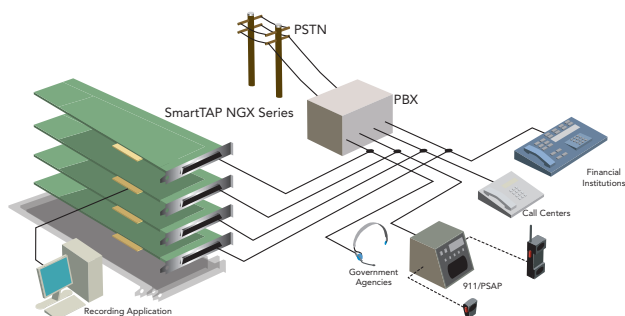
EXTENSIVE PBX SUPPORT

Designed with international deployment in mind, the SmartWORKS™ NGX taps 2-wire, 4-wire, BRI and full duplex PBX's. The list of PBXs the NGX supports is constantly growing. Contact your AudioCodes sales representative for more information.

BUILT IN PERFORMANCE MONITORING

The SmartWORKS™ API provides framer alarms and network statistics to pass easily into performance monitoring applications. Event driven framer alarms are generated with a loss of signal condition. Network statistics are available for both sides of the conversation, incoming and outgoing. Statistics such as synchronization errors, line amplitude, noise or clipping are available via a simple API function call.

COMMON SMARTWORKS™ API FEATURES:

- Media Control - CODECS
- Tone Detection / Generation
- CallerID/FSK/DTMF/MF Detection
- Activity / Silence Detectors
- Switching (H.100 and MVIP)
- Automatic Gain Control (AGC)
- Automatic Volume Control (AVC)
- Stereo Recording
- Echo Cancellation
- Call Progress Monitoring (CPM)
- Full-duplex Channels
- Media Streaming
- Live Monitoring
- Start/Stop Call Recording Triggers

AudioCodes
BLADE BUSINESS LINE

SmartWORKS™ NGX

SPECIFICATIONS

System Requirements

Hardware Requirements	Pentium 4 or equivalent · 2 GHz or better · PCI motherboard or passive backplane with 3.3V power supply · PCI 2.2 bus
Operating Systems	Windows 2000 · Windows XP · Windows 2003 32 bit · Linux
Technical Specifications	Max boards per system: Any combination up to 512 ports · Max ports per system: Up to 512 (16 Boards max) Resource Sharing Bus: MVIP or H.100
Physical Characteristics	Form Factor: Full-size PCI card · Operating Temperature: 0C to +60C · Boards Status: On-board LEDs · Clocking: Master/Slave Storage Temperature: -20C to +85C · Humidity: 8% to 80% non-condensing · Storage humidity: 8% to 80% non-condensing

Telephony and Interfacing

Tap Interface	Insertion loss: <1dB · Isolation: Galvanic 500VDC +/-10%, 100VRMS 1 sec · Impedance: Soft-Switchable 1KOhms/1000hms External connector: RJ-21X 25 Pair female
Host Interface	Bus Compatibility: Complies with PCISIG Bus Specifications, Rev. 2.2 · Bus Speed: 33 MHz Bus Mode: 32 bit bus master/target
Analog Jack	Audio Connector: 3-pin 0.1" ctr header · Output impedance: 3000hms · Input impedance: 33KOhms · Return loss: >25dB Mic bias: +5VDC @ 4.7KOhms · Input gain: +9dB · Output gain: 2.6dBm @ 3000hms · Full scale input: 370 mVRMS Full scale output:1.5 VRMS open circuit
PBX Interface	PBX Support: Software Configurable (see www.AudioCodes.com for a complete list)
Audio Signal	Receive range: -68 dBm to + 3 dBm · Input gain control: +24 to -50 dB · Silence Detection:Programmable from API
Transmit volume control	+24 to -50 dB to MVIP/H.100 · Automatic Gain Control (AGC):Programmable from API Automatic Volume Control (AVC): Programmable from API

Software

SDK	AudioCodes Native SmartWORKS™ API · SmartControl (Control Panel) · SmartVIEW (Card functionality test application)
Activity Detection	Programmable from API · Frequency Response: 300 - 3400 Hz (+/- 3dB)
Audio Digitizing	5.3 Kb/sG.723.1 · 8 Kb/s:G.729A · 13 Kb/s:GSM 6.10, Microsoft GSM · 16 Kb/s:G.726 24 Kb/s:G.726, OKI · 32 Kb/s:G.726, OKI · 40 Kb/s:G.726 · 64 Kb/s:µ-law or A-law per G.711, 8 bit linear PCM (signed & unsigned) · 96 Kb/s:6 Khz 16 bit linear PCM(signed) 128 Kb/s: 16 bit linear PCM (signed & unsigned) · Wave file formats: Microsoft GSM, Linear signed · 8 & 16-bit PCM
Digitization selection	Programmable per channel, independent for encode and decode
DTMF Tone Detection	DTMF digits: 0 - 9, *, #, A, B, C, D · Dynamic range: -38 dBm to 0 dBm · Minimum tone detection: 40 ms /programmable Interdigit timing: 40 ms min.
Acceptable twist	Per LSSGR sec. 6, 8 dB forward, 4 dB reverse · Frequency variation: Accept all +/- 1.5%, reject all +/-2.5% Noise tolerance: Per LSSGR sec. 6
Talk off	Bellcore TR-TSY-000762
D Channel Events	The following types of D-channel events are decoded:
PBX Event (Command Events)	Generated by the PBX and passed to the phone as a command to perform some type of action.
Signaling	These events indicate a call progress tone (dial tone, ring tones), or audio changes
LEDs	These events correspond to light changes on the phone
Display	These events indicate that the LCD on the phone has been updated. These are usually related to the clock display, or messages displayed on the LCD.
Phone Events	Generated by the phone indicating an action has been taken (i.e. button pressed).
Hook State	Off hook and on hook changes occur when the handset is removed or replaced
Button events	Indicate that a button on the phone was used. For example: digits pressed, speaker buttons etc.

Power Requirements

NGX (base)	+ 3.3 VDC: 0.9 A · +5 VDC: 1.5 mA · -12 VDC: 25 mA · +12 VDC: 25 mA
NGX (24 channel)	+ 3.3 VDC: 1.6 A · +5 VDC: 1.5 mA · -12 VDC: 35 mA · +12 VDC: 35 mA

Safety and Certifications

Telecom: DOC · Emissions: FCC Part 15 class A · EN 55022 · Immunity: EN 55024 · Safety: EN 60950
Estimated MTBF: 250,000 hours per Bellcore Method I

ABOUT AUDIOCODES

AudioCodes Ltd. (NASDAQ: AUDC), Your Gateway to VoIP, provides innovative, reliable and cost-effective Voice over Packet (VOP) technology and Voice Network products to OEMs, Network Equipment Providers, Service Providers and System Integrators worldwide. AudioCodes provides a diverse range of flexible, comprehensive media gateway and media processing technologies (based on VoIPerfect™ – AudioCodes' underlying, best-of-breed, core media gateway architecture) and Session Border Controllers (SBCs). The company is a market leader in product development, focused on VoIP Media Gateway, Media Server and SBC technologies and network products. AudioCodes has deployed tens of millions of media gateway and media server channels globally over the past few years and is a key originator of the ITU G.723.1 standard for the emerging Voice over IP market. The Company is a VoIP technology leader focused on quality, having recently received a number one ranking from ETSI for outstanding voice quality in its media gateways and media servers. AudioCodes voice network products feature media gateway and media server platforms for packet-based applications in the converged, wireline, wireless, broadband access, enhanced voice services and video markets. AudioCodes enabling technology products include VoIP and CTI communication blades, VoIP media gateway processors and modules, and CPE devices. AudioCodes' headquarters and R&D facilities are located in Israel with an R&D extension in the U.S. Other AudioCodes' offices are located in Europe, the Far East, and Latin America.

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RoHS COMPLIANT, LEAD FREE TECHNOLOGY

Lead and other materials banned in the RoHS directive are below ALL applicable substance levels as mandated by the EU

What's inside matters™