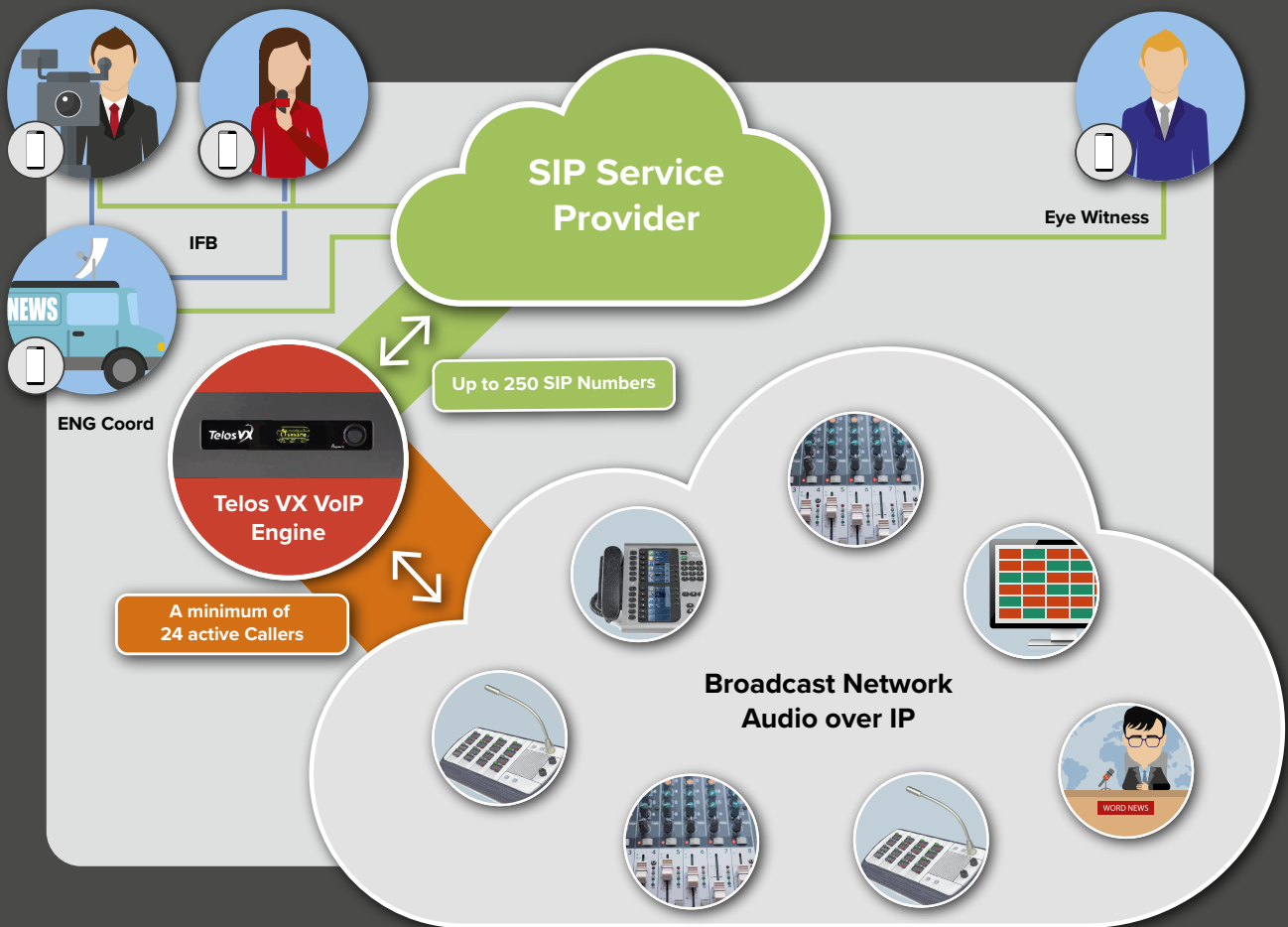


Telos VX™ Broadcast VoIP: Facility-Wide Digital Telephony Solutions



IFB, Remote Intercom, and Live Phone Contribution used to require a rack full of Couplers and Codecs. Not any more! Read on ...

VoIP Benefits - Built for Broadcast

Telos VX™ is the world's first VoIP-based broadcast telephony system – a dedicated broadcast phone solution that is so powerful it can run all remote communications, IFB and on-air phone requirements for your entire facility.

Efficiency and Scalability

As part of a suite of AoIP products brought to you by the people who invented Audio-over-IP for broadcast, the Telos VX System integrates seamlessly with other interoperable AES67 solutions, such as mixing consoles and intercom, as well as connecting to legacy baseband analog, AES-3, MADI and even SDI sub-systems using Telos Alliance xNodes and other compatible devices.

With Audio over IP (AoIP) you can create a distributed, networked routing infrastructure. Telos' own Axia Pathfinder router management software can control your calls using dedicated VSet handsets, user defined routing screens or integrated third-party control systems. Naturally, VX is scalable and capable of serving even the largest of facilities while remaining cost-effective enough for single studio stations.

Cut Cost Without Compromise

The cost of leasing traditional POTS and ISDN telephone circuits is climbing at the same time their availability is diminishing. VX can connect to VoIP-based PBX systems and SIP trunking services to take advantage of low-cost delivered phone services. By using IP to connect the outside world to your plant and taking advantage of Ethernet as its connection backbone, VX cuts the cost of telephony through cheaper installation, ease of maintenance, reduced infrastructure cabling and lower ongoing cost of ownership.

Case Study One - NFL Networks, Culver City, CA

The Problem:

In 2006 NFL Networks built their current facility in Culver City, CA. Communications with remote broadcasts was based on POTS lines as was common at the time. They installed 6 x Telos ONE plus ONE POTS telephone hybrids in each Production Control Room. One line in each Telos ONE plus ONE was used for remote coordination and the other hybrid was used for presenter IFB. The system worked well but restricted the fixed POTS lines to specific productions galleries, locking video and audio contribution circuits alongside them. A more flexible solution was sought.

The Solution:

The goal of the new system design was to increase the number of lines to 50, creating 25 coordination/IFB pairs that were freely assignable. Two VX systems now provide NFL Networks with 50 digital hybrids in just 4RU. A Micromedia MADI to Livewire AoIP converter provides bi-directional connectivity between the Intercom, audio consoles and the VX systems. Each co-ord circuit/IFB pair can be independently controlled and routed from and to any location in the facility.

Caller management and routing within the virtual Livewire AoIP matrix is handled using Axia Pathfinder software. Telos engineers worked with NFL Networks personnel, and by using the Pathfinder Panel Designer, created custom XML based control screens for users in various locations to manage routing and calls.

The VX System has proved capable of doing much more than just handling remote communications and IFB traffic. A portion of the VX capacity has been used to create a 10-Line Talkshow system that is used to take viewer calls during the NFL Fantasy Live, fantasy football league show. It is also used to setup conference bridges on an ad-hoc basis.

Case Study Two - WSB TV, Atlanta, GA

WSB-TV is a Cox owned television station and the ABC affiliate for Atlanta. Their internal production output is mainly news based, with a strong traditional TV and on-line presence. Their broadcast VoIP system is comprised of three Telos VX units (two active, and one hot spare) and several Telos Alliance xNodes located centrally in the Racks Room. These xNodes interface with a core Klotz routing system and with additional xNodes networked around the building close to monitoring positions (in MCR for example). They have a redundant Asterisk SIP server setup handling approximately 100 SIP extensions, 60 of which can be taken to air simultaneously via VX 'hybrids'.

The VX system is mostly used for Remote IFB's with field reporters dialing into the station using 12 dedicated phone numbers. Axia Pathfinder Pro is used for monitoring and control of the hybrids and the remote traffic management system is controlled using customized Pathfinder router and caller status screens. When called, each of the 12-remote dial-in numbers can auto answer up to 5 callers, each fed with their associated and fixed IFB from the connected audio/comms system.

The system is also set up to handle on-air calls in two of the Production Control Rooms. These are handled using a VSet6 in each PCR with two dedicated hybrids feeding a pair of faders on the mixing console. This setup is used for emergency and ad-hoc production requirements when a breaking story needs to put a contributor on the air quickly. One example was following a recent bridge collapse, where the Fire Chief was put on air directly from his cell phone. The system also takes advantage of the Asterisk servers' own "meet-me conference" function and is used to create ad-hoc conference bridges that can be routed to a VX hybrid.

Space Saving Technology

Nowadays, rack space is a premium commodity at almost every broadcast facility. By giving the user an equivalent complement of at least 24 independent hybrids or couplers in just 2RU, Telos VX can free up a minimum of 12RU of room versus the equivalent in dual channel POTS devices.



Associated Telos Alliance Products

Telos VX™ Prime

VX Prime is a version of the VX Broadcast VOIP Engine designed for users with less demanding telephony requirements. With an identical feature set compared to the larger VX Engine, VX Prime delivers eight fixed hybrids (non-expandable) in the same compact 2ru package.



Telos VSet Broadcast Phone Controller

Available in 6 or 12 line versions, each with a color LCD status display, the VSet is a powerful telephone handset that allows the user to manage incoming and outgoing call traffic.

Telos Alliance xNodes

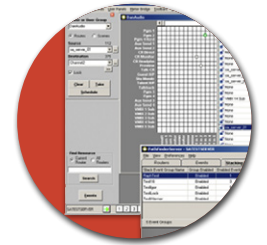
xNodes are the key to connecting the VX to equipment that lacking from AES67 or Livewire connectivity. 1RU high, 1/2 rack width wide, xNodes enable bi-directional conversion of up to eight Livewire or Livewire+ AES67 audio streams to baseband formats.

Available in Analog, AES-3, Microphone, Mixed Signal and even SDI formats, each xNode provides the equivalent of eight bi-directional mono or four stereo connections to existing equipment.



Axia Pathfinder Routing Control Software

Pathfinder is a family of software tools that are used to customize and control a Livewire or Livewire+ AES67 network. Used within a VX system, Pathfinder creates a virtualized router of sources and destinations that can be controlled using dedicated Telos Alliance RCPs, user customizable software panels, or by 3rd party broadcast management systems via the in-built protocol translation tool.



Telos VX In Detail

Applications

- Dial-up IFBs
- Remote Engineering Co-ords
- On Air Contribution
- Talkshow
- Straight-to-Tape Contribution
- Live Voice Over
- Emergency and Back-Up Audio and Comms
- Telephone Conferencing
- Site to Site Trunks

Features

- World's first VoIP telephone system designed and built specifically for broadcasting
- Standards-based SIP/IP interface integrates with other, standards based VoIP-based PBX systems
- Clear, clean caller audio from fifth-generation Telos Adaptive Hybrid technology
- Voice processing features include Digital Dynamic EQ, AGC, adjustable caller ducking, send and receive-audio dynamics processing and wideband acoustic echo cancellation
- Up to 24 digital hybrids per 2RU VX system
- A single VX can support up to 256 SIP numbers
- A minimum of 24 active callers
- Scalable with multiple VX devices for larger systems or for redundant and back-up operation
- Connect VX to any audio console, or other broadcast equipment, using Telos Alliance Analog, AES-3, Mixed Signal, GPIO, and SDI xNodes
- Telos Alliance AoIP interfaces feature 48 kHz sampling rate and studio-grade 24-bit A/D converters with 256x oversampling
- Dynamic line management enables instant re-allocation of lines
- VSet phone controllers with full-color LCD displays and Telos® Status Symbols present operators with a rich graphical information display
- Each VSet features its own address book and call log
- Native integration or third party 'virtual matrix' control using Axia Pathfinder AoIP routing and control software
- Support for G.722 codec enables HD Voice phone calls from SIP clients
- Integration with POTS, T1/E1, ISDN via suitable SIP PBX services (e.g. Asterisk)

VX Engine Specifications*

General

- Telos 5th-generation Adaptive Digital Hybrids
- Minimum number of active phone calls: 24, when used with a-Law or u-Law codecs for VoIP lines (Higher quality codecs, such as G.722, consume more system resources and result in fewer total lines available.)
- Maximum number of SIP numbers: 256
- Minimum active on-air calls: 24

IP/Ethernet Connections

- One 100BaseT/gigabit Ethernet via RJ-45 LAN connection
- One 100BaseT/gigabit Ethernet via RJ-45 WAN connection

Processing Functions

- All processing is performed at 32-bit floating-point resolution
- Send AGC/limiter
- Send filter
- Gated Receive AGC
- Receive filter
- Receive dynamic EQ
- Ducker
- Sample rate converter
- Line Echo Canceller (hybrid)
- Acoustic Echo Canceller (wideband)

Power Supply AC Input

- Modular, field-replaceable auto-sensing supply, 90VAC to 240VAC, 50 Hz to 60 Hz, IEC receptacle, internal fuse
- Power consumption: 100 Watts

Operating Temperatures

- -10-degree C to +40-degree C, <90% humidity, no condensation

Studio Audio Connections

- Via Livewire+ IP/Ethernet. Each selectable group and fixed line has a send and receive input/output
- Each studio has a Program-on-Hold input
- Each Acoustic Echo Canceller has two inputs (signal and reference) and one output
- Livewire+ AES67 equipped studios may take the audio directly from the network
- Telos Alliance xNodes are available for pro analog and AES-3 breakout

Telco Connections

- Audio: standard RTP. Codecs: g.711 U-Law and A-Law, and g.722
- Control: standard SIP trunking

** Due to the wide variation in broadcast telephony workflows and the complexities that can be involved in converting those services to SIP, we really want to talk with you about your system design before you order. Telos has VX System engineers standing by to help you draw up a configuration that will ensure your VX purchase will meet or exceed your expectations.*

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