



Telos VX is the next generation multi-studio phone system from Telos.

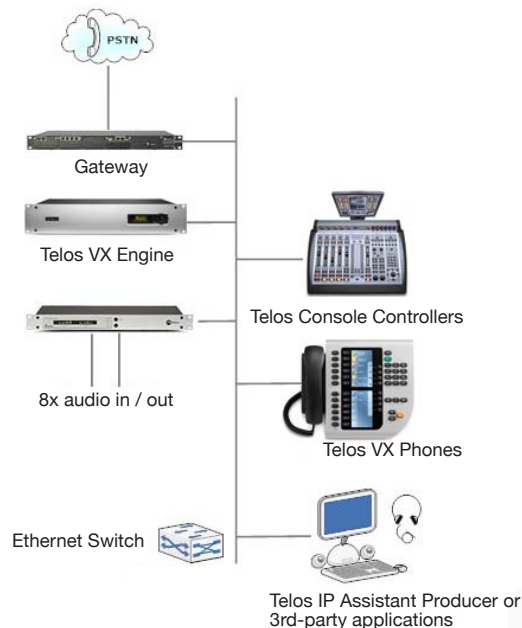
It provides a powerful, simple, and cost-effective way to share phone lines across a number of studios using standard IP technology. It offers a number of advanced features to enhance production of talk shows and active DJ use of phones.

For years, you have been asking for an uncomplicated way to share phone lines around a facility to multiple studios. And we are always hearing that you need a way to better integrate the studio system with your office phone PBX. Finally, the VoIP-based Telos VX lets us do this.

We're the studio phones company. We're also the IP-Audio company. With the introduction of the Telos VX, we are marrying the two, creating an exciting synergy and driving a revolution in broadcast studio phone operations.

The Telos VX is a scalable system that provides a low-cost entry-level solution for stations with modest needs, while being able to grow to support facilities that have large numbers of Telco lines and studios.

The diagram shows a typical installation, hinting at the possibilities inherent in the system.



Gateway

The VX system connects to Telco lines using industry standard SIP (Session Initiation Protocol). This means it is compatible with a wide variety of VoIP gateways and PBXs. The diagram shows a basic gateway that adapts traditional Telco lines to the SIP format. Gateways are available for POTS, T1/E1, and both BRI and PRI ISDN. These can be rack-mount units that support large numbers of connections or low-cost desktop boxes that interface a few POTS lines.

The "gateway" could also be a full-up IP PBX, such as from Cisco, Avaya, Nortel, Digium (Asterisk), and many others. In this case, compatible IP phones can be used for general office locations. Since SIP provides a rich control interface, it would be possible to easily transfer calls between the office and studio systems.

Recognizing the growth in market share of VoIP PBXs, Telcos are beginning to offer "SIP Trunking" service, which delivers phone network connectivity directly over a controlled IP link. With this service, it would be possible to eliminate the gateway device.

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Telos VX Engine

This is a 2U rack-mount device with enormous processing power, providing all the call control and audio processing needed for the system. It supports dozens of telephone lines and many studios. Its gigabit Ethernet port provides a cost-effective interface to both telephone lines and studio audio via Livewire.™

Call processing is sophisticated and flexible. Lines may be readily shared among studios. A web interface allows easy assignment of lines to “shows”, which can then be selected by users on the studio controllers. Each studio can provide its own Program-on-Hold. Audio processing features also have taken a leap forward. There is a hybrid per line, allowing multiple calls to be conferenced and aired simultaneously with excellent quality.

A new acoustic echo canceller algorithm solves the longstanding problem of feedback and echo when a loudspeaker-to-microphone acoustic path is required in the studio, such as when DJs prefer to record calls without using headphones or when guests need to hear calls without headphones. The AEC in the Telos VX is a remarkable new development from the bright people at Fraunhofer Institute, the MP3 and MPEG AAC inventors. Its performance is shockingly impressive, permitting very high loudspeaker volume with no noticeable feedback or return echo.

All of the usual Telos advanced hybrid functions are provided: AGC, adaptive EQ, ducking, etc. All of these are provided per-line.

An auto-answer and message play function is provided as an option. This could be for a legal notice or just to let callers know that someone will eventually pick up the line.

Livewire Nodes

When needed, traditional audio connections are provided via Axia Livewire Nodes. These come in both analog and AES3 versions. Because they are networked, they can be located where convenient, either in individual studios or in a central rack room. Each Node connects eight stereo audio inputs and eight outputs.

These are not required when the VX is used with Livewire-enabled studios. In this case the audio is simply delivered to the studio Livewire network and may be picked-up wherever needed. With its simple support of bi-directional audio flow, Livewire is ready for hassle-free mix-minus.



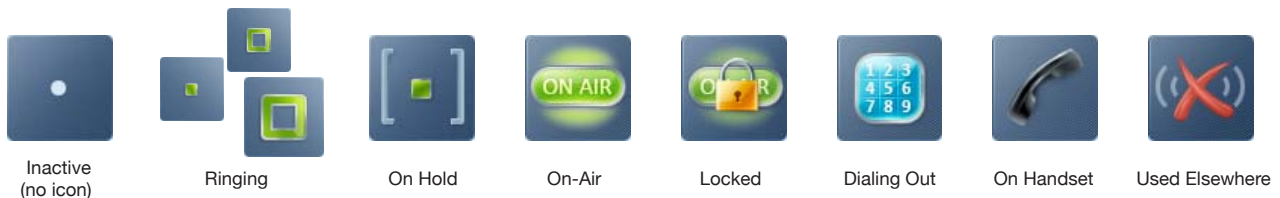
The VX Director Phone

The all-new IP-based Telos VX Director has two large, high-contrast color LCD panels that provide line status, detailed caller information and fader assignments.

For the comfort of familiarity, the VX can work like a traditional Telos controller, with calls being selected, held, and dropped in the usual way. But because the VX system has a hybrid per line, it is often desirable to spread multiple calls over a number of faders, using one for each call so that operators can control each line’s level individually. It is also possible to hard-assign individual lines to fixed faders, such as for VIP calls.

Caller ID can be shown for each line, along with time ring-in or on-hold. Text can be written to the line fields to describe calls from the Telos Assistant Producer PC application.

Each line has a status icon, such as:



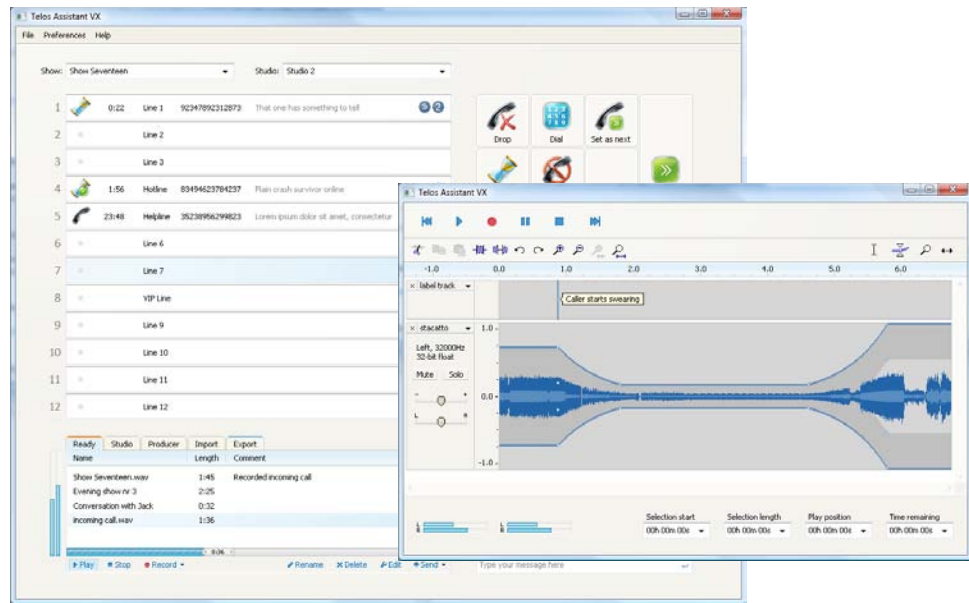


◀ Console Controllers

These will connect via IP and provide line selection and status monitoring.

At this time, the VX supports the Axia Element console, supplying smooth integration between the mixing and telephone systems. The usual Ethernet connection that connects the console to the Livewire network is also used to communicate with the VX system; only a single connection is needed. There are new Axia consoles on the way, and they will all have tightly integrated phone control modules that will work with the VX system.

Stand-alone control modules are planned for use with other vendors' consoles.



VX Assistant Producer ▲

The new VX Assistant Producer application takes studio phone operations to a higher plane. In addition to the usual Producer-Talent communication functions, it offers a number of innovations.

For one, it has a built-in audio recorder/editor. A producer can record and edit a phone call without leaving the application. The resulting audio files can be easily sent to the talent PC for quick and convenient airing. We imagine that this simple, but powerful feature could add an interesting new element to many call-in situations. Callers who don't have time to "wait their turn" could be quickly recorded and carefully edited. Perhaps montages could be created to open segments. Removing the need to wait might encourage comments from higher-quality callers.

The VX Assistant Producer includes an integrated soft phone, which lets producers take calls with a headset attached to the PC, simplifying operation and saving the expense of a hardware phone.

3rd-Party Producer Applications

The VX uses an open protocol for control, which permits non-Telos software applications to be used in place of, or to augment, the Telos Assistant Producer application. At this time, Broadcast Bionics and NeoSoft have announced their intention to create such applications.

Ethernet Switch

The VX system components are linked via a standard Ethernet switch. In Livewire-enabled studios, this will already be present and no additional switch would be needed. Facilities that already have a VoIP PBX would also probably have a suitable switch in place. Should a new switch be required, we will recommend one that we have qualified from Cisco or Hewlett-Packard.

Roadmap

The Telos VX represents an exciting change in direction for studio telephone operations. "The open IP nature of the system, along with its rich user interfaces and a powerful platform, offers ongoing opportunities for enhancement of its capabilities."

Here are some things we have in mind:

- Implement automatic answering and "take the Nth caller" as the winner of a contest prize. With the rich user interface on the VX phones and Assistant Producer application, it would be simple enough to enter the number of the caller to be the winner and the system would answer all the calls with a brief recorded message in the form, "hello, you are caller number N – sorry you are not the winner this time". The status of all the calls would be shown on the line icons so that the operator can monitor the progress. A special icon indicates that the call is being "auto answered" for a contest. When the winning call is answered, the VX Director main display would indicate the appropriate line icon.
- Add more sophisticated auto-attendant features to allow you to customize the system behavior in response to incoming calls. For example, it would be possible to have a "press 1 to talk the producer or press 2 to record a message" feature. Recorded messages could be retrieved from the system and edited for on-air play.
- A gateway to Skype, allowing callers to connect via computer with higher quality than usual phones. It could be possible to exchange chat messages to update callers on how long they need to wait, etc.
- Build in a texting (SMS) gateway to allow this form of communication with mobile phones.
- Make a simpler VX phone for applications that don't need the fancy LCD displays.

We invite your suggestions and creative ideas.