Better Faster Cheaper and Happier!

Using Today's Lower-Cost Technology for Perfect Audio Now and TOMORROW

Kirk Anders HARNACK
The Telos Alliance
It won’t work

It may work, but that’s not meant for broadcast.

Oh, we do that, too.
Disruptive Challenges
The Purpose-Built Paradigm

Individual devices in an audio distribution and processing rack.
1992, Orleans, France
Early Virtualization
Recent Virtualization
Those products now fit in your pocket with a $200 iPhone
Disruptive Technologies

VoIP = Voice Over IP
AoIP = Audio Over IP
IoIP = Intercom Over IP
MoIP = MPX Over IP
VoIP = Voice Over IP
AoIP = Audio Over IP
AoIP = Audio Over IP
AoIP = Audio Over IP

MORE SERENDIPITY

European Broadcasters IP Network

Livewire IP-Audio
2.5 Mbps - Each Linear Stereo Stream

THE TELOS ALLIANCE™
IoIP = Intercom Over IP
Diagram showing how traditional Matrix Intercom connects

All of the components pieces with a green highlight are replaced by AoIP connectivity using network distributed DSP from the Telos Infinity System, or by a software product that is part of the Dashboard software suite.
Multi Site System

Sites are connected using Telos Infinity Trunkmaster software servers equipped with the adaptive OPUS VoIP codec.

Dashboard manages each local client with overall administrative control assigned to one or more Master Control operations.

Transparent high bandwidth WAN connections should work directly via either Multicast or Unicast connections.
MoIP = Multiplex Over IP

Omnia MPX Node - Delivers FM MPX over IP

Any FM Processor with Stereo Generator

Analog MPX

MPX or μMPX Encode to IP

Private IP Link
Public Internet
WAN, etc.

IP Decode to MPX

FM Transmitter
Omnia MPX Node - Decodes μMPX

Omnia.9 FM Processor with μMPX Option

Private IP Link
Public Internet
WAN, etc.

FM Transmitter

Analog MPX

IP Decode to MPX
Omnia MPX Node - Applications - Main or Backup STL

Any FM Processor with Stereo Generator

Analog MPX

MPX or µMPX Encode to IP

IP Radio Link <400 kbps required

FM Transmitter

Analog MPX

IP Decode to MPX
Omnia MPX Node - µMPX - 5 FM Stations - <2 Mbps

Example:
5 FM Stations’ Processing

Example:
To 5 FM Transmitters

IP Link
Internet
WAN
<2 Mbps

Router

Router
Disrupting Technologies = Enabling Technologies
Enabling Technology

Platform Virtualization

- Using software in efficient, resilient, and redundant scenarios.
- Using better hardware, and using it more fully.
Virtualized Station Clusters

- 30 Radio Stations in 18 Rack Units
- All Livewire AoIP
- Connect Axia Fusion to any of them
- Experimental
BBC Local Radio has Virtualized Playout, Cloud Mixing, Phones, and Codecs. Many resources are shared, allocated dynamically as needed.
Pathfinder Core PRO Appliance or VM?
### Current Pending Decoded Alerts

<table>
<thead>
<tr>
<th>Chnl/Orig EAS Type</th>
<th>ID</th>
<th>Start Time</th>
<th>End Time</th>
<th>Location</th>
</tr>
</thead>
</table>

**View alert forwarding action table.**

**View expired alerts.** *(uncheck to remove view).*

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**Select Expired Alert View**

- **View Expired Alerts**
- **View Expired Alerts Pending Deletion**
- **View Deleted Expired Alerts**

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**Expired Decoded Alerts**


**Past 7 Days Alerts**

**Expired Alerts Display Control**

Jul 29, 2019 to Aug 4, 2019

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**Click for text version.**

- **Text version: Categorize alerts.** *Enabled.*

10 alert records displayed.
Everything you need to start your radio station

Take the product tour

Got an idea for a radio station? Book a demo now and discuss your idea with one of our experts.
Inevitable: IP-Connected broadcast infrastructure
Virtualization Provides:

- Flexible Workflows
- Commodity equipment
- Lower capital cost
- Full redundancy
Virtualization Provides:

- Local Virtualization
- Centralized Virtualization
Virtualization Provides:

- Efficient use of Hardware
- Data Center
- Cloud Services
- IP Connections
- Each with Redundancy
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- Efficient use of Hardware
- Data Center
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- Each with Redundancy
Take-Away Points:

- Virtualized Workflows imply...
  - Simple Local Studios
  - Talent & Sales can work from anywhere - even from home - effectively
  - Convenient syndicated program distribution - with no sun outages.
  - Even smaller stations can leverage large-scale data center efficiencies.
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