



# Telos Alliance

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LOVE WHAT YOU HEAR



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# Martin Dyster

*VP Business Development  
&*

*Telos Infinity Product Director*

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# Telos Infinity VIP

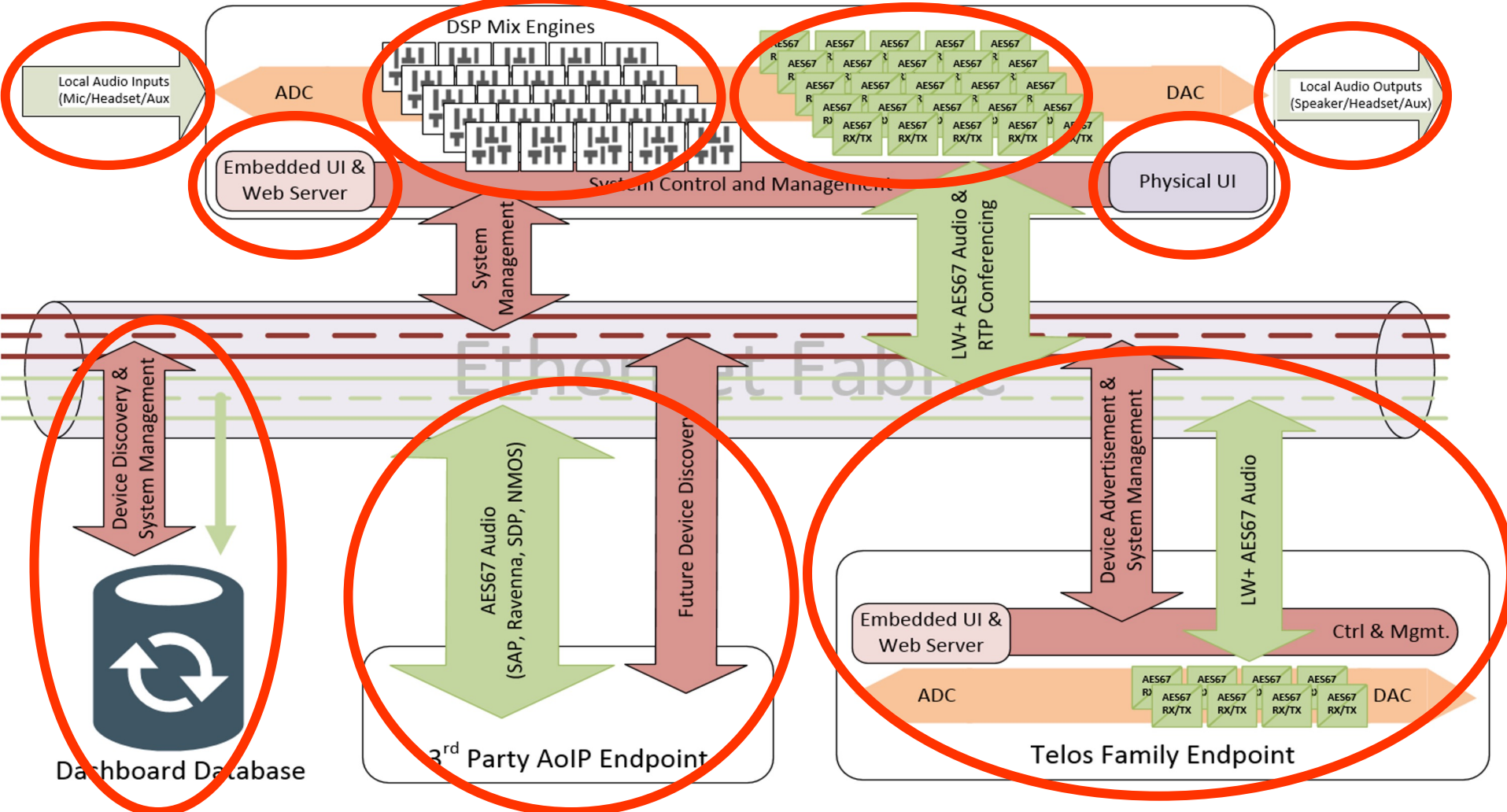
Virtualized IP Intercom for  
Cloud, On Prem and Hybrid  
Workflows

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# Telos Infinity Hardware Intercom - History

- Launched at NAB 2018
- Matrix-less native AoIP broadcast Intercom
- A range of hardware panels, beltpacks and peripherals
- Simplified UI for any skill level
- Resilient architecture – Bonded Failover / ST2022-7
- AES67 / ST2110-30 system interoperability
- Native VoIP connectivity using Infinity Link (Opus)
- Multi-site capability
- Lower TCO

# Infinity Device / Panel or Beltpack



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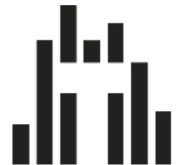
# THE PRODUCT FAMILY

# Telos Infinity<sup>®</sup> IP Intercom

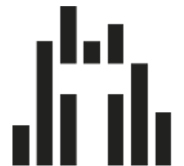
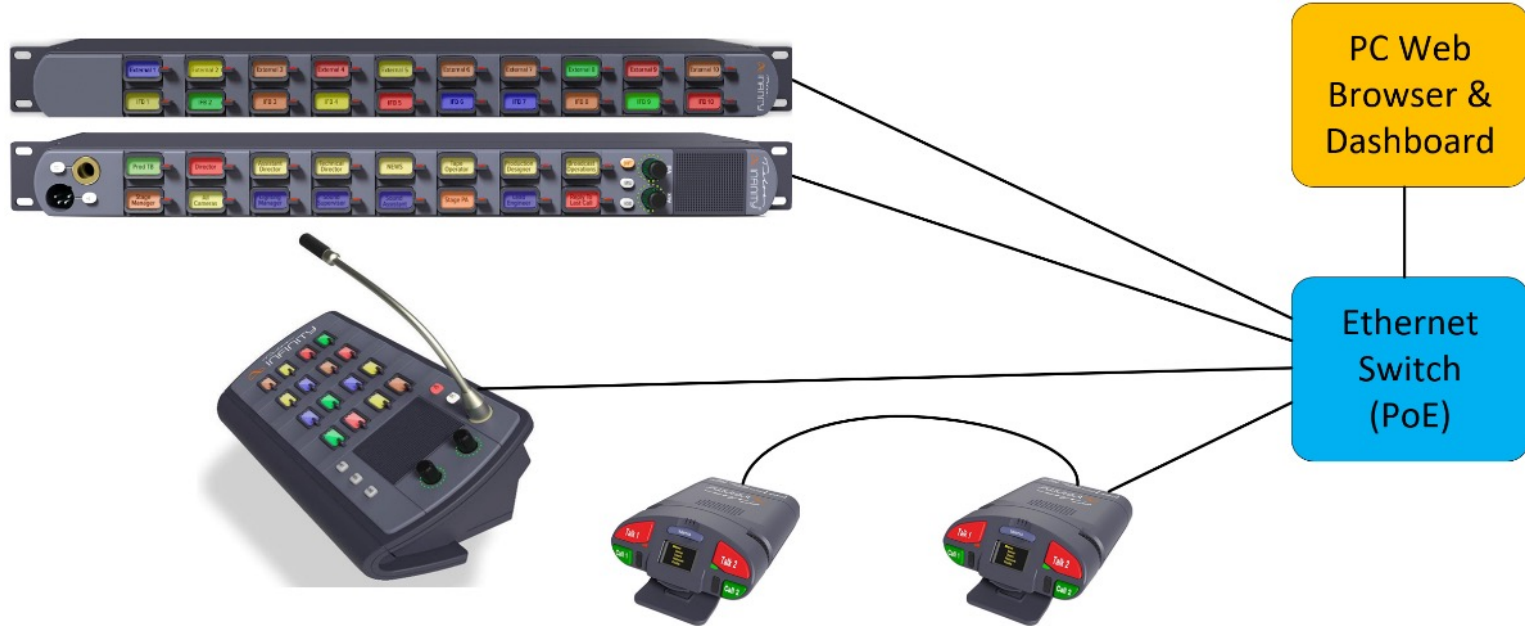
The Intercom solution that changes everything.



- Voice communication and contribution audio on a single **standards-based** AoIP media network
- Matrix-free design allows for “infinite” scalability
- Hardware includes BP-2 & BP-4 Dual/Quad Channel Beltpacks, MP-16 IRU Master Panel, MXP-20 Expansion Panel, and DS-16 Master Desktop Station
- Telos Infinity Dashboard software provides intuitive configuration and management
- Infinity Link VoIP for remote system deployment over WAN
- Native integration with Telos Alliance family products



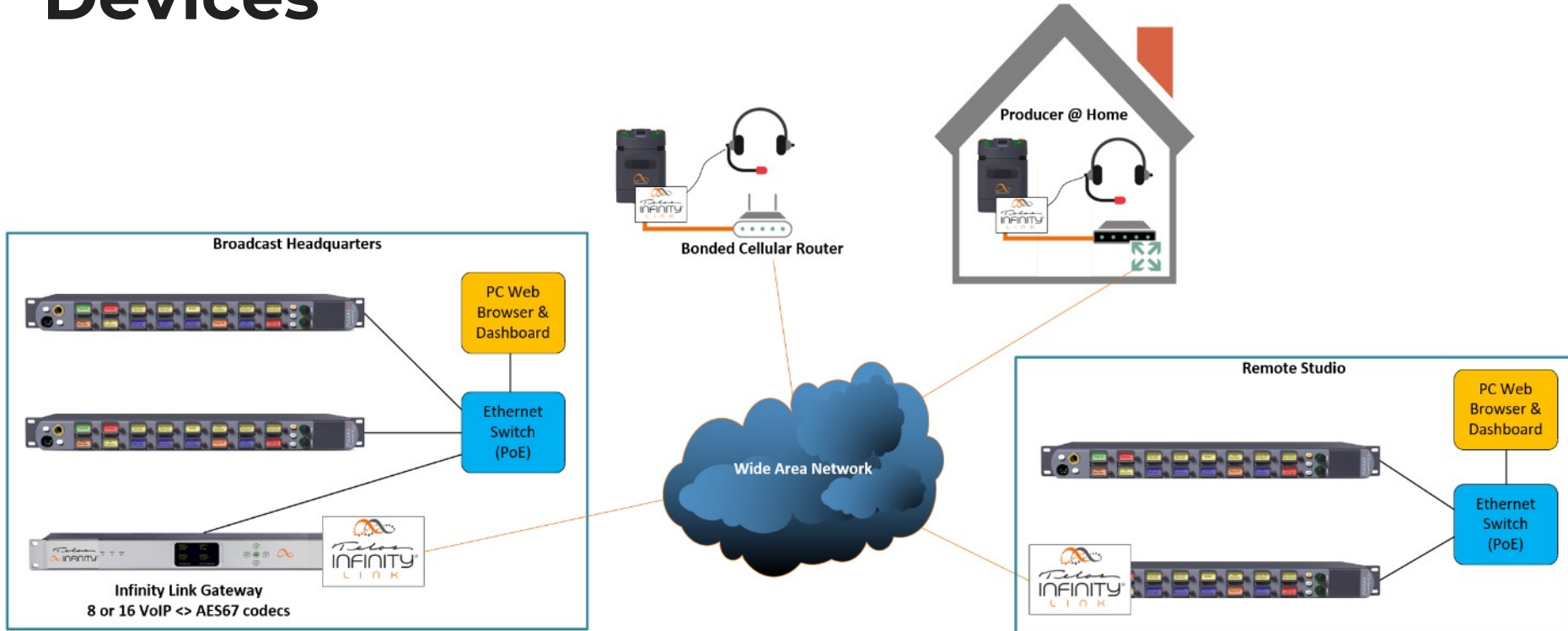
# Telos Infinity IP Intercom Basic Connectivity





# Infinity Link Gateway and Devices

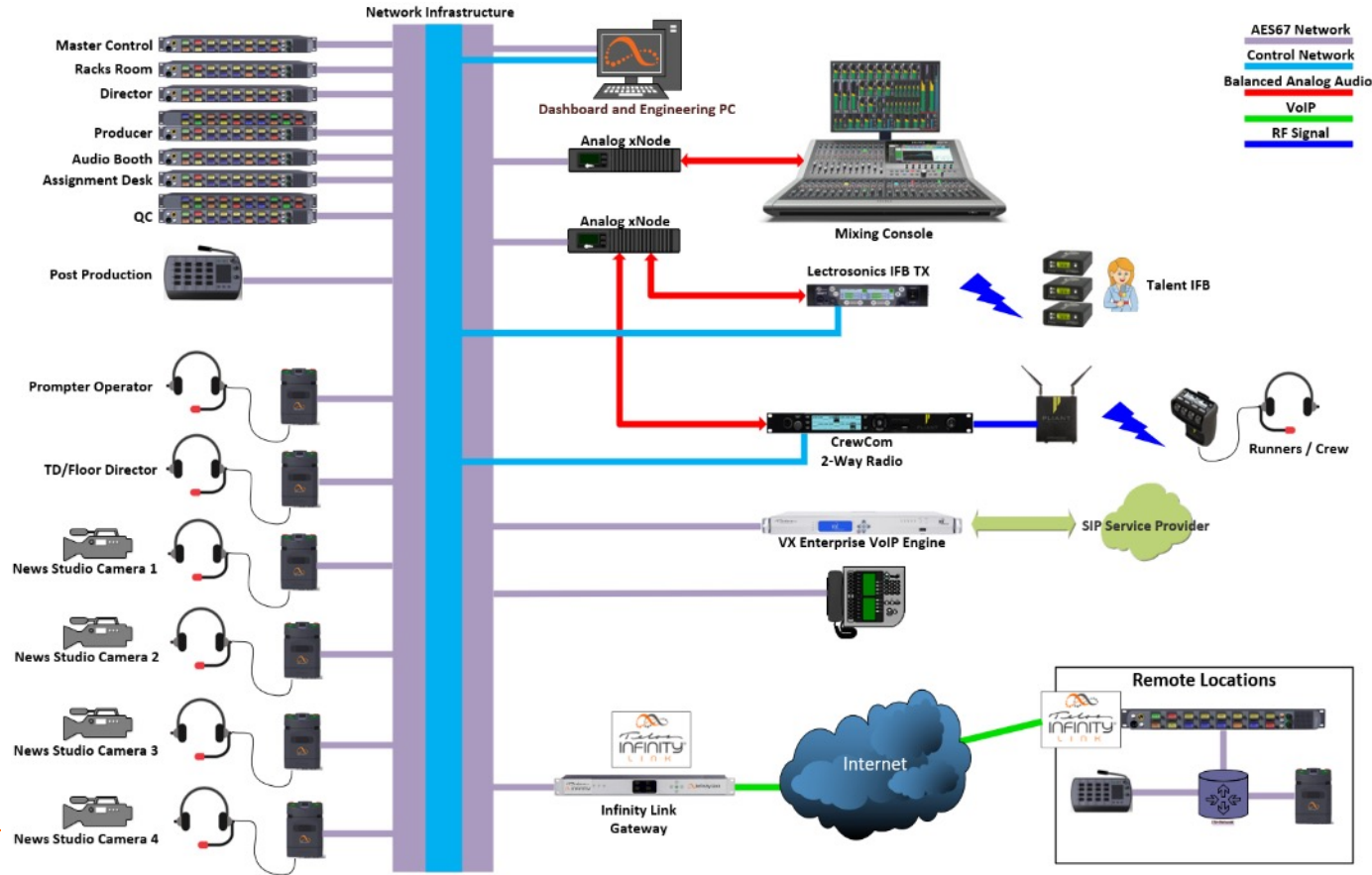
The Product Range



# Typical Small TV System

## Example Systems

- Telos Infinity has no Matrix, so communication between Intercom elements is via direct connection to the LAN/VLAN/WAN
- Analog and other baseband audio is converted to IP by node devices and any ST2110-30/AES67 present on the network connects natively without an external interface





VIP

# Virtual Intercom Platform

Matrix-Less Cloud Communications



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# In 2020 ...

- Remote Production established over past decade
- Crew @ HQ and reduced staff at venue now commonplace
- Technology adaptable and mature
- **March 2020 – Sport stops (EPL March 13<sup>th</sup>)**
- **June 2020 – Sport slowly restarts (EPL June 17<sup>th</sup>)**
- Reduced staff @ venue and remote team dispersal
- Technology had to adapt **REALLY** quickly
- Content providers look to Cloud and Virtual solutions

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# What the market was asking (Telos) for...

- A scalable and agile virtual Intercom
- Rapid deployment on demand, @Home, @Venue, @HQ
- Integrated with hardware and software audio production subsystems
- Non proprietary / standards based audio
- Subscription / Software as a Service (SaaS) options
- Intercom panels on PC, mobiles and tablets
- Hardware controller integration
- Fully featured – like a ‘real’ Intercom

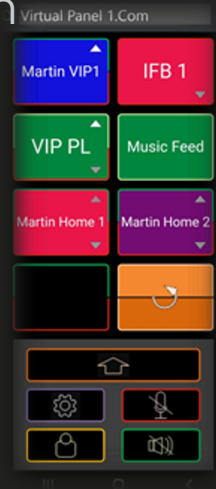
# What is Infinity VIP ?



Telos Infinity® VIP is the first fully-featured Cloud-based intercom system enabling sophisticated browser-based comms on any device: Smartphone, Laptop, Desktop, or Tablet.

Cloud, On Prem, and Hybrid Media Production Workflows made easier

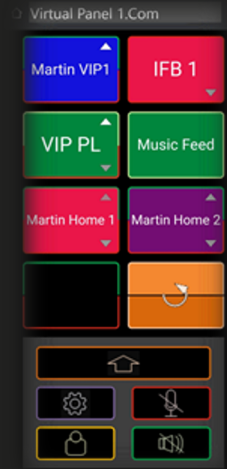
- A 'reimagining' of the Infinity Intercom hardware platform
- Individual virtual 'panels' running in Docker containers
- Virtualised Dashboard Config and Management Software
- Built-with Web Security, Authentication, Licensing, Server Management and System Metrics



# Infinity VIP Architecture



- Panels on same VIP server maintain AES67 multicast structure
- Panels use same distributed AES67 architecture as HW
- '4-wires' connect between subsystems using AES67 Unicast, Opus or NDI via virtualised 'Infinity Link' codec
- Users 'invited' to connect to panel via secure VIP Beacon Server
- On Prem or Cloud deployment – Public or Private
- Hardware control interface support – Stream Deck etc.
- Container management using Portainer (standard install)



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# Connectivity and Security



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# VIP Connectivity & Security – WebRTC, DTLS and SRTP

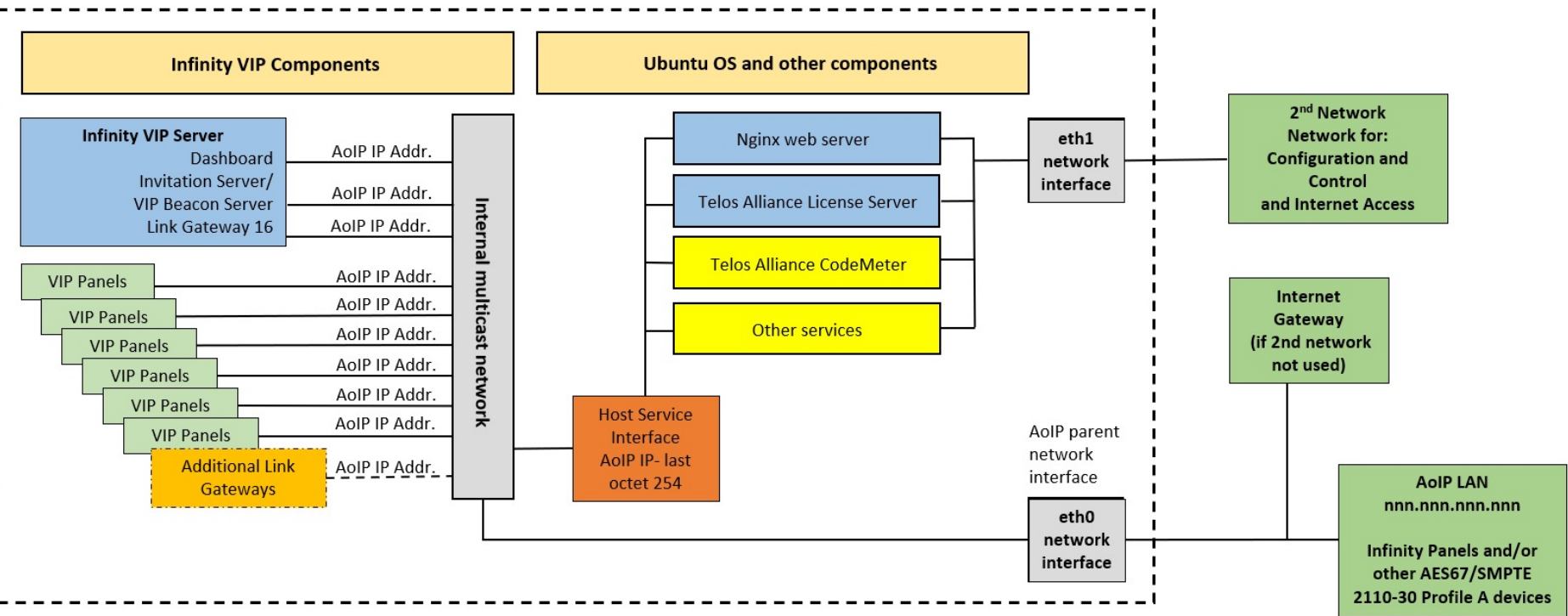
- **WebRTC** (Web Real-Time Communication) enables real-time communication in the browser without the need for plug-ins or other requirements
- **Encryption is a mandatory feature of WebRTC**
- **DTLS** (Datagram Transport Layer Security) is used to secure all data transfers between panels in browsers and the VIP server
- **SRTP** (Secure Real-Time Transport Protocol) is used to secure audio streams between panels in browsers and the VIP server

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# VIP Connectivity & Security - ICE, STUN and TURN

- The **ICE** (Interactive Connectivity Establishment) framework and **STUN** (Session Traversal Utilities for NAT) and **TURN** (Traversal Using Relays around NAT) servers are used to establish and maintain connections between VIP panels and VIP server
- **Encryption includes the signalling mechanism and audio streams**
- While peer-to-peer connections over UDP are preferred, a TURN server should always be available to make the connection between a panel and the VIP system when needed

# Telos Alliance Infinity VIP Simplified Block Diagram



**Notes:**

Host Service Interface: Allows Host apps to connect to AoIP network and containers running on the Host

eth1, second NIC, is optional

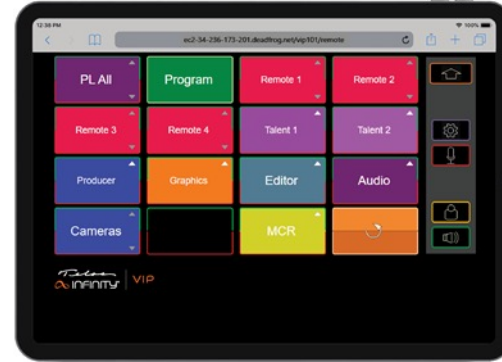
If eth1 is installed, then Internet access can be from that network

eth0 is the parent interface of the internal multicast network for the VIP containers (macvlan)

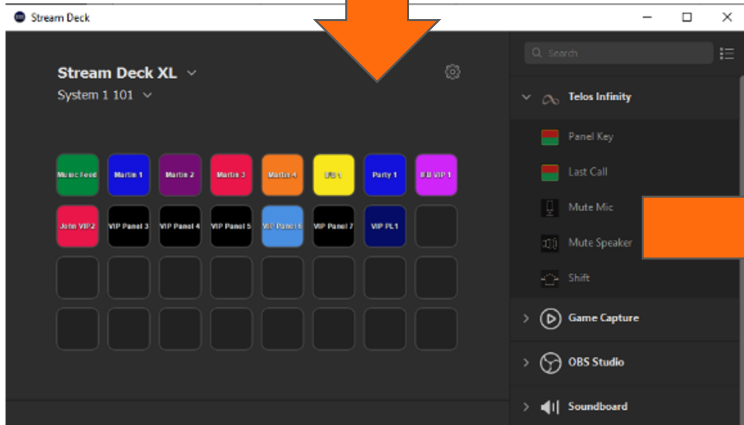
VIP components (Docker containers) use static addresses that are a subset of AoIP network.

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Infinity VIP	Simplified Block Diagram		
Date: June 10, 2021	Page 1 of 1	v9	kt

# Infinity VIP User Panel Options



# Elgato Stream Deck Plugin





VIP

# Deployment Options: Most Common Use Cases

Matrix-Less Cloud Communications



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# Telos Infinity VIP

Cloud Deployment Model

powered by aws

Cloud Production Services

Telos Infinity VIP Server

BREAKING LIVE

WAN / VPN

On-Premise Audio Production Systems

Infinity Link AoIP<>VoIP

Dashboard Management  
(Remote Control of VM)

KP-5032

ADAM-M

OMNEO & AES67

Switch

NDI

Audio console

Cloud Production Services with VIP



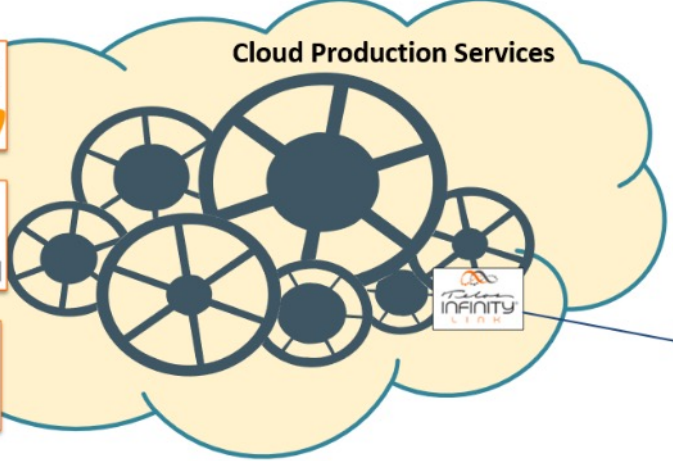
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# Telos Infinity VIP

On Premise Deployment Model



Cloud Production Services



Remote Infinity HW Users



Remote VIP Panel Users



Broadcast HQ

Local On Prem Infinity VIP Server



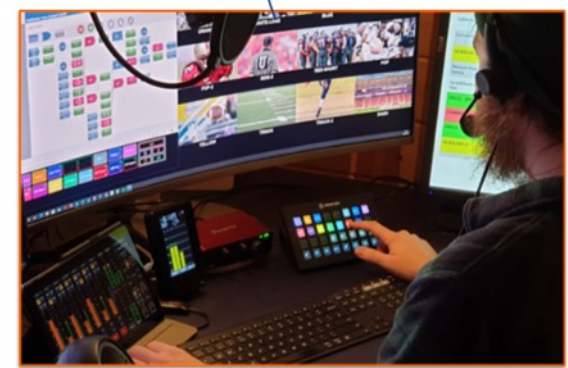
AES67 / 2110-30



Dashboard Management



Local Audio Production Systems




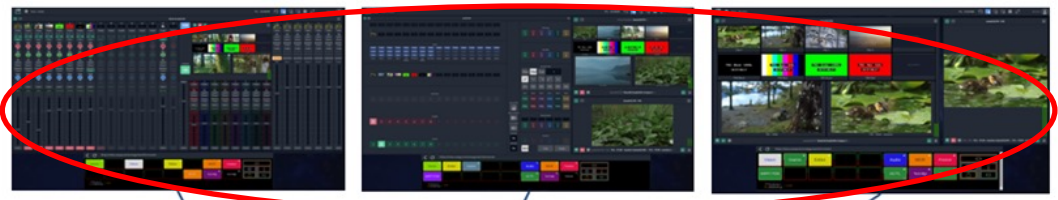
Cloud Production Services with VIP

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# Telos Infinity VIP

Cloud Deployment Models  
With Grass Valley AMPP

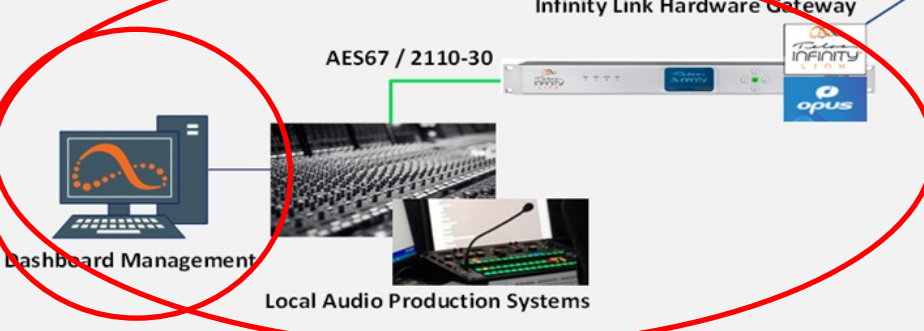
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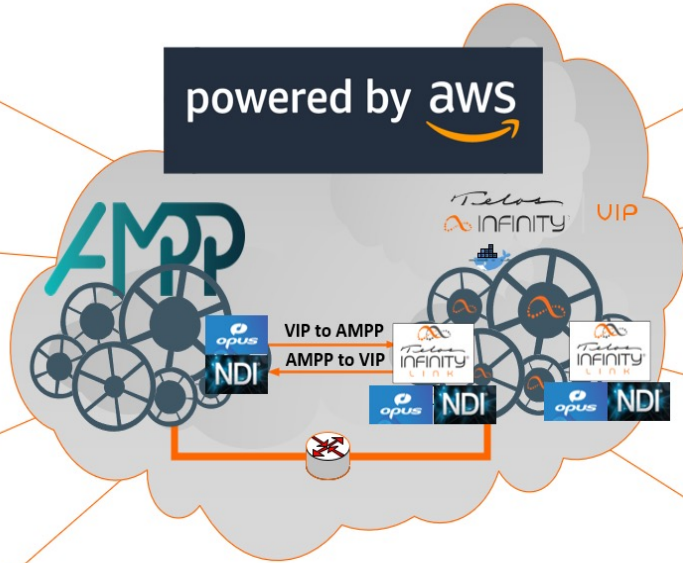
AMPP



### Broadcast HQ



Virtual Control Room  
GV AMPP Users



Event Venue



GV AMPP Edge Node



Remote Crew



Remote Crew



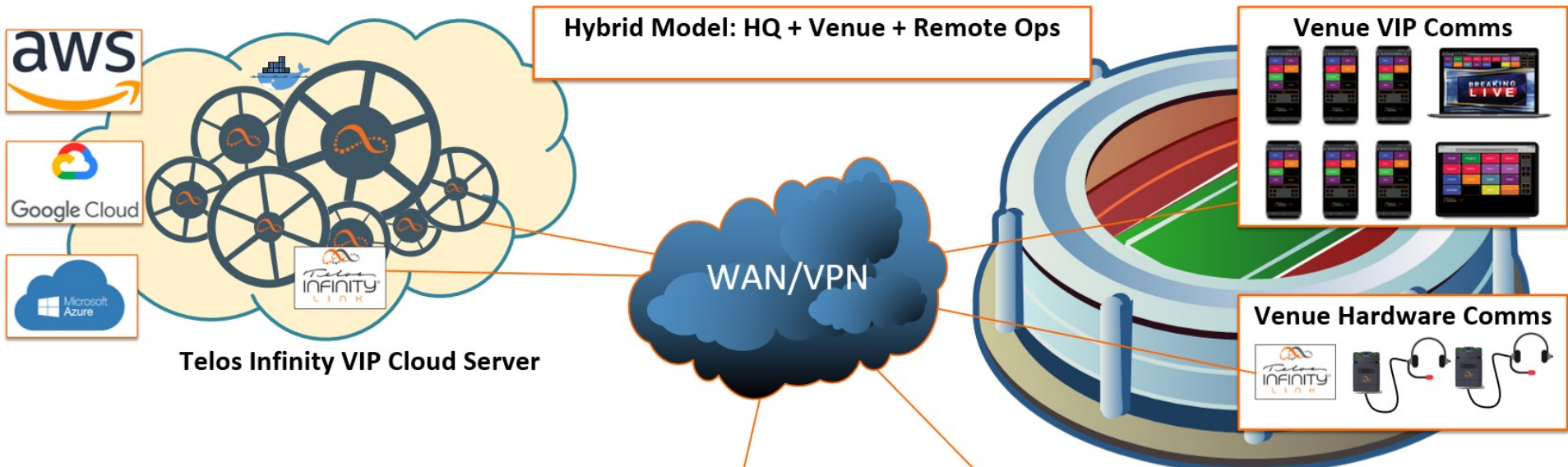
Infinity Link Gateway



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# Telos Infinity VIP

Hybrid Model – Cloud + On Prem



**Remote Production Team w/VIP**

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# Q&A