



<https://Routing.audio>

Anthony P. Kuzub - IP Audio Product Manager  
<https://Ward-Beck.Systems>



IP SHOWCASE THEATRE AT IBC - SEPT. 14-18, 2018



**Transport**  
AES67 / ST 2110-30

**Discover / Announce / Query**  
Ravenna / SAP / IS-O4

**Control / Subscription**  
AES70 / Operator Web Gui





# AES67

## AES67-2013

Standard for audio applications of networks:  
High-performance streaming audio  
over-IP

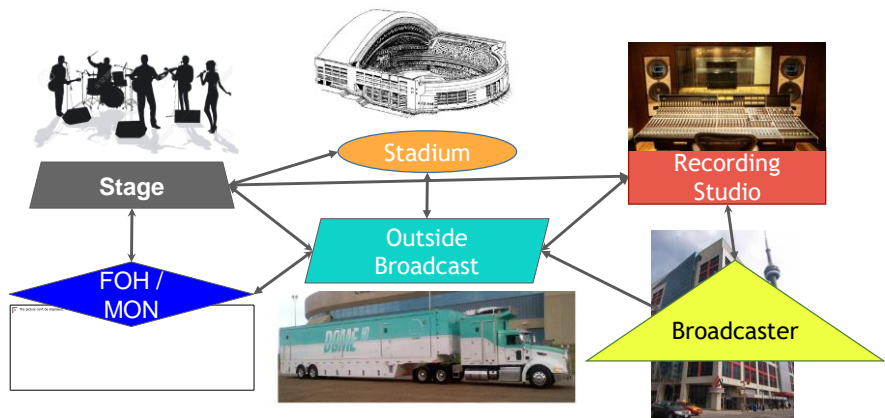


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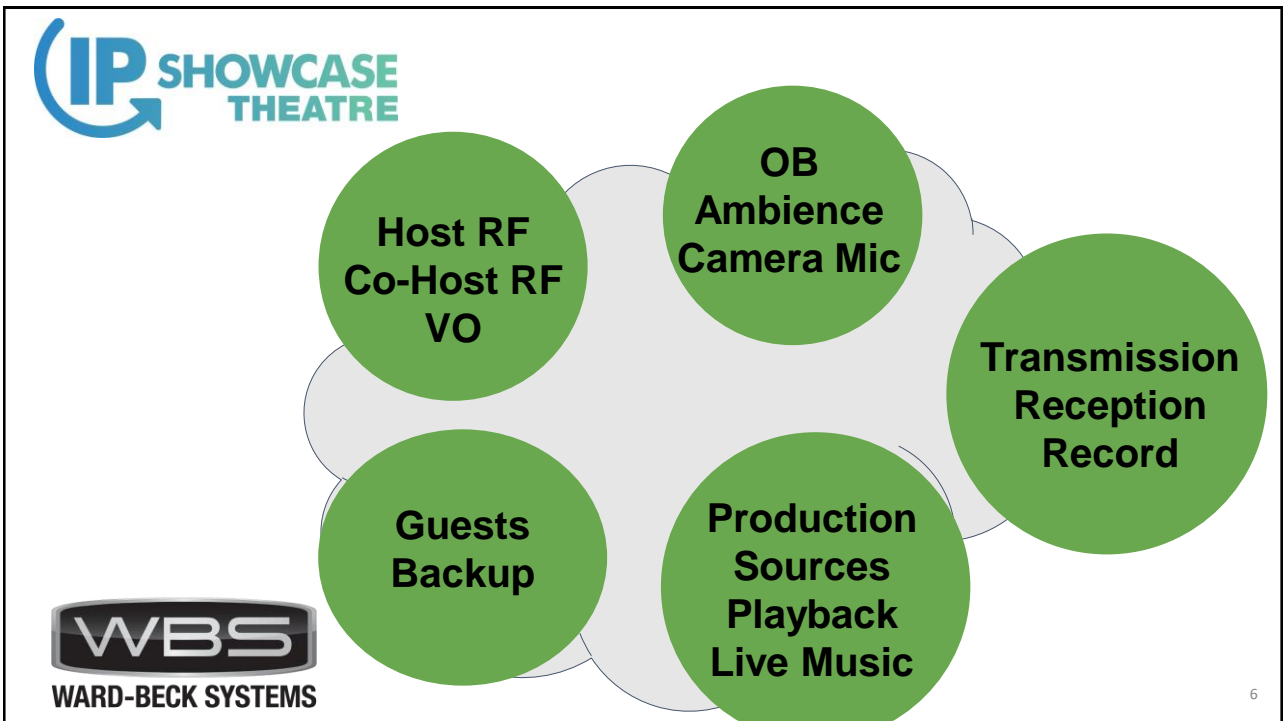
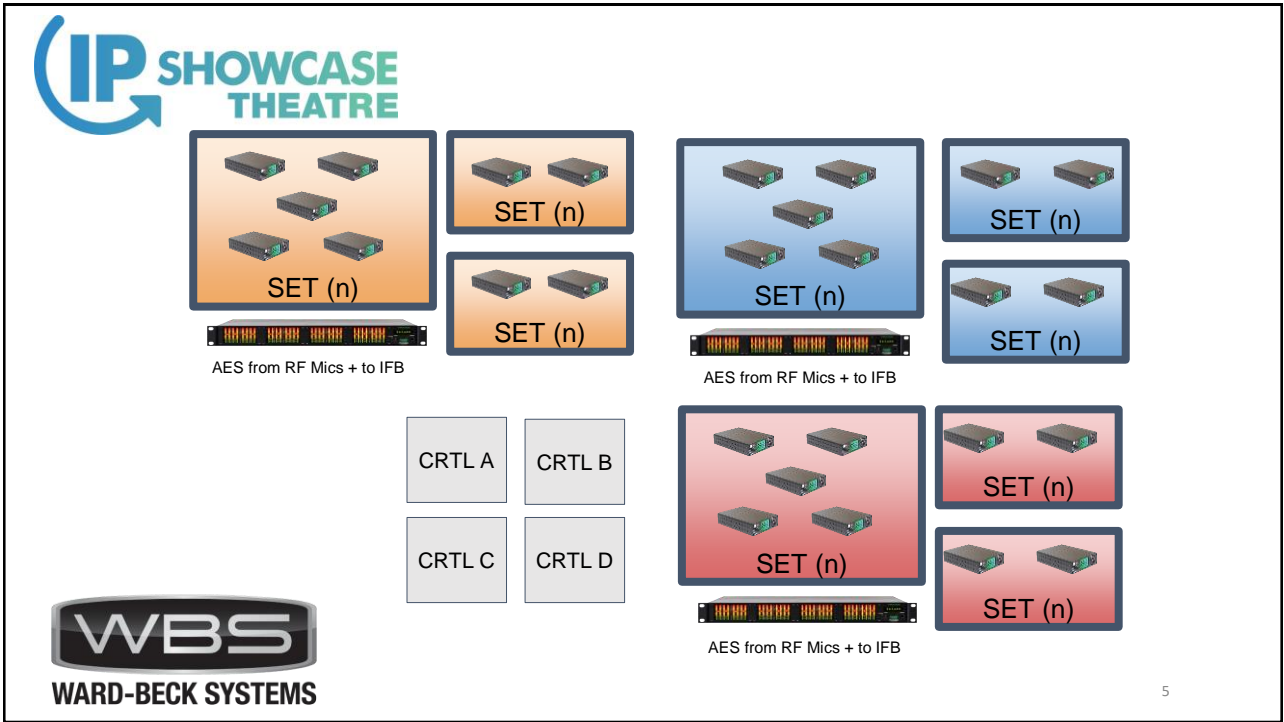


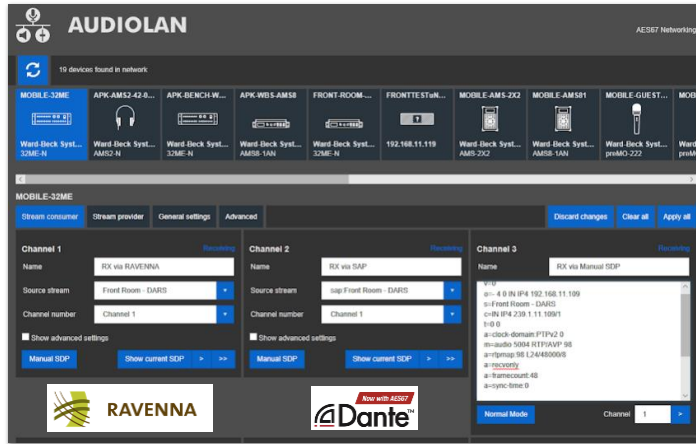
# AES67 Solution:

Provides the ability to interconnect entire systems and/or campuses based on established network technology



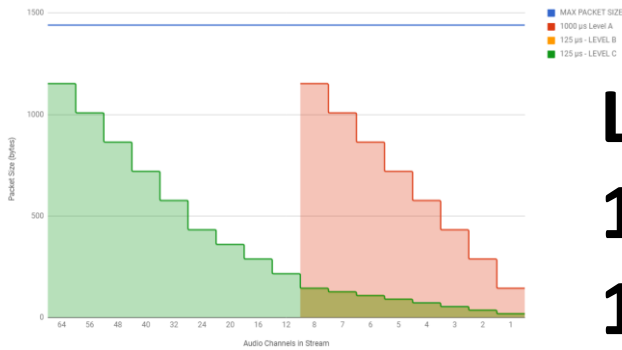
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# SMPTE 2110-30 RX CONFORMANCE

Packet Timing in Microseconds - Bytes Per Packet VS Channels in stream - 48KHz - 24-Bit -

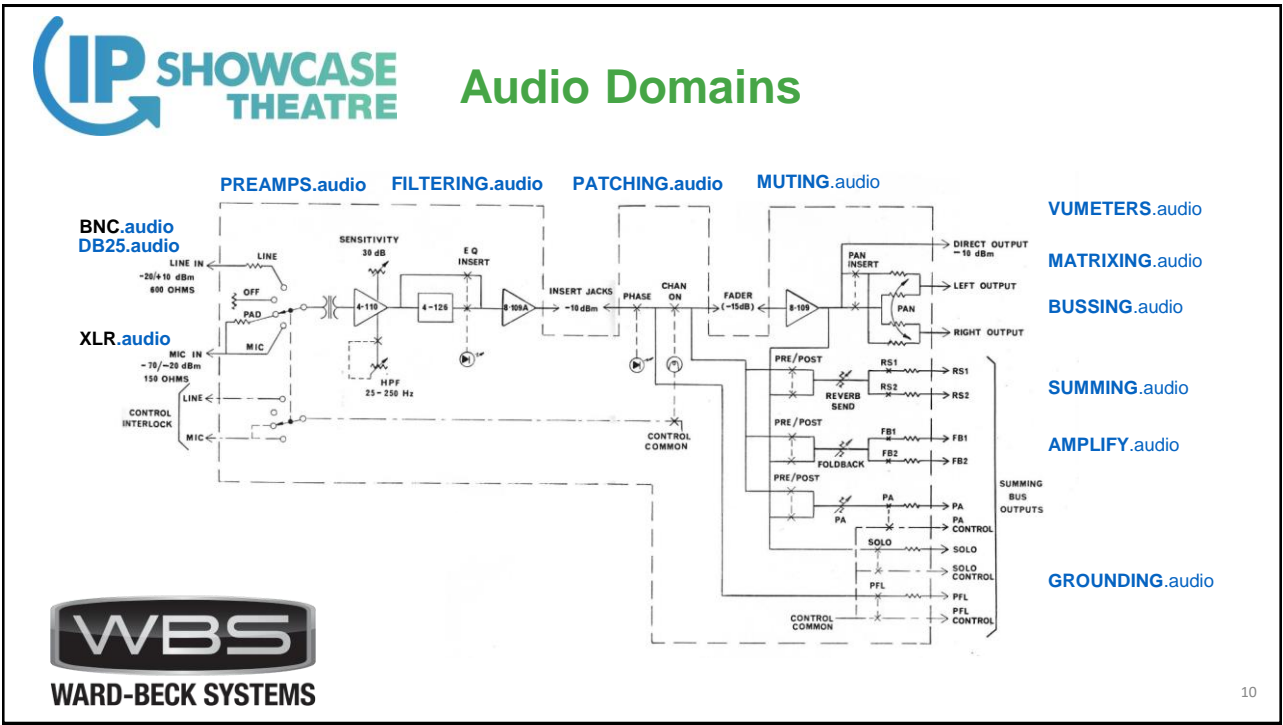
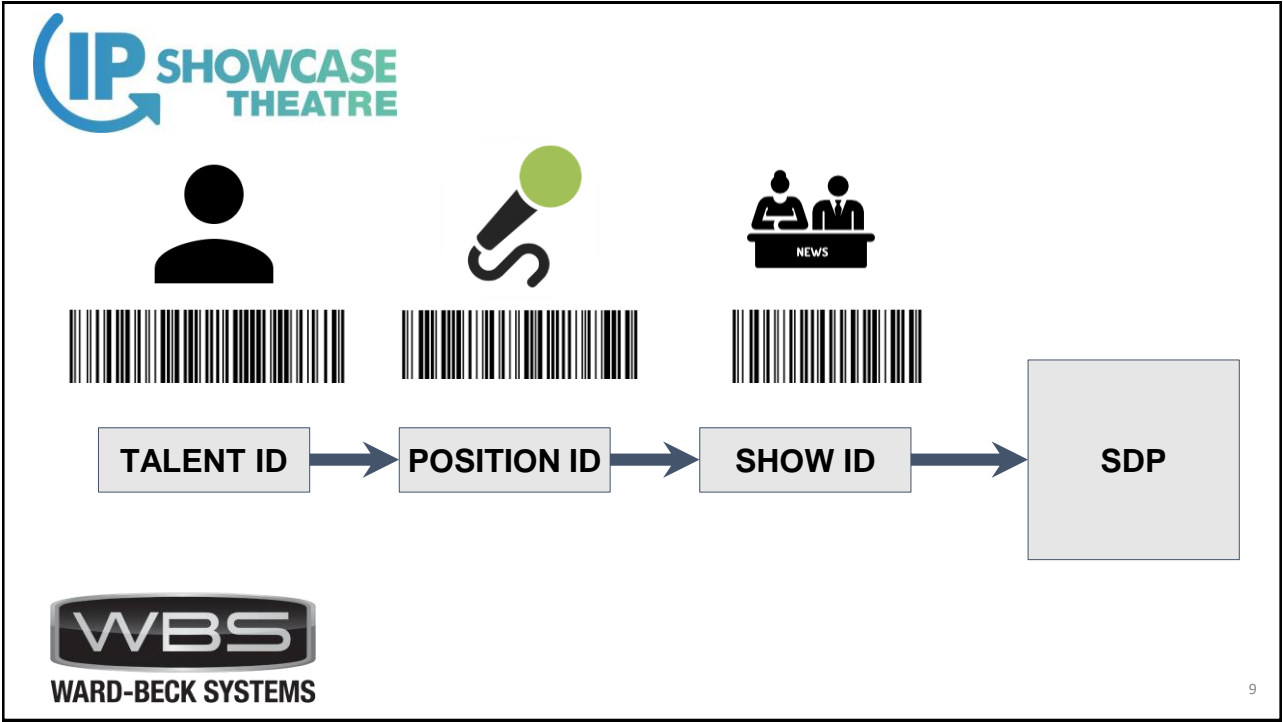


**LEVEL C**  
0.125ms  
1-64 CH

**LEVEL A**  
1ms  
1-8 CH

**LEVEL B**  
0.125ms  
1-8 CH



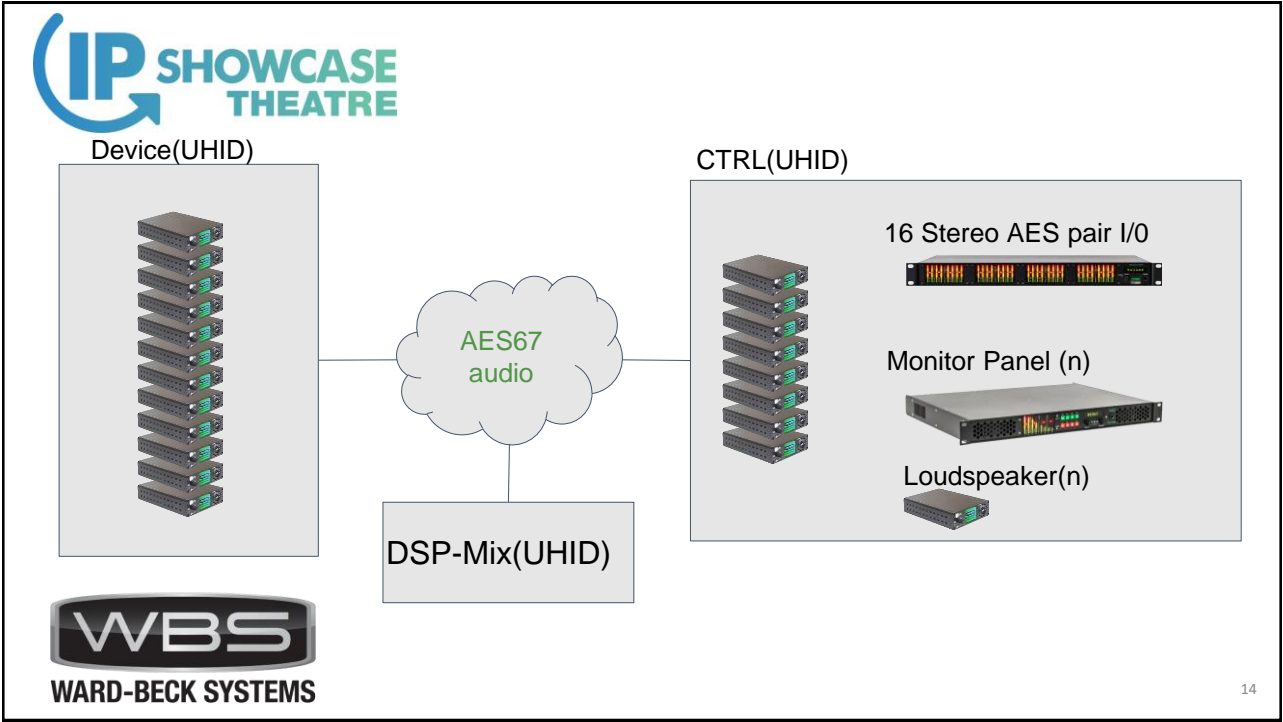
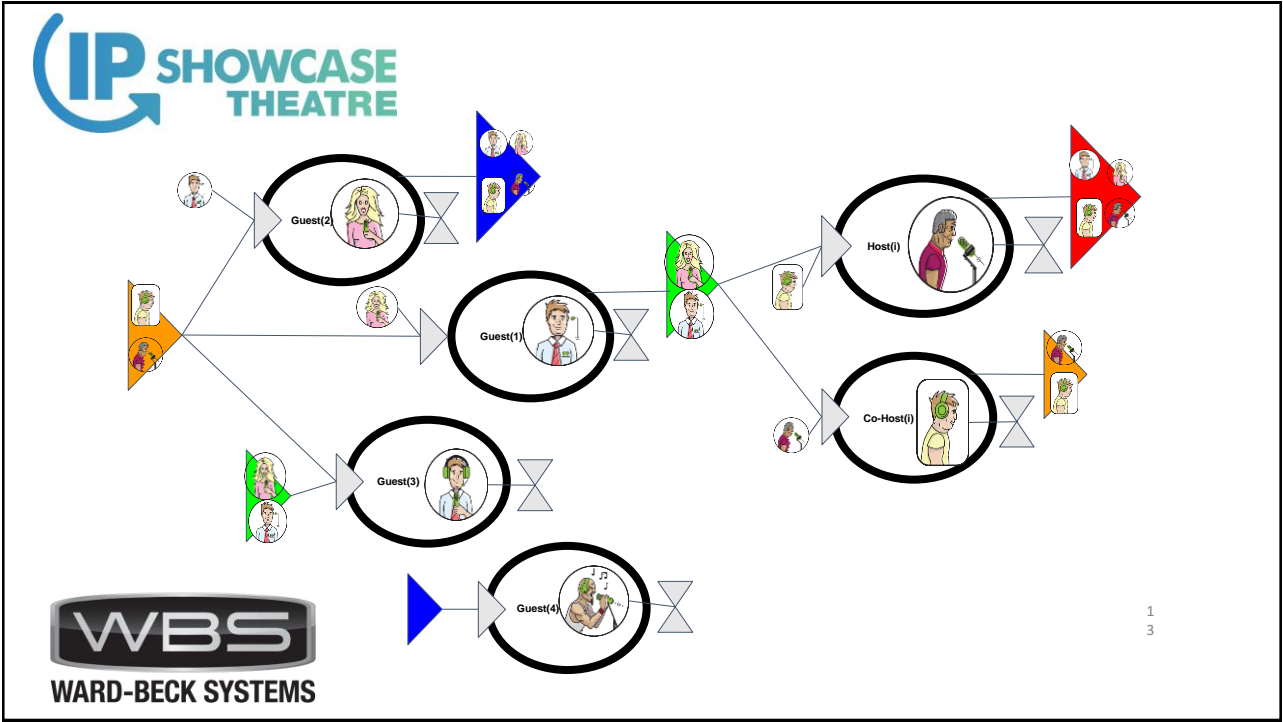


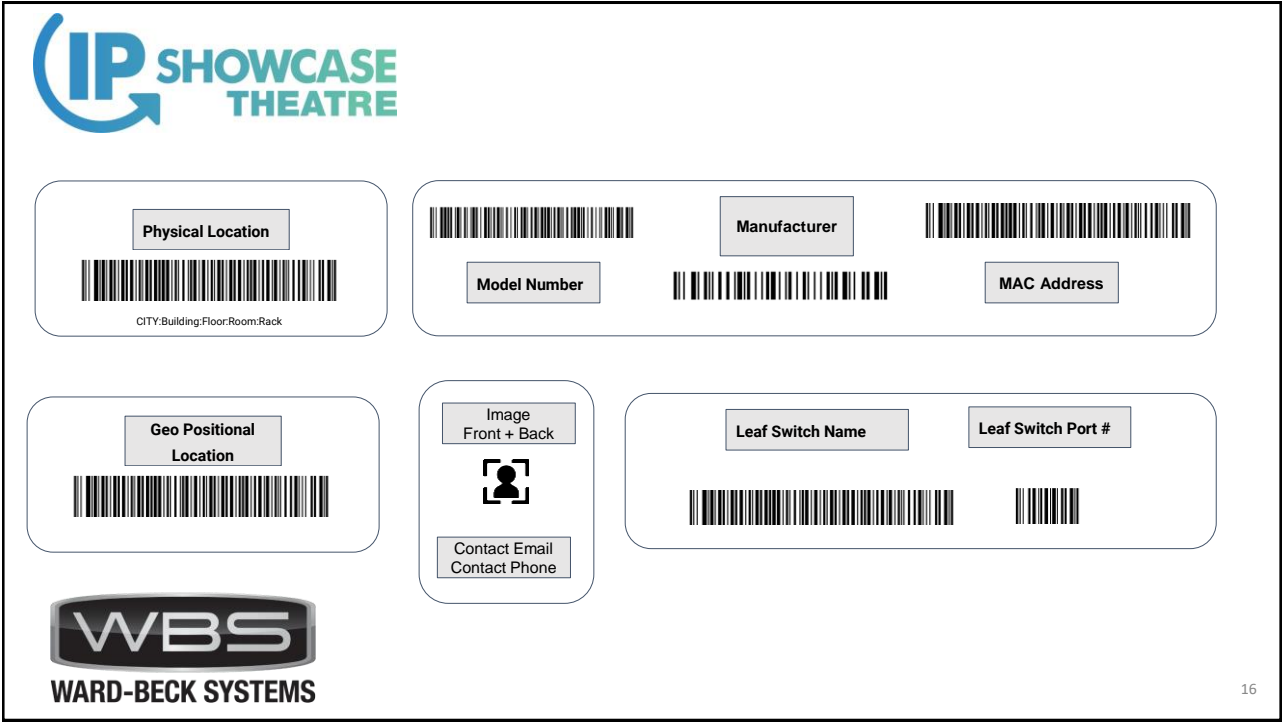
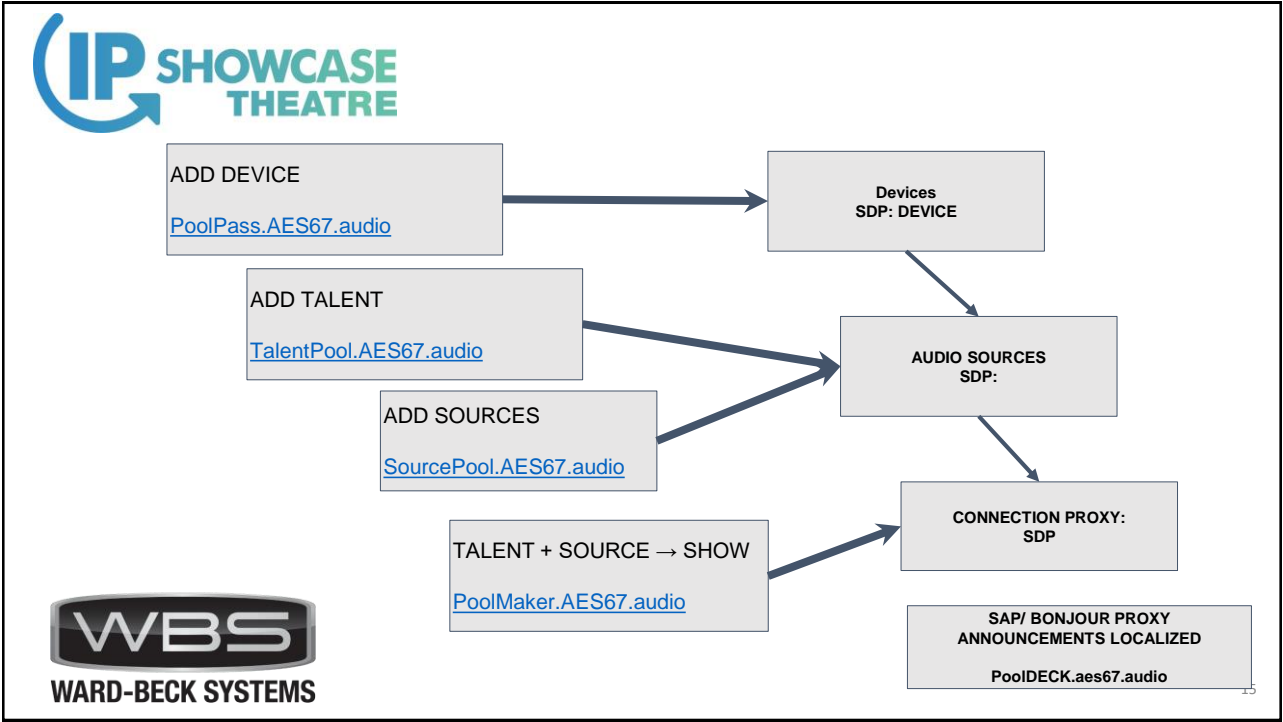


## Session Description Protocol


v=0 v= (protocol version number, currently only 0)  
 o=- 2 0 IN IP4 192.168.110.178 o= (originator and session identifier : username, id, version number, network address)  
 s=WardBeck 32ME s= (session name : mandatory with at least one UTF-8-encoded character)  
 t=0 0 t= (time the session is active)  
 a=clock-domain:PTPv2 0 a= (attribute)  
 m=audio 50000 RTP/AVP 98 m= (media name and transport address)  
 c=IN IP4 239.30.178.1/1 c= (connection information/TTL)  
 a=rtpmap:98 L24/48000/8 a= (attribute)  
 a=recvonly a= (attribute)  
 a=framecount:48 a= (attribute)  
 a=sync-time:0 a= (attribute)  
 a=ptime:1 a= (attribute: Packet Time)  
 a=ts-refclk:ptp=IEEE1588-2008:EC-46-70-FF-FE-00-8F-C8:0 a= (attribute)  
 a=mediack:direct=0 a= (attribute)




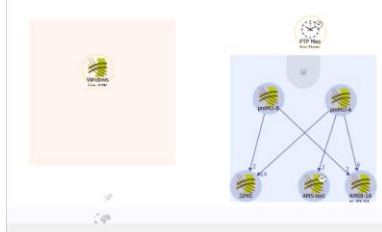


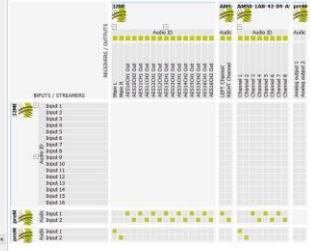


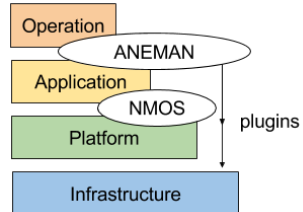

















Connection Change



Broken Connection



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**IP SHOWCASE THEATRE**

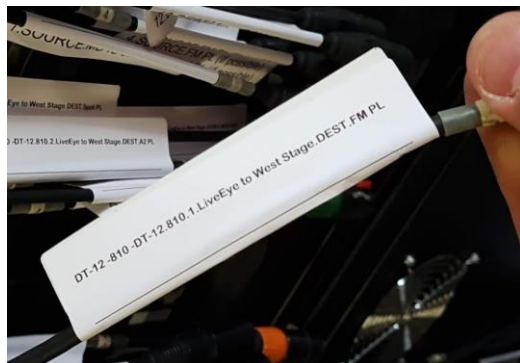
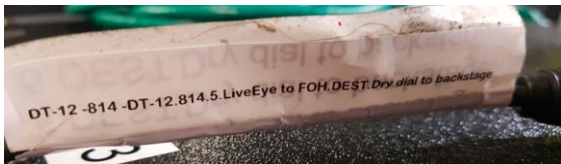
XLR.audio

**WBS**  
WARD-BECK SYSTEMS





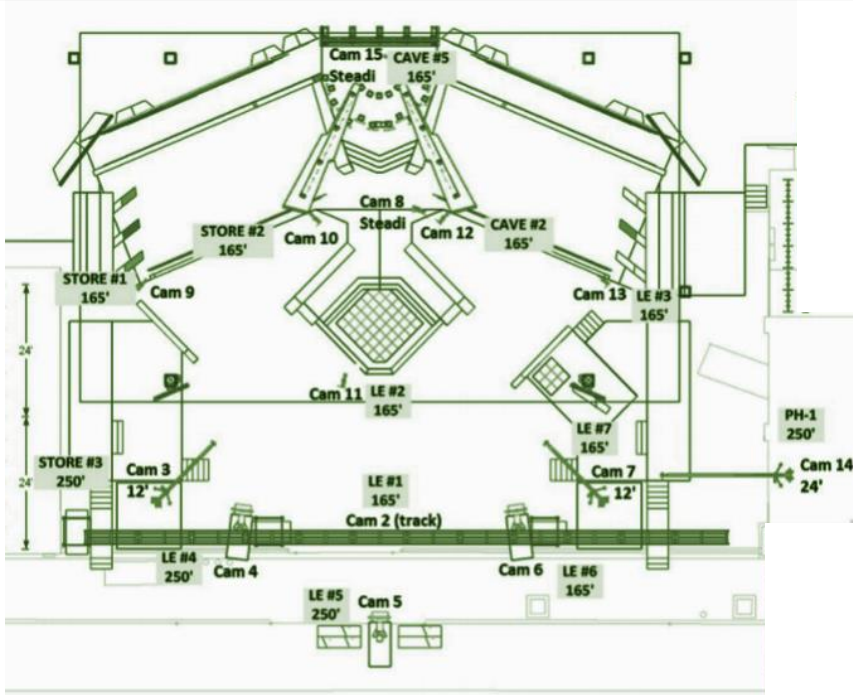
### Leveraging The Data

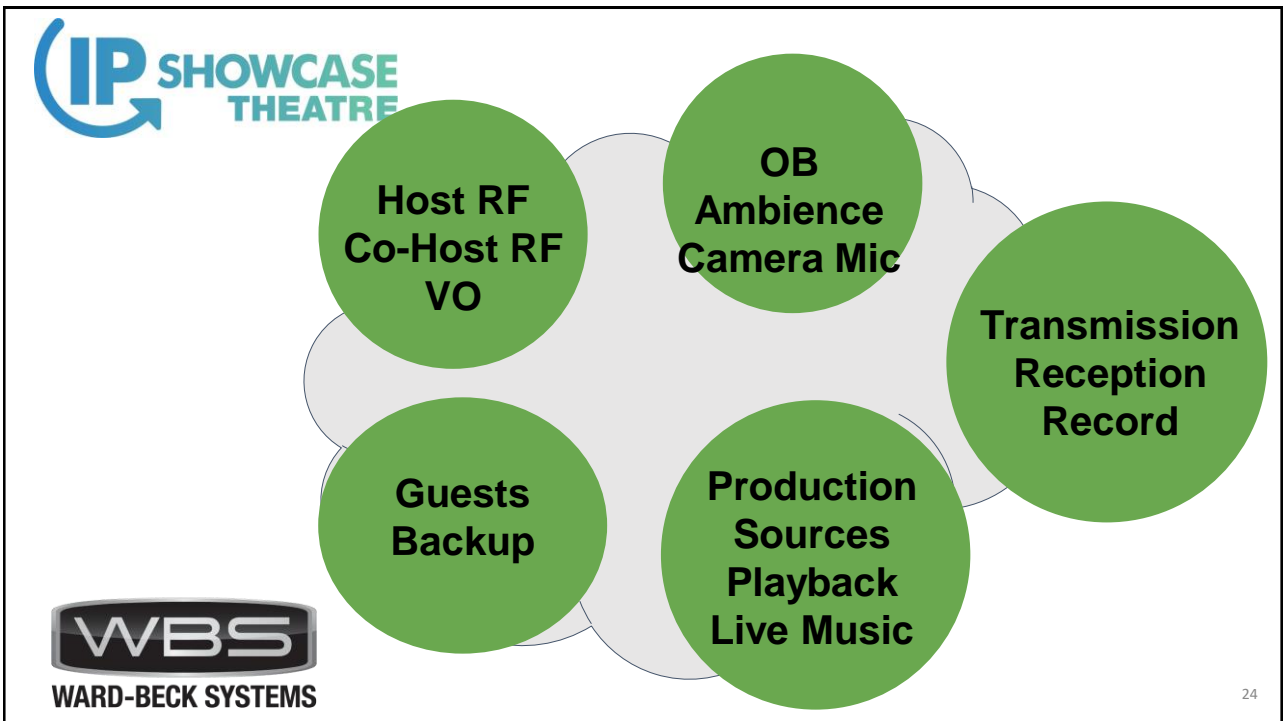
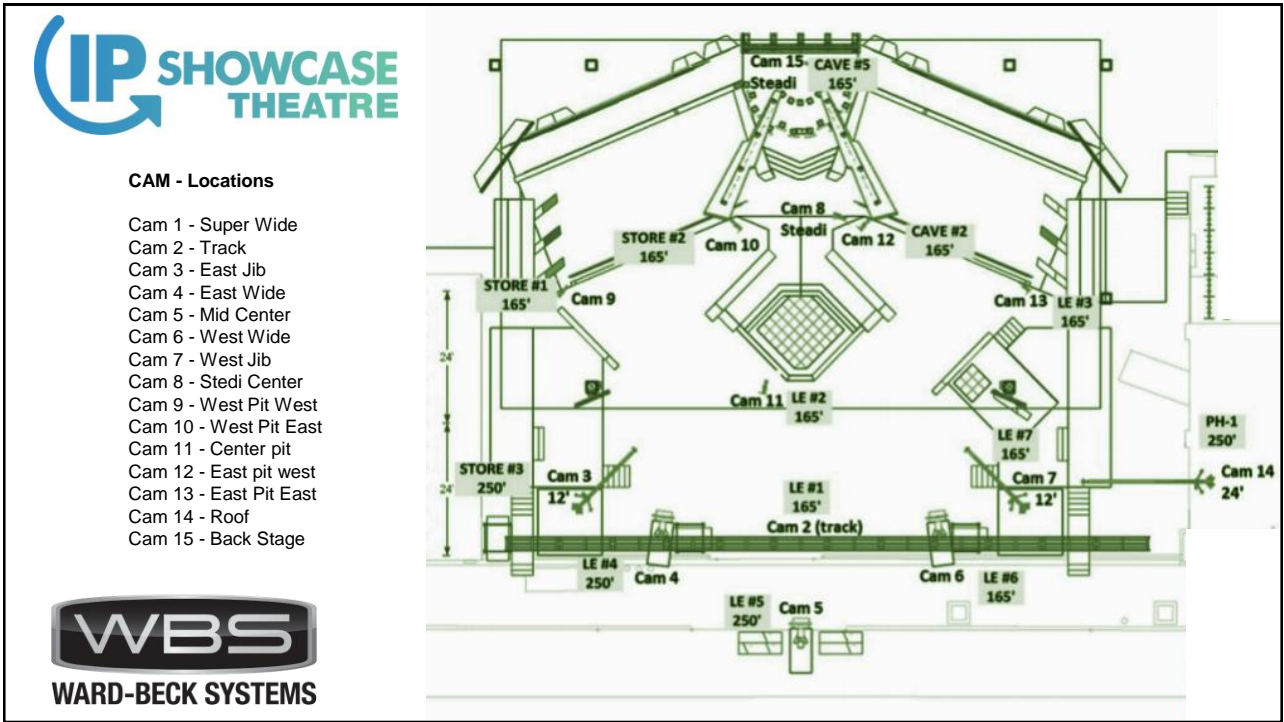


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### LAYOUT







### ATSC 3.0

LIVE  
IMMERSIVE  
MIXING



### Thinking Small

(3) 24" X 24" X 24"  
+  
(4) Laptops



**IP SHOWCASE THEATRE**

**WBS**  
WARD-BECK SYSTEMS

PH-1	250'
Cam 14	24'

Camera- Main
Pat Crandies
Ken McGuire
Jamie Corbett
Cory Dynes
Paul Mills
Cory Lawrence
Prateek George
Chris Corrado
Greg Laws
Pat Pidgeon
Andy Roeso
Basil Young
Connor Jones
Harbinder Singh
Toby Robinson

**IP SHOWCASE THEATRE**

**CENTER.POOL**

**WBS**  
WARD-BECK SYSTEMS

**IP SHOWCASE THEATRE**

**AWARDS.POOL**

**WBS**  
WARD-BECK SYSTEMS

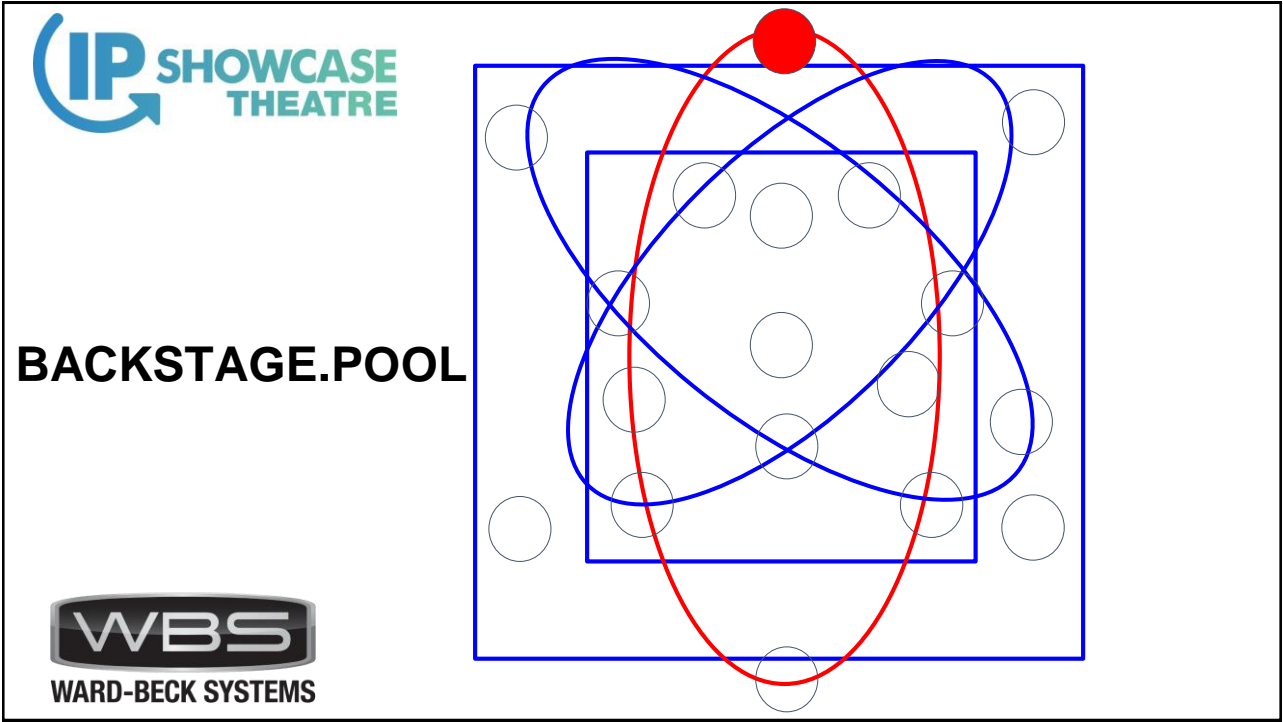
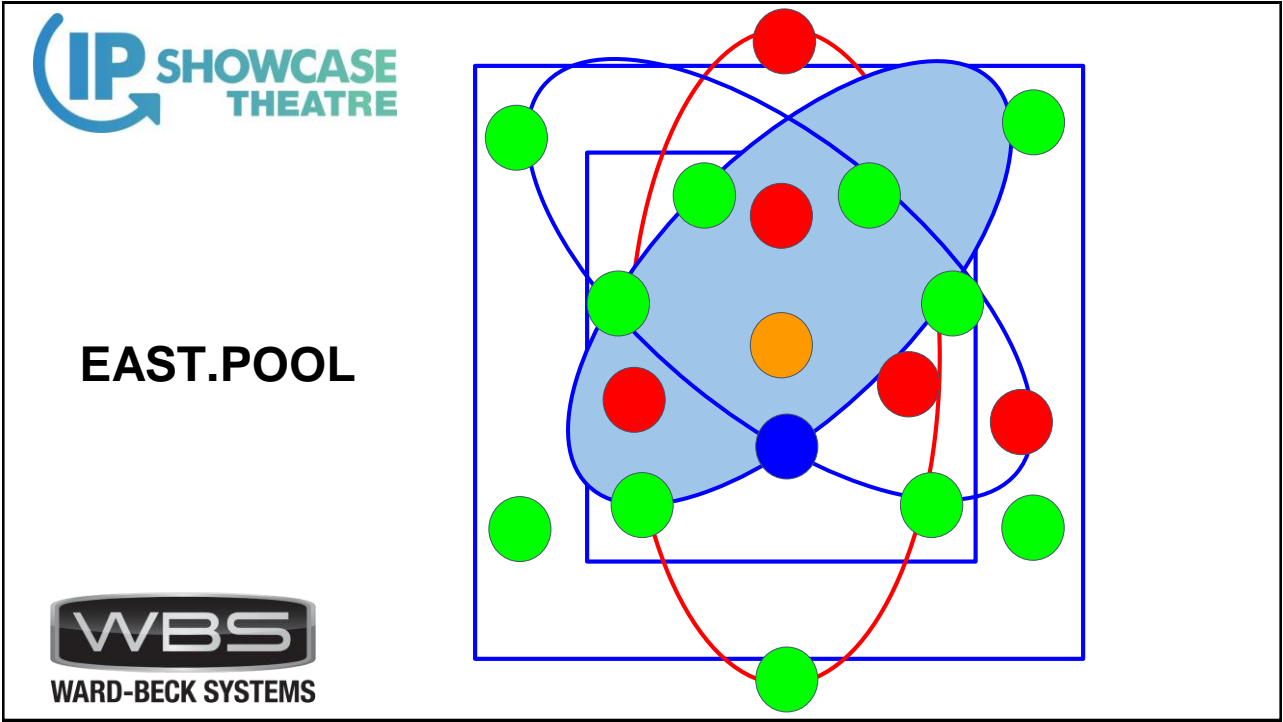
The diagram for AWARDS.POOL is contained within a square frame. It features a central blue node and an orange node. Surrounding them are several red and green nodes. A network of blue and red lines connects these nodes. A thick grey oval highlights a specific cluster of nodes in the center-right area of the diagram.

**IP SHOWCASE THEATRE**

**WEST.POOL**

**WBS**  
WARD-BECK SYSTEMS

The diagram for WEST.POOL is contained within a square frame. It features a central blue node and an orange node. Surrounding them are several red and green nodes. A network of blue and red lines connects these nodes. A light blue shaded area highlights a large, irregular cluster of nodes that covers most of the central and right portions of the diagram.





**IP SHOWCASE THEATRE**

**EVENT.POOL**

**WBS**  
WARD-BECK SYSTEMS

**IP SHOWCASE THEATRE**

**WBS**  
WARD-BECK SYSTEMS

**IP SHOWCASE THEATRE**

**POSITION + BEARING**

**AES70**

43.649868, -79.3907432

Machi Digital Studios

MR. SPUD

Queen St W

**WBS**  
WARD-BECK SYSTEMS

**IP SHOWCASE THEATRE**

**LAYER.0.SWITCHING.AUDIO**

TRUCK.MUSIC.IGMP.AUDIO

TRUCK.VIDEO.IGMP.audio

TRUCK.RF.IGMP.audio

BUILDING.IGMP.audio

AMB.IGMP.AUDIO

IMMERSIVE.IGMP.audio

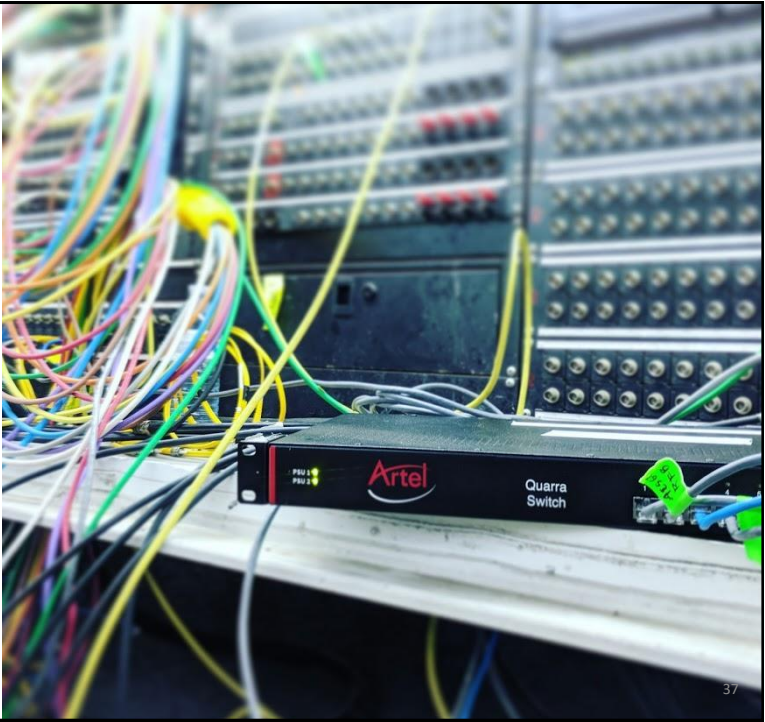
FOH.IGMP.AUDIO

**WBS**  
WARD-BECK SYSTEMS

**IP SHOWCASE THEATRE**

**SWITCHING.AUDIO**

**WBS**  
WARD-BECK SYSTEMS



**IP SHOWCASE THEATRE**

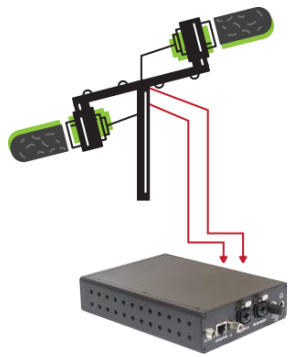
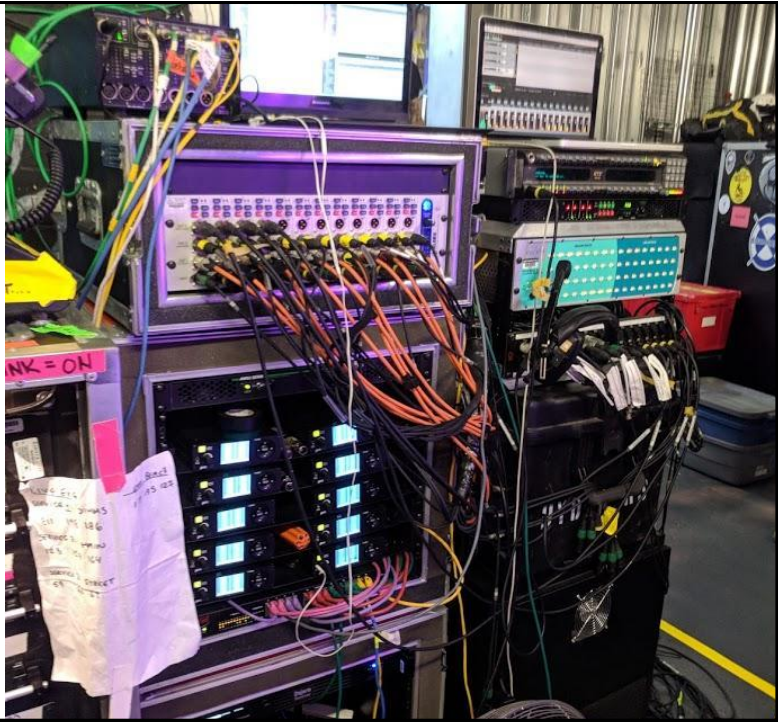
Leveraging  
Building  
Infrastructure


**WBS**  
WARD-BECK SYSTEMS




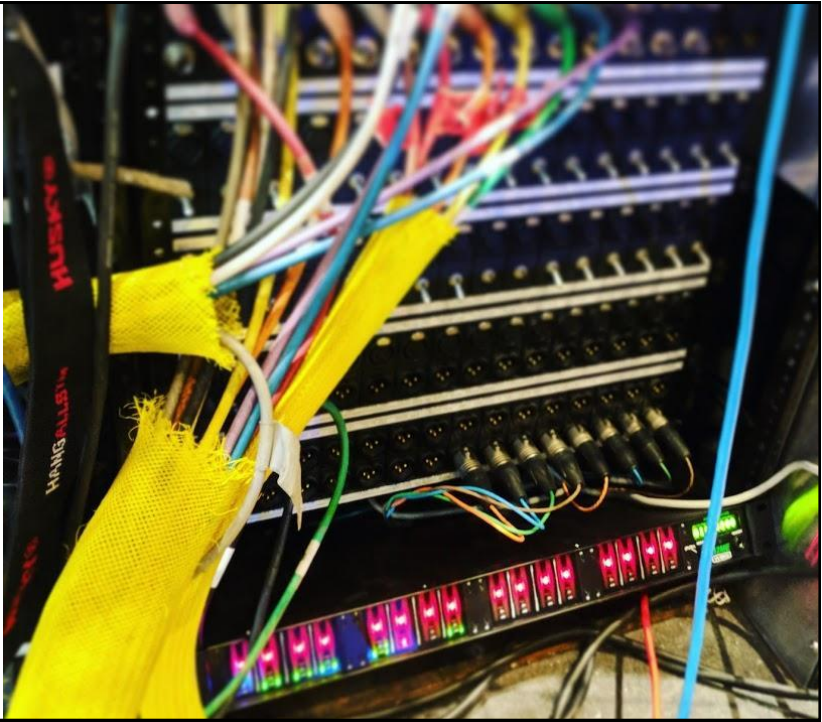





# Resilient Execution





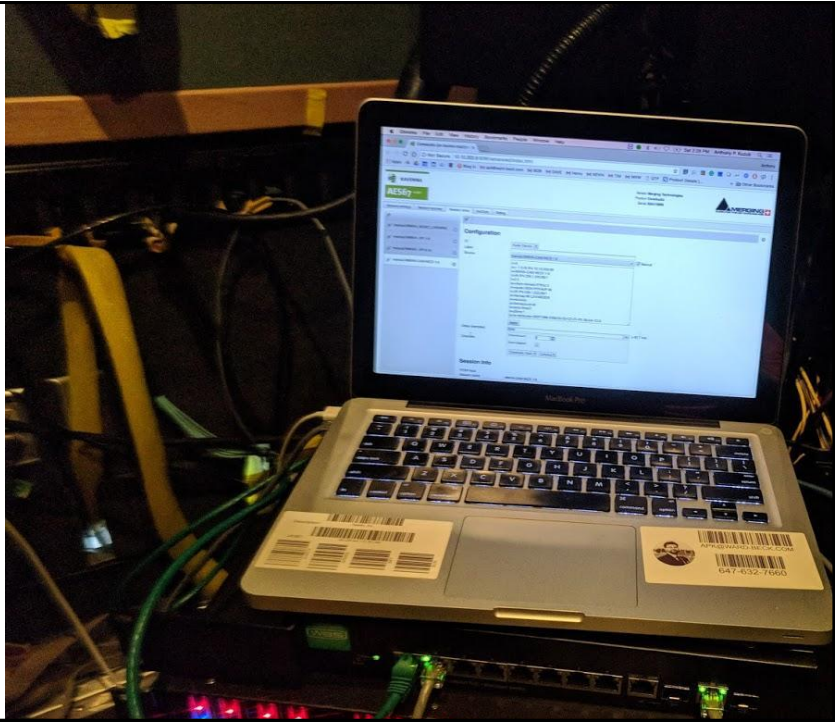
CCU AES OUT

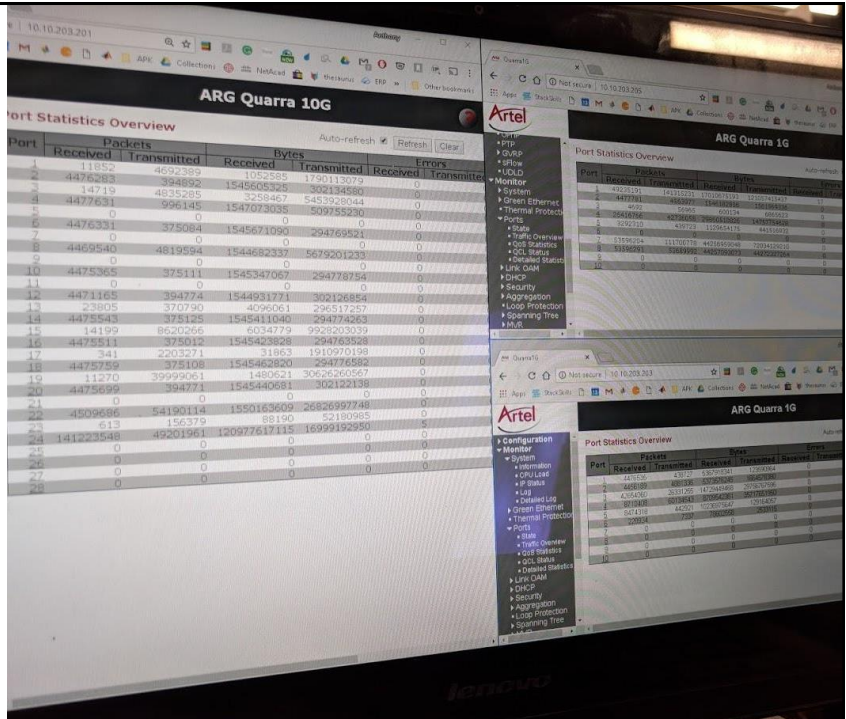


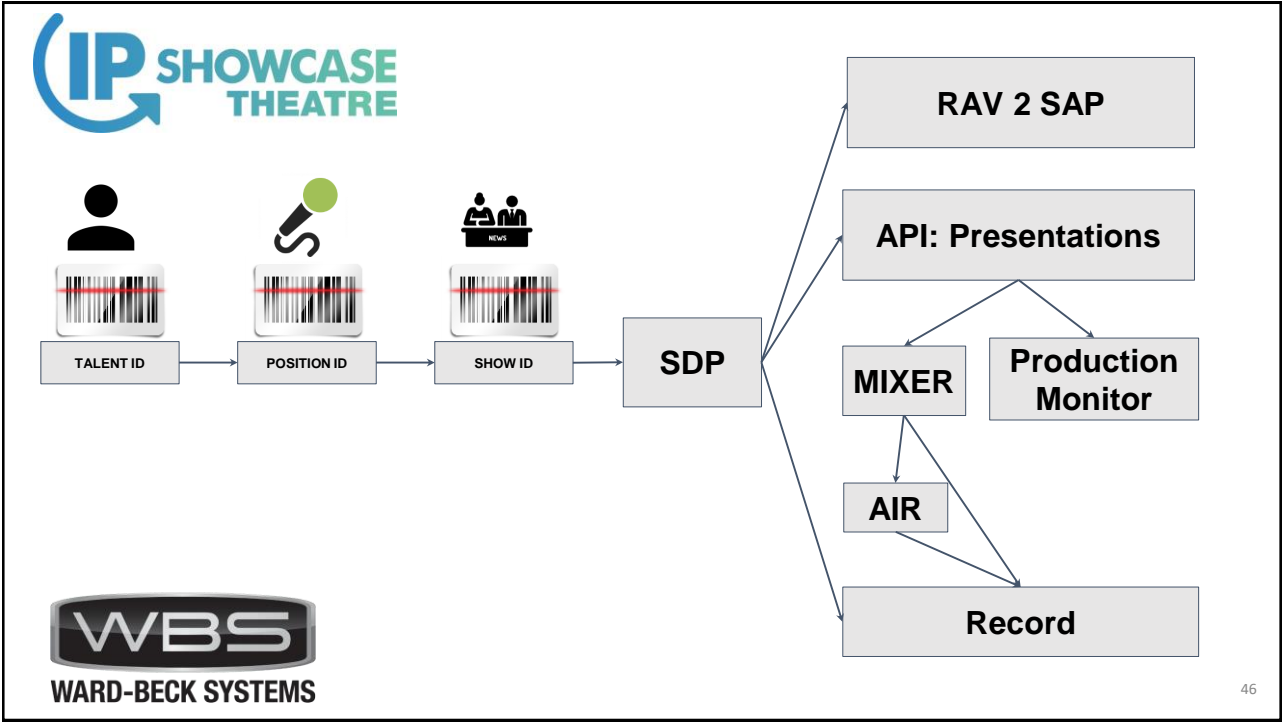
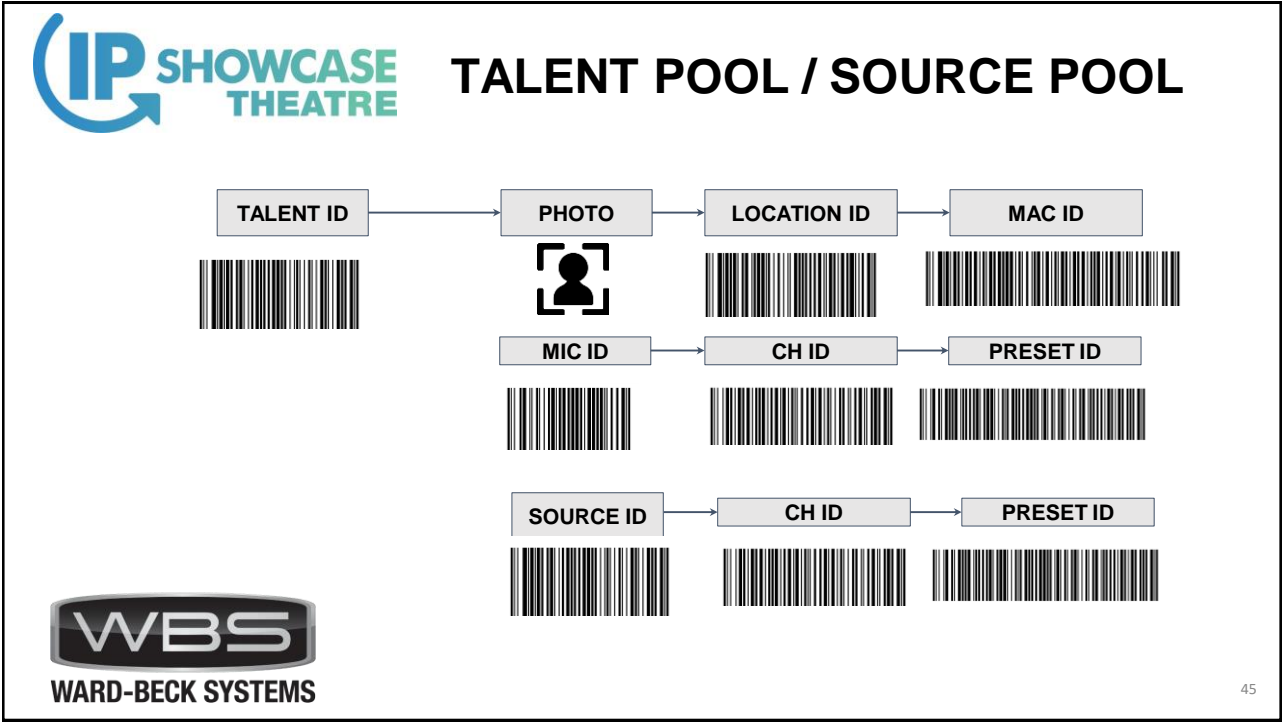


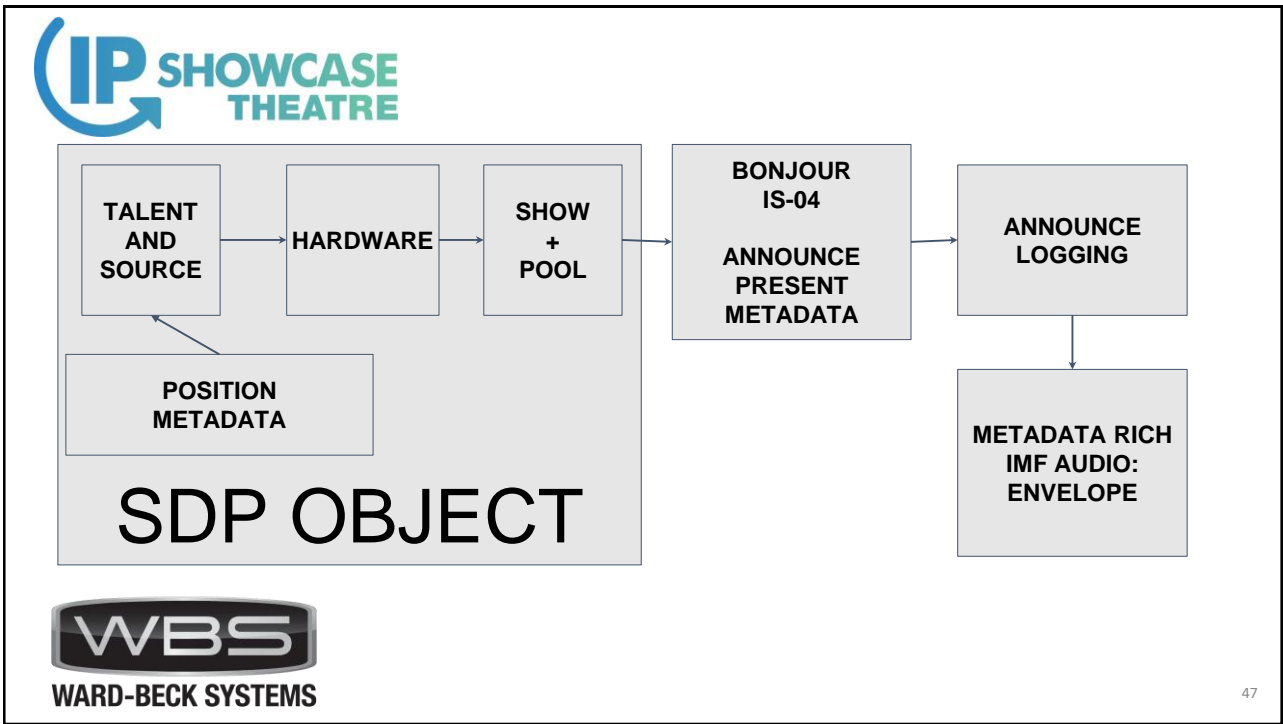
- Virtual Sound Card
- Virtual Machine
- 100 Chan Record
- Sync LTC.AES67



- MONITORING**
- SWITCH
  - PORTS
  - TRUNKS
  - PTP







**IP SHOWCASE THEATRE**

**RAV 2 SAP**

RAVENNA	Origin	Multicast	SAP	SAP	LOC	STEP	EXP	PRO	ENV
Private Search System Client	W	http://192.168.1.1:244000/...	...	192.168.1.27	239.24.1.29	235			
Private Search System Server	W	http://192.168.1.1:244000/...	...	192.168.1.27	239.24.1.29	235			
Private Search System	W	http://192.168.1.1:244000/...	...	192.168.1.27	239.24.1.29	235			
Private Search System	W	http://192.168.1.1:244000/...	...	192.168.1.27	239.24.1.29	235			

**WBS WARD-BECK SYSTEMS**

**RAVENNA A5507**  
The RAVENNA 2-SAP Converter is licensed and optimized to help connecting AVS50.





# Extended SDP

a=OCA:1000:1.1.3:OcaBlock:0:1:BLK\_Library=Library  
 a=OCA:1001::OcaLibrary:0:1e6:Application= 222  
 a=OCA:1002::OcaLibrary:0:1e6:Preset= 57575  
 a=OCA:1003::OcaLibrary:0:1e6:Microphone=23452345

a=OCA:10000:1.1.3:OcaBlock:0:5:preAMP 1=Kick Drum  
 a=OCA:10001:1.1.1.4:OcaSwitch:0:1:Phantom=1  
 a=OCA:10002:1.1.1.4:OcaSwitch:0:1:Phase\_Invert=0  
 a=OCA:10003:1.1.1.4:OcaSwitch:0:1:Input(MIC/LINE)=0  
 a=OCA:10005:1.1.1.5:OcaGain:0:63:Pre Amp Gain=45  
 a=OCA:10100:1.1.3:OcaBlock:0:3:DSP Input 1=2  
 a=OCA:10101:1.1.1.4:OcaSwitch:0:1:HPF Enable=1

# SDP: Common Language

a=OCA:1000=Library  
 a=OCA:1001= 222  
 a=OCA:1002=57575  
 a=OCA:1003= 23452345



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# Thank You

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