

A CLOUD-READY SOLUTION FOR RADIO AND INTERNET STREAMING AUDIO PROCESSING

WISCONSIN BROADCASTERS CLNIC
September 2021



Copyright Ross Video

ROSS[®]
LIVING LIVE!



AGENDA

- Media Challenges We Are Addressing
- A Bit About Ross, Orban and Our Partnership
- What is SoftGear™ Technology
- Radio and Internet Streaming Audio Processor



Servus TV (Red Bull Media House) Control Room, Salzburg, Austria



CHALLENGES FACING BROADCASTERS



Changing Business Environment



Shorter Opportunity Window



Un-flexible "Big Iron" Tools



Slow, hard and expensive to scale



Cloud is scary:
new tools, skills,
management



CHALLENGES FACING BROADCASTERS



Changing Business Environment



Shorter Opportunity Window



Un-flexible "Digital Content"

SOLUTIONS NEED TO BE FLEXIBLE, ADAPTABLE, SCALABLE AND FUTURE-READY!



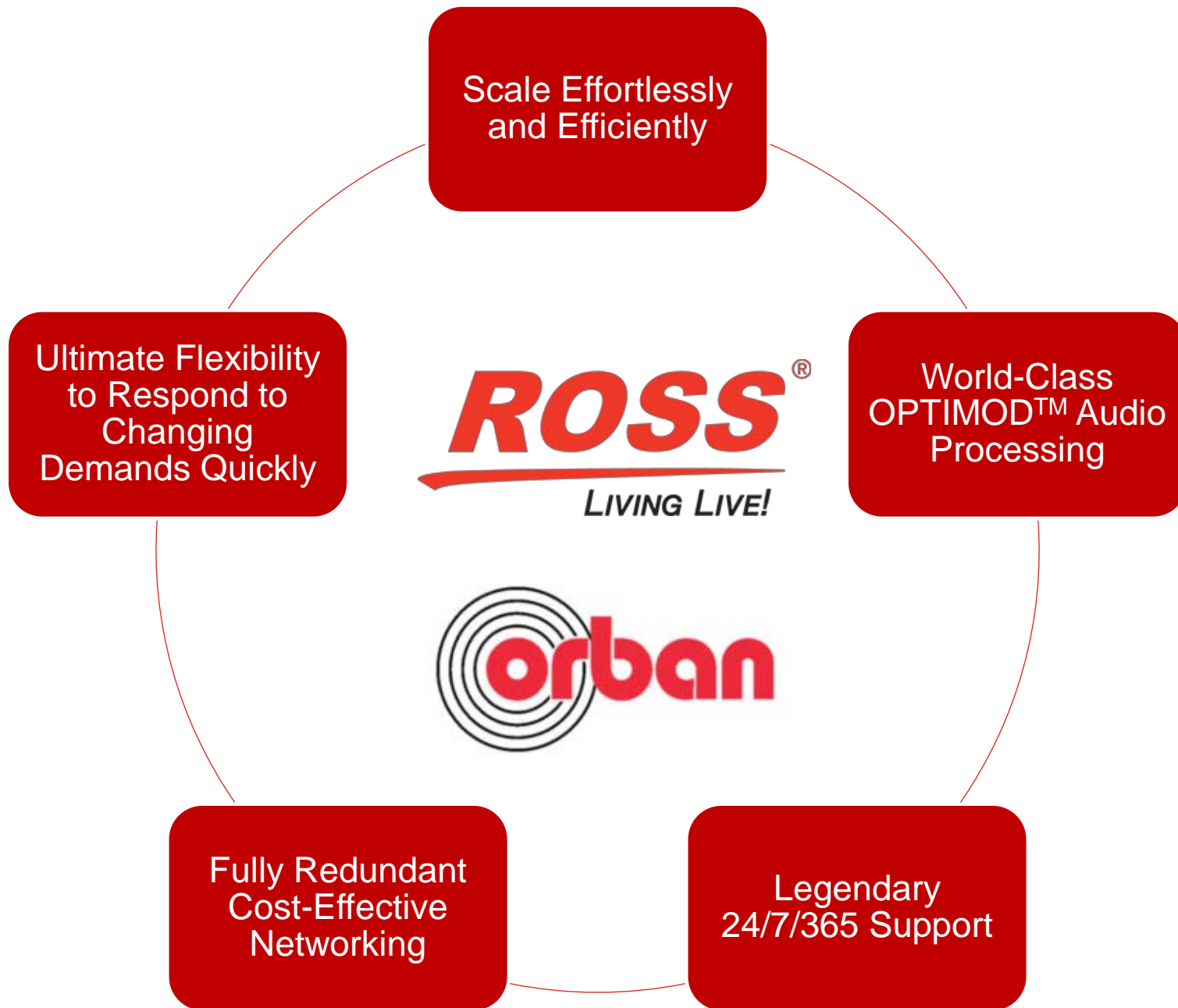
Slow, hard and expensive to scale



Cloud is scary: new tools, skills, management



OUR PARTNERSHIP



Help broadcasters navigate the rapidly changing media landscape easily and cost effectively by offering solutions unparalleled in the industry

A PASSION FOR LIVE PRODUCTION

- Ross creates technology, solutions and services for the live production industry
- Ross has a unique position in the industry thanks to our focus, and the breadth and depth of our portfolio
- Ross solutions enable customers to develop *High Impact, High Efficiency* live productions



Ross, Technology deployed in the LED Control Room
for 86th edition of the NFL Draft

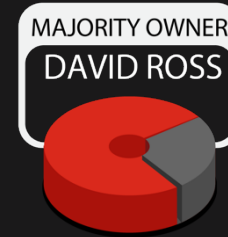
THIS IS WHO **WE** ARE



David Ross, President and CEO



Privately Owned,
Founded in 1974



Majority Owned
by David Ross



>200 employee
shareholders



Self Funded, &
Debt Free



Revenue Keeps on
Growing; ~15%
CAGR

THIS IS WHO **WE ARE**

DOING BUSINESS IN



100+
COUNTRIES EVERY YEAR



TOP
Rated*

- Value For Money
- Great Customer Service



15
GLOBAL
OFFICE
LOCATIONS

Ottawa
Iroquois
London - Reading
London - White City
Singapore
Virginia
Kanata
Sunnyvale
Sydney
Fort Lauderdale
Beijing
Melbourne
Salt Lake City
Connecticut
Toronto

LIVE PRODUCTION
Technology & Services



1000+
EMPLOYEES



ROCKET SURGERY
ROSS CREATIVE & PROFESSIONAL SERVICES

100+ CUSTOMER
PROJECTS
A YEAR

ACQUISITIONS IN 11 YEARS

17



- 1) Media Refinery - Graphics
- 2) Norpak - Data And Ratings Insertion
- 3) Codan Broadcast - Routers
- 4) FX Motion - Robotic Cameras
- 5) Cambotics - Robotic Cameras
- 6) Montalto - Routers
- 7) MCP - Mobile Production Services
- 8) ADS - News Room Computers
- 9) Unreel - Virtual Set Technology
- 10) Rocket Surgery - Creative Services
- 11) Covelo - IP Technology
- 12) Abekas - Video Servers & Replay
- 13) Portalis - Workstation Integrator
- 14) Piero - Sports Graphics Analysis
- 15) Coiron - XPression Applications
- 16) Image Video - Tally Control Platform
- 17) Primestream - Asset Management

PRODUCT & SERVICE CATEGORIES

26

Graphics, Camera Robotics, Production Switchers, Signal Processing, Routers, Master Control, Automated Production, Facility Control, Virtual & Augmented Reality, Creative Services, Mobile Production Services, Cameras, Video Servers, Replay Systems, Media Asset Management, News Room Editorial Systems, Social Media Media Management, Venue Signage System, MultiViewers, Media IP Technology, LED Video Processors, Studio-In-A-Box, Workstation Integration, Sports Analysis, Tally Systems, Remote Production Cloud

70,000 Sq.ft

MANUFACTURING
FACILITY

Top 3 Ross Video Word Associations*

Innovative Leader Reliable

*Source: Devencroft Big Broadcast Survey

9

VERTICAL MARKETS



ROSS

PRODUCTION
SERVICES

500+

EVENTS
A YEAR

ROSS
LIVING LIVE!

OUR CUSTOMERS AND OUR VERTICAL MARKETS

Broadcast



Corporate



Education



Worship



Entertainment



Government



Stadiums



Esports



MOTION GRAPHICS

XPRESSION | Single, Triple, 4K UHD Flex, Prime, Go!, Designer, Developer, Remote Sequencer
XPRESSION CLIPS
XPRESSION TESSERA
XPRESSION MAPS 3.1
XPRESSION TELESTRATE
XPRESSION TOUCH FACTORY
XPRESSION BRAND IT
PIERO | Sports Analysis Graphics
PIERO LIVE | Down and Distance



1RU, 2RU & 4RU

CREATIVE SERVICES

ROCKET SURGERY | Graphics Creation



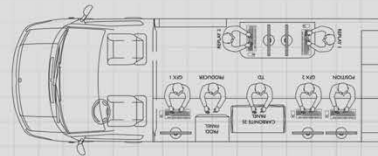
STUDIO IN A BOX

GRAPHITE | All-in-One Live Production Vehicle
GRAPHITE PPC | Portable Production Centre



OPENTRUCK

OPENTRUCK | Flight Case through 40-foot Truck



PRODUCTION SERVICES

ROSS PRODUCTION SERVICES



MULTI-SCREEN IMAGE PROCESSING

CARBONITE MOSAIC



CAMERAS

ACID CAMERA | H200-UCHR, Z50-UCHR
PIVOTCAM | PIVOTCam SE



ASSET MANAGEMENT & STORAGE

STREAMLINE | Standard, Enterprise, Graphics
STREAMLINE.CLOUD
STREAMLINE NEWS VIDEO SUITE | MAM, Storage & Playback for News
EVO | Networked Storage



CHROMA KEYING

ULTRACHROME HR



* Carbonite Black Chassis with UltraChroma HR Software

PRODUCTION TECHNOLOGY & SERVICES

NEWS & SOCIAL MEDIA

INCEPTION NEWS | Academic, Express, Standard, Enterprise
INCEPTION LIVE
INCEPTION SOCIAL
INCEPTION.CLOUD
HORIZON



CONTROL SYSTEMS

OVERDRIVE | Express, Prime, Premium
DASHBOARD | Facility Control
LIGHTNING | Assembly Control
ULTRITOUCH | Touch Screen Control
POWERPLAY | Event Control System



INFRASTRUCTURE

SIGNAL PROCESSING

OPENGear | Modular Signal Processing, QGX Frame
SOFTGear | Software Microservice Media Processing Platform
MASTER CONTROL | MC1-UHD Master Control System
NIELSEN | Watermarks Encoder
GATOR | 12G UHD Signal Conversion and Processing
RAPTOR | ST 2110 Gateway
GEARLITE | Point of Use Signal Processing
NEWT | ST 2110 Gateway
MASTER SYNC & REFERENCE | SRG-2200, SRG-4500, ACO-4400
AUDIO MONITORING | MB 651, MB 652



CONNECTIVITY

ULTRIX 12G & IP ROUTER | 16x - 160x and beyond
NK ROUTER | 16x4 - 72x72
ULTRITOUCH | Touch Screen Control
ULTRIMIX-MXR | Audio Mixer License
ULTRICORE BCS | Advanced Connectivity System Controller
ULTRICORE IP | IP Controller License for Ultricore BCS
ULTRICORE TLX | Tie-Line Manager license for Ultricore-BCS
PRO-XI | Workstation Integrator
TSI 4000 | Next Generation Tally Control System

IP TECHNOLOGY

IP GATEWAYS | ST 2110 and AES67: Iggy, Newt, Raptor
SOFTWARE DEFINED PROCESSING | softGear Microservice Processing Platform

OEM PRODUCTS | BACH ST-2110 / AES67 OEM Modules and SoCs.



VIDEO SERVERS, REPLAY & DELAY

MIRA+ | Enhanced Replay System
TRIA+ | Enhanced Production Server
TRIA+ UHD | Enhanced Production Server
TRIA NEWS | News Clip Server

MIRA EXPRESS | Replay System
TRIA EXPRESS DUET | Video Clip Server
AIRCLEANER | Live Events Delay
KIVA | Studio Live



PRODUCTION SWITCHERS

ACUITY

ACUITY PANEL | A1s, A2m, A2x, A3m, A3, A4
ACU-4, ACU-8 | SDI, SD/HD/UHD
ULTRIX ACUITY | SD/HD/HD/HD/HD/HD

CARBONITE

TOUCHDRIVE | TD1C, TD1, TD2, TD2S, TD3S
CARBONITE BLACK SOLO
CARBONITE BLACK SOLO 13
CARBONITE BLACK PLUS
CARBONITE BLACK PLUS 12G
CARBONITE ULTRA



*Integrated RAVE audio mixer option

ROBOTICS

FURIO SKYDOLLY | Ceiling-Mounted Furio Dolly, S2 Inverted Lift
FURIO LIVE | Live Head, SE Dolly and SE Lift; PanBar and Joystick Controls
FURIO STUDIO | VR100, VR600 Heads; SE & S2 Lifts; SE BlackBird
CAMBOT | 520PT, 600PT, 700PT Heads; 600 BlackBird; 600XY & 700XY Free-Roaming Peds
VR0 | Manual Fluid Head with Tracking
SMARTSHELL | Robotic Camera Control System, CamBot Motion Director



VIRTUAL & AUGMENTED REALITY

TRACKLESS VIRTUAL LUCID STUDIO | Control System & Workflow
VOYAGER | EPIC Unreal Engine 4 AR/VR Renderer



ROSS
LIVING LIVE!

Who is Orban?

- Founded 45 years ago by Robert Orban who is still at his bench
- State-of-the-art audio processing for live performances, content creators, radio, TV and Internet broadcasters
- US and Germany production
- Powering over 14,800 broadcasts and live events every year



We Are Audio Processing

- Loudness + Dynamic Range Measurement and Control
- Stereo and Multi-channel Surround Technologies
- Broadcast, Consumer and Content Creation Applications





**Delighting Over
One Billion Ears
Every Day**



The softGear™ Platform



Copyright Ross Video



THE SOFTGEAR™ PLATFORM



softGear enables flexibility to meet the rapidly changing needs of today's broadcasters, providing software media processing built on a scalable microservices platform ideal for on-premise or cloud deployment



nielsen
.....

 **Dolby**
AUDIO



 **ST 2110**

DashBoard



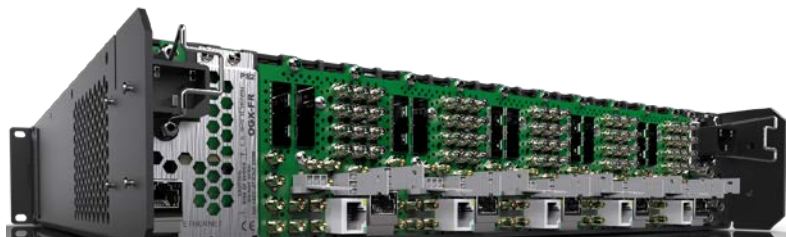
Copyright Ross Video

ROSS
LIVING LIVE!

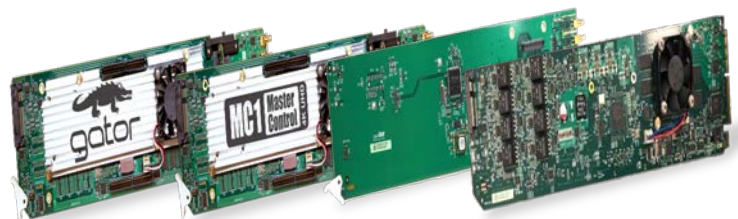
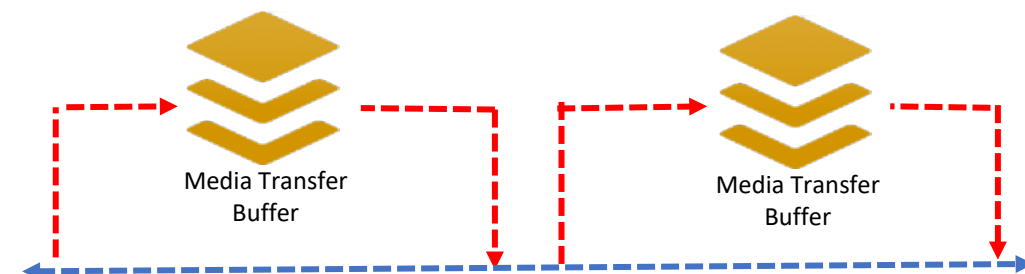
THE EVOLUTION OF MEDIA PROCESSING INSPIRED BY OPENGear



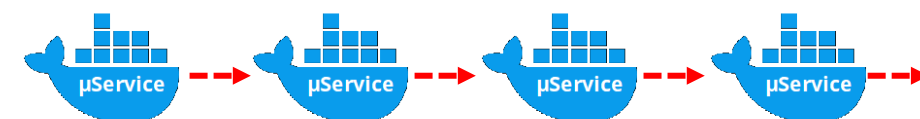
Hardware
Environment



Internal
Communication



Best of Breed
Processing



Manage, Control
and Monitor





RSAP | Radio and Streaming Audio Processor



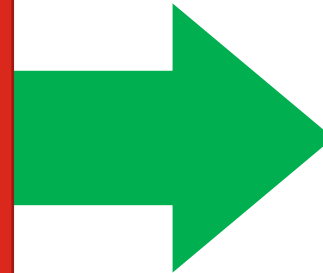
THE ORIGINS OF A POWERFUL SOLUTION



- Microservices Platform
- Containerized Applications
- High Channel Density
- Advanced Networking
- Built-In Reliability



- World-Class OPTIMOD™ Processing
- MX-Limiter
- Multi-Band Processing
- Hand-Crafted Presets



RSAP | RADIO AND STREAMING AUDIO PROCESSOR

- Easy Migration & Redundancy
- Easy Deployment & Scaling
- Easy on the Budget
- Easy to take to the Cloud
- Easy to Configure and Manage

ULTIMATE FLEXIBILITY
BUILT-IN RELIABILITY
ONE POWERFUL SOLUTION



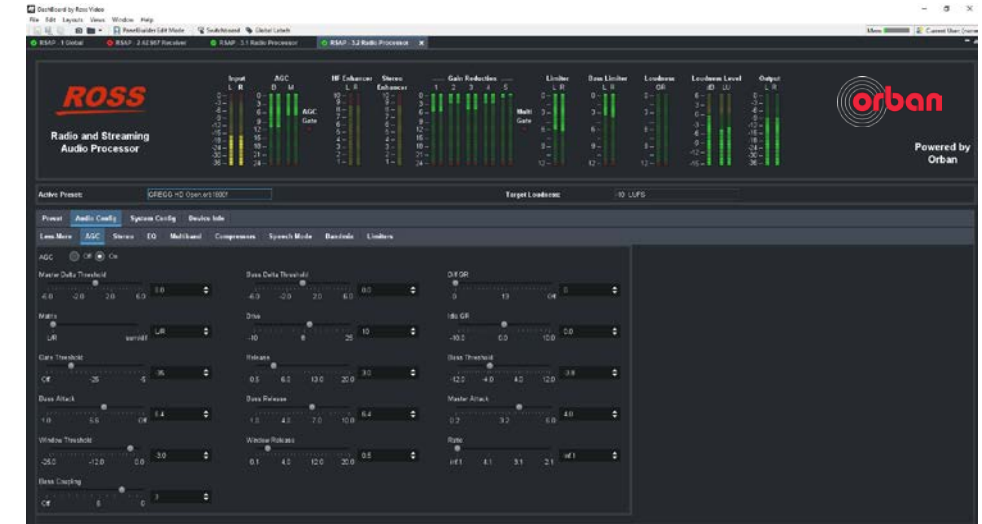


Hi **IMPACT**
EFFICIENCY

Easily scales in cost effective manner on off-the-shelf hardware
Uses DashBoard, making it simple to deploy and control applications

softGear **RSAP RADIO AND STREAMING AUDIO PROCESSOR**

- Centralized multi-channel audio processor
- Scalable microservice-based platform
- World-class Orban OPTIMOD™ radio processing
 - FM/ DAB+/ HD Radio/ Streaming
- Industry's most consistent sound, track-to-track & source-to-source
- Create and lock-in your own unique sonic brand
- Easily configured and managed via DashBoard



DashBoard

CHALLENGES FACING BROADCASTERS



Changing Business Environment



Shorter Opportunity Window



Un-flexible "Digital Content"

SOLUTIONS NEED TO BE FLEXIBLE, ADAPTABLE, SCALABLE AND FUTURE-READY!



Slow, hard and expensive to scale



Cloud is scary: new tools, skills, management

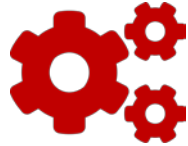


HOW RSAP SOLVES THESE CHALLENGES?



Microservices Architecture

Simple Deployment via Portable SW Containers
Easy Scaling & Migration
Ultimate Flexibility



Best of Breed Processing

Ross, Orban, 3rd Party Apps
World-class Signal Processing



Centralized Management

Easily configured and managed via intuitive unified control environment



Rapid Evolution

Fast Development
Quickly Address New Media Applications



High Density Media Processing

More Revenue-generating Programming in Less Rack Space

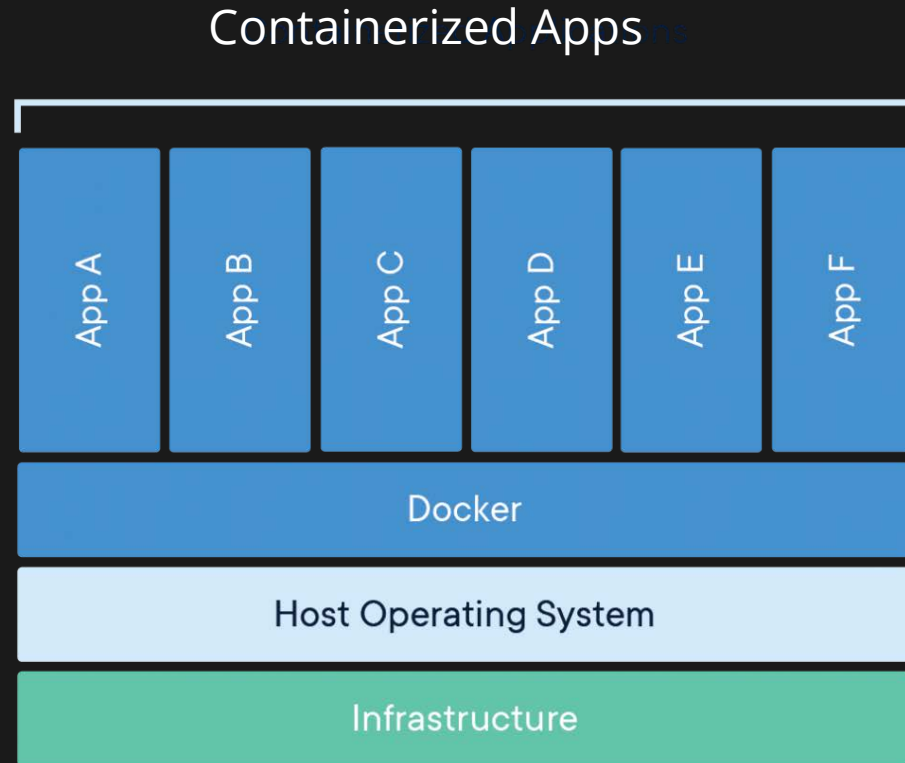


On-Premise Workflow Appliance

Not ready for the Cloud?
Easy to Deploy On-Prem
Migrate to Cloud



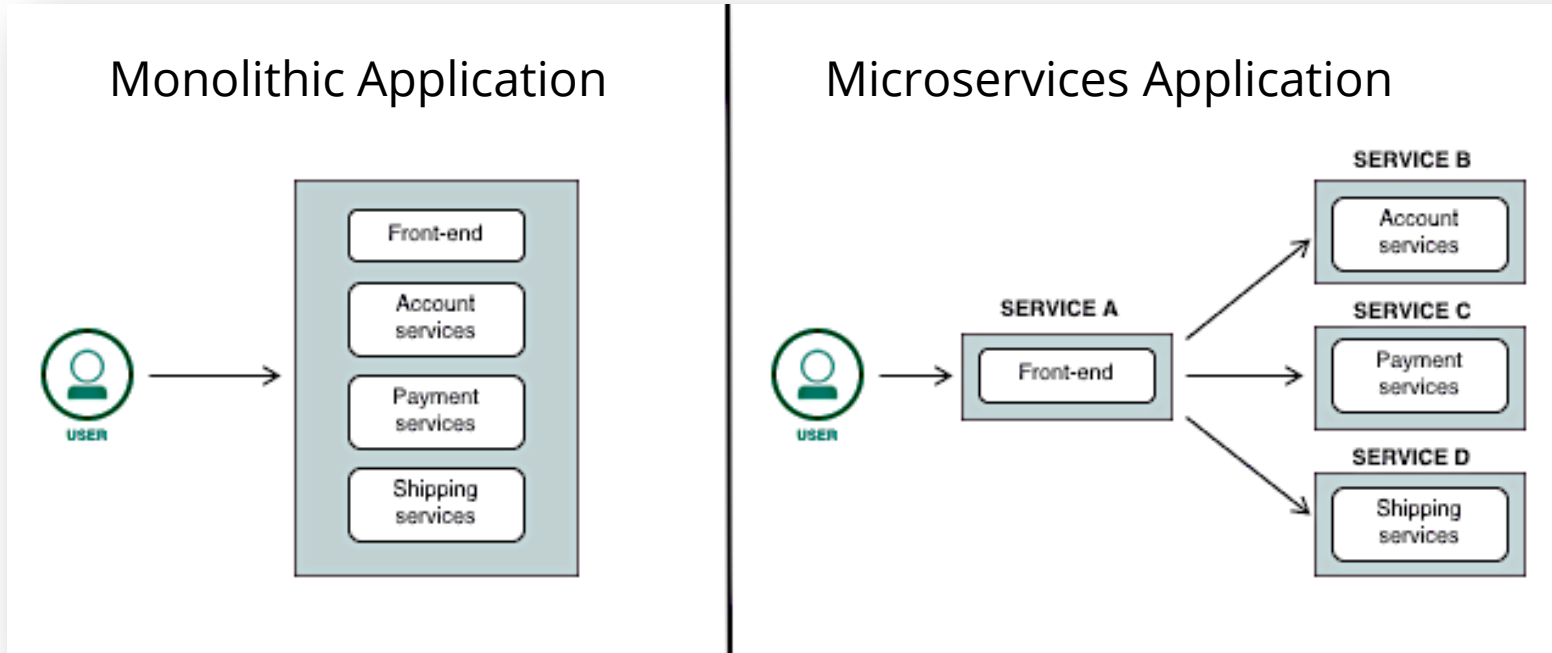
PORTABILITY VIA CONTAINERS



- Isolates s/w from its environment
- Allows easy deployment
- Guarantees consistency
- Lightweight, standalone executable package
- Bundles app and its dependencies (code, tools, libraries, configuration files)



MICROSERVICES: A BETTER WAY TO BUILD SOFTWARE



- Flexible and efficient
- Independently deployable
- Independently scalable
- Greater resiliency

Containers and microservices the preferred approach to make applications **resilient**.

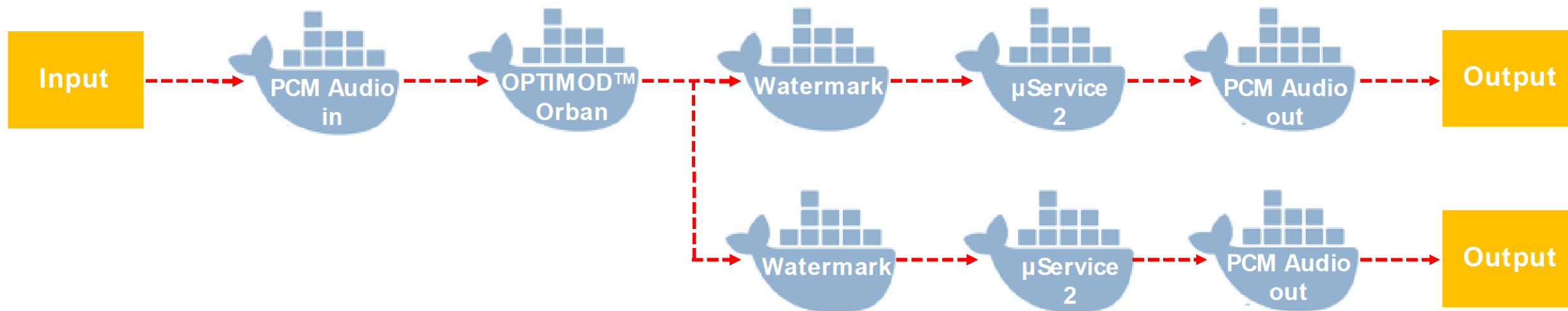


ENABLING WORKFLOW FLEXIBILITY

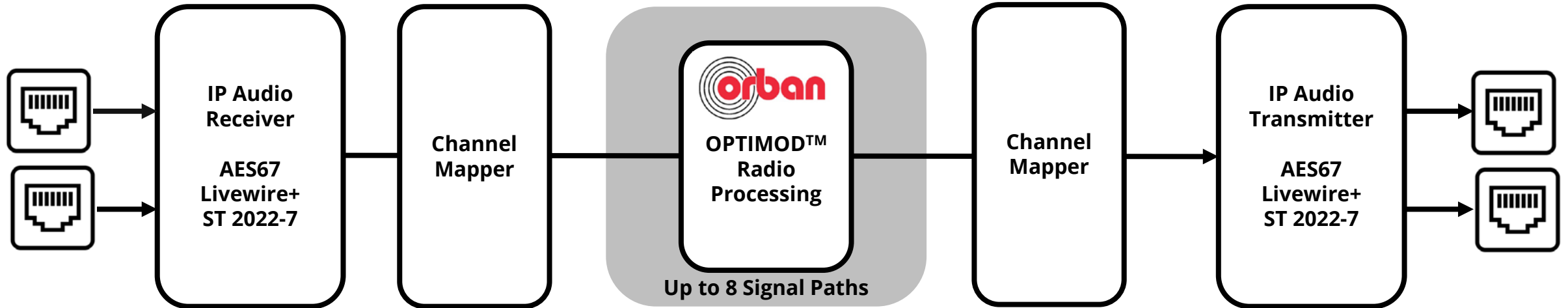
Orban OPTIMOD™ with Watermark Encoder and Additional Processing



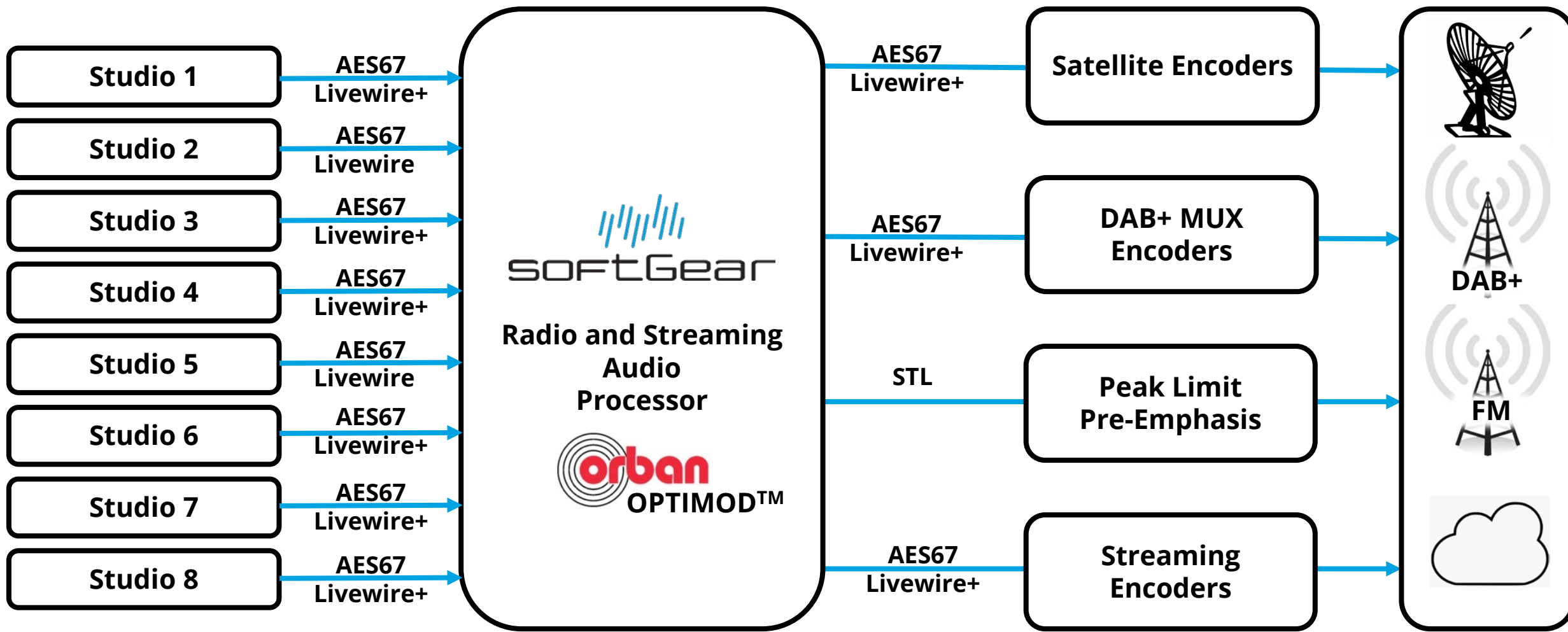
Output Streams can be sent to new Chains



SOFTGEAR™ RSAP ARCHITECTURE

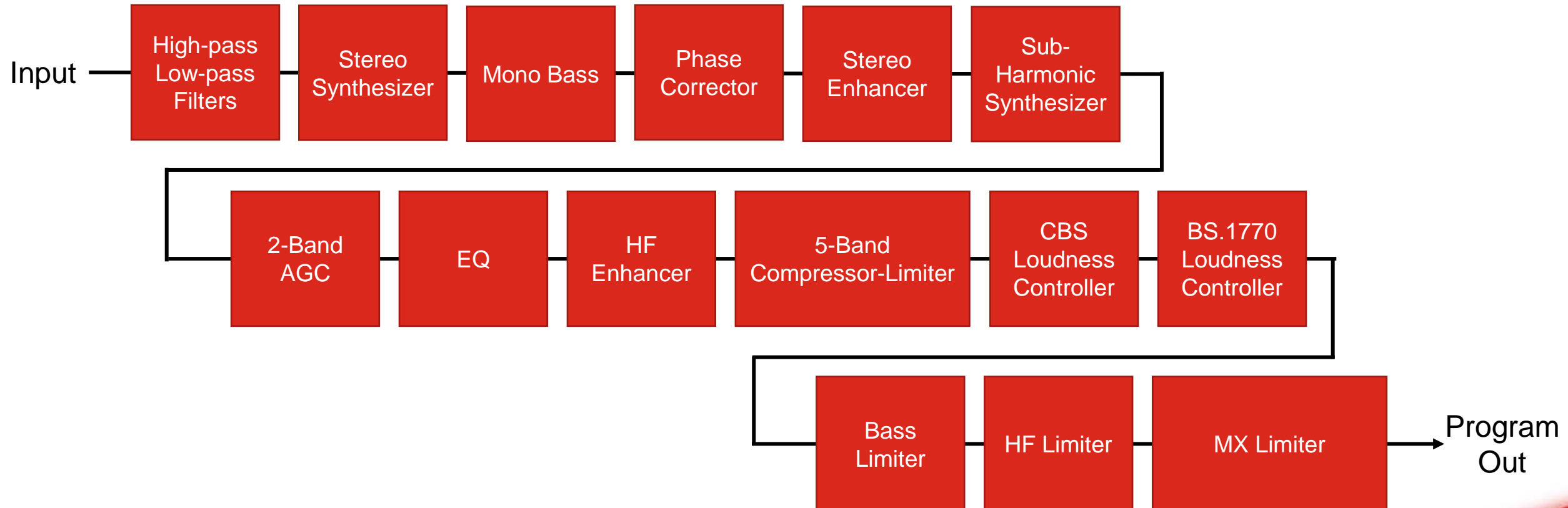


SOFTGEAR™ RSAP: HIGH DENSITY PROCESSING



ORBAN PROCESSING BLOCK DIAGRAM

Simplified – Equivalent to OPTIMOD™ 8700



CHALLENGES FACING BROADCASTERS



Changing Business Environment



Shorter Opportunity Window



Un-flexible "Digital Content"

SOLUTIONS NEED TO BE FLEXIBLE, ADAPTABLE, SCALABLE AND FUTURE-READY!



Slow, hard and expensive to scale



Cloud is scary: new tools, skills, management



REAL WORLD EXAMPLE: RSAP LAUNCH CUSTOMER



Customer Challenge

- Hundreds of Orban processors scattered across many sites
- Difficult to access, manage or change easily
- Need to dispatch a technician to the relevant transmitter site



Key Requirements

- Hot-standby and fault tolerant redundancy
- Infosec precluded use of Microsoft Windows solution



SOFTGEAR™ RSAP LAUNCH CUSTOMER



Solution

- Centralize audio processing in one location
- Leverage existing Orban equipment at each transmitter site
- Cost-effective redundancy
- Roadmap Bonus: Path to cloud deployment



Easy to Access and Manage



DashBoard Intuitive Control



2022-7 Hitless Redundancy



Scalable



Legendary Support



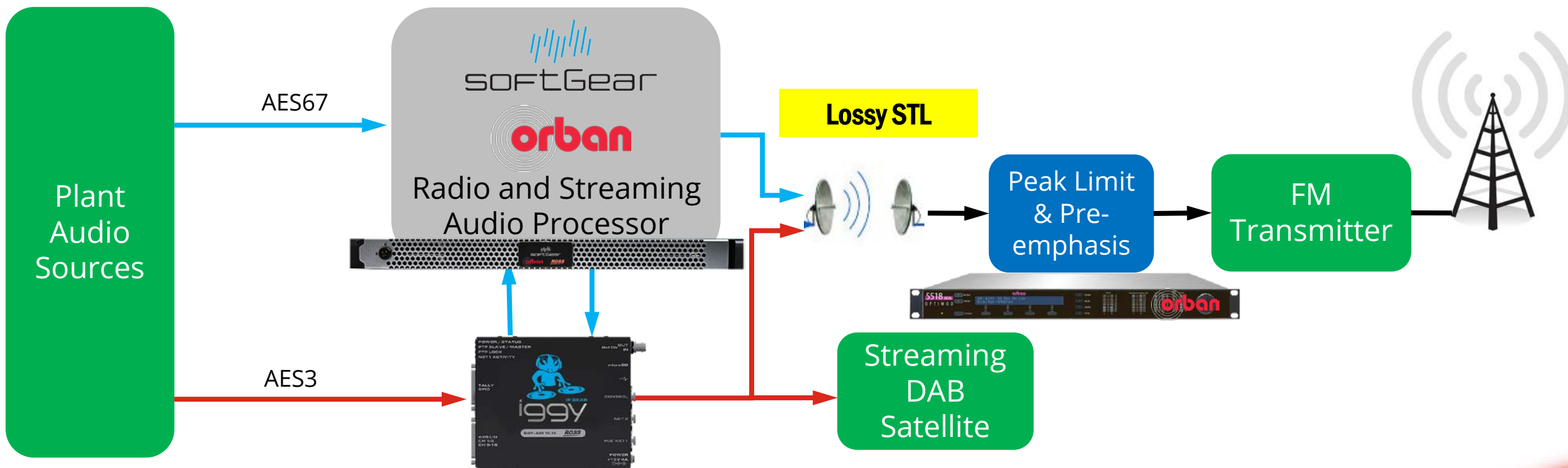
Copyright Ross Video



RADIO AND STREAMING AUDIO PROCESSOR

Studios / NOC

Transmitter Sites



RSAP-OPTICLOUD: ON-THE-AIR NOW!



Orban and Ross Thank You!



Copyright Ross Video

ROSS[®]
LIVING LIVE!

