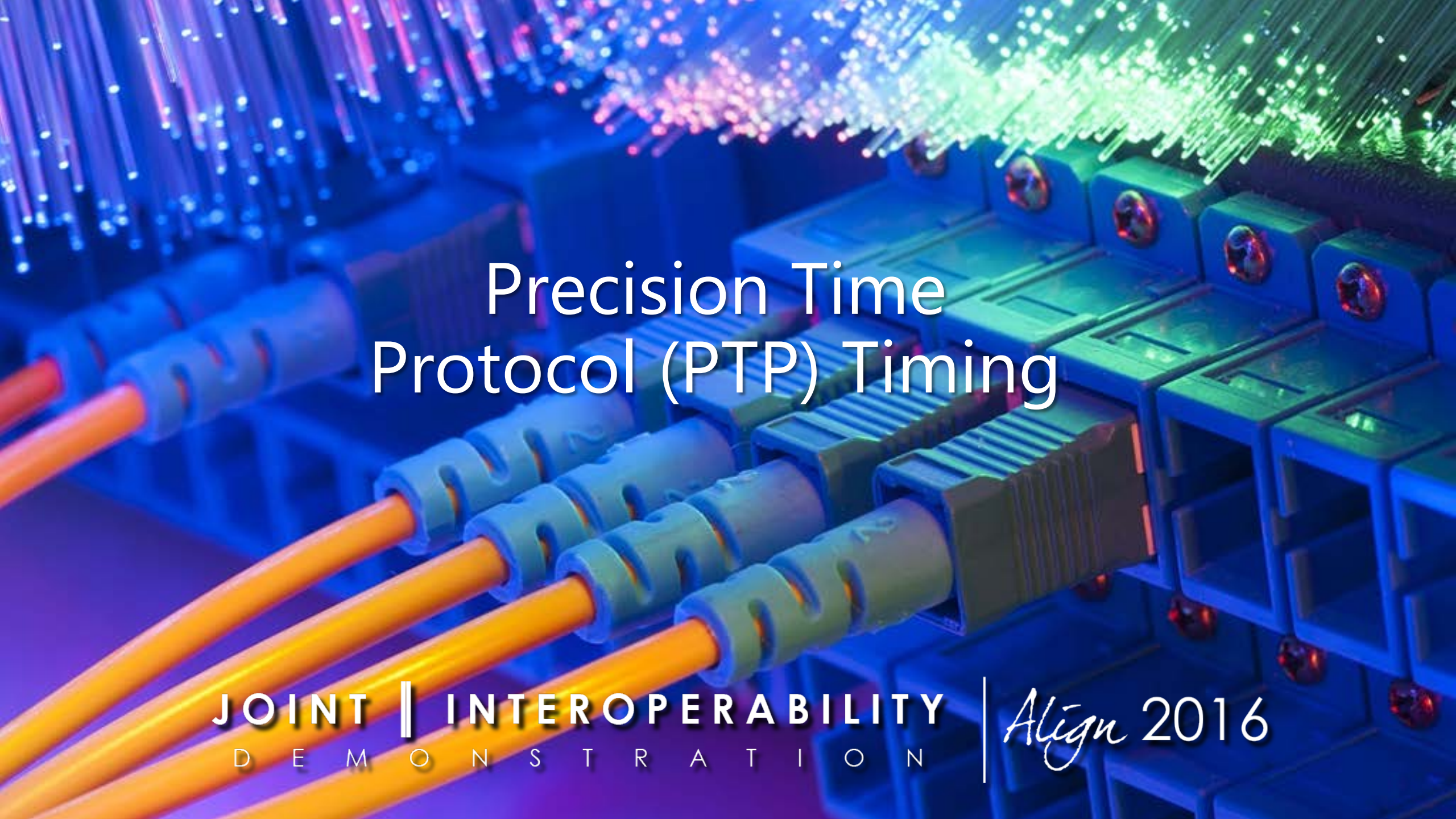
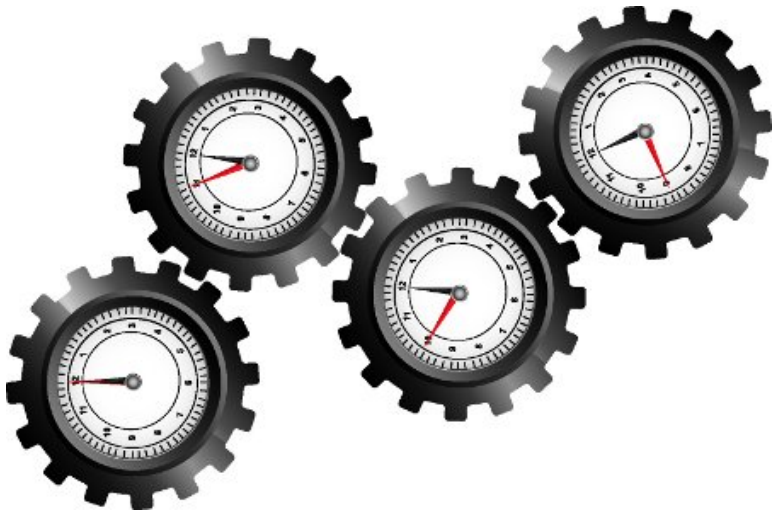

Precision Time
Protocol (PTP) Timing
JOINT | INTEROPERABILITY
DEMONSTRATION
Align 2016

# WHAT IS PTP?

- **P**recision **T**ime **P**rotocol
- A ***proven*** technology used in multiple industries (IEEE 1588)
- A method for distributing precise, GPS referenced time stamps over an IP network for ***synchronization*** and ***alignment*** of signals



# PROBLEM: LEGACY TECHNOLOGY REQUIRES **MULTIPLE INFRASTRUCTURES**

- Today we use separate standards for video, audio, timecode

**Black Burst**

**Digital Audio Reference Signal (DARS)**


**LTC and VITC (Longitudinal Time Code, Vertical Interval Time Code)**

- Each requires a separate distribution network adding ***cost*** & ***complexity***

**PTP Unifies these timing mechanisms and simplifies cabling**

# PROBLEM: LEGACY TECHNOLOGY LACKS **PRECISION** AND **SPAN**

**Black Burst**

PRECISION: Sub µsec
SPAN: One frame

**Digital Audio Reference Signal (DARS)**

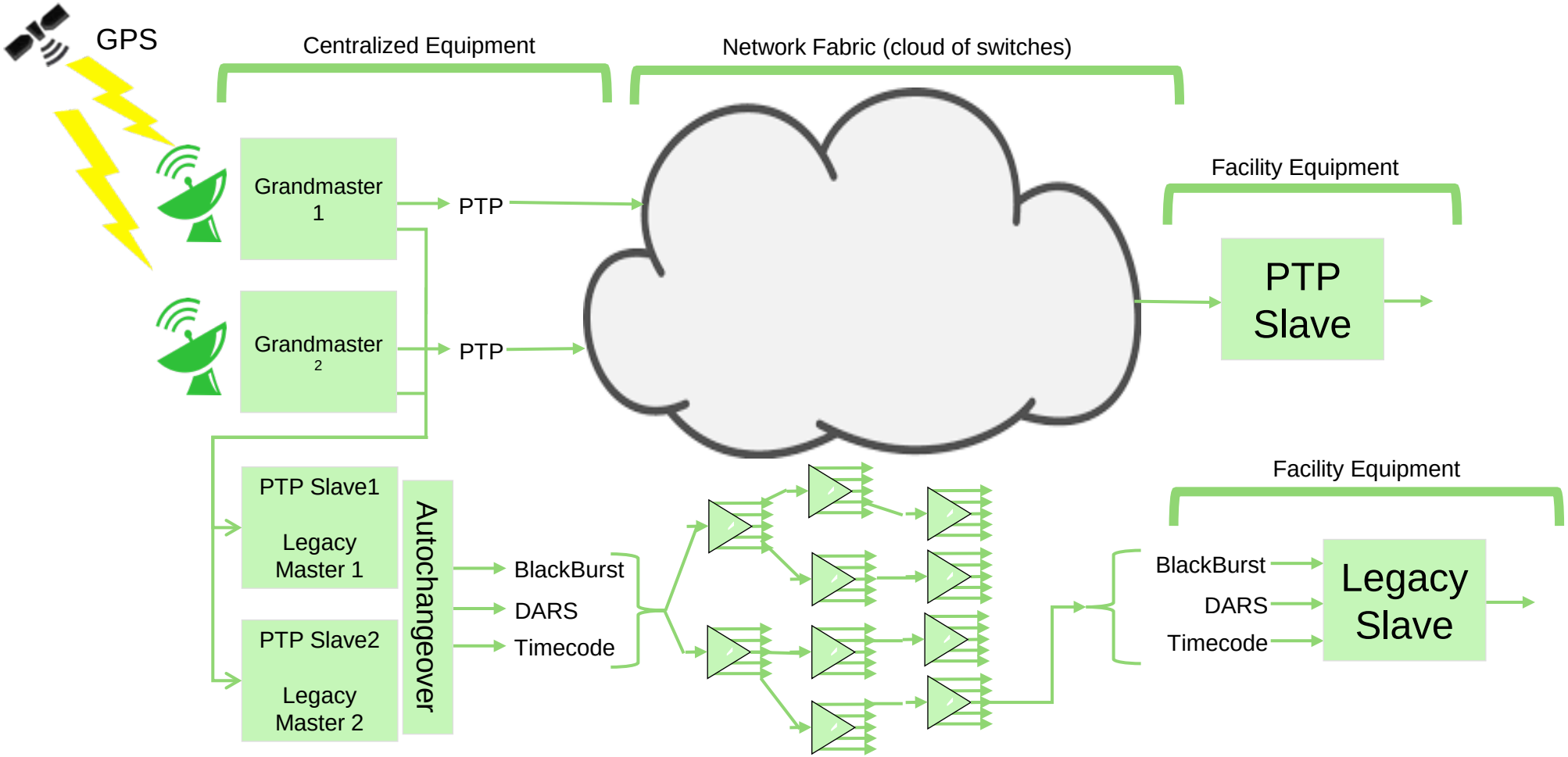
PRECISION: Sub µsec
SPAN: ~4 msec

**LTC and VITC (Longitudinal Time Code, Vertical Interval Timecode)**

PRECISION: 1 video field
SPAN: 24 hours

**PTP Timestamps (64 bit) have precision to 1 nanosecond and span ~136 years**
**PTP has sufficient precision for all signal types and rates**
**PTP avoids problems like timecode “roll over”**

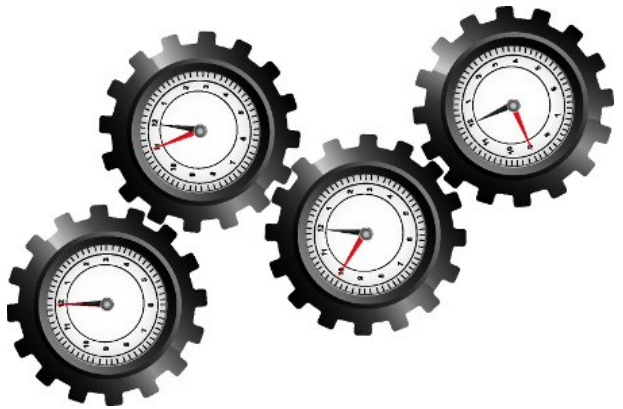
# PTP CAN COEXIST WITH LEGACY REFERENCES IN SAME FACILITY




**Smooth migration is possible**

# PTP FOR OUR INDUSTRY

- SMPTE ST 2059 defines PTP for broadcast synchronization
  - Specifies relationship between traditional media signals and PTP
- AES67 defines PTP for audio synchronization
- SMPTE and AES have established ***common PTP operating points*** for ***guaranteed interoperability***
  - Validated through interoperability testing



# COMPANIES DEMONSTRATING PTP TIMING INTEROPERABILITY AT IBC

ARISTA BBC CISCO COVELOZ COVCREATE evertz

Imagine COMMUNICATIONS MEDIA LINKS Media Defined Networking MEINBERG Oregano Systems The Flavour of Excellence RIEDEL

ROSS Production Technology Experts sam Snell Advanced Media SONY Stagebox Tektronix

Other companies which have verified PTP Timing interoperability

Adeas A·R·G XILINX ALL PROGRAMMABLE

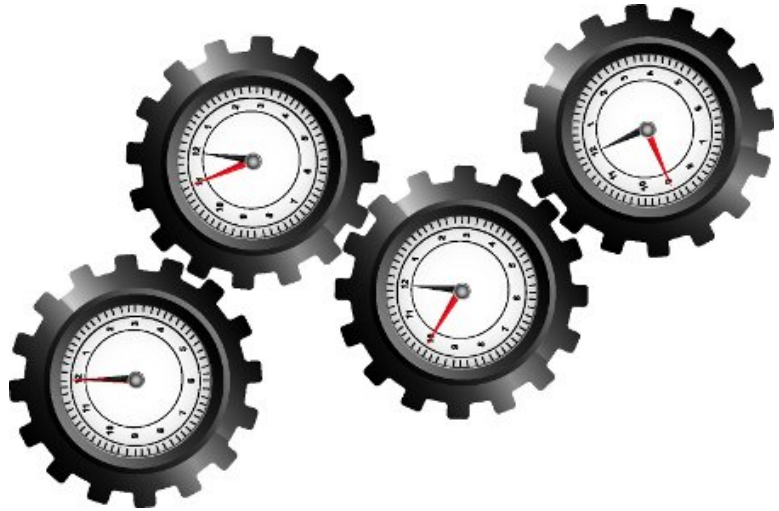
Supporting Companies

21ST CENTURY FOX DVBLink IRT PacketStorm Communications, Inc.

JOINT INTEROPERABILITY DEMONSTRATION | Align 2016

# PTP TIMING DEMONSTRATION

- Interoperability of masters, switches, and slaves
- Operation at proposed common rates for ST2059-2 and AES67
- Displays alignment of traditional signals generated from PTP
- Illustrates the effects of traffic on different IP switch types
  - Non-PTP aware
  - Transparent Clock
  - Boundary Clock




Precision Time Protocol
• Precise
• Comprehensive
• Compatible (with legacy references)
• Proven
• No extra cabling required
JOINT | INTEROPERABILITY
DEMONSTRATION
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