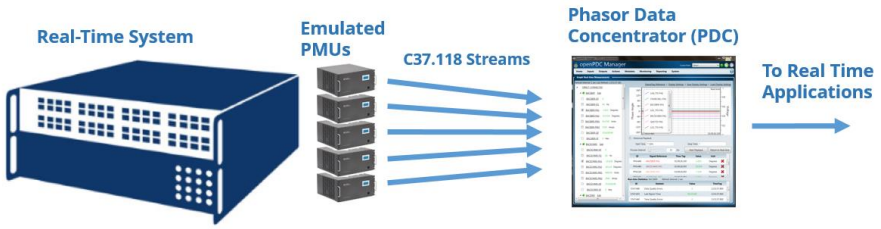
IEEE C37.118

C37.118 is the IEEE Standard for Synchrophasor Measurements for Power Systems, which defines synchrophasors, frequency, and rate of change of frequency (ROCOF) measurement under all operating conditions. It specifies methods for evaluating these measurements and requirements for compliance with the standard under both steady-state and dynamic conditions.

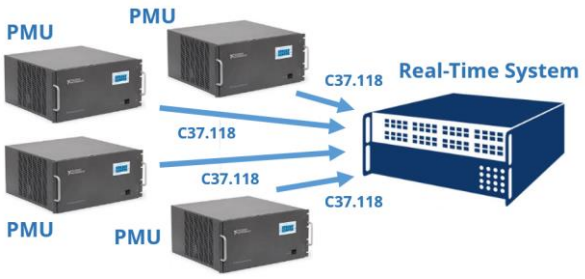
OUR SOLUTION

OPAL-RT provides the C37.118 drivers for fast transmission and reception of synchrophasor streams, according to the IEEE C37.118 standard, typically composed of a set of 3 voltages and 3 currents (magnitudes and angles). Streams are fully configurable, allowing to interface any equipment that requires other types of measurements, reporting rates and class M and P specifications. Streams are also time synchronized using IEEE 1588, IRIG-B or 1PPS input signals from grand master or GPS clock.

When used in slave (send) mode, the driver makes it possible to stream synchrophasors from the simulator to phasor data concentrators (PDC), SCADA systems or other devices that support C37.118 master. Users can easily emulate phasor measurement units (PMUs) modeled within a power system simulation.



When used in master (receive) mode, it makes it possible to receive synchrophasors streams from external hardware into your real-time simulation and to perform control and protection scenarios in real-time.



KEY FEATURES

- **Synchronization through GPS, IEEE1588, IRIG-B or 1PPS**
- **Support up to 240 frames per second**
- **Fully configurable data streams**
- **Supports analog and digital data**
- **Support class M and P equipment**
- **Interface PMU, PDC, SCADA, control and protection equipment**
- **Compatible with C37.238-2011 standard for precision timestamping**

TECHNICAL SPECIFICATION

Standards	C37.118.1-2011 and C37.118.2-2011
Fundamental frequencies	50/60 [Hz]
Number of frames per second	Up to 240
Number of streams	16 streams per license (or up to 192 measurement data points)
Protocol Modes	TCP, UDP, TCP/UDP
Time Synchronization	GPS, IEEE 1588, 1PPS, IRIG-B

OPAL-RT SOFTWARE COMPATIBILITY

SOFTWARE	C37.118 SLAVE	C37.118 MASTER
RT-LAB	☑	☑
HYPERSIM	☑	☑

THIRD-PARTY HARDWARE†

NAME	REQUIRED	SKU	DESCRIPTION
Time Synchronisation kit, Oregano Syn1588 PCIe NIC†	☑	OP3811 or OP3812	Card required for accurate time synchronization (0.1 ppm oscillator).
Intel Quad-port Ethernet card†	☐	EXPI9404PTL	Dispatch Ethernet traffic over multiple ports to increase bandwidth

†Certain systems may not have PCI Express slots available for these cards. Prior to ordering and/or installing, check with your local OPAL-RT representative to ensure compatibility.