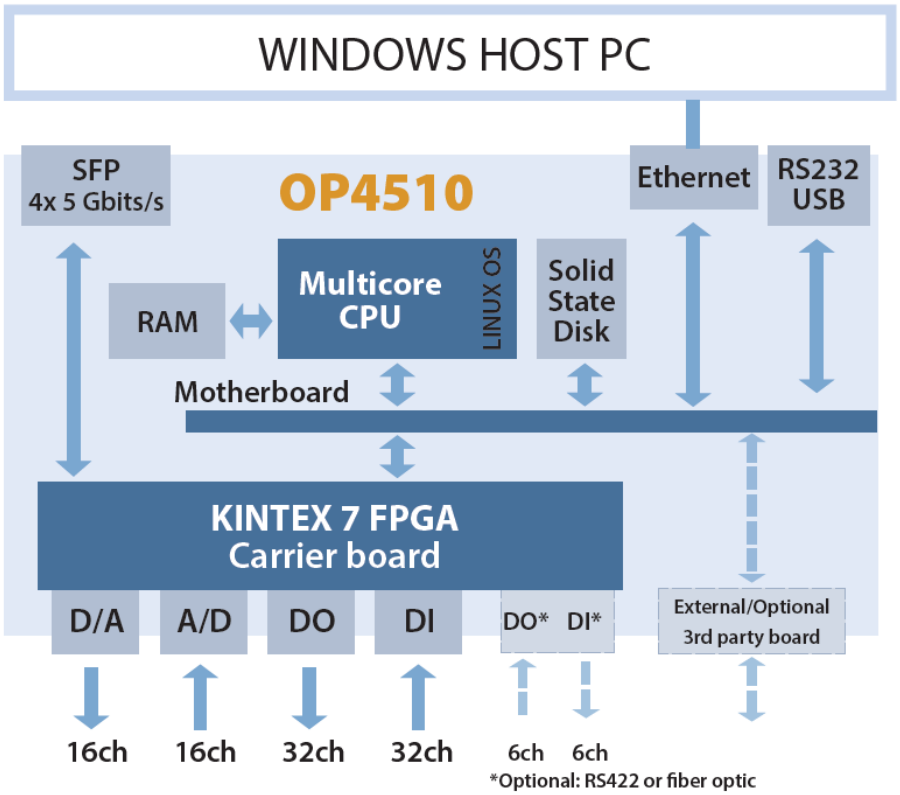
OP4510 V2 System Description

The OP4510 V2 is a compact device with 128 fast I/O channels with signal conditioning, 12 optional channels for RS422 or optional low-speed fiber-optic communication, 4 high-speed communication ports (SFPs), an expansion bay for one I/O expansion box or third-party board (see below the list of options) and is fully integrated with Simulink, SimPowerSystem.

The integration of high-end INTEL multicore processors with powerful Xilinx Kintex 7 FPGA provides greater simulation power and sub-microsecond simulation time steps to maximize the accuracy of fast power electronic systems. The OP4510 V2 can simulate power grids with up to 200 nodes.



A series of standardized I/O configurations are available with the OP4510 V2, each targeting specific applications. There are also several options for external boards to expand the OP4510 V2 capabilities: CAN communication, synchronization (IRIG-B, PPS or IEEE1588) or I/O expansion. (See OP4510 V2 I/O Expansion Options in OP4510 V2 Rear Interface for full details).

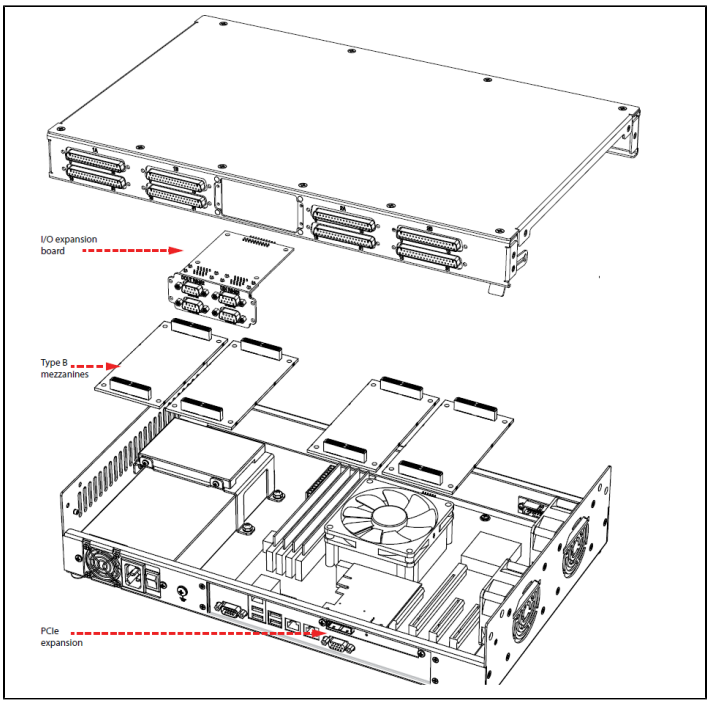
SFP ports can be used to expand the simulator I/O capability with OPAL-RT's **MUlti-System Expansion (MuSE)**: each port can be connected to a remote I/O unit (OP4200, OP4520, OP5607), effectively increasing the simulator's capacity to 1024 channels.

Ports not used for high-speed links remain compatible with Generic Aurora links. The MuSE link is compatible with OPAL-RT boards and OPAL-RT's new I/O management architecture.

Simulator Architecture

The following image illustrates the simulator's architecture for each option using assembly views of the simulation hardware components within the OP4510 V2 chassis.

The OP4510 V2 is an entry-level simulator that contains an FPGA carrier, which can accept four standard OPAL-RT mezzanine boards, in addition to the RS422 signals.



Note: The example shown is only to illustrate how the OP4510 is assembled. OPAL-RT strictly prohibits users from opening the OP4510. Opening the unit renders the warranty null and void.

The OP4510 V2 can contain any four type B mezzanine boards, according to user needs. The standard OP4510 V2-1 contains two digital and two analog boards (see OP4510 V2 I/O Specifications for details).

These mezzanine boards interface using a DB37 connector at the back of the chassis. Four pairs of DB37F connectors provide up to 32 channels (Channel 00 to 15 and 16 to 31) and optional DB9 (RS422) connectors each provide an additional six channels.

The OP4510 V2 offers two types of synchronization, either LVDS or fiber optic, making it easier to synchronize with any OPAL-RT device.