DSP281 Dual Intel® 4th Gen Quad Core™ i7

6U OpenVPX Deployed Server Platform

Features

- **Two Intel Core i7-4700EQ CPUs**
  - Four cores, eight threads per CPU
  - Two channels ECC 1600-DDR3L
  - 16GBytes DDR3L
  - AVX2.0 Advanced Vector Extensions
  - HD-4600 on-chip graphics
- **Two platform controller hubs**
  - 16MBytes BIOS Flash per PCH
  - 16GBytes SATA NAND Flash
  - 256KBytes NRAM
- **Platform security**
  - Configurable security hub FPGA
  - Intel Trusted Execution
  - Intel vPRO/AMT technology
  - Intel AES new instructions
- **Firmware support**
  - Built-in Test
  - UEFI BIOS
- **Operating system support**
  - Linux® SDK
  - Windows® SDK
  - WRS VxWorks® BSP
  - WRS Hypervisor

- **Middlewares and libraries**
  - AXISPro application dev. framework
  - AXISLib VSIPL and RSPL multi-threaded DSP and math libraries for VxWorks, Linux and Windows
  - GE signal- and image processing quick start examples
  - Intel OpenCL SDKs, IPP and MKL

The GE Intelligent Platforms DSP281 is a rugged 2nd generation, COTS multiprocessor that brings data center performance and scalability to deployed defense and aerospace applications.

Designed for size, weight and power (SWaP) sensitive applications, GE's high performance embedded computing (HPEC) platforms deliver expanded mission capabilities across a wide range of manned- and un-manned, airborne, ground and naval platforms.

More GigaFLOPS, same SWaP

The DSP281 delivers up to 614GFLOPS per card slot, and increased system bandwidth with two Intel 4th gen quad Core i7 CPUs, up to 16GBytes DDR3L main memory per processor, inter-node DMA over PCIe™ gen 3 and OFED RDMA InfiniBand or Ethernet data plane via the latest Mellanox ConnectX™-3 network interface controllers (rNICs).

Planned technology insertion

GE launched the DSP28x platform architecture in 2011 with the DSP280 COTS processor.

Developers can leverage proven software support from this open architecture now with a clear path to the new DSP281 Intel 'Haswell' platform to capture the latest micro-architecture/performance boost.

Open System Architecture (OSA)

GE Intelligent Platforms provides a rugged, scalable solution that builds on open standards from the wider high performance computing (HPC) and 'Big Data' communities to exploit widely used application programing interfaces (APIs), high performance middlewares, libraries and productivity tools that greatly reduce cost of ownership, technical risk and time-to-deployment.

Sensor-, image- and data processing

GE goes further to fully exploit Intel's hyper-threaded multi-core platform with AXIS Advanced Multiprocessor Integrated Software. Developers can optimize and scale applications across GE's 3U and 6U OpenVPX HPEC solution sets that include Ethernet and InfiniBand SFMs, GPGPU processors, SBCs and I/O modules.

Typical applications

- Back-end sensor and image processing
- Radar, sonar, multi-INT
- Display and mission computing
- Data and network gateways
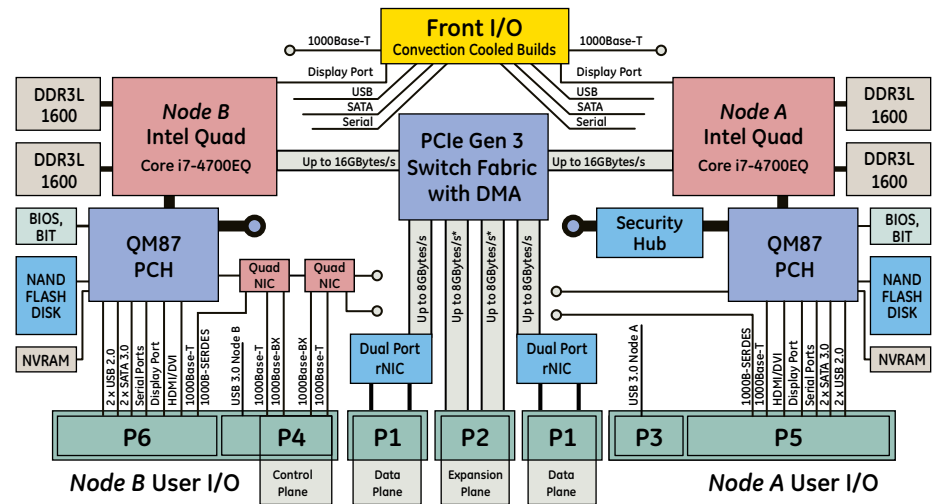- InfiniBand HPC clusters
- Distributed Ethernet clusters

DSP281 - Dual Intel 4th Gen Quad Core i7 - 6U OpenVPX Deployed Server Platform
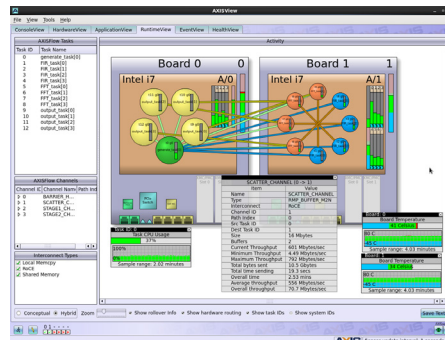
Specifications

- **6U OpenVPX VITA65**
  - SLT6-PAY-4F1Q2U2T-10.2.6
  - MOD6-PAY-4F1Q2U2T-12.2.1-8

- **Build options**
  - VITA48.1-1" pitch convection cooled
  - VITA48.2-1" pitch conduction cooled
  - VITA48.5-1.2" pitch air flow through
  - Wide temperature, extended shock and vibration builds – consult factory

- **Intel 4th gen Core processors**
  - Quad core i7-4700EQ (eight threads)
  - 2.4GHz base frequency

- **Memory per CPU node**
  - 6MBytes on-chip last level cache
  - 16GBytes DDR3L 1600 with ECC per CPU
  - 16MBytes BIOS, BIT and back-up Flash
  - 16GBytes SATA NAND Flash disk
  - 512KBytes NVRAM

- **OpenVPX I/O planes**
  - **Management:** I2C with BMM
  - **Data:** 4 × Fat Pipes – InfiniBand or Ethernet via 2 × dual port Mellanox ConnectX-3 FDR10 InfiniBand / 40GE RDMA NICs
  - **Expansion:** 2 × Double Fat Pipes or 4 × Fat Pipes – PCIe via PLX Tech gen 3 switch with inter-node DMA via NT port
  - **Control:** 2 × 1000Base-T and 2 × 1000Base SERDES with IEEE-1588 PTP (precision time protocol) support
  - **User I/O:** 2 × 1000Base-T vPRO ports, Serial, 4 × USB-2, 2 × USB-3, 4 × SATA-3, GPIO, HD audio
  - **Display:** 2 × HDMI/DVI, 2 × display port
  - **Front I/O:** 2 × 1000Base-T, 2 × SATA-2, 2 × USB-2 plus 1 × USB-2 and 1 × Display Port muxed between nodes A & B. Front I/O on convection cooled builds only via front panel transition module (FTM) accessory
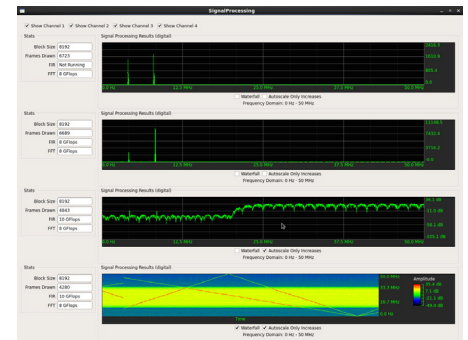
Block Diagram

*Inter-board data and expansion plane bandwidth will be highly dependent on design for high speed signal integrity at system level. Consult GE for more information.

The AXISPro-01M development environment supports application optimization on multi-core, multi-threaded and multi-node distributed system architectures across multiple operating systems including Linux, Windows and VxWorks and includes quick start signal and image processing examples to accelerate time-to-solution.

AXISView screen shot - Multi-threaded application on dual Intel Core-i7 processor.

AXISQuickStart application.

Contact GE Intelligent Platforms for pricing and availability.