C4ISR - Joint Strike Mission Computer

1. Unparalleled Parallel Computing

 - this is how it works

In fact, C4ISR incorporates every army function and operation. It determines faster speed, better resolutions and decisive actions- making it the key to mission success.
We want to synergize tactical, operational, and strategic performance. Information and data flowing through multiple systems must be received and disseminated by the commander timely and accurately.

Harnessing information and data as new source of powerful weapon has become crucial nowadays. And real-time reaction is vital. That's why 7StarLake's Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) solutions emphasize on ultra-high performance system integration. We focus on the capabilities to control - because control lead to dominance.

AV800-D27 & THOR 11-D27 are equipped with Ultra-High Performance Intel® Xeon® D-2796NT CPU. In a scenario where virtual machine is integrated with C4ISR system, the 20-core processor allows the CPU resources be reallocated to one or more virtual machines. For instance, four cores are assigned to one virtual machine would mean the user now has

maximum four different operating systems running on the same physical computer at the same time.

In this way, IT operators will no longer be disturbed by numerous interfaces, monitors and humongous servers. Various and complex system connecting one another should work coordinately, interpreting the received data and representing the commander's order.

All data and assets can be managed from one location. Ideal hardware utilization, expansion potentials and high efficiency operation are further guaranteed. In battlefield reality, where one second difference defines success and failure, the application of virtualization machine has become indispensable.

We want to synergize tactical, operational, and strategic performance. Therefore, information and data flowing through multiple systems must be received by the commander timely and accurately; same as those to be disseminated.
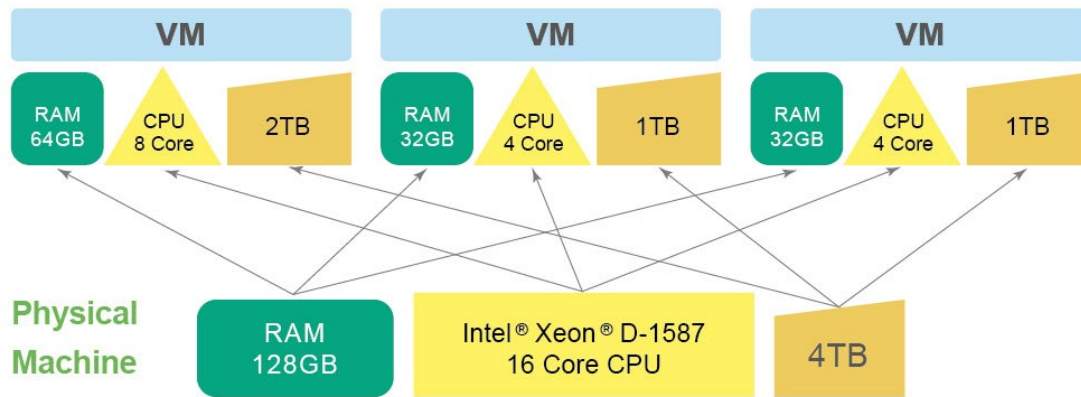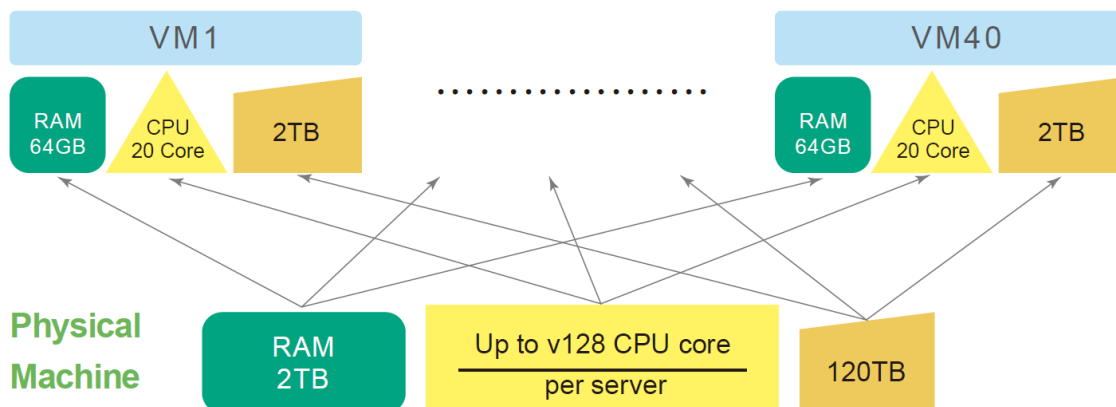
2. Virtual Machine Application

Our aim is to enhance tactical, operational, and strategic performance through synergy. To achieve this, information and data flowing through multiple systems must be received by the
commander promptly and accurately, just as they are disseminated.

The increasing adoption of Virtual Machine technology by organizations and enterprises isn't solely driven by the reduction of physical hardware and the expansion potentials it offers. Indeed, both authorities and private sectors are turning to virtual machines because they provide users with numerous options for running operating systems in constrained environments. Essentially, the utilization of virtual machines effectively saves costs and achieves ultra-high efficiency.

Take **SR800 & HORUS200** for example, the CPU resources of their 16-core Ultra-High Performance Intel® Xeon® D-1587 processor can be allocated to one or more virtual machines. Various operating systems can thus run at the same time, without having to adopt extra physical hardware and server. Meanwhile, all data and assets can be managed from one location. It achieves an ideal hardware utilization and lead to unlimited expansion potentials, which undoubtedly are the keys to mission success.

VM

| RAM 64GB | CPU 8 Core | 2TB |

VM

| RAM 32GB | CPU 4 Core | 1TB |

VM

| RAM 32GB | CPU 4 Core | 1TB |

Physical Machine

| RAM 128GB | Intel® Xeon® D-1587 16 Core CPU | 4TB |

Take **AV800-D27 & THOR11-D27** for example, the CPU resources of their 20-core Ultra-High Performance Intel® Xeon® D 2796NT processor can be allocated to one or more virtual machines. Various operating systems can thus run at the same time, without having to adopt extra physical hardware and server. Meanwhile, all data and assets can be managed from one location. It achieves an ideal hardware utilization and lead to unlimited expansion potentials, which undoubtedly are the keys to mission success.

VM1

| RAM 64GB | CPU 20 Core | 2TB |

. . . .

VM40

| RAM 64GB | CPU 20 Core | 2TB |

Physical Machine

| RAM 2TB | Up to v128 CPU core per server | 120TB |

Virtual machines offer more than just cost savings on hardware and energy expenses. Nowadays, enterprises are also leveraging their secure virtual environments. Unlike physical servers, damage to a virtual machine doesn't affect the physical server, ensuring quick disaster recovery. Furthermore, when operating systems run in a virtual environment, the license key required by the virtual OS matches that of the hard drive ID. This makes virtual machines an ideal option for system testing and software licensing. While fulfilling these functions, virtual machines also ensure forward compatibility and support for legacy operating systems. The robust capabilities of virtual machines make them an unparalleled choice for significant data computing tasks.

3. MIL-STD 1275/461 - Power Supply with Voltage Transient Protections

SK711

Source: https://7starlake.com/case-studies/c4isr-joint-strike-mission-computer

the power board adopted by **AV800-D27 & THOR11-D27**, supports input range from 18V to 36V. Possessing military standard filter for EMI avoidance, SK711 guarantees a stability of voltage and electric current under system operation. It is especially suitable for application in military or other harsh environment.
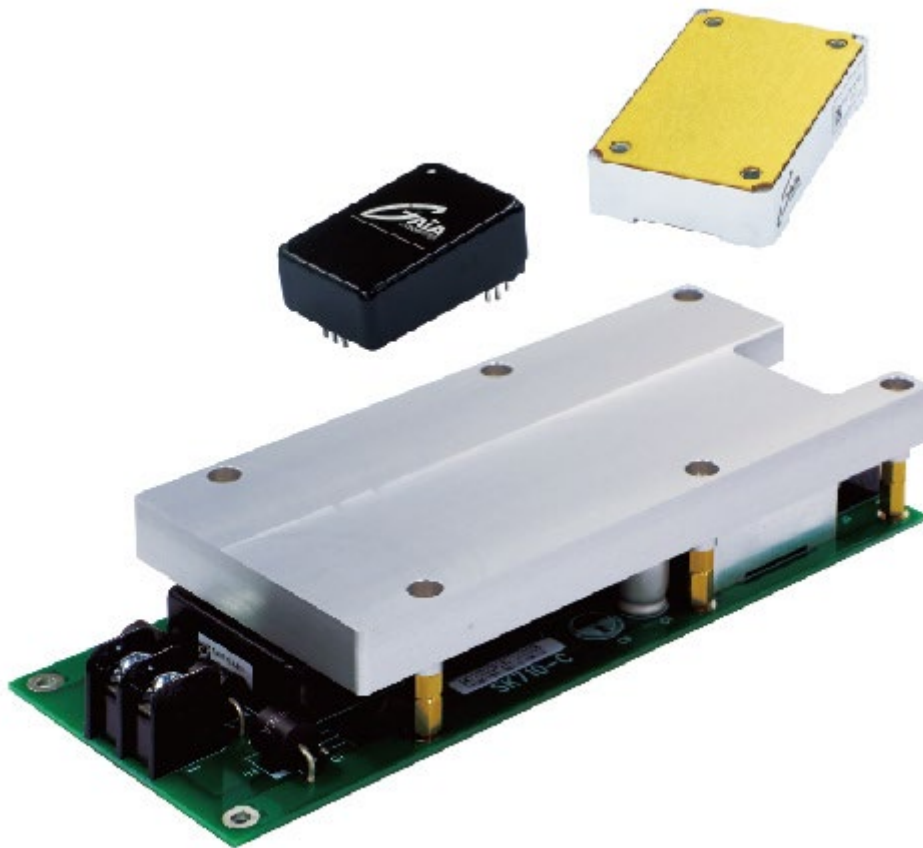

Furthermore, with parallel design, two SK711 combining can generate double power of 300W, supporting prominent system performance. Compliant with MIL-STD 1275/461, DO-160F and extended operating temperature from -40 to 85°C, SK711 performs as an ideal converter module for severe environmental usage.

Its GAIA Hi-Rel DC/DC CONVERTER also provides Undervoltage Lockout (UVLO), Output Over Current Protection (OCP), Output Overvoltage Protection (OVP) and Over Temperature Protection (OTP) to made stability and safety. They module is compliant with MIL-STD-461 C/D/E/F Standards.
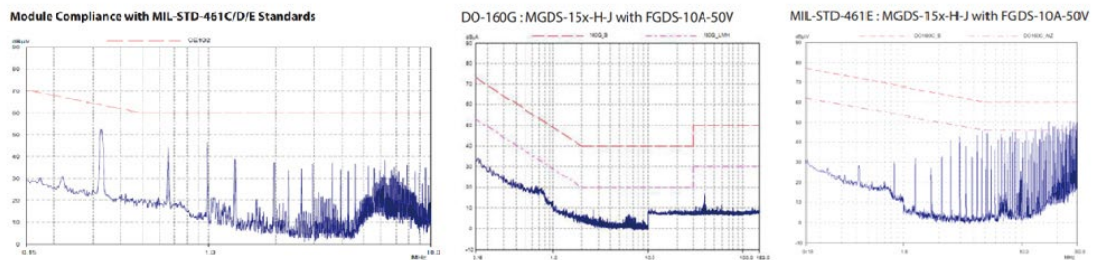
SK710

SK710, the power board adopted by **SR800 & HORUS200**, supports input range from 12V to 40V. Possessing military standard filter for EMI avoidance, SK710 guarantees a stability of voltage and electric current under system operation. It is especially suitable for application in military or other harsh environment.
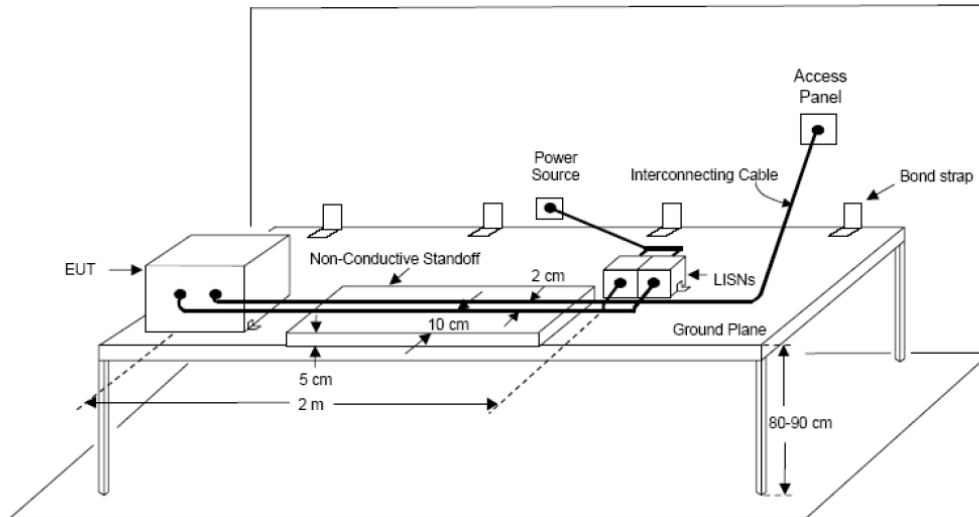
Furthermore, with parallel design, two SK710 combining can generate double power of 150W, supporting prominent system performance. Compliant with MIL-STD 1275/461, DO-160F and extended operating temperature from -40 to 85°C, SK710 performs as an ideal converter module for severe environmental usage.

Its GAIA Hi-Rel DC/DC CONVERTER also provides Undervoltage Lockout (UVLO), Output Over Current Protection (OCP), Output Overvoltage Protection (OVP) and Over Temperature Protection (OTP) to made stability and safety. They module is compliant with MIL-STD-461C/D/E Standards.


Test Configuration

Diagram labels: Access Panel, Power Source, Interconnecting Cable, Bond strap, EUT, Non-Conductive Standoff, 2 cm, LISNs, 10 cm, Ground Plane, 5 cm, 2 m, 80-90 cm

MIL-STD-461

is a military standard that establishes the control of electromagnetic interference (EMI) emissions and susceptibility characteristics of electronic, electrical & electromechanical equipment and subsystems for military equipment.

EMI, or Electromagnetic Interference, refers to any unwanted signals or "noise" emitted by electronic devices. Maintaining control over EMI is paramount in military applications, as uncontrolled emissions could lead to detection by enemy forces, potentially resulting in significant losses. Designing a product to meet stringent requirements demands engineers with comprehensive expertise in both electrical and mechanical design. This ensures the prevention of unintended generation, propagation, and reception of electromagnetic energy, which could otherwise lead to adverse effects such as physical damage to operational equipment.
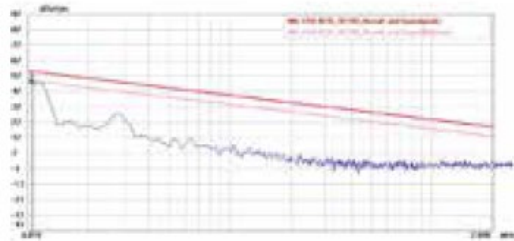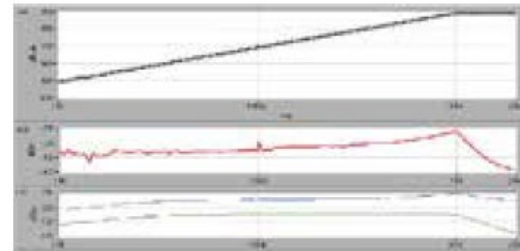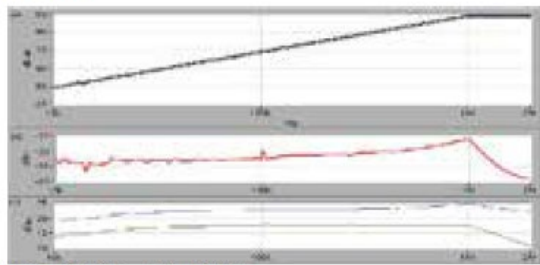
CS101
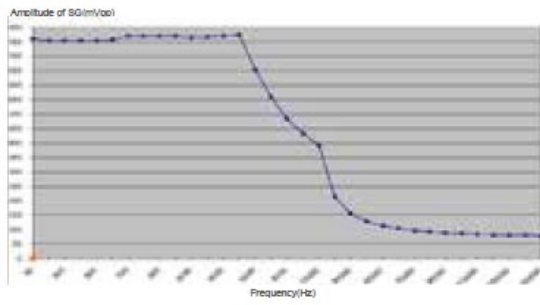
CS102
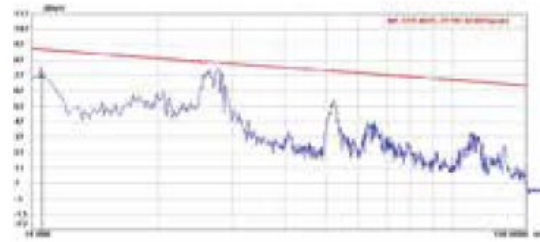
RE102

CS114

CS115

Peak Current Limit [A]: 5.0   Rise-time, tr [s]: 1.52n
Charging Voltage [%]: 56.4   Fall-time, tf [s]: 1.30n
Peak Current, Cpeak [A]: 5.1   Duration, td [s]: 30.45n

CS116