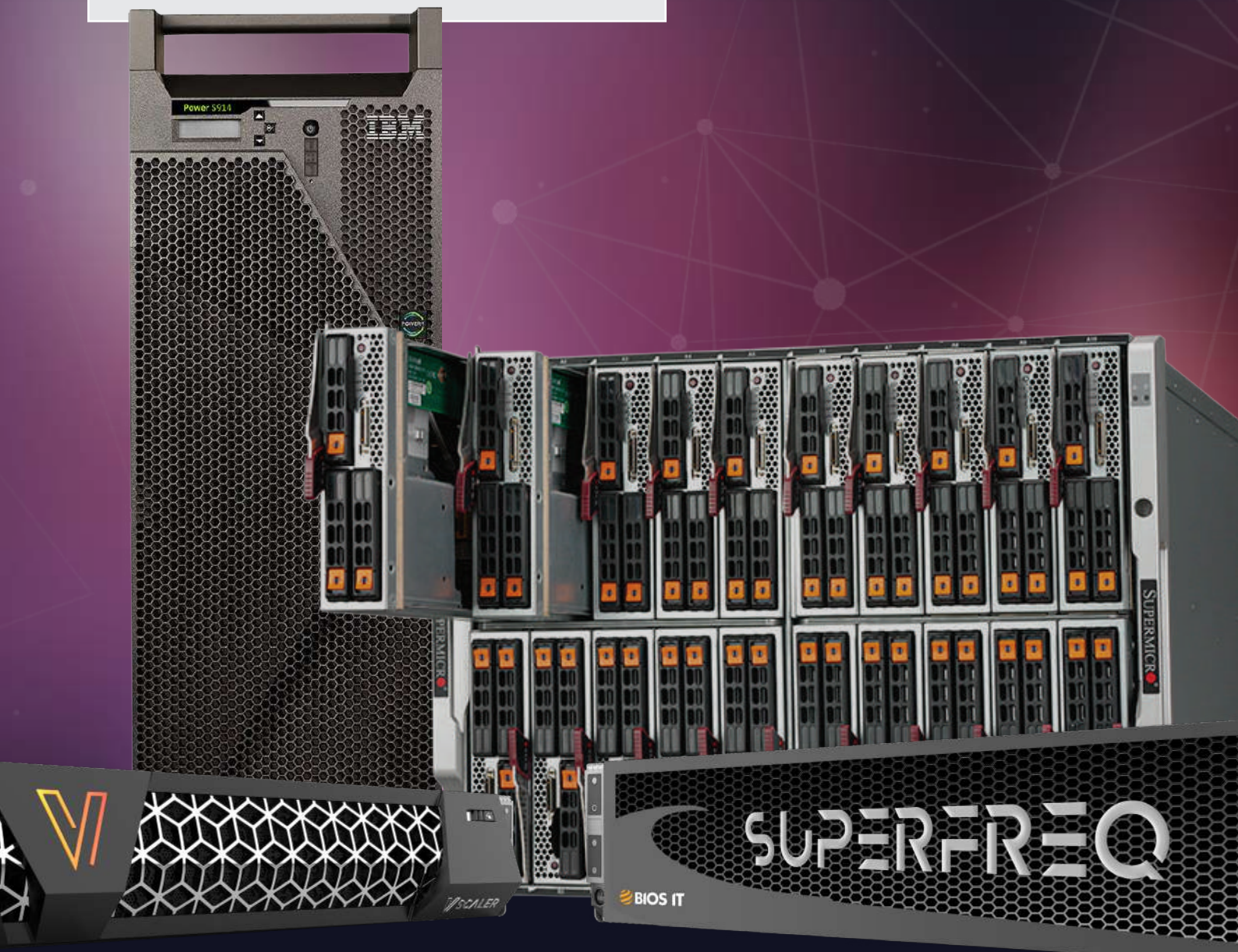


Design Optimise Innovate

BIOS IT Corporate Brochure 2019

www.bios-it.com



ABOUT BIOS IT

Who we are and what we do

BIOS IT is a global design house, systems builder and integrated solution provider for enterprise performance computing.

We construct bespoke clusters and appliances by hand picking the best components and newest technologies based on specific customer goals. We support well-known organisations at the top of their research fields, across science, engineering, academia and finance disciplines. Our comprehensive range of products and services include: high-performance enterprise servers, storage and networking, on-premise or in the cloud, with associated services, support, hosting and software.



Ian Mellett
General Manager, BIOS IT

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Cluster diagram

OUR WORKFLOW

HPC CONSULTANCY

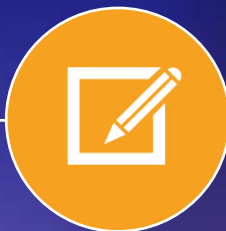
Our team of HPC experts are constantly benchmarking new solutions. This enables us to collaborate with our customers, share knowledge and expertise to deliver optimised solutions.

BIOS IT LABS

Our facilities are available to customers either onsite or via remote access, to test out the latest technologies and architectures. The BIOS IT lab enables customers to run benchmarks and simulations on evaluation systems prior to purchase.

PLANNING & INSTALLATION

Understanding technical dependencies and business requirements ensures a well thought out implementation and ensures the shortest installation period. Our team of senior engineers ensure this complex task is managed and completed in a professional manner.



TAILOR MADE DESIGN

BIOS IT design bespoke solutions in line with customer applications and requirements, including the utilisation of hardware and software accelerators designed for improved performance and faster workflows.

CONFIGURATION & QA

Our in-house engineering team ensure our solutions are engineered to the highest standards for both quality, stability and performance. Our state of the art build facility is ISO:9001 certified.

MANAGED SERVICES & SUPPORT

We provide our customers with tailor-made SLA solutions to suit your specifications. We offer bespoke service level work packages for ongoing support and global onsite warranty.



FIRST TO MARKET

At BIOS IT we are dedicated to providing our clients with first-to-market technologies, along with unrivalled consultancy and expertise that you can trust.

Working with a leading ecosystem of IT partners in both hardware and software from across the industry, BIOS IT is positioned to design and create the most innovative solutions optimised for speed and efficiency, that provides you with that imperative edge over the competition.

Our Value

Our world class Finance and HPC solutions come perfectly balanced with leading edge hardware, application specific software and ongoing support, tailor-made for your requirements. Combined with our in-house team of technical experts and support staff, BIOS IT can deliver innovative, scalable, power-efficient and reliable HPC solutions.

Our unique selling points WHY BIOS IT?

We strive to be the first to introduce next generation solutions specialising across low latency, high performance, power efficiency and extreme density. Delivering these disruptive technologies facilitates improved performance for our customers, along with a superior TCO for their businesses. We have excellent relationships with some of the world’s largest IT manufacturers, and we participate in global events in order to discover and collaborate with bleeding edge hardware and software vendors, ensuring our offerings include the latest and greatest technologies to benefit your business.



Design & Integration expertise

Our team of experts work with you to design, experiment and innovate on new solutions to complex problems. We design and build the custom solution to optimise application performance.



Enterprise Solutions & Services

We design bespoke solutions and service level agreements in line with customer applications and requirements, designed for improved performance and faster work flows and including ongoing global support.



Shared Knowledge and expertise

We travel the world to build the right partnerships with leading vendors and seek out the freshest, emerging technologies with the best pricing. We collaborate with our customers, share knowledge and expertise so as to deliver the optimal solutions.



Warranty & Support

We support our customers at every stage of their HPC journey, including application profiling, cluster design, configuration, integration, hosting, hardware and software training, global managed services, support and warranty.

AREAS OF EXPERTISE

FINANCE

Resilient, state-of-the art
IT systems provide the
foundation for virtually all
capital markets services

Wolfgang Eholzer, Head of Derivatives
and Cash Trading, Deutsche Börse AG

Financial Technology, or FinTech, is the biggest, current disrupter to the financial services sector. The adoption of innovative technologies has allowed fast-moving companies, often start-ups, to quickly gain traction in the market and challenge the incumbent. Artificial Intelligence (AI) has proved to be one critical tool in remaining afloat in this highly competitive world. The use of AI has increased massively across applications such as analytics, security and anti-fraud. The explosion of crypto-currencies and 'Open Banking' creates new possibilities within financial services, with technology being deployed to accelerate research and development.

Giving finance houses their competitive edge

The trend for securing the latest and greatest hardware to keep ahead has culminated in BIOS IT's range of solutions for the finance sector - including the SuperFreq series of servers.

Used in algorithmic trading and model simulations, the single socket overclocked SuperFreq systems help customers to mitigate risk when nanosecond responses cost millions.



- ✓ 10 Cores @ 4.9GHz
- ✓ Remote Server Management
- ✓ Global warranty & support

SuperFreq

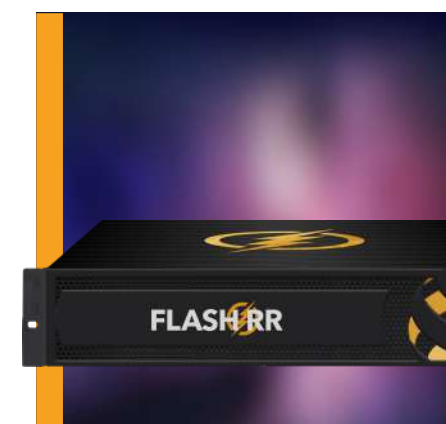
Tailor made for high frequency trading and low latency environments. An overclocked, single socket server delivering high performance and maximum reliability.



- ✓ Up to 36 cores @ 4.43GHz
- ✓ Overclocked system memory
- ✓ 1U air-cooled design

HyperSpeed Ultra

Maximised performance with mission critical reliability. Designed to deliver ultra-fast, high performance for high-frequency trading workloads.



- ✓ Virtualise your storage
- ✓ Faster IO with lower latency
- ✓ Low cost all-flash performance

Flash R-R

A Machine intelligent storage solution featuring virtual SSD software, and computational storage.



Case Study: Deutsche Börse AG

Up to 85% median round trip time improvements

BIOS IT upgraded the majority of Deutsche Börse AG's core T7 servers for its derivatives and Xetra cash markets, by providing custom systems designed to deliver ultra-fast performance for its high frequency trading and latency sensitive environment. Additional benefits of the BIOS IT deployment include record performance (Deutsche Börse AG recorded between 40% and 85% improvements on the round median trip times), extreme expandability for versatile configurations and an optimised cooling design, providing enterprise reliability.

HEALTHCARE

Solutions for healthcare, life science and precision medicine

I am proud to accept this award on behalf of @sangerinstitute and the teams which built our on-premise cloud and run world-leading science on it. @BIOS_IT @AristaNetworks @Supermicro_SMCI Dr. Tim Cutts, Head of Scientific Computing, Sanger Inst.

Over the last few years in the Healthcare and Life Sciences industry, the physical, digital, and biological worlds have converged. Forward thinking research organisations and pharma companies are focusing on how new technologies can add value to their operations. The evolution of instruments has led to a step change in scientific process and has helped to drive innovation in order to cope with the increased volumes of data. The amount of information being created has accelerated the wider adoption of disruptive technologies and has led to Big Data driven insight which has dramatically transformed diagnoses, treatment planning, patient monitoring, and drug discovery.

Accelerating time to results, reducing cost of discovery

One of the major factors driving huge market growth in healthcare technology is the development of cost-effective and time efficient IT solutions. Our range of optimised solutions for life sciences combine disruptive hardware and software technologies to help drive meaningful industry transformation, to advance researchers' time to results while reducing the Total Cost of Discovery (TCD). These revolutionary solutions are ideal for precision medicine, microbiology, clinical research, genomics and beyond, accelerating life sciences and healthcare discoveries across the board.



- ✓ 30x faster analysis
- ✓ AI Automation
- ✓ Lower TCO

Gene Genie

An end-to-end ecosystem for AI advancement in the healthcare industry. Accelerate genomics and pipelines using highly parallel GPU architecture.



- ✓ Open Source
- ✓ Scalable
- ✓ 70% more cost effective

vScaler Cloud

Accelerating the prevention, diagnosis and treatment of life-threatening illnesses. An optimised cloud platform for the analysis of next generation sequencing data.



- ✓ NVIDIA Tesla GPUs
- ✓ NVLink Interconnect
- ✓ Up to 16x GPUs

BIOS ANNA

Gain insights in hours with our Artificial Neural Network Appliance featuring NVIDIA® Tesla® architecture, purpose-built to be the engine of computers that learn, see, and simulate our world.



Case Study: Wellcome Trust Sanger Institute

Increased efficiency, density, and lower TCO

BIOS IT delivered a shared scientific computing resource designed around a flexible architecture. Built upon Red Hat OpenStack and CloudForms, the Wellcome Trust Sanger Institute are now able to provide a full featured and self-contained "Science as a Service" platform to its research teams.

SCIENTIFIC RESEARCH

BIOS IT can design bespoke HPC systems that are fully optimised to meet the requirements of your applications

If we need to build a cutting-edge super conductor, what we do is develop a suitable industry partnership. We work together, we grow together. **Fabiola Gianotti**, CERN Director General



As featured in The CEO Magazine 2019

Scientific disciplines use information technology differently. For example, in high energy physics, neurobiology, chemistry and materials science, experiments generate millions of observations per second, which must be screened and recorded in real time. Economics, psychology and public health experiments on the other hand, accumulate data slowly over time. While these disciplines require HPC with large storage capacity they do not need the capability to react in ‘real time’, making the HPC solution requirements very bespoke. Whatever the scale of your business, our aim is to build and implement compute solutions of all sizes using our expertise in high performance computing, application specific environments, cloud computing and IaaS.

SOLUTIONS TAILORED SPECIFICALLY TO YOUR REQUIREMENTS

We recognise that our customers are looking for novel ways to increase performance while reducing power consumption. In addition to our ability to deliver traditional x86 systems our strong partner ecosystem allows us to design and supply a broad range of solutions that include IBM Power, FPGA's, Intel Xeon Phi, NVIDIA GPU's and ARM. These technologies can be used to build a dedicated system, optimised for a particular workload or as an accelerated alternative resource.



- ✓ 1U/2U with 2/4 server nodes
- ✓ Up to 16 DIMM slots per node
- ✓ Dual Intel Xeon Processors

Twin Pro

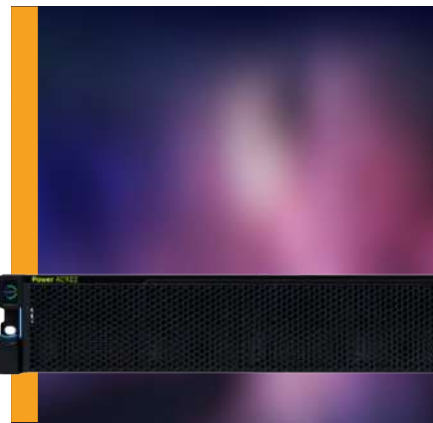
Build, expand or future-proof your advanced computing infrastructures. A revolution in Green Computing designed to support customer's critical applications and reduce Data Centre TCO.



- ✓ Up to 16x NVIDIA Tesla V100s
- ✓ 2.4TB/s Bandwidth
- ✓ 30TB NVMe Storage

NVIDIA DGX

Scale your high-performance environment to support your research. Establish computational excellence by handling large workloads, increasing efficiency, and lowering operational costs.



- ✓ Feat. PCIe 4.0
- ✓ NVLink 2.0
- ✓ PowerVM

IBM POWER9

When data-intensive workloads are the bottom line Power Systems deliver both performance and cost advantages with superior core performance and memory bandwidth.



Case Study: CERN BIOS IT accelerates enterprise technology that supports the biggest discoveries in particle physics

BIOS IT delivered over 50PB of storage to CERN for the Large Hadron Collider (LHC) project and over 20K CPU cores in collaboration with partners Supermicro® and Promise Technology. As a long standing contributor to the LHC project and their centralised IT infrastructure, we provide a wide range of systems and are a key strategic partner that continues to introduce significant changes in CERN's technology.

ACADEMIA

The wider adoption of HPC is accelerating what can be achieved in top academic institutes around the world.

The installation of the HPC cluster enables researchers in the Geography department to efficiently perform multiple high-resolution simulations of Earth systems, thus allowing us to explore more deeply the interactions between the cryosphere and climate over a range of temporal and spatial scales.

Dr. Leanne Wake, Northumbria University

For our Academia customers, High Performance Computing is now an integral part of their Infrastructure. Institutes can accelerate their research by having access to varied architectures, the latest technologies and faster compute power. In the not too distant past, the idea of a student cross-validating a statistics model hundreds of times over on a laptop or desktop PC would have been unthinkable. Thanks to today's technology - and the wider adoption of HPC - this can be done significantly faster.

EMPOWERING ACADEMIC RESEARCH

HPC is empowering today's Academic research innovators, visionaries and change makers - empowering the pioneering research community to achieve amazing things. Our range of solutions for academia has been built over many years of working with top academic institutions, such as the University of Cambridge (Big Data Institute) to Imperial College London from Montana State University to the University of New South Wales and many more in between.



- ✓ Intel® Xeon® Scalable
- ✓ Up to 8 double width GPU
- ✓ Up to 24 Hot-swap 2.5" drives

GPU Solutions

GPU accelerated, high performance servers with the ability to dramatically improve processing time for the most compute intensive applications.



- ✓ Single Socket
- ✓ 36x 3.5" Hot-swap SAS3 HDDs
- ✓ Dual JBOD expansion slots

Super Storage

Designed for optimal performance in a high density 4U form factor. With excellent expansion capability, our storage servers can meet the demands of the toughest storage environments.



- ✓ Cluster administration
- ✓ Remote Configuration
- ✓ Monitoring & Health Checks

Managed Services

Our expert team is on-hand to provide a range of Managed Service options for your HPC infrastructure including cluster administration and remote configuration assistance.



Case Study: Northumbria University Intel® Omni-Path Architecture Prepares Northumbria University for the Future

Northumbria University, working in partnership with BIOS IT have become one of the first UK sites to deploy Intel® Omni-Path Architecture (Intel® OPA) for their centralised HPC infrastructure. This is the first stage of Northumbria University's long term objective to provide its students, researchers and faculty members with a state of the art multipurpose heterogeneous computing facility.

MANUFACTURING

CAE and CFD optimised HPC solutions

In partnership with BIOS IT, the vScaler HPC Cloud system which was deployed at a top CFD consultancy house, provides the customer with the ability to address all of their existing CAE infrastructure challenges and spend more time working on the mission critical problems their customer face.

David Power, CTO vScaler



High Performance Computing (HPC) remains a critical component for Computer-aided engineering (CAE) and the many forms of simulations used to predict product performance. Whether looking at the product composition, such as laminates, acoustics, motion, structural or Computational fluid dynamics, manufacturers are looking to stretch the boundaries in their disciplines and are looking at more complex, compute heavy workloads. Examples of these heavy workloads include using transient simulations to gain every ounce of aerodynamic performance from complex surfaces in Formula 1, through to identifying when a component will fail in an Apache helicopter through vibration or stress.

DISRUPTIVE TECHNOLOGY FOR CAE

New technologies are constantly emerging that continue to allow larger, more complex, simulations, from Intel's Non Volatile Memory (Optane) that is 1000x faster than traditional NAND, through to AMD's EPYC 7002 series processors with up to 208GB/sec memory bandwidth per socket.

Our range of CAE optimised solutions feature the latest disruptive technology, including Intel Optane, AMD EPYC and vScaler Cloud.



- ✓ 4 Nodes in 2U
- ✓ Up to 56 Cores & 6TB Memory
- ✓ Supports Intel Optane DC Persistent memory

BigTwin

The "All-rounder" for Computer Aided Engineering, compute optimised for virtualisation, cloud, and hyperscale/hyperconverged applications in a 2U form factor with 4 or 2 nodes.



- ✓ Up to 128 Cores & 8TB Memory
- ✓ Industry leading I/O
- ✓ Up to 2x NVIDIA Tesla GPUs

A+

Optimised for AMD EPYC™ processors and offering new levels of CFD application-performance per watt and per dollar. Delivers outstanding core density, superior memory bandwidth, and unparalleled I/O capacity.



- ✓ Provision virtual resources
- ✓ Burst to Public Cloud
- ✓ Containerised applications

vScaler

Spin up multiple bare metal clusters in a virtualised environment and run CFD simulations via containerised application stacks. Provide dedicated resources to mission critical CAE projects.



Case Study: Customer under NDA

A cloud solution for CFD/CAE

In partnership with vScaler, BIOS IT has deployed a HPC Cloud system that provides our CAE customer with the ability to support a wide range of CAE/CFD applications, including older application versions that were needed for validation purposes and certain partner/customer requirements, not often supported by modern operating systems. They now have the agility to leverage public cloud resources for peak demand and to provision virtual resources within the cluster for prototyping, testing and evaluating new technologies.

SOLUTIONS: COMPUTE

Built on Twin Architecture



Twin Architecture is the foundation of the most advanced server platforms in HPC. These high performance, high density systems feature optimum airflow for energy efficient cooling, easy maintenance and high availability with hot-swappable nodes.

Our Approach to Compute

Facing budget limitations and energy efficiency initiatives alongside growing demands for greater processing power and capacity in the datacentre, organisations seek solutions that help lower their power consumption and operational costs while enhancing the scalability of their IT infrastructure. Our compute servers are a smart, yet affordable investment for enterprises and institutions that need to build, expand or future-proof advanced computing infrastructures.

Our Compute solutions at a glance

- > Satisfy the ever-increasing efficiency, density, and low-TCO demands of today's HPC clusters.
- > Custom built for your particular application and environment, rapidly adapt your infrastructure to your changing needs.
- > Easy maintenance and high availability with hot-swappable nodes and redundant power supply modules.

Configure your ideal cluster

Configure your ideal cluster with our range of enterprise compute solutions, from x86 to IBM, from Intel to AMD processing power, with your choice of add-ons and accelerators including GPUs and FPGAs.



Intel Clusters

BIOS IT IS Intel Cluster Ready

Match your HPC applications to today's leading platforms and components. preconfigured cluster solutions are delivered ready to run, so you can unleash more parallel performance over a shorter time period.



GPU Clusters

Developed with AI in mind

Our GPU Clusters feature integrated Deep Learning application stacks and optimised NVMe storage as well as the world's fastest GPU architecture.



AMD Clusters

Raise expectations for your Data Center

Customers with compute-intensive applications including CFD, FEA, custom HPC and AI workloads choose AMD clusters for exceptional performance and power/space efficiency.



IBM Power9

Blazing speed with Power9

Built for the most data-intensive and demanding computing on earth, Power9 is the premier platform for accelerated enterprise computing with maximized bandwidth.

SOLUTIONS: STORAGE

Millions of IOPs to affordable Big Data



BIOS IT can offer a wide range of storage solutions to support Enterprise and HPC Customers. software and applications, including NVMe, NVMe over Fabric, Accelerated Flash SSD and affordable large capacity storage solutions.

We realise your data is King.

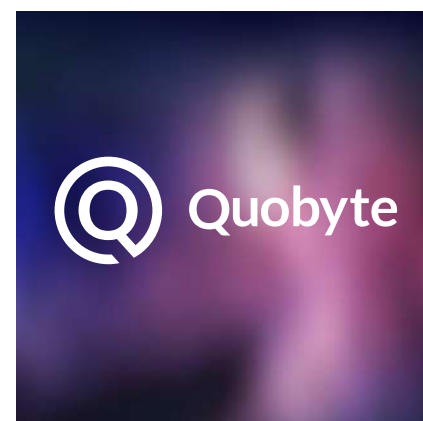
In today's world, data is king and is often what separates you from your competition. By choosing the right storage appliance, you can determine the speed and ease in which you access your data as well as safeguarding and protecting your most valued asset. Working with Industry leading Storage partners, BIOS IT can deliver your storage requirements - whatever the workload.

Our Storage Solutions at a glance

- > Scale-out parallel file systems and high performance computing storage systems.
- > NAS, SAN and JBODs as well as Hyper-converged and virtualised storage solutions.
- > Have a specific requirement? Get in touch and will tailor make a solution to fit your needs.

Our storage partners

Performance, capacity and reliability are key factors when deciding how to structure your HPC Storage infrastructure.



Quobyte

For demanding workloads

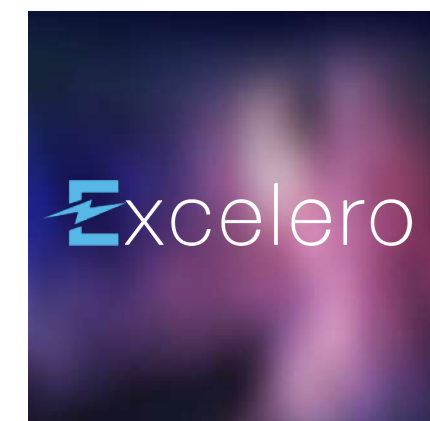
A highly versatile, software defined storage solution with the capability to create multiple volumes, providing both file and object storage.



BeeGFS

Parallel File System

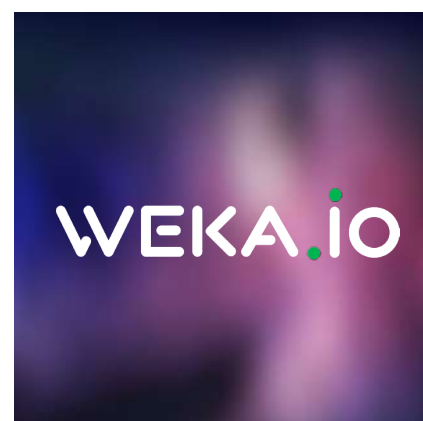
Designed for scale-out network-accessible storage, developed with a strong focus on performance and designed for very easy installation and management.



Excelero

NVMe Burst/Buffer

Excelero enables low latency and high-performance access to NVMe volumes, delivered to remote clients with minimum processor overhead.



WekaIO

Worlds fastest file system

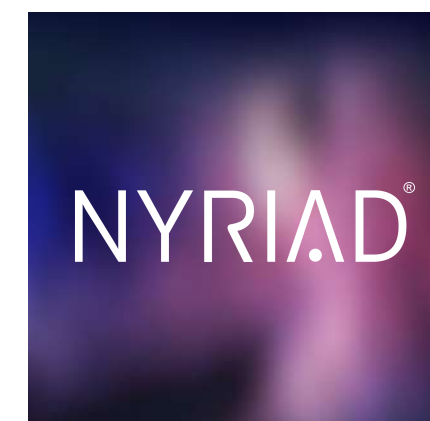
First flash-native parallel file system that supports low latency NVMe-over-fabrics. Fully distributed data and metadata ensures no hot-spots or bottlenecks.



Panasas

Plug and Play Storage

The fastest plug-and-play parallel data storage system, optimised to accelerate workflows, simplify data management, and deploy easily.



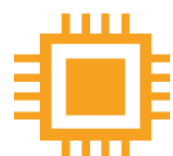
Nyriad

Alternative to RAID

NYRIAD features NSULATE, a Linux block device that functions as a software-defined alternative to RAID for configuring fast, reliable, larger scale storage solutions.

SOLUTIONS: AI

Experts in AI and Deep Learning



Experience new levels of AI speed and scale with our broad range of AI and Deep Learning solutions. Take on the world's most complex challenges with our scalable, accelerated solutions and expertise.

Our Approach to AI

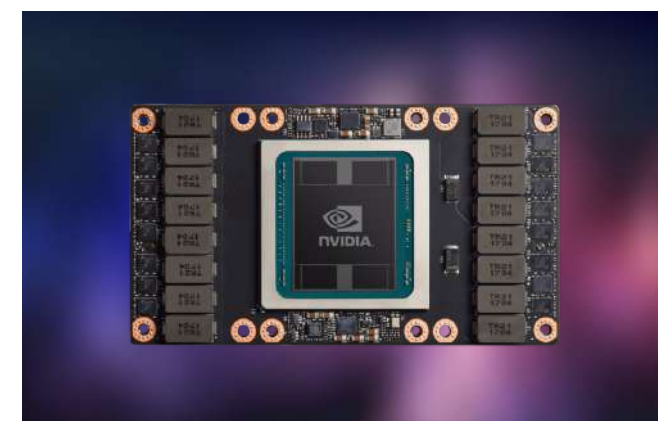
Artificial Intelligence and Machine Learning are revolutionising the way we see and interact with the world around us. Our range of hardware accelerated Deep Learning appliances and solutions are specifically designed to enhance the performance of Artificial Intelligence algorithms. By combining the latest in CPU, GPU, FPGA and/or other co-processing technologies, with Deep Learning framework repositories, we remove the initial challenges of AI infrastructure deployment.

AI Solutions at a glance

- > Integrated with the latest generation GPUs, designed and optimised to accelerate neural network training.
- > Our solutions accelerate AI workloads over a high performance network fabric and storage.
- > Access GPU or virtualised GPU in the cloud via virtualised Deep Learning clusters.

Fast track your insight

Fast-track your AI initiative with a range of AI optimised solutions, from GPU or FPGA accelerated servers to cloud based Deep Learning frameworks that enable you to gain insights in hours instead of months.



GPU

Worlds fastest accelerators

With NVIDIA Tesla powered solutions, you can parse petabytes of data orders of magnitude faster than with traditional CPUs, in applications ranging from energy exploration to deep learning.



FPGA

Up to 90X higher performance than CPUs

Our FPGA solutions powered by Xilinx, offer up to 90X higher performance than CPUs for key workloads, including machine learning inference, video transcoding, and data analytics.



vScaler POD Reference Architecture DGX Management Platform

Featuring centralised storage, the power of the NVIDIA DGX-2 GPU platform, Mellanox RDMA accelerated Fabric and a built in Deep Learning application repository.



Deep Learning Training Certified DLI trainers

Deep Learning Institute (DLI) workshops, hosted by BIOS IT, offer hands-on training for developers, data scientists, and researchers looking to solve challenging problems with deep learning.



Mellanox ANZ Partner
of the Year award 2018

SOLUTIONS: INTERCONNECT

Mellanox's InfiniBand accelerates 6 of the top 10 Supercomputers



BIOS IT works with a number of leading interconnect vendors; in the HPC environment our preferred partner is Mellanox Technologies - a leading supplier of end-to-end Ethernet and InfiniBand intelligent interconnect solutions and services for servers, storage, and hyper-converged infrastructure.

Why Mellanox?

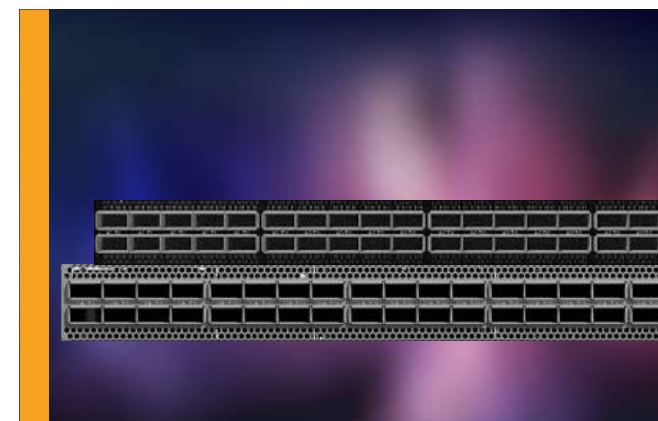
Mellanox solutions increase high performance fabric interconnect efficiency by providing the highest throughput and lowest latency, delivering data faster to applications and unlocking system performance. Mellanox's InfiniBand solutions accelerate six of the top ten HPC and AI Supercomputers on the June TOP500 list including the top three. Almost 60% of the TOP500 Supercomputers have a Mellanox Infiniband or Ethernet backbone.

Interconnect Solutions at a glance

- > High performance fabric interconnect - the industry's most advanced interconnect solution for HPC and deep learning.
- > HA Block Storage - highly available storage can be delivered via both IB and Ethernet, as the storage target dictates.
- > Contact us to discuss our Open Networking options - enabling your company to simplify, modernise and grow.

Our networking building blocks

Our end-to-end InfiniBand and Ethernet Interconnect Solutions and Services increase data center efficiency by providing the highest throughput and lowest latency, delivering data faster to applications and unlocking system performance capability.



Infiniband QM8700/QM8790

QM8700 has the highest fabric performance available in the market with up to 16Tb/s of non-blocking bandwidth with sub-90ns port-to-port latency.



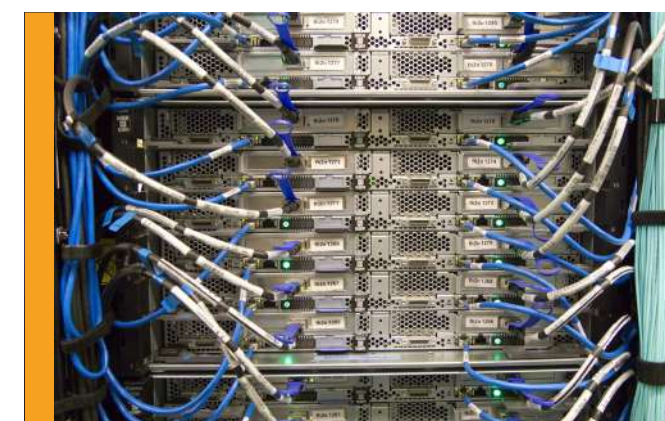
Ethernet SN2000 Series

The world's lowest latency for 100GbE switching and routing, while having the lowest power consumption in the market.



Network Interface Cards ConnectX-6, Bluefield 2 and Multi-Host

Mellanox Smart NICs, brings new acceleration engines for maximizing High Performance, Machine Learning, Storage, Web 2.0, Cloud, Data Analytics and Telecommunications platforms.



Cables & Transceivers LinkX

Designed to maximize the performance of High Performance Computing networks, requiring high-bandwidth, low-latency connections between compute and switch nodes.



SOLUTIONS: CLOUD

Our cloud solutions are powered by vScaler



BIOS IT has partnered with disruptive cloud providers vScaler to deliver an application specific cloud solution to its broad customer base. We have successfully deployed vScaler cloud solutions into Genomics, Finance, Academic and CAE verticals.

Introducing vScaler

vScaler is a private Cloud platform built on Open Source technology that enables you to create a secure, scalable, cost effective, flexible IT infrastructure.

Deploy your on premise private cloud in minutes, add cloud-based services or applications, and scale to public or hybrid cloud environments on-demand - all under a single management portal.

vScaler Cloud at a glance

- > A single, cost effective cloud management portal for your entire infrastructure.
- > Batch and Containerised application deployment options.
- > Application specific stacks out of the box including Deep Learning and AI frameworks.

vScaler Cloud building blocks

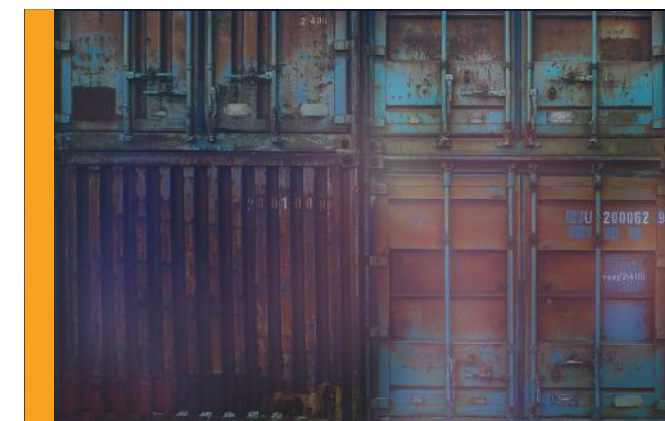
Build your bespoke cloud solution using vScaler building blocks. Our experts can assist in tailor making a cloud solution for your requirements.



Private Cloud Appliance

All-in-one Block

The vScaler all-in-one cloud appliance includes all of your cloud, compute, and storage services and provides up to 256VMs.



Storage

Scale your capacity

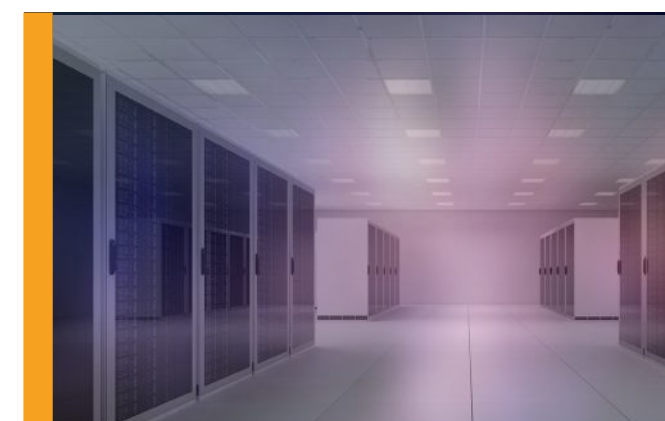
High capacity storage building block which can scale your capacity with additional flash (up to 12TB NVMe) and SAS (up to 720TB).



GPU

Accelerated compute

Our GPU Accelerator block provides up to 4 V100 NVIDIA GPUs in passthrough mode or 64x virtual GPUS (vGPU).



Compute

Scale your computational capabilities

Compute module add-on in order to scale the computational capability of your cloud. This building block increases your VM capacity by an additional 300VMs



SOLUTIONS: LOW ENERGY

Increased efficiency without the environmental impact



Low energy and power efficient computing are becoming ever more important concepts for the IT industry as power costs increase and environmental impact becomes more and more significant.

Advanced Cooling methods

BIOS IT have been at the forefront of new cooling technologies for many years, partnering with specialists focussed on facilitating greater density of compute within standard racks through to more esoteric solutions requiring a greater level of customisation. We have worked with industry leaders for many years to create the industry's most power efficient solutions whilst still maintaining performance leadership.

Low Power Solutions at a glance

- > Disaggregated solutions that optimize datacenter power, cooling, shared resources and refresh cycles.
- > Green IT innovation that helps the environment as well as provides TCO savings for our customers.
- > Optimal cooling methods across a range of solutions including 'in-rack' cooling and immersed computing.

'In Rack' Cooling

High efficiency, lower costs

Using advanced DX rear door cooling, we are able to provide an "in rack" solution to turn a standard data centre into a HPC data centre without the need for large scale modification or the associated costs involved.

Our solution provides very high efficiency with indoor fans requiring a lower volume airflow and no mixture of hot and cold air, allowing for up-to 30kW cooling in a standard datacentre with in a 42U rack.

There is also no requirement for liquid containment as the unit uses electronically safe refrigerants. These doors can also be fully integrated into Building Management Systems, via ethernet, Modbus & SNMP.

Installation is simple with a simple door adapter with all piping running overhead, so no requirement for a raised floor. This solution allows you to increase the capacity in a Datacentre by up-to 200kW with just 10 DX rear cooling doors and one outdoor unit.



Supermicro Green Computing

Disaggregated Server Architecture

Supermicro's passion for energy efficient design continues to expand with the inclusion of Disaggregated Server Architecture reducing the need to replace all of the hardware at the point of technical refresh or performance upgrade.

- Optimized system architecture created to take advantage of Supermicro's power saving technology to produce optimal cooling at all application levels
- Motherboards designed with leading-edge technology based on the latest generation x86 processors and high-efficiency components such as VRMs optimized to reduce energy consumption
- High-efficiency power supplies designed to run at significantly higher efficiencies of up to 96%+, greatly reducing energy losses
- Cooling subsystems including advanced technology heat sinks, pulse-width modulated fan speed control, structured chassis airflow design, intelligent temperature and power management, all designed for the most effective cooling for all system components
- Low-power components such as processors, memory, and HDDs/SSDs



OUR SERVICES

Support and advice for the whole project cycle

BIOS IT LABS

ONSITE OR REMOTE ACCESS TO THE LATEST TECHNOLOGY

With the constant innovations in technology and profusion of options, we understand how daunting the prospect of investing in new, upgraded IT hardware is – especially without the option of viewing or testing your purchase prior to receiving it. This is why we have introduced BIOS IT Technology Labs.

BIOS IT Technology Labs rethinks customer procurement with informed purchase decisions and ability to try expensive solutions before they buy. We offer both in lab or remote access to new technologies or configurations that are being explored. Customers are supported in the testing and running of their workloads for real world performance results.



At BIOS IT's integration and labs facility, our advanced, green computing solutions can be quickly configured, optimized and validated to accelerate deployment and increase IT efficiency and workflows

Wally Liaw, Sr. Vice President of Sales at Supermicro

DESIGN & CONSULTANCY

Optimising performance and planning for the future

Navigating the open waters of enterprise IT is a difficult task, made more so by the deluge of new technologies popping up every day. BIOS IT HPC Engineers provide much needed guidance: we work with customers of all skill sets to listen, understand and introduce the innovations that equate to real world performance gains and solutions built to endure.

Architecture Design

Whether it's a highly-parallel compute cluster, a non-blocking network or a tiered storage array, our HPC Engineers will identify key technologies to meet project goals. Our design philosophy of performance, reliability, scalability, flexibility and cost is centric to creating the right solution for each opportunity.

Custom Appliances

Our high-performance appliance design and build service takes optimisations to the node level. We tailor-make servers for specific workloads with production capability to launch products globally.

Roadmap Planning

When we're not engrossed in a tech deep dive with CPU manufacturers or meeting and testing technology with the latest start-ups, we are talking to customers. Keeping them informed of changes ahead and planning a roadmap to futureproof investment.



SETUP SERVICES

From day 1 IT Launch



Integration

Greenfield site or an extension to existing infrastructure, we align our solutions to best fit your unique environment. On-site installation and network integration services ensure your new cluster peacefully coexists with the wider IT infrastructure. Our risk management strategy promotes proactive issue resolution for minimal downtime and successful network integration.

Cluster Configuration

In deploying multiple node types, our cluster configuration and provisioning services are available to reduce and remove administrative burden following an install. System UEFI and BIOS settings can be fully configured during production to create a cluster that operates exactly as the customer defines.

Application Migration and Training

BIOS IT offer an application migration service for certain HPC workloads and toolsets transitioning Ubuntu and Linux. This includes extensive application testing and on-premise administrator training. Additional customer user workshops are available either on-premise or via webinar.

Data Transfer

We offer replication and a range of technologies to support zero packet loss during the transfer. Moving your data across to new storage infrastructure has never been easier.

Project Management

Planning, strategy and communication delivered within a fixed budget and dates are key for project success. Our PRINCE2 qualified project managers will guide you through design, execution, testing and handover acceptance.

LIFETIME SERVICES

Reliable performance, day-in, day-out



Managed Services

To enable our customers to free up internal resource, BIOS IT offers tailor-made managed services packs. Understanding the diverse way in which businesses operate, we take a “only buy what you need” approach from basic administration, to code correction and debugging, allowing total flexibility.

Cluster admin

BIOS IT engineers can manage standard cluster status checks such as machine operation, interconnect subsystems, storage and application queuing. All relevant notes concerning fixes, changes, up-dates and upgrades are documented, managed and shared via our Managed Technical Operation Centre.

Application Optimisation

Ensure portability of codes between architectures to ensure efficient use of different clusters. Application profiling to identify performance bottlenecks and then tune for performance. Includes recommendation of best practice for job submission scripts for each application.

Leasing

Take advantage of an OPEX model to lease the new technology that you require to drive your business forward. This model can give a greater level of flexibility than the standard approach to purchasing IT.

Disposal

We can maximise the return from your redundant product, from recovery of components and value recovery from current technology to cost effective disposal of IT meeting all your WEEE liabilities and providing disposal certification.

GLOBAL WARRANTY & SUPPORT

From remote diagnostics assistance to on site support.



Diagnostics Assistance

Once you have received your new system, our after sales support team are on hand to provide diagnostics assistance and to answer any support questions you may have.

On-site Support

Every support engineer is trained to deal with requests quickly and effectively, using escalation procedures where necessary to ensure maximum up-time. In addition to our standard warranty we can offer fully tailored service solutions should this be required.

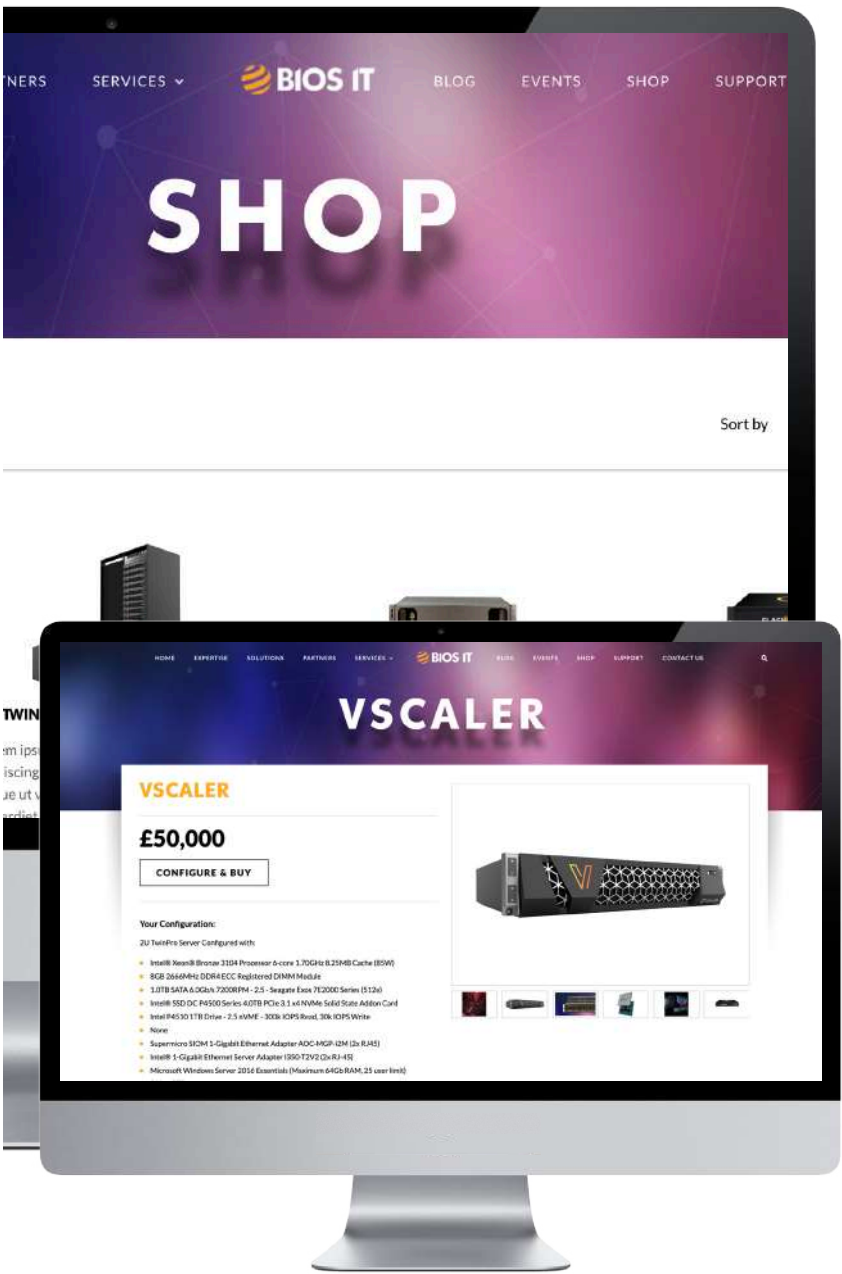
Our tailor-made SLA solutions are custom designed to suit your specifications and we offer bespoke service level work packages for ongoing support.

Warranty

We provide on-site warranty support globally and in many cases can support you with more time-critical warranty services such as 4 hour response, 24x7 engineer availability or even a custom service options to meet your specific requirements.

ONLINE SERVICES

Coming soon!



Online Shop

We are excited to announce that our online shop is coming soon. Visit www.bios-it.com and sign up to our newsletter to stay informed on our new website launch including our online shop. Receive monthly updates and information on our latest solutions and industry new and announcements.

Online Configurator

Our soon to launch configurator tool enables you to customise your solution to your requirements. Choose from various customisable components and SKUs to build your bespoke solution. Generate real-time quotes in just a few mouse-clicks.

EMERGING TECHNOLOGY

We are continually researching and benchmarking the latest technology solutions

At BIOS IT we are dedicated to providing our clients with first-to-market technologies, along with unrivalled consultancy and expertise that you can trust. We strive to be the first to introduce next generation solutions specialising across low latency, high performance, power efficiency and extreme density. Delivering these disruptive technologies facilitates improved performance for our customers, along with a superior TCO for their businesses.



GIGAIO

- ✓ 512Gb/s with PCIe Gen 4
- ✓ Latency values of 43nsec
- ✓ In-memory network

GigaIO

www.gigaio.com

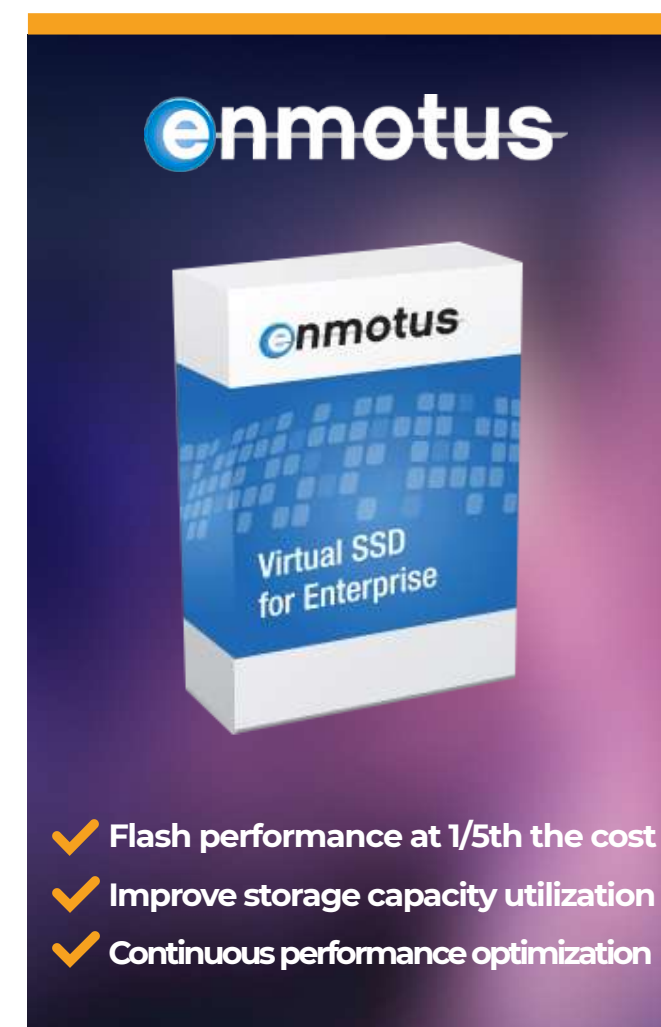
GigaIO's hyper-performance network solutions break the constraints of old architectures, opening up new configuration possibilities that radically reduces system cost and protect your investment by enabling you to easily adopt new compute or business processes.

The FabreX™ Switch is the fundamental building block of the FabreX network for true Software Defined Infrastructure (SDI). The Switch communicates with FabreX host drivers to identify and coordinate resources required by the hosts, then quickly connects the respective resources. Choose from a variety of switch software packages to provide the cluster configurations, management and control you need

Enmotus

www.enmotus.com

Enmotus provides a cutting edge storage method to leverage machine intelligence while self optimising utilizing your real time data. Enmotus Virtual SSD software identifies the active data set of applications and dynamically allocates the appropriate storage resources in order to optimise performance. Utilizing revolutionary storage device level virtualisation, analytics and optimization techniques, scale out data centres and storage servers will realize improvements in performance, capacity utilization and operating costs.



enmotus

Virtual SSD for Enterprise

- ✓ Flash performance at 1/5th the cost
- ✓ Improve storage capacity utilization
- ✓ Continuous performance optimization



KALRAY

MPPA - MANYCORE

HFCBGA 1156V100
F1 A11 F12 XXXXXXXXXX
TWNTFYWW

- ✓ 288 Cores
- ✓ 128 Crypto co-processors
- ✓ 2MB Shared Memory

Kalray

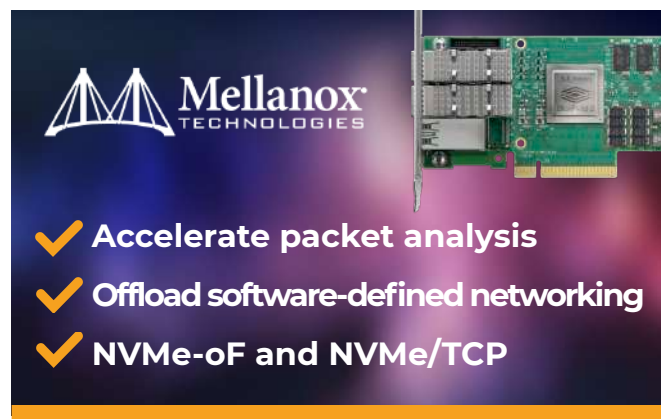
www.kalrayinc.com

Low-power & high-performance are key to future computer data gathering & processing. The Massively Parallel Processor Array (MPPA®) is Kalray's ground-breaking many core technology, giving chips more processing power with less power consumption. With market value in AI, computer vision Aerospace, autonomous vehicles, data storage, & data networking, Kalray lends itself to many verticals with a single programmable chip.

Featuring Crypto co-processors which add a further layer of security for applications that need unbreakable cryptography or for applications with no other layers of cryptography.

Architecture

- 256 compute cores, 16 management cores and 4 quad cores.
- 2MB of Shared Memory (16X 128KB each with a 64-bit width)
- 128 crypto co-processors, each with 2 compute units:
- UNIT0: DES, AES-128, AES-192 or AES25 encryption and decryption
- UNIT1: DES encryption or decryption, 128x128 carry-less multiplication (CLMUL), 64x64 CLMUL, Galois field operations, SHA-1, SHA-256, SHA-512, CRC32 or CRC64 with any polynomials



Open Networking, with BIOS IT, Cumulus and MellanoX

www.bios-it.com

Open Networking is fundamentally the disaggregation of hardware and software, giving you the freedom to use any network operating system on bare metal switches, giving you control and optimising efficiency. Open Networking focuses on the following elements:

- Intelligence built into the software
- Agility and scalability
- Freedom of choice
- Network virtualisation
- Open and modular design
- Automation and orchestration
- Advanced interoperability with containers

The End Result: A seamless flow of real-time data within your organisation, driving digital transformation initiatives and enabling your company to simplify, modernise and grow. BIOS IT partners with Mellanox and Cumulus Networks to deliver Open Networking solutions. Contact us for more information.



Mellanox Programmable Smart NICs

www.mellanox.com

Mellanox's offers a suite of programmable SmartNICs that encompass the advanced capabilities of the ConnectX network adapters with advanced software or FPGA programmability, providing datacentres with levels of performance and functionality previously unseen in the market. These cards are based on the BlueField I/O Processing Unit (IPU) – a family of innovative networking and I/O acceleration ICs.

The new generation of SmartNICs is the perfect blend of hardware and programmable accelerations enabling secure and high-performance network solutions for cloud, storage, machine learning and edge computing applications while increasing productivity and reducing total cost of ownership.

- BlueField delivers unmatched performance in Ethernet and InfiniBand network environments.
- Offering a broad coverage of configurations best suited for the most demanding workloads.
- BlueField enables next-generation IoT and edge computing platforms while reducing total cost of ownership.

OUR TECHNOLOGY PARTNERS

A rich ecosystem of hardware, software and cloud expertise



www.bios-it.com

UK Office

Salisbury House,
29 Finsbury Circus,
London

Contact

Phone +44 (0) 203 178 6467
sales@bios-it.co.uk

USA Office

Fairfield, NJ
Austin, TX

Contact

Phone 1-800-654-BIOS
sales@bios-it.com

APAC Office

Suite 701, 275 Alfred St.,
North Sydney
NSW 2060 Australia

Contact

Phone +61 (0)2 8866 3343
sales@bios-it.com.au

