

Aurora. Some have more power™





+ Energy efficiency

+ Compatibility

+ Reliability

+ Availability

The background of the entire slide is a photograph of a vast, icy ocean under a cloudy sky. The water is a deep blue-grey, and the surface is covered with numerous small, white ice floes. In the distance, a thin line of land or ice is visible on the horizon. The overall mood is cold and expansive.

+ Scalability

+ Intelligent performance

+ Unified Network Architecture

+ Computational Efficiency

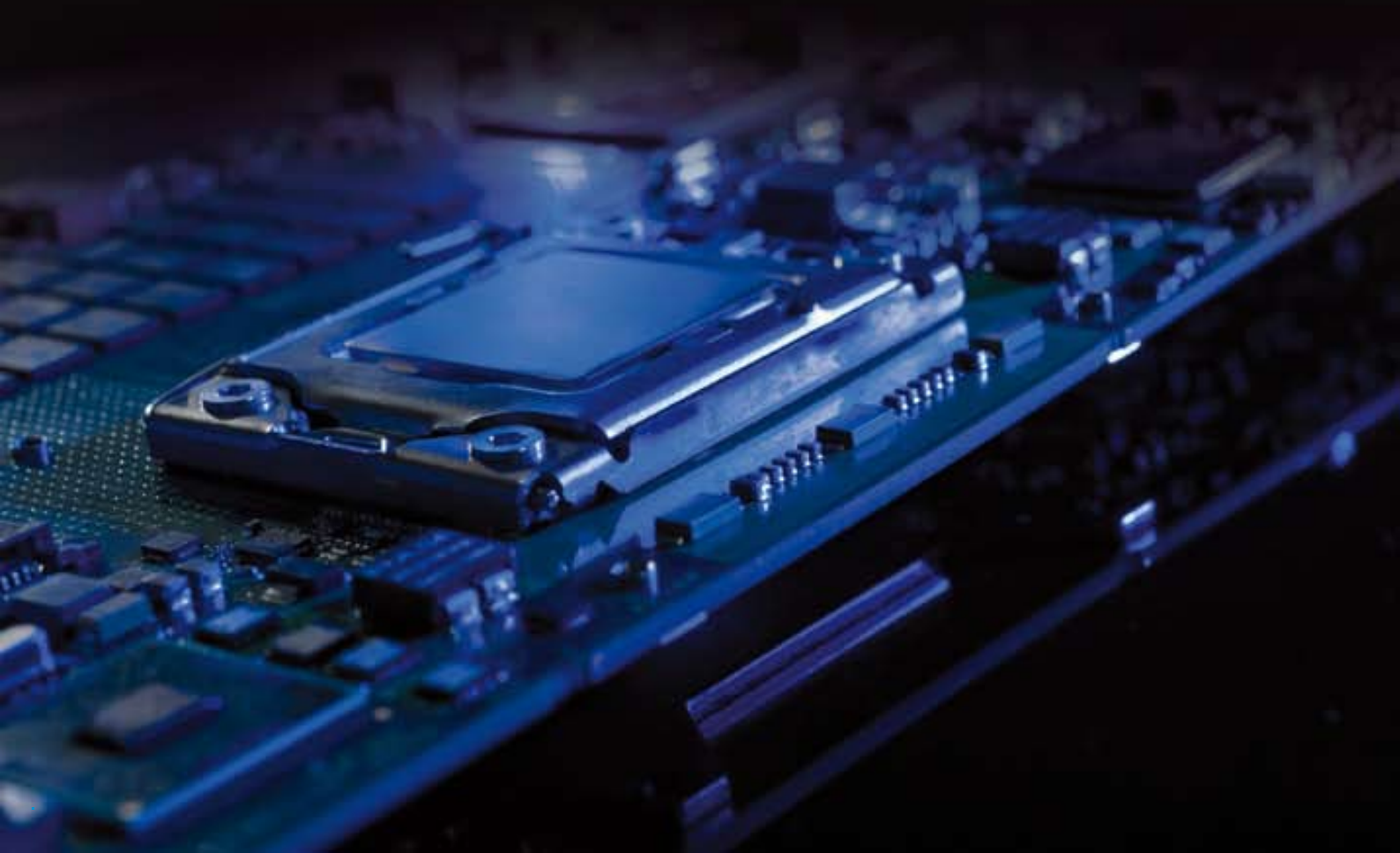
Aurora. Performing coolness

The new wave is coming: Petascale computing is the great opportunity for existing and emerging leaders. • HPC leaders are taking a broader view over their installations: total cost of ownership, reliability and installation footprint are important choice elements in their decisions. • Aurora is the scalable Petascale solution that sets new records for power and computational efficiency, reliability and footprint. **Can you afford to have less? Aurora. Some have more power.**

AURORA

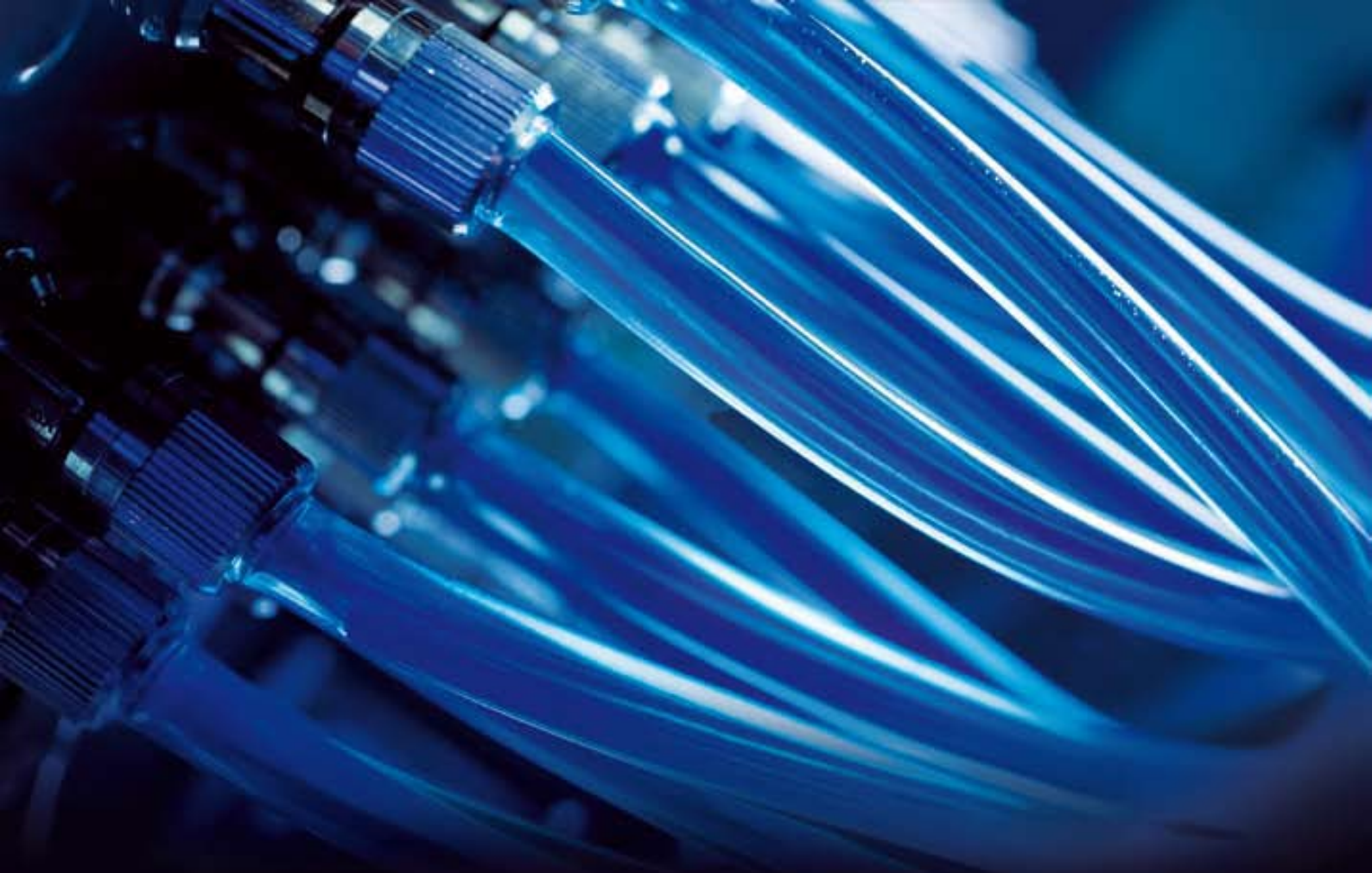
HPC as never seen before

Enjoy Petascale. With Aurora you can confidently achieve **consistent performance** regardless of the dimension of your installation. Its **unified and reconfigurable network** architecture merges the 3D toroidal and switched topologies, providing automatic or user optimized communication routing. Efficiency at any scale is enforced by global, domain and subdomain **synchronization networks**. Existing x86 and MPI-based code can be run with **minimal or no porting**; additional acceleration can be achieved with the integrated **high performance programmable accelerator**. Aurora has no moving parts and is **liquid cooled**, to provide the highest level of **reliability and power efficiency**. www.eurotech.com/aurora









Intelligent Performance

Intel® Xeon® 5500 series CPUs – Solid State Disk
On-node programmable accelerator



Scalability

100GFLOPS/Node – Up to 24TeraFLOPS/rack
1PetaFLOPS in just 42 racks



Unified Network Architecture

60Gbps 3D torus – QDR Infiniband®
Sub μ s memory to memory latency



Computational Efficiency

Synchronization networks
Reconfigurable network processor



Energy Efficiency

Liquid cooling – As much as 60% energy savings



Compatibility

Full x86 compatibility – Optimized MPI libraries



Reliability

ServNet® – No moving parts



Availability

Redundant – Hot Swap – Zero Knowledge Replacement

Aurora technical features

Intelligent Performance

Enjoy the most advanced node card design

- CPU: two Intel® Xeon® 5500 series CPU / 100GFLOPS
- On-node memory: up to 24GB DDR3
- On-node storage: up to 160GB Intel® Solid State Disk
- On-node programmable high performance accelerator

Unified Network Architecture

Automatic and reprogrammable routing of packets over different topologies with CPU offload

- Toroidal: 60Gbps 3D
- Switched: 40Gbps Infiniband®
- Latency: Sub μ s memory to memory latency
- SAN: 40Gbps Infiniband® with protocol offload
- Monitoring: In-band and out of band
- Synchronization: three hardware synchronization networks
- Network Processor: reconfigurable and programmable routing

Compatibility

Preserve your software investment

- Full x86 compatibility: minimal or no porting for most code
- Optimized MPI libraries: advanced networking features can be transparently used
- Standard environment: use established development and debugging tools

Reliability

Embedded resilience for extreme challenges

- ServNet®: advanced and system independent control and monitoring infrastructure
- No moving parts: Aurora does not use fans, rotating media or other potential sources of mechanical failure and vibration

Scalability

Flexible performance up to multiple PetaFLOPS

- Rack: from 3 TeraFLOPS to 24TFLOPS
- System: 1PetaFLOPS installation requires just 42 racks
- Synchronization networks: hardware synchronization of the nodes preserves efficiency in large installations

Computational Efficiency

Achieve more with an efficient architecture

- Synchronization networks: multi-level node and process synchronization for the highest system availability
- Reconfigurable network processor: application-based routing optimization over toroidal and switched topologies

Energy Efficiency

Reduce total cost of ownership with liquid cooling: no need to cool the building, just the modules

- Heat transfer efficiency: direct, on-component liquid cooling with much better heat transfer than air
- Total Ownership Cost: up to 60% less total energy costs
- Greener Computing: many options – free cooling, reuse of system heat for building heating, compatibility with natural sources of cold water

Availability

Unstoppable performance

- Redundant: enhanced availability for large systems and uninterrupted execution
- Hot-Swap: replacing cannot be simpler
- Zero Knowledge Replacement: node cards support stateless mode with slot-keyed automatic reconfiguration



www.eurotech.com/aurora

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