Enable high performance workloads, analytics & databases
- Provision NVMe volumes for bare-metal, VMs, containers from a pool of scale-out data nodes
- Consistent latency as low as 16 usec. Uses SRIOV to enable low latency for VMs & containers
- QoS & real-time monitoring
- Works with any OS, any hypervisor
- Migrate persistent volumes between VMs, containers or bare metal servers

Respond in real-time to evolving business needs
- Zero-touch, SW-defined REST, GUI provisioning for operators & users
- Zero host software/agents

Lower TCO
- Eliminate over-provisioning; scale storage separate from compute
- Shared volumes for analytics
- Cost/power/space efficient data nodes; single or dual-port SSDs
- Support up to 1024 hosts per data node; up to 11M IOPS / data node
- Allocate from SSD tiers

Choice of Host Interface
- Attala Host NVMe-oF adapter or RDMA NIC (e.g. Mellanox)
- 100% Standards based

The Attala high-performance composable storage infrastructure is based on an Intel FPGA-based scale-out fabric that leverages standard Ethernet networks to interconnect servers and data nodes. With full automation, the fabric dynamically, arbitrarily and securely attaches volumes from storage resources directly to where the application lives – whether in a bare-metal server, in a virtual machine or a container.

Any OS, Any Hypervisor - The host NVMe-oF adapter fully emulates NVMe SSDs enabling operation with any OS, any hypervisor. The kernel treats it as an actual SSD using standard, in-box NVMe drivers. The solution includes a mechanism to create these virtual SSDs - & their allocation to SSDs from the pool – using out-of-band techniques that enable pre-boot and run-time provisioning. The approach requires zero host agents or software.

Predictable, verifiable performance & QoS - The Attala solution delivers latency & IOPS nearly identical to locally-installed NVMe SSDs – adding only 5 μsec of added latency (vs local SSDs) & up to 11M IOPS per data node. This much performance was meant to be shared; with multiple contending hosts, the solution includes granular QoS controls (IOPS, throughput) on a per-volume basis. And it also includes granular latency, IOPS and throughput monitoring statistics that can be shared with operator and/or user.
Efficient scale-out capacity - A given data node can support up to 24 NVMe SSDs. An example configuration using 8TB SSDs delivers 192TB in a 2U chassis. Additional capacity can be added via scaling-out with added data units. Each data node uses power and cost-efficient FPGA technology; each 2U node is only 20.9 inches deep to enable space-efficient, power and cost friendly scale-out infrastructures.

Capacity and performance where & when you need Via fully automated management software, physical NVMe resources are mapped to servers, VMs or containers. A given server with a single Attala host adapter can map up to 512 NVMe volumes from any data node on the network. A single data node can supply up to 1024 hosts (256 per redundant data port pair) and up to 384 allocatable volumes. Every active volume has a tenant-defined QoS parameters.

Enterprise Resilience and High-Availability. Attala data nodes include multi-link-access technology which enables any SSD in the data nodes to be accessed via any network port. This enables highly-available designs that can survive one or more network link failures. In addition, Attala data nodes have been designed with redundant data paths (IO modules), dual-port NVMe SSDs and designed for use with MPIO initiator software/hardware for the ultimate in high-availability.

Enterprise-Class Features - The Attala solution enables high-performance and complete flexibility in how NVMe SSDs are accessed.
- For efficiency, cloud operators can carve SSDs into several namespaces with each namespace allocated to a different host
- Cloud operators can execute full SSD diagnostics (e.g. SMART)
- Operators can define policies that define allowable tenant/user SSD admin operations
- Isolation of faults and error handling between the SSD/PCIe and Ethernet/network domains

Zero-touch multi-tenant provisioning - In a multi-tenant environment, each tenant has their own GUI or API-driven interface to provision NVMe resources for their applications. The tenants simply request the namespace size and class-of-service for their application needs. The SPARA software autonomously selects the resource that satisfies the request while also optimizing infrastructure utilization.

Performance Analytics & Automation - The SPARA solution tracks the performance of thousands of applications in real-time to ensure they get the resources and performance they need. The latency, IOPS and throughput of application traffic to every NVMe-oF namespace in the scale-out cluster is measured, stored and analyzed. Alerts or adjustments are made against the namespace’s existing QoS settings to ensure that the application is getting what it needs or to reclaim unused resources.

Health Monitoring and Troubleshooting - Get an at-a-glance summary of the entire infrastructure health via an intuitive dashboard, with drill-down for more information with just a few simple clicks. View metrics for the physical infrastructure and tenant statistics. Isolate problems and troubleshoot quickly with simple workflows, granular detail and search capabilities.

Maintenance and Firmware Management - SPARA handles firmware updates across all host NVMe-oF adapters and data nodes. The new firmware will apply after a user-specified reboot.

Contact info@attalasystems.com for more info.