Netezza High Performance System

Disk Enclosures

Slice of User Data
Swap and Mirror partitions
High speed data streaming

SMP Hosts

SQL Compiler
Query Plan
Optimize
Admin

Snippet Blades
(S-Blades)

Processor &
streaming DB logic

High-performance database
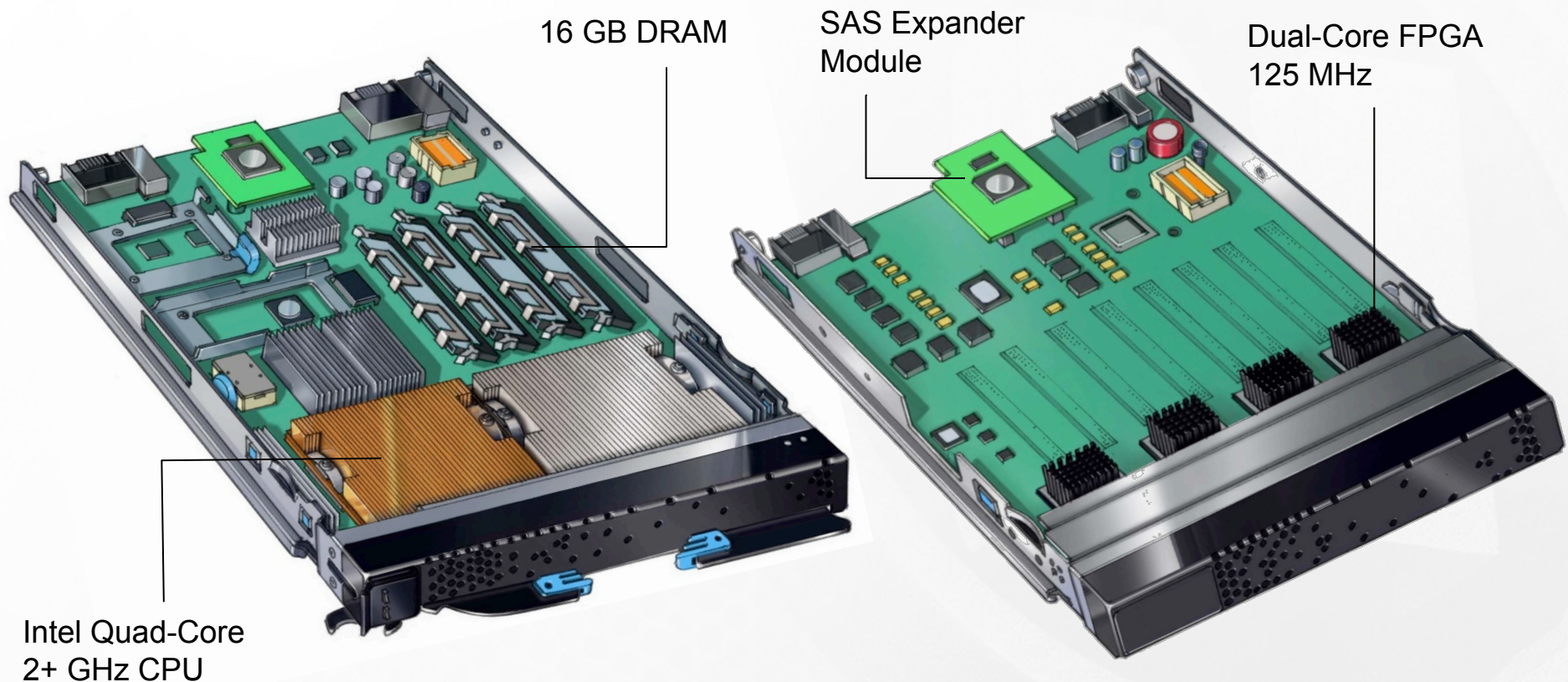*engine streaming joins,*
aggregations, sorts, etc.
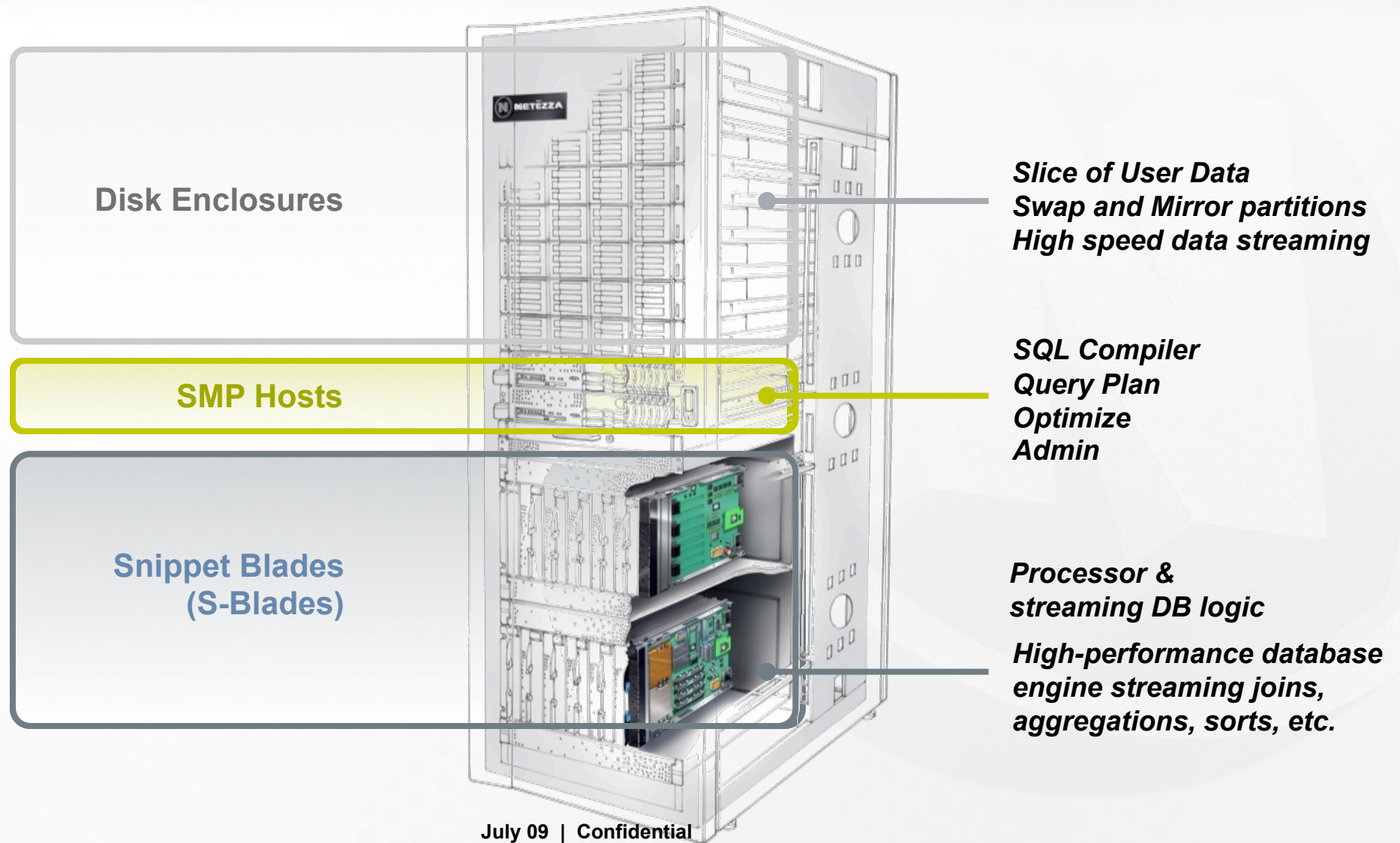
Netezza S-Blade

Netezza S-Blade

16 GB DRAM

SAS Expander Module

Dual-Core FPGA 125 MHz

Intel Quad-Core 2+ GHz CPU
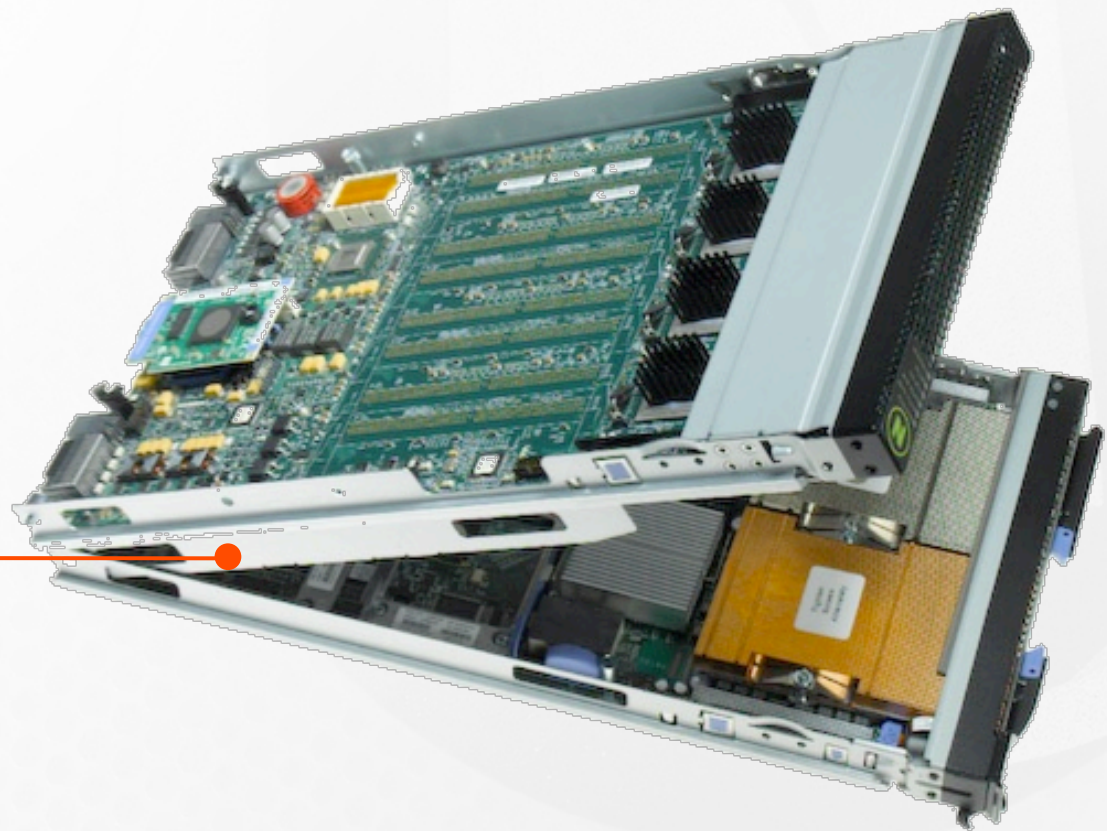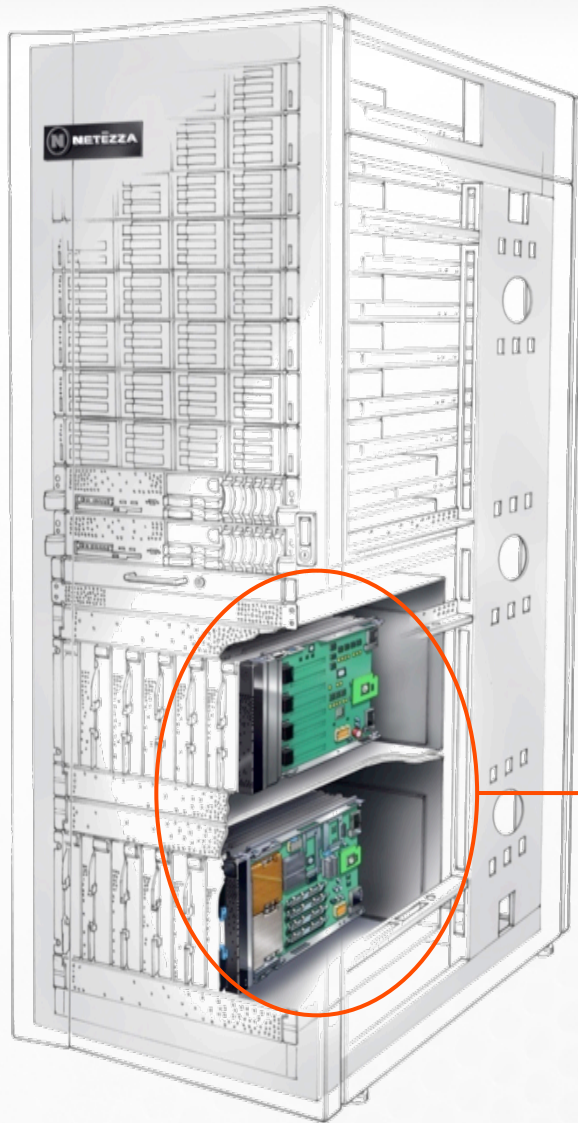
IBM BladeCenter Server

Netezza DB Accelerator

Data Stream Processing

FPGA Core

CPU Core

Compress   Project   Restrict Visibility   Complex ∑ Joins, Aggs, etc.
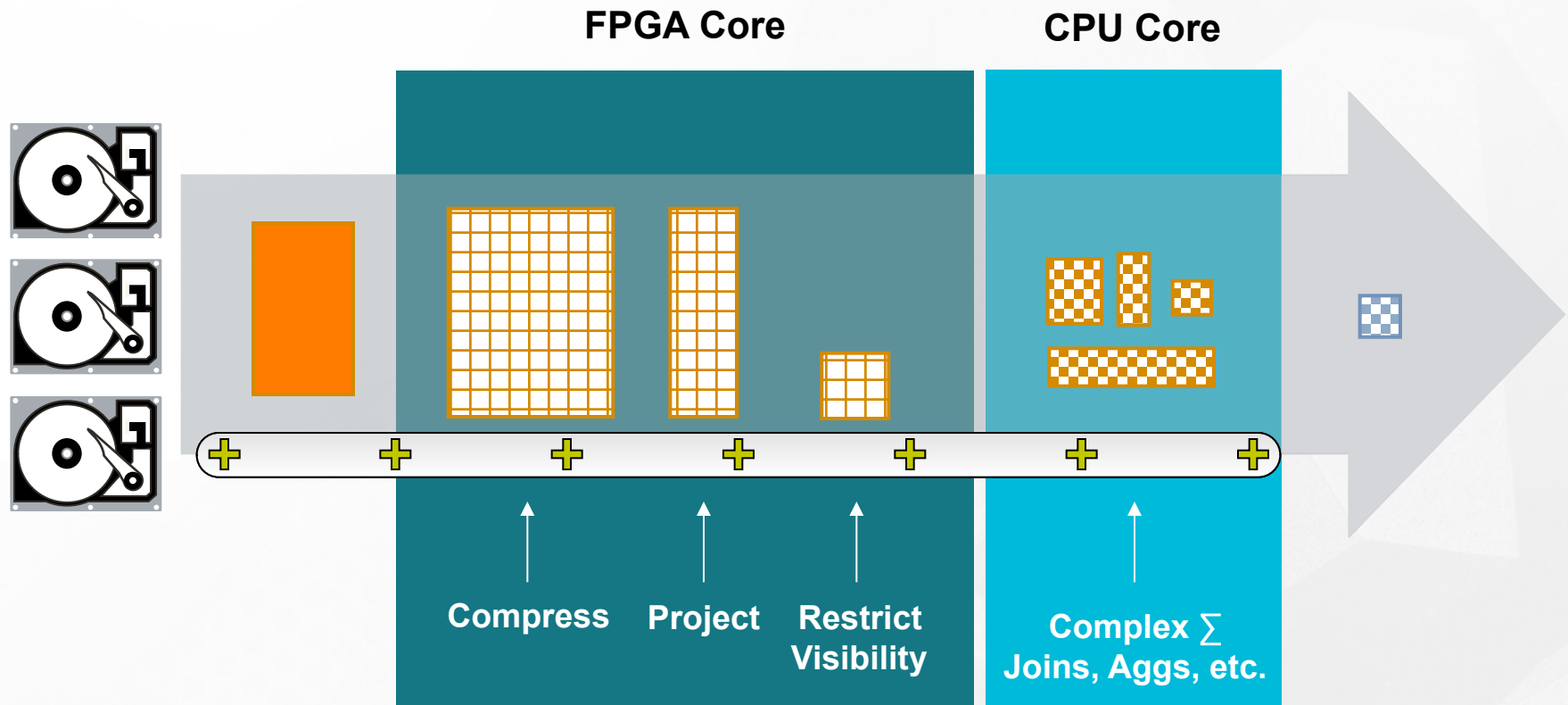
Snippet Processing – FPGA Co-Processor
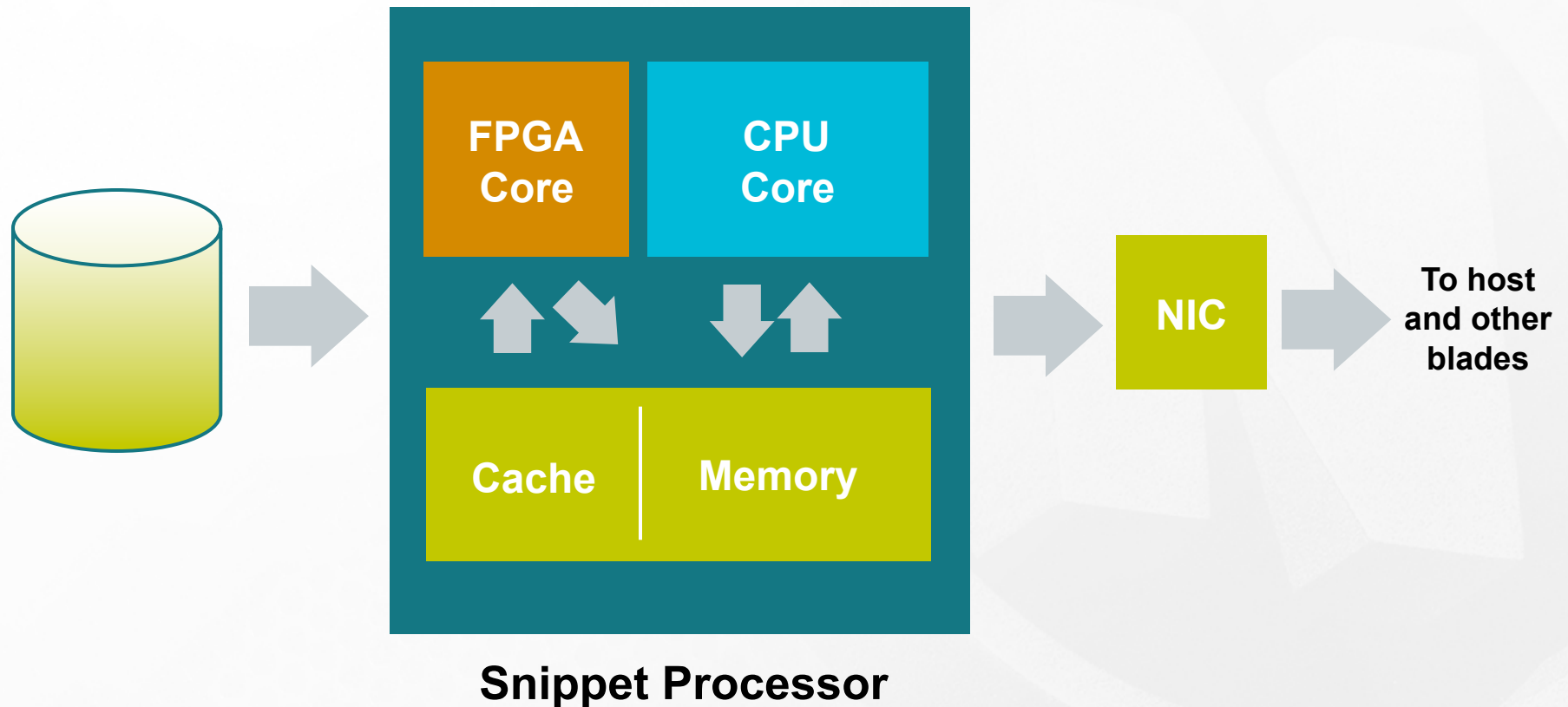
Snippet Processor

8 Snippet Processors per S-Blade

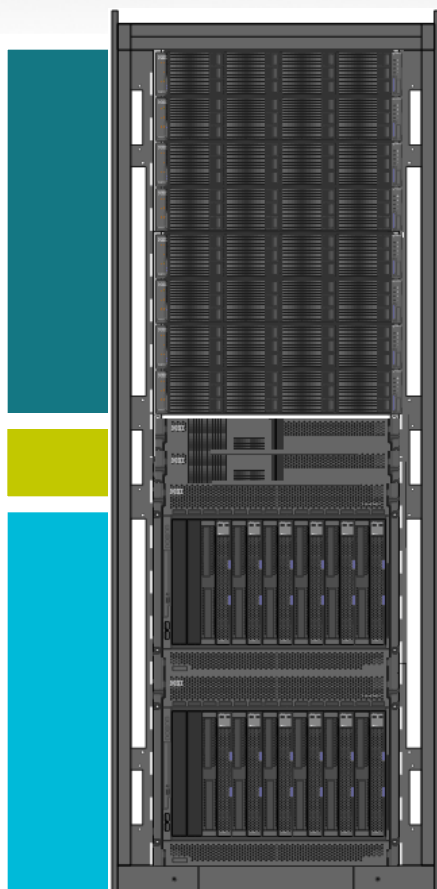# "New Product" Single-Rack Specification*

- 8 Disk Enclosures
- 96 1TB SAS Drives (4 hot spares)
- RAID 1 Mirroring

- 2 Hosts (Active-Passive):
- 2 Quad-Core Intel 2.6 GHz CPUs
- 7x146 GB SAS Drives
- Red Hat Linux 5 64-bit

- 12 Netezza S-Blades:
- 2 Intel Quad-Core 2+ GHz CPUs
- 4 Dual-Engine 125 MHz FPGAs
- 16 GB DDR2 RAM
- Linux 64-bit Kernel

* For multi-rack P-Series systems: one host is included in each of the first two racks

- **User Data Capacity:** 128 TB**
- **Data Scan Speed:** 145 TB/hr**
- **Load Speed (per system):** 2+ TB/hr

- **Power Requirements:** 7.6 kW
- **Cooling Requirements:** 7.8 kW

**: 4X compression assumed

Key Initial Performance Enhancers

Individual Hardware Components:

- **CPU and memory speed**   8X

- **Disk read speed**   2X

- **Disk write speed**   4.5X

- **FPGA speed**   2X

- **Memory per Snippet Processor (SP)**   2X

- **L2/L3 cache**   13X

- **Network**   3X

Overall System Features:

- **SP Table Cache (compressed)**   1.25 – 2.5X

"New Product" vs. NPS 10000 Series Performance

Performance improvement by type of workload

Strategic	Operational	Compute Intensive	Bulk Data Movement	Data Maintenance
3-5X	2-3X	10X	2.5X	3X

Customer results will vary depending on data and workload
Performance comparison on a per-rack basis

Mixed workload performance improvement: 3-5X