

LEWIS RHODES LABS – NPUs^{search}™ Integrated Search-in-Storage on Samsung SmartSSD® CSDs powered by Xilinx FPGAs

WHAT IS NPUs^{search}™?

Lewis Rhodes Labs' NPUs^{search} uses a novel neuromorphic processing technology integrated into storage to accelerate data search capability.

Lewis Rhodes Lab's Neuromorphic Processing Unit (NPU) is the core of NPUs^{search}. Designed with the fine grain parallelism and hierarchical structure of the brain, the LRL NPU functions as highly efficient pattern matcher to accurately and rapidly scan data.

NPUs^{search} supports efficient, scalable content search of big data in storage, providing an innovative solution to a significant unsolved problem.

PRODUCT FEATURES

The NPUs^{search} capability is integrated into a dual-CPU supported appliance containing 96 TB SSD storage. Full content search of unindexed data collection is regex accessible via Jupyter Notebook or other Python-based interface. The deterministic search feature scans an entire database within minutes - independent of query or data type - returning to CPU only the requested items of interest.



96TB NPUs^{search} storage appliance

NPUs^{search} ADVANTAGE

- > Low power consumption
- > Fixed latency
- > Fixed throughput
- > High resolution accuracy

FULLY SCALABLE SEARCH-IN-STORAGE

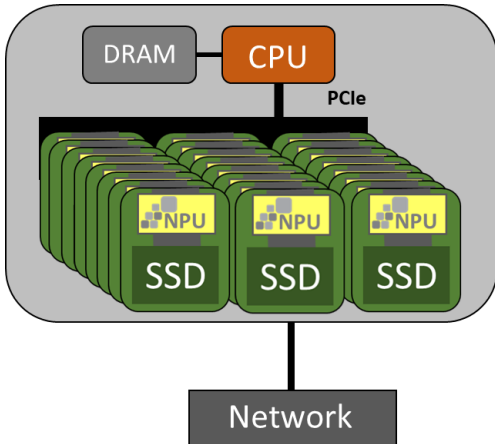
- > Supports data monetization
- > Minimizes indexing burden
- > Optimizes CPU utilization
- > Decreases network demands
- > Utilizes high performance PCIe



Adaptable. Intelligent. 

NPU INTEGRATED SEARCH-IN-STORAGE

Novel Architecture



Storage Appliance with NPUsearch

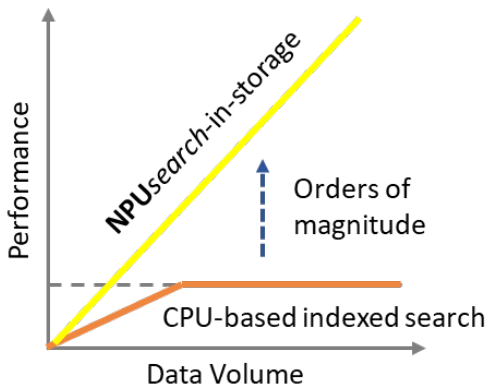
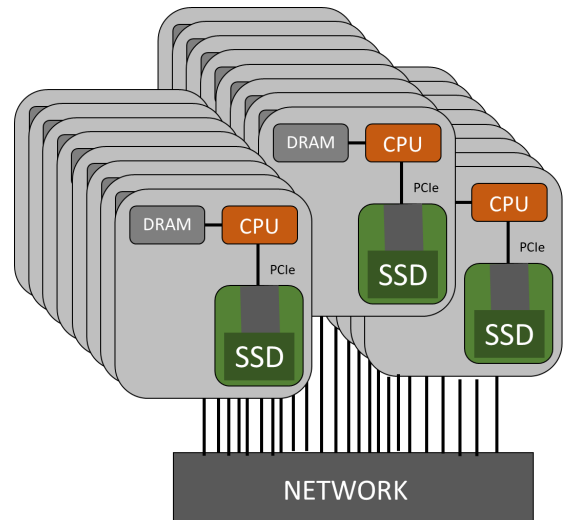
- ✓ Rapid, deterministic search
- ✓ Reduce CPU costs
- ✓ Move only data of interest
- ✓ Light network demands
- ✓ Minimize data flow
- ✓ Scalable search capacity

SEARCH PETABYTES IN MINUTES

- > Inconsistent search capacity
- > CPU-intensive cost profile
- > Move all data to CPU to search
- > Heavy network requirements
- > High volume of data flow
- > Unable to scale performance

COMPARE CPU-BASED SEARCH

Traditional Architecture



TAKE THE NEXT STEP

Visit Lewis Rhodes Labs > www.lewis-rhodes.com
www.xilinx.com/smartssd

