

# Lenovo Neptune™

Increase performance and lower energy consumption with our holistic approach to liquid cooling in the data center.



## Advantages

- Up to **40% reduction** in energy consumption
- Reduces overall data center cooling costs
- Operate at lower temperatures than traditional air-cooled systems
- Run Intel® Xeon® Scalable Processors up to 240W+ (vs 165W with air cooling)
- Optimize workloads to prioritize energy, performance or both
- Preserve existing dense data center footprint



## What is Neptune™?

Neptune™ is a smarter, **sustainable approach to liquid cooling in the data center**. Neptune™ is not hardware or software; it's a combination of technologies that extract heat from systems, freeing them to perform better.

## How does it work?

Lenovo Neptune™ utilizes three key technologies. Each may be used together or independently according to the needs of your environment:

- Direct-to-Node (DTN) cooling uses warm water to remove heat (up to 50°C) from the CPUs, memory, IO, local storage, and voltage regulators.
- A Rear-Door Heat Exchanger (RDHX) functions much like a car radiator, bringing water to the rack to reduce heat and absorbing heat from the exhaust of air-cooled systems, with more than 80% removal efficiency.
- The Thermal Transfer Module (TTM) combines liquid and air cooling within the Lenovo ThinkSystem SD530 by integrating a hermetically sealed liquid-filled pipe. TTMs allow you to run higher wattage CPUs over traditional air-cooled systems.
- Energy Aware Runtime (EAR) Software regulates and monitors energy consumption and acts like a throttle, raising or lowering runtime frequencies based on workload needs.

## Why use Neptune™?

Escalating electricity consumption in the data center doesn't just drain budgets, it has negative effects on our environment. With Neptune, your data center can run up to 40% more efficiently and maintain a dense footprint, without sacrificing performance.