

# Powering AI Factories: Scaling GenAI with Direct-to-Chip Liquid-Cooling

Transforming Datacenters from Cost Centers to Engines of Intelligence



Andrew Buss  
IDC IT infrastructure EMEA



Luis Fernandes  
IDC IT infrastructure EMEA

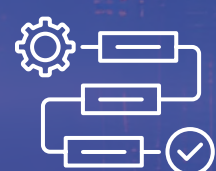




# Direct-to-chip liquid-cooling is foundational to AI factory design. It supports 100kW+ racks and enables scalable and sustainable intelligence production.

## Elements of a direct-to-chip liquid-cooled datacenter that turn it into an AI factory:

Datacenter facilities-side plumbing, fluid, and heat exchanger



Facilities-side liquid distribution manifolds and heat exchangers in datahalls



Coolant distribution units (CDUs) in racks, rows, or datahalls



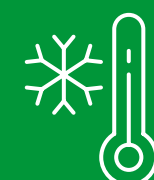
Hybrid or 100% direct-to-chip cooling loop with **advanced technical cooling fluid**



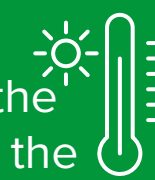
The suitability of different air and liquid-cooling approaches based on rack-level power density

## The key benefits of direct-to-chip liquid-cooling:

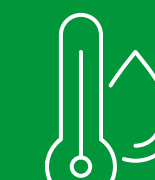
Dramatically lowers cooling overhead and enhances TCO



Maximum system performance due to the high heat capacity of the technical cooling liquid



More efficient datacenter use of water



Helps meet ESG commitments and reporting requirements



Supports significantly higher GenAI compute density



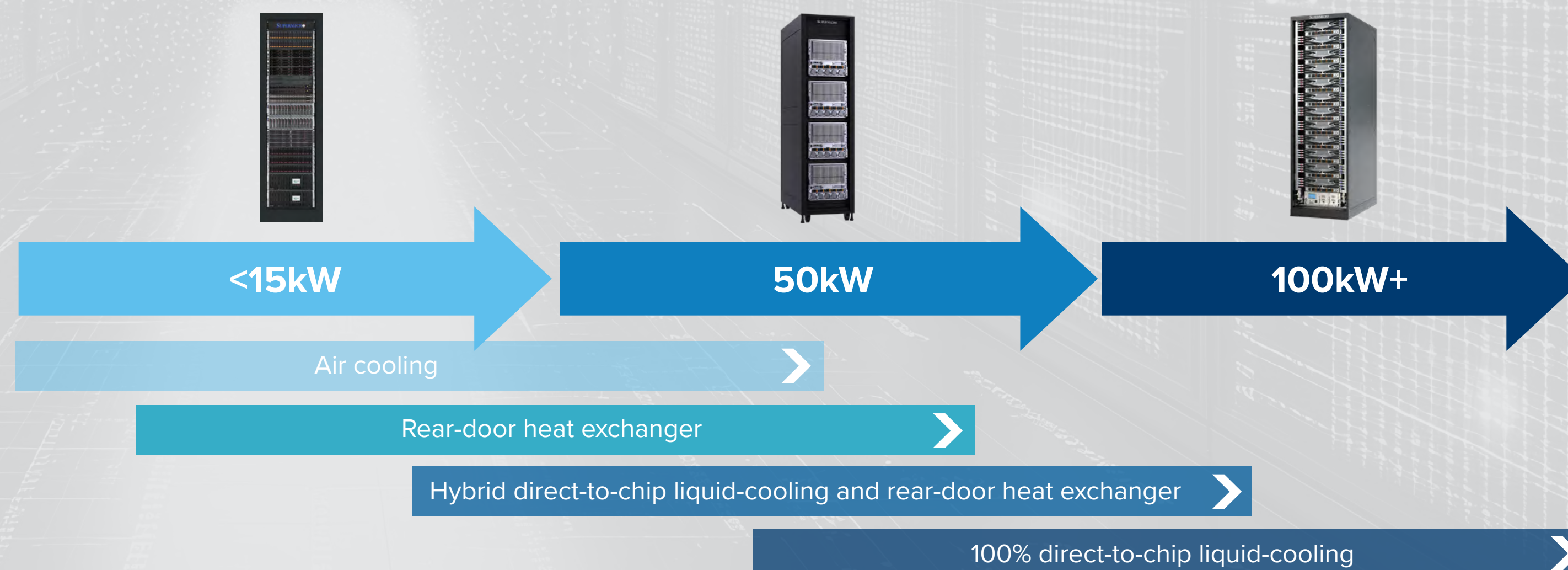
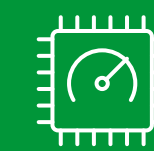
Quieter operation, improving workplace comfort



Prevents hotspots and thermal throttling



Processors that run more consistently at peak “boost” clocks





## Message from the sponsor



Supermicro and NVIDIA are redefining the economics of deploying AI factories. We offer state-of-the-art infrastructure solutions that address increased power and cooling challenges in modern AI datacenters. Additionally, significant savings can be achieved with direct liquid-cooling (DLC-2) for highly efficient generative AI datacenters.

**For more information**