Liquid Cooling Integration and Logistics (Cold Plate)
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Why Liquid Cooling?

- As more high-power racks are deployed, air cooling becomes untenable from an economic and sustainability perspective.
- Bringing liquid to the rack can increase the capacity and efficiency of data center cooling.
- Liquid cooling leverages the higher thermal transfer properties of water or other fluids to support efficient and cost-effective cooling of high-density racks.
Why Integration and Logistics?

- Increasing interest to deploy liquid cooling.
- Insights and guidance to life cycle considerations to deploy are often not disclosed or available resources.
- Life cycle touches on multiple discrete practices including manufacturing, transport, pre deployment integration and deployment practices.
- The whitepaper specifically focuses on liquid cooling using cold plates integrated into the server, rack liquid manifolds and coolant distribution units.
Scope: Logistics & Integration

**Manufacture**
- Server manufacturing Levels (L1-10)
- Rack Integration (L11-12)
- Server Assembly, Cold Plate Integration, Rack Manifold Functional Test
- Quality Assurance
  - Gaseous testing
  - Visual inspection

**Transport**
- Server Assembly Cold Plate and rack manifold preparation
- Packaging
  - Design, Handling, Labelling
- Airfreight, Sea freight, Road transport options

**Integrate**
- Server Assembly Cold Plate, rack manifold, in-rack CDU preparation
- Server Assembly Cold Plate, rack manifold, CDU Testing
- Storage options
  - Ship to DC

**Deploy**
- Delivery
  - Inspection Preparation
- Installation, Commission and Start-up.
- Operation, Maintenance and decommission
Manufacture

Server manufacturing Levels (L1-10)
Rack Integration (L11-12)

Server Assembly, Cold Plate Integration, Rack Manifold Functional Test

Quality Assurance
Gaseous testing
Visual inspection
Transport

Server Assembly Cold Plate and rack manifold preparation

Packaging
Design, Handling, Labelling

Airfreight, Sea freight, Road transport options
Integration

Integrate

Server Assembly Cold Plate, rack manifold, in-rack CDU preparation

Server Assembly Cold Plate, rack manifold, CDU Testing

Storage options
Ship to DC

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Deploy

Delivery Inspection Preparation

Installation, Commission and Start-up.

Operation, Maintenance and decommission
# Closing Summary

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**OPEN POSSIBILITIES.**
Call to Action

- ACS Workstream: https://www.opencompute.org/projects/acs-cold-plate
Open Discussion