Τεχνολογίες Ψύξης

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Cooling topologies

4 Basic Types
Scalable DC: Low Density
Scalable DC: Mid Density 1
Scalable DC: Mid Density 2
Scalable DC: High Density
Cooling topologies

Scalable DC: Low Density

Standard raised floor climatisation with downflow
Cooling topologies

Scalable DC: Mid Density 1

Standard raised floor climatisation with downflow and aisle containment
Cooling topologies

Scalable DC: Mid Density 2

Rowbased Cooling with:Aisle Containment and LCP Inline
Cooling topologies

Scalable DC: High Density

Rackbased Cooling with LCP
Perfect fit into The System
Complementary Technology

Low Density
Mid Density
High Density

Basic Solution
CRAC
LCP Extend
LCP Inline
LCP Standard / LCP Smart
LCP Plus
LCP T3+ fully redundant

With aisle containment

Heatload per cabinet

Bicsi
Best practices in cooling
Best practices in cooling

Old technologies!!!
Best practices in cooling

Downflow units VS Traditional

Airside pressure drop reduced due to moving the fan into the raised floor:

Energy savings around: 15 to 47%
Best practices in cooling

Usage of EC-type fans:

**Electrical energy saving up to 24% per se**
Best practices in cooling

Water Temperatures

With bigger HEX you can increase water inlet temperatures – this results in increased free-cooling performance.
Best practices in cooling

- With conventional room climatisation (downflow) or in-line without containment

Assumptions:
- 26kW of installed equipment
- Room dim 10x4x5 (width x depth x height)
- 8 racks 800x1000x42U
- 20°C inside temperature

Results:
- Required cooling of the equipment 24 kW
- Required cooling for the room with $\Delta T=15$C (inner – outer temp difference) 10 kW
- Total required cooling capacity of units: 34 kW
Best practices in cooling

• With Rack –based climatisation

Assumptions:
• 26kW of installed equipment
• Room dim 10x4x5 (width x depth x height)
• 8 racks 800x1000x42U (dim 6.4 x 1 x 2)
• 21 C inside temperature

Results:
• Required cooling of the equipment 24 kW
• Required cooling for the racks with ΔT=5C (inner –outer temp difference) 3 kW
• Total required cooling capacity of units: 27 kW
• Energy saving 20-25%
Ευχαριστούμε πολύ!!