Ventilation in Data Center

Case Study of scSTREAM

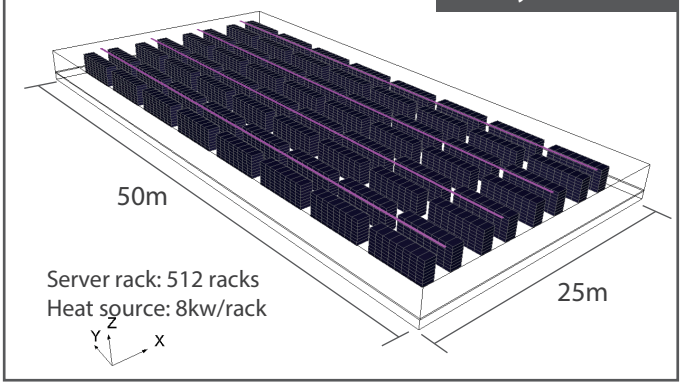
What if hot aisle and cold aisle are separated ? Validation using scSTREAM

Hot/Cold Aisle

Hot aisle:
The space where exhaust heat and air from server are gathered

Cold aisle:
The space where cold air from air-conditioner is gathered

Analysis model



The problem with original design

The hot air from the hot aisles flows into the cold aisles, preventing servers from efficient cooling (Fig.2)

Countermeasure

Decrease the amount of hot air entering into cold aisles by installing partitions from upper server racks to the ceiling (Fig.3)

Before

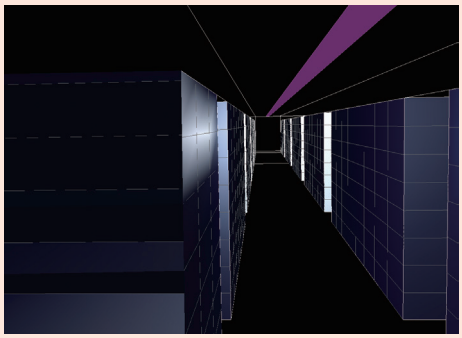


Fig.1

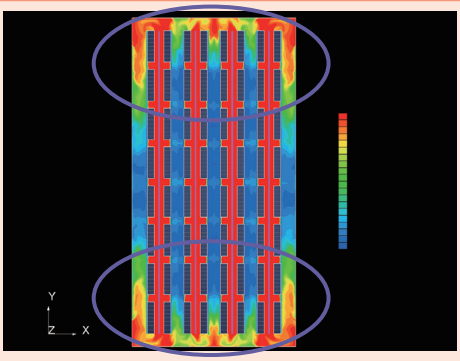


Fig.2 Temperature Contour

Separated hot aisle and cold aisle

After

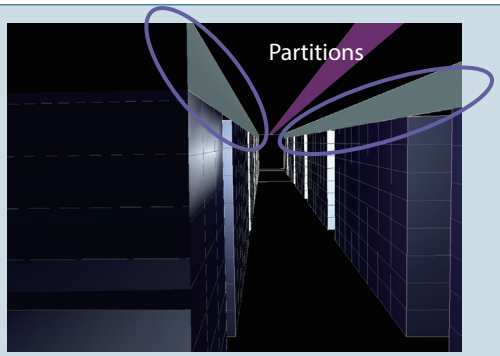


Fig. 3

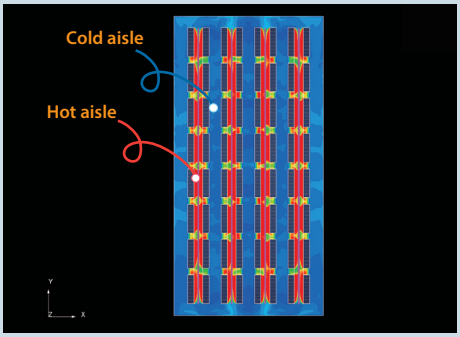


Fig. 4 Temperature Contour

Notes

- The highest temperature inside the data center became lower by separating hot aisle and cold aisle using partitions.
- CFD using scSTREAM enables you to shorten the span of designing and to improve energy efficiency and environment consciousness by calculating various design of structural layout such as air-conditioner location or the air flow rate.