# Ventilation of hot air in Data Center

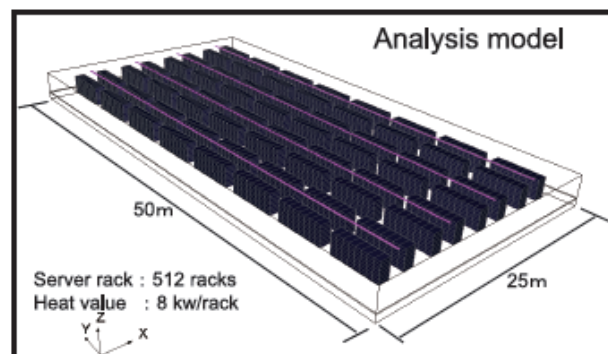## What if hot aisle and cold aisle are separated ? Validation using STREAM

### ☑ Hot/Cold aisle

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

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

#### Analysis model



50m
25m

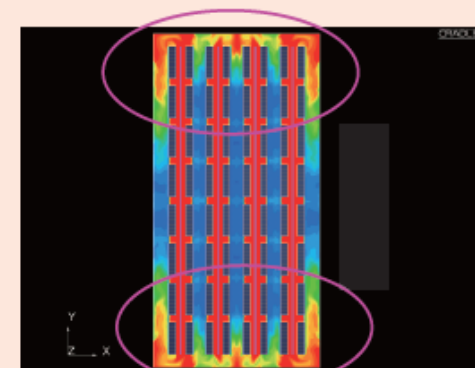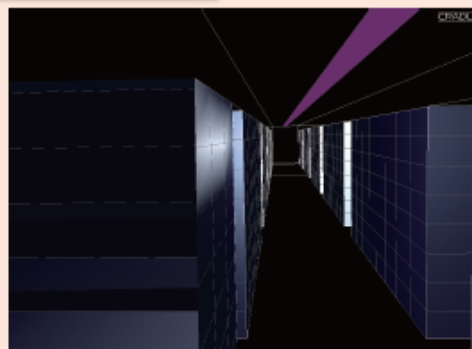Server rack : 512 racks
Heat value : 8 kw/rack

#### The problem with original design

The hot air from the hot aisles flows into the cold aisles and decreases the efficiency of servers. (Fig.2)
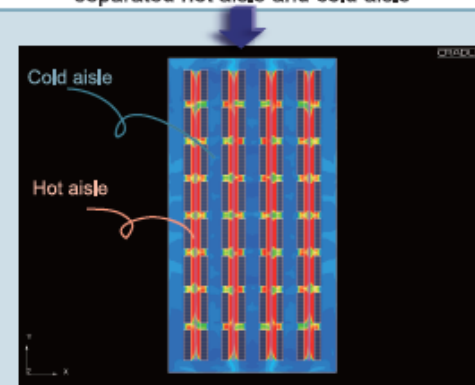
#### Counter measure

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**



Partitions

Fig.3



Cold aisle

Hot aisle

Fig.4 Temperature Contour

### comment

· Maximum temperature inside the data center improved lower by separating hot aisle and cold aisle using partitions.
· CFD using STREAM 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 volume.