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# Responding to High Efficiency Challenges: Data Centre Energy Saving Solutions

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**HUAWEI TECHNOLOGIES CO., LTD.**



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**Background of Data Center Energy Saving**

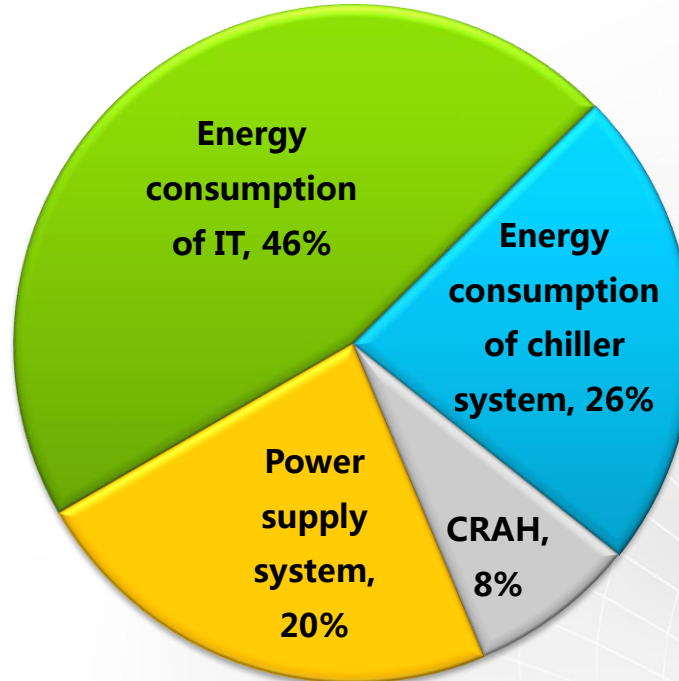
2

**Huawei practice of Data Center Energy Saving**

3

**Case**

# Typical Energy Consumption Inside Data center



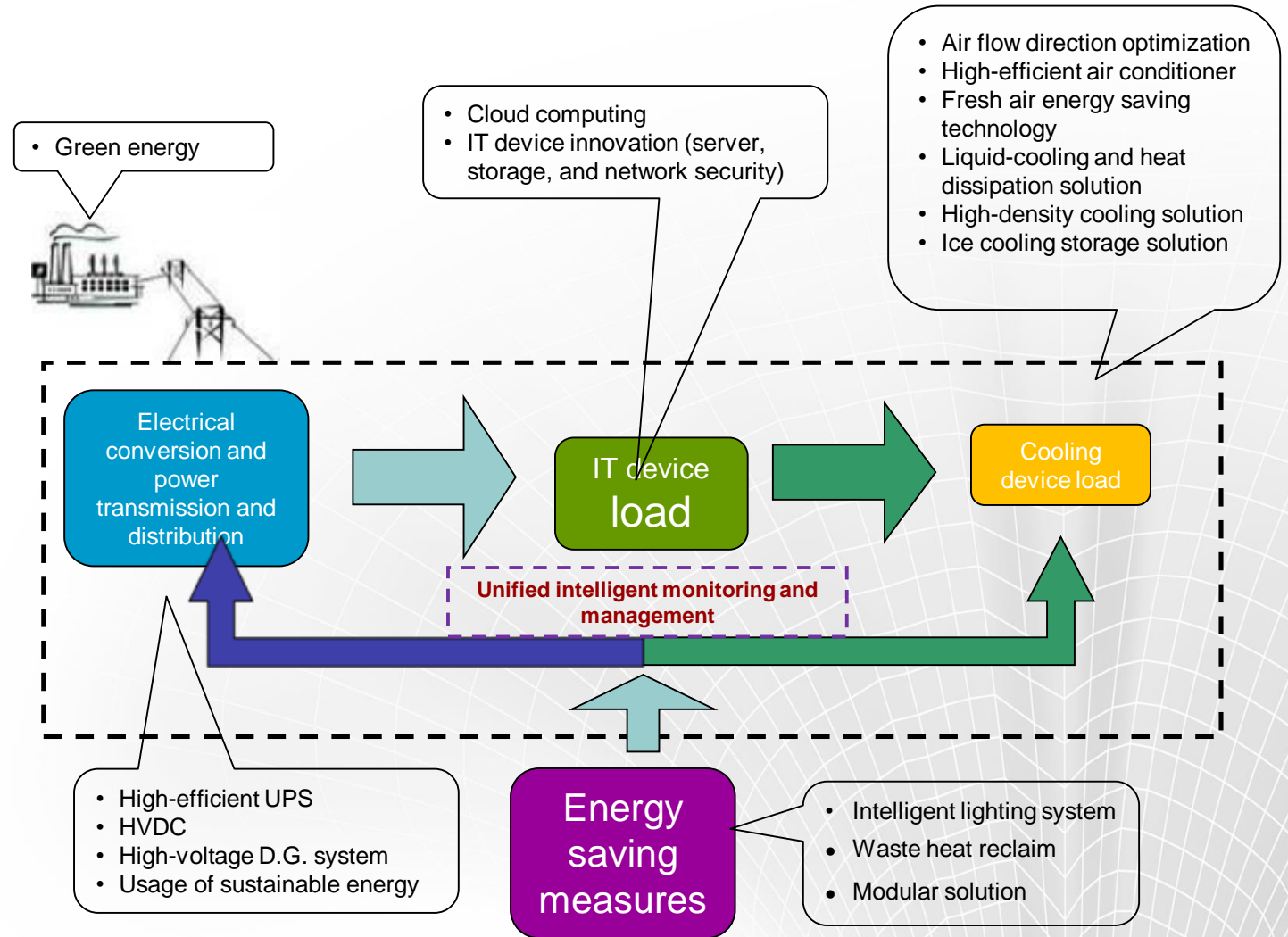
According to the Independent, the amount of energy consumed by the world's data centre amounts to 3 per cent of the global electricity supply and accounts for about 2 per cent of total greenhouse gas emissions. That gives it the same carbon footprint as the airline industry.





# Principle: E2E Energy Saving Design for DC

- **E2E energy saving design for DC:**
  - **IT system energy saving design:** reducing energy consumption of a DC from the source
  - **Power distribution energy saving design:** ensuring reliability, improving power distribution system efficiency, and reducing energy consumption
  - **Cooling system energy saving design:** high-efficient cooling systems, and free cooling application



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Trend of Green Data Center

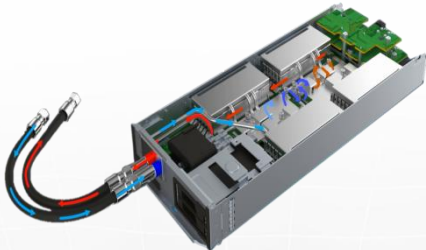
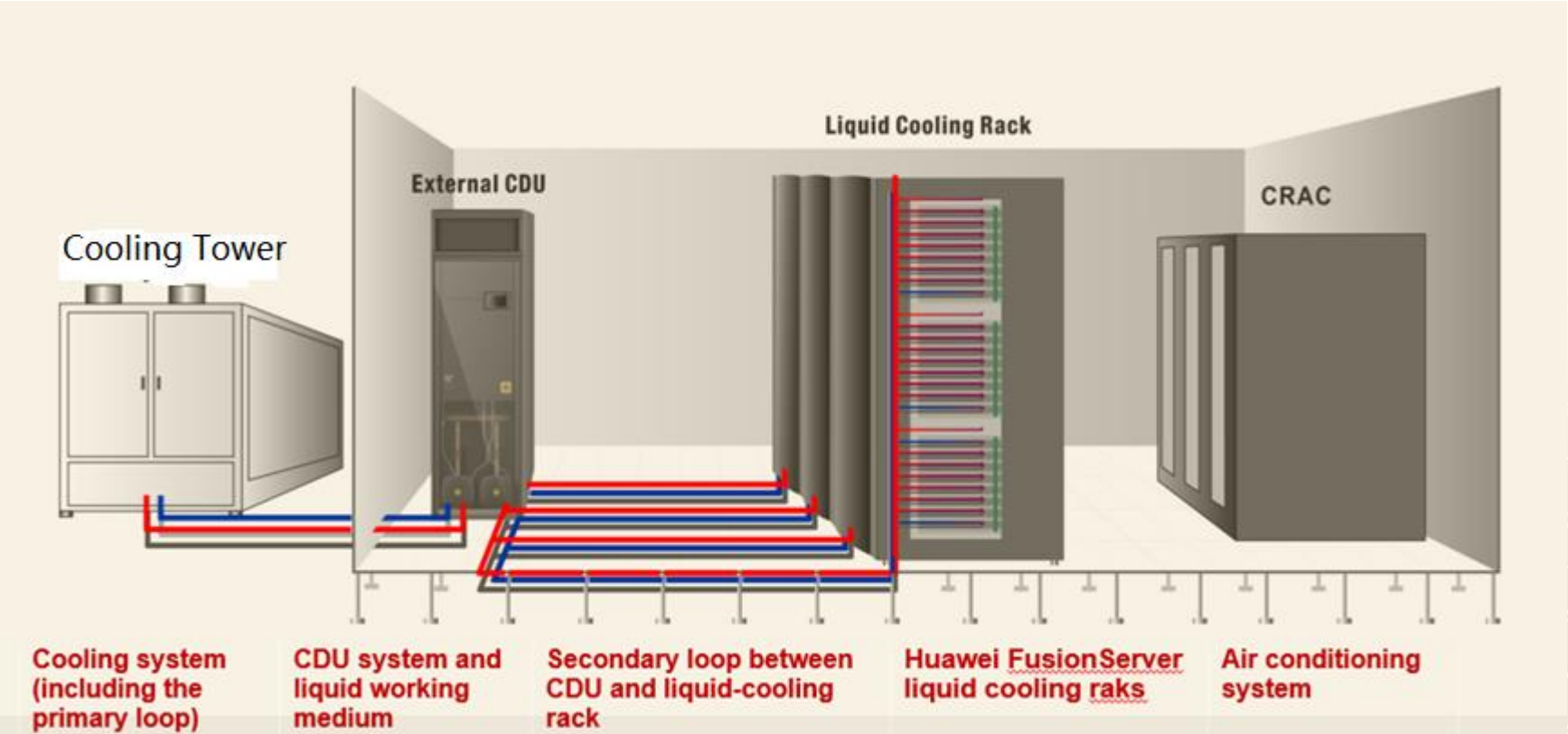
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**Huawei practice of Data Center Energy saving**

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# Liquid Cooling Solution For Server



**45kW/cabinet** Heat dissipation capability



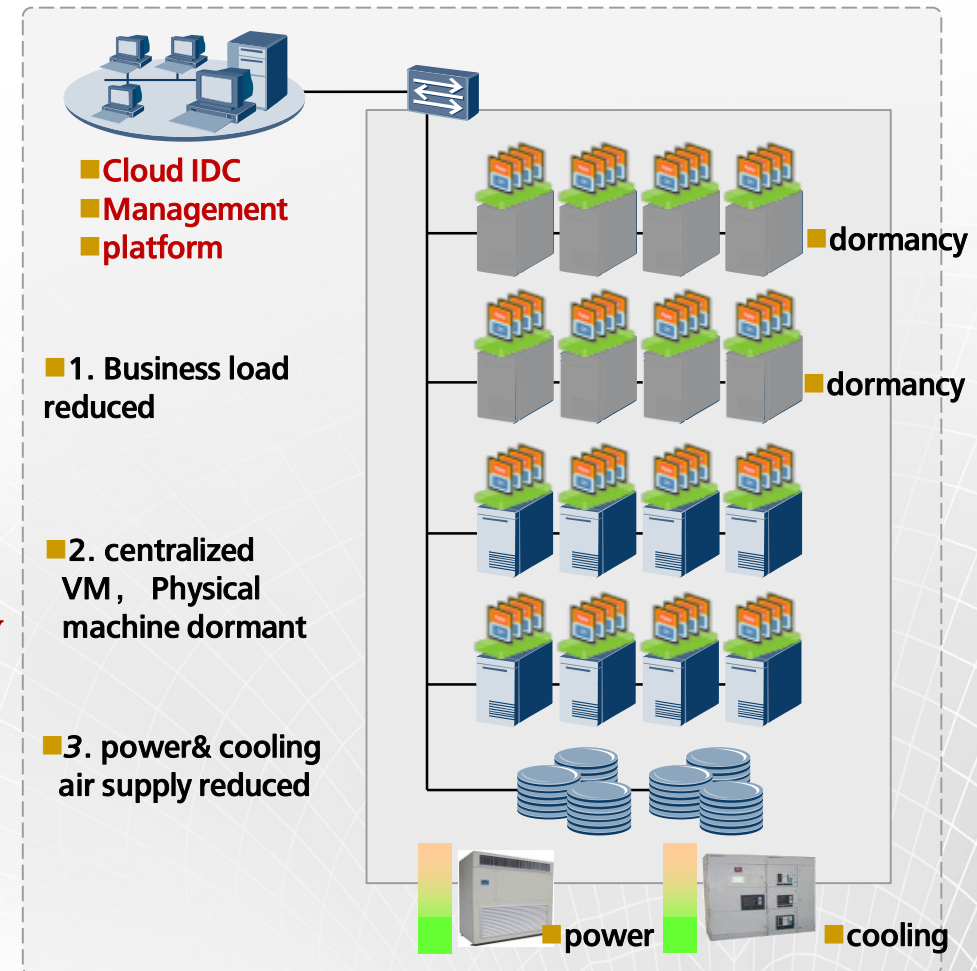
**80%** liquid cooling  
3D high density tube embedded cold plate, inlet water temperature up to 45 °C



**40%** energy saving  
PUE≈1.1

# Management of existing ICT equipment and services with cloud computing technology

- Audit existing physical equipment and services:
  - Consolidation of existing services
  - Decommission unused ICT equipment/services
  - Decommission low business value services
  - Shut down idle equipment
- **Design data centre with cloud computing technology**
- **Virtualise and archive legacy services**
- **Dynamic control cooling and power supply with IT demand in cloud computing data centre**



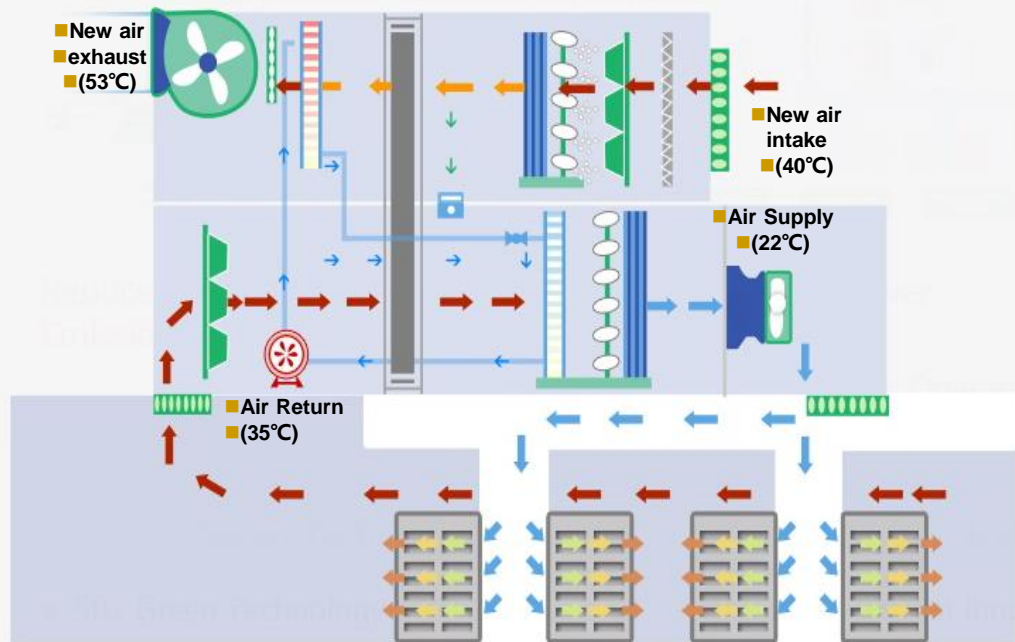


# Indirect Air Side Free Cooling Technology Solution

## Indirect Evaporator Cooling Solution Principle

### Design Criteria

- Temperature, humidity, water resource analysis
- Air supply and return working condition design
- Building structure considering



## Benefit

- High Efficiency, Save 20%(PUE 1.2 VS 1.5)
- Occupy less space
- Stronger environmental adaptability





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# Case 1: Huawei Help xx To Build TOP80 Supercomputing Center with Huawei Liquid Cooling Server



TOP 80 Supercomputing Center, Cooling **PUE (CLF) =1.05**

# Case 2: Huawei indirect air side free cooling solution

## Green cooling

- Take full advantage of free cooling
- Indirect air side free cooling free cooling

## Cold Aisle Containment

- Divide hot and cold air stream
- Improve supply air temperature
- Reduce hot air stream reflux and optimize air distribution

## High efficiency power

- Distributed DC power, improve efficiency
- Direct Current model, efficiency more than 97%

**PUE ≤ 1.215**





# Thank you

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