



Copyright © Huawei Technologies Co., Ltd. [2023] . All rights reserved.

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Huawei Technologies Co., Ltd.

Trademark Notice



HUAWEI, and are trademarks or registered trademarks of Huawei Technologies Co., Ltd.

Other trademarks, product, service and company names mentioned are the property of their respective owners.

General Disclaimer

The information in this document may contain predictive statements including, without limitation, statements regarding the future financial and operating results, future product portfolio, new technology, etc. There are a number of factors that could cause actual results and developments to differ materially from those expressed or implied in the predictive statements. Therefore, such information is provided for reference purpose only and constitutes neither an offer nor an acceptance. Huawei may change the information at any time without notice.



DC Power Services

DIGITAL POWER SERVICE



Trends and Challenges of Data Center O&M

Global Data Center Development Trend: Under the Dual-carbon Background, Policies impose strict requirements on DC energy efficiency. Zero-carbon DCs and legacy reconstruction become major pain points.

Release policies, control energy consumption, limit PUE, guide intensive, green construction, and reward and punishment.



Control

Energy consumption is controlled by dual control, strength and total quantity are restricted, and performance evaluation is tightened, making approval more and more difficult.



Restriction

PUE policy restrictions: PUE < 1.3, east node < 1.25, west node < 1.2



booted

Guide 70% of the new constructions in the future to converge to the hub nodes of "East Digital and West Computing"

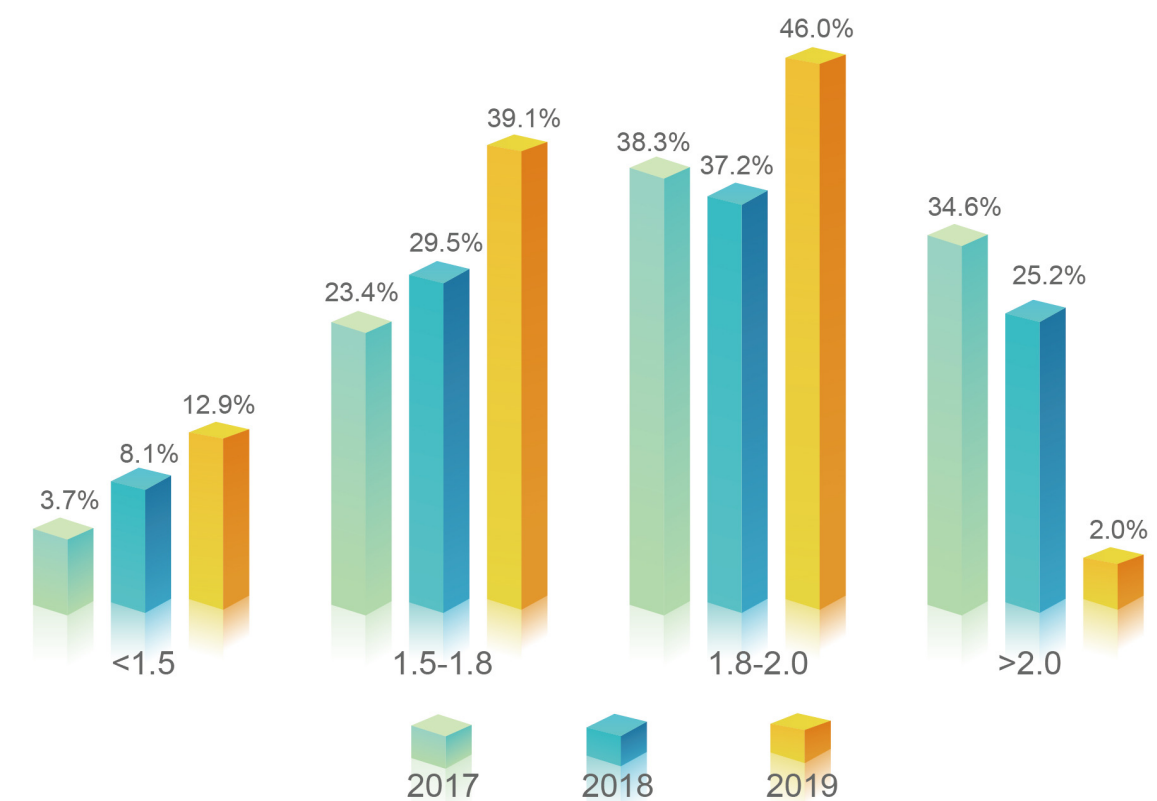


Reward and Punishment

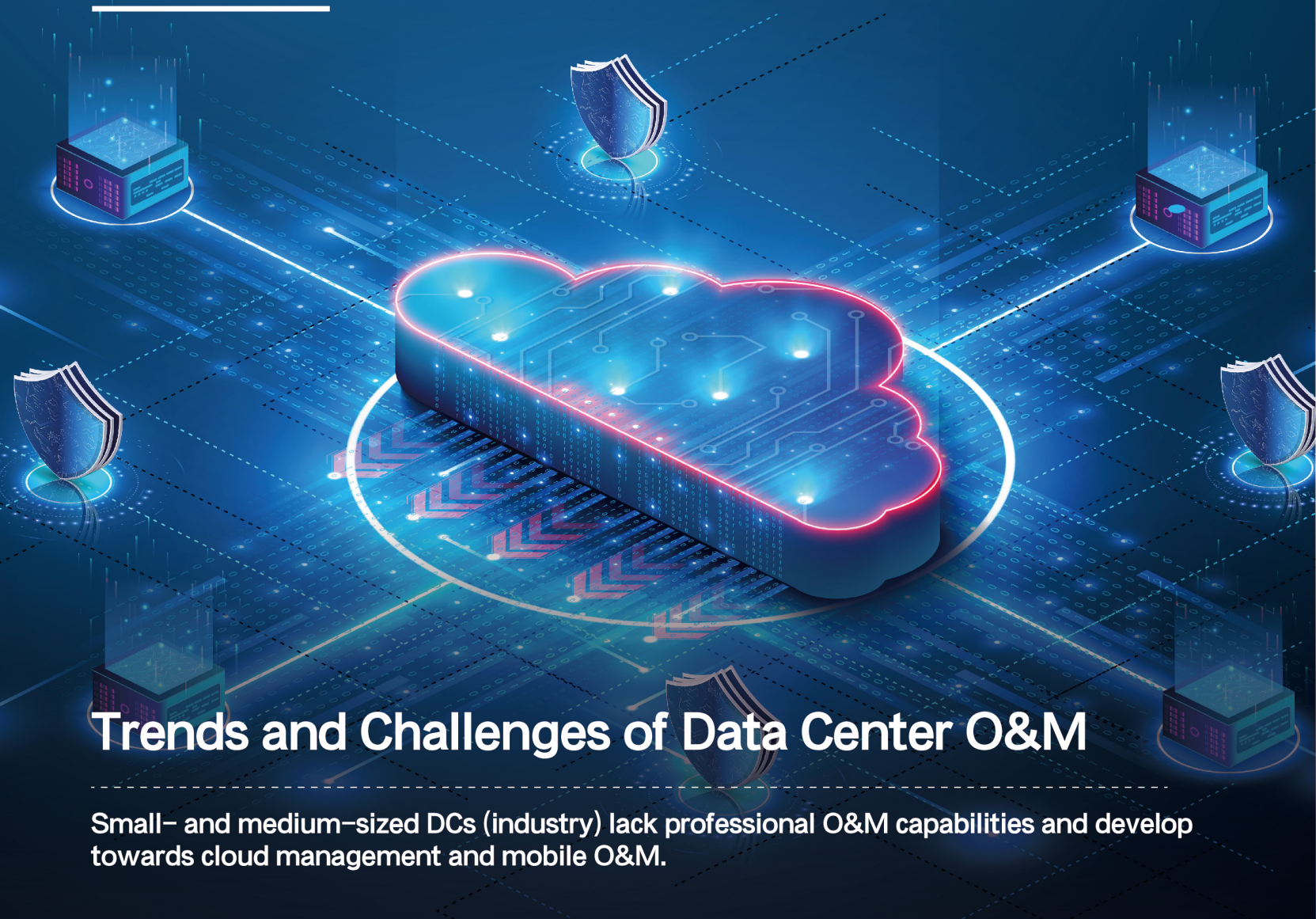
- A: PUE < 1.2, maximum prize: 10 million
- B: If the PUE is greater than 1.8, add 0.5 yuan to the electricity fee.

The proportion of DC power consumption increases year by year, and energy saving requirements are strong.

Average PUE of enterprise data centers in China: 1.8



DIGITAL POWER SERVICE



Trends and Challenges of Data Center O&M

Small- and medium-sized DCs (industry) lack professional O&M capabilities and develop towards cloud management and mobile O&M.

Analysis of characteristics and O&M problems of small- and medium-sized DCs



High cost

Industry is numerous and scattered
Remote O&M is unavailable.
High cost of traditional management software



Low efficiency

Risks cannot be identified in a timely manner.
Faults cannot be located remotely.
Low issue handling efficiency



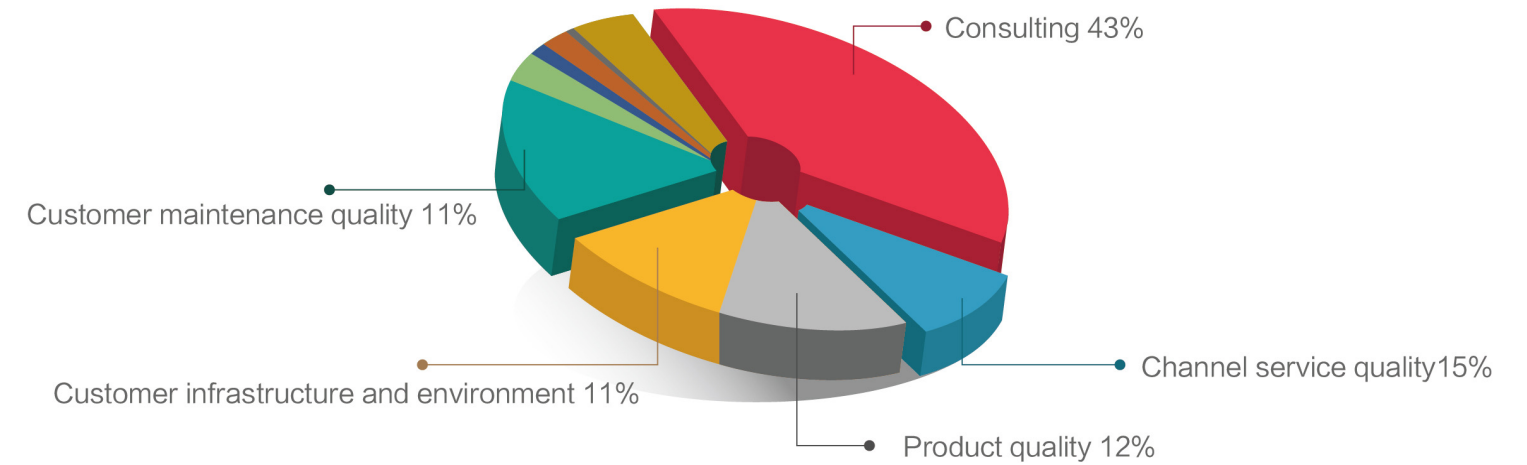
Difficulty

Unprofessional personnel, equipment dare not touch
Lack of proactive maintenance, turning hidden dangers into accidents
Personnel mobility, difficult to develop capabilities

Customer requirements: Tools are required to check the running status of devices anytime and anywhere. The vendor is expected to provide remote monitoring and maintenance assistance.

22% of the problems are due to the environment and quality of maintenance

Fault root cause statistics



Small- and medium-sized DCs develop towards cloud management and mobile O&M



Patchwork network room
Multi-cabinet and multi-brand patchwork



Modularization and productization
Integrated cabinet, modularized quick rollout

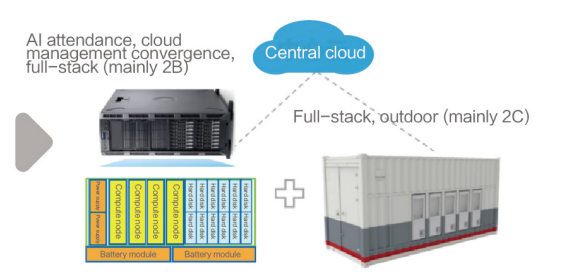


cloud-edge collaboration
Multi-cabinet and multi-brand patchwork



Indoor single cabinet

Indoor multi-cabinet



Trends and Challenges of Data Center O&M

Cloud computing continues to grow rapidly. Both IDCs and EDCs will become cloud DCs.

Continuous increase in the proportion of cloud migration: It is estimated that traditional non-cloud DCs will account for only 20% in 2025, Cloud DC accounts for 80%. (40% for hybrid cloud and 40% for public cloud)

The growth rate of traditional DCs is 6%, the growth rate of Internet public cloud is 25%, and the growth rate of government and enterprise hybrid cloud is 40%

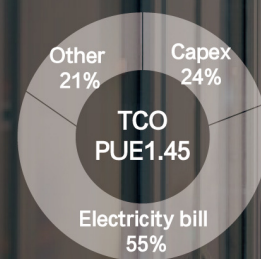
• Physically reliable and responsive:

Routine monitoring, preventive maintenance, fault locating, fault review, and personnel management.....

• Improve efficiency and reduce electricity costs:

Data center with a PUE of 1.45: The electricity fee for power supply and temperature control exceeds 30%.

In 2010, the OPEX accounts for nearly 80% of the total cost of ownership (TCO).



Ultimate CAPEX: Typical IRR of third-party IDCs in China is about 10% to 13%, and ROI is about 6 to 7 years.

• Absolutely safe:

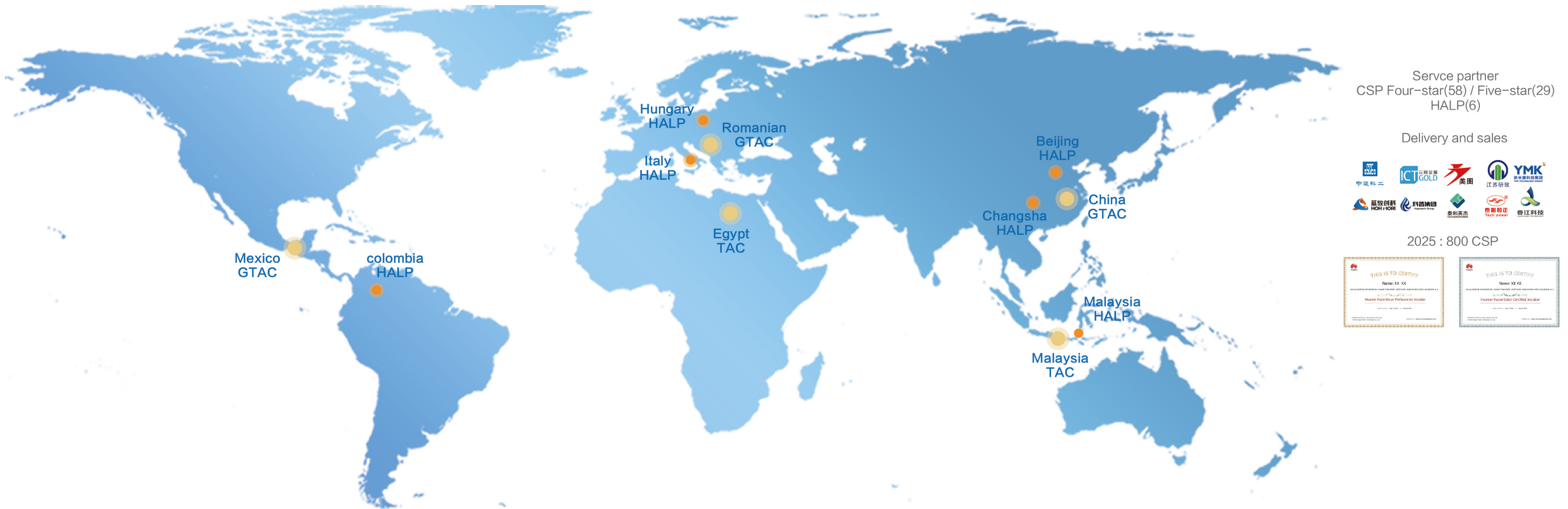
3.6 million websites are affected, and some data is permanently lost.

- In March 2021, a well-known European cloud service provider caught fire in a data center in France.
- The affected servers host about 3.6 million websites, including platforms in France, United Kingdom, Poland and more.
- Because live data on the server is not backed up offsite, some data is permanently lost on many of the websites it hosts.

DIGITAL POWER SERVICE

Huawei Data Center Service Architecture and Investment

Build a more secure, efficient, professional, and intelligent global digital delivery network.



Super Safety

Technical support center

1800+ professional technical engineers
170 countries and 14 languages
24/7 support services recovers faults within 120 minutes.

Spare parts service

7 x 24 hours single interface
One end-to-end visualized integrated IT system
Designed Spare parts system, dispatch within hour

Professional Service

1000+ projects, enabling 400+ partners



Full Lifecycle Service Solution

Maintenance | energy saving | Supervising | training

Ecosystem solution & partners

Consulting design partner material partner, integration partner, O&M partners and professional service partners

Smart Enabling Tools

Digital Service Delivery Platform

The digital delivery platform is a tool that enables partners to visualize DC equipment, automate processes, visualize opportunities, and standardize operations, improving operation efficiency by 50% and reducing faults by 39%.

Xiaoling Self-service Customer Service

The AI robot provides Q&A services for global users about Huawei's products and technologies in three fields of digital energy, covering pre-sales and post-sales multi-service question scenarios, with an accuracy of 88%.

FDC 3D Panoramic display

Provides full-scenario 3D model display, completes in-depth project design, enlarges solution design details, and displays the real-life effect after the project is completed based on the surrounding environment of the project site. Provide intuitive and clear design solutions for the owner to help customers understand and familiarize themselves with the project, improve communication effect, and improve customer satisfaction.

DIGITAL POWER SERVICE

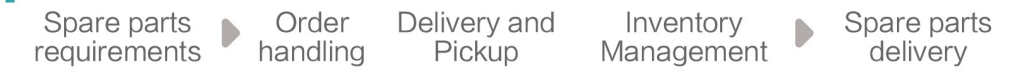
Global spareparts, fast response 2-5BD shipment with IT tool and smart planning



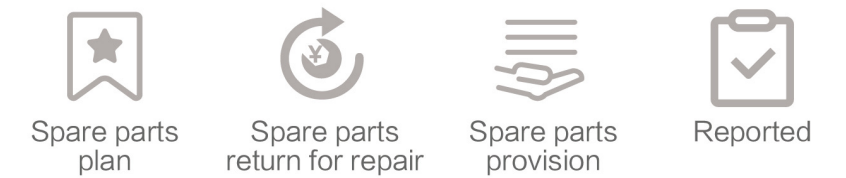
- Global Spare Parts Center
- Regional spare parts center
- National Maintenance Center

130+ Country Spare Parts Logistics Center, 16 pieces Global Repair Center, 9 pieces Regional Spare Parts Operation Center, 1 pcs Global Spare Parts Operation Center, Global service coverage 170+ countries

TAC: 24/7 single interface



Dynamic planning



One end-to-end visualized integrated IT system



All Requests in One Interface



Global Visibility



Dynamic Planning



Mobile APP

Huawei Data Center Service Solutions and Practices

Energy-saving service: iCooling AI optimization, achieving ultimate PUE

iCooling AI optimization reduces PUE by 8% to 15%



AI training platform

Public cloud

Local

Energy saving optimization service

Energy-saving evaluation solution design model training and continuous optimization

E2E system-level energy-saving reconstruction



Large DC	Cold source upgrade (↓ 0.06~0.12)	Chilled water terminal upgrade (↓ 0.03~0.05)	Power supply and distribution upgrade (↓ 0.05~0.07)	Secondary Area Device Upgrade (↓ 0.02~0.05)
Small- and medium-sized DCs	Smart module reconstruction (↓ 0.05~0.08)	Temperature control upgrade (↓ 0.07~0.1)	UPS upgrade (↓ 0.05~0.07)	Green electricity application (↓ 0.005~0.02)

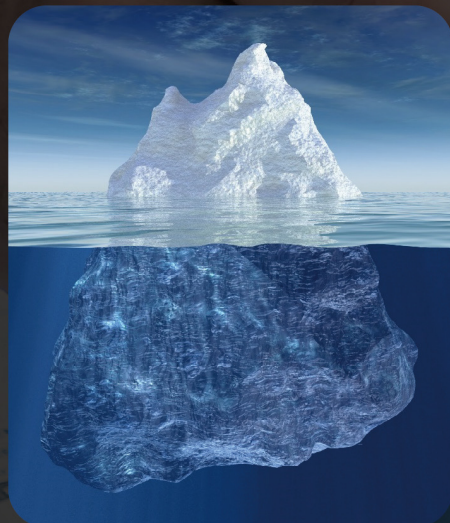
Platform: PUE Assessment Tool, Simulation tool, Methodology, The expert, Experience library, Partners, AI platform, Delivery experience assurance

Service: Digital Chemical Survey Service, Energy Saving Assessment Service, Energy-saving solution design service, AI algorithm implementation service, Energy efficiency test service

Huawei Data Center Service Solutions and Practices

Service value: Achieve customers and win-win results. Identify risks and prevent them before they happen

Identify risks and prevent unburned risks



Customer service personnel

The O&M team is uneven.

- Electrician, property management
- Security and administrative personnel
- Instructor in training/practitioners

Customer maintenance issues

- System crash and interruption
- Lack of proactive equipment maintenance, potential risks, and accidents
- Insufficient maintenance capabilities, low efficiency, long time, and high costs

Professionals do professional things, the process is easy to worry about, the results are comfortable, and the business is at ease.

Maintenance service Offering	Maintenance Value	Value Presentation Point
● Spare parts service	Secure, stable and reliable	Pursue "0" accidents; Timely response to support even in case of failure
● Remote service	Enhance brand value	Improve the brand awareness of manufacturers and build a good reputation of partners.
● Online O&M	Protect customer investment	Ensures normal DC operation, protects investment, and improves customers' ROI.
● On-site support	Improve O&M efficiency	Share global service experience to help customers improve O&M efficiency, reduce OPEX, and improve device availability.
● Proactive care	Enhance three-way stickiness	Explore key opportunities through three-party interaction and more communication and guidance.

Huawei Data Center Service Solutions and Practices

Training service: Provide technical training on self-developed products for government and enterprise end users to help enterprises cultivate talents.

Modular training programme	
Basic Knowledge	Power supply and distribution foundation, Precision air conditioner foundation, Monitoring System Basics
Planning and design	Power supply and distribution design, Precision air conditioner design, Monitoring Configuration
System Architecture	Power supply and distribution architecture, Precision air conditioner architecture, Monitoring Architecture
O&M management	O&M Management Regulations, Energy efficiency improvement methods, O&M Standards
O&M	UPS O&M, Precision Air Conditioner Maintenance, Monitoring System Operation
Troubleshooting	UPS Case Study, Precision Air Conditioner Cases, Monitoring System Cases

Basic courses	
Technical training on key power supply products	Technical training on intelligent cooling products
Modular Data Center Product Technical Training	DC Management System Product Technical Training

Values

Learn the knowledge of data center infrastructure products systematically, and have the O&M capability and overall energy efficiency optimization capability of the corresponding products.



Huawei Data Center Service Solutions and Practices

Implementation service: Professional design and optimal solution ensure quick project delivery and safe startup and normal operation of devices.

Huawei-developed data center energy products



Implementation Services

- Checking the Installation Environment
- Power-on commissioning
- Product Technical Consultation
- Installation of equipment
- Test and acceptance
- Transfer-to-maintenance training



Supervising service

- Checking the Installation Environment
- Power-on commissioning
- Product Technical Consultation
- Installation supervision
- Test and acceptance
- Transfer-to-maintenance training



Consulting and design services

- Huawei Product Portfolio Solution Planning
- Huawei Product Portfolio Design
- Design review

Professional implementation, Reliable construction period

Fully tested and verified, Assist the customer in skill improvement

1. Provide customers with industry insights as a reference for investment decision-making.
2. Enhance customer loyalty, supplement ecosystem partners' insufficient product design capabilities, and enhance the initiative of expansion in the "front-store-back-to-factory" model to facilitate ecosystem construction.



Huawei Data Center Service Solutions and Practices

Huawei iCooling is the first attempt and application in the data center finance field: The annual average PUE is reduced by 0.25, the energy consumption is reduced by 13%, and the annual power consumption is reduced by 2.4 million kWh.



Energy Efficiency Optimization Solution iCooling@AI

Project Background

- The Jinqiao data center is located in the Jinqiao comprehensive bonded area of Shanghai. It has 18,000 cabinets and 8 buildings (D1–D8).
- The project aims to use AI technologies to save 20% to 30% energy in the cooling system, achieving a green and secure balance between data centers in the financial industry.

Huawei Solution

In this project, the iCooling@AI technology is deployed in the D5 building. The average load of the building is about 25%, the annual average PUE is about 1.67, and the annual average power consumption of the HVAC system is 18 million kWh. In 2021, AI energy efficiency optimization will be started. In September, AI optimization algorithms will be deployed to infer the optimal cooling policy based on device and system reliability, and deliver the optimal cooling policy to achieve optimal data center energy efficiency.

Customer Benefits

- The first dual-cooling source system AI practice large-scale data center in the financial industry in China.
- He won the "2021 Cloud Computing Center Science and Technology Award Excellence Award" awarded by China Electronic Energy Saving Technology Association.
- The equipment room on the D5 floor with 2000 cabinets reduces the annual PUE by 0.25, saves 13% energy consumption, and saves over 2.4 million kWh annually.

Digital Power Professional Service Panorama

Data Center Power



Consulting & Design

Advisory services

Cost Consulting, Industry consulting
Site selection consultation, Industry consulting
Construction consultation

Design Services

Solution design, Construction drawing design
Preliminary design, initial expansion design
Design Change and Process Management

Implementation Services



Implementation & Reconstruction

Project management, Checking the Environment
Hardware installation, Device commissioning

Supervising service

Product consultation, Installation supervision
On-site guidance, Device commissioning

iCooling Energy Saving Service

Energy saving solution design, Power saving solution implementation
AI PUE software platform, Expert Services



Maintenance

Hi-Care, infrared thermal scan, Battery depth detection
Co-Care, Health Check, On-site service



Training

Technical training on key power supply products,
Technical training on intelligent cooling products
Modular DC Product Technical Training,
DC Management System Product Technical Training

