

HUAWEI ENTERPRISE ICT SOLUTIONS **A BETTER WAY**

Report on data center design of Uzbekistan AL0QA bank

enterprise.huawei.com
HUAWEI TECHNOLOGIES CO., LTD.



Catalog

Main configuration list of the project

Design scheme

Scheme analysis

Successful cases

Main configuration list of the project

Main configuration list of data center project of ALOQA Bank

Project	Specification and model	Quantity	Unit
Server cabinet	600mm*1200*2000mm-42U-Server cabinet	26	Set
Channel assembly	Closed cold channel	2	Pair
Industry level precision air conditioner	NetCo15000-A050H-46KW	8	Set
Room level precision air conditioner	NetCo18000-A013U-13KW	4	Set
Modularization UPS	UPS-5000E-250KVA (Including 10 50KVA modules)	2	Set
UPS Battery Rack	1150*1420*1600mm (Including DC switch)	4	Set
Battery	VRLA battery 12V-230AH-UPS Special battery	80	Section
DCIM	Data center infrastructure integrated management system (One server + environmental control software system)	1	Set

Illustration: This scheme only includes the infrastructure equipment of the data center, not including the server, switch, storage and network security equipment deployed in the cabinet

Catalog

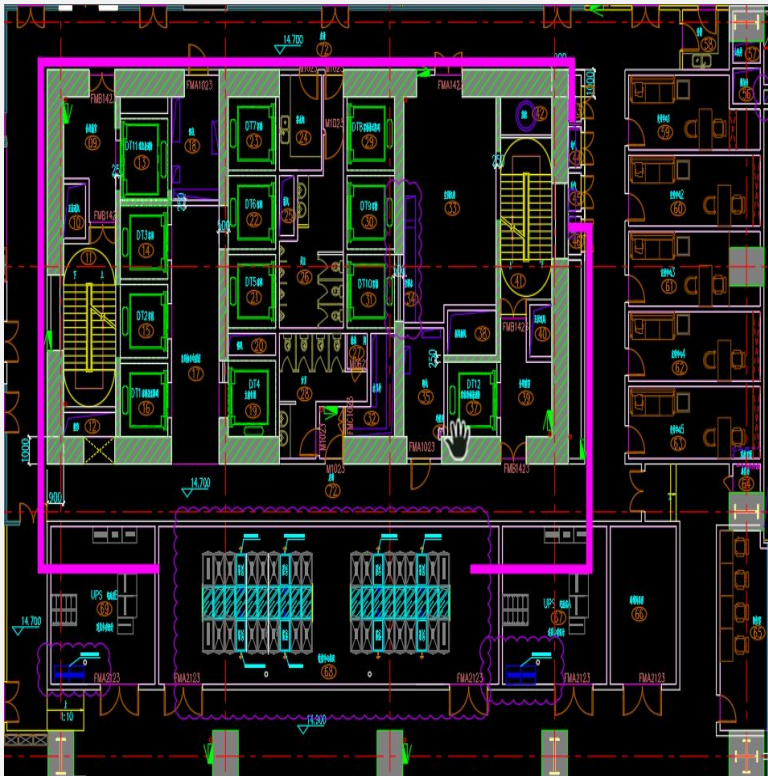
Main configuration list of the project

Design scheme

Scheme analysis

Successful cases

26#ALOQA Computer Room Design scheme



Layout of computer room

整体规划

- 主数据中心，部署2套双排智能微模块
- 26台机柜，平均单柜支持部署7KW负载
- 主数据中心两侧部署A路和B路UPS系统

UPS配电系统

- UPS配电系统采用2N架构，具备容错功能
- 采用模块化UPS，方便后期扩容和运维
- 单台UPS备电15min，系统备电30min

制冷系统

- 风冷行级空调，直流变频压缩机+EC风机
- 前送风后回风，独有低载除湿特性
- 精密空调采用N+1冗余，关键部件冗余

管理系统

- 微模块级管理系统，智能联动，管理简单
- 独立显示屏，3D可视，运维便捷
- 故障智能定位，移动运维，实时监控

Precision air conditioning data center and Calculation and selection of UPS

Two sets of micro modules are designed in the data center: 14 it cabinets in module one and 12 it cabinets in module two. The average single cabinet load is 7KW; the total load is $26 * 7 = 182KW$

Micro module I:

IT load $w = 14 * 7 = 98KW$, cooling capacity $C = W * 1.15 * 1.05 = 98 * 1.15 * 1.05 = 118.335KW$, the number of air conditioners required $N1 = C / 46 = 2.573$, rounding up $N1 = 3$, considering $N + 1$ redundancy, the actual number of air conditioners is $N2 = N1 + 1 = 4$. Among them, 1.15 is the air conditioning margin coefficient and 1.05 is the distribution heat dissipation margin coefficient.

Micro module 2:

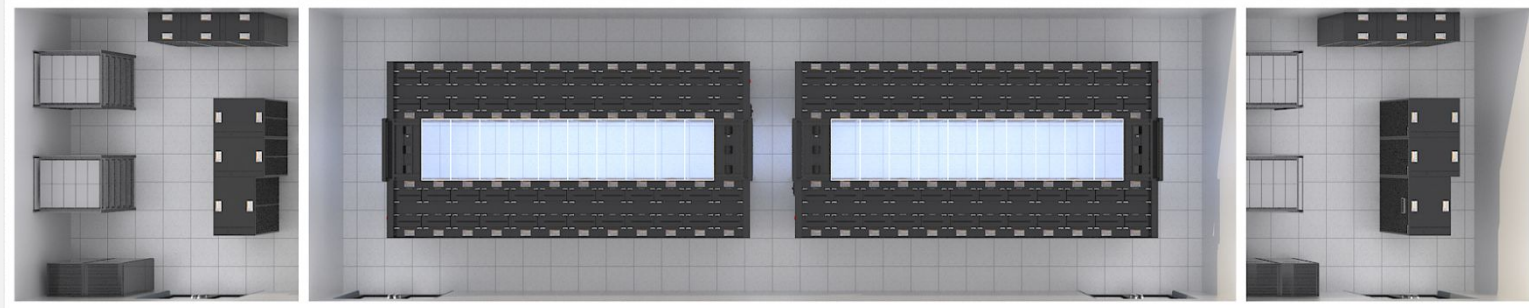
IT load $w = 12 * 7 = 84KW$, cooling capacity $C = W * 1.15 * 1.05 = 84 * 1.15 * 1.05 = 101.43KW$, the number of air conditioners required $N1 = C * / 46 = 2.205$, rounding up $N1 = 3$, considering $n + 1$ redundancy, the actual number of air conditioners is $N2 = N1 + 1 = 4$. Among them, 1.15 is the air conditioning margin coefficient and 1.05 is the distribution heat dissipation margin coefficient.

UPS selection:

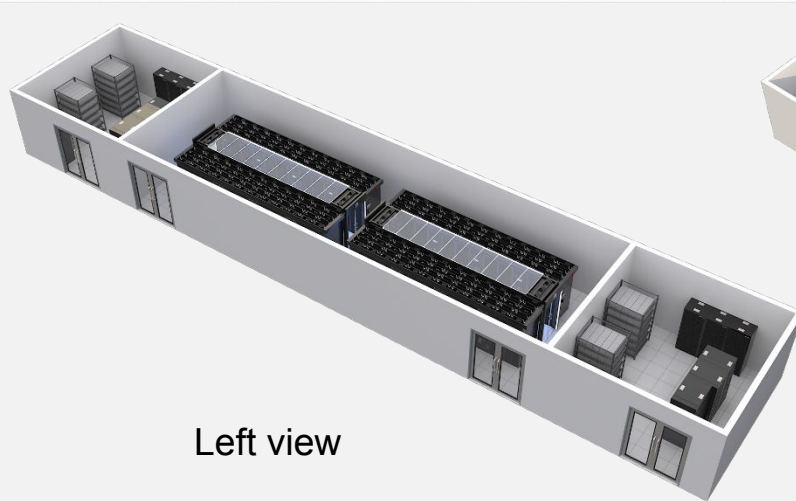
$S=1.2*P/Cos\phi$, Where: s-ups capacity; p-it equipment load; 1.2 is redundancy coefficient; $Cos\phi$ is power factor, taking 0.9;

$S=1.2*182/0.9=242.67KVA$, Therefore, two 250kVA modular ups are selected for UPS distribution system

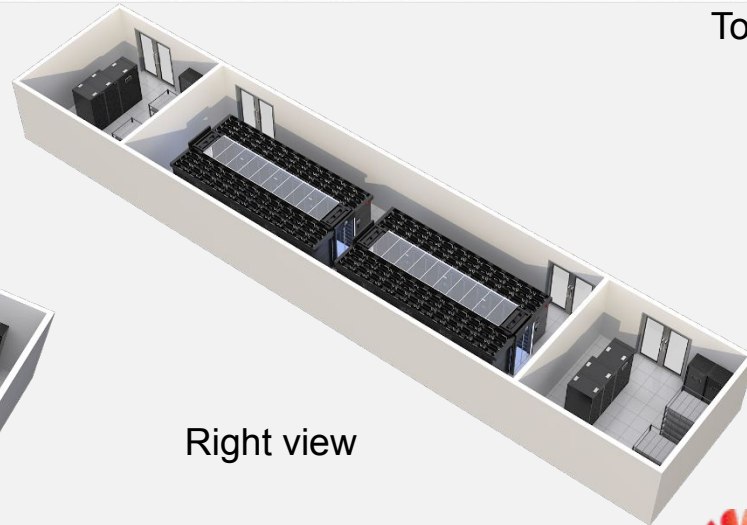
Computer room deployment rendering



Top view



Left view



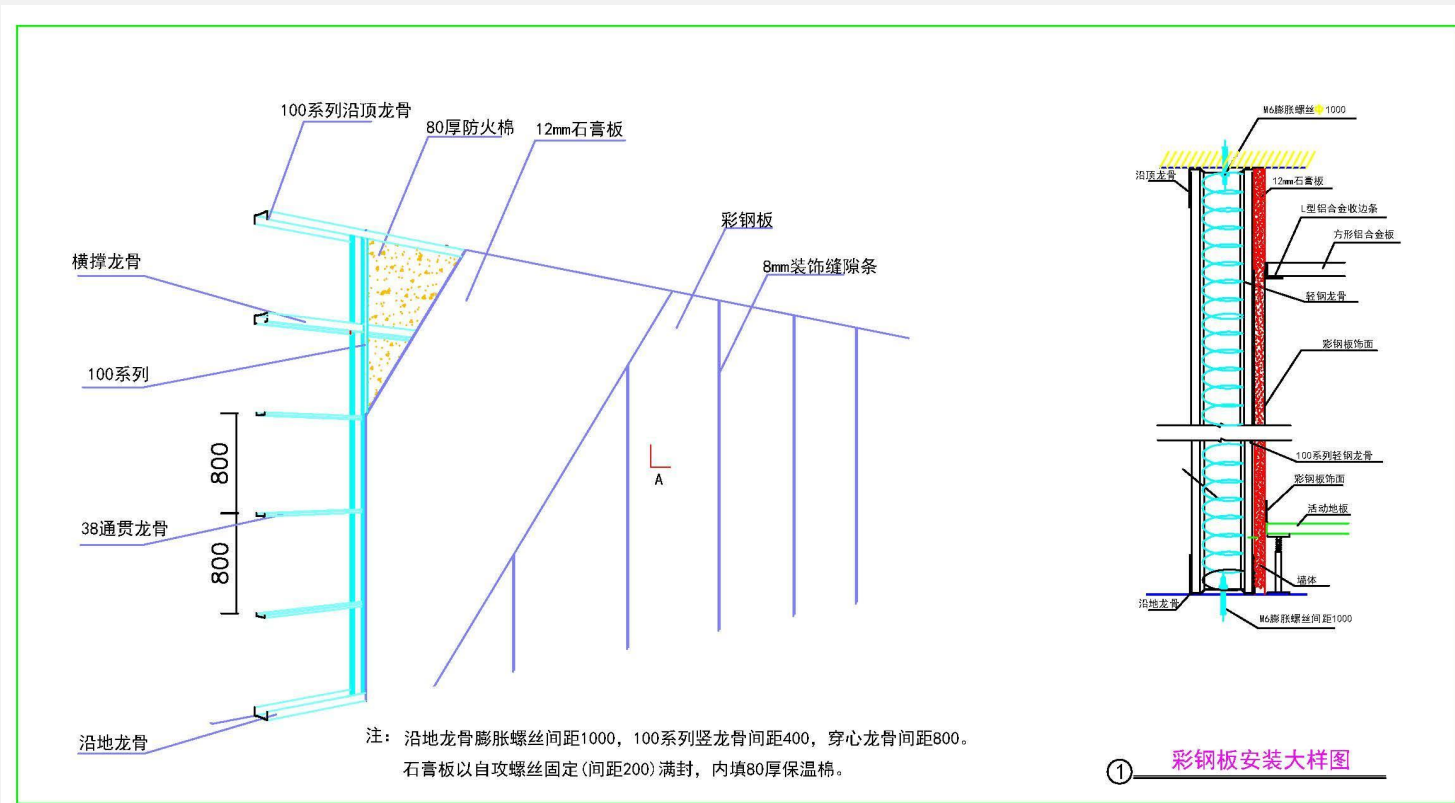
Right view



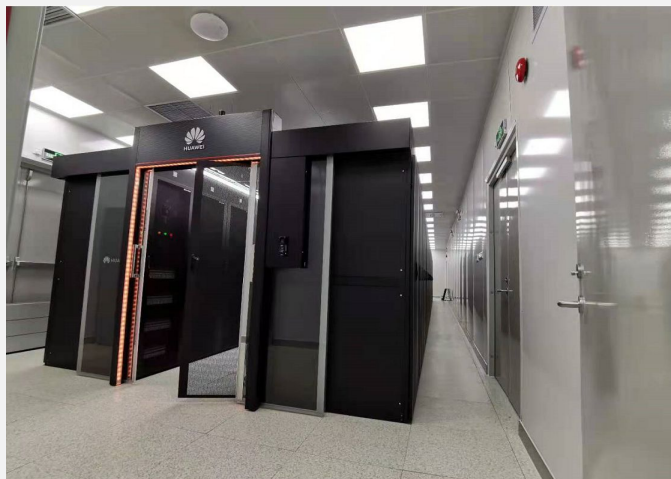
Micro module deployment rendering



Installation Method of wall column in Computer Room



Schematic diagram of computer room decoration



Value summary

稳定可靠

- 设计可靠、架构可靠、运行可靠
- 保证机房稳定运行，适应多变环境，为客户提供可靠业务基础

高效节能

- 高功率密度，合理布局，节省空间，提高机房可用性与经济性
- PUE值更低，效率更高，为客户最大程度节省成本

简单易用

- 标准接口，预组装、预测试，可快速部署，交付简单
- 模块化部件，维护简单，节省维护成本

智能运维

- 统一监控，无人值守，减少管理成本
- PUE值实时监控分析，提高利用率，智能节能

Huawei solutions & Products vs mainstream brand solutions & Products

Project	Category	Huawei	Mainsteam brand	Comparison
UPS	Power density	600*850*2000mm,single cabinet maximum 300KW	1000*1000*2000mm, single cabinet maximum 250KW	Huawei UPS has higher power density
	Input voltage range	138~485V	228V~478V	Huawei UPS has wider working range
	Lightning protection design	5KA	2/3KA	Huawei UPS has wider working range
	Host MTBF	≥43 Ten thousand hours	≥20 Ten thousand hours	Higher availability of Huawei UPS
Precision air conditioner	Cooling capacity	46KW	35-39KW	Huawei air conditioning has a higher and row level precision air conditioning, which can effectively solve the problem of single cabinet high-density load operation
	Humidification mode	Wet film humidification	Infrared / electrode humidification	Huawei's humidification method is more energy-saving and requires lower water quality
	Low load dehumidification capacity	Stable and reliable dehumidification with minimum 10% load	Can achieve the minimum 20% load stable and reliable dehumidification	Huawei air conditioner has wider dehumidification capacity
	Number of fans	10 sets: 9+1 Redundant configuration	2/3 Set	Huawei air conditioning fan has redundancy function
	Refrigerant leakage detection	Have	Not have	Higher availability of Huawei air conditioning
	Electronic expansion valve drive with energy storage unit	Have	Not have	Longer service life of Huawei air conditioning compressor
Monitor	Monitoring network	Ring network	Series networking	Ring networking of Huawei monitoring system to eliminate single point of failure

Catalog

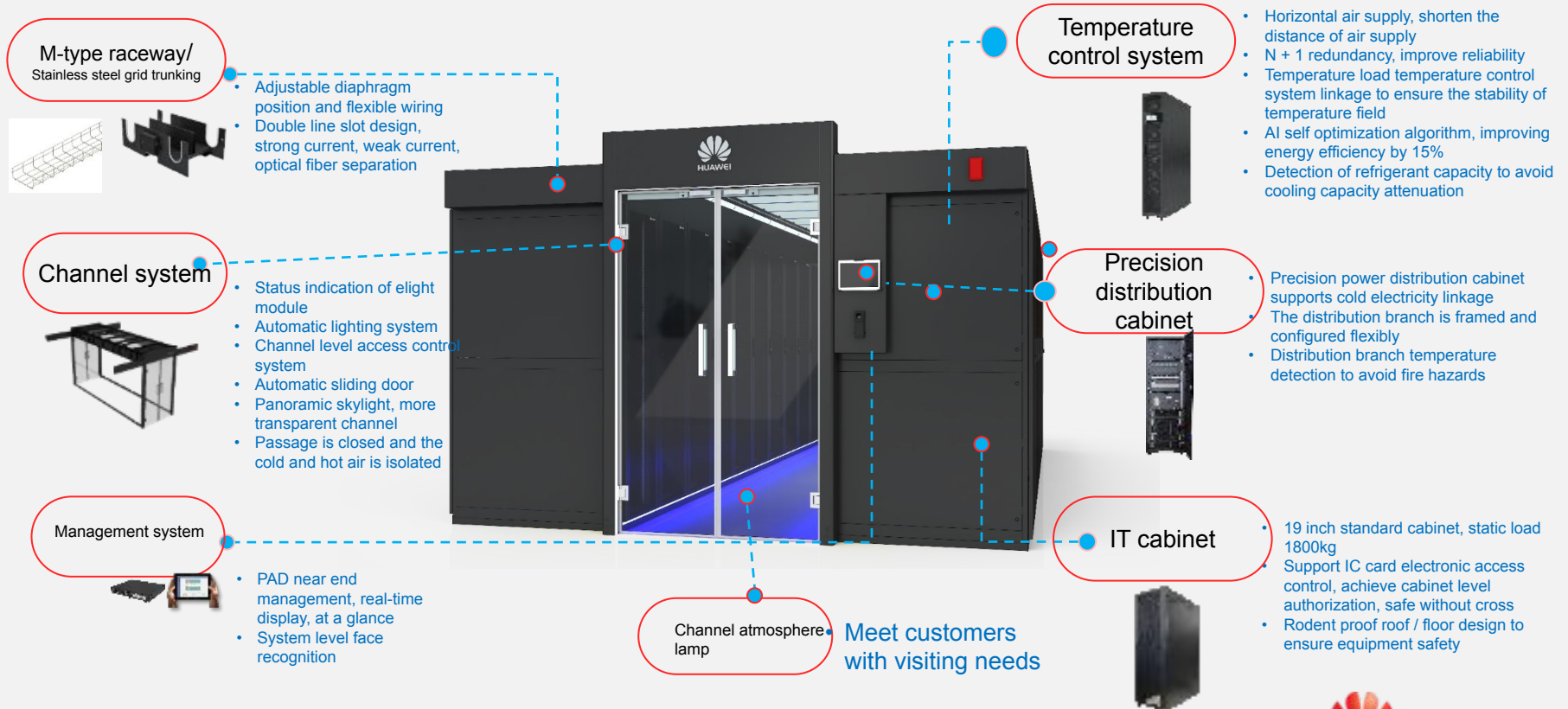
Main configuration list of the project

Design scheme

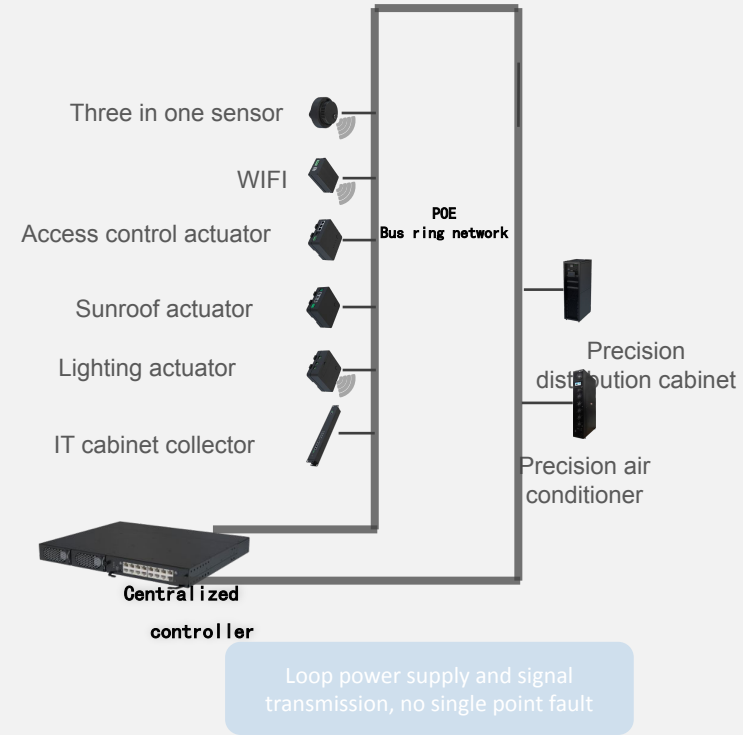
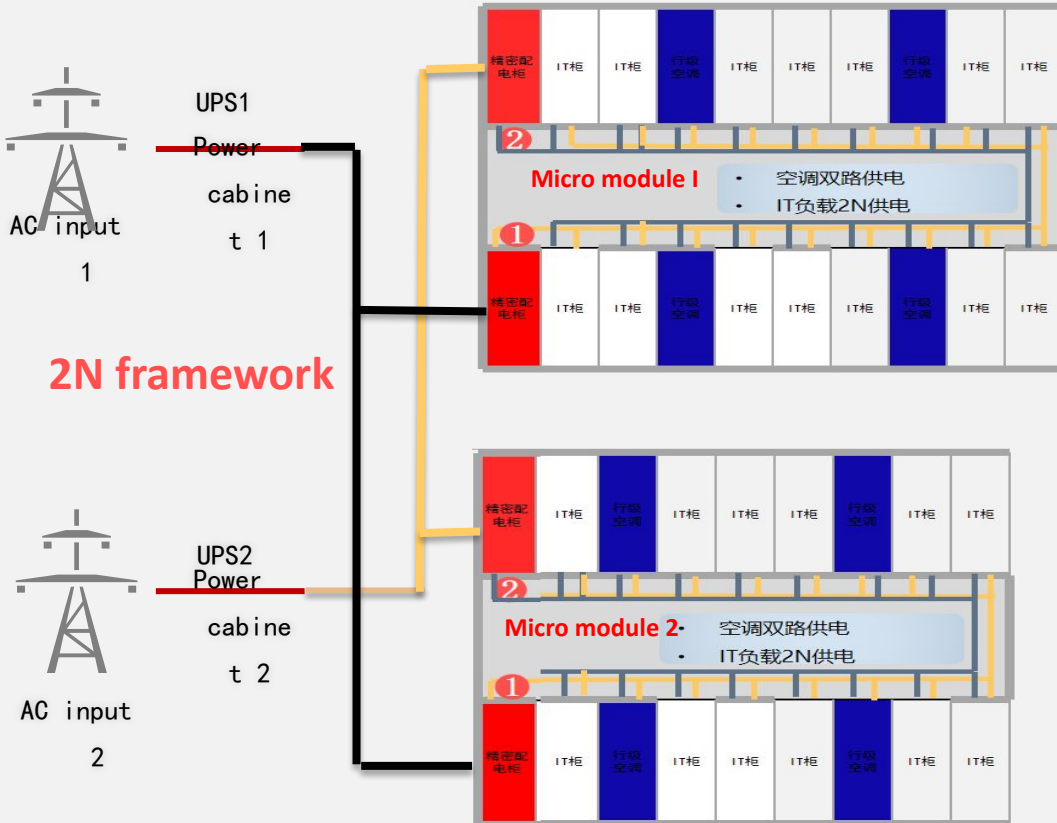
Scheme analysis

Successful cases

Micro module organization structure



The micro module configuration is safe and reliable



Advantages of Huawei modular UPS products

稳定可靠

- 全模块化冗余设计，无任何单点故障
- 超强输入、输出环境适应性，极限可靠性测试确保稳定可靠
- iPower智能监控，关键部件失效预警，失火等风险提前关断

高效节能

- 效率97.5%，业界最高
- 空间利用高效，占地面积减少50%，更多IT业务空间
- 低载高效，匹配业务扩展性强，时时高效，节省电费支出

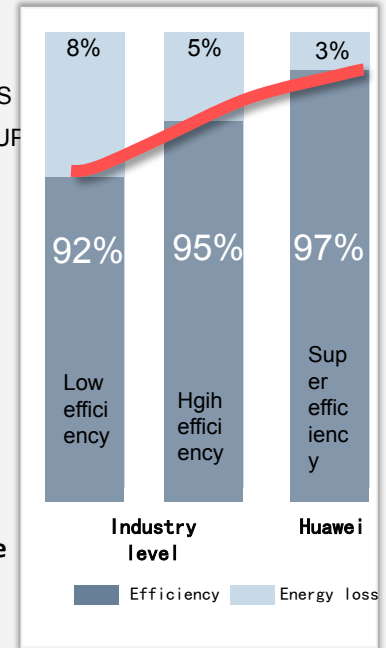
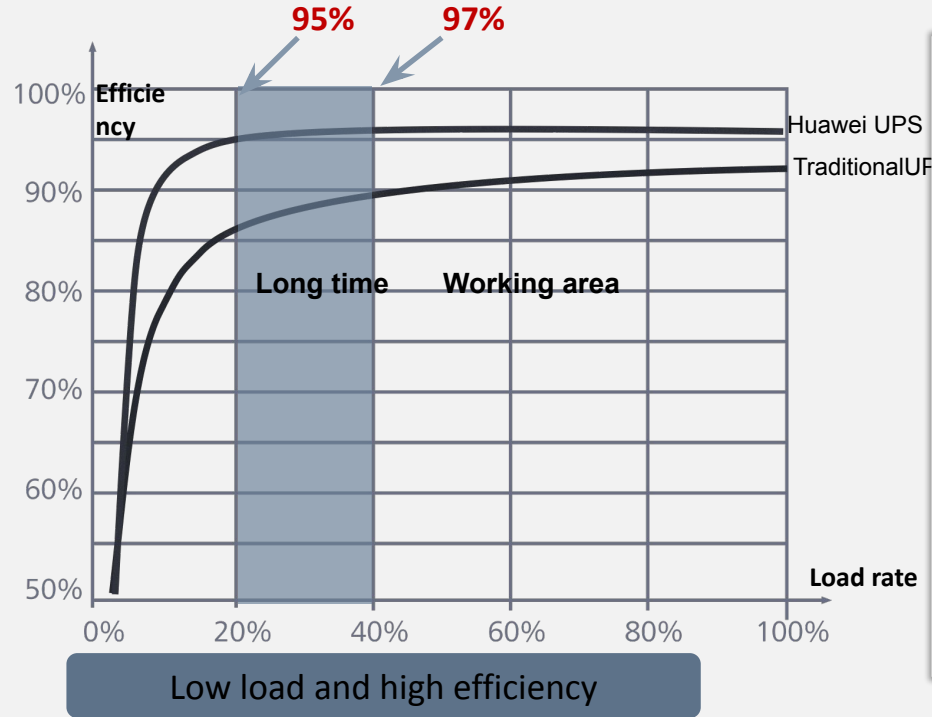
简单易用

- 体积小、重量轻，交付过程方便
- 模块化设计，普通工程师5min完成扩容和维护
- 核心供电节点状态实时监控、免除UPS系统人工巡视

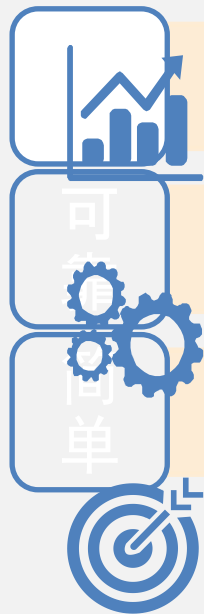
Efficient power supply: 1% efficiency improvement, saving 1 equipment / 10 years



Modular UPS



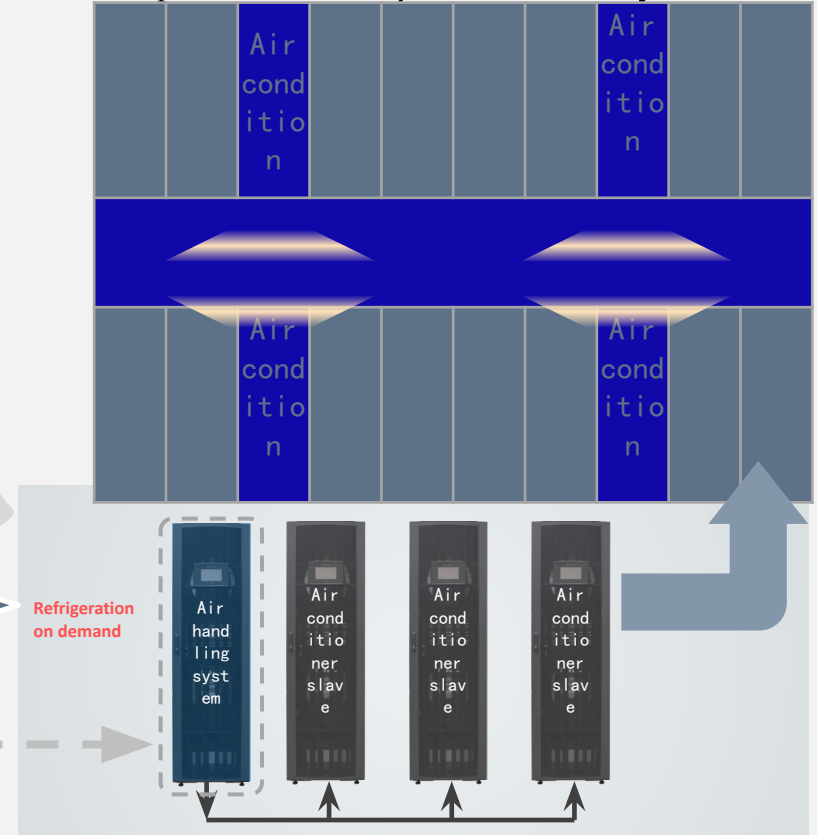
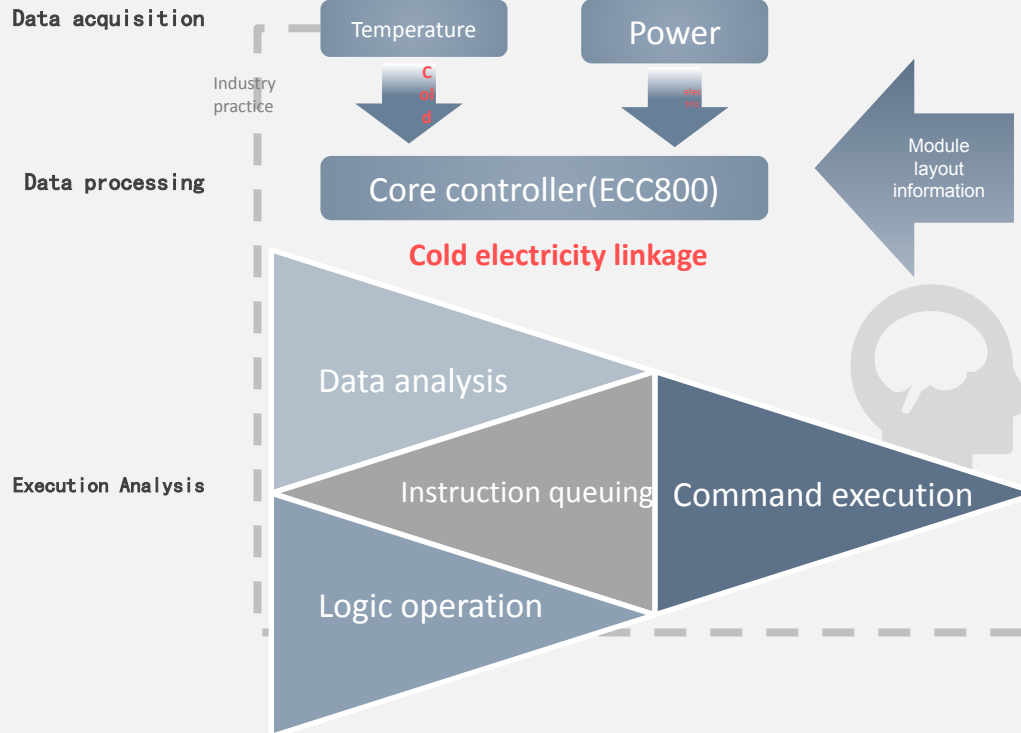
Industry level variable frequency air conditioning, to achieve on-demand cooling, accurate cooling



- 行级近端制冷, 低 PUE
Row-level near-end cooling, low pue
- 智能群控响应, 按需制冷
Intelligent group control response, refrigeration on demand
- 直流变频, 动态匹配负载, 低载高效
DC frequency conversion, dynamic load matching, low load and high efficiency
- 近端制冷, 气流组织更优, 无热点风险
Near-end cooling, better air distribution, no hot spots risk
- 高品质部件&精确控制
High quality parts & precise control
- 更宽的环境适应性, 恶劣条件稳定运行
Wider environmental adaptability and stable operation under harsh conditions
- 结构可变, 适应不同机柜尺寸需求
Variable structure, adapt to different cabinet size requirements
- 模块插拔维护, 简化维护工作
Module plug maintenance to simplify maintenance
- 智能触屏控制, 信息可视, 简化运维
Intelligent touch screen control, information visualization, simplify operation and maintenance

Cold electricity linkage, high efficiency refrigeration

"Cold electricity" linkage, deal with complex conditions, PUE reduced by 0.05



Micro module intelligent management system



Real time monitoring

Quick view at anytime, at anywhere



PAD



Alarm Preview



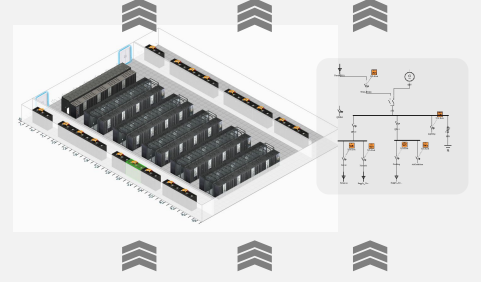
Component visualization

Highly Efficient troubleshooting



Efficiency analysis

Remote centralized management



Digital quantization and visual display

Advantages of micro module solution

节省空间

- 微模块方案场景适应性强，可部署在规则和不规则空间
- 微模块采用行级空调水平送风方式，对层高要求低
- 微模块方案集成度高，减少空调占地面积

灵活扩容

- 微模块方案支持单柜功率密度可调
- 微模块完全解耦，行级空调和机柜均可以增补
- 精密配电柜采用模块化设计，配电插框灵活可调

节能高效

- 微模块采用密闭通道部署方式，隔绝冷热气流，制冷效率高
- 行级空调采用湿膜加湿方式，不需加热，节省电能
- 行级空调群控技术，实现按需制冷和精确制冷，降低PUE值

Catalog

Main configuration list of the project

Design scheme

Scheme analysis

Successful cases

MDC Reduces OPEX for CITIC London Branch

Demands and Challenges

- London branch is the first branch of China CITIC Bank in Europe, established in 2015
- Needing highly reliable solution to ensure business stable
- Needing intelligent management to reduce cost of maintenance

HUAWEI Solution

- The smart modular DC: FusionModule2000, 2N design
- Modular UPS: UPS5000
- Smart management system: NetEco6000

Benefit to Customer

- Modular and redundant architecture design, high reliability
- High efficiency of UPS, up to 96%, and low PUE, saving OPEX by 10%
- Intelligent management system, reduce cost of maintenance by 30%



FusionModule2000



UPS5000



DCIM: NetEco6000

Huawei Modular DC FM2000 in MAB Myanmar



Customer scenario & requirements

- MAB bank plans to reconstruct their DR DC, around 44 IT cabinets are planned, power density is 3.5kVA, 2N power redundancy & 1+1 air cooling redundancy are required to achieve Tier 2+ system redundancy.

HUAWEI Solution

- Two FM2000 DC module, total 56 cabinets;
- 2N modular UPS and 3+1 in room DX cooling with raised floor.

Benefits to Customer

- Cabinet expansion in modular approach, UPS, air conditioners are deployed in 2 phases;
- Achieve the best operation and maintenance with intelligent DCIM;



MDC Help Bank Alfalah Expand Business

Demands and Challenges

- Bank Alfalah is the fifth largest private Bank in Pakistan with a network of over 600 branches in more than 200 cities across Pakistan
- Existing data center is running out of rack space.
- Soaring power bills due to inefficient power usage
- Inefficient cooling poses critical challenges to the stability of IT infrastructure.

HUAWEI Solution

- Huawei modular Dc solution: FusionModule2000
- Intelligent DC management system: NetEco6000

Benefits to Customer

- One-stop solution with fast deployment
- Power bills are drastically cut down along with the total OPEX.
- A new data center equipped with latest technologies aligns with rapidly-growing business.



MDC Helps SPD Extend Its Branch in London

Demands and Challenges

- Its first London branch, the latest in a series of Chinese banks opening offices in London.
- Fast construction in 2 months.
- High standard to meet international advanced design standards .
- Free mobility to move flexibly to other site.

HUAWEI Solution

- Smart modular DC: FusionModule2000
- Modular UPS: UPS5000
- Intelligent management system: NetEco6000

Benefits to Customer

- Modular and standard solution, deployment time was shortened by 20%
- Meet 2N architecture design, high reliability
- Intelligent system monitors DC in real-time, reduce maintenance cost



FusionModule2000



UPS5000



DCIM: NetEco6000

BOC Qatar Financial center DC Project , Qatar: Fusion Module-2000

Challenges

- Customer planned to have fast deployment data center solution to host IT infrastructure for Qatar Branch Office
- The Data center should be easy manage and high power efficient

Huawei Solutions

- 1 Nos Module FM2000 System including 5 IT racks, 2 PCSs 80KVA Modular UPS system, 2 PCSs 30KW CW In-row AHU system and ECC800 Monitoring system.
- Huawei Engineer Supervision and 2 Year Hi-care Warranty

Customer Benefits

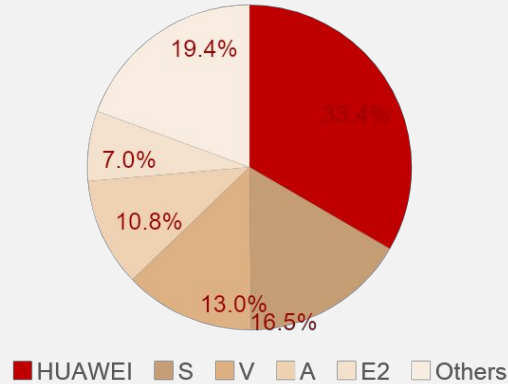
- Modular solution brings fast deployment
- Redundant resign for Power and cooling system to ensure reliability for critical Financial business
- Multiple green Technologies(Cold Aisle, High efficient UPS and In-row CRAC) boost the PUE and reduce customer OPEX.
- Intelligent monitoring system enables easy management



Data center business continues to grow, and market share has won the first place in many industries

Modularization UPS

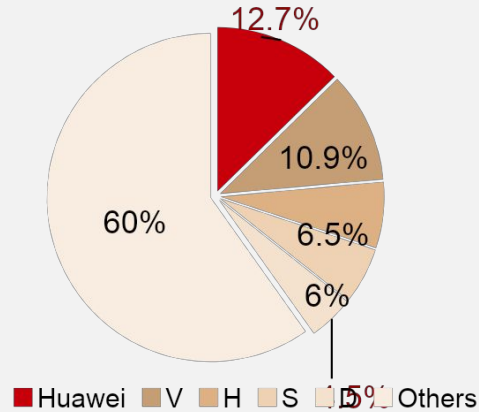
Global NO. 1



Data sources: Frost & Sullivan. 2017

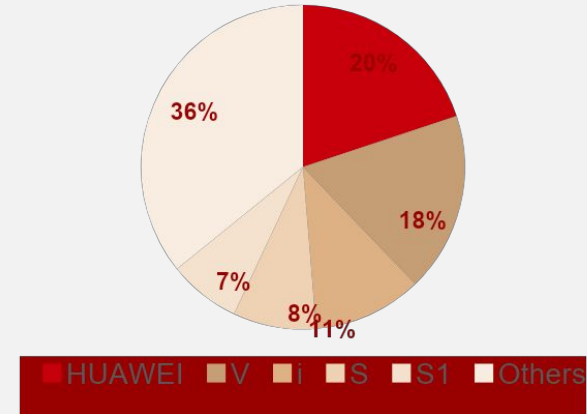
Modular data center

Global NO. 1



Sources: Frost & Sullivan.2018

Industry level intelligent temperature control **China NO. 1**



Data sources: ICT Research 2018

Huawei data center Awards & Achievements



DCD Green Data Center award



DCD Blueprint Award



DCD Innovation Award



DCD Edge computing infrastructure Innovation Award



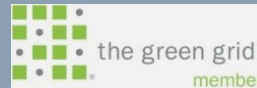
Uptime Charter Member



The first batch of UPS Energy Star certification in the world



ECA UK government



Green Grid contribution member



Uptime Tier III Authentication



Uptime Tier 4 Ready



HUAWEI ENTERPRISE ICT SOLUTIONS **A** **BETTER WAY**

Copyright©2012 Huawei Technologies Co., Ltd. All Rights Reserved.

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.