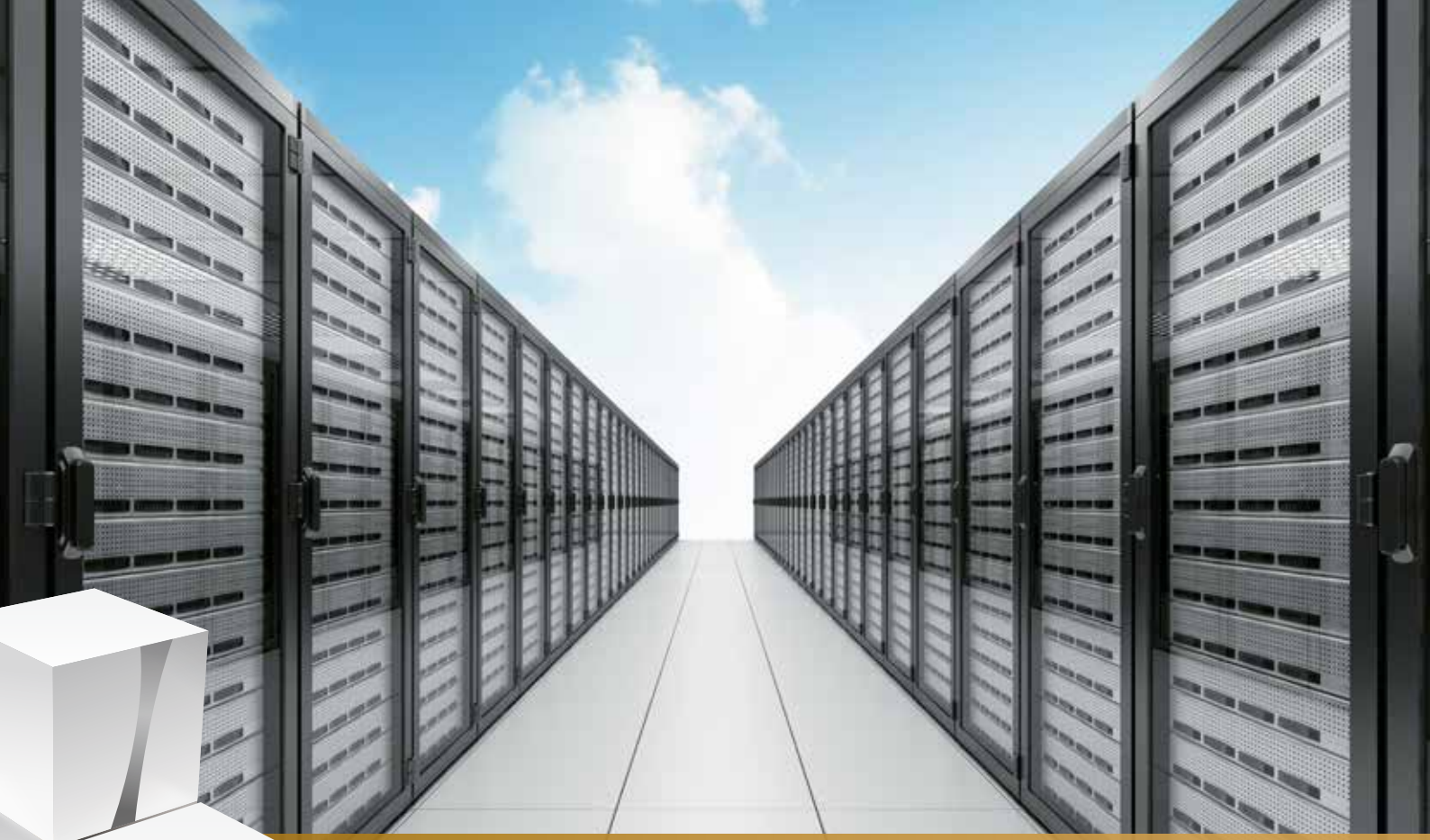

Power ICT in a Smart Way

Huawei Data Center Facilities Solutions

HUAWEI TECHNOLOGIES CO., LTD.

HUAWEI

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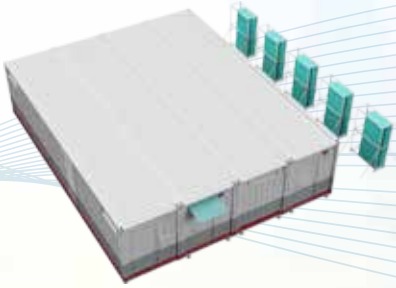


FusionModule1000B

Modular Data Center

FusionModule5000 Smart Modular Data Center

Introduction

HUAWEI FusionModule5000 is a new generation smart modular data center solution with complete integration of cabinets, power supply and distribution systems, cooling systems, cabling systems, management software, and other subsystems. It supports flexible deployment with single or dual row, cold or hot aisle containment. The maximum IT power can be up to 21kW/rack.

FusionModule5000 (Dual-row)

Application Scenarios

- Maximum IT power per module can be up to 310kW, which meet the requirements of large-scale data center for industries like ISP, government, education, healthcare, finance, telecom, etc.
- Designed for chilled water cooling scenarios.

FusionModule5000 (Single-row)

Features & Value

Reliable

- Single/dual power supply, Tier IV supportive, Precise monitoring of power branch temperature prevents fire caused by loose contact and overheat
- Water leakage monitoring keeps room away from flooding
- Ring network of monitoring system
- Warning of component expired, aging, damaged
- Optional aisle/cabinet-level door access keeps the data center safe

Efficient

- Closely coupled cooling to efficiently avoid partial hot spot, high-density deployment supportive
- Hot/cold aisle containment for isolation of hot and cold air
- Local/remote monitoring, PAD or cell phone mobile O&M

Simple

- Standardized devices, modular architecture, on-demand deployment
- Busway for power distribution is optional , easy installation

Specifications

Item	Specifications	
System	Dimensions	Single-row with aisle containment (LxWxH (IT cabinets)): Lx2400x2000mm, L≤15 m Lx2300x2000mm, L≤15 m Lx2400x2200mm, L≤15 m
		Dual-row with aisle containment (LxWxH (IT cabinets)): Lx3600x2000mm, L≤15 m Lx3400x2000mm, L≤15 m Lx3600x2200mm, L≤15 m
	Cabinet number per module	Single row: 2-24; Dual row: 6-48
	Power supply	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	IT power consumption per module	UPS inside: 112kW UPS outside: 310kW
	Maximum power per rack	21kW/R
	Availability	Tier II or Tier III (up to Tier IV)
	Altitude	0-4000m (derating above 1000m)
	Installation	Installed on concrete or base support
Cabinet	Dimensions (HxWxD)	2000mmx600/800mmx1200mm 2000mmx600/800mmx1100mm 2200mmx600/800mmx1200mm
	Space available	42U/47U
	Protection level	IP20
Chilled water In-row air conditioner	Cooling capacity	30kW
	Dimensions (HxWxD)	2000mmx300mmx1200mm
	Power supply	200~240V (1Ph, 50/60Hz)
	Refrigerant	Water/Ethylene Glycol
Integrated UPS (UPS inside)	Input voltage	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	Input power factor	Full load > 0.99, Half load > 0.98
	Rated capacity	40~160kVA
	Efficiency	≥ 96%
	AC SPD	20kA, 8/20μs
Precision power distribution cabinet (UPS outside)	Input voltage	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	Rated capacity	400/250/160A
	AC SPD	20kA, 8/20μs
	Output	16A/20A/32A/40A optional, max branches up to 144 (single phase), or 48 (three phase)
Smart busway (UPS outside)	Input voltage	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	Rated capacity	250/160A
	Output	40A/1P (6 branches in one Power Distribution Unit, can be expand with the length of cabinets)

Modular Data Center

FusionModule2000 Smart Modular Data Center

Introduction

FusionModule2000 is a new generation smart modular data center solution. It's a modular-designed, highly integrated solution which comprises power supply system, cooling system, rack & structure system, cabling system, management system within a module. The structure of the module can be single-row or dual-row, and support both cold/hot aisle containment.

Huawei FusionModule2000 is awarded World's First "Uptime Tier IV Ready" Certification.

FusionModule2000 (Dual-row)

Application Scenarios

- Designed mostly for small-to-medium sized data centers
- Suitable for enterprise HQ or large regional branch, operator, bank secondary branch, government, education, healthcare, etc.

FusionModule2000 (Single-row)

Features & Value

Reliable

- Circuit breaker terminal temperature detection enhance the reliability of power supply system
- Battery temperature detection & BCB auto shutdown help to prevent the risk of fire disaster
- 10% low-load dehumidification technology, avoid the risk of condensation
- POE ring circuit power supply & signal transmission for sensors and actuators can enhance the reliability of monitoring system

Simple

- Modular design and standard architecture provide fast installation and on-demand deployment
- Local PAD/ mobile APP/ NetEco Management System can significantly improve the efficiency of O&M

Efficient

- Closely coupled cooling system, inverter PAC and contained aisle bring high-efficiency operating
- AC group control function let the air-conditioners working at high-efficiency status, reducing power consumption

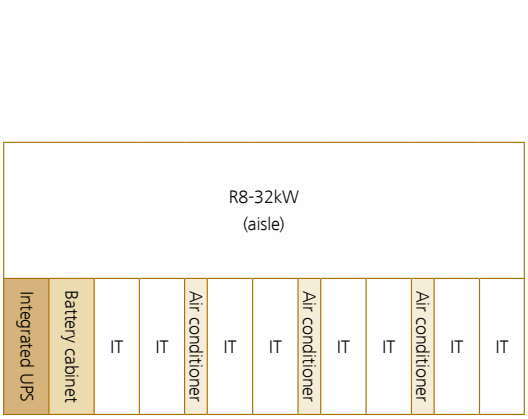
Specifications

Item	Specifications	
System	Dimension	Single-row with aisle containment (L×W×H): L×2400×2000mm, L≤15 m L×2300×2000mm, L≤15 m L×2400×2200mm, L≤15 m
		Dual-row with aisle containment (L×W×H): L×3600×2000mm, L≤15 m L×3400×2000mm, L≤15 m L×3600×2200mm, L≤15 m
	Cabinet number per module	Single row: 2-24; Dual row: 6-48
	Power supply	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	IT power consumption per module	125kW (with integrated UPS)/ 145kW (with integrated PDC)/ 235kW (with precision PDC)
	Operation condition	Ultralow temperature condition: -40°C to 45°C T1 condition: -20°C to 45°C T3 condition: -5°C to 55°C
	Availability	Tier II or Tier III (up to Tier IV)
	Altitude	0-1000m (derating above 1000m)
	Installation	Installing on concrete floor or raised floor
Cabinet	Dimensions (H×W×D)	2000mm×600/800mm×1200mm 2000mm×600/800mm×1100mm 2200mm×600/800mm×1200mm
	Space available	42U/47U
	Protection level	IP20
Air-cooled In-row air conditioner	Cooling capacity	25kW/42kW
	Dimensions (H×W×D)	2000mm×300mm×1100mm 2000mm×600mm×1100mm
	Power supply	380V AC~415V AC 50/60Hz, 3Ph+N+PE
	Refrigerant	R410A
Air-conditioner PDB	Rated voltage	380/400/415Vac
	Rated input current	160/250/400A
	Output	160A: 8×40A/3P+2×10A/1P+1×32A/1P 250/400A: 8×63A/3P+2×10A/1P+1×32A/1P
Integrated UPS (UPS inside)	Input voltage	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	Input power factor	Full load > 0.99, Half load > 0.98
	Rated capacity	25~125kVA
	Output	IT: 160A/250A, 40A/1P×24×2, Air conditioner: 160A/250A, 40A/3P×8 or 63A/3P×8
	Efficiency	≥ 96%
	AC SPD	5kA, 8/20μ
Integrated power distribution cabinet (UPS outside)	Input voltage	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	Rated input current	IT: 160A/250A, Air conditioner: 160A/250A
	Output	IT: 160A/250A, 40A/1P×24×2, Air conditioner: 160A/250A, 40A/3P×8 or 63A/3P×8
	AC SPD	20kA, 8/20μs
Precision power distribution cabinet (UPS outside)	Input voltage	380/400/415Vac,50/60Hz,3Ph+N+PE
	Rated input current	160/250/400A
	Output	40A/1P, maximum 144 routes
Smart busway (UPS outside)	Input voltage	380/400/415Vac,50/60Hz,3Ph+N+PE
	Rated capacity	250/160A
	Output	40A/1P (6 branches in one Power Distribution Unit, can be expanded with the length of cabinet)

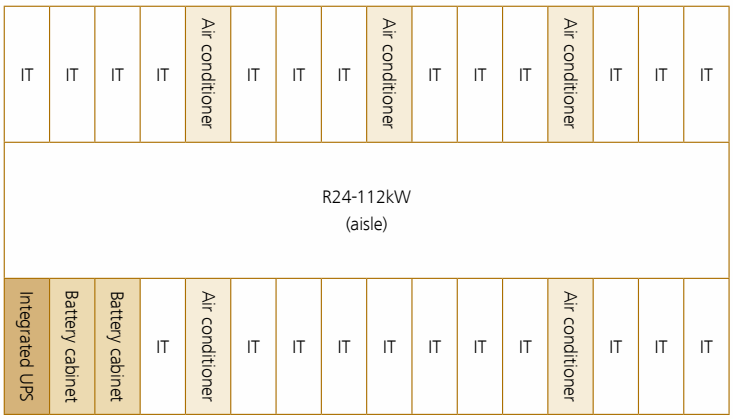
Recommended Configurations——UPS Inside

Single-row cabinet scenario

Dual-row cabinet scenario



R8 single row module typical layout



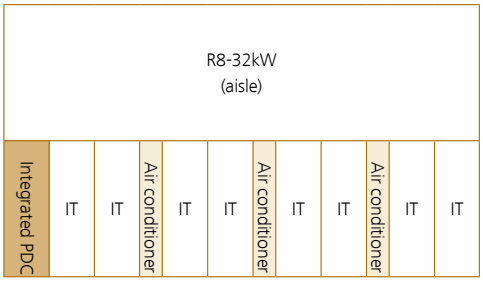
R24 dual row module typical layout

IT Load (kW)	Power Supply	Redundancy	AC Configuration	Battery
20	Integrated UPS	N+1/2N	25kW×2	In-row (Battery cabinet)/Outside Installation
40			25kW×3	
60			25kW×4	
80			42kW×3	
100			42kW×4	
125			42kW×5	

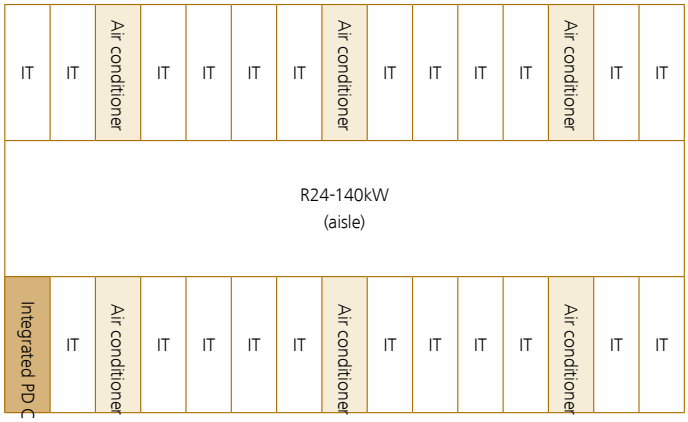
Recommended Configurations——UPS Outside

Single-row cabinet scenario

Dual-row cabinet scenario



R8 single row module typical layout



R24 dual row module Typical layout

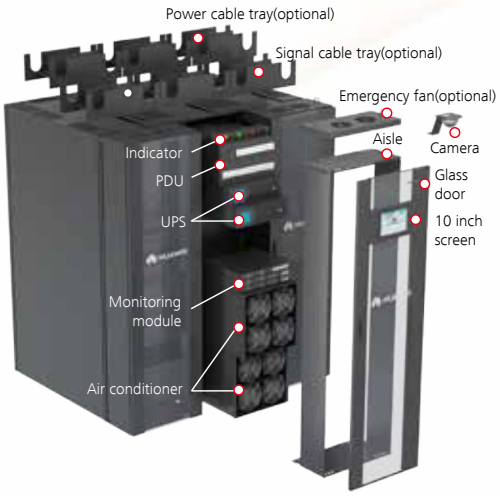
IT Load (kW)	IT Power Supply	AC Power Supply	Redundancy	AC Configuration
20	Integrated PDC/Precision PDC/Smart Busway	Integrated PDC/ Power Distribution Box	N+1/2N	25kW×2
40				25kW×3
60				25kW×4
80				42kW×3
120				42kW×4
145	Integrated PDC/Precision PDC			42kW×5
160	Precision PDC	Power Distribution Box		
200				42kW×6
235				42kW×7

Modular Data Center

FusionModule800 Smart Small Data Center

Introduction

FusionModule800 Smart Small Data Center is a new-generation data center solution. It is integrated with PDU, UPS, monitoring, cooling and rack system in a comprehensive cabinet to save space. IT cabinets can be deployed flexibly on both sides of it. A single module supports 8 cabinets at most and IT load no more than 15kW. The power density is up to 7kW/R. Cold/hot aisle lowers the PUE to 1.37.



FusionModule800 Architecture

Application Scenarios

- Bank branches and outlets, education, medical, or public security organizations, small-and medium-sized enterprises, and retail merchandising, carrier business halls, etc.
- Indoor modular data center
- Tier I or Tier II construction

Features & Value

Simple

- PDU, UPS, monitoring and air conditioner are integrated in one cabinet. Cabinets are preassembled in the factory and only need to be combined onsite. This reduces deployment time to be 4 hours only
- Mobile phone APP, SMS alarm, remote web platform monitoring and centralized management for multiple data centers realize unattended operation

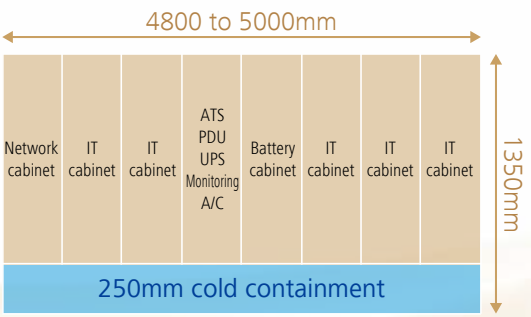
Efficient

- In-rack air conditioner saves at least one cabinet installation space
- Frequency conversion refrigeration, hot or cold aisle containment, superior PUE 1.37

Reliable

- Dehumidifying at min. 10% IT load avoids condensation risk
- Automatic shutdown for battery overheating to prevent the fire

FusionModule800 Application



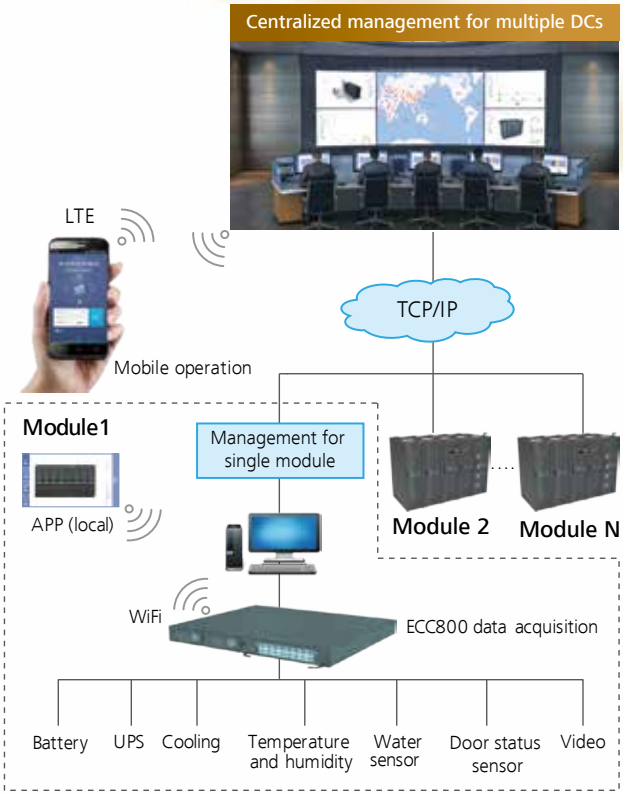
Maximum configuration

Specifications

System features		
Power system	380/400/415Vac, 50Hz, 3Ph+N+PE	
Aisle containment	Hot or cold	
System protection level	IP20	
Ambient temperature	-20℃ ~45℃	
Maximum cabinet quantity for a module	8	
Quantity of IT cabinets	0~6	
Maximum IT load	15kW	
IT cabinet max load	7kW	
IT cabinet weight	Static load 1500kg, Dynamic load 1000kg	
Total Dimensions (H × W × D mm)	2000 × (600-5000) × 1350	
Air conditioner		
Power system	220/230/240Vac, 50Hz, 1Ph+N+PE	
Cooling capacity	11kW[a]	
Configuration	1+0, 1+1, 2+0, 2+1	
Cooling mode	Direct expansion air-cooled	
Sensible heat ratio	≥0.99	
Installation	Rack mounted	
Air volume	2600m³/h	
Air supply mode	Front supply, rear return (in-row cooling)	
Power Supply and Distribution System		
AC SPD	CLASSII/C, In 20kA, Imax 40kA, 8/20us	
Input power	Single or dual inputs	
UPS capacity	10kVA	20kVA
UPS configuration	N, N+1, 2N	
UPS output power factor	0.9	
UPS rated output voltage	220/230/240Vac 50/60Hz, 1Ph+N+PE	380/400/415Vac 50/60Hz, 3Ph+N+PE
UPS efficiency	94.5%	95%
Battery backup mode	Battery pack, battery cabinet, battery rack	
Backup time	15min/30min	
Maintenance bypass	Standard	
Intelligent battery monitoring system	Optional	
Monitoring system		
Monitoring system	Mobile phone APP, SMS alarm, Web access, centralized management for multiple DCs	
10 inched Pad	Standard	
Water sensor	Optional	
Smoke sensor	Standard	
Door status sensor	Optional	
Door access control system	Optional (2 most)	
Temperature and humidity sensor	Standard	
Local mobile app	Standard (ECC APP)	
Remote mobile app	Optional (NetEco APP)	
SMS alarm	Standard	
Camera (4 most)	Optional, camera of module (1 most)	
	Optional, room camera (4 most)	

Note: Typical configuration 1, 5 and 6 are only applicable to TierI construction level for enterprise.

a. The cooling capacity is obtained when the indoor dry bulb temperature is 37.8℃ , indoor wet bulb temperature is 20.8℃ , and outdoor dry bulb temperature is 35℃ . The actual cooling capacity varies according to the indoor and outdoor ambient temperatures and relative humidity.



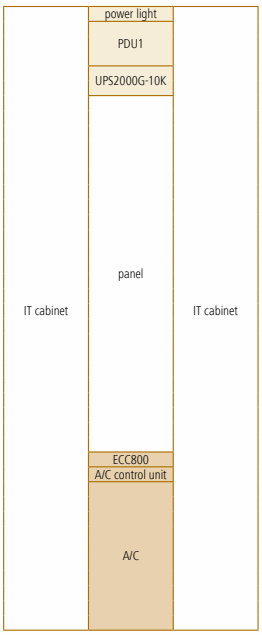
Eight Typical Configurations

IT load (Normal)	≤ 7.5 KW			
Typical configuration	BC1*	BC2	BC3	BC4
Aisle containment	Hot or cold			
UPS (kVA)	10	10	10+10	10+10
Air conditioner (Cooling only)	1+0	1+1	1+1	1+1
Input power	Single	Single	Single	Dual
Rpdu	1	1	2	2
UPS output	4	4	14	14

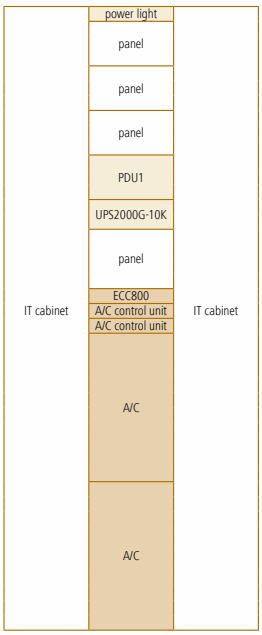
IT load (Normal)	7.5 kW < IT load ≤ 15 KW			
Typical configuration	BC5*	BC6*	BC7	BC8
Aisle containment	Both hot and cold			
UPS (kVA)	20	20+20	20+20	20+20
Air conditioner (Cooling only)	2+0	2+0	2+1	2+1
Input power	Single	Single	Single	Dual
rPDU	1	2	2	2
UPS output	14	14	14	14

Typical Configurations

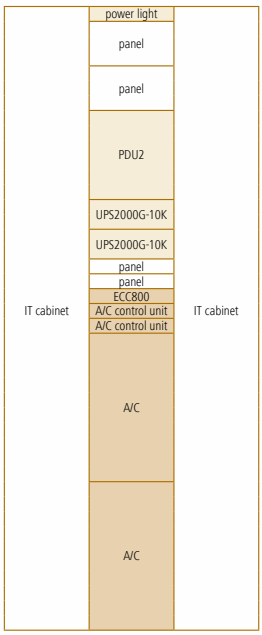
IT load ≤ 7.5 kW



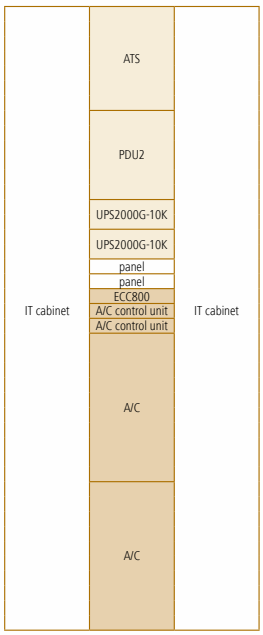
Typical configuration 1



Typical configuration 2



Typical configuration 3



Typical configuration 4

IT load	IT load7.5KW			
Typical configuration	Typical configuration 1*	Typical configuration 2	Typical configuration 3	Typical configuration 4
Aisle type	Cold aisle			
UPS configuration (KVA)	10	10	10+10	10+10
A/C configuration	1+0	1+1	1+1	1+1
Power input	single	single	single	dual
Rpdu quantity	1	1	2	2
UPS output quantity	4	4	14	14
Standard configuration	Temperature and humidity sensor, smoke sensor, short message alarm, mobile phone APP			
Optional	Door magnetic switch, water sensor, video system, backup power			

Note: Two to four cabinets are recommended.
Typical configuration 1 is only applicable to Tier 1 construction level

Typical Configurations

7.5 kW < IT load ≤ 15 kW

Typical configuration 5 | **Typical configuration 6** | **Typical configuration 7** | **Typical configuration 8**

IT load	IT load15KW			
Typical configuration	Typical configuration 5*	Typical configuration 6*	Typical configuration 7	Typical configuration 8
Aisle type	Cold aisle			
UPS configuration (KVA)	20	20+20	20+20	20+20
A/C configuration	2+0	2+0	2+1	2+1
Power input	single	single	single	dual
Rpdu quantity	1	2	2	2
UPS output quantity	14	14	14	14
Standard configuration	Temperature and humidity sensor, smoke sensor, short message alarm, mobile phone APP			
Optional	Door magnetic switch, water sensor, video system, backup power			

Note: Four to eight cabinets are recommended.
Typical configuration 5 and Typical configuration 6 are only applicable to Tier 1 construction level

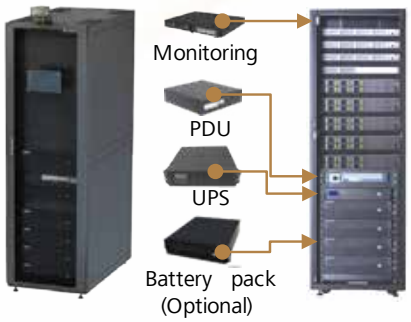
Smart Mini Data Center Solution

FusionModule500

Introduction

FusionModule500 smart mini data center solution integrate UPS, PDU, monitoring, battery pack in a cabinet. All parts are prefabricated, pre-installed, pre-tested. On-site installation is simple to achieve rapid deployment. The remote monitoring function with web interface can realize remote operation. At the same time, FusionModule500 can be equipped with Huawei NetEco management system, achieving centralized monitoring and unified management.

Integrated architecture



Feature

Simple

- All-in-one design, preassembly, two-hours installation
- Battery remote discharge, mobile phone APP, SMS alarm, remote web platform control, Network centralized monitoring, realizing unattended operation

Efficient

- Rack DC, saving at least 50% space

Reliable

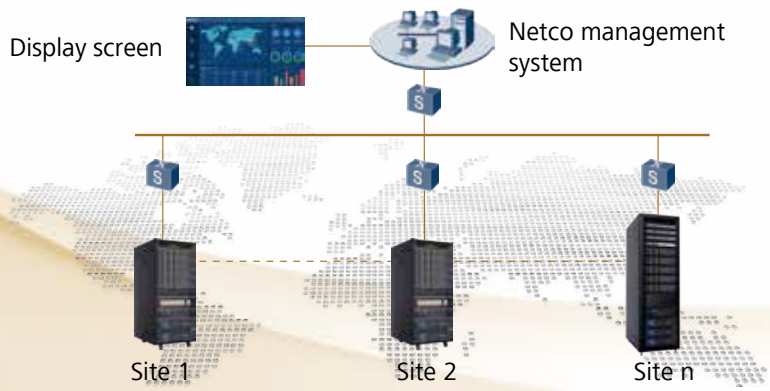
- Civil air conditioner intelligent start, no risk of overheat
- Battery overheating intelligent shutdown to prevent the fire

Integrated cabinet

Integrated cabinet+network cabinet
or Integrated cabinet+battery cabinet

Application scenarios

- Bank sites, education, enterprise branches, retail merchandising and carrier business halls, etc.
- No need special data center room



Integrated cabinet+network cabinet+battery cabinet

Specifications

Item		Description	42U	24U
Overall parameter		Power type	220/230/240Vac, 50/60Hz, 1Ph+N+PE	
		Temperature	0-40°C	
		Humidity	5-95%	
		Altitude	0-4000m (1000 meters or more to reduce capacity)	
Certificate		Certificate	CE, ROHS, REACH	
Cabinet system		Cabinet dimensions W × H × D (mm)	600 × 2000 × 1100	600 × 1200 × 850
		Cabinet combination	IT cabinet / IT cabinet+battery cabinet, IT cabinet+network cabinet, IT cabinet+network cabinet+battery cabinet	IT cabinet, IT cabinet+battery cabinet
User space		ICT space	36U (no battery pack) 24U (4 battery pack)	17U (no battery pack) 11U (2 battery pack)
Power system	System input	Input switch capacity	32A (3kVA); 63A (6kVA,10kVA)	32A (3kVA); 63A (6kVA)
	System output	Input switch	4 × 40A/1P+1 × 16A/1P (6kVA/10kVA) 2 × 16A/1P+3 × 10A/1P (3kVA)	4 × 40A/1P+1 × 16A/1P (6kVA/10kVA) 2 × 16A/1P+3 × 10A/1P (3kVA)
	UPS	Capacity	3kVA, 6kVA, 10kVA	3kVA, 6kVA
		Configuration	Single UPS	
		Power factor	0.9	
		Efficiency	94% (3kVA/6kVA), 94.5% (10kVA)	
	rPDU	Installation	Vertical (6kVA/10kVAUPS) Horizontal (3kVAUPS)	Horizontal
		Type	IEC/GB	
		Configuration	IEC: 20 × C13+2 × C19	IEC: 8 × C13
	Battery pack	Capacity	7AH, 9AH	
		Quantity	0-4	0-2
	Power backup	Backup type	Battery pack, Battery cabinet	
	Battery cabinet	Backup time	15min-4H	
Monitoring system		Monitoring	ECC800	
		Home A/C restart function	Optional	
		SMS	Optional	
		Remote mobile APP	Optional	
		Liquid sensor	Standard configuration	
		Tem&Hum sensor	Standard configuration	
		Door magnetic switch	Standard configuration	
		Smoke sensor	Standard configuration	
		10-inch display (wifi module)	Optional	
		Web monitoring	Standard configuration	
		Camera	Optional	
Management system		NetEco6000	Optional	
Cooling system		Heat radiation	Natural heat dissipation	
Dimensions/weight		Package dimensions W × H × D (mm)	734 × 2200 × 1268	734 × 1400 × 1068
		Integrated cabinet weight	144kg (no battery pack)	100kg (no battery pack)
		Battery pack weight	61kg (7Ah), 69kg (9Ah)	

Prefabricated Data Center

FusionModule1000A Prefabricated All-in-One Data Center

Introduction

The prefabricated all-in-one data center solution functions as a foundation for cloud computing in enterprise data centers. It meets the requirements for environmental protection, saving energy, and fast deployment. In addition, it has distinct advantages in scenarios such as disaster relief operations, oil exploration, and enterprise data management.

FusionModule1000A 40ft

Application Scenarios

- IT load≤48kW per container
- Fast deployment and movable scenarios

Features & Value

Simple

- Prefabricated and pre-tested
- Highly integrated, one container is an entire data center facility
- Easy on-site work, saving 80% deployment time

Efficient

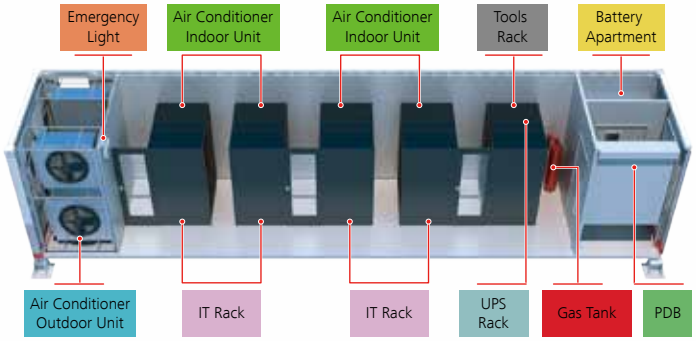
- High energy efficiency, PUE down to 1.5
- High efficiency O&M, saving 10% OPEX at least

Reliable

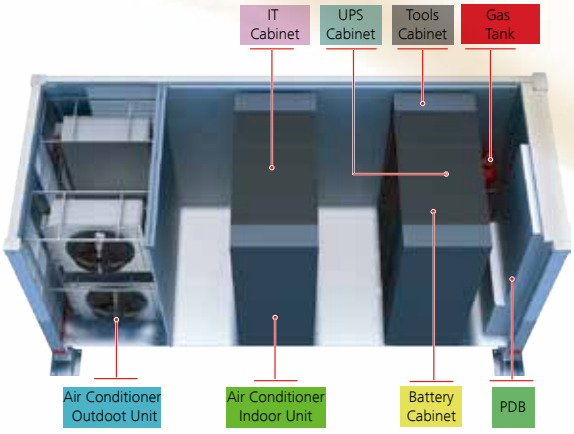
- High environment adaption helps business operate stably
- IP55 external protection level and 9 degree anti-seismic intensity performance

FusionModule1000A 20ft

Specifications



FusionModule1000A 40ft



FusionModule1000A 20ft

Item	Sub Feature	FusionModule1000A 40ft	FusionModule1000A 20ft
Power	Input power	380/400/415Vac, 50/60Hz, 3Ph+N+PE; 480Vac, 60Hz, 3Ph+N+PE	
	Lightningproof level	60kA(PDB)	
	Power density per rack	6kW per rack	
	UPS mode	HUAWEI UPS 2000G, 20kVA rack mounted UPS	
	UPS redundancy	3+1 redundancy	2+1 redundancy
	BAT backup time	7~10 mins	10 mins
Cooling	Technology	DX (Direct Expansion) type air-conditioner units	
	Containment	Hot and cold aisle isolation	
	Cooling capacity	20kW per unit, 3+1 redundancy	20kW per unit, 2+1 redundancy
	Refrigerant	R410A	
	Humidity	Build-in humidification function	
Environmental requirements	Operation temperature	-15°C ~ +52°C*	
	Operation humidity	5% to 100% relative humidity	
	Altitude	<3000m	
Fire control	Type	Automatic fire detection & suppression system c/w emergency release function	
Size	Dimensions (L x W x H)	12192mm x 2438mm x 2896mm	6058mm x 2438mm x 2896mm
	Total IT load	48kW	24kW
	Typical rack capacity	8 IT racks, 360U	4 IT racks, 180U

* -40°C ~ -15°C conditions should use low temperature air conditioner, some parameters will change.

Prefabricated Data Center

New Generation ICT Prefabricated All-in-One Data Center

Introduction

HUAWEI FusionModule1000A is an advanced, all-in-one designed and prefabricated data center infrastructure facility solution to house, power and manage modern IT equipment with simple, green and reliable power & environment control system. The prefabricated all-in-one data center solution functions as a foundation for network facility in data center constructions. It meets the requirements for environmental protection, saving energy, and fast deployment.

FusionModule1000A 40ft

Features & Value

Simple

- All-in-One structure, prefabricated and pre-tested
- Highly integrated, one container is an entire data center facility
- Easy on-site installation work, saving 80% deployment time

Efficient

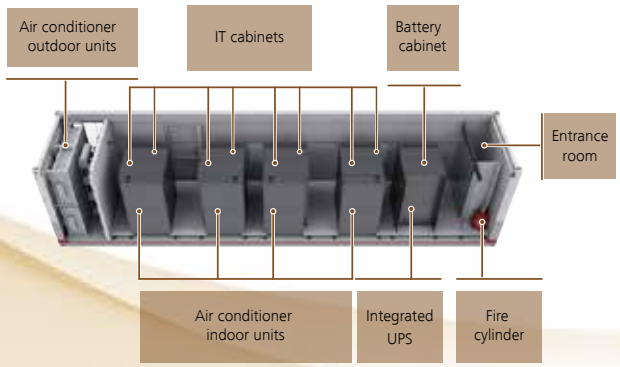
- Highly efficient power supply & distribution and temp. control solution with PUE as low as 1.5; highly efficient DX inverter in-row precision air conditioners with light load non-condensing design
- Save 10% TCO at least in comparison with traditional DC

Reliable

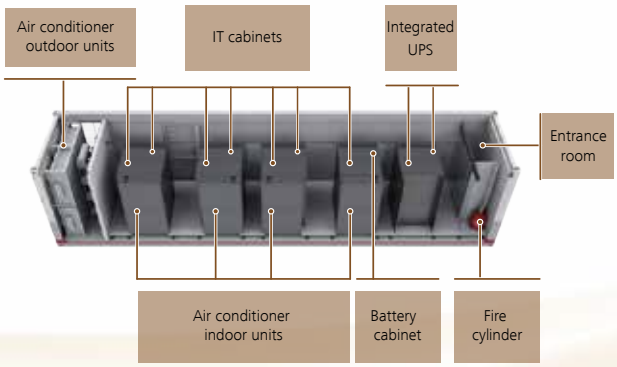
- High environment adaption helps business operate stably
- IP55 (optional IP65) external protection level and 9 degree anti-seismic intensity performance

FusionModule1000A 40ft Deployment

Layout



FusionModule1000A 40ft TIER2



FusionModule1000A 40ft TIER3

Specifications

Item	Sub Feature	FusionModule1000A 40ft TIER2	FusionModule1000A 40ft TIER3
Power	Input power	380/400/415Vac, 50/60Hz, 3Ph+N+PE	380/400/415Vac, 50/60Hz, 3Ph+N+PE 208Vac, 60Hz, 3Ph+N+PE
	Power density per rack	≤9kW	208Vac≤7.5kW; Others≤9kW
	UPS model	HUAWEI Integrated UPS	
	UPS redundancy	N+X	2N
	BAT backup time ①	7.5 to 15mins	10 to 15mins
Cooling	Technology	DC Inverter DX (Direct Expansion) type air-conditioner units	
	Containment	Hot and cold aisle isolation	
	Cooling capacity	25kW per unit, 3+1 redundancy	
	Refrigerant	R410A	
	Humidity	Build-in humidification function	
Environmental requirements	Operation Temperature ②	-40°C ~ +55°C	
	Operation humidity	5% to 95% relative humidity	
	Altitude	<4000m	
Fire control	Type	Automatic fire detection & suppression system c/w emergency release function	
Size	Dimensions (L x W x H)	12192mm x 2438mm x 2896mm	
	Total IT load	52kW	
	Rack capacity ③	6 to 8 42U racks	

①③ : The BAT backup time and rack capacity is different based on the configuration. Please check the product overview for specific information.
② : -40°C to -20°C condition should use low temperature air conditioner, some parameters will change.

Prefabricated Data Center

New Generation ICT Prefabricated All-in-One Data Center

Introduction

HUAWEI FusionModule1000A is an advanced, All-in-One designed and prefabricated data center infrastructure facility solution to house, power and manage modern IT and CT equipments with simple, green and reliable power & environment system. The prefabricated all-in-one data center solution functions as a foundation for network facility in telecom data center constructions. It meets the requirements for environmental protection, saving energy, and fast deployment.

FusionModule1000A 40ft CT

Features & Value

Simple

- All-in-One structure, prefabricated and pre-tested
- Highly integrated, one container is an entire data center facility
- Easy on-site work, saving 80% deployment time

Efficient

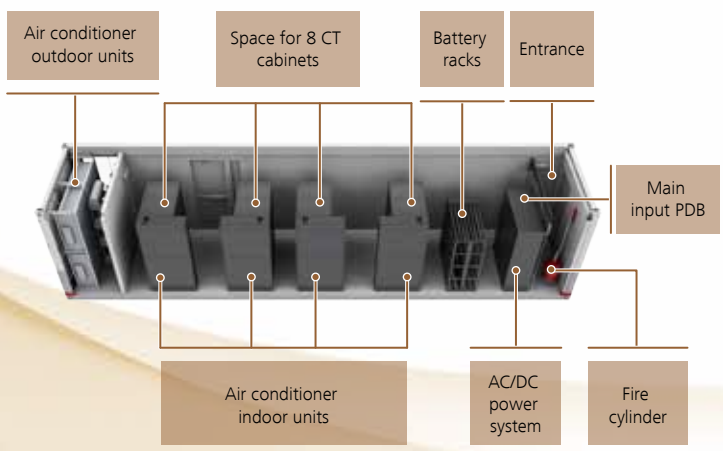
- Highly efficient power supply & distribution and temp. control solution with PUE as low as 1.5; with free cooling technology, PUE is as low as 1.2
- Save 10% TCO at least in comparison with traditional DC

Reliable

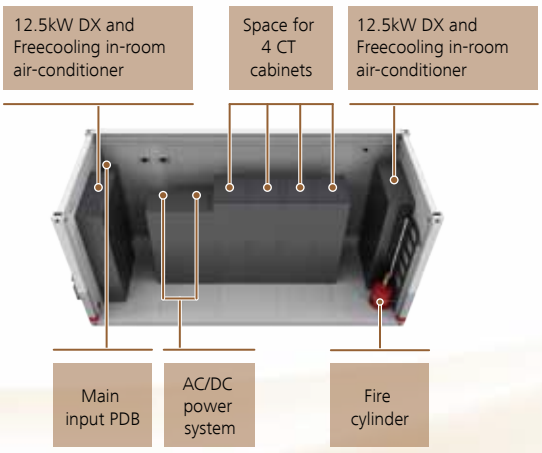
- High environment adaption helps business operate stably
- IP55(optional IP65) external protection level and 9 degree anti-seismic intensity performance

FusionModule1000A 20ft CT

Layout



FusionModule1000A 40ft CT



FusionModule1000A 20ft CT

Specifications

Item	Sub Feature	FusionModule1000A 40ft CT	FusionModule1000A 20ft CT
Power	Input power	380/400/415Vac, 50/60Hz, 3Ph+N+PE	
	Power density per rack	≤8kW per rack	
	CO Power model	HUAWEI TP48 CO Powers	
	CO Power redundancy	1+1 redundancy	
	BAT backup time	60 mins	240 mins
Cooling	Technology	DC Inverter DX (Direct Expansion) type air-conditioner units	DX (Direct Expansion) + Freecooling type air-conditioner units
	Containment	Hot and cold aisle isolation	NA
	Cooling capacity	25kW per unit, 3+1 redundancy	12.5kW per unit, 1+1 redundancy
	Refrigerant	R410A	R407C
	Humidity	Build-in humidification function	Direct air free cooling
Environmental requirements	Operation temperature	-40°C ~ +55°C	-20°C ~ +40°C
	Operation humidity	5% to 95% relative humidity	
	Altitude	<4000m	<3000m
Fire control	Type	Automatic fire detection & suppression system c/w emergency release function	
Size	Dimensions (L x W x H)	12192mm x 2438mm x 2896mm	6058mm x 2438mm x 2896mm
	Total IT load	40kW	8kW
	Typical cabinet capacity *	Support 8 CT cabinets	Support 4 CT cabinets

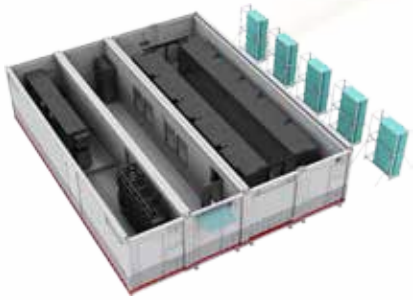
* -40°C to -20°C conditions should use low temperature air conditioner, some parameters will change.
CT cabinets and equipments are excluded in standard configurations.

Prefabricated Data Center

FusionModule1000B Prefabricated Modular Data Center

Introduction

HUAWEI FusionModule1000B is an advanced, modular designed and prefabricated data center infrastructure facility solution to house, power and manage modern IT and CT equipments with simple, green and reliable power & environment system. HUAWEI FusionModule1000B Prefabricated Modular Data Center includes an integrated power system for both AC and DC, energy-saving water-cooled or air cooled in-row cooling system, automatic fire detection & suppression system and intelligent management system for infrastructure facilities, becoming a superior alternative to traditional data center structures.



FusionModule1000B Air-cooled DX Application

Application Scenarios

- IT Scenario: Modular UPS and water cooled or air cooled cooling system to house IT equipments
- CT Scenario: Rectifier and air cooled cooling system to house CT equipments
- IT-CT Co-existence Scenarios: one site with and air cooled cooling system to house both IT and CT equipments.

FusionModule1000B Chilled Water-cooled Application

Features & Value

Simple

- HUAWEI core components; standard solutions 8 weeks lead time
- A prefabricated solution, deploy time shortened by 50% at least.
- ISO shipping container dimensions, and transportation cost reduced by 50%

Efficient

- Standard density up to 15kW/rack and maximum 30kW/rack customizable
- Free cooling technology supported, saving 10% TCO at least in comparison with traditional DC
- Multiple scenarios supported: IT, CT and IT-CT co-existence.

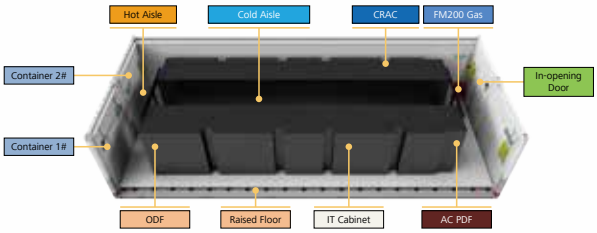
Reliable

- 25-year service life; IP55 water and dust proof
- Unique NEBS GR63 Zone3 anti-seismic (equivalent to 9 degree anti-seismic intensity) and 120-minute fire rating
- Comply with UPTIME TIER and TIA942 topology

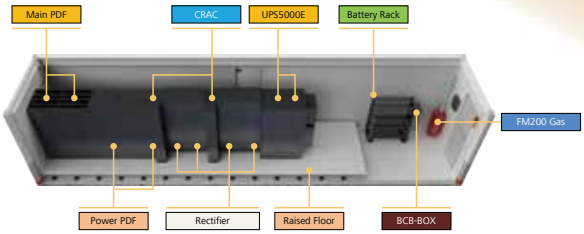
FusionModule1000B IT-CT Co-existence Scenarios

Specifications

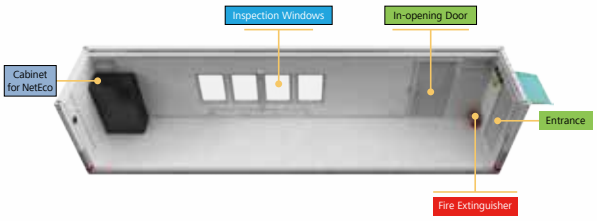
Equipment Container



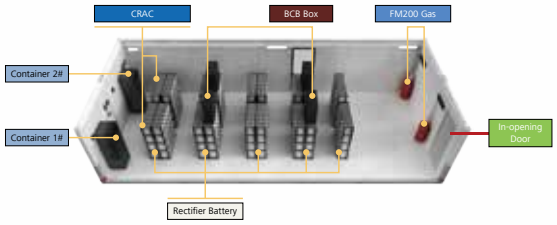
Power Container



Central Control Container



Battery Container (Optional)



Component	Features	
Power	Input power	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	Power component	IT: HUAWEI UPS5000E; CT: HUAWEI TP48 Series Rectifier
	Power density per rack	Air cooled cooling: 3kW~10.5kW; Chilled water cooling: 3kW~15kW
	Battery Management	Optional HUAWEI iBattery
Cooling- DX System	Cooling Technology	HUAWEI NetCol5000A air-cooled in-row air conditioner, N+1
	Structure	Cold/hot aisle containment
	Cooling capacity per unit	NetCol5000A020: 20kW; NetCol5000A035: 35kW
	Size (H x W x D)	NetCol5000A020: 2000mm x 300mm x 1000mm NetCol5000A035: 2000mm x 600mm x 1000mm
	Fan type	EC Fans
	Refrigerant	R410A
Cooling- Chilled Water System	Cooling technology	HUAWEI NetCol5000C chilled water in-row air conditioner, N+1
	Structure	Cold/hot aisle containment
	Cooling capacity per unit	30kW
	Size (H x W x D)	2000mm x 300mm x 1000mm
	Fan type	EC Fans
	Refrigerant	R134A
	Compressor	Scroll Compressor

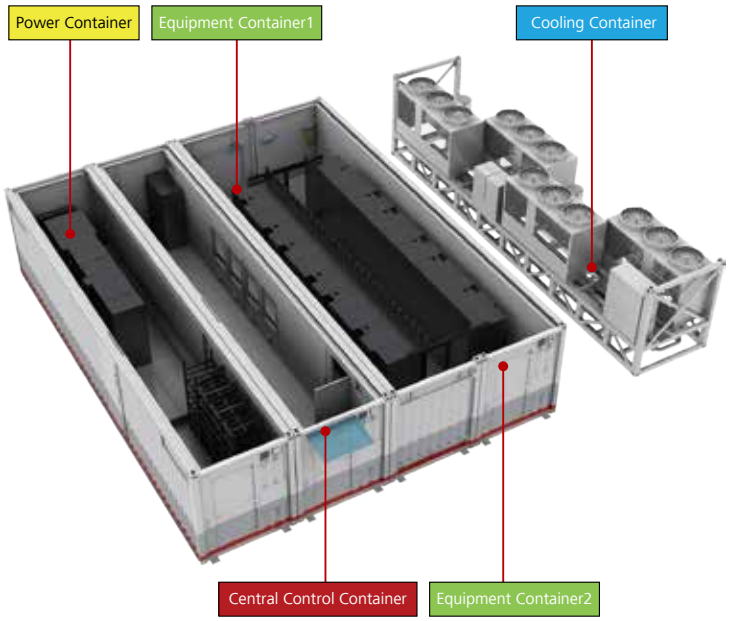
Specifications

Component	Features	
Design Operation Parameters	Water and Dust Proof	IP55
	Temperature	-40°C~+52°C*
	Relative Humidity	10%~100%
	Altitude	Maximum 3000m
Dimensions	Equipment Container (L x W x H)	12192mm x 2438mm x 2896mm
	Cooling Container (L x W x H)	12192mm x 2438mm x 2896mm
	Power Container (L x W x H)	12192mm x 2438mm x 2896mm
	Central Control Container (L x W x H)	12192mm x 2438mm x 2896mm
	Battery Container (L x W x H)	12192mm x 2438mm x 2896mm
	Rack	IT Equipment Container: 19′ 42U racks
		CT Equipment Container supports third party racks
Fire Detection & Suppression	Fire Extinguishing Agent	Standard: FM200; Optional: Novec1230
	VESDA	Standard in Equipment Container, Power Container and Battery Container
	Hydrogen Detection and Discharge System	Standard in Power Container and Battery Container
	Insulation	100mm Rockwool Sandwich Panel
	Fire Rating	120 minutes
Security	Container Access	Standard IC card access, customizable multifunction (fingerprint, password and IC card) access
	Rack Access	Customizable IC card access
	Video Surveillance	HUAWEI HR IP Camera, connected to HUAWEI NetEco
Availability	IT Scenarios	Optional between 2N and N+X
	CT and IT-CT Co-existence	Standard: 2N
	Standard Compliance	Comply with UPTIME TIER and TIA942 Topology

*+45°C ~ +52°C tropical conditions should use high temperature air conditioner, -40°C ~ -15°C conditions should use low temperature air conditioner, some parameters will change.

Specifications

Chilled water cooling, UPS Power



Two Equipment Container Solution

Four Equipment Container Solution

Six Equipment Container Solution

Chilled Water Cooling, UPS Power, 2N Scenarios Configuration

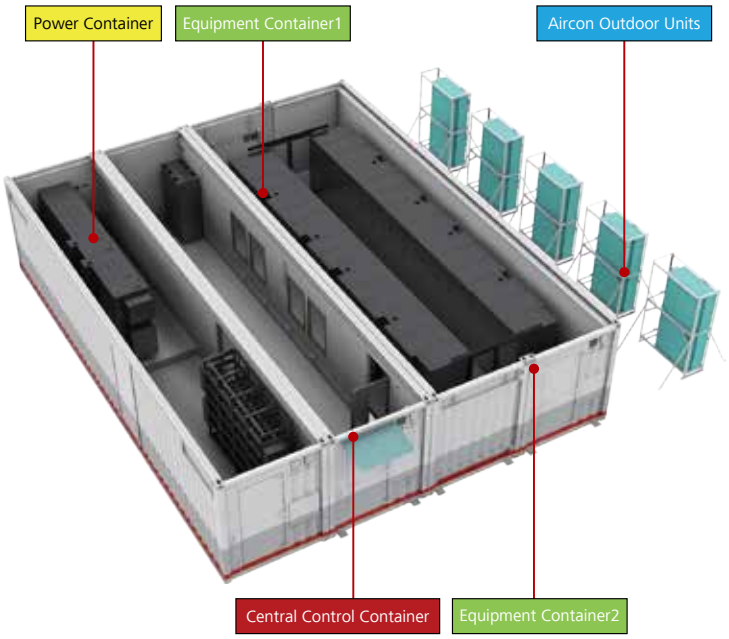
Scenario Category	Equipment Container	Power Container (2N)	Central Control Container	Cooling Container	Qty of Racks	Maximum Power Density, kW
Chilled Water Cooling IT-2N	2	1	1	1	18	15
	2	1	1	1	24	9
	4	1	1	1	52	6
	6	1	1	1	84	3.5

Chilled Water Cooling, UPS Power, N+X Scenarios Configuration

Scenario Category	Equipment Container	Power Container (N+X)	Central Control Container	Cooling Container	Qty of Racks	Maximum Power Density, kW
Chilled Water Cooling IT-N+X	2	1	1	1	18	15
	2	1	1	1	24	9
	4	1	1	1	52	6
	6	1	1	1	84	3.5

Specifications

Air-cooled DX Cooling, UPS Power



Two Equipment Container Solution

Three Equipment Container Solution

Four Equipment Container Solution

Six Equipment Container Solution

Air-cooled Cooling, UPS Power, 2N Scenarios Configuration

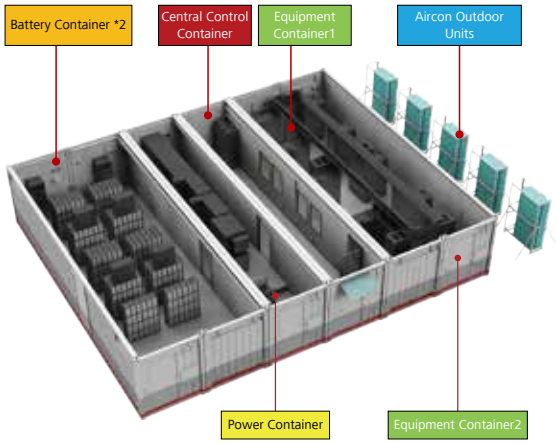
Scenario Category	Equipment Container	Power Container (2N)	Central Control Container	Qty of Racks	Maximum Power Density, kW
Air-cooled DX Cooling IT-2N	2	1	1	20	10.5
	3	1	1	34	6.5
	4	1	1	44	6.5
	4	1	1	20+24	10.5+3
	4	1	1	48	5
	6	1	1	78	3

Air-cooled Cooling, UPS Power, N+X Scenarios Configuration

Scenario Category	Equipment Container	Power Container (N+X)	Central Control Container	Qty of Racks	Maximum Power Density, kW
Air-cooled DX Cooling IT-N+X	2	1	1	20	10.5
	4	1	1	44	6.5
	4	1	1	48	5
	6	1	1	78	3

Specifications

Air-cooled Cooling, Rectifier Power



Two Equipment Container Solution

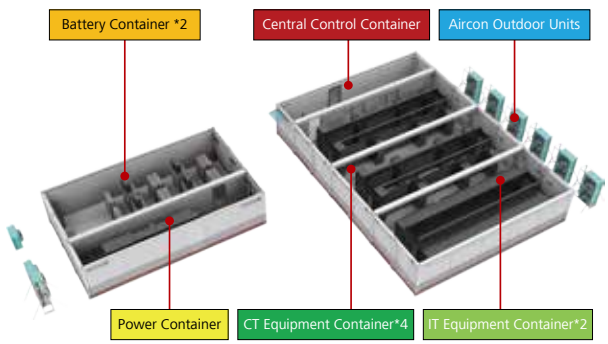
Four Equipment Container Solution

Six Equipment Container Solution

Air-cooled DX Cooling, Rectifier Power, 2N Scenarios Configuration

Scenario Category	Equipment Container	Battery Container	Power Container (2N)	Central Control Container	Qty of Racks	Maximum Power Density, kW
Air-cooled CT-2N	2	2	1	1	22	6.5
	4	2	1	1	48	3
	6	2	1	1	72	3

Air-cooled DX Cooling, Rectifier and UPS Power



Air-cooled Cooling, Rectifier and UPS Power, 2N Scenarios Configuration

Scenario Category	Equipment Container	Battery Container	Power Container (2N)	Central Control Container	Qty of Racks	Maximum Power Density, kW
Air-cooled ICT-2N	6	2	1	1	72	3

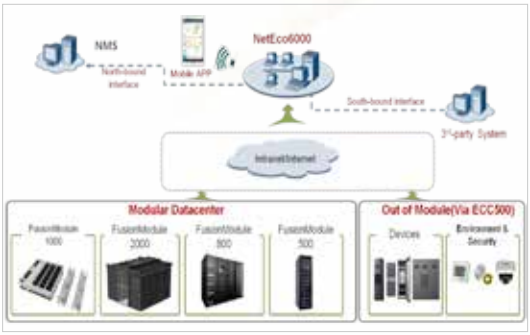
Data Center Facility Management System

NetEco6000

Introduction

NetEco6000 is a new generation data center management system launched by Huawei. It manages the real-time data and status of data center facility, including power, environment, air conditioner CCTV, access etc and generates alarms if any fault occurs.

NetEco6000 could support remote management by PAD, and provide functional assets, capacity, energy efficiency, alarms, reports, etc., to give you convenience and good experience.



Application Scenarios

- Large DC: ISP, Operators , Headquarter of Banks, Cloud DC etc.
- Multiple DC: Bank branches, Rail transportation, etc.

Value & Benefit

Simple

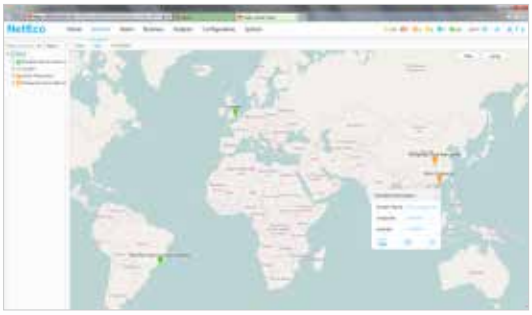
- Simple Delivery
  Pre-installation, automatically upload devices' parameters, reduce 90% debugging time
- Simple Usage
  UI design based on scenarios, simple web interface & APP, simple operation
- Simple Expansion
  Online expansion

Efficient

- Efficient Resource Usage
  Asset life-cycle management, balanced planning of power, cooling and space, full utility of capacity resource in data center
- Efficient O&M
  Remotely update device software, automatically filter invalid alarms, guide maintenance process, automatically push maintenance report

Reliable

- Reliable Data Center
  Collect data every second, pre-alarm for component, fast fault location
- Reliable System
  Data encryption during analysis, transmission and storage, reinforcement design of OS and DB, anti-virus and vulnerability scanning test



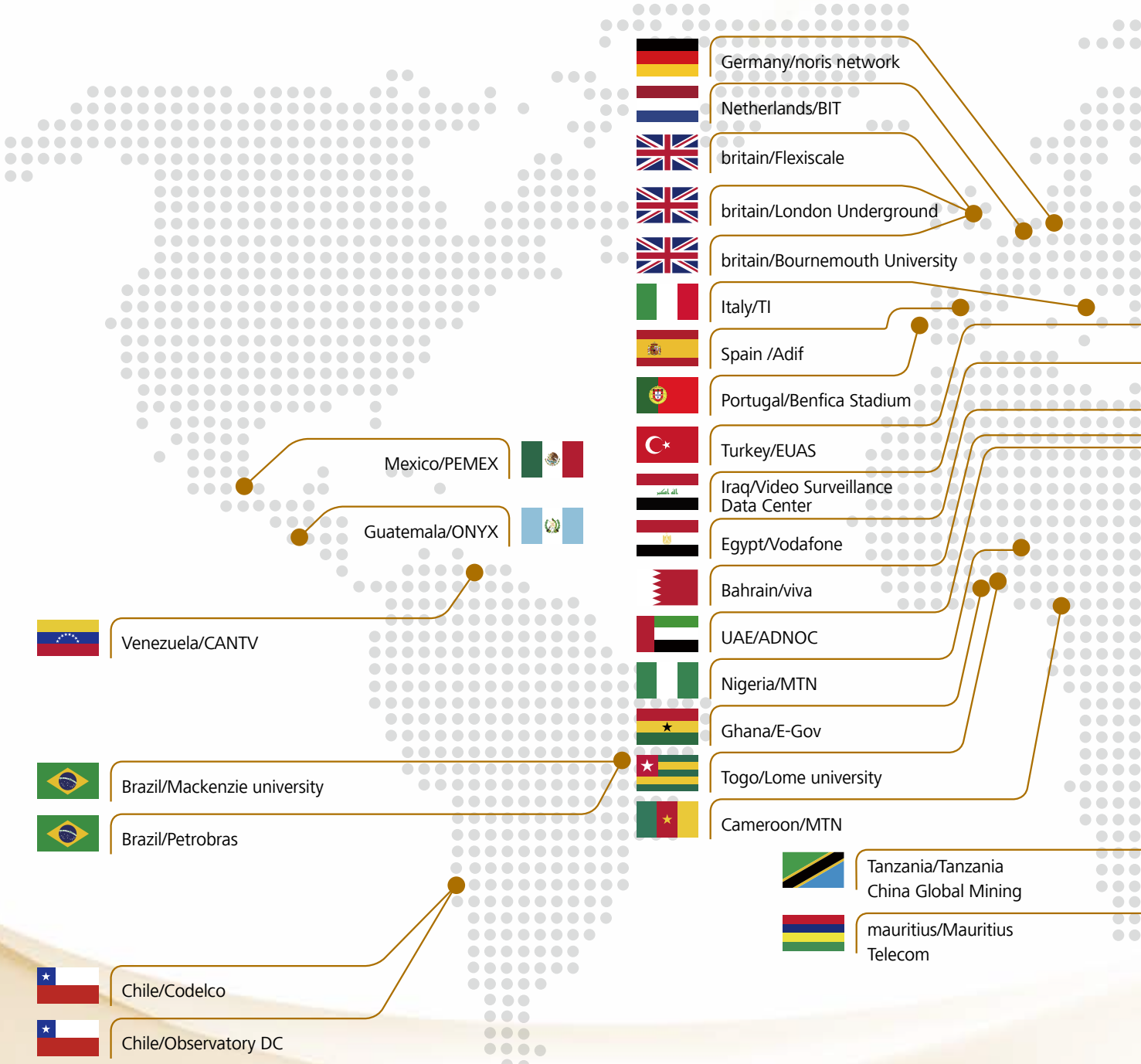
Specification & Feature

Items	Specification		
System Capacity	RH2288 simple configuration	RH2288 medium configuration	RH5885 high configuration
	500 smart nodes 20,000 parameters	1000 smart nodes 100,000 parameters	5000 smart nodes 400,000 parameters
Platform Function	B/S, online help		
Networking Solution	IP Networking		
Southbound interface	SNMP \ Modbus etc		
Northbound interface	SNMP \ Webservice \ C interface etc		
ECC500	Maximum support 20 RS485 communication interfaces or 128 AI / DI access (chosen Independent Deployment AI/DI Module)		

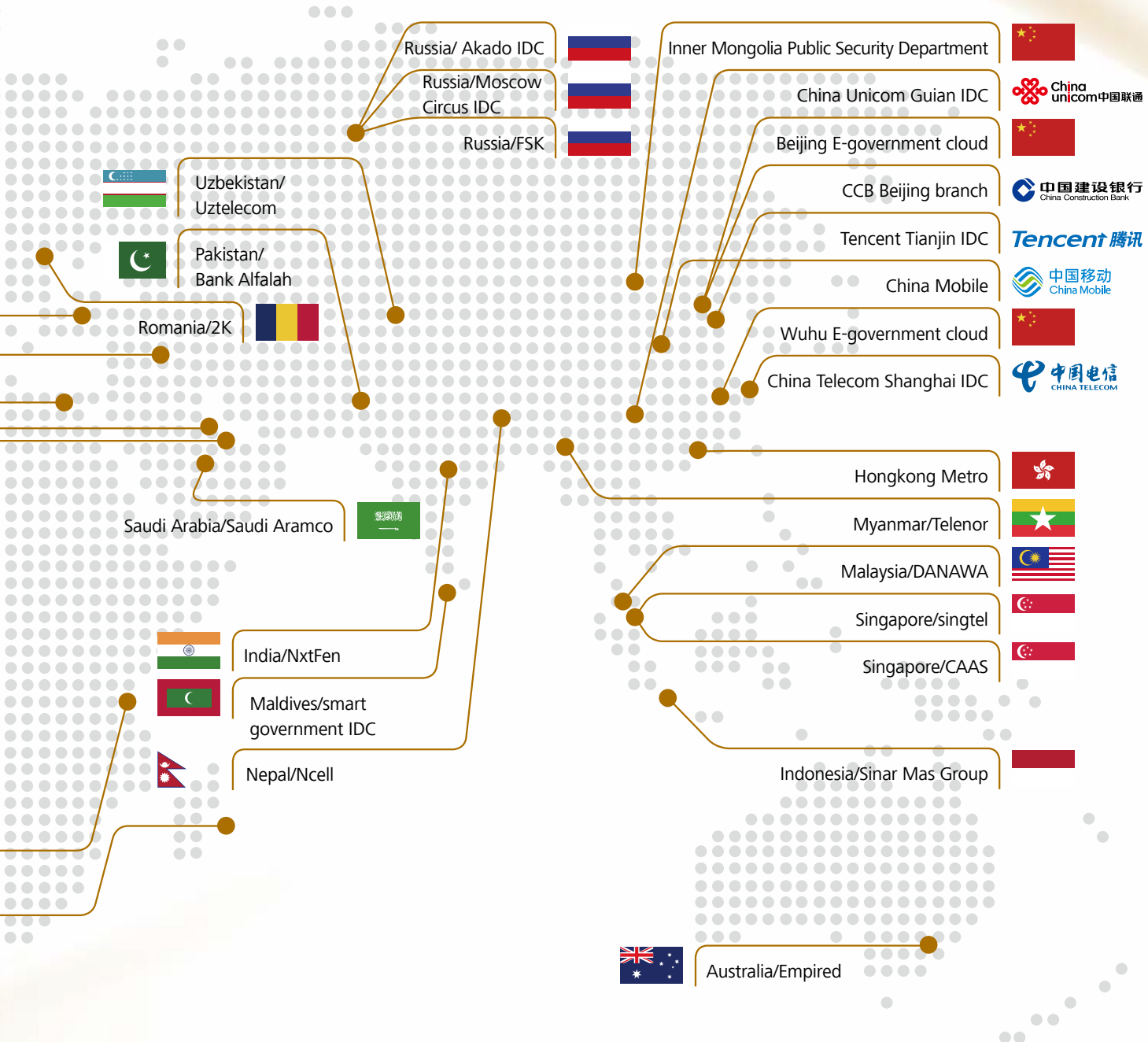
Items	Features
Real-time Monitoring	GIS site Map ,real-time monitoring, 2D/3D GUI, customized real-time counter subscription and my workspace
Alarm Mgmt.	3 Level warnings, alarm collection and storage, alarm browse, alarm notification, alarm processing, alarm setting, dry contact alarm management, alarm masking and alarm thresholds setting
Configuration Mgmt.	Controller discovery, graphical drag and drop site configuration, batch DC copy and batch parameters modification, configuration data export to EXCEL
Data Mgmt.	NetEco6000 and database support automatic backup and recovery NetEco6000 Historical data is saved for 30 days by default , automatically covered Daily Report data is saved by default 90 days , the monthly report data saved by default 2 years , the annual report data saved by default for 5 years Alerting data retention period can be set to the default 100 days Log data retention period can be set to the default 100 days
Report Mgmt.	Historical data collection, query, statistical analysis, report management; customized report, automatic periodic report
Security Mgmt.	Network security management, role and operation authority management, user and password management, operation authentication, log management, CCTV and Access centralized management
Optional Features	Capacity Mgmt, APP, Energy efficiency management, iBMS, Power distribution system and Chiller water system management, etc.

Global Applications

The offerings in the Huawei data center facilities solutions have been successfully applied in China Unicom Guian IDC, Myanmar Telenor, London Underground, Mexico PEMEX, etc.



By the end of 2016, Huawei has deployed 830 data centers and 420 cloud data centers across the world.



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