




Digital O&M for Autonomous Driving Data Center Infrastructure Management System

iManager NetEco

 redot winner 2020



iManager NetEco

Data Center Infrastructure Management System

Product Overview

The NetEco6000 is a data center infrastructure management system developed and continuously updated by Huawei. By managing power supply and distribution devices, cooling devices, and the operating environment of equipment rooms, it provides highly reliable O&M and refined operation experience, and maximizes the efficiency and value of data centers.

Application Scenarios

- Medium and large data center
- Outdoor prefabricated data center
- Micro/Small data center

Value & Design Concept

Digital Visualization

Digital visualization and intelligent base for ultimate experience and overall control

Intelligent Operation

Asset lifecycle management and intelligent capacity planning, improving resource utilization by 20%

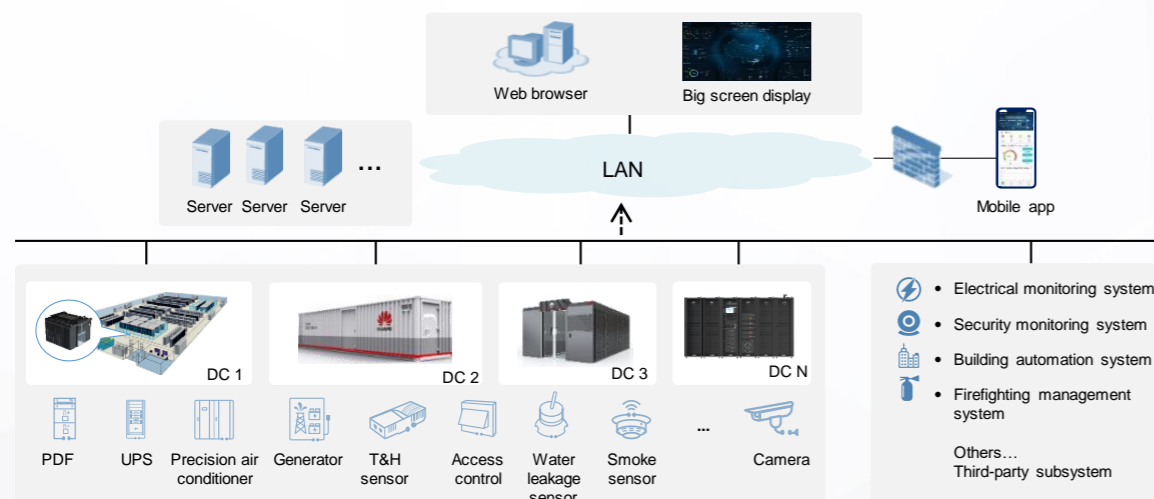
Intelligent Maintenance

Digital and intelligent O&M, improving O&M quality and efficiency and reducing O&M costs by 35%

AI PUE Optimization

iCooling-enabled intelligent optimization of system-level energy efficiency, reducing PUE by 8% to 15%

System Architecture



Basic Parameters

Category	Specifications	Remarks
Deployment Mode	Single server, cluster server, and VM (FusionSphere or FusionCompute)	
Operating System/Database	EulerOS/GaussDB, Huawei developed	
Management Capability	≤ 3 million monitoring points (about 15,000 cabinets), supporting capacity expansion	
Number of Online Users	≤ 100	
Data Storage	Default 1 year, maximum support 3 years	

Features Overview

Category	License	Feature	Remarks
Basic Features	NA	Device Monitoring, Big Screen Display, Alarm Management, Power Link Visualization, Cooling Link Visualization, Report Management, Energy Efficiency Analysis.	
Platform Interface	Southbound Interface Northbound Interface	Device/System Integration (including video, access control, fire extinguishing, HVAC, and power supply and distribution)	
Optional Features	Temperature Nephogram	Temperature Map	
	3D View-Lite	3D View-Lite	
	Customized large screen	Professional large-screen engine, supporting flexible customization	
	Basic Maintenance	Personnel and Shift Management, Electronic Inspection, App O&M, Knowledge Library, and O&M Process Management	
	Digital Maintenance	Personnel and Shift Management, Electronic Inspection, App O&M, Knowledge Library, O&M Process Management, Conserve, Repair Management, Routine Drill, Entry and Exit Registration, and Supplier Management	Select one from the two.
	AI Predictive Maintenance of Circuit Breaker	Breaker Health Prediction and Circuit Breaker Setting Analysis	
	AI Predictive Maintenance of Power Facility	Temperature Prediction, Fault Impact Analysis of Power Supply Links	
AI Predictive Maintenance of Energy Storage	Lithium Battery Health Prediction		
Intelligent Operation	Asset Management, Capacity Management, Tenant Management, Warehouse Management, and Automatic Detection of U Space		
Cooling Optimization	AI PUE Optimization, Energy Efficiency Analysis		

Digital Visualization Module

License	Feature	Description	Value	Content	
Basic Features	Device Monitoring	Real-time monitoring of data center infrastructure.	Topology of the power and cooling system.	<ul style="list-style-type: none"> Monitor data center infrastructure in real time, such as power equipment, cooling equipment, sensors, etc. Can centrally manage multiple data centers. 	
	Big Screen Display	Display the KPI on the splicing LCD.	Professional big screen display	<ul style="list-style-type: none"> You can flexibly display the alarm, energy efficiency, capacity and O&M dashboards on the big screen 	
	Alarm Management	Viewing and Handling Alarms.	Alarm masking rules that support multiple conditions.	<ul style="list-style-type: none"> Supports alarm browsing, query, masking, redefinition and threshold setting. Notification methods include SMS, phone, email and WeChat. Supports the expert experience library to record alarm handling experience and suggestions. 	
	Power Link Visualization	Displays the operating status of the power system.	Accurately locate problems and reduce repair time.	<ul style="list-style-type: none"> Automatically generate power links, which can be customized and show power flow. You can click the device or alarm icon on the link to quickly jump to view. 	
	Cooling Link Visualization	Displays the operating status of the cooling system.	Shortens the emergency handling duration and improves reliability.	<ul style="list-style-type: none"> The flow direction can be displayed on the link, which can be defined. You can click the device or alarm icon on the link to quickly jump to view. 	
	Report Management	Statistics and analysis of platform data.	Supports report customization and create scheduled report tasks.	<ul style="list-style-type: none"> Built-in report templates, such as asset reports, capacity reports, energy consumption reports, etc. The content, logo, etc. of the report can be customized. Reports can be sent to designated users regularly. 	
	Energy Efficiency Analysis	Statistical analysis of data center energy efficiency indicators.	The calculation method of energy efficiency indicators can be customized, and different levels of PUE calculations are also provided.	<ul style="list-style-type: none"> Supports different levels of PUE and historical curve analysis such as data center, room and smart module. The threshold and reference value of PUE can be set, and an alarm is generated when PUE is too high. Electricity cost calculation supports multistep electricity price. Identify abnormal cPUE and energy consumption. 	
	Fault Analysis	Simulates and analyzes the service scope affected by a device fault.	Links can be analyzed in a dynamic manner, supporting real-time analysis and pre-drill.	<ul style="list-style-type: none"> Analyzes the impact of device alarms and displays the impact scope on power distribution links. Supports fault simulation pre-drill and displays the impact. 	
	Temperature Nephogram	Temperature Map	Monitors the temperature field in the equipment room to quickly identify hot spots.	The data is accurate, which is collected by the sensor in real time.	<ul style="list-style-type: none"> Supports three-layer temperature maps and automatically identifies top 5 hot spots. Displays 2D or 3D temperature maps. Adjusts the range of temperature rendering colors.
	3D View -Lite	3D View-Lite	Provides 3D views of data centers.	The built-in 3D engine enables seamless integration and one-click switch between 2D and 3D views.	<ul style="list-style-type: none"> Provides multi-layer 3D views of data centers, smart modules, and cabinets. Automatically generates 3D views based on the floor plan. Displays the SPC capacity information and temperature maps in 3D mode.
Customized large screen	Large-screen customization	Provides a personalized customization tool for large-screen data to meet customers' personalized requirements.	Professional large-screen engine, supporting flexible customization	<ul style="list-style-type: none"> Supports personalized customization of large screens, such as data statistics rules and display modes. Allows users to set the theme and color of large screens. 	
Southbound Interface/Northbound Interface	Device/System Integration	Provides access capabilities for video, access control, fire extinguishing, HVAC, and power supply and distribution systems.	Multiple subsystems have been pre-integrated.	<ul style="list-style-type: none"> Provides standard southbound and northbound interfaces. Monitors performance and alarm information reported by subsystems. Pre-integrates with multiple subsystem suppliers, enabling quick delivery. 	

Intelligent Maintenance Module

License	Feature	Description	Value	Content
Basic Maintenance & Digital Maintenance	Personnel and Shift Management	Manages O&M personnel and shift.	O&M tasks can be automatically dispatched based on the shift plan.	<ul style="list-style-type: none"> Configures basic information, positions, and agent groups for O&M personnel. Provides a shift calendar to quickly view the shift time of each work group. Allows users to set shift plans, shift handover plans, and personal shift adjustment plans. Collects and analyzes abnormal shift handover data.
	Electronic Inspection	Supports electronic and mobile routine inspection of equipment rooms.	Inspection templates are provided to share expert experience, reducing inspection skill requirements.	<ul style="list-style-type: none"> Allows users to plan inspection tasks and create inspection templates, such as inspection contents, sequence, methods, reference values, and precautions. Automatically receives inspection tasks through the mobile app and invokes inspection content through QR codes or NFC to standardize the inspection process. Generates equipment room inspection reports.
	App O&M	Supports remote access through mobile phones.	App permission control is supported and inspection data can be cached offline.	<ul style="list-style-type: none"> Allows users to view active alarms, PUE, and device parameters on the app. Allows users to view and process O&M tasks. Allows users to record, bind, check, and count assets.
	Knowledge Library	Summarizes and shares O&M experience and technical documents.	The expert review mechanism ensures the quality of knowledge cases.	<ul style="list-style-type: none"> Allows users to upload routine O&M experience and technical documents to the knowledge library. Allows users to comment on, share, favorite, and reference knowledge items.
	O&M Process Management	Provides O&M process management based on ITIL standards and traces the data center O&M process throughout the management process.	ITIL standards and data center O&M process	<ul style="list-style-type: none"> Supports process management such as problem, event, change, and risk management, and allows users to create, approve, and process work orders for tracing tasks. Collects statistics on and analyzes trends of processes such as problems, events, changes, and risks. Automatically prompts users to create risk work orders for abnormal inspection items.
	Digital Maintenance	Conserve	Routinely maintains devices in the equipment room.	Maintenance statistics and calendars are supported.
Repair Management		Manages and tracks the repair process throughout the process.	Guidance is provided for device maintenance to avoid misoperations.	<ul style="list-style-type: none"> Allows users to create, approve, and urge repair process orders. Tracks the repair work order status throughout the process, for example, periodically pushes the repair status.
Routine Drill		Performs drills for various emergencies.	Drill templates can be customized.	<ul style="list-style-type: none"> Supports the formulation of emergency drill plans, periodically triggers tasks, reminds users, and tracks the task status throughout the process. Collects statistics on the trend of emergency drill tasks.
Entry and Exit Registration		Registers and manages the entry and exit of personnel and goods from the equipment room.	Personnel and goods are strictly controlled.	<ul style="list-style-type: none"> Supports registration of basic personnel information, goods carried, access areas, and visitors. Supports query of historical records.
Supplier Management		Displays basic information and scoring management of solution suppliers.	Users can define scoring rules, contents, and tasks.	<ul style="list-style-type: none"> Supports basic supplier information and classification management. Allows users to customize supplier scoring content and rules. Supports users to create supplier scoring tasks and scoring statistics.
AI Predictive Maintenance of Circuit Breaker		Breaker Health Prediction and Circuit Breaker Setting Analysis	Analyzes the setting value of the circuit breaker online and predicts the health status based on AI technologies.	AI technology replaces manual experience, improving the service life of circuit breakers and power supply reliability.
AI Predictive Maintenance of Power Facility	Temperature Prediction	Predicts the contact temperature of power distribution facilities based on AI technologies.	AI-based dynamic load prediction enables users to identify risks in advance and prevent accidents.	<ul style="list-style-type: none"> Presets temperature curve models that support AI deep learning. Provides fault warning and alarm analysis based on the real-time temperature, current-carrying capacity, and ambient temperature of the power distribution cabinet of the power module.
	Fault Impact Analysis of Power Supply Links	Analyzes faults in a visualized manner based on electrical single-line links and AI technologies.	AI-based analysis models provide analysis support.	<ul style="list-style-type: none"> Allows users to discover and make reasonable decisions. Facilitates analysis based on manual simulation. Analyzes the impact scope after a fault occurs to provide support for emergency handling.

Intelligent Maintenance Module

License	Feature	Description	Value	Content
AI Predictive Maintenance of Energy Storage	Lithium Battery Health Prediction	Predicts the health of lithium batteries based on AI technologies.	Precise prediction is supported based on AI technologies and analysis of deep battery charge and discharge.	<ul style="list-style-type: none"> Accurately predicts lithium battery capacity and backup time. Allows users to view battery charge and discharge records.

Intelligent Operation Module

License	Feature	Description	Value	Content
Intelligent Operation	Asset Management	Manages allocated and inventory assets.	The built-in IT device model library enables users to manage asset status throughout the lifecycle.	<ul style="list-style-type: none"> Supports lifecycle management of allocated and inventory assets, and records the inbound, allocation, relocation, unallocation, repair, and return processes of assets. Allows users to record asset attributes, including the device model, department, and maintenance information, and to customize attributes. Provides a device model library with built-in IT device model information of top <i>N</i> vendors in the past three years.
	Capacity Management	Collects and analyzes capacity resource usage data of data centers.	Automatic detection of U spaces enables intelligent allocation planning.	<ul style="list-style-type: none"> Provides historical curve analysis, dashboards, and capacity reports for SPCN capacity usage. Manages IT device connections, such as power connections to rPDUs and network connections to switches. Recommends installation positions based on factors such as SPCN, customer ownership, and service division. Supports automatic generation of allocation and unallocation work orders and interconnection with the ITSM to obtain service requirement order information.
	Tenant Management	Manages data center tenants and resource leasing.	Cabinet resources can be allocated and tenant groups can be analyzed to match colo scenarios.	<ul style="list-style-type: none"> Supports allocation, pre-allocation, and resource statistics of area, cabinet, and U space resources. Analyzes the status and trend of the data center leasing rate. Analyzes VIP customers and customer groups to understand resource leasing preferences. Identifies tenants whose electricity consumption exceeds the limit and lists detailed records. Identifies tenants whose leases expire or lease rates are high, facilitating precision marketing.
	Warehouse Management	Manages the devices, spare parts, consumables, and tools in the warehouse.	In-stock assets are managed to ensure full lifecycle management of assets.	<ul style="list-style-type: none"> Manages the asset inbound, outbound, and claiming processes. Supports collection of inventory statistics and provides a message for spare parts and consumables with insufficient inventory, consumables whose validity period is about to expire, and spare parts and consumables whose outbound period is about to expire.
	Automatic Detection of U Space	Automatically identifies asset locations through the U space manager.	The accuracy of U space capacity management is 100%.	<ul style="list-style-type: none"> Automatically identifies the installation positions of devices in each cabinet. Automatically collects statistics on the available capacity of each cabinet. Accurately traces asset changes in the equipment room in real time.

AI PUE Optimization Module

License	Feature	Description	Advantages	Content
Cooling Optimization	AI PUE Optimization	Adjusts the cooling system based on AI technologies to reduce power consumption.	The iCooling, AI algorithm-based technology, is used.	<ul style="list-style-type: none"> Dynamically adjusts the running status of the chilled water system to ensure that the system works under optimal working conditions and reduce the power consumption of data centers by 8% to 15%. Applies to air-cooled chilled water systems, water-cooled chilled water systems, EHUs, and liquid cooling systems*, and has pre-integrated with BMSs from multiple suppliers. Allows users to set SLA constraints. <p><small>Note: In the liquid cooling scenario, confirm the liquid cooling product model with the Huawei contact person.</small></p>



Huawei Digital Power

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Huawei Digital Power Technologies Co., Ltd.
 Huawei Digital Power Antuoshan Headquarters,
 Futian District, Shenzhen
 518043
 digitalpower.huawei.com