



Monitor Manage Maximize

Redefining data center optimization

Immersive software, innovative sensors and expert thermal services to optimize critical facilities



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Critical Things®

INTEGRATED SENSOR TECHNOLOGY

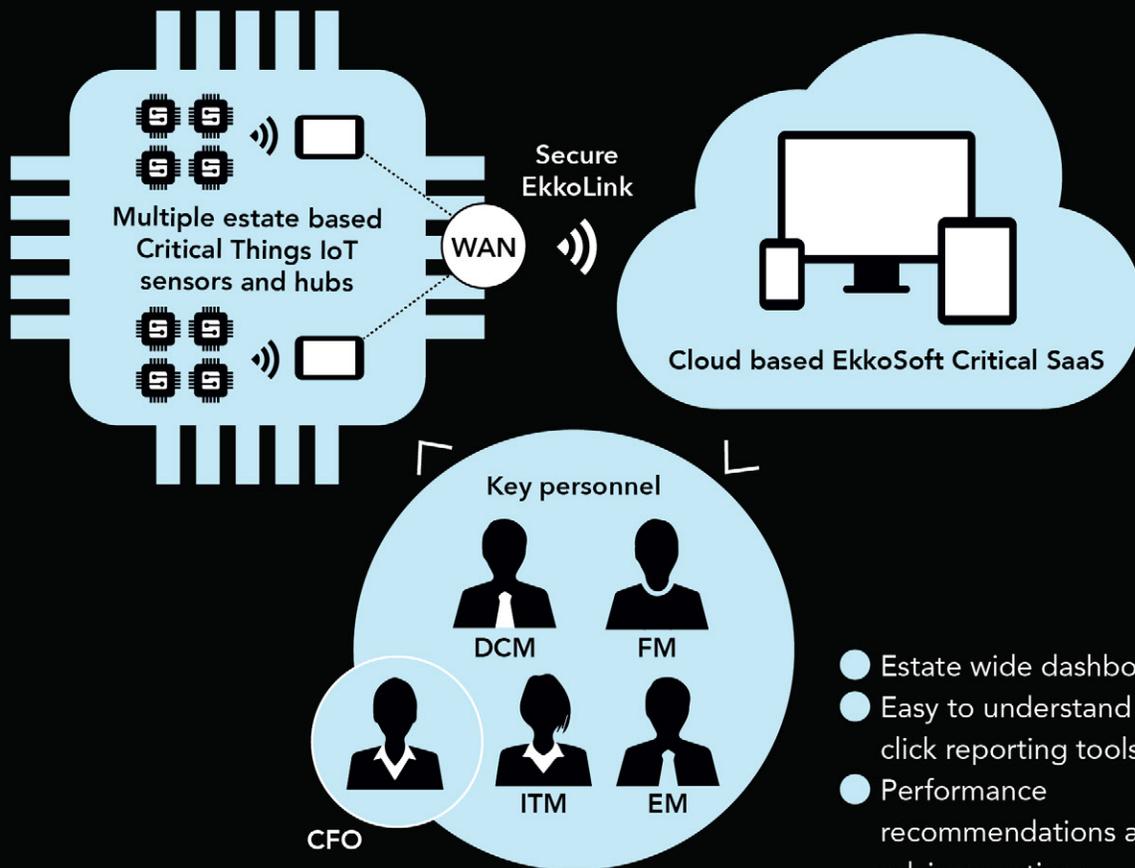
- € Internet of Things (IoT) enabled family of wireless thermal sensors
- € Ultra-low cost sensors with 5 year battery life
- € Unique cooling duty meter to show cooling utilization for any CRAC/AHU
- € Integration with 3rd party BMS and power logging systems
- € Secure, encrypted data transmission



EkkoSoft® Critical

MONITOR MANAGE MAXIMIZE

- € Simple to deploy and easy to use
- € Immersive interface with real-time monitoring and alerting
- € Estate wide dashboard for site performance comparisons
- € Unique AI based cooling analytics
- € Intuitive M&E capacity planning
- € Cooling Advisor and autonomous control to drive energy savings



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The EkkoSense® Effect



Thermal Risk Removed



Cooling issues still account for almost a third of unplanned data center outages.

EkkoSoft Critical provides 100% rack-level ASHRAE thermal compliance, significantly reducing risk.

Energy Costs Reduced



Even the best run data centers still have cooling power and capacity issues and cooling is the second largest energy consumer.

EkkoSoft Critical has provided the platform for 24% average cooling energy savings with an ROI of 10 months.

Capacity Increased



The majority of data centers are typically only running at 34% cooling capacity.

EkkoSoft Critical provides real-time insights to quantify true cooling capacity and stop unnecessary spend on new cooling systems.

Trusted by

CBRE



Telefonica



VISA

Bloomberg



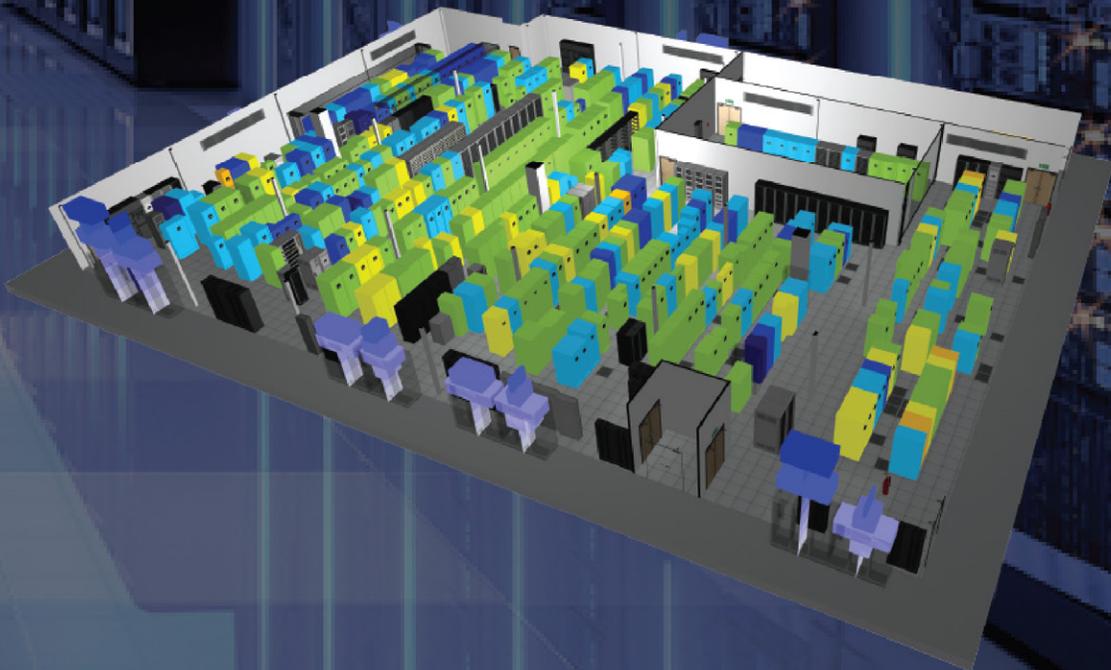
DIGITAL REALTY



EkkoSoft® Critical
MONITOR MANAGE MAXIMIZE

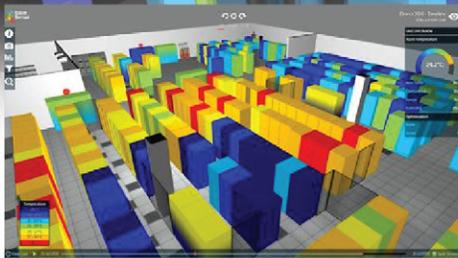
Powerful 3D visualization software makes the real-time monitoring and planning of power, cooling and space a reality

Rapidly model environments in the 3D room builder, quickly gather thermal insights with intuitive visualizations and enable true real-time M&E Capacity Planning for data center power, cooling and space.



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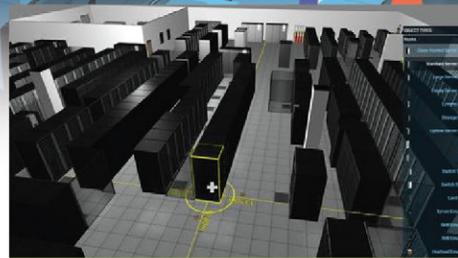
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Monitor

EkkoSoft Critical features intuitive visualization capabilities, enabling performance insights into data center power and cooling performance to help manage risk and maximize operational capacity. Key features include:

- Live 3D views make it easy to support real-time thermal decision-making, covering all aspects of your data center estate's performance including intuitive thermal overviews, cooling, power and space capacity.
- Estate Page dashboards give operations teams the control needed to see exactly how their entire estate is performing, with both site and room-level visibility.
- Comprehensive EkkoSoft Critical Reporting means you get to see exactly how your estate is operating, with highlighted performance metrics as well as alerts for potential power and cooling issues.
- Integrated Site Leader Board to show each location's temperature, compliance and PUE performance.



Manage

EkkoSoft Critical enables true real-time M&E Capacity Planning for power, cooling and space - at a fraction of the cost of expensive and complex DCIM solutions. Capabilities include:

- Powerful Capacity Planning features, comprehensive Ticketing and Future Capacity support, as well as the ability to identify Power Allocation Variance and release stranded M&E capacity.
- A Rapid Room Builder feature that lets you quickly build, populate and edit your data center rooms in 3D, with a simple interface and a range of layouts including first person, plan, 3D views and power schematics.
- A unique Site Power View 3D power schematic feature that simplifies capacity management by showing detailed power usage across your estate by site, UPS, DC and cooling.
- 3D Visualization gives you a powerful 'drag and drop' M&E capability to track and manage actual and planned capacity changes, providing immediate insight into their impact on power, cooling and space capacity, as well as changes to thermal performance and ASHRAE compliance.



Maximize

EkkoSoft Critical combines the power of artificial intelligence with our range of Critical Things sensors to provide:

- Self-optimization through our Cooling Advisor module that utilizes EkkoAir data to guide operational changes to remove areas of thermal risk, improve compliance to industry standards and unlock 10%+ cooling energy savings in-house – simply by acting on advice.
- Real-time kWc cooling duty and airflows using EkkoAir, our unique vendor agnostic solution that highlights performance trends of critical equipment and uncovers failing or inefficient units.
- Powerful Zone-by-Zone Cooling Analytics that identify and provide updates on cooling effects to support improved resiliency and smarter capacity planning decisions.
- Accessible Point-in-Time views that quickly enable split screen comparisons to clearly identify the thermal changes before and after significant upgrade or optimisation works.



Integral software **Cooling Advisor** for user-optimized thermal performance

Unlocks 10%+ data center cooling energy savings in-house – simply by acting on recommendations

Embedded into EkkoSoft Critical, the company's unique Cooling Advisor functionality provides operations teams with focused cooling performance recommendations and advisory actions to help monitor, manage and maximize their data center's thermal performance.

Cooling Advisor is the industry's first advisory capability built right into the heart of a thermal optimization solution. Its clear recommended actions take advantage of EkkoSense's PhD-level optimization expertise, to deliver a powerful self-optimization capability that can unlock data center cooling energy savings of 10%+ simply by acting on recommendations.



Once activated within EkkoSoft Critical, Cooling Advisor works to:

- Identify data center floor tiles or grilles that need changing
- Provide guidance on immediate adjustments to cooling set points
- Advise on any Computer Room Air Handlers that aren't actively cooling, are in competition or that could be suspended or modified



Powerful real-time insights for comprehensive **Capacity Planning**

Providing space, power and cooling capacity planning – not just capacity reporting

EkkoSoft Critical's powerful 3D Capacity Planning capability is the most intuitive platform currently available for space, power and cooling capacity management.

Unlike the traditional limited capacity reporting offered by more expensive legacy DCIM systems, EkkoSoft Critical Capacity Planning offers true live capacity planning functionality.



Key Capacity Planning features include:

- Comprehensive Ticketing and Future Capacity – using our 3D Live View visualization to reserve space, power and cooling for future projects
- Ability to identify Power Allocation Variance – where racks might have locked-in power capacity they're not using
- Intuitive Power Allocation control supports adding new racks, adding capacity to existing racks, removing capacity from racks and removing existing racks entirely
- Full estate-wide or room-by-room Live 3D Views of your current space utilization, power usage and cooling capacity performance



Software-embedded **Site Power View** for user-optimized thermal performance

Unique 3D power schematic visualization simplifies capacity management by showing detailed **Power Usage** across your estate

Site Power View simplifies capacity planning by using a unique 3D power schematic visualization to display data center power usage in real-time. Site Power View delivers a detailed analysis of UPS, DC and Cooling power use both at an individual room level – as well as cumulatively across entire data center estates.

Site Power View directly addresses the requirement for real-time monitoring and planning of data center power. An immersive and intuitive graphical user interface provides both data center IT and facilities management teams with immediate insight into rack power usage and associated PDU utilization across their estate.



Visualization and Reporting at a fraction of the cost of traditional DCIM and BMS solutions:

- Easily track power usage at rack, room or estate level
- Unique 3D power schematic visualization simplifies capacity management
- Allows you to make immediate capacity decisions across connected rooms



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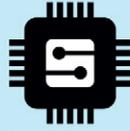
Ultra-low cost innovative sensors and flexible integration options for real-time thermal management

Easy to install Critical Things sensors and hubs provide rack level and cooling unit level thermal data via secure 128 bit AES encryption into the EkkoSoft Critical cloud based software.



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EkkoSensor

Wireless Sensors
The industry's first true Internet of Things-enabled family of wireless thermal sensors



Wireless Cooling Duty Sensor
Manufacturer-agnostic wireless sensor to provide real time tracking of cooling duty loads in kWc for any CRAC/AHU unit



EkkoHub

Wireless Data Receiver
Collecting and forwarding data from up to 500 wireless EkkoSensors within a 20m radius



EkkoLink

Data Aggregator
Receives data from EkkoHubs for secure forwarding to EkkoSoft Critical in the cloud





EkkoSensor

Wireless Temperature and Humidity sensors with optional display

EkkoSense® is the first Internet of Things-enabled family of wireless thermal sensors. It disrupts the traditional sensor cost model and makes the real-time thermal management of critical facilities a possibility.

Critical Things® sensors are compact, unobtrusive and cost effective enough to be deployed in large numbers – enabling higher spatial resolution right down to rack-level. The air temperature and humidity at each asset of interest is accurately measured and wirelessly transmitted using 128-bit AES encryption to provide critical monitoring visualization and analysis using EkkoSoft® Critical cloud based software.

EkkoSensors are self-contained, battery-powered and uniquely identified at manufacture making installation simple. The direct sensor-to-hub linkage, facilitates simple networking with predictable battery life and performance.

The TDX EkkoSensor includes a local display of key values along with configurable temperature alert thresholds. The screens can be cycled to show alert status, temperature profiles over the last hour, 24 hours and 7 days for quick thermal assessment on site.



EkkoAir

Wireless Cooling Duty Sensor

Track data center cooling loads in real-time.

EkkoAir Wireless is a unique, manufacturer-agnostic wireless sensor that provides real time cooling duty performance in kWc for any CRAC/AHU unit. It can be fitted in moments, allowing data center operators to monitor thermal instabilities across individual rooms as well as broader data centre estates.

EkkoAir Wireless is housed in a standard DIN rail mount enclosure with two compact temperature and humidity sensors that is remarkably easy to install and connect. The humidity-sensing element is protected with a PTFE membrane which avoids errors caused by dust. All fan current measurements are made using standard millivolt output current transformers. An opto-isolated 12V-24V AC input is provided. This can be used to monitor the operating status of the CRAC/AHU.

The EkkoAir Wireless transmits data at intervals of between 30 seconds and 10 minutes. Data can either be transmitted as an instantaneous value, or as the average from multiple measurements throughout the transmit interval ensuring that changes to AHU/CRAC operating conditions between transmissions are captured.



EkkoHub Wireless Data Receiver

EkkoHubs are designed to facilitate easy install being housed in a compact enclosure with a variety of mounting options.

The EkkoHub wireless data receiver can receive measurement data from up to 500 wireless EkkoSensors at greater than 20m distance. This data is then forwarded to the cloud based EkkoSoft® Critical visualization and analysis software over the WAN.

EkkoHubs are powered from a standard IEEE802.3af Power Over Ethernet interface, with local power also an option. Four LEDs on the front panel provide real time status information.

EkkoHub's radio interface is encrypted with 128-bit AES. Multiple EkkoHub units connect to an on-site EkkoLink device that provides local data aggregation and storage and handles secure connectivity with EkkoSoft® Critical cloud based software.

The EkkoHub is compatible with all members of the Critical Things® sensor family; temperature and humidity sensors (THX, TDX) and wireless EkkoAirs. The EkkoHub can receive data at 868.3MHz (ES-EH-02) and 923MHz (FS-EH-02).



EkkoLink Data Aggregation

EkkoLink serves as a data aggregator, receiving data from EkkoHubs and securely forwarding it over an internet (wired or cellular) connection to EkkoSoft® Critical in the cloud. EkkoLink® is also able to retrieve data from other on-site third- party devices and networks using Modbus, OBIX or SNMP also forwarded to EkkoSoft® Critical.

In the event of a temporary loss of external connectivity, EkkoLink buffers the site data and automatically transfers it to EkkoSoft Critical when the connection is restored.

EkkoLink features three LAN ports dedicated to the external internet connection, the on-site EkkoSense network (for EkkoHubs) and local data integration. Network configuration and security rules are applied separately to provide robust segregation. EkkoLink also has two RS485 ports configured for Modbus communications facilitating direct data retrieval from local devices such as power meters for forwarding to EkkoSoft.

EkkoLink is implemented as an appliance running Debian 9. It can be installed in client racks or in a dedicated EkkoSense low profile wall mount rack along with other infrastructure such as a PoE switch for the EkkoHubs.



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