



Monitor
Manage
Maximize



Redefining data center optimization

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



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Redefining data center optimization



Critical Things®

INTEGRATED SENSOR TECHNOLOGY

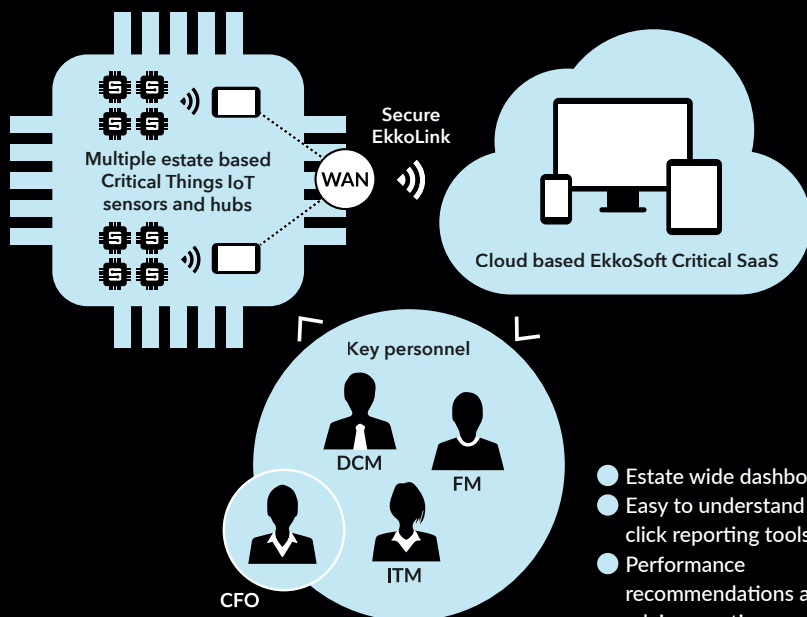
- € Internet of Things (IoT) enabled family of wireless thermal sensors
- € Ultra-low cost sensors with 5 year battery life
- € Unique cooling duty meter to show cooling utilization for any CRAC/AHU
- € Integration with 3rd party BMS and power logging systems
- € Secure, encrypted data transmission



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



Find out more at
www.criticalleg.com/ekkosense



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.

Find out more at ekkosense.com/risk-reduction

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.

Find out more at ekkosense.com/cost-reduction

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.

Find out more at ekkosense.com/capacity-optimisation

Trusted by

CBRE



Telefónica



VISA

Bloomberg



Santander



DIGITAL REALTY



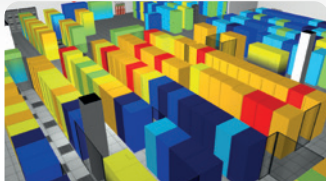
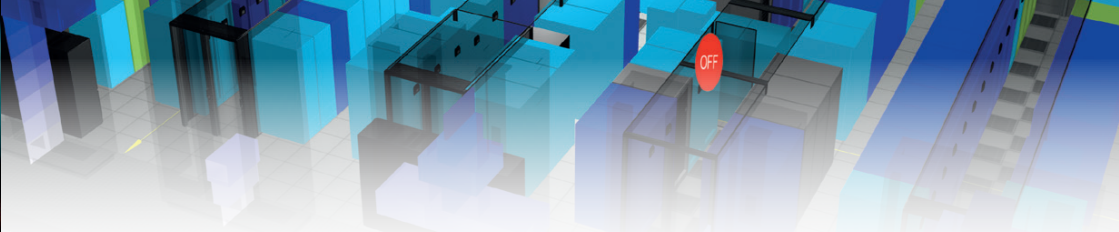
EkkoSoft® Critical
MONITOR MANAGE MAXIMIZE



Innovative software for the analysis of critical thermal issues in real-time and on any device

Rapidly model environments in the 3D room builder, quickly gather thermal insights with intuitive visualizations and analyze performance using advanced analytics

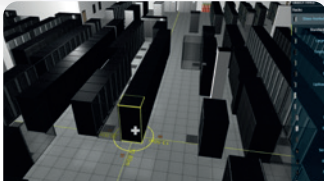




Monitor, analyze and report

EkkoSoft Critical features intuitive visualization capabilities to create an immersive digital twin of your data center – supporting real-time thermal decision-making, and delivering performance insights into your data center space, power and cooling to help manage risk and maximize operational capacity. Covering all aspects of your data center estate's performance including intuitive thermal and power overlays, EkkoSoft Critical makes it easy to optimize performance, while our Estate Page dashboards give operations teams the control needed to see exactly how their whole estate is performing, with both site and room-level visibility.

Thanks to EkkoSoft Critical reporting, you get to know exactly how your estate is operating, with highlighted performance metrics as well as full alerts and alarm monitoring of your critical assets. EkkoSoft Critical also offers a site leader board to show each location's temperature, compliance and PUE performance.

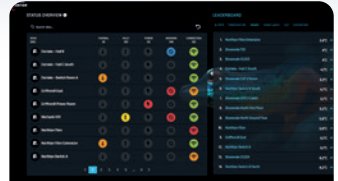


Manage, build and simulate

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.

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. Our Rapid Room Builder feature also 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.

Meanwhile EkkoSoft Critical's 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 how data center changes would impact thermal performance, capacity and ASHRAE compliance.



Maximise, analyze and optimize

Combining the power of artificial intelligence with our range of Critical Things sensors, EkkoSoft Critical supports self-optimization through its Cooling Advisor Module, a unique real-time cooling duty analytics capability as well as powerful Zone-by-Zone Cooling Analytics for resiliency and capacity planning decisions.

A point in time viewer quickly enables split screen comparisons to clearly identify the thermal changes before and after significant upgrade or optimisation works.

EkkoAir, our unique vendor agnostic solution for providing real-time kWc cooling duty and airflows, highlights performance trends of critical equipment and uncovers failing or inefficient units. Utilizing this data, EkkoSoft Critical features an in-built Cooling Advisor module that guides operational changes that can remove areas of thermal risk, improve compliance to industry standards and unlock 10%+ cooling energy savings in-house – simply by acting on advice.



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:

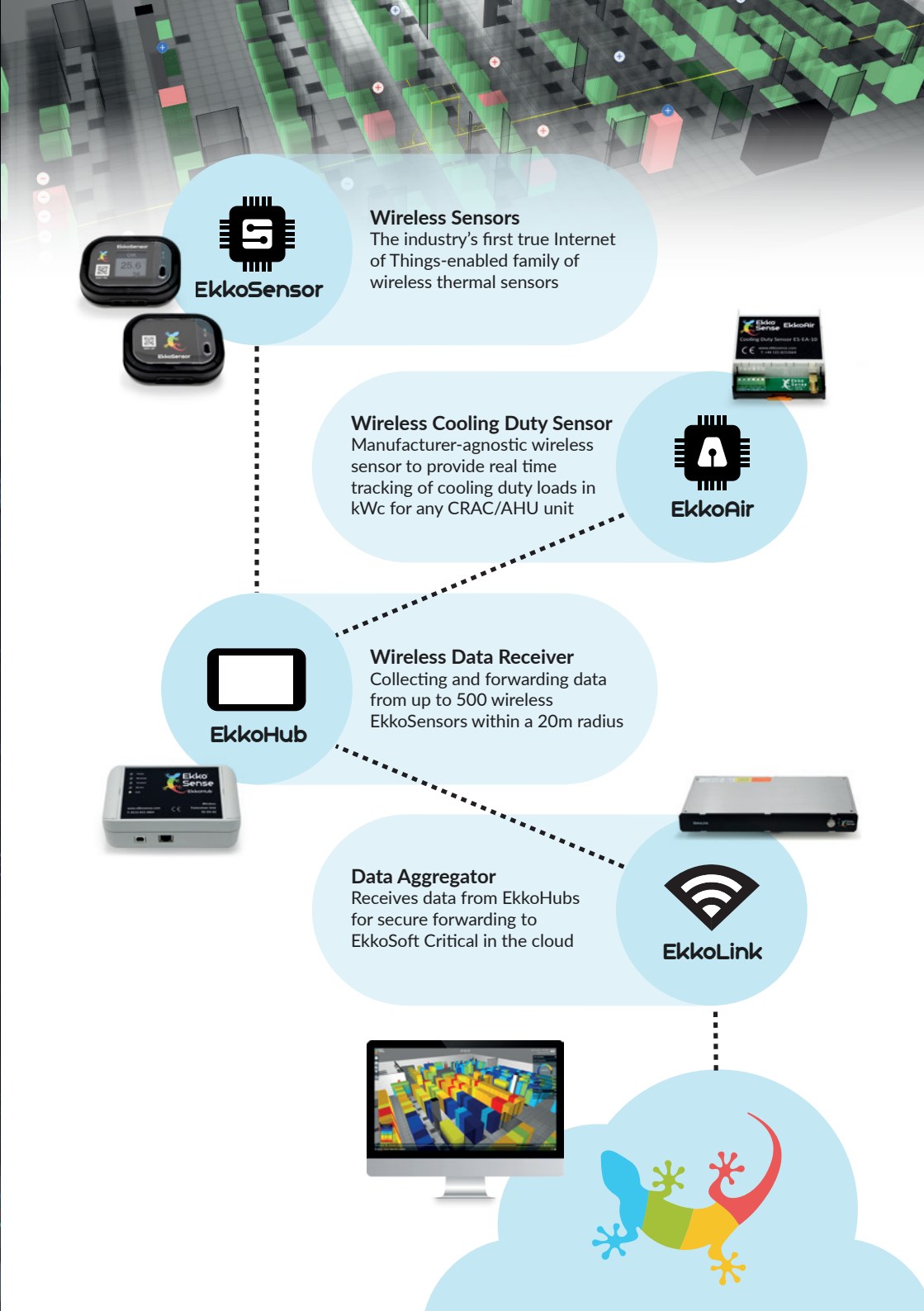
- Comprehensive Ticketing and Future Capacity – using our 3D Live View visualization to reserve space, power and cooling for future projects
- Ability to identify Power Allocation Variance – where racks might have locked-in power capacity they're not using
- Intuitive Power Allocation control supports 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

**Critical Things®**

INTEGRATED SENSOR TECHNOLOGY

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



EkkoSensor

Wireless Sensors

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



EkkoAir

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.

Find out more at www.criticleg.com/ekkosenes



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.

We offer a range of flexible commercial models for software, sensor and consultancy engagements to meet any customer requirement

	'Full Service' Ongoing Relationship	EkkoSoft® Critical Platform	DCOP® Optimization Service
Energy saving	✓	✓	✓
Risk reduction	✓	✓	✓
Capacity release	✓	✓	✓
EkkoSoft® Critical software	✓	✓	
Critical Things® sensors	✓	✓	
Monthly performance reports	✓	✓	
Thermal optimization services	✓		✓
Sensor maintenance	✓		
Regular airflow PPMs	✓		
Discounted additional services	✓		
Commercial model	OpEx	CapEx + OpEx SaaS	CapEx

For more information or a free demo

www.criticalleg.com/ekkosense | 1.800.257.5235



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