Vertiv™ Liebert® iCOM™-S

Advanced Thermal Monitoring and Control Software

Optimizing Thermal Management of Complex Data Centers

Building and expanding data centers is a time-intensive enterprise, which takes staff effort and expertise as well as ongoing CapEx and OpEx investment. Your operational and data center teams seek to optimize the thermal management of your facility or network of facilities to protect high-performing equipment, maintain business operations and drive throughput, while reducing unnecessary energy costs.

Scaling Thermal Management Across Deployments and Facilities

Vertiv™ Liebert® iCOM™-S is data visualization software that provides your facility and data center management teams with advanced thermal monitoring and control that can reduce energy costs up to 35%, using advanced control algorithms. The software helps data center teams streamline the execution of critical tasks, such as auto-discovering devices, monitoring and managing thermal conditions, validating equipment changes and optimizing energy use.

Use iCOM-S™ to accomplish the following strategic data center objectives:

- **Deploy faster:**
  Liebert iCOM-S speeds deployment times with auto-discovery of Vertiv devices and use of intelligent system diagnostic tools. The software also includes building management system (BMS) integration wizards that give you increased access to data and capabilities not available with other systems.

- **Integrate easily:**
  Dynamically incorporate new thermal devices into controls, performance metrics, trends and statistical reporting with no reprogramming. Monitor multiple buildouts across campuses with a single desktop application, simplifying your BMS integration.

- **Avoid configuration issues:**
  Benefit from enhanced views of system data including dedicated commissioning and reporting screens. The software quickly aggregates connected device data and presents configuration values, enabling your team to identify and address issues, identifying and addressing issues if devices are misconfigured.

- **Automate thermal management:**
  Once the thermal management system is fully integrated, Liebert iCOM-S uses advanced automation algorithms and tools like hot-spot protection to help you control cooling settings and energy usage. Ensure optimal conditions for all your critical equipment and avoid hot spots, or temperature variations that can cause energy waste, increase system outages and damage expensive equipment.

- **Simplify data analysis:**
  Liebert iCOM-S simplifies data ingestion and communication of thermal management data to other externally connected systems. Use system dashboards and reporting to verify thermal conditions. Leverage highly accurate, preprogrammed metrics and diagnostics to streamline any repairs. Harness a common application code to baseline data centers in different regions.

- **Optimize:**
  Gain a holistic view of your data center, while allowing any temperature sensor to be easily assigned to any unit group's control. Access thousands of data points that improve automation and ensure maximum uptime and energy savings. Use teamwork functionality, or the ability to collaborate on thermal monitoring and controls, to provide your staff with the connectivity, visibility and tools to coordinate changes.

- **Improve security:** Maintain tighter control over access to iCOM-S with corporate IT integration. Use multiple features to strengthen security, including a single secure interface, corporate domain user authentication, streamlined patch and firmware updates and parallel installs.

Accelerate Your Path to ROI

iCOM-S provides your facility and data center teams with multiple benefits, including:

- Simplified, automated integration reduces human error

- Substantially decreased deployment and integration time

- Increased access to data for better data integrity and system visibility

- Up to 35% thermal energy reduction via advanced control algorithms

- Accelerated return on investment that is approximately one year for typical installations

Deployment Type (Approximate device quantities may vary based on application)	1U Form Factor	Touch Screen Panel	Installed Software (customer provided VM/Server)
Small: Up to 20 Thermal Units + 100 wireless sensors	Best	Better	Good
Medium: 20 to 75 Thermal Units + 250 wireless sensors	Good	Better	Best
Large: More than 75 Thermal Units + 900 wireless sensors	--	--	Best (iCOM-S GW required)
Cross Network Device Communication	iCOM-S GW Required (Optional if not specifically labeled)		

Common Deployment Scenarios

With iCOM-S™, data center teams leverage a common user interface and experience to execute different deployment scenarios. The following illustrations demonstrate three common scenarios.

Scenario #1 – Smaller/Lightweight Deployments

Data center teams seek a lower-cost solution that provides visibility into less than ten thermal units and one hundred wireless sensors. They can integrate lightweight controls by manipulating end-device set points. Teams can deploy and integrate devices easily via a pre-loaded appliance that can be rack- or wall-mounted. In most cases, iCOM-S provides a better experience at a lower cost than a scaled-down, thermal-only BMS could provide.

Scenario #2 – Enterprise Facilities Deployments

Medium to large enterprises typically seek enhanced thermal controls integration with 10 to 80 thermal units and 200 to 400 optional wireless sensors. For these facilities- and operations-focused teams, we offer iCOM-S software pre-loaded on a wall-mounted panel enclosure with a large 21.5" capacitive multi-touch screen. Software features include the cross-group sensor control, control feedback loop integration for reduced operational costs, and mass threshold and set point change capabilities of the iCOM-S software. Using a single IP address, iCOM-S either replaces direct-to-unit BMS connections or enhances it by adding aggregated thermal domain expert calculations for the entire connected system and space.

Scenario #3 – Enhanced Software-Only Deployments

Large enterprise and colocation customers require a higher level of IT/security integration, networking, and redundancy. The iCOM-S solution for this scenario includes software-only installations on a customer-provided server using network-connected iCOM-S Gateways. The iCOM-S Gateways enable secure network segregation and aggregation and deployable functionality and redundancy based on the application requirements. This approach enables customers to create a highly scalable solution that integrates well into their IT security and clustering environments. Software features valued by these customers include quickly deployed mirrored /duplicate buildouts, commissioning toolsets and automated reporting/data exports, enabling them to reduce operational costs.

iCOM-S meets customers' needs for a consistent experience across a multitude of applications. In addition, iCOM-S integrates with other Vertiv technology, such as the Vertiv™ Wireless Sensor Network (WSN) to help you efficiently and securely scale your data center management operations.

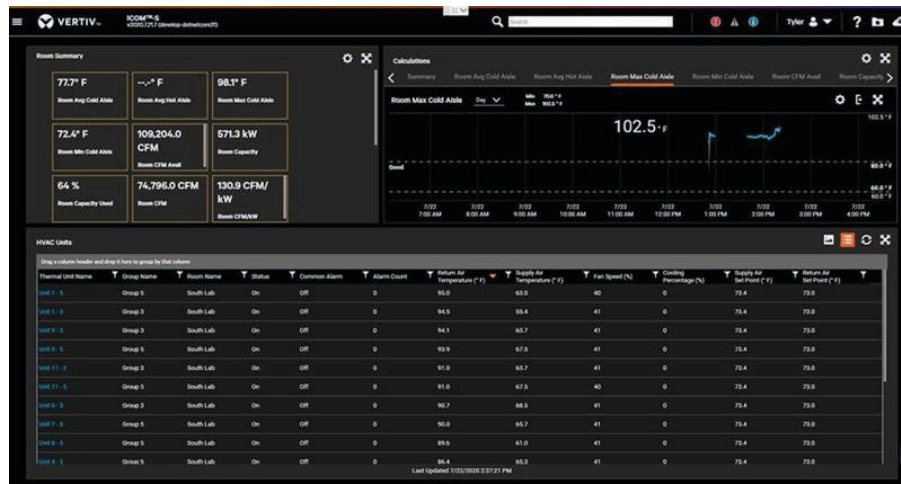## Enabling Seamless Integration with Vertiv Wireless Sensor Network (WSN)

Vertiv™ Wireless Sensor Network (WSN) is typically used in dynamic data centers where locations of racks or load within the data center change frequently. WSN helps teams reduce the long-term operating costs of having to run or modify sensor cabling throughout the data center.
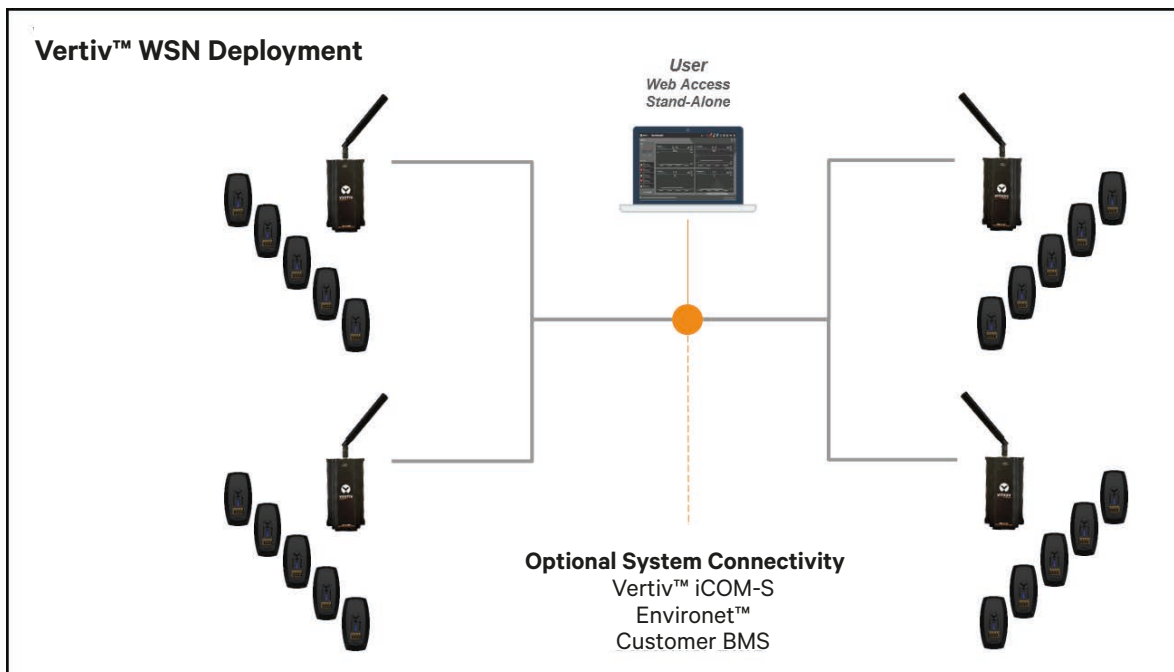
In large data centers, WSN enables easier and faster scaling of the number and location of sense points and permits access to sensor mounting locations that prohibit wired sensors. Its longer range means WSN can provide coverage for larger areas, reducing deployment costs and network complexity.

This expandable sensor platform allows future sensor types to be added by expanding input/output ports on the front of sensors with minimal effort. It also operates as a stand-alone environmental application where needed, providing greater operational flexibility.

Benefits of using iCOM-S™ with Vertiv™ WSN include:

- Seamless integration, since iCOM-S and Vertiv™ WSN are designed to function together.**

- iCOM-S pulls event and diagnostic data from the Vertiv WSN into its systems for in-depth analysis.

- Vertiv WSN sets temperature thresholds for devices at scale, receives notifications when they are exceeded and provides synchronized device properties.

- iCOM-S triggers auto-discovery of devices, while Vertiv WSN secure communications prohibit rogue devices from joining the network.

- This highly secure platform uses a secure wireless protocol with proprietary data packet validation, layered encryption and user approval requirements.

- iCOM-S reads data from the wireless gateway via API/MQTT protocols. Users can communicate this data to a BMS using Modbus/BACnet IP protocols.

- iCOM-S provides graphic representation and enhanced visualizations to guide wireless sensor placement.

- It integrates Vertiv WSN data into the iCOM-S thermal controls for maximum optimization.

Vertiv™ WSN Deployment

User
Web Access
Stand-Alone

Optional System Connectivity
Vertiv™ iCOM-S
Environet™
Customer BMS