

Using the Right Tool for the Job

Modius *OpenData* versus a Building Management System (BMS)



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Modius OpenData vs. a BMS

We are sometimes asked how Modius OpenData is different than a BMS. “Why should I consider Modius OpenData when I already have a BMS?”

In short, the answer comes down to using the right tool for the job. A BMS is installed at a large building to monitor and control the environment within that building, for example: lighting, ventilation, and fire systems. It helps facility managers better manage the building’s physical space and environmental conditions, including safety compliance. As concerns about energy conservation have gained critical mass, feature enhancements to BMSs have evolved to become more attuned to energy efficiency and sustainability. However, this doesn’t make a BMS a good tool for data center optimization any more than a scissors can be substituted for a scalpel.

Unlike a BMS, OpenData software by Modius was designed to uncover the true state of the data center by continually measuring all data points from all equipment, and providing the incisive decision support required to continually optimize infrastructure performance. Both facility and IT managers use OpenData to gain visibility across their data center operations, to arrive at an energy consumption baseline, and then to continually optimize the critical infrastructure of the data center—from racks to CRACs. The effectiveness of the tool used for this purpose is determined by the:

- **operational intelligence** enabled by the reach and granularity of data capture, accuracy of the analytics, and the extensibility of the feature set to utilize the latest data center metrics
- **unified alarm system** to mitigate operational risk
- **ease-of-use and flexibility** of the tool to simplify the job

To illustrate, following are the top three differences between OpenData and a typical BMS that make OpenData the right tool to use for managing and optimizing data center performance.

1. **OpenData provides the operational intelligence, enabled by the reach and granularity of data capture, accuracy of the analytics, and the extensibility of the feature set, to utilize the latest data center metrics.** Modius understands that data center managers don’t know what type of analysis they will need to solve a future problem. Thus, OpenData provides all data points from all devices, enabling data center managers to run any calculation and create new dashboards and reports whenever needed. This broad and granular data capture enables managers to confidently assess their XUE¹, available redundant capacity, and any other data center metric required for analysis. Moreover, because all of the data points provided can be computed at will, the latest data center metrics can be implemented at any time. Figure 1, below, is one of several dashboards that illustrate how OpenData can display Power Usage Effectiveness (PUE).

¹ The “X” refers to the usage effectiveness metric *de jour*, whether it is PUE, pPUE, CUE, WUE, or something new.



Figure 1: Complete visibility and analysis across all devices—from racks to CRACs. Measure all data points from all equipment.

In contrast, a BMS requires identifying a set of data points upon its installation. Subsequent changes to that data set require a service request (and service fee), which means that even if the data is collected in real-time, it may not be available to you when needed. Thus, the difficulty and expense of enabling the networked communications and reporting for real-time optimization from a BMS is far beyond what most would consider a “reasonable effort” to achieve.

2. **OpenData provides a unified alarm system to mitigate operational risk.** With OpenData, end-users can easily set thresholds on any data point, on any device, and edit thresholds at any time. Alarms can be configured with multiple levels of escalation, each with a unique action. Alarms can be managed independently or in bulk, and the user interface displays different alarm states at a glance. Figure 2, below, displays the Alarm Summary page of unified alarming with conditional, user-defined thresholds.

In contrast, with a typical BMS integration the system only reports alarms native to the device—i.e., it doesn’t have access to alarms other than its own mechanical equipment. When data center managers take the extra steps to implement unified alarming (e.g., by feeding into the BMS the relay outputs or OPC server-to-server connections from the various subcomponents), they will often only get the summary alarms as a consequence of the cost charged per point and/or the expense of additional hardware modules and programming services to perform the communication integration with third-party equipment. Thus, when personnel receive an alarm, they have to turn

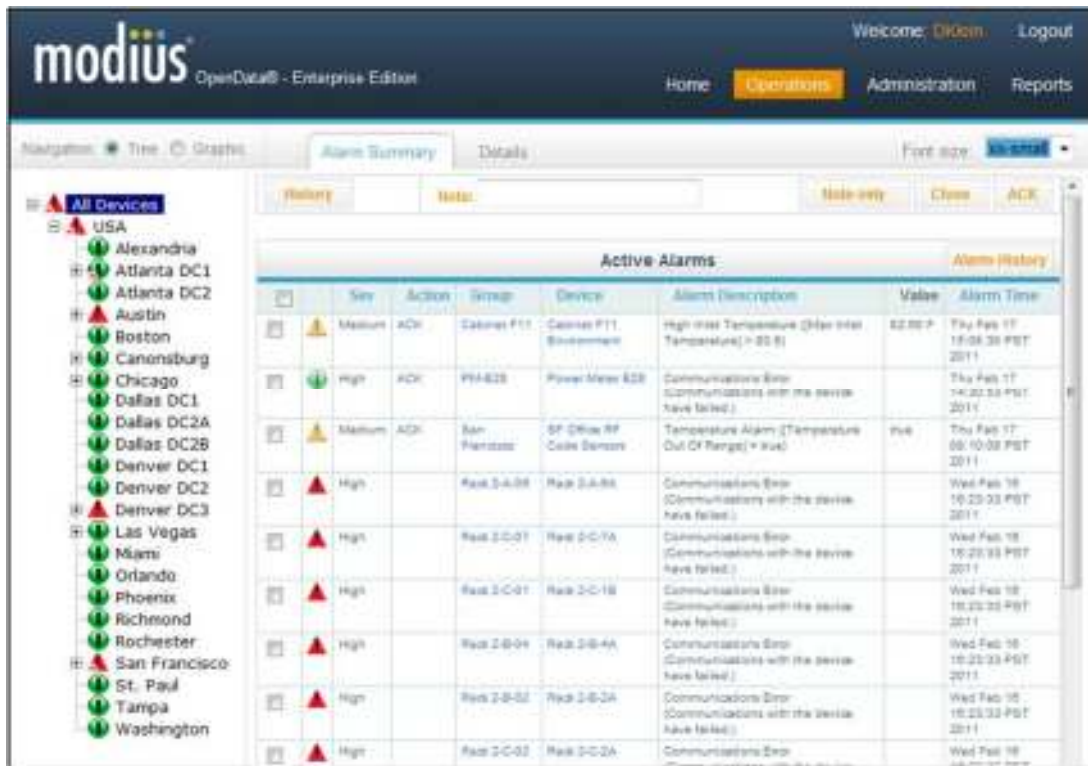


Figure 2: Unified alarming with conditional, user-defined thresholds

to the console of the monitoring system that “owns” the alarming device to understand what is happening.

3. **Ease of use and flexibility to simplify the job.** OpenData is designed to be user-driven: it is completely configurable by the end-user and no coding is required, period. Learning how to use OpenData takes approximately a day. For example, OpenData enables users to add new calculations, adjust thresholds, add and remove equipment, and even add new sites. In contrast, using a BMS to pro-actively make changes is virtually impossible to administer independently. Because the BMS is typically one component of a vendor’s total environmental control solution, the notion of “flexibility” is constrained to what is compatible with the rest of their solution offerings. Consequently, a BMS adheres to rigid programming and calculations that frequently require a specialist to implement changes to the configuration, data sets, and thresholds.

In summary, the only thing constant in data centers is flux. Getting the right information you need—when you need it—is crucial for data center up-time and optimization. For the purpose of performance monitoring and optimization, using a BMS is more problematic and ultimately more expensive because it is not designed for broad and granular data capture, analysis and user configuration. Ask yourself: What would it take to generate an accurate PUE report solely using a BMS?

The following table summarizes key differences between OpenData and a BMS, including the impact to data center managers.

Typical BMS	OpenData	Impact
Monitor a single site only	Monitor multiple sites	Data center operations frequently span multiple sites, such as technology closets and server rooms that mushroom across a university campus or enterprise data centers across the planet. OpenData provides an intelligent, federated view of multiple sites, which enable data center managers to optimize performance, including the energy efficiency, of their entire network infrastructure, not just at one physical site. On the other hand, a BMS is limited to a single site.
Collect and analyze selected data points from selected devices	Collect and analyze as much data as you need, whenever you need it	OpenData provides the flexibility to select all of the data (or any subset of that data) from all of the devices in a data center to create new dashboards and reports on-the-fly—without programming. A BMS is programmed upon installation and typically requires a service call for any subsequent changes to the data set.
Take steps to supplement data from other monitoring systems to get actionable information	Review incisive analysis and trend reports for planning or troubleshooting	OpenData is designed as a broad and granular monitoring and data capture tool to provide complete visibility and analysis across all devices and any performance dimension. A BMS doesn't typically store a large amount historic data, nor is it equipped for analysis and reporting, and certainly not when it relates to merging data from systems that it typically does not access directly, like power equipment.
Export to report or limited reporting functions	Generate a report with the on-boarding reporting capabilities	OpenData provides both standard and custom reports through the on-boarding of reporting capabilities. A BMS was never designed as a reporting tool. Most allow data to be exported to a report. Once the data is exported, then visibility of that report is gone from the system, limiting the value of that report.
Call the BMS vendor to change alarm thresholds	Change alarm thresholds whenever you need	OpenData can set a threshold on any data point on any device, and then allow the user to edit that threshold. A BMS is often difficult to change or edit, or they only report the alarms that are native to the device.
Ignore spurious alarms from various vendor alarm systems	Synchronize alarms with a conditional customer-driven policy	A BMS will report a device fault; whereas, OpenData can send a conditional alert for a device which is operating beyond set policies.