No time like the present:
The value of real-time data for infrastructure management

modius

In the new age of data centers, DCIM (Data Center Infrastructure Management) systems must evolve to offer a proactive, real-time approach to infrastructure optimization.

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Data centers have long been the nerve centers of our digital lives, supporting continually growing volumes of information, application workloads, and compute demands. This trend is driven in no small part by the rise of generative AI, which is rapidly redefining what's required of these facilities.

With generative AI workloads comes a need for higher density compute infrastructure, more advanced cooling systems, and reliable real-time operational visibility. As operators race to deploy GPU-heavy systems, the infrastructure behind those systems must evolve to support the demand for scalability, precision, and flexibility.

A leading provider of critical infrastructure management software, Modius, provides full stack solutions — covering all of the essential infrastructure from the generator in the parking lot to the network connectivity on the backside of racks.

With the ability to flex for different use cases Modius' streamlined approach provides a broad solution for operators. Customers can easily customize the solution around their requirements by selecting which modules they want to leverage — all on a single software stack.

Craig Compiano, CEO at Modius, shares his insights on the current state of DCIM (data center infrastructure management), the growing demand for scalable infrastructure, and how Modius is helping operators navigate this new era of high-density, AI-driven workloads.

What DCIM means today

At its core, DCIM is a suite of tools and processes designed to monitor, measure, and manage the data center's physical infrastructure. It covers both the IT hardware — servers, storage, and networking, in tandem with the facility systems that support them, such as power distribution and cooling.

Done right, DCIM provides a single point of control for operators, enabling centralized management, real-time monitoring, energy optimization, and capacity planning, bridging the gap between facilities and IT. Compiano explains:

"The value of DCIM is that it gives the operator the ability to manage the supply of space, power, and cooling with the demand for space, power, and cooling. That's the fundamental benefit of an effective setup.

Complete DCIM through a single pane of glass   ☑ Scalable | ⊘ Secure | ⏱ Realtime

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"If you want to just take a look at your servers and racks, you can do that on a spreadsheet. To monitor your main UPS and chiller plants, you can use the BMS. What you cannot do with either of those two approaches is to converge all the real-time data from the supply side with the demand data from the IT side, and map that supply and demand against individual IT assets."

This convergence of physical and digital layers is essential for the new generation of data centers. Traditional air-cooled environments can be more forgiving of system variation, but in high-density racks cooled with liquid systems, precision is everything. Even slight deviations in cooling efficiency or power load can have a significant ripple effect.

Modern DCIM platforms such as Modius OpenData construct a dynamic relationship between the power path, cooling zones, and IT loads, offering a unified view that enables operators to make faster, more informed decisions.

"As operators move towards more intense loads driven by AI and GPUs, as many colocation operators are, they're building capacity as fast as possible. Their tenants come in with disparate requirements," says Compiano.

As IT loads evolve, leaving deployment schemes in a state of flux, robust, enterprise-class DCIM is pivotal in managing these changes, providing operators with the tools necessary to respond quickly to dynamic demand.

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Keeping pace

The rise of AI, and especially generative AI, has created a watershed moment for data center operations. The pace of change is faster than ever before, and workloads are more variable and energy-hungry.

"Today, more than any time in the last 20 years, DCIM software is better understood and more appreciated by operators," says Compiano. "They realize that with higher densities, swing loads from GPUs, and rapid changes in technology, they need better analytics. What worked yesterday is already obsolete. They're now searching for better solutions."

That search has led many operators to re-evaluate home-built systems or outdated legacy solutions. These tools often fall short of today's needs for real-time visibility, proactive insights, and scalability.

As a result, more people are moving away from technical debt filled internally developed solutions to third party providers like Modius — in order to keep up with demand. Because today's challenges require modern, commercial-grade platforms capable of handling the complexity of AI infrastructure.

The new baseline: Real-time visibility

In a world driven by high-performance computing and energy-intensive AI models, real-time data is no longer a nice-to-have, it's fast becoming an essential part of the data center arsenal.

Real-time telemetry allows operators to react to shifting loads, optimize infrastructure utilization, and anticipate potential failures before they impact performance. Whether it's rebalancing a cooling zone or spotting stranded capacity, real-time data is the engine behind intelligent decision-making.

"If your DCIM solution doesn't provide that level of visibility, then you're probably a day late and a dollar short," says Compiano. "Many of the older DCIM products were descriptive in nature. They told you where the servers were or showed historical performance data. But that's not enough anymore."

The future of DCIM, he says, is prescriptive: "It should inform the operator what to do, or do it automatically. A DCIM solution should enable what's called supervisory control."

In practical terms, this means DCIM systems must evolve into real-time advisors and automation engines. If an IT load increases, the system should prompt chilled water flow in advance, not in reaction. If something deviates from normal behavior, the platform should flag it instantly.

Building smarter infrastructure

So, how can AI be used to make DCIM more intelligent? Modius' answer to this challenge is OpenData, its flagship DCIM platform. OpenData offers full integration across OT and enterprise IT, bridging the physical and digital worlds of the data center. It includes built-in analytics, dashboards, and graphical views, everything required to monitor and manage performance in real time.

"Different manufacturers present data differently," explains Compiano. "Output power from a device might be called six different things by six different manufacturers. So if you're trying to analyze that data, you need to normalize it first."

OpenData does exactly that, transforming raw telemetry into structured, actionable information. As the system collects data, it immediately organizes it into a defined model tailored to the operator's set needs. That structured data can then be fed directly into AI systems for deeper insights.

The structured data model, combined with modular software architecture, makes OpenData highly customizable — whether it's deployed by a hyperscaler, a colocation operator, or an enterprise running its own facility.

"We didn't build a monolithic platform that forces you to take on everything," says Compiano. "Instead, users can right-size the deployment, and select only what they need to suit their goals and budget. It's scalable, flexible, and highly accurate."

An elegantly simple approach

Modius' innovative DCIM solution provides operators with total overview via a single pane of glass'. "In our view, that phrase means that all of the different subsystems that are like little islands of data, are converged at the presentation layer, so that the operator has a single overview," explains Compiano.

"Typically, with so many different subsystems the operator has to literally swivel between different monitors — one screen might display the power systems and another has to do with IT loads. For the same reason that we believe it's important to converge the data for data analytics, it's also important to streamline and simplify how it's viewed."

With OpenData, all subsystems feed into a unified view. Operators can monitor power systems, IT loads, service tickets, pending workloads, and more — all on one screen, drawn from a single database.

This integrated model not only improves efficiency but also reduces the risk of human error. For multisite operators, this consistency is critical. It avoids data fragmentation and reduces the burden of maintaining multiple disconnected systems.

"Our solution is elegantly simple to maintain and use, because it does bring all that data together in a single pane of glass," adds Compiano.

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Scalability and security

Collecting real-time data from thousands of devices across multiple sites generates billions of data points. Scaling to meet that challenge requires an architecture purpose-built for distributed data collection.

"Unlike servers, which change relatively infrequently, real-time infrastructure data is dynamic, altering by millions of points per minute," explains Compiano. "So you need a platform that scales to handle that velocity."

Modius has engineered OpenData for horizontal scalability, distributing processing from the central database to Edge devices. This ensures operators can scale efficiently without overwhelming their systems.

Security is also paramount. The company employs a two-tier architecture with one-way encrypted data flows from OT to IT, meaning even if a breach occurs at the IT layer, the core infrastructure remains secure. OpenData runs on Microsoft SQL Server and incorporates industry best practices for authentication, encryption, and access control — including LDAP and SSO integration..

DCIM meets AI

As generative AI reshapes how infrastructure is designed and operated, the next logical step is embedding AI into the DCIM platforms themselves.

"AI hasn't fully arrived in this product category yet — but we're changing that," says Compiano. "We're actively deploying machine learning in OpenData to detect anomalies, optimize systems, and eventually guide operators using embedded AI agents."

AI will help predict maintenance needs, optimize cooling strategies, and even manage workloads dynamically across hybrid environments. With this new approach, DCIM becomes not just a management tool but a proactive partner in infrastructure operations.

Generative AI is rewriting the rulebook for data centers — and infrastructure management must keep pace. Operators need flexible, scalable, and intelligent tools to meet these growing demands. Modius, with its unified architecture, modular design, real-time data analytics, and forward-looking integration of AI, is poised to catapult the DCIM industry into its next chapter.

Ready to take control of your data center operations? Discover how Modius OpenData delivers real-time visibility, scalability, and actionable insights to optimize your infrastructure. Visit **modius.com** to learn more or schedule a demo today!